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Intermountain
Region

Ogden, Utah

1991



THREATENED, ENDANGERED, AND SENSITIVE SPECIES OF THE INTERMOUNTAIN REGION



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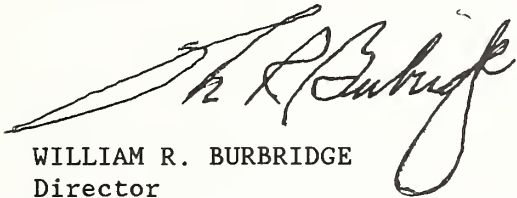
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To: Recipients of the Intermountain Region's Threatened, endangered and sensitive species publication

The enclosed publication provides information on the 243 threatened, endangered and sensitive (TES) plant and animal species which inhabit National Forests in the Intermountain Region.

This document will be updated as necessary to reflect any changes in the status of TES species in the Intermountain Region.

Please distribute a copy of this publication to individuals on your staffs concerned with the management of TES species. Additional copies may be obtained by contacting the Fisheries and Wildlife Staff, Intermountain Region, USDA - Forest Service, Federal Building, 324 - 25th Street, Ogden, Utah 84401 (Ph: 801-625-5363).



WILLIAM R. BURBRIDGE
Director
Fisheries and Wildlife Management

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THREATENED, ENDANGERED, AND SENSITIVE SPECIES OF THE INTERMOUNTAIN REGION

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Fisheries and Wildlife Management
Intermountain Region

1991

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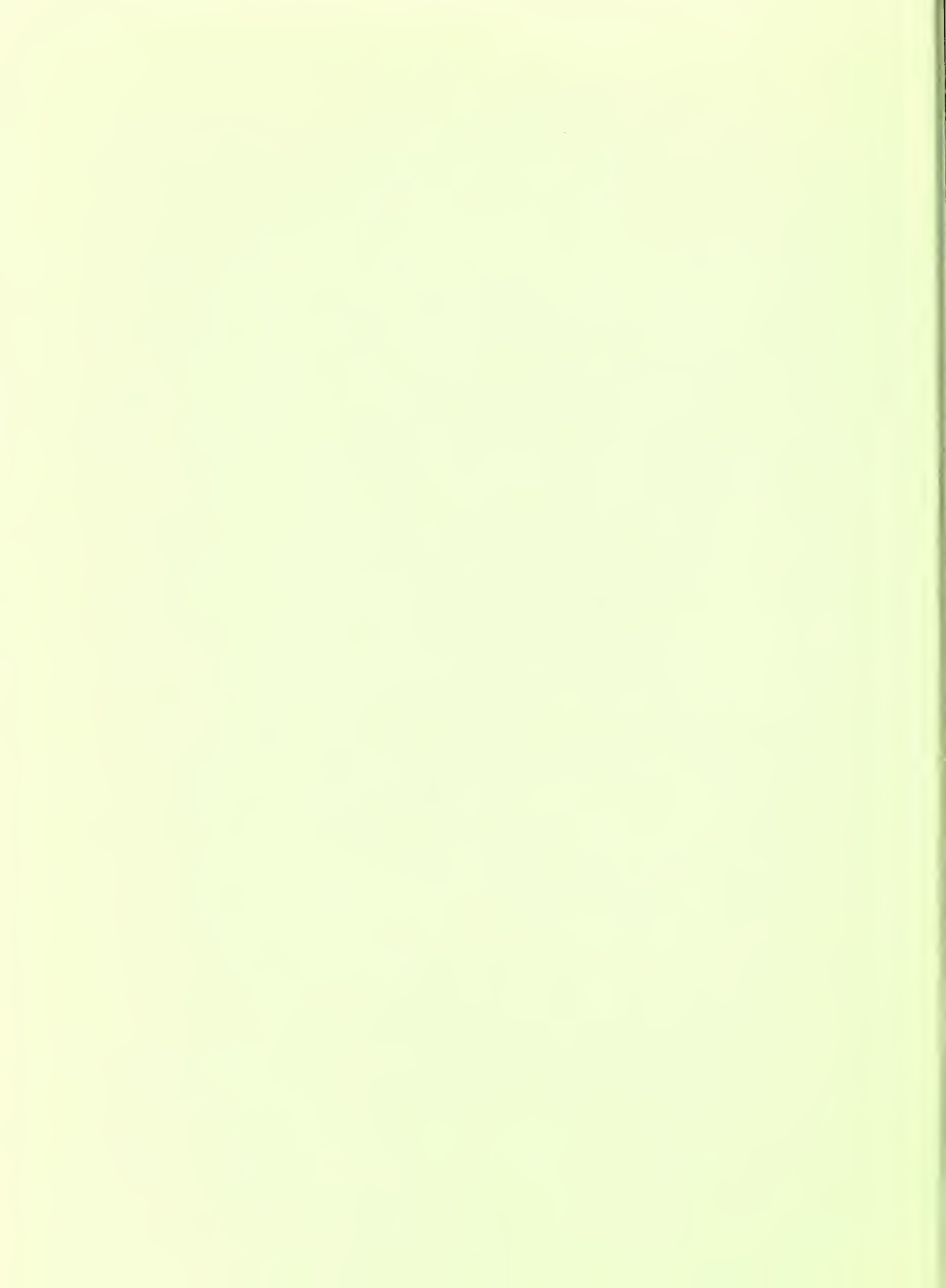
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INTRODUCTION

The 31+-million-acre Intermountain Region (Region 4) is the largest of the nine Regions in the USDA Forest Service. Region 4, which lies between the Sierra Nevada and Rocky Mountains, in the States of Utah, Nevada, Idaho, Wyoming, and California, provides a wide range of biological diversity. Due to this diversity, Region 4 supplies habitat for a number of threatened, endangered and sensitive (TES) plant and animal species.

There are 16 plant and animal species inhabiting National Forest System (NFS) lands in Region 4 which have been Federally listed as either threatened or endangered. In addition, 227 plant and animal species have been officially designated by the Regional Forester as being sensitive.

Passage of the Endangered Species Act (ESA) in 1973 has stimulated a growing public interest in the conservation of threatened and endangered species. While program emphasis has focused on the preservation of individual species, it is gradually being recognized that the maintenance of biological and/or natural diversity is the key to species preservation.

The recovery of threatened and endangered species is among the highest priority challenges to our natural resource stewardship. World-wide we are witnessing an accelerating rate of plant and animal extinction--what some authorities have called "...the greatest extinction crises in the history of the earth." The greatest threat of extinction results from loss or alteration of natural habitats. National Forests are special lands recognized in both the Endangered Species Act and the National Forest Management Act as critical to the survival of plants and animals and the conservation of biotic diversity.

The purpose of this book is to provide information on the distribution, biology and management implications for those TES plant and animal species which inhabit National Forest System Lands in the Intermountain Region. Increased awareness of these species will foster increased attention to their needs and will result in the implementation of proactive programs designed to enhance recovery and management.





ACKNOWLEDGEMENTS

Thanks to Juan Spillet, Sharon Rollins, Sherel Goodrich, and Bob Thompson for helping to write species accounts; Bill Noblitt, Sandy Boyce, and Craig Groves for their advice and expertise on species distribution and status; the California, Idaho, Nevada, Utah, and Wyoming Natural Heritage Programs for providing Heritage rankings.

Thanks to Joyce Stoddard for her initial work preparing camera-ready copies for publication and for all her help and suggestions. The final camera ready copies were prepared by Robin Spahr with assistance from Stephanie Nettles.

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Antennaria arcuata, *Astragalus robbinsii* var. *occidentale*, *Astragalus uncialis*, *Cymopterus nivalis*, *Erigeron latus*, *Eriogonum holmgrenii*, *Lewisia maguirei*, *Penstemon moriahensis*, *Penstemon capillaris*, *Primula nevadensis*.

All other plant illustrations are by Kaye H. Thorne.

Illustrations of Utah prairie dog, lynx, fisher, Idaho ground squirrel, willow flycatcher, mountain quail, flammulated owl, white-headed woodpecker, three-toed woodpecker, great gray owl, spotted owl, sharp-tailed grouse, desert tortoise, spotted frog, and all fish are by Rick Weiss. The bald eagle is by Debbie Ruggiero.

Region 1 supplied illustrations by Bill Gamaradt of gray wolf, grizzly bear, spotted bat, wolverine, Townsend's big-eared bat, whooping crane, boreal owl, trumpeter swan, common loon, and harlequin duck.



DEFINITIONS

FEDERAL STATUS

Species listed as endangered or threatened or as candidates for endangered or threatened status under the Endangered Species Act are defined as follows:

Listed Species (from Endangered Species Act, Section 3)

Endangered - Taxa in danger of extinction throughout all or a significant portion of its range.

Threatened - Taxa likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Candidate Species (from Federal Register 54(4):554-579)

Category 1 (C1) - Taxa for which the U.S. Fish and Wildlife Service currently has substantial information on hand to support the biological appropriateness of proposing to list as endangered or threatened. Proposed rules have not yet been issued, but development and publication of proposed rules are anticipated.

Category 2 (C2) - Taxa for which information now in possession of the U.S. Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. Further biological research and field study may be needed to ascertain the status of taxa in this category.

Possibly Extinct Category 2 (C2*) - Taxa possibly extinct.

Category 3 (C3) - Taxa that were once being considered for listing as endangered or threatened, but are not currently receiving such consideration.

3a - Taxa for which the U.S. Fish and Wildlife Service has persuasive evidence of extinction.

3b - Taxa that do not meet the legal definition of a species under the Endangered Species Act.

3c - Taxa that are now considered to be more abundant and/or widespread than previously thought.

Proposed (P) - Taxa which are proposed for a specified status (listed or candidate).

FOREST SERVICE REGION 4 STATUS

Endangered - See Federal Status

Threatened - See Federal Status

Sensitive Species (from Forest Service Manual 2670.5) - Those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:

- a. Significant current or predicted downward trends in population numbers or density.
- b. Significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.

STATE LISTS

ANIMALS

Species that are listed (e.g. endangered, threatened, species of concern, or priority species) by the agency responsible for wildlife management. Depending on the state, the animal lists are developed by :

California Department of Fish and Game
Idaho Department of Fish and Game
Nevada Department of Wildlife
Utah Division of Wildlife Resources
Wyoming Department of Game and Fish

PLANTS

Species listed by the agency responsible. Depending on the state, the plant lists are developed by:

California - California Nongame Heritage Program, Department of Fish and Game
Idaho - Idaho Native Plant Society
Nevada - Division of Forestry, Department of Conservation and Natural Resources through authority granted in NRS 527.270
Utah - No state listings
Wyoming - No state listings

NATURAL HERITAGE PROGRAM RANKS

The Natural Heritage Programs use a numerical ranking system to indicate a species' rarity at the global or rangewide (G), national (N), and state (S) levels. Species are ranked according to the following definitions:

1 - Critically imperiled because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction.

2 - Imperiled because of rarity (6 to 20 occurrences) or because of other factors demonstrably making it very vulnerable to extinction.

3 - Either very rare and local throughout its range or found locally (even abundant at some of its locations) in a restricted range, or because of other factors making it vulnerable to extinction throughout its range; in the range of 21 to 100 occurrences.

4 - Apparently secure, though it may be quite rare in parts of its range, especially at the periphery.

5 - Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery.

E - Exotic or introduced.

H - Of historical occurrence; formerly part of the native biota with the implied expectation that it may be rediscovered.

Q - Indicates uncertainty about taxonomic status.

T - Trinomial rank indicator; denotes rangewide or worldwide status of subspecific taxa.

U - Unknown; possibly in peril but status uncertain.

X - Believed extinct or extirpated.

? - Indicates reservations about assigned rank.

DISTRIBUTION MAPS

The distribution of each species is shown only for the area encompassed by the Intermountain Region.





STATUS

FOREST

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	TOI	UIN	W-C
MAMMALS																
spotted bat <i>Euderma maculatum</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
North American lynx <i>Felis lynx canadensis</i>	X	X	X	X	X					X	X	X	X		X	X
wolverine <i>Gulo gulo</i>	X	X	X	X	X					X	X	X	X	X		X
fisher <i>Martes pennanti</i>		X	X		X					X	X	X	X	X	X	
western big-eared bat <i>Plecotus townsendii</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Idaho ground squirrel <i>Spermophilus brunneus</i>									X							
BIRDS																
boreal owl <i>Aegolius funereus</i>		X	X	X	X					X	X	X	X			X
trumpeter swan <i>Cygnus buccinator</i>			X	X								X				
southwestern willow flycatcher <i>Empidonax traillii extimus</i>						X	X		X					X		
common loon <i>Gavia immer</i>			X									X				
harlequin duck <i>Histrionicus histrionicus</i>			X	X	X					X	X	X				
mountain quail <i>Oerortyx pictus</i>		X								X				X		
flamulated owl <i>Otus flammeolus</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
white-headed woodpecker <i>Picoides albolarvatus</i>		X								X						X

STATUS

FOREST

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	TOI	UIN	W-C
three-toed woodpecker <i>Picoides tridactylus</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
great gray owl <i>Strix nebulosa</i>	X	X	X	X	X		X	X		X	X	X	X	X		X
Mexican spotted owl <i>Strix occidentalis lucida</i>						X	X		X							
California spotted owl <i>Strix occidentalis occidentalis</i>														X		
Columbian sharp-tailed grouse <i>Tympanuchus phasianellus columbianus</i>			X						X							X
REPTILES AND AMPHIBIANS																
spotted frog <i>Rana pretiosa</i>	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
FISH																
Wood River sculpin <i>Cottus leiopomus</i>												X				
westslope cutthroat trout <i>Oncorhynchus clarki lewisi</i>		X		X	X				X	X	X	X				
Colorado cutthroat trout <i>Oncorhynchus clarki pleuriticus</i>	X		X			X			X						X	X
Bonneville cutthroat trout <i>Oncorhynchus clarki utah</i>		X	X	X	X	X	X	X							X	X
fine spotted cutthroat trout <i>Oncorhynchus clarki</i> ssp.			X	X									X			
steelhead trout* <i>Oncorhynchus mykiss</i>		X			X					X	X	X				
sockeye salmon* <i>Oncorhynchus nerka</i>					X*					X*	X*	X				
chinook salmon* <i>Oncorhynchus tshawytscha</i>		X			X					X	X	X				

*Wild and naturally reproducing stocks on only

*Migration corridors only

STATUS

FOREST

SENSITIVE ASH BOI B-T CAR CHA DIX FIS HUM M-L PAY SAL SAW TAR TOI UIN W-C

guardian buckwheat
Eriogonum meledonum

X

X

barrel cactus
Ferocactus acanthodes
var. *acanthodes*

X

sedge fescue
Festuca dasyclada

X

X

X

Pahute gentian
Frasera pahutensis

X

four-parted gentian
Gentiana propinqua

X

X

slender gentian
Gentianella tenella

X

Rabbit Valley gilia
Gilia caespitosa

X

spike gilia
Gilia spicata

X

Davis' stickseed
Hackelia davisii

X

X

puzzling halimolobus
Halimolobus perplexa var. *lemhiensis*

X

X

X

puzzling halimolobus
Halimolobus perplexa var. *perplexa*

X

Idaho goldenweed
Haplopappus aberrans

X

X

alpine goldenrod
Haplopappus alpinus

X

Pine Valley goldenbush
Haplopappus crispus

X

bugleg goldenweed
Haplopappus insecticuriis

X

STATUS

FOREST

SENSITIVE ASH BOI B-T CAR CHA DIX FIS HUM M-L PAY SAL SAW TAR TOI UIN W-C

Salmon twin bladderpod <i>Physaria didymocarpa</i> var. <i>lyrata</i>								X											
Eastwood podistera <i>Podistera eastwoodiae</i>							X												
marsh cinquefoil <i>Potentilla palustris</i>	X																		
alkali primrose <i>Primula alcalina</i>												X							
Ruby Mountain primrose <i>Primula capillaris</i>								X											
Greenland primrose <i>Primula egalikensis</i>						X													
Nevada primrose <i>Primula nevadensis</i>								X											
Tahoe yellowcress <i>Rorippa subumbellata</i>																		X	
hoary willow <i>Salix candida</i>																	X		
Farr's willow <i>Salix farriae</i>											X								
Clokey's mountain sage <i>Salvia dorrii</i> var. <i>clokeyi</i>																			X
Weber's saussurea <i>Saussurea webberii</i>								X											
wedge-leaf saxifrage <i>Saxifraga adscendens</i> var. <i>oregonensis</i>											X								
Tobias' saxifrage <i>Saxifraga bryophora</i> var. <i>tobiasiae</i>										X									
nodding saxifrage <i>Saxifraga cernua</i>												X						X	

FOREST

STATUS

SENSITIVE ASH BOI B-T CAR CHA DIX FIS HUM M-L PAY SAL SAW TAR TOI UIN W-C

Stanley thlaspi
Thlaspi alleeanae

X

X

out-of-tune sticky tofieldia
Tofieldia glutinosa var. *absona*

X

Charleston ground daisy
Townsendia jonesii var. *tumulosa*

X

Charleston Mountain violet
Viola purpurea var. *charlestonensis*

X

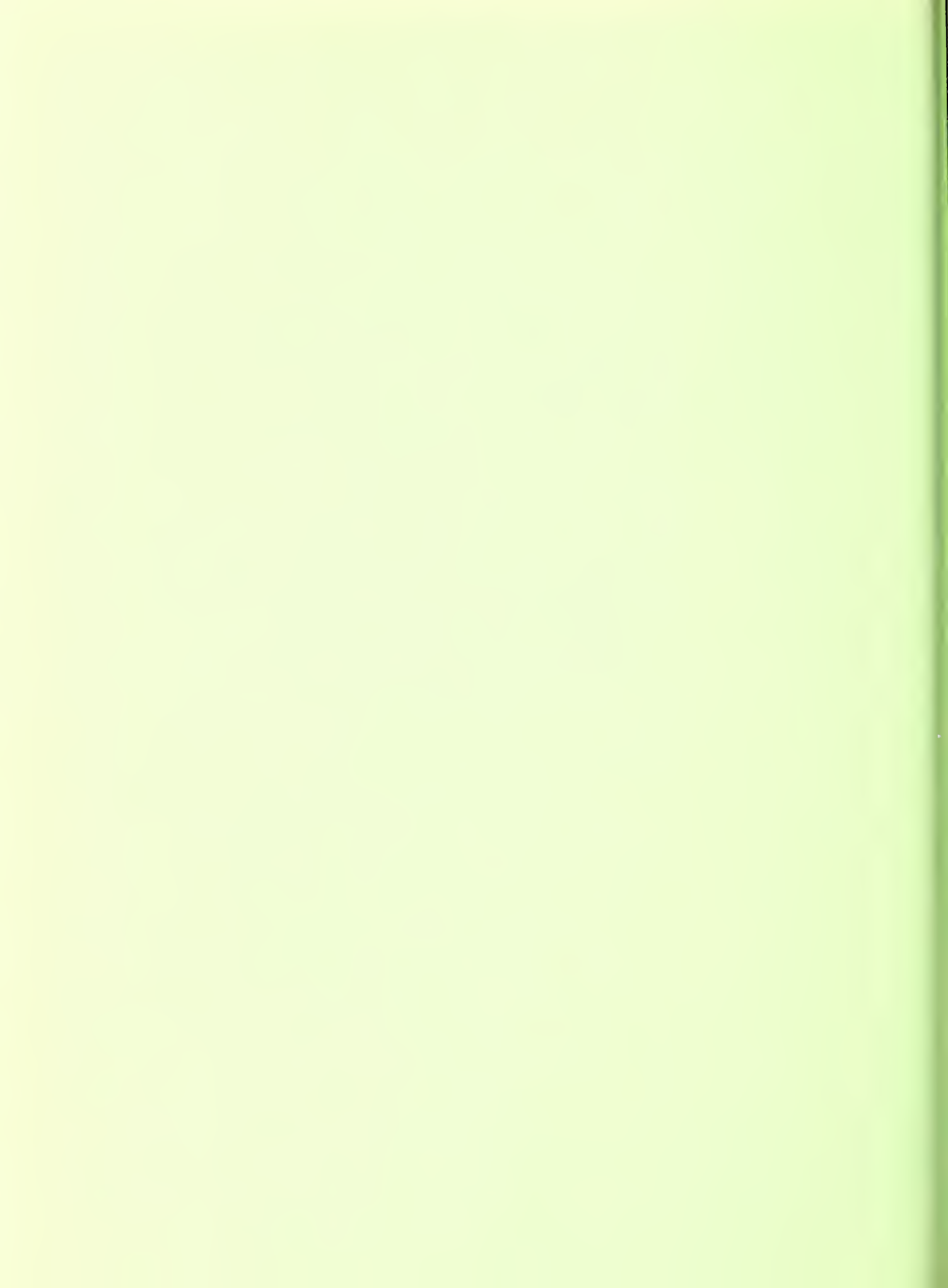
FOREST

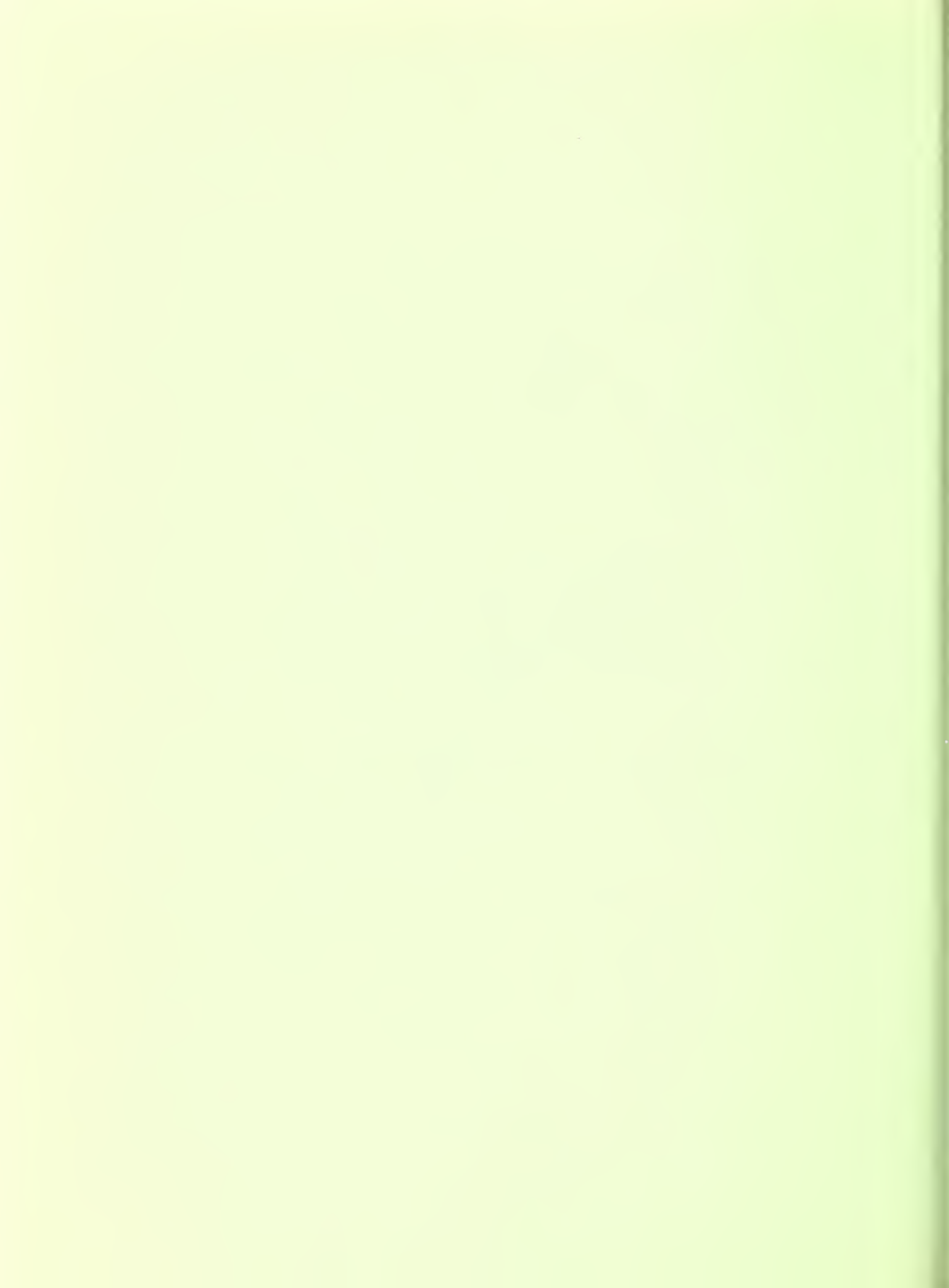
ASH - Ashley
BOI - Boise
B-T - Bridger-Teton
CAR - Caribou

CHA - Challis
DIX - Dixie
FIS - Fishlake
HUM - Humboldt

M-L - Manti-LaSal
PAY - Payette
SAL - Salmon
SAW - Sawtooth

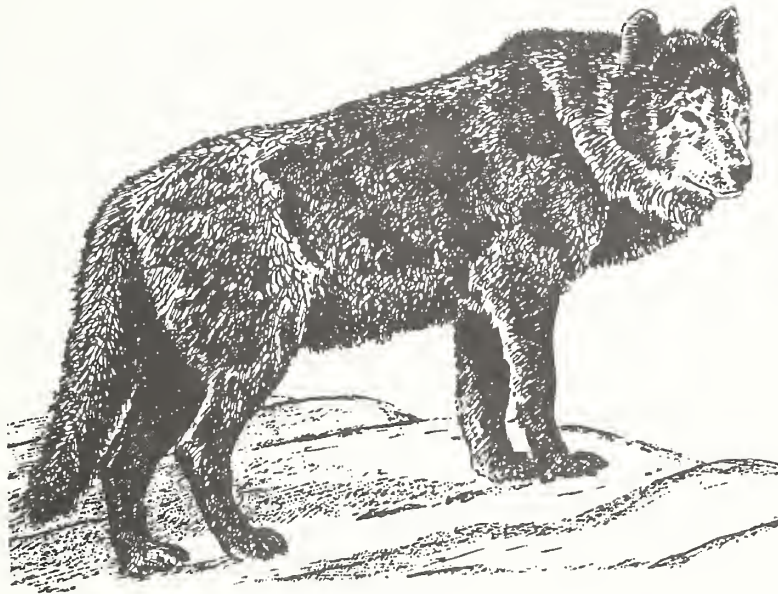
TAR - Targhee
TOI - Toiyabe
UIN - Uinta
W-C - Wasatch-Cache





ROCKY MOUNTAIN GRAY WOLF

Canis lupus irremotus
Canidae



USFWS Status: Endangered

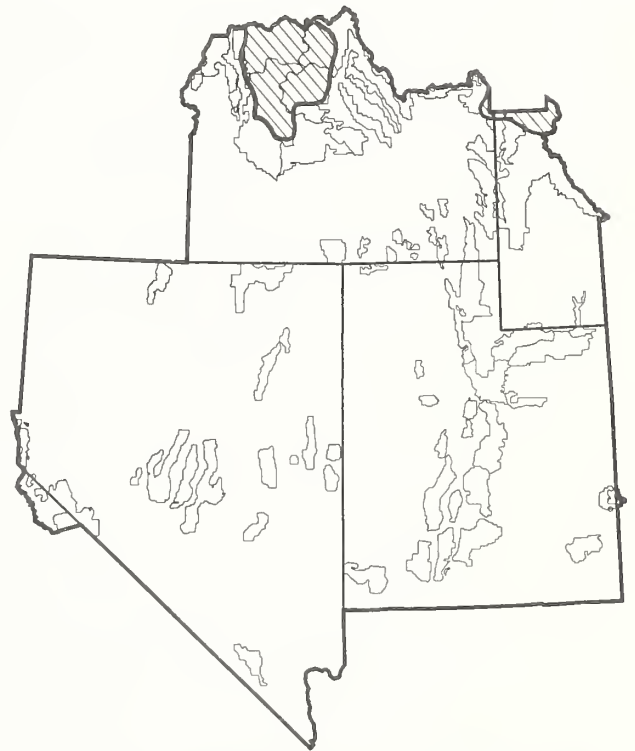
USFS Status: Endangered

State List: ID, WY

Heritage Global/State Status: G4/ID-S1, WY-SH

Distribution.—The gray wolf is abundant in Canada and Alaska and populations exist in northeastern Minnesota and in portions of Michigan and Wisconsin. Recently wolves have been observed in and around Glacier National Park. In the Intermountain Region, wolves have been documented in central Idaho and the Montana/Idaho border. Non-verified wolf reports have been made in the Yellowstone ecosystem. The geographic range of the Rocky Mountain gray wolf in the Intermountain Region consists of the Central Idaho and Yellowstone “wolf recovery areas”, as designated in the Rocky Mountain Gray Wolf Recovery Plan.

Description.—The gray wolf is the largest wild member of the dog family. Adult males have a shoulder height of 2.3-2.6 ft., a total length of 5.0-6.5 ft., one-fourth of which is tail length, and weigh 45-175 lbs. Adult females are 4.5-6.0 ft. long and weigh 40-120 lbs. Wolves differ in appearance from domestic dogs in that their legs are longer, their chest narrower, and their overall size larger. Wolves are larger, more doglike in appearance, and have ears that are more rounded and smaller than coyotes (*Canis latrans*). When running, the wolf carries its tail high or straight back, while the coyote carries its tail somewhat lower. Gray wolves are generally grayish, but colors vary from white to black, with about equal proportions of grays and blacks in



Wolf recovery areas (U.S. Fish and Wildlife Service Recovery Plan) in the Intermountain Region.

the Rocky Mountains of the U.S. and Canada. Wolves have 5 toes on the front feet and 4 on the hind. Their claws are nonretractable, blunt, and straight

Reproduction.—Reproduction within a wolf pack is determined by social status of individuals. Although wolves may breed in their second year, only the dominant male and female in a pack usually breed. Breeding occurs between January and March and, after a 9-week gestation period, 4-7 pups are born in late March to May. Pups typically are a sooty black color, with dirty gray on the head. Females give birth in dens that are usually located in underground burrows dug on steep slopes in well-drained soil, in hollow logs, or overturned stumps. When the young are 6-10 weeks old (between late May and early July), the pack usually moves the pups to a rendezvous site. Rendezvous sites are gathering areas where the pups remain while the pack hunts and are often located in meadows adjacent to timbered hillsides with surface water nearby. A number of rendezvous sites may be used throughout the summer. Yearling wolves usually remain with the pack, but may disperse at 1.5-2.5 years and form new packs.

Food.—Wolves are opportunistic predators and often hunt cooperatively in packs of up to 20 or more. Primary prey species include large ungulates such as deer and elk, and small mammals such as rabbits and beaver. Wolves locate prey by direct scenting, chance encounter, and tracking. Both parents bring food to pups and may travel 35-40 miles round trip to feed the pups.

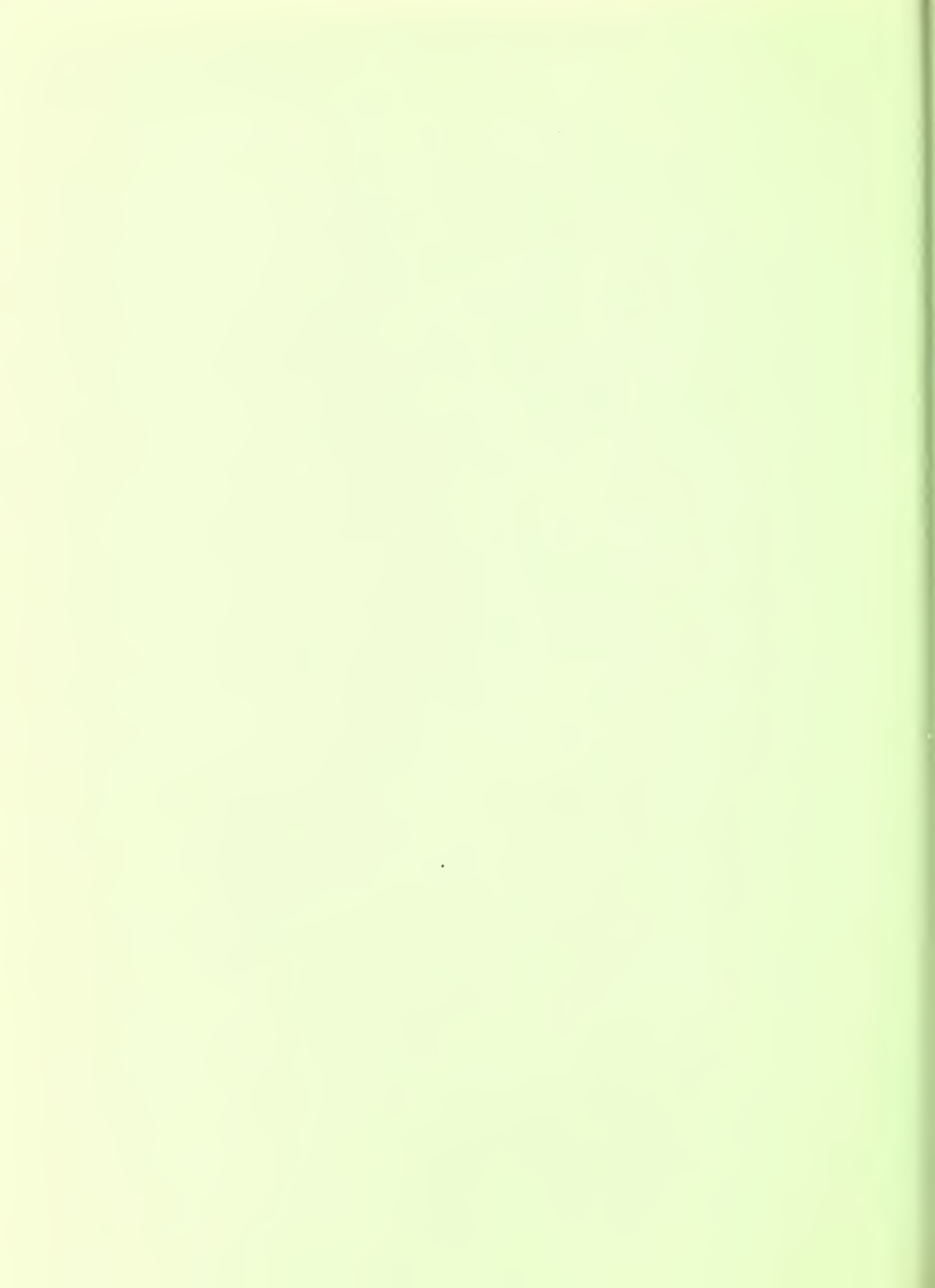
Habitat.—The availability of adequate prey and isolation from human activities are key factors for suitable wolf habitat. Wolves are highly social animals that form groups or packs of from 2-20 individuals. Depending upon the

availability of prey and the number of wolves in the pack, a pack may have an exclusive territory of from 50-300 mi². Wolves occur at low densities from 1 wolf/30-100 mi². Adult wolves have been known to travel hundreds of miles.

Management Implications.—Any activity that adversely affects wild ungulate populations also affects wolf populations or the potential of an area to provide suitable habitat for wolves. Relatively large areas, with little human activity and high density wild ungulate populations, are important to the maintenance of a viable wolf population. Wolves may occasionally kill domestic livestock. When this occurs, control programs are implemented (see U.S. Fish and Wildlife Service Wolf Control Plan). A Central Idaho Wolf Recovery Steering Committee has been established to help coordinate wolf recovery efforts in central Idaho. Recently, the Secretary of the Interior established a coordinating committee to oversee wolf recovery in Central Idaho and Yellowstone National Park.

References.

- Mech, D.L. 1970. The wolf: the ecology and behavior of an endangered species. Natural History Press, Doubleday, New York. 384 pp.
- Mech, D.L. 1974. *Canis lupus*. Mammalian Species No. 37. 6 pp.
- Paradiso, J.L. and R.M. Novak. 1982. Wolves. Pages 460-474 in J.A. Chapman and G.A. Feldhamer, eds. Wild mammals of North America: biology, management, and economics.
- U.S. Fish and Wildlife Service. 1987. Northern Rocky Mountain wolf recovery plan. U.S. Fish and Wildl. Serv., Denver.



PEREGRINE FALCON

Falco peregrinus anatum
Falconidae

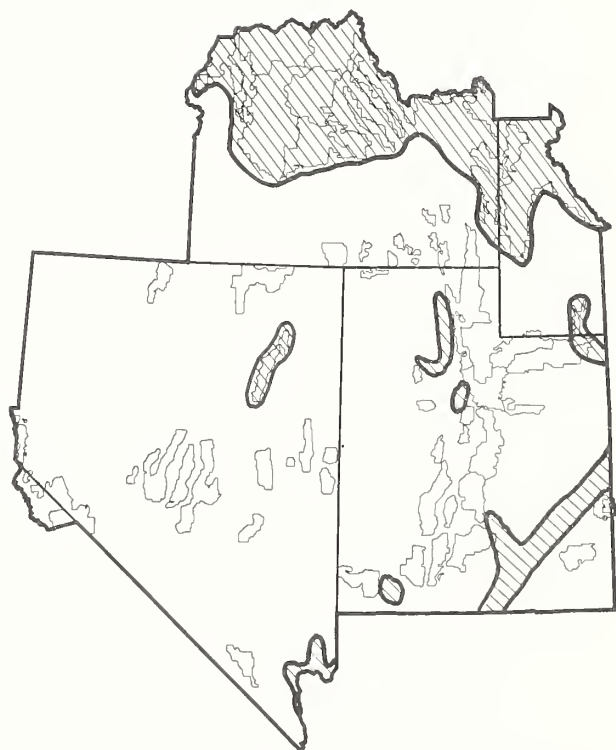


USFWS Status: Endangered
USFS Region 4 Status: Endangered
State List: ID, NV, UT, WY
Heritage Global/State Status: G3/ID-S1, NV-S1, UT-S3,
WY-S1

Distribution.—Peregrine falcons are widely distributed throughout the world wherever prey is abundant. Currently peregrines are distributed throughout North America and their numbers are increasing after a drastic decline due to DDT. They have been successfully reestablished in the eastern United States where they were at one time extinct. Peregrines generally migrate south for the winter to the Gulf of Mexico, and into Mexico and Central America.

Description.—The peregrine falcon is a medium-sized, fast-flying bird of prey. Like many raptors, females are larger than males. Females are 16-18 in. in length and weigh 1.6-2.1 lbs. while males are 14-16 in. long and weigh 1.0-1.5 lbs. Adult peregrine falcons are dark slate blue above with a black helmet, nape, and broad moustache stripe. The throat and upper breast are tan to white and the tail is lightly banded. The cere (fleshy part of the bill) and feet are yellow and the eyes are dark brown. Immature peregrines are dark brown above with a heavily streaked breast. Their ceras and feet are blue to greenish yellow. In flight peregrines have sharply pointed wings and a narrow tail.

Reproduction.—Peregrines generally breed at 2 years of age. Beginning in March, the male establishes a breeding



Current breeding and reintroduction areas of the peregrine falcon in the Intermountain Region.

territory and pairs with a female. Three to 4 eggs are laid in early to mid-April in a shallow scrape on a cliff ledge, cutbank, or a tall man-made structure. Both parents incubate which lasts 33-34 days. Males provide most of the food during this time. Young hatch in early to mid-May and fledge after about 6 weeks. They remain dependent on their parents for several weeks after fledging.

Food.—Peregrine falcons prey on a wide variety of birds including pigeons, shorebirds, waterfowl, and grouse. They are extremely agile flyers and capture prey by striking from above with their talons after a high-speed dive. Peregrine dives have been clocked at over 200 mph.

Habitat.—Peregrine falcons occupy a wide range of habitats. They are typically found in open country near rivers, marshes, and coasts. Cliffs are preferred nesting sites, although reintroduced birds now regularly nest on man-made structures such as towers and high-rise buildings. Peregrines may travel more than 18 miles from the nest site to hunt for food, however a 10 mile radius around the nest is an average hunting area, with 80% of foraging occurring within a mile of the nest. Little is known about postbreeding habitat. Some peregrines migrate to Mexico and Central America or to large rivers and wildlife refuges in the United States. If there is an adequate food supply, some birds remain on their breeding territories through the winter.

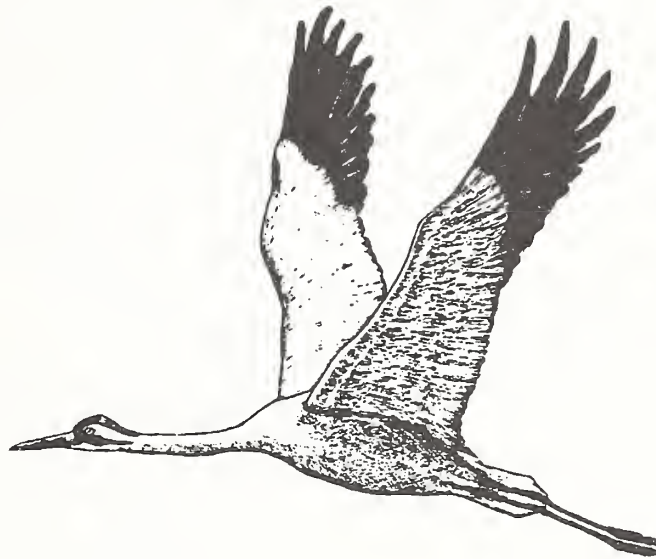
Management Implications.—Peregrine falcon populations declined throughout the world as a result of contamination from pesticides, mainly DDT in the United States, which caused eggshell thinning and drastically low reproduction. The banning of DDT in 1972 and a very successful reintroduction effort have resulted in significant increases in peregrine numbers and breeding pairs in North America. The use of pesticides in countries where peregrines and their prey winter is still a concern however. Censusing and monitoring efforts should continue to ensure recovery goals are being met. This is especially true in areas where natural reproduction is anticipated due to successful reintroduction efforts.

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WHOOPING CRANE

Grus americana
Gruidae



USFWS Status: Endangered

USFS Region 4 Status: Endangered

State Lists: ID, WY

Heritage Global/State Status: G1/ID-SE, WY-S1

Distribution.—Currently whooping cranes breed only in northern Alberta and southern Northwest Territories in Wood Buffalo National Park. They winter along the Texas coast, mainly in Aransas National Wildlife Refuge. A small population has been introduced at Gray's Lake National Wildlife Refuge in eastern Idaho. No breeding has yet taken place in this population. Their wintering area is in New Mexico at the Bosque de Apache National Wildlife Refuge.

Description.—The whooping crane is a large, long-legged wading bird. It is the tallest bird in North America standing approximately 4.3 ft. Males weigh about 17 lbs. and females about 15 lbs. The sexes look alike with an all white body except for red facial skin on the crown and side of the head. The primaries are black and show up prominently in flight. The bill is dark gray, the legs and feet are black, and the eyes are yellow. The plumage of immature whooping cranes is mottled white and rust, and their eyes are light blue-gray.

Reproduction.—Whooping cranes are monogamous and mate for life. They first form pair bonds at 3 years of age but may not breed until 4-6 years of age. Towards the end of winter, pairs begin their pre-mating behavior and dancing displays. Pairs arrive on their breeding grounds in late April. The same nesting territory is used year after year. Usually 2



Current range of the whooping crane in the Intermountain Region.

eggs are laid in May i. Nests are built in dense emergent vegetation in water 8-18 in. deep. Both adults incubate, males during the day and females at night, which lasts 30-34 days. Young stay close to the nest and are fed by their parents. They fledge between 78-90 days, but remain with their parents until the following spring. Whooping cranes migrate south in mid-September and arrive on their wintering areas by mid-November.

Food.—Whooping cranes are omnivorous, eating plant tubers, leaves, berries, cultivated grain crops, a variety of invertebrates, small fish, frogs, birds, and mammals. On their wintering grounds, blue crabs and several species of clams are very important sources of food.

Habitat.—Whooping crane breeding grounds consist of marshes, sloughs, prairie potholes, and lake margins with abundant emergent vegetation in isolated, undisturbed areas. They also forage in adjacent upland areas. Breeding territories average 2.8 mi². They winter on salt marshes and barrier islands along the Texas coast and in the Rio Grande area of central New Mexico. Whooping cranes are very sensitive to human disturbance during the nesting period and will abandon their nests if disturbed.

Management Implications.—Historically, whooping cranes ranged over most of North America from the arctic coast south to central Mexico and from Utah east to New Jersey, South Carolina, and Florida. Traditional winter grounds were the tall grass prairies of southwestern Louisiana and along the Gulf coast of Texas and north-eastern Mexico. The conversion of the prairie potholes of the midwest to agriculture, human disturbance, and illegal

shooting all contributed to the whooping crane's drastic decline. The establishment of Wood Buffalo National Park preserved the last breeding population. Recovery efforts have led to the establishment of Aransas National Wildlife Refuge to protect the wintering area. Efforts to increase the breeding population have led to the introduction of cranes to Gray's Lake National Wildlife Refuge in Idaho, and cross-fostering eggs from the wild flock in Canada and (from a captive flock) to sandhill crane (*Grus canadensis*) nests at Gray's Lake. The U.S. Fish and Wildlife Service is planning to introduce whooping cranes in the eastern United States by the mid 1990's. Whooping cranes are still threatened by loss of habitat, human disturbance, shooting, powerline collisions, collisions and entanglement in barbed wire fences, and disease.

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BALD EAGLE

Haliaeetus leucocephalus
Accipitridae



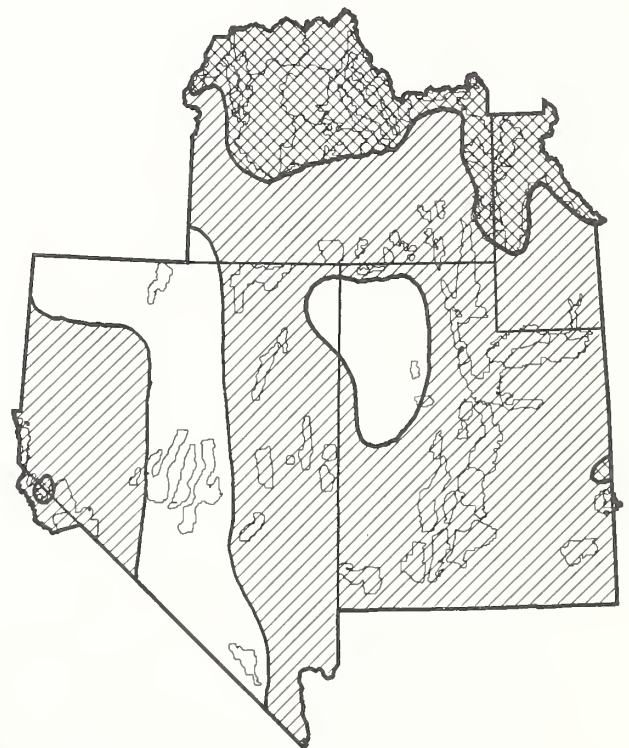
USFWS Status: Endangered
USFS Region 4 Status: Endangered
State List: CA, ID, WY
Heritage Global/State Status: G3/CA-S3, ID-S3, NV-S1,
UT-S1, WY-S1

Distribution.—Bald eagles range across North America. Breeding range extends from south of the arctic tundra in Alaska and Canada south to the southern United States and Baja California. During winter, eagles generally move south to open water or wherever food is available. Bald eagles can be found in almost every state for all or part of the year.

Description.—The bald eagle is a large raptor classified as a sea or fish eagle ranging in length from 31-39 in. Females average about 11.4 lbs. with an average wing span of 6.5 ft. Smaller males average 9 lbs. with a wing span averaging 6.2 ft. The adult plumage is very distinctive with a dark brown body, white head and tail, and yellow bill, feet, and eyes. Immature bald eagles are brown with varying amounts of white mottling on the body, wings, and tail. The feet, bill, and eyes are brownish. The immature plumage is retained for 4-5 years.

Reproduction.—Bald eagles establish pair bonds and are assumed to mate for life. Bonding may occur on the wintering areas or at the breeding grounds. Start of the breeding season varies with location. In the Intermountain Region bald eagles initiate nesting from February to March. Nests

 *Breeding range*  *Wintering range*



Current breeding and winter range of the bald eagle in the Intermountain Region.

are generally built in trees, although cliffs are used also. Nests are usually located within 2 miles of water and are built where they provide a good view of the surrounding area. Tree nests are typically found in trees that are taller than the average tree in the stand. Both males and females help build the large stick nest which may be reused year after year. Bald eagles lay 1-3 eggs around March or April and incubation lasts approximately 35 days. Parents share incubation and brood rearing duties. Nestlings fledge at 8-14 weeks but remain dependent on the adults for food for another 6-10 weeks. The bald eagle is long-lived with a low reproductive rate, approximately 1 young/occupied nest (this figure varies among locations and years) so that populations are slow to increase. Adult survival is critical to the species survival.

Food.—During the breeding season bald eagles eat mainly fish. They also eat waterfowl, shorebirds, upland birds, and small mammals. Bald eagles are very opportunistic predators, especially during the winter. They will eat whatever is available including fish, waterfowl, small mammals, and carrion. They fish by flying just above the water and extending their talons a few inches below the water surface or by wading in shallow water up to their bellies and striking at fish with their bills. They also hunt from perches and while soaring. They commonly steal from each other and from other species including osprey, loons, and mergansers.

Habitat.—During the breeding season, bald eagles are closely associated with water, along coasts, lakeshores, or river banks. Nests are commonly found in large trees, mainly conifers and cottonwoods. Because eagles need large trees to support their large nests, they are often found in multi-storied, old-growth stands with open canopies. They establish breeding territories which include exclusive use of the nest tree and favored perches nearby. They also commonly have alternate nests within their territories. These breeding territories are typically 250-500 acres. Some pairs defend foraging areas while others share foraging areas with other pairs. During winter bald eagles tend

to concentrate wherever food is available. This usually means open water where fish and waterfowl can be caught. They also winter on more upland areas feeding on small mammals and deer carrion. At winter areas, bald eagles commonly roost in large groups. These communal roosts are located in forested stands that provide protection from harsh weather. Eagles are also thought to roost communally to "learn" the location of food from others.

Management Implications.—Bald eagle population declines in the United States were first brought to public attention in the early 1900's. During this time habitat loss and shooting were the main causes for the declines. Passage of the Bald Eagle Protection Act in 1940 made it illegal to shoot a bald eagle, except in Alaska. From the late 1940's to the early 1970's organochlorine pesticides, mainly DDT, caused major declines in bald eagle reproduction. Since the banning of DDT in 1972 and the listing of the bald eagle as endangered, populations have slowly, but steadily increased. Currently the bald eagle is listed as endangered in all of the lower 48 states except Washington, Oregon, Minnesota, Wisconsin, and Michigan where it is threatened. The number of nesting pairs has increased in recent years and the U.S. Fish and Wildlife Service is in the process of reclassifying part or all of the bald eagle populations in the lower 48 states from endangered to threatened. The main threat to bald eagle populations presently is habitat loss and disturbance from development of shoreline areas, recreation, logging, road building, and mining. Management of bald eagle habitat should include protection of nest sites, breeding territories, foraging areas, and roost sites, and restriction of human activity in these areas when eagles are present.

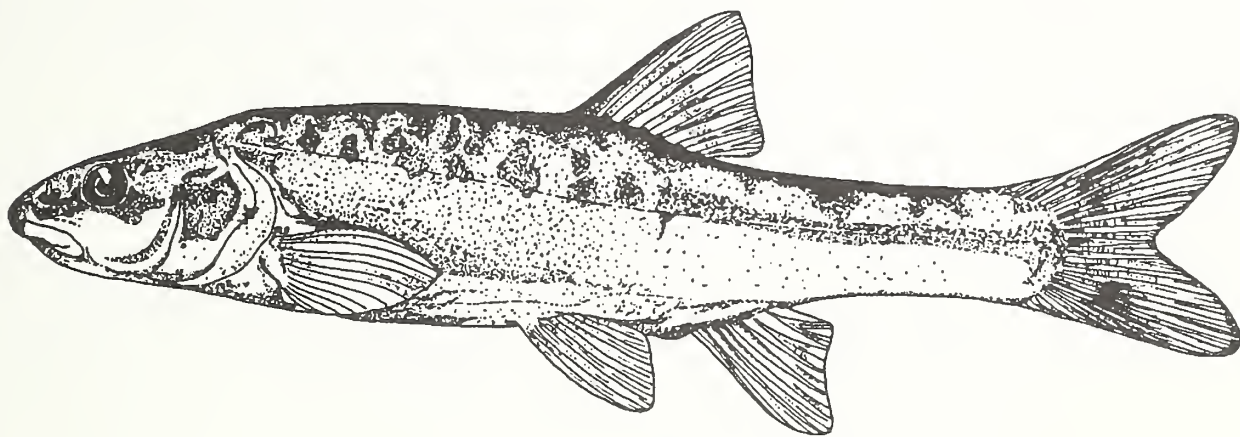
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KENDALL WARM SPRINGS DACE

Rhinichthys osculus thermalis
Cyprinidae



USFWS Status: Endangered

USFS Region 4 Status: Endangered

State List: WY

Heritage Global/State Status: G5T1/WY-S1

Distribution.—The Kendall Warm Springs dace is restricted to the Kendall Warm Springs in the upper Green River Basin on the Bridger-Teton National Forest in Wyoming.

Description.—The Kendall Warm Springs dace is a small minnow with adults ranging in size from 0.9-2.1 inches. It is currently recognized as a subspecies of the speckled dace (*Rhinichthys osculus*). Breeding males are light purple and females are dull olive green. The body in both sexes is mottled with a faint lateral line. The Kendall Warm Springs dace was once thought to be the same subspecies as the Green River speckled dace (*Rhinichthys osculus yarrowi*). However, it is distinguished from the Green River speckled dace by a smaller body, larger head and fins, and fewer scales and fin rays.

Reproduction.—Little is known about the life history of the Kendall Warm Springs dace. Spawning is thought to occur throughout the summer and several times a year, based on the widespread distribution of fry. The fry nursery areas are in still water pockets in dense mats of aquatic vegetation.

Food.—The Kendall Warm Springs dace is assumed to be an omnivorous and opportunistic forager, similar to the



Current range of the Kendall Warm Springs dace.

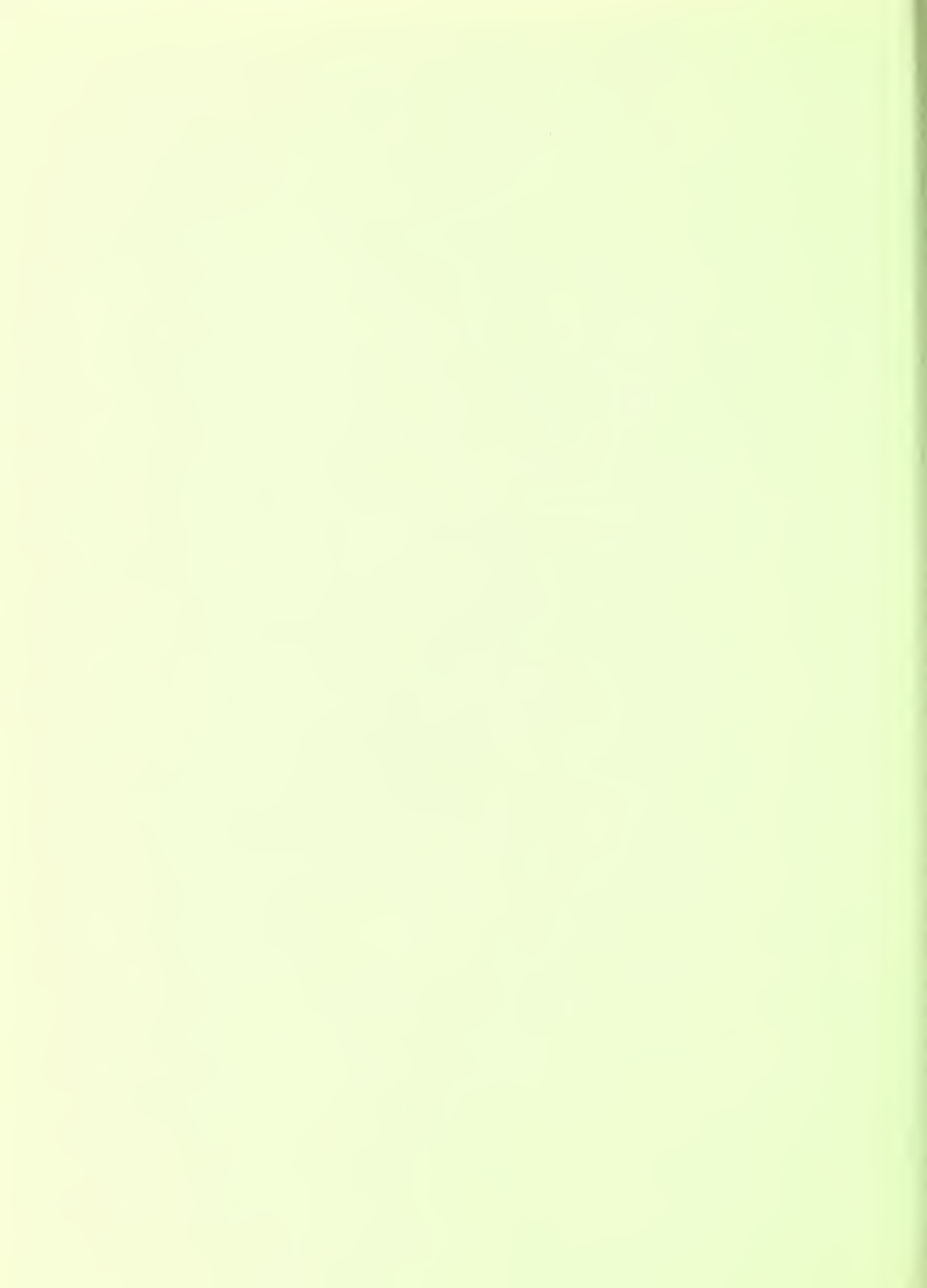
speckled dace, eating insects, crustaceans, algae, and plankton.

Habitat.—The Kendall Warm Springs consist of several springs and seeps scattered along the north face of a limestone ridge at an elevation of 7840 ft. Water from the springs travels southwest for about 980 ft. and then falls over an embankment, formed from mineralized deposits, into the Green River. The springs are thermal with temperatures ranging from 78-85 °F, depending on the proximity to the source and the season. The water is slightly alkaline and well mineralized. Various grasses, forbs, and shrubs grow near the springs. Monkeyflower, moss, sago pondweed, and stonewort are the main aquatic plants found in the springs and pools. The Kendall Warm Springs dace is the only fish known to inhabit the springs. They are found mainly in pools and quiet eddies where plants and debris are present to slow the current and provide escape cover. Dace usually occur in schools, possibly due to space limitations or behavioral preference.

Management Implications.—The Kendall Warm Springs dace has suffered from human-caused disturbances to its habitat including cattle grazing, water pollution (from the use of soap for bathing and washing clothes), and collection for sport fish bait. Federal listing of the dace as endangered in 1970 has resulted in prohibitions on trapping, seining, bathing, or wading in the springs. Other actions to protect the dace have included fencing the springs to keep cattle out, withdrawal of the area from mining, and setting up barriers to exclude unauthorized vehicles.

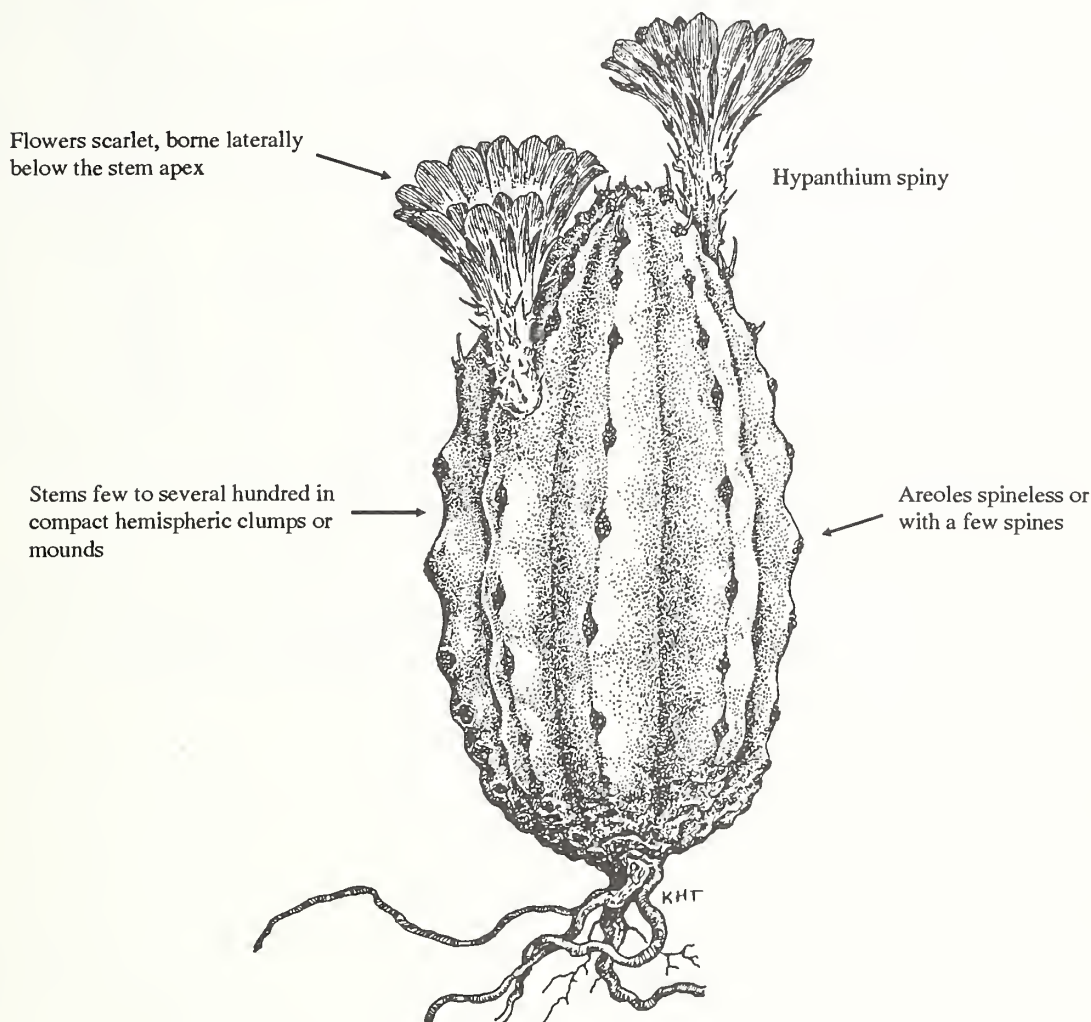
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SPINELESS HEDGEHOG CACTUS

Echinocereus triglochidiatus Engelm. var. *inermis* (Schum.) Arp.
Cactaceae



USFWS Status: Endangered

USFS Region 4 Status: Endangered

State List: Not listed

Heritage Global/State Status: G5T2Q/UT-S2

Description.—A member of the cactus family, spineless hedgehog cactus grows in dense clumps of 2-200, most commonly 5-15, stems. These stems are short, fleshy, dark green, cylindrical or oblong, 8 cm high, and 5 cm wide. They are divided into 8 or 9 vertical ribs, each edged with white areoles. The areoles may be completely spineless or may bare vestigial spines (5-8 in number and up to 2 cm in

length). Flowers are scarlet, 5-8 cm long. The ovary tube may or may not have short bristly spines.

Reproduction.—This cactus flowers from mid-May to mid-June with flowers remaining open 3-5 days. The bright red fruit is small and spiny. It is set about 10 days after flowering and is mostly dropped by mid-July. The black seeds are then removed by rodents, ants, and water. Hummingbirds and bumble bees have been observed as pollinators. These are mostly long-lived plants.

Habitat.—Rugged, semi-arid tablelands of the Colorado Plateau. It typically is found on pinyon-juniper covered mesas. Population sites are characterized by shallow, rocky

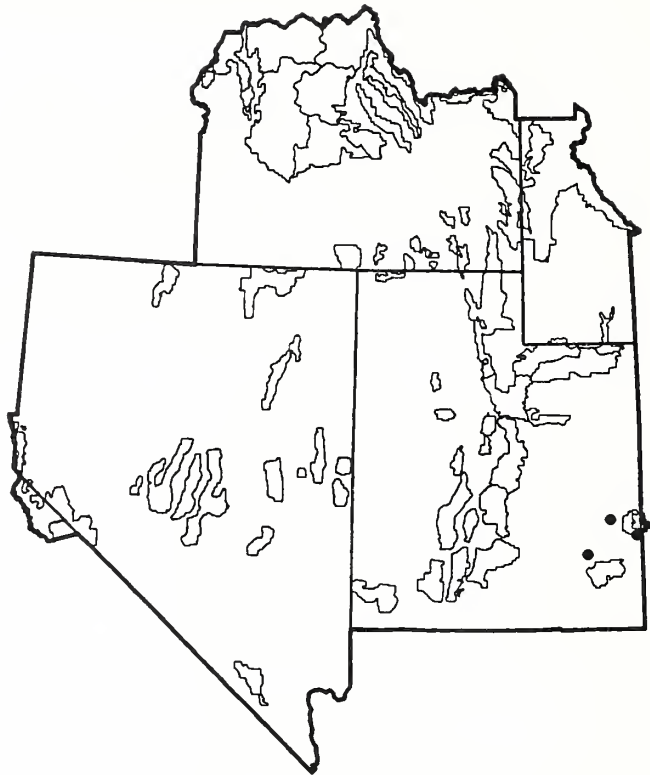
soils, edges of sandstone, and outcrops of exposed bedrock. Elevation between 5,000-8,000 feet. Most plants occur on north and west exposures, sloping between 1-25%, in the more shaded places.

Distribution.—It is scattered from the Adajo Mountains, San Juan County, Utah, northwest along the Uncompahgre Plateau to the foothills of the Grand Mesa, Mesa County, Colorado.

Management Implications.—This cactus is somewhat a novelty because of its lack of spines and commercial exploitation could occur. There may be impacts to sites from woodcutting, range improvement projects, livestock grazing, and access roads. Several species of insects have been observed using these plants. One species, the green stink bug, feed on the cactus joints and either kills them or seriously weakens them. This spineless phase may not represent a good taxon, if so, delisting is probably appropriate.

References.

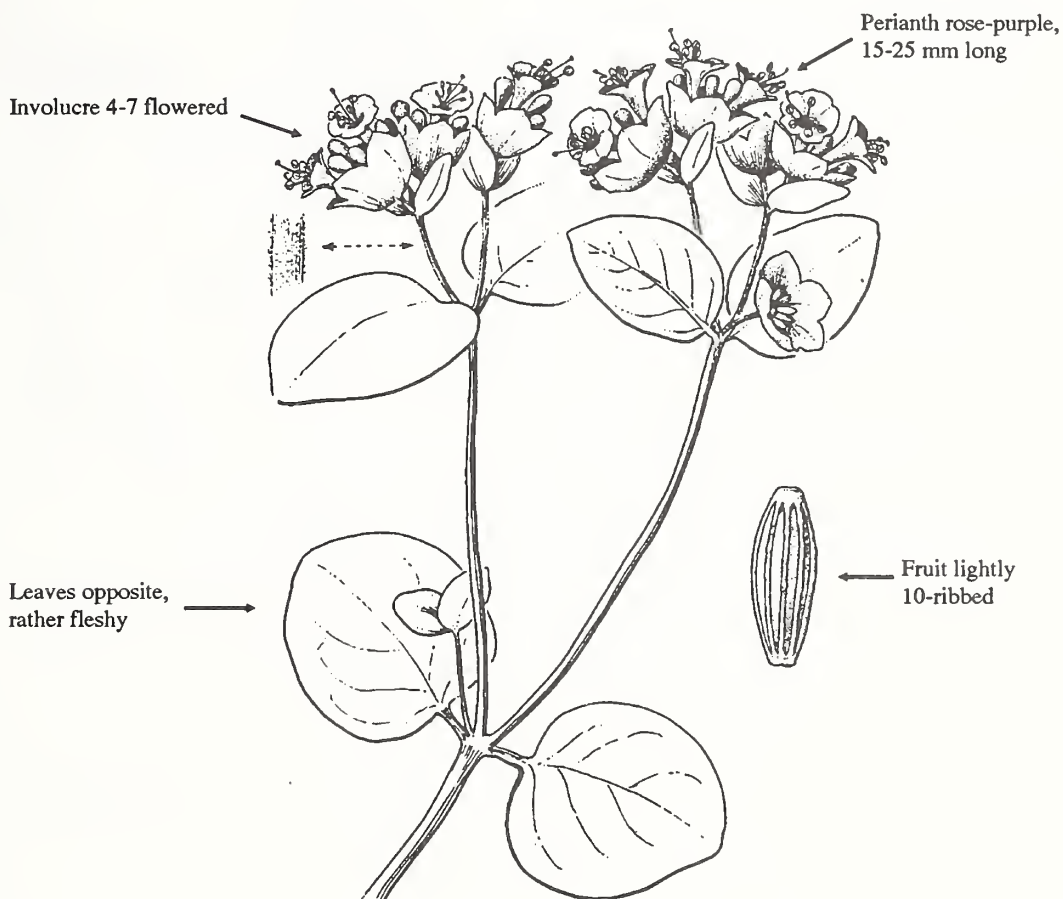
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Distribution of *Echinocereus triglochidiatus* var. *inermis* in the Intermountain Region.

MACFARLANE'S FOUR-O'CLOCK

Mirabilis macfarlanei Constance and Rollins
Nyctaginaceae



USFWS Status: Endangered

USFS Region 4 Status: Endangered

State List: ID

Heritage Global/State Status: G1/ID-S1

Description.—A member of the four-o'clock family, Macfarlane's four-o'clock has a stout, deep-seated taproot. The stems are freely branched (swollen at the nodes) causing the plant to form clumps, 6-12 dm in diameter. The leaves are opposite, green above and gray below. The lower leaves are orbicular, becoming progressively smaller toward the tip of the stem. Flowers occur 4-7 per cluster and are strikingly large in size (25 mm long and 25 mm wide). The flowers

are rose-purple in color and funnel-form in shape, the 5 stamens are exserted.

Reproduction.—A perennial, flowering from April to early May. Its fruit is lightly 10-ribbed. Plants appear to be long-lived, overwintering by the deep-rooted, perennial taproot.

Habitat.—Scattered plants occur on open, steep slopes of sandy soils, generally having west to southeast aspects. Talus rock underlies the soil in which the plants are rooted. The habitat area is in a canyon corridor where the climate is warm and dry with a winter rainy season. Associated in a grassy-scrub community.

Distribution.—On the banks of the Snake River in Hell's Canyon, above the Imnah River, Wallowa County Oregon, and above the Salmon River in adjacent Idaho County, Idaho.

Management Implications.—Trampling due to increased recreational use on hiking trails and livestock causing soil erosion appear to be potential hazards. Insect damage and fungal diseases also threaten its survival. Competition and overcrowding from more common plants appear to inhibit seed germination and growth decreasing the vitality of many plants. The species is stable with sufficient populations to probably warrant delisting to a sensitive species.

References.

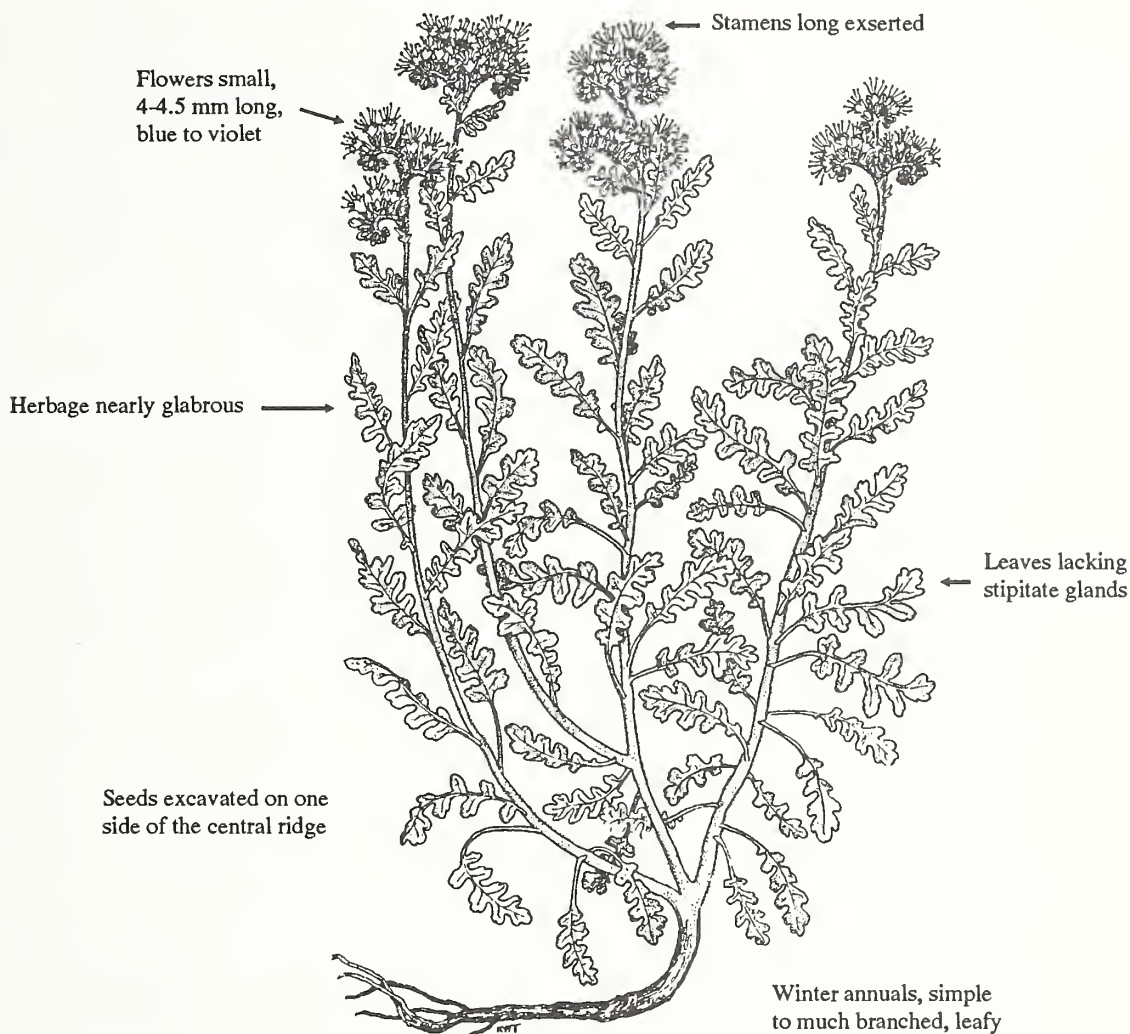
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Distribution of *Mirabilis macfarlanei* in Idaho.

CLAY PHACELIA

Phacelia argillacea Atwood
Hydrophyllaceae



USFWS Status: Endangered

USFS Region 4 Status: Endangered

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the waterleaf family, clay phacelia grows 10-36 cm tall with slightly hairy stems. The leaves are deeply pinnatifid, 0.8-5.0 cm long, and hairy. The flowers occur in large clusters on coiled branches, are blue to violet, and bell-shaped with hairy lobes. The stamens and style are exerted.

Reproduction.—A winter annual, germination occurs in late summer and it overwinters as a photosynthetic basal rosette.

Flowering begins in May and continues blooming until July. Its fruit is a glandular capsule, 3.2-3.3 mm long with 4 mature, ovate to elliptic pitted, brown seeds with the ridge excavated on one side.

Habitat.—Pinyon-juniper and mountain brush communities on shaley clay colluvium of the Green River Shale. The sites are dry and steep. Elevation 6,100 feet.

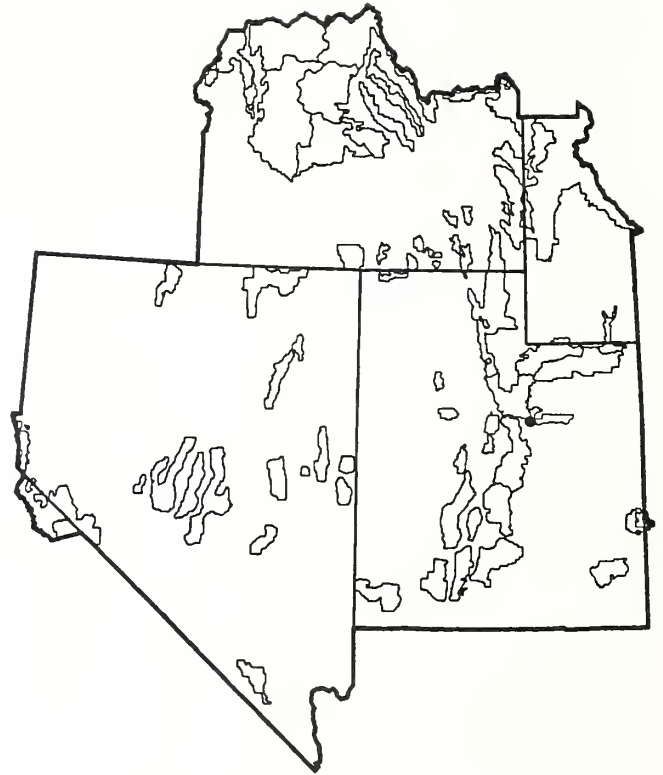
Distribution.—Known presently only from Utah County, Utah in the vicinity of Tucker. Historically it was known from the vicinity of Pleasant Valley Junction, southeast of Solider Summit.

Management Implications.—Destruction of the habitat by railroad maintenance, grazing by wildlife and domestic sheep, and trampling all threaten the survival of this plant. The Nature Conservancy has purchased and fenced the major habitat occupied by the species.

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U.S. Fish and Wildlife Service. 1982. *Phacelia argillacea* Atwood Recovery Plan. U.S. Fish and Wildl. Serv., Albuquerque, NM.

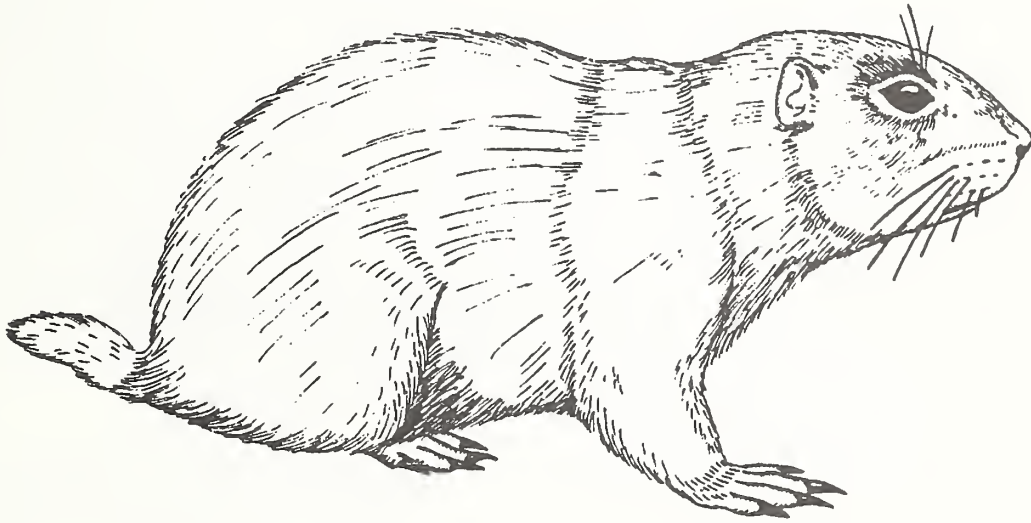
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Distribution of *Phacelia argillacea*.

UTAH PRAIRIE DOG

Cynomys parvidens
Sciuridae



USFWS Status: Threatened

USFS Region 4 Status: Threatened

State List: UT

Heritage Global/State Status: G2/UT-S2

Distribution.—The Utah prairie dog's range is currently limited to 5 counties in south-central Utah. However, since given protection in 1973 and because of transplant efforts by state and federal agencies, they have increased dramatically in recent years.

Description.—The Utah prairie dog is a member of the white-tailed prairie dog group that is distinguished from the 2 black-tailed prairie dog species by their shorter and white-tipped tails, and generally smaller appearance. This buff to yellow or light brown prairie dog is relatively stocky in build. Total length is approximately 12-16 in., tail length is 1.5-2.5 in., and weight is 1.5-2.5 lbs. Its ears are short and rounded, its legs are also relatively short, and its feet equipped with claws for burrowing. It is very close in appearance to the other 2 white-tailed species, the white-tailed prairie dog (*Cynomys leucurus*) and the Gunnison's prairie dog (*Cynomys gunnisoni*), however neither of the 2 species occupy the same range as the Utah prairie dog.

Reproduction.—The Utah prairie dog is not as gregarious nor as prone to establish well-defined "towns" as the black-tailed prairie dogs. Mating occurs in March or April among 2 year old or older adults. After a gestation period of about 30 days, 3-5 young are born in late April or early May.



Current range of the Utah prairie dog.

Young emerge above ground at 6 weeks to forage. Age, sex, and elevation determine when Utah prairie dogs emerge above ground or enter dormancy. Adults emerge and begin foraging from mid-March to early April and enter dormancy mid-July to mid-August. Juveniles begin foraging from late May to early June and enter dormancy from early October to mid-November. Low elevation colonies (under 7,000 ft.) are generally 2 weeks earlier than higher elevation colonies.

Food.—Although the Utah prairie dog is classified as an herbivore, insects (particularly cicadas), where available, are its preferred food. Alfalfa is the preferred vegetative food type. Except for alfalfa, and a few select forbs in certain growth stages (leafy aster, European glorybind, and some wild buckwheats in seed), the Utah prairie dog prefers grasses to forbs and shrubs. Flowers and seeds account for all shrub biomass ingested, and their use of leaves and new growth is negligible. In fact, during late spring, young Utah prairie dogs reportedly prefer dead vegetation and cattle feces over shrubs. Given the opportunity, they usually select a plant's flowers or seeds over its leaves.

Habitat.—Basic habitat requirements for the Utah prairie dog include deep, well-drained soil, vegetation that prairie dogs can see over or through, and suitable forage. Moist palatable forage must also be available throughout the summer. Utah prairie dogs live in organized colonies, like other prairie dogs, called towns. Towns are dotted with several mounds which mark the openings to burrows. Burrows, which are about 6 in. in diameter, go straight down for about 10-15 ft. and then branch into 2-3 horizontal tunnels that contain grass nests.

Management Implications.—Historically, Utah prairie dogs inhabited 9 Utah counties. Reductions in its numbers

and range have been brought about by direct poisoning and shooting, and habitat change. Protecting and transplanting Utah prairie dogs onto public land have been the major recovery efforts in recent years. Transplant sites must include well-drained, deep soils so that dormant and newborn prairie dogs don't drown and can avoid temperature extremes and predators. Habitat manipulations sometimes may be necessary to establish or to maintain colonies on some sites. Prairie dogs need vegetation that they can see over or through. Thus, fire, mechanical, or chemical means may be necessary to manipulate tall or dense vegetation. Because livestock grazing usually results in shorter vegetation and induces plant regrowth, it is often beneficial to Utah prairie dogs. However, overgrazing can be detrimental by reducing the production of cool season grasses, such as blue grama (*Bouteloua gracilis*), causing loss of moist swales or small meadows through gullying, and encouraging the growth of tall shrubs.

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GRIZZLY BEAR

Ursus arctos horribilis

Ursidae



USFWS Status: Threatened

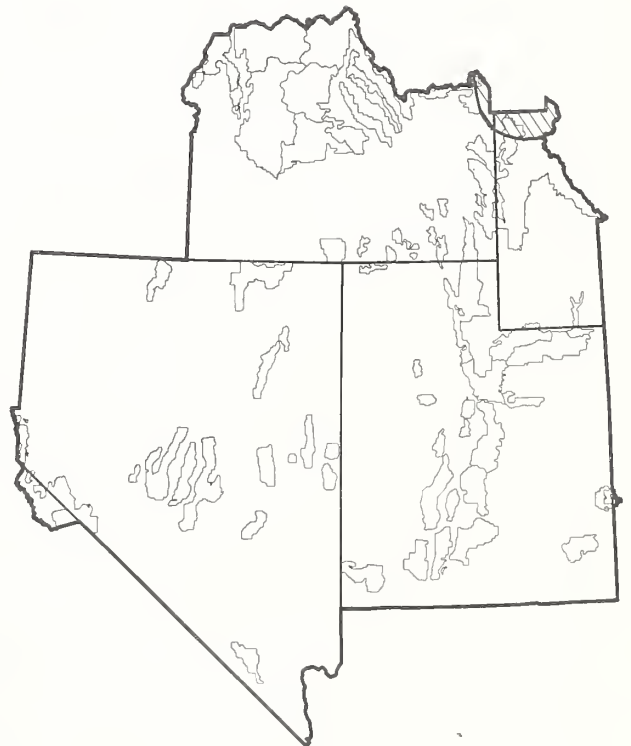
USFS Region 4 Status: Threatened

State List: ID, WY

Heritage Global/State Status: G4/ID-S1, WY-S1

Distribution.—Current grizzly bear distribution is primarily Alaska and northern and western Canada. There are 4 areas within the 48 contiguous states that contain grizzly bear populations. These include northwestern Montana, northern Idaho, northeastern Washington, and the Greater Yellowstone Ecosystem which includes Yellowstone National Park and adjacent portions of Montana, Idaho and Wyoming.

Description.—The grizzly bear is the Intermountain Region's largest carnivore. Size and weights of grizzly bears are highly variable among populations. In the Yellowstone Ecosystem, adult females average from 290-320 lbs. and adult males average 400-490 lbs. In general, grizzly bears have a shoulder height of 3-4 ft. and a total length of 6-9 ft. The grizzly differs in appearance from the black bear in that it has a noticeable hump above the shoulders and a concave muzzle or "dish-shaped" face. Coloration ranges from pale yellowish to dark brown or nearly black. White or "silver-tipped" guard hairs, especially on the back, often give a "frosted" or "grizzled" effect, from which its name is derived. Another distinguishing characteristic is the grizzly's long (2.4-3.2 in.) and light-colored claws on the front feet which tend to produce track markings.



Current range of the grizzly bear in the Intermountain Region.

Reproduction.—Grizzlies have one of the lowest reproductive rates among mammals. Females normally attain sexual maturity at 6 years of age, and then produce 1-3 cubs (2 is the norm) every third year thereafter. Males breed first at 5-9 years. The breeding season is from May through July, with most breeding occurring in June. Females may breed with several males during one season. Delayed implantation of the blastocyst postpones active pregnancy for 1-2 months. The gestation period lasts 6 months. Cubs are usually born in the den in January or February. At birth, cubs are nearly naked, and weigh less than 1 lb. Their eyes open at about 10 days, and by late March or early April they generally emerge from the den with their mother. Thereafter, they usually remain with their mother for 2 years, at which time she is ready to breed again and generally encourages the cubs to strike out on their own.

Food.—Grizzly bears are opportunists, eating a wide variety of both plant and animal matter. Depending on the season, they may feed on grasses, sedges, forbs, berries, young or physically impaired deer elk, and moose, fish, small mammals, insects, and carrion.

Habitat.—Optimum grizzly habitat has a variety of aspects, elevations, and vegetative communities. Areas in the Yellowstone ecosystem where white bark pine nuts are available are preferred fall feeding sites. Areas which provide animal prey, such as young or physically impaired deer, elk, and moose, and fish are also important. Grizzlies hibernate in natural caves or excavate dens. They enter dens in November and remain there until late March or early April. Some overlap in territory exists among sex and age classes, but grizzlies, except while mating or with cubs, are usually solitary and need considerable space away from human activity in which to roam. Grizzly bear densities are variable depending on location and habitat type, and may range from 1 bear/16-300 mi².

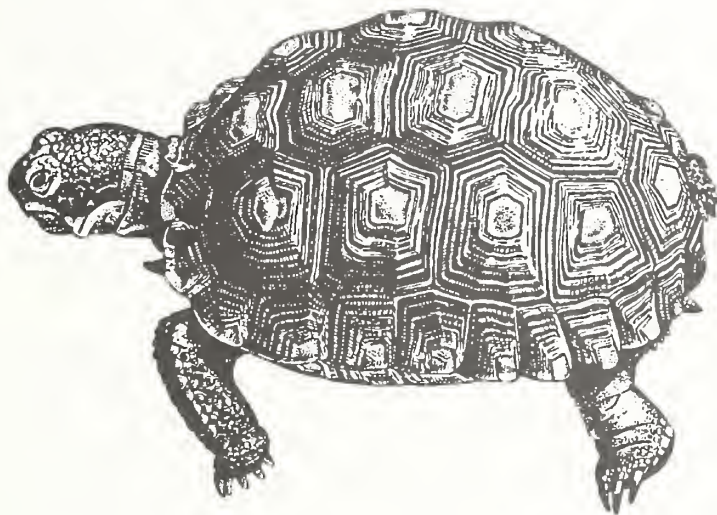
Management Implications.—Historically, the grizzly bear inhabited western North America from central Mexico to the Arctic Ocean and from Minnesota to the Pacific coast. Now, however, grizzly bears occupy less than 1% of their historic range within the lower 48 states. They are wide-ranging animals that require large areas of undisturbed habitat. Population declines of grizzlies most often are attributed to excessive mortality rates and loss of habitat due to human encroachment. Human activities that have the potential to adversely affect grizzly bears include timber harvesting, oil and gas development, recreational development, and livestock grazing. Continued efforts are needed to eliminate attractants such as garbage and food in grizzly bear habitat. The Interagency Grizzly Bear Committee and its Yellowstone subcommittee coordinate recovery activities in the Yellowstone ecosystem. Proposed habitat alterations are analyzed using the grizzly bear cumulative effects model. The Interagency Grizzly Bear Guidelines provide management direction for grizzly bear recovery.

References.

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DESERT TORTOISE

Gopherus agassizii
Testudinidae



USFWS Status: Threatened

USFS Region 4 Status: Threatened

State List: CA, NV, UT

Heritage Global/State Status: G4/CA-S2, NV-S3, UT-S1

Distribution.—The desert tortoise occurs in the greater Mojave and Sonoran Basin deserts in southeastern California, the southern tip of Nevada, extreme southwest Utah, and western Arizona. In the Intermountain Region, the Mojave Desert tortoise is found on a small portion of the Toiyabe National Forest in southern Nevada.

Description.—Recent genetic and morphometric studies describe 2 generally distinct populations for the desert tortoise, the Sonoran Desert population and the Mojave Desert population. It is the Mojave Desert tortoise that is represented in the Intermountain Region of the Forest Service. These populations have different upper shell or carapace shapes, occur in different habitat types, and reportedly differ in behavioral patterns. These land-dwelling tortoises are typified by having a domed shell and elephant-like limbs. Adults measure 5.8-14.0 in. in carapace length, and usually have prominent growth lines on the shields of both the carapace and plastron or under shell. The 6-sided carapace is brown or horn-colored, usually without a definite pattern. The plastron is yellowish and unpatterned. The forelimbs are covered with large conical scales and, when drawn in, the stocky limbs close the openings of the shell. The tail is short. Young tortoises have a flexible shell and nails that are longer and sharper than those of adults. Males have



Current range of the desert tortoise in the Intermountain Region.

longer gular shields (horny plate covering the under part of the throat) than females. The lump (chin gland) on each side of the lower jaw also is larger on males.

Reproduction.—Desert tortoise populations are characterized by requiring a long period to attain reproductive maturity (14-20 years), and having a low reproductive output, as well as low survival of young. Sexually mature females lay clutches of 1-15 eggs between March and July, sometimes laying 2-3 clutches in favorable years. However, they may not lay at all during years of low forage productivity. Nests usually are constructed along washes in nests scooped out of the ground. Incubation lasts 3-4 months with hatching from August-October. In addition to adequate amounts of suitable herbs, grass, or cacti for food, adequate soil moisture also is need for the survival of tortoise eggs and young.

Food.—Desert tortoises are herbivores, but have been reported to occasionally eat some animal matter. The forage base for Mojave Desert tortoises typically consists of native winter and summer annuals, perennial grasses, cacti, a few shrubs, leaves, and some exotic or introduced plant species. A major problem in some tortoise ranges is direct competition for forage by domestic livestock and other ungulates, including feral burros.

Habitat.—The completely terrestrial desert tortoise frequents desert oases, riverbanks, washes, dunes, and occasionally rocky slopes. Mojave tortoise populations typically occur in creosote bush-burro bush or creosote bush-tree yucca vegetation types. Desert tortoises require firm, but not hard, ground for burrows, which they construct in banks of washes or compressed sand. Burrows often are located at the base of bushes, have halfmoon-shaped openings, and may be 3-30 ft. long. Burrows may be occupied by one or many tortoises. Short burrows afford temporary

shelter, while longer ones or dens are used for estivation and hibernation. Activity patterns are associated with forage availability and they are only active for 4-5 months a year, primarily spring and fall.

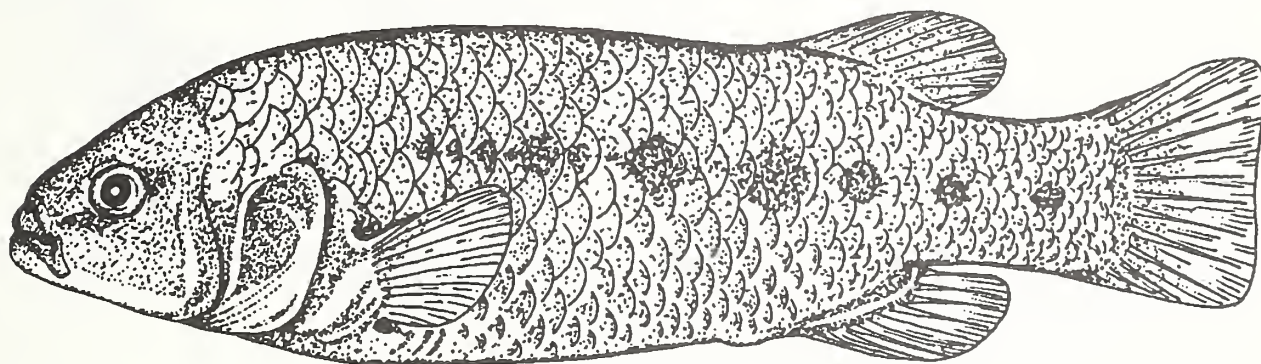
Management Implications.—Desert tortoise populations and habitats are experiencing downward trends from urban development, over-grazing by domestic livestock grazing, mining, large-scale water development, off-highway vehicle use, collecting, and many other human-related uses. Provision of adequate quantities of suitable forage, as well as cover, is of primary importance in maintaining or increasing tortoise populations. Public education, to reduce the popular appeal of collecting tortoises for pets, also could help reduce the demise of tortoise populations.

References.

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RAILROAD VALLEY SPRINGFISH

Crenichthys nevadae
Cyprinodontidae



USFWS Status: Threatened

USFS Region 4 Status: Threatened

State List: NV

Heritage Global/State Status: G1/NV-S1

Distribution.—The Railroad Valley springfish is native to 4 thermal springs in northeastern Nye County, Nevada. It has been introduced into 2 other springs areas in Nevada, just south of the native springs and near Sodaville in southeastern Mineral County.

Description.—The Railroad Valley Springfish is one of only 2 species of the genus *Crenichthys*. This genus lacks pelvic fins, has a long, coiled intestine, and is adapted to thermal water. The Railroad Valley springfish measures about 2.4 inches long. It is greenish above and silvery below.

Reproduction.—Little is known about the life history of the Railroad Valley springfish. It breeds year round and remains within a restricted area throughout its life.

Food.—The Railroad Valley springfish feeds on insects and plant matter.

Habitat.—The Railroad Valley springfish occurs in warm spring pools, outflow streams, and adjacent marshes. They are able to tolerate high temperatures and low dissolved oxygen.

Management Implications.—The thermal springs inhabited by the Railroad Valley springfish have been altered



Current range of the Railroad Valley springfish.

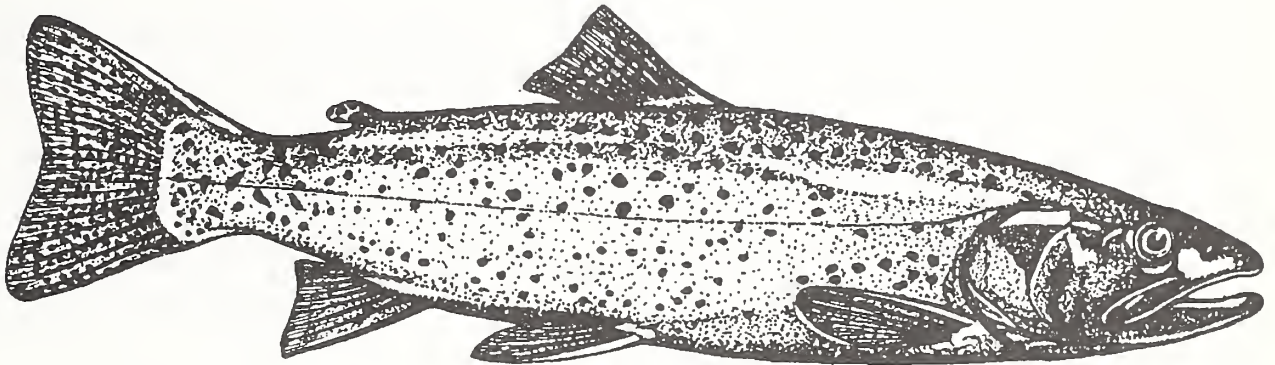
by diking and diversions for livestock watering holes and from trampling of surrounding vegetation by cattle. Groundwater pumping and introduction of non-native fish into their habitat also threaten remaining populations. Six springs and associated streams and marshes in Nye County have been designated as critical habitat by the U.S. Fish and Wildlife Service to give further protection to this springfish.

References.

- La Rivers, I. 1962. Fishes and fisheries of Nevada. Nevada State Game and Fish Commission, Carson City. 782 pp.
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LAHONTAN CUTTHROAT TROUT

Oncorhynchus clarki henshawi
Salmonidac



USFWS Status: Threatened

USFS Region 4 Status: Threatened

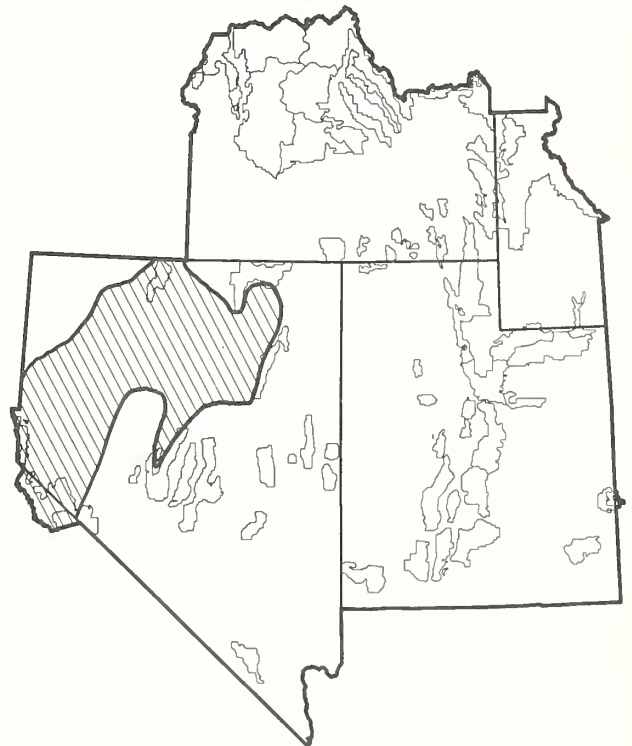
State List: CA, NV

Heritage Global/State Status: G5T2/CA-S2, NV-S3

Distribution.—The Lahontan cutthroat trout is found in lakes and streams in the Lahontan Basin of Nevada and adjacent portions of California.

Description.—The Lahontan cutthroat trout is one of several subspecies of cutthroat trout (*Oncorhynchus clarki*). Typically, cutthroat trout have an elongated, slightly compressed body and show a bright red stripe or “cutthroat” mark under each side of the lower jaw. The Lahontan cutthroat, generally the largest cutthroat subspecies, ranges in size from 9-15 inches. Historically in the large lakes of the Lahontan Basin, this subspecies grew to very large sizes, and was probably the largest of any inland North American trout. It is greenish to bluish above and silvery below with large, roundish dark spots covering the body and extending to the head and ventral surface. The head, fins, and sides may be yellowish.

Reproduction.—Reproduction of Lahontan cutthroat is similar to that of other cutthroat trout. They spawn in spring, usually April-July depending on stream flow and water temperature. They require clean gravel substrate and water temperatures of about 57 °F for spawning. Females build redds in gravel beds of streams and don’t guard their eggs or fry. Eggs hatch in 4-6 weeks depending on water temperature. Growth is variable depending on habitat



Current range of the Lahontan cutthroat trout in the Intermountain Region.

quality. They may reach sexual maturity in 2-3 years in streams and 3-5 years in lakes.

Food.—Small cutthroat feed on small invertebrates such as crustaceans and aquatic insects. As they grow they feed in larger invertebrates and small fish. Large lake-dwelling adults eat almost entirely fish.

Habitat.—Cutthroat trout are found in cool, well-oxygenated water throughout their lives. In streams, they use rocky areas, riffles, deep pools, and areas under logs and overhanging banks. Cover is an important component of cutthroat habitat with at least 25% of the stream area providing cover optimal. Lahontan cutthroats also inhabit lakes, although they move to streams to spawn. They are able to withstand high water temperatures for short periods of time on a daily basis and are adapted to highly mineralized water commonly found in the Lahontan Basin

Management Implications.— The Lahontan cutthroat trout has declined throughout its range and currently occupies only a small fraction of its historic range. Habitat has been damaged from mining operations, timber harvesting, forest fires, and livestock grazing. Dams and water diver-

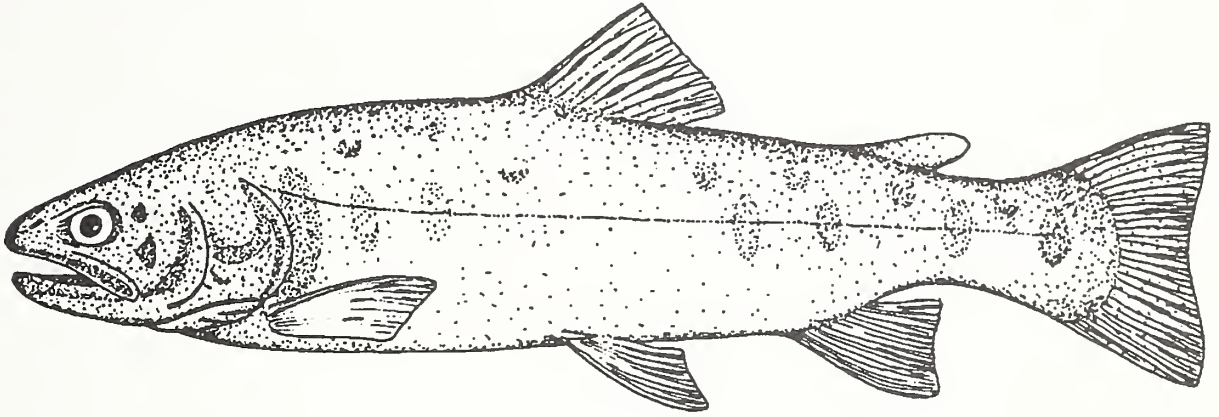
sions have directly eliminated habitat. Many populations have been eliminated as a result of introduction of predatory, competing, or hybridizing non-native species. Management strategies include stream rehabilitation, construction of fish ladders, and restocking from captive populations of Lahontan in hatcheries.

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- La River, I. 1962. Fishes and Fisheries of Nevada. Nevada State Fish and Game Commission, Carson City. 782 pp.
- Sternberg, D. 1987. Freshwater gamefish of North America. Prentice Hall Press, New York. 160 pp.

PAIUTE CUTTHROAT TROUT

Oncorhynchus clarki seleniris
Salmonidae



USFWS Status: Threatened

USFS Region 4 Status: Threatened

State List: CA

Heritage Global/State Status: G5T1T2/CA-S1S2

Distribution.—Paiute cutthroat trout are very limited in distribution. They are native to a small section of Silver King Creek and its tributaries on the East Fork of the Carson River drainage on the Toiyabe National Forest in California. They have been transplanted to other streams and lakes in California outside of their native drainage.

Description.—The Paiute cutthroat trout is a subspecies of cutthroat trout (*Oncorhynchus clarki*), growing 9-12 in. Like all cutthroat trout, it has an elongated, compressed body with a bright red stripe or “cutthroat” mark under each side of the lower jaw. The Paiute cutthroat is distinguished by its purplish pink to yellow-orange color and lack of body spots.

Reproduction.—Paiute cutthroat spawn in early summer with the peak in June and July. They require clean gravel for nest (redd) construction and spawning. Eggs hatch in 6-8 weeks depending on water temperature. Growth rate varies depending on water temperature and abundance of food. Sexual maturity is usually reached at age 2-3.

Food.—Paiute cutthroat are opportunistic feeders eating aquatic insects and other invertebrates.

Habitat.—Paiute cutthroat require cool, oxygenated water during all stages of life. They prefer low gradient streams



Current range of the Paiute cutthroat trout in the Intermountain Region.

that flow through meadows. Large fish will defend stream pools forcing smaller fish to use run and riffle areas. Paiute cutthroat can survive in lakes but must migrate into streams for spawning.

Management Implications.—Paiute cutthroat trout were thought to have been eliminated from their historic range in the early 1900's by hybridization with introduced rainbow trout (*Oncorhynchus mykiss*) and Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*). However, the Paiute cutthroat has been successfully transplanted in Silver King Creek and several of its tributaries, and in Cottonwood Creek on the Inyo National Forest in California. The Paiute cutthroat remains threatened by hybridization and competition from other trout species, having a very limited range, and damage to its habitat from cattle grazing. They are also less wary than other trout making them very vulnerable to fishing pressure. Recovery has included protection of exist-

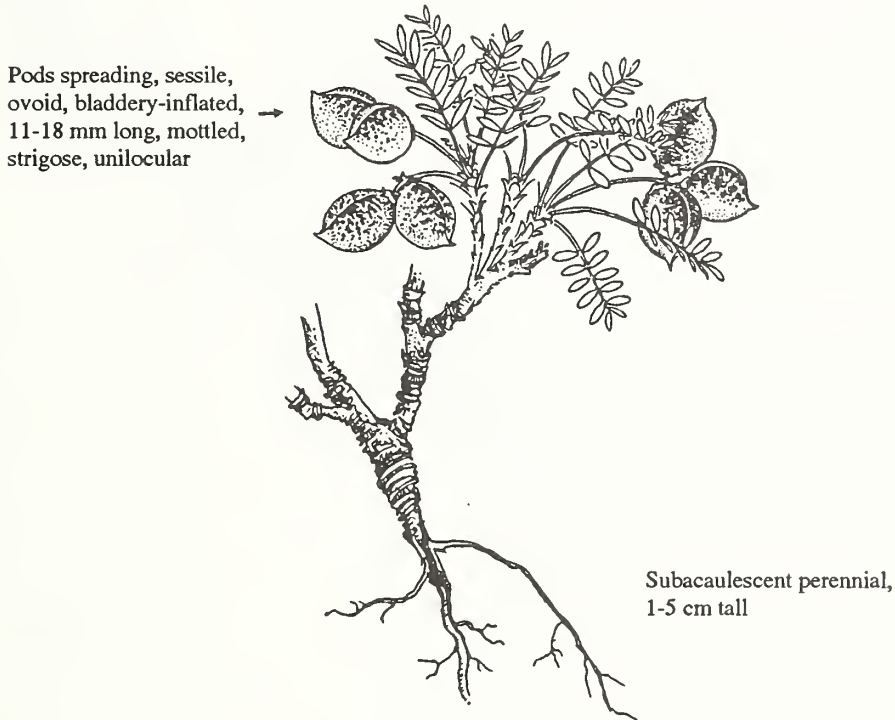
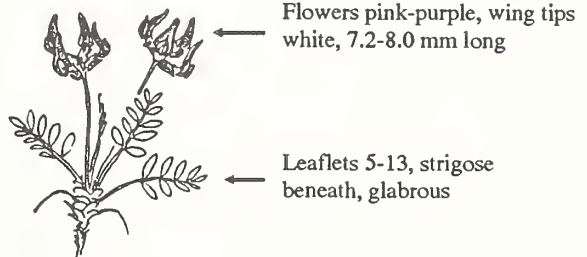
ing habitat, rehabilitation of streams, fishing restrictions, removal of non-native fish, and reintroduction of Paiute cutthroats.

References.

- Behnke, R.J. and M. Zarn. 1976. Biology and management of threatened and endangered western trouts. U.S. Dept. Agricul. For. Serv. Gen. Tech. Rep. RM-28. 45 pp.
- Moyle, P.B. 1976. Inland fishes of California. Univ. of California Press, Berkeley, Los Angeles, London. 405 pp.
- U.S. Fish and wildlife Service. 1985. Paiute cutthroat trout recovery plan. U.S. Fish and Wildl. Serv., Portland. 68 pp.

HELIOTROPE MILKVETCH

Astragalus montii Welsh
Fabaceae (Leguminosae)



USFWS Status: Threatened
USFS Region 4 Status: Threatened
State List: Not listed
Heritage Global/State Status: G1G2/UT-S1

Description.—Growing from a short stalk (1-5 cm tall), Heliotrope milkvech is hairy. The stems are ascending to erect and the herbage is covered with hairs. The leaves are comprised of 5-13 leaflets which are hairy beneath and have inrolled margins. The flowers occur 2-8 per cluster and are pink-purple with white wing tips. The sepals form a hairy vase-shaped tube.

Reproduction.—A perennial, this milkvech begins flowering about 7-10 days after snowmelt, around July 1 to July 10 and continues into August. It forms an inflated pod, 11-18 mm long, unilocular, mottled, and hairy. Seed is set 3-5 days after flowering and is ripe in 10-15 days. Seed is the main reproductive method, some layering may be taking place. Perennial rootstocks overwinter underground.

Habitat.—Heliotrope milkvech is found at high elevations (10,500-11,000+ feet) on wind-blown ridges and open snowdrift sites in the subalpine mixed grass-forb community. It occurs on all exposures and on slopes between

0-10 percent. It is found only on the Flagstaff Limestone Formation.

Distribution.—The Heliotrope milkvetch is presently known to occur only on 3 sites located on the south end of the Wasatch Plateau in Sevier and Sanpete counties, Utah.

Management Implications.—This plant is probably not used by livestock for forage, but the area is grazed by domestic sheep. Potential impacts, if any, need to be documented and management objectives established. Its seeds may be used by birds and small rodents for food. This plant is a narrow endemic within the genus *Astragalus* and could help in providing a genetic pathway to the evolution of this group of plants. At present, monitoring studies are being conducted on the 3 known population sites. These studies are designed to collect data on the status of this species and determine the impacts of the present resource management. A report on *Astragalus montii* (Heliotrope milkvetch) on the Manti-LaSal National Forest by the Utah Heritage Programs, summarizes the monitoring data from 1982 through 1988.

References.

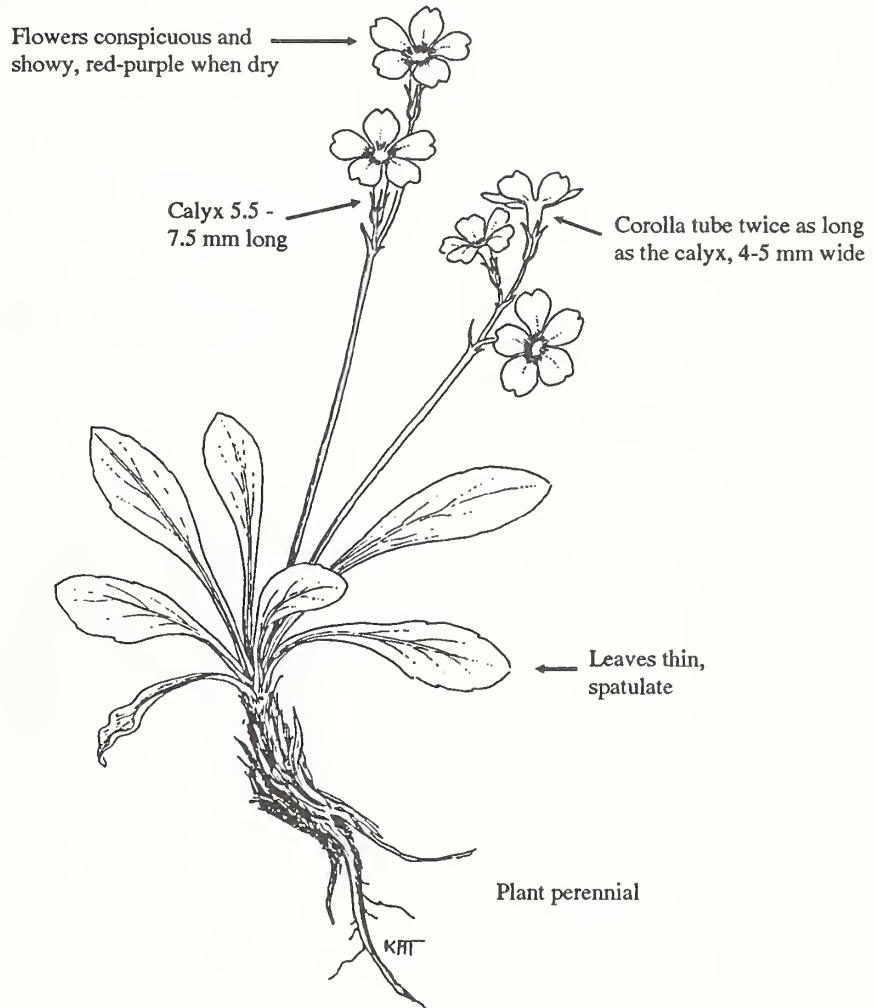
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- Tuhy, J.S. 1988. *Astragalus montii* Welsh (Heliotrope Milkvetch) on the Ferron Ranger District, Manti-LaSal National Forest.



Distribution of *Astragalus montii*.

MAGUIRE'S PRIMROSE

Primula maguirei L.O. Williams
Primulaceae



USFWS Status: Threatened
USFS Region 4 Status: Threatened
State List: Not listed
Heritage Global/State Status: G1/UT-S1

Description.—A member of the primrose family, Maguire's primrose is low growing with 1 or several slender flower stalks. The leaves are broadly spatulate, 3-7 cm long and are grouped at the base of the plant. Flowers occur in groups of 1-3 at the top of each stalk. The 5-petaled flowers are red-purple.

Reproduction.—A perennial, this primrose flowers from mid-April to June. Its fruit is a cylindrical capsule, 5 mm

long. Individual plants die back in the fall and overwinter by the perennial root.

Habitat.—Damp ledges and shaded crevices along canyon walls in coniferous forests. It is found mainly on north and east facing moss-covered cliffs composed of carboniferous limestones and dolomites. Elevation between 4,800 and 6,600 feet.

Distribution.—Known only from Cache County, Utah in Logan Canyon.

Management Implications.—Casual collection by hikers and destruction by rock climbers threatens the populations.

Campgrounds, tourism, and highway construction may alter the habitat.

References.

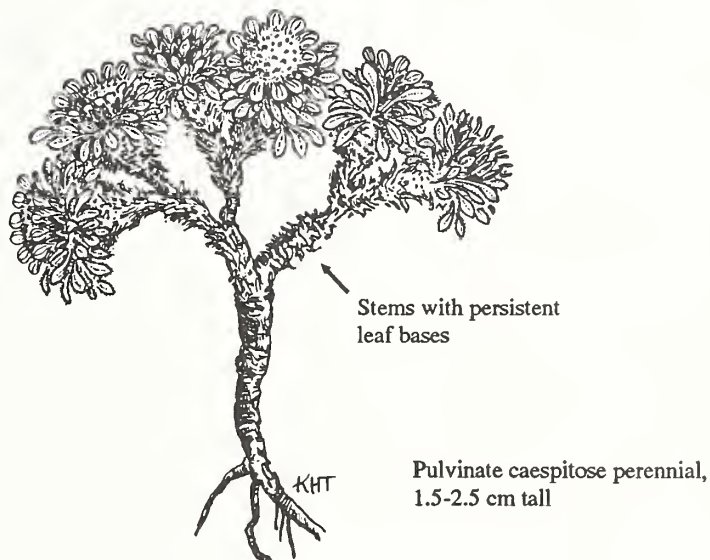
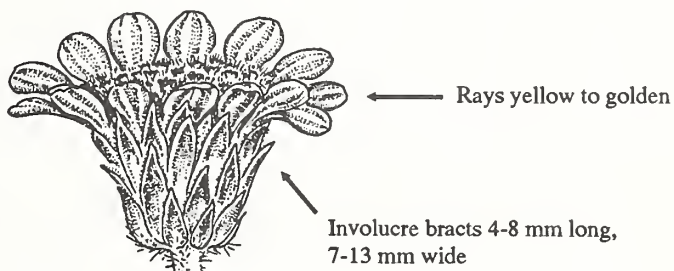
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Distribution of *Primula maguirei*.

LAST CHANCE TOWNSENDIA

Townsendia aprica Welsh and Reveal
Asteraceae (Compositae)



USFWS Status: Threatened

USFS Region 4 Status: Threatened

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the sunflower family, last chance townsendia grows in mats from a much branched rootstock. The upper branches of the root are clothed with persistent leaf bases. The plant grows to a height of 1.5-2.5 cm tall. The leaves are spatulate to oblanceolate, hairy on both sides, and 6-7 mm long. Flower heads are 4-8 mm high. The bracts are fringed red. The ray flowers are yellow, 4-7 mm long, and the disk flowers are purplish to yellow, 3.7-4.5

mm long. The ray pappus is 0.2-1.0 mm long and the disk pappus is 4-5 mm long.

Reproduction.— A perennial, flowering begins in late April and continues into late May and early June. The fruit is an achene 2.0-2.5 mm long which is compressed. Plants wither by late June and overwinter underground. They appear to be short-lived perennials.

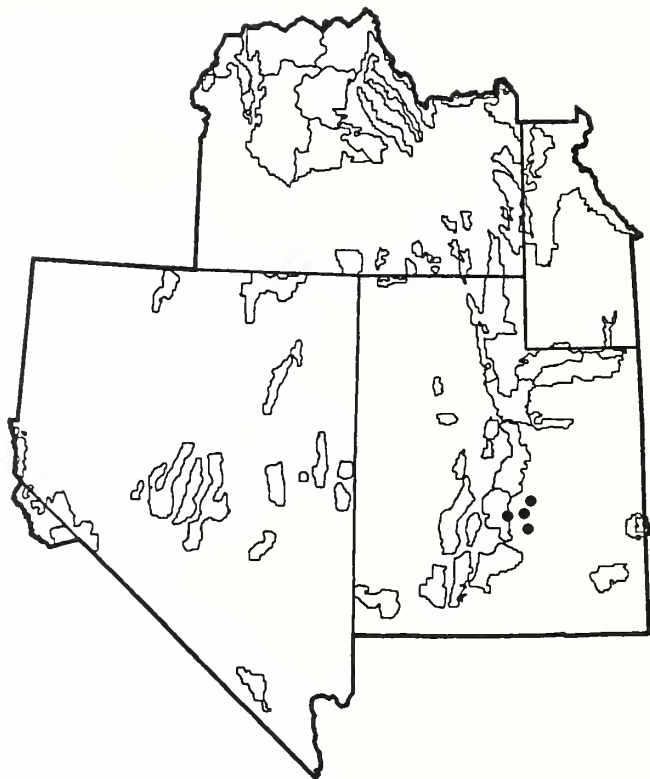
Habitat.—This plant is most commonly found on gray clay exposures with scattered boulders and on mancos shale in salt desert shrub and pinyon-juniper plant communities. Elevation between 6,500- 8,000 feet.

Distribution.—Populations of this plant are endemic to Emery and Sevier counties, Utah.

Management Implications.—Loss of suitable habitat area by heavy livestock trailing and road construction have impacted the species. Populations are small and seem to be declining. Monitoring studies need to be initiated to determine the population status and distribution on BLM and National Forest administered lands.

References.

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Distribution of *Townsendia aprica*.

SPOTTED BAT

Euderma maculatum
Vespertilionidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID, NV, UT, WY

Heritage Global/State Status: G4/ID-SH, NV-S1, UT-S1, WY-S1?

Distribution.—Spotted bats occur in scattered areas in British Columbia, Idaho, the southeastern corner of Oregon, southwestern Montana, western Wyoming, Nevada, Utah, western Colorado, southeastern California, Arizona, western New Mexico, and south to the Mexican state of Queretaro.

Description.—The spotted bat is the most distinctive looking bat in North America. The back is black with 3 prominent white spots, the ventral surface is whitish, and the large ears are pink. The wing membranes are pinkish red to gray brown. Spotted bats average 0.5 oz. with total length of 4.2-4.5 in. and wing span approximately 9.8 in. The ears are 1.7-1.9 in. in length. The sexes are similar in morphology. Spotted bats have an atypically low-frequency echolocation call that is audible to humans.

Reproduction.—Very little is known about reproduction in spotted bats. They apparently breed in late February to early April and give birth to 1 young in late May to early July.

Food.—Little is known of the spotted bats food habits. They are thought to feed mainly on moths. Their echolocation call is very effective for fast flight feeding on tympanate moths (moths that can detect ultra-sonic sounds). They forage



Current range of the spotted bat in the Intermountain Region.

alone, after dark, and avoid each other by listening to the echolocation calls of others.

Habitat.—Spotted bats have been found in a variety of habitats including open ponderosa pine, desert scrub, pinyon-juniper, and open pasture and hay fields. They roost alone in rock crevices high up on steep cliff faces. Cracks and crevices ranging in width from 0.8-2.2 in. in limestone or sandstone cliffs are critical roosting sites. There is some evidence that individuals show fidelity to roost sites. They are territorial and avoid each other while foraging. Information on seasonal movements is scarce, though spotted bats are thought to migrate south for winter hibernation.

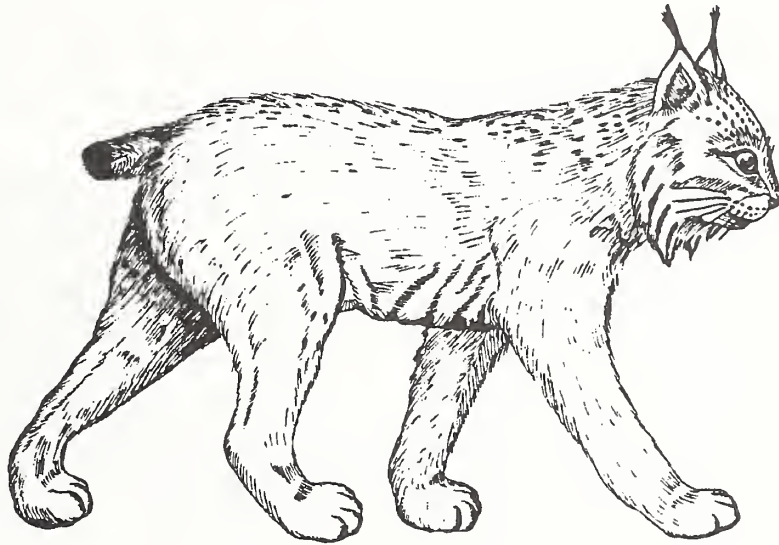
Management Implications.—Spotted bats are rare and may be limited by suitable roosting sites. They are found in relatively remote, undisturbed areas, suggesting that they may be sensitive to human disturbance.

References.

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NORTH AMERICAN LYNX

Felis lynx canadensis
Felidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID, UT, WY

Heritage Global/State Status: G5/ID-SU, UT-S1, WY-S2

Distribution.—Lynx occur across the boreal forests of Canada and Alaska. They are also found in isolated spruce, fir, and lodgepole pine forests of Washington, Idaho, Montana, Wyoming, Colorado, and Utah.

Description.—The lynx is a medium-sized cat with a short tail, short body, and long legs, adapted to the cold and deep snows of boreal forests. Their fur is thick, reddish to gray brown, with black encircling the tip of the tail and black ear tufts. Winter pelage is a grizzled gray brown mixed with a paler brown. Males weigh about 22 lbs. with total length (head to tail) averaging 33 in. Females average 18 lbs. with an average total length of 32 in. They possess 5 toes in front and 4 in back with sharp, retractable claws. The paws are well-furred and very broad enabling them to move easily across snow. Lynx are lighter than bobcats (*Felis rufus*) and have a less spotted pelage, longer ear tufts, completely black circles around the tip of the tail, and larger paws. Lynx can support twice as much weight on snow as the bobcat, allowing the lynx to manage in deeper snow. Because of this difference, their ranges appear to be separated by winter habitat conditions.

Reproduction.—Breeding occurs from mid-March to early April. During this time females seek out males by moving



Current range of the lynx in the Intermountain Region.

into male territories. Females are sexually mature their first year (at about 10 months), but generally don't breed until their second year. During low prey years, many females may not breed. Males generally breed by their second year. They will fight for dominance with other males and may breed several females. Females give birth after approximately 63 days, (late May to early June) in dens which may consist of hollows in or under trees, in rock crevices, or in cleared areas under dense thickets or low growing trees. Litter size averages 3-4 kittens. Kittens can eat meat at 30 days, but are not weaned for approximately 6 months. Young remain with the females until the next breeding season. Prey abundance directly affects production and survival of young.

Food.—The major food of lynx is the snowshoe hare. Hares normally make up 80% of the lynx diet, and even more when snowshoe hare density is high. Lynx and snowshoe hare have long been thought to exhibit the classic predator-prey cycle. Hare abundance affects lynx populations mainly through recruitment rather than direct mortality from starvation. When hare numbers are low, fewer females breed, litters are smaller, and survival of the kits is lower than when hare numbers are high. This cycling averages 10 years from low to peak population levels. Lynx also eat mice, voles, squirrels, grouse, ptarmigan, and weakened deer fawns and moose calves. They will also eat vegetation. Lynx are most active at night, but will hunt during the day. They hunt mainly by sight having eyes well adapted for night vision. Hunting is generally solitary involving random searching and lie-in-wait techniques. Females and kits will hunt cooperatively.

Habitat.—Lynx are generally found in the northern boreal forest in association with snowshoe hare habitat. Early successional stands with high densities of shrubs and seedlings are optimal for hares, and subsequently important for

lynx. Mature forest stands are used for denning, cover for kittens, as well as travel corridors. Home ranges of lynx are generally 6-8 mi², but range from 5-94 mi². Males have larger ranges than females. Overlapping ranges do occur, mainly among animals of different sex and age classes. Adult lynx of the same sex tend to keep exclusive home ranges. Scent marking is used extensively by lynx to avoid one another. Density of lynx in an area is highly dependent on prey (snowshoe hare) abundance. Most densities range from 1 lynx/6-10 mi².

Management Implications.—The historical range of the lynx in the Intermountain Region has dwindled due to hunting pressure, predator control, and loss of wilderness forests. The main threat to lynx populations is forest fragmentation from timber harvest and development causing loss of denning habitat and disruption of travel corridors. Lynx are vulnerable to heavy trapping during the low period of their population cycle, and road development may increase trapping activities. Management of forest stands for snowshoe hare is beneficial to lynx. Areas of 20-25 acres should be managed for hares. Dense stands of conifers interspersed with openings that are no farther than 1300 ft. from the middle of the opening to cover should be created. Stands of mature forest near snowshoe habitat should be available for denning and security cover.

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WOLVERINE

Gulo gulo
Mustelidae



USFWS Status: C2

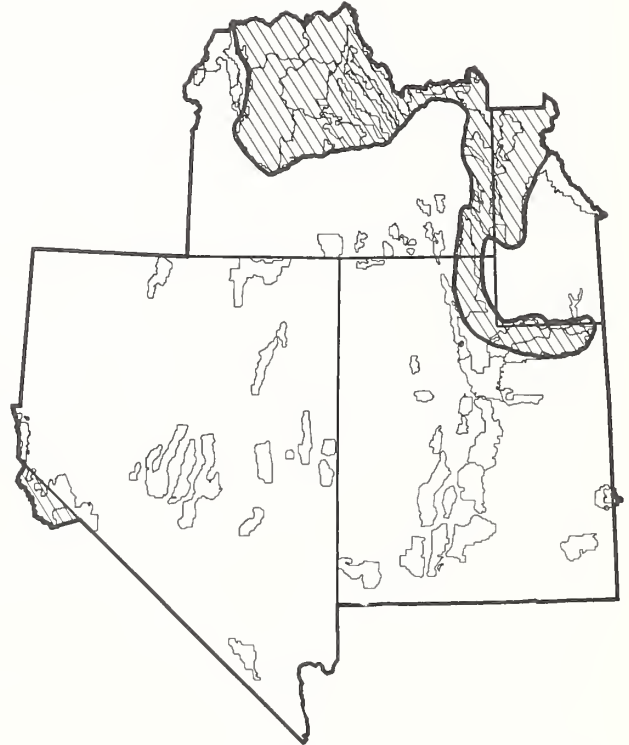
USFS Region 4 Status: Sensitive

State List: CA, ID, UT, WY

Heritage Global/State Status: G4/CA-S2S3, ID-S2, UT-S1, WY-S1

Distribution.—The range of the wolverine is circumboreal. In North America, they occur in Alaska and across the boreal forests of Canada south into Washington, Oregon, Idaho, Montana, and Wyoming. They also occur in backcountry areas of California, Colorado, and northern Minnesota. Although there have been occasional observations of wolverines or their tracks in recent years, wolverines are considered to be scarce or rare in the Intermountain Region.

Description.—The wolverine is the largest terrestrial member of the weasel family. Unlike the long, slender form of most mustelids, the wolverine has the appearance of a small bear with a bushy tail. It is compact and strongly built, with short, thick skeletal structures and heavy musculature. Its neck is short and stout, its head broad, the legs relatively short. Wolverines also have disproportionately large feet, which are adapted for deep-snow travel, digging and climbing. They have 5 toes with curved, semi-retractable claws. Adult males have a head and body length of 25-40 in., a tail length of 6-10 in., and a weight of 30-60 lbs. Females generally average 10% less in length and about 30% less in weight than males. Wolverine coat color varies from brown to nearly black. A broad yellowish or grayish stripe runs along both sides of the body and joins at the rump. There is



Current range of the wolverine in the Intermountain Region.

a gray patch on the forehead and usually a yellowish-white patch on the chest. Their fur is unique in that frost crystals do not adhere to the individual guard hairs which has made wolverine fur valuable as trim on parka hoods. Like all mustelids, wolverines possess a pair of large scent glands, which secrete an odorous spray. They have small eyes and poor sight, and rely on their acute sense of smell (which can locate food under 3-6 ft. of snow) for detection of danger and hunting.

Reproduction.—Wolverines are a naturally low-density species throughout their range. They lead a solitary life except during the breeding season and while rearing young by the female. They also have a relatively low reproductive output, apparently because of juvenile mortality and poor or irregular breeding success. Mating periods vary, but mating usually occurs in May through August. Males will mate with 3-4 females whose ranges overlap their own. Delayed blastocyst implantation postpones active pregnancy until December or January. Then, following a 30 to 40-day gestation period, 2 or 3 young usually are born from February through April. Young are born at den sites which may consist of a hollow or uprooted tree, cave, burrow, overhanging bank, or snow tunnel. Females are very protective of the kits. Young wolverines develop and mature rapidly. They are weaned at 7-8 weeks, begin to leave the den at 12-14 weeks, and disperse in the fall. Both sexes generally don't breed until their second year. Females apparently breed or produce litters only every 2 or 3 years. Thus, wolverine populations grow very slowly.

Food.—Wolverines feed primarily upon small mammals and ungulate carrion. Their powerful jaws are adapted for crushing bones and tearing meat off from frozen carcasses. Although primary predation on large mammals usually accounts for only a small portion of the wolverine's overall diet, it can kill animals many times its own size, especially when deep snow or special circumstances hinder the prey's movements. They also eat grouse, ptarmigan, fish, fruits and berries, and insect larvae. Wolverines can best be described as opportunistic, scavenging predators, with a tendency to cache surplus food items. They also are known for taking bait or animals from traps. They hunt by stamina

rather than stealth or speed, and are very strong for their size often dragging large food items long distances.

Habitat.—The wolverine essentially is a wilderness mammal. It inhabits tundra and coniferous forest zones, generally at higher altitudes during summer and mid to lower elevations during winter. Low elevation riparian areas may be important winter habitat. Wolverines reportedly prefer to hunt around small meadows, timbered thickets, cliffs, riparian and ecotonal areas. However, except for an occasional direct crossing, they generally avoid large parks, meadows and clear cuts. They are mainly active at night, but will hunt during the day. Because wolverines travel long distances in search of food, they have very large home ranges. Males have much larger ranges (163-257 mi²) than females (36-150 mi²). Wolverines appear to be territorial with both sexes engaging in extensive scent marking. However, some range overlap occurs and active defense is rare. Wolverines are active year round and are nonmigratory. Densities are low (1 wolverine/25-80 mi²), even in the best habitats, and closely tied to the diversity and availability of food.

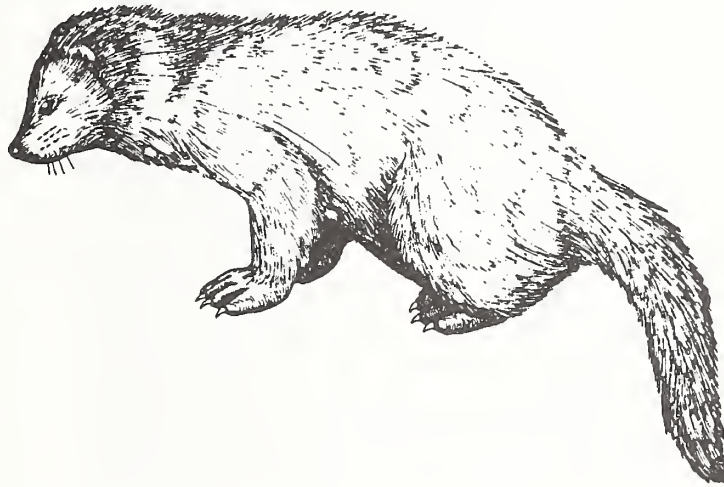
Management Implications.—The historical range of wolverines in North America extended south down the Rocky Mountains into Arizona and New Mexico, the Great Lakes states and northern New England. Contraction of this range was due to the fur trade, settlement, destruction of bison herds, logging, and mining. Current threats include intentional and incidental trapping, incidental poisoning, logging, mining, and development of existing habitat. Wolverines have benefited from the establishment of National Parks and wilderness areas.

References.

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FISHER

Martes pennanti
Mustelidae



USFWS Status: None

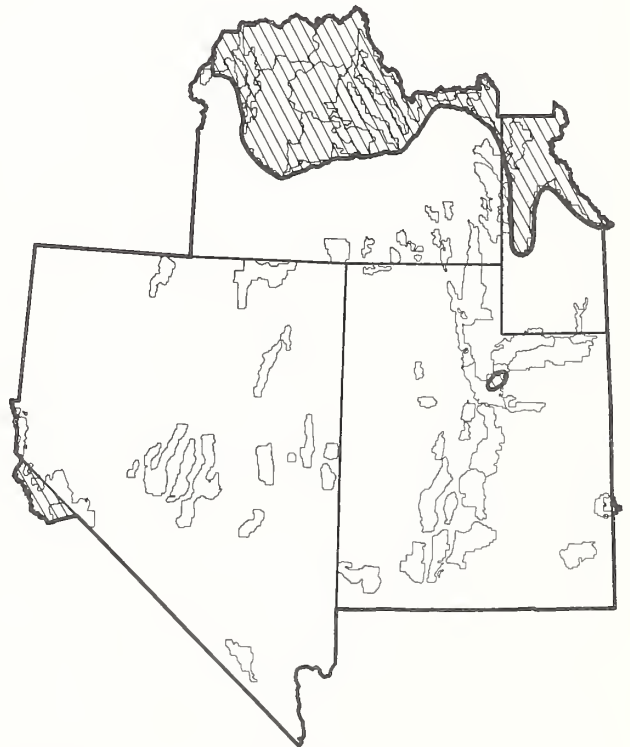
USFS Region 4 Status: Sensitive

State List: ID, WY

Heritage Global/State Status: G5/CA-S2S3, ID-S1, UT-SX, WY-S1

Distribution.—The fisher occurs only in North America ranging from British Columbia to Nova Scotia south to northern New England and New York, northern Wisconsin and northeastern Minnesota. They also occur in Montana, central Idaho, northwestern Wyoming, Oregon, and California. Isolated populations are found in Colorado and West Virginia.

Description.—Fishers are cat-sized members of the weasel family. Shaped like a stocky weasel, they have a long, slender body, a furry tail (making up about one-third of the total length), a pointed face, rounded ears, and short legs. Adult males weigh 7-12 lbs. with a total length of 35-47 in. Females weigh 4.5-5.5 lbs. and measure 29-37 in. total length. Their valuable fur is long except on the face. The tail, rump, and legs are black, while the face, neck, and shoulders are grizzled with gold or silver. The ventral pelage is brown with variable cream patches. Fishers have 5 toes on all feet with retractable claws. Fishers are able to rotate their hindlimbs to allow a squirrel-like descent of trees. Both males and females have paired anal scent glands. Fishers are distinguishable from pine martens (*Martes americana*), whose range they share, by their darker color, lack of a cream chin/chest patch, and larger size.



Current range of the fisher in the Intermountain Region.

Reproduction.—Fishers are solitary except during the breeding season between March and May. Delayed implantation of the blastocyst postpones active pregnancy for 10-11 months. Gestation lasts for about 30 days. Females usually give birth in tree dens located in high cavities of large trees. Litters range from 1-6 kits, averaging 3 kits. Mature females may breed 6-8 days after giving birth. Kits are mobile by 8 weeks, and weaned at 18 weeks. They remain with the female until late summer or early fall. Males are sexually mature at 1 year but may not breed until their second year. Females may breed at 1 year and produce their first litter at age 2.

Food.—The fisher is primarily a predator, eating small mammals such as snowshoe hares, squirrels, shrews, and mice. They are renowned for their ability to successfully prey on porcupines. They also eat birds, eggs, reptiles, amphibians, fish, insects, carrion, fruits, nuts, and berries.

Habitat.—Fishers prefer extensive, continuous canopies such as dense lowland forests or mature to old-growth spruce-fir forests with high canopy closure. Fishers usually avoid open areas such as meadows, grasslands, and clearcuts and may be limited by snow depth. Optimal habitat appears to be large, suitable areas of 245 acres or more interconnected with other large areas of suitable habitat. A dense understory of young conifers, shrubs, and herbaceous cover is important during summer. Besides maternal dens, fishers use temporary dens for sleeping and shelter from bad weather. Temporary shelters may be in hollow logs, brush or rock piles, tree nests, or burrows. Fishers are active both day and night and year round, although their most active periods are dawn and dusk during summer. Adult males have home ranges from 6.5-15.0 mi² and females may use areas of 1.5-5.8 mi². Male and female ranges may overlap

extensively, however, there is little overlap between fishers of the same sex. Both sexes scent mark their home ranges. Fisher density varies from area to area and annually with 1 fisher/1-77 mi². Densities in preferred habitat are 1 fisher/1-3 mi². Fishers and pine martens ranges overlap and may compete with one another for some resources. However, fishers are less arboreal than pine martens, and pine martens eat more small mammals and birds and are less restricted by snow than fishers.

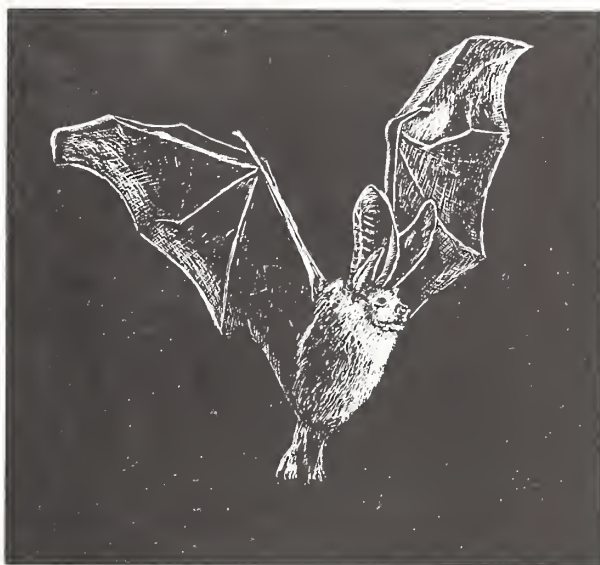
Management Implications.—Fishers originally inhabited northern forests south into the Appalachian Mountains, Rocky Mountains, and Pacific Coast Mountains. Overtrapping and habitat destruction, mainly from logging, fires, and settlement, constricted their range. The current threat to the fisher is forest fragmentation which reduces the size of suitable habitat and/or isolates patches of suitable habitat.

References.

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WESTERN BIG-EARED BAT

Plecotus townsendii
Vespertilionidae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: CA, ID, WY

Heritage Global/State Status: G4/CA-S2S3, ID-S2, NV-S?, UT-SX, WY-S3?

Distribution.—The western big-eared bat occurs throughout western North America, from British Columbia to southern Mexico, and east to South Dakota and western Texas and Oklahoma. Isolated populations exist in southern Missouri, northwestern Arkansas, and northeastern Oklahoma, and in eastern Kentucky, West Virginia, and western Virginia. They are widely distributed throughout the Intermountain Region.

Description.—The western or Townsend's big-eared bat is medium-sized weighing 0.2-0.5 oz. and averaging 0.4-4.4 in. in length, with large ears 0.12-0.15 in. long. Wing span ranges from 9-11 in. Females are slightly larger than males. Hair color on the dorsal surface is gray with cinnamon brown to blackish brown tips, while hair on the ventral surface varies from brown to gray with brown or buff tips. Ear and wing membranes are light brown. Two prominent lumps are visible on either side of the nose in front of the eyes.

Reproduction.—Females sexually mature by their first fall, while males breed at 1-2 years of age. Breeding occurs at winter roost sites between October and February. Because fertilization is delayed, length of pregnancy varies from 56-100 days. Females give birth in late spring or early



Current range of the western big-eared bat in the Intermountain Region.

summer to 1 offspring. Females and young roost communally at sites called nurseries. Nursery colonies range in size from a dozen or so individuals to 200 individuals. Females forage at night and relocate their young visually or by scent. The offspring fly at 3 weeks, reach full size at 1 month, and are weaned at 6-8 weeks. Nurseries breakup by August.

Food.—Western big-eared bats are insectivores, eating primarily moths. They forage after dark using echolocation on the wing.

Habitat.—Western big-eared bats use juniper/pine forests, shrub/steppe grasslands, deciduous forests, and mixed coniferous forests from sea level to 10,000 ft. elevation. During winter they roost singly or in small clusters in caves, mine shafts, at rocky outcrops, or occasionally in old buildings. They remain at these sites, called hibernacula, from October to February. They hang from ceilings with their ears curled in ram's horn fashion, possibly to help prevent heat loss. They don't migrate, but will move to different roost loca-

tions within hibernacula and even move to different hibernacula during a winter. These movements are thought to be in response to temperature changes. In summer, females roost with their young in nursery roosts. Males and non-breeding females roost alone.

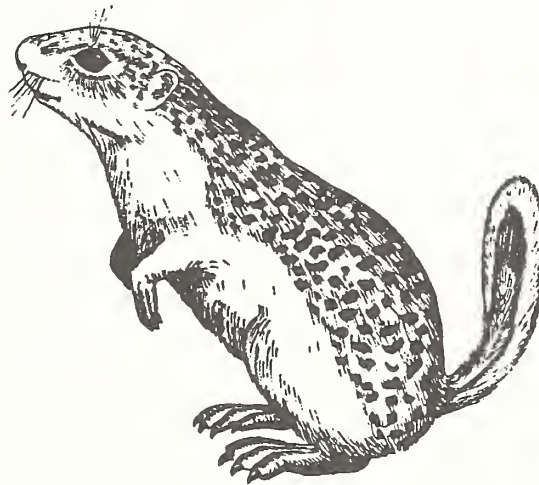
Management Implications.—Big-eared bats are very sensitive to human disturbance and will abandon roost sites if disturbed. Recreation, mainly cave exploration, should be regulated when these activities involve known roost sites. Low reproductive rates and limited roost sites make this species vulnerable.

References.

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- Kunz, T.H. and R.A. Martin. 1982. *Plecotus townsendii*. Mammalian Species No. 175. 6 pp.

IDAHO GROUND SQUIRREL

Spermophilus brunneus
Sciuridae



USFWS Status: C1

USFS Region 4 Status: Sensitive

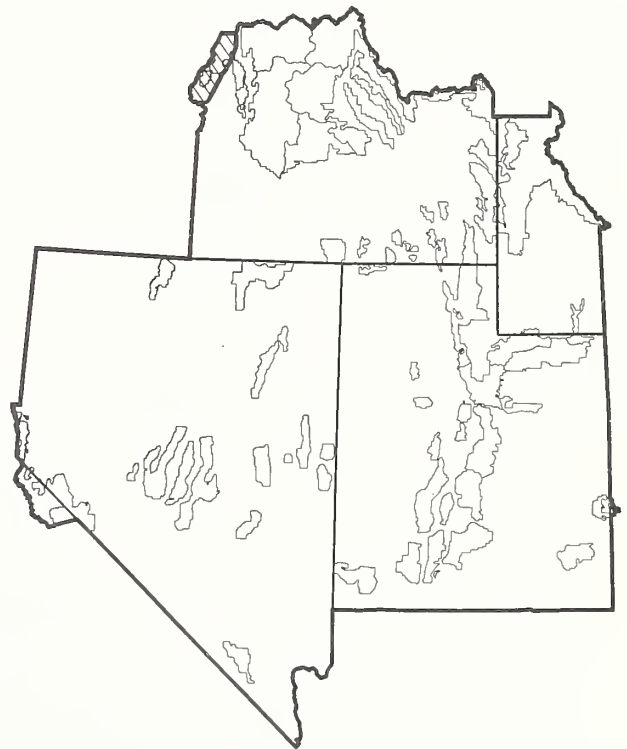
State List: ID

Heritage Global/State Status: G2/ID-S2

Distribution.—The Idaho ground squirrel is limited to a few isolated colonies in 5 counties in western Idaho. Currently 2 different populations are recognized. The northern population is restricted to Adams and Valley counties with the main concentration between the Seven Devils Mountains and the Cuddy Mountains in Adams County. The southern population occurs in Gem, Payette, and Washington counties north of the Payette River. Only the northern population occurs on National Forest land.

Description.—The Idaho ground squirrel is a small unstriped ground squirrel measuring 8.4-10.1 in. in total length. The short tail is 1.5-2.4 in. in length and the ears are moderate in size. They weigh from 6-10 oz. with males larger than females. Upperparts are dappled grayish brown, the nose, outer hind legs, and the under surface of the tail are rusty brown, the belly is grayish, and the chin is white. Idaho ground squirrels are distinguishable from the Townsend's ground squirrel (*Spermophilus townsendii*) which they closely resemble, by the darker nose, legs, and under surface of the tail.

Reproduction.—In the northern population, males emerge from hibernation in late March to early April. Breeding takes place when females emerge a few weeks later.



Current range of the Idaho ground squirrel.

Females are receptive for only 1 day a year. During this period males guard and defend their females from other males. The day after breeding, the female excludes all males from her burrow and a small area around it. Gestation lasts about 3 weeks and litter size is approximately 6-7 (Eric Yensen, pers. commun.). The young are weaned after 3 weeks and hibernation begins from late July to early August (Eric Yensen, pers. commun.).

Food.—Idaho ground squirrels eat a variety of grasses, forbs, and seeds. They will also eat insects.

Habitat.—Idaho ground squirrels live in scattered colonies in a very restricted range. The northern population is found on dry, rocky ridges and xeric meadows surrounded by ponderosa pine/Douglas-fir forests at elevations of 3700-5100 ft. These meadows are dominated by stiff sage or mountain big sage with various bunchgrasses and forbs also

present. Burrows are in well-drained soils with entrances usually under rocks and logs.

Management Implications.—Idaho ground squirrels occur in isolated colonies within a restricted area making them very susceptible to man-caused mortality, such as shooting. Currently, reasons for their limited distribution are not completely understood. It is thought that they may be limited by competition from Columbian ground squirrels (*Spermophilus columbianus*) which live in close proximity to Idaho ground squirrels.

References.

- Larrison, E.J. and D.R. Johnson. 1981. Mammals of Idaho. Univ. Press of Idaho, Moscow. 166 pp.
- Sherman, P.W. and E. Yensen. 1988. Behavior, ecology, and evolution of the Idaho ground squirrel. Final report to National Geographic Society. 11 pp.

BOREAL OWL

Aegolius funereus
Strigidae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G5/ID-S2, WY-SU

Distribution.—The range of the boreal owl is circumboreal. In North America, it breeds from Alaska east across Canada, and south into the mountains of Washington, Idaho, Montana, Wyoming, and Colorado. During winter, boreal owls may wander south of their breeding range.

Description.—The boreal owl is a small, chocolate brown owl with long, broad wings, and a short tail associated with high elevation forests. Average length is 9 in. Females and males show pronounced size dimorphism with the females weighing 5.7 oz. on average and the males averaging 4.1 oz. Adult boreal owls have white wing spots, tail bars and a white and brown mottled breast. They also possess a large, round head with a well-defined facial disk with no ear tufts, a light-colored-bill, and white head spots. The legs and feet are covered with white feathers. Juveniles are solid brown with a few wing spots and white “eyebrows”. Adult boreal owls are distinguished from the closely related saw-whet owl (*Aegolius acadicus*) by their head spots, pale bill, and larger size.

Reproduction.—Boreal owls begin courtship activity and calling as early as mid-February, and continue into early spring. They nest in old woodpecker cavities. Females begin occupying the nest cavity from 1-2 weeks prior to

 *Breeding range*  *Range of wintering vagrants*



Current range of the boreal owl in the Intermountain Region.

egg-laying which takes place from early April to mid-May. Clutch size varies with location, but is generally 2-4 eggs in the Intermountain Region. Incubation lasts 25-32 days. Fledging occurs at 20-36 days, and the young become independent of the adults at 5-6 weeks. Boreal owls are sexually mature at 1 year. In the Intermountain Region cavities are found in ponderosa pine, aspen, Douglas-fir, and Engelmann spruce. The cavity opening ranges from 2-6 in. high and 2-6 in. wide. The cavity itself ranges from 3-20 in. deep and dbh of the tree may range from 13-44 in.

Food.—Boreal owls prey primarily on small mammals. Red-backed voles make up the highest proportion of their diet. They are however, opportunistic and also eat insects, birds, pocket gophers, and shrews. Females may take flying squirrels occasionally. They are primarily nocturnal hunters but will forage during the day. Boreal owls are sit and wait predators that hunt from low perches. They probably use acoustical clues to aid in foraging due to their possession of asymmetry of the external ear which aids in locating prey. Boreal owls will cache food.

Habitat.—Boreal owls are closely associated with high elevation spruce-fir forests due to their dependence on this forest type for foraging year round. Nesting habitat structure consists of forests with a relatively high density of large trees (12 in. dbh), open understory, and multi-layered canopy. Owls nest in cavities excavated by large woodpeckers in mixed coniferous, aspen, Douglas-fir, and spruce-fir habitat types. In summer, owls roost in cool spruce-fir stands. In winter, they may move down in elevation and roost in protected forested areas. Boreal owls roost close to the bole of the tree, usually within 6 in., probably for both security and thermoregulation. Boreal owls avoid open areas, such as clearcuts and open meadows, except for occasional use of the edges of openings for foraging. Boreal owls actively

defend a small area in the immediate vicinity of the nest tree. Home ranges are large, probably because of the need for different forest types to provide for nesting, foraging, and roosting. Summer home ranges average 2920 acres and winter ranges average 3585 acres. Boreal owls occur in low densities ranging from 0.08-1.5 pairs/250 acres. Boreal owls don't migrate but are considered nomadic and will move some distances in search of prey.

Management Implications.—In the Intermountain Region, the boreal owl occurs as island populations due to its confinement to spruce-fir forests, and it exhibits low density and low rates of population growth. All of these factors make it vulnerable to loss of spruce-fir forests and nest sites. Nesting habitat can be managed best through snag, large woodpecker, and aspen management. Nest snags should be over 12 in. dbh and part of an intact forest stand. Maintaining a broad dispersion of small (1.2 acres) aspen stands of large diameter trees can provide adequate nesting habitat. Timber management that is compatible with abundant small mammal populations should be practiced in boreal owl range. Research on artificial nest box use is currently being conducted. This technique may provide management opportunities for the boreal owl.

References.

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- Hayward, G.D. 1989. Habitat use and population biology of boreal owls in the northern Rocky Mountains, U.S.A. Ph.D dissertation. Univ. of Idaho, Moscow. 113 pp.

TRUMPETER SWAN

Cygnus buccinator
Anatidae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID, WY

Heritage Global/State Status: G4/ID-S1, WY-S1

Distribution.—There are currently 3 populations of trumpeter swans. The Pacific Coast Population nests in interior and southcentral Alaska and winters along the Pacific Coast from southern Alaska to Oregon. The Interior Population is the result of transplant and captive propagations efforts. This population consists of flocks in Lacreek National Wildlife Refuge, South Dakota and Hennepin County Park Reserve District, Minnesota which are gradually moving south during fall but are still dependent on supplemental feeding. The Rocky Mountain Population breeds along the Rocky Mountains in Canada and the northern United States and winters in southwestern Montana, northeastern Idaho, and northwestern Wyoming (Greater Yellowstone Ecosystem).

Description.—The trumpeter swan is the largest species of waterfowl in the world. Males weigh 20-27 lbs. and are 4.5-5.2 ft. in length and females weigh 16-22 lbs. and are 4.5-4.9 ft. in length. Adult trumpeter swans have all white plumages, often with the head and upper neck stained rust from contact with iron in the water and sediment. The bill, legs, and feet are black. Cygnets (first year swans) are gray with a pink bill that gradually turns black. The trumpeter swan is larger than the tundra swan (*Cygnus columbianus*), which it closely resembles, and lacks the yellow patch below



Current range of the trumpeter swan in the Intermountain Region.

the eye. Also the trumpeter swan's call is horn-like in sound and louder than the tundra swan's call which sounds more like high-pitched barking.

Reproduction.—Trumpeter swans form pair bonds in their second or third year but don't actually nest until 4-5 years of age. Pairs usually stay together year round and mate for life. The pair builds their nest in dense mounds of aquatic vegetation, on muskrat houses, or on islands in late April or early May. The pair is extremely territorial and defends the mating, nesting, and feeding grounds. Clutches contain from 2-7 eggs and hatch in June after about 33 days of incubation. Only the female incubates, however the male regularly attends the nest and brood. Cygnets are able to fly at 14-17 weeks but remain with their parents throughout the winter. Family bonds are strong and the subadult siblings may stay together up to their third year, rejoining their parents after the nesting period.

Food.—Trumpeter swans feed mainly on aquatic plants such as pondweed, waterweed, duckweed, and water milfoil. Cygnets feed mainly on aquatic insects and crustaceans after hatching and gradually include more and more aquatic plants in their diet as they grow. Trumpeters prefer shallow, slow-moving water for feeding.

Habitat.—Nesting habitat consists of marshes, lakes, beaver ponds, and oxbows and backwaters of rivers. They prefer quiet, shallow water with dense aquatic plant and invertebrate growth. Tall emergent vegetation is essential for cover for both the adults and brood. During mid-summer, flocks of 20-100 nonbreeding swans may gather on large lakes and reservoirs. Territory size varies with the quantity of food available near the nest site, ranging from 5-10 acres. In several places territory size corresponds to lake size because trumpeters rarely tolerate other pairs using the same lake. In winter, trumpeter swans need areas with

plentiful aquatic vegetation that remains ice-free all winter. In the Intermountain Region, swans are restricted to areas of geothermal activity, springs, and dam outflows.

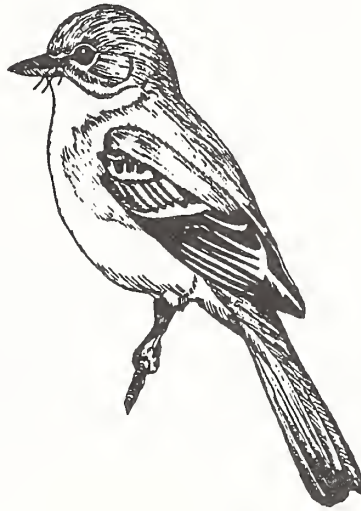
Management Implications.—Historically, trumpeter swans bred across most of North America and wintered in ice-free freshwater and coastal areas. Trumpeters declined to almost extinction by the early 1900's due to exploitation in the commercial swanskin trade, overhunting, and habitat destruction. Only the Pacific Coast Population and Rocky Mountain Population remained. Destroyed along with the swans was their knowledge of traditional migration pathways to wintering areas. Protection and restoration has helped to increase numbers and distribution, however historic migration pathways have not been restored. As a result, almost all of the Rocky Mountain Population winters in the Greater Yellowstone Ecosystem. This population is threatened by reduced river flows, heavy ice formation from unusually severe winter weather, disease, and pollution. Management of trumpeter swans currently includes ensuring adequate winter river flows, protecting and restoring nesting and wintering habitat, and restoring southward migration pathways to suitable wintering areas. Recent efforts have included transplanting of swans to suitable winter habitat along the Snake River in southern Idaho.

References.

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SOUTHWESTERN WILLOW FLYCATCHER

Empidonax traillii extimus
Tyrannidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: CA

Heritage Global/State Status: G5T1/CA-S2, NV-S?, UT-S1

Distribution.—The willow flycatcher breeds from southern British Columbia to New England and south to California, Arizona, and New Mexico in the west and the Appalachian Mountains in the east. They winter in southern Central America and western South America. At least 2 subspecies (*E. t. adastus* and *E. t. extimus*) are known to breed in the Intermountain Region. The southwestern subspecies (*E. t. extimus*) is found from southern Utah and southern Nevada south to southern California, Arizona, New Mexico, and western Texas.

Description.—The willow flycatcher is one of 8 species in the genus *Empidonax* all of which are very similar in appearance. The willow flycatcher measures 5.0-6.5 in. in length. It is brownish-green on the head and back with a lighter breast and belly and an even lighter throat. It has a faint white eye ring and 2 whitish wing bars. The bill is long and wide with an orange lower mandible. They can be located by their song, the characteristic “fitz-bew”. Several subspecies of the willow flycatcher are recognized. The southwestern willow flycatcher is the palest in color of the races.



Current range of the southwestern willow flycatcher in the Intermountain Region.

Reproduction.—Willow flycatchers arrive on their breeding territories in early May when the males begin singing. Nesting occurs between late May and late July. Females construct nests by weaving bark strips, and dried grass and leaves into forks of shrubs or small trees from 2-18 ft. above the ground. Clutches of 3-4 eggs are laid in mid-June to mid-July. Only the female incubates which lasts about 12 days. Both parents feed the chicks which fledge after 12-15 days.

Food.—Willow flycatchers are insectivores and take their prey on the wing. They eat wasps, bees, beetles, flies, moths, and butterflies. Their hunting strategy is sit-and-wait predation which involves mainly perching and waiting for insects to fly by.

Habitat.—Willow flycatchers are closely associated with riparian habitats such as willow or alder thickets along streams, on the shores of ponds, or bordering marshy areas. They also are found in the brushy margins of fields, along mountain streams, and in shrubby floodplain areas. They prefer areas of high shrub densities interspersed with openings or meadows. The woody component of their habitat is almost exclusively deciduous including willows, alders, cottonwoods, aspens, and shrubs such as chokecherry, hawthorn, sumac, and wild rose. Their breeding territories are approximately 1.5 acres and densities of 9-14 pairs/100 acres can be found. Willow flycatchers migrate in the fall to wintering areas in Central and South America.

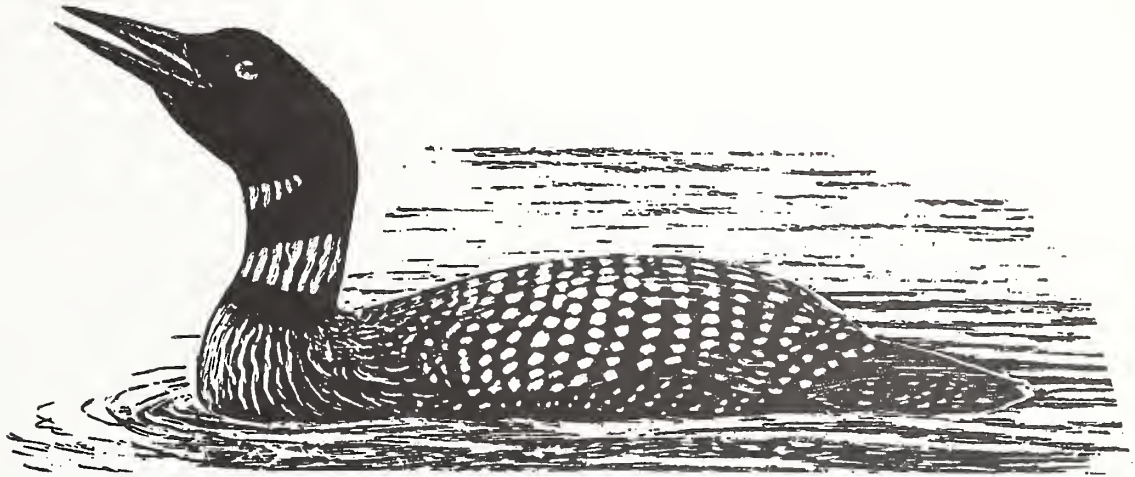
Management Implications.—Habitat loss and brown-headed cowbird (*Molothrus ater*) nest parasitism are the 2 main causes of willow flycatcher declines. Logging, agriculture, dam construction, and livestock grazing and trampling have contributed to the degradation of riparian habitats. Expansion of cowbirds with irrigated agriculture and livestock grazing has also impacted the willow flycatcher. Other possible threats include pesticides and degradation of winter habitat. Management of the willow flycatcher should include protection and restoration of riparian areas and control of cowbird populations.

References.

- Ettinger, A.O. and J.R. King. 1980. Time and energy budgets of the willow flycatcher (*Empidonax traillii*) during the breeding season. *Auk* 97:533-546.
- King, J.R. 1955. Notes on the life history of Traill's flycatcher (*Empidonax trailli*) in southeastern Washington. *Auk* 72:148-173.
- Sharp, B. 1987. Management guidelines for the willow flycatcher. Region 1, U.S. Fish and Wildl. Serv., Portland, OR. 21 pp.
- Unitt, P. 1987. *Empidonax traillii extimus*: an endangered subspecies. *Western Birds* 18:137-162.

COMMON LOON

Gavia immer
Gaviidae



USFWS Status: None

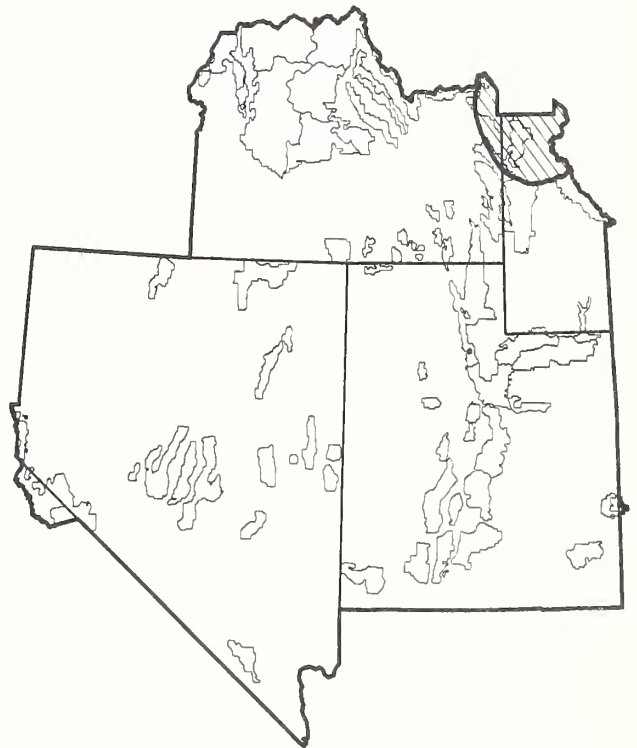
USFS Region 4 Status: Sensitive

State List: CA, ID, WY

Heritage Global/State Status: G5/ID-S1, NV-S?, WY-S1

Distribution.—The breeding range of the common loon extends from the Arctic Ocean south to New York, Michigan, Wisconsin, Minnesota, North Dakota, northwestern Montana, northern Idaho, and Washington. There is an isolated breeding population in the Greater Yellowstone Ecosystem of Idaho, Montana, and Wyoming. Loons winter on coastal areas of the Atlantic and Pacific Oceans, the Gulf of Mexico, the Sea of Cortez, and on the Great Lakes.

Description.—The common loon is a large diving bird weighing 7-9 lbs. with a length ranging from 28-36 in. and a wingspan of 4.7 ft. The summer breeding plumage of both sexes consists of a black head and neck with 2 white necklaces on the neck, prominent white checkers on the black back, red eyes, and a heavy, dagger-like black bill. Adults in winter and juveniles have a dark gray to dark brown head, neck, and upper parts with white cheeks, throat, and under parts. Loons have a steep forehead in profile and ride very low in the water, sometimes with only their head above the water. They fly with their head held slightly lower than their body and their feet trailing behind. Like other divers, the loon must run across the water surface to get airborne. Loons are awkward on land and are usually only out of water to nest. They have 4 vocalizations. The wail, which sounds



Current range of the common loon in the Intermountain Region.

similar to a wolf's howl, is used to contact other loons over long distances. The tremolo or "laugh of the loon" is a high-pitched, rapid 5 beat call given when loons are annoyed or alarmed. The yodel, a slow, rising note followed by several high-pitched, short notes, is given only by the male to establish his territory. The hoot is a soft one note call loons use for close up communication with each other and their chicks.

Reproduction.—Loons arrive on their breeding grounds in early May after ice breakup when pair formation takes place, followed by nest site selection, and nest building. Nests are made of mud and vegetation and usually no more than 3.0-6.5 ft. from the water edge. Clutch size is 1-2 olive-brown eggs with dark brown spots. Both sexes incubate, which takes 26-31 days, and brood the chicks which may involve carrying them on their backs. Parents are aggressively territorial during the egg and early chick rearing stages and will chase other loons and waterbirds away. Both adults feed the chicks live prey from hatching to fledging, although as the chicks grow they are able to forage for themselves. Chicks are able to fly at about 11 weeks at which time they become independent of the adults. They leave their breeding areas before ice formation in the fall. Loons don't breed until 3 years of age.

Food.—Loons primarily eat fish including yellow perch and several minnow species. They also eat amphibians, crayfish, leeches, aquatic insects, and some vegetation. Loons rely on their sight for foraging and hunt mainly under water.

Habitat.—Loons breed on large (greater than 9 acres), clear lakes at elevations of 5000-9000 ft. Lakes need to be ice-

free for a minimum of 4 months with at least partially forested shorelines. Loons need lakes large enough to provide adequate runways for flight, deep enough to sustain fish populations, and clear enough for them to see their prey. A loon's breeding territory will contain a secluded shoreline area that will protect the nest from wave action and an area of shallow water with emergent vegetation within a protected cove or bay for chick rearing. Loons frequently nest on islands. Loons avoid lakes with high levels of human activity, fluctuating water levels, turbid water, and no protected coves. During the winter and migration, loons forage alone during the day, but gather at night into flocks or rafts of up to 100 individuals. During migration, loons forage at staging lakes along their path. They winter in coastal areas.

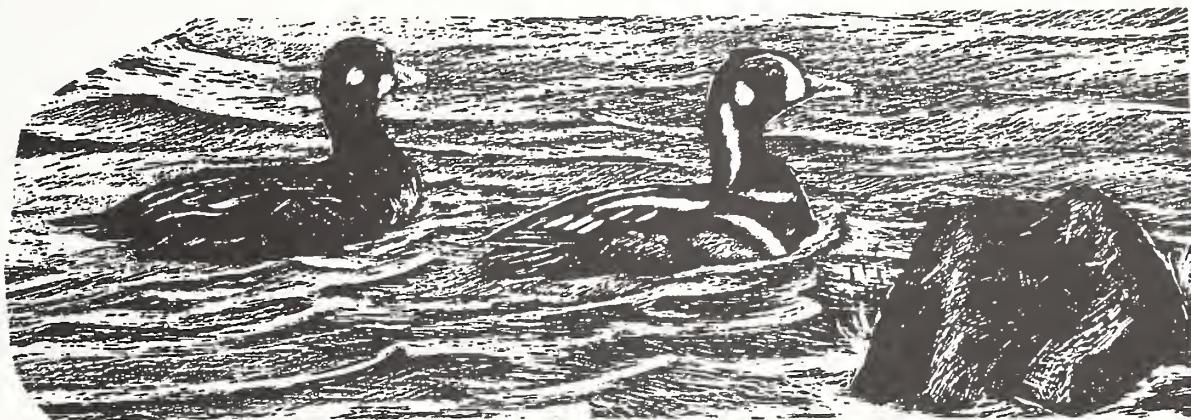
Management Implications.—Historically, common loons ranged as far south as Pennsylvania, Indiana, Iowa, and California. Unregulated harvest, chemical contamination, oil spills on their wintering areas, and human activity and development have resulted in the current contracted distribution. Presently, development of lakeshores, recreation, poor water quality, and water level fluctuations on reservoirs and dammed lakes are threats to loons. Limiting access or restricting activity at known or potential loon nesting areas during the early nesting period (egg laying and incubation) would help minimize disturbance to breeding loons.

References.

Ritter, S.A. 1989. Nongame species account: common loon. Nongame program, Biological Serv. Section, Wyoming Game and Fish Dept. Cheyenne, WY. 35 pp.

HARLEQUIN DUCK

Histrionicus histrionicus
Anatidae



USFWS Status: None

USFS Region Status: Sensitive

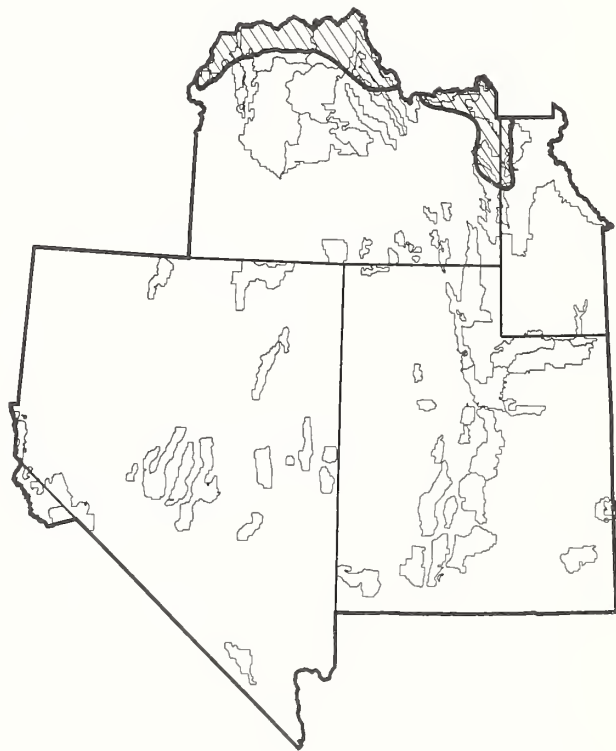
State List: CA, ID

Heritage Global/State Status: G5/ID-S1, WY-S2

Distribution.—Harlequin ducks occur in 2 separate regions. In the east, they breed in Iceland, Greenland, Baffin Island, and Labrador, and winter along the east coast as far south as New Jersey. In the west they are found in north-eastern Siberia, the Aleutian Islands, and from Alaska south to central California, Idaho, and northwestern Wyoming.

Description.—The harlequin duck is a relatively small duck with males averaging 17 in. in length and 1.4 lbs. in weight, and females 15.5 in. and 1.2 lbs. Breeding male harlequins are probably the most oddly colored of all North American waterfowl. The body is basically a glossy, slate blue with chesnut sides and flanks. But the rusty stripe along the crown and white crescent and dashlike stripes and spots on the head, neck, and scapulars are what gives the male its striking appearance. Females are basically black-brown with mottled gray on the breast and upper belly. They also have 3 white spots or blotches on the head. The eclipse plumage of the male is similar to the female plumage.

Reproduction.—In the Intermountain Region, breeding pairs, which generally form on the wintering areas, arrive on the breeding grounds by late April through mid-May. Harlequins show high fidelity to their breeding areas. Males defend a small area, about a 6.5 ft. radius, around their mate



Current range of the harlequin duck in the Intermountain Region.

until incubation begins at which time the pair bond is broken. Males remain in the breeding area for about a week and then leave for the west coast. Females lay 3-8 eggs in nests lined with grass, twigs, leaves, and down. Nests are located on riverbanks or islands of mountain streams, usually under low, dense shrubs. Incubation begins around mid-May through late June depending on elevation and snow melt, and lasts approximately 30 days with hatching from mid-June through late July. The young fledge at 6 weeks, and leave the breeding area shortly after that, from August to mid-September.

Food.—Breeding harlequin ducks feed primarily on benthic aquatic insects including stoneflies, mayflies, caddisflies, and dipterans. They also eat crustaceans, mollusks, and fish. They feed by diving to depths of 3-5 ft. and by immersing their heads or tipping up like dabbling ducks.

Habitat.—Harlequin ducks require relatively undisturbed, low gradient, meandering mountain streams with dense shrubby riparian areas, and woody debris for nesting and brood rearing. They also need log jams and overhanging vegetation for cover and loafing areas. The presence of harlequins on a stream is an indicator of high water quality. Specific habitat requirements include streams with gradients less than 3 degrees, greater than 50% streamside shrub cover, and at least 3 loafing sites (mid-stream boulders or

log jams) per 33 ft. of stream. They winter on the west coast where little is known about their habitat requirements.

Management Implications.—Harlequin ducks are threatened mainly by habitat degradation and human disturbance. They require high quality forested riparian areas which may be adversely affected by logging and road construction. Trails or roads should be greater than 165 ft. from harlequin duck streams and should not be visible from the streams. Logging should be avoided in the riparian areas. Harlequins have relatively low productivity compared to other ducks making them particularly sensitive to habitat loss and disturbance.

References.

- Bellrose, F.C. 1980. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, PA. 540 pp.
- Cassirer, E.F. and C.R. Groves. 1990. Harlequin duck ecology in Idaho: 1987-1990. Unpubl. rep., Idaho Dept. of Fish and Game, Boise. 93 pp.
- Wallen, R.L. 1987. Habitat utilization of harlequin ducks breeding in Grand Teton National Park. M.S. Thesis, Montana State Univ., Bozeman. 67 pp.

MOUNTAIN QUAIL

Oreortyx pictus
Phasianidae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-SE?, NV-S?

Distribution.—Mountain quail are distributed from Vancouver Island, British Columbia south along the mountains of the Pacific coast to northern Baja Peninsula. They also occur in the Sierra Nevada Mountains, eastern Oregon, western Idaho, and extreme northern Nevada.

Description.—The mountain quail is a relatively large quail measuring 10.5-11.3 in. in length. It differs from other quail in that both sexes have straight, narrow, blackish crests which consist of 2 feathers. The throat is chesnut and separated from the slate gray head, neck, and breast by a white line. The back, wings, and tail are olive gray. The flanks are chesnut brown with conspicuous vertical white bars.

Reproduction.—The mating season begins in March in low elevations and early April at higher elevations. Mountain quail select mates while they are still in coveys. Nesting occurs from April to mid-July depending on elevation. Females lay approximately 9-10 eggs in well concealed nests located under fallen branches, in weeds or shrubs at the base of trees, or in masses of shrubby vegetation. Nests are usually within a few hundred yards of water because the chicks require water soon after hatching. Incubation lasts 24-25 days. Both sexes may incubate and defend the nest



Current range of the mountain quail in the Intermountain Region.

and brood. The family group may stay together through the next fall and winter as a covey.

Food.—Mountain quail eat a variety of seeds and fruits including those of smooth sumac, chickweed, microsteris, hackleberry, serviceberry, grape, snowberry, and gooseberry, as well as an assortment of acorns, legumes, grass, weed, and pine seeds. Green vegetation is eaten in the spring and buds and flowers are eaten as they become available. In the fall, tubers and roots are eaten. Winter food includes acorns and various seeds. Chicks eat only a small percentage of insects. Flower heads of chickweed, miner's lettuce, and various seeds make up the majority of their diet.

Habitat.—Mountain quail are found in dense brush, coniferous forests, and around the edge of mountain meadows from 1500-10,000 ft. elevation. In winter, they use mixed brush and herbaceous areas. In spring, quail move to nesting areas which consist of woody cover near water. They move to areas with suitable mast crops in the fall. Important year round microhabitat characteristics include close proximity to water and tall, dense shrubs. Mountain quail spend the majority of the year in coveys of 5-10 birds, mainly family groups. Coveys break up in spring but form again after hatching. Daily movements are small, not much more than 0.6 miles, however seasonal movements, from wintering to

nesting areas and back, can be as long as 20 miles. Densities may range from 9-30 quail/250 acres.

Management Implications.—In the Intermountain Region, mountain quail have steadily declined in west central and southwestern Idaho. Very few sightings have been reported in the last 5 years or so. Possible reasons for decline include competitive exclusion by California quail (*Lophortyx californicus*), disturbance from livestock and humans during the breeding season, predation by coyote populations, hunting, and heavy mortality during severe winters. Management for this species should include preservation of any known quail habitat areas and areas of shrubby cover near water such as riparian areas.

References.

- Brennan, L.A., W.M. Block, and R.J. Gutierrez. 1987. Habitat use by mountain quail in northern California. *Condor* 89:66-74.
- Johnsgard, P.A. 1973. Grouse and quails of North America. Univ. of Nebraska Press, Lincoln. 553 pp.
- Robertson, M. 1989. Statewide survey of mountain quail 1989, a report on the status of mountain quail in Idaho. Unpubl. Idaho Dept. of Fish and Game Rep.

FLAMMULATED OWL

Otus flammeolus
Strigidae



USFWS Status: None

USFS Region 4 Status: Sensitive

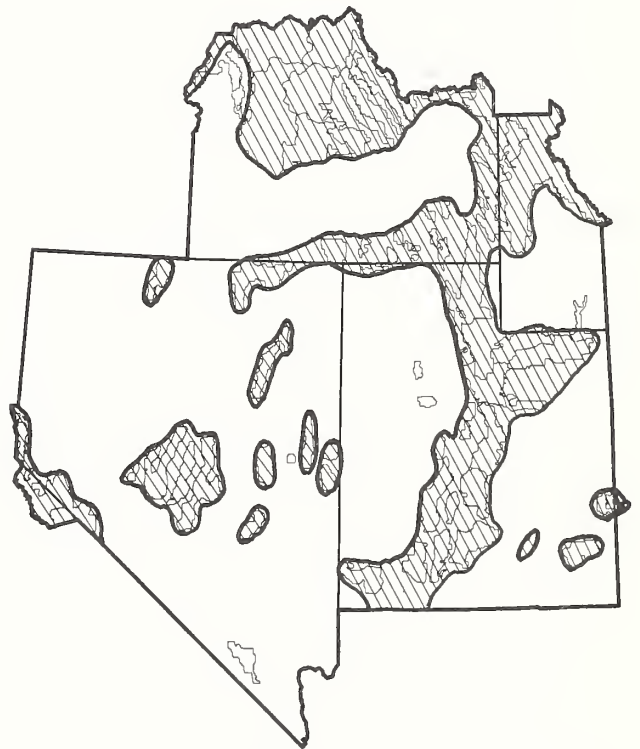
State List: ID

Heritage Global/State Status: G4/ID-S3?, NV-S?, UT-S2, WY-SU

Distribution.—Flammulated owls breed from southern British Columbia south to Veracruz, Mexico and from the Rocky Mountains to the Pacific. Their winter range is thought to extend from central Mexico to Guatemala and El Salvador.

Description.—The flammulated owl is the only small forest owl with dark eyes. It measures 6-7 in. in length with males weighing about 1.9 oz. and females weighing about 2.3 oz. Sexes are similar in plumage with a mixture of brown and gray on the crown and back with irregular dark streaks and white with irregular brownish-black barring on the underparts. The wings match the back, but have more pronounced barring on the outer primaries, and the tail is also barred. They have a collar of white or pale buffy spots on the lower hind neck. The facial disk is grayish-white with light brown barring and outlined in black and rufous. Their ear tufts are small and rarely seen.

Reproduction.—Males arrive on their breeding territories and begin calling in early May. Females arrive a few weeks later when pair formation and nest site selection take place. Clutches of 2-3 eggs are laid in natural or flicker-sized woodpecker excavated cavities in early June. Incubation



Current range of the flammulated owl in the Intermountain Region.

lasts 21-22 days. Females incubate and brood the chicks while males hunt throughout the nestling period. Young fledge at 22-25 days in late July. They become independent of their parents 25-32 days after fledging and disperse from their natal area by September. Adults leave by mid-October.

Food.—Flammulated owls are almost exclusively insectivorous, preying on small to medium sized moths, beetles, caterpillars, and crickets. They also eat spiders, scorpions, and other arachnids. Flammulated owls are nocturnal foragers and hunt by gleaning among tree branches, hawking or capturing of flying insects, and pouncing on ground prey from a perch.

Habitat.—Flammulated owls can be found in the mixed pine forests, from pine mixed with oak and pinyon at lower elevations to pine mixed with spruce and fir at higher elevations. They have also been found in aspen and second growth ponderosa pine. However, they prefer mature ponderosa pine-Douglas-fir forests with open canopies. Large diameter (> 20 in.) dead trees with cavities at least as large as northern flicker (*Colaptes auratus*) cavities are important nest site characteristics. They avoid foraging in young dense stands where hunting is difficult. Flammulated owls are migratory in the northern part of their range. They move south in the fall to central Mexico and Central America to spend the winter where insects are available. Territory size varies from 20-59 acres and is determined by age and

patchiness of overstory trees. Densities of flammulated owls range from 1-5 owls/2.5 acres.

Management Implications.—Several aspects of flammulated owl habitat requirements remain unknown. Its preference for mature ponderosa pine-Douglas-fir stands, its dependence on cavities for nesting, and its avoidance of cut-over areas suggest that it may be threatened by clearcutting and cutting of mature trees. Recent surveys in southern Utah National Forests have indicated that flammulated owls are more abundant and widely distributed than previously thought.

References.

- Bull, E.L., A.L. Wright, and M. G. Henjum. 1990. Nesting habitat of flammulated owls in Oregon. *J. Raptor Res.* 24(3):52-55.
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- Reynolds, R.T. and B.D. Linkhart. 1987. The nesting biology of flammulated owls in Colorado. Pages 239-248 in R.W. Nero, R.J. Clark, R.J. Knapton, and R.H. Hamre, eds., *Biology and conservation of northern forest owls*. U.S. Forest Service, Gen. Tech. Report RM-142.

WHITE-HEADED WOODPECKER

Picoides albolarvatus

Picidae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S1?, NV-S?

Distribution.—White-headed woodpeckers range from southern British Columbia south through Washington and Idaho to Southern California and western Nevada.

Description.—The white-headed woodpecker is a small woodpecker measuring 7.4-8.2 in. in length and weighing 1.8-2.8 oz. The distinctive plumage is all black except for the white head and throat. The base of the primaries are also white which shows as a white wing patch in flight. The eyes are red and the bill is slate black. Males are slightly larger than females and have a narrow red nape patch.

Reproduction.—White-headed woodpeckers nest in mid-May to June. During pair bonding both sexes tap at the nest site and display near the nest. Nests are excavated in snags and stumps and are usually located near the ground, averaging 8.2 ft. high. Females lay 3-7 eggs. Both sexes incubate, which lasts about 14 days, brood, and feed the young. Young fledge after about 26 days, usually in early July.

Food.—White-headed woodpeckers feed mainly on seeds from cones. They also forage on spiders, boring beetles, fly larvae, and other insects by prying, probing, gleaning, and flaking bark from trees. Most foraging is done on the lower 13 ft. of the tree. They are relatively quiet while foraging with excavating and loud tapping uncommon.



Current range of the white-headed woodpecker in the Intermountain Region.

Habitat.—White-headed woodpeckers are found in mixed conifer forests from 3500-9000 ft. elevation. Nests are excavated in large diameter, usually greater than 23 in., dead pines and firs in moderate to advanced stages of decay. They prefer open-canopied stands of mature and overmature trees. They forage in both live and dead trees. In the Intermountain Region in the Sierra Nevadas, white-headed woodpeckers forage mainly on white fir, red fir, and Jeffrey pine. In Idaho, ponderosa pine is primarily used. Trees with dbh of greater than 9.8 in. are preferred as these provide greater surface area and deeper cracks for insects. During winter, white-headed woodpeckers show some down-slope movements from higher elevations.

Management Implications.—Intensive harvesting of mature, large diameter trees, especially ponderosa pine, threatens the white-headed woodpecker. Retention of large (dbh 23 in.) snags in fairly advanced decay in dispersed clumps throughout an area is needed for white-headed woodpecker management. Large diameter snags allow larger cavities to be excavated which can result in larger

clutch sizes and provide better insulation for eggs and young. For maximum densities of white-headed woodpeckers of 5 pairs/100 acres, 45 suitable snags/100 acres are required.

References.

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- Raphael, M.G. and M. White. 1984. Use of snags by cavity-nesting birds in the Sierra Nevada. Wildl. Monogr. No. 86. 66 pp.
- Short, L.L. 1982. Woodpeckers of the world. Del. Mus. of Nat. His. 676 pp.

THREE-TOED WOODPECKER

Picoides tridactylus
Picidae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S2, NV-S?, UT-SX, WY-S3?

Distribution.—Three-toed woodpeckers range across North America from tree line south to southern Oregon and through Idaho and Utah to New Mexico and Arizona. In eastern North America, they are found south to Minnesota, southern Ontario, New York, and northern New England. They also occur across northern Europe and Asia.

Description.—The three-toed woodpecker is a small black and white woodpecker, weighing approximately 1.6-2.7 oz. with a length of 8.0-9.5 in. Three-toed woodpeckers have a dark brown or black back with white down the center. In some birds the white is barred rather than solid. They are white underneath with dark bars or streaks on their sides. They have black ear patches with white above and below the patch. Males have a yellow crown patch and are 8-12% larger than females. The three-toed woodpecker closely resembles the black-backed woodpecker (*Picoides arcticus*), but the latter lacks white on the back.

Reproduction.—Three-toed woodpeckers breed in May and June. Both sexes excavate the nest cavity which is 9.7-11.7 in. deep and 4.3 in. in diameter, with an entrance 1.8 in. in diameter. The nest cavity may be found anywhere from 3-50 ft. high in a dead, or occasionally a live, tree. Both



Current range of the three-toed woodpecker in the Intermountain Region.

sexes incubate eggs (4 on average) for 12-14 days and brood young. Both sexes also feed the young, although the males feed more than females. Young fledge at 22-26 days, but remain with the adults for at least another month.

Food.—Three-toed woodpeckers forage mainly in dead trees, although they will feed in live trees. They forage by scaling which involves prying off layers of bark by probe-tapping to get at insects underneath the bark. Birds feed singly or with their mate. About 75% of their diet is wood-boring insect larvae, mostly beetles, but they also eat moth larvae. They are major predators of the spruce bark beetle, especially during epidemics, and may contribute to its control. Fruit is occasionally eaten as well as sap at sapsucker pits.

Habitat.—Three-toed woodpeckers are found in northern coniferous and mixed forest types up to 9000 ft. Forests containing spruce, grand fir, ponderosa pine, tamarack, and lodgepole pine are used. Nests may be found in spruce, tamarack, pine, cedar, and aspen trees. They forage on a wide variety of tree species depending on location. In Colorado, they prefer to forage on old-growth and mature trees. In Oregon, they have been observed scaling dead lodgepole pine trees with average dbh of 9.4 in., average height of 59 ft., and with most bark and limbs present. Fire killed trees are a major food source, and forest fires may lead to local increases in woodpecker numbers 3-5 years after the fire. In the northeastern United States, they were found to have territories of 74 acres, with a density of 3 pairs/247 acres, although densities may increase during beetle outbreaks. They stay on their territories year round, though insect outbreaks may cause irregular movements.

Management Implications.—Densities are very low, and there is little information on populations within the Inter-

mountain Region. Because they require snags for feeding, perching, nesting, and roosting, they are threatened by clearing of forests without snag retention. Fire suppression that eliminates fire killed trees is also a threat. For maximum population levels, snags with dbh of 12-16 in. and heights of 19.6-39.4 ft. should be left at a density of 42-52/100 acres in clumps rather than as isolated individuals. Also, because three-toed woodpeckers forage by scaling, snags with the majority of their bark present should be available.

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- Short, L.L. 1982. Woodpeckers of the world. Del. Mus. of Nat. Hist. 676 pp.

GREAT GRAY OWL

Strix nebulosa
Strigidae



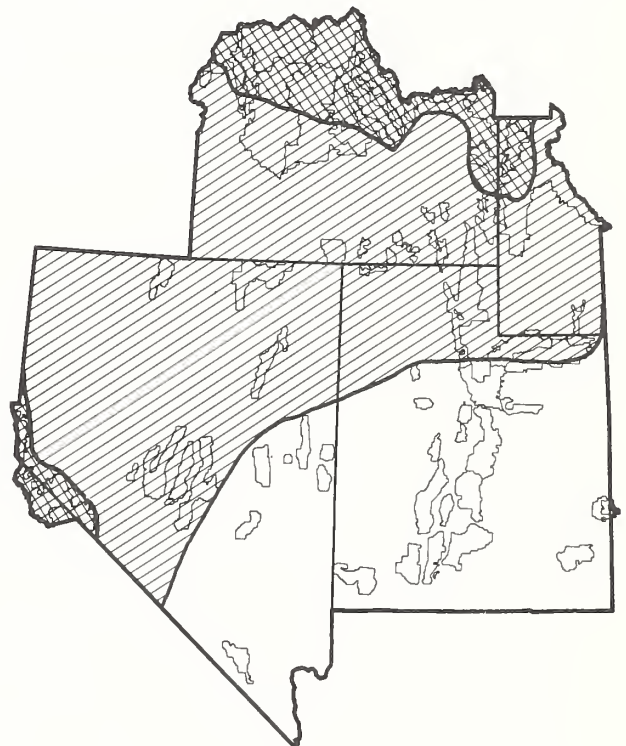
USFWS Status: None
USFS Region 4 Status: Sensitive
State List: CA, ID, WY
Heritage Global/State Status: G5/CA-S1, ID-S2, NV-S?, WY-S3

Distribution.—In North America, the great gray owl breeds from the boreal forests of Alaska, east to Ontario, and south to northeastern Minnesota, northwestern Wyoming, western Montana, Idaho, and through the Sierra Nevadas of California and Nevada.

Description.—The great gray owl is the largest North American owl measuring 18-26 in. in length. It is mostly feathers however, and is outweighed by both the great horned owl (*Bubo virginianus*) and the snowy owl (*Nyctea scandiaca*). Female great grays weigh 2.3-2.9 lbs. and males weigh 1.7-2.4 lbs. The general plumage color is dusky grayish brown or sooty, broken by grayish white mottling. It has a large, circular facial disk with no ear tufts. A conspicuous white patch or “bow tie” is present on the throat. The eyes and bill are yellow.

Reproduction.—Courtship and nest site selection take place during late winter. Nests are in shallow depressions on the top of broken-top snags, in old stick nests of other raptors or ravens, in debris platforms from dwarf mistletoe, and in artificial platforms. Egg laying occurs from mid-April to early June depending on snow melt in the breeding territory. Clutch size ranges from 1-5 but 3-4 eggs are most common.

 *Breeding range*  *Range of wintering vagrants*



Current range of the great gray owl in the Intermountain Region.

The female incubates for approximately 30 days while the male provides food. Owlets leave the nest after 20-29 days while still unable to fly. They climb small leaning trees near the nest. They fledge at about 55 days, but remain dependent on the adults for several weeks more. Great grays normally first breed at 3-4 years of age. The pair bond is not maintained outside of the breeding season although some pairs return to the same breeding territory every year and reform pair bonds. During years of low prey abundance some pairs may not breed.

Food.—Great gray owls prey primarily on voles and pocket gophers throughout the year. During the breeding season, they hunt during the day and at night. In winter they hunt in early morning and from late afternoon to dusk. Great grays generally hunt from low perches using their excellent vision and hearing to locate and capture prey. Their hearing allows them to capture prey under snow in winter.

Habitat.—Great gray owls use mixed coniferous and hardwood forests usually bordering small openings or meadows. They forage along edges of clearings. Semi-open areas, where small rodents are abundant, near dense coniferous forests, for roosting and nesting, is optimum habitat for great grays. During winter some birds stay on or near their breeding territories and others make irregular movements in search of prey and favorable snow conditions. In the Intermountain Region, great grays occur primarily in

lodgepole pine/Douglas-fir/aspen zone and in ponderosa pine.

Management Implications.—Great gray owls are generally uncommon throughout their range, although they can be locally abundant in some areas, especially during years of high prey abundance. Small clearcuts can be beneficial to great grays by creating foraging areas. However, intensive harvesting and firewood cutting may eliminate nesting trees and roosting habitat. Management for great grays should include protection of nest sites, creation of nest sites using artificial nest platforms, protection and creation of hunting perches near clearings, and reduced human activity near nests during the nesting period.

References.

- Franklin, A.B. 1988. Breeding biology of the great gray owl in southeastern Idaho and northwestern Wyoming. *Condor* 90:689-696.
- Groves, C. and E. Zehntner. 1990. Distribution and status of great gray owls (*Strix nebulosa*) on the Targhee National Forest, 1989. Idaho Dept. of Fish and Game Rep., Boise.
- Johnsgard, P.A. 1988. North American owls, biology and life history. Smithsonian Institute Press, Washington and London. 295 pp.

MEXICAN SPOTTED OWL

Strix occidentalis lucida
Strigidae

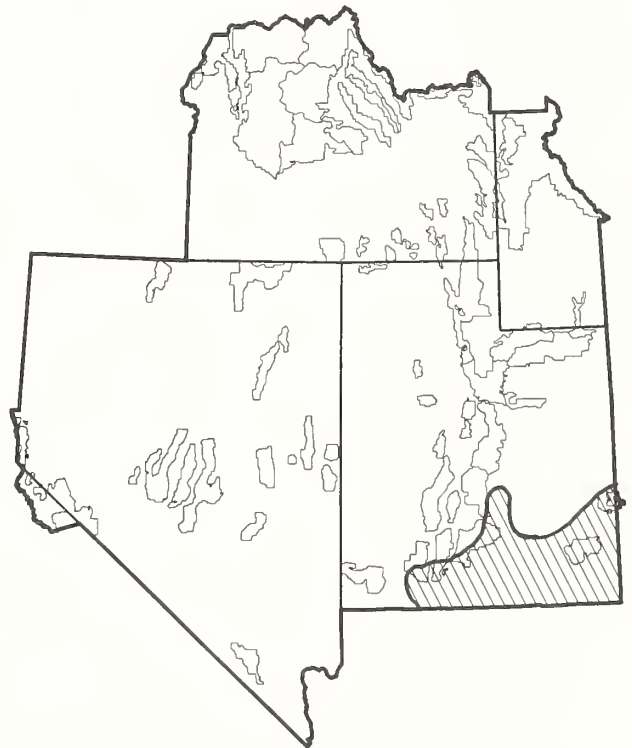


USFWS Status: Proposed for listing as Threatened
USFS Region 4 Status: Sensitive
State List: UT
Heritage Global/State Status: G3TU/UT-S1

Distribution.—The Mexican spotted owl is found in northern Arizona, southeastern Utah, and southwestern Colorado south through western Texas to the Mexican Plateau.

Description.—The Mexican spotted owl is one of 3 subspecies of spotted owl. Spotted owls are medium-sized forest owls measuring 16-19 in. in length. Females weigh 1.2-1.7 lbs., slightly larger than males which weigh 1.1-1.5 lbs. There are no plumage differences between sexes. The Mexican spotted owl is slightly smaller and lighter in color than the other subspecies. The head and back are brown with creamy white spots. The breast and belly are light with a regular pattern of brown and white spots. The brown facial disk is concentrically barred with brown. The dark tail is banded with light brown. The spotted owl lacks ear tufts, has dark eyes, and a pale to yellowish bill.

Reproduction.—Spotted owls begin roosting together and calling in early March. Nest site selection begins shortly after pair formation. Mexican spotted owls use cavities, old stick nests built by other birds, debris platforms (dense tangles of limbs formed from dwarf mistletoe), and cliffs for nesting. Females lay 2-4 eggs in early to mid-April and incubate them for about 30 days while males provide food. Hatching occurs in early to mid-May. Owlets leave the nest



Current range of the Mexican spotted owl in the Intermountain Region.

by early to mid-June after 32-36 days. They are usually unable to fly at first and climb to elevated perches near the nest where the adults continue to feed them. At 40-45 days, owlets can fly and are independent by mid-September. Spotted owls generally have low reproductive success, about 0.5 young/pair. Age at first breeding is usually 2 years. They show a high level of nest site fidelity, and the same pair may breed for several years in the same area. Spotted owls are mostly solitary outside the breeding season (September-February).

Food.—Woodrats, white-footed mice, voles, rabbits, and pocket gophers make up the majority of the Mexican spotted owls diet. They also eat bats, birds, reptiles, and insects, but these species are less important. Spotted owls are nocturnal predators that generally hunt from perches, moving down to low perches just before attacking prey. They cache prey in trees or tall grass near logs or rock outcrops.

Habitat.—Distribution is patchy in mountains and canyons containing mixed conifers, pine-oak, and evergreen oak forests. They are found on steep slopes in mature forests with dense, uneven-aged stands and high canopy closure, high basal area, and many snags and downed logs. Nest sites are generally found in mature mixed conifer forests, mainly Douglas-fir and to a lesser extent in ponderosa pine, Gambel oak, and on cliff ledges. They forage in mature forests of mixed conifer and Gambel oak possibly due to the availability of preferred prey (woodrats) and avoidance of great horned owls (*Bubo virginianus*). Roosting sites may be limiting to spotted owls. They are intolerant of high temperatures and seek cool, shaded roost sites with a high component of white fir, Douglas-fir, and spruce, or in riparian forests in canyons. Home range sizes in Arizona

vary from 701-2386 acres with a smaller core area used the majority of the time, especially during the breeding season. There is some shift in home range area used during winter with summer and winter ranges generally overlapping. Some spotted owls may leave their breeding area altogether during winter.

Management Implications.—The complete range and habitat needs of Mexican spotted owls are unknown. Survey work is being conducted to determine owl distribution and densities. The most serious current threat to the spotted owl is habitat alteration which could result in reduction in prey availability, modification of the thermal environment, increased risk of predation, and packing which occurs when owls are forced into territories of adjacent pairs because of habitat loss. Recent studies have shown that the best management strategy for conserving spotted owls is establishment of large contiguous habitat blocks that will support multiple pairs. Distribution of these habitat blocks across the landscape should be at distances which allow interaction of owls among them. This strategy reduces the effects of habitat fragmentation and allows for dispersal of juveniles. Management actions that are detrimental to spotted owl habitat should be avoided in these areas.

References.

- Ganey, J.L. 1988. Distribution and habitat ecology of Mexican spotted owls in Arizona. M.S. Thesis. Northern Arizona Univ., Flagstaff. 229 pp.
- Johnsgard, P.A. 1988. Owls of North America, biology and life history. Smith. Instit. Press, Washington and London. 295 pp.

CALIFORNIA SPOTTED OWL

Strix occidentalis occidentalis
Strigidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: CA

Heritage Global/State Status: G3/CA-S2, NV-S?

Distribution.—California spotted owls occur in the south coastal ranges of California and in the Sierra Nevadas of California and Nevada.

Description.—The California spotted owl is one of 3 subspecies of spotted owl. Spotted owls are medium-sized forest owls measuring 16-19 in. in length. Females weigh 1.1-1.7 lbs., slightly larger than males which weigh 1.1-1.5 lbs. There are no plumage differences between sexes. The head and back are dark brown with creamy white spots. The breast and belly are lighter with a regular pattern of brown and white spots. The brown facial disk is concentrically barred with darker brown. The dark tail is banded with light brown. The spotted owl lacks ear tufts, has dark eyes, and a pale to yellowish bill.

Reproduction.—Spotted owls begin roosting together and calling in early March. Nest site selection begins shortly after pair formation. California spotted owls use cavities in large snags, old stick nests built by other birds, debris platforms (dense tangles of limbs formed from dwarf mistletoe), and cliffs for nesting. Females lay 2-4 eggs in early to mid-April and incubate them for about 30 days while males provide food. Hatching occurs in early to mid-May. Owlets leave their nest by early to mid-June after 32-36 days.



Current range of the California spotted owl in the Intermountain Region.

They are usually unable to fly at first and climb to elevated perches near their nest while adults continue to feed them. At 40-45 days, owlets can fly well, becoming independent by mid-September. Spotted owls generally have low reproductive success, about 0.5 young/pair. Age at first breeding is usually 2 years. They show a high level of nest site fidelity, and the same pair may breed for several years in the same area. Spotted owls are mostly solitary outside the breeding season (September-February).

Food.—Flying squirrels, pocket gophers, and deer mice comprise the majority of the California spotted owl's diet. They also eat bats, birds, reptiles, and insects, but these species are less important. Spotted owls are nocturnal predators that generally hunt from perches, moving down to low perches just before attacking prey. They cache prey in trees or tall grass near logs or rock outcrops.

Habitat.—California spotted owls are distributed in mountains and canyons containing mixed conifer and pine-oak forests and in foothill oak woodlands. They are found in mature forests with characteristics that include dense, uneven-aged stands with high canopy closure (at least 40% and preferably 70%), high basal area, and abundant snags and downed logs. Nest sites are generally located in mature mixed conifer forests of ponderosa pine, canyon live oak, and at higher elevations in white fir, red fir, and lodgepole pine. They forage in mature forests of mixed conifer. Roost site availability may be limiting to spotted owls. They are intolerant of high temperatures and seek cool, shaded roost sites, usually in mature mixed conifer forests with high tree and snag density, and high canopy closure, or in riparian forests in canyons. Spotted owls exhibit a range of seasonal movement patterns. Some are residents on their home range, some enlarge the area they use or shift their use during the winter with overlap onto their summer range, and some use completely different areas in the summer and winter.

Most movements in the winter are to lower elevations. Pair home range size averages 3400 acres.

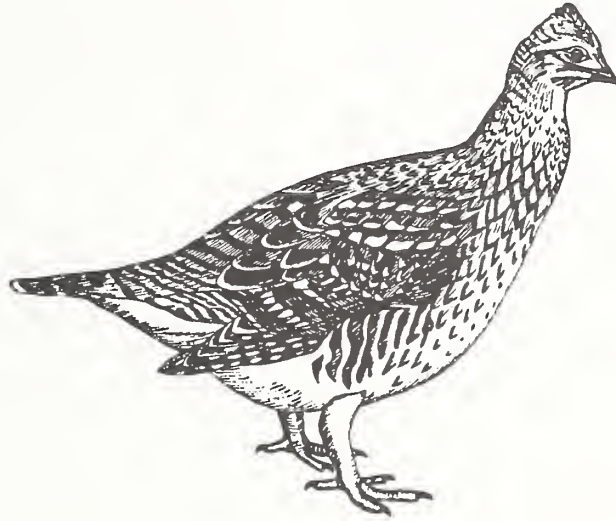
Management Implications.—The complete range and habitat needs of California spotted owls are unknown. Survey work is being conducted to determine owl distribution and densities. The most serious current threat to the spotted owl is habitat alteration which could result in reduction in prey availability, modification of the thermal environment, increased risk of predation, and packing which occurs when owls are forced into territories of adjacent pairs because of habitat loss. Recent studies have shown that the best management strategy for conserving spotted owls is establishment of large contiguous habitat blocks that will support multiple pairs. Distribution of these habitat blocks across the landscape should be at distances which allow interaction of owls among them. This strategy reduces the effects of habitat fragmentation and allows for dispersal of juveniles. Management actions that are detrimental to spotted owl habitat should be avoided in these areas.

References.

- Gould, G.I., Jr. 1988. Distribution of the spotted owl in California. *Western Birds* 8:131-146.
- Johnsgard, P.A. 1988. *Owls of North America, biology and life history*. Smith. Instit. Press, Washington and London. 295 pp.
- Laymon, S.A. 1990. Personal communication.
- Neal, D.L., J. Verner, G.N. Steger, and G.P. Eberlain. 1990. A study of spotted owl home range size and composition in the Sierra National Forest, annual progress report 1989. Unpubl. Rep. Pacific Southwest For. and Range Exp. Sta.

COLUMBIAN SHARP-TAILED GROUSE

Tympanuchus phasianellus columbianus
Phasianidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

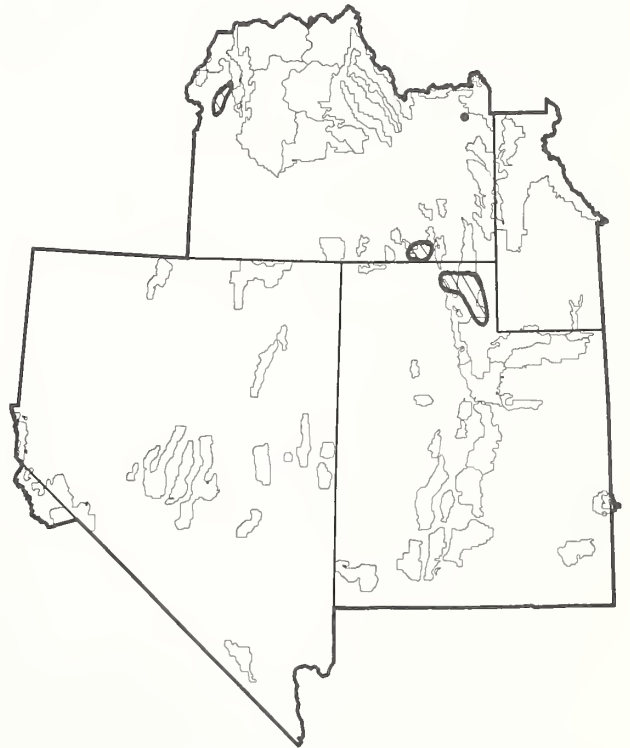
State List: Not listed

Heritage Global/State Status: G5/ID-S2, NV-S3, UT-S1

Distribution.—The 6 subspecies of sharp-tailed grouse range from Alaska to western Quebec south to Utah, Colorado, and Michigan. The Columbian sharp-tailed grouse is limited to British Columbia with remnant populations in Washington, Idaho, Montana, Wyoming, Utah, and Colorado.

Description.—The Columbian sharp-tailed grouse is one of 6 subspecies of sharp-tailed grouse that, together with the greater prairie chicken (*Tympanuchus cupido*), make up the “prairie grouse” of North America. Adult sharp-tails range in length from 17-19 in. with males averaging about 2 lbs. and females 1.8 lbs. Both have inconspicuous crests with the head and upperparts barred and spotted with white, tawny brown, and black. Wings are spotted white, the flanks and breast show V-shaped brown markings, and the abdomen is white. The middle pair of tail feathers, which extend far beyond the others, are black and brown while the rest of the tail is white. Males possess an inconspicuous yellow comb and pink to pale violet areas of bare neck skin, both of which expand during courtship displays.

Reproduction.—Sharp-tails, like other grouse, engage in ritualized courtship behavior which takes place on leks or dancing grounds. Leks are areas of low or sparse vegetation



Current range of the Columbian sharp-tailed grouse in the Intermountain Region.

with good visibility. Males defend a small territory on the lek and compete with other males for females and mating opportunities. Numbers of males on a single lek range from 2-50 but typically number about 8-12. The male performs a dance which consists of a series of rapid stepping movements with tail erect, wings outstretched, head held forward and low, and neck feathers erected to show the purple skin. Along with stepping movements, the male makes strong lateral vibrations of the tail producing a rattling sound. Dancing begins in March, peaks in April, and tapers off in May. A few dominant males occupy the lek's center and mate with the majority of females that attend the lek. Males provide no parental care of young. After mating, the female lays an average of 12 eggs in a nest scrape under shrubby or herbaceous cover, usually not more than 1.2 miles from the lek. Incubation lasts 23-24 days and the female will reneest if this first clutch is destroyed. After hatching the female leads the brood to more open areas where insects and herbaceous food is abundant. Chicks are able to fly to a limited degree at 10 days. At 6-8 weeks, chicks are independent and the brood begins to break up.

Food.—A dependable and nutritious food source is very important during winter, and sharp-tails will eat a variety of foods depending on location. In the Intermountain Region, sharp-tails eat the buds of maple, chokecherry, and serviceberry, and the fruits of hawthorn. In spring and summer, sharp-tails eat mainly herbaceous plants, mostly native annuals and perennials. They also eat grasses, alfalfa, and clover, as well as insects. In late summer and fall, a variety of seeds and fruits are eaten. Chicks eat mainly insects

initially, but gradually increase the amount of vegetation in their diets through the summer.

Habitat.—Sharp-tails need large areas of undisturbed native shrub-grassland year round. Spring to fall habitat consists of mountain shrub patches and riparian shrub areas for escape cover and late summer-early fall food, and sagebrush cover types with a high diversity of shrubs, forbs, and grasses and high structural diversity. In winter, sharp-tails use clumps of trees or tall shrubs along hillsides or riparian areas which provide both food and cover. Serviceberry, chokecherry, bittercherry, and hawthorn are important species. Sharp-tails also snow-burrow to conserve energy and to roost relatively safe from predators.

Management Implications.—Historically, Columbian sharp-tailed grouse ranged from British Columbia south to California and Colorado including most of the Intermountain Region. Deterioration of native shrub-grasslands from livestock overgrazing and loss of habitat from cultivation are the major reasons for their decline. Management of Columbian sharp-tails should include protection of the habitat that already supports grouse and rehabilitation of rangeland to its native condition.

References.

- Johnsgard, P.A. 1973. Grouse and quails of North America. Univ. of Nebraska Press, Lincoln. 553 pp.
- Marks, J.S. and V.S. Marks. 1987. Habitat selection by Columbian sharp-tailed grouse in west-central Idaho. U.S. Dept. of the Int., Bur. of Land Manage., Boise District, ID. 115 pp.

SPOTTED FROG

Rana pretiosa
Ranidae



USFWS Status: None

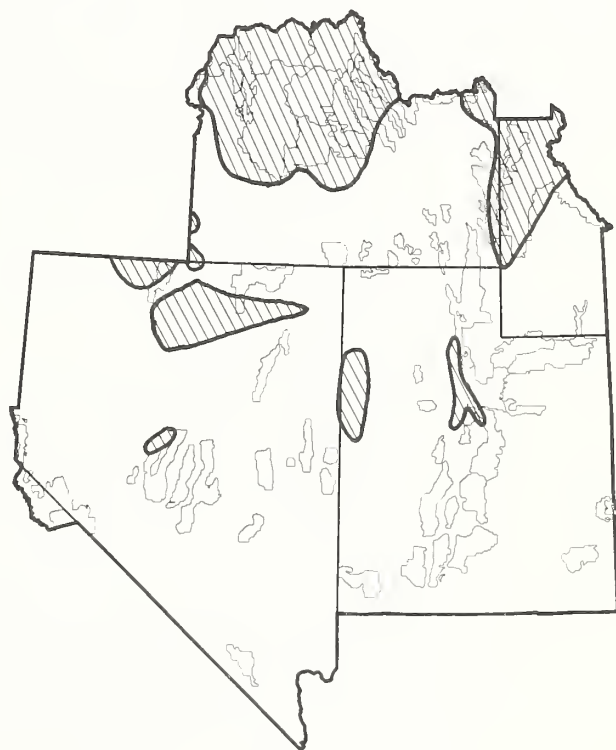
USFS Region 4 Status: Sensitive

State List: NV, UT, WY

Heritage Global/State Status: G5/NV-S?, UT-S1, WY-S3?

Distribution.—The spotted frog ranges from extreme southeastern Alaska through western Alberta, western Montana and northwestern Wyoming to northern Utah and central Nevada and west to the Pacific coast in Oregon and Washington. In the southern part of its range it is represented primarily by isolated populations, which may occur anywhere from sea level to 10,000 ft. in elevation. Although the spotted frog has a wide distribution, it reportedly is losing ground to the northern leopard frog (*Rana pipiens*) and the bullfrog (*Rana catesbiana*) in some areas, and now appears to be nearly extinct in western Oregon and Washington.

Description.—The spotted frog is a true frog measuring 2-4 in. in length. It is light brown, dark brown, or grayish above, with varying numbers of spots. The large dorsal spots often have light centers with indistinct or fuzzy edges. Although sometimes faint, there is a “mask” on the face. A light-colored jaw strip usually reaches the shoulder. Adults are red, salmon, or yellow on the underside of the limbs, depending on locality and their age. In young, the yellow or orange ventral color is faint or absent. Color in the spotted frog appears to be almost painted on with the pigment very near the skin surface. The throat, as well as sometimes the entire ventral surface, is spotted and mottled dusky. The legs are



Current range of the spotted frog in the Intermountain Region.

relatively short, and the heel of the depressed hind limbs seldom reach to the nostril. Eyes are turned slightly upward. Males have a swollen and darkened thumb base. Spotted frog populations south of the Salmon River in Idaho, as well as in Nevada and Utah, usually are yellowish below, elsewhere red or salmon predominate. The spotted frog emits a series of 4-50 faint, rapid, low-pitched clicks, which increase in intensity during the call. The call also has been described as a series of 6-9 short bass notes. Calls last about 1-10 seconds, and may be given above, or occasionally under, water.

Reproduction.—The spotted frog breeds from late February to early July, beginning as early as the winter thaw will permit. They may be locally abundant when they congregate to breed in spring. Males gather at breeding locations, usually in shallow water, and begin calling. They do not defend territories. Mating occurs during the day in shallow water. Eggs are deposited primarily in ponds or quiet water in clusters of several masses. These rounded egg masses are not attached to any vegetation and rest on the bottom in shallow water. Clutch size ranges from 700-1500 eggs. Hatching time is dependent on temperature and ranges from 3-21 days. Some tadpoles metamorphose by fall while others overwinter as tadpoles and metamorphose the following spring. Spotted frogs reach sexually maturity at 2-6 years of age depending on location and elevation. At higher elevations, spotted frogs grow and reach sexual maturity more slowly, have longer life spans, and may not breed every year.

Food.—Spotted frogs feed on a wide variety of insects, and a few kinds of mollusks, crustaceans, and arachnids. It is

thought to be an opportunistic feeder and feeds under water to some extent.

Habitat.—Spotted frogs are most likely found near permanent water such as marshy edges of ponds or lakes, in algae-grown overflow pools of streams, or near springs with emergent vegetation during the breeding period. They may move considerable distances from water after breeding, often frequenting mixed conifer and subalpine forests, grasslands, and brushlands of sage and rabbitbrush. Spotted frogs are thought to hibernate in holes near springs or other areas where water is unfrozen and constantly renewed.

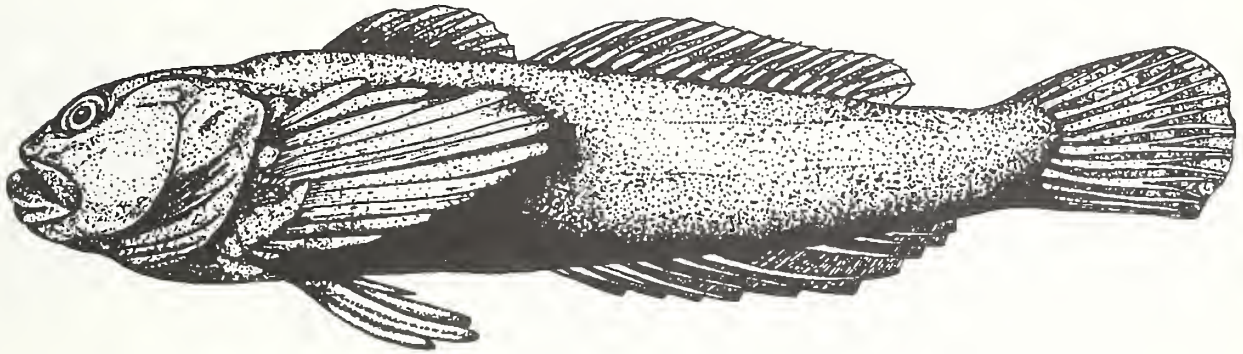
Management Implications.—The demise of spotted frog populations generally has resulted from interspecific competition with northern leopard frogs and bullfrogs, and loss of riparian habitat from grazing and man-caused disturbances. Discouraging the introduction of other frog species into spotted frog habitat and protecting permanent water sources used by this species appear to be major management considerations.

References.

- Nussbaum, R.A., E.D. Brodie, Jr., and R.M. Storm. 1983. Amphibians and reptiles of the Pacific Northwest. Univ. Press of Idaho, Moscow. 332 pp.
- Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Company, Boston. 336 pp.
- Turner, F.B. 1958. Life history of the western spotted frog in Yellowstone National Park. *Herpetologica* 14:96-100.

WOOD RIVER SCULPIN

Cottus leiopomus
Cottidae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G2/ID-S2

Distribution.—The Wood River sculpin is restricted to the Big and Little Wood rivers and their tributaries in Idaho.

Description.—The Wood River sculpin is a member of the freshwater sculpin genus *Cottus*. Like all members of the sculpin family it is distinguished by an enlarged, flattened head, large mouth, fanlike pectoral fins, absence of scales, eyes placed high on the head, 2 dorsal fins, and absence of spines in the anal fin. The Wood River sculpin is grayish olive and mottled with dark brown or black. Adults range in size from 4-6 inches.

Reproduction.—Little is known about the life history of the Wood River sculpin, but it is assumed to be similar to other freshwater sculpins. Spawning generally occurs in the spring. Nests are scooped out beneath stones or debris in water temperatures of 45-50 °F. Females lay eggs in small clusters and the male guards the nest until the eggs hatch in 3-5 weeks. Sexual maturity is attained at 2-3 years.

Food.—Sculpins feed on aquatic insects, crustaceans, and small fish.

Habitat.—Sculpins inhabit clear, cold streams with clean rock or gravel bottoms. They are bottom dwellers and will hide under rocks and debris when not active. Sculpins are



Current range of the Wood River sculpin.

indicators of high water quality (cool temperatures, high oxygen content, low pollution).

Management Implications.—The Wood River sculpin is threatened by poor land management practices which cause habitat degradation. Removal of streamside vegetation and

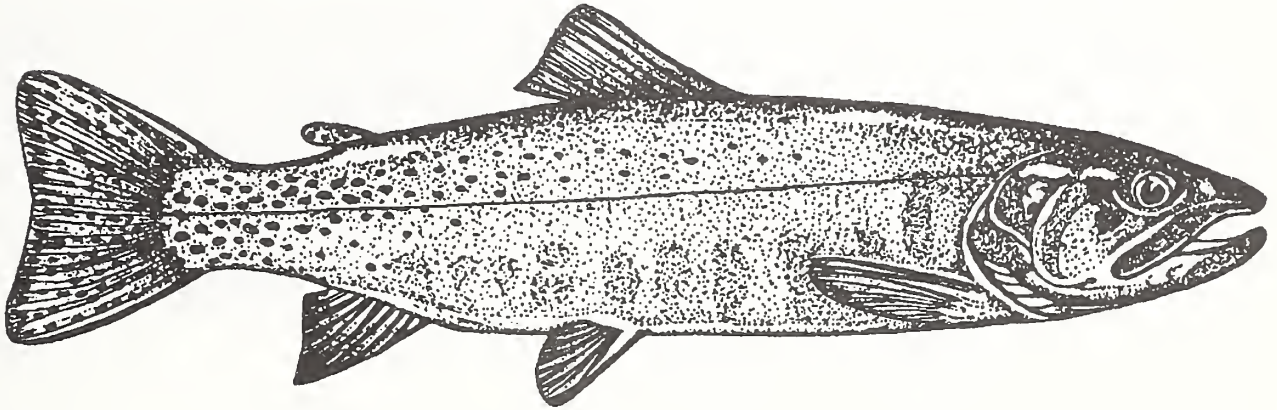
water diversions for irrigation contribute to bank erosion, siltation, and warming water temperatures.

References.

Simpson, J.C. and R.L. Wallace. 1982. *Fishes of Idaho*. Univ. Press of Idaho, Moscow. 238 pp.

WESTSLOPE CUTTHROAT TROUT

Oncorhynchus clarki lewisi
Salmonidae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID, WY

Heritage Global/State Status: G5T3/ID-S2, WY-S2?

Distribution.—The westslope cutthroat trout is native to the upper Missouri River drainage in Montana, the Salmon, Clearwater, and Spokane river drainages in Idaho, and the Clark Fork and Kootenai river drainages in Idaho, Montana, and British Columbia.

Description.—The westslope cutthroat trout is a subspecies of cutthroat trout (*Oncorhynchus clarki*) ranging in size from 5-18 inches. It has a silver body with yellowish tint and the bright red stripe or “cutthroat” mark under each side of the lower jaw. Its sides and belly are orange, pink, or red. The small, irregular spots are most abundant on the tail and back with few spots below the lateral line on the front half of the body.

Reproduction.—Spawning occurs from March-July depending on elevation with 2 spawning patterns exhibited. Resident westslope cutthroat spawn and spend their entire lives in small streams. Migratory cutthroat spawn in tributary streams generally traveling 25-50 miles. Juveniles spend 2-3 years in tributaries, then migrate to a main river or lake where they remain until they spawn. Westslope cutthroat reach sexual maturity at 4-6 years. Like all cutthroat trout, they require a clean gravel substrate for spawning.



Current range of the westslope cutthroat trout in the Intermountain Region.

Food.—Westslope cutthroat trout feed mainly on insects, both aquatic and terrestrial, and zooplankton. They seldom prey on other fish.

Habitat.—Westslope cutthroat trout are found in small mountain streams, main rivers, and large natural lakes. They require clean, cool, well-oxygenated water throughout their lives. In rivers, adults prefer large pools and slow velocity areas and in lakes they are found near shore areas.

Management Implications.—The westslope cutthroat trout has declined throughout its range. Hybridization with other cutthroat subspecies and rainbow trout (*Oncorhynchus mykiss*) has caused a drastic loss of genetically pure populations and competition from introduced kokanee (*Oncorhynchus nerka*), lake trout (*Salvelinus namaycush*), and

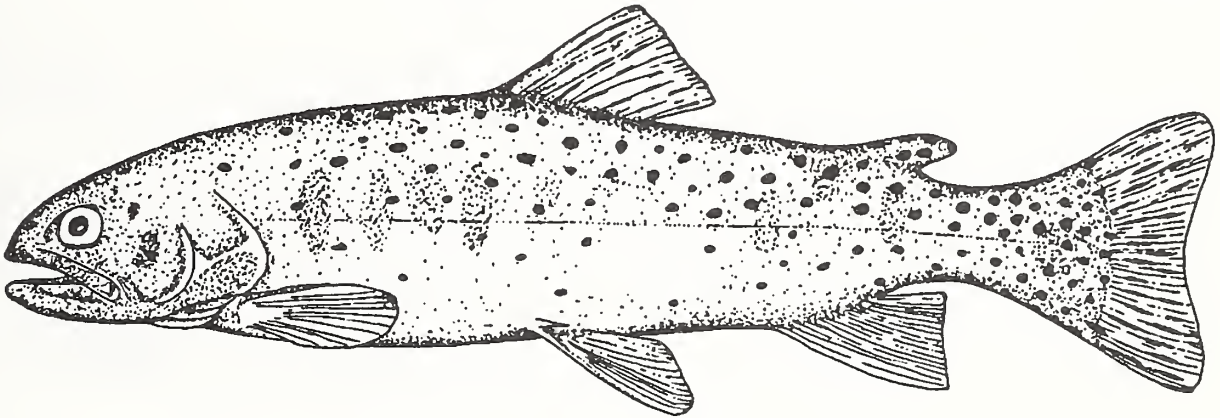
brook trout (*Salvelinus fontinalis*) have eliminated populations from many areas. Westslope cutthroat are sensitive to fishing pressure and restricted or catch-and-release fishing has been needed to maintain wild populations. Loss of habitat from logging, road construction, mining, and grazing has also affected this subspecies.

References.

- Liknes, G.A. and P.J. Graham. 1988. Westslope cutthroat trout in Montana: life history, status, and management. *Am. Fish. Soc. Symp.* 4:53-60.
- Simpson, J.C. and R.L. Wallace. 1982. *Fishes of Idaho*. Univ. Press of Idaho, Moscow. 238 pp.

COLORADO CUTTHROAT TROUT

Oncorhynchus clarki pleuriticus
Salmonidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

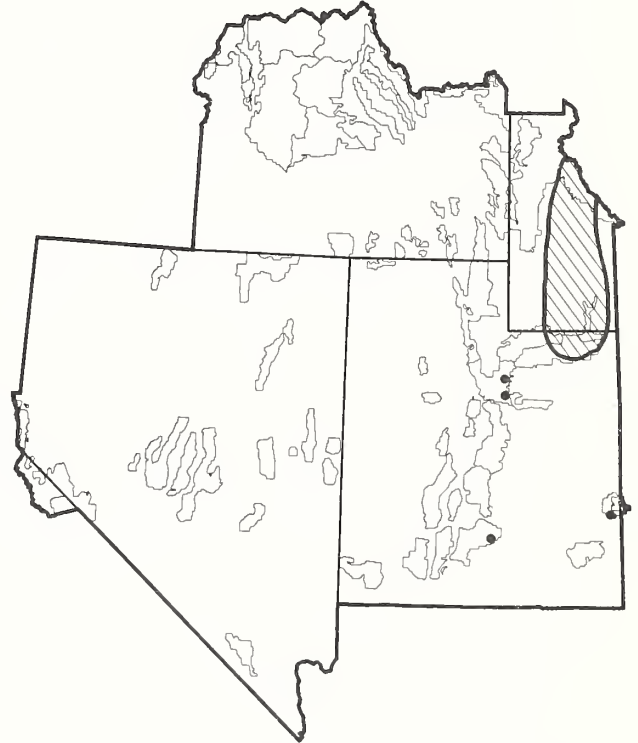
State List: UT, WY

Heritage Global/State Status: G5T2T3/UT-S2, WY-S2

Distribution.—Colorado cutthroat trout are currently limited to a few small headwater streams of the Green River and upper Colorado River in Colorado, Utah, and Wyoming. There are also populations in several high elevation lakes of the Rocky Mountains as a result of stocking efforts. Most of these lake populations are not self-sustaining due to the lack of adequate spawning streams.

Description.—The Colorado cutthroat trout is a subspecies of cutthroat trout (*Oncorhynchus clarki*) native to the Colorado River drainage, ranging in size from 5-14 inches. This subspecies is distinguished by its bright coloration. Its sides are very bright red and it sometimes develops bright tints of crimson, orange, and gold on the belly. It has coarse dark spots on the body and concentrated in the tail region. Like all cutthroat trout, it has a bright red stripe or “cutthroat” mark on each side of the lower jaw.

Reproduction.—Spawning occurs in late spring when the water temperature reaches approximately 45 °F. The female digs a nest in a gravel bed in flowing water and covers the eggs with gravel. Eggs hatch in late summer. Sexual maturity is reached in 2-3 years. Like all cutthroat trout, Colorado cutthroat need cool water and clean gravel for spawning.



Current range of the Colorado cutthroat trout in the Intermountain Region.

Food.—The Colorado cutthroat is an opportunistic feeder. It eats mainly insects and other invertebrates. Large adults will prey on small fish.

Habitat.—Colorado cutthroat trout require cool, clear water and well vegetated streambanks for cover and bank stability. Instream cover, in the form of deep pools and structures such as boulders and logs, is also important. This subspecies is adapted to relatively cold water and prospers at high elevations.

Management Implications.—Historically, the Colorado cutthroat trout was distributed throughout the colder headwaters of the Green and Colorado Rivers as far south as the San Juan River. Hybridization with introduced non-native trout has drastically altered the genetic purity of this subspecies. There are few pure populations remaining. They have also suffered from habitat alteration from grazing, logging, mining, and water diversions for irrigation. Con-

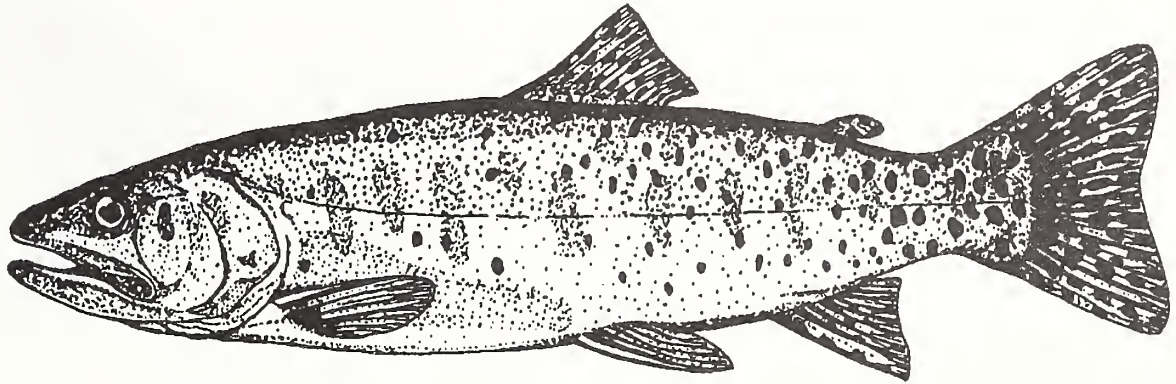
struction of fish barriers to protect the Colorado cutthroat from contact with hybridizing trout and rehabilitation of both streambank and water quality should help the recovery of this subspecies. In addition, elimination of non-native trout through chemical treatment and transplanting Colorado cutthroat from known pure populations may be done effectively.

References.

- Baxter, G.T. and J.R. Simon. 1970. Wyoming fishes. Wyoming Game and Fish Dept. Bull. No. 4, Cheyenne. 168 pp.
- Behnke, R.J. and D.E. Benson. 1980. Endangered and threatened fishes of the upper Colorado River Basin. Coop. Ext. Serv., Colorado State Univ., Fort Collins, Bull. 503A. 34 pp.

BONNEVILLE CUTTHROAT TROUT

Oncorhynchus clarki utah
Salmonidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

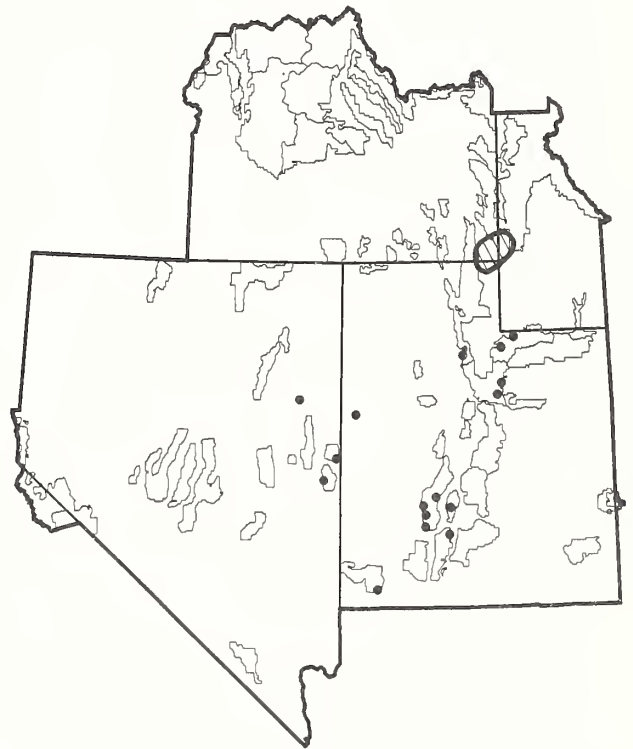
State List: ID, UT, WY

Heritage Global/State Status: G5T2/ID-S1, NV-S2, UT-S2, WY-S2

Distribution.—Currently pure strains of Bonneville cutthroat trout are restricted to less than 50 populations in Idaho, Nevada, Utah, and Wyoming. They are primarily found in small headwater streams.

Description.—The Bonneville cutthroat trout is a subspecies of cutthroat trout (*Oncorhynchus clarki*) native to the Bonneville Basin. They generally range in size from 2-9 inches with lake populations reaching 30 inches. The back is yellow-brown to steel-gray with the sides lighter and the belly yellow to off-white. The tail, back, and sides are marked with large, round spots. A bright red stripe or “cutthroat” mark is present under each side of the lower jaw. The coloring of the Bonneville cutthroat is relatively subdued compared to other cutthroat trout, although some populations do display bright reddish-orange spawning colors.

Reproduction.—Bonneville cutthroat trout spawn in spring from April-June. Like other cutthroat, they require a clean, gravel substrate in cool water for spawning. They reach sexual maturity at 2-3 years of age.



Current range of the Bonneville cutthroat trout in the Intermountain Region.

Food.—They eat mainly aquatic insects and terrestrial insects that fall into the water from overhanging vegetation. Larger Bonneville cutthroat feed on small fish.

Habitat.—Bonneville cutthroat trout require cool, clear water throughout their lives. Optimum habitat characteristics include areas with a 1:1 pool to riffle ratio and slow, deep water with vegetated streambanks for shade, bank stability, and cover. They prefer summer water temperatures of about 55 °F, but can survive in water up to 70 °F. Bonneville cutthroat may also inhabit lakes.

Management Implications.—Historically, Bonneville cutthroat trout occurred throughout the Bonneville Basin. Loss of habitat from man-made causes such as water diversions, overgrazing of riparian areas, timber harvest and water pollution has contributed to the decline of this sub-

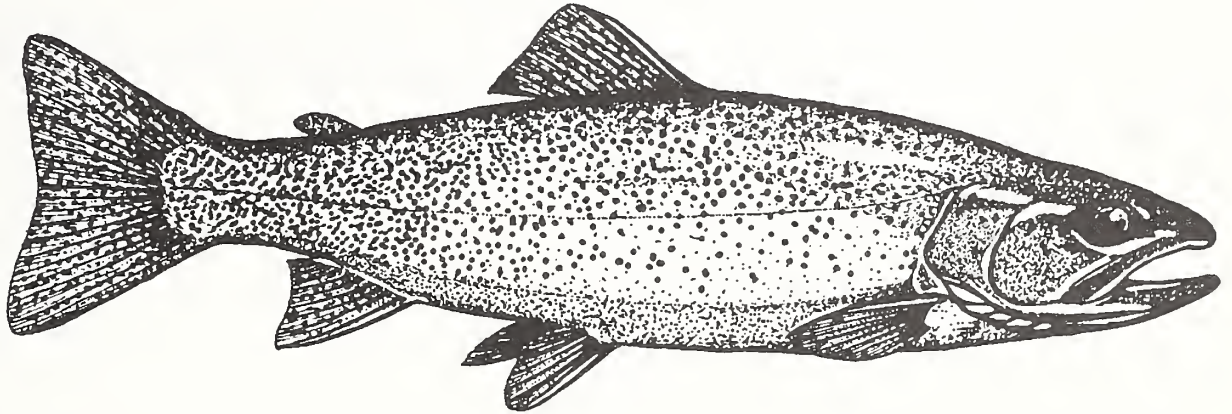
species which at one time was thought to be extinct. Hybridization with introduced non-native trout has resulted in the loss of genetic purity. Management actions for the Bonneville cutthroat should include stream habitat improvement and protection from non-native trout introductions. They are also susceptible to overfishing and in many areas are protected from intensive fishing pressure.

References.

- Duff, D.A. 1988. Bonneville cutthroat trout: current status and management. *Am. Fish. Soc. Symp.* 4:1-127.
- Sigler, W.F. and R.R. Miller. 1963. *Fishes of Utah*. Utah State Dept. of Fish and Game, Salt Lake City. 203 pp.

FINE SPOTTED CUTTHROAT TROUT

Oncorhynchus clarki ssp.
Salmonidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

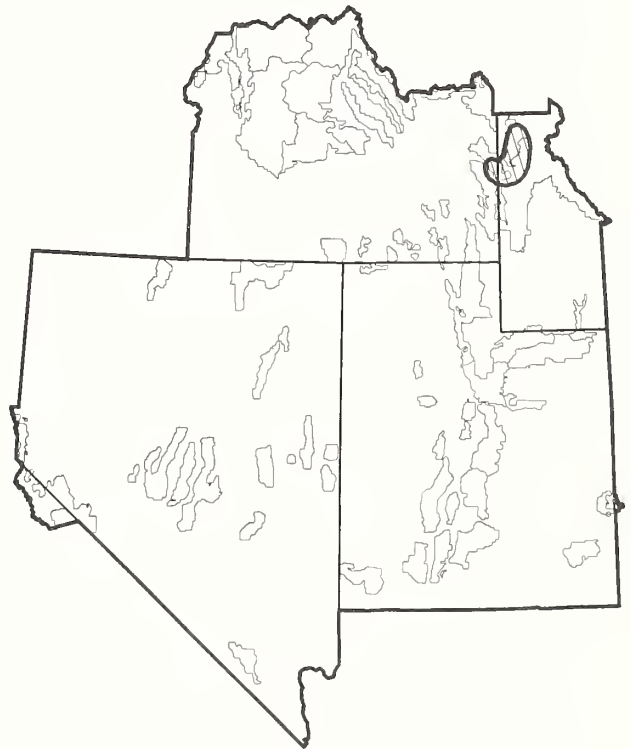
State List: ID

Heritage Global/State Status: G5T1/ID-S1, WY-S2?

Distribution.—The fine spotted cutthroat trout inhabits the Snake River from above Jackson Lake to Palisades Reservoir in Wyoming and Idaho. It also inhabits tributaries of the Snake River from the Gros Ventre River to the Salt River. In the Gros Ventre drainage, Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) are found in the headwater streams and fine spotted cutthroat occur in the rest of the drainage. The fine spotted cutthroat is also extensively stocked outside its native range in Wyoming and Colorado.

Description.—The fine spotted cutthroat trout is an undescribed (has not been named or described officially) subspecies of cutthroat trout (*Oncorhynchus clarki*) distinguished by its spotting pattern. It has abundant small spots over its body concentrated on the posterior end and above the lateral line. Its body is primarily yellowish-brown and its fins may become orange or red. It possesses the characteristic bright red stripe or "cutthroat" mark under each side of the lower jaw. It generally ranges 7-20 inches in size.

Reproduction.—The fine spotted cutthroat exhibits 2 spawning patterns. Resident cutthroat in small streams spawn in April-May. Migratory cutthroat move from a main river to a tributary stream in March and spawn in April-May.



Current range of the fine spotted cutthroat trout in the Intermountain Region.

Some fingerlings move to the main river in January or February and some migrate at age 1 or older. Fine spotted cutthroat spawn in cold, spring-fed streams less than 12 inches deep with a clean gravel bottom. Most spawning fish are 3-4 years of age.

Food.—They feed mainly on aquatic and terrestrial insects both on the surface and bottom. Larger trout often feed on small fish such as sculpins.

Habitat.—The fine spotted cutthroat trout appears to be adapted to large rivers with swift currents. Like all cutthroat trout, it needs cool, clear, well-oxygenated water to survive. It adapts well to lakes and reservoirs.

Management Implications.—The fine spotted cutthroat is native to the upper Snake River drainage above Shoshone

Falls, Idaho. Because of stocking, this subspecies remains widespread. However, spawning tributaries in its native range have been altered by erosion, siltation, and irrigation diversions due to agricultural practices. Management actions for this subspecies have concentrated on restoration of spawning areas and stocking from hatchery populations.

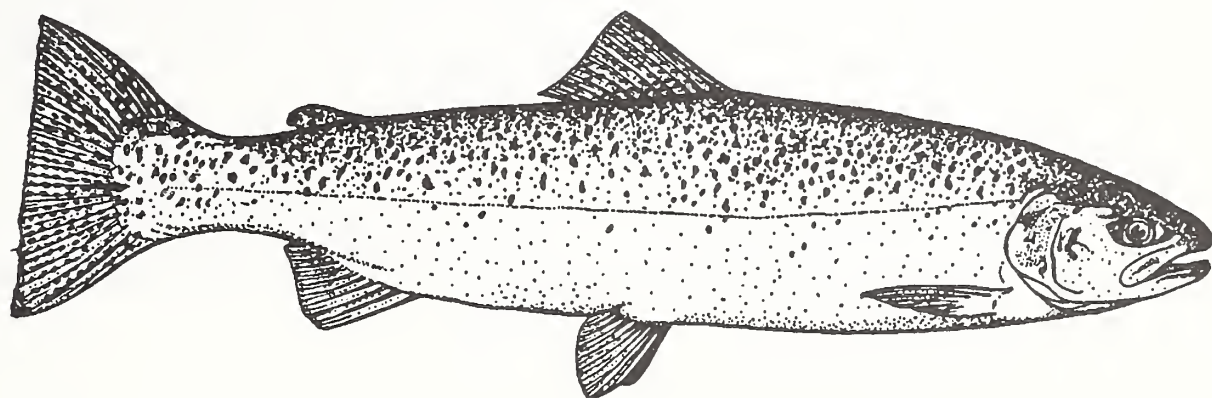
References.

Baxter, G.T. and J.R. Simon. 1970. Wyoming fishes. Wyoming Game and Fish Dept., Bull. No. 4, Cheyenne. 168 pp.

Simpson, J.C. and R.L. Wallace. 1982. Fishes of Idaho. Univ. Press of Idaho, Moscow. 238 pp.

STEELHEAD TROUT

Oncorhynchus mykiss
Salmonidae

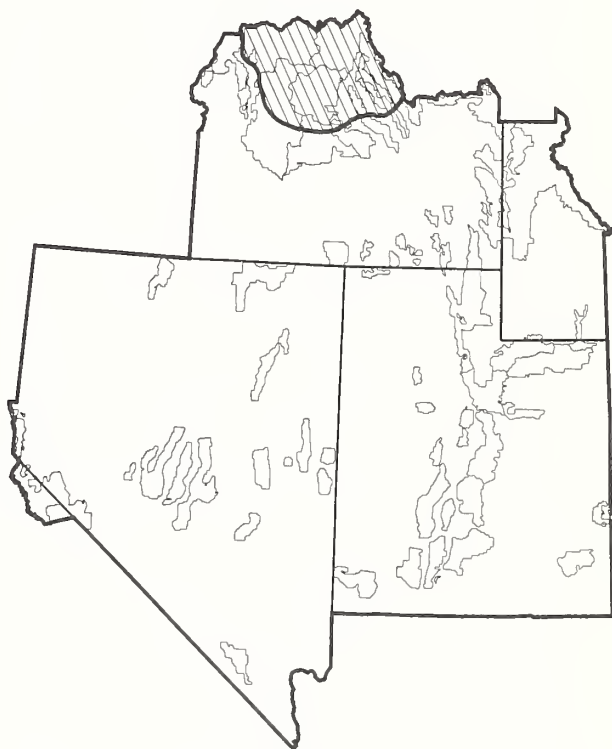


USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage/Global State Status: G5/ID-G4

Distribution.—Steelhead trout are found along the Pacific Coast from the Alaska Peninsula south to California and inland to the Rocky Mountains. In the Intermountain Region steelhead occur in the Snake and Salmon river drainages.

Description.—The steelhead trout is an anadromous form of rainbow trout spending part of its life in the ocean and returning inland to spawn in freshwater streams. Its body is elongate and moderately compressed averaging 20-30 inches in length. Its back and sides are bluish to olive-green and its belly is silver. Irregular black spots are present on the head, back, and sides with few below the lateral line.

Reproduction.—Steelhead trout spawn from March-July but may enter freshwater streams several months before spawning. The female digs several nests (redds) in the gravel with her tail and deposits over 1000 eggs in each. Redds are usually located at the tail of a gravelly pool or at the riffle at the head of a pool. Males court and defend the female while she constructs her nests. After the eggs are fertilized, the female digs up gravel above the nest which covers the eggs. Incubation lasts 3-4 weeks and fry emerge from the gravel 2-3 weeks later. Juveniles remain in freshwater streams for 2-3 years before migrating to the Pacific



Current range of the steelhead trout in the Intermountain Region.

Ocean. They spend 1-3 years in the ocean before returning to their natal streams to spawn. Sexual maturity is reached at 2-5 years. Unlike chinook and sockeye salmon, many steelhead survive after spawning. In areas closer to the ocean they return to the ocean and then back to freshwater to spawn. In the upper Columbia River basin however, this phenomenon is almost non-existent.

Food.—Steelhead trout feed on aquatic insects, crustaceans, and zooplankton. They also eat other fish and fish eggs. They will aggressively defend their feeding areas. While in freshwater steelhead generally do not feed.

Habitat.—Steelhead spend part of their lives in the Pacific Ocean and part of their lives inland where they inhabit small, headwater streams and larger rivers. Like other salmonids, steelhead require cool, clear water, silt-free gravel substrates, well-vegetated banks for shading and bank stability, and abundant instream cover such as boulders, logs, and undercut banks. In winter, deep pools with low velocity and extensive cover are important for shelter from weather. Steelhead trout are also found in large inland lakes.

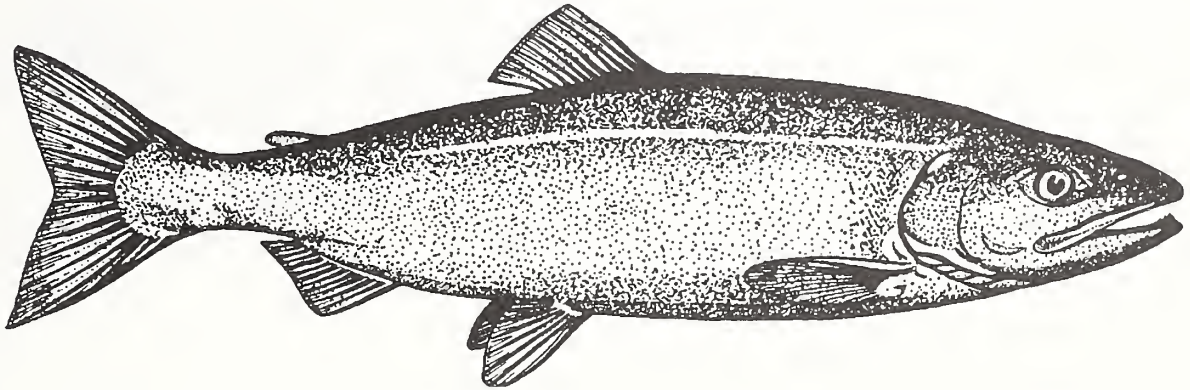
Management Implications.—Wild and naturally reproducing steelhead runs in the Columbia basin have declined mainly due to construction of several major dams along their migration routes. Dams cause considerable problems for migrating steelhead including mortality from turbines, increased predation in impoundments and below dams, and loss of migratory motivation in the impoundments. Loss and degradation of spawning and rearing habitats from logging, road construction, mining, and grazing, all of which decrease water quality and increase siltation, have contributed to declines as well. Currently hatchery stock are being used to maintain runs in many areas.

References.

- Simpson, J.C. and R.L. Wallace. 1982. *Fishes of Idaho*. Univ. Press of Idaho, Moscow. 238 pp.
- Sternberg, D. 1987. *Freshwater gamefish of North America*. Prentice Hall Press, New York. 160 pp.

SOCKEYE SALMON

Oncorhynchus nerka
Salmonidae



USFWS Status: Proposed for listing as Endangered
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G5/ID-S1

Distribution.—Sockeye salmon range from Point Hope, Alaska south to the Klamath River, California. In the Intermountain Region, spawning habitat is currently limited to Redfish Lake in the Stanley Basin, Idaho.

Description.—The sockeye salmon has a brilliant steel-blue to bluish green back with silvery sides and a white belly. It lacks distinct spots but may have speckles on its back. At spawning time both sexes turn bright red on the back and the male's snout becomes long and hooked. The body is elongated and stream-lined and lacks spotting. Adult sockeye salmon generally range in size from 20-25 in.

Reproduction.—Sockeye salmon are anadromous, meaning they hatch in freshwater, spend their adult lives in the ocean, and return inland, as far as 900 miles, to freshwater streams to spawn. Sockeye begin their spawning migration up the Columbia River in June and spawn in late summer to early fall. The female digs a series of nests (redds) in gravel and deposits her eggs. Both sexes guard the nest until they die. Normally, smolts spend their first 2 years in freshwater, then migrate to the ocean where they spend 2 more years before returning to spawn. However, they may spawn as early as 3 years or as late as 9 years. They generally spawn in inlet or outlet streams of lakes or sometimes in beaches



Current range of the sockeye salmon in the Intermountain Region.

of the lake itself at water temperatures of 45-52°F. Both inlet/outlet spawners and beach spawners occur in the Inter-mountain Region. All juveniles are reared in the lakes prior to migration to the ocean.

Food.—The diet of sockeye salmon consists mainly of plankton and crustaceans.

Habitat.—Sockeye salmon require cool, clear, silt-free streams and lakes as juveniles. As adults they live in the north Pacific off the coast of Alaska, Canada, Washington, and Oregon.

Management Implications.—Sockeye salmon originally spawned in tributaries of Payette Lake, Idaho and Stanley, Redfish, and Alturas lakes in the Stanley Basin, Idaho. Sockeye salmon populations in this region have almost been extirpated from man-made causes. Downriver migration of smolts has declined drastically due to construction of several major dams on the Columbia and Snake rivers. Juveniles

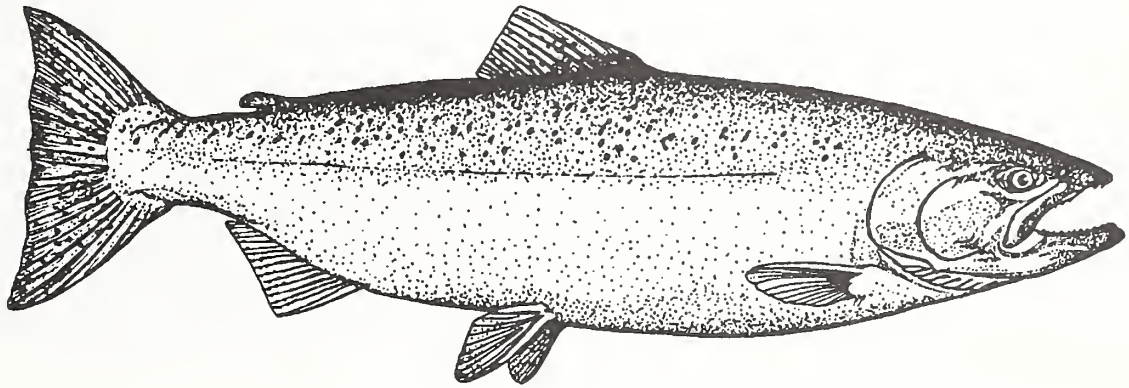
are lost from dam turbines, increased predation in impoundments and below dams, and loss of migratory motivation in the impoundments. Loss of adults has primarily been due to dam construction and irrigation diversions that block upstream passage. Spawning habitat has also been eliminated and degraded from logging, road construction, mining, and grazing further contributing to the declines.

References.

- Moyle, P.B. 1976. Inland fishes of California. Univ. of California Press, Berkeley, Los Angeles, London. 405 pp.
- Simpson, J.C. and R.L. Wallace. 1982. Fishes of Idaho. Univ. Press of Idaho, Moscow. 238 pp.
- Sternberg, D. 1987. Freshwater gamefish of North America. Prentice Hall Press, New York. 160 pp.

CHINOOK SALMON

Oncorhynchus tshawytscha
Salmonidae



USFWS Status: Not listed (Currently being evaluated by the National Marine Fisheries Service)

USFS Region 4 Status: Sensitive

State List: CA, ID

Heritage Global/State Status: G5/CA-S1, ID-S3

Distribution.—Chinook salmon are found along the Pacific Ocean from Alaska south to southern California. In the Intermountain Region chinook spawn mainly in the South Fork of the Salmon River in Idaho.

Description.—The chinook salmon is a large, anadromous salmonid important to commercial, ceremonial, and sport fisheries. It has a stream-lined body that tapers at the tail and head, with the lower jaw coming to a point. Spawning males have a hooked jaw and a slightly humped back. The back is greenish-blue to black, the sides are silver, and the belly is white. Small black spots are present on the head, back, sides, tail, and fins. Adult chinook salmon average 20-50 inches in length and commonly reach 15-25 pounds or more.

Reproduction.—Chinook salmon spend their adult lives in the ocean but return inland to freshwater streams to spawn. They are very strong swimmers and may travel 900-1200 miles inland to spawn. Spring chinook begin their migration up the Columbia River in June-May and spawn in early August-mid-September. Summer chinook begin migration in June-July and spawn late August-early October. Fall chinook begin migration in August-September and spawn in



Current range of the chinook salmon in the Intermountain Region.

October and November. Fall chinook have been very nearly extirpated from habitats in the Intermountain Region. Spawning begins 2-3 weeks after arrival on the spawning grounds. The female builds a large nest (redd) in a gravel bed, typically at the tail end of a pool (where a pool begins to break into a riffle), and deposits about 4000 eggs. She is generally attended by 1 dominant male and several smaller males. After spawning, the female guards her eggs for a few days to a few weeks, and then dies. Males also die shortly after spawning but may attend more than 1 female. Incubation lasts 5-6 months depending on water temperatures. After hatching the fry remain in the gravel for 30 days until the yolk sack is absorbed. They then emerge and begin feeding. Some juveniles remain in the natal areas for a few months while others spend up to 2 years in the natal stream before migrating to the ocean as smolts. Chinook spawn at 2-5 years of age. For spawning success, they require streams with clean gravel substrates and water temperatures of 40-55 °F.

Food.—Young chinook in freshwater feed on aquatic and terrestrial insects. Adults in the ocean feed on zooplankton, crustaceans, and fish. They do not feed while migrating to their spawning areas.

Habitat.—Chinook salmon are found in a variety of aquatic habitats depending on the stage of their life. As juveniles they occur in clear, cool streams with good cover provided by vegetation, large organic material, and boulders. As adults they live in the north Pacific Ocean off the coast of

southeast Alaska, Canada, Washington, and northern Oregon.

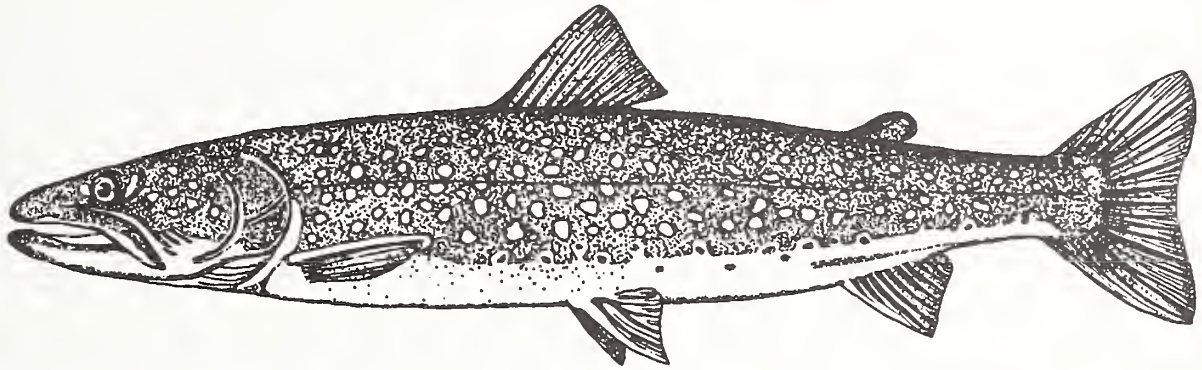
Management Implications.—Chinook salmon originally occurred in almost all accessible tributaries of the Columbia River including the Snake River and its tributaries up to Shoshone Falls, Idaho. The range of chinook has been substantially reduced by construction of several major dams along the Columbia and Snake rivers which block fish passage and cause loss of juveniles from dam turbines, increased predation in impoundments and below dams, and loss of migration motivation in the impoundments. Loss and degradation of spawning habitat from siltation caused by timber harvest, livestock grazing, road construction, and mining has caused declines as well. Management actions have included aiding downstream passage around dams by trucking smolts around dams and by construction of fish ladders to aid upstream passage of adults. Hatchery programs and protection of remaining spawning habitat has helped to maintain some runs of chinook salmon.

References.

- Moyle, P.B. 1976. Inland fishes of California. Univ. of California Press, Berkeley, Los Angeles, London. 405 pp.
- Simpson, J.C. and R.L. Wallace. 1982. Fishes of Idaho. Univ. Press of Idaho, Moscow. 238 pp.
- Sternberg, D. 1987. Freshwater gamefish of North America. Prentice Hall Press, New York. 160 pp.

BULL TROUT

Salvelinus confluentus
Salmonidae



USFWS Status: C2

USFS Region 4 Status: Sensitive

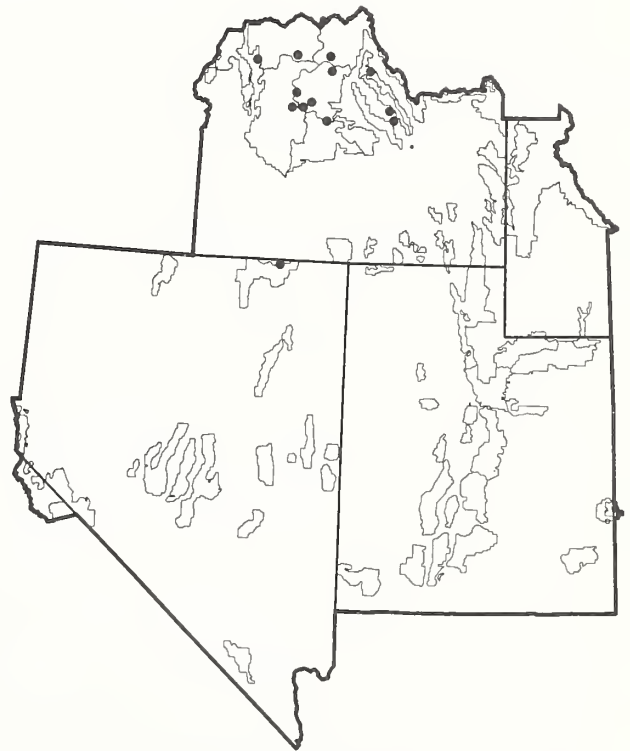
State List: CA, ID

Heritage Global/State Status: G4/CA-S1, ID-S2, NV-S?

Distribution.—Bull trout occur from southeastern Alaska and northern British Columbia south to western Montana, Idaho, and extreme northern Nevada. In the Intermountain Region, they are found in larger tributaries of the Snake River below Shoshone Falls and the Salmon River drainage in Idaho and in the Jarbidge River system in Nevada.

Description.—The bull trout is similar in appearance to the Dolly Varden and until recently, they were considered one species. The species was split in 1978 with the coastal form called Dolly Varden (*Salvelinus malma*) and the inland form called bull trout. The bull trout has a rounded, slightly compressed body averaging 12-25 inches in length. Bull trout in excess of 30 in. were historically present. Loss of anadromous trout stocks has resulted in the loss of these very large bull trout specimens. It is basically olive-green to brown in color with grayish to dark green sides. The back is spotted pale yellow and pinkish orange spots are present on the sides. The fins are marked with white on the leading edges.

Reproduction.—River-dwelling bull trout move into small tributaries and lake-dwellers move to inlet streams in spring. Spawning takes place in late summer or fall. The female digs several nests (redds) in a gravel bed, usually at the tail



Current range of the bull trout in the Intermountain Region.

end of a riffle, and lays 900-10,000 eggs. During this time she is attended by a dominant male. After spawning both adults return to the river or lake. Eggs hatch in January and fry emerge from the gravel in early spring. Most juveniles migrate to larger rivers or to a lake by mid-summer, while some may stay in their spawning streams for 2-3 years. Bull trout reach sexual maturity at 4-5 years of age.

Food.—Bull trout prey mainly on fish. However, they are opportunistic feeders and will eat insects, crustaceans, and mollusks. They also have been known to eat small vertebrates such as mice, frogs, and ducklings.

Habitat.—Bull trout live in lakes and deep pools of large coldwater streams. River dwelling bull trout are usually found close to the bottom in moderate to fast currents with water temperatures of 45-50 °F. They also winter in deep pools and move to lower reaches of mainstream rivers. Lake dwelling bull trout inhabit all depths during fall, winter, and spring. In summer they move to deeper water where cooler temperatures occur. Areas with large woody debris and rubble substrate are important as juvenile rearing habitat.

Management Implications.—Land management activities that damage riparian areas and cause stream siltation such

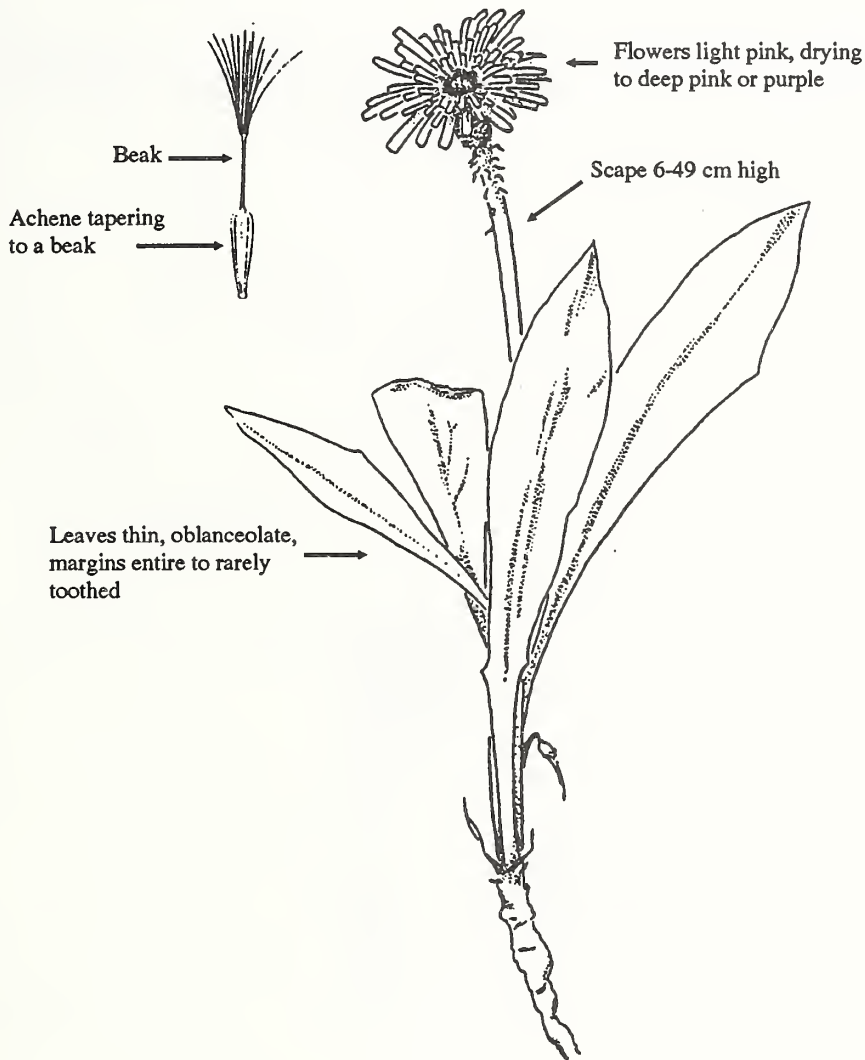
as logging, road construction, and grazing are harmful to bull trout spawning habitat. Hybridization with brook trout (*Salvelinus fontinalis*) has also contributed to population declines. Management efforts for the bull trout should include habitat improvement such as the creation of instream structures that provide pockets of slow water for rearing of juveniles, and protection from introduced brook trout.

References.

- Cavender, T.M. 1978. Taxonomy and distribution of the bull trout, *Salvelinus confluentus* (Suckley), from the American Northwest. California Game and Fish 64(3):139-174.
- Goetz, F. 1989. Biology of the bull trout, a literature review. Willamette National Forest. 53 pp.
- Moyle, P.B. 1976. Inland fishes of California. Univ. of California Press, Berkeley, Los Angeles, London. 405 pp.
- Simpson, J.C. and R.L. Wallace. 1982. Fishes of Idaho. Univ. Press of Idaho, Moscow. 238 pp.

PINK AGOSERIS

Agoseris lackschewitzii Henderson, Moseley, and Cholewa
Asteraceae (Compositae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G2/ID-S1

Description.—Pink agoseris, a member of the Aster family, has a simple or branched caudex which arises from a long slender taproot. It produces a basal rosette and 1-3 stems. The leaves are thin, oblanceolate, 6-20 cm long, entire to rarely toothed and slightly curved. The stems are 6-49 cm high topped with a solitary head. The ligulate flowers are light pink with 8-10 mm long, 5-toothed ligules. The style is purple with a rounded stigma.

Reproduction.—This agoseris flowers from mid July to August. The fruit, an achene, gradually tapers to a slender, obscurely nerved beak. The pappus is 6-10 mm long, double, very slender, and white. Plants overwinter through their perennial root. New plants also form from germinating seeds.

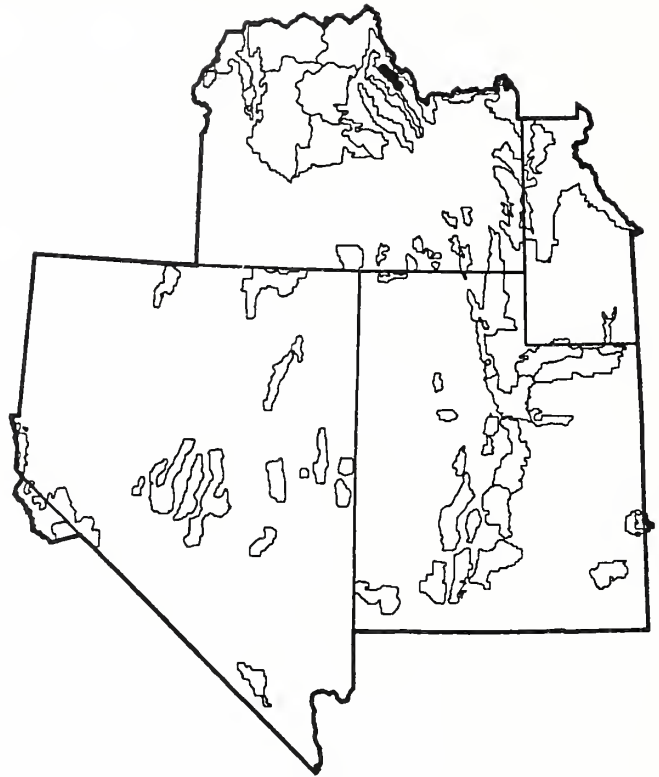
Habitat.—This plant is restricted to perennially wet montane meadows on a variety of substrates in which the soil is saturated throughout the growing season. Elevation is mid-montane to subalpine.

Distribution.—Fremont and Lemhi Counties, Idaho and southwestern Montana.

Management Implications.—Livestock grazing is the only known potential threat to this species, as AMP'S are revised, an analysis should be made to determine impacts, if any, and appropriate measures taken to ensure species viability.

References.

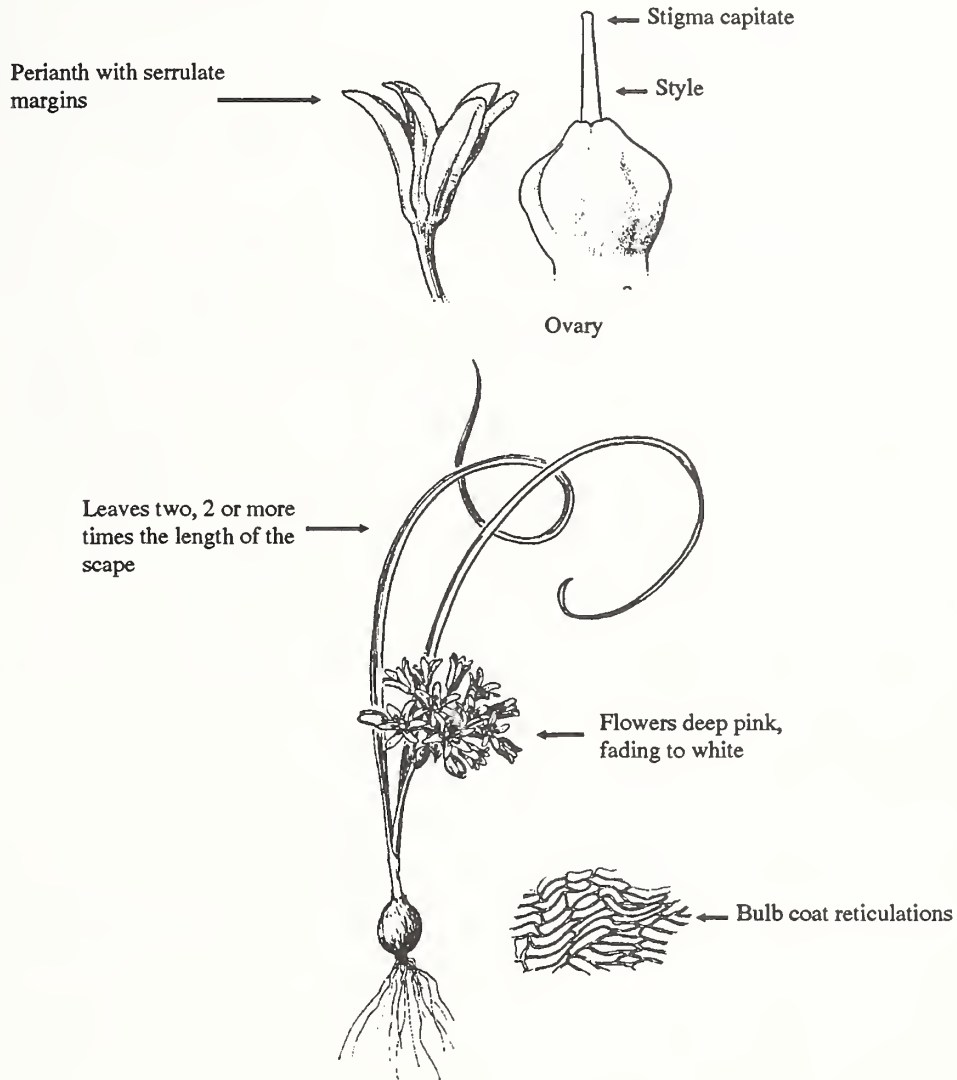
Henderson, D.M., Mosely, R.K., and A.F. Cholewa. 1990. A new *Agoseris* (Asteraceae) from Idaho and Montana. *Syst. Bot.* 15(3):462-465.



Distribution of *Agoseris lackschewitzii* in the Intermountain Region.

AASE'S ONION

Allium aaseae Ownbey
Liliaceae



USFWS Status: C1

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3/ID-S3

Description.—Aase's onion is a member of the lily family whose slightly flattened stem (1-5 cm long, 1-3 cm above ground) grows from an ovoid bulb with whitish or red inner layers and grayish or brownish outer layers. Two linear, channeled leaves which are at least twice as long as the stem arise from the base. There are 5-10 deep pink fading to white flowers in each cluster. The yellowish-purple stamens are

much shorter than the perianth. The ovary is crestless and the style is inserted.

Reproduction.—In late winter just after the ground thaws, the onion's characteristic 2 leaves appear. It develops quickly so that its small flowers begin blooming in March and continue through April. The flowers are pollinated randomly by many types of insects. The perianth becomes papery in fruit and the seeds are a shiny black. Seed dispersal occurs via wind currents. Following seed dispersal in May, the onion returns to dormancy.

Habitat.—Aase's onion occurs on bare sedimentary soil with fine gravel surfaces or gravelly river benches most

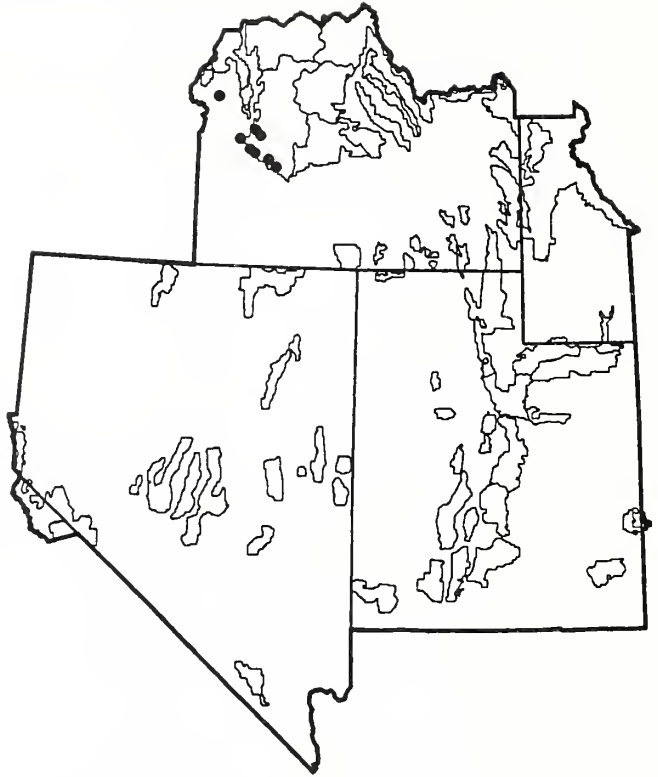
often on steep southerly exposures. Elevation between 2,850-4,400 feet. It is often found growing with *Purshia* and *Eriogonum* within sagebrush/grass zones. It is endemic to Glens Ferry Formation soil types.

Distribution.—It is limited in distribution from west central Idaho in Ada, Gem, Washington, Boise, and Elmore counties.

Management Implications.—Large animals easily disturb this plant by trampling. Competition for water occurs with weedy exotics. ORV's, mining, and land development are the greatest threats. Much of this allium's habitat is adjacent to and within suburban areas and some sites have already been destroyed. Preserves or protected botanical areas need to be established to provide adequate protection for essential habitat. Land acquisitions are also a viable alternative to acquiring and protecting areas critical to the species survival.

References.

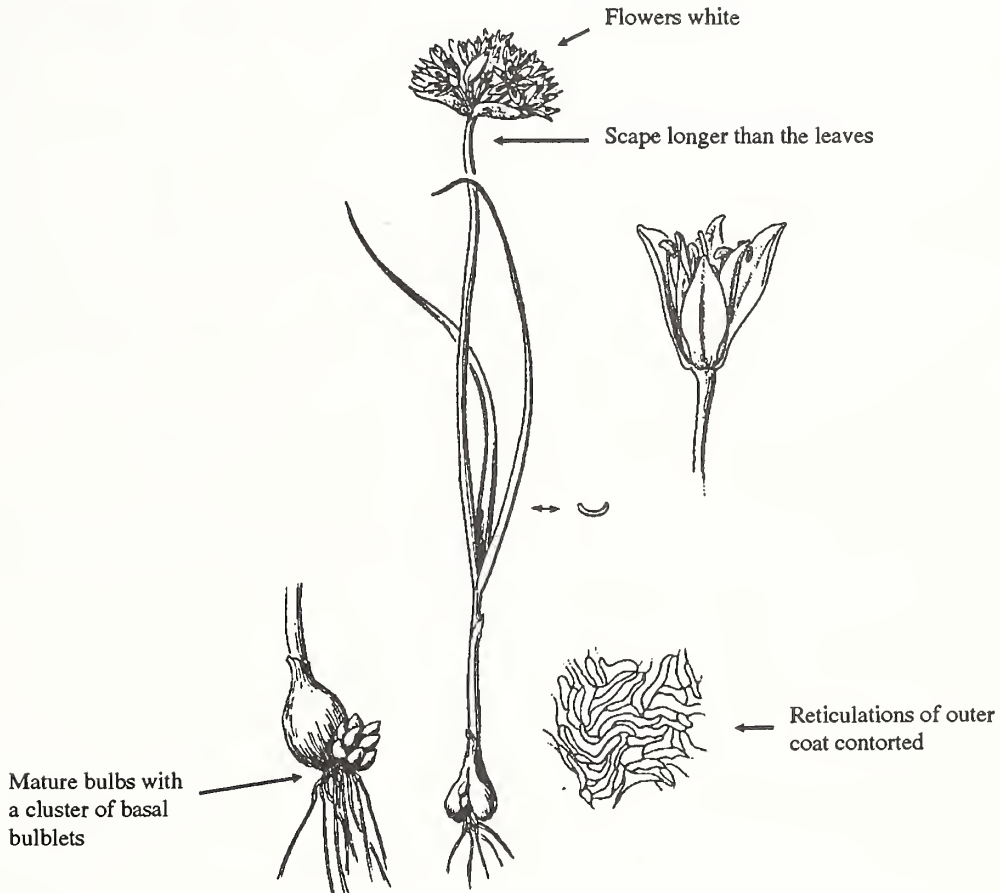
- Ownbey, M. 1950. The genus *Allium* in Idaho. Res. Stud. St. Coll. Wash. 18:38.
- Bolin, R. and R. Rosentreter. 1988. The autecology of *Allium aaseae*, a southwestern Idaho endemic. Unpubl. manuscript.



Distribution of *Allium aaseae*.

SWAMP ONION

Allium madidum S. Wats.
Liliaceae



USFWS Status: 3C
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G3/ID-S2

Description.—A member of the lily family, swamp onion has a slender stem, circular in cross-section, 1-2 dm long, which arises from an ovoid bulb. A cluster of easily detached bulblets are located at 1 side of the base of the mature bulb. The outer layers of the bulb are gray to brown and contorted while the inner layers are white to pink. This plant has 2 concave-convex leaves which are about equal in the length to the stem. A cluster of white flowers with green

midribs or pink with prominent midribs top each stem. Each flower is supported by a stalk which is less than twice the length of the perianth. The perianth segments are 6-10 mm long and curl at the tip. The stamens are shorter than the perianth with oblong, yellowish to purplish anthers. The ovary is crestless or obscurely crested with 3 low processes.

Reproduction.—A perennial, swamp onion flowers from early May through early July. The perianth becomes papery and the bracts become twisted in fruit. The seeds are a dull black. Bulbs overwinter underground and produce new

shoots the following season. The bulblets also develop into young plants.

Habitat.—Swamp onion occurs in seasonally wet meadows along low ground water courses and around vernal pools. Elevation between 3,800-6,500 feet.

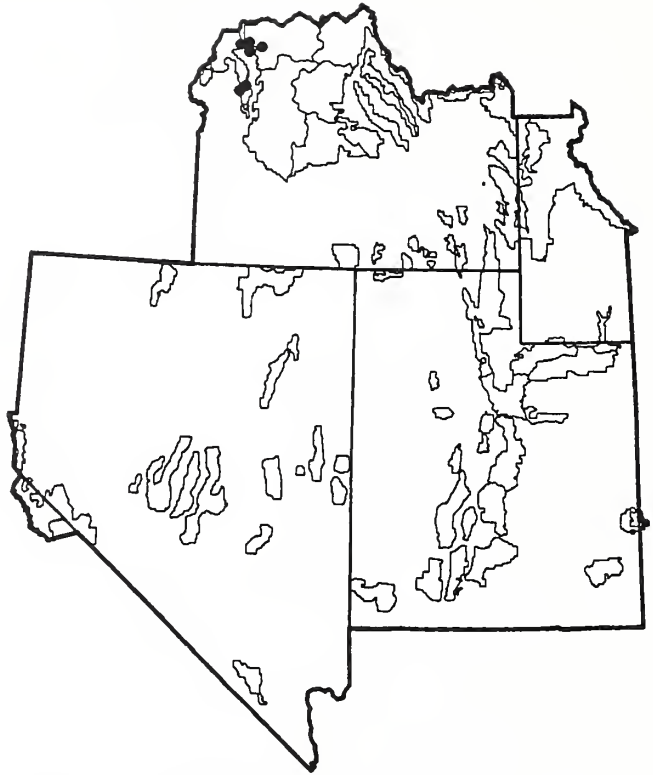
Distribution.—This plant is located in the Blue Mountains of eastern Oregon and western Idaho, near Payette Lake, Valley County, and near New Meadows, Adams County, Idaho.

Management Implications—Recreation and timber harvesting are potential impacts to the species and its habitat. Sensitive plant clearances should be conducted on all projects likely to impact known and potential habitats.

References.

Ownbey, M. 1950. The genus *Allium* in Idaho. Res. Stud. St. Coll. Wash. 18:3-39.

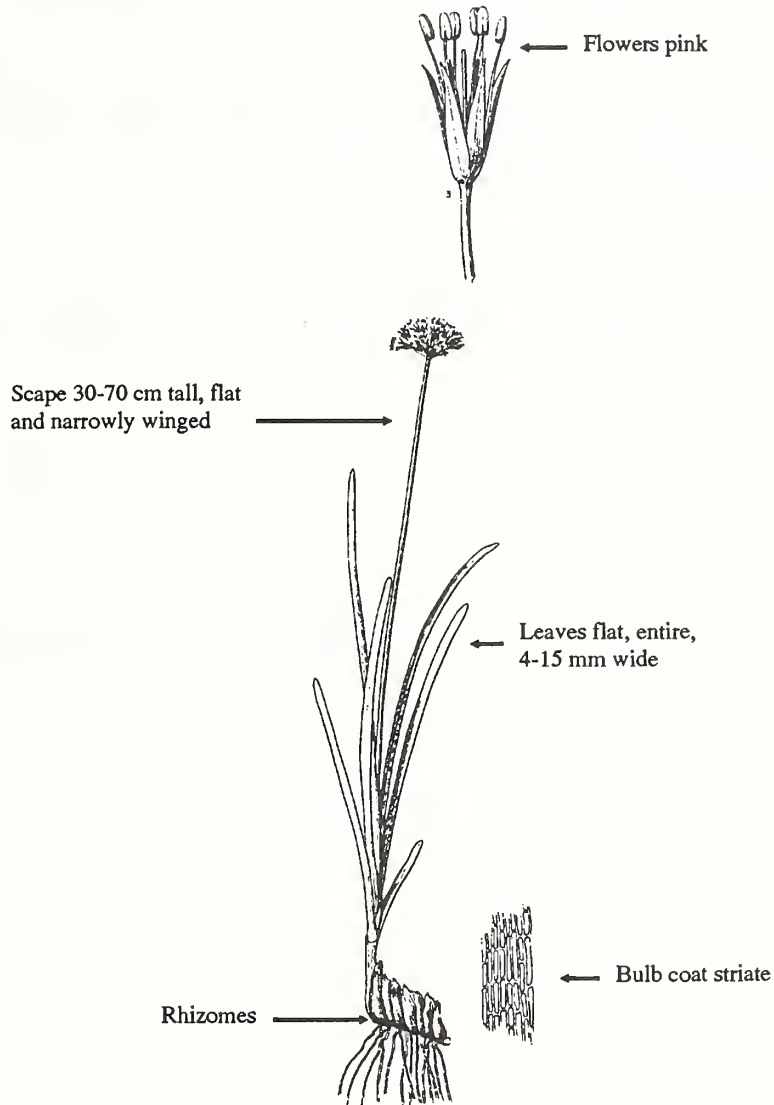
Watson, S. 1879. Original description. Proc. Amer. Acad. 14:228.



Distribution of *Allium madidum* in the Intermountain Region.

TALL SWAMP ONION

Allium validum S. Wats.
Liliaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G4/ID-S1

Description.—Tall swamp onion, a member of the lily family, is distinctive for its numerous flattened leaves that arise around a flattened stem. The leaves are shorter than the stem. The stem arises from an elongate bulb attached to an elongate rhizome and grows to 3-7 dm tall. The outer layers of the bulb are brown with parallel striate fibers and the inner layers are reddish-purple to white. A pair of sheathing bracts appear beneath the cluster of flowers that

tip the stem. There are 15-30 pink flowers with petals 8-10 mm long. The stamens are much exserted with yellowish to purplish anthers. The ovary is crestless and the style is exserted.

Reproduction.—Tall swamp onion flowers in late June through August and later forms seeds. A perennial plant, it also reproduces vegetatively through rhizomes that grow beneath the soil surface. The petals wither in fruit. The capsules are longer than broad and the seeds are long and slender.

Habitat.—This onion is located in swampy meadows, springs, and along boggy lake edges. Most sites are found in mountainous areas at mid to high elevations.

Distribution.—This plant is distributed throughout the great basin from the east side of the Cascades from British Columbia to California, east to northeast Nevada and western Idaho.

Management Implications.—Livestock grazing, mining, and timber harvesting are the most significant impacts to this species. Improvement in riparian area conditions would provide more stable habitat for species viability.

References.

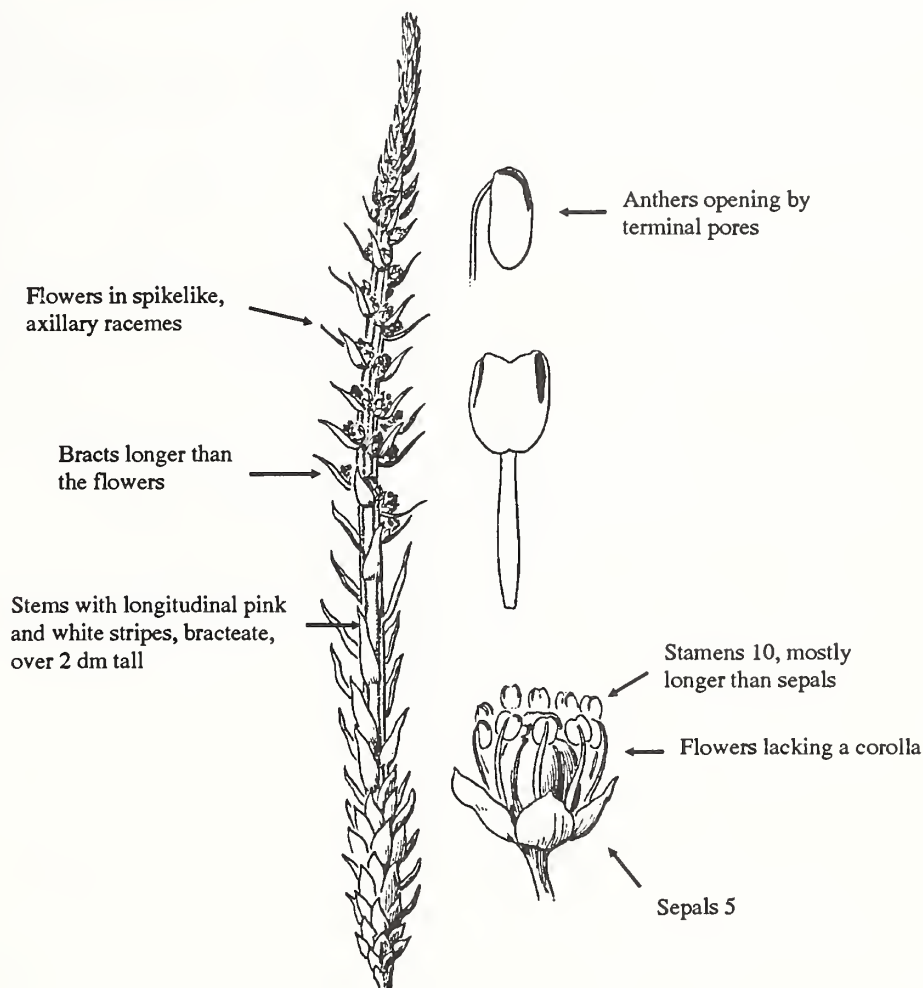
Watson, S. 1871. Botany U.S. Geol. Expl. 5:350.
Washington, D.C.: Government Printing Office.



Distribution of *Allium validum* in Idaho.

CANDYSTICK

Allotropa virgata T. and G. ex Gray
Ericaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S1

Description.—Candystick's tall pink and white striped stems (1-4 dm tall) make this species stand out in the forest. Linear-lanceolate, pink to yellow-brown leaves spiral upwards around the stem. The stems are tipped by a 2-10 flowered inflorescence. Flowers appear singly above 1 to several bracts. No petals are present, but 5 short, white or pinkish to brownish sepals make up the flowers. Ten purplish stamens, which are equal to or twice as long as the

sepals, are present. The 5-lobed ovary is superior with a very short style. Candystick is a saprophyte, obtaining its nutrients from non-living organic material found in forest soils.

Reproduction.—A perennial, candystick flowers from May through August. It forms seed capsules before it dies back to the rhizome.

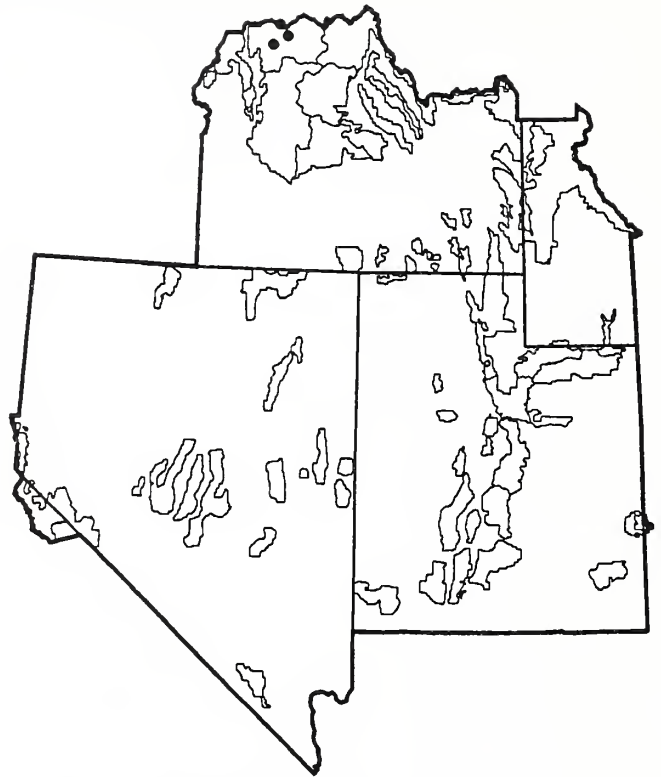
Habitat.—Deep humus or partially decomposed logs are likely places to find candystick growing. It is generally found in the shaded areas of old growth coniferous forests. Elevation between 2,300-6,700 feet. It grows in association with *Abies*, *Thuja*, *Pinus*, and *Xerophyllum*.

Distribution.—This plant occurs primarily west of the Cascades from British Columbia to California with disjunct populations in Idaho and Montana.

Management Implications.—A species of mature forests, candystick depends on well-developed humus areas. Any major activity that changes the overstory or ground cover in these areas is likely to influence this plant.

References.

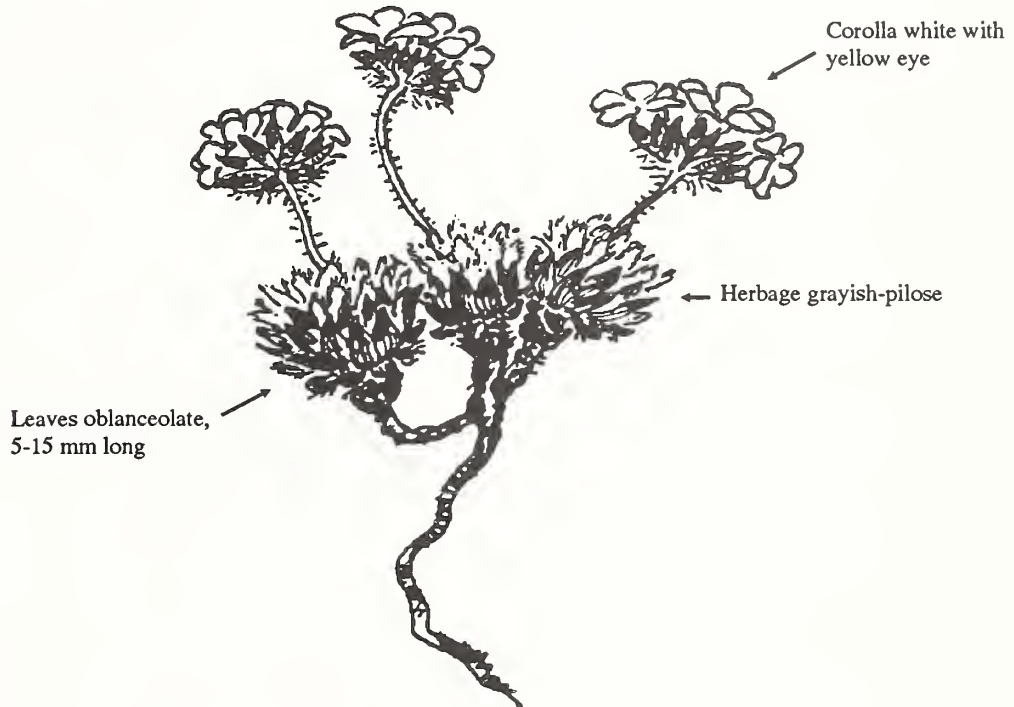
Copeland, H.F. 1938. The structure of *Allotropia*. Madrono 4:137-168.



Distribution of *Allotropia virgata* in the Intermountain Region.

SWEET-FLOWERED ROCK JASMINE

Androsace chamaejasme Wulf. var. *carinata* (Torr.) Knuth
Primulaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T4/WY-S1

Description.—Sweet-flowered rock jasmine grows with a mat forming characteristic. The flowering stems are 1.2-5.0 cm tall. The leaves are oblanceolate, 2-8 mm long with hairs on the underside. Flowers occur in clusters of at least 2. They are white to cream (fading pinkish) with a yellow center eye. The herbage is grayish-pilose.

Reproduction.—A perennial herb, this plant arises from a perennial rootstock through basal rosettes and flowers from

late May to late July. New plants also form from seeds produced each year.

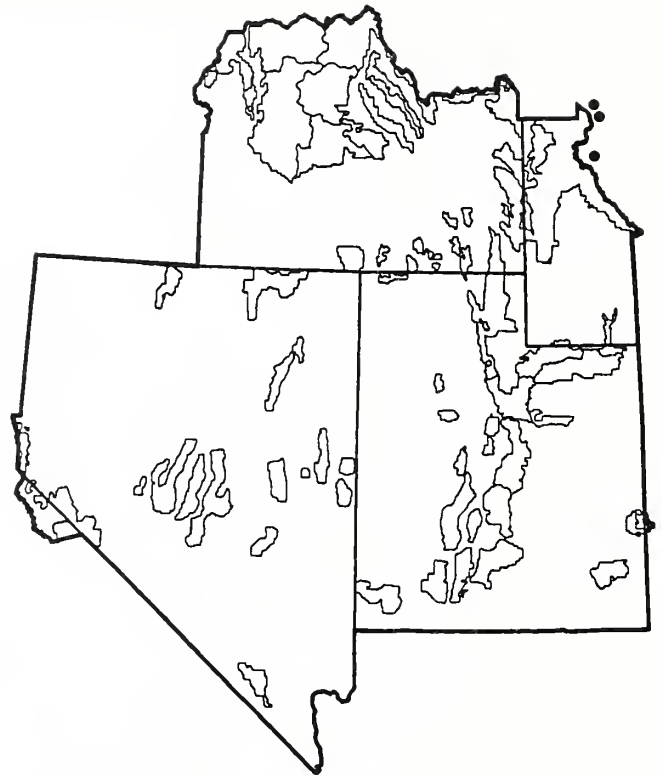
Habitat.—This jasmine grows in rock crevices and on mountain slopes. Elevation between 9,500-10,800 feet.

Distribution.—Globally sweet-flowered rock jasmine grows from Alaska to Wyoming.

Management Implications.—Major threats are from mining and domestic and wild sheep grazing. Essential habitat areas should be determined to provide protection and in order to maintain viable population levels.

References.

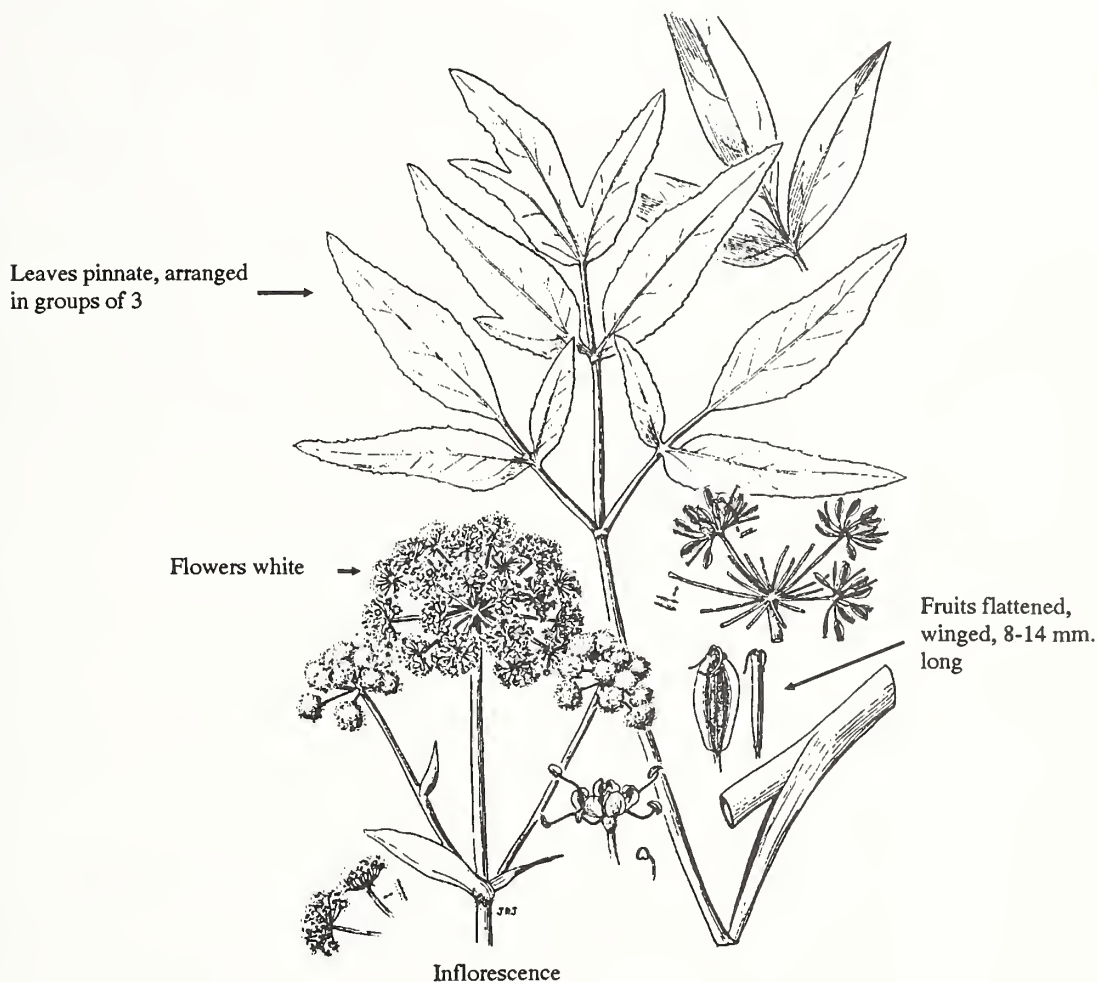
Robbins, G.T. 1944. North American species of *Androsace*. Amer. Midl. Natur. 32:137-163.



Distribution of *Androsace chamaejasme* var. *carinata* in the Intermountain Region.

CHARLESTON ANGELICA

Angelica scabrida Clokey and Mathias
Apiaceae (Umbelliferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2

Description.—Charleston angelica is a tall perennial, up to 15 dm high, with alternate, ternate-pinnate leaves. The pubescent stems have large basal leaves with lanceolate to ovate-lanceolate and glabrous leaflets 8-16 cm long. Each marginal tooth of the leaflets bears a small spine at the tip. Flowers are in umbels of 25-32 unequal length stalks each supporting about 40 stalked white flowers. The pedicels and

stalks are roughened. The fruits are flattened, 8-14 mm long, with narrow wings and are rough or smooth at maturity.

Reproduction.—A tall perennial blooming in July and early August. The flattened, 8-14 mm long, narrowly winged fruits are set in late July to August. These germinate in July to produce new plants. Mature plants overwinter through the underground perennial root.

Habitat.—It occupies aspen, mountain mahogany, ponderosa pine, and wash communities on gravelly soils between 4,315 and 8,400 feet elevation.

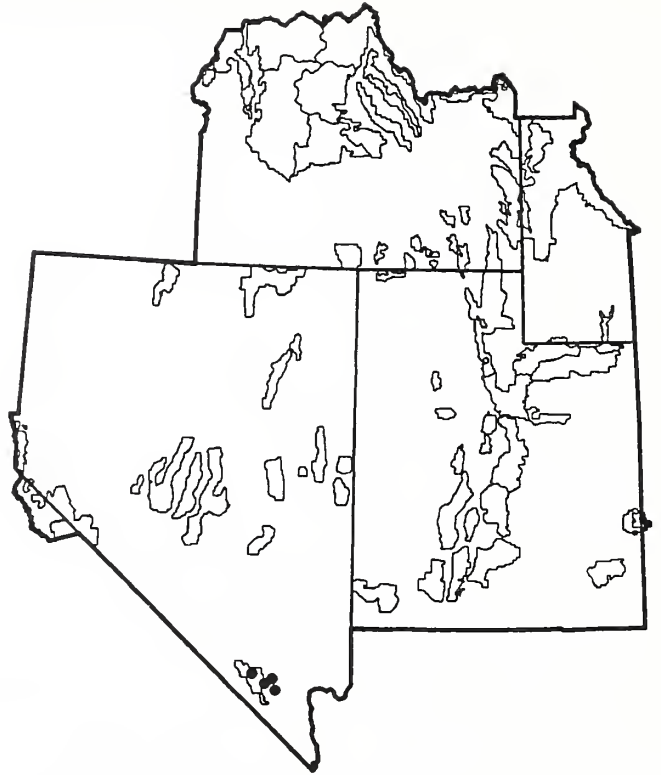
Distribution.—Charleston angelica is endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—The major threats to this species are from recreation users and road construction or improvement. The Latin name angelica (angelic) refers to the medicinal properties. The potential medicinal value of this species has not been determined.

References.

Clokey, I.W. 1951. Flora of the Charleston Mountains, Clark County, Nevada. Univ. of California Press, Berkeley and Los Angeles. 274 pp.

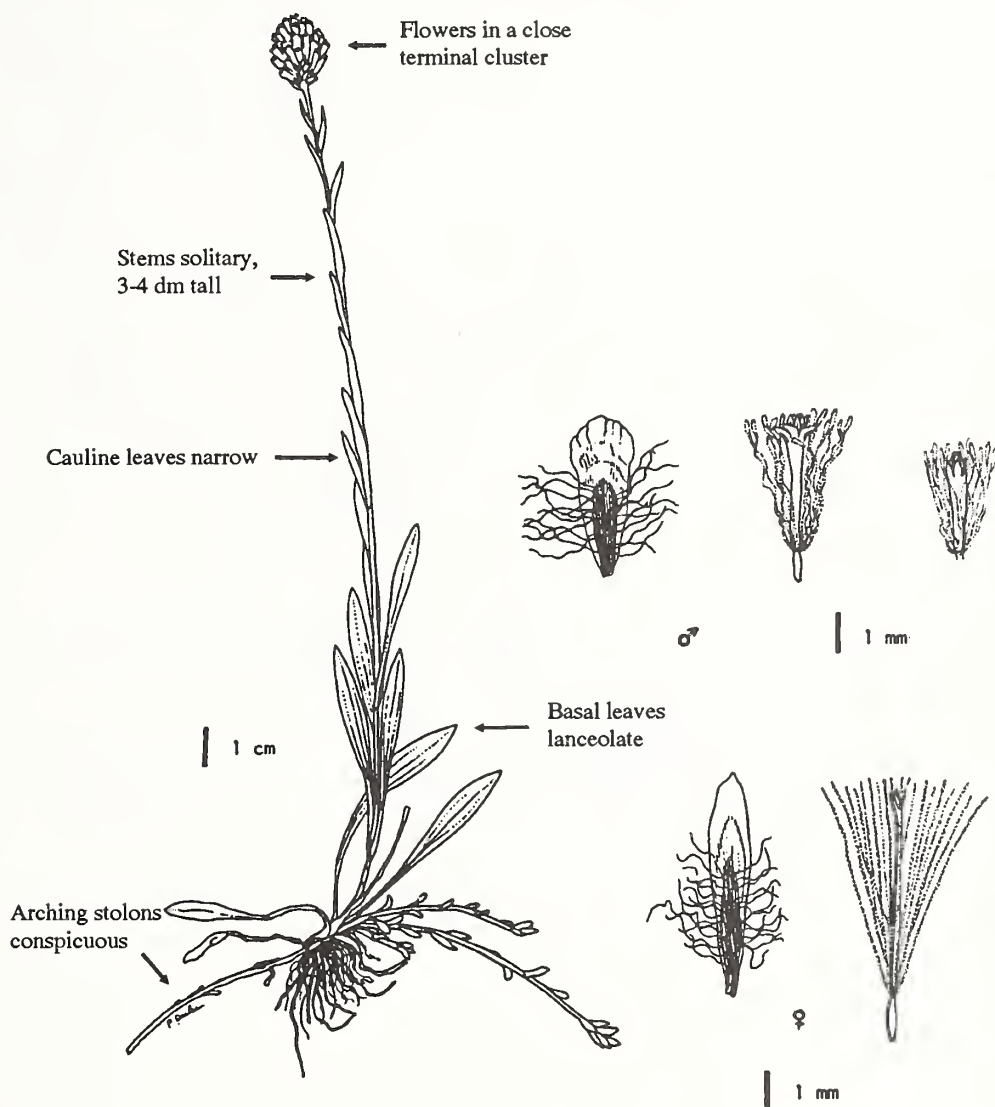
Clokey, I.W. and M.E. Mathias. 1983. So. Calif. Acad. Sci. Bull. 38:8.



Distribution of *Angelica scabrida*.

MEADOW PUSSYTOES

Antennaria arcuata Cronq.
Asteraceae (Compositae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not Listed
Heritage Global/State Status: G2/NV-S1

Description.—A loosely white-wooly plant, the distinctive characteristic of this *Antennaria* is the conspicuously arching stolons which are 1 dm long. Each stolon roots late in the season and produces a single erect flowering stem, 3-4 dm tall. The few basal leaves are oblanceolate, while the stem leaves are narrow gradually reducing upward. The flowering heads are numerous and aggregated in terminal clusters. The bracts are white and striated. The petals of the

male plants are proportionately shorter and wider than the female.

Reproduction.—The arching stolons root late in the season and produce a short-lived plant with a single erect flowering stem. Flowering occurs in July and August, with the mature achenes developing in late July to mid-September.

Habitat.—This *Antennaria* occupies small, bare or lichen covered spots of soil in sedge-grass meadows. It also grows at the edge of wild hay meadows that are not permanently wet. Elevation between 5,250-6,400 feet.

Distribution.—Locations include Blaine County, Idaho, Steens Mountain, Oregon, northeastern Nevada in Elko County, and southwestern Wyoming in Fremont County.

Management Implications.—Some grazing trespass occurs on the habitat sites, but appears to have little impact. Increased grazing may jeopardize the population. Additional threats come from plowing and reseeding nearby meadows. Monitoring studies are needed to determine the species status, use, condition, and trends.

References.

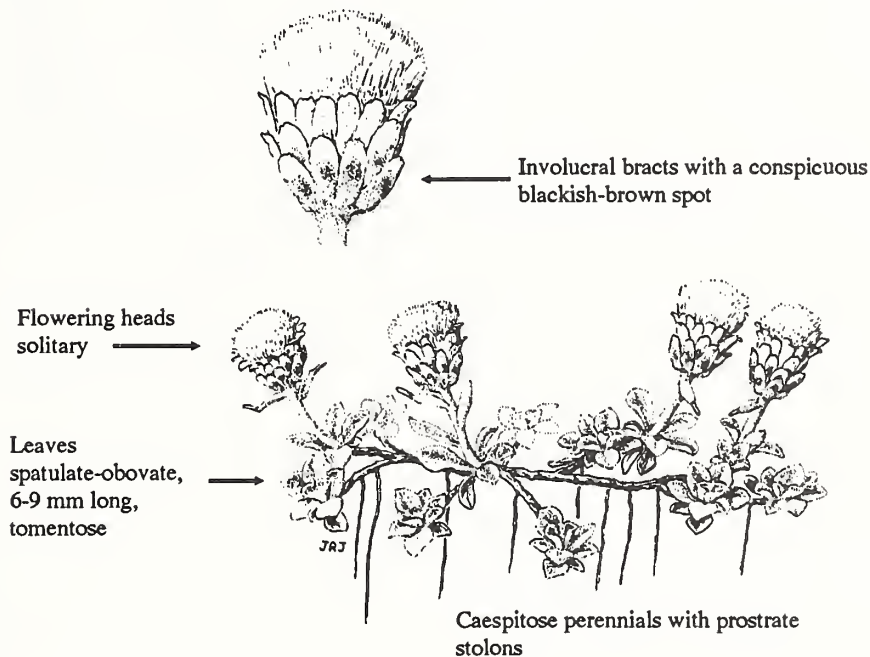
Cronquist, A.H. 1950. Notes on the Compositae of the Northwestern U.S. *Leafl. of West. Bot.* 6:41-42.



Distribution of *Antennaria arcuata* in Nevada.

CHARLESTON PUSSYTOES

Antennaria soliceps Blake
Asteraceae (Compositae)



USWFS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/NV-S1

Description.—A member of the sunflower family, Charleston pussytoes forms mats up to 45 cm in diameter. The leaves are densely white-wooly on the underside and somewhat grayish above. The stem leaves are 5-8 mm long and gradually reduced upwards. Flowering heads have 60-64 flowers, the outer with conspicuous blackish-brown spots. The pappus is white, 6 mm long, consisting of 22-26 hairy bristles in a ring.

Reproduction.—Flowering occurs in July and August with fruiting in August and September. The fruit is an achene, 1.5 mm long. Populations are maintained by the spreading stolons, germinating achenes, and the perennial root.

Habitat.—Timbered mountain meadows, north facing cliffs, gravelly open slopes and gravelly soil with Bristlecone pine. Elevation between 7,500-11,500 feet.

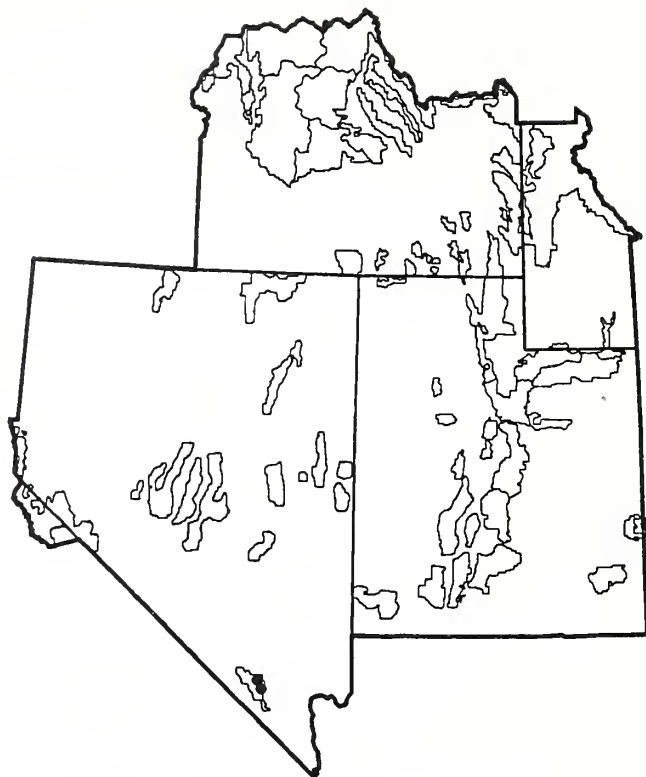
Distribution.—Endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—Foot traffic and free roaming horses on unstable slopes pose the greatest threats.

Increased numbers of elk could impact this species if heavy grazing occurs in the habitat occupied by the *Antennaria*. Monitoring studies are needed to assess potential or real impacts.

References.

Blake, S.F. 1938. Two new Asteraceae from the Charleston Mountains, Nevada. Proc. Biol. Soc. 51:7-8.

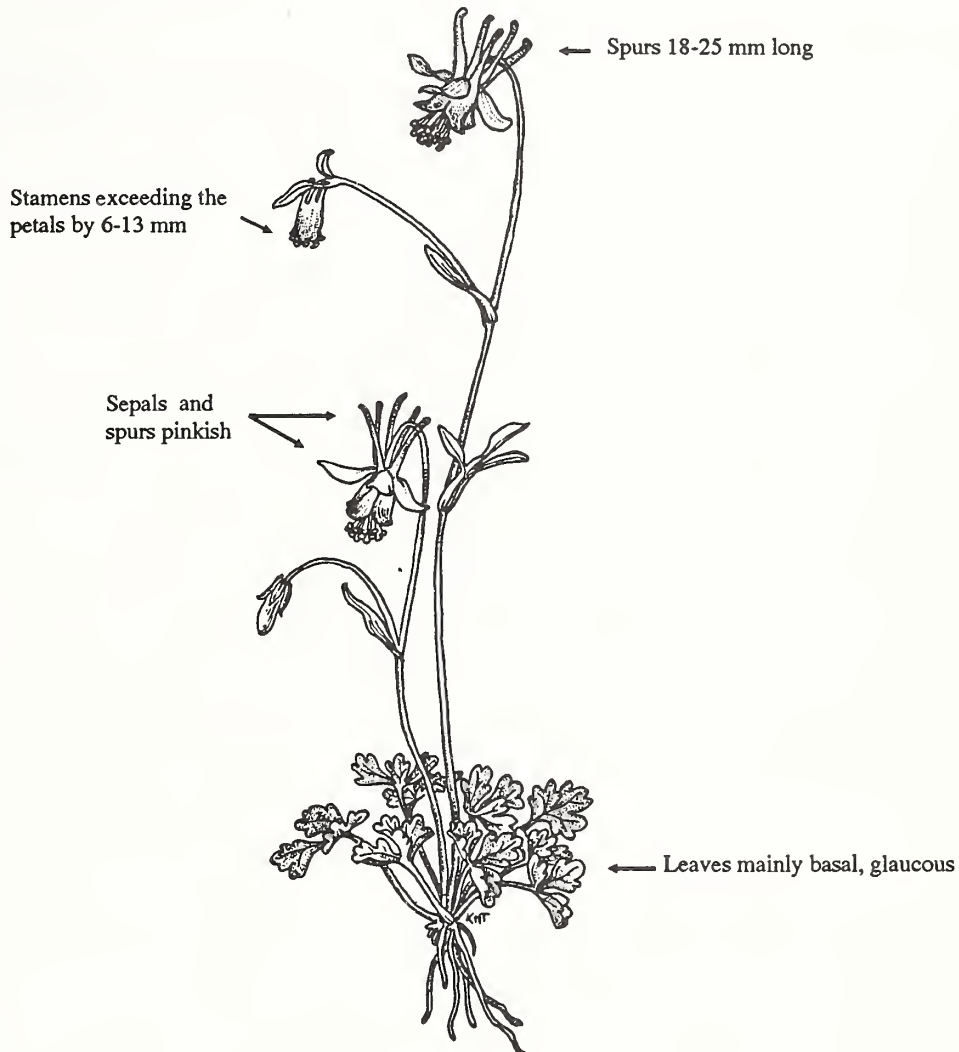


Distribution of *Antennaria soliceps*.

SHALE COLUMBINE

Aquilegia barnebyi Munz

Ranunculaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S3

Description.—This member of the buttercup family grows to a height of 3-8 dm tall. The stems are hairless below and glandular hairy above. The leaves are mainly basal, 0.5-2.7 dm long, and cuneate-obovate-shaped. The leaves grow in clusters of 3 with 2-3 marginal lobes. The flowers are 1 to several and may be erect or spreading. The petals with spurs are pinkish in color. The blades are yellowish to cream, 6-10 mm in length. The stamens exceed the blade by 6-13 mm.

Reproduction.—This plant is a perennial, flowering in June and fruiting in July. It reproduces by seeds, which are 1.5 mm in length, and by the perennial root. Plants are apparently long-lived perennials.

Habitat.—Shale columbine is found in mixed desert shrub, salina wildeye pinyon-juniper, and Douglas fir communities on the Green River and Uinta formations between 5,495-7,400 feet elevation.

Distribution.—A Uinta Basin endemic, it is located in Duchesne and Uintah counties, Utah and adjacent Colorado.

Management Implications.—The existing threat to this species is oil, gas and oil shale development, and exploration. An increase in these activities could affect it and its habitat. Commercial firewood harvesting may also be impacting the species.

References.

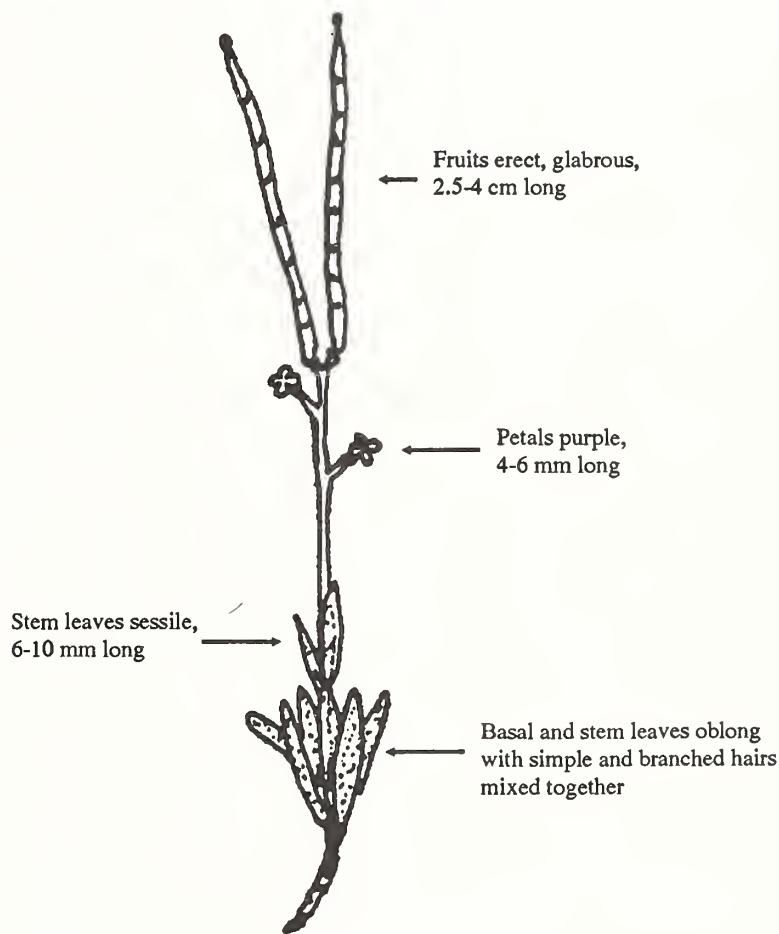
Munz, P.A. 1949. *Leafl. West. Bot.* 5(11):177.



Distribution of *Aquilegia barnebyi* in the Intermountain Region

OPHIR ROCKCRESS

Arabis ophira Rollins
Brassicaceae (Cruciferae)



Plant small, 5-10 cm high

USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/NV-S1

Description.—Ophir rockcress is a perennial mustard growing from a branching caudex. The simple, erect stems are 4-10 cm tall, densely covered with coarse 2-3 branched, erect hairs intermixed with some simple hairs. The leaves are both basal and cauline, entire, and densely pubescent. The purplish sepals are erect, oblong, scarious-margined, densely pubescent, and 2-3 mm long. Petals are also purplish, erect, spatulate, and 4-6 mm long. The fruiting

pedicels are erect, straight, and 4-6 mm long. The fruit is an erect silique.

Reproduction.—A perennial, this mustard flowers in June and produces mature fruit in late June-mid July. The unisereate, flattened seeds have a narrow wing which aids in disposal away from parent plants. These seeds germinate when environmental conditions are right.

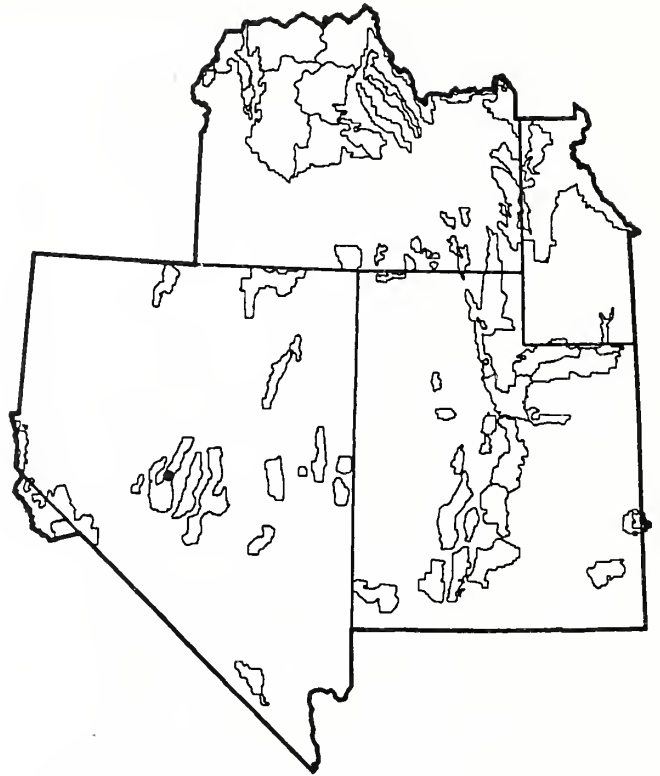
Habitat.—This mustard grows in open rocky areas near talus slopes above timberline at 10,400 ft. elevation.

Distribution.—Endemic to the Toiyabe Range, Nye County, Nevada.

Management Implication.—Grazing by livestock and bighorn sheep and potential mineral development are the possible threats to this plant. The degree of impacts, if any, are unknown. Additional information is needed on the species distribution, use, condition, and trends.

References.

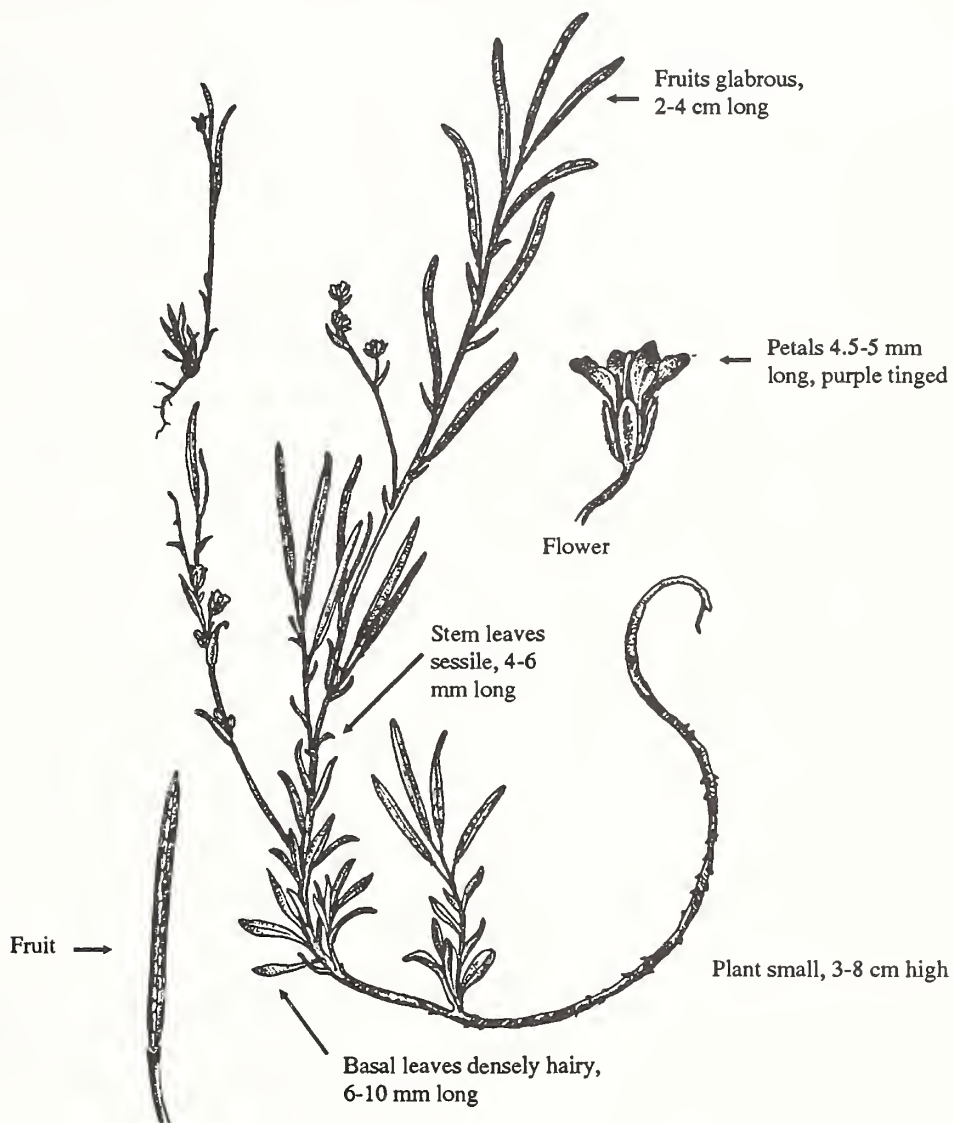
Rollins, R.C. 1981. Studies on *Arabis* (Cruciferae) of western North America. *Systematic Bot.* 64:55-64.



Distribution of *Arabis ophira*.

PINZL ROCKCRESS

Arabis pinzlae Rollins
Brassicaceae (Cruciferae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/NV-S1, CA-S?

Description.—A perennial with one to few erect, slender stems which are covered with hairs below and sparsely so above. The plants have a tuft of narrow, mostly inrolled, densely hairy leaves, 6-10 mm long which taper to an acute tip at the base. There are 3-5 narrowly-oblong, sessile, densely hairy stem leaves. The purple sepals are oblong, thin margined, and 3 mm long. Petals are whitish below with purple tips and spatulate in shape.

Reproduction.—A perennial, this species flowers in July and produces mature fruit in 2-3 weeks with seeds in a single row filling the silique. The silique is linear and 2-4 cm long with uneven margins. The seeds are winged all around, compressed, and oblong to nearly orbicular.

Habitat.—Alpine areas on the talus cirques in dry granitic sand at 10,000-11,300 feet elevation.

Distribution.—White Mountains of Esmeralda County, Nevada and Mono County, California.

Management Implications.—The high elevation areas of the White Mountains attract hikers and other

recreationalists. Potential impacts have not been determined for this species. It is known only from a few sites with a limited number of plants.

References.

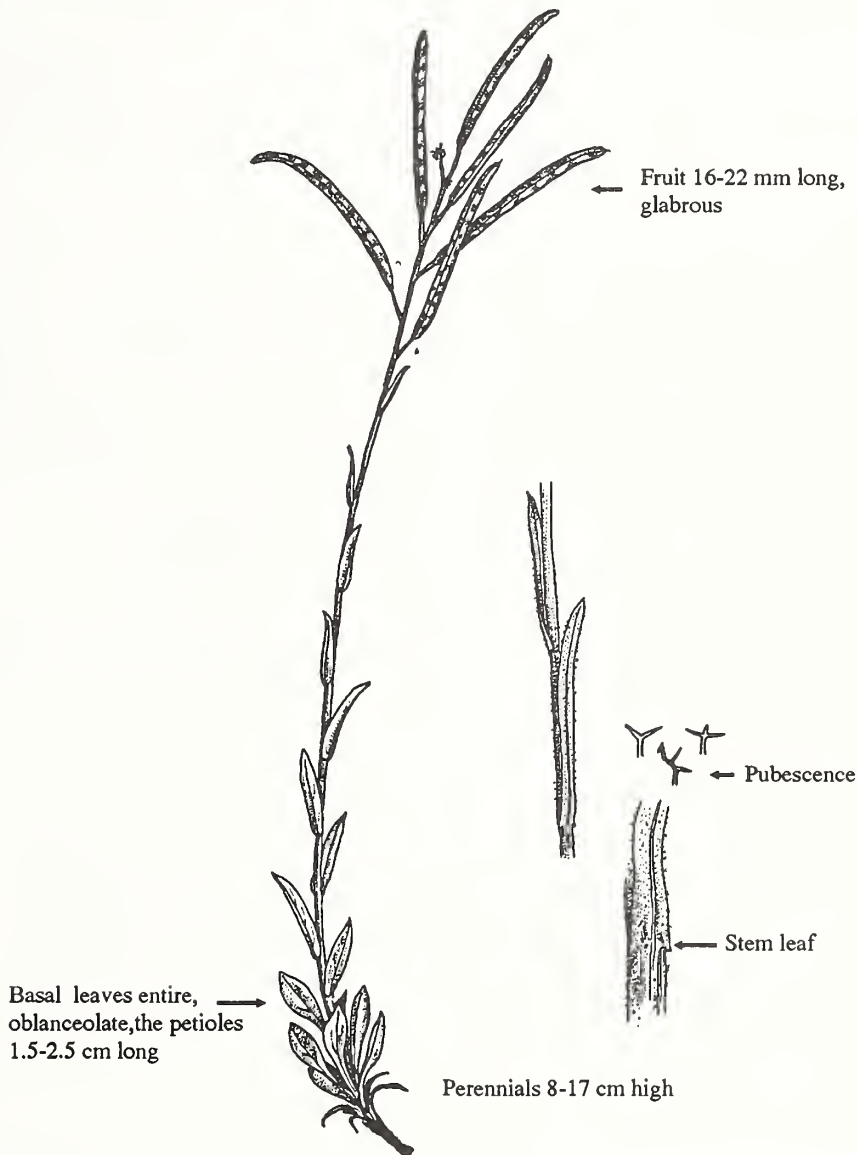
Rollins, R.C. 1982. Studies on *Arabis* (Cruciferae) of western North America II. Gray Herb. Contrib. II 212:110-111.



Distribution of *Arabis pinzlae*.

GALENA CREEK ROCKCRESS

Arabis rigidissima Rollins var. *demota* Rollins
Brassicaceae (Cruciferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S1

Description.—This perennial rockcress, with 1 to few stems, grows from a woody caudex. The leaves are petiolate with an oblanceolate, pubescent blade. The pedicels and few, strangely 1-nerved fruits are divaricately ascending. The spatulate, pink petals are 7-9 mm long.

Reproduction.—A long-lived perennial, this rockcress flowers in August and produces fruit 2-3 weeks later. The seeds are small, measuring 2.5-3.0 mm.

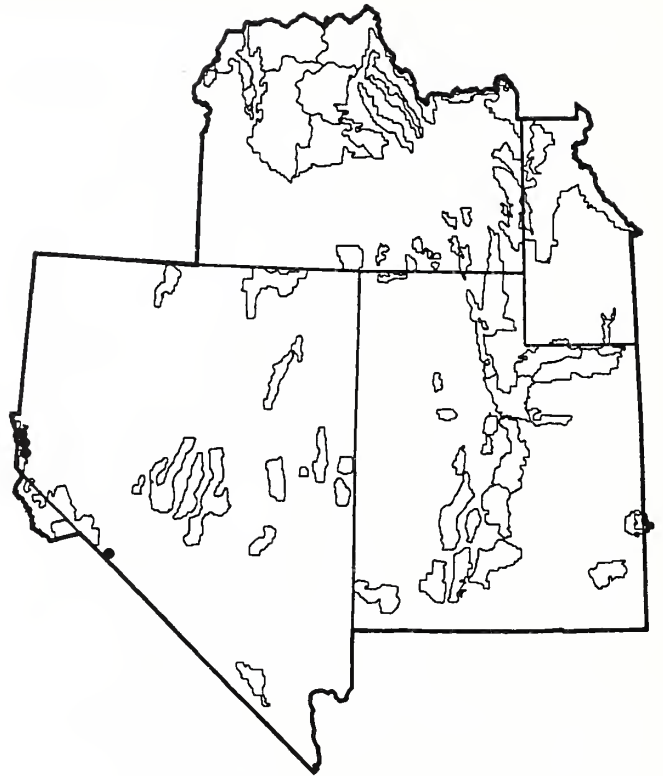
Habitat.—This rockcress occupies rocky areas at the edge of aspen groves and brushy slopes at 7,900 feet elevation.

Distribution.—Galena Creek rockcress is found in western Nevada in Washoe County.

Management Implication.—It is subject to habitat disturbance from recreationists, timber cutting, development, and trail construction.

References.

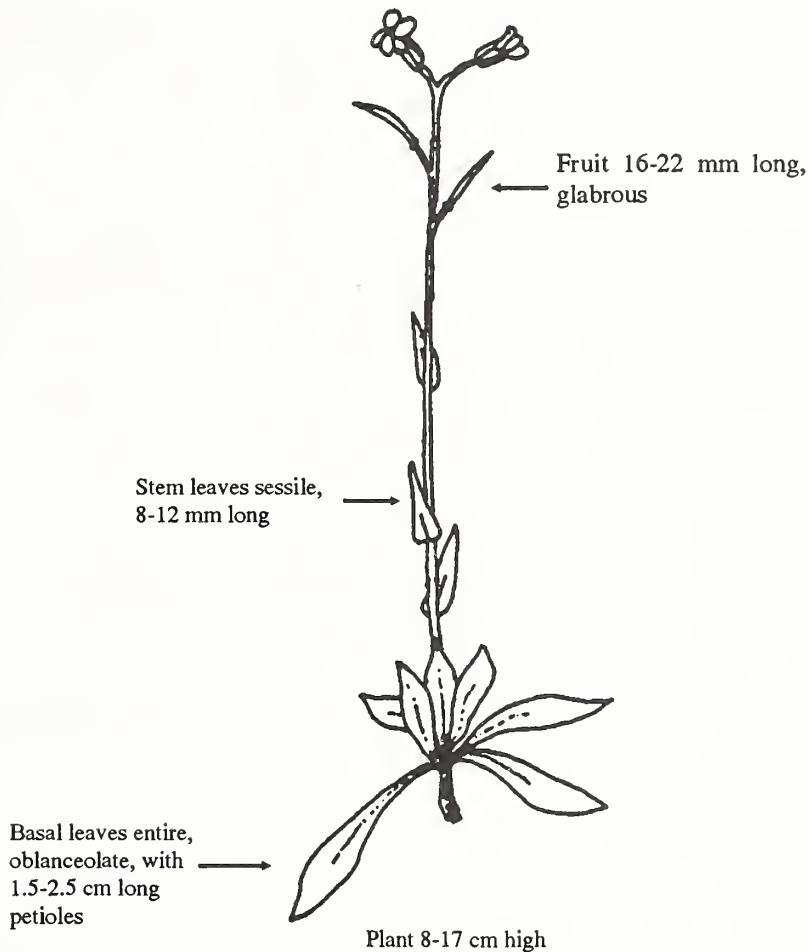
Rollins, R.C. 1983. Studies in Cruciferae of western North America. 64:498-499.



Distribution of *Arabis rigidissima* var. *demota*.

TIEHM MUSTARD

Arabis tiehmii Rollins
Brassicaceae (Cruciferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/CA-S?, NV-S1

Description.—Tiehm mustard is an 8-17 cm tall perennial with thick stems and persistent leaf bases. The basal leaves are in a thick tuft, erect, petiolate, and 1.5-2.5 cm long by 4-6 mm wide with large simple hairs. The stem leaves are oblong, sessile, 8-12 mm long, and glabrous or with a few hairs along the basal margin. Pedicels and fruit are straight, divaricately ascending, and glabrous. The oblong seeds are plump and wingless on the sides.

Reproduction.—A perennial from a stout taproot, this mustard flowers in August and develops mature fruit in September.

Habitat.—It grows in subalpine areas near rock outcrops and windswept ridges on decomposed granite at 11,200-11,400 feet elevation.

Distribution.—Tiehm mustard is known only from the Carson Range of the Sierra Nevada, Washoe County, Nevada, the adjacent Tioga Pass area of California, and the Hoover Wilderness, Mono County, California.

Management Implications.—Very little information is available to determine management needs. Additional survey work of potential habitat is needed to assess the species status.

References.

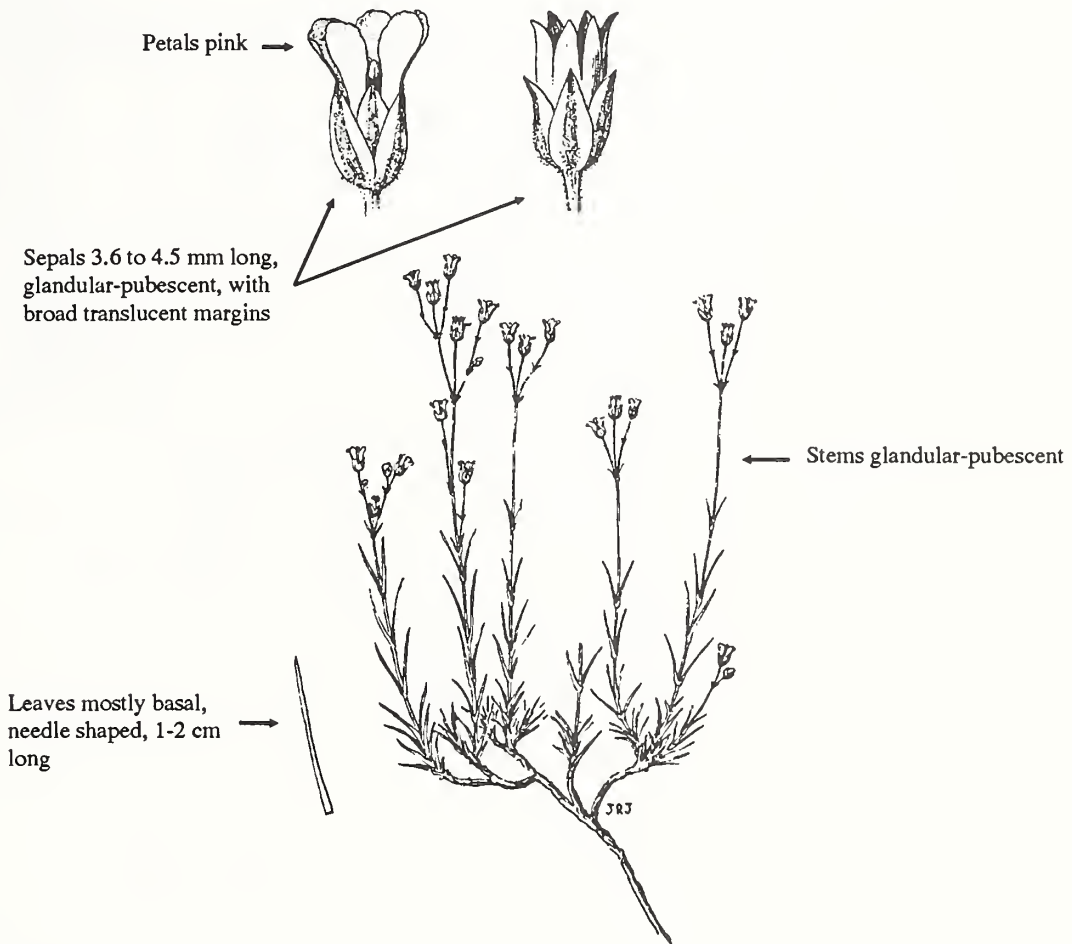
Rollins, R.C. 1983. Studies in the Cruciferae of western North America J. Arn. Arb. 64:496-498.



Distribution of *Arabis tiehmii* in the Intermountain Region.

ROSY KING'S SANDWORT

Arenaria kingii (Wats.) Jones var. *rosea* Maguire△
Caryophyllaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T2/NV-S2

Description.—This member of the pink family develops from a perennial, woody root-stock and reaches a height of 1-2 dm. The few-leaved, slender stems are glandular and hairy. The 1-2 cm long, needle-like leaves are mostly basal. The 3.6-4.5 mm long sepals are shorter than the pink flowers and have a broad translucent margin.

Reproduction.—A perennial, this sandwort flowers from June to early August. Fruit is a capsule which produces

mature seeds from July to late August. Plants appear to be long-lived, producing new growth each year.

Habitat.—King's rosy sandwort occupies ponderosa and limber pine communities on dry, rocky hillsides and limestone ridges between 5,900-9,500 feet elevation.

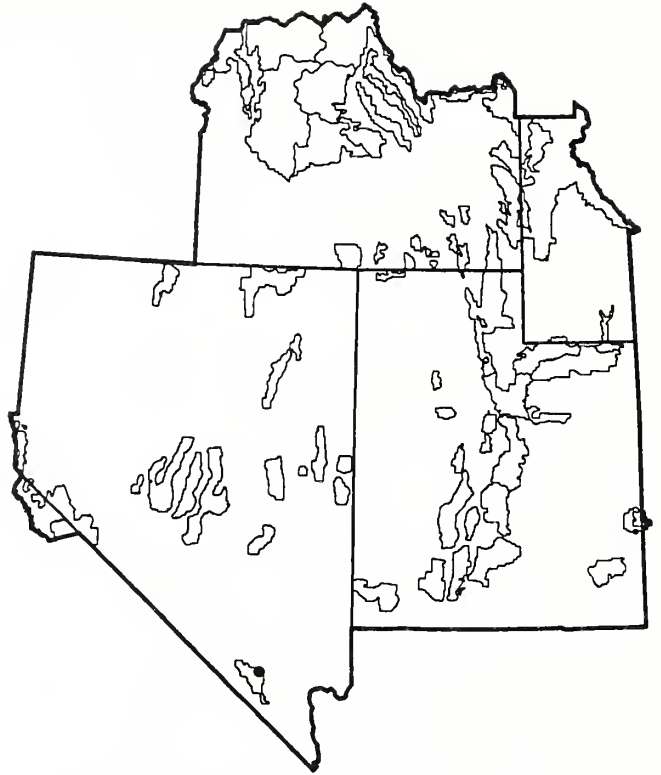
Distribution.—Endemic to Clark County in southern Nevada.

Management Implications.—The expanding population and recreational use in the Charleston Mountains where this plant occurs is a real threat. Essential habitat areas should be determined and protected to ensure species viability.

Excess numbers of wild horses and burros may also be impacting the species and its habitat.

References.

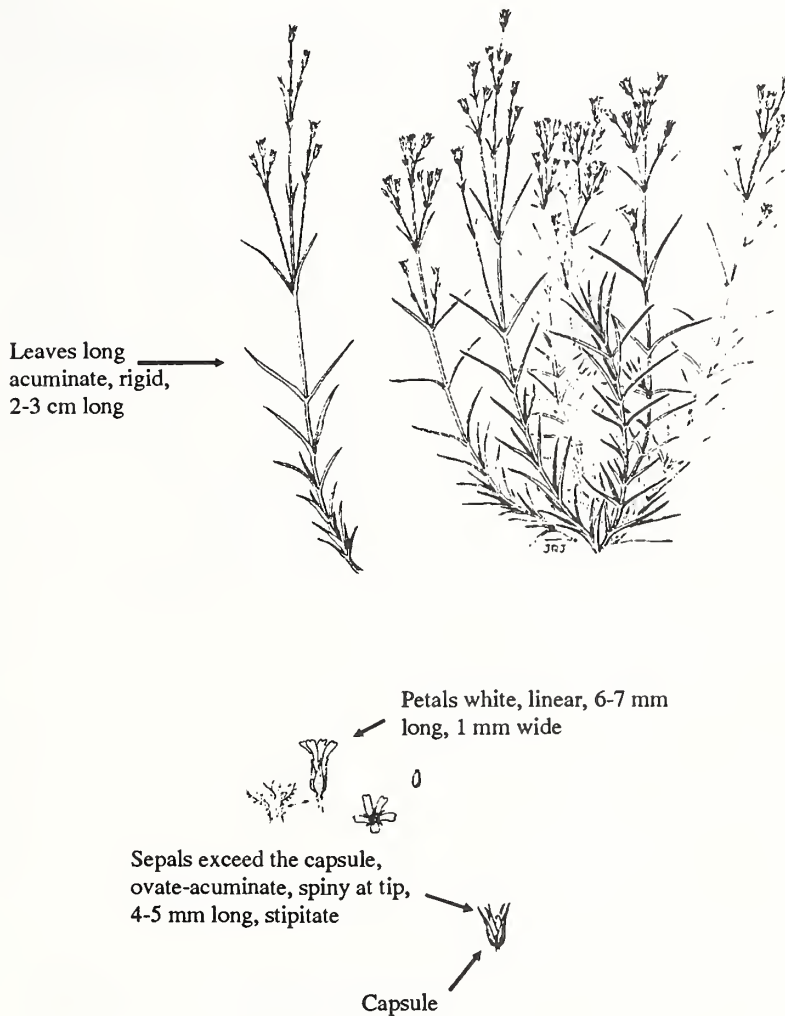
Maguire, B. 1946. Studies in the Caryophyllaceae - I. Torr.
Bot. Club Bull. 73(3):326.



Distribution of *Arenaria kingii* var. *rosea*.

MEADOW VALLEY SANDWORT

Arenaria stenomeres Eastwood
Caryophyllaceae



USWFS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/NV-S1

Description.—A member of the pink family, Meadow Valley sandwort forms clumps up to 40 cm in diameter and 30 cm tall. The leaves are green, narrow, spiny, opposite, and 2-3 cm long. Lower leaves can occur 3 in a whorl. The sepals are about 4-5 mm long and spiny at the tip. The petals are white and 6-7 mm long. The flowers and flowering stalks are sticky.

Reproduction.—A long-lived, perennial herb, flowering begins in April with fruiting beginning in May. It produces an ovate capsule 4 mm long, which produces winged seeds 1 mm long. Seeds are dropped by July.

Habitat.—Steep slopes or vertical rock outcrops of limestone mostly west facing in *Larrea*, *Atriplex*, or *Stipa* communities. Elevation between 3,200-3,600 feet.

Distribution.—West side of the Meadow Valley Mountains in Lincoln County and the Las Vegas Range, Clark County, Nevada.

Management Implications.—Due to the very steep habitat, the populations are inaccessible thus easing the threat. Mining activities seem to be the only potential threat.

References.

Eastwood, A. 1944. *Arenaria stenomeres*. Leaflet. West. Bot. 4:63.

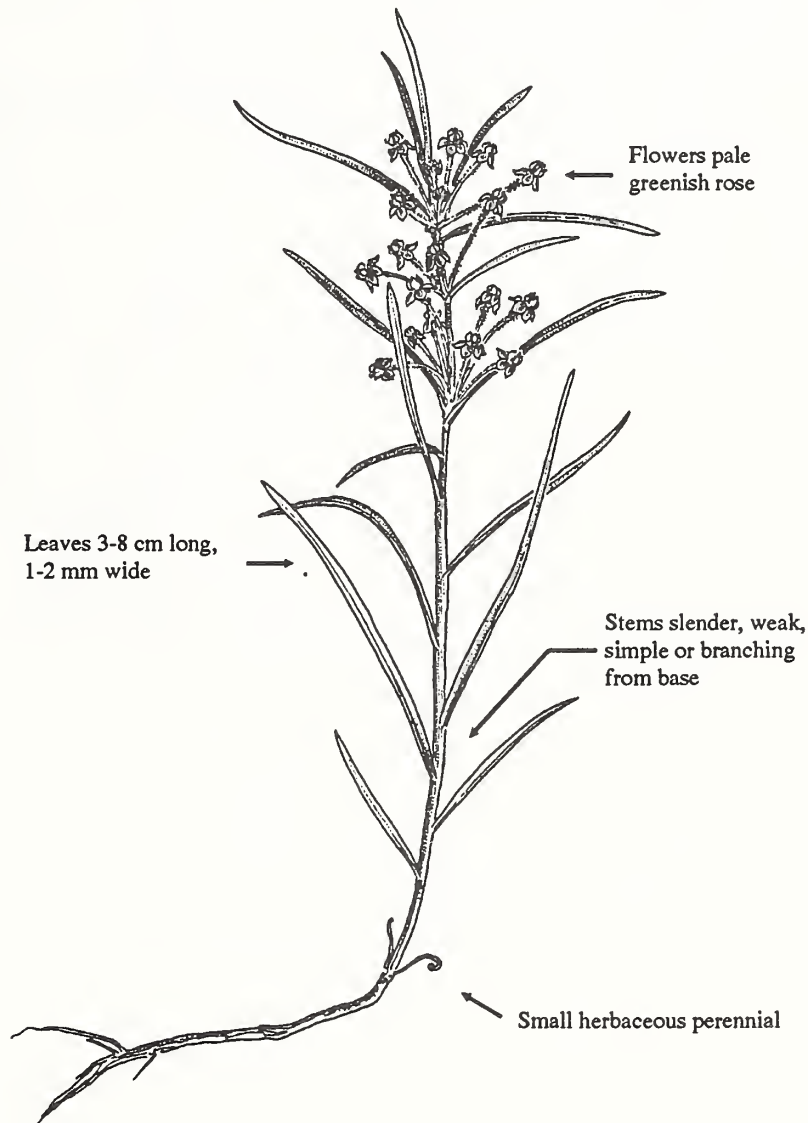


Distribution of *Arenaria stenomeres*.

CUTLER MILKWEED

Asclepias cutleri Woodson

Asclepiadaceae



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A small low herbaceous member of the milkweed family, Cutler milkweed arises with a very slender simple or branching stem from the root stocks (6-13 cm long). The herbage is inconspicuously covered with fine hairs. The leaves are sessile, 3-8 cm long, and 1-2 mm broad. The flowers arise terminally in the axil of the leaves and are usually solitary. The flowers are small and pale

greenish-rose. The petals are reflexed, about 5 mm long. The horn is tongue-like and slightly longer than the hood.

Reproduction.—A perennial, this milkweed begins flowering in late April and into mid-May. The plant is somewhat rhizomatous and spreads by underground roots. The fruit is a smooth follicle, 4-5 cm long. The seeds are broadly oval, about 1 cm long, the white coma about 1.5 cm long.

Habitat.—This plant occurs on sand dunes, moving sand and gravelly sites in mixed desert shrub and pinyon-juniper communities. Elevation between 4,500-6,000 feet.

Distribution.—A Colorado Plateau endemic, it is found in Grand and San Juan counties Utah and into northeast Arizona.

Management Implications.—Very little is known about this plant species. Studies need to be initiated to help determine the status and population diversity. Livestock grazing may have significant impacts on the species, especially on Indian Lands.

References.

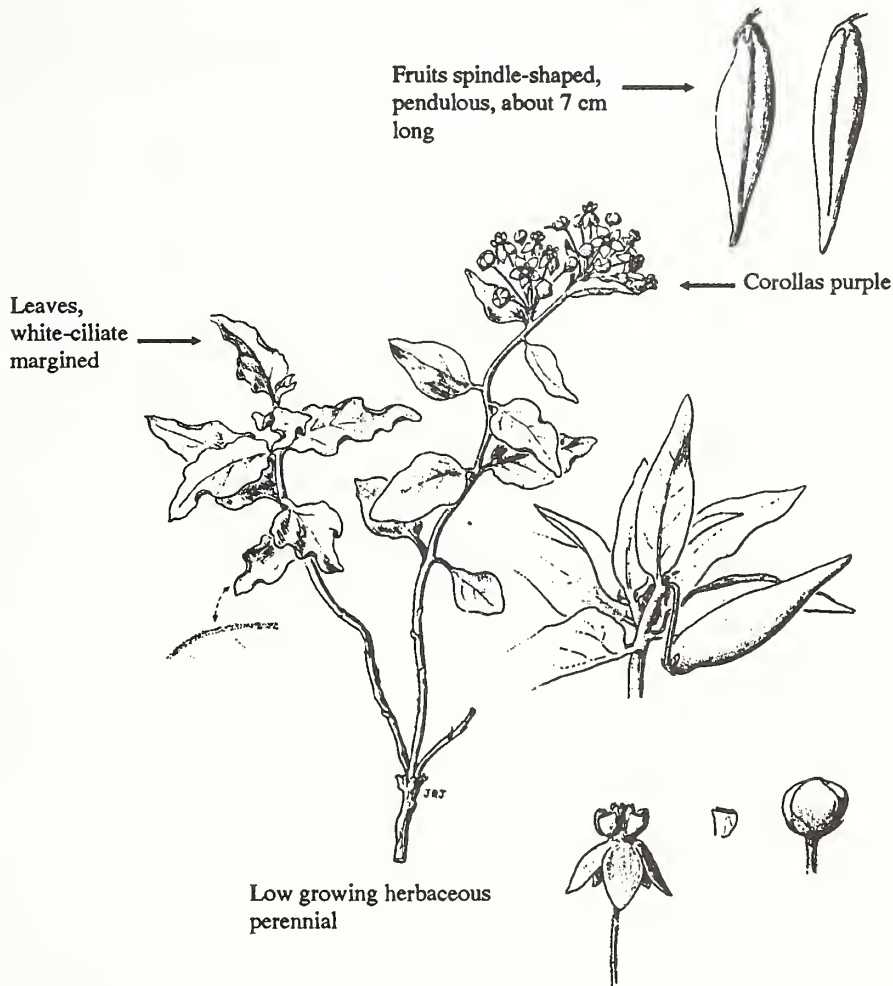
Woodson. 1939. *Asclepias cutleri*. Ann. Missouri Bot. Gard. 26:263.



Distribution of *Asclepias cutleri*.

EASTWOOD MILKWEED

Asclepias eastwoodiana Barneby
Asclepiadaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2

Description.—Eastwood milkweed is a low, few-stemmed perennial growing from a woody root. The stems are flexuous, few, 1-2 dm long, and sparsely pubescent. The leaves have white margins and are broadly oval to nearly circular, except for the uppermost lance-like leaves. The purplish-violet flowers occur in umbrella-like clusters with 6-11 per cluster. The 17 cm long fruits are spindle-shaped.

Reproduction.—A perennial from a deep-seated taproot, it flowers from mid-May to mid-June with fruiting from June through mid-July. The seeds are wind dispersed.

Habitat.—It grows in desert shrub and pinyon-juniper communities on calcareous, tuffaceous, and sedimentary substrates between 3,500-7,000 feet elevation.

Distribution.—This milkweed is found in western, central, east-central, and southern Nevada in Lincoln, Nye, Esmeralda, Mineral, and Lander counties.

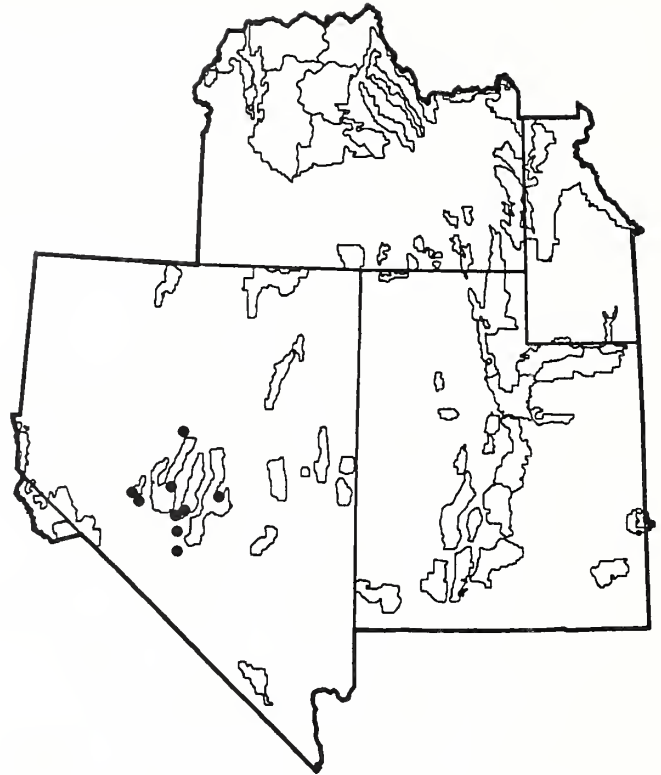
Management Implication.—Trampling by cattle and loss of habitat due to mining and road construction are the major

impacts. Complete surveys should be conducted to determine the species range, use, condition, trends, and biological needs of the species. Populations are small and widely disjunct.

References.

Barneby, R.C. 1945. A new species of *Asclepias* from Nevada. *Leafl. West. Bot.* 4(8):210.

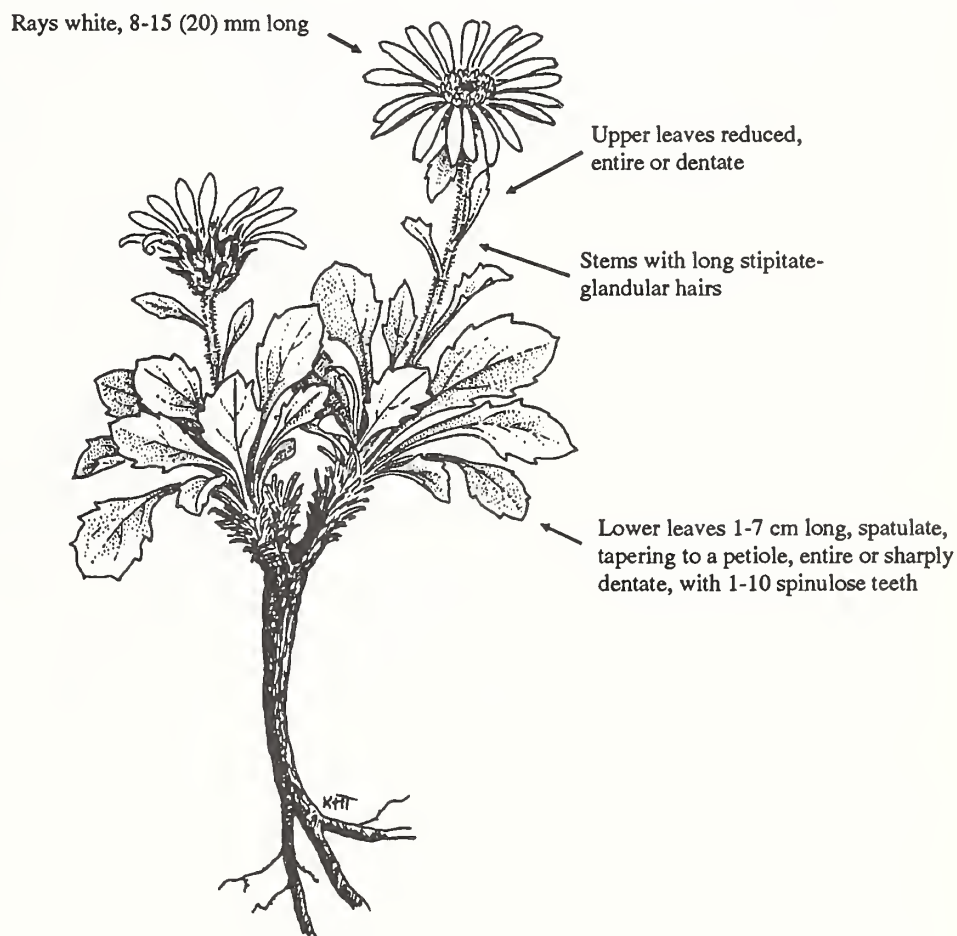
Welsh, S.L. 1981. Status report for *Asclepias eastwoodiana* prepared for U.S. Fish and Wildlife Service, Portland, OR. 31 pp.



Distribution of *Asclepias eastwoodiana*.

BARNEBY WOODY ASTER

Aster kingii D.C. Eaton var. *barnebyana* (Welsh and Goodrich) Welsh
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3T1/UT-S1

Description.—This member of the sunflower family grows from a well developed taproot. There are persistent blackish or dark brown, old leaf bases at the base of the plant. The stems are short (3-12 cm long) and the herbage is covered with glandular hairs. The leaves are basal, 0.8-12 cm long, and oblanceolate to spatulate in shape with 1-10 pronounced teeth. Flowers occur in clusters of 1-5, standing 8-11 mm high. The inner bracts are often purplish and the tips of at

least the outer are bent backward. The ray flowers are white, often fading to pale pink.

Reproduction.—A long-lived perennial, flowering occurs August to September. The fruit is an achene, 3.5 mm long, and covered by hair. It reproduces by the numerous achenes which develop each year.

Habitat.—Found in mountain mahogany and oak communities on rock outcrops composed of Precambian quartzite. The range of elevation is between 7,345 and 7,610 feet.

Distribution.—Endemic to the Canyon Mountains in Millard County, Utah.

Management Implications.—Quite well protected by its habitat, but apparently of limited distribution. Additional search in the Pavaunt Range, San Pitch Mountains, and other ranges may yield other populations. Mormon crickets devoured the flowers of nearly every plant observed in the Canyon Mountains during 1990.

References.

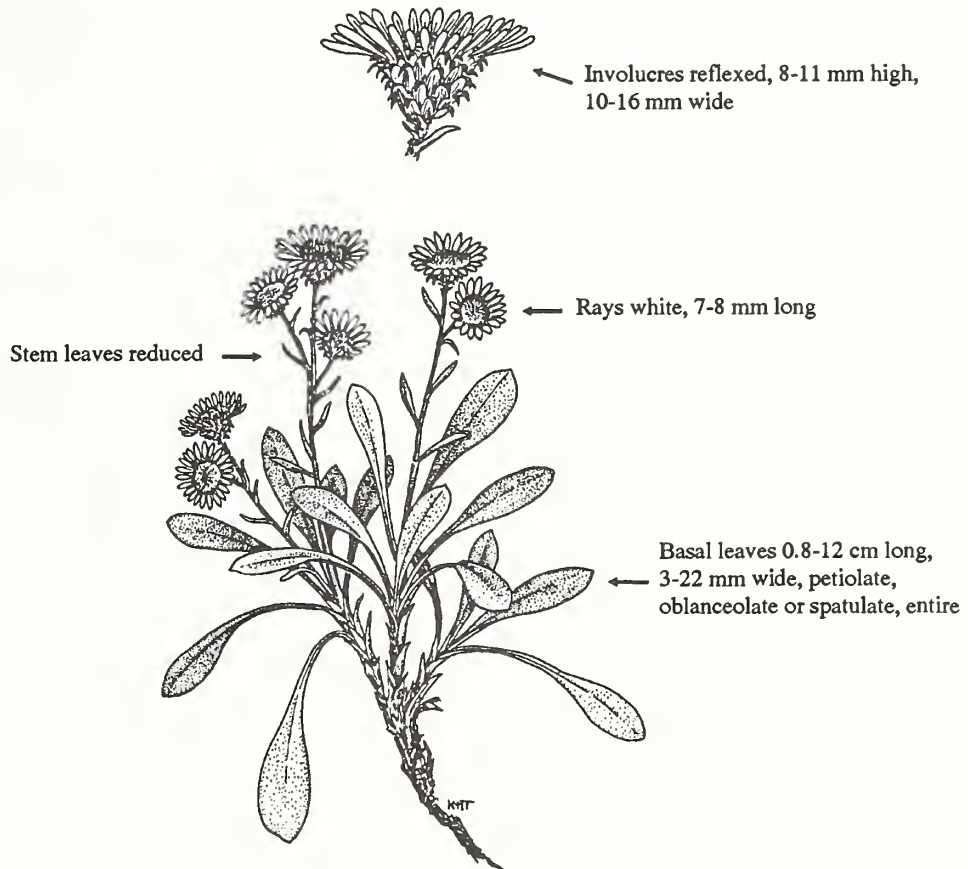
Welsh, S.L. 1981. New taxa of western plants in Tribute. *Britt.* 33(3):299-300.



Distribution of *Aster kingii* var. *barnebyana*.

KING WOODY ASTER

Aster kingii D.C. Eaton var. *kingii*
Asteraceae (Compositae)



Low clump forming plants
from a woody caudex

USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3T2/UT-S2

Description.—A member of the sunflower family, king woody aster grows from a well developed, more or less woody root. There are persistent blackish or dark brown, old leaf bases at the base of the plant. The stems are short (3-12 cm long) and the herbage is covered with glandular hairs. The leaves are basal, 0.8-12 cm long and oblanceolate to spatulate in shape. Flowers occur in clusters of 1-5, standing 8-11 mm high. The inner bracts are often purplish

and the tips of at least the outer are bent backward. The ray flowers are white often fading to pale pink.

Reproduction.—A long-lived perennial, this aster produces achenes, 3.5 mm long. New plants are produced from germinating achenes.

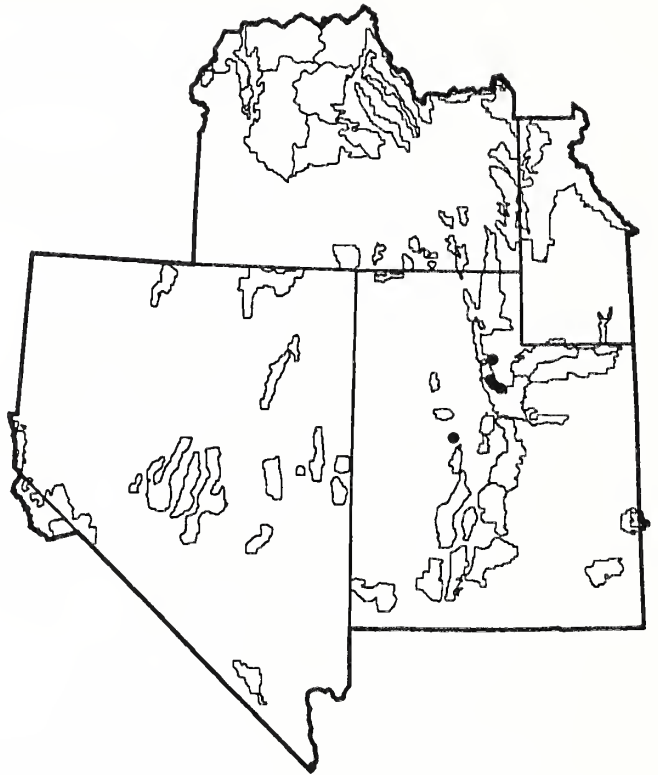
Habitat.—Rock outcrops mostly on limestone in Douglas fir-white fir, mountain brush, and cottonwood communities. Elevation between 6,030-10,000 feet.

Distribution.—Known from the Wasatch Mountains in Juab, Millard, Salt Lake, and Utah counties, Utah.

Management Implications.—Quite well protected by its habitat. Known threats are from goats, transplanted into the habitat where this species grows, and periodic seasons when mormon cricket populations are heavy.

References.

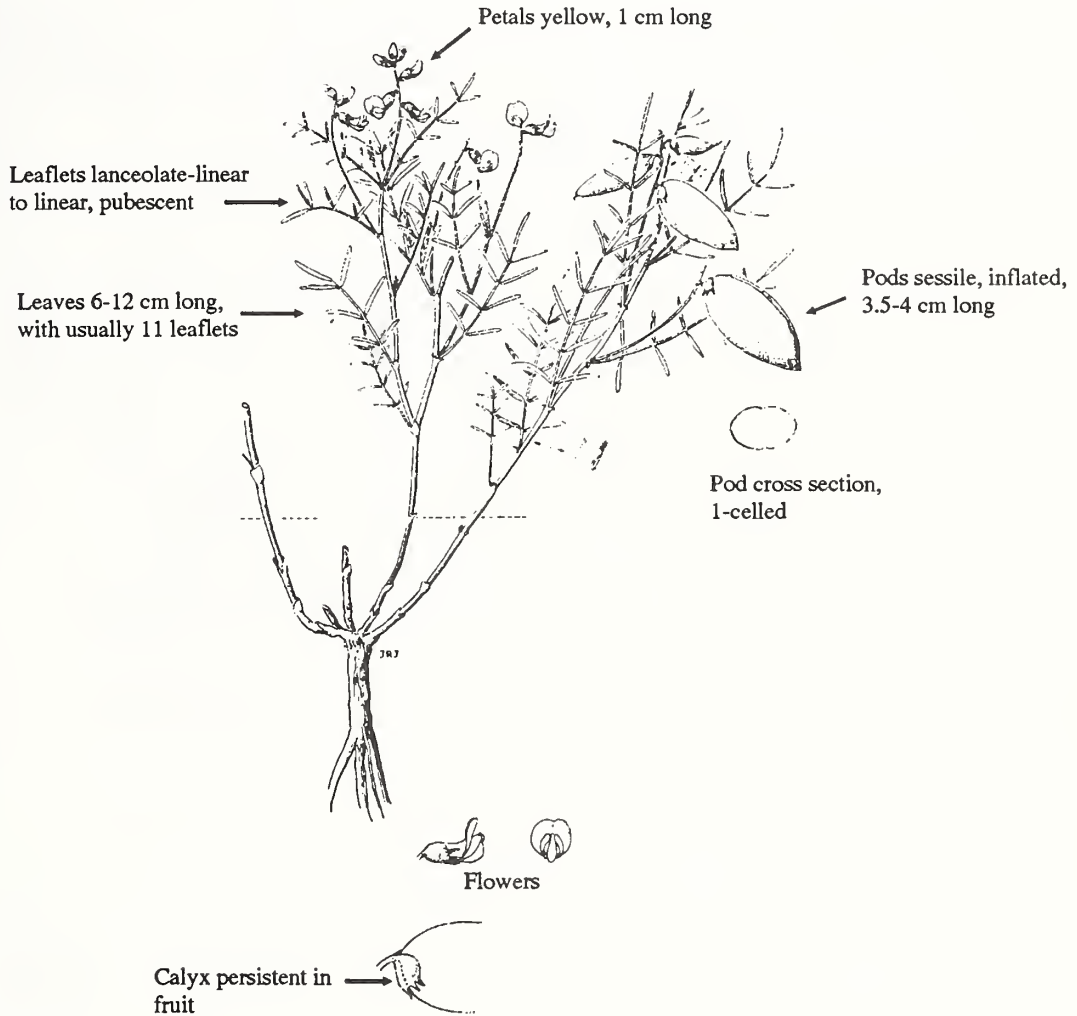
Watson, S. 1871. Botany U.S. Geol. Expl. of the fortieth parallel. Vol. 5:141-142. Washinton: Government Printing Office.



Distribution of *Aster kingii* var. *kingii*.

CLOKEY MILKVETCH

Astragalus aequalis Clokey
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2

Description.—Clokey milkvech is an erect, many stemmed plant growing up to 7 dm tall. The stems are marked with fine longitudinal lines and covered with stiff, appressed, straight hairs. The 6-12 cm long leaves generally have 11 narrowly lanceolate to linear leaflets clothed with hairs like those of the stems. The 2-3 mm long stipules are narrowly triangular. The inflorescence exceeds the leaves and produces 6-12 yellow flowers about 1 cm long. An awl-

shaped or triangular calyx surrounds the yellow corolla. The fruiting pods are inflated, sessile, 3.5-4.0 cm long, and straw-colored to brownish.

Reproduction.—The Clokey milkvech is a perennial growing from a deep taproot, flowering in May and June and producing mature fruit in early May to early July. The bladderly inflated legumes are wind dispersed.

Habitat.—It is found in low sagebrush, pinyon-juniper, and ponderosa pine communities on calcareous gravel flats and open ridges at 5,900-8,400 feet elevation.

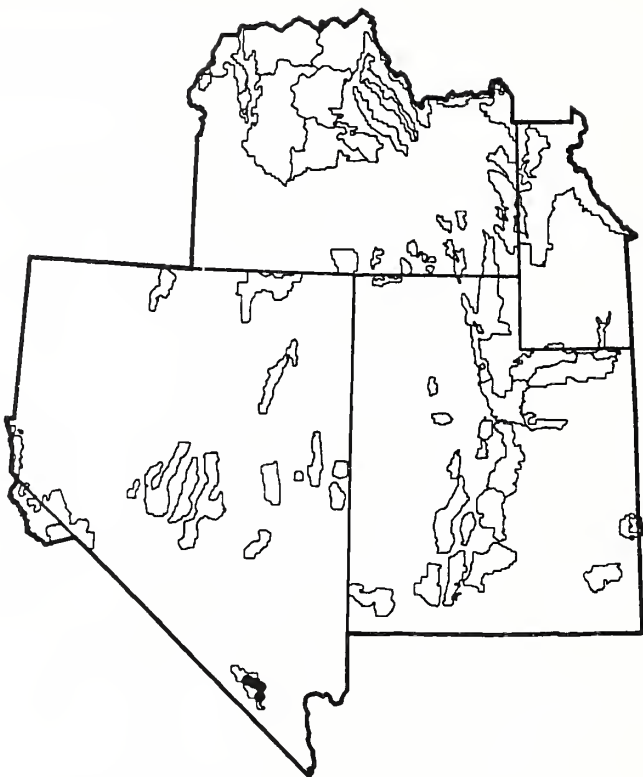
Distribution.—This milkvetch is endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—Livestock grazing, particularly wild horses, and heavy recreation use are significant impacts to this milkvetch. Population areas should be determined and essential habitat areas protected.

References.

Clokey, I.W. 1942. *Astragalus*. Madrono 6: 215.

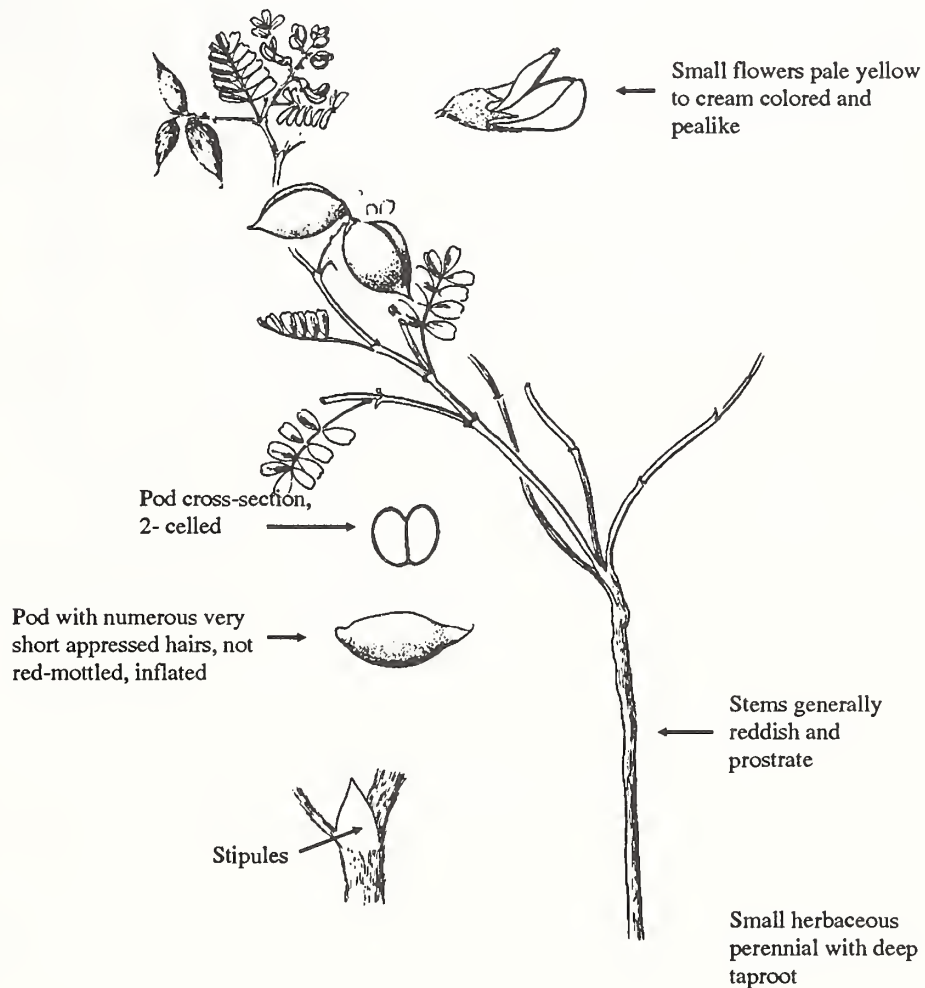
Barneby, R.C. 1964. North American Astragali 13:261-263.



Distribution of *Astragalus aequalis*.

CHALLIS MILKVETCH

Astragalus amblytropis Barneby
Fabaceae (Leguminosae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3/ID-S3

Description.—A member of the pea family, Challis milkvech grows from a buried root crown with repeatedly branching reddish stems which form a silvery, fan-shaped spray. The stems lie flat on the ground and are 1-4 dm long. The leaves are composed of 9-13 somewhat bicolor leaflets. Both leaflet surfaces are covered with hair, however, the lower surface displays a yellowish-green cast. The small flowers arise from a short stalk, 6-10 per cluster. The

sepals are covered with white hairs and form a tube which becomes papery with age. The petals are a dull straw-yellow often veined lilac.

Reproduction.—A small perennial herb with a deep tap root, the Challis milkvech begins growth in late March and flowers from late May to early July. This plant fruits prolifically, at first the fruit is pale green then turning straw-colored and lustrous. The fruits develop in May and are enormous in size in comparison to the leaves. The pods are 2-celled and inflated with numerous very short appressed hairs. Seed dispersal begins in July as the pods dry out. The seeds are olive brown, sometimes minutely purple-speckled, smooth

but dull. Pollinators are small, low flying leaf cutter bees which are most active in late afternoon.

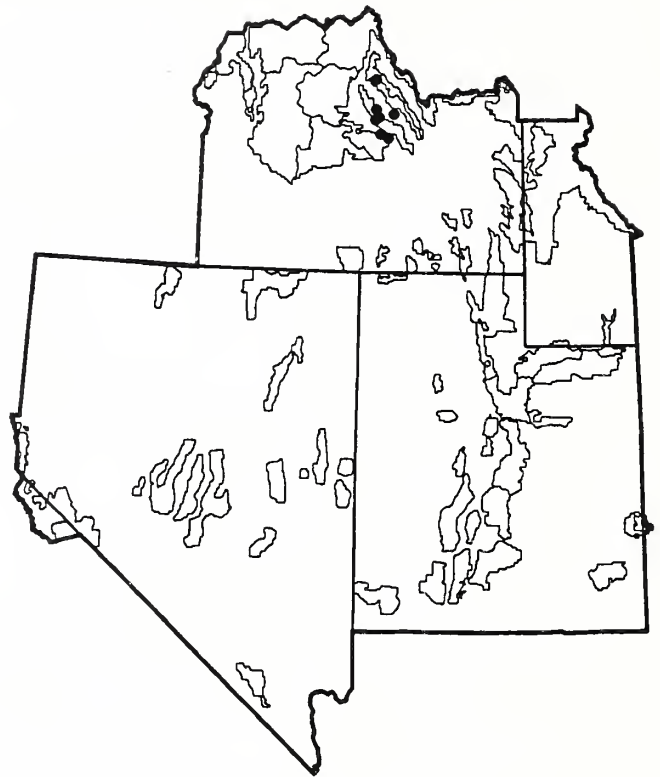
Habitat.—The Challis milkvetch is located on soft clay, mobile shale, clay detritus, and volcanic ash deposits of lower sagebrush or shadescale covered slopes. It is obligate to steep, south facing gullies, but will infrequently establish on the sand bars of the canyon floors. Elevation between 4,600-5,600 feet. It primarily occurs in barren areas with *Artemisia* and *Atriplex*.

Distribution.—This plant is located in central Idaho in Custer and Lemhi counties. It is often found along the canyon of the Salmon and East Fork Salmon Rivers and their tributary creeks for a distance of 30 miles up and downstream from Challis.

Management Implications.—A significant increase in grazing pressure in the known populations could be detrimental. Also ORV use and local herbicide spraying may affect the populations.

References.

Barneby, R.C. 1949. *Astragalus amblytropis*. Amer. Midl. Nat. 41:502.

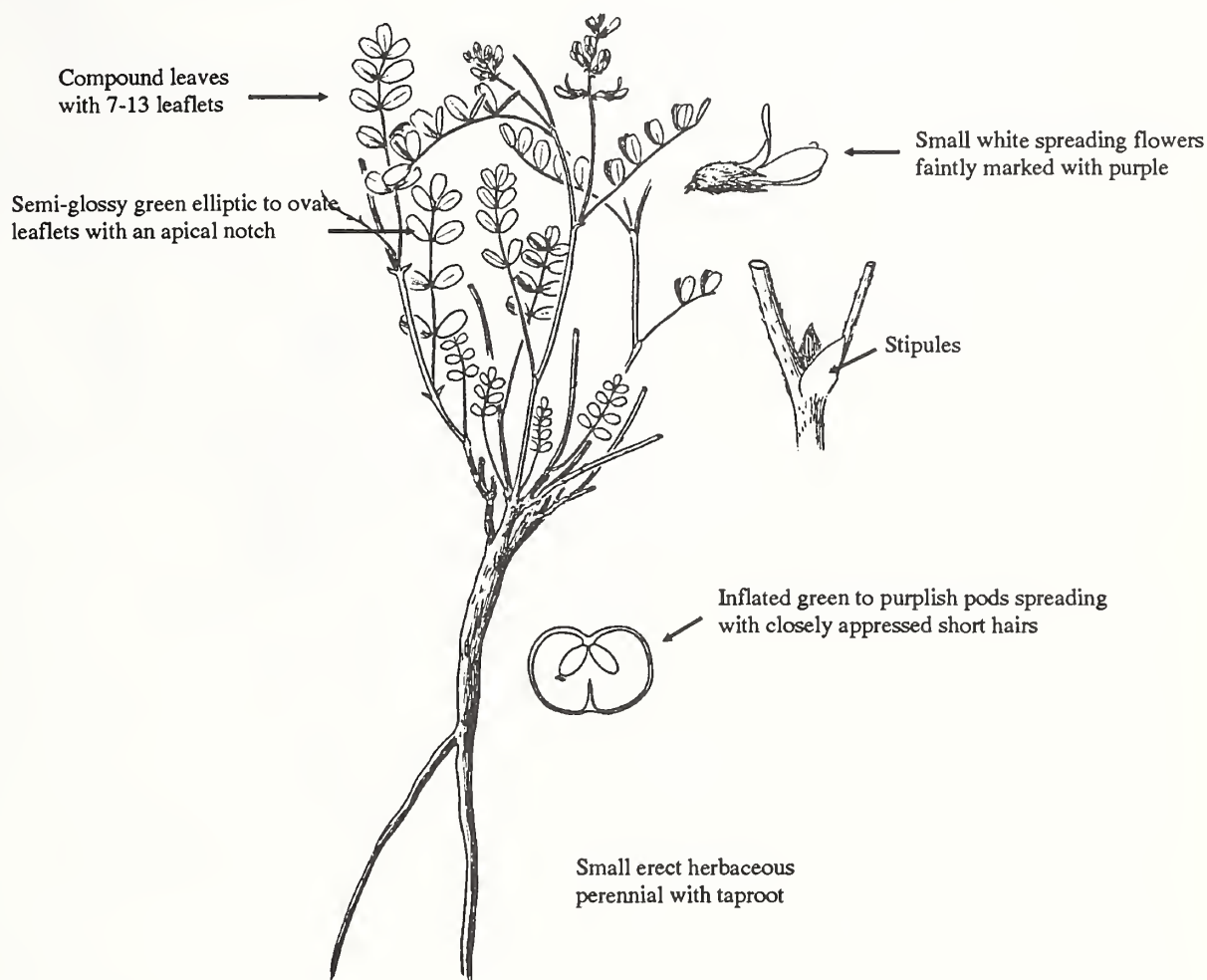


Distribution of *Astragalus amblytropis*.

LOST RIVER MILKVETCH

Astragalus amnis-amissi Barneby

Fabaceae (Leguminosae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3/ID-S3

Description.—A member of the pea family, Lost River milkvetch grows from a simple stem arising from a superficial root crown. The herbage is green. The stems are few, spurred at the base and 1-25 dm long. The compound leaves consist of 7-13 thinly textured, semi-glossy, green leaflets. The flowers occur 5-12 per cluster. The sepals form a green or purplish tube with black or mixed black and white hairs. The petals are white, faintly marked with purple-blue.

Reproduction.—A perennial herb, this milkvetch flowers from late May to late August. Fruiting is rare and the plants vary greatly in the quantity of fruit produced. The few inflated pods are semibilocular, green to purplish with short hairs, and ellipsoid in shape. The pods become papery through maturity. Seeds are few and rare.

Habitat.—Cracks in ledges and other similar sites on near vertical limestone cliffs and in talus at the base of cliffs are likely places to find Lost River milkvetch. These plants are located mostly in moist, shaded areas. Elevation between 6,300-6,600 feet. This species grows in association with Douglas-fir, mountain mahogany and sagebrush.

Distribution.—This plant is known from numerous canyons of the Lost River Range, Custer County and the southern tip of the Lemhi Range, Butte County, Idaho.

Management Implications.—The plant is being grazed, but with no apparent harm. Increased grazing at the cliff bases may jeopardize the population due to the plants highly restricted nature. Many individual populations exist in suitable habitats, each with a small number of plants. Many of these populations occur in ideal locations to prevent extermination.

References.

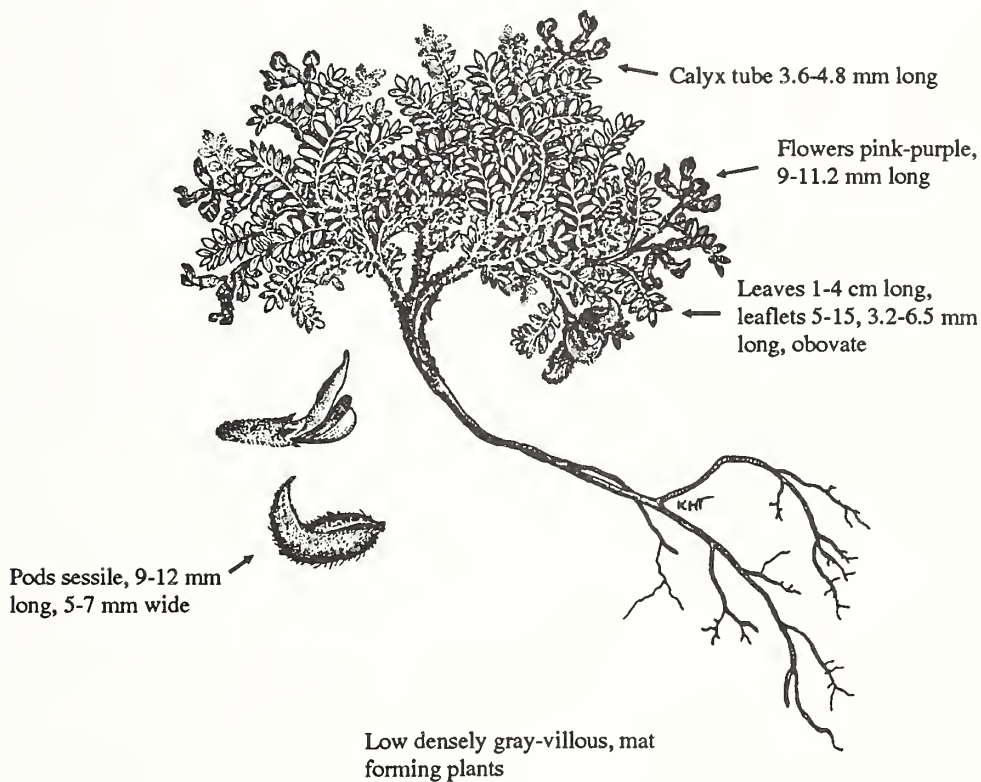
Barneby, R.C. and C.L. Hitchcock. 1961. *Astragalus amnis-amissi*. Univ. Wash. Pub. Biol. 17:219.



Distribution of *Astragalus amnis-amissi*.

GOOSE CREEK MILKVETCH

Astragalus anserinus Atwood, Goodrich and Welsh
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/ID-S1, UT-S1

Description.—Goose Creek milkvech is a member of the pea family with a dwarf matted appearance (1.0-1.5 dm in diameter). The leaves and flowers arise from a 3-11 cm long stem. The leaves are composed of 5-15 hairy leaflets. Flowers are small and appear in clusters of 3-7 with pink-purple petals. The sepals are white and form a hairy tube.

Reproduction.—A perennial herb from a slender taproot, this milkvech is of short duration. It flowers from June

through July. The pod which is produced later is 1-celled, 9-12 mm long, hairy, and curved. Young plants form yearly from germinating seeds.

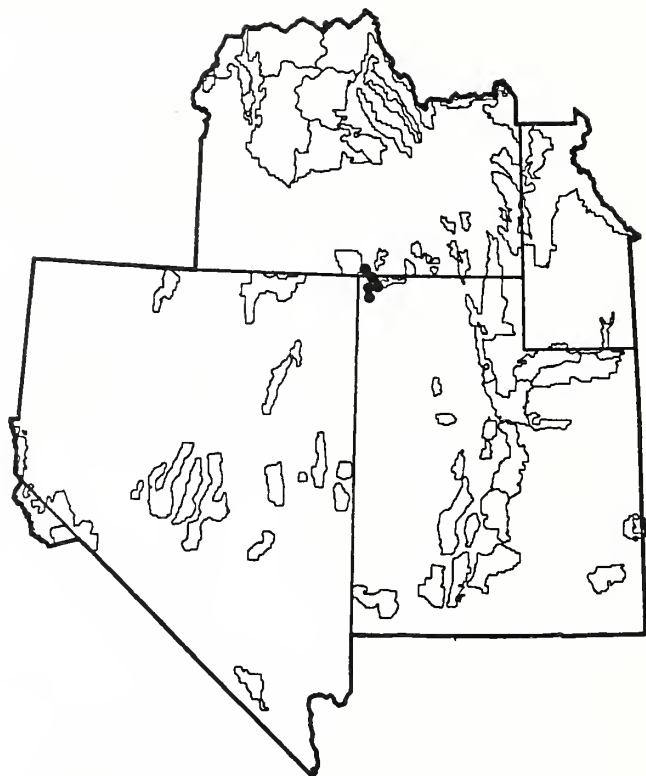
Habitat.—Goose Creek milkvech occurs on barren slopes composed of white tuffaceous sand. Elevation between 5,000-5,200 feet. This species grows in association with sagebrush, rabbitbrush, and juniper.

Distribution.—This plant is limited to a few populations in the three corners of northeastern Nevada, southern Idaho, and northwestern Utah.

Managemen Implications.—Habitat areas occupied by this species are grazed moderately to heavy by domestic cattle. Monitoring studies are needed to determine the degree of impact.

References.

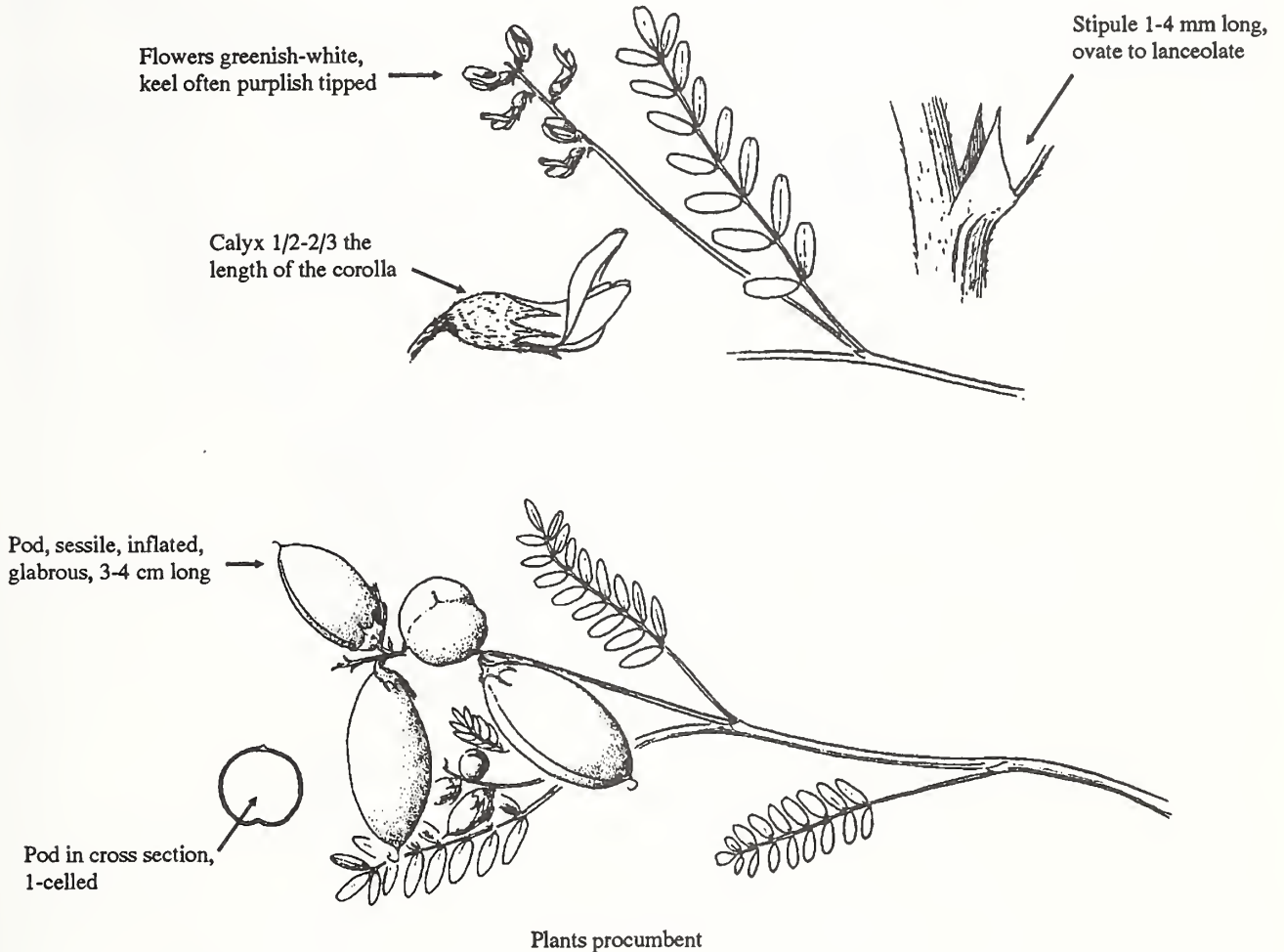
Atwood, D., S. Goodrich, and S. Welsh. 1984. New *Astragalus* (Leguminosae) from the Goose Creek Drainage, Utah-Nevada. *Great Basin Natur.* 44:263.



Distribution of *Astragalus anserinus* in Idaho and Utah.

LEMHI MILKVETCH

Astragalus aquilonius Barneby
Fabaceae (Leguminosae)



USFWS Status: PC2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3/ID-S3

Description.—Lemhi milkvetch is a member of the pea family with a stout taproot, knotty root crown, and greenish herbage. It has several stems (2.0-3.4 dm long) lying flat on the ground which are usually purple-tinged. The stipules are 1-4 mm long and oblanceolate with a purplish color. The leaves, all of which are petioled, contain 9-23 leaflets. Flowers appear in a cluster, each with purplish bracts. The sepals are 1/2 to 2/3 the length of the petals forming a tube

around them and have sharp white hairs. The petals are greenish-white, often veined or tinged with a purplish tip.

Reproduction.—A perennial herb of short duration, Lemhi milkvetch flowers from late May to July. It produces an ovoid, inflated pod which is 2.5-4.0 cm long. The 1-celled pod is thin and a pale green color. The seeds are brown, smooth but dull, and germinate in the spring.

Habitat.—This milkvetch is located on shale or clay in washes of gullied clay bluffs, on steep eroded canyon banks, or on the sand and gravel bars along streams within the shrub-steppe zones at lower elevations.

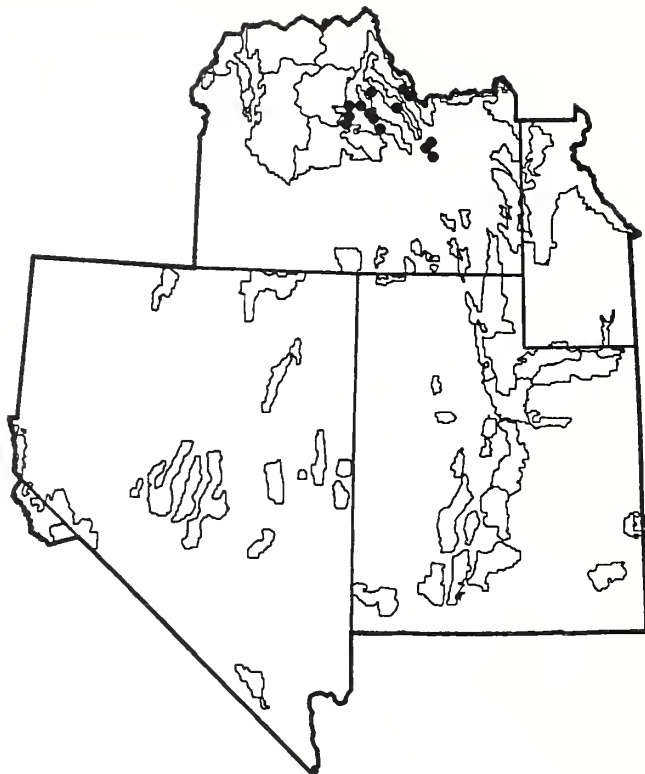
Distribution.—Lemhi milkvetch occurs along the upper Salmon River near Challis and disjunctly from along the lower Lemhi River in Custer, Lemhi, and Butte counties, Idaho.

Management Implications.—Population numbers vary from year to year. Habitat areas are grazed by domestic livestock and large herds of antelope. Monitoring studies are needed to access the variation in populations and population numbers needed to maintain species viability.

References.

Barneby, R.C. 1949. *Astragalus wootonii* Sheld. var. *aquilonius* Barneby. Amer. Midl. Nat. 41:499.

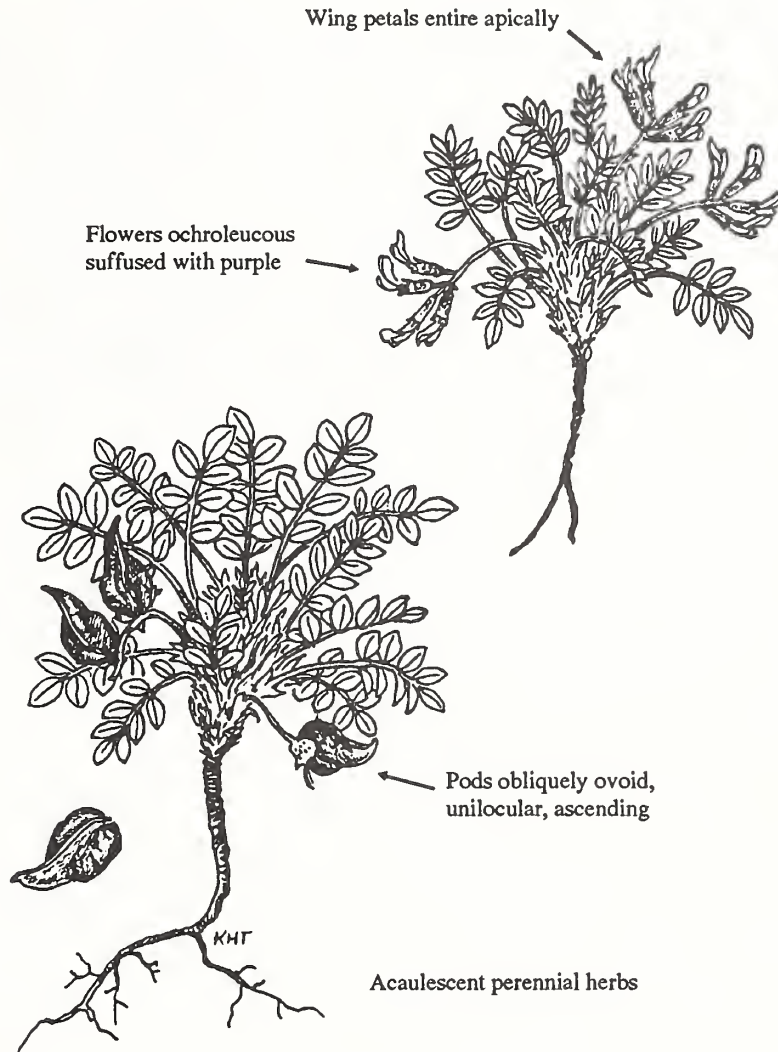
Barneby, R.C. 1964. Atlas of North American Astragali. Mem. of the New York Bot. Gard. Part II, p. 875-876, 1964.



Distribution of *Astragalus aquilonius*.

BICKNELL MILKVETCH

Astragalus consobrinus (Barneby) Welsh
Fabaceae (Leguminosae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not Listed

Heritage Global/State Status: G2G3/UT-S2S3

Description.—A member of the pea family, Bicknell milkvetch is very small, forming tufts of silver-gray foliage 3-20 cm in diameter and 1-5 cm tall, essentially lacking stems. The leaves, with 3-11 leaflets, are densely hairy on both sides. Flowers occur 2-7 per stem. The sepals are hairy and form a vase-shaped tube. The petals are whitish, sometimes faintly pinkish tinged.

Reproduction.—A perennial herb, this milkvetch sometimes flowers the first year. Flowering occurs from mid-May to mid-July with hairy pods produced later. The pods are 11-19 mm long, ovoid, and straight with a triangular beak.

Habitat.—Bicknell milkvetch is found on volcanic gravel, gravelly or sandy knolls, barren stony hillsides, cobblestone bluffs, and outwash fans on sandstone and volcanic debris. It appears in desert shrub, pinyon-juniper, and sagebrush-grassland communities. Elevation between 5,200-8,500 feet.

Distribution.—It is located on the upper forks of the Sevier River and the east slope of the Utah Plateaus from southeast Emery and Sevier to southwest Garfield counties, Utah.

Management Implications.—Habitat areas have received heavy grazing pressure from domestic livestock. The species trend should increase with improvement in range conditions. Road construction and mining activities pose additional threat to the species.

References.

Barneby, R.C. 1949. *Astragalus castaneiformis* var. *consobrinus*. Amer. Midl. Nat. 41:496.

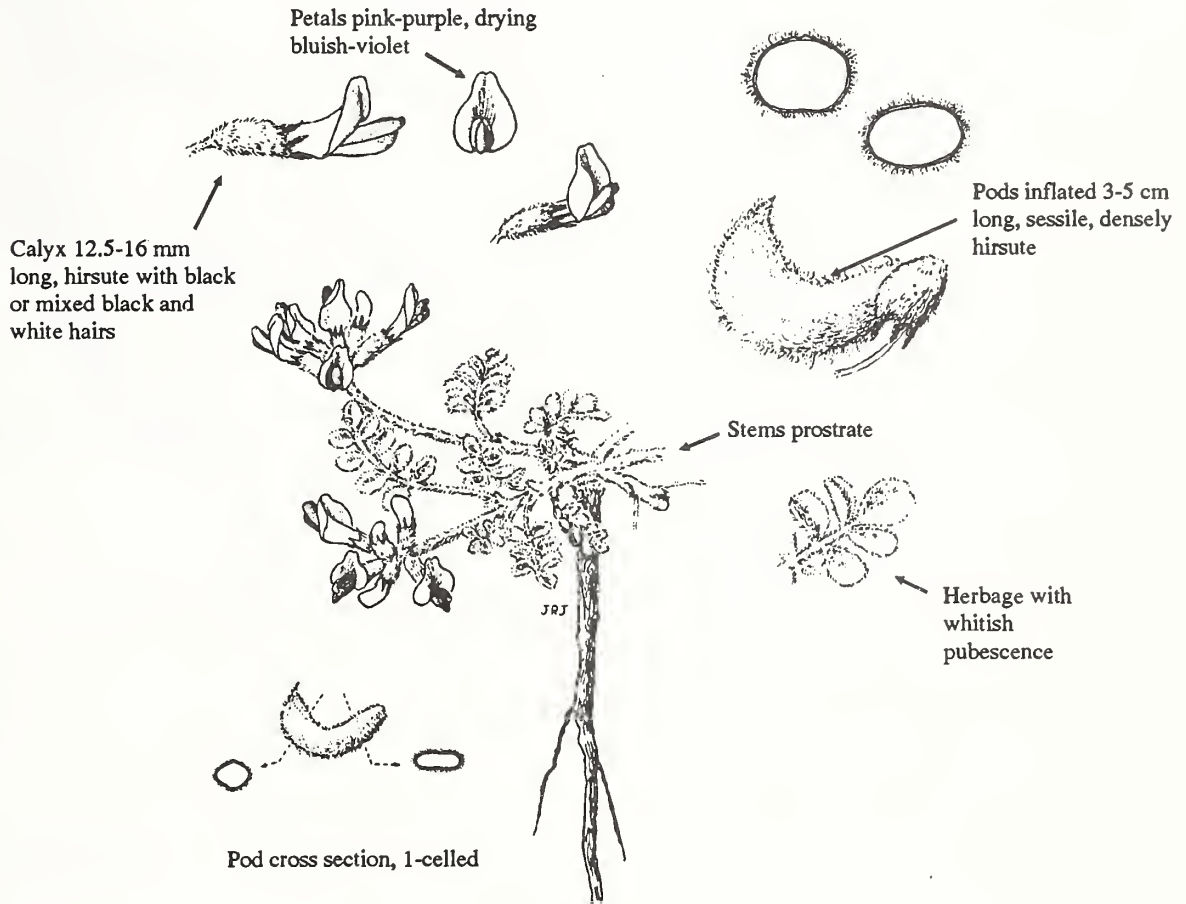
Welsh, S.L. 1978. *Astragalus consobrinus*. Great Basin Natur. 38 (3):271.



Distribution of *Astragalus consobrinus*.

FUNERAL MILKVETCH

Astragalus funereus Jones
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not Listed

Heritage Global/State Status: G2/CA-S2.2, NV-S2

Description.—Funeral milkvetch is a perennial, mat-forming plant which grows from a taproot. Stems are prostrate and up to 1 dm long. The herbage is covered with a dense, white, tangled pubescence that gives a woolly appearance. The leaves are pinnate with 7-17 oval leaflets up to 5 cm long. The flowering peduncles are stout with 5-10 flowers. The calyx lobes have prominent black hairs. The pink-

purple flowers are 2.4-2.7 cm long. The mature silky-woolly pods are inflated and 5 cm long by 1.5 cm wide.

Reproduction.—Growing from a perennial rootstock, funeral milkvetch flowers from March to May with fruit setting about 3 weeks after flowering.

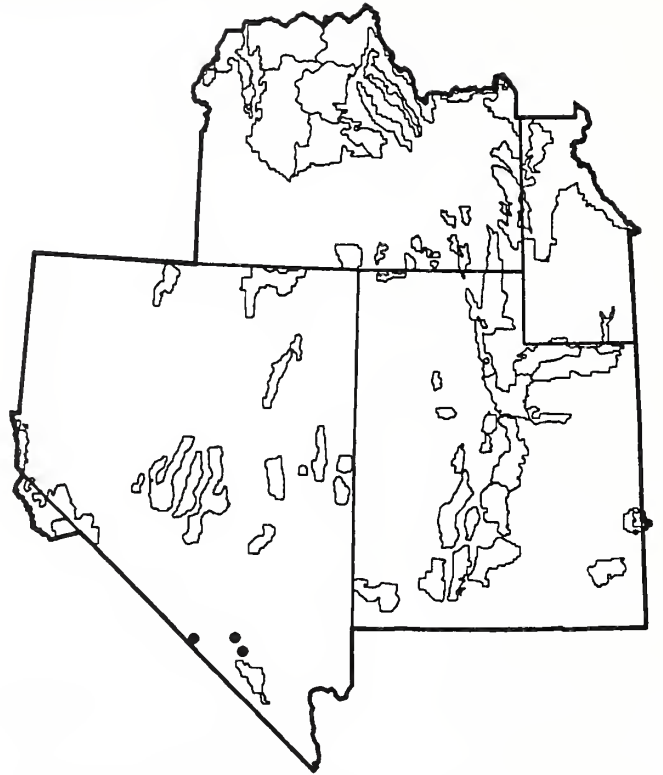
Habitat.—It grows in sagebrush, shadescale, and creosote communities on gravelly clay ridges, cliff ledges, and talus slopes between 3,200-7,500 feet elevation.

Distribution.—This milkvetch is found in Nye and Clark counties of southern Nevada and Inyo County, California.

Management Implications.—Populations could be threatened if potential mineral development is pursued. This plant is a very attractive *Astragalus*, worthy of ornamental status. Complete surveys should be conducted to determine the species range and status.

References.

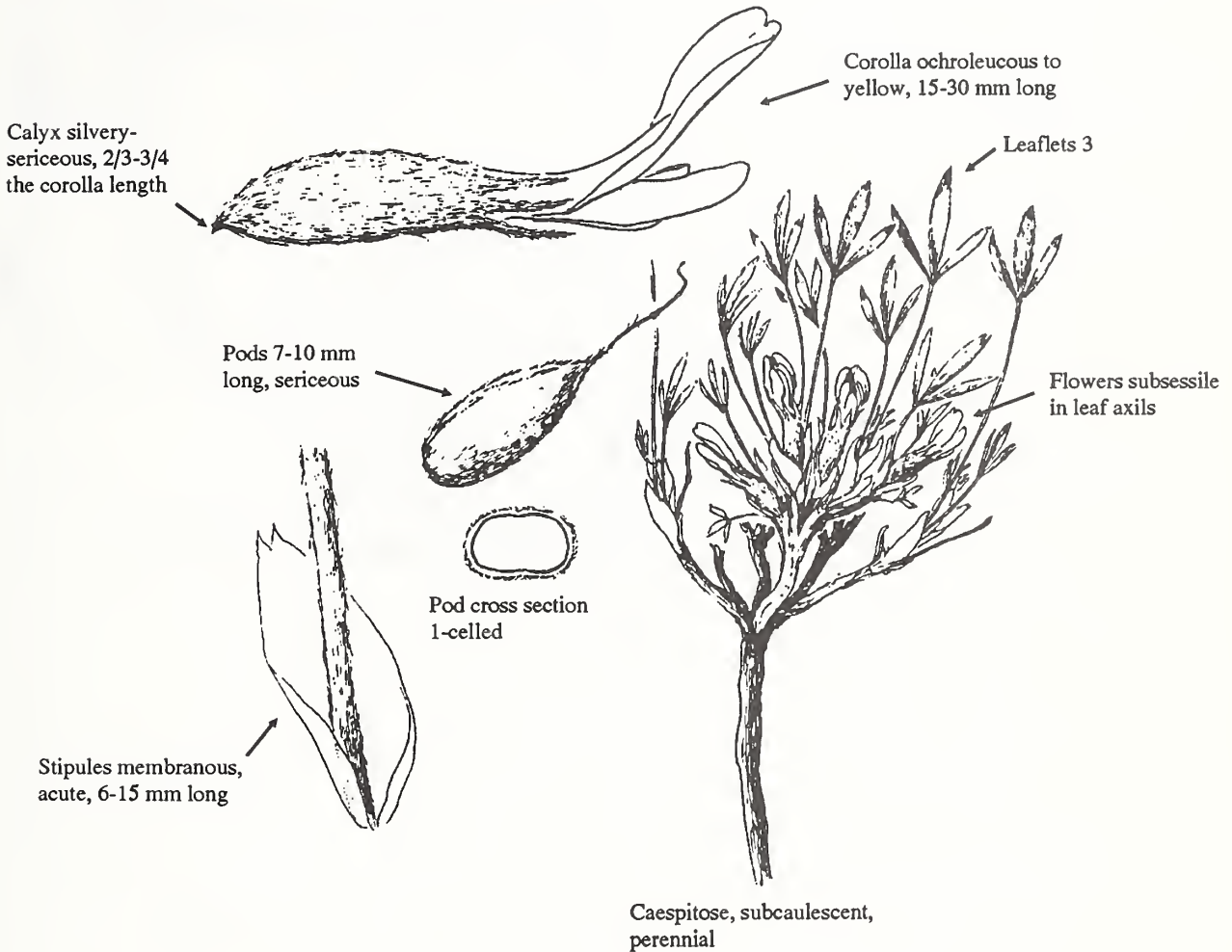
Barneby, R.C. 1964. Atlas of North American *Astragali*, part II. Mem. New York Bot. Gard. 13: 686-688.



Distribution of *Astragalus funereus* in Nevada.

PLAINS MILKVETCH

Astragalus gilviflorus Sheld.
Fabaceae (Leguminosae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S1

Description.—A member of the pea family, plains milkvech forms mounded tufts with lustrous silvery hairs, 1.5-13 cm tall. The leaves (1.5-10 cm long) consist of 3 palmate leaflets, the terminal one slightly longer than the lateral pair. Flowers, which are long and narrow, occur in 2's (rarely 1 or 3) and are located in the leaf axils. The sepals are densely hairy forming a cylindrical tube. Petals are white

to yellow with a pink-purple tip, or rarely entirely pink-purple or bluish.

Reproduction.—A perennial herb, plains milkvech is among the earliest spring flowers, blooming from a bud formed in the winter. Flowering occurs in rapid succession and lasts only a few days beginning in May, June in the higher elevations. The 1-celled pod is ovoid, 6-10 mm long, fleshy, and densely hairy. The seeds are deep purple-black, smooth but dull, and sometimes distorted.

Habitat.—Plains milkvech is located on barren knolls, stony hilltops, and gullied bluffs and badlands. It occurs on

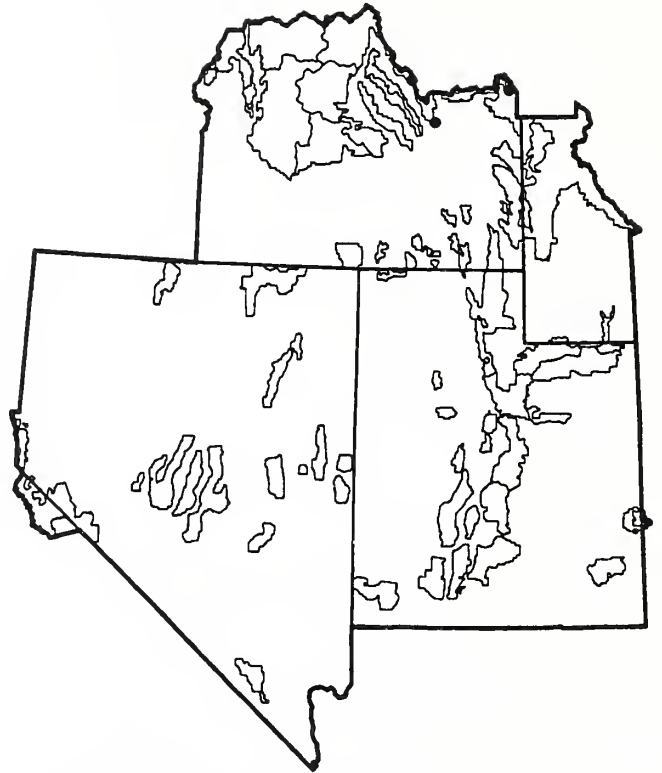
limestone, shale, or sandstone in sagebrush communities. Elevation between 5,340-6,590 feet.

Distribution.—This milkvetch occurs on the east base of the Rocky Mountains, from Montana to Colorado, east to Saskatchewan and Nebraska. It is known in southwestern Clark County, Idaho and from Bear River Valley and Echo Canyon in Rich and Summit counties, Utah and Sheep Creek in Daggett County, Utah.

Management Implications.—Habitat areas are grazed by livestock with heavy use occurring in some areas. Potential mineral development could also impact this species.

References.

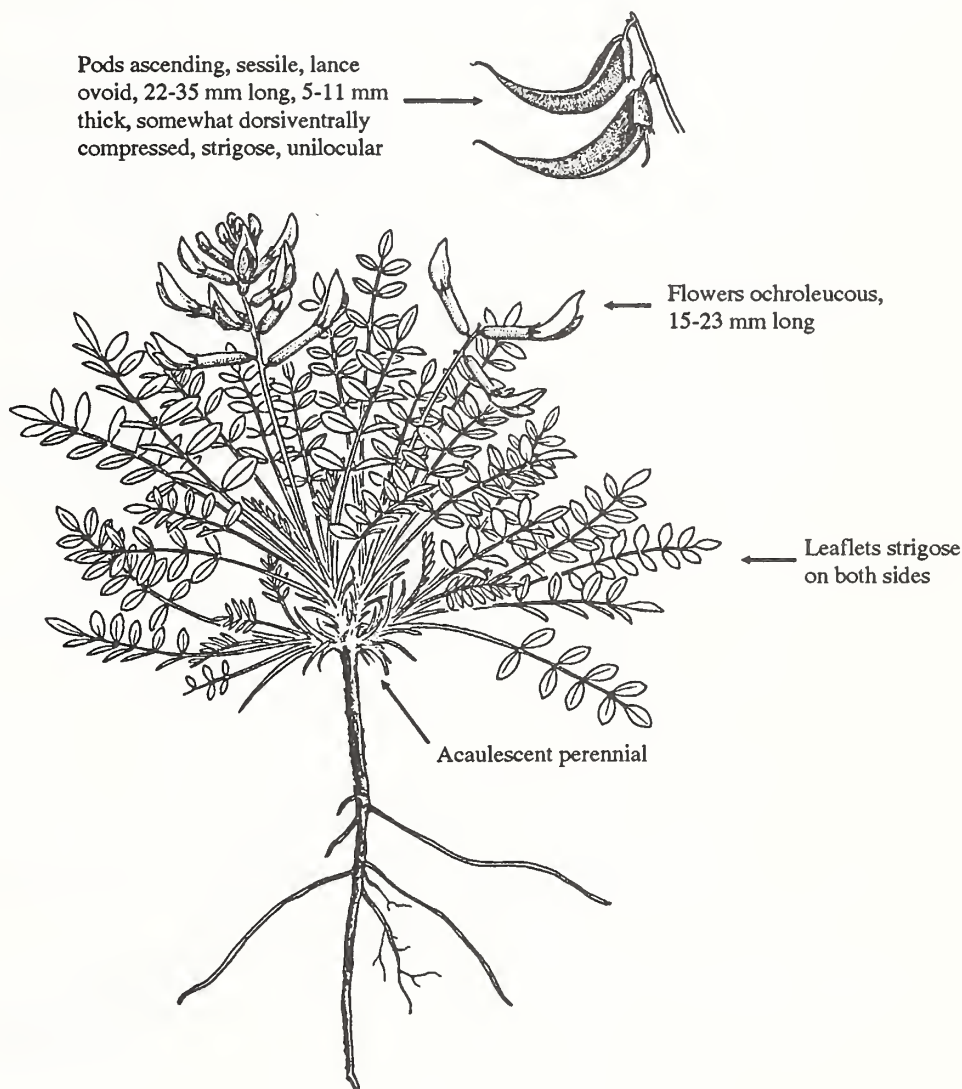
Sheldon, E.P. 1894. *Astragalus gilviflorus*. Minn. Bot. Stud. 1:21.



Distribution of *Astragalus gilviflorus* in Idaho.

DANA MILKVETCH

Astragalus henrimontanensis Welsh
Fabaceae (Leguminosae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the pea family, Dana milkvetch grows 4-15 cm tall from a branching base, which is clothed with coarse persistent leaf bases. Each branch contains persistent leaf bases. The leaves contain 7-17 elliptic to oblanceolate leaflets which are hairy on both sides. The yellowish flowers occur 2-11 per cluster, the sepals form a long, cylindric, hairy tube. The petals are yellow-white with a purple tip.

Reproduction.—Dana milkvetch is a perennial herb which flowers from April to May. It produces a slightly curved, unilocular, 22-35 mm long hairy pod.

Habitat.—This milkvetch occurs in washouts and gravel soil in mixed ponderosa pine, juniper, and sagebrush communities. Elevation between 7,000-9,200 feet.

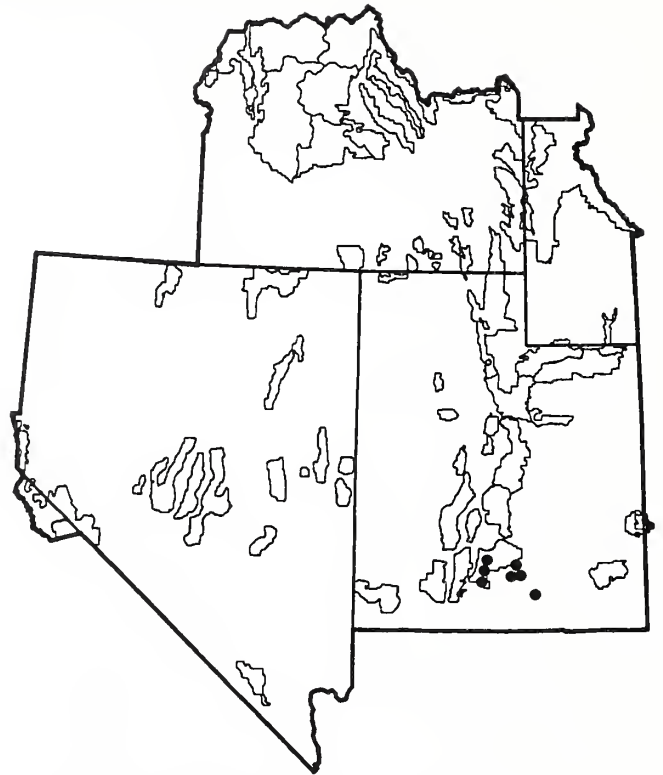
Distribution.—This species is endemic to the Henry Mountains and Aquarius Plateau in Garfield County, Utah.

Management Implications.—Reclamation of vegetation on the Henry Mountains, chaining, windrowing, and reseed-

ing with introduced old-world plants are threats to this species.

References.

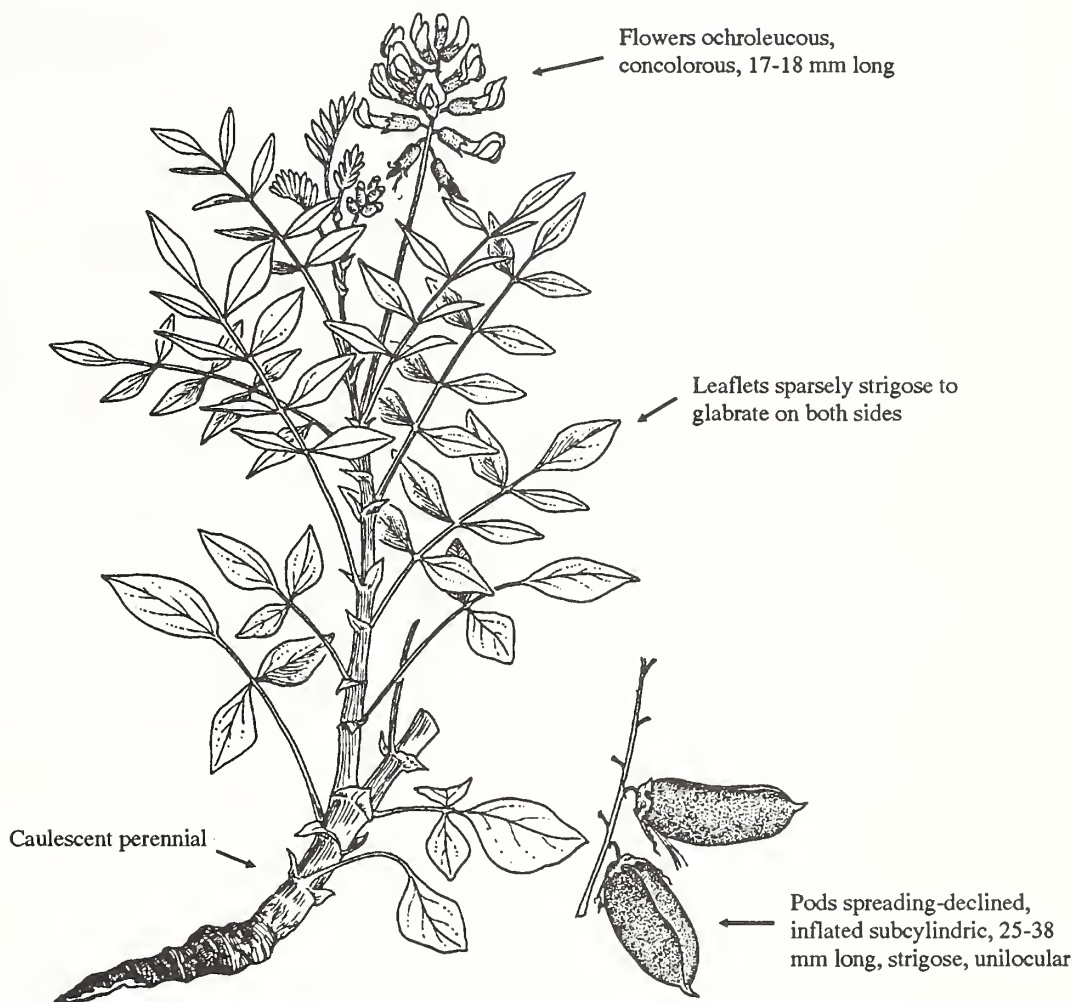
Welsh, S.L. 1978. *Astragalus henrimontanensis*. Great Basin Natur. 38:281.



Distribution of *Astragalus henrimontanensis*.

ISELY MILKVETCH

Astragalus iselyi Welsh
Fabaceae (Leguminosae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1G2/UT-S1S2

Description.—A member of the pea family, Iseley milkvetch grows 8-25 cm tall from a branching caudex. The stems are ascending to erect. The leaves consist of 5-13 leaflets which are sparsely hairy on both sides. The flowers occur 7-20 per cluster and are yellow-white in color. The sepals form a hairy tube 5.5-6.3 mm long.

Reproduction.—A perennial, flowering for this milkvetch begins in late March and continues into early June. The

unilocular pods are inflated, subcylindric, leathery, and 25-38 mm long. Seed is set in 10-15 days and is dispersed by late August or early September. There are no known pollinators using this plant. It has a very strong selenium odor. Plants appear to be short-lived with new plants produced in years with adequate moisture.

Habitat.—The Iseley milkvetch occurs in the heavy, strong structured seleniferous and gypsiferous clays of the Morrison and Paradox Geologic formations that occur along the western and southern foothills of the LaSal Mountains. It is found in the pinyon-juniper and desert shrub plant communities at elevations between 5,000-6,500 feet. Plants

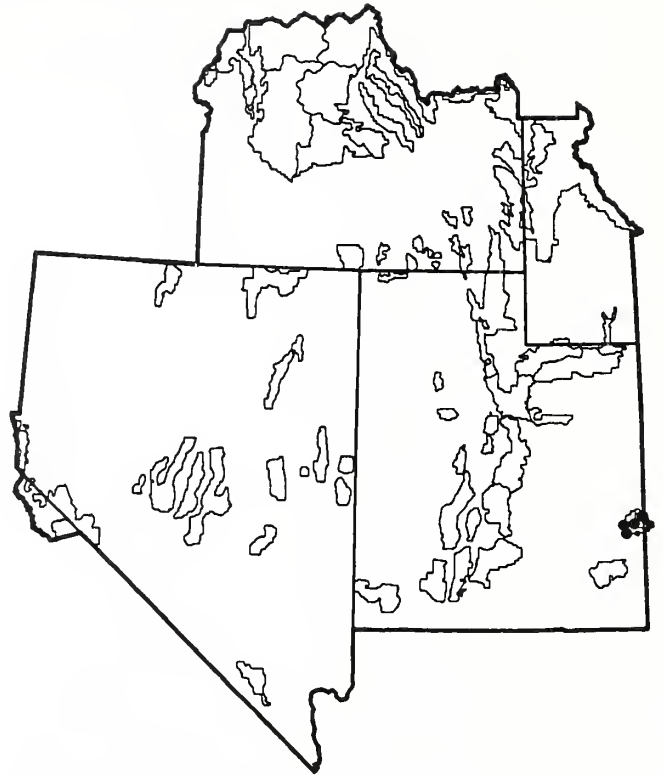
have been found growing on all exposures, however it prefers the more moist sites, such as gully bottoms, road borrow areas, and places where some moisture may accumulate.

Distribution.—This plant is endemic to Grand and San Juan counties, Utah. It is restricted to the clay outcrops along the foothills of the LaSal Mountains.

Management Implications.—Livestock do not use this plant for forage because it is poisonous and has a very offensive odor. Monitoring studies need to be initiated to help determine its population dynamics and distribution.

References.

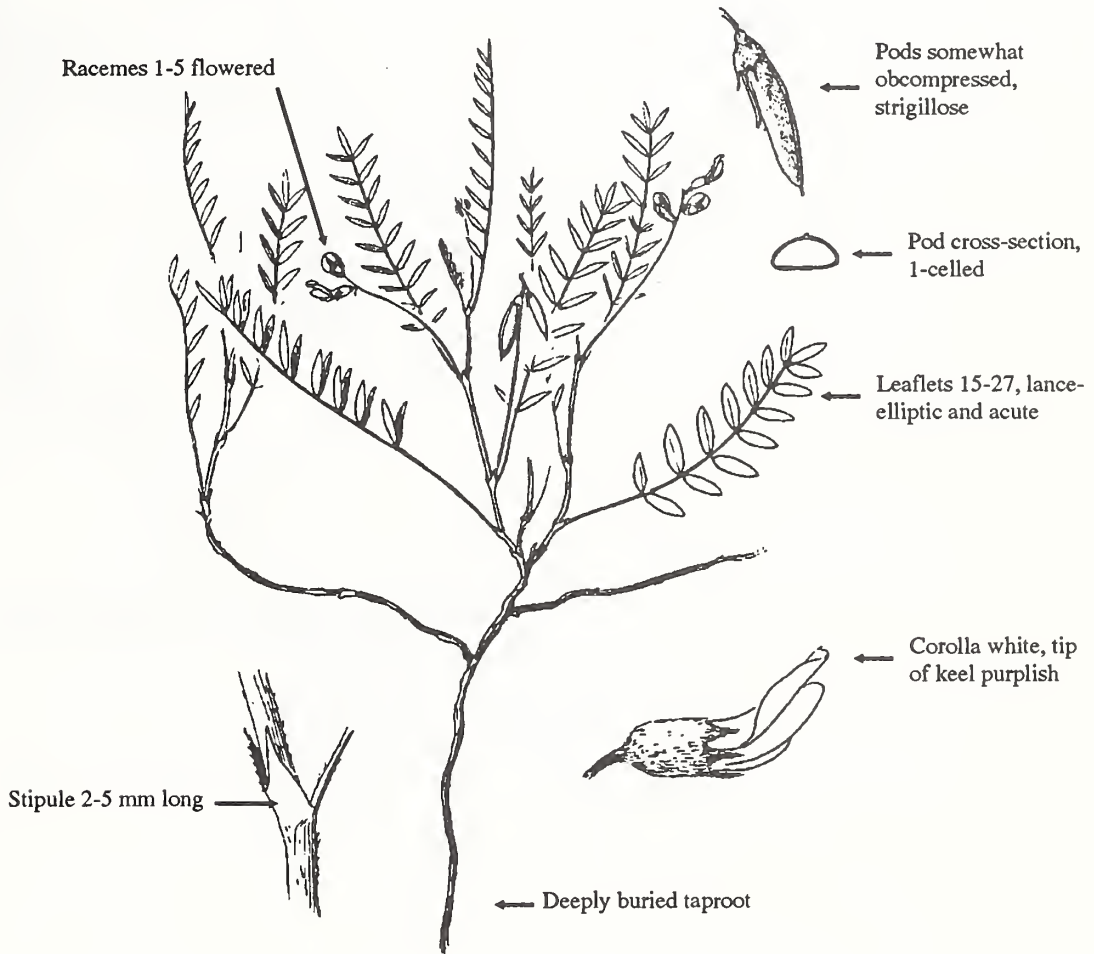
Welsh, S.L. 1974. *Astragalus iselyi*. *Great Basin Natur.* 34:305.



Distribution of *Astragalus iselyi*.

PARK MILKVETCH

Astragalus leptaleus Gray
Fabaceae (Leguminosae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S1

Description.—A member of the pea family, Park milkvetch widely branches from buds on a matted base. The stem (5-20 cm long) is bright green with fine straight hairs. Each leaf contains 15-27 thin-textured, elliptic leaflets. The flowers form near or well below the middle are tiny, occurring 1-5 (commonly 2 or 3) per cluster, and are often concealed by the prolific foliage. The sepals are thinly covered

with black, or rarely white, hairs and form a bell-shaped tube. The petals are white with a dull bluish-purple tip.

Reproduction.—A perennial herb from a slender deeply buried taproot, this milkvetch flowers from June to September. The 1-celled pod is elliptic and 8-14 mm long with fine hairs. The pods become papery when dry. The seeds are brown, smooth, and lustrous.

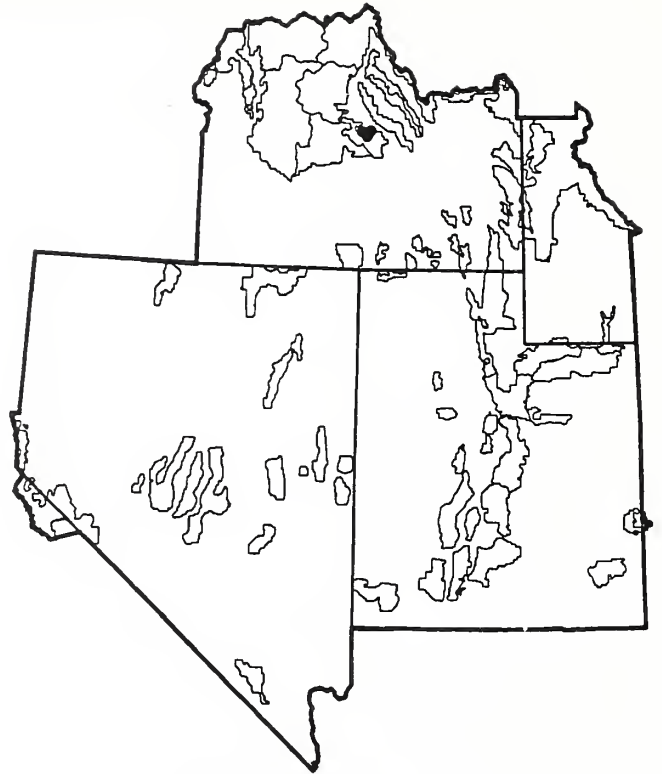
Habitat.—Park milkvetch forms small scattered colonies or runs together into extensively matted growths in sedge-grass meadows, swales, and hummocks at the edges of mountain brooks and among streamside willows. Elevation between 2,800-8,700 feet.

Distribution.—This plant occurs from western Montana to east-central Idaho, south in the Rocky Mountains to Colorado and reportedly north to Alberta.

Management Implications.—In all locations, these plants are subject to trampling and grazing and in no case are individual numbers numerous. An additional threat is fishing and camping vehicle traffic. Tracks have been found which pass near some populations.

References.

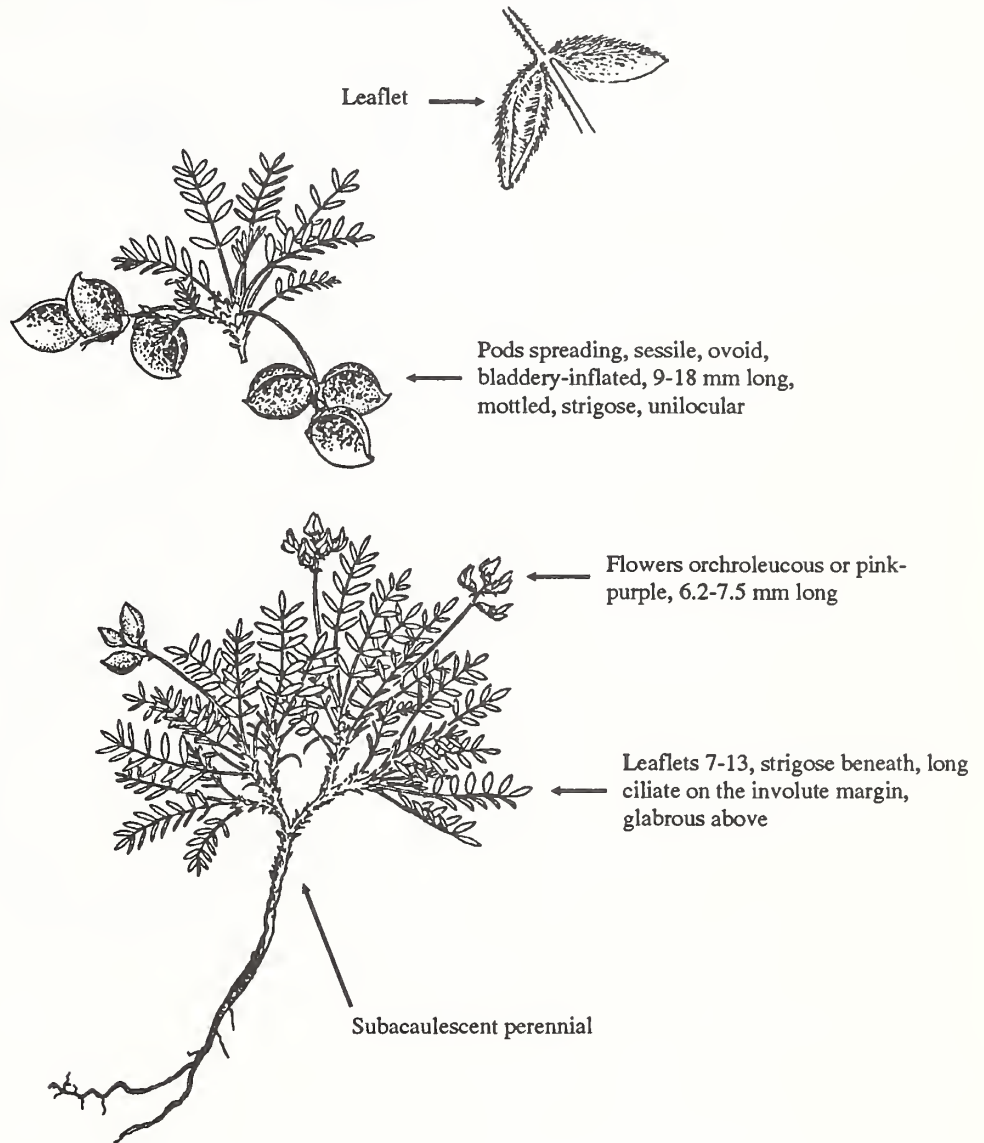
Gray, A. 1864. *Astragalus leptaleus*. Proc. Amer. Acad. 6:220.



Distribution of *Astragalus leptaleus* in Idaho.

NAVAJO LAKE MILKVETCH

Astragalus limnocharis Barneby var. *limnocharis* Barneby
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1T1/UT-S1

Description.—An herbaceous member of the pea family, Navajo Lake milkvetch arises from a branched caudex, 1-5 cm tall. The herbage is greenish and the stipules are connate. The leaves are composed of 7-13 lanceolate to elliptic or oblong leaflets which have inrolled margins and are hairy beneath and along the margin. Flowers arise in clusters of 2-10 and are yellow-white or pink purple in color. The

sepals are covered with black hairs and form a tube around the petals.

Reproduction.—A perennial herb growing from a taproot, this milkvetch flowers from June to August. Its unilocular pod is 9-18 mm long, ovoid, green, hairy, and inflated, forming a beak at the tip. Fruiting occurs through October. The pods are dispersed by wind and wave action. Plants die back to the perennial root to overwinter.

Habitat.—Open gravel beaches along lake shores and loose, rocky slopes of the pink Wasatch Limestone Formation. The soils are poorly developed, mostly of clay texture. Vegetation is sparse and consists mostly of plants that can

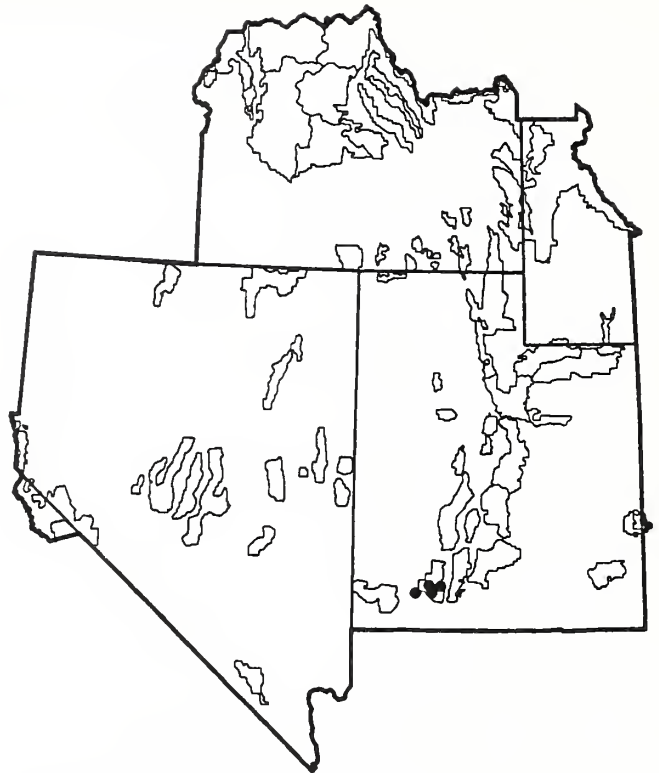
inhabit poorly developed clay sites like grasses and sedges. It grows in association with scattered bristlecone pine.

Distribution.—The type locality for this plant is on the beach at Navajo Lake. It occurs in southeast Iron, northwest Kane and Garfield counties, Utah. Plants can be found along the terraces below the high water lines as the lake recedes.

Management Implications.—Over utilization of the beach for recreation purposes and modification of the lake may threaten the habitat. Timber harvesting and associated roads and skid trails are potential threats.

References.

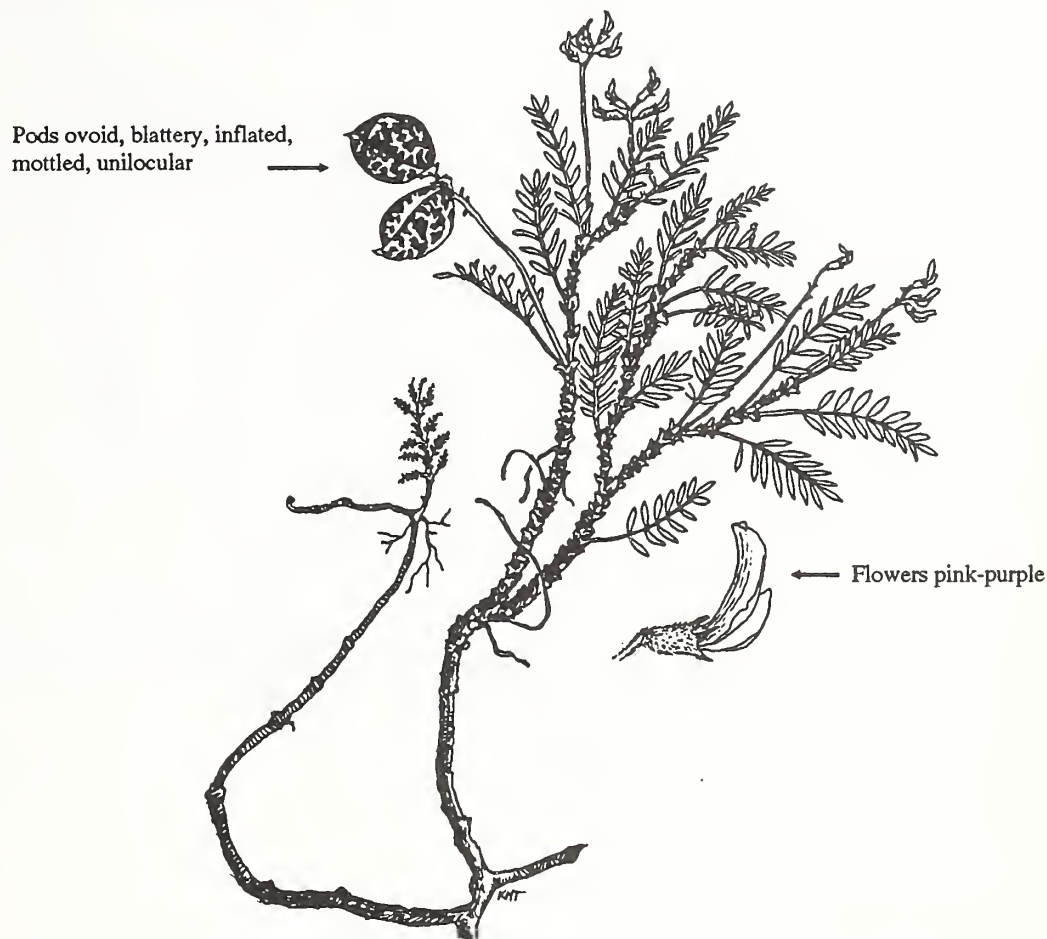
Barneby, R.C. 1946. Pugillus Astragalorum—V. Leaflet. W. Bot. 4:228-238.



Distribution of *Astragalus limnocharis* var. *limnocharis*.

TABLE CLIFF MILKVETCH

Astragalus limnocharis Barneby var. *tabulaeus* Welsh
Fabaceae (Leguminosae)



Plants soboliferous

USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1T1/UT-S1

Description.—An herbaceous member of the pea family, Table Cliff milkvetch is similar to Navajo Lake milkvetch. It arises from a branched caudex, 1-5 cm tall with greenish herbage and connate stipules. The leaves are composed of 7-13 oblong leaflets with inrolled margins. The leaflets are hairy beneath and exhibit long hairs along their margins. The flowers arise in clusters of 2-10 and are pink-purple.

The sepals form a tube around the petals. This milkvetch is soboliferous allowing it to survive on steep slopes.

Reproduction.—A perennial herb growing from a taproot, Table Cliff milkvetch flowers from June to August. Its unilocular pod is ovoid and inflated. Plants spread by underground runners. Surviving plants overwinter by the perennial root.

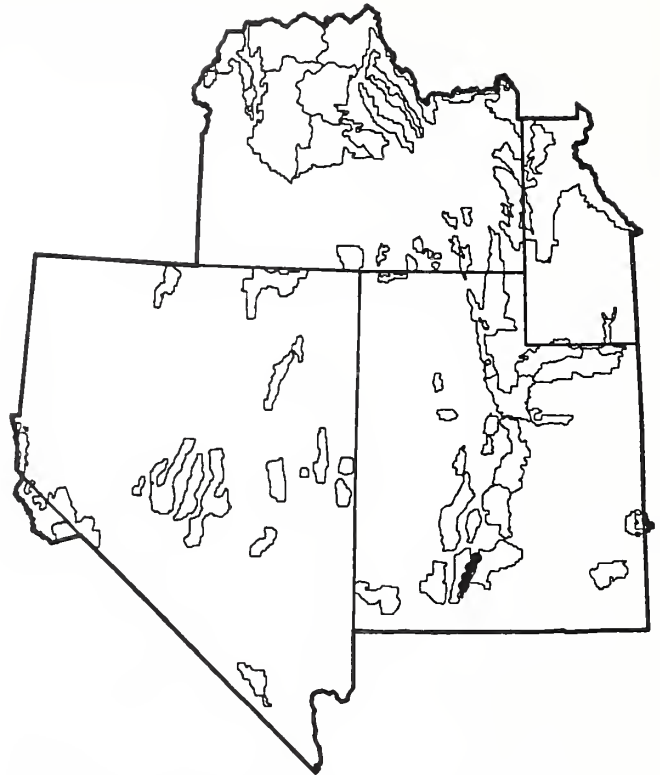
Habitat.—Growing on steep unstable slopes on the pink member of the Wasatch Limestone Formation. Elevation between 9,200-10,170 feet.

Distribution.—It is located in the pass between Boulder Mountain and the Table Cliff Plateau, Garfield County, Utah. It is endemic to this area.

Management Implications.—Any timber harvesting in essential habitat areas of this species may have a significant impact on viability.

References.

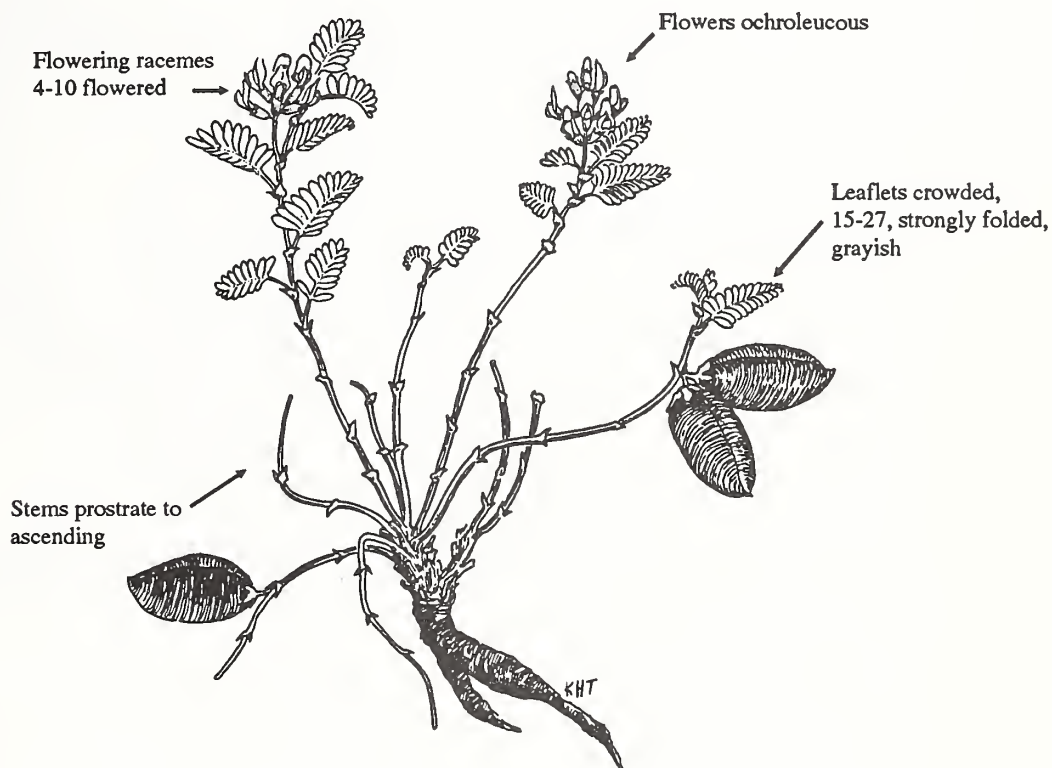
Welsh, S.L. 1986. New taxa in miscellaneous families from Utah. *Great Basin Natur.* 46(2):261-264.



Distribution of *Astragalus limnocharis* var. *tabulaeus*.

DRAGON MILKVETCH

Astragalus lutosus Jones
Fabaceae (Leguminosae)



Perennial from a short caudex

USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4/UT-S3

Description.—This member of the pea family grows from a subterranean branched caudex with the branches occasionally rhizomatus. It grows to a height of 2-10 cm. The stems spread out in flat, radiating fashion with the tips curving upward. The leaves are pinnately compound with 11-27 strongly folded, grayish leaflets. The flowers are 20-38 mm long, white to yellowish in color, and there are

4-10 flowers per cluster. The lower petal or keel has a purple tip.

Reproduction.—A perennial, flowering occurs May to August. The fruit is a legume 15-37 mm in length, 8-23 mm thick, and ovoid-ellipsoid in shape. The pod is bladdery inflated with 1 inner chamber and covered outside with stiff straight hairs. The legumes are wind dispersed.

Habitat.—Barren shale knolls and bluffs in shadscale, desert shrub, and pinyon-juniper communities on the Green River Shale Formation. The range of elevation is between 5,150-4,415 feet.

Distribution.—Eastern Uintah County, Utah, Rio Blanco and Garfield counties, Colorado, and disjunct in Wasatch and Utah counties, Utah.

Management Implications.—The distribution of this species is widespread and locally common. It is however, located in areas potentially subject to oil shale development, which would cause an immediate threat to the species. Portions of its habitat are heavily grazed by domestic livestock, cattle and sheep, and is important winter range for deer and elk. Monitoring studies should be initiated to access use, condition and trends.

References.

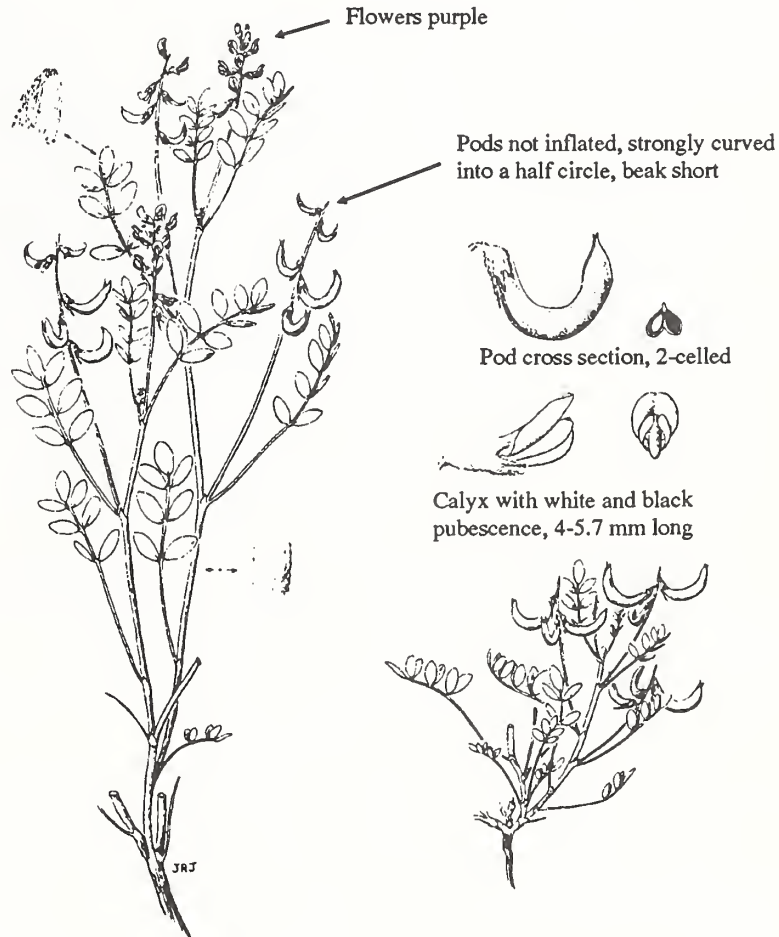
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah Flora. Great Basin Natur. Mem. No. 9:369.



Distribution of *Astragalus lutosus* in the Intermountain Region.

HALF-RING POD MILKVETCH

Astragalus mohavensis S. Wats. var. *hemigyris* (Clokey) Barneby
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3T2/CA-S1.2, NV-S2

Description.—This low winter annual or short-lived perennial has silvery-white hairs with numerous stems trailing up to 4 dm long. The leaves are 2-10 cm and blunt or indented at the tip. The inflorescence extends a little beyond the leaves and bears purple flowers 5-8 mm long. The leathery, strongly-veined fruit is curved into a half-circle with a short beak.

Reproduction.—The species reproduces by seeds which probably germinate and flower the same year, and may live for 1 to several years. Plants flower in April to June, depending on available moisture, and set mature fruit 2-3 weeks after flowering.

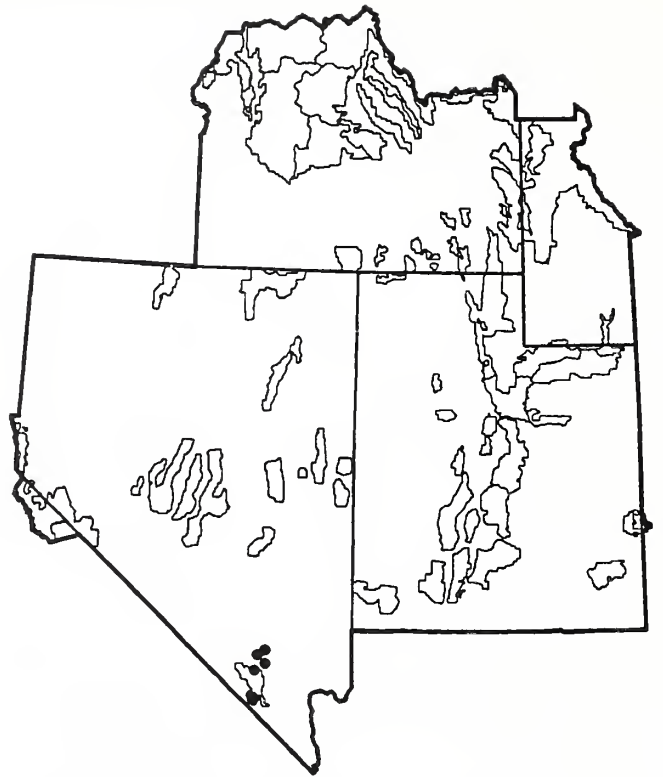
Habitat.—This milkvetch occupies creosote brush and blackbrush communities on limestone ledges and gravelly hillsides between 4,065-6070 feet elevation.

Distribution.—It is found in Clark County, Nevada and Inyo County, California.

Management Implications.—The habitat occupied by the species is heavily used for recreation purposes and grazed by domestic livestock, wild horses, and wild burros. The degree of impacts need to be determined and essential habitat protected.

References.

Barneby, R.C. 1964. Atlas of North American *Astragali*, part II. Mem. New York Bot. Gard. 13:1025.

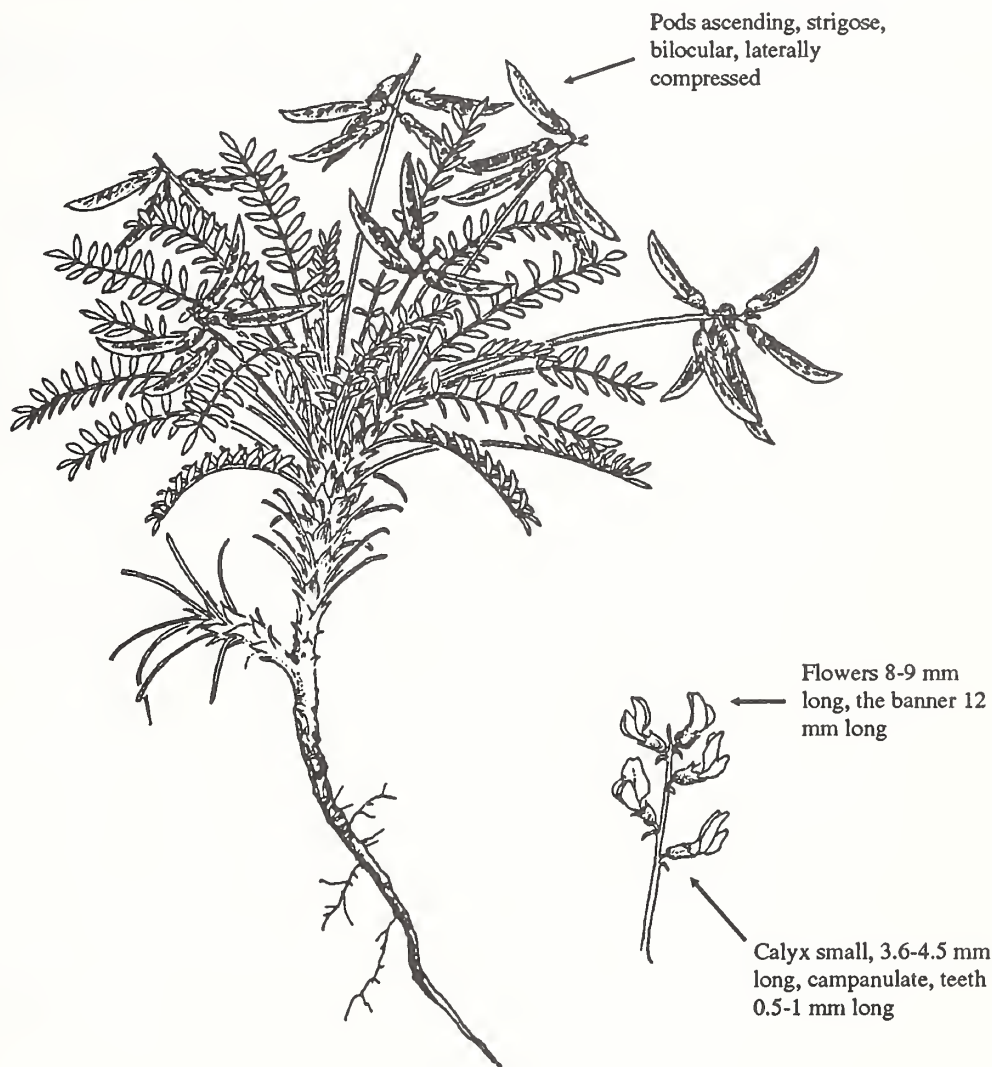


Distribution of *Astragalus mohavensis* var. *hemigyris* in Nevada.

MONUMENT MILKVETCH

Astragalus monumentalis Barneby

Fabaceae (Leguminosae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the pea family, monument milkvetch grows 3-18 cm tall from a branching caudex. The herbage is hairy sometimes shortly malpighian. The stems arise 1-6 cm with the internodes commonly concealed by the distinct stipules. The leaves consist of 5-12 leaflets which are elliptic or oblanceolate and hairy beneath. The flowers arise 3-9 per cluster and are pink-purple in color. The sepals are hairy and purplish in color.

Reproduction.—A perennial, flowering for this milkvetch begins in late April and continues into June. It forms pods which are narrowly oblong to lanceolate in outline, 12-21 mm long, bilocular, often mottled, and triangular in cross section. Seed is set in 5-10 days and is ripe and scattered by mid July. Plants live from one to several year. New plants appear from germinating seeds in years of adequate moisture.

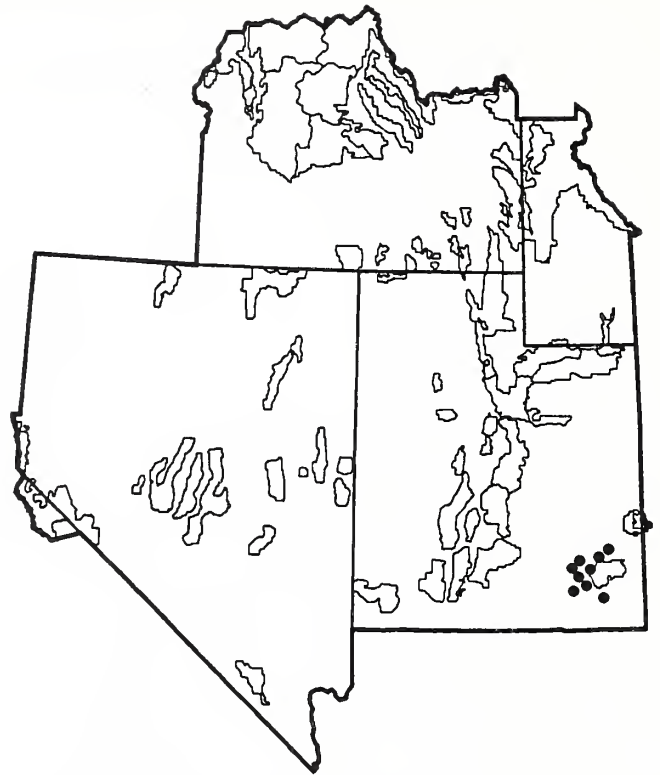
Habitat.—Monument milkvetch is found in cracks, crevices, and shallow depressions in open slickrock within mixed desert shrub and pinyon-juniper plant communities. Elevation between 4,300-6,500 feet.

Distribution.—This plant is endemic to Garfield and San Juan counties, Utah.

Management Implications.—This low, short-lived plant has little forage value for any user except possibly deer or desert bighorn sheep. Studies need to be initiated to help determine the present status and population diversity.

References.

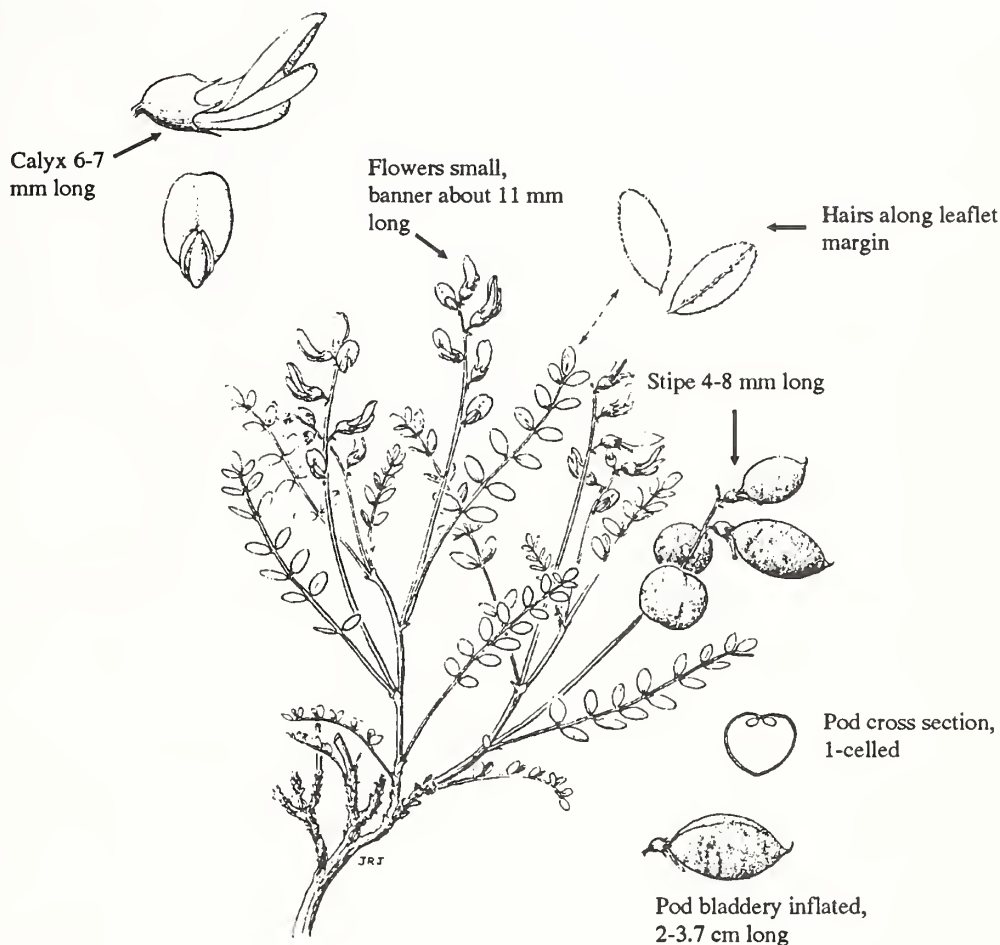
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987.
A Utah Flora. Great Basin Natur. Mem. No. 9:370.



Distribution of *Astragalus monumentalis*.

LEE CANYON MILKVETCH

Astragalus oophorus Wats. var. *clokeyanus* Barneby
Fabaceae (Leguminosae)



USWFS Status: C1
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G4T1/NV-S1

Description.—A member of the pea family, Lee Canyon milkvech is low and slender with stems up to 1 dm long. The leaflets are small, less than 1 cm long with hairs along the margin. The flowers are also small with the banner and keel claws 5 mm long. The petals are white or all yellow-white, tipped with lavender. The banner is reddish-purple with a white eyespot.

Reproduction.—A perennial herb, flowering occurs from June to July. It produces a pod, 2.0-3.7 cm long, which is 1-celled and bladdery inflated. The legumes are wind dispersed. Plants overwinter by the perennial root.

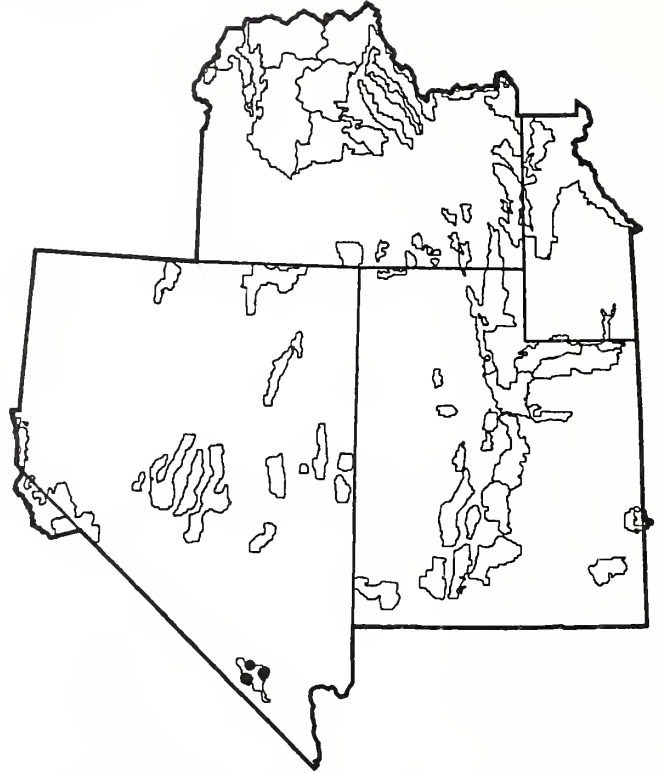
Habitat.—Lower edge of the forest belt on open slopes in yellow pine forest and in the pinyon-juniper belt on gravelly soil derived from limestone. Elevation between 8,100-9,100 feet.

Distribution.—Known only from the upper reaches of Lee Canyon and the north and west side of the Charleston Mountains, Clark County, Nevada.

Management Implications.—The habitat occupied by the species is heavily used for recreation purposes and grazed by domestic livestock, wild horses, and wild burros. The degree of impacts need to be determined and essential habitat protected.

References.

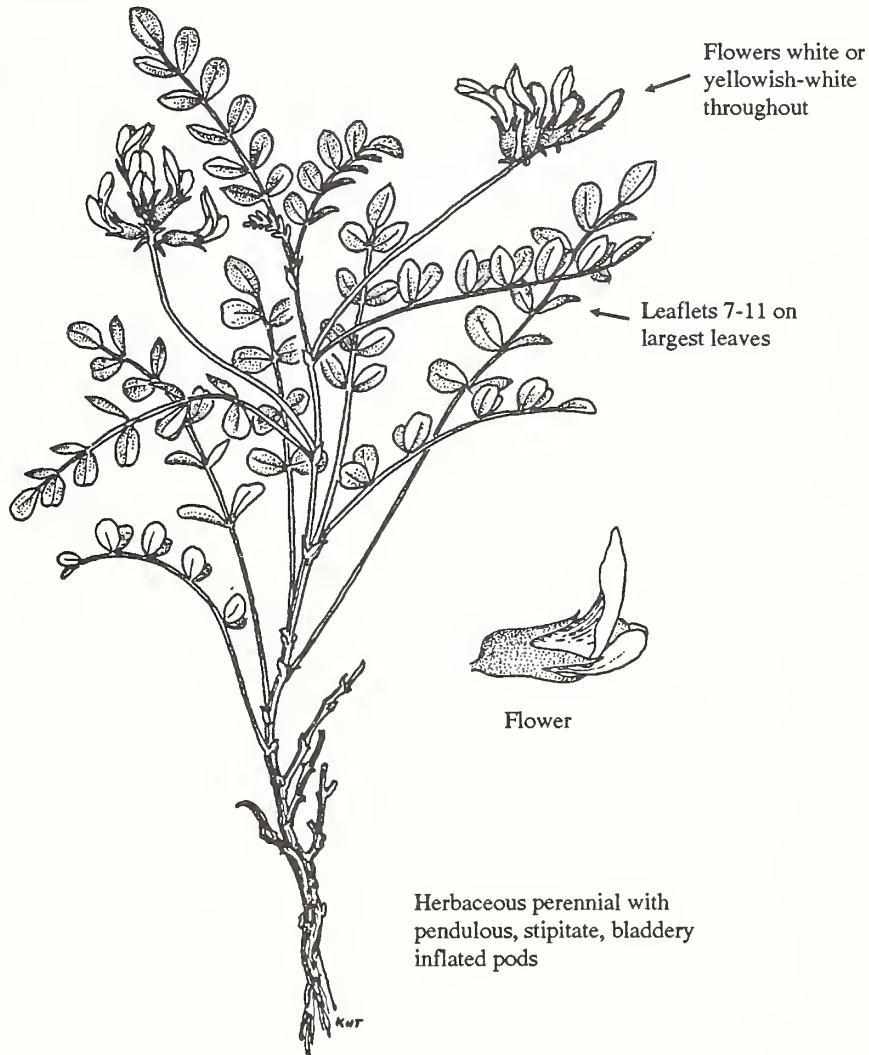
Barneby, R.C. 1954. *Astragalus oophorus* var. *clokeyanus*.
Leafl. of West. Bot. 7(8):194.



Distribution of *Astragalus oophorus* var. *clokeyanus*.

LAVIN'S EGG MILKVETCH

Astragalus oophorus S. Wats. var. *lavinii* Barneby
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T1/CA-S?, NV-S1

Description.—This diffuse, caulescent, mostly glabrous milkvech grows from a perennial root-crown. The stems are decumbent-ascending and 1.0-2.5 dm tall. The compound leaves bear 7-11 leaflets which are 5-15 cm long. The flowering racemes are loosely 4-10 flowered. The 6-12 mm long calyx is usually glabrous except for some short white or black hairs on the calyx teeth. The corolla is white, drying

ochroleucous. The pods are widely spreading or pendulous, sessile, and bladdery-inflated.

Reproduction.—This plant is a perennial flowering in late May to June. It produces bladdery-inflated pods in June and July. These pods are wind dispersed with mature seeds intact. Viable seeds germinate to produce new plants. The perennial rootstocks live several years.

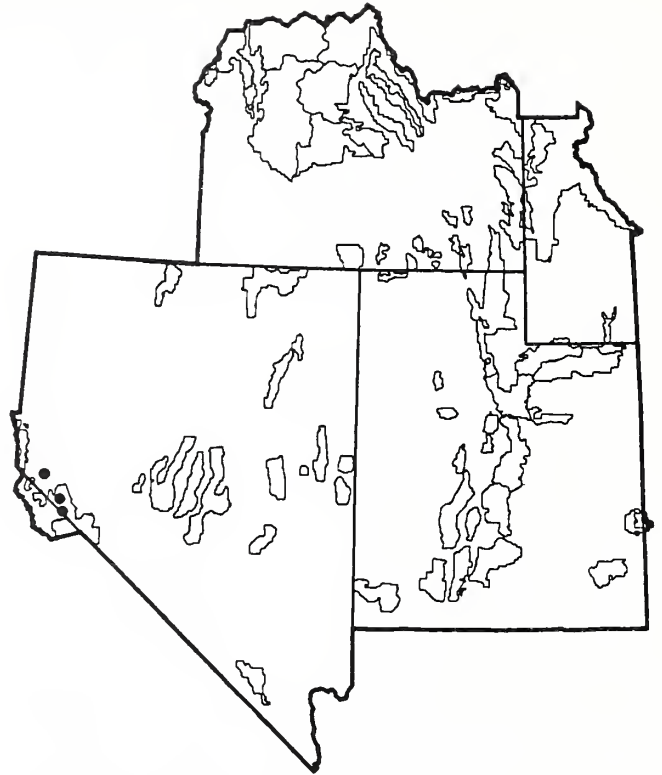
Habitat.—It grows in pinyon-juniper-sagebrush communities on open, gravelly or sandy hillsides, canyons, and knolls.

Distribution.—This milkvetch is found in western Nevada in Lyon and Douglas counties and in adjacent Mono County, California.

Management Implications.—Rangeland treatments of pinyon-juniper-sagebrush communities would have a significant impact on this species. Essential habitat areas should be determined and protected.

References.

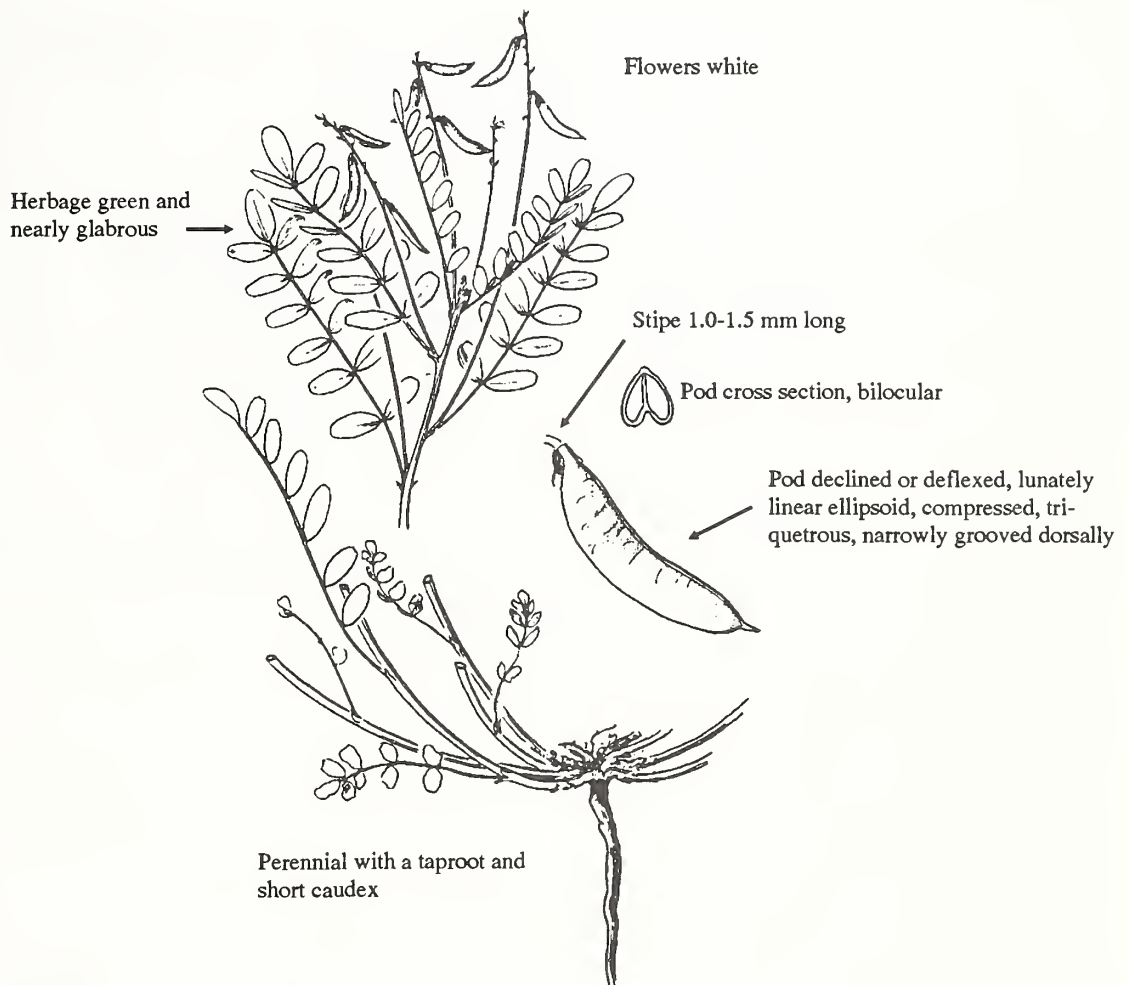
Barneby, R.C. 1984. *Dragma Hippomaniacum X: Astragali (Leguminosae) Nevadenses Novi Criticive, Singulo Peruviano Adjecto*. *Britt.* 36(2):167-173.



Distribution of *Astragalus oophorus* var. *lavinii*.

PAYSON'S MILKVETCH

Astragalus paysonii (Rydb.) Barneby
Fabaceae (Leguminosae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not Listed

Heritage Global/State Status: G4/WY-S2

Description.—A pale green member of the pea family, Payson's milkvech is rather slender with a shortly forking caudex growing to 5 dm high. The stems and the lower surface of the leaflets are hairy. The leaflets (7-15 per leaf) are bicolored, bright green above and pale beneath. The stems are numerous and sometimes grow forming large clumps. The flower cluster consists of 5-20 small, whitish

sometimes faintly lilac tinged flowers with sepals which are densely covered with black or black and white hairs.

Reproduction.—A perennial, Payson's milkvech flowers beginning in late June ending in August and produces fruit through October. The bilocular pod is thinly hairy and pea pod-shaped. The fruits become papery and straw-colored when dry. The seeds are smooth and brown. It dies back to a taproot to overwinter.

Habitat.—This milkvech grows in open places in the timber belt, sometimes in burned-over forests, on decomposed granites, or other open disturbed mountainous sites. It is also present in clear cut areas. It occurs in silty and ashy soils.

Elevation between 5,500-9,300 feet. Growth occurs in association with *Cirsium*, *Senecio*, and *Achillea*.

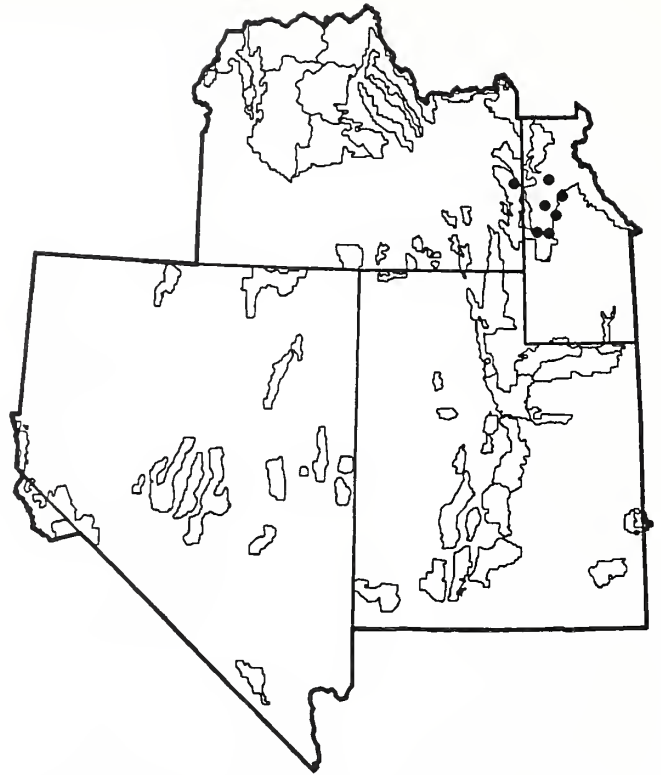
Distribution.—Known only from the Green-Snake watershed in Sublette and Lincoln counties, Wyoming and from the Clearwater Mountains, Bonneville, and Idaho counties, Idaho.

Management Implications.—An early pioneering species, it disappears a few years after initial disturbance of the vegetation. Thus, fire suppression eliminates its habitat and disappearance. The same follows for clear cutting and elimination of other disturbances (i.e. timber roads). Monitoring studies are needed to evaluate vegetative manipulation practices and their impacts on the species viability.

References.

Barneby, R.C. 1944. *Astragalus paysonii*. Leaflet. West. Bot. Club 4:60.

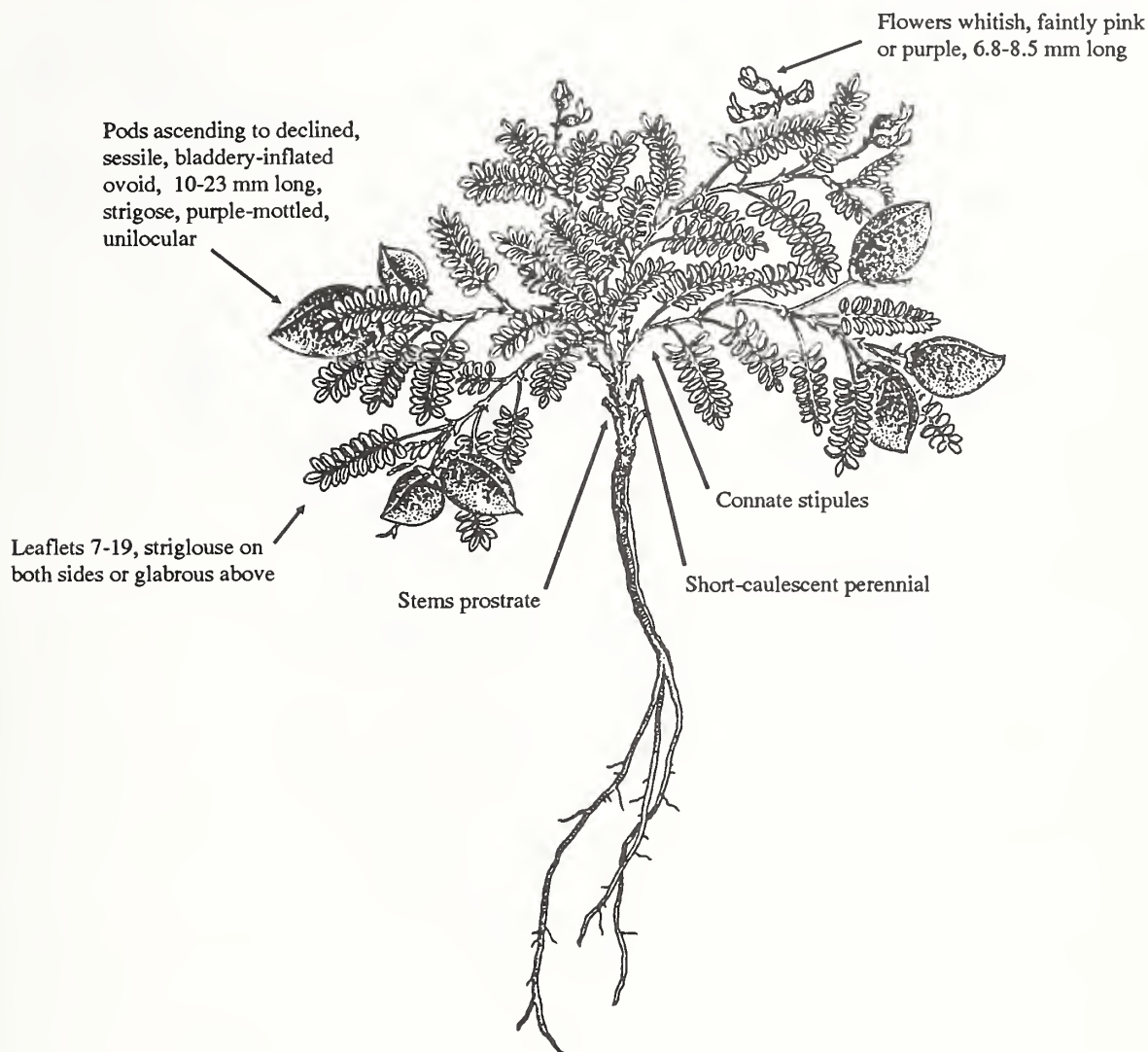
Barneby, R.C. 1927. *Hamosa paysonii* Bull. Torr. Bot. Club 54:22.



Distribution of *Astragalus paysonii* in the Intermountain Region.

RYDBERG MILKVETCH

Astragalus perianus Barneby
Fabaceae (Leguminosae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S3

Description.—This member of the pea family is very slender and dwarfed (1-6 cm tall). It arises from a buried root crown. The herbage is very hairy. The many stems are leafless near the base. The leaves consist of 7-15 crowded, thick-textured leaflets which tend to be folded. The flowers occur in groups of 2-6 and are purplish to whitish when fresh. The sepals form a broad bell-shaped tube which is tinged pink.

Reproduction.—A perennial herb, this milkvetch flowers and fruits from June through September. The unilocular pods are inflated, ovoid, 10-23 mm long, and purple mottled. Dispersion is via wind and water. Mature seeds germinate each year and mature plants die back to a root.

Habitat.—Openings in spruce-fir forests, sagebrush, and open aspen-fir-mahogany on igneous intrusive gravels, volcanic gravel, or clay soil. Elevation between 7,150-11,500 feet. It occurs on west and south exposures with very little slope allowing the necessary weathering of the soil.

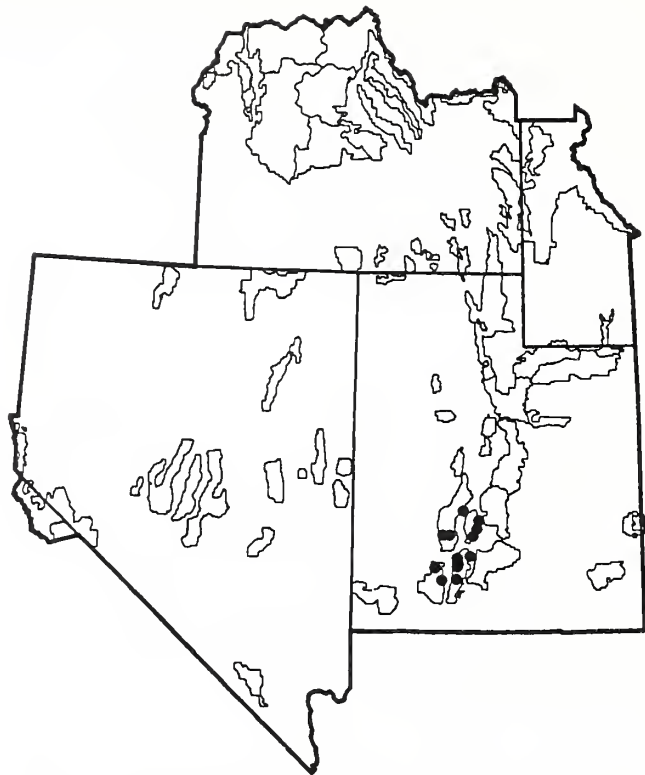
Distribution.—Restricted in Utah to Iron, Garfield, Piute, Beaver, and Sevier counties. It is known from the Tushar

Mountains, Cedar Mountain, Monroe Mountain, and Paunsaugunt Plateau.

Management Implications.—Populations could be impacted by mining, road construction, and ORV's. Some sites could be impacted by heavy livestock use. This species was delisted from Federally Threatened to 3C in October 1989. The 1988 Endangered Species Act amendments require monitoring for 5 years.

References.

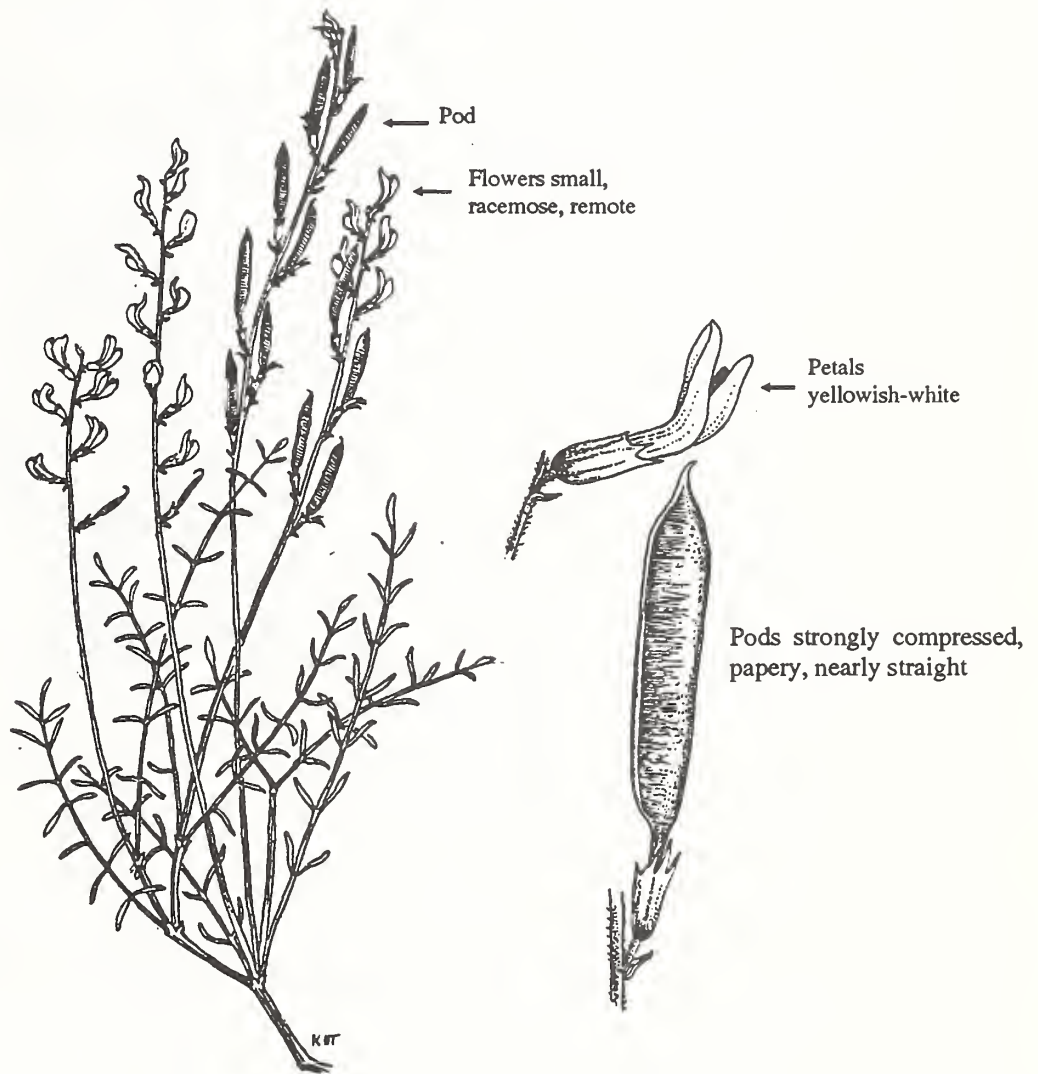
Barneby, R.C. 1964. *Astragalus perianus*. Mem. New York Bot. Gard. 13:972.



Distribution of *Astragalus perianus*.

SPRING MOUNTAIN MILKVETCH

Astragalus remotus Barneby
Fabaceae (Leguminosae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/NV-S1

Description.—This erect, slender milkvetch grows from a somewhat woody caudex. The stems are sparsely leafy, stiffly ascending in clumps and 1.5-4.0 dm high. The petiole leaves, which are 4-15 cm long, bear 11-19 (21) leaflets which are 2-13 mm long. The racemes are borne on stiff, erect peduncles, 6-17 (24) cm long, and are loosely or remotely flowered. The small flowers are yellowish with a

lilac-tinged keel tip. The pods are stiffly erect, stipitate, strongly compressed, and pale green or pinkish.

Reproduction.—A perennial, this plant flowers from April to early June and produces fruit from May to June. Plants live from one to several years.

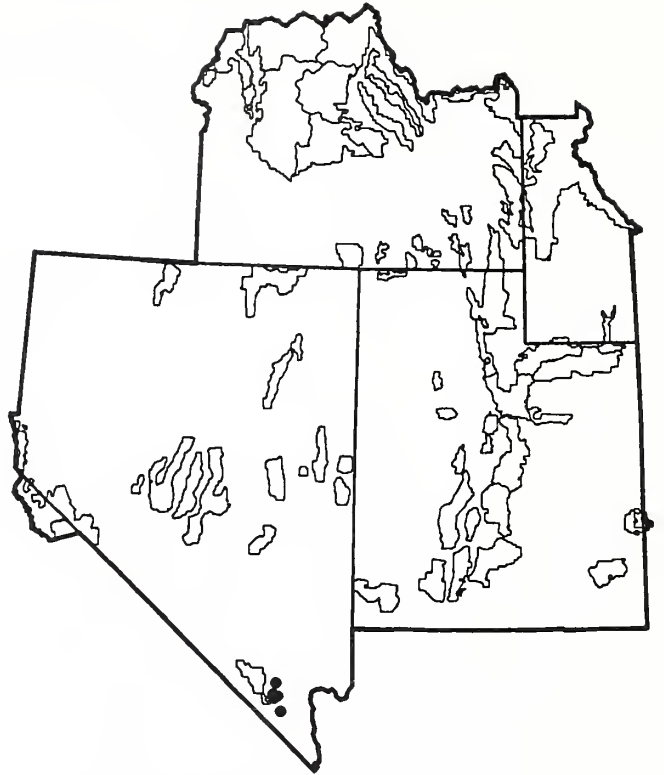
Habitat.—It grows in desert shrub/wash communities in dry, gravelly soils derived from limestone or sandstone on rocky hillsides and washes at 3,600-5,550 feet elevation.

Distribution.—This milkvetch is endemic to the southern portion of the Charleston (Spring) Mountains of Clark County, Nevada.

Management Implications.—Threats exist from livestock and wild horses/burros grazing, heavy recreation use of the Charleston Mountains from the ever expanding Las Vegas population, and from fires that frequent the area. Essential habitat areas need to be determined and monitored to insure species viability.

References.

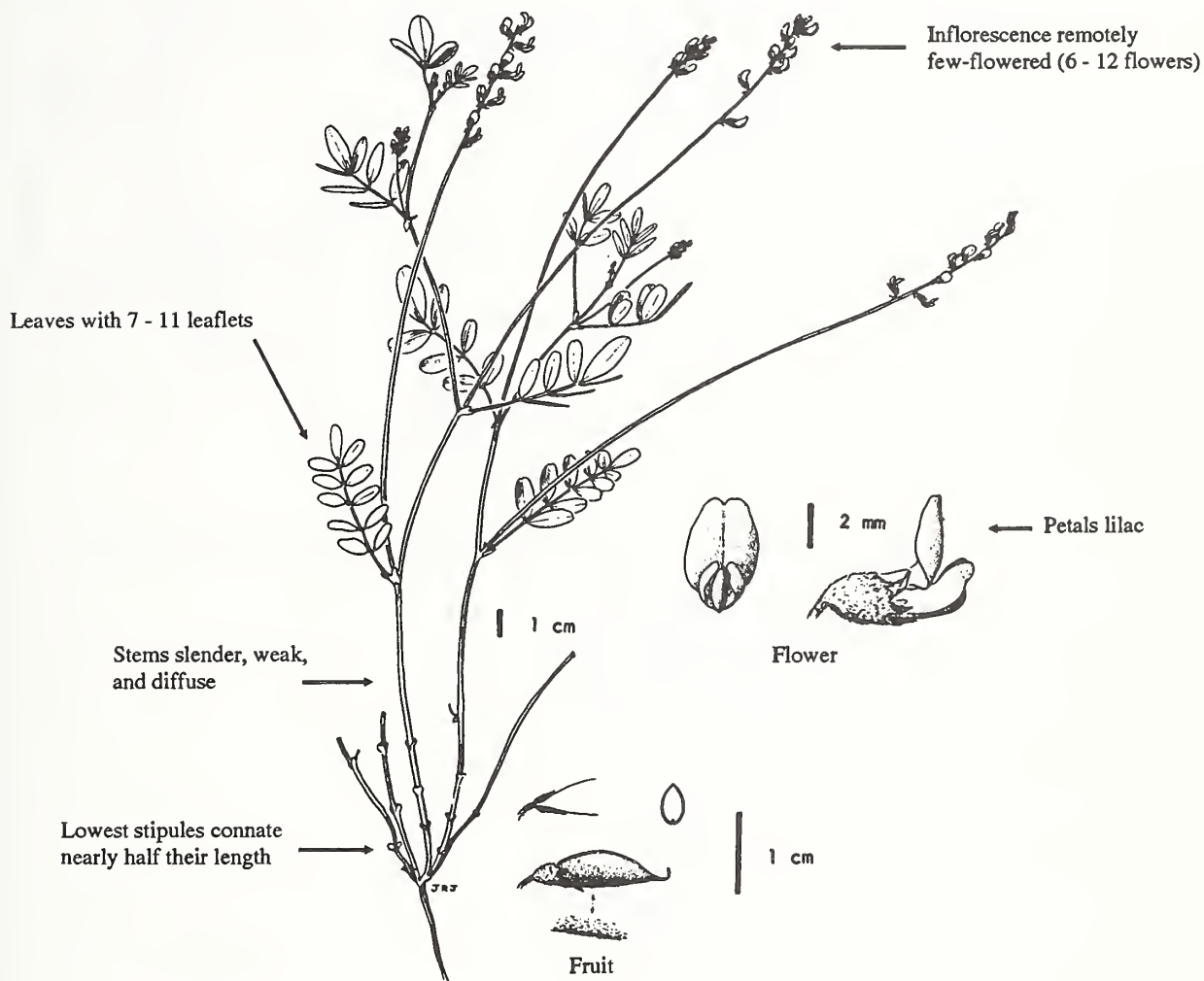
Barneby, R.C. 1964. Atlas of North American *Astragali*, part II. Mem. New York Bot. Gard. 13:531-533.



Distribution of *Astragalus remotus*.

LAMOILLE CANYON MILKVETCH

Astragalus robbinsii (Oakes) Gray var. *occidentalis* Wats.
Fabaceae (Leguminosae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: NV
Heritage Global/State Status: G5T2/NV-S2

Description.—A member of the pea family, Lamouille Canyon milkvech exhibits very slender growth habits, attaining a stem height of 1.5-4.5 dm. The leaves consist of 5-11 leaflets which are hairy beneath. Flowers occur separate from each other in small clusters (6-12 per cluster) bearing lilac-colored petals.

Reproduction.—A perennial herb, this plant flowers from late June to August. The pod which is produced has a short stalk, is flattened, hairy, and 1.0-1.5 cm long.

Habitat.—This milkvech occurs sporadically along stream banks and in moist loam soil of timbered creek beds or sheltered under shrubs and trees. Elevation between 6,900-10,000 feet. It grows in association with poplars and willows in riparian habitats.

Distribution.—Northern Ruby Mountains, mostly along Lamoille Canyon and Island Lake and east Humboldt Mountains of Elko County in northeastern Nevada.

Management Implications.—Populations exist near picnic grounds and in campgrounds. Increased use may alter the habitat. Other known sites are subject to grazing. Essential habitat areas should be determined and monitored to insure species viability.

References.

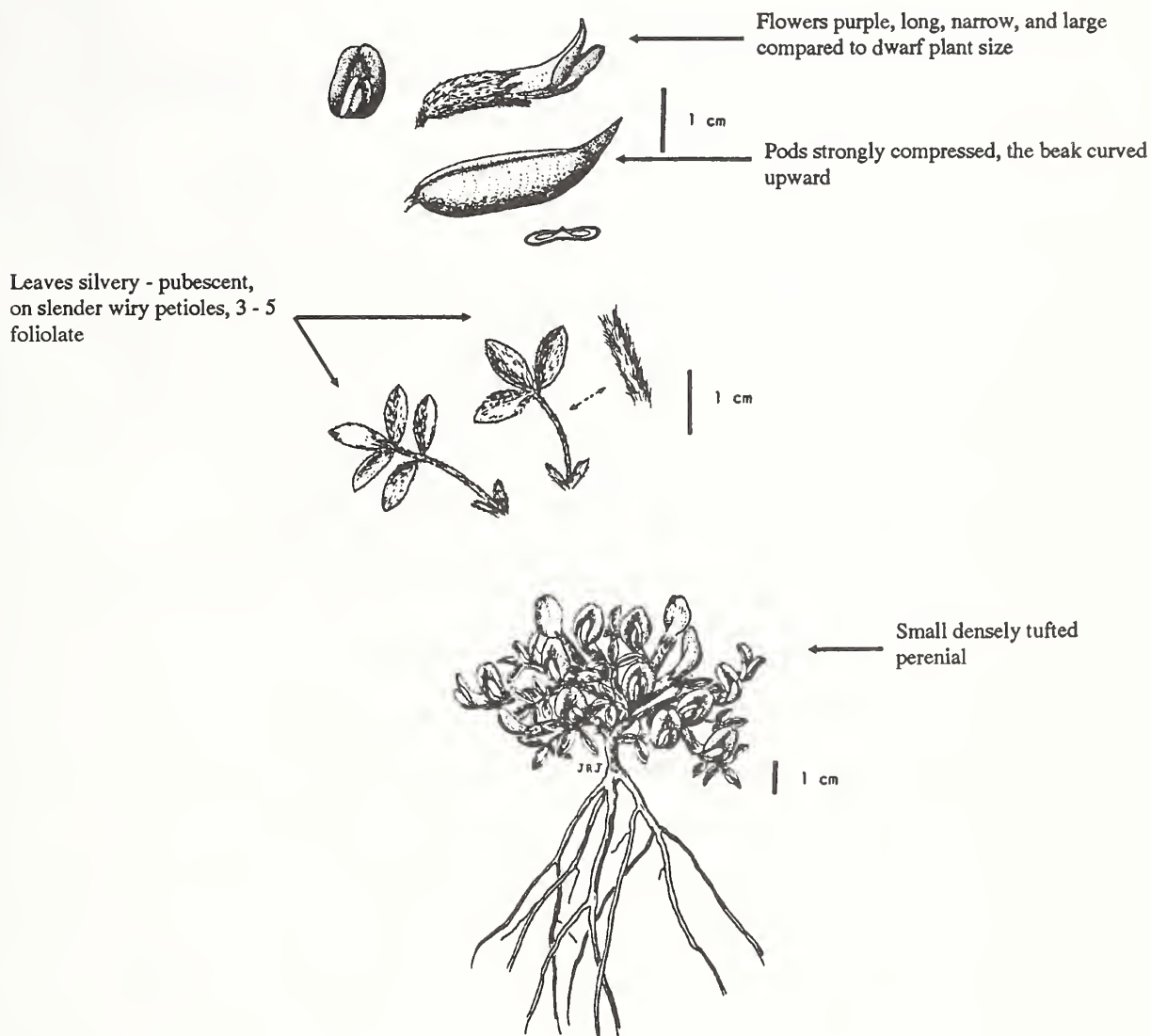
Watson, S. 1871. *Astragalus robbinsii* var. *occidentalis*. Botany 70 In: C. King, Report of the U.S. Geological Explorations of the Fortieth Parallel. 15:1-525.



Distribution of *Astragalus robbinsii* var. *occidentalis*.

CURRENT MILKVETCH

Astragalus uncialis Barneby
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2

Description.—A member of the pea family, currant milkvetch is an ornamental dwarf, densely tufted species. It is composed of several sessile crowns arising from a shortly forking caudex. The herbage is silvery and covered with hairs. The leaves (1.5-7.5 cm long) have slender, wiry petioles and 3-5 silvery foliolate leaflets which are gathered into tufts. The showy flowers occur 1-3 per cluster, are bright pink or deep purple, and are disproportionately large

for the plants size. They occur on leafless stalks which are shorter than the leaves. The large upper petal is curved backwards. The sepals form a cylindric, straight or slightly curved, purplish tube.

Reproduction.—A herbaceous perennial with a woody taproot, this milkvetch has been observed in flower from early May to mid-June. The pods, which are slow to open, are 2.5-3.0 cm long and nearly straight in the lower 2/3 and abruptly curved above. At maturity it is straw-colored or brown with a coat of silvery hairs. The seeds are smooth and orange-brown when immature. Plants apparently live for several years.

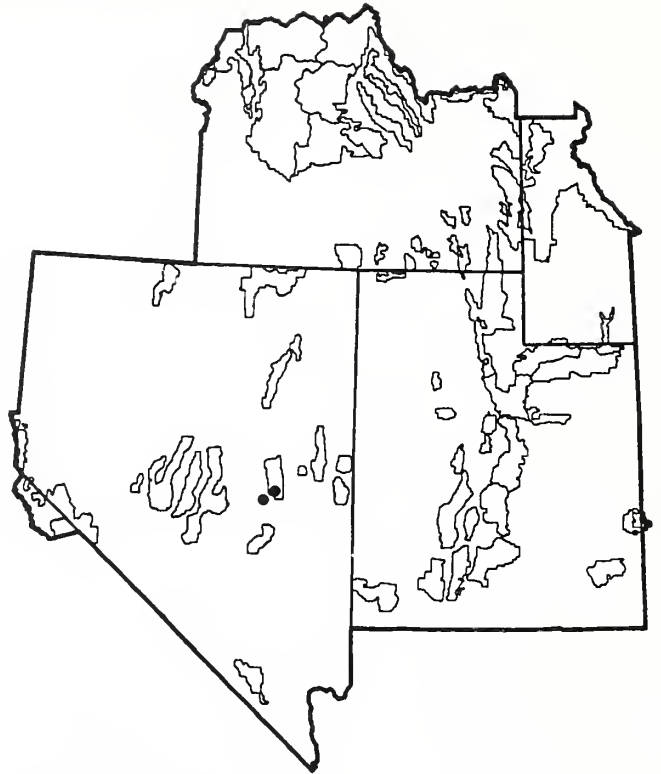
Habitat.—Dry knolls and gullies in saline, sand, or gravel soils derived from comminuted limestone and in some areas in desert paving. Elevation between 4,600-6,050 feet. Growth occurs in an extensive shadscale-budsage community.

Distribution.—Known from the foothills of the White Pine and Pancake Ranges, northeastern Nye County, Nevada and north of Sevier Lake, Millard County, Utah.

Management Implications.—Plants may be trampled by cattle, but eating is doubtful. Increased mining activity and ORV use are potential threats.

References.

Barneby, R.C. 1942. *Astragalus uncialis*. Leaflet. West. Bot. 3:101.

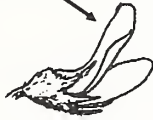


Distribution of *Astragalus uncialis* in Nevada.

WHITE CLOUD MILKVETCH

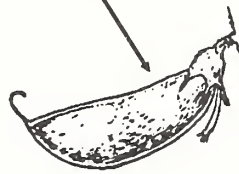
Astragalus vexilliflexus Sheld. var. *nubilus* Barneby
Fabaceae (Leguminosae)

Banner 5-6 mm long

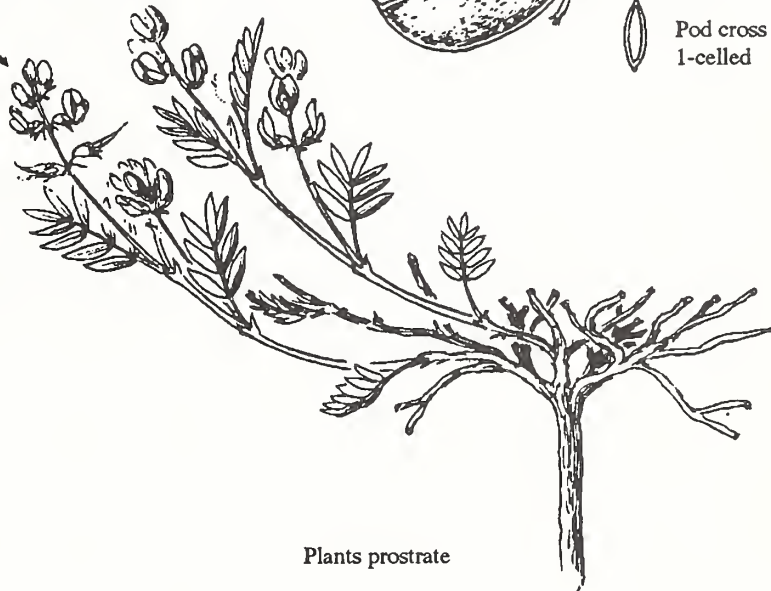


Flowers 5-8 (10) mm long,
ochroleucous with purplish
keel to a deep lavender-
purplish

Pod membranous, sessile or subsessile, narrowly
oblong-elliptic, strongly compressed until seeds
produced then rounded, strigillose, 7-11 mm long
and 2.5-3 mm wide



Pod cross section,
1-celled



Plants prostrate

USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G4T1/ID-S1

Description.—A member of the pea family, White Cloud milkvetch grows densely matted with silky herbage. The leaves consist of 7-13 linear-elliptic to oblong-elliptic leaflets. The flowers are whitish tipped and veined with purple to a deep lavender. The sepals form a tube.

Reproduction.—A perennial herb with a thick woody taproot, this milkvetch flowers from August through Sep-

tember. The pods are narrowly oblong-elliptic, compressed when young and rounded when mature. The woody root survives for several years to produce new growth, pods, and seeds.

Habitat.—Subalpine and alpine areas on talus slopes in sagebrush communities. Elevation between 10,000-11,000 feet.

Distribution.—Known only from the White Cloud Range (Railroad Ridge), Custer County, Idaho.

Management Implications.—Monitoring should occur for impact by hikers and bikers in the vicinity. Increased recreational use could deteriorate its status.

References.

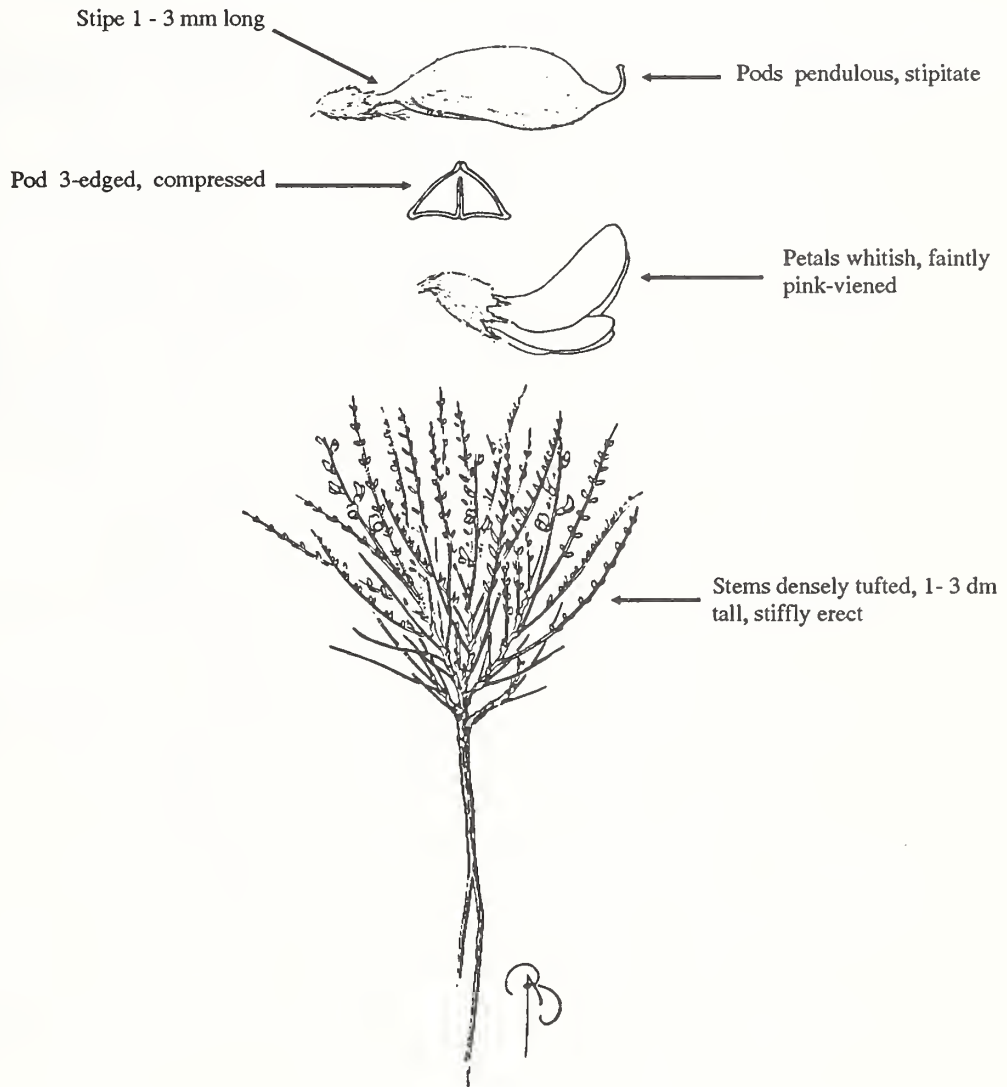
Barneby, R.C. 1956. *Astragalus vexilliflexus* var. *nubilus*.
Amer. Midl. Nat. 55:484.



Distribution of *Astragalus vexilliflexus* var. *nubilus*.

OSGOOD MOUNTAIN MILKVETCH

Astragalus yoder-williamsii Barneby
Fabaceae (Leguminosae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: NV
Heritage Global/State Status: G?/NV-S?

Description.—A member of the pea family, this dwarf milkvetch grows from a densely tufted branched caudex with stems attaining a height of 1-3 cm tall. The leaves occur on stiff tapering stalks with minute green leaflets (7-19 in number). The flower clusters consist of 2-8 flowers which are whitish with pink striations. The sepals form a hairy tube around the petals.

Reproduction.—A perennial herb with a multicapital taproot, this milkvetch flowers from June to early July. The bilocular pod is elliptic and abruptly contracted at the base. The seeds are faint yellow or pale green, not speckled.

Habitat.—Decomposed granite gravel flats in sage-rabbitbrush communities. Elevation 7,100 feet.

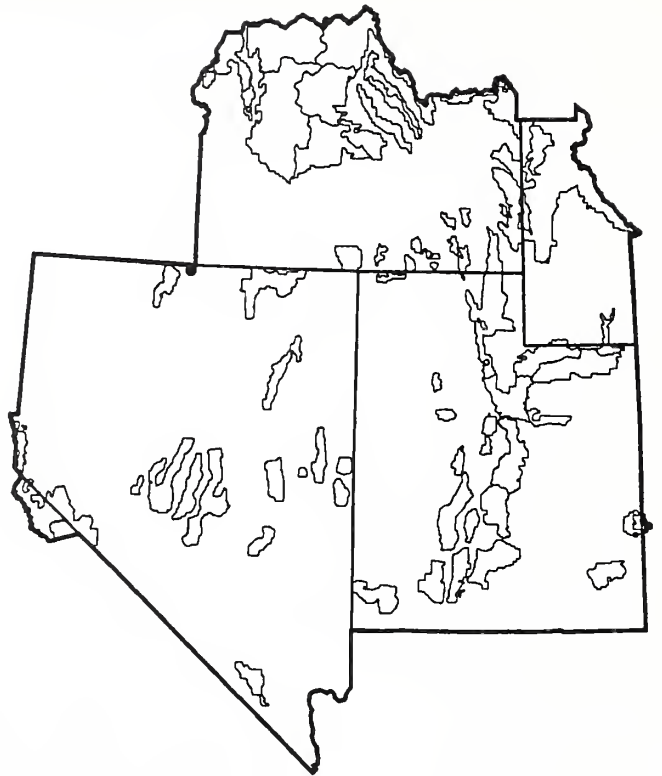
Distribution.—Northern Osgood Mountains in north central Nevada and the Owyhee Mountains in southwestern Idaho.

Management Implications.—Mining assessment work could cause severe decreases in available habitat as well as

direct loss of individual plants. Potential habitat areas on the Santa Rosa Ranger District should be surveyed to determine the species distribution.

References.

Barneby, R.C. 1980. Draga Hippomaniacum VI: A new Tragacanthoid *Astragalus* from Nevada and Idaho. *Britt.* 32(1):30-32.

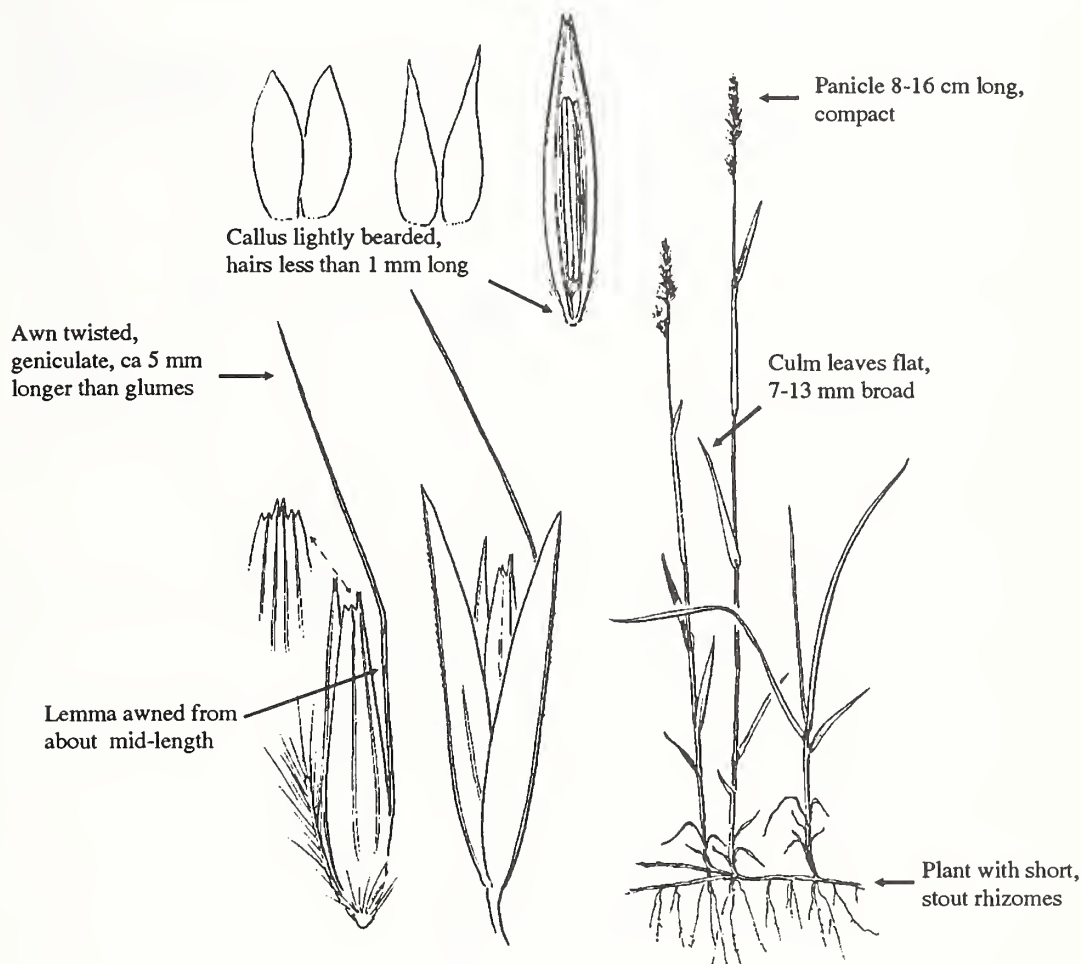


Distribution of *Astragalus yoder-williamsii* in Nevada.

CASCADE REEDGRASS

Calamagrostis tweedyi (Scribner) Scribner in Vasey

Poaceae (Graminae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3/ID-S1

Description.—A member of the grass family, Cascade reedgrass grows from short, stout rhizomes to a height of 6-15 dm tall. The few leaves of the stem are flat, rarely over 12 cm long, and 5-13 mm wide. The inflorescence is a compact panicle, 8-16 cm long. The lemma is awned from about mid-length. The awn of each floret is sharply bent. The callus is lightly bearded with hairs less than 1 mm long. The anthers are purplish.

Reproduction.—This perennial reedgrass persists in a vegetative state as scattered stems. Flowering occurs in late July through early August. This species is wind pollinated.

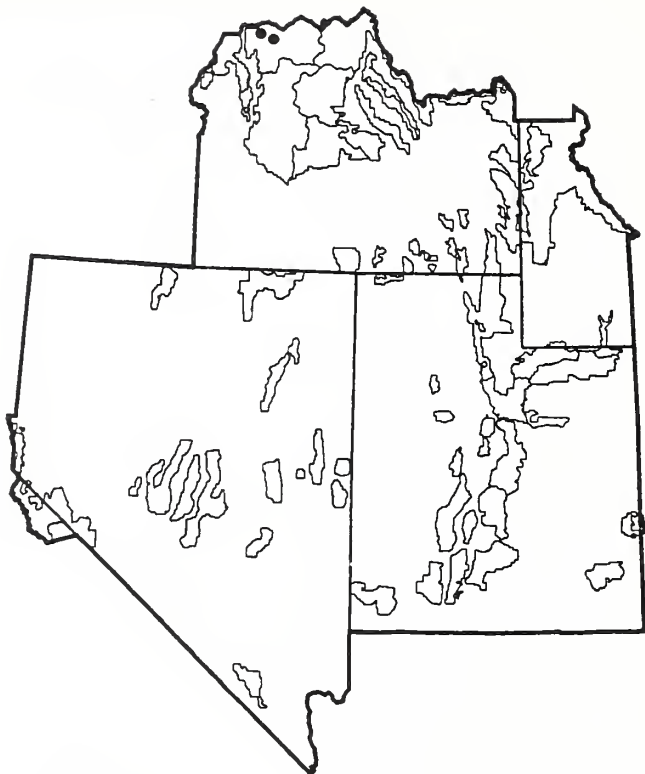
Habitat.—Predominately on northerly and easterly subalpine slopes and moist meadows, often growing in timber in association with *Carex geyeri*. Elevation between 5,000-5,900 feet. Inhabited sites range from level ground to moderately steep slopes.

Distribution.—Known from the Wenatchee Mountains, Chelan and Kittitas counties, Washington, Payette National Forest in Idaho County, Idaho, and Montana.

Management Implications.—Possible conflict with logging activities, overgrazing, and recreational users.

References.

Scribner, F.L. 1982. *Calamagrostis tweedyi*. Contr. U.S. Nat. Herb. 3:83.



Distribution of *Calamagrostis tweedyi* in the Intermountain Region.

BRONZE SEDGE

Carex aenea Fern.
Cyperaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S2

Description.—This member of the sedge family grows in dense tufts, 3-8 dm tall. The leaves all arise on the lower half of the plant and are flat. The spikes occur 3-10 on a plant, are pale green or medium brown, loose, and flexuous. The bracts, which subtend the spikes, are not leaflike, but are short and inconspicuous. The perigynia has winged margins, is serrate distally, 3.5-4.9 mm long, wrinkled, pale green often blackish near the base, and tapers to a flat end.

Reproduction.—A perennial, flowering for this sedge begins in May with fruiting continuing through July. The achene is 1.5-2.0 mm long and 1.3-1.4 mm wide. The perennial roots overwinter underground.

Habitat.—Moist meadows, streambanks, edges of cultivated fields, and wet places mostly in humid regions, from low elevations to montane.

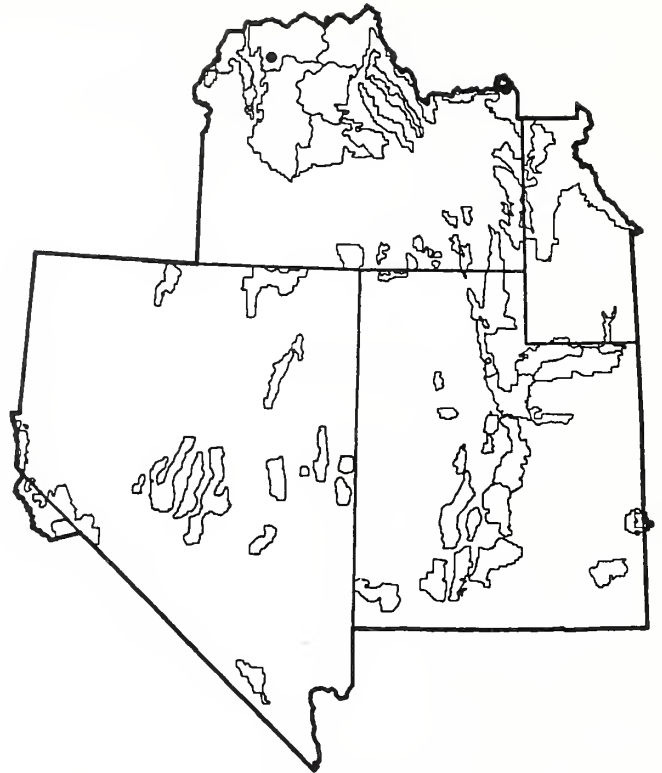
Distribution.—Fremont, Idaho, and Kootenai counties, Idaho, and from Labrador to Connecticut and westward from the Yukon to British Columbia

Management Implications.—The distribution of this species is poorly known and may be impacted by overgraz-

ing in meadows and along streams. Some habitat loss has occurred from conversion of habitat to cultivated fields. Complete surveys are needed to determine population areas, use, condition, and trends for the species.

References.

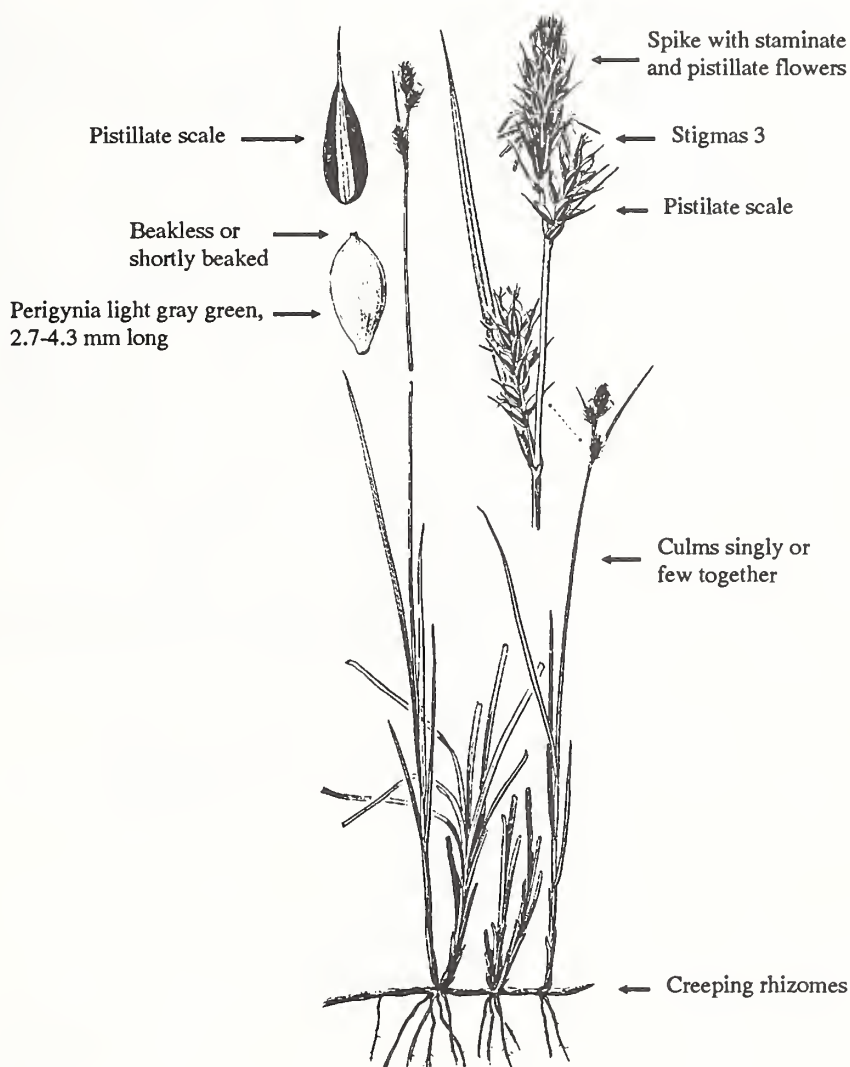
Fernald, M.L. 1902. *Carex aenea*. Proc. Amer. Acad. 37:480.



Distribution of *Carex aenea* in Idaho in the Intermountain Region.

BUXBAUM'S SEDGE

Carex buxbaumii Wahl.
Cyperaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S1

Description.—A member of the sedge family, Buxbaum's sedge has culms which are loosely mat-forming from creeping rhizomes, mostly 3-10 dm tall. The leaves are all along the stem, borne on the culms with blades 1-3 mm wide. There are 2-5 more or less separate spikes. The scales are reddish black or reddish brown with a usually paler midrib, usually surpassing the perigynia. The perigynia is 2.7-4.3 mm long, beakless or shortly beaked, firm-walled, and light gray-green with prominent marginal nerves.

Reproduction.—A perennial, flowering occurs from June to August. It produces an achene which is triangular in cross section. This plant does reproduce by seed, but mostly by rhizomes.

Habitat.—Sunny or slightly shady swamps, meadows, peat bogs, marshes, and other wet places. Elevation between 7,400-9,500 feet.

Distribution.—Newfoundland to southern Alaska, south to Georgia, Arkansas, Colorado, Utah, Idaho, and California. Also known from Eurasia.

Management Implications.—Management that will maintain riparian areas with native floras should provide ade-

quate habitat for this species. Additional data are needed to assess population status in Idaho.

References.

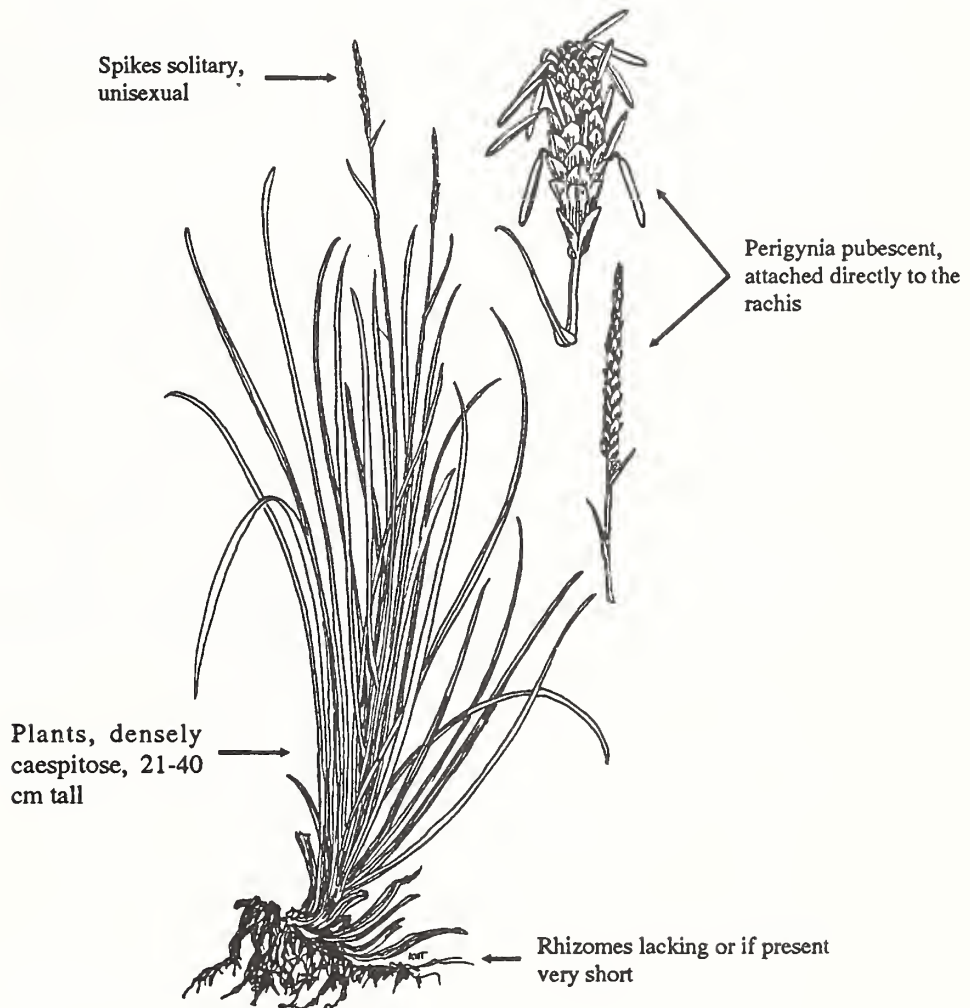
Cronquist, A., A. Holmgren, N. Holmgren, J.Reveal, and P. Holmgren. 1977. Intermountain Flora 6:138.



Distribution of *Carex buxbaumii* in Idaho in the Intermountain Region.

CANYONLANDS SEDGE

Carex curatorum Stacey
Cyperaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G5Q/UT-S1

Description.—This member of the sedge family grows from a densely matted tuft to a height of 21-40 cm. Rhizomes are usually lacking, but if present, they are very short. The leaves are basal and 1-4 mm wide. The spike is solitary, 1.8-4.5 cm long, and 5 mm thick with reddish-brown scales. The perigynia is sparsely pubescent and attached directly to the rachis.

Reproduction.—A perennial, flowering occurs from May to August. The fruit is a triangular achene with concave sides, capable of producing 1 seed only. The achene is 2 mm long, 1.5 mm wide, and is chestnut-brown in color. The plant is unisexual. Populations are maintained by overwintering rootstocks, rhizomes, and germinating achenes.

Habitat.—Occurs in hanging gardens and canyons along the Colorado and San Juan Rivers between 3,770-4,395 feet elevation.

Distribution.—Found in Kane and San Juan counties, Utah and northern Arizona.

Management Implications.—Some of the habitat may have been lost with the filling of Lake Powell. Extant populations may be subject to impacts from recreationists.

References.

Cronquist, A., A. Holmgren, N. Holmgren, J. Reveal, & P. Holmgren 1977. *Intermountain Flora* 6:113-114.

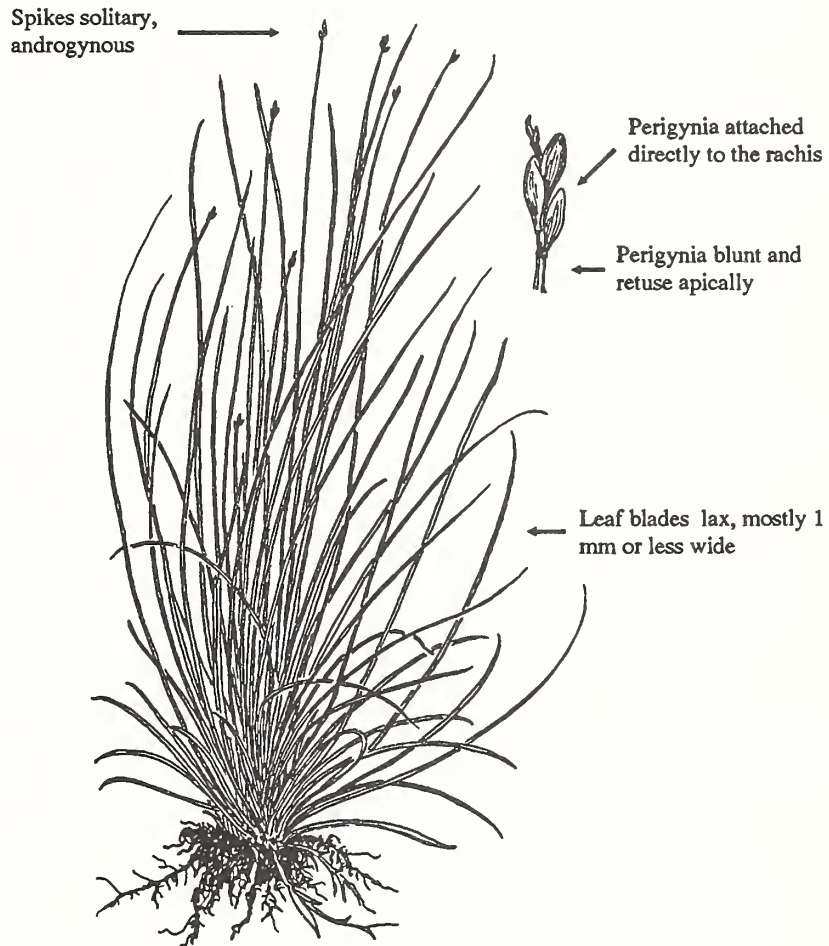
Stacey, J. W. 1937. Notes on *Carex*-VIII. *Leafl. of West. Bot.* 2(1):13.



Distribution of *Carex curatorum* in the Intermountain Region.

BRISTLE-STALK SEDGE

Carex leptalea Wahl
Cyperaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G5/UT-S1

Description.—A member of the sedge family, bristle-stalk sedge grows in dense tufts with slender stems from freely branched rhizomes to a height of 1.5-6.0 dm tall. The leaves are shorter than the culms, flat or nearly so, and only 0.7-1.2 mm wide. The culms are slender and rather flaccid. The spikes are solitary, 0.5-1.5 cm long, and bractless. The scales are greenish to brownish with translucent margins and are shorter than the perigynia. The perigynia is pale green with 2 marginal nerves and is often notched at the tip.

Reproduction.—Flowering for this sedge occurs from May to August. The fruit produced is an achene which is triangular in cross section. Rhizomes produce new growth for several years.

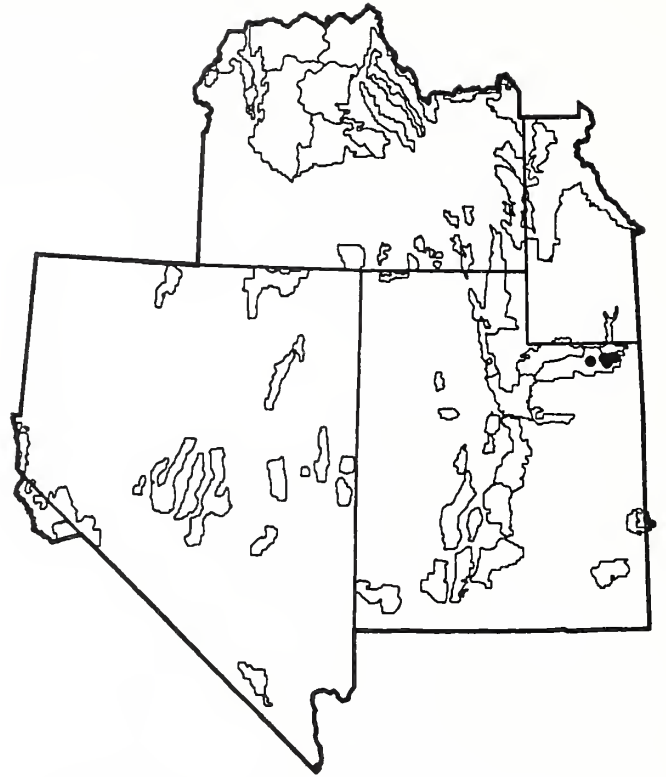
Habitat.—Sphagnum bogs, swamps, lake shores, and wet low grounds. Elevation between 7,200-7,300 feet.

Distribution.—Labrador to Alaska, southward to Florida, Texas, Colorado, Utah, and California.

Management Implications.—This species is disjunct over a wide area in North America. Habitat needs for Utah populations of this species will be met if riparian areas and/or wetlands are managed for native floras.

References.

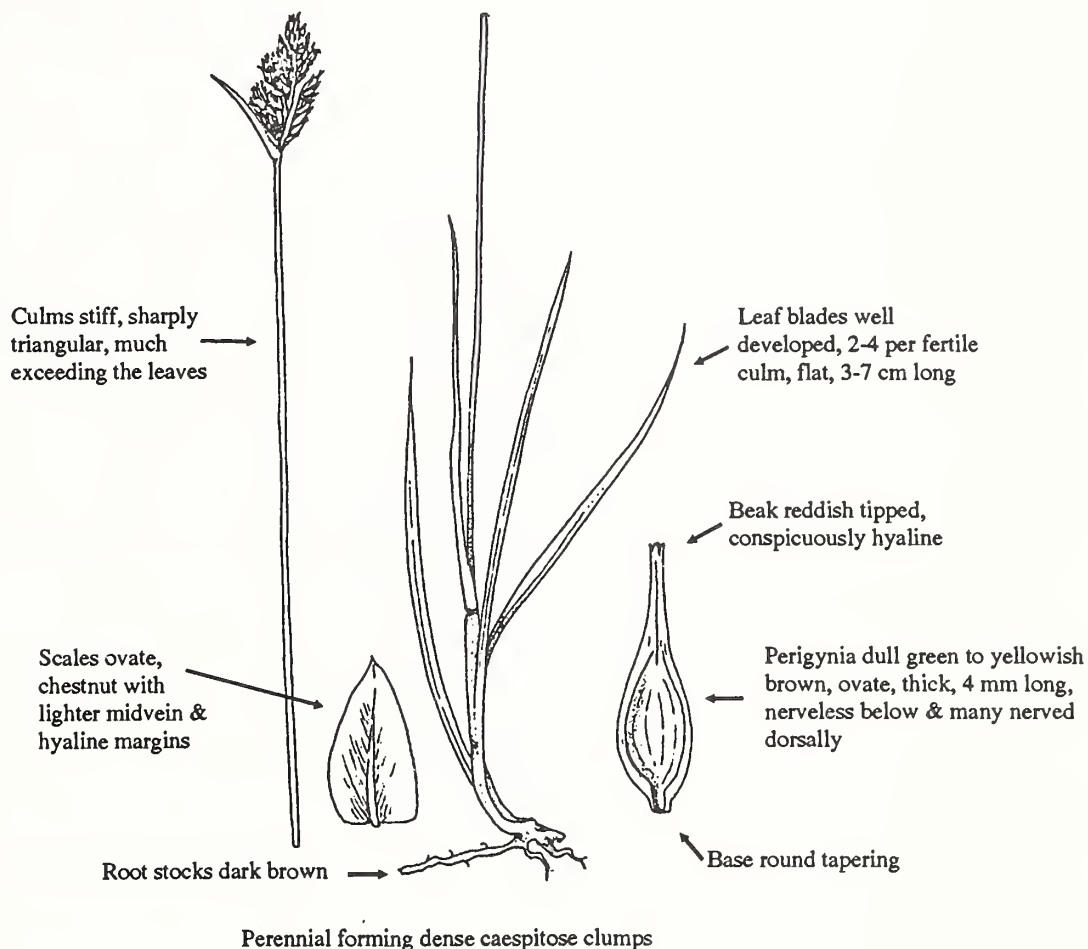
Welsh, S.L., D. Atwood, L. Higgins, & S. Goodrich 1987.
A Utah Flora. Great Basin Natur. Mem. No. 9:668.



Distribution of *Carex leptalea* in Utah.

SIERRA SEDGE

Carex paucifructa Mack.
Cyperaceae



USFWS Status: 3B

USFS Region 4 Status: Sensitive

State List: CA

Heritage Global/State Status: G1/CA-S1.2

Description.—A member of the sedge family, Sierra sedge grows in mats and is 1-25 cm tall with dark brown rootstocks. The leaf blades are well developed, flat, and 3-7 cm long. The culms are stiff, sharply triangular, and greatly exceed the leaves. The scales have translucent margins and a lightened midvein. The perigynia is translucent at the tip, dull green to yellowish brown, thick, 4 mm long, and nerveless below.

Reproduction.—A perennial, it produces achenes which are more or less flattened. The spreading rootstocks germinate new growth yearly.

Habitat.—Meadows or red fir and subalpine forests. Elevation between 5,000-8,600 feet.

Distribution.—Eldorado, Tuolumne, and Sierra counties, California.

Management Implications.—Population trends are subject to timber management practices. Habitat alteration which could result in a reduction of population numbers should be avoided. Closer coordination on survey work and management between Region 4 and 5 is needed.

References.

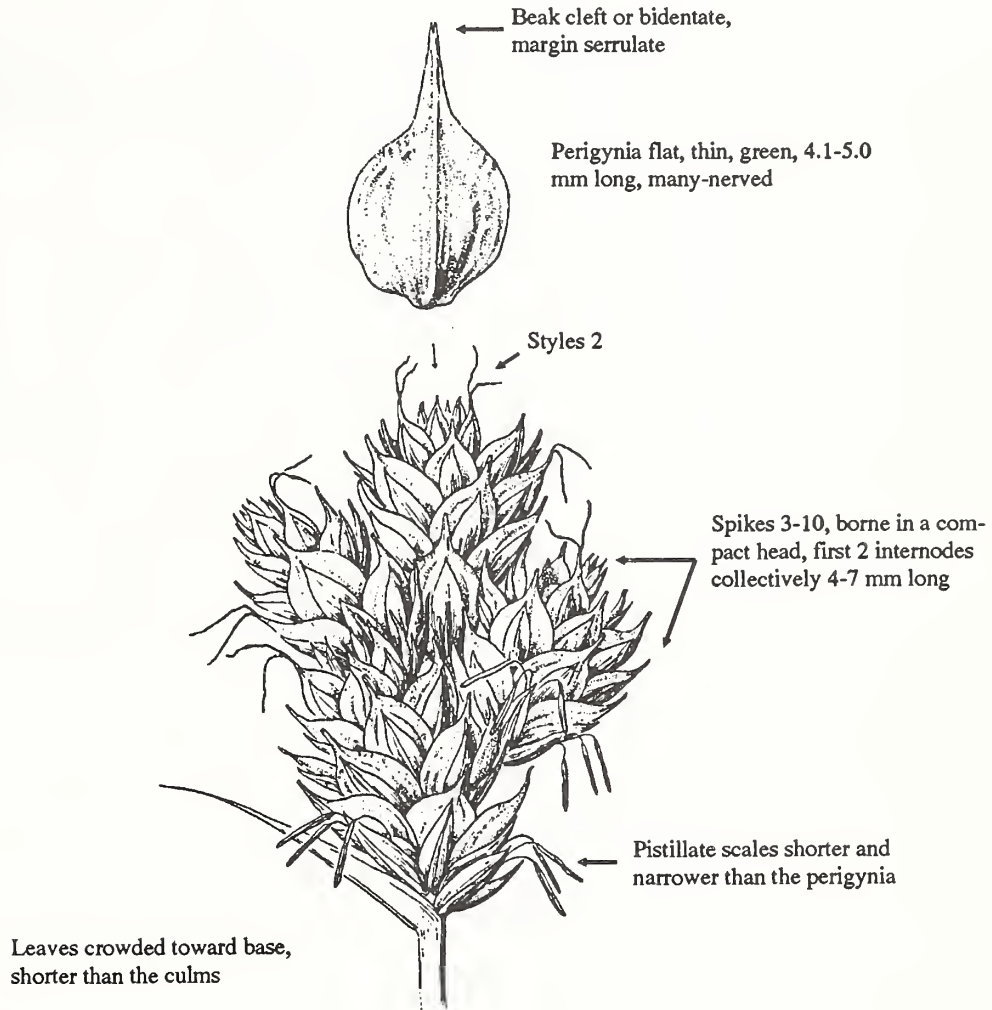
Munz, P.A. 1975. A California Flora. University of California Press, Berkeley, California. 1681 pp.



Distribution of *Carex pauciflora* in the Intermountain Region.

MT. SHASTA SEDGE

Carex straminiformis L.H. Bailey
Cyperaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S2

Description.—A member of the sedge family, Mt. Shasta sedge grows in dense tufts up to 4 dm tall. The leaves are crowded near the base and are generally much shorter than the culms. The leaves are rather firm, flat or nearly so, and mostly 2-4 mm wide. The spikes occur 3-10, are about 1 cm long or less, and are closely crowded in a compact head. The scales are mostly brownish with translucent margins and a firm green midrib. The perigynia is crowded, thin and flat,

commonly greenish, and mostly 4.1-5.0 mm long tapering to a beak with many nerves.

Reproduction.—Flowering for this sedge occurs from June to August. The achenes produced are triangular in cross section and 1.6-1.9 mm long.

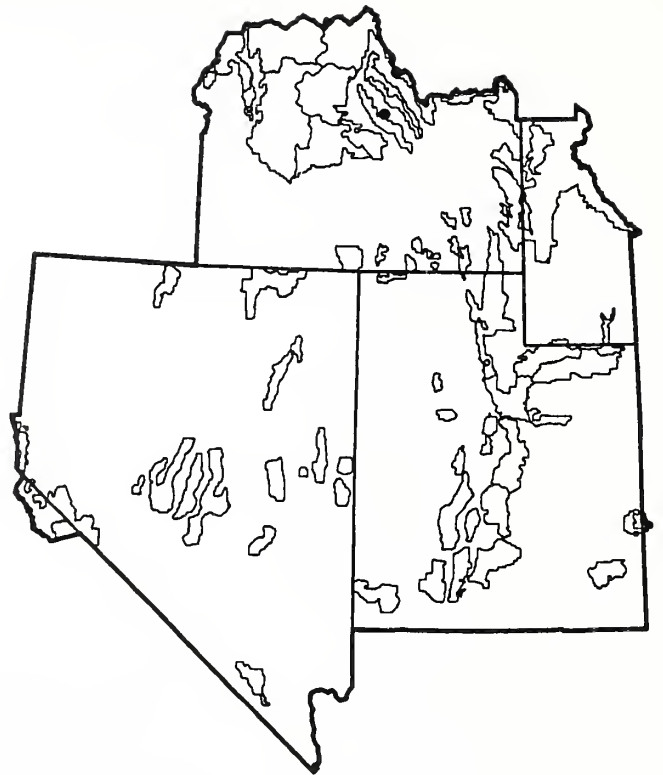
Habitat.—Open slopes, often near persistent snowbanks mostly near or above timberline. Elevation between 9,000-10,300 feet.

Distribution.—Sierra Nevada and White Pine Mountains of California and adjacent Nevada, north irregularly in the Cascade region to Mt. Adams, Washington and disjunct in the Wasatch Mountains of Utah, and also in central Idaho.

Management Implications.—Subject to grazing of domestic and wild herbivores. Additional survey work is needed in R4 to determine the species distribution.

References.

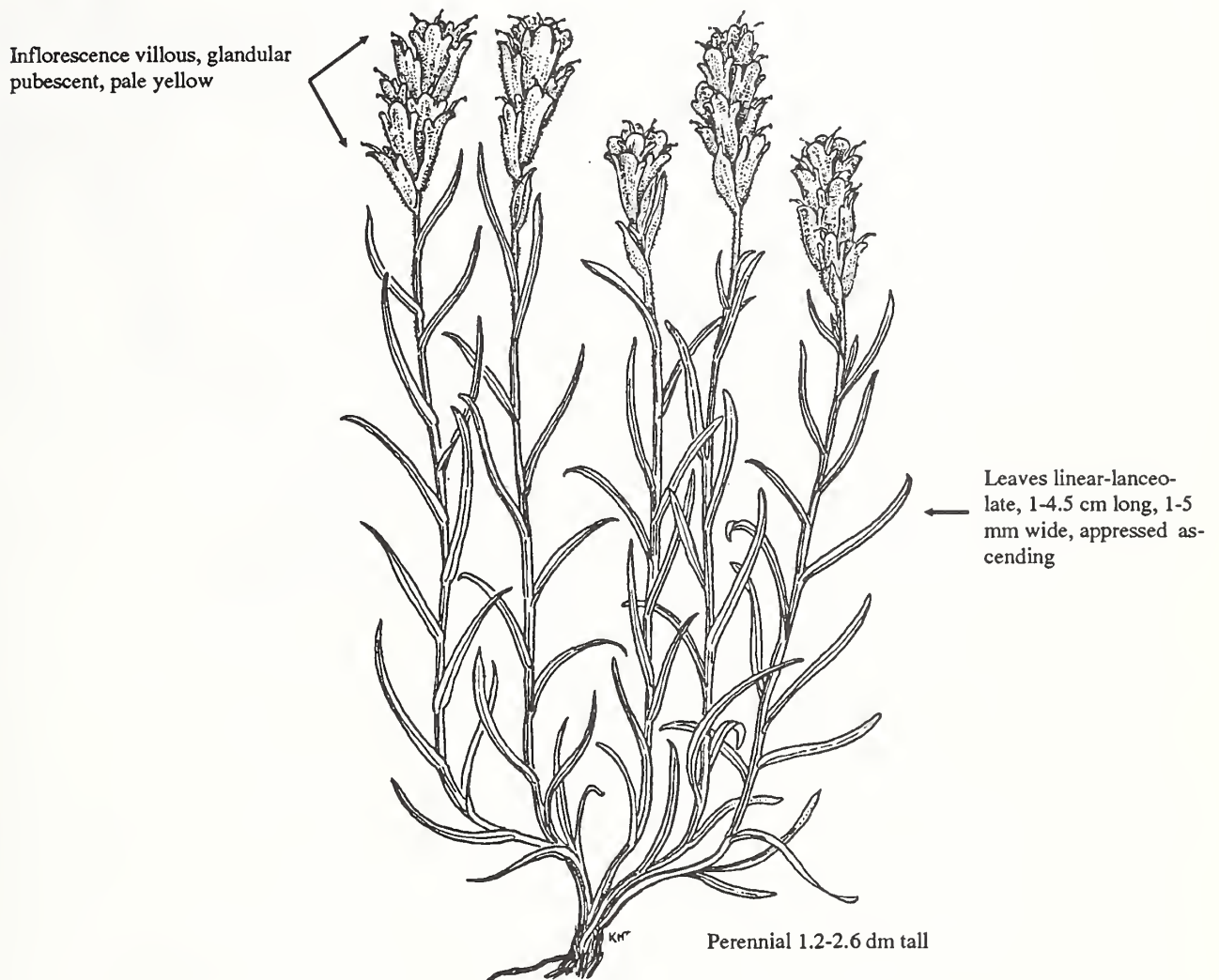
Cronquist, A., A. Holmgren, N. Holmgren, J. Reveal, P. Holmgren 1977. *Intermountain Flora* 6:172-173



Distribution of *Carex stramineiformis* in Idaho in the Intermountain Region.

AQUARIUS PAINTBRUSH

Castilleja aquariensis N. Holmgren
Scrophulariaceae



USFWS Status: C1

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—Aquarius paintbrush is an herbaceous member of the figwort family which grows erect, 1.2-2.6 dm tall. There are several unbranched stems which are irregular in length and often blue purple in color. The leaves are linear-lanceolate with fine hairs and arise erectly along the stem. The inflorescence is pale yellow except for the reddish margins of the galea, hairy, and glandular. The bracts are broadly lanceolate to ovate, the lower ones are entire. The sepals are cleft, deeper in front than the back. The petals are

1.3-1.6 cm long. The anthers have basal tufts of hair and the stigmas are black and spherical.

Reproduction.—Flowering begins soon after snowmelt, mid-June through mid-August. Some plants flower until frost hits them. It produces a capsule 7-10 mm long with about 100 seeds. Seed is set in 15-20 days and scattered by the wind, small birds, and mammals. Surviving plants overwinter by the perennial root.

Habitat.—Sagebrush and grass meadow communities adjacent to aspen-subalpine fir on clay-loam soils with volcanic boulders. It prefers, and may be limited to, open, well-lit sites. It does not tolerate even modest amounts of

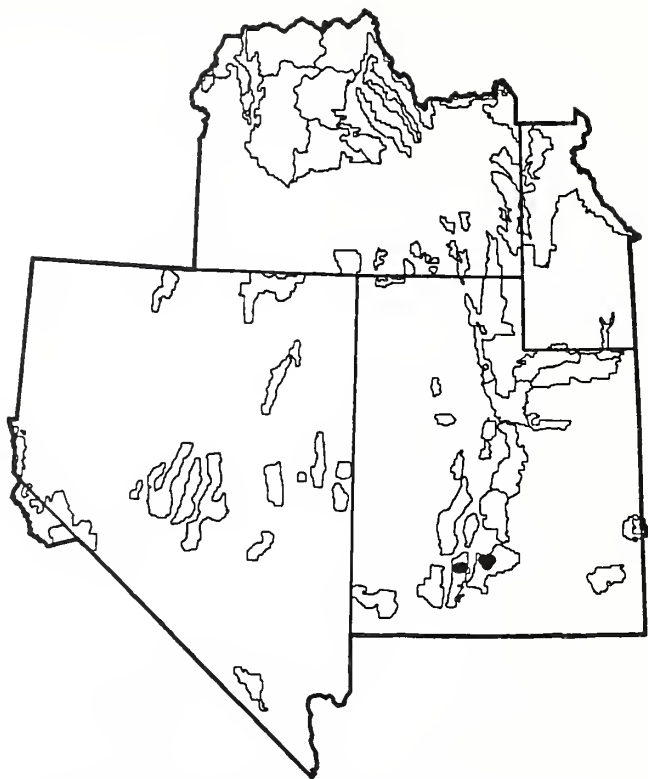
shade. Elevation between 9,500-11,200 feet. It grows mostly in association with whitesage.

Distribution.—Endemic to Boulder Mountain (Aquarius Plateau), Garfield County in south-central Utah.

Management Implications.—Any road building and/or construction that occurs on the fringes of timber stands in meadows occupied with whitesage will probably destroy local, isolated populations. It is also heavily impacted by grazing and trampling. Heavy sheep and cattle grazing over the last century has and is currently reducing the viability of this species. Very few plants survive to maturity and produce seeds, and very few seedlings or young plants have been observed. Studies are currently underway to determine population areas, impacts, and biological needs of the species. A 5 year management plan was written and approved in 1983, but funds were not programmed for implementation of the plan. The plan should be updated and funds programmed for implementation. A graduate student from Brigham Young University will be studying this taxon for the next 2 years.

References.

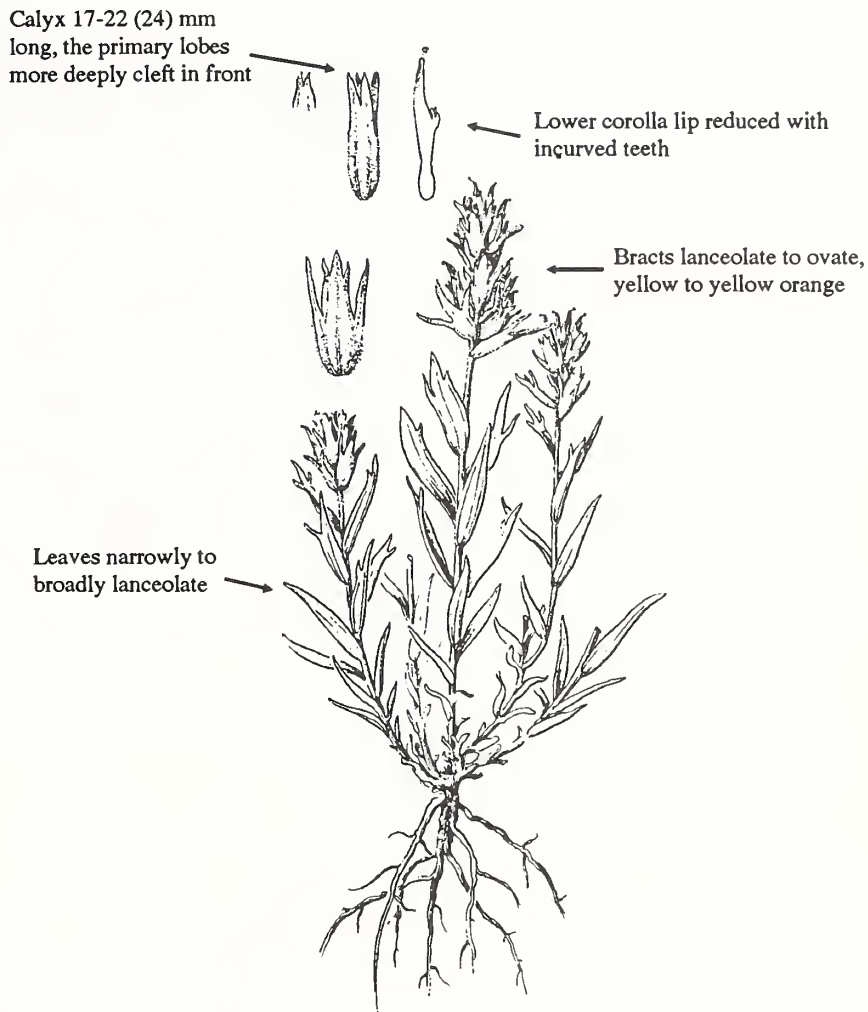
Holmgren, N. 1973. Five new species of *Castilleja* (Scrophulariaceae) from the Intermountain Region. Bull. Torr. Bot. Club 100:87.



Distribution of *Castilleja aquariensis*..

CHRIST'S INDIAN PAINTBRUSH

Castilleja christii N. Holmgren
Scrophulariaceae



USFWS Status: C1

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G1/ID-S1

Description.—This member of the figwort family grows to a height of 1.5-3.0 dm with erect, usually unbranched stems. The leaves are 2-6 cm long, narrowly to broadly lanceolate, with 1 or 2 pair of lateral lobes above. The inflorescence has glandular hairs and is yellow to yellow-orange. The bracts are lanceolate to ovate with 1 or 2 pairs of narrow lateral lobes. The sepals are 17-24 mm long with the primary lobe being more deeply cleft in front. The galea is 8-11 mm long with a reduced lower lip and incurved teeth.

Reproduction.—A perennial herb, Christ's Indian paintbrush flowers in July. Its fruit is a many seeded capsule 10-14 mm long. The perennial root overwinters underground.

Habitat.—Grassy subalpine meadows along the crest and slope of the mountain in loamy gravel. Elevation 9,000-9,100 feet. The major areas occupied are where snow drifts remain into early summer.

Distribution.—Endemic to Harrison Mountain (near the summit), Cache Peak Range, Cassia County, Idaho.

Management Implications.—It is subject to trespass grazing by domestic livestock. It is also located in a popular

recreation area with some off-road vehicle erosion problems. The management plan, signed in March 1985, has not been fully implemented due to lack of funds and botanical expertise. The plan should be updated and funds made available for full implementation. A monitoring study was established in 1985, but has not been re-read as scheduled in the management plan.

References.

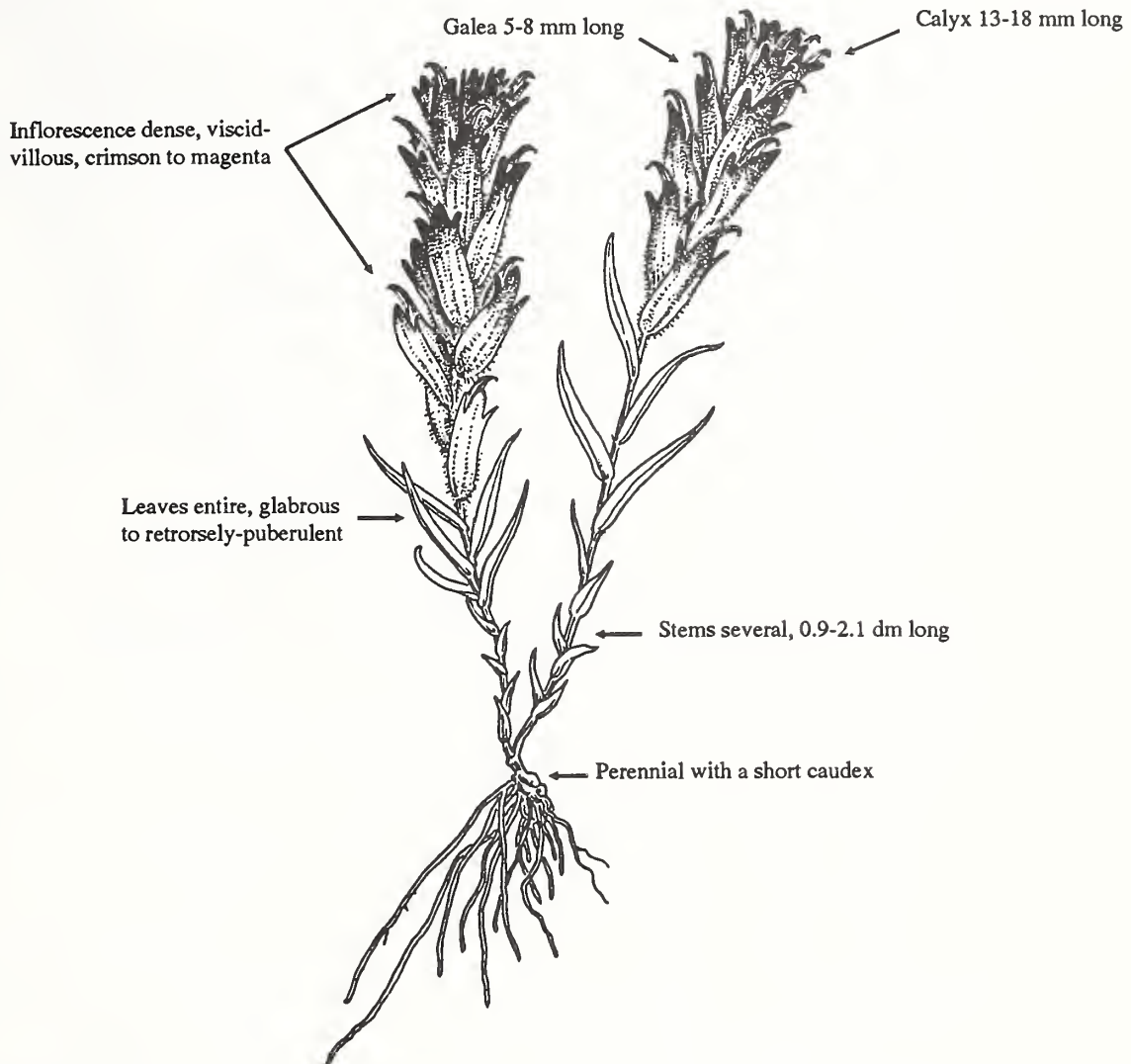
Holmgren, N. 1973. Five new species of *Castilleja* (Scrophulariaceae) from the Intermountain Region. Bull. Torr. Bot. Club 100:91.



Distribution of *Castilleja christii*.

TUSHAR PAINTBRUSH

Castilleja parvula Rydb. var. *parvula*
Scrophulariaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2T1/UT-S1

Description.—A member of the figwort family, Tushar paintbrush grows in dense tufts with many stems to a height of 5-15 cm tall. The leaves are lanceolate and 1-2 cm long. The bracts are ovate, dark brownish-crimson, 2-3 mm long, and entire, with short lobes which are equally cleft above. The petals are 17-18 mm long and greenish with purplish margins.

Reproduction.—A perennial, flowering occurs in late June to mid-August. It produces a capsule whose seeds are dispersed by wind and gravity. Plants die back to the underground, perennial root.

Habitat.—Tushar paintbrush occurs in grassy alpine meadows and openings on igneous gravels and outcrops. Soils are shallow rocky clay loams. Elevation between 10,000-12,000 feet.

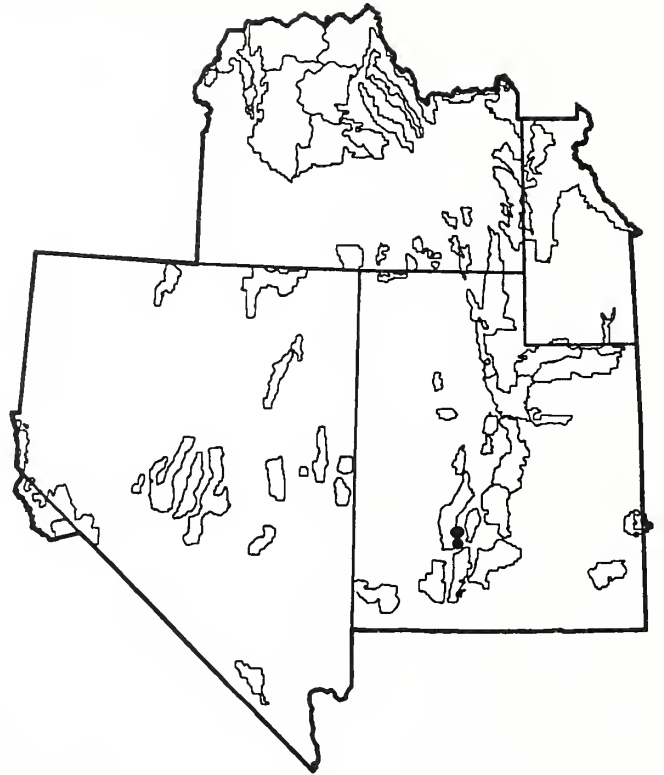
Distribution.—This plant is endemic to the Tushar Mountains in Piute, Beaver, and Garfield counties, Utah.

Management Implications.—This paintbrush is one of several closely related *Castilleja* species that occupy very

narrow ecological and edaphic sites. Mining claims and mineral exploration have impacted habitat of this plant. Monitoring studies need to be initiated to help determine the population status and range. A portion of the land serves as grazing for sheep and as sheep bedgrounds.

References.

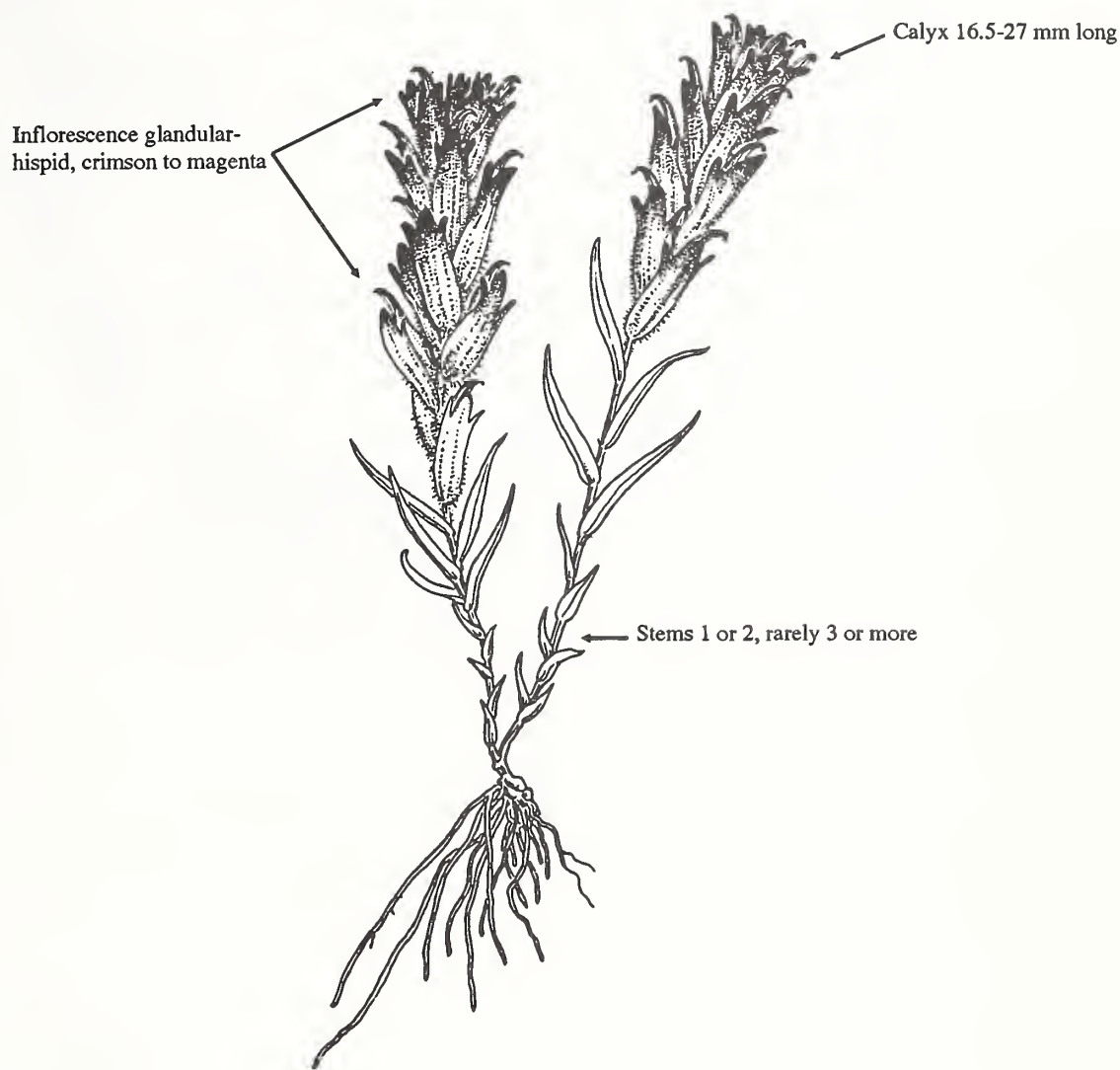
Rydberg, P.A. 1907. *Castilleja parvula* var. *parvula*. Bull. Torr. Bot. Club 34:40.



Distribution of *Castilleja parvula* var. *parvula*.

REVEAL PAINTBRUSH

Castilleja parvula Rydb. var. *revealii* (N. Holmgren) Atwood
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2T1/UT-S1

Description.—A member of the figwort family, Reveal paintbrush has a soft woody caudex surmounting a cluster of roots. It usually has 1 or 2, rarely 3 or more, unbranched erect stems (0.8-1.5 dm tall) often reddish-purple. The old stems persist on the plant. The leaves are 2.0-3.5 cm long, linear-lanceolate, and entire, the uppermost with small lateral lobes. The inflorescence is magenta to rose with broadly lanceolate to ovate lobes. The sepals are green at the base, magenta-rose above, and 16-27 mm long with

glandular hairs. The petals are green with magenta-rose on the margins and slight glandular hairs on the back.

Reproduction.—A perennial, this paintbrush begins flowering in mid-June and continues to mid-July. The fruit is a capsule about 1 cm long whose seeds are dispersed by wind, small birds, and mammals. The perennial roots overwinter for several years.

Habitat.—This paintbrush occurs on heavy clay soils derived from the pink limestone member of the Wasatch Formation in ponderosa pine, bristle cone pine, and manzanita plant communities. It is mostly located on west to

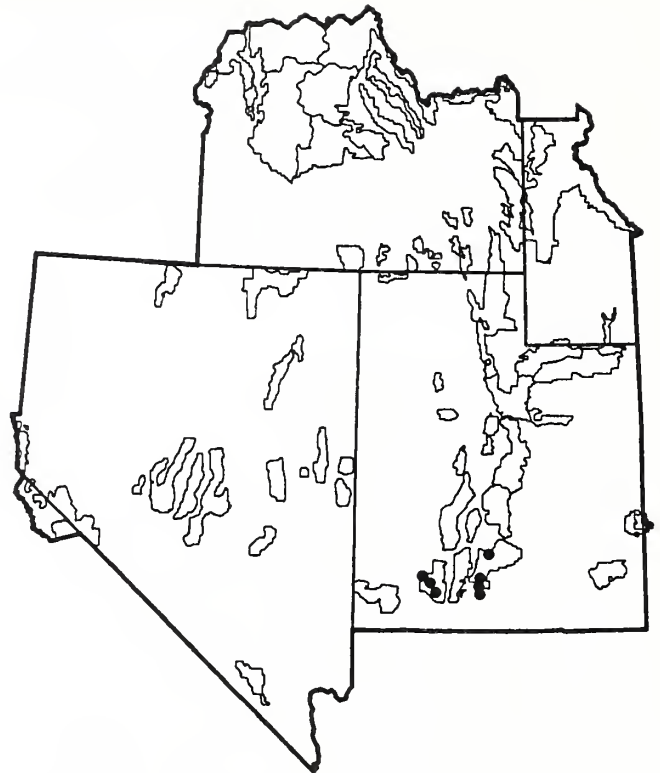
southwest slopes, with little vegetative cover. Elevation between 7,800-8,500 feet.

Distribution.—Reveal paintbrush is endemic to the Pansaugunt Plateau in Iron and Kane counties, Utah.

Management Implications.—This species is one of several closely linked, narrowly endemic *Castillejas* that occupy very peculiar ecological and edaphic situations and is important in determining the evolution of these taxa. Monitoring studies need to be initiated to help determine plant populations and distribution. Trampling could be a potential threat to the existence of this plant. Restriction of off-path and off-highway use might be necessary.

References.

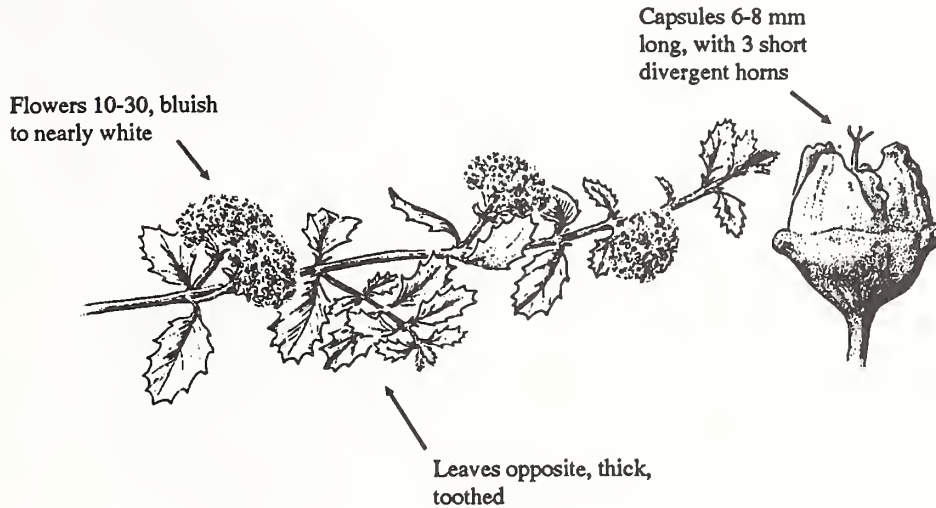
Holmgren, N. 1973. Five new species of *Castilleja* (Scrophulariaceae) from the Intermountain Region. Bull. Torr. Bot. Club 100:87.



Distribution of *Castilleja parvula* var. *revealii*.

MAHALA-MAT CEANOOTHUS

Ceanothus prostratus Benth.
Rhamnaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G5/ID-S1

Description.—A member of the buckhorn family, mahala-mat is a grayish-green shrub, forming mats 1-3 m broad and 3-5 cm tall. The leaves are opposite, thick and fleshy, oblong to obovate, 1.0-2.5 cm long, and 3-7 toothed above the middle with a hairy lower surface. The stipules are brownish and 2 mm long. Flowers occur 10-30 per cluster terminating the short lateral branches and are bluish to grayish blue or nearly white.

Reproduction.—A woody perennial, this *Ceanothus* flowers from May through July. Its fruit, a capsule, is 6-8 mm long with 3 short divergent horns. The shrubby plants are long-lived.

Habitat.—On dry forest floor in ponderosa pine-shrub community.

Distribution.—Eastern slope of the Cascades from Washington through Oregon to the Sierra Nevada, in western Nevada, and in California. Disjunct in west central Idaho in Adams County.

Management Implications.—The major threat to this species is commercial harvesting of ponderosa pine stands, particularly clearcutting. Biological evaluations for TES species should be conducted on all timber harvesting to provide adequate consideration for protection of TES habitats.

References.

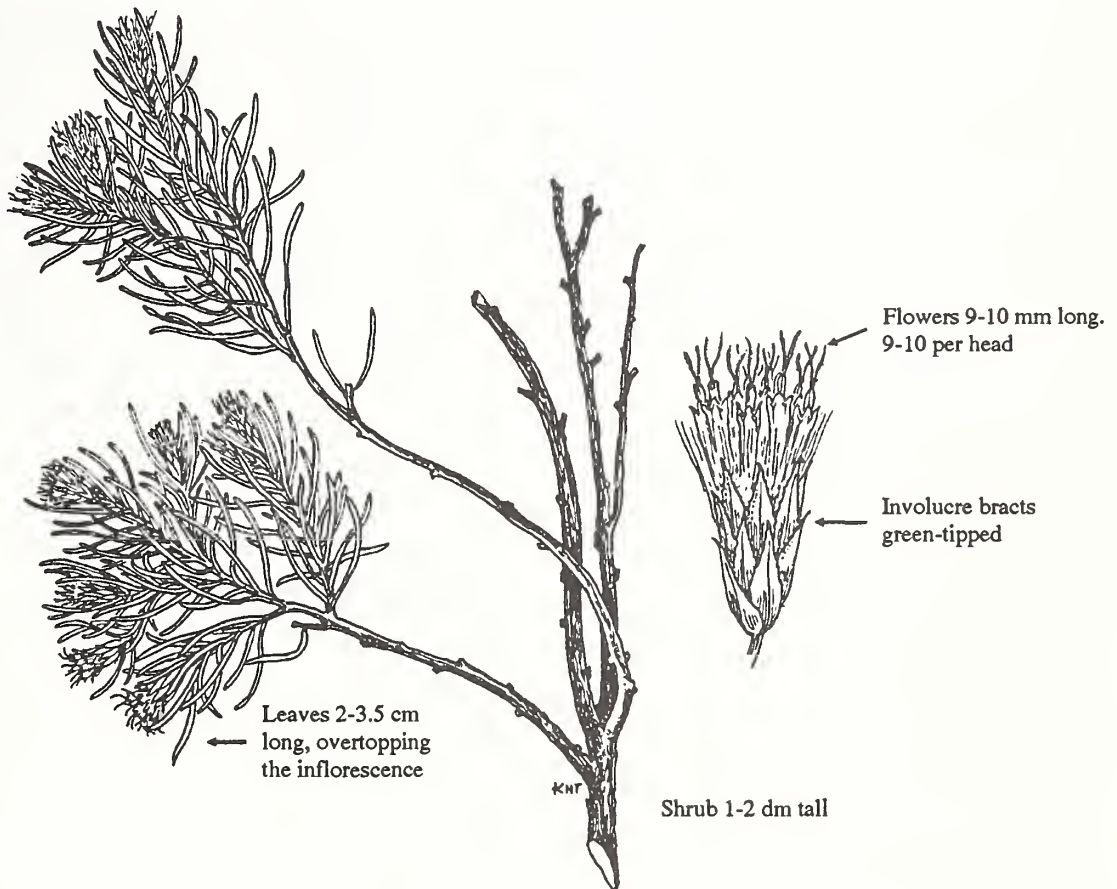
Bentham, G. 1848. *Ceanothus prostratus*. Pl. Hartw. 302 pp.



Distribution of *Ceanothus prostratus* in Idaho.

CENTENNIAL RABBITBRUSH

Chrysothamnus parryi (Gray) Greene ssp. *montanus* L. Anderson
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5T1/ID-S1

Description.—A member of the sunflower family, centennial rabbitbrush is a low spreading shrub, 1-2 (3) dm tall which is intricately branched. The leaves are alternate, entire, linear, green, and 2.0-3.5 cm long. The upper leaves surpass the few-headed flower cluster. The bracts, 11-18, occur in vertical rows, the outer with ciliate margins and long acuminate, herbaceous tips. The 4-12 disk flowers are yellow with 9-10 mm long petals.

Reproduction.—This perennial shrubby species produces fruits of achenes, 8 mm long and hairy. The plants are long-lived.

Habitat.—Locally common on Beaverhead Conglomerate rock outcrops, slump gravels, and relatively stable talus of SE to SW exposures. Elevation 8,800-9,800 feet.

Distribution.—Known only from the Red Conglomerate Peaks of the Idaho-Montana state line, western Centennial Mountains, Clark County, Idaho.

Management Implications.—Survey work was conducted on the Targhee National Forest in FY 1990. Although no

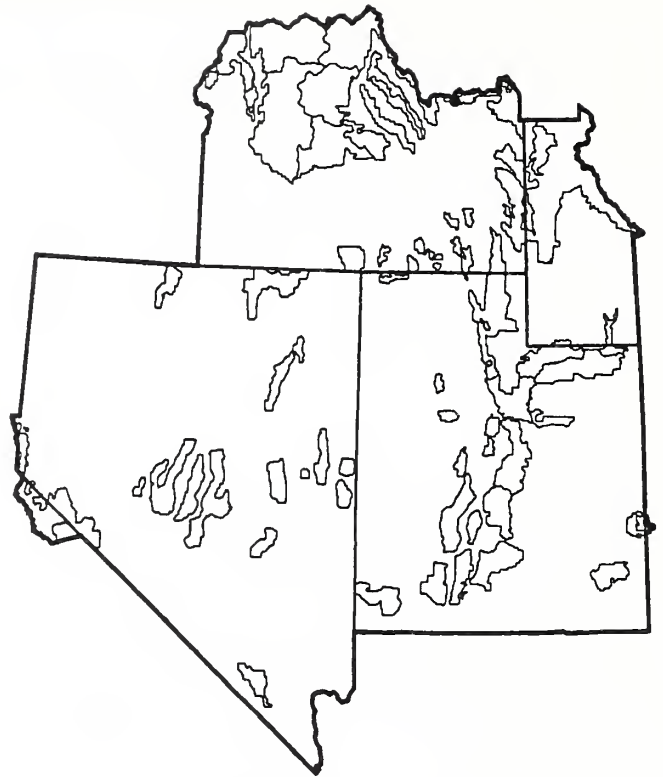
threats to the Targhee NF populations are evident at present, they are all relatively small and localized in a narrow set of habitat conditions. Changes, such as initiation of mining activity in the area could inadvertently destroy a population if the species is not given careful consideration in land management planning. No monitoring activities were recommended by the INHP following the survey work in 1990. Targhee National Forest field personnel should document additional sightings of this plant by making voucher specimens (Mosely 1990).

References.

Anderson, L.C. 1978. New Taxa in *Chrysothamnus*, Section *Nauseosi* (Asteraceae).

Mosely, R.C. 1990. Field investigations of *Chrysothamnus parryi* ssp. *montanus*, a Region 4 sensitive species on the Targhee National Forest. Idaho Dep. of Fish and Game. 11pp.

Phytologia 38(4):319-320.

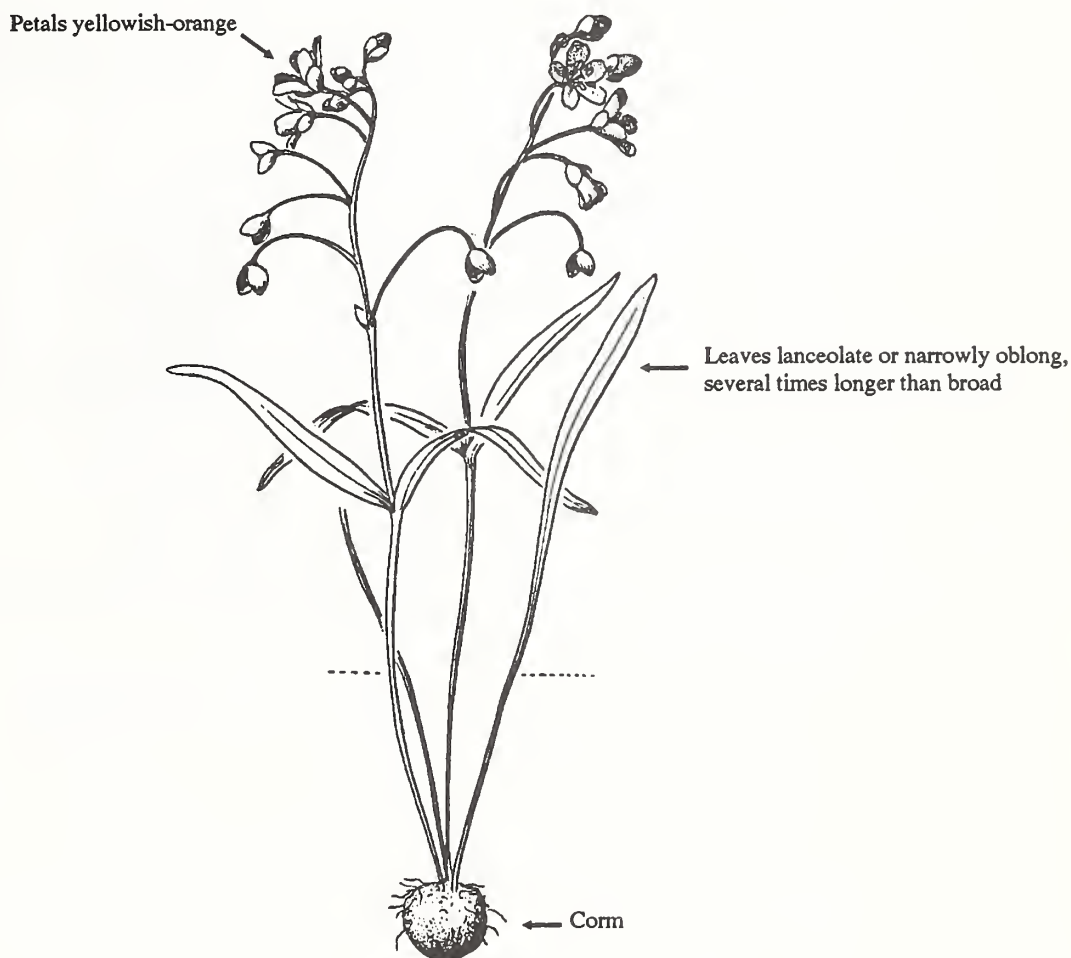


Distribution of *Chrysothamnus parryi* ssp. *montanus* in the Intermountain Region.

YELLOW SPRING-BEAUTY

Claytonia lanceolata Pursh var. *flava* (A. Nels.) C.L. Hitchc.

Portulacaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5T1/ID-S1

Description.—A member of the purslane family, yellow spring-beauty is usually well over 1 dm tall growing from a corm which is 1-2 cm in diameter. There are up to 4 (usually 1) basal leaves which are narrowly elliptic or oblanceolate, up to 15 cm long on long petioles. The leaves stay green year round where the soil is kept wet. The stems are weak and grow 1-5 per corm with 2 opposite, sessile, lanceolate leaves. Flowers occur 3-12 per stem with an ovate, 3-6 mm

long bract at the base and sometimes with 1-2 reduced ones above. The sepals (2) are ovate and rounded at the top. The petals are golden yellow, clawed, 7-12 mm long, and very slightly united at the base. The stamens are about half as long as the petals with the filament attached on the claw near the base.

Reproduction.—A perennial, this claytonia flowers from April through June. The fruit produced is a capsule, 3-4 mm long with shiny black seeds. Plants survive by overwintering corms.

Habitat.—Moist mountain meadows at very widely scattered localities where grasses have not established a thick

turf. Level to moderate sloping, open exposures in lodgepole pine communities. Elevation between 5,500-10,000 feet.

Distribution.—Waynes Creek and adjacent drainages and Henry's Lake, Fremont County, Idaho, Anaconda, Deer Lodge County, Montana, and northwestern Wyoming.

Management Implications.—Present or threatened destruction, modification, or curtailment of its habitat or range in Idaho is from residential development. The Staley Springs population has probably been extirpated. There is also potential cattle and horse grazing disturbance associated with livestock holding sites. Hunting and four-wheel drive roads are also present in some habitat areas. Survey work of potential habitat in R4 should be completed.

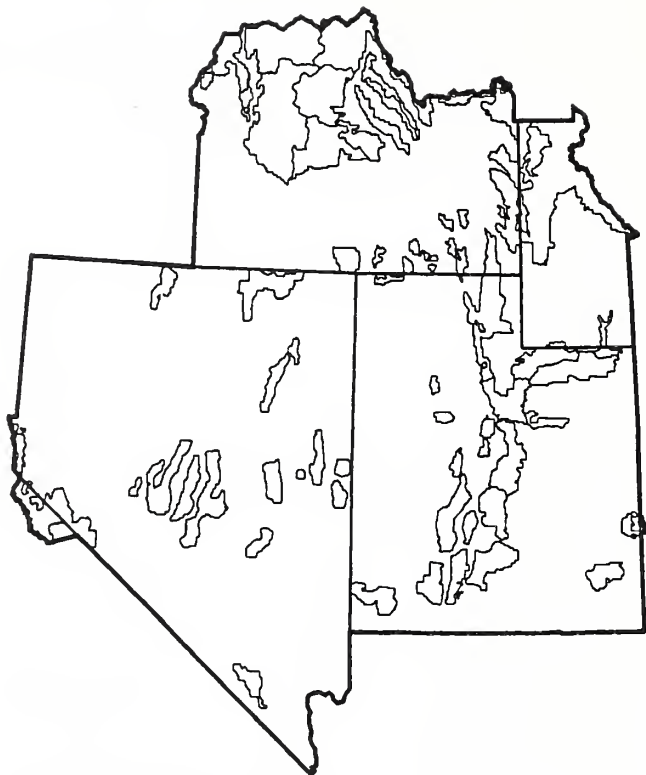
References.

Nelson, A. 1900. *Claytonia aurea*. Bull. Torr. Bot. Club 27:260.

Nelson, A. 1926. *Claytonia flava*. Univ. Wyo. Pub. Bot. 1:142.

Marriott, H. 1986. Status Report for *Claytonia lanceolata* var. *flava*. 41pp.

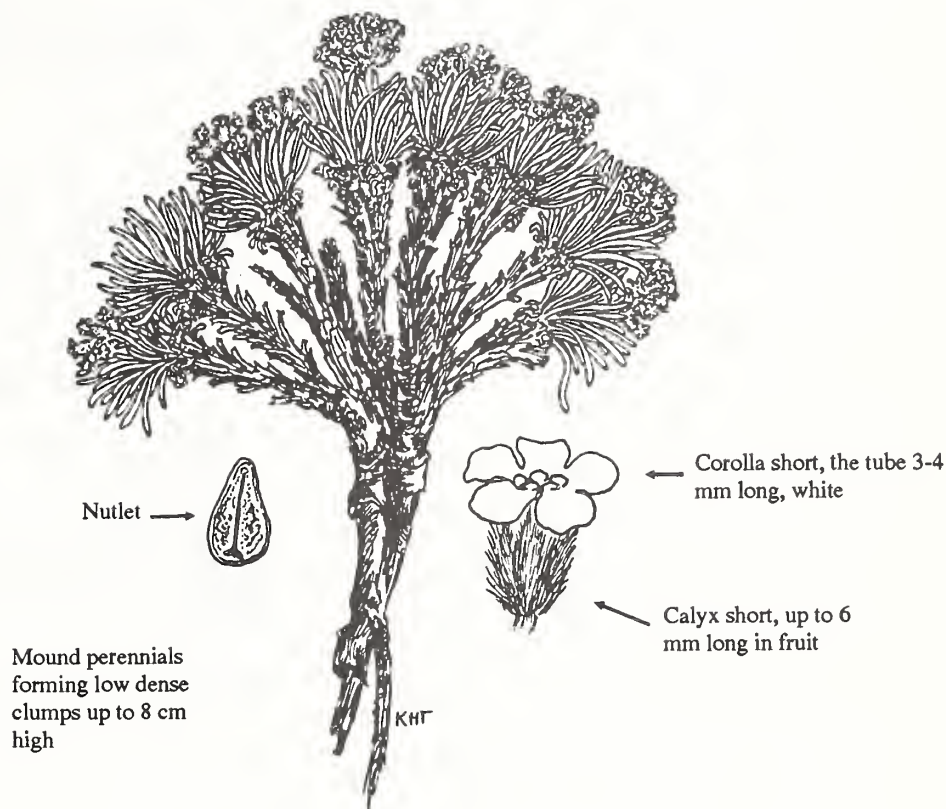
Davis, R. J. 1966. The North American Perennial species of *Claytonia*. Britt. 18:285-303.



Distribution of *Claytonia lanceolata* var. *flava* in Idaho.

TUFTED CRYPTANTH

Cryptantha caespitosa (A.Nels.) Payson
Boraginaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S2

Description.—A member of the borage family, tufted cryptanth has a mat forming characteristic, growing to a height of 0.5-1.5 dm from a woody rootstock. The basal leaves are persistent, forming a dense mat and are up to about 3 cm long. The stem leaves are scattered and similar or somewhat smaller than the basal ones. The petals are white, forming a tube at the base which is about as long as the sepals. The flower cluster is rather compact.

Reproduction.—A perennial, this cryptanth flowers from May to June. It produces a fruit which consists of 4 hard nutlets. These mound-forming perennials are long-lived.

Habitat.—Dry, often barren, clay, gravelly, or sandy knolls, ridges, and draws commonly in the pinyon-juniper or sagebrush zones. Elevation between 6,400-10,230 feet.

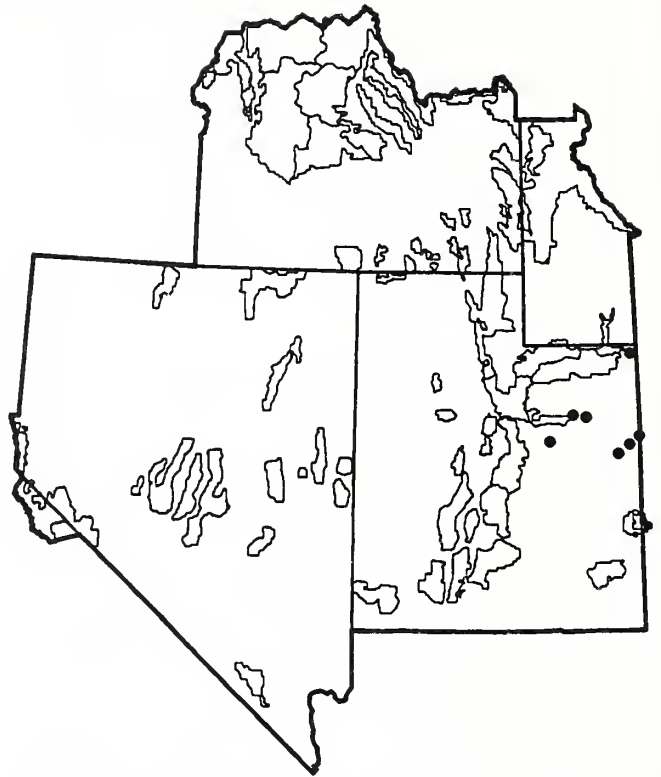
Distribution.—Southwestern Wyoming, northeastern Utah in Daggett and Rich counties, and north along the east side of Bear Lake to Montpelier, Idaho.

Management Implications.—Some habitat areas occur where oil production is underway. Other areas are grazed

and used as bedgrounds for domestic livestock. The cumulative effects of these impacts have not been determined.

References.

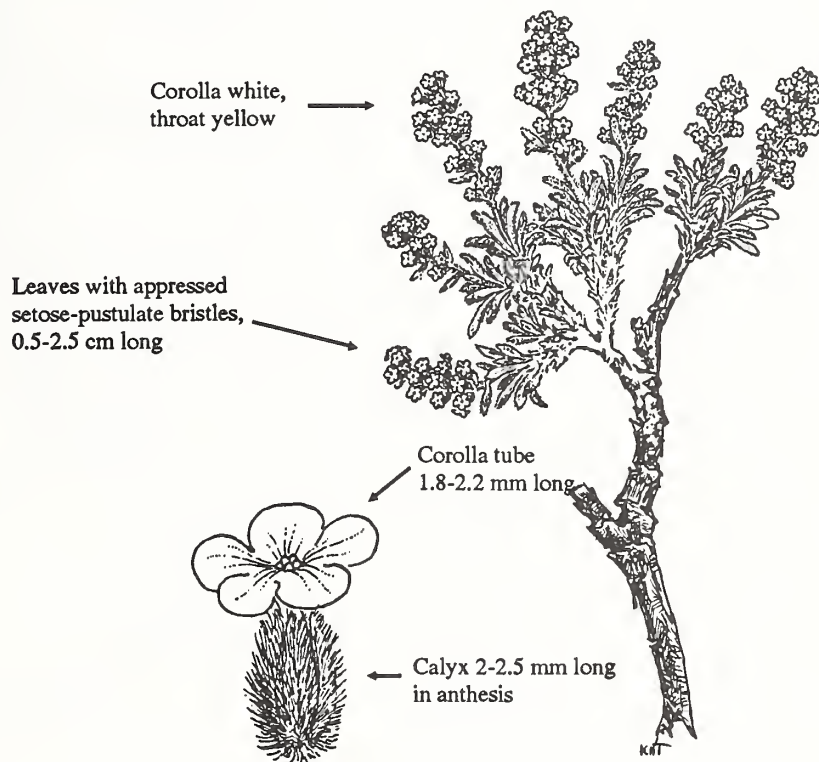
Payson, E.B. 1927. *Cryptantha caespitosa*. Ann. Missouri Bot. Gard. 14:281.



Distribution of *Cryptantha caespitosa* in Utah.

MOUND CRYPTANTH

Cryptantha compacta Higgins
Boraginaceae



Plants 0.3-1 dm tall

USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S3

Description.—A member of the borage family, mound cryptanth grows in dense mats, 0.3-1.0 dm tall. There are numerous stems, 1-4 cm long which arise from a woody root and are covered with stiff hairs, often covered with a blackish skin. The leaves are 0.5-1.5 cm long with bristles on the lower surface. The sepals are 2.0-2.5 mm long and covered with dense white hairs. The petals are white, with the tube equalling the length of the sepals.

Reproduction.—A perennial, flowering occurs from May to July. It produces a fruit of 4 hard nutlets, of which only 1 or 2 mature. The mature nutlets are minutely roughened. The dense perennial mats live for several to many years.

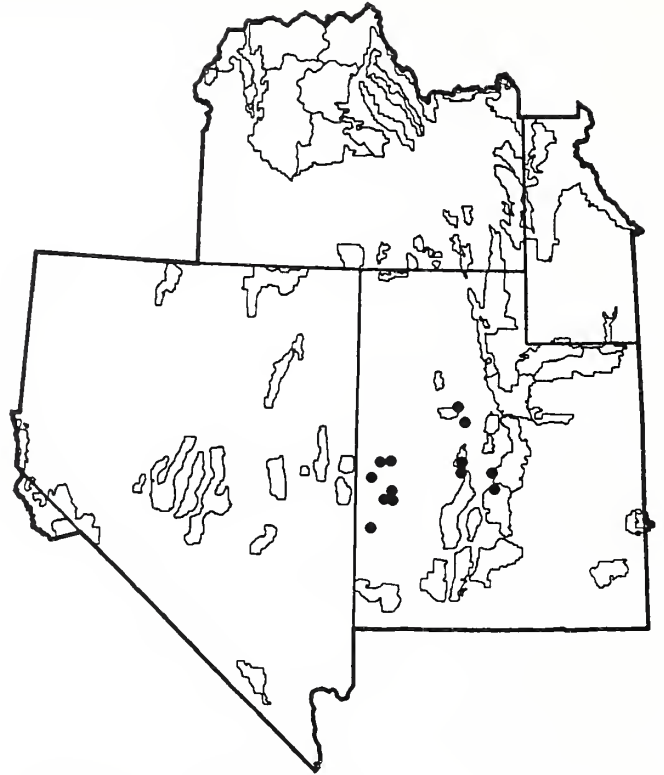
Habitat.—Shallow, stony loam, rocky slopes, and summits of desert ranges with *Sphaeralcea caespitosa* in salt desert shrub and mixed desert shrub communities. Elevation between 6,230-7,380 feet.

Distribution.—Endemic to southwestern Millard, Beaver, and Tooele counties, Utah.

Management Implications.—Determine the distribution and essential habitat areas needed to maintain viable population levels in concert with other Land Management agencies.

References.

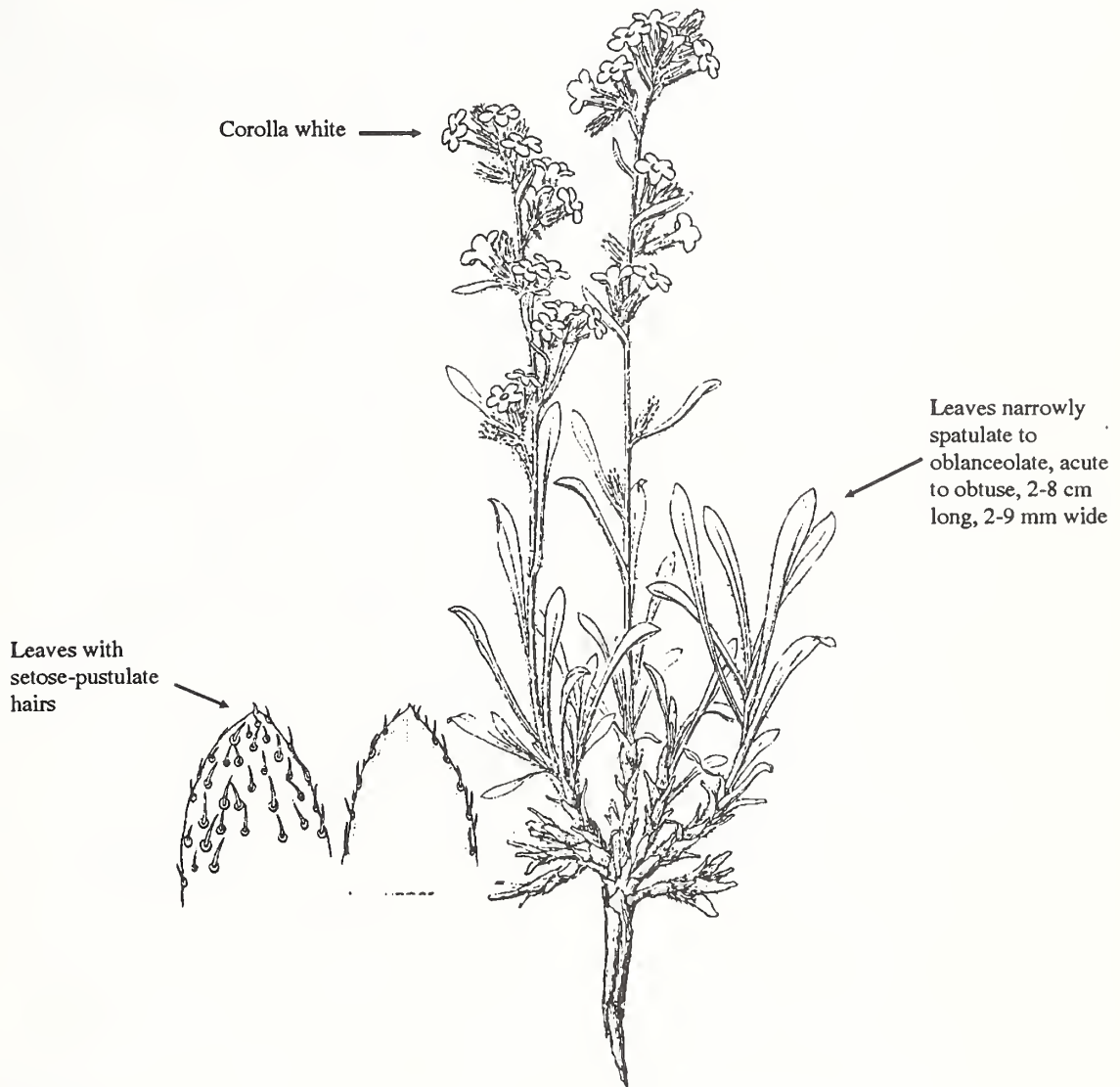
Higgins, L.C. 1971. A revision of *Cryptantha* subgenus *Oreocarya*. Brigham Young Univ. Sci. Bull. Biol. Serv. 13(4):39.



Distribution of *Cryptantha compacta*.

CREUTZFELDT FLOWER

Cryptantha creutzfeldtii Welsh
Boraginaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the borage family, Creutzfeldt cryptanth grows 0.7-2.3 dm tall. It has many stems which arise from a multicapital caudex clothed with marcescent leaf bases and a stout black-barked taproot. The leaves are narrowly spatulate to oblanceolate, 2-8 cm long and appressed with bristles below. The flowers occur few to several per cluster below the terminal sepals. The petals are white with a long bell-shaped tube.

Reproduction.—A long-lived, perennial herb, flowering for this cryptanth begins in late April and continues into early June. The nutlets are 4-5 mm long without an elevated margin. Seed is set 5-10 days after flowering and is ripe by mid-June. Seed is dispersed by late July.

Habitat.—The Creutzfeldt cryptanth can be found growing on open, dry, exposed Mancos shale ridges and slopes in open pinyon-juniper and salt desert shrub plant communities. Soils are very shallow, rocky, and of a heavy clay texture. Elevation between 5,500-6,500 feet. Plants have been found growing on all exposures, but more commonly observed on south exposures.

Distribution.—This plant is endemic to Carbon and Emery counties, Utah. It is confined to the open Blue Mancos Shale hilltops near Price, Utah, and open shale slopes west of Ferron, Utah.

Management Implications.—This cryptanth has no grazing value for livestock or big game. The seeds may be used by some birds or small mammals. Populations of this plant occur on a stock driveway and has, in the past, been heavily trampled. Studies need to be initiated to help determine the impacts on this plant and its habitat. A interagency management plan with BLM should be developed outlining FS share of costs and work.

References.

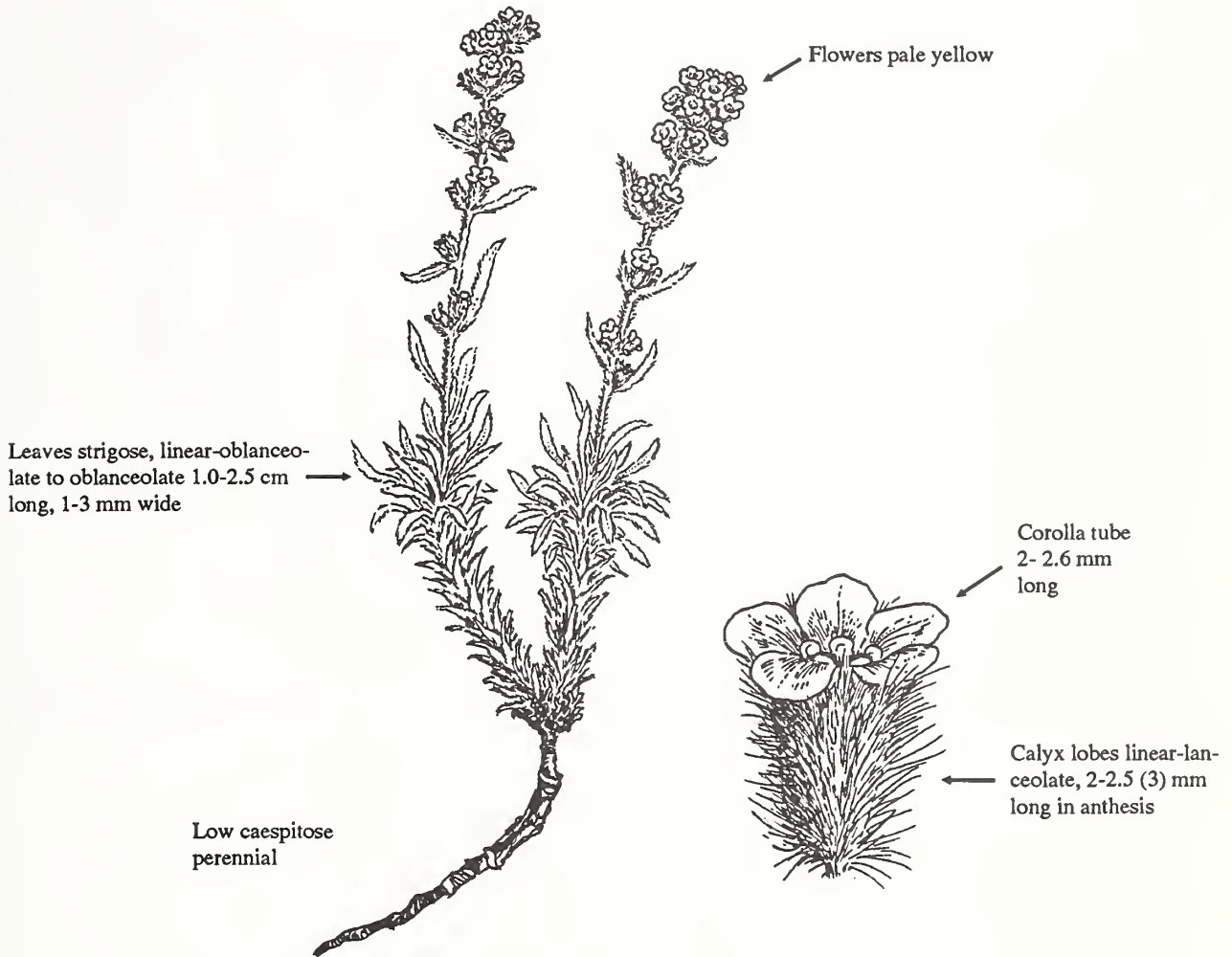
Welsh, S.L. *Cryptantha creutzfeldtii*. *Great Basin Natur.* 42:2.



Distribution of *Cryptantha creutzfeldtii*.

YELLOW-WHITE CATSEYE

Cryptantha ochroleuca Higgins
Boraginaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1G2/UT-S1S2

Description.—A member of the borage family, yellow-white cryptanth grows low (2-13 cm tall) with a mat forming characteristic. It has several hairy stems. The leaves are linear-oblongate, 1.0-2.5 cm long, and 1-3 mm wide. The basal leaves are covered with dense hairs, the petioles with white hairs. The stem leaves are hairy with bristles. The inflorescence is narrow and the petals are pale yellow with a 2.0-2.5 mm long tube.

Reproduction.—A long-lived, perennial, flowering begins in May and continues into late June. It produces only 1 mature nutlet, 2.5-3.0 mm long with no elevated margin.

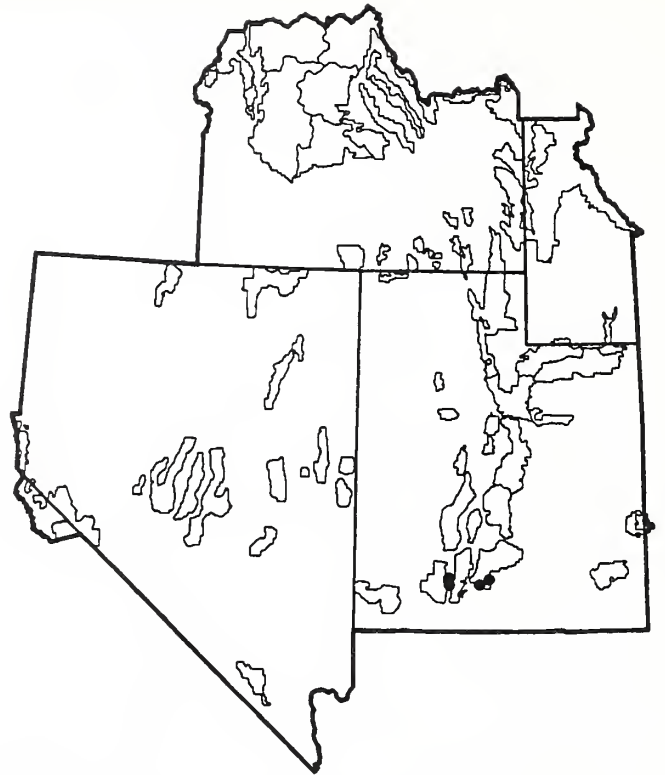
Habitat.—Dry, open sites on unconsolidated alluvium with angular limestone, gravelly soils. Plants prefer southern, warm slopes that are relatively stable, having some soil development among rocks and boulders. Pinyon-juniper, ponderosa pine, and bristle cone pine plant communities on the pink limestone member of the Wasatch Formation are preferred habitat areas. Elevation between 6,500-9,000 feet.

Distribution.—This plant is limited to the pink limestone of the Wasatch Formation in Red Canyon, Garfield County, Utah.

Management Implications--A monitoring study should be initiated to determine this plants population status and distribution. The populations are traversed by a main highway. There is considerable ORV and camping use of the area. Trampling seems to represent an existing threat and will increase significantly over the next decade. Industrial development and expansion also pose a potential threat.

References.

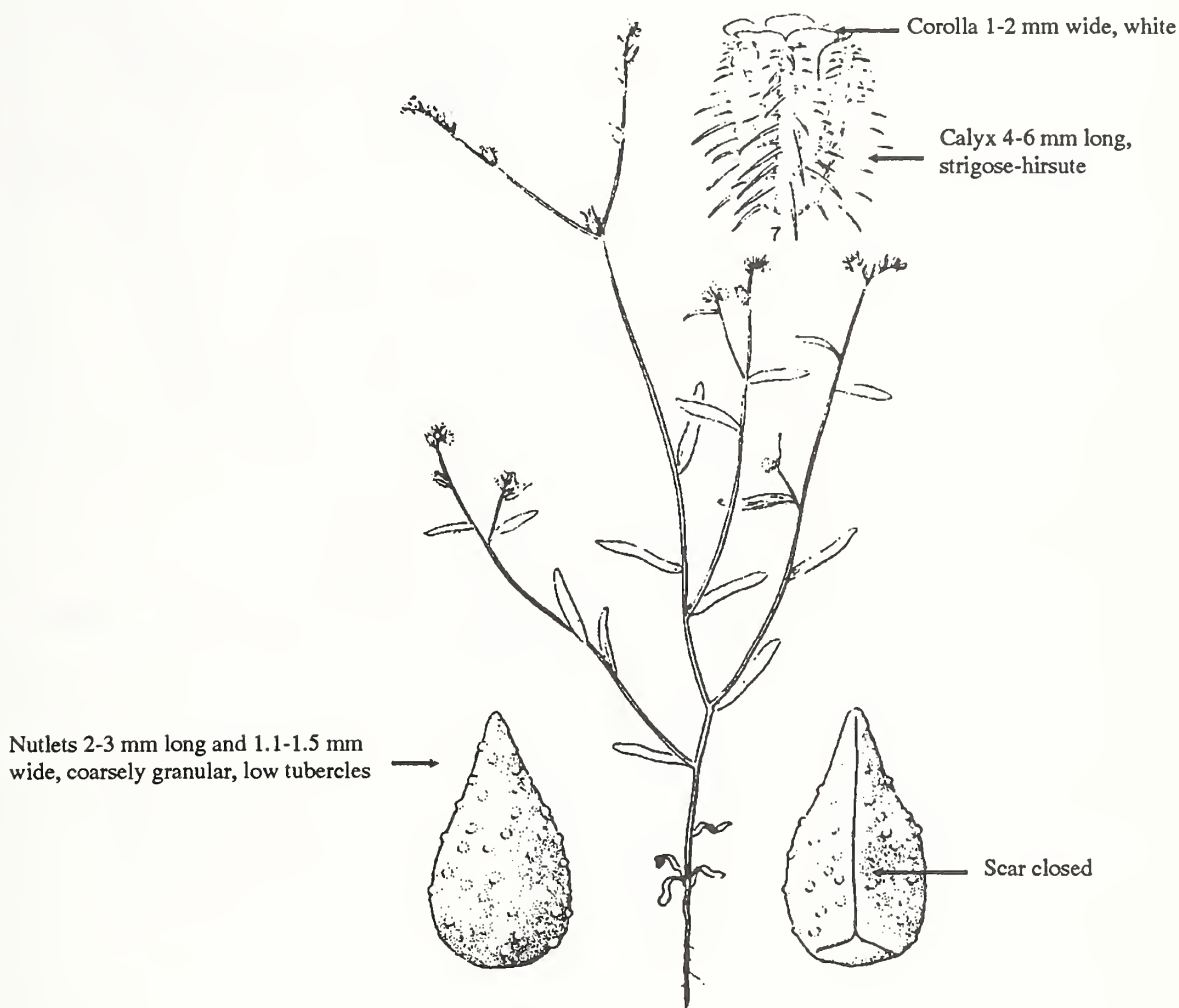
Higgins, L.C. 1968. New species of perennial *Cryptantha* from Utah. *Great Basin Natur.* 28:197.



Distribution of *Cryptantha ochroleuca*.

PINEWOOD CRYPTANTH

Cryptantha simulans Greene
Boraginaceae



Plants annual

USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S1

Description.—A member of the borage family, Pinewood cryptanth is openly branched, 1.5-5.0 dm tall. The herbage is hairy. The leaves are scattered and linear or linear-oblong. The fruiting sepals are hairy with some stiffer curved bristles and 4-6 mm long. The petals are white and 1-2 mm wide.

Reproduction.—An annual, this cryptanth flowers from June to July. It produces a 4 nutlet fruit, 2-3 mm long which is coarsely glandular with scattered low tubercles. The scar

is closed. Plants survive and grow yearly from the seed bank.

Habitat.—Open ponderosa pine forests.

Distribution.—Southern California to central Washington east of the Cascade summits, and disjunct in northern, west-central, and southwestern Idaho in Latah, Owyhee, and Boise counties.

Management Implications.—Currently impacted by logging operations. Cumulative effects over the range of this species is needed to access, use, condition and trends.

References.

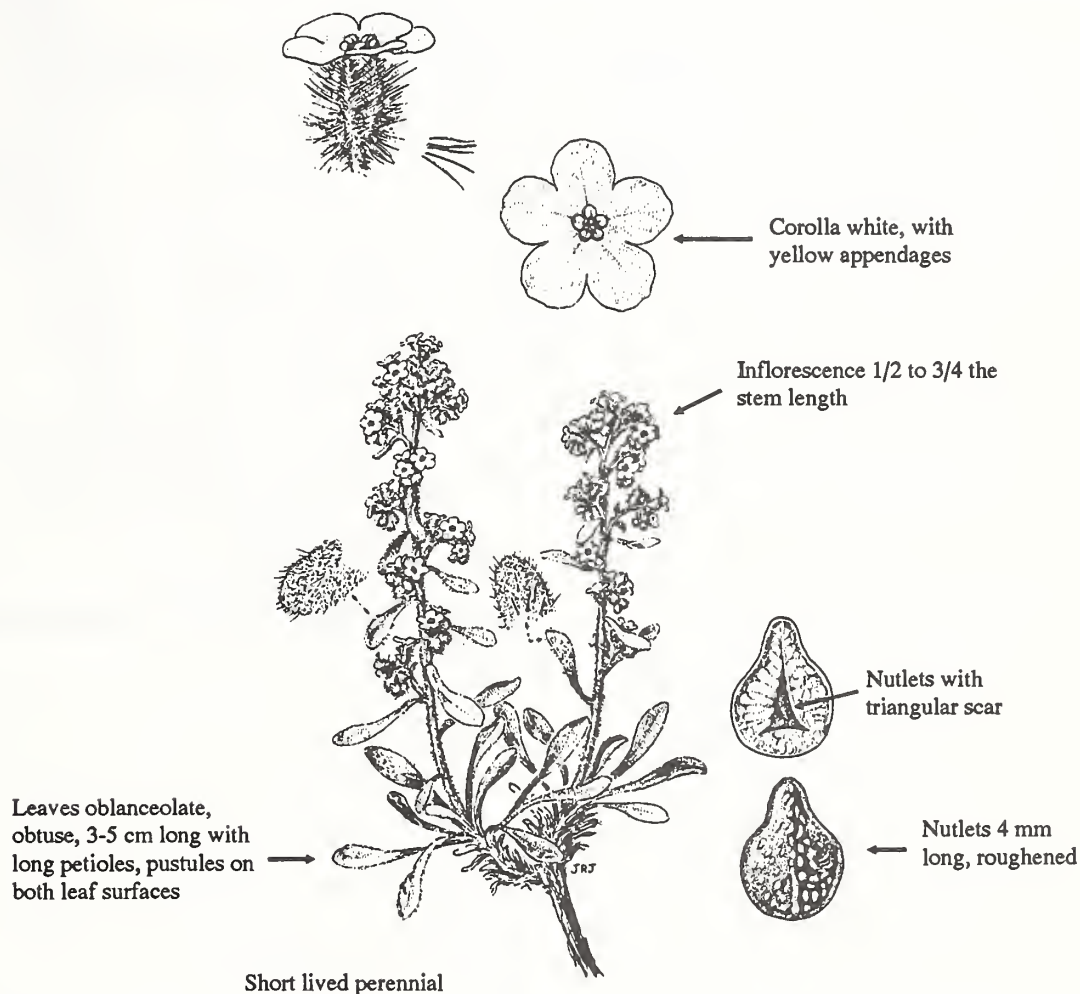
Greene. 1902. *Cryptantha simulans*. Pitt. 5:54.



Distribution of *Cryptantha simulans* in Idaho in the Intermountain Region.

MOHAVE CRYPTANTH

Cryptantha tumulosa (Payson) Payson
Boraginaceae



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2G3/CA-S?, NV-S?

Description.—This cryptanth is a coarse, bristly plant growing up to 1.4 dm tall. The few to many stems are erect and grow from a branching, stout caudex. The leaves are mostly basal, numerous, oblanceolate, and 3-5 cm long with the blade gradually narrowed to a long, slender petiole. The flowering stalk extends 1/2-3/4 the stems length and is floriferous, narrow, and densely bristly. The flowers are white and about the same length as the sepals.

Reproduction.—A short-lived perennial, this cryptanth flowers from late April to June. The fruit (nutlets) occur 1-3 per flower.

Habitat.—It occupies pinyon-juniper and mountain brush communities on rocky limestone hills, ridges, and washes between 4,500-10,200 feet elevation.

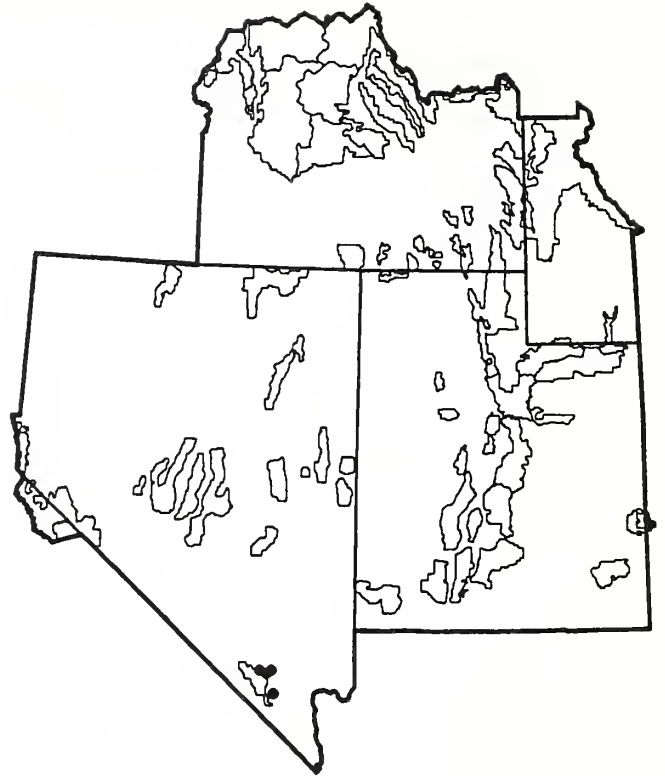
Distribution.—Mohave cryptanth grows in southern Nevada in Clark and Nye counties and Inyo County, California.

Management Implications.—Recreational use of the areas adjacent to Las Vegas is the major threat to this plant. Many

of the reported populations are known from collections made between 1902-1950. The current status of these populations is unknown. Heavy grazing by wild horses and burros has increased over the last decade and poses a significant threat as well.

References.

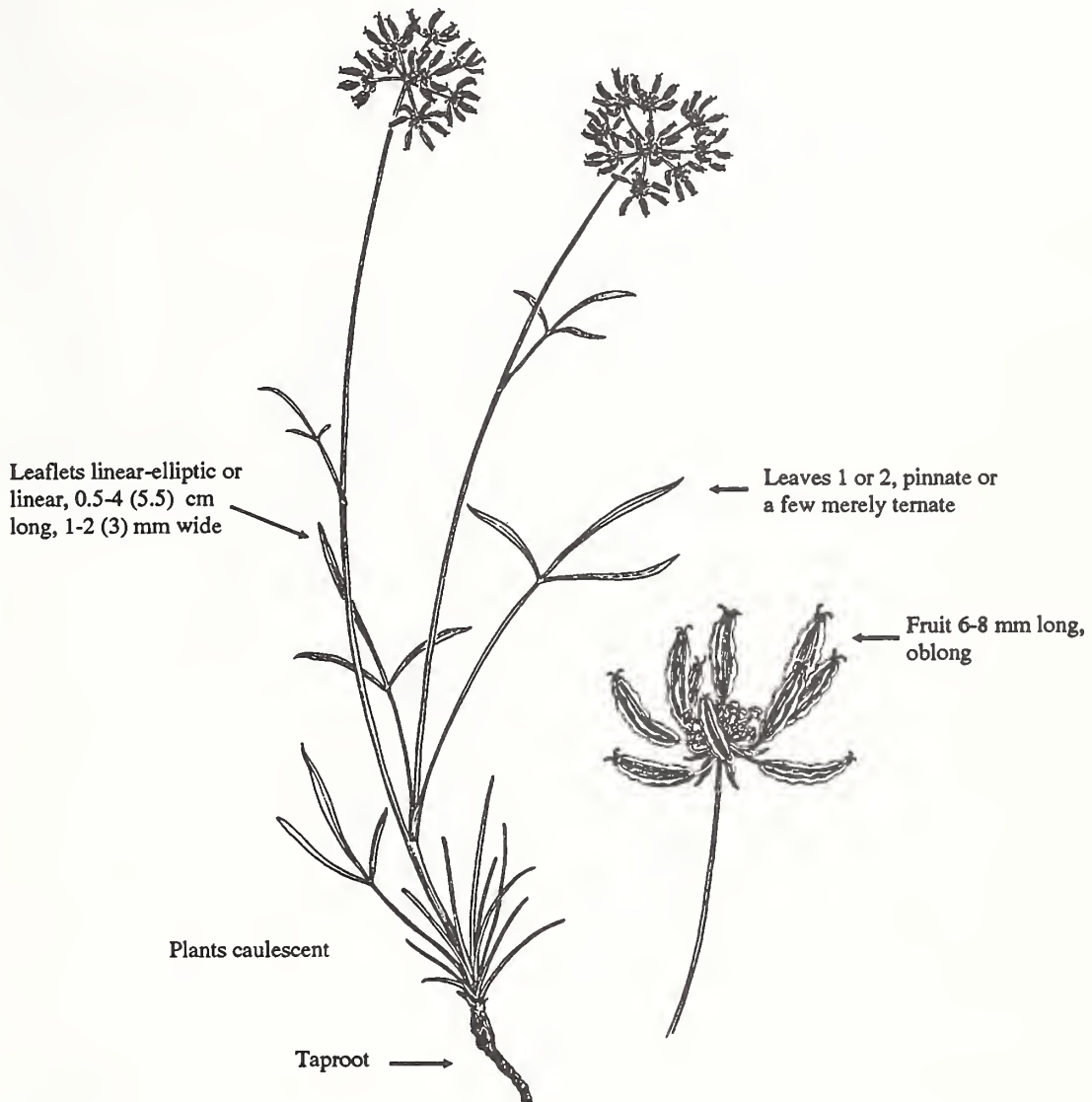
- Higgins, L.C. 1971. A revision of *Cryptantha* subgenus *Oreocarya*. Brigham Young Univ. Sci. Bull. Biol. Ser. 13(4):32.
- Mozingo, H. and M. Williams. 1980. Threatened and Endangered Plants of Nevada. U.S. Dept. Inter. Bur. of Land Manage. and Fish and Wildl. Serv.



Distribution of *Cryptantha tumulosa* in the Intermountain Region.

PINNATE SPRING-PARSLEY

Cyompterus beckii Welsh and Goodrich
Apiaceae (Umbelliferae)



USWFS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the parsley family, pinnate spring parsley grows 5-40 cm tall. The plant has a weak aroma. The leaves extend up the stem from a taproot, which is often clothed at the base with persistent leaf bases. The leaves are once or twice pinnate, with 2-3 opposite pairs of lateral leaflets. There are 3-7 leaflets, 0.5-4.0 cm long, or the terminal one 1.0-5.5 cm long. There are 1-3 flower clusters per stem. The bractlets are greenish with dry, thin

margins. The petals are bright yellow when fresh, fading to white when dried.

Reproduction.—A perennial, plants flower from late May into July. Seed is set in 10-15 days and is ripe by mid-September. The fruits are 6-8 mm long with lateral wings 1 mm wide. The perennial taproot overwinters for several years. Young seedlings emerge from germinating seeds.

Habitat.—Sandy to rocky sites in pinyon-juniper, mountain brush, and ponderosa pine plant communities. This species prefers sites on north and east exposures. Soils are mostly shallow, sandy, and rocky. Plants grow on ledges, rock

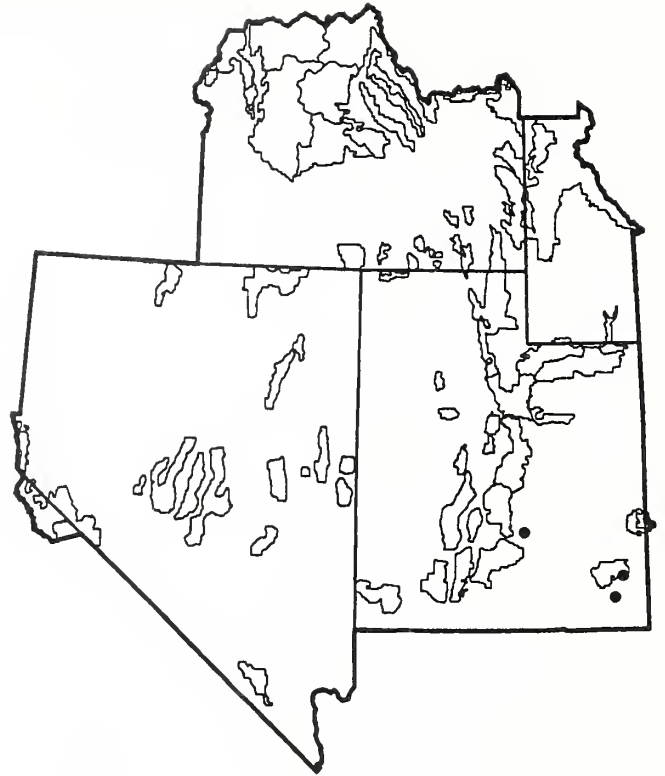
crevices, and cliff bases. Elevation between 5,500-7,500 feet.

Distribution.—This plant is endemic to Wayne and San Juan counties, Utah in Capitol Reef National Park and the Elk Ridge area west of the Abajo Mountains.

Management Implications.—The species grows mostly in and on sites inaccessible to large grazing animals. Other activities which may impact this plant are road construction or mining and oil and gas exploration. Survey work was completed on the Monticello Ranger District in 1990.

References.

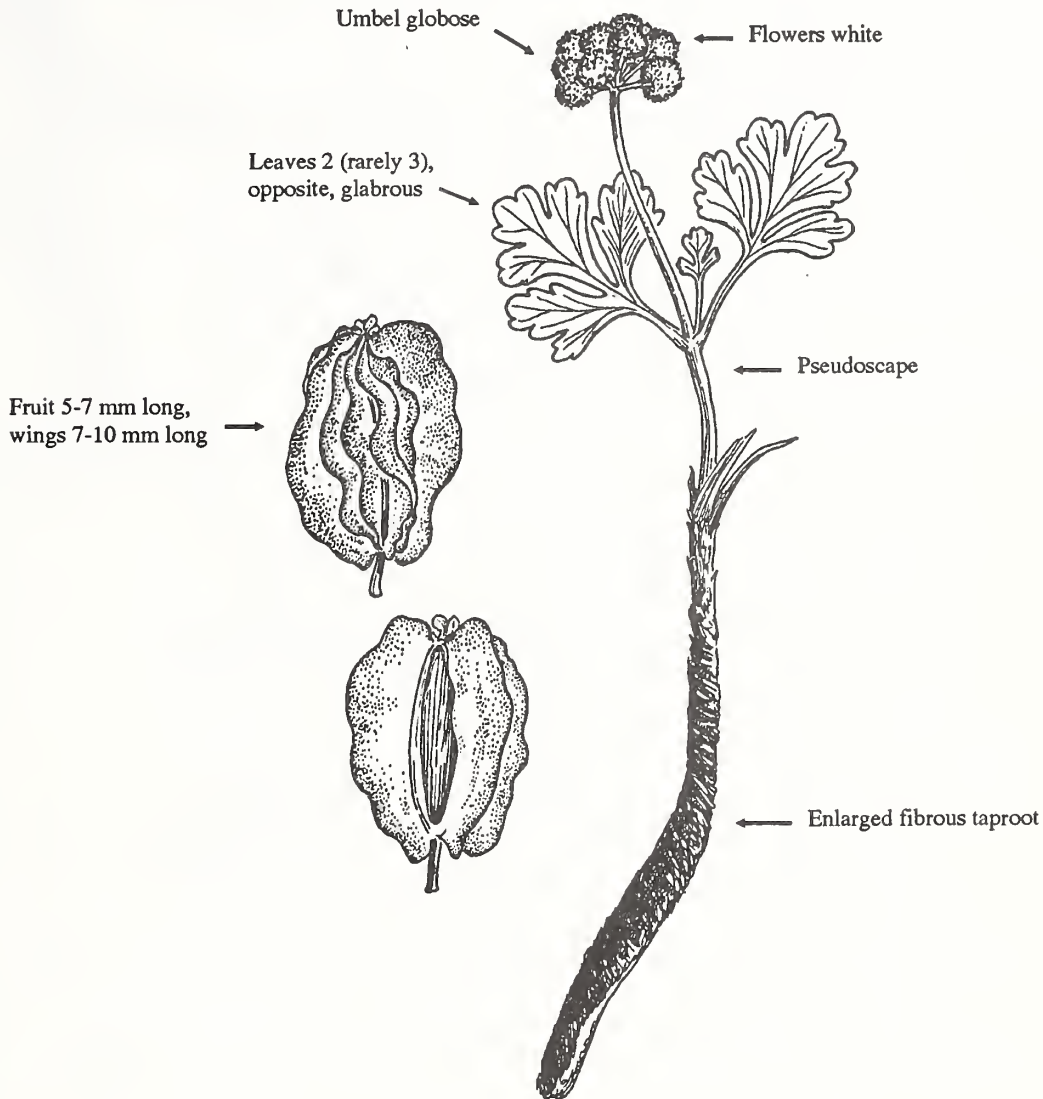
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich 1987. A Utah flora. Great Basin Natur. Mem. No. 9:621.



Distribution of *Cymopterus beckii*.

COULTER BISCUITROOT

Cymopterus coulteri (Jones) Mathias
Apiaceae (Umbelliferae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S3

Description.—A member of the parsley family, Coulter biscuitroot grows with the development of a pseudoscape, to a height of 4-11 cm, from an enlarged fibrous taproot. There are 2 opposite leaves which are borne at ground level. The leaves are ternately cleft, ovate in outline with a 1-3 cm long petiole. The flower cluster arises from a solitary, 2-7 cm long peduncle (slightly exceeding the leaves). The involucre is lacking. The bractlets are 2-4 mm long (usually

exceeding the flowers), green or purplish in age, and entire. The sepals have minute teeth and are white. The petals are also white. The stamen filaments are white, while the anthers are purple.

Reproduction.—Flowering for this perennial begins in late March and continues into mid-May. The papery fruit is 5-7 mm long with lateral wings and 3 dorsal wings. The seeds are probably dispersed by the wind. The enlarged fibrous taproot is long-lived.

Habitat.—This *Cymopterus* grows in gravelly, clay, often seleniferous soils in desert shrub and black sagebrush plant

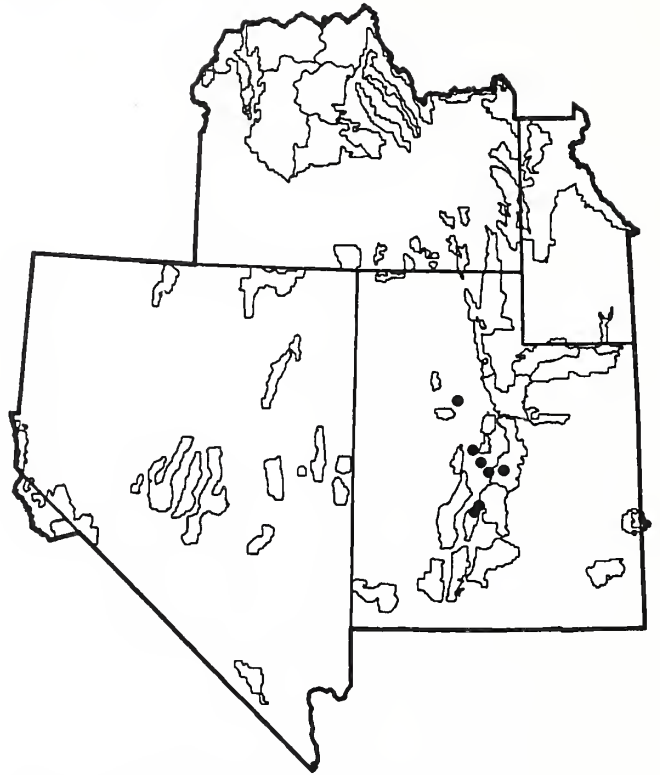
associations. Elevation between 5,000-6,000 feet, growing on all exposures.

Distribution.—The species is endemic to parts of Juab, Sanpete, Sevier, and Tooele counties in Utah.

Management Implications.—Little is known about the species. Sheep prefer not to graze on it and it has a good strong root system. Studies need to be initiated to help determine the plants status. Gypsum mining operations threaten the habitat and gravel pits have reduced the total habitat area.

References.

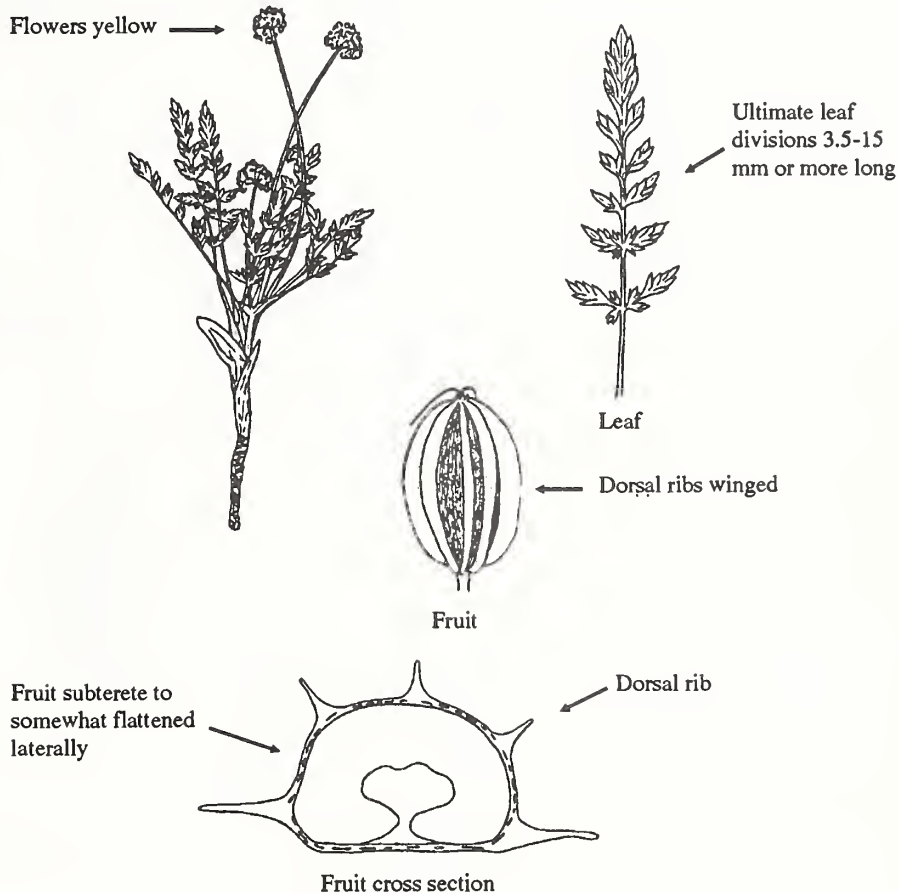
Mathias, M.E. 1930. *Cymopterus coulteri*. Ann. Missouri Bot. Gard. 17:276.
Jones, M.E. 1908. *Cymopterus corrugatus* var. *coulteri*. Contr. W. Bot. 12:19.



Distribution of *Cymopterus coulteri*.

DAVIS' WAVEWING

Cymopterus davisii R.L. Hartman
Apiaceae (Umbelliferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G1/ID-S1

Description.—A member of the parsley family, Davis' wavewing is a low growing (2-16 cm tall), herbaceous plant which when crushed has a marked aroma. It grows from a straight to curved primary root 10-20 cm long or more. The crown is simple or with a few branches arising 1-6 cm below ground. The branches are enveloped by persistent, papery, or somewhat fibrous leaf sheaths. The leaves are pinnate-pinnatifid to bipinnate, 1.5-15 cm long, 0.5-2.5 cm broad and

often minutely glandular-roughened on the margin. The petiole is often flat to U-shaped and 0.5-6.0 cm long. There are 1-5 leaflets, the terminal being deeply pinnatifid, the lower distinct. The inflorescence is of subcompact, compound umbels, 3-15 mm in diameter. The flower stalk is 4-15 cm long. The 3-7 bractlets are linear to lanceolate, white margined, 1-4 mm long, and about equalling the flowers. The flowers are yellow with broadly rounded to triangular sepals which do not enlarge in fruit. The anthers are yellow.

Reproduction.—A perennial, flowering begins for this *Cymopterus* in July. Fruiting occurs in late July and con-

tinues through August. The fruit is flattened laterally, broadly elliptic, 3.5-4.8 mm long, minutely glandular-roughened, and dull reddish-brown with light brown to whitish wings.

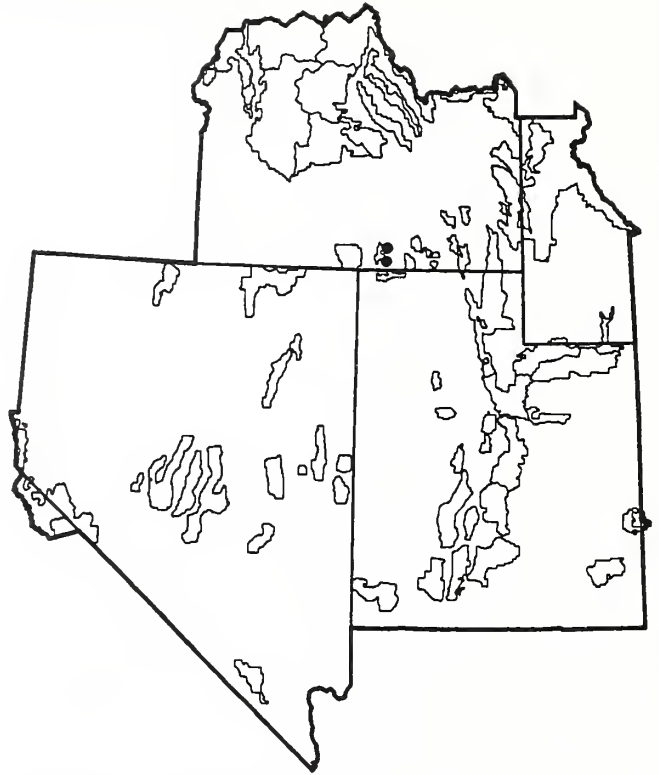
Habitat.—Subalpine and alpine areas on grassy slopes in gravelly disturbed sites or rock outcrops on granite and quartzite substrates.

Distribution.—Extreme south central Idaho on Mt. Harrison and Cache Peak in the Albion Mountains of Cassia County.

Management Implications.—The species management guide, developed and approved in 1984, needs to be updated, funded, and implemented.

References.

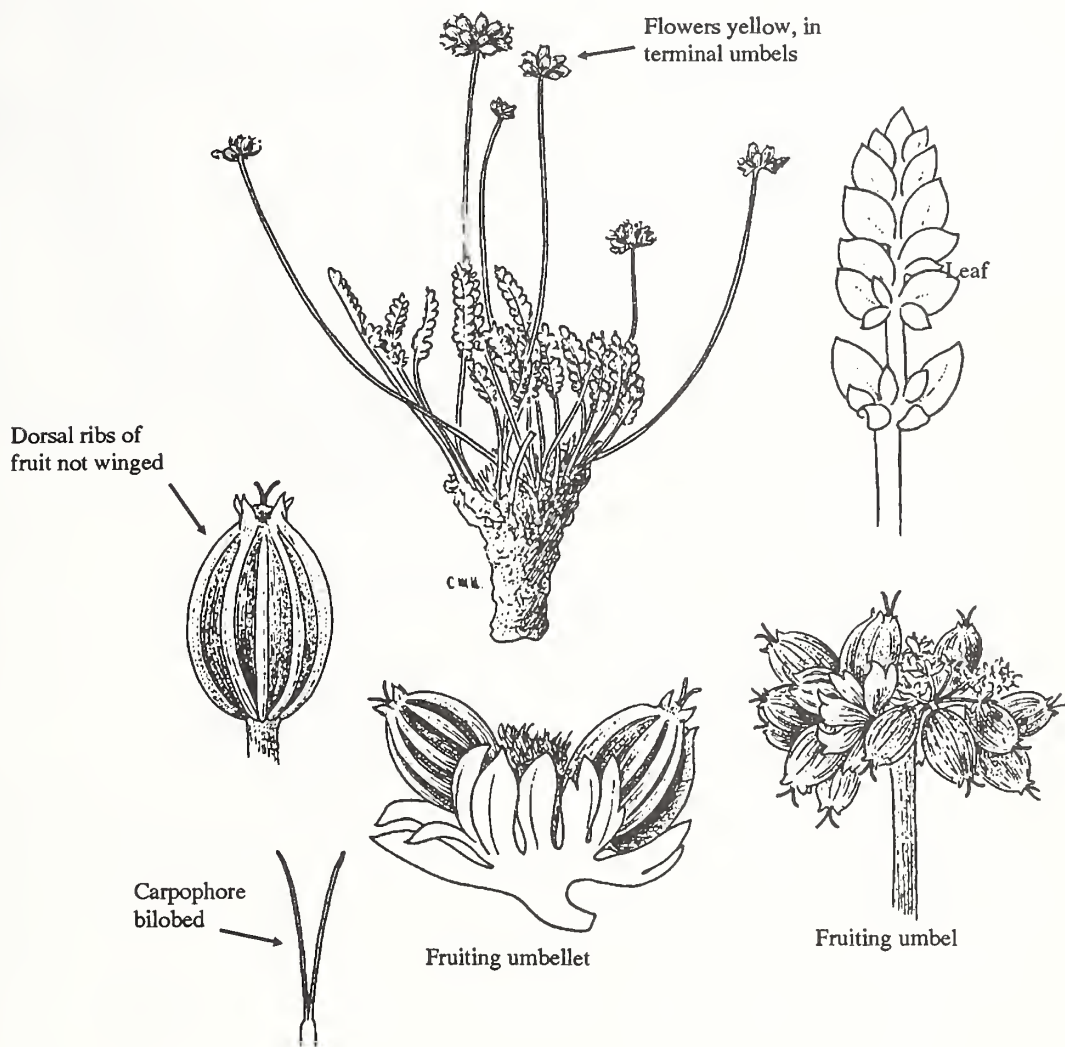
Hartman, R.L. 1985. A new species of *Cymopterus* (Umbelliferae) from southern Idaho. *Britt.* 37:102-105.



Distribution of *Cymopterus davisii*.

DOUGLAS BISCUITROOT

Cymopterus douglasii R.L. Hartman and L. Constance
 Apiaceae (Umbelliferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G2/ID-S2

Description.—A member of the parsley family, Douglas wavewing grows low and tufted (4-15 cm tall) with a straight to curved, 6-20 cm long taproot. The crown has few to several branches arising 1-3 cm below ground, which are enveloped by marcescent, papery leaf sheaths. The leaves are oblong, 2-5 cm long, green to grayish-green, and once-pinnate with entire leaflets or few to many unequally bilobed to pinnately 3-7 lobed or twice-pinnate (especially below).

The leaflets are in 3-5 opposite, elliptic, distinct pairs which are crowded and greatly overlapping. The inflorescence consists of subcompact, compound umbels, 3-8 mm in diameter. The flower stalk is 4-13 cm long and exceeds the leaves. The 5-12 bractlets are entire, about equalling the flower length, and thinly white margined. The flowers are yellow (fading pale) and the carpophore is bilobed.

Reproduction.—A long-lived perennial, this *Cymopterus* flowers from mid-June to late July. It then fruits from late July to August. The fruit is broadly ovoid, 3-4 mm long, dull to somewhat lustrous, prominent, corky, and winged. The seeds are slightly compressed dorsally.

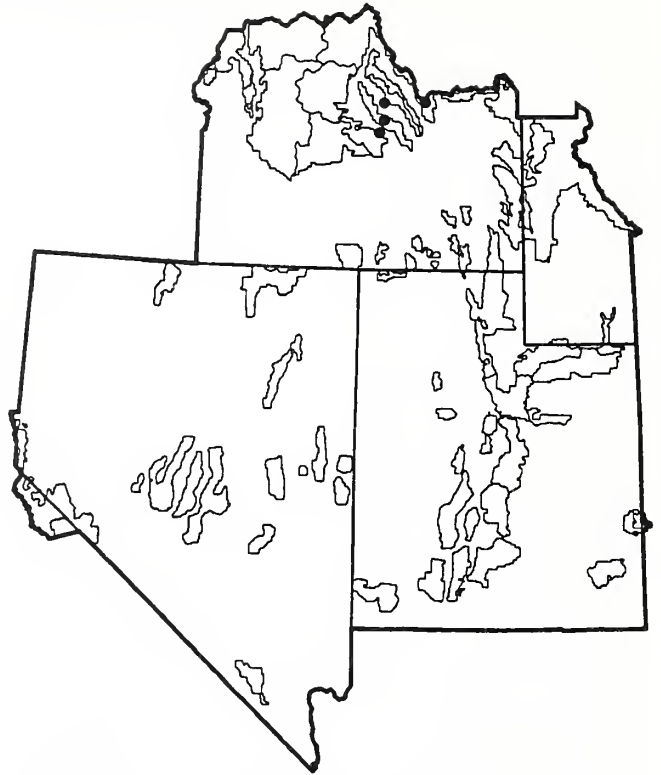
Habitat.—Locally abundant on open, grassy, or rocky ridges and summits or in moist alpine and subalpine meadows in calcareous or dolomitic substrates. Elevation above 9,000 feet. Growing in forb-grass communities.

Distribution.—Endemic to the Lost River and Lemhi Ranges in east central Idaho, Lemhi, and Custer counties.

Management Implications.—Oil and gas exploration, mining development, and existing roads with potential ORV activity are potential threats. Biological studies are needed to access impacts and the species biological needs.

References.

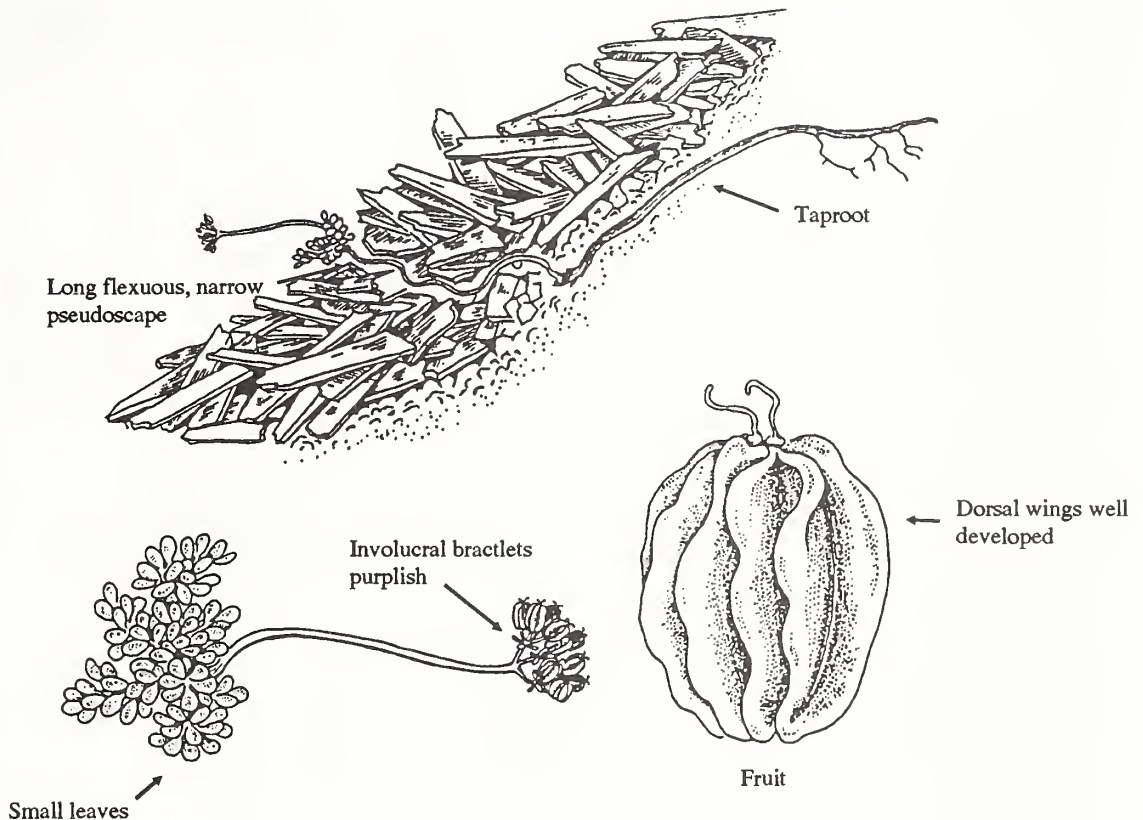
Hartman, R.L. and L. Constance. 1985. Two new species of *Cymopterus* (Umbelliferae) from western North America. *Britt.* 37:88-95.



Distribution of *Cymopterus douglasii*.

GOODRICH SPRING PARSLEY

Cymopterus goodrichii Welsh and Neese
Apiaceae (Umbelliferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/NV-S1

Description.—This *Cymopterus* grows from a simple or branched caudex. It produces a single flexuous pseudoscape from each caudex bearing a persistent leaf thatch. The deep seated taproot is fusiform to subcylindric. The leaves, borne at the top of the pseudoscape on petioles 3-50 mm long, are dissected, glaucous, and spatulate or elliptic. The whitish or purplish flowers are on peduncles 1-6 cm long and lack an involucre.

Reproduction.—This species is a long-lived perennial, flowering in June and producing fruit in late June to July. The fruit has both lateral and dorsal wings that are slightly wind-buoyant which aids in dispersal from the parent plants.

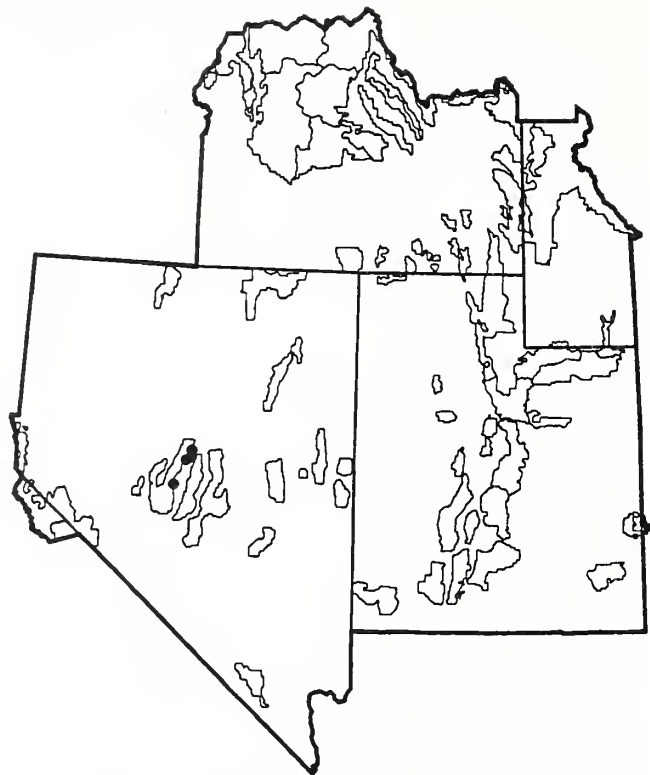
Habitat.—It occupies shrub-forb communities on talus slopes of slate and limestone between 7,300-11,110 feet elevation.

Distribution.—Goodrich spring parsley is endemic to the Toiyabe Range of central Nevada in the vicinity of Bunker Hill in Lander County.

Management Implications.—Central Nevada has been and is currently heavily grazed by domestic livestock. Portions of Goodrich spring parsley habitat are extensively staked with mining claims. Very little data are available on this species range and current status. Essential habitat areas need to be determined and protected.

References.

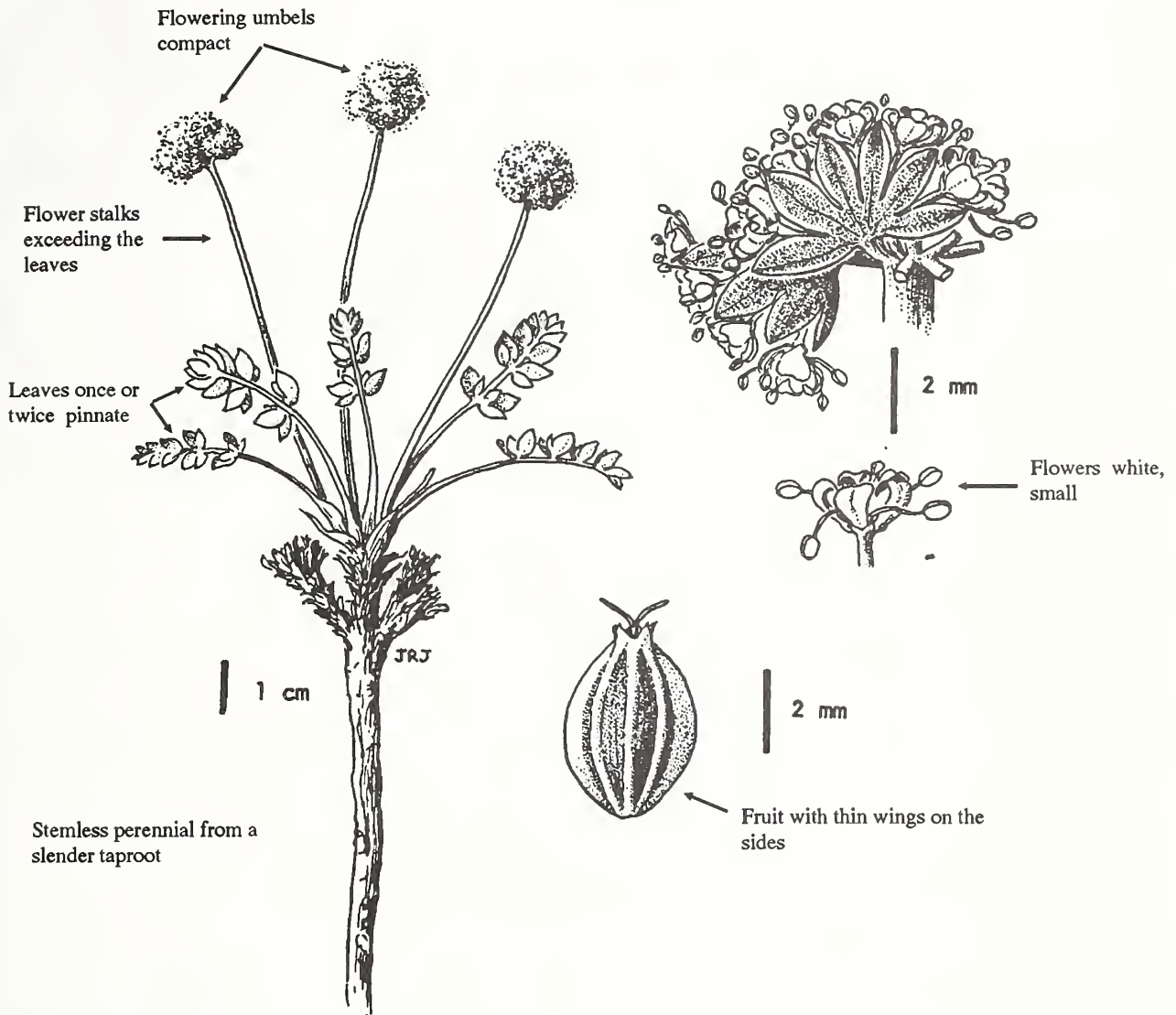
Welsh, S.L. and E. Neese. 1980. A new species of *Cymopterus* (Umbelliferae) from the Toiyabe Range, Lander County, Nevada. *Madrono* 27:97-100.



Distribution of *Cymopterus goodrichii*.

SNOWY SPRING PARSLEY

Cymopterus nivalis Wats.
Apiaceae (Umbelliferae)



USWFS Status: 3C
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G?/NV-S?

Description.—A member of the parsley family, snowy spring parsley has a long slender taproot. The leaves are once or twice pinnate and 1.5-5.0 cm long with small hairs. The flower stalks exceed the leaves, which are 4-10 cm long, and support a cluster of flowers. The flowers are white or purplish and small (5 mm long).

Reproduction.—A long-lived perennial, flowering occurs in July. The fruit produces a thin wing on either side, is ovate-oblong, and about 1.5 mm long.

Habitat.—Dry, rocky sites in subalpine zones, possibly on limestone. Elevation between 9,000-11,550.

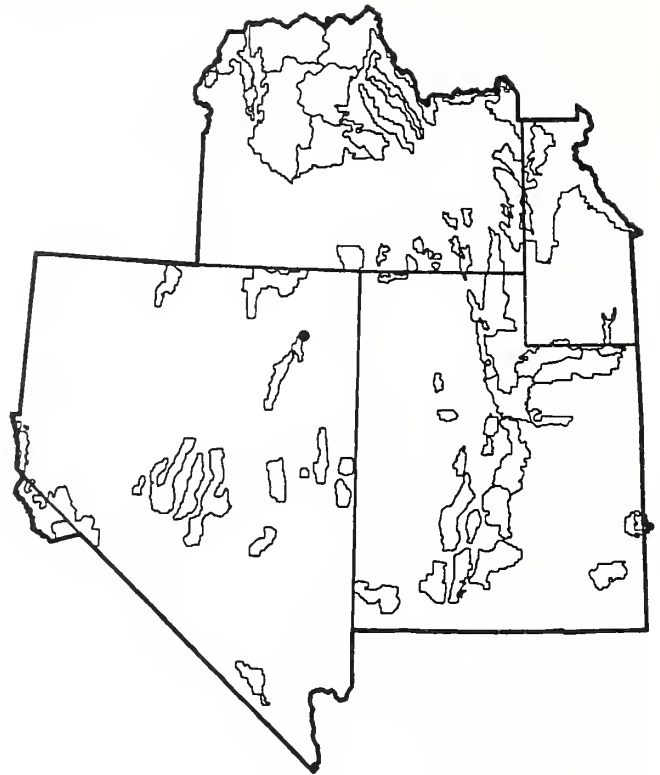
Distribution.—Endemic to the Ruby Mountains, Elko County, Nevada.

Management Implications.—Specimens from Idaho and Montana previously identified as *C. nivalis* have been described as new species. The Nevada collections from the Ruby Mountains represent the only plants referable to *C.*

nivalis which makes the species a Nevada endemic known only from one population on the Ruby Mountains. Snowy spring parsley occupies that habitat on a high inaccessible mountain top. Some exploratory mining holes occur in the vicinity so mining may be a potential or real threat. Additional field work is needed to determine if additional populations occur on the Humboldt National Forest or adjacent mountain areas administered by BLM. Based on current information this species represents one of the rarest taxa in Nevada with a high potential for Federal listing.

References.

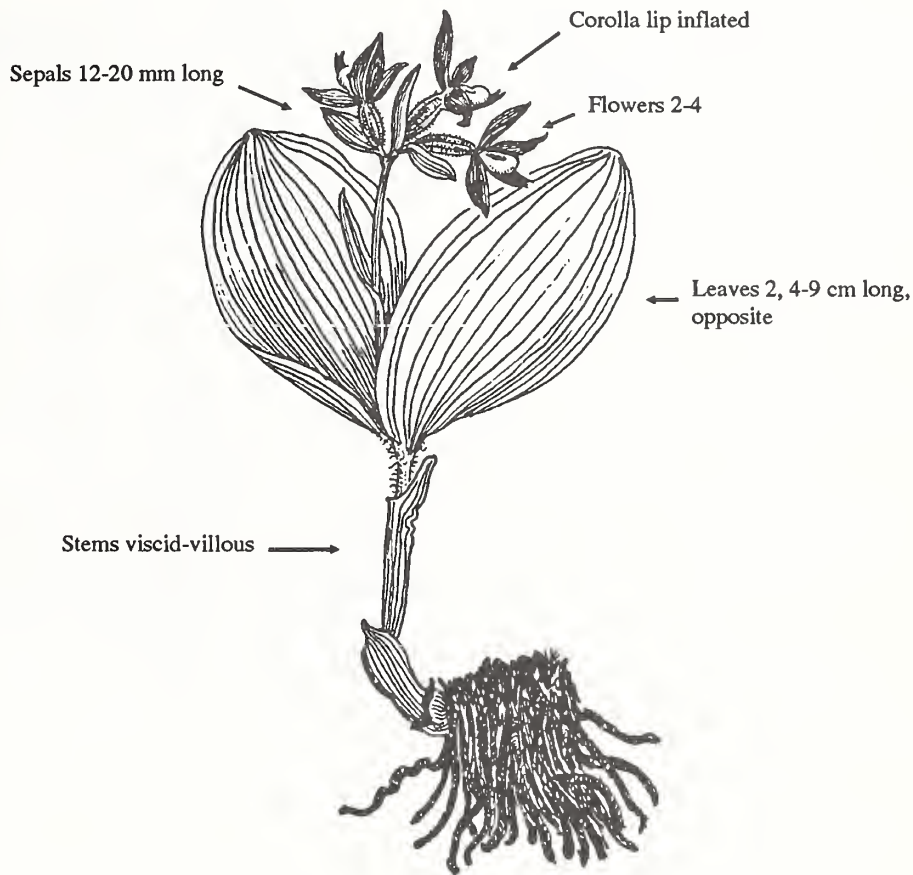
Mathias, M.E. 1930. *Pseudocymopterus nivalis*. Ann. of the Mo. Bot. Gard. 17:327.



Distribution of *Cymopterus nivalis*.

BROWNIE LADYSLIPPER

Cypripedium fasciculatum Kellogg ex. Wats.
Orchidaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S1

Description.—This member of the orchid family has numerous fibrous roots and grows to a height of 3 dm. The stems are slender with, long, soft, sticky hairs. There are 2 opposite leaves 4-11 cm long, 2.5-7.5 cm wide with little to no hairs. The bracts surrounding the flowers are 3.5 cm long and 6-13 mm wide. There are 2-4 small flowers per stem. The sepals are lanceolate in shape, 1.5-2.5 cm long, and 3-6 mm wide. The petals are broadly ovate with a small greenish

yellow lip. The lip is spherical-shaped and 8-14 mm long with a purplish margin deeply infolded.

Reproduction.—A perennial flowering June to July. The fruit is an obovoid-ellipsoid capsule, 1.5-2.0 cm in length. It produces numerous small seeds. These germinate yearly when environmental conditions for germination are met. The fibrous roots overwinter, and regrowth occurs soon after snowmelt and when soils are free of frost.

Habitat.—Found in duff among spruce-fir or lodgepole pine forests and along shaded streams between 7,940-9,840 feet elevation.

Distribution—Known only from Daggett, Salt Lake, Uintah, and Summit counties, Utah, Montana, Idaho, Wyoming, and Colorado west to Washington, Oregon, and California.

Management Implications.—This species occurs in limited disjunct locations in the west. It is considered rare or threatened in most of the states where it occurs. Timber management practices are the biggest threat to the species. Other threats include livestock grazing and degradation of riparian areas. An inter-regional effort is needed to identify essential habitat areas to protect species viability.

References.

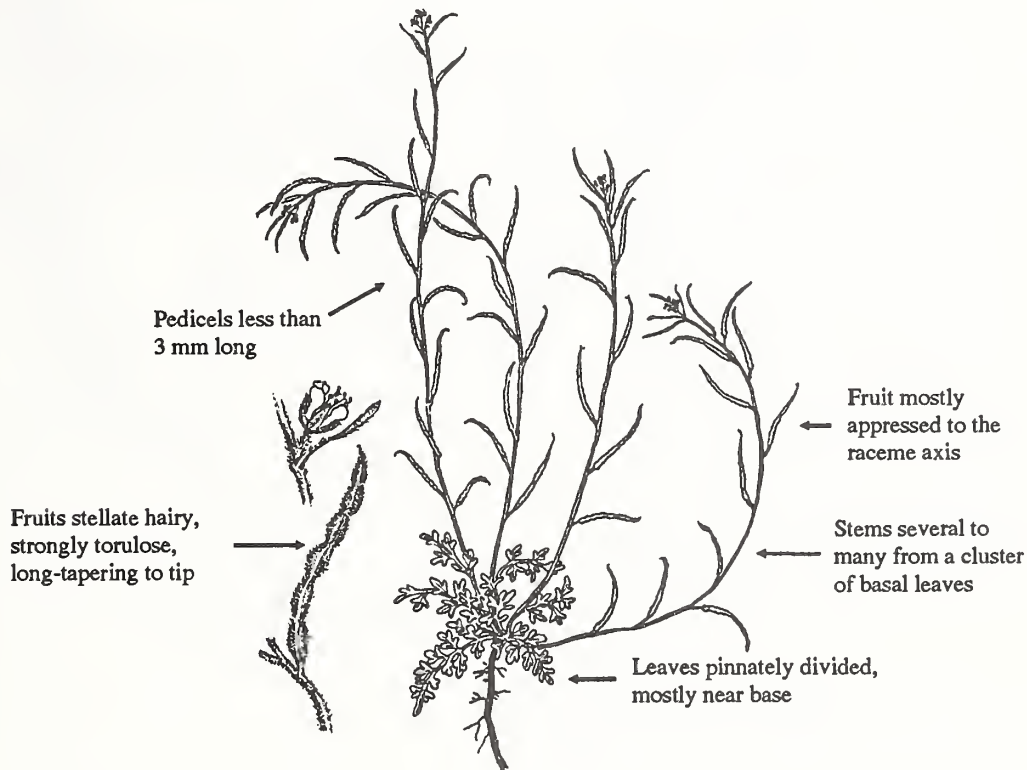
Brownell, V.R. and P.M. Catling 1987. Notes on the distribution and taxonomy of *Cypripedium fasciculatum* Kellogg ex Watson (Orchidaceae). *Lindleyana* 2(1):53-57.



Distribution of *Cypripedium fasciculatum* in Utah.

WYOMING TANSY MUSTARD

Descurainia torulosa Rollins
Brassicaceae (Cruciferae)



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/WY-S1

Description.—A member of the mustard family, the Wyoming tansy mustard grows very low with several stems (6-13 cm long) arising from a dense cluster of leaves. The leaves are compound, 2-3 cm long with a short petiole on the crown leaves. There are only a few leaves along the stem. The flowers are minute, slightly more than 1 mm long with a translucent margin. The petals are about 1.5 mm long

and whitish. The flowering stem is 6-10 cm. The herbage is covered with star-like hairs.

Reproduction.—A perennial (possibly biennial) growing from a well developed taproot, this tansy mustard flowers beginning in July with fruit set by August. The hairy fruits are siliques which are erect, slightly curved outward and tapering to the tip. They are constricted between the seeds, 8-15 mm long, and slightly more than 1 mm in diameter. The seeds are in a single row, narrowly oblong, plump, about 0.5 mm in diameter, and dark brown in color. Healthy, overwintering rootstocks produce new growth yearly.

Habitat.—Sandy soil (scree slopes) at the base of cliffs or on low ledges of the Tertiary Volcanic Wiggins Formation. Associated vegetation is sparse and usually western yarrow, cut-leaved daisy, and mountain sorrel. Elevation 7,800-10,500 feet (Mariott 1991).

Distribution.—Known only from northwestern Wyoming in Fremont, Park, and Teton counties in the Absaroka and Brooks Lake/Toqwotee Pass areas. All documented sites are on National Forest administered lands in R4 and R2.

Management Implications.—The Wyoming Natural Heritage Program surveyed some of the potential habitat in R4 and R2 in 1990. Results of these studies suggest man-caused impacts are minimal and do not represent a significant threat to areas surveyed in 1990 (Mariott 1991). Possible impacts could result from oil and gas drilling if these activities occur in habitats occupied by the species (Dorn 1989). All known populations are extremely small. Its limited range, small populations, and lack of vigor make it vulnerable to extinction. However large areas of unsurveyed potential habitat exist. Due to the rough terrain, field surveys are difficult and time-consuming (Mariott 1991). Further surveys in other areas of the Absaroka Mountains are recommended. Without further surveys and taxonomic studies, the conservation status will remain unknown (Mariott 1991).

References.

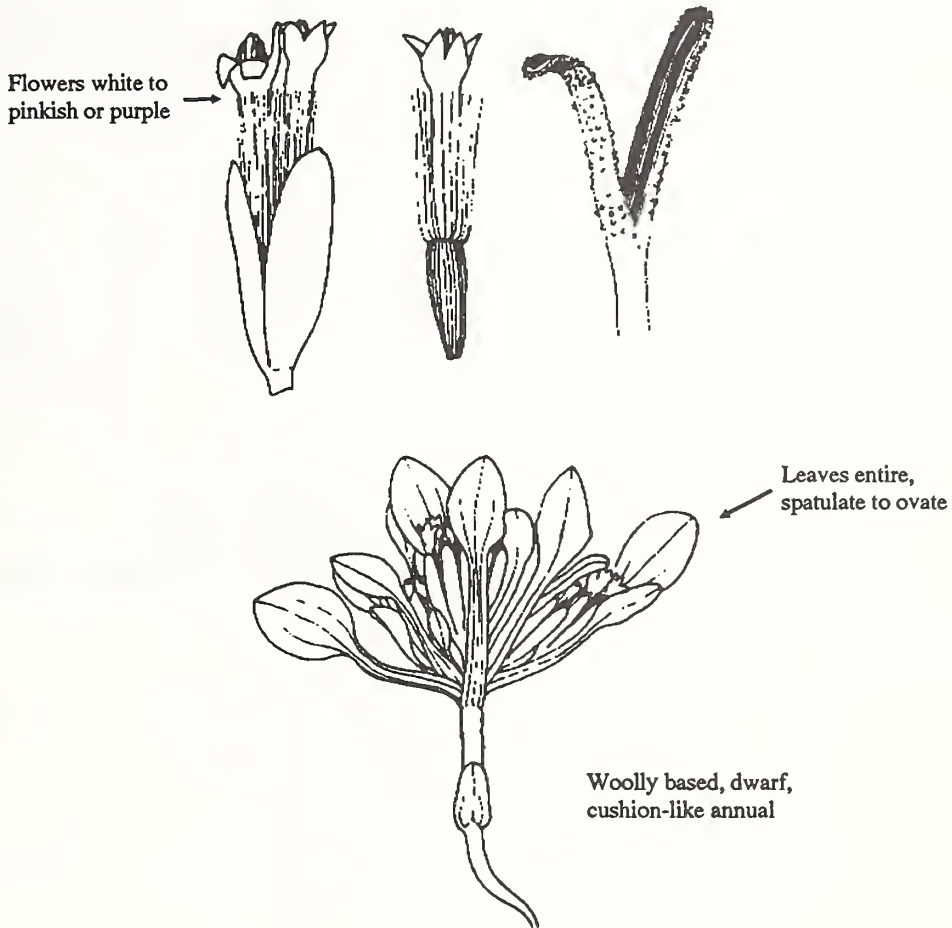
- Dorn, R.D. 1989. Report on the status of *Descurainia torulosa*, a candidate threatened species. U.S. Fish and Wildl. Serv., Region 6, Denver.
- Mariott, H.H. 1991. Status report for *Descurainia torulosa* (Wyoming tansy mustard). Wyo. Nat. Herit. Prog. 12pp.
- Rollins, R.C. 1983. *Descurainia torulosa*. Jour. Arn. Arb. 64:491-510.



Distribution of *Descurainia torulosa*.

HOWELL DIMERSIA

Dimersia howellii Gray
Asteraceae (Compositae)



USFWS Status: 3C
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G4/NV-S4

Description.—A member of the sunflower family, Howell dimersia grows dwarf in a cushion-like manner. The plants are woolly at the base and glandular upwards. The leaves are spatulate to ovate, 1 cm wide, 3 cm long, and are aggregated around the flower heads. The heads occur solitary or in compact clusters, each about 4-6 mm high. The flowers are white to pinkish or purplish.

Reproduction.—An annual, this *Dimersia* flowers from May to July with fruiting into August. It produces an achene. Plants survive and maintain viability through the seed bank.

Habitat.—Dry, gravelly or rocky volcanic soil in the mountains, surrounded by sagebrush and annual buckwheats.

Distribution.—Known from northeast Oregon in Malheur County to northeast California and northwest Nevada with populations in Owyhee County, Idaho being at the northeast edge of the plants range.

Management Implications.—ORV's and livestock grazing are the main threats, otherwise it is protected from other hazards by its habitat. Many populations are small with a limited number of plants. They will not tolerate physical disturbance of the substrate during the growing season.

References.

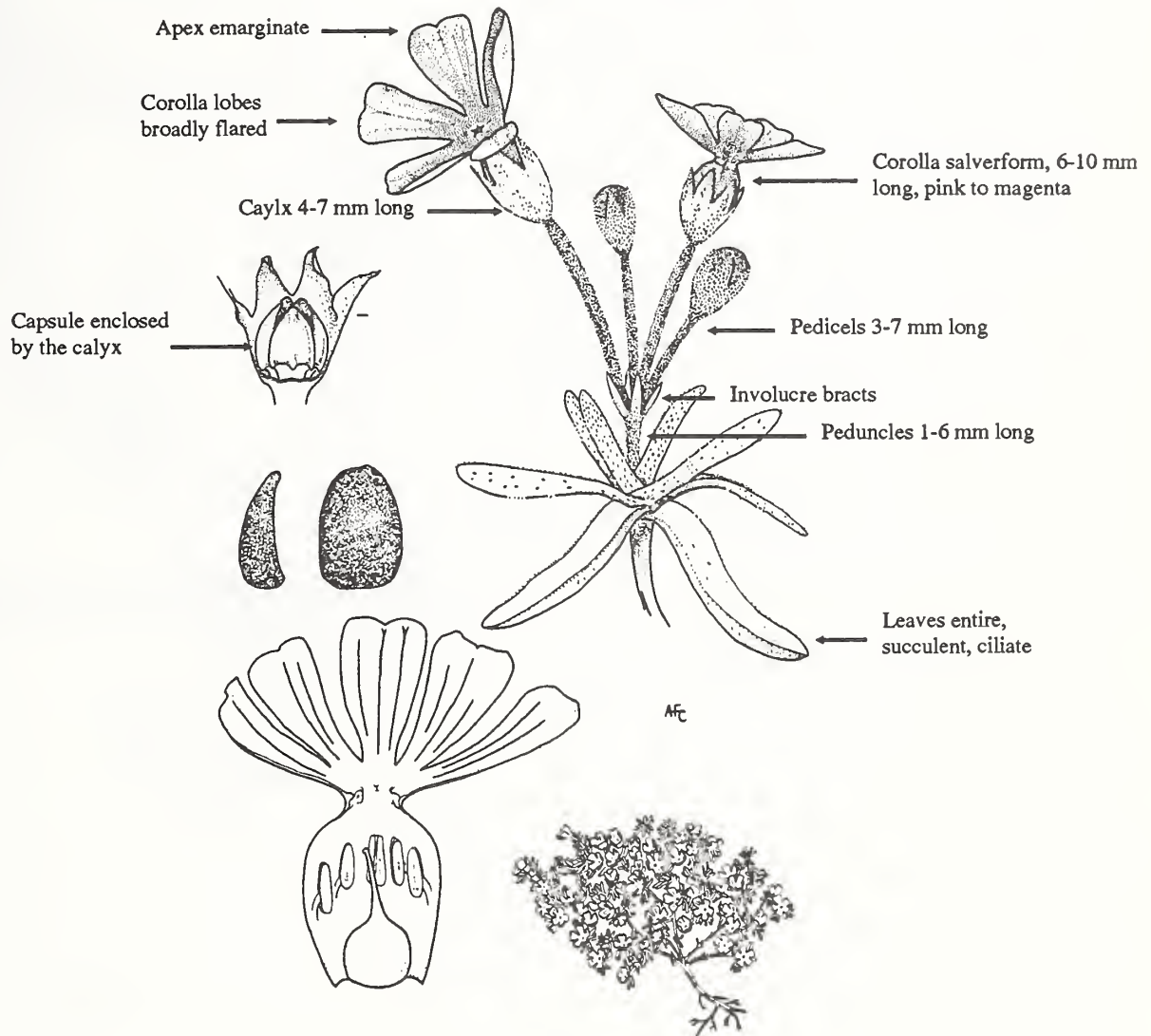
Gray, A. 1886. *Dimersia howellii*. Syn. Fl. ed. 1:449.



Distribution of *Dimersia howellii* in Nevada.

IDAHO DOUGLASIA

Douglasia idahoensis D. Henderson
Primulaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/ID-S1

Description.—A member of the primrose family, Idaho douglasia grows forming mats. The stems are finely covered with hairs and terminate in rosettes of entire leaves. The leaves are succulent, oblong to oblanceolate, 7-11 mm long, becoming strongly reflexed in age. The leaves turn red soon after flowering. The flowers occur 3-5 per cluster from a stalk 1-6 mm long. The bracts, 5-9, are lanceolate to lanceovate, 2.5-5.0 mm long with scattered simple white hairs and

hairy margins. The flower stalks are 1-6 mm long with simple forked hairs throughout. The margins of the sepals are hairy and the sepal tube (2.4-3.0 mm long) is covered with short, simple white hairs. The petal lobes are broadly flared with a pink-magenta limb and yellow throat. The corolla tube exceeds the sepals and is lighter in color than the limb. The 5 stamens are included, having yellow anthers.

Reproduction.—A perennial herb from a slender taproot, this plant flowers from late June to late July. It produces a 5-valved capsule, 1.4-2.6 mm long. There is 1 to several seeds per capsule which are dark reddish-brown to nearly

black and minutely pitted. It dies back to its roots to overwinter. Young seedlings emerge as needed to maintain population viability.

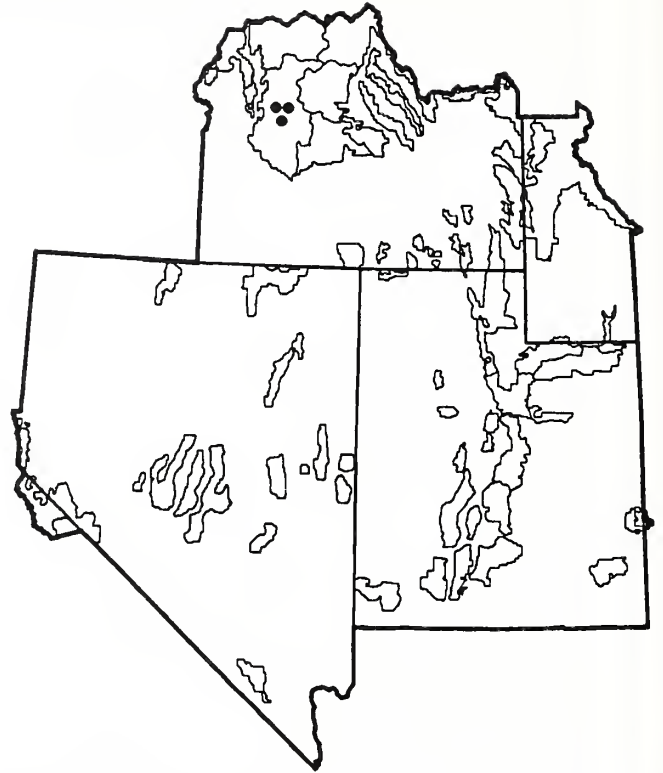
Habitat.—Open, subalpine sites on gravelly soils and unstable northeast slopes and ridges where soils are from recently decomposed granite bedrock. Growing in association with subalpine fir and bear grass. Elevation between 7,600-8,200 feet.

Distribution.—Known from Peace Rock, Rice Peak, and Gold Fork Rock, Valley County and Scott Mountain, Boise County, Idaho, and historically from Square and Elk Mountain, Idaho County.

Management Implications.—Since only 4 populations are known, monitoring studies would provide baseline data to insure protection for viable populations. Sensitive plant clearances should be conducted on projects likely to impact known populations and potential habitat areas. Sheep grazing occurs along some of the ridges, but does not seem to affect the populations.

References.

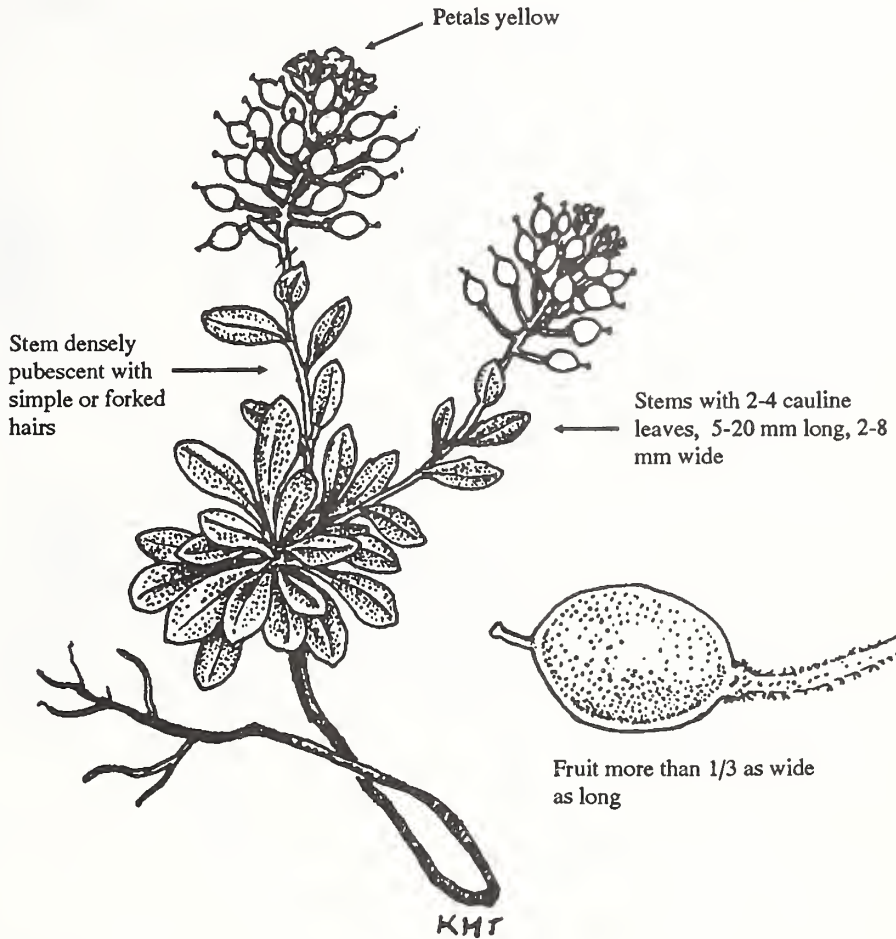
Henderson, D.M. 1981. A new *Douglasia* (Primulaceae) from Idaho. *Britt.* 33(1):52-56.



Distribution of *Douglasia idahoensis* in the Intermountain Region.

ARID DRABA

Draba arida C.L. Hitchc.
Brassicaceae (Cruciferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2G3/NV-S2

Description.—This mustard plant is a perennial from a branched woody base, and has few short spreading branches on the stem. The stem is covered with simple or forked hairs growing 3-7 cm in height. The lower basal leaves form a rosette with 2-4 upper stem leaves. The stem leaves are 5-20 mm wide. The floral clusters may include 3-40 individual flowers with sepals 2 mm in length. The petals are yellow in color and are 4 mm long.

Reproduction.—A perennial which flowers in June. The fruit is a silicle capable of producing more than 1 seed. The silicle is typically less than twice as long as wide. The seeds are 1.2-1.5 mm in length with 6-8 seeds produced per silicle during the season. Plants overwinter in seed banks and perennial rootstocks.

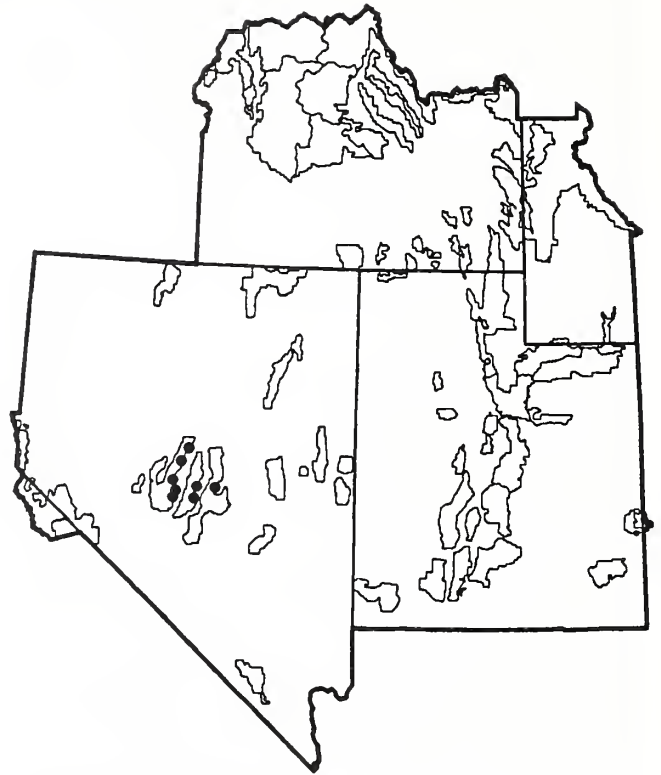
Habitat.—Occurs between basin meadows near the alpine habitat in loamy soils. The range of elevation is between 10,000-11,000 feet. This plant is most often associated with *Pinus flexilis*.

Distribution.—Known only from the Toiyabe, Toquima, and Monitor ranges, Nye and Lander counties in central Nevada.

Management Implications.—The primary threat to this species is overgrazing and trampling. Additional data are needed to assess the species status and distribution.

References.

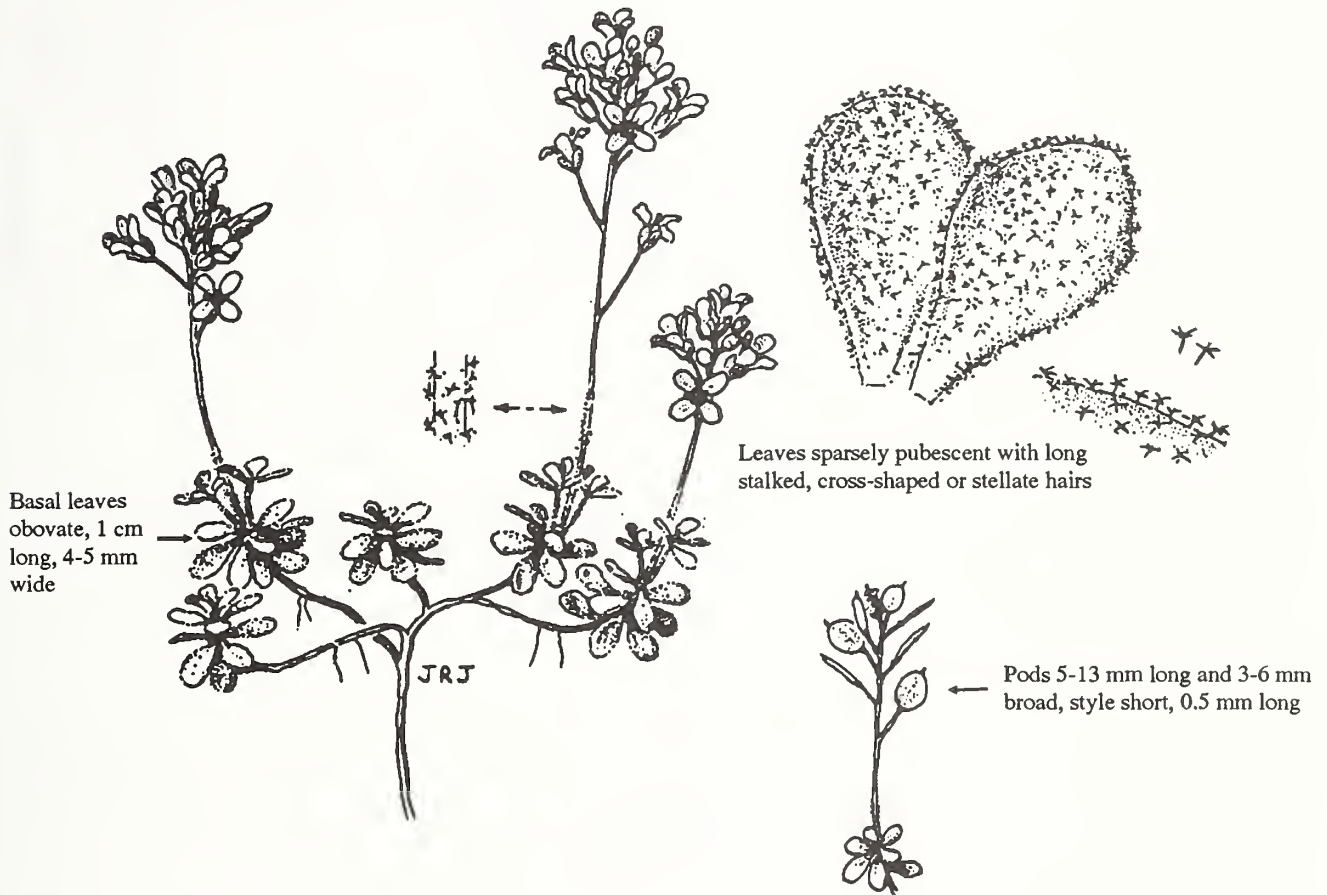
Hitchcock, C.L. 1941. *Drabas* of western North America. Univ. of Wash. Pubs. in Biol. 2:52.



Distribution of *Draba arida*.

STAR DRABA

Draba asterophora Payson var. *asterophora*
Brassicaceae (Cruciferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2G3/NV-S2

Description.—A member of the mustard family, this draba is a loosely tufted perennial with some long trailing vegetative branches. The leaves are oblanceolate to obovate, 4-5 mm wide, and approximately 1 cm long. The few hairs consist of long stalks, stellate in character. The slender, smooth stems are 3-4 cm long with a short, 10-25 flowered raceme. The flowers are yellow and produce broad, flattened, glabrous pods, 3-6 mm wide and 5-13 mm long.

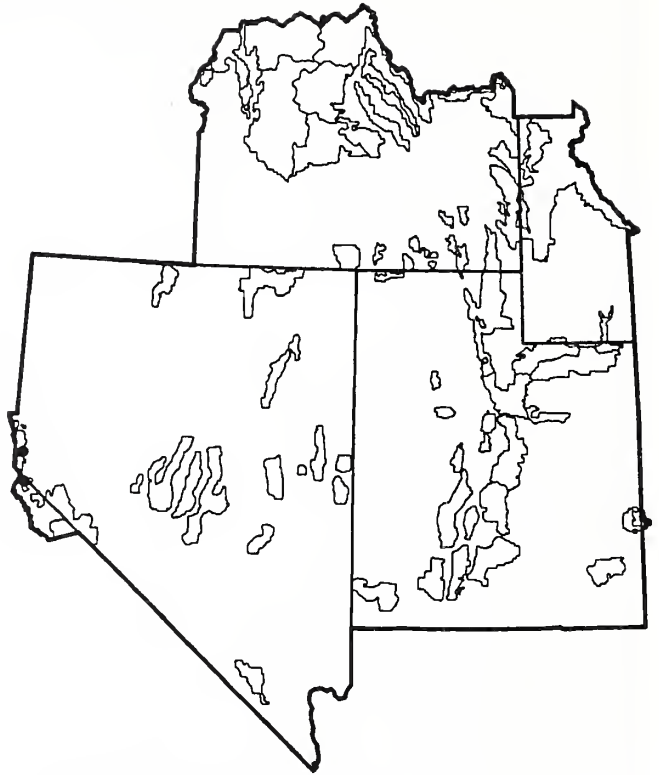
Reproduction.—This plant produces broad, flattened, glabrous siliques. The unique seeds have a nearly complete, thin wing about 0.5 mm broad that aids in dispersal. The perennial root overwinters underground. New plants are generated in the population through seed germination.

Habitat.—Loose hillsides and slopes of decomposed granite at or above timberline.

Distribution.—Known only from eastern Nevada and Adjacent California on the Toiyabe National Forest and Tahoe Management Basin.

References.

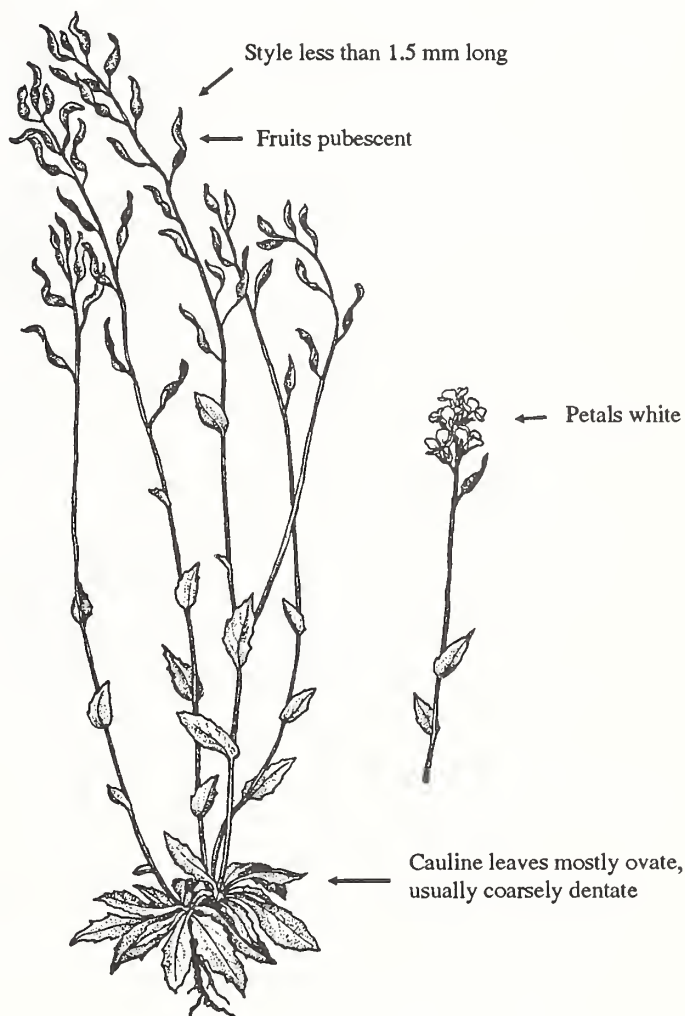
Payson, E.B. 1917. American J. Botany 4:263.



Distribution of *Draba asterophora* var. *asterophora* in the Intermountain Region.

BOREAL DRABA

Draba borealis DC.
Brassicaceae (Cruciferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4/WY-S1

Description.—A member of the mustard family, boreal draba is a low growing herbaceous forb with the lower stems mostly spreading with simple or forked hairs. The stem leaves are mostly ovate and usually coarsely dentate. The petals are white. The style is less than 1.5 mm long.

Reproduction.—Flowering occurs from July to August. The fruit, a silicle or infrequently a short silique, matures in August and September.

Habitat.—Boreal draba occupies rocky slopes and meadows between 6,800-7,000 feet elevation.

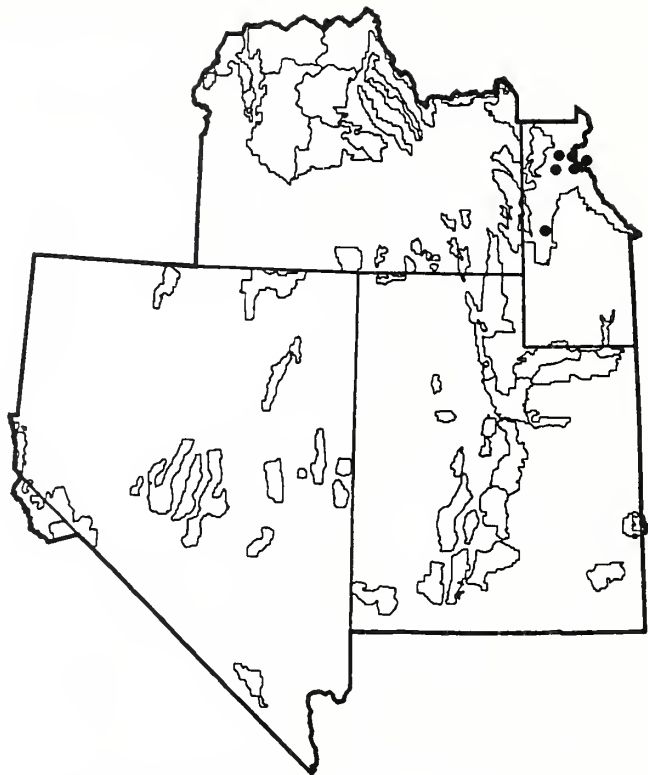
Distribution.—It is known from Fremont, Teton, and Lincoln counties in western Wyoming.

Management Implications.—A rarely collected plant due to its limited populations and numbers. The range of the species should be determined along with use, condition, and

trends. Potential impacts include ungulate grazing and mineral development.

References.

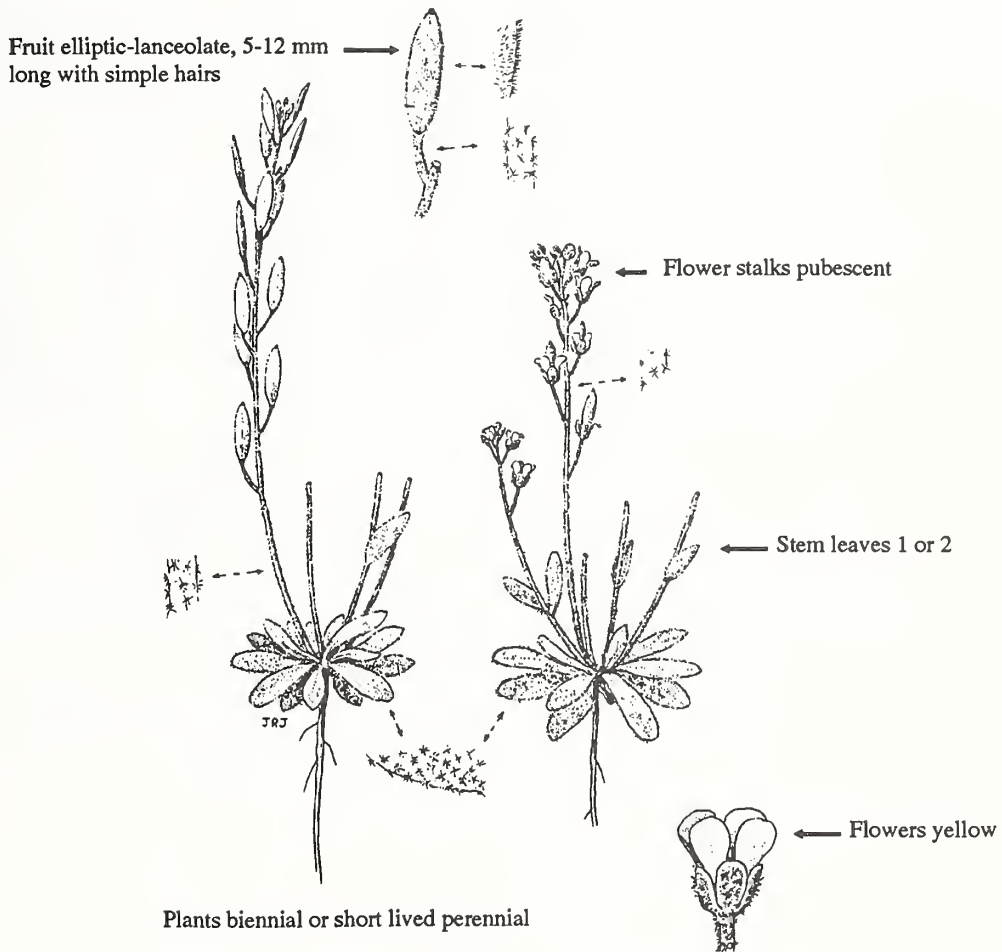
Dorn, R.D. 1988. Vascular plants of Wyoming. p.108.



Distribution of *Draba borealis*.

ARC DOME DRABA

Draba crassifolia R. Grah. var. *nevadensis* C.L. Hitchc.
Brassicaceae (Cruciferae)



USFWS Status: 3C
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G5T2/NV-S2

Description.—This low-growing mustard plant has 1 to several stems with star-like hairs, 2-20 cm tall. The leaves are linear to spatulate in shape and slightly hairy. The leaves are 19-25 mm in length. The flowers are yellow with 3-29 flowers per cluster and 1-2 leaves per stem. The sepals are 1 mm in length and the petals are 2-3 mm long.

Reproduction.—A biennial or short-lived perennial, flowering occurs from May to August. The siliques range

from elliptic to lanceolate in shape. They are 5-12 mm long and are covered with short simple hairs. Populations are maintained by overwintering rosettes, perennial rootstocks, and potential plants in the seed bank.

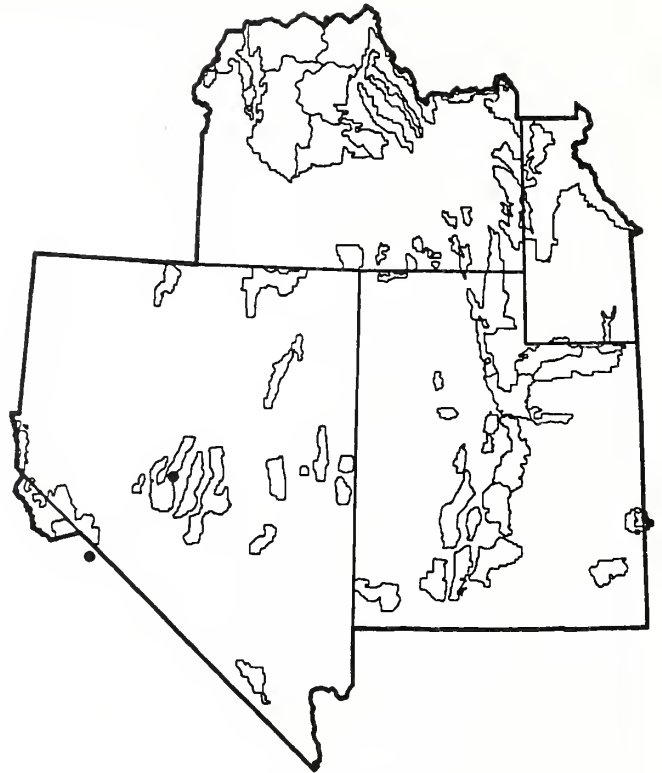
Habitat.—This plant grows in meadows and rocky sites along streams in the *Artemesia tridentata* and *Grayia spinosa* communities. The range of elevation is between 5,200-11,500 feet.

Distribution.—Found in Nye County, Nevada and Inyo and Mono counties, California.

Management Implications.—Very little data is available for this species. Additional work is needed to determine its distribution, biological needs, and status. It is a rare, seldom collected species.

References.

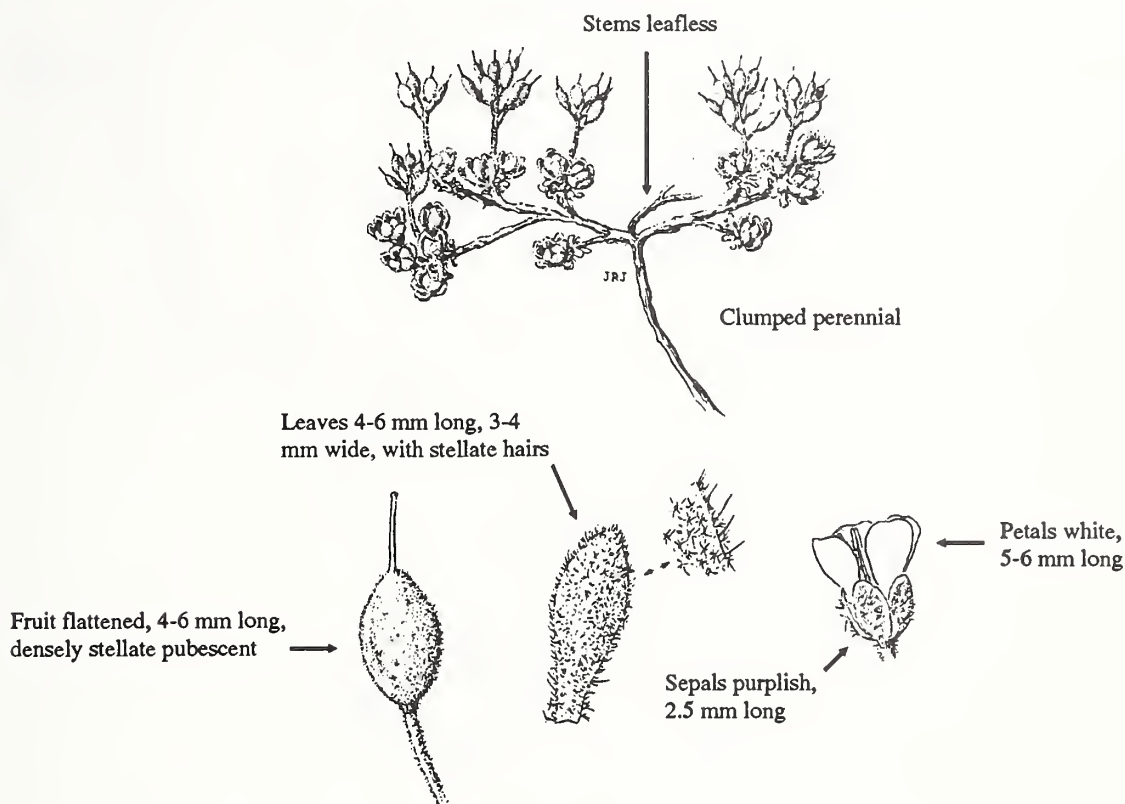
Mozingo, H. and M. Williams. 1980. Threatened and endangered plants of Nevada, an illustrated manual. U.S. Fish and Wildl. Serv. and Bur. of Land Manage. 268 pp.



Distribution of *Draba crassifolia* var. *nevadensis*.

JAEGER DRABA

Draba jaegeri Munz and Johnston
Brassicaceae (Cruciferae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/NV-S2

Description.—This mustard forms a low clump with narrowly, obovate leaves. The leaves are 4-6 mm long and 3-4 mm wide. The foliage is covered with star-shaped hairs producing a grayish cast. The flower cluster has 3-8 individual white flowers. The sepals are 2.5 mm long and the petals are 5-6 mm long.

Reproduction.—A perennial, flowering occurs from June to August. The fruit is a silicle. The silicle is flat, densely

hairy, and 4-6 mm in length. There are 6-12 seeds produced per silicle, each 2 mm long. Some seeds germinate each year to replace old or dead plants.

Habitat.—Occurs in alpine and bristlecone communities on rock outcrops and rocky, gravelly slopes and crevices. The range of elevation is between 9,810-11,740 feet.

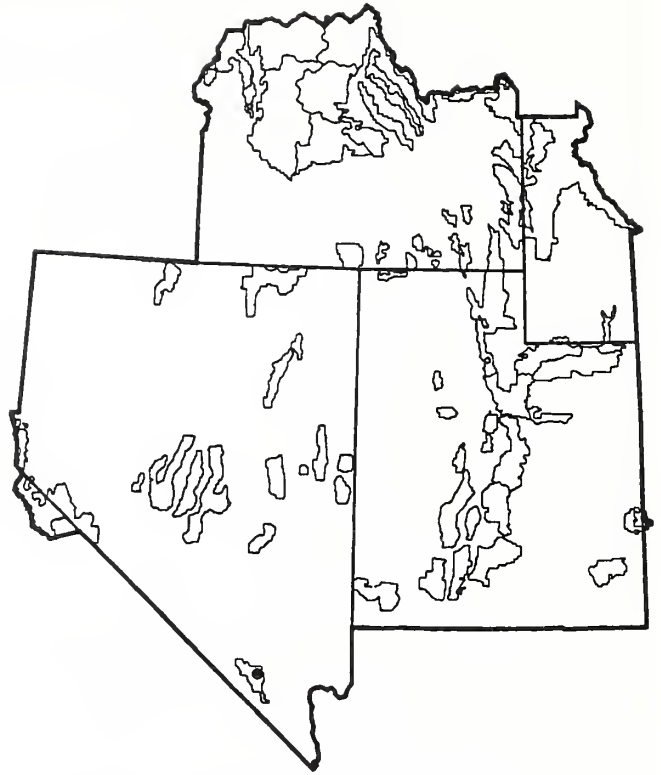
Distribution.—Known only from the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—The potential threat to this species includes free roaming horses and heavy recreational use in the area. Expansion of the Carpenter Canyon RNA

boundary on the high elevation area of Charleston Peak would include essential habitat for this and other endemic plants in the Charleston Mountains. Inclusion of these important sensitive plant habitats within the Carpenter Canyon RNA would provide additional authority for protection of these habitats.

References.

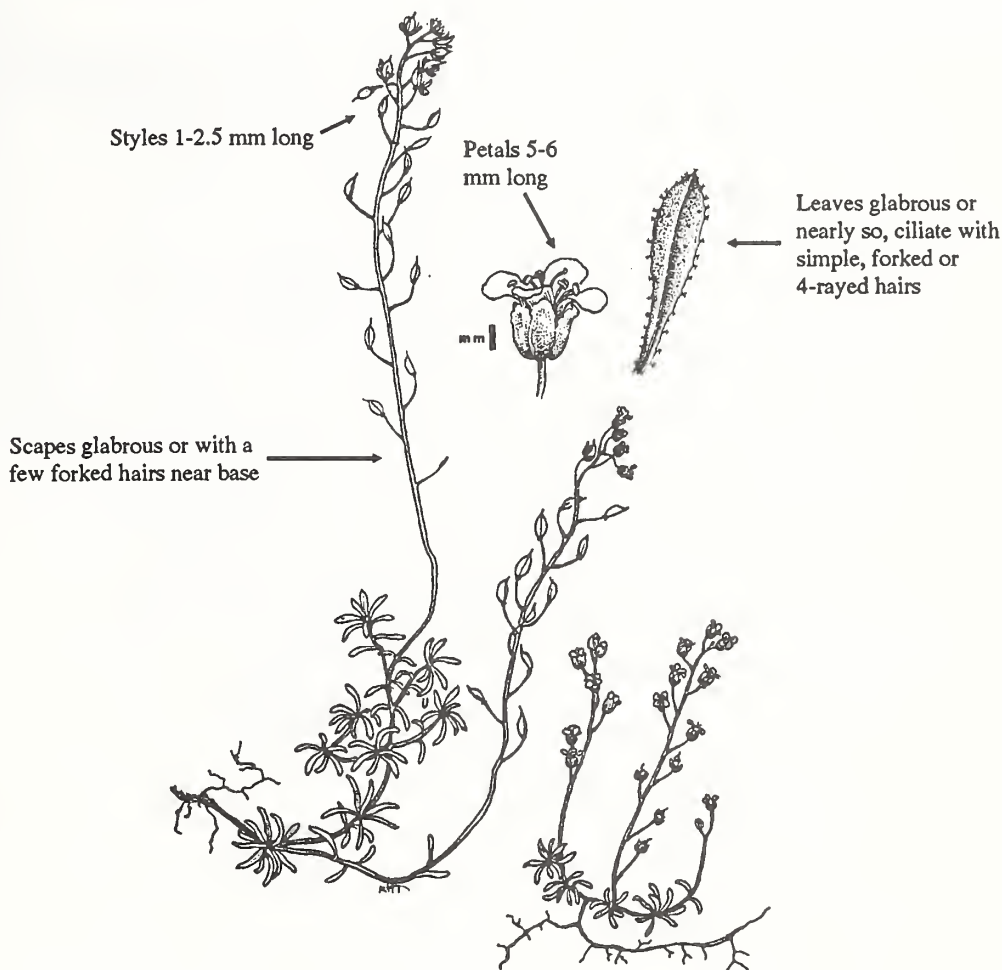
Hitchcock, C.L. 1941. *Drabas* of western North America. Univ. of Wash. Pubs. in Biol. 2:54.



Distribution of *Draba jaegeri*.

MAGUIRE DRABA

Draba maguirei C.L. Hitchc.
Brassicaceae (Cruciferae)



USFWS Status: 3B

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the mustard family, Maguire draba grows in tufts with substoloniferous branches. The flowering stalk is 2-20 cm tall. The leaves are 3-15 mm long, 1-4 mm wide, and obtuse to acute with cilia on the margins. The sepals and petals are yellowish.

Reproduction.—A perennial, this draba flowers in May and June, fruiting in July and August. The fruit is 4-9 mm long and ovate to lanceolate with 2-8 seeds. Plants overwinter

underground. New plants are produced each year from the seed bank.

Habitat.—Talus slopes and rocky outcrops. Elevation between 8,500-9,600 feet.

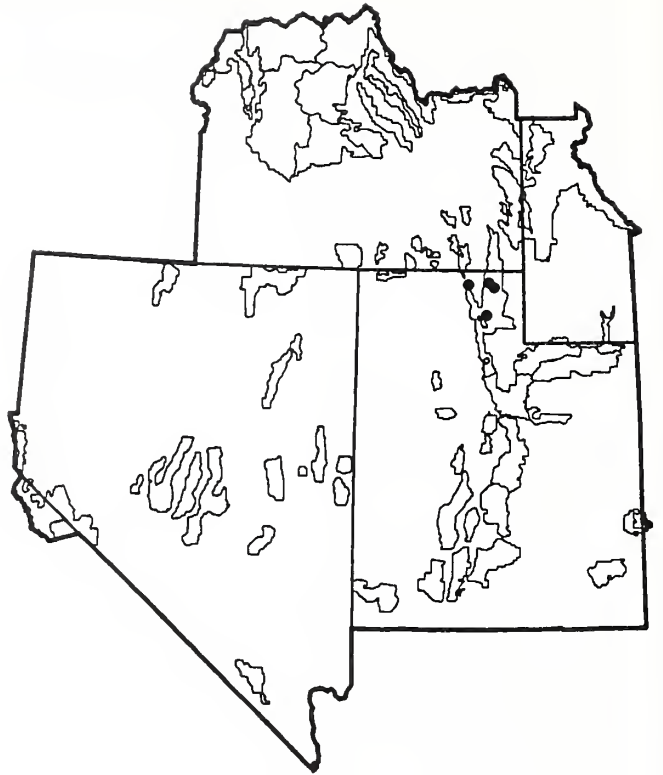
Distribution.—Known only from Cottonwood Canyon in the Wellesville Mountains, Box Elder County, and Mt. Ben Lomond in the Wasatch Mountains, Weber County, Utah. It is expected to occur in adjacent Idaho.

Management Implications.—Heavy recreational use, campgrounds, tourism, and highway construction are the most significant impacts to this species. Survey work is

being conducted on the Caribou and Wasatch-Cache National Forests in 1990. Results of these studies will be available in 1991.

References.

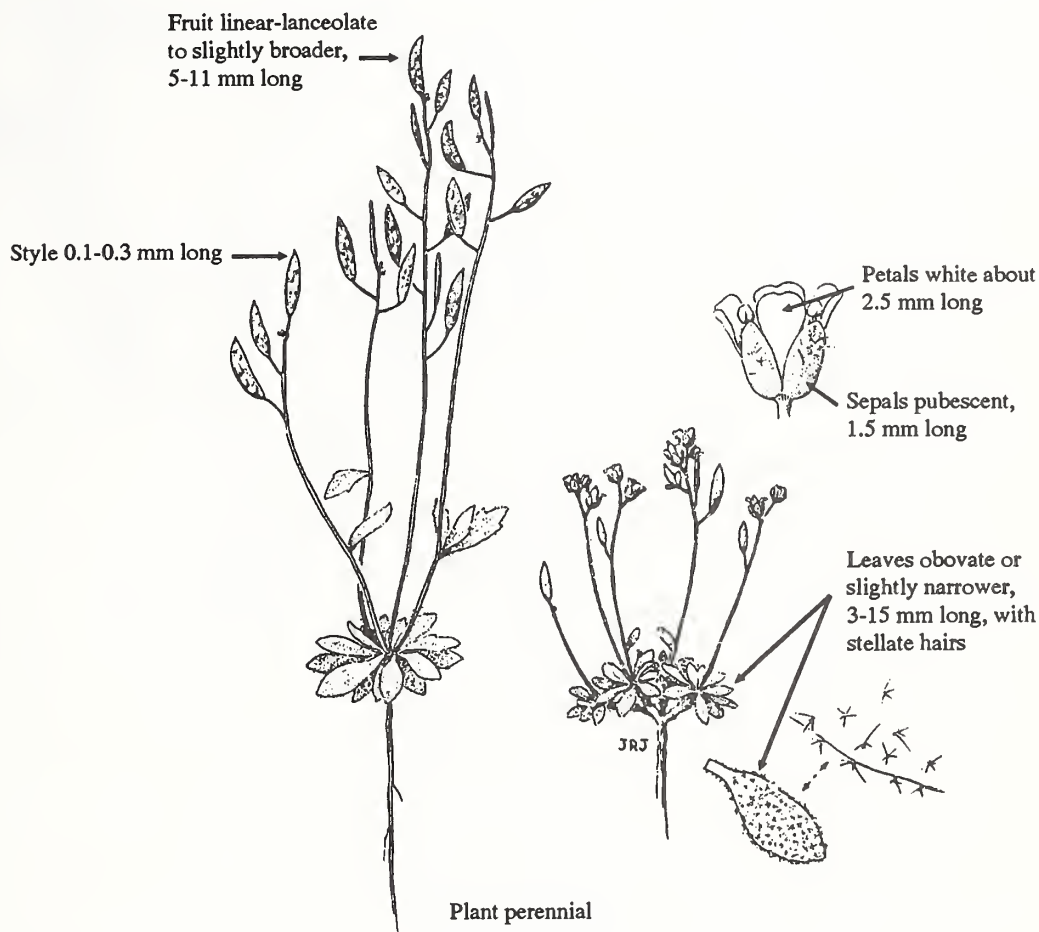
Hitchcock, C.L. 1941. *Draba maguirei* var. *burkei*. Univ. of Wash. Pub. in Biol. 11:72.



Distribution of *Draba maguirei*.

CHARLESTON DRABA

Draba paucifructa Clokey and C.L. Hitchc.
Brassicaceae (Cruciferae)



USFW Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1G2/NV-S1S2

Description.—This mustard is a perennial growing to a height of 4-10 cm. It has 1 to several crowns of persistent leaf bases, each giving way to 1-4 stems. The basal leaves are obovate to obovate-oblongate in shape, numerous, and form a rosette around the base of the stem. The basal leaves are 3-15 mm long and densely covered with star-shaped hairs. There are 3-12 flowers per cluster on erect,

glabrous pedicels or stalks. The petals are yellow quickly fading to white, 2.5 mm long, and nearly spatulate in shape.

Reproduction.—A low perennial flowering occurs in June and July. The fruit is a linear to lanceolate shaped silicle which is 5-11 mm long. It produces 20-30 seeds per silique, each 0.8 mm long. The perennial root overwinter underground. New plants emerge each year from the seed bank.

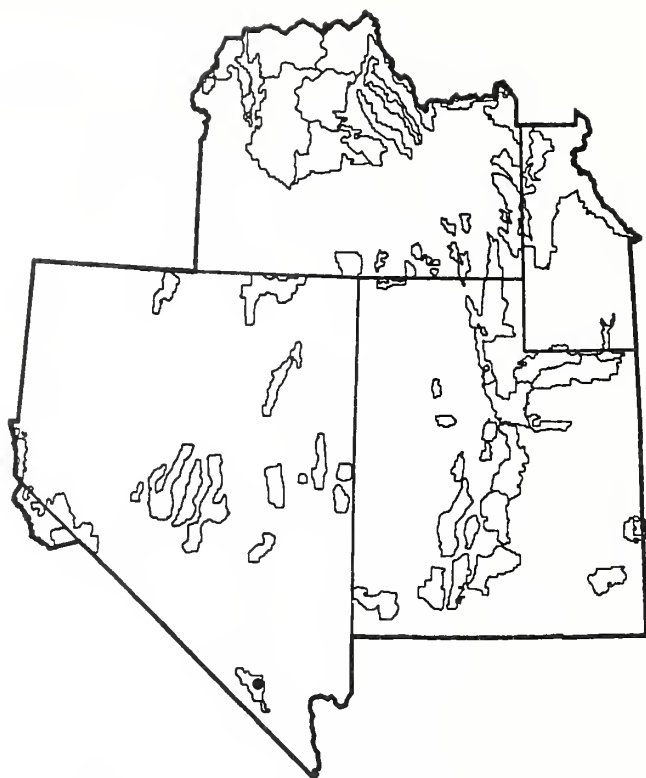
Habitat.—This plant grows in bristlecone pine and limber pine communities in moist sites by seeps, springs, or roadsides. The range of elevation is between 8,700-11,380 feet.

Distribution.—Endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—Recreational activities and wild horse and burro grazing create existing threats in the Charleston (Spring) Mountains at this time. The degree of these threats should be assessed by establishing monitoring studies on selected habitat areas.

References.

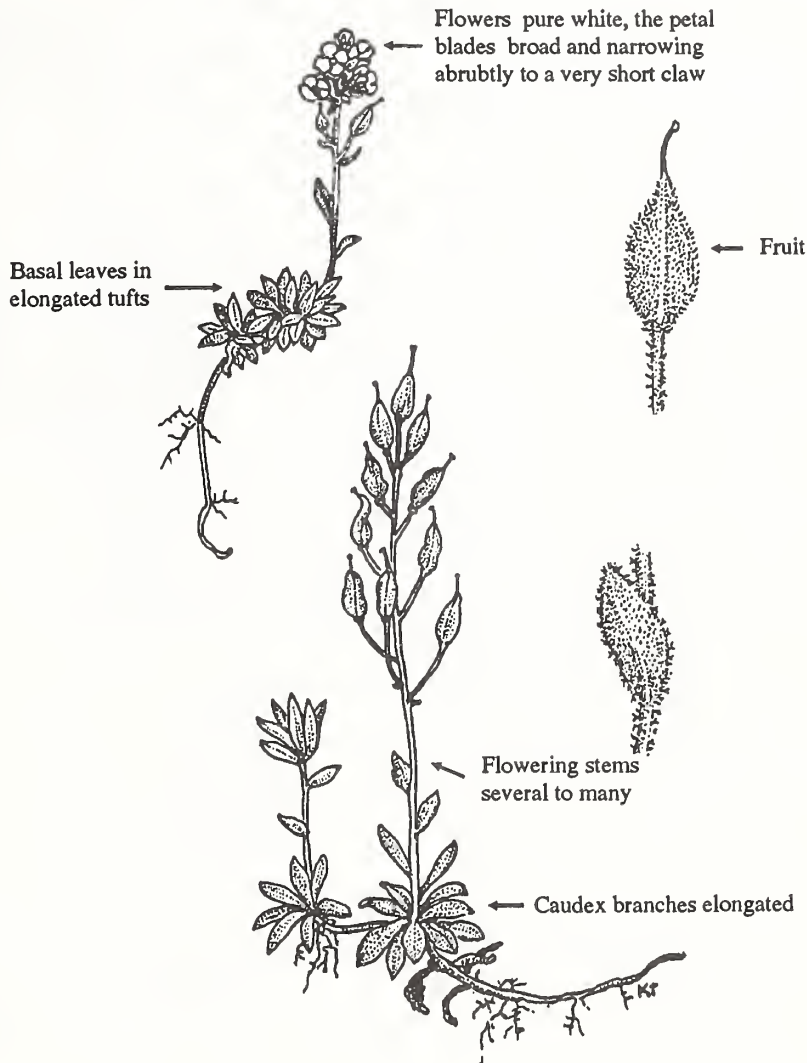
Hitchcock, C.L. 1941. *Drabas* of western North America. Univ. of Wash. Pubs. in Biol. 2:105-106.



Distribution of *Draba paucifructa*.

PENNEL DRABA

Draba pennellii Rollins
Brassicaceae (Cruciferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2

Description.—A member of the mustard family, this draba grows with a loosely branching caudex whose branches are elongated and partially covered with old leaves and leaf bases. The leaves are sessile, oblong, 5-8 mm long, and densely covered with stalked 4 or 5 branched hairs. Basal leaves are in elongated tufts. The flowering stems are slender, erect, 4-7 cm tall, and densely covered with spreading, forked hairs. The sepals are oblong, greenish turning

purplish with a translucent margin in age. The white petals are obovate, narrowing to a claw and less than 1 mm long.

Reproduction.— A perennial, this plants fruit is a silique which is flattened, ovate to nearly oval, and 5 mm long with minute forked hairs. Plants overwinter underground, and new growth is initiated the following year when moisture/temperature conditions are right. Germination of seeds also produces new plants.

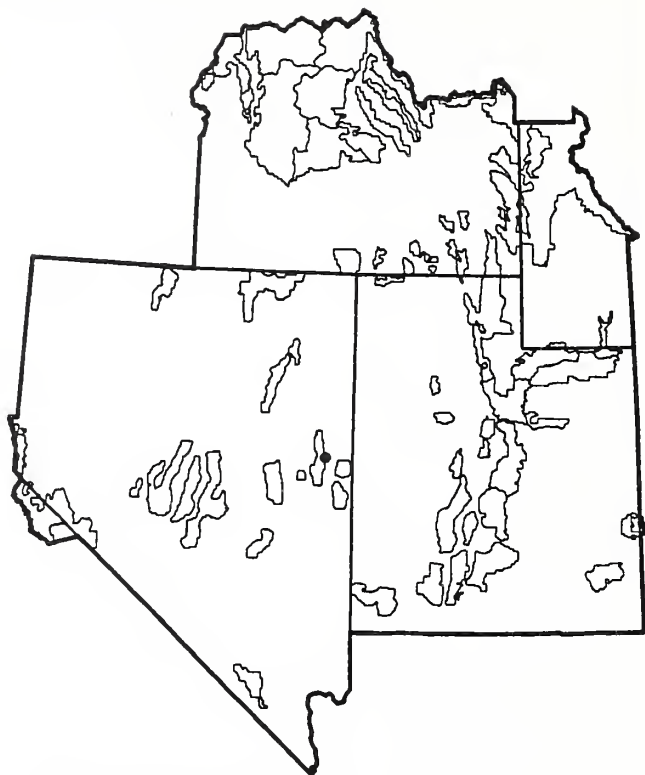
Habitat.—Confined to rock ledges. Elevation between 10,000-10,500 feet.

Distribution.—Known only from the head of South Fork of Berry Creek in the Shell Creek Range, White Pine County, Nevada.

Management Implications.—Unknown due to lack of data. Surveys should be completed for potential habitats on the Humboldt National Forest.

References.

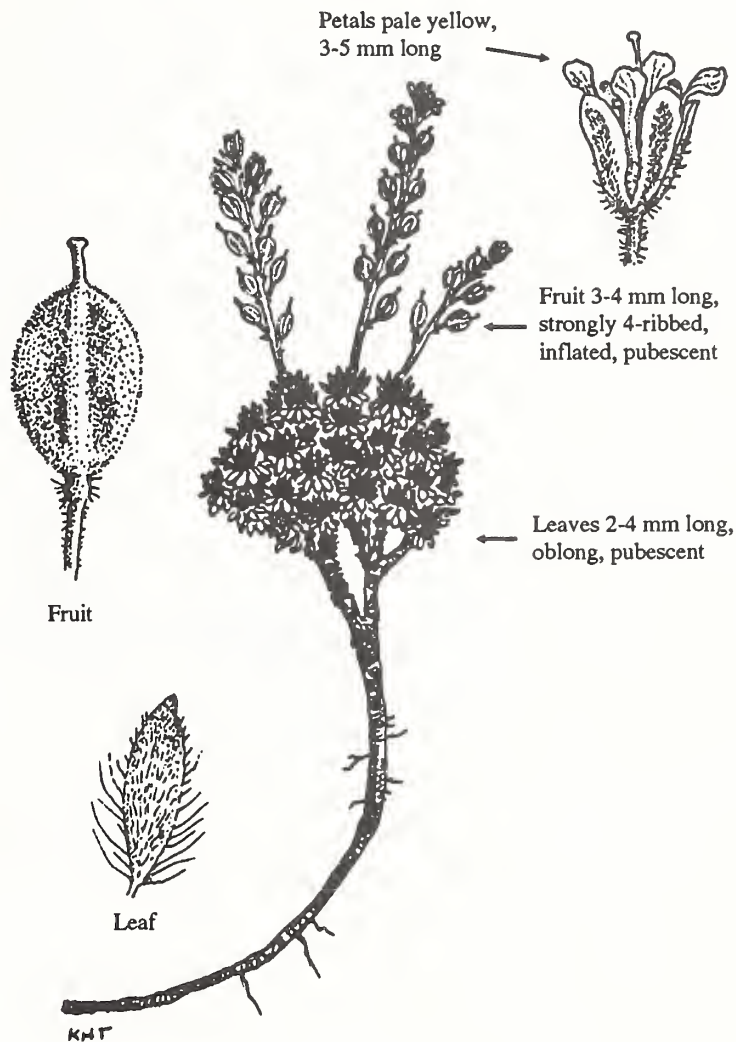
Rollins, R.C. 1983. Studies in the Cruciferae of western North America. *Jour. of the Arn. Arb.* 64(4):501-503.



Distribution of *Draba pennellii*.

BODIE HILLS DRABA

Draba quadricostata Rollins
Brassicaceae (Cruciferae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/NV-S2, CA-S3.2

Description.—This member of the mustard family develops from a taproot forming into a dense mat 2-30 cm broad. The caudex or woody base is highly branched. Leaves are pale green with a prominent midrib and are oblong in shape. The leaves are hairy on both sides, 2-4 mm long, and 0.5-1.0 wide. The inflorescence or flower cluster has 5-10 pale yellow flowers. The petals are spatulate-shaped, 3-5 mm

long, and 1.0-1.5 mm wide. The filaments are slender and expanded at the base.

Reproduction.—A perennial with ovate siliques, 3-4 mm long, and 2 mm wide. The fruit is strongly inflated and 2-valved. The seeds are wingless, plump, and 1.5 mm long. Only 1 or 2 seeds are produced per silique. The perennial root overwinters underground, and new plants are generated from the germination of seeds from the seed bank.

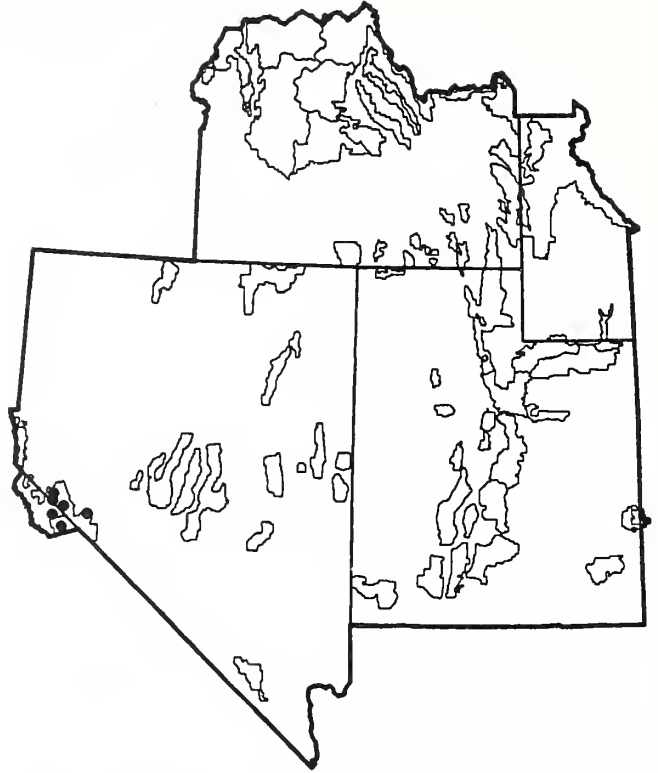
Habitat.—This plant grows in low sagebrush, pinyon-juniper, and mountain mahogany communities most generally on windswept side slopes and ridges. The range of elevation is between 6,000-9,200 feet.

Distribution.—Occurs in western Nevada in Mineral and Douglas counties, and in Mono County in California.

Management Implications.—At this time, existing threats to the species include over-grazing and ORVs. A potential threat exists with a possible increase in mining operations.

References.

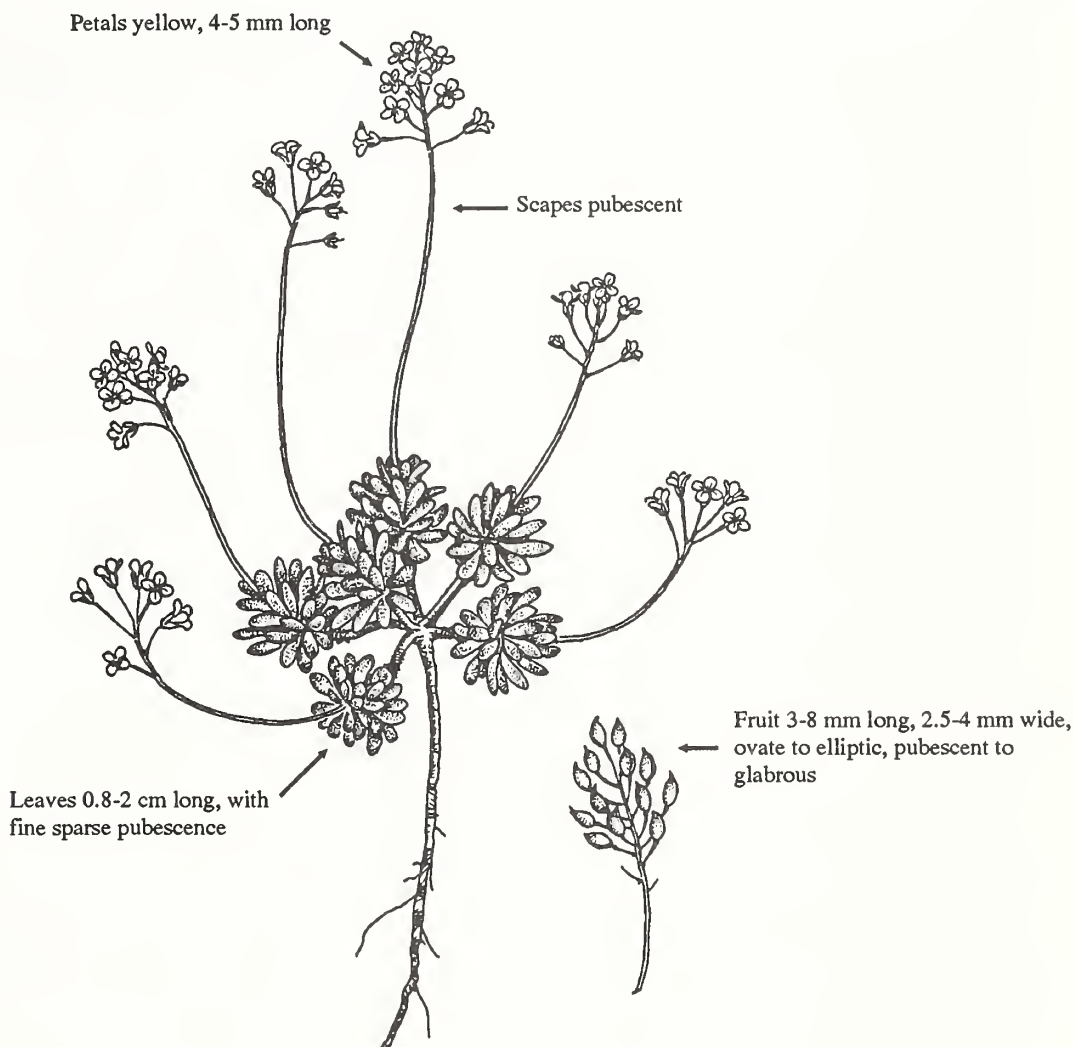
Rollins, R.C. 1946. Some new or noteworthy North American Cruciferae II. *Contr. Dudley Herb.* 3:366.



Distribution of *Draba quadricostata*.

CREeping DRABA

Draba sobolifera Rydb.
Brassicaceae (Cruciferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the mustard family, creeping draba grows tufted with a branched caudex. The flowering stalks are leafless or with 1 leaf, 0.1-0.6 dm tall with intermixed hairs. The leaves are 0.8-2.0 cm long, obovate to oblanceolate, covered with star-shaped hairs and usually with simple hairs along the margin of the base. Flowers occur 5-20 per stalk and are compact with 4-5 mm long, yellow petals.

Reproduction.—A long-lived perennial, this draba flowers from July to August. The fruit is a 3-8 mm long silicle with 4-12 seeds. The soboliferous underground roots overwinter and generate new growth.

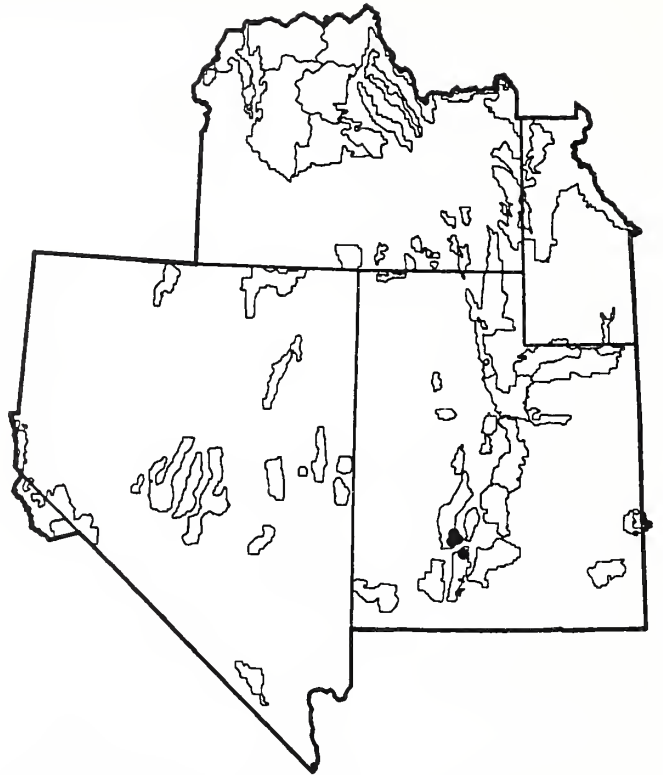
Habitat.—Igneous gravel and humus over igneous gravel in spruce-fir and alpine communities. Elevation between 7,500-12,000 feet. Slope exposure varies from 5-25% or greater.

Distribution.—Endemic to the Tushar Mountains between Panguitch Lake and Marysvale in Garfield, Piute, and Beaver counties, Utah.

Management Implications.—Mineral exploration, roads, and prospecting have impacted the habitat of this species. A portion of the land is grazed by sheep.

References.

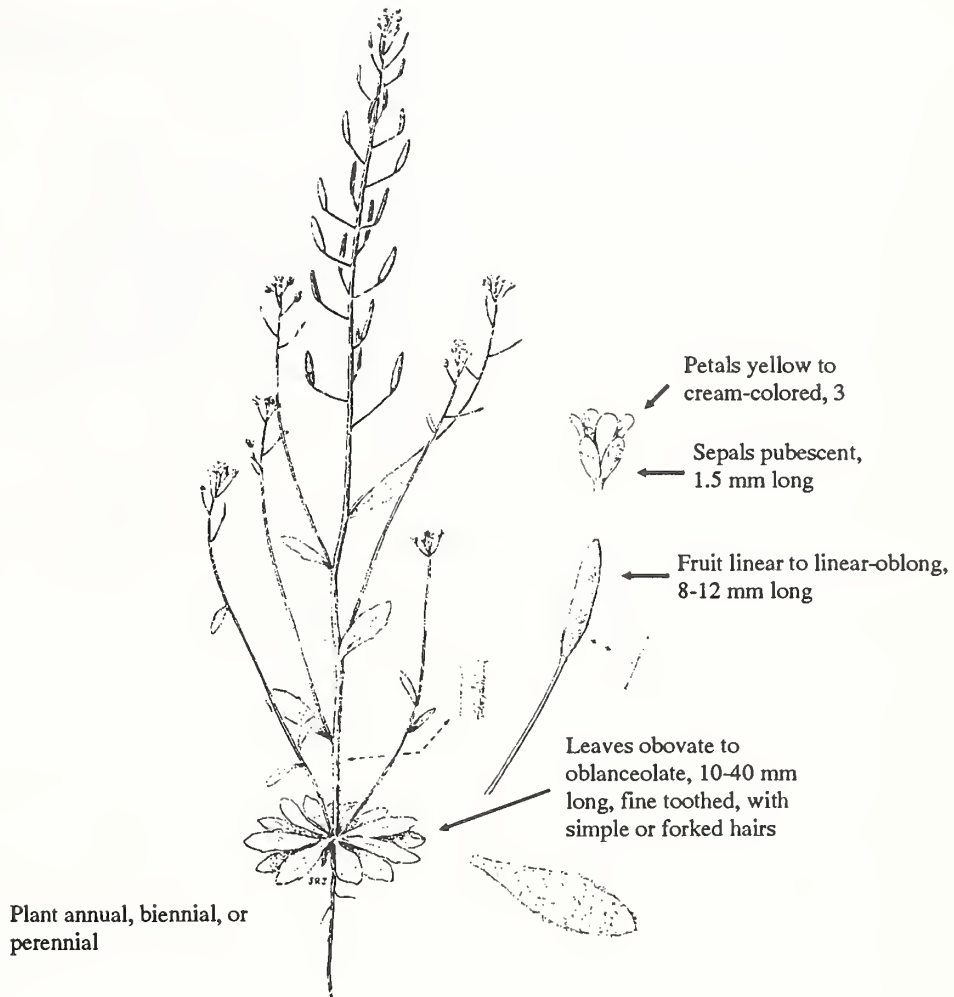
Rydberg, P.A. 1903. *Draba sobolifera*. Bull. Torr. Bot. Club 30:251.



Distribution of *Draba sobolifera*.

CARSON RANGE DRABA

Draba stenoloba Ledeb. var. *ramosa* C.L. Hitchc.
Brassicaceae (Cruciferae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G5T2/NV-S2, CA-S?

Description.—This mustard plant develops from a simple or branched rootstock. It has mostly basal leaves, obovate to oblanceolate in shape. The leaves are 10-40 mm long, densely pubescent with finely toothed margins. The flower cluster has 10-30 yellow to cream colored flowers, 0.5 cm in diameter. There are 4 spatulate-shaped petals 3 mm long. The sepals are hairy and 1.5 mm in length. The lower flower stalks are longer than the silicle.

Reproduction.—May be an annual, biennial, or perennial flowering in June and July. The fruit is a silicle, linear to linear-oblong in shape. The silicle is finely hairy and 8-12 mm long.

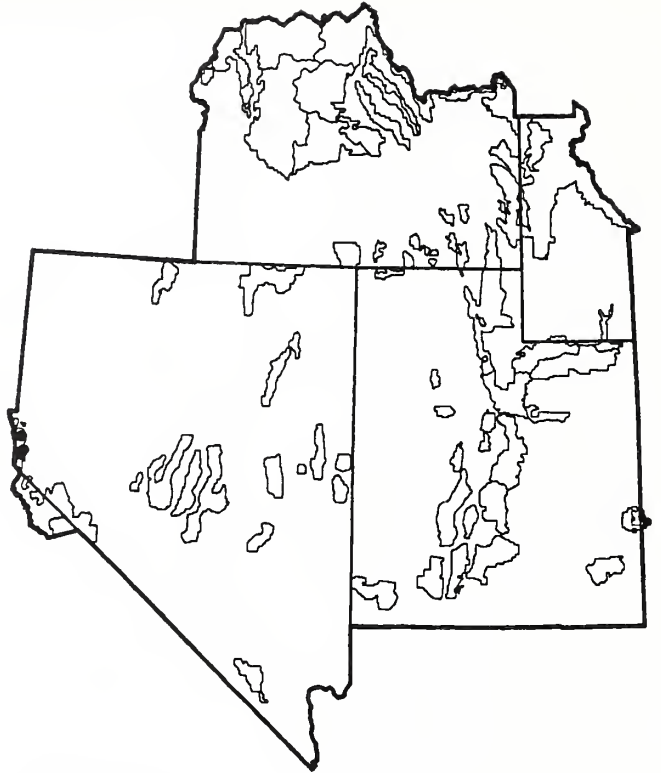
Habitat.—Occurs in moist granitic sand or grassy hills near streams in *Juncus*, *Ranunculus*, and *Polygonum* communities. The range of elevation is between 6,300-10,000 feet.

Distribution.—Found in Douglas, Carson, and Washoe counties in Nevada and Placer, El Dorado, Alpine, Mono, and Modoc counties in California.

Management Implications.—ORV's, timber management practices, and overgrazing have adversely affected the habitat. Cumulative effects from these impacts have not been assessed. Monitoring studies are needed to evaluate the species status and overall trend.

References.

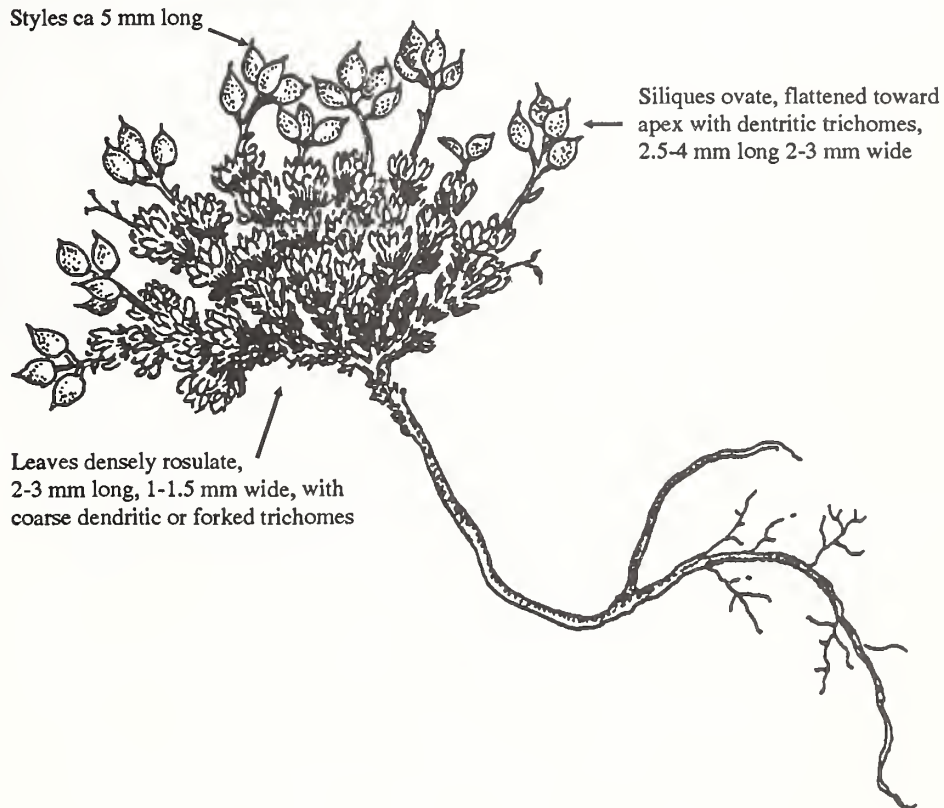
Hitchcock, C.L. 1941. *Drabas* of western North America. Univ. of Wash. Pubs. in Biol. 2:102.



Distribution of *Draba stenoloba* var. *ramosa* in the Intermountain Region.

STANLEY'S WHITLOW-GRASS

Draba trichocarpa Rollins
Brassicaceae (Cruciferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/ID-S2

Description.—A member of the mustard family, Stanley's whitlow-grass grows in clumps up to 10 cm across from a dense branching caudex which is covered with old leaves and leaf bases. The leaves are oblong to spatulate, 2-3 mm long, and covered with coarse, forked, glandular hairs. The sepals are obovate with translucent margins. The petals are 2.5-3.5 mm long, yellow, and come to a short claw at the tip. The styles are about 5 mm long.

Reproduction.—A perennial, this draba flowers from June to August. It produces a silique which is ovate and flattened toward the tip with branched hairs. The seeds are plump, oblong to oval, wingless, and 1.8-2.0 mm long. Plants may be short-lived.

Habitat.—Steep slopes on granitic parent material at 6,450 feet elevation.

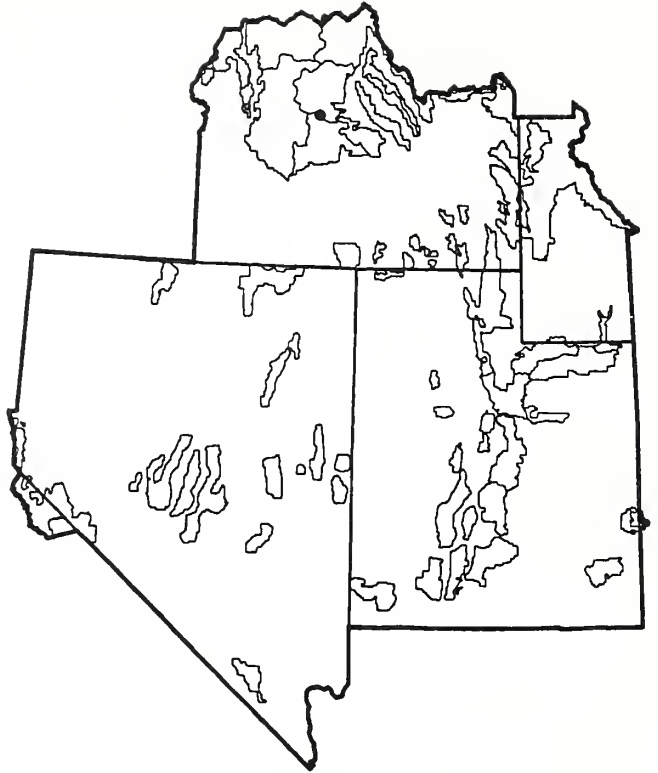
Distribution.—Endemic to Stanley Basin, Custer County in central Idaho.

Management Implications.—Survey work has been completed for this draba. Monitoring studies were established

in 1990 to assess the species' trends and biological relationships. A management plan outlining goals, objectives for management, protection, and funding is needed for the next 5 years.

References.

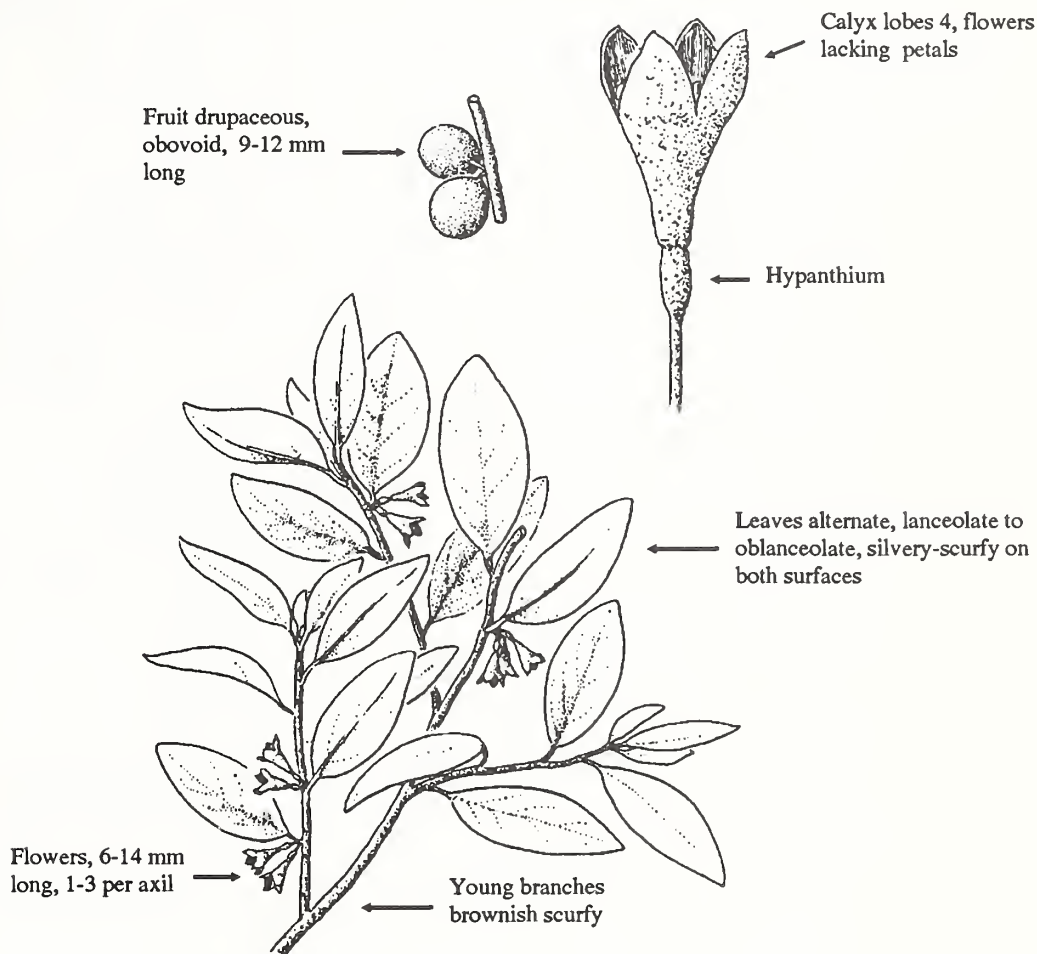
Rollins, R.C. 1984. Studies in the Cruciferae of western North America II. Contr. from the Gray Herb. 214:4-5.



Distribution of *Draba trichocarpa*.

AMERICAN SILVERBERRY

Elaeagnus commutata Benth.
Elaeagnaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S3

Description.—A member of the Oleaster family, American silverberry is a shrub growing 1-2 m tall with extensive rootstocks. The young branches are brownish-scurfy, while the old branches are dark grayish-red. The leaves are alternate, short-petioled, 2-7 cm long, lanceolate to oblanceolate, and silvery-scurfy on both sides with some brown scales intermixed. Flowers occur 1-4 per axil or clustered at the base of new twigs and are 10-15 mm long with 4 yellowish

sepal lobes and petals. The 4 stamens are included. The hypanthium base is silvery.

Reproduction.—This plant flowers from June to July. Its fruit is an obovoid drupe, 9-12 mm long. It regenerates from rootstocks and seeds, spread by birds and small mammals.

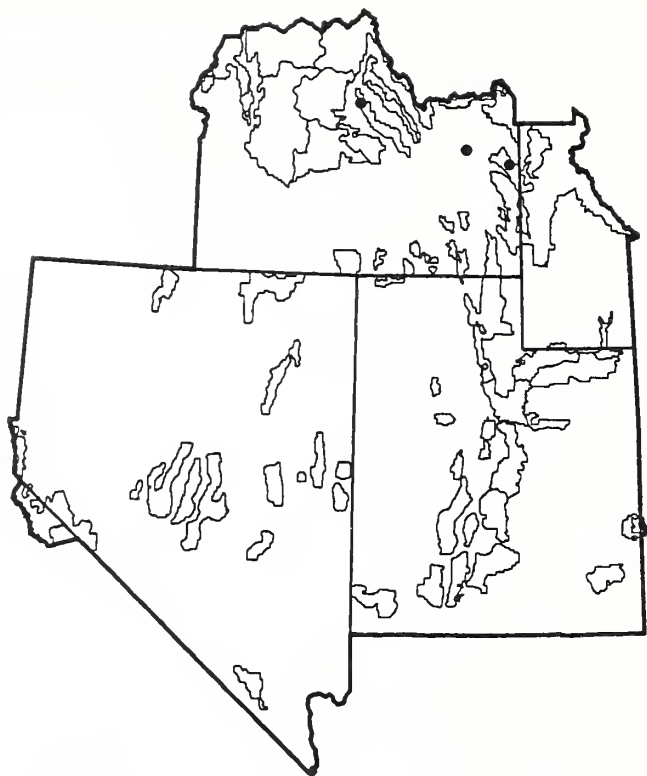
Habitat.—Gravelly benches and scabland or more commonly along watercourses with willow and poplar. Elevation between 6,000-8,000 feet.

Distribution.—Alaska and Yukon, east to Quebec, south to Idaho, Wyoming, Minnesota, Montana, and Utah.

Management Implications.—The species is impacted by livestock grazing and other activities associated with riparian areas. Improvement of vegetative conditions along streams and other riparian areas occupied by this species would improve its status. The fruits are used as a source of food for birds and small mammals. They aid in dispersal of seeds to unoccupied habitats.

References.

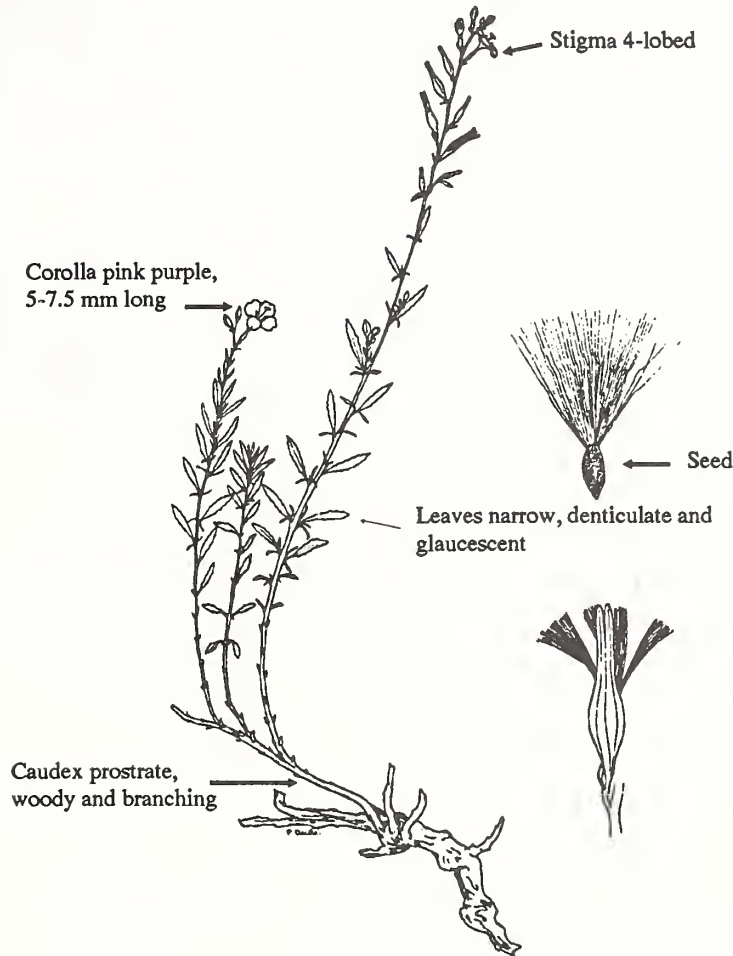
Bernhardi, J.J. 1843. *Elaeagnus commutata*. Allg. Theur. Gartenf. 2:137.



Distribution of *Elaeagnus commutata* in Idaho.

NEVADA WILLOWHERB

Epilobium nevadense Munz
Onagraceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S1, NV-S2

Description.—A member of the evening primrose family, Nevada willowherb is shrubby with persistent, woody branches and a stout taproot. The stems are more or less upright, leafy, and 15-40 cm tall. The leaves are narrow mostly alternate, 4-30 mm long, and folded. There are few to several flowers in a terminal cluster. The hypanthium is 2.0-4.5 mm long. The sepals are 2-4 mm long and purplish.

The petals are united, 4-lobed, 5.0-7.5 mm long, and pink-purple.

Reproduction.—A long-lived perennial, flowering occurs in late summer through fall (late July to September). Its fruit is a capsule, 8-15 mm long. The seeds are 2.0-2.5 mm long with tufts of hair. The tufts of hair on the seeds aid in wind dispersal.

Habitat.—Pinyon-juniper and mountain brush communities on limestone cliffs and gravels at the base of cliffs. Elevation between 7,000-8,800 feet.

Distribution—Clark and Lincoln counties, Nevada and Millard and Washington counties, Utah.

Management Implications.—Insufficient data is available to assess use, conditions, and trends. The species is rarely collected and appears to occur in small, isolated, disjunct populations where habitat conditions exist for survival. Threats to the species include ungulate grazing, mining activities, and heavy recreation use.

References.

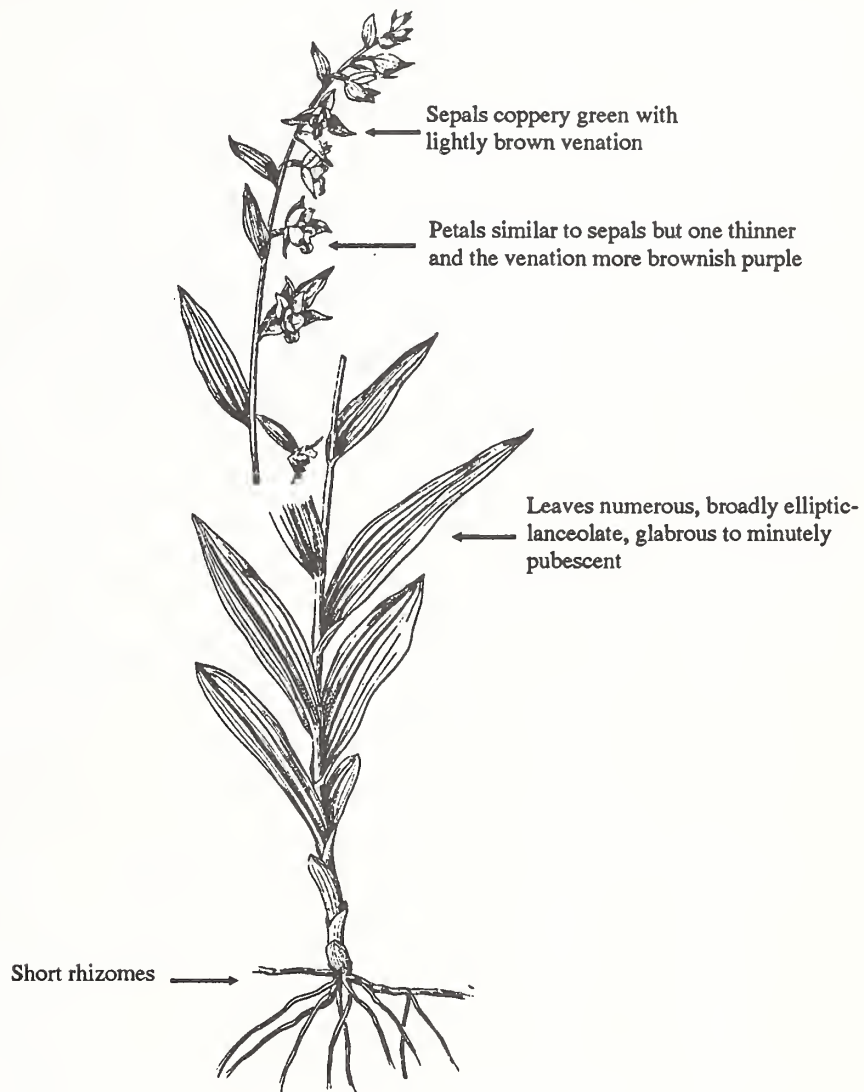
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:442.



Distribution of *Epilobium nevadense*.

GIANT HELLEBORINE

Epipactus gigantea Dougl. ex Hook.
Orchidaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S2

Description.—A member of the orchid family, giant helleborine grows from short rhizomes with 1 to several stems, 3-10 dm tall. The leaves are sheathing, the lower sessile, the upper narrower, mostly 7-19 cm long and 1.5-7.0 cm broad. The showy flowers occur 3-15 per stalk with the bracts becoming reduced above, the terminal one still exceeding the ovary. The sepals are coppery green with light brown venation. The petals are similar to the sepals, somewhat

thinner and with more brownish-purple venation. The lip is 15-20 mm long. The 3-lobed sac has prominent raised purplish lines leading to the base and the flattened tip is greenish yellow with uprolled margins. The base is thick and yellow.

Reproduction.—A long-lived perennial, this helleborine flowers from April to August. Its fruit, a capsule, is 2.0-2.5 cm long, reflexed, ovoid to ellipsoid, dark brown on the ridges, and otherwise yellowish. Thousands of seeds are released before the stem dies back to the rhizomes to overwinter.

Habitat.—Wet places on seepage slopes and at the base of cliffs along springs, streambanks, and rivers. Often in wet places in desert areas and in thermal sites. Elevation between 2,900-4,100 feet.

Distribution.—Widely distributed from British Columbia south to Baja California in most of the western United States to the Rocky Mountains and south to Mexico.

Management Implications.—Populations are being impacted or extirpated throughout the range of the species due to ungulate grazing, construction of dams and reservoirs, and heavy recreational use of thermal hot springs. A concerted effort by all land management agencies is needed to determine the species' distribution, use, condition, and trend. Protective measures are needed to maintain viable populations throughout the species range. This would allow for species survival and maintenance of genetic diversity.

References.

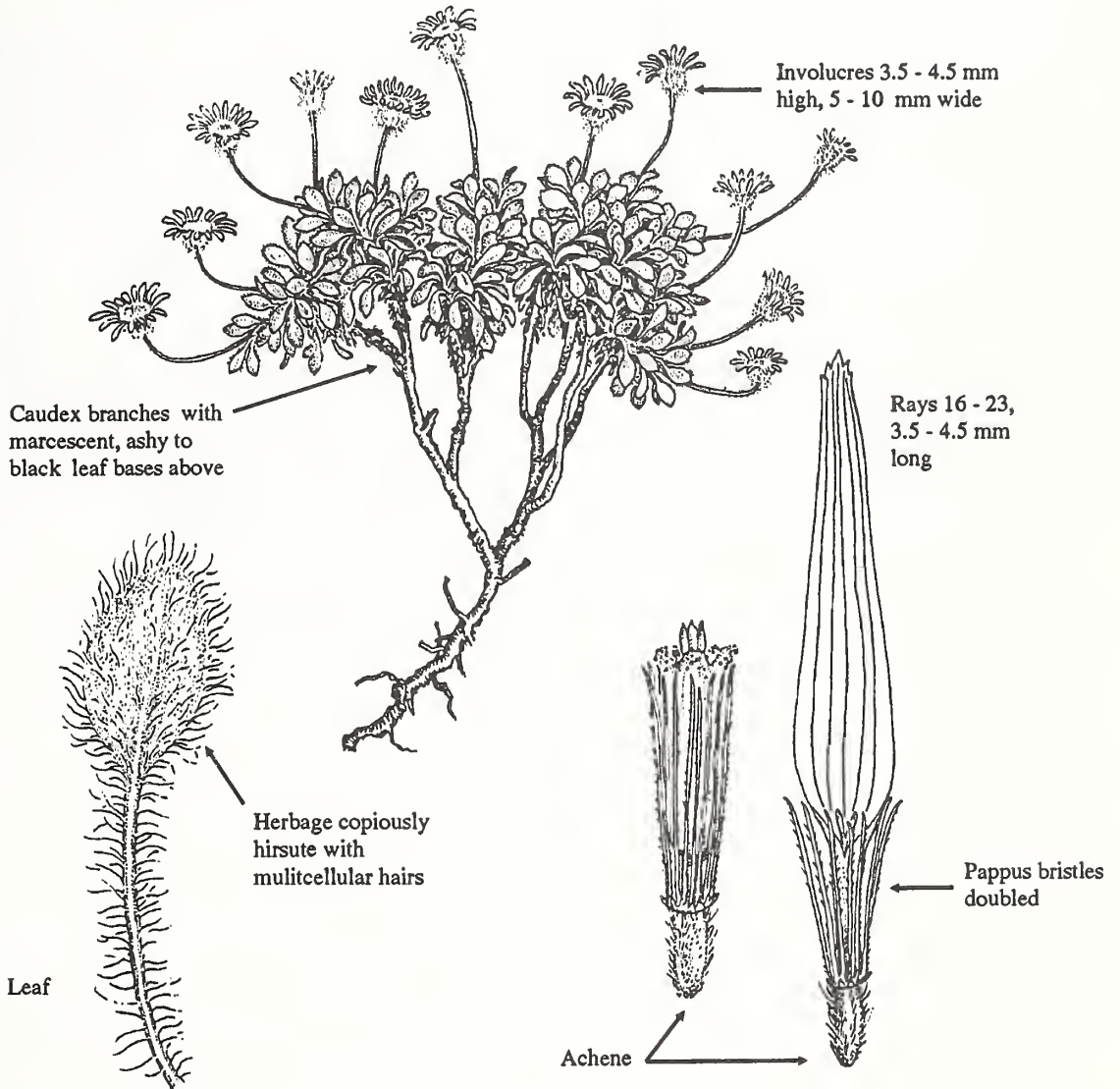
- Douglas, D. 1839. *Epipactis gigantea*. Fl. Boreali-Amer. 2:202.
- Coulter, J.M. 1894. *Peramium giganteum*. Contr. U.S. Natl. Herb. 2:424.
- Nelson, A. and J.F. Macbride. 1913. *Amesia gigantea*. Bot. Gaz. 56:472.



Distribution of *Epipactis gigantea* in Idaho.

SNAKE MOUNTAIN ERIGERON

Erigeron cavernensis Welsh and Atwood
Asteraceae (Compositae)



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/NV-S?

Description.—A member of the sunflower family, Snake Mountain erigeron has persistent ashy to black leaf bases at the base of the rootstock. The stems are slender, 1.7-6.0 cm tall. The leaves on the stem are reduced upwards. The flowering heads are solitary, 3.5-4.5 mm high. The bracts are somewhat thickened and purplish with the inner ones having dry, thin margins. There are about 16-23 ray flowers

which are purplish or white and 3.5-4.5 mm long. The pappus is double with about 18-20 inner bristles.

Reproduction.—A long-lived perennial herb, this erigeron produces 2-nerved, hairy achenes. The achenes germinate when soil moisture and temperature conditions are right, producing new plants. Hundreds of achenes are produced by each plant. These overwinter and new plants are produced from the seed bank.

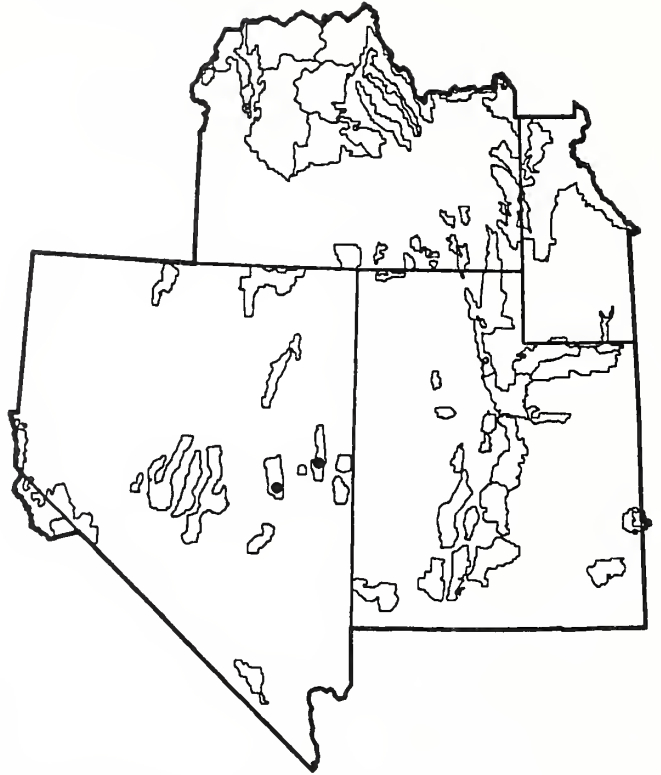
Habitat.—Limestone cliffs and rubble in *Pinus flexilis* and *P. longaeva* communities. Elevation between 10,000-11,000 feet.

Distribution—Cave Mountain in the Schell Creek Range and Currant Mountain at the western margin of White Pine County, Nevada.

Management Implications.—Impacts from domestic and wild ungulate grazing are the most significant impacts to this erigeron. The degree to which these activities are impacting Snake Mountain erigeron have not been assessed. Monitoring studies could be initiated to determine impacts and trends.

References.

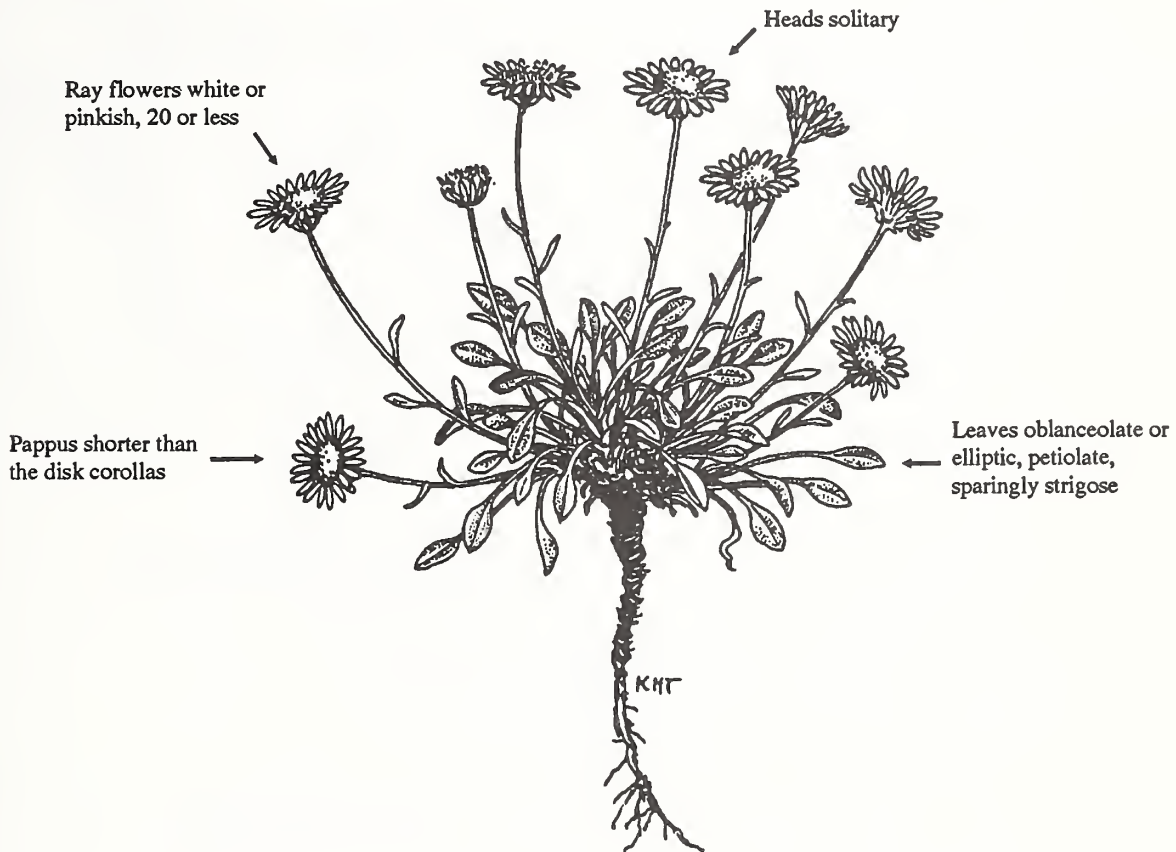
Welsh, S.L. and N.D. Atwood. 1988. An *Erigeron* from Nevada and a *Penstemon* from Idaho. *Great Basin Natur.* 48(4):495-498.



Distribution of *Erigeron cavernensis*.

CRONQUIST DAISY

Erigeron cronquistii Maguire
Asteraceae (Compositae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/UT-S2

Description.—A member of the sunflower family, Cronquist daisy has short, closely-branched caudices with leaf bases from several seasons. It is commonly 3-7 cm tall with simple, erect stems. There are several conspicuous basal, spatulate leaves, 2-5 cm long with a slender petiole. There are 5 or less leaves along the stem. The flowering heads are solitary (occasionally 2), 3-5 mm high with short spreading hairs and fine glands. The disc is 5-8 mm wide. The bracts

are thin, the inner broad with prominent green margins and purple tips, the outer narrower. The ray flowers occur 10-20 per head, are 5-6 mm long, and white or pinkish. The pappus consists of 12-20 very slender, fragile bristles.

Reproduction.—A perennial herb, this daisy flowers and fruits from May to August. It produces 2-nerved achenes with sparse hairs. The persistent leaf bases this species survives for several years, overwintering by the perennial root.

Habitat.—Rock crevices in cliffs and talus and in canyons in aspen-spruce-fir communities on limestone and dolomite. Elevation between 5,800-9,900 feet.

Distribution.—Bear River Range in Cache County, Utah and adjacent Idaho.

Management Implications.—It is subject to potential impacts from summer homes and highway construction, along with industrial development and heavy recreational use in the Logan Canyon area.

References.

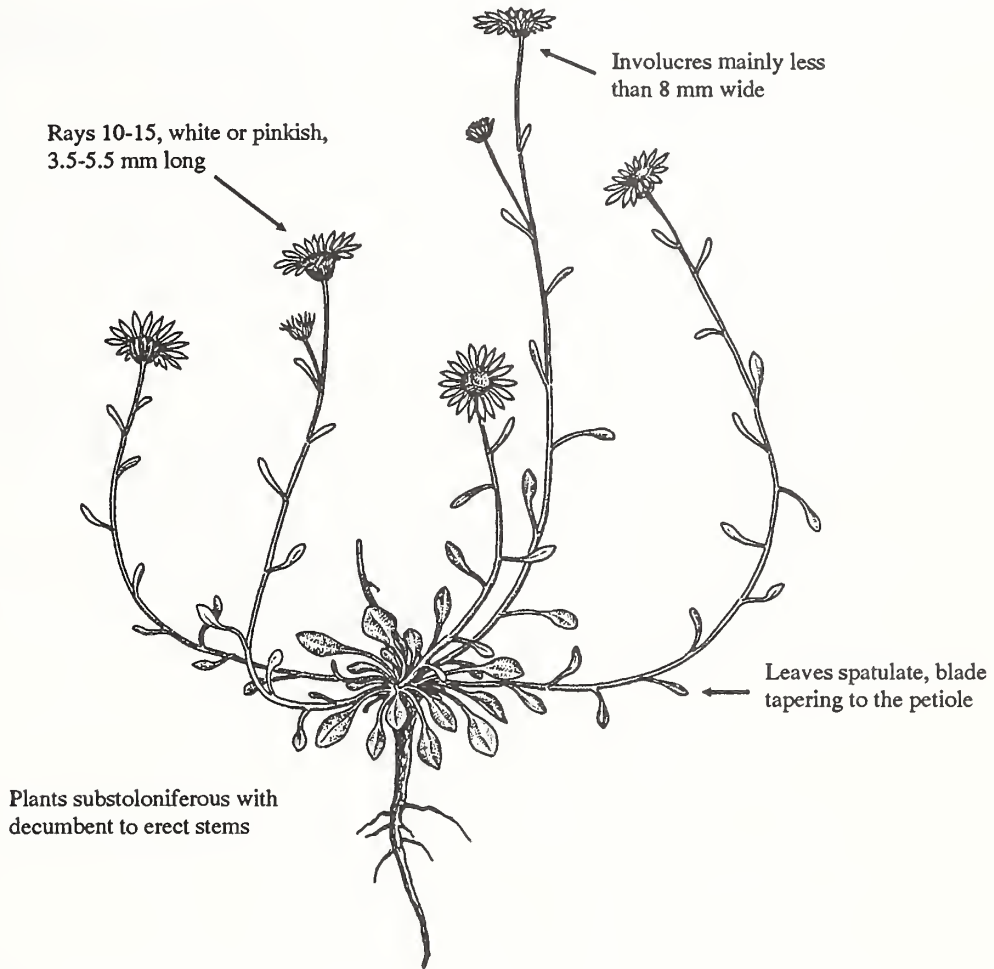
Maguire, B. 1944. Great Basin plants VIII new species of *Carex* and *Erigeron*. *Britt.* 5:201.



Distribution of *Erigeron cronquistii* in Utah.

KACHINA DAISY

Erigeron kachinensis Welsh and Moore
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the sunflower family, Kachina daisy grows with a stout, simple or branched caudex and taproot to a height of 6-18 cm tall. The basal leaves are numerous, 1.3-5.0 cm long, and oblanceolate with the blade tapering gradually to the petiole. The stem has 5-11, reduced, spatulate to oblong leaves. The flower heads are solitary, or 2-4, with the disk being 5-6 mm broad. The flowers are 3.2-4.0 mm high. The inner and some of the

outer bracts are purplish at the tip, the outer are green with minute glands. The ray flowers occur 10-15 per head and are white or tinged with pink and 3.5-4.5 mm long. The disk petals are about 2.5 mm long with a 1.2 mm long tube. The modified sepals are double with white bristles and are shorter than or equal with the disk petals.

Reproduction.—A perennial herb, this daisy begins flowering in early May and continues into mid-July. The fruit is a 2-nerved hairy achene. Seeds and the overwintering perennial root maintain populations. Pollinators include several species of bees and some large flies.

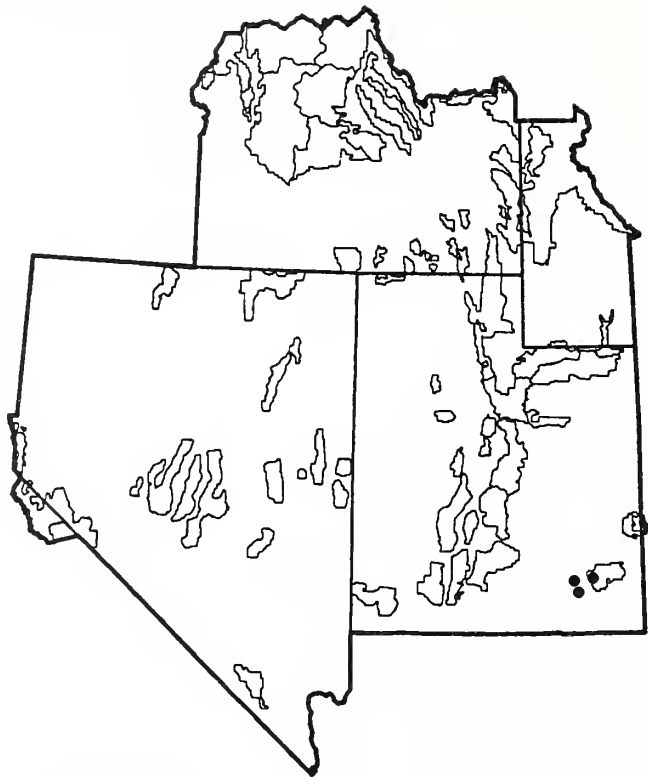
Habitat.—Occurs only in wet seeps, hanging gardens, cool alcoves, and spring sites in ledges and rock outcrops in the ponderosa pine type. Elevation between 5,300-7,500 feet. Mostly found in shady, moist sites.

Distribution.—This plant is a Colorado Plateau endemic and is found in Natural Bridges National Park, Dark Canyon, other canyons on Elk Ridge, and Cliff Dwellers Pasture in San Juan County, Utah along with sites in Montrose County, Colorado.

Management Implications.—This plant is a narrow endemic in the genus *Erigeron* and could be a link to some of the origins of the species in this complex genus. It has little value for livestock grazing, but where it grows big enough, some use is made of it by big game. The type locality occurs along a major trail from the summit of the mesa down toward Kachina Natural Bridge, and may be impacted by visitors to Natural Bridges National Park.

References.

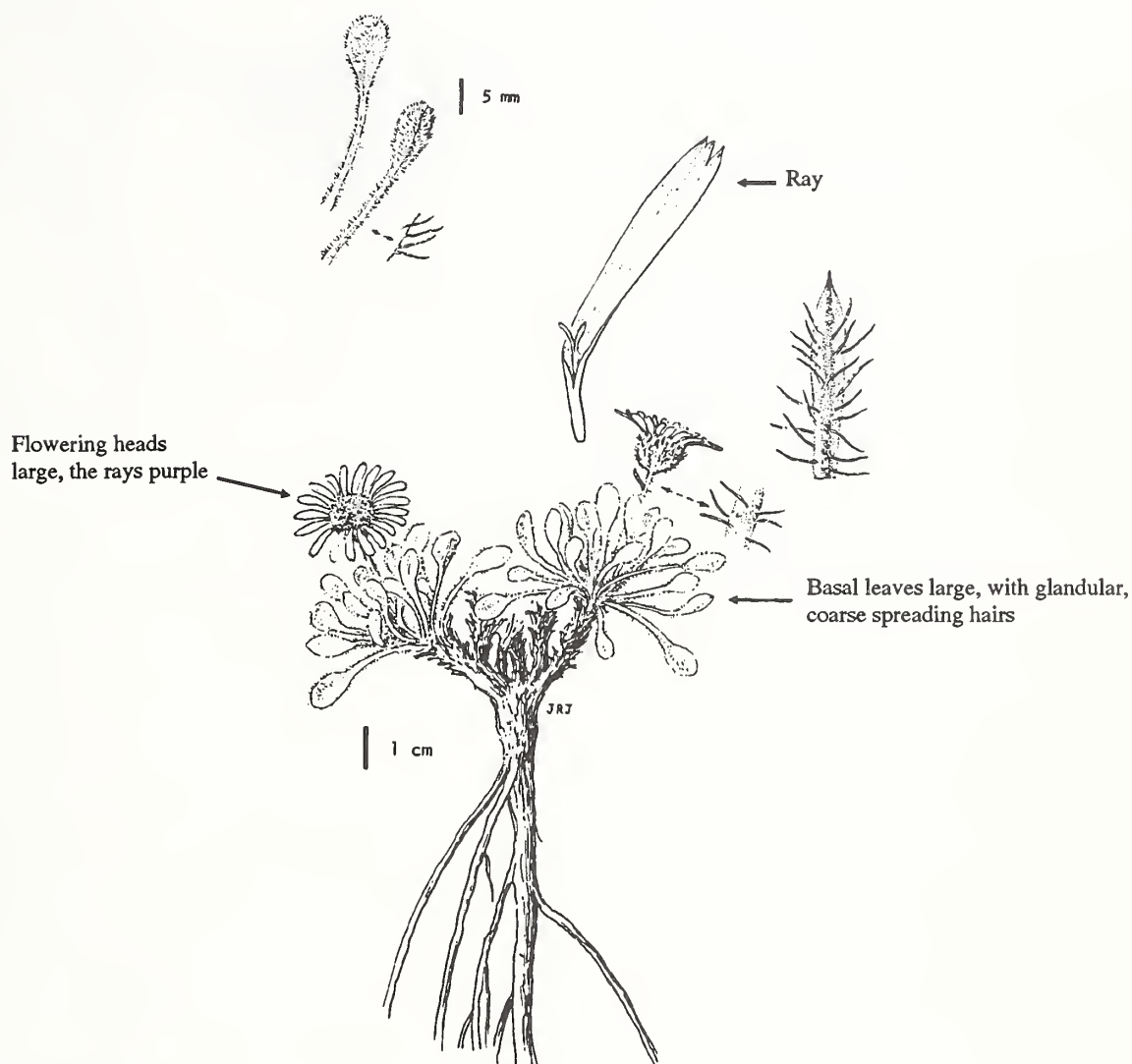
Welsh, S.L. and G. Moore. 1968. *Erigeron kachinensis*. Proc. Utah Acad. 45:231.



Distribution of *Erigeron kachinensis* in the Intermountain Region.

BROAD FLEABANE

Erigeron latus (Nels. and Macbr.) Cronquist
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not Listed

Heritage Global/State Status: G2/NV-S?

Description.—A member of the sunflower family, this erigeron grows from a taproot with a stout, branched caudex. The stem is 3-8 cm high with fine glands and sparse spreading hairs. The leaf margins have hairs at the base. The basal leaves are oblanceolate to spatulate and up to 6 cm long, while the stem leaves are inconspicuous and linear or absent. The flowering heads are large, solitary and covered with long, coarse hairs. The 15-25 ray flowers are purple, 7-10

mm long. The disk flowers are about 4.7-6.0 mm long. The pappus is essentially simple and consists of about 20-27 coarse firm bristles.

Reproduction.—A perennial herb, flowering occurs in July. The fruit of this plant is a 2-nerved achene which is hairy when young and less so when mature, with 20-27 coarse, firm bristles at the tip. The plants are probably short-lived.

Habitat.—Thin soil on gravelly or rocky hillsides or volcanic sands at 6,400 feet elevation. Growing in sagebrush/juniper communities.

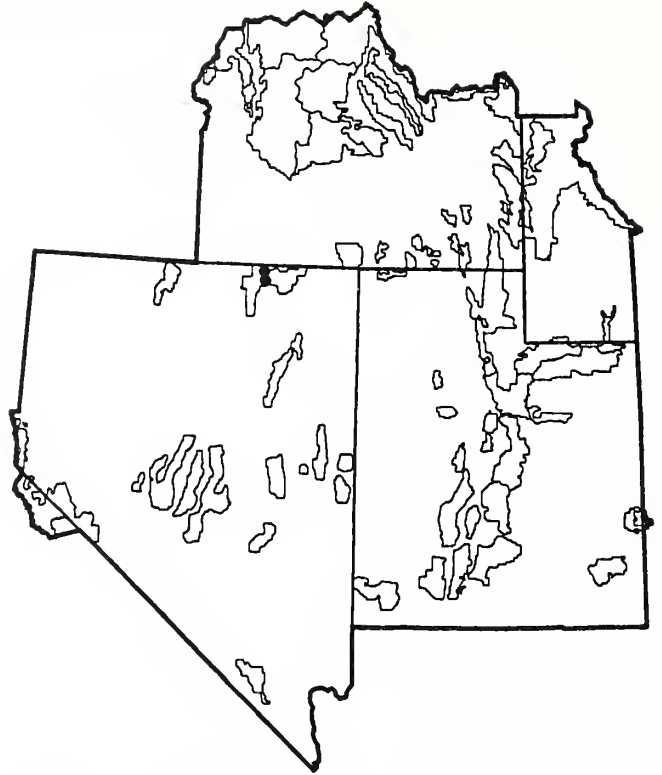
Distribution.—Known from Three Creek, Owyhee County, Idaho and Point of Rocks, Elko County, Nevada.

Management Implications.—Not enough is known about this rare species to determine the threats to it. An intensive search should be conducted to determine its distribution and abundance. Potential habitat areas occur on the Humboldt National Forest and adjacent BLM lands. Coordinated surveys are needed before the species status can be assessed.

References.

Cronquist, A. 1947. *Erigeron latus*. Brittonia 6:192-193.

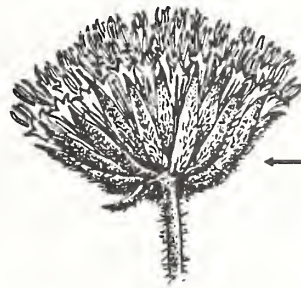
Nelson, A. and J.F. Macbride. 1913. *Erigeron poliospermus* var. *latus*. Bot. Gaz. 55:383.



Distribution of *Erigeron latus*.

LASAL DAISY

Erigeron mancus Rydb.
Asteraceae (Compositae)



← Involucre 5-6.5 mm high, 7-12 mm wide,
glandular villous with multicellular hairs

Flower heads solitary,
ray flowers lacking →



Leaves pinnately lobed →

← Caudex branches short
with straw colored
persistent leaf bases

Pulvinate caespitose
subscapose perennial, not
soboliferous

USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/UT-S2

Description.—A member of the sunflower family, LaSal daisy grows low and cushiony from a branched caudex with dark brown to straw-colored persistent leaf bases. The herbage has minute glandular hairs. The stems are erect, mainly 2-6 cm long. The basal leaves are pinnatifid, 1.2-4.0 cm long with linear-oblongate crowded segments. The stem leaves are greatly reduced. The flower heads are solitary, 5.0-6.5 mm high and 7-12 mm wide with glandular hairs.

The bracts are somewhat thickened basally, often with purplish tips. The ray flowers are lacking. The pappus is simple with 20-30 bristles.

Reproduction.—A perennial, this daisy begins flowering within 5 days after snowmelt (July). It produces 2-nerved hairy achenes that ripen in 12-15 days and is scattered by the wind. The perennial roots overwinter for several seasons.

Habitat.—The LaSal Mountain Daisy is found in the alpine mixed grass forb community on rocky granitic ridge crests. Plants are mostly confined to small colonies, 0.5-1.0 m in diameter on north and east aspects. Smaller colonies and individual plants do occur scattered on south and west

aspects and in disturbed sites. Elevation between 10,000-12,000 feet.

Distribution.—This plant is endemic to the alpine areas of the LaSal Mountains located in Grand and San Juan counties, Utah.

Management Implications.—LaSal daisy is found only in alpine plant communities and may be used by some big game animals. On sites that have been disturbed by mining and drilling more plants have been found indicating that land disturbance activities may be of some benefit to this plant. Monitoring studies are needed to determine species' trend and status.

References.

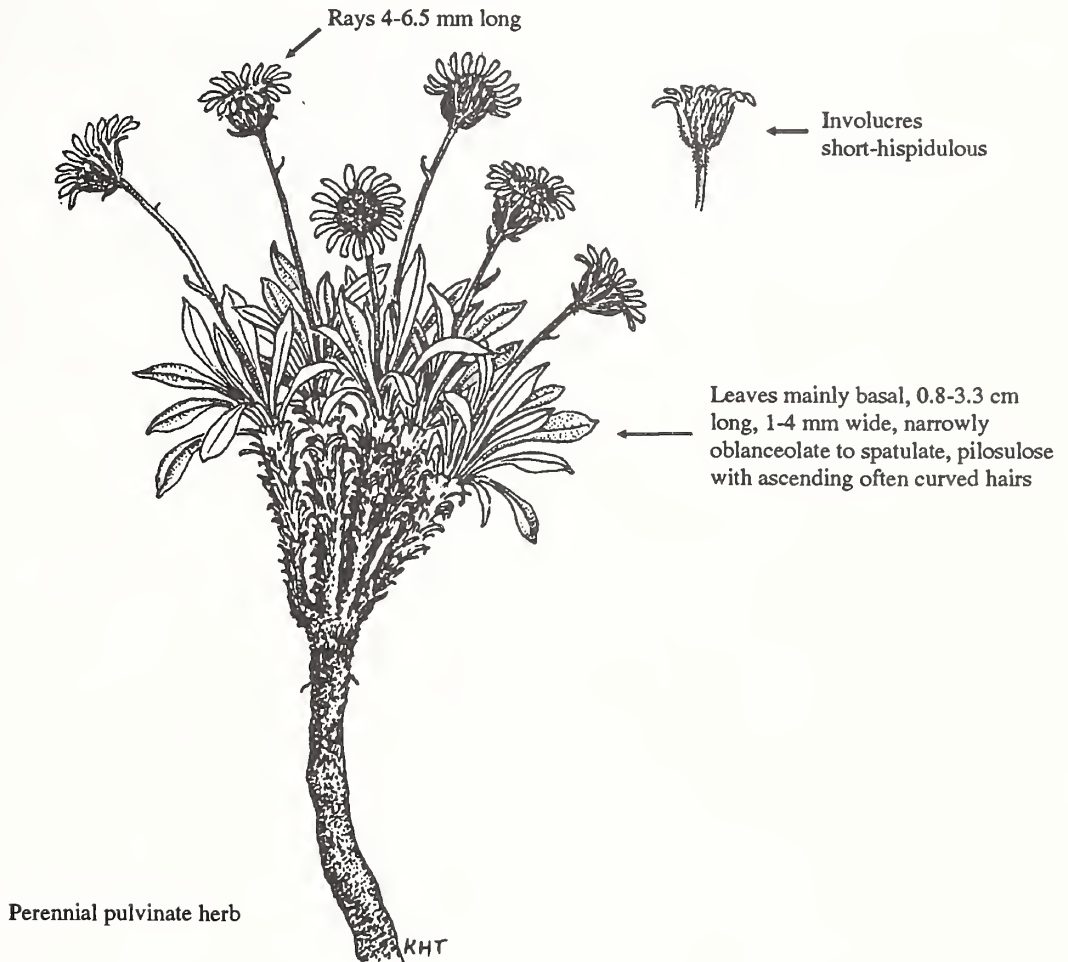
- Rydberg, P.A. 1917. Flora of the Rocky Mountains and adjacent plains. New York. 1144 pp.
- Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:188.



Distribution of *Erigeron mancus*.

UNTERMANN DAISY

Erigeron untermannii Welsh and Goodrich
Asteraceae (Compositae)



Perennial pulvinate herb

USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—This member of the sunflower family is a cushion-shaped perennial with a woody base. The woody base is clothed with persistent leaf bases. The leaves are mainly basal, 0.8-3.3 cm long, 1-4 mm wide, and narrowly oblanceolate to spatulate in shape. The stem leaves are reduced in comparison with the basal leaves. The flowering heads are solitary with involucre bracts densely covered with short spreading hairs. The outer ray flowers are white and the inner disc flowers are yellow.

Reproduction.—A long-lived perennial, flowering occurs from May to June. The fruit is a flattened achene with 2 nerves and covered with soft, straight hairs.

Habitat.—Untermann daisy occurs in pinyon-juniper communities on light to buff calcareous shales of the Uinta Formation. The range of elevations is between 7,000-9,440 feet.

Distribution.—Endemic to the Tavaputs Plateau in Duchesne County, Utah.

Management Implications.—At this time there is some ORV use in the area, along with grazing activity. Oil wells dot the landscape and drilling activities are a potential threat.

Due to its rarity, all of this species' known locations should be considered essential habitat (Franklin 1988). If site specific project clearances are conducted and if nearby oil activities do not move onto ridges occupied by this species, the present use and management is probably adequate. Survey work was conducted in 1988 by the Utah Natural Heritage Program (UNHP). Ben Franklin, botanist for the UNHP, recommended that the search for additional habitat be conducted.

References.

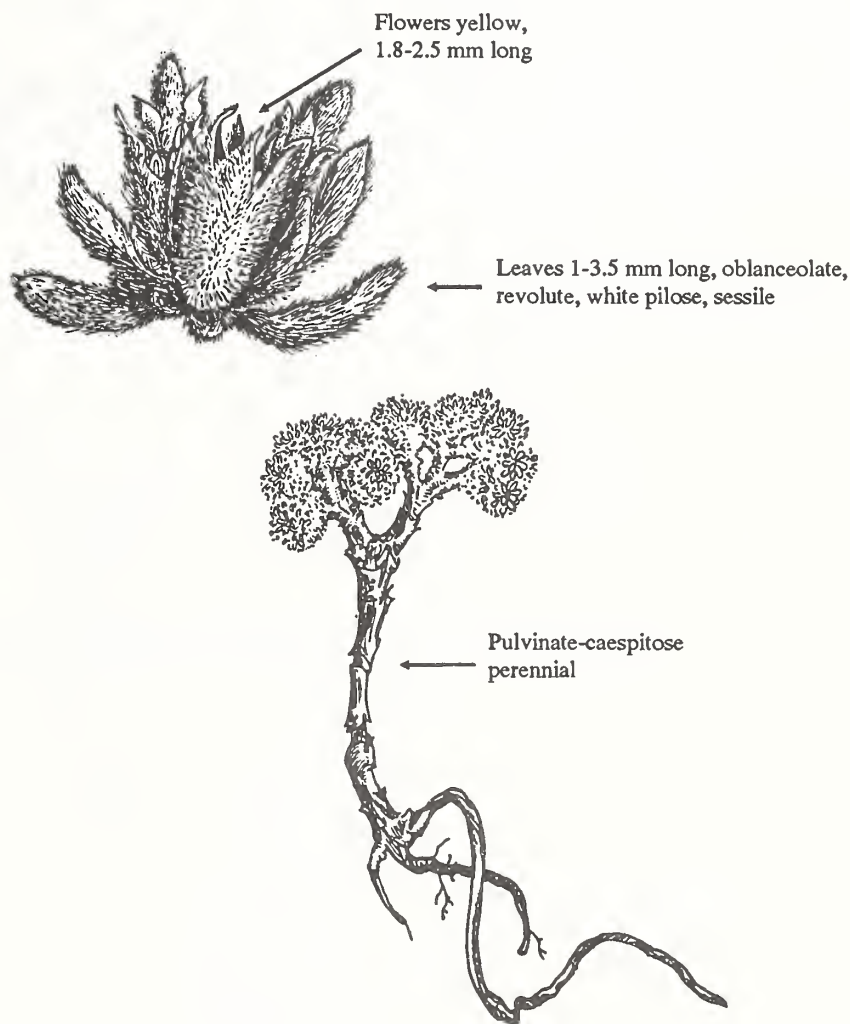
Franklin, B. 1988. Report for sensitive plant inventory on *Erigeron untermanni*. The Nature Conservancy/Utah Natural Heritage Program. 49 pp.



Distribution of *Erigeron untermanni*.

WIDTSOE BUCKWHEAT

Eriogonum aretioides Barneby
Polygonaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/UT-S1

Description.—A member of the buckwheat family, Widtsoe buckwheat grows low with 20-30 rosettes of leaves, forming flat to rounded mats, 1-4 dm in diameter. The leaves are oblanceolate to elliptic, 3-8 mm long with a slightly thickened, rolled margin, and covered with a soft white wool. The stems are leafless and erect with a single flowering head atop. The flowers are yellow, 2 mm long, with soft, straight hairs out and none in.

Reproduction.—A perennial, this buckwheat flowers from May to August. It produces numerous, 2 mm long, brown achenes. Plants appear to be long-lived with new plants produced each year from germinating seeds.

Habitat.—Grows on calcareous gravels on thin rocky soil in pinyon-juniper, ponderosa pine, and western bristle cone pine communities on slopes and ridges of the pink limestone member of the Wasatch Formation. Elevation between 7,500-8,000 feet.

Distribution.—Endemic to the foothills of the Escalante Range, western Garfield County, Utah with the major populations located in Red Canyon Recreation Area.

Management Implications.—This plant is threatened by potential use of limestone for industrial purposes and by potential railroad development. Also, timber harvesting, both commercial and firewood, heavy recreational use, and road construction in the area have impacted the species and its habitat. Portions of its habitat occur in the Red Canyon Research Natural Area. One additional population is being studied for potential botanical area status. Survey work has been conducted over the last 2 years and has resulted in discovery of new locations. Additional survey work is needed along with monitoring studies to evaluate the species trend and status.

References.

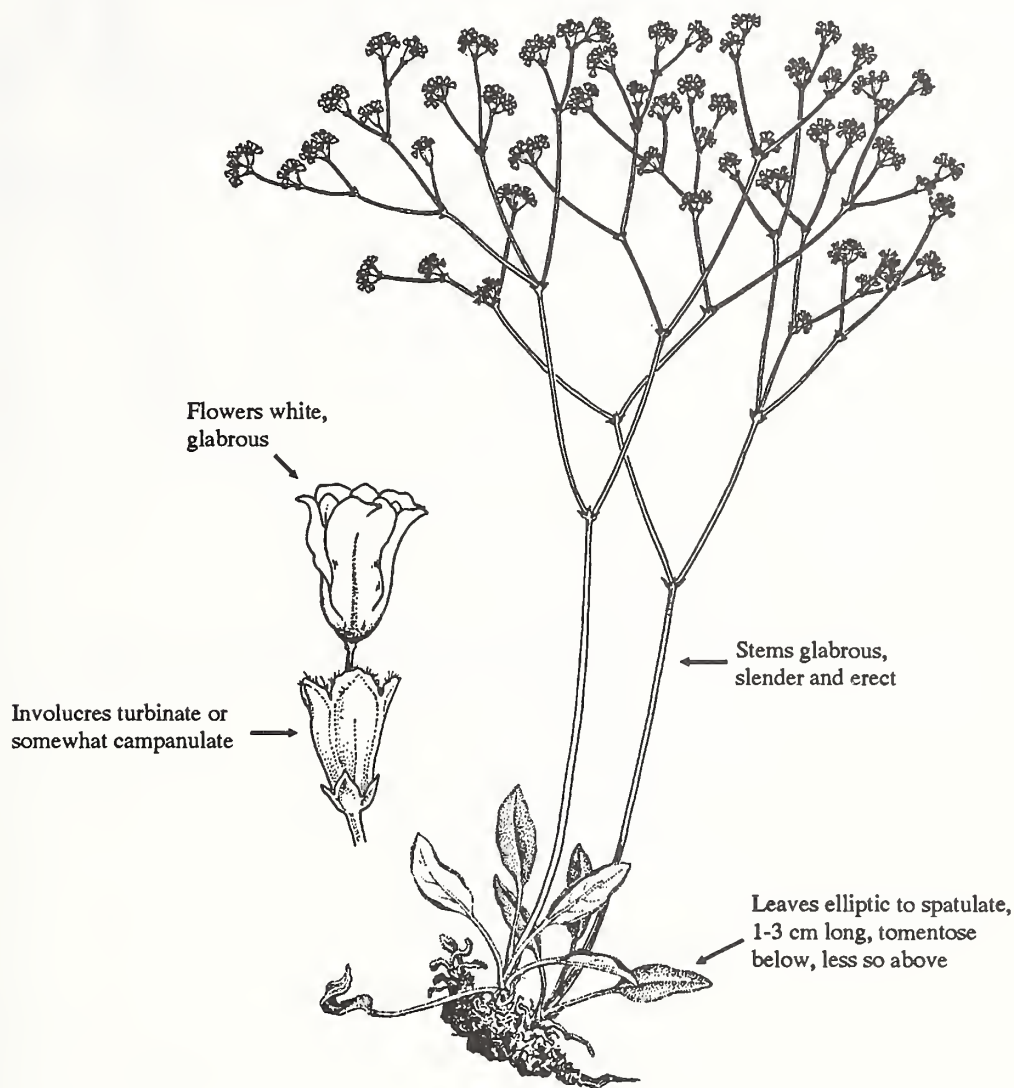
Barneby, R.C. 1949. *Eriogonum villiflorum* and its near relatives in the Great Basin. *Leafl. W. Bot.* 5:151-155.



Distribution of *Eriogonum aretioides*.

ELSINORE BUCKWHEAT

Eriogonum batemanii Jones var. *ostlundii* (Jones) Welsh
Polygonaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G?T3/UT-S3

Description.—A member of the buckwheat family, Elsinore buckwheat grows with a spreading characteristic, 2-4 dm tall. The leaves are basal, elliptic to spatulate, 1-3 cm long, and white woolly on the underside. The stems are slender and erect, 5-22 cm long with 1-5 branching flowering stalks. The flowers are 1.5-2.3 mm long and white.

Reproduction.—A long-lived perennial, this buckwheat flowers from July to September. The fruit consists of numerous, pale brown achenes, 2.5-3.0 mm long.

Habitat.—Mainly on thermally modified igneous outcrops and gravels in sagebrush, ponderosa pine, and mixed desert shrub, pinyon-juniper communities. Elevation between 5,800-6,500 feet.

Distribution.—Endemic to Piute, Sevier, and Wayne counties in central Utah on the Fishlake National Forest, BLM Richfield District, and state and private lands.

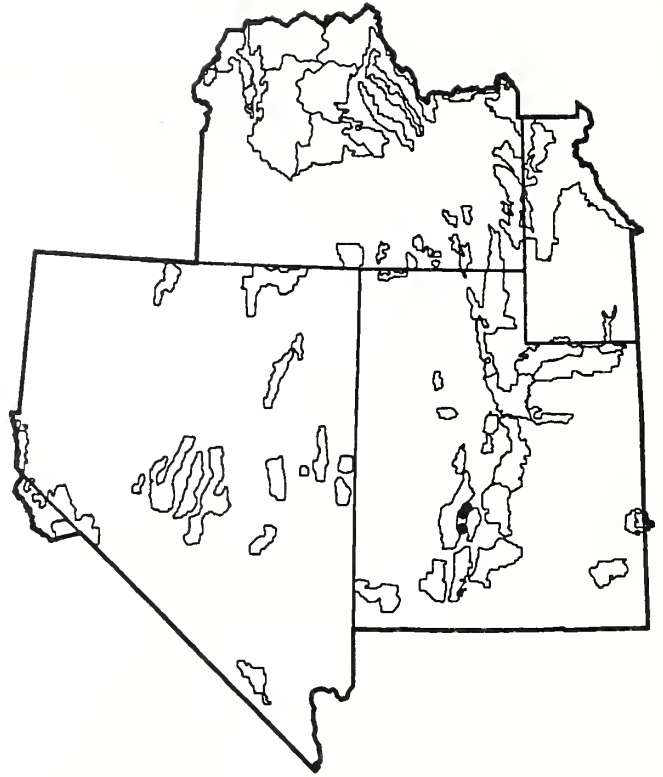
Management Implications.—Roadways penetrate all known populations and a railroad traverses one locality.

Private enterprises have reduced the total area. Portions of at least one population are subject to trampling by grazing animals. Additional work is needed to assess its status.

References.

Jones, M.E. 1903. *Eriogonum batemanii* var. *ostlundii*.
Contr. W. Bot. 11:12.

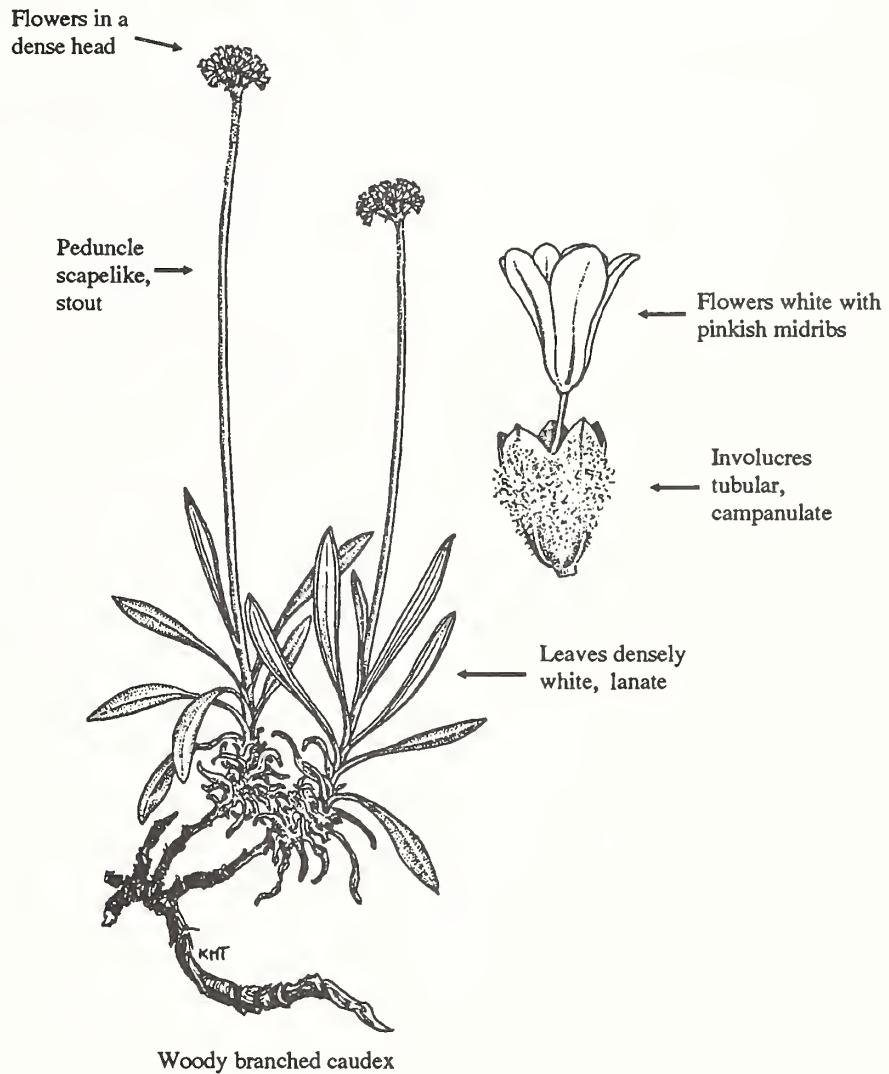
Reveal, J.L. 1973. *Eriogonum* (Polygonaceae) of Utah.
Phytologia 25:169-217.



Distribution of *Eriogonum batemanii* var. *ostlundii*.

LOGAN BUCKWHEAT

Eriogonum brevicaule Nutt. var. *loganum* A. Nels.
Polygonaceae



USFWS Status: 3C
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G4T2/UT-S2

Description.—A member of the buckwheat family, Logan buckwheat grows from a woody branching caudex, 2-4 dm in diameter, and 1.5-3 dm high. The stems are 1-2.5 dm long and leafy with 3-5 flowers per stalk. The herbage is covered densely with white wool. The leaves are narrowly elliptic, 2-7 cm long. The flowers are cream to yellow and 2.5-4.0 mm long with oblong-obtuse sepals.

Reproduction.—A long-lived perennial, this buckwheat flowers in late June. The fruit, achenes, are 3.0-3.5 mm long, brown, and ripen in July.

Habitat.—On clay bluffs, hills, limestone outcrops, and dry benchlands in mountain brush-grassland communities. Elevation between 4,800-4,950 feet.

Distribution.—This plant is endemic to the benches above Logan, Utah west to the Box Elder County line along Hwy 69, Cache County, Utah.

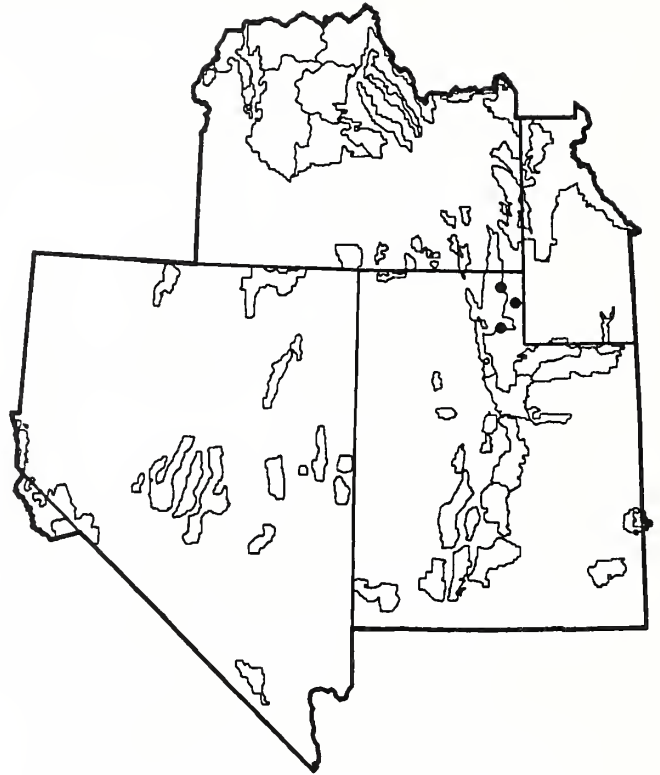
Management Implications.—Housing projects, roadways, and associated facilities are threats to this species. All populations occur within close proximity to Logan and are

subject to increasing recreational activities. The species' population status should be assessed and monitored.

References.

Nelson, A. 1912. Contribution from the Rocky Mountain Herbarium XI. New Plants from Idaho. Bot. Gaz. 54:149.

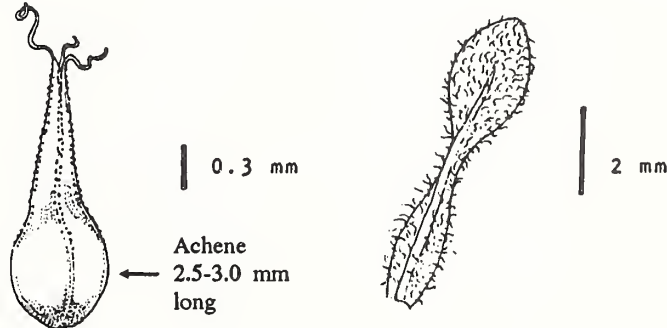
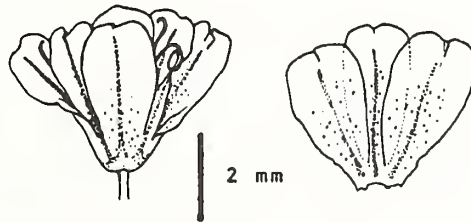
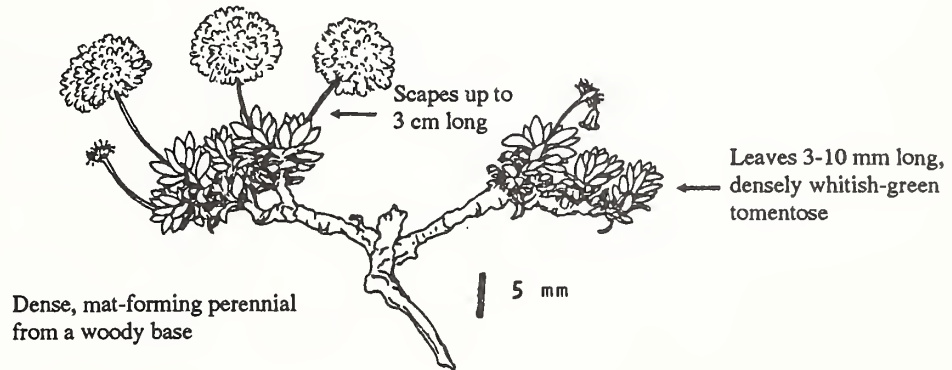
Reveal, J.L. 1973. *Eriogonum* (Polygonaceae) of Utah. Phytologia 25:169-217.



Distribution of *Eriogonum brevicaule* var. *loganum*.

HOLMGREN BUCKWHEAT

Eriogonum holmgrenii Reveal
Polygonaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/NV-S1

Description.—A member of the buckwheat family, Holmgren buckwheat grows from a woody base forming dense thick mats of varying sizes. The leaves are numerous, oblanceolate to spatulate, 3-10 mm long, and densely whitish-green woolly below, less so above. The leafless stems are erect, up to 3 cm long, woolly or glandular-hairy. The flowers are 2.5-3.0 mm long, sparsely glandular when young and white with a red midrib becoming pink, orange,

and deep red at maturity. The stamens are included and the anthers are greenish to a reddish-purple.

Reproduction.—A long-lived perennial, this plant flowers from July to August. The fruit are achenes, 2.5-3.0 mm long, light greenish brown to light brown, and ovoid, tapering to a 3-angled beak.

Habitat.—Growing on talus quartzite slopes in crevices of granite rocks and on limestone slopes. Common among boulders, limestone soil, and occasional in alpine turf in grass-forb communities. Elevation between 10,900-11,800 feet.

Distribution.—Endemic to the Snake Range between Pyramid Peak and Lincoln Peak, White Pine County, Nevada.

Management Implications.—Present threats seem to be minor because of the remote, rocky habitat and scattered nature of the plants. However, the species is rare and all habitat should be considered essential for survival. Land managers need to ensure project clearances are conducted on potential and existing habitat to provide adequate protection and maintenance of species viability.

References.

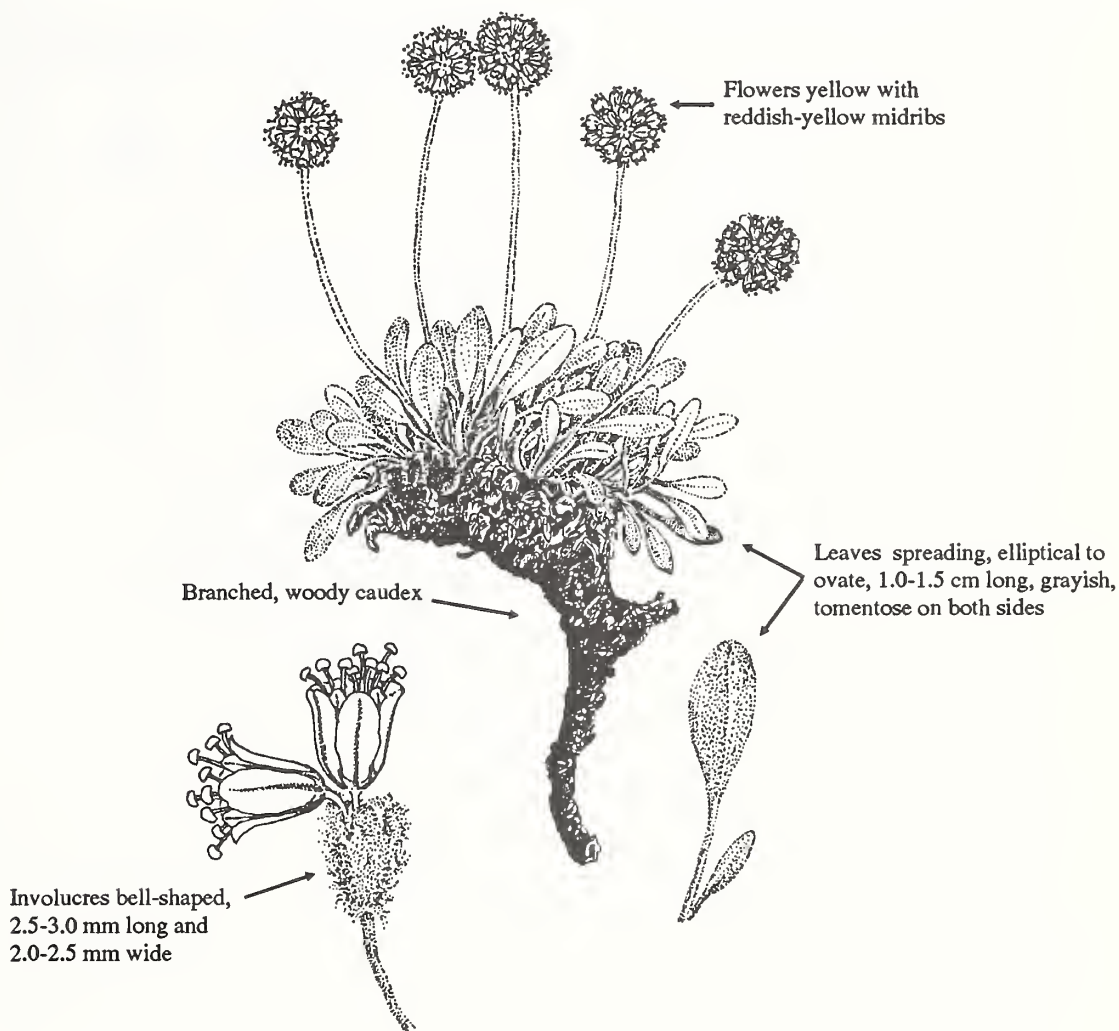
Reveal, J.L. 1965. A new alpine *Eriogonum* from Nevada. *Leafl. of West. Bot.* 10(11):183-186.



Distribution of *Eriogonum holmgrenii*.

LEWIS'S BUCKWHEAT

Eriogonum lewisii Reveal
Polygonaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/NV-S1

Description.—A member of the buckwheat family, Lewis's buckwheat is low and rounded, forming a compact to slightly spreading mat, 1-4 dm across and up to 1 dm high. It arises from a stout, gnarled, woody taproot. The leaves are elliptic to ovate, 1.0-1.5 cm long, and grayish woolly on both sides, becoming less so and greenish with age on the upper surface. The stems are 4-10 cm long. The flowers are yellowish with reddish yellow midribs. The stamens are exserted and the anthers are yellow.

Reproduction.—A long-lived perennial herb, this buckwheat produces light brown achenes, 3.0-3.5 mm long which taper to a long, 3-angled, minutely bristled beak. Flowering occurs from June through early August with fruit produced in late July and August.

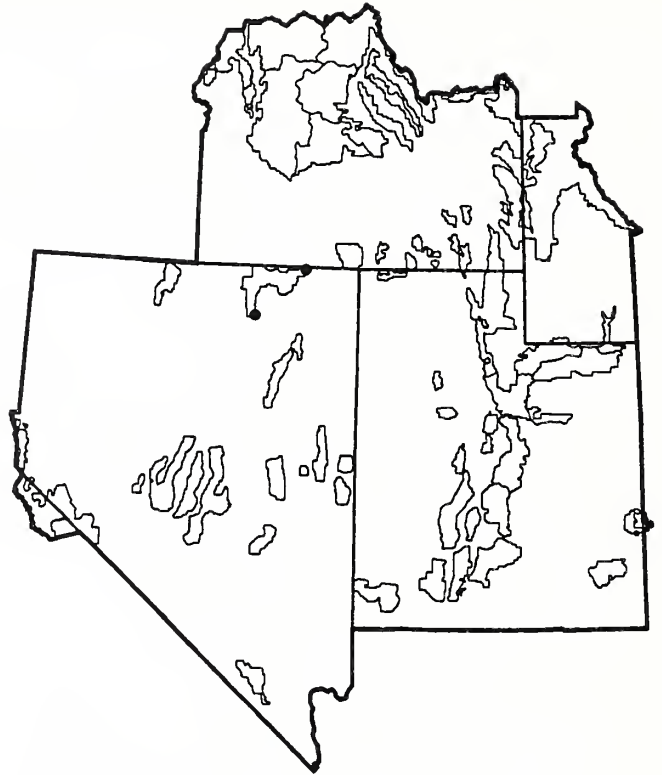
Habitat.—Exposed rocky ridges with sagebrush at high elevations above 8,300 feet.

Distribution.—Known only from Independence Mountains and south of Elk Mountain of northeastern Nevada in Elko County.

Management Implications.—Very little information is available or work completed on this species. All known habitats should be considered essential for species survival.

References.

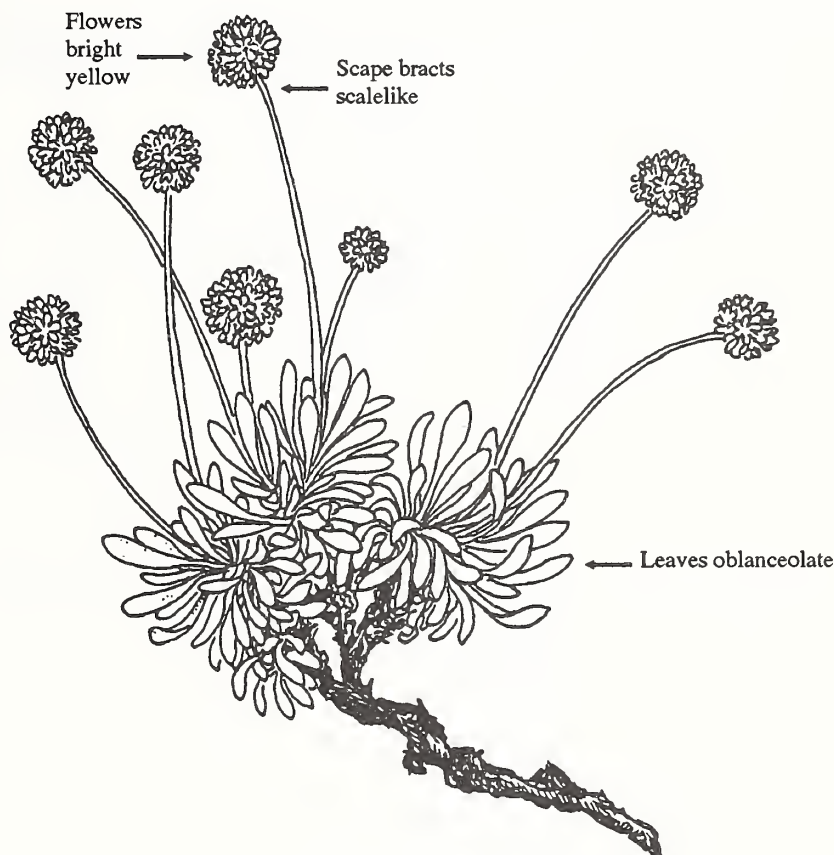
Reveal, J. 1985. New Nevada entities and combinations in *Eriogonum*. *Great Basin Natur.* 45:277.



Distribution of *Eriogonum lewisii*.

GUARDIAN BUCKWHEAT

Eriogonum meledonum Reveal
Polygonaceae



Plants forming dense sprawling mats

USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G1/ID-S1

Description.—A member of the buckwheat family, guardian buckwheat forms dense sprawling mats, 1-2 dm across. The leaves are all basal, the blades are spatulate to narrowly elliptic, densely grayish-tomentose. Flowering stems are scapose, erect, and 4-10 cm long. The flowers occur in capitate heads, are bright yellow, 2.5-3.0 mm long, and glabrous. The stamens are long and exserted with yellow anthers. The bracts on the stem are scale-like.

Reproduction.—Flowering begins in late June and continues through mid-July. The mature brown achenes are shed in August. The dense sprawling mats are apparently long-lived.

Habitat.—It is found in unstable scree slopes on granite parent material at about 6,200 feet elevation.

Distribution.—Endemic to central Idaho in Stanley Basin, Custer County.

Management Implications.—This species is restricted to a few populations, all vulnerable to a catastrophic event. Essential habitat areas need to be designated and protected.

Survey work has been completed by the Idaho Natural Heritage Program.

References.

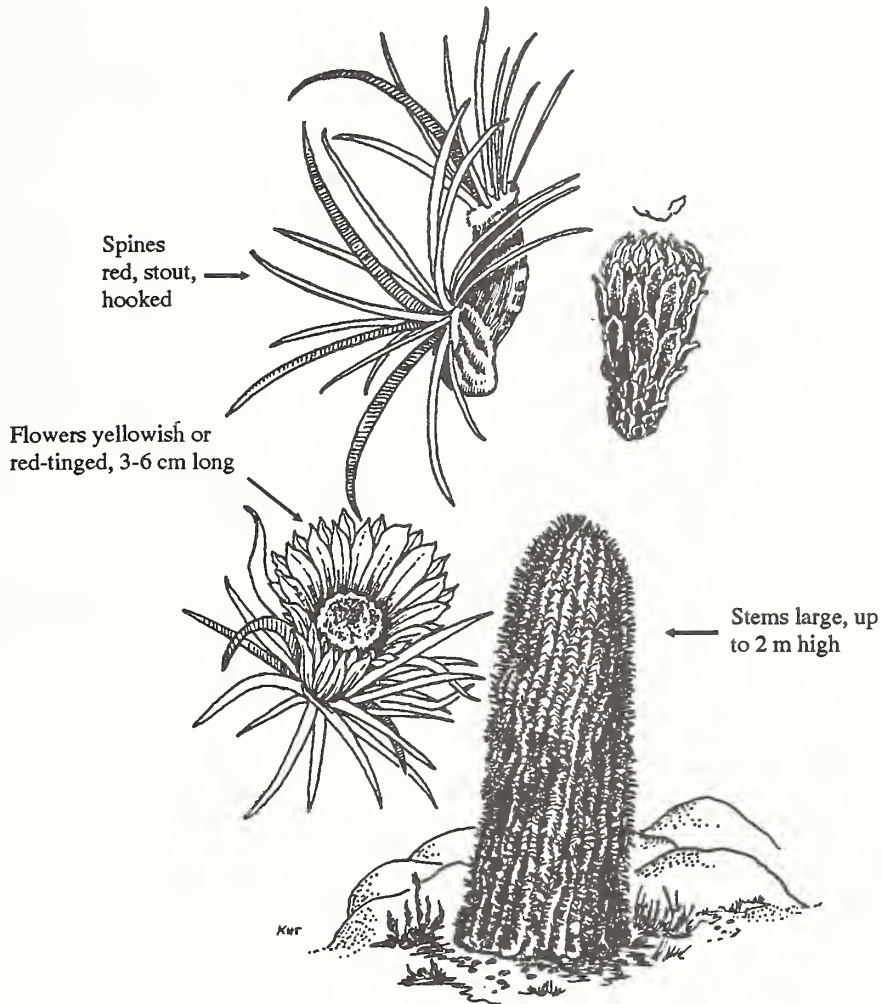
Reveal, J.R. 1989. New combinations and novelties in *Eriogonum* (Polygonaceae: Eriogonoideae). *Phytologia* 66(3):251-265.



Distribution of *Eriogonum meledonum*.

BARREL CACTUS

Ferocactus acanthodes Britt. and Rose var. *lecontei* (Engelm.) Lindsay
Cactaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G5/NV-S5

Description.—The stem on this large, columnar cactus is simple and unbranched. It grows to a height of 2-15 dm and a width of 2-5 dm. It has 20-30 ribs and an areole 1.0-1.5 cm long. This cactus appears brown-woolly when young. The spines may vary from red, pink, to yellow in color. There are 1-4 central spines, 4-8 cm long, and curved. The radial spines are both coarse and slender. The flowers are yellowish to red-tinged and 3-6 cm long. The sepals and

petals are oblong to spatulate shaped and the filaments are yellow in color.

Reproduction.—This cactus flowers primarily in May or June, but sporadic flowering may occur at other times depending on moisture conditions. The ovaries appear scaly, rather than woolly. The fruit is 3.0-3.5 cm long and the seeds are 2-3 mm long. Most plants live for many years.

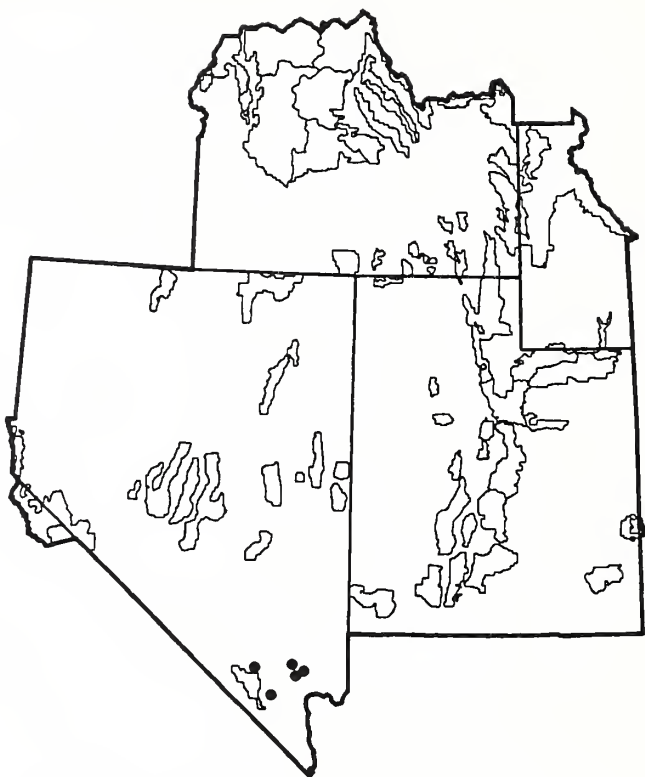
Habitat.—Occurs in sandstone and limestone outcrops in creosote bush communities. The range of elevation is 1,000-5,000 feet.

Distribution.—Found in Clark, Lincoln, and Nye counties Nevada and in Arizona, California, and Utah.

Management Implications.—The species and all varieties are on the decline throughout their range. State protection laws are needed in Utah to ensure protection of populations. The species is protected in Nevada and other states by state statutes. However, overcollecting (mostly illegal) by commercial groups and private home owners continues. A coordinated effort is needed by all states and agencies to identify essential habitats and ensure that protective measures are strictly enforced.

References.

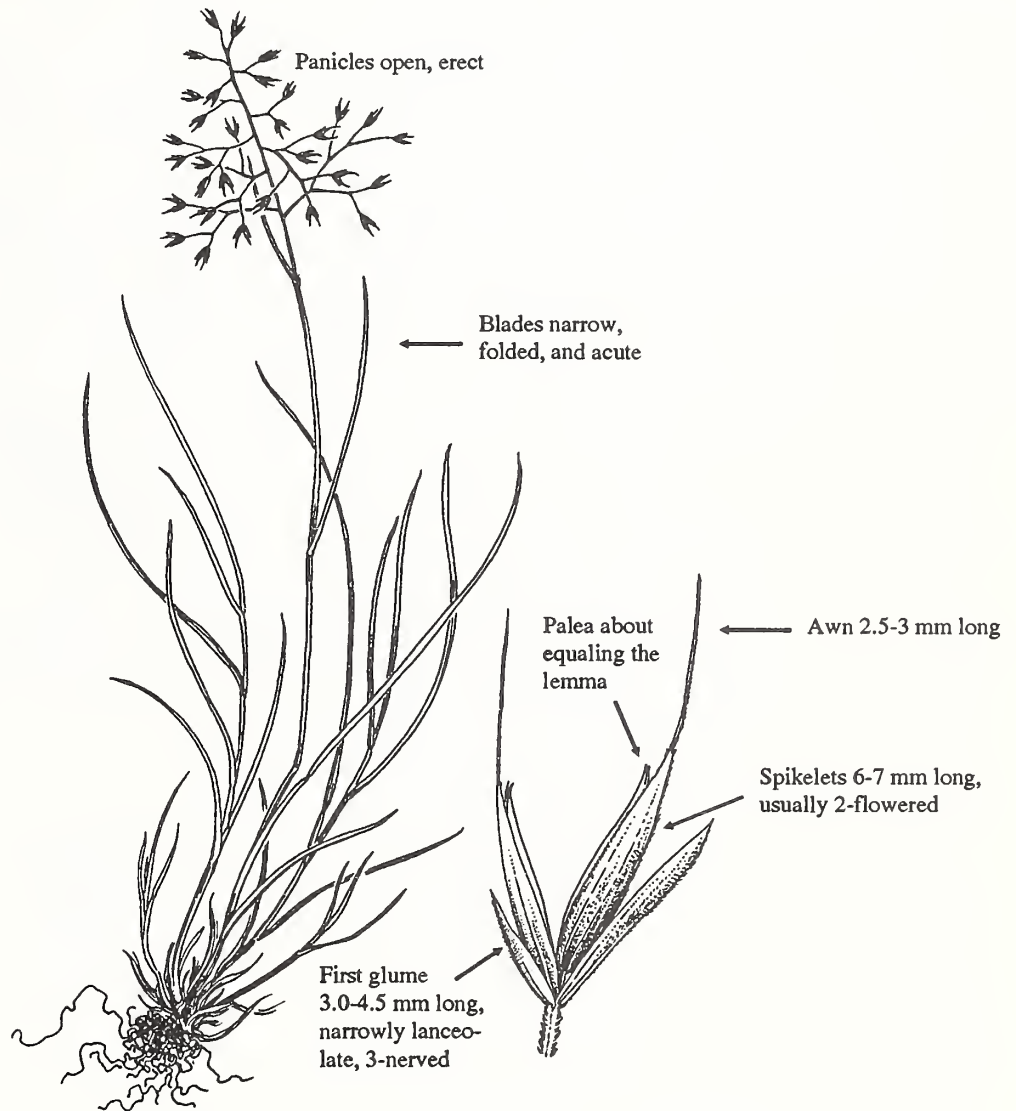
Benson, L. 1969. The cacti of Arizona. Univ. Ariz. Press. pp.163-167.



Distribution of *Ferocactus acanthodes lecontei* in Nevada.

SEDGE FESCUE

Festuca dasyclada Hackel ex. Beal
Poaceae (Graminae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S1

Description.—This member of the grass family is tufted, growing 1.5-4.0 dm tall. The stems are erect or somewhat bent and have little to no hairs. The blades are 0.5-2.0 mm wide, 5-15 cm long, and tightly rolled. The flower cluster is open and erect with marginal hairs on the prominent angles. Spikelets are 5-7 mm long, 1-3 flowered, and pale green in color. The glumes or bracts at the base of the spikelet are unequal and 2.6-4.5 mm in length. The lemmas

are mostly rounded on the back, 5-6 mm long, and 5-nerved with the mid nerve prolonged as an awn. The palea is about equal to the lemma.

Reproduction.—A perennial, flowering occurs in July and is fully mature by September. The fruit is an achene. Plants die back to the perennial root for overwintering.

Habitat.—Sedge fescue grows on bare hillsides among sagebrush-grass communities on the Green River Shale Formation between 7,119-8,480 feet elevation.

Distribution.—It is restricted to a few populations in Emery, Sanpete, Wasatch, Utah, and Garfield counties, Utah and western Colorado.

Management Implications.—This species is located on formations where extensive oil extraction could take place in the future, thus destroying the habitat. Other populations occur in areas subject to moderate grazing and timber harvesting, which may impact it if biological evaluations are not conducted on project activities. The type specimen is from Sanpete County, Utah. It has probably been extirpated from the 2 historic locations in Sanpete County, including the type locality. Repeated searches in these areas have all been unsuccessful in relocating the species. Historically, these habitats received excessive livestock grazing resulting in heavy losses of soil and vegetation.

References.

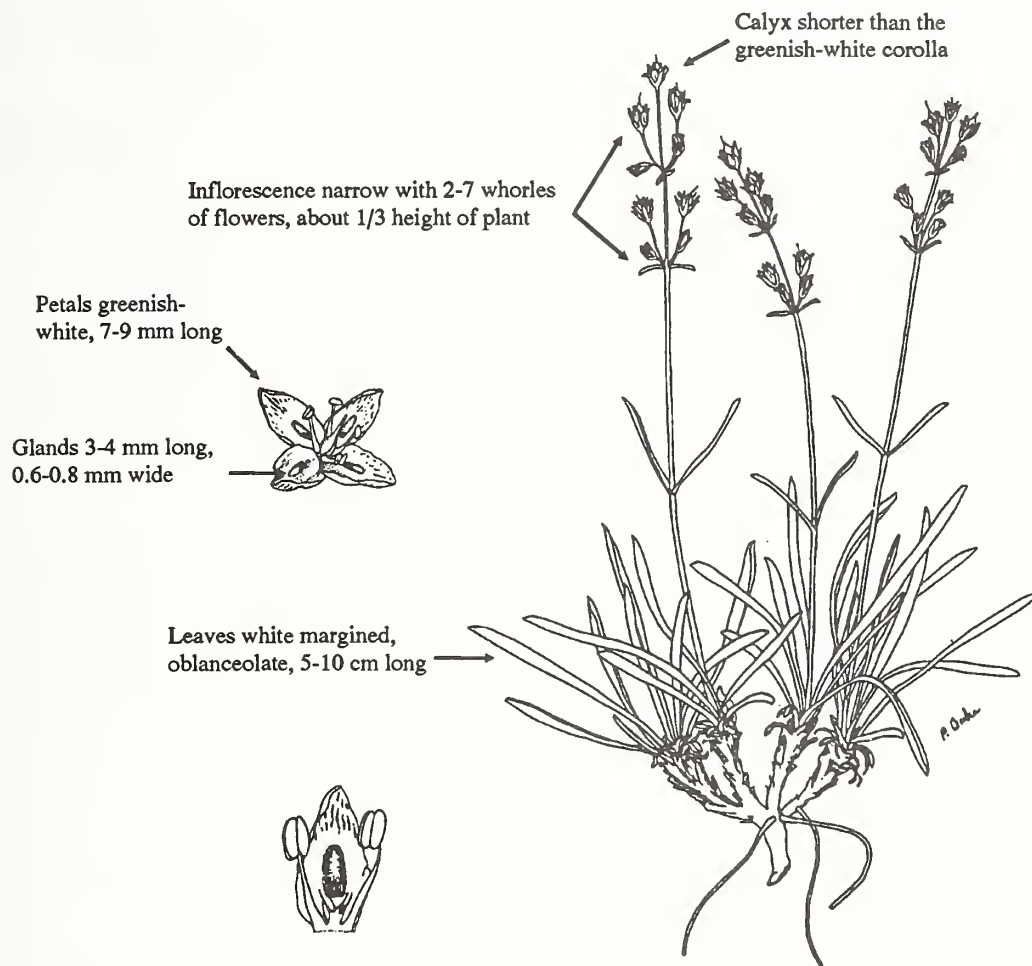
Beal, W.J. 1896. Grasses of North America 2:602.



Distribution of *Festuca dasyclada* in the Intermountain Region.

PAHUTE GENTIAN

Frasera pahutensis Reveal
Gentianaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2

Description.—This member of the gentian family develops from a branched root-stock with 5-10 branches arising from a woody taproot. It has slender stems 1-3 dm long with minute, soft hairs. The basal leaves are green with white margins, oblanceolate in shape, and 5-10 cm in length. The leaf margin is curved or scalloped. The stem leaves are reduced in size and narrowly oblanceolate. The inflorescence or flower cluster has 2-7 whorls of flowers covering

1/3 or less the total plant height. The petals are greenish-white with dark purple spots above the gland. The petals are 7-9 mm long and the glands are 3-4 mm long.

Reproduction.—This is a long-lived perennial, flowering in June possibly in July. The fruit is an oblong capsule 0.9-1.3 cm long. The capsule has a beak 3-4 mm long that breaks away when the capsule opens. The capsule produces 3-4 tan, oblong seeds. These seeds measure 4.5-5.5 mm in length.

Habitat.—The species occurs predominantly on gravelly slopes and valley bottoms in alluvial soils in pinyon-juniper,

sagebrush, and bitterbrush communities. The elevation range is between 7,200-8,300 feet.

Distribution.—Endemic to central and southern Nevada in Nye county.

Management Implications.—Overgrazing by either domestic or wild animals, mining, road construction, and ORV's create existing and potential threats. Some survey work was completed in 1990. These data need to be evaluated and management requirements identified and implemented to ensure viable population levels are maintained.

References.

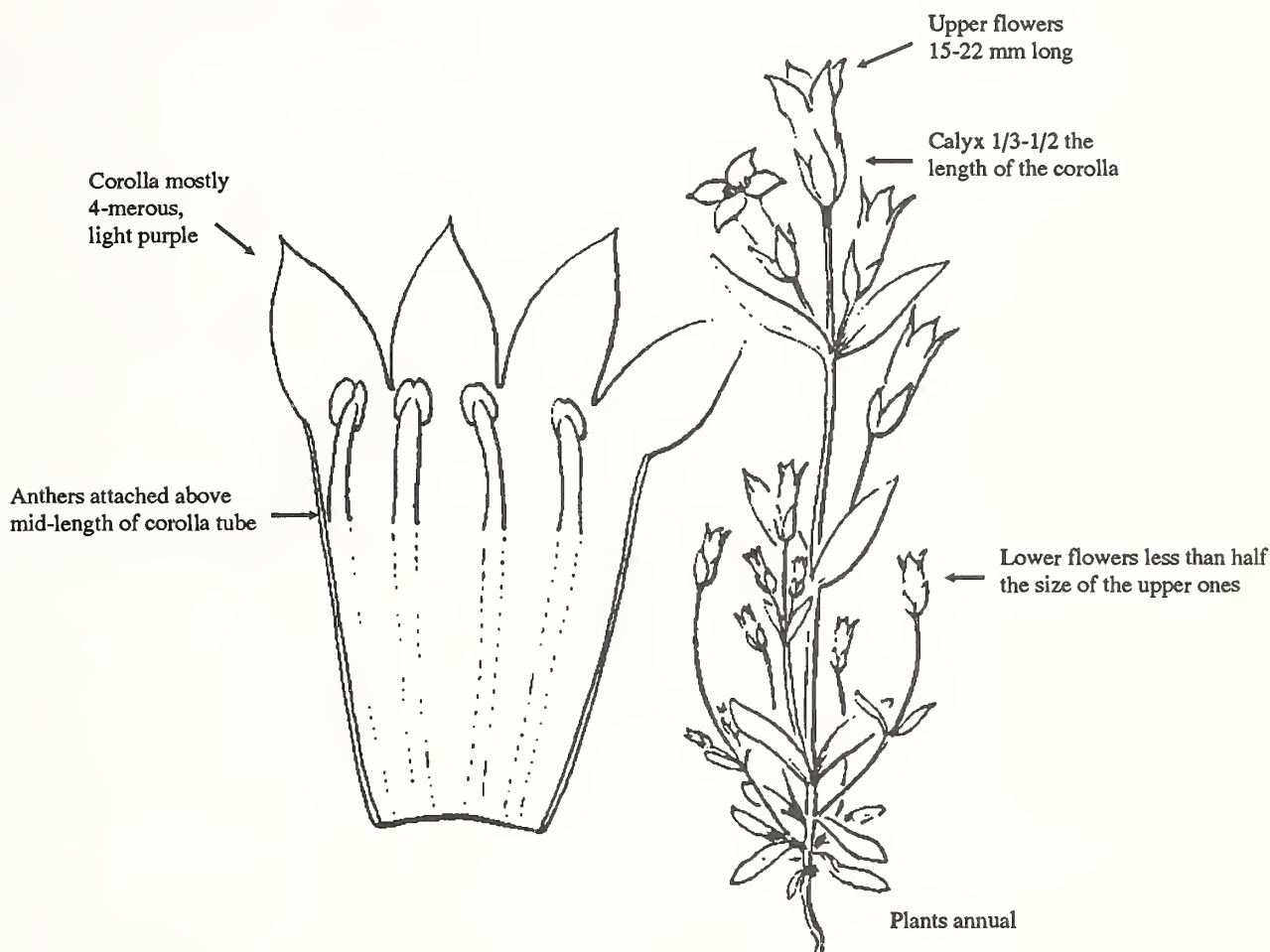
Reveal, J. 1971. A new *Frasera* from southern Nevada (Gentianaceae). Bull. Torr. Bot. Club. 98(2):107-108.



Distribution of *Frasera pahutensis*.

FOUR-PARTED GENTIAN

Gentiana propinqua Richards
Gentianaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S1

Description.—A member of the gentian family, the four-parted gentian has angled stems with many smaller branches. The basal leaves are oblanceolate, 5-20 mm long. The stem leaves are numerous, ovate-lanceolate, and 1-4 cm long. The lower flowers (near the base) are less than half the size of the upper ones. The upper flowers are 15-22 mm long with lobed sepals which are 1/3-1/2 the length of the petals. The petals are light purple, forming a tube at the base

and flat at the top, and are quick to close. The stamens are equal in length to the petals and are attached above the midlength of the petals. The anthers are bluish-purple.

Reproduction.—An annual, this gentian flowers from July to August. It forms a capsule whose many seeds are ovoid, smooth, and pale yellow. New plants are produced from the seed bank.

Habitat.—High elevation meadows and streambanks above 9,800 feet elevation.

Distribution.—From Alaska south in the Rocky Mountains to British Columbia and Alberta, into Idaho in Custer and

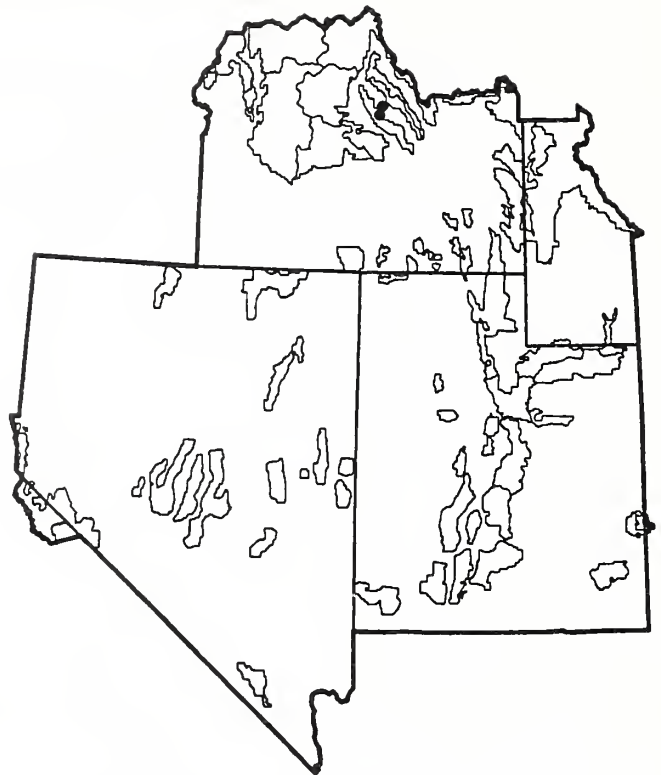
Fremont counties and Montana, eastward to Quebec and Newfoundland.

Management Implications.—This species is subject to usual impacts to riparian areas from livestock grazing. Areas occupied by this taxon receive high recreational use. The degree of impacts should be determined through monitoring studies on key populations on the Challis National Forest.

References.

Richards, J. 1823. *Gentiana propinqua*. App. Frank. Journ. 734.

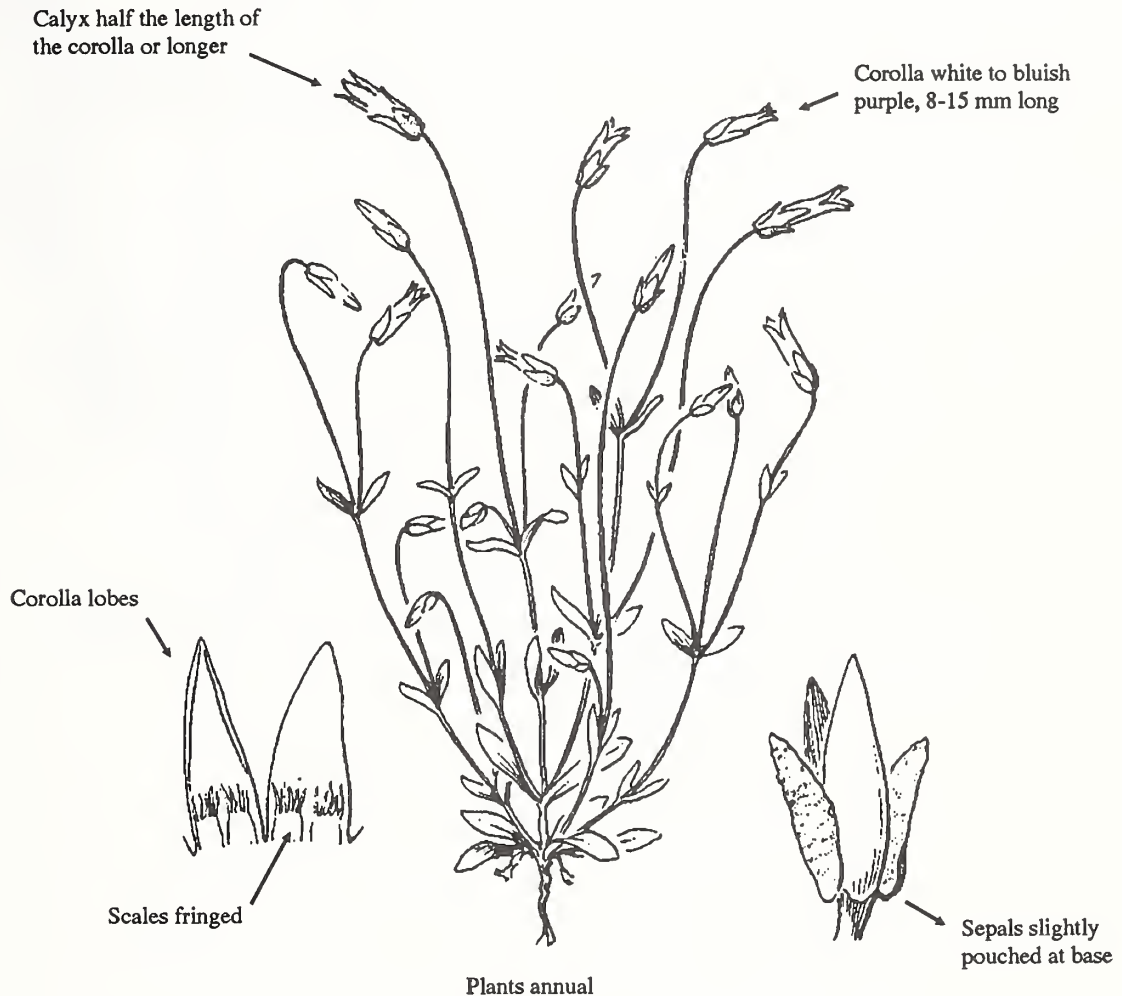
Greene, E.L. 1904. *Amarella propinqua*. Leaflet 1:53.



Distribution of *Gentiana propinqua* in the Intermountain Region.

SLENDER GENTIAN

Gentianella tenella Rottb.
Gentianaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G4/ID-S1

Description.—A member of the gentian family, slender gentian grows 4-15 cm tall with simple to freely branching stems near the base. The stems are 4-angled and slender. The basal leaves are oblanceolate, 3-10 mm long, while the few stem leaves are opposite and 5-15 mm long. The flowers are 8-15 mm long at the top of the stalk. The sepals are half the length of the petals or longer and slightly pouched at the base. The petals are tubular and white to

bluish purple, each fringed by 2 basal scales. The stamens are shorter than the petals.

Reproduction.—An annual herb, this gentian flowers from July to August. Its fruit, a capsule, slightly exceeds the petals. The seeds are yellow, ovoid, and nearly smooth.

Habitat.—Moist subalpine and alpine grassy meadows and slopes. Elevation between 9,000-10,000 feet.

Distribution.—Circumboreal in widely separated mountain ranges, extending south in North America to California, Nevada, and Arizona. Disjunct in the south Sierra Nevada and White Mountains of California and Nevada. Known

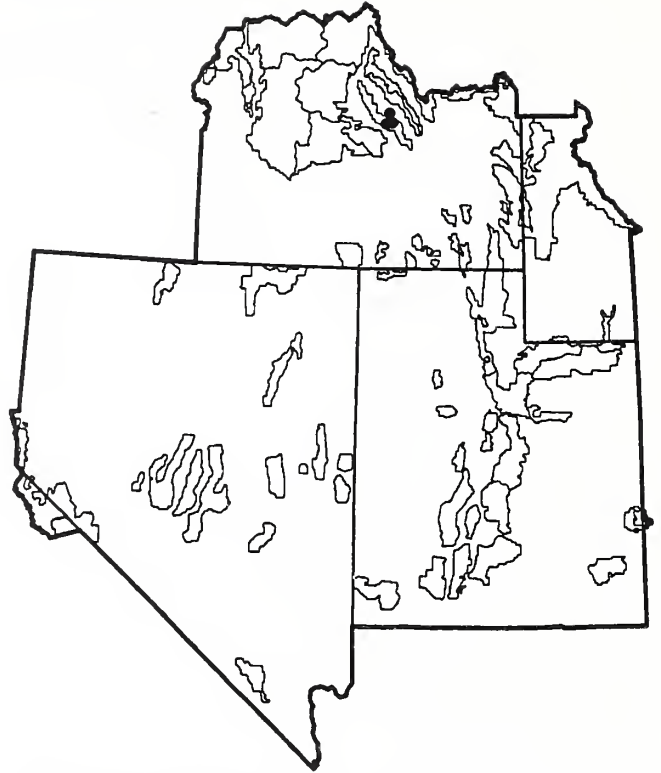
from Yellowstone National Park, Wyoming and Custer County, Idaho.

Management Implications.—Livestock graze in the meadows, but because of its low stature, effects on the plant may not be significant. Monitoring studies should be established to determine the level of impacts if any. Essential habitat for this species in Idaho occurs on the Challis National Forest.

References.

Rottboell, C.F. 1770. *Gentiana tenella*. Acta. Hafn. 10:436.

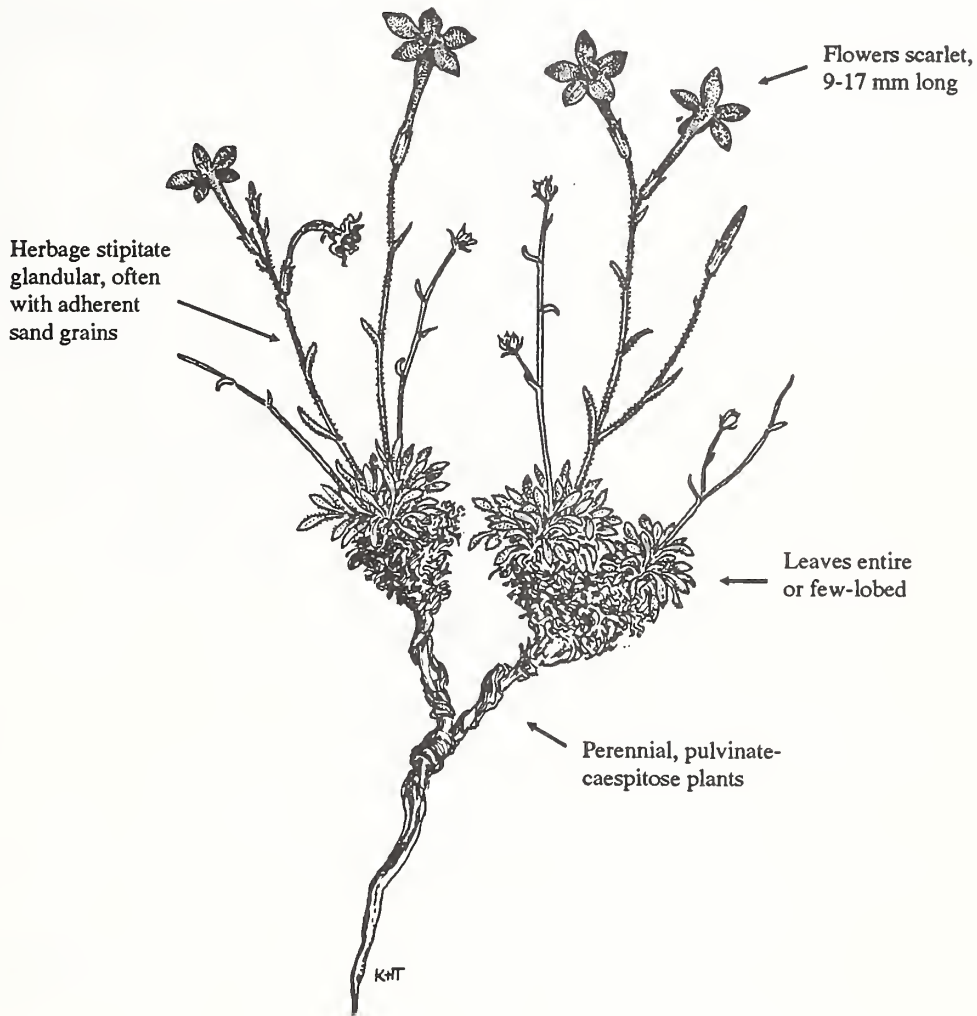
Borner, C.J. 1912. *Gentianella tenella*. Fl. Deut. Volk. 542.



Distribution of *Gentianella tenella* in Idaho.

RABBIT VALLEY GILIA

Gilia caespitosa Gray
Polemoniaceae



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/UT-S1

Description.—A member of the phlox family, Rabbit Valley gilia grows in clumps from a taproot and branching caudex. It is clothed with persistent leaf bases and terminated by rosettes of leaves. The herbage is glandular with adherent sand grains. Flowering stems are 3-8 cm tall. The basal leaves are 3-20 mm long and oblanceolate to linear. There are few stem leaves. The flowers are solitary or few to several per stalk. The sepals are 4-6 mm long with lobes

subequal to the tube. The petals are scarlet, fading maroon or blue purple with a 9-17 mm long tube. The lobes are 4-6 mm long and the stamens are included.

Reproduction.—A long-lived perennial herb, flowering occurs for this gilia from June through July. Seed is set in late July into late August. The fruit is a few seeded capsule.

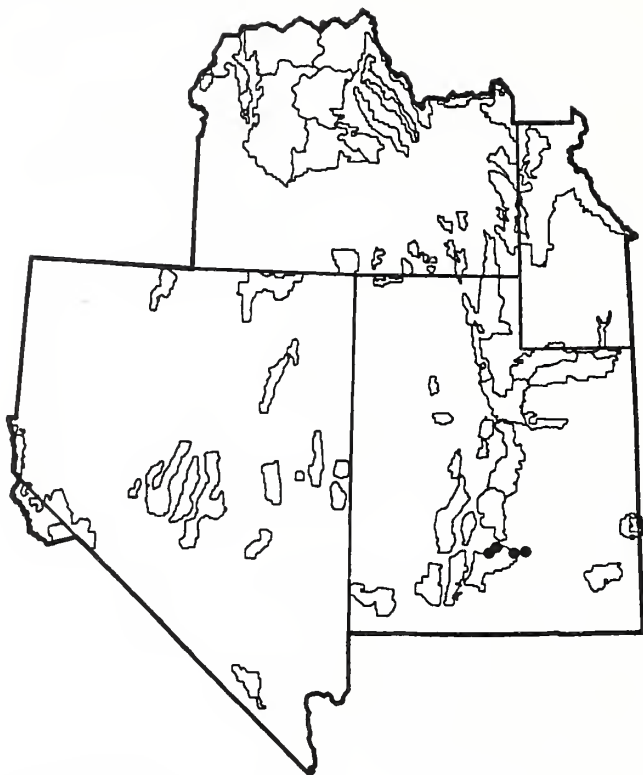
Habitat.—Dry, rocky sites and white talus slopes, confined to the more protected pockets and on north aspects. The soil is shallow and calciferous. This plant is found mostly in the pinyon-juniper and mahogany plant communities on the Carmel and Navajo sandstone formations. Elevation between 5,200-8,500 feet.

Distribution.—Endemic to the sandstone cliffs at the southern extreme of Rabbit Valley, near Teasdale, in southwestern Wayne County, Utah.

Management Implications.—Most of the habitat this plant is known to occur on is staked as mining claims. The future of these sites is in question if mining for limestone and gypsum continue, especially in this area. The U.S. Fish and Wildlife Service (FWS) is now in the process of developing a federal listing package to list the species as endangered. The proposed rule should be published early in 1991. Insufficient data are available on potential habitats on the Dixie National Forest to respond to any action by the FWS to list the species. Survey work has not been completed on National Forest administered lands.

References.

Gray, A. 1876. Characters of *Canbye* (n. gen.) and *Arctomecon*. Proc. Amer. Acad. Arts. 12:80.

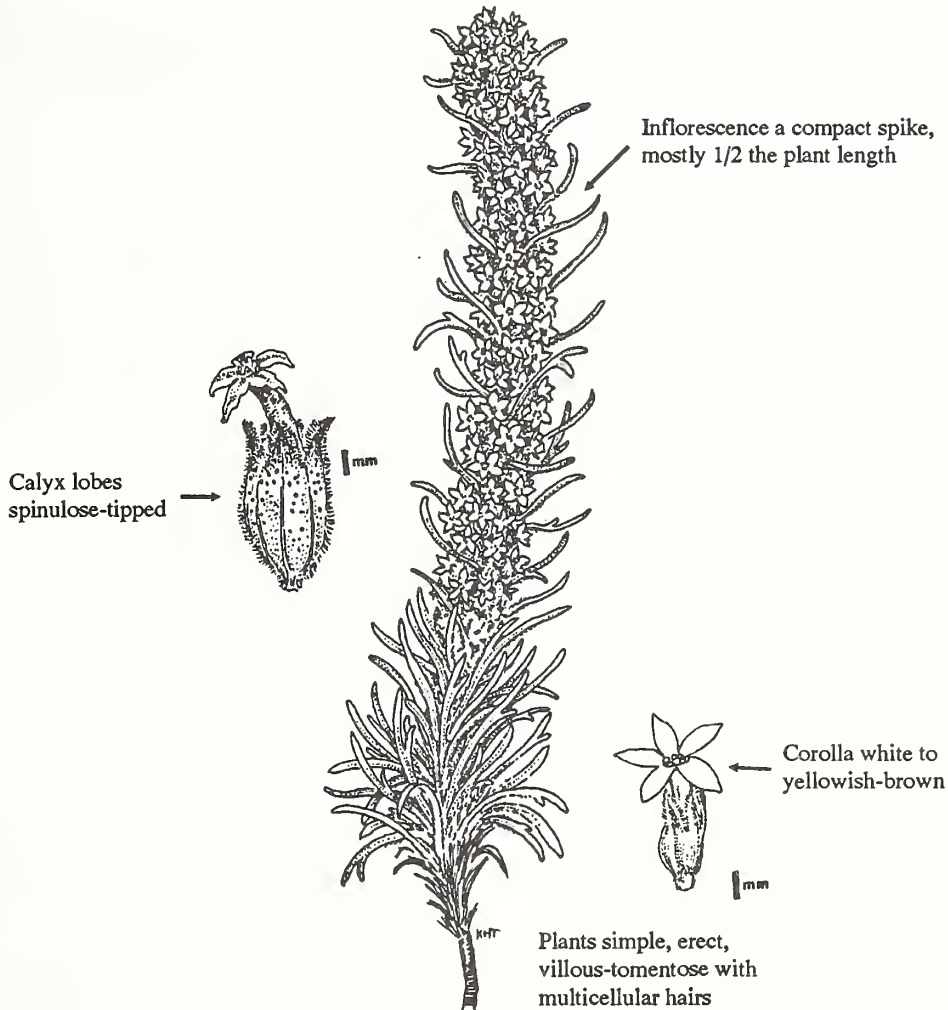


Distribution of *Gilia caespitosa*.

SPIKE GILIA

Gilia spicata Nutt.

Polemoniaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4?/UT-S1

Description.—A member of the phlox family, Spike gilia's herbage has long hairs. The stems are mostly unbranched and 0.5-4.0 dm tall. The leaves are found both at the base and along the stem and are 1.5-7.0 cm long, often some have 1 to several linear lateral segments. The flowers are numerous and are borne on a stalk often covering more than half the plant height. The sepals are 4.5-6.0 mm long. The petals are united, 5-lobed, and whitish or brownish yellow.

Reproduction.—A short-lived perennial, this gilia flowers from May to July. It produces capsules 3.5 mm long, with seeds 2.5-3.0 mm long.

Habitat.—Dry, open places often associated with shale outcrops or clay soil in desert shrub, sagebrush, and juniper communities. Elevation between 5,740-6,200 feet.

Distribution.—Idaho and Montana south to New Mexico. In Utah known from Daggett County and possibly Weber and Morgan counties. A specimen at Brigham Young University (Shoup 43) bears the locality "near Ogden, Utah." The supposition that the specimen is correctly labeled is supported by a previous report for the species from

Weber or Morgan County by the Hayden expedition in 1871 (Welsh et al. 1987).

Management Implications.—Utah populations are small with few individual plants. These are subject to livestock grazing and occur in areas with fairly high populations of deer and antelope. Potential or real impacts are poorly known.

References.

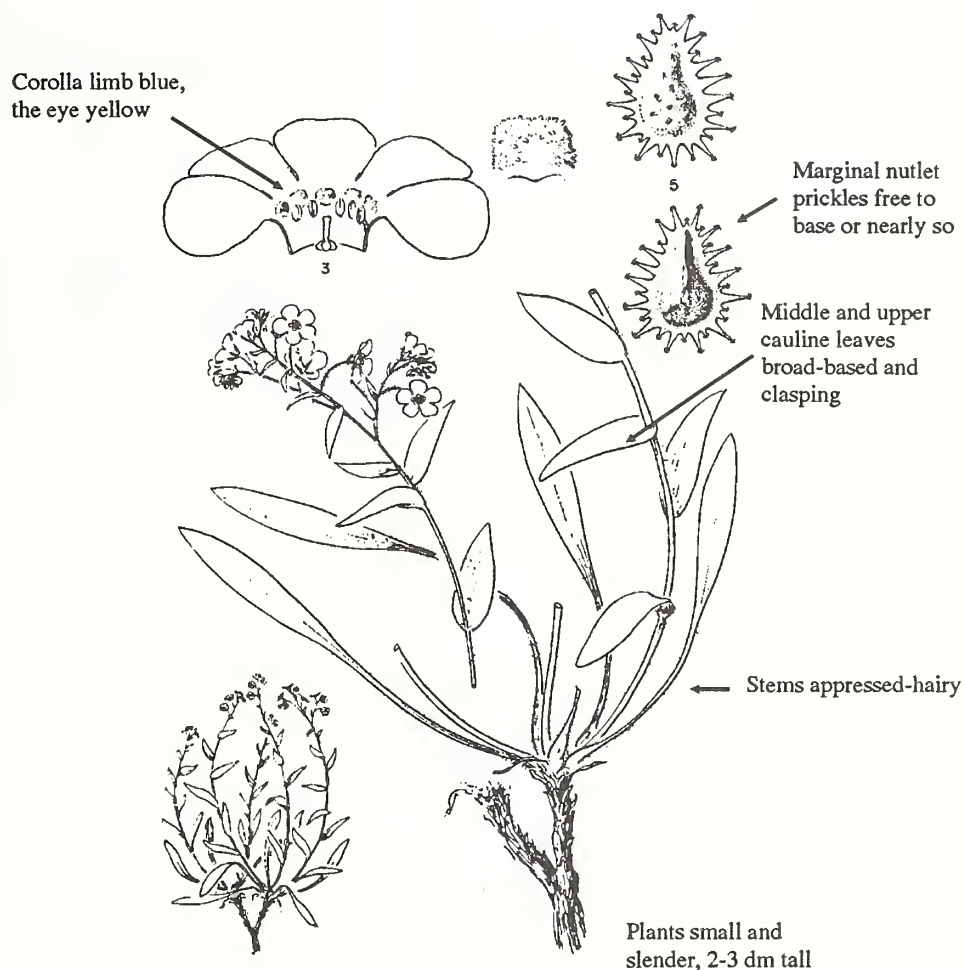
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:462.



Distribution of *Gilia spicata* in Utah.

DAVIS' STICKSEED

Hackelia davisii Cronquist
Boraginaceae



USFWS Status: 3C
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G3/ID-S3

Description.—A member of the borage family, Davis' stickseed has several slender, lax, curved stems, 2-3 dm tall. The stems are thick toward the base and hairy. The basal leaves are oblanceolate, hairy, and up to 10 cm long. The stem leaves are sessile and 2-5 cm long. The flowers are few, blue with a yellow eye, and with a 10-12 mm wide limb.

Reproduction.—A perennial, this hackelia flowers from May to July. Fruiting occurs after the middle of May. The

fruit is a nutlet with marginal prickles which stick to clothing, and fur and wool of animals, aiding in dispersal. Plants die back to the perennial root to overwinter.

Habitat.—Rocky areas, often on cliffs or in talus near the base of cliffs where it is moist and partly shaded on limestone, volcanic, and granitic substrates. Elevation generally below 5,500 feet.

Distribution.—Known only from the drainages of the main Salmon River and major tributaries in the vicinity of Shoup to the confluence with the Middle Fork, and the mid to lower part of the Middle Fork and major tributaries. Lemhi, Custer, and Valley counties, Idaho.

Management Implications.—Increasing recreational use in the area via float trips and ORV traffic can cause added pressure on the species. The added possibility of opening gold mines, mineral deposits, and associated roads and facilities will also threaten its survival. Surveys should be completed on National Forest administered lands, especially along the Middle Fork of the Salmon River. Monitoring studies are needed to evaluate cumulative effects from existing threats.

References.

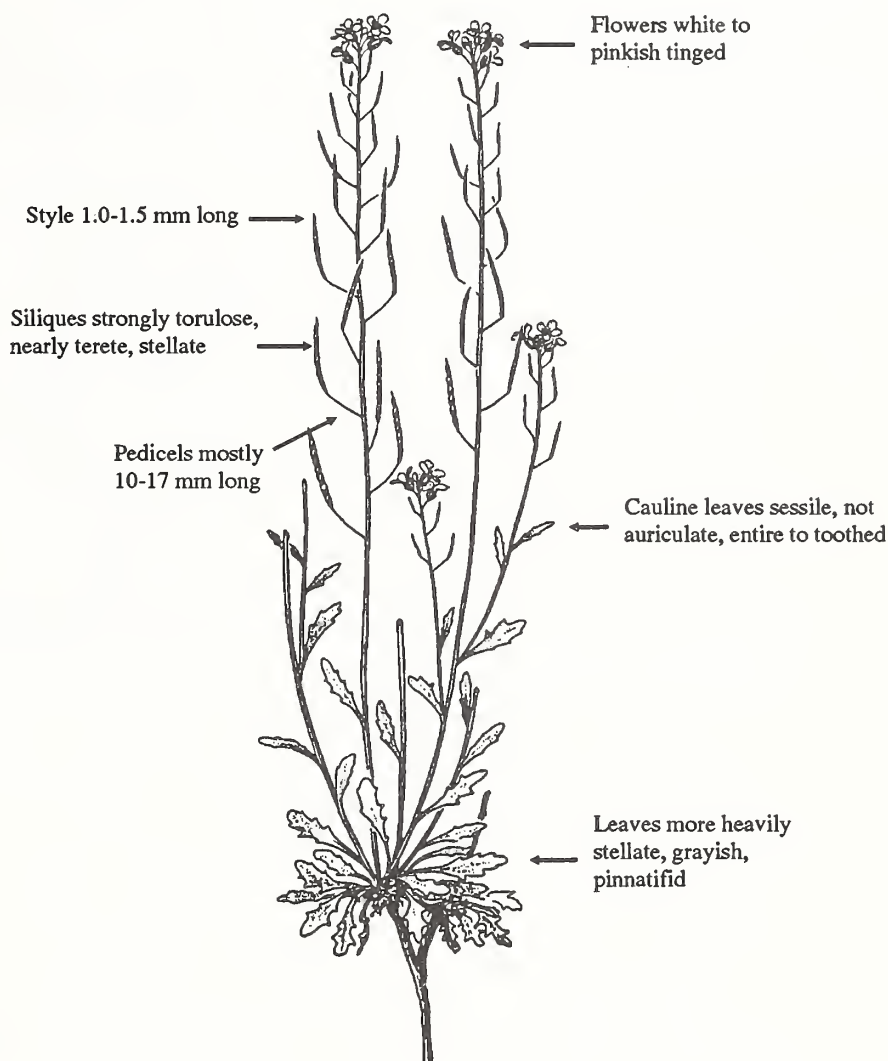
Hitchcock, C.L., et. al. 1959. Vascular plants of the Pacific Northwest. 4:208-210.



Distribution of *Hackelia davisii*.

PUZZLING HALIMOLOBUS

Halimolobus perplexa Henderson var. *lemhiensis* C.L. Hitchcock
Brassicaceae (Cruciferae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T4/ID-S4

Description.—A member of the mustard family, puzzling halimolobus grows with a simple or branched caudex. The herbage is somewhat grayish with coarse, 3-7 rayed bristles. The stems are branched from near the base and 1-3.5.0 dm tall. The basal leaves are numerous, 1-5 cm long, and deeply serrate-dentate to shallowly pinnatifid. The stem leaves are reduced, the upper ones are sessile and more deeply toothed

than the basal. The petals are white, sometimes pinkish-tinged, and 3-8 mm long.

Reproduction.—A short lived perennial or biennial, this plant flowers from May to June. Its fruit is an erect silique, 1-2 cm long which is constricted between the seeds. The pedicels are 10-17 mm long and the style is 1.0-1.5 mm long. The seeds are slimy when wet.

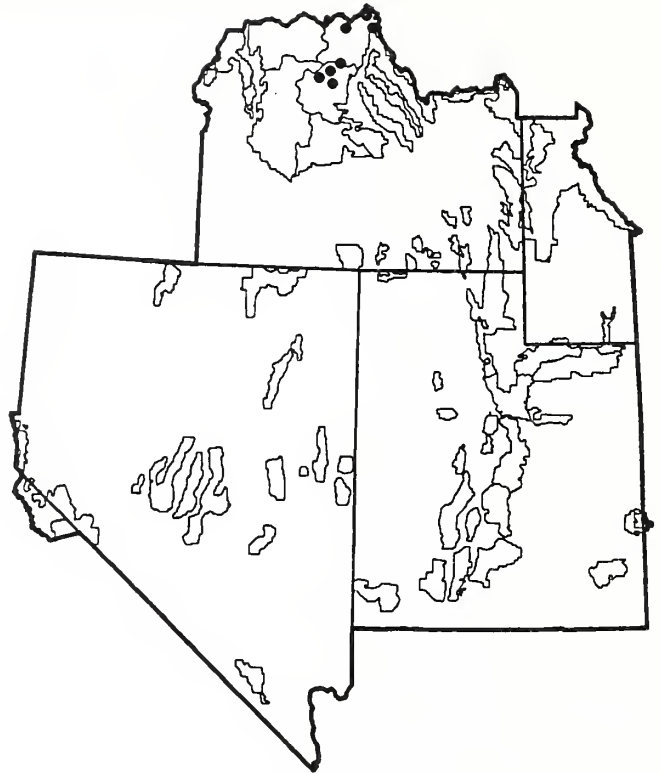
Habitat.—Dry, unstable, gravelly or sandy slopes, roadcuts, and dredge tailings composed of both quartzite and granitic substrates. Elevation between 3,000-5,000 feet.

Distribution.—Endemic from northwestern Custer to northern and western Lemhi counties, Idaho. It seems to be confined to the drainage of the Salmon River.

Management Implications.—Road construction, noxious weed competition, and spraying are the main threats. The Idaho Natural Heritage Program has completed survey work on this species. Their recommendation was to delete the species from the Intermountain Region Sensitive Species List. Prior to taking this action, the Salmon, Challis, and Boise national forests should determine the impacts from the noxious weed spraying programs on species' viability.

References.

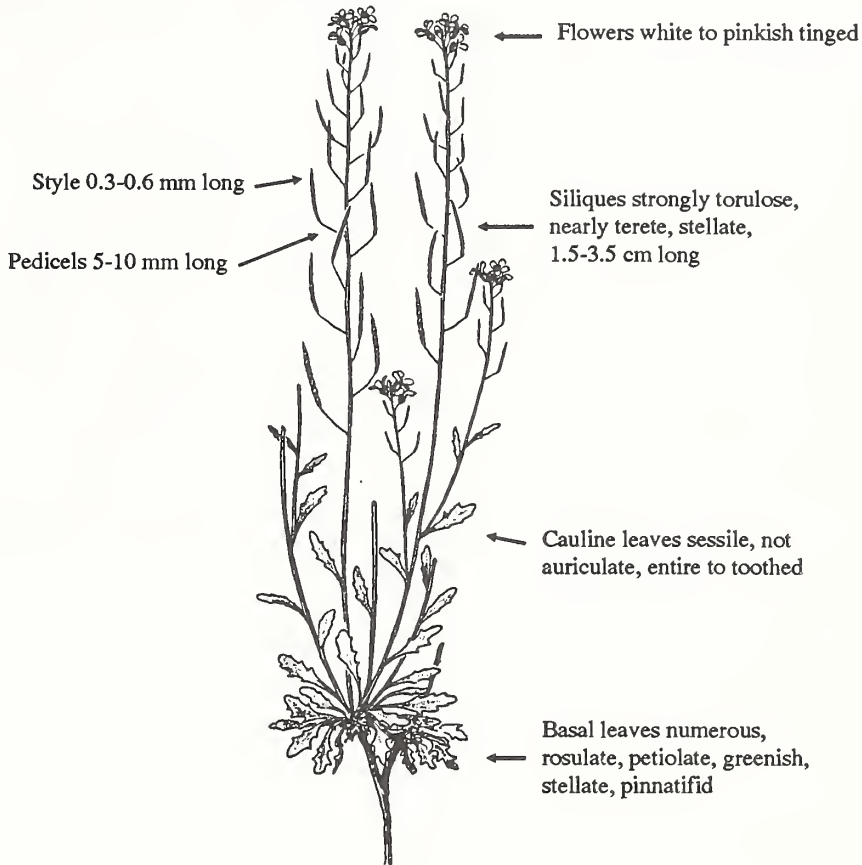
Hitchcock, C.L., et. al. 1964. Flora of the Pacific Northwest. 2:508-509.



Distribution of *Halimolobus perplexa* var. *lemhiensis*.

PUZZLING HALIMOLOBUS

Halimolobus perplexa (Hend.) Rollins var. *perplexa*
Brassicaceae (Cruciferae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4T3/ID-S3

Description.—A member of the mustard family, puzzling halimolobus is short-lived, growing from a simple or branching root system with several simple stems, 1.5-4.0 dm high. The herbage is hairy and grayish. The basal leaves are abundant, broadly oblanceolate, pinnatifid, and 3-5 cm long forming a rosette. The stem leaves are sessile, hairy, and 1.5-3.0 cm long, the lower usually being pinnatifid. The flowers occur alternately on long, upcurved stalks on the

upper portion of the stem. The sepals are hairy and 2-3 mm long. The petals are white or slightly tinged purple and 4-6 mm long.

Reproduction.—An annual (possibly biennial) this plant flowers and fruits from May to September. The siliques are erect, constricted between the seeds, and 1.5-3.5 cm long with a 0.5 mm long style. The seeds are oblong, about 1.5 mm long.

Habitat.—Associated with ponderosa pine, Idaho fescue, and bluebunch grass on basaltic cliffs, gravel slides, talus slopes, ridges, and rocky roadcuts in thin soil, sandy slopes, and moist banks. Elevation between 3,200-7,000 feet.

Distribution.—Endemic to the canyons of the Little Salmon River in Adams and Idaho counties, Idaho on the Payette National Forest.

Management Implications.—Road construction and logging activities have affected the plant and its habitat. Cumulative effects from these impacts should be determined.

References.

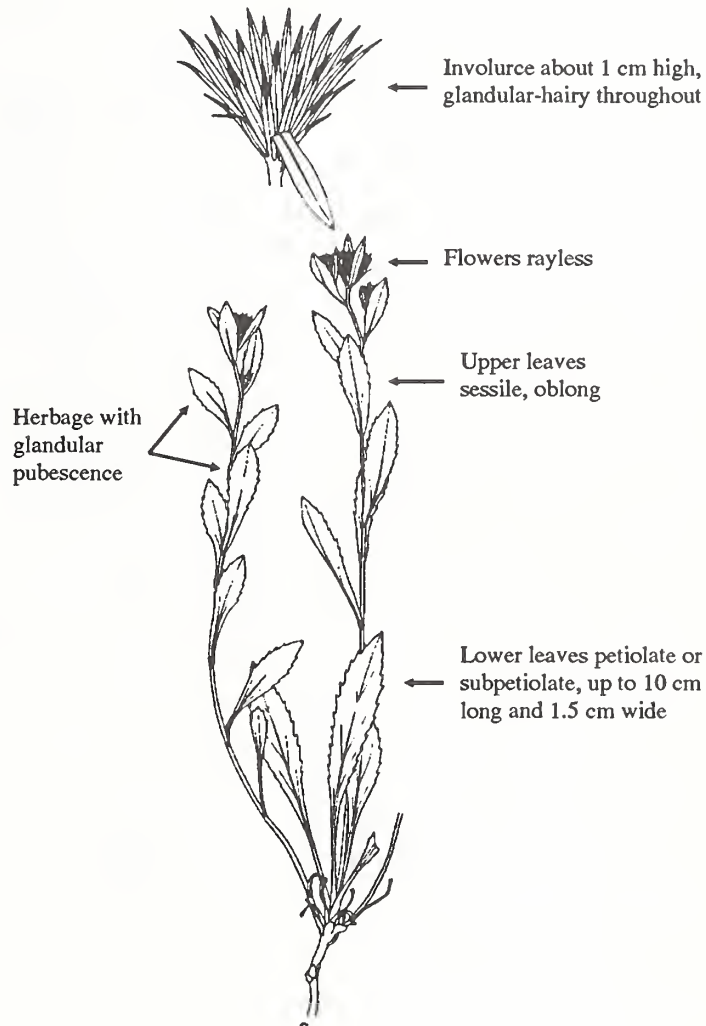
Henderson, L. 1900. *Halimolobus perplexa*. Bull. Tor. Bot. Club 27:342-343.



Distribution of *Halimolobus perplexa* var. *perplexa*

IDAHO GOLDENWEED

Haplopappus aberrans (A. Nels.) Hall
Asteraceae (Compositae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3?/ID-S3?

Description.—A member of the sunflower family, this haplopappus is woody only at the very base and glandular-hairy throughout. It grows 0.5-1.0 dm high with slender, erect stems from a branched crown. The leaves are obovate to oblanceolate, 1-3 cm long, 1-nerved, and prominently tipped. The flower heads are solitary, 1 cm high, and terminating leafy stems. There are no ray flowers and about 30-40 disk flowers. The pappus is about equal to the petals.

Reproduction.—A perennial herb, this plant flowers from July through September. The fruit, an achene, is cylindrical, 1-ribbed, and about equalling the petals in length.

Habitat.—Crevices of granite outcrops among boulders and rocky ground in upper *Abies lasiocarpa* zones on steep slopes and ridge crests. Elevation between 6,000-10,000 feet.

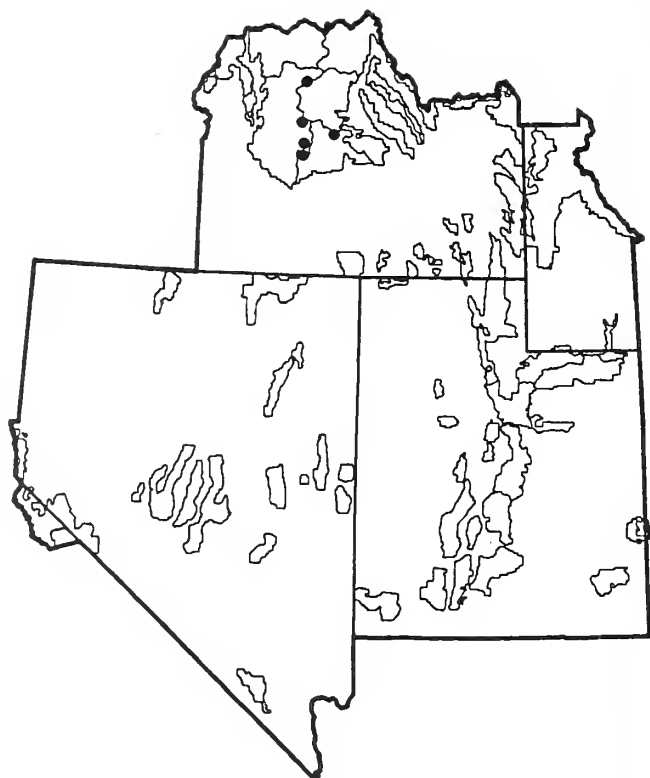
Distribution.—Endemic to Idaho in Valley, Boise, and Elmore counties on the Boise, Challis, and Sawtooth national forests. Nevada plants previously referred to as *H. aberrans* are now *H. alpina*, a recently described taxon endemic to central Nevada.

Management Implications.—Seems to be in little danger due to its rock crevice habitat and rather inaccessible location. Bighorn sheep grazing could have some impacts if populations exceed existing numbers.

References.

Hall, H. 1928. *Haplopappus aberrans*. Carn. Inst. Wash. Pub. 389:185.

Nelson, A. 1912. *Macronema aberrans*. Bot. Gaz. 53:226.



Distribution of *Haplopappus aberrans* in Idaho.

ALPINE GOLDENROD

Haplopappus alpinus L.C. Anderson and S. Goodrich
Asteraceae (Compositae)



Cauline leaves oblanceolate-spatulate, cuneate or clasping the stem, dentate, 3-5.5 cm long, 8-18 mm wide

H. aberrans



H. eximius

Disk flowers golden yellow, rays absent, pappus shorter than the corolla

Outer phyllaries 21-28, leaflike, broadly ovate, 3 nerved and glandular

USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/NV-S2

Description.—This member of the sunflower family develops from a woody root. It grows to a height of 0.7-1.0 dm tall. The stems are glandular-hairy and branched only in the flower clusters. The foliage is dark green and also glandular-hairy. The basal leaves are obovate to oblanceolate in shape. The leaf margins are serrated above the middle, 3-7 mm long, and 10-36 mm wide. The stem leaves are oblanceolate to spatulate, tightly clasp the stem, and are 3.0-5.5 cm long. The flower clusters have usually 1 or up to

5 heads, which are bell-shaped and 10-12 mm long. Disk flowers are golden yellow, ray flowers lacking, and the pappus is shorter than the petals.

Reproduction.—A perennial herb, flowering occurs in late July through September. Numerous achenes are produced on each plant. The perennial roots overwinter and produce new growth the following season.

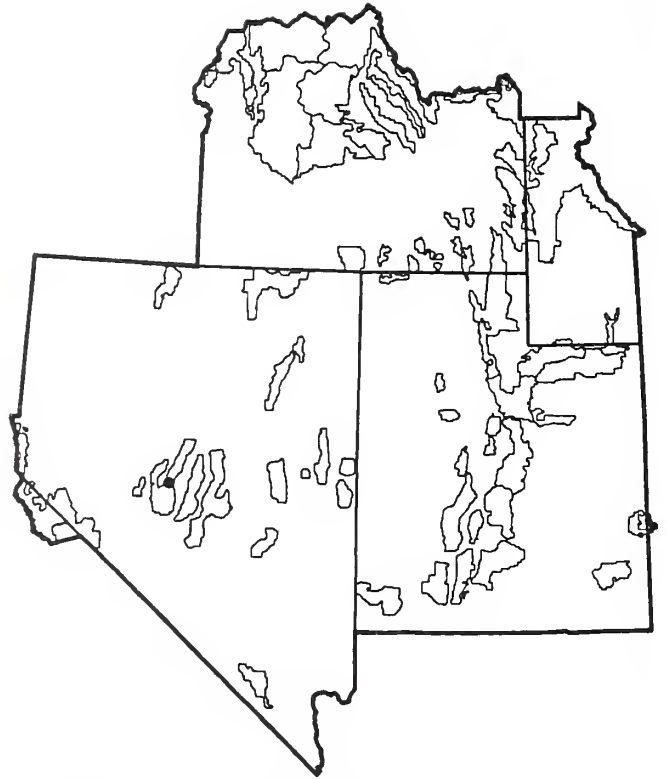
Habitat.—Occurs in crevices of rock outcrops, among boulders, and on rocky ground. Most often it occurs on light colored granites, but occasionally on other substrates. The range of elevation is between 9,000-11,000 feet.

Distribution.—Found on and near the crest of the Toiyabe Range from the Lander-Nye County line south to the head of Steward Creek, Shoshone Mountain, and Mt. Jefferson of the Toiyama Range, Nevada.

Management Implications.—Currently impacted by heavy livestock grazing in central Nevada. Surveys should be completed and essential habitat areas designated.

References.

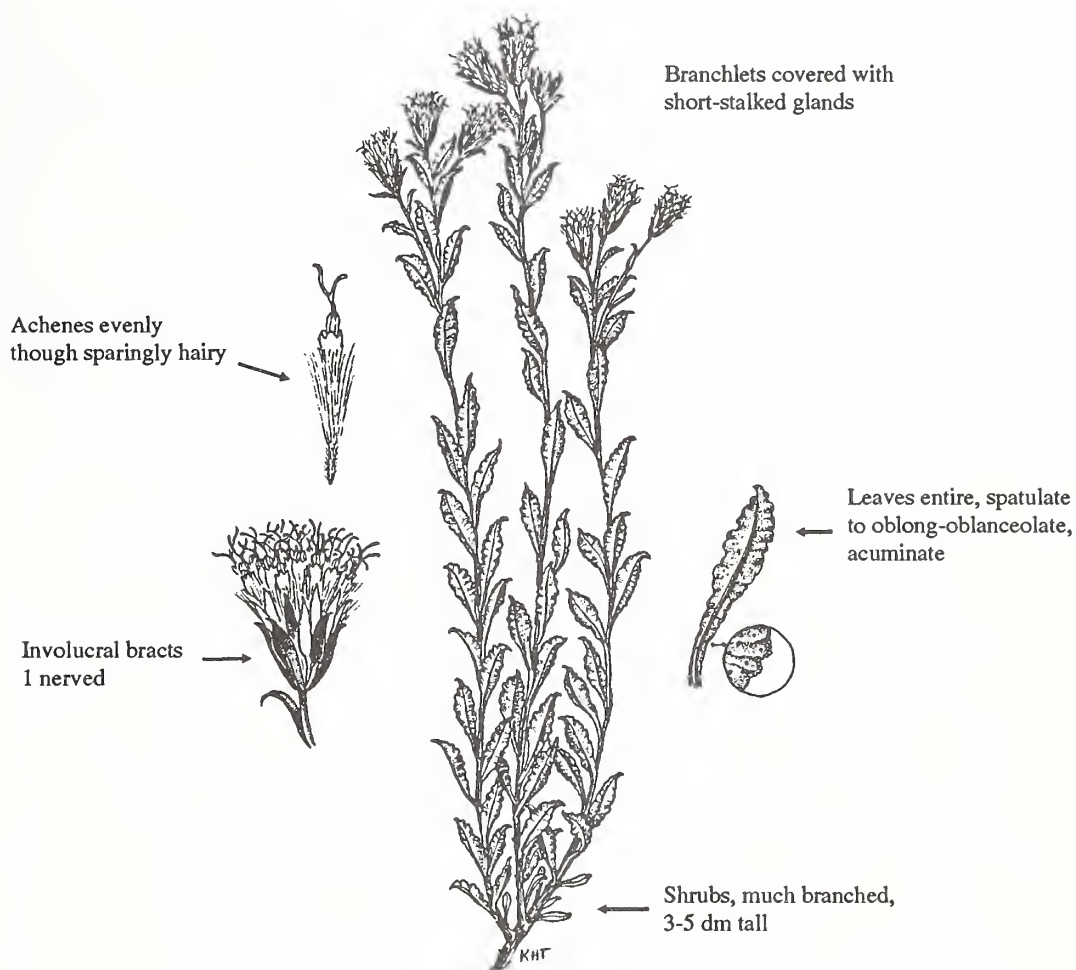
Weixelman, D. and D. Atwood. 1990. Toiyabe National Forest sensitive plants field guide. U.S. Dept. of Agricul., For. Serv., Intermountain Region. 123 pp.



Distribution of *Haplopappus alpinus*.

PINE VALLEY GOLDENBUSH

Haplopappus crispus L.C. Anderson
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the sunflower family, Pine Valley goldenbush is a woody shrub, 3-5 dm (or more) tall. Its many branches are covered with short-stalked glands. The leaves are alternate, 1.5-3.0 cm long, and spatulate to oblong-ob lanceolate with wavy margins. Flower heads occur 1 or 2 or more per branch and are 12.5-16.0 mm long. The bracts are green and leaf-like. Ray flowers are lacking. There are 14-24 disk flowers which are pale yellow. The bracts are 1-nerved, green, the outer leaf-like, and narrowed

with a green tip. The inner bracts are stramineous, abruptly narrowed in to a slender green tip, and erose-ciliate apically. The pappus is 8.0-9.5 mm long.

Reproduction.—This haplopappus flowers and fruits from August to October. The fruit is an achene, 6.5-8.5 mm long with sparse hairs. A long-lived, woody perennial.

Habitat.—Ponderosa pine, fir, manzanita, and aspen communities generally in moderately open settings. Elevation between 5,970-9,200 feet.

Distribution.—Endemic to southwestern Utah in Washington County on the Dixie National Forest.

Management Implications.—This species was described in 1983 from the Pine Valley Mountains. Based on available data, the species appears to be endemic to National Forest administered lands. Surveys are needed to determine the species distribution.

References.

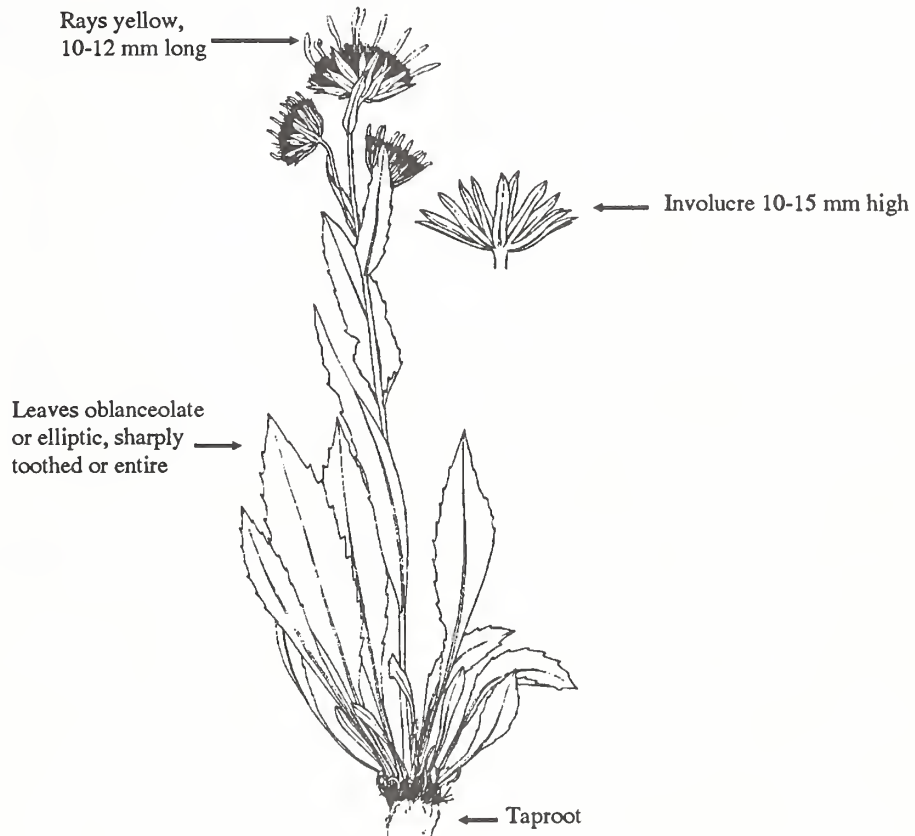
Anderson, L.C. 1983. *Haplopappus crispus* and *H. zionis* (Asteraceae): new species from Utah. *Great Basin Natur.* 43(2):358-364.



Distribution of *Haplopappus crispus*.

BUGLEG GOLDENWEED

Haplopappus insecticuri Henderson
Asteraceae (Compositae)



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G3/ID-S3

Description.—A member of the sunflower family, bugleg goldenweed grows upright, 30-40 cm high with many-celled and jointed white hairs. The leaves are 8-10 cm long, oblanceolate, and sharply toothed or entire. Flower heads are 10-15 mm high. The ray flowers are light yellow, 10-12 mm long, and 20 in number. The disk flowers are exceeded by the pappus.

Reproduction.—Probably a short-lived perennial, flowering for this haplopappus occurs from July to August. The fruit, an achene, is thickly covered with coarse, dull white hairs.

Habitat.—Dry stony ground in sagebrush-grass meadows. Elevation between 5,000-6,000 feet.

Distribution.—Endemic to the western end of Big Camas Prairie, Blaine, and Camas counties, Idaho.

Management Implications.—Hay and cattle production and some dry land farming along with housing development may threaten its habitat. Habitat under National Forest management occurs on the Sawtooth National Forest.

References.

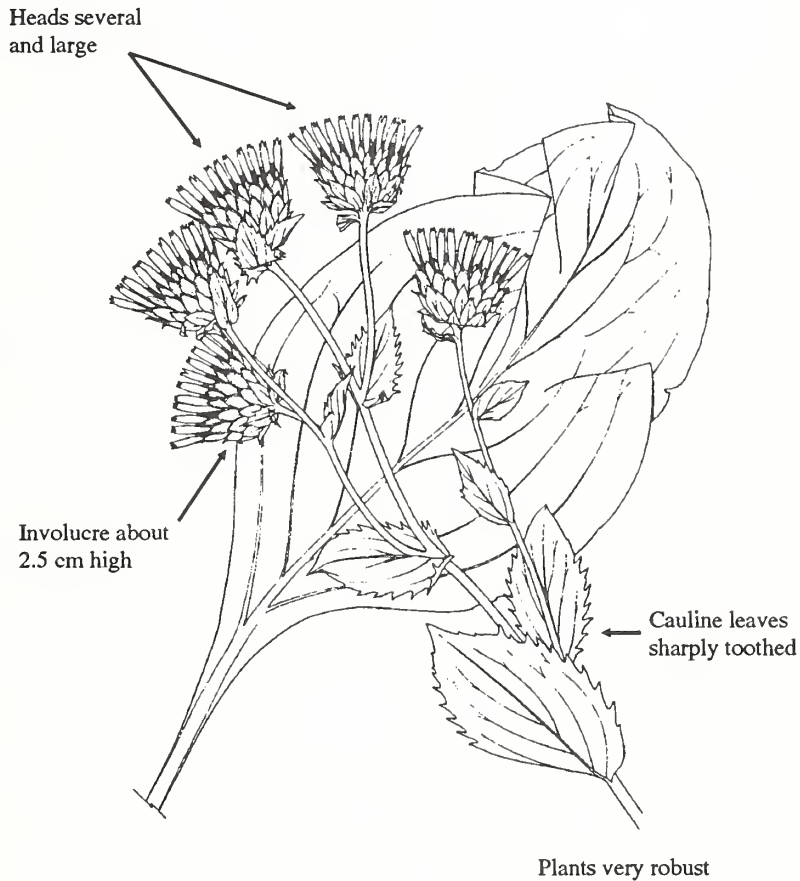
Henderson, L. 1900. *Haplopappus insecticuriis*. Bull.
Torr. Bot. Club 27:346.



Distribution of *Haplopappus insecticuriis*.

RADIATE GOLDENROD

Haplopappus radiatus (Nutt.) Cronq.
Asteraceae (Compositae)



USFWS Status: C1

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G2?/ID-S1

Description.—A member of the sunflower family, radiate goldenrod grows from several stems about 7 dm tall. The basal leaves are 2-5 dm long and broadly elliptic. The stem leaves are sharply toothed, the upper are sheathing. Flower heads occur several per stalk and are large, 2.5 cm high. The disk is 3-4 cm wide and 15 mm long. The bracts are ovate-oblong with pale margins. Ray flowers (about 34) are 6-12 mm long.

Reproduction.—A perennial, this haplopappus flowers in July. It produces an elongate, often infertile achene. Plants are long-lived perennials.

Habitat.—Dry, steep, rocky hillsides or gravelly terraces in shallow soils with sagebrush, buckwheat, and various grasses. Elevation between 2,200-3,000 feet.

Distribution.—A narrow endemic from the south end of the Snake River canyon in western Idaho and northeastern Oregon. Potential habitat has been surveyed by the Idaho Natural Heritage Program. These data will be available early in 1991.

Management Implications.—Competition from cheatgrass and grasshopper infestation has hampered several populations in Oregon. Intense grazing pressure has altered the habitat such that it is difficult for seedlings to establish. In moist years, a fungus attacks the flowering heads. The seed bank for reestablishing the older plants may be low as a result of these impacts. Monitoring studies are needed to assess the species' trends and status. Radiate goldenrod is recognized as a sensitive species by BLM and the Forest Service in the Intermountain and Pacific Northwest regions.

References.

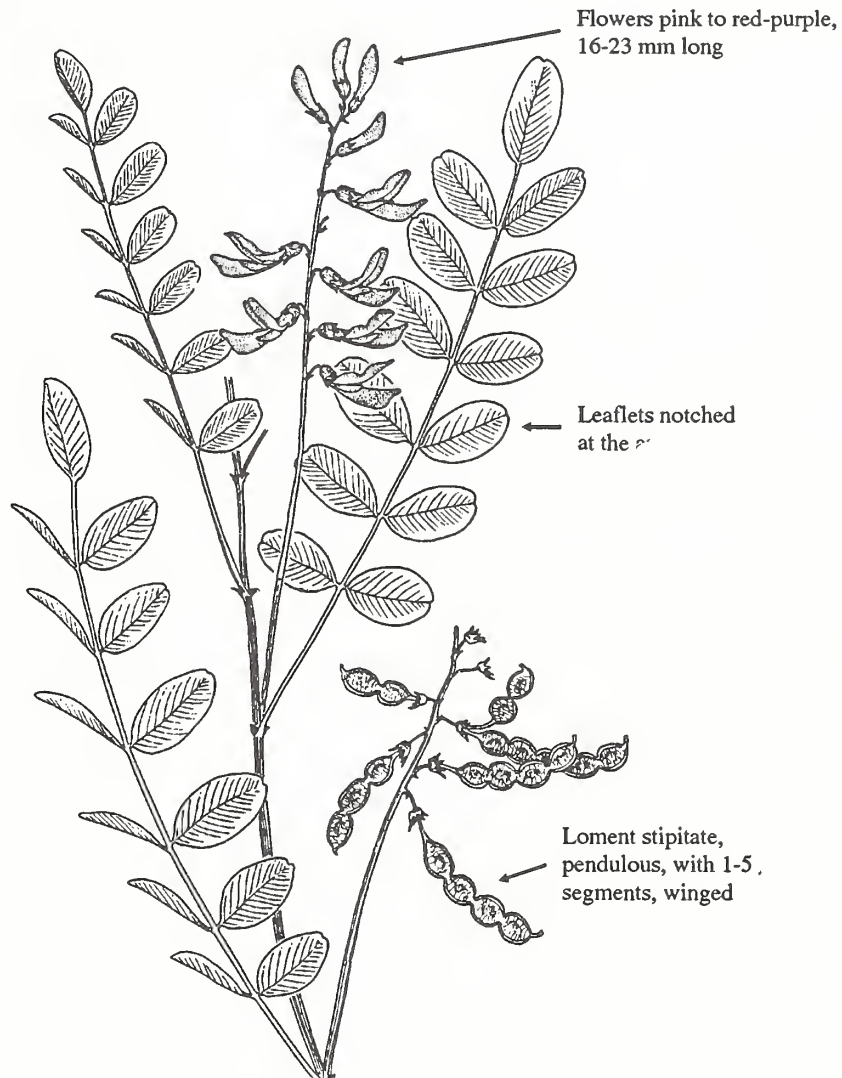
Hitchcock, C.L., et. al. 1955. Vascular plants of the Pacific Northwest 5:223.



Distribution of *Haplopappus radiatus* in the Intermountain Region.

CANYON SWEETVETCH

Hedysarum occidentale Greene var. *canone* Welsh
Fabaceae (Leguminosae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G5T2Q/UT-S2

Description.—A member of the legume family, canyon sweetvetch grows 30-90 cm tall from a branching caudex. The stems are ascending to erect. There are 7-17 leaflets, 9-29 cm long which are ovate to obovate or broadly elliptic with hairs on the veins beneath. Flowers occur 4-35 per stalk. The bracts are 2-8 mm long with linear, lanceolate bracteoles. The sepals are 3.5-7.0 mm long with a 2.3-4.0 mm long, bell-shaped tube. The flowers are pale pink, 16-22 mm long.

Reproduction.—A long-lived perennial, this sweetvetch flowers from late June to mid-August. Some plants continue to flower until frost. The fruit is a pendulous loment with 1-5 segments. Seed is set in 10-15 days and is mostly ripe by September 1. Seeds are mostly scattered by wind or gravity. Small birds and mammals may also spread some seed. Numerous bumblebees have been observed on and in these plants when they are at peak flowering.

Habitat.—The canyon sweetvetch prefers sites that have subsurface water from 0-6 feet in depth and is found mostly on alluvium or outwash deposited material. Plants have been found growing on all aspects and slopes. The large populations have been found on south and west aspects

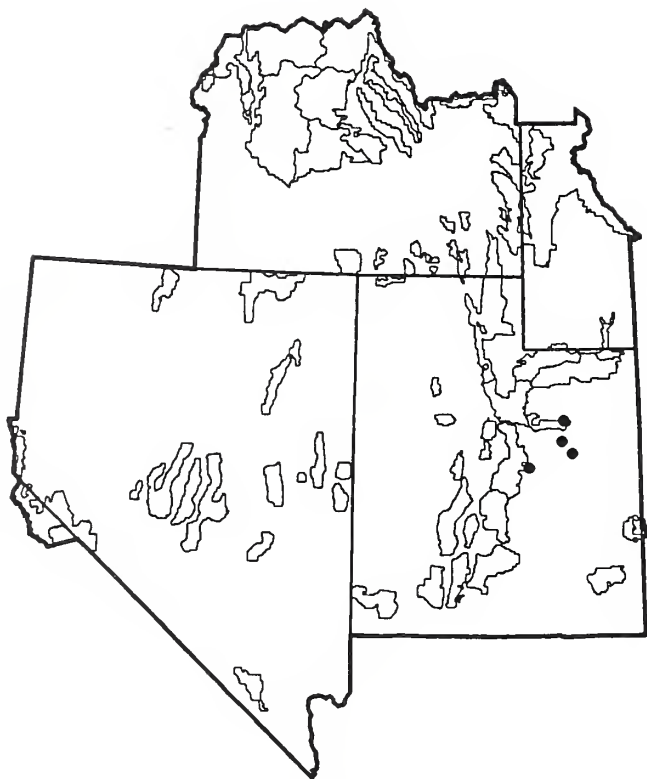
where there is good available water. River birch, Rocky Mountain juniper, and skunk-brush plants usually dominate the sites these plants prefer. Elevation between 5,000-8,000 feet.

Distribution.—This plant occurs in Carbon, Emery, and the southwest part of Duchesne counties, Utah. It has been located in small populations from Horse Canyon, southeast of East Carbon City, around Castle Valley to Straight Canyon west of Orangeville, Utah.

Management Implications.—Canyon milkvetch has an extensive, massive root system and could be adapted to grow on sites which are wet and tend to slide. It has little or no value for livestock grazing. Some big game animals may use this species. Populations are located where major coal reserves are found and mining of these areas are the major threat. Essential habitat areas should be determined to ensure protection of viable population levels. Monitoring studies have been established on a few populations. These data will be evaluated in 1991.

References.

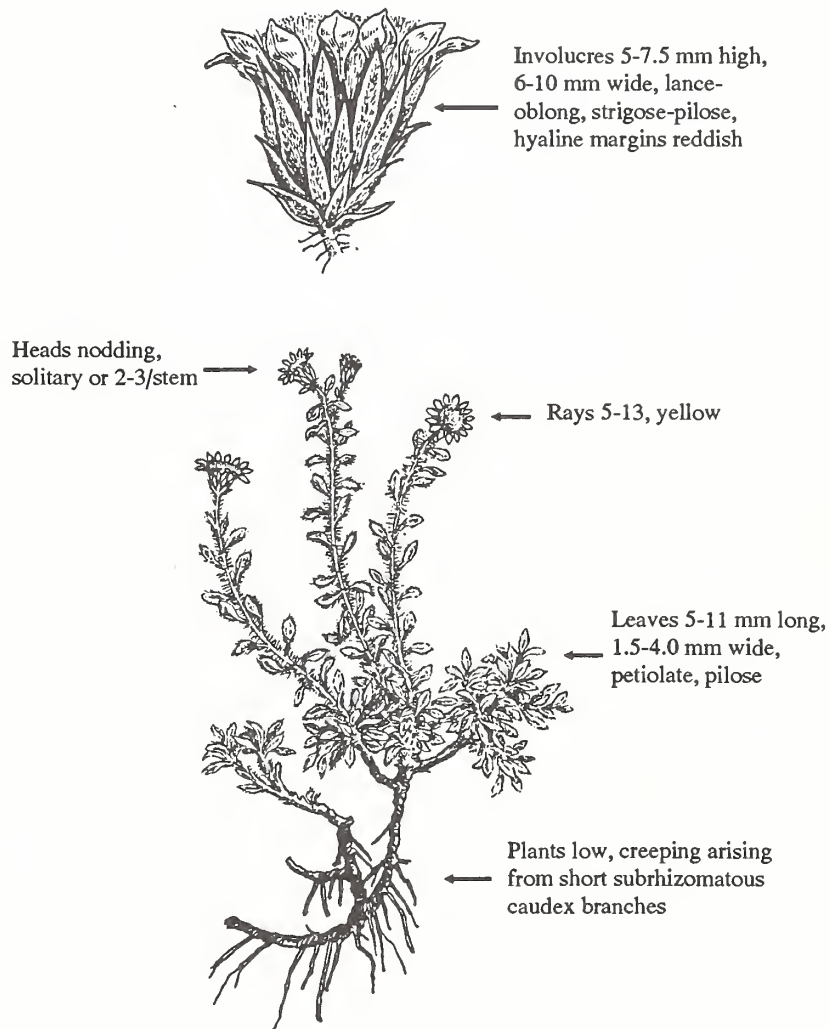
Welsh, S.L. 1978. *Hedysarum occidentale* var. *canone*. Great Basin Naturalist 38(3):314.



Distribution of *Hedysarum occidentale* var. *canone*.

JONES GOLDENASTER

Heterotheca jonesii (Blake) Welsh and Atwood
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage/Global State/Status: G2/UT-S2

Description.—A member of the sunflower family, Jones goldenaster grows in tufts from a creeping subrhizomatous caudex. The stems are 4-8 cm tall. The leaves are 5-11 mm long and obovate to spatulate. The heads are solitary or 2-3 with soft hairs, 5.0-7.5 mm high. The bracts are narrowly lance-oblong and hairy with translucent reddish margins. There are 5-13 yellow ray flowers, 4-6 mm long and hairy.

Reproduction.—A long-lived perennial herb, this heterotheca begins flowering in mid-May and continues

until frost in mid-September. Seed is set in 7-10 days and dispersed throughout the growing season.

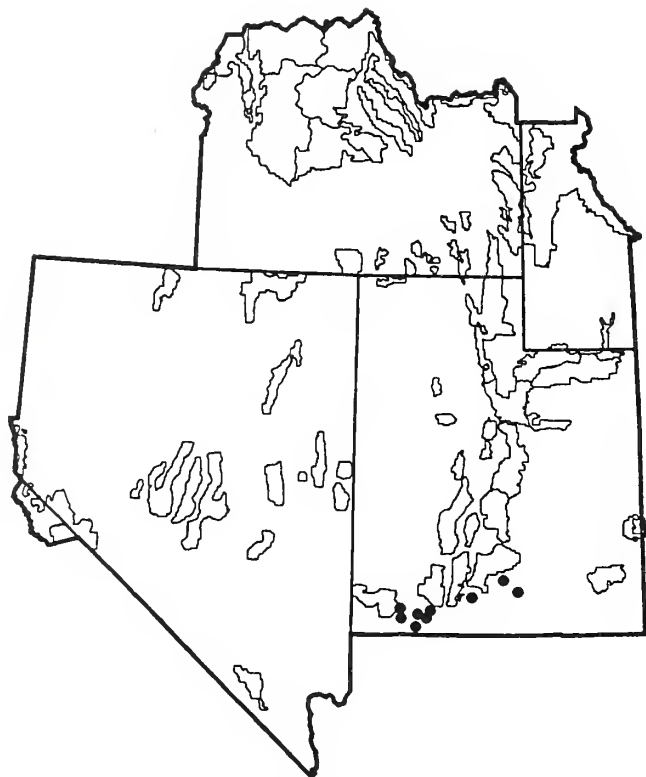
Habitat.—Ponderosa pine, manzanita, pinyon pine, oakbrush, and Douglas-fir communities on sandstone or in sand on south and west facing slopes. Elevation between 4,000-9,400 feet.

Distribution.—This plant is endemic to Utah with populations scattered in Garfield, Kane, and Washington counties.

Management Implications.—Some populations have been impacted by road construction. ORV use is another threat to the species and its habitat. Monitoring studies need to be initiated to determine population status and essential habitat.

References.

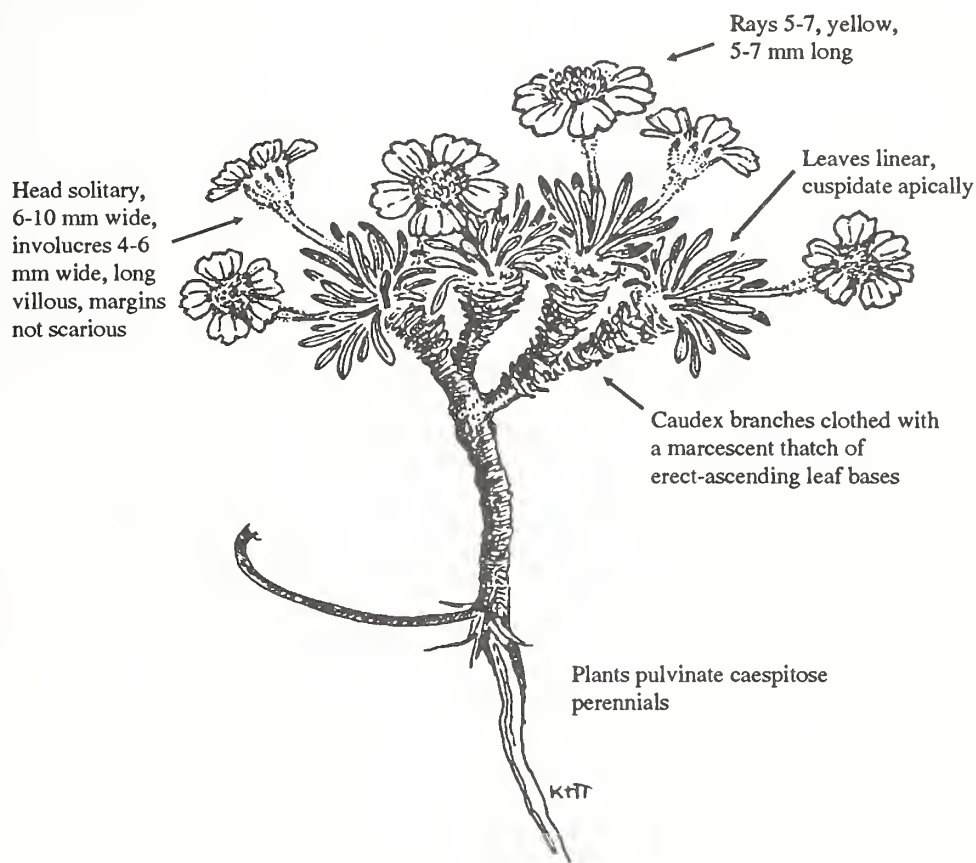
Welsh, S.L. and D. Atwood. 1975. *Heterotheca jonesii*.
Great Basin Natur. 35:336.



Distribution of *Heterotheca jonesii*.

LOW HYMENOXYS

Hymenoxys depressa (T. & G.) Welsh and Reveal
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3G4/UT-S3S4

Description.—A member of the sunflower family, low hymenoxys grows thick and matted from a multicapital caudex. The caudex branches are woolly, 1-4 cm tall, and clothed with conspicuous, commonly erect persistent leaf bases. The leaves are basal, woolly, 0.4-3.0 cm long, and linear to oblanceolate with the inner being glandular. The flowering heads are solitary, large, and showy. The disks are 6-10 mm wide and 4-6 mm high. The bracts occur in 2

or 3 subequal series. The 5-7 ray flowers are yellow and 3-6 mm long. The pappus scales are 2-3 mm long.

Reproduction.—A perennial herb, flowering begins for this hymenoxys in late May continuing to mid-June and lasts from 10-15 days. Seed sets in 3-5 days and is ripe in 7-10 days. Seed begins scattering before the last flowers have finished blooming. The plant remains green and growing into late summer or when moisture is gone.

Habitat.—Very rocky, shallow soils of fine silty clay to clay loam. Sagebrush and pinyon-juniper plant communities. This plant grows on a very narrow and limited habitat area on barren exposures in rim rock and cliff edges. The in-

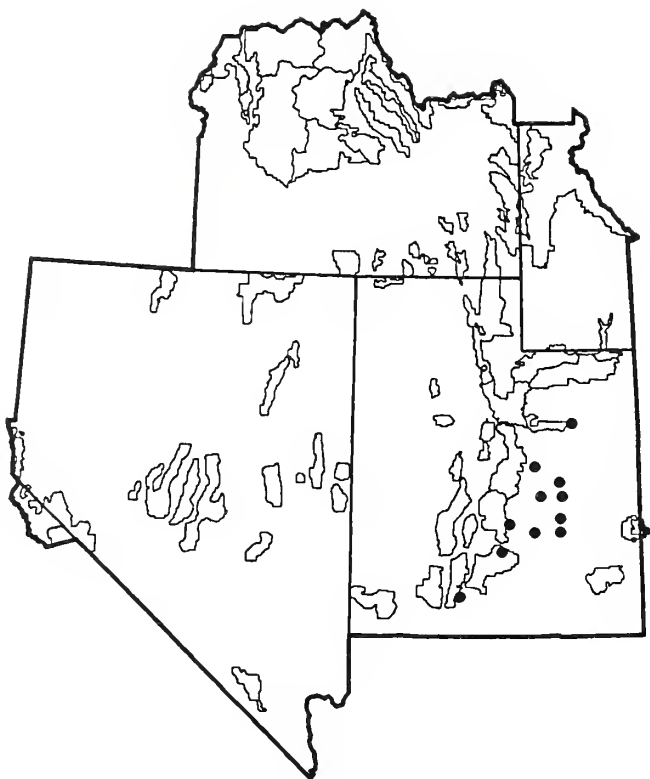
dividual plants occur only a few to each habitat area. Elevation between 6,000-8,000 feet.

Distribution.—Low hymenoxys is found in Duchesne, Garfield, Wayne, Emery, and eastern Sevier counties, Utah.

Management Implications.—It has no value for livestock grazing or use. Some birds and mammals may use some of the seed for food. Road construction and coal drilling have impacted its habitat. Cumulative effects from these activities have not been determined.

References.

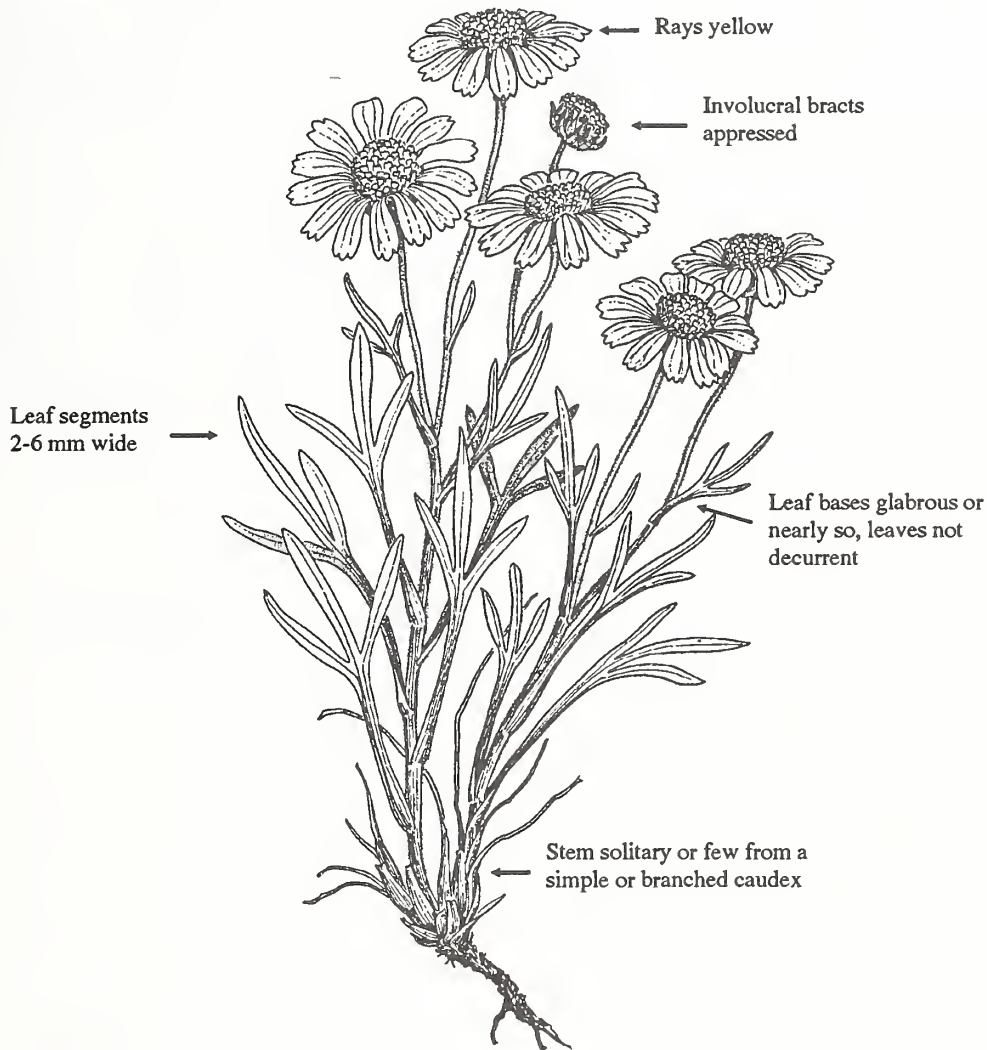
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:207.



Distribution of *Hymenoxys depressa*.

HELENIUM HYMENOXYYS

Hymenoxys helenioides (Rydb.) Cockerell
Asteraceae (Compositae)



USFWS Status: 3B
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G3Q/UT-S3

Description.—A member of the sunflower family, *Helenium hymenoxys* grows from a simple or branched caudex which is clothed with broad, brown persistent leaf bases. The stems are mainly 25-45 cm tall, simple below, and branched above. The leaves are flat, mainly 5-15 cm long, entire or 2-5 lobed, and finely glandular. The heads occur in clusters of 3-13, the disks being 10-12 mm wide. The outer bracts are green. The 5-11 ray flowers are yellow

and 8-19 mm long. The 5-7 pappus scales are 2.5-3.5 mm long.

Reproduction.—A perennial herb, flowering begins in early July and continues until frost in late August or mid-September. It produces 2.5-3.0 mm long achenes, set 10-15 days after flowering and ripen and disperse in about 20 days. This taxon may be an infertile hybrid. Bumblebees have been observed on the flowers of this plant.

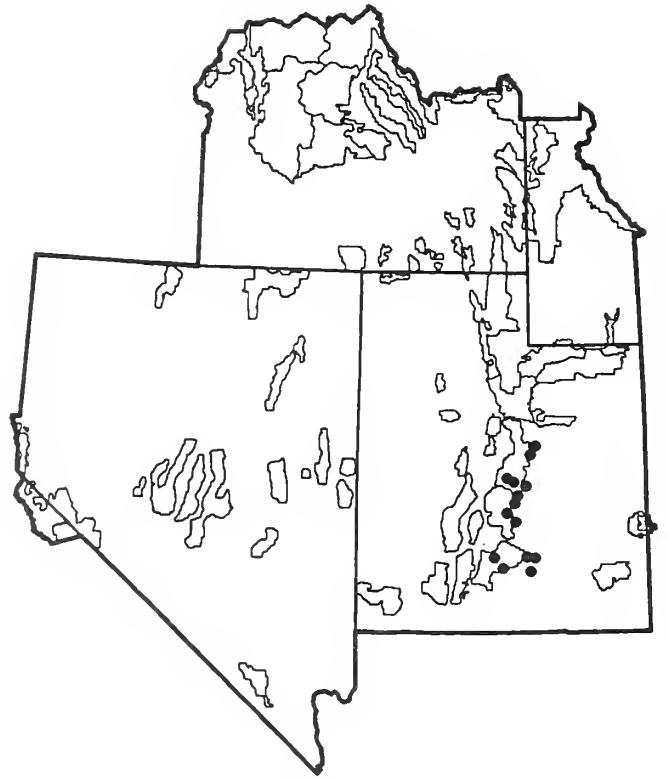
Habitat.—Small, open, rocky ridges and flats in aspen, mountain sagebrush, and dry meadows on south and west aspects. The soil is shallow and of clay loam texture. Elevation between 8,000-9,500 feet.

Distribution.—Disjunct populations occur in part of Emery, Carbon, Sanpete, and Sevier counties, Utah, western Colorado, northwestern New Mexico, and northern Arizona.

Management Implications.—Sheep sometimes eat the flowers and some of the more tender parts of the plant, mostly in late fall. Cattle do not use this plant. More study needs to be conducted to determine its status as a viable species and its distribution. It may be a sterile hybrid from *Hymenoxys richardsonii* and *Helenium hoopsii*.

References.

Cockerell, T.D. 1904. *Hymenoxys helenioides*. Bull. Torr. Bot. Club 31:481.

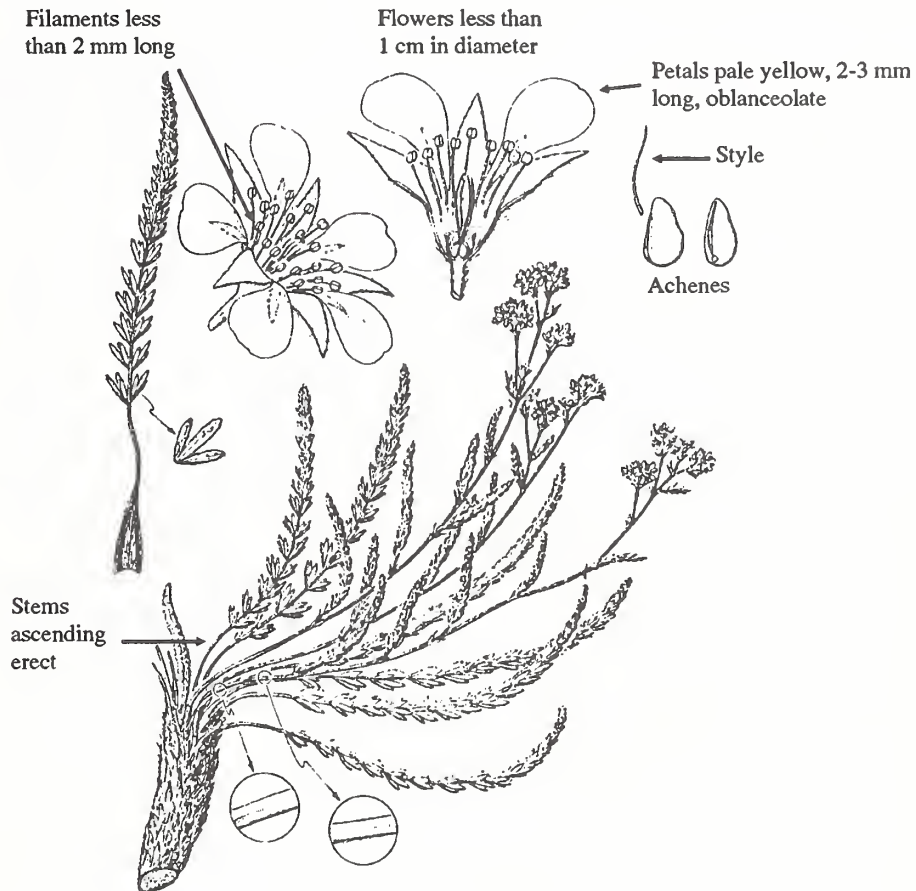


Distribution of *Hymenoxys helenioides* in the Intermountain Region.

DOG VALLEY IVESIA

Ivesia aperta (J.T. Howell) Munz var. *canina* Ertter.

Rosaceae



USWFS Status: C1

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/CA-S1

Description.—A member of the rose family, Dog Valley ivesia grows from a thick taproot. The leaves are basal, 10-20 cm long with 20-35 pairs of leaflets which are divided into lobes that are sometimes further subdivided. The stems are 17-40 cm long. The hypanthium is pale green, internally golden. The sepals are 4.0-5.5 mm long. The petals are pale yellow, 4-7 mm long with a base which narrows to a broad claw.

Reproduction.—A long-lived perennial, flowering occurs from June to August. The achenes are 2.0-2.6 mm long. The thick taproots overwinter and produce new growth the following season.

Habitat.—Shallow, rocky soil of volcanic origin in yellow pine forest clearings. Elevation between 5,580-6,230.

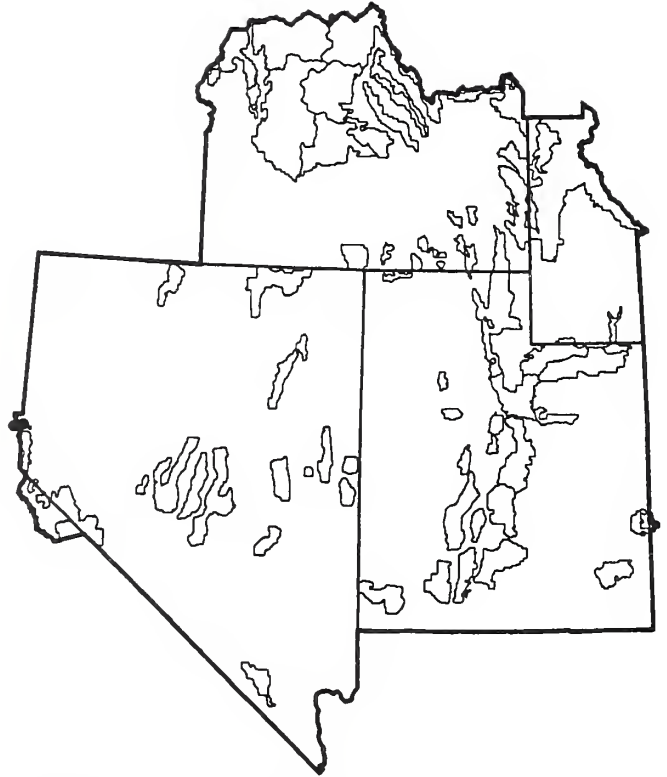
Distribution.—Endemic to Dog Valley northwest of Verdi, Sierra County, California.

Management Implications.—This species is threatened with extinction by the proposed Dam in Dog Valley. Only 1 population exists at the type locality. Additional survey work is needed to determine if other populations occur.

These surveys should be completed in 1991 during the peak flowering period. The U.S. Fish and Wildlife Service may be petitioned to emergency list the species if the proposed dam is pursued further.

References.

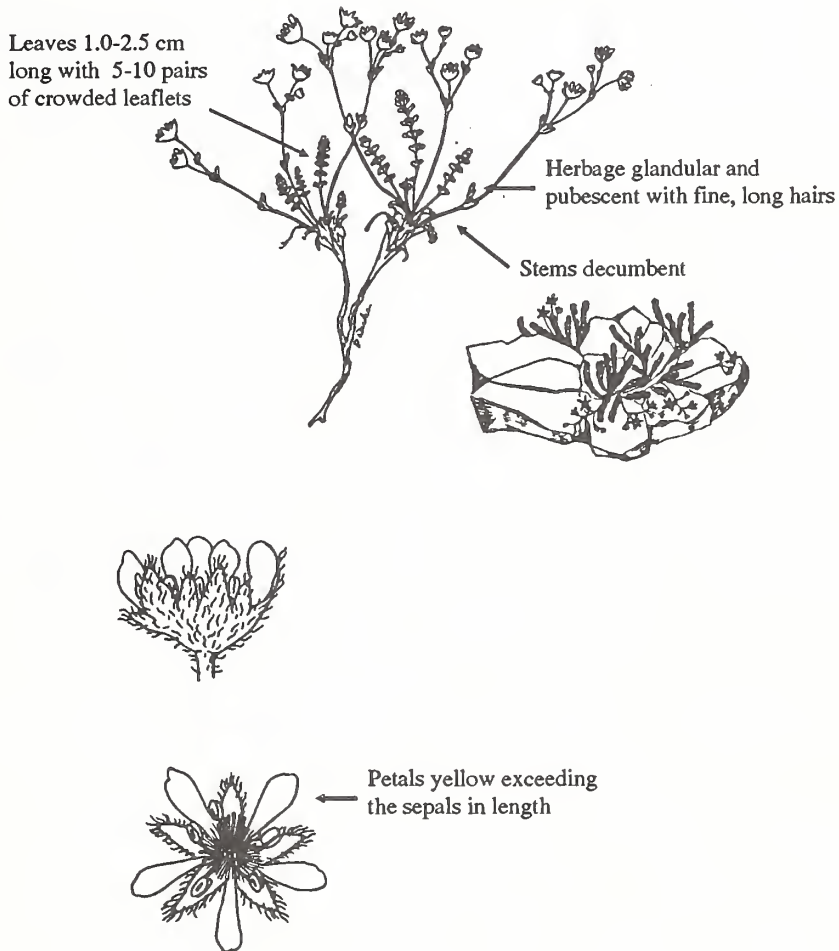
Ertter, B. 1988. *Ivesia aperta* var. *canina*. (Rosaceae), new from California. *Britt.* 40(4):398-399.



Distribution of *Ivesia aperta* var. *canina*.

CHARLESTON IVESIA

Ivesia cryptocaulis (Clokey) Keck
Rosaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/NV-S1

Description.—This is a flat, mat forming member of the rose family growing 2-3 cm in height. The stems and leaves are glandular and hairy with leaves 1.0-2.5 cm long. This plant has 5-10 pairs of leaflets and individually they measure 1.5-2.5 cm in length. There are few flowers and the color varies from yellow to bleached depending on age. The flower has 5 stamens, 6-10 pistils, and the petals, which are spatulate in shape, may exceed the sepals in length.

Reproduction.—A perennial flowering occurs in July-August. The fruit is an achene, which contains only 1 seed. The achene is smooth and compressed with a single ridge along one side. The achene is 1.4-1.8 mm in length and light green or brown in color. Numerous achenes are produced on each plant every year.

Habitat.—Grows at or above timberline in limestone, slide rock, or gravelly soil on gentle slopes and flats. The range of elevation is between 10,820-11,480 feet. Plants closely associated include *Sphaeromeria compacta*, *Draba jaegeri*, and *Pinus longaeva*.

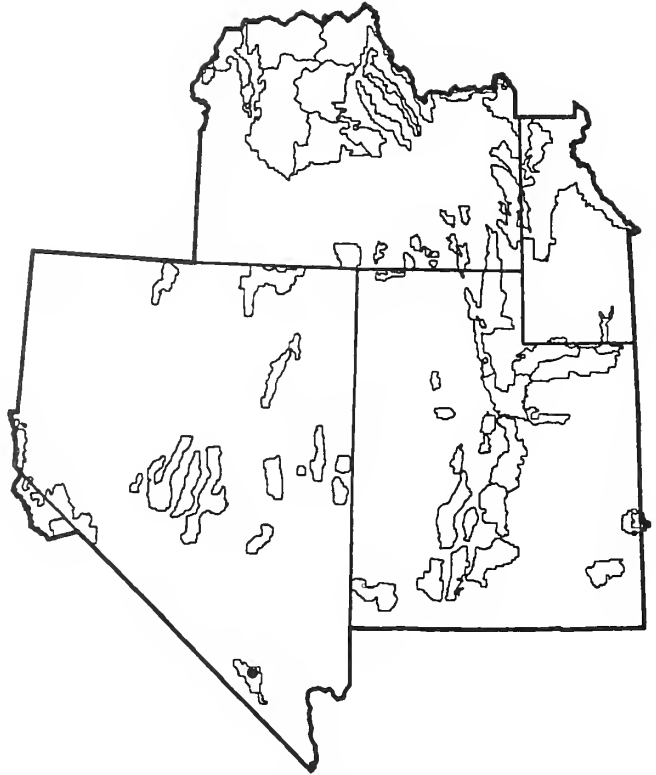
Distribution.—Known only from the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—Existing threats include free roaming horses and heavy recreational use. Monitoring studies should be established to determine use, condition, and trend for the species.

References.

Clokey, I.W. 1938. Notes on the flora of the Charleston Mountains. Southern Calif. Acad. of Sci. Bull. 37:4.

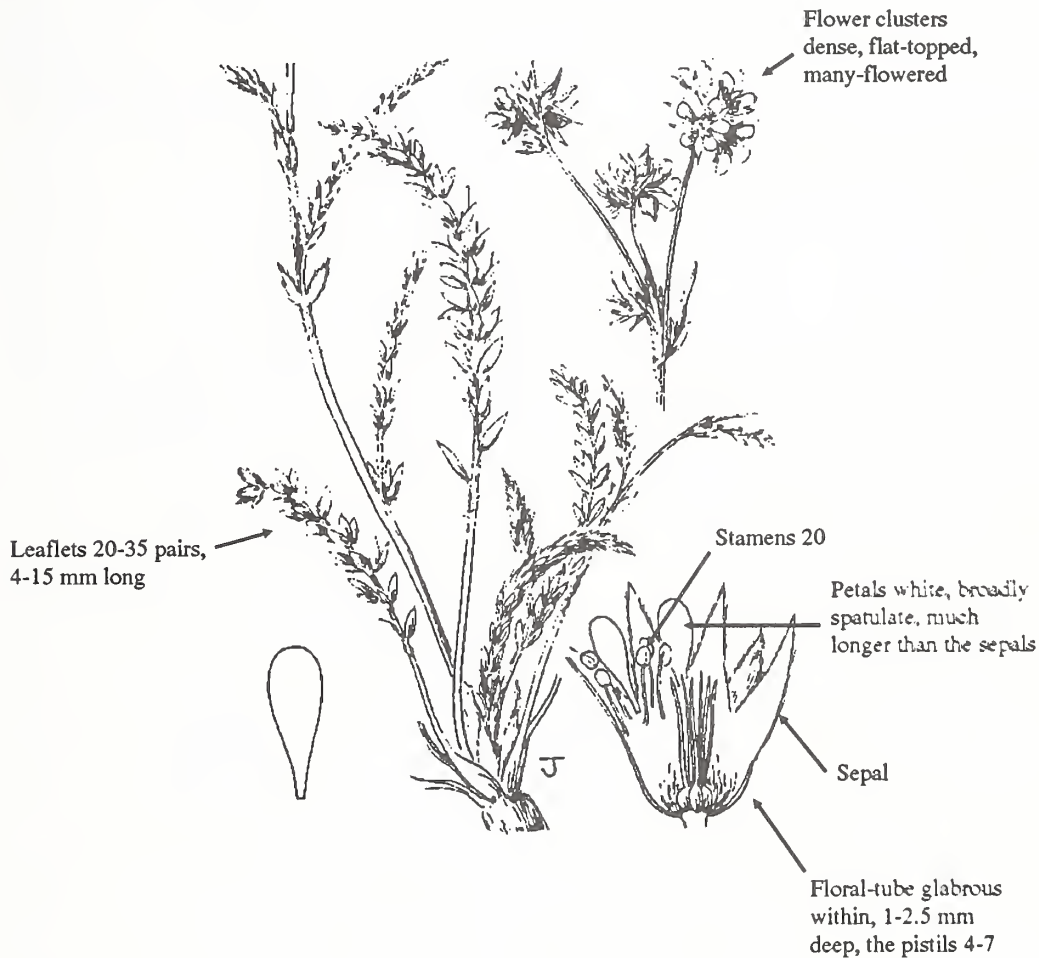
Keck, D. 1938. *Horkelia* and *Ivesia*. Lloydia 1:130-131.



Distribution of *Ivesia cryptocaulis*.

PLUMAS IVESIA

Ivesia sericoleuca Rydberg
Rosaceae



USWFS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G3/CA-S2.2

Description.—A member of the rose family, *plumas ivesia* grows with a thick root which is crowned with brownish, densely yellowish-hairy scales. The stems are 3-4 dm high and rather leafy. The basal leaves are numerous, pinnate, 1-2 dm long, and densely white silky. The leaflets are numerous, generally over 30 and, crowded. The flowers occur many to a cluster, initially rather dense, opening up with age. The sepals are 4 mm long and the petals are clawed, white, and longer than the sepals.

Reproduction.—A perennial, flowering occurs from June to August. The fruit is an achene. Hundreds of achenes are produced on each plant. Plants survive for several years with the overwintering rootstocks producing new growth each year.

Habitat.—Alkaline flats, vernal pools, and meadows within the Great Basin shrub and upper montane forest. Elevation 4,600-6,600 feet.

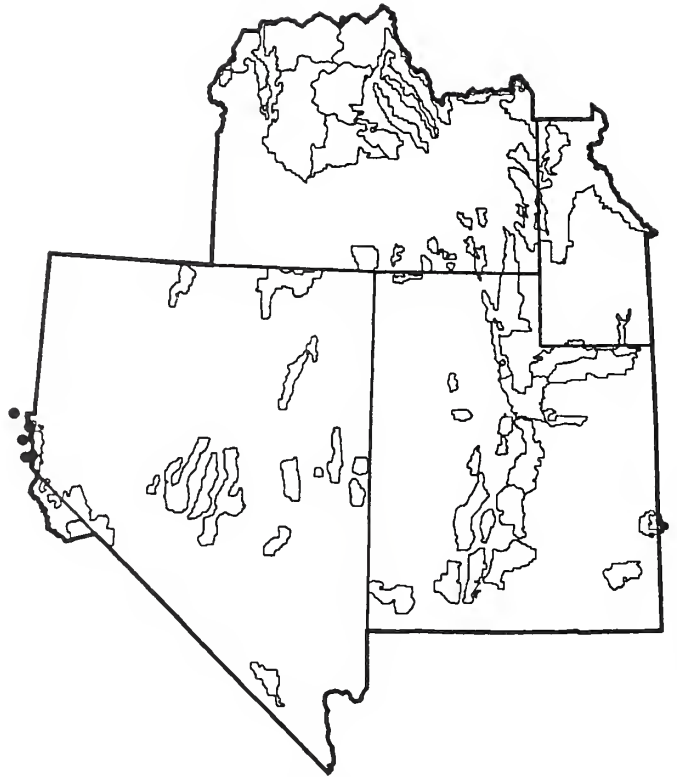
Distribution.—*Plumas*, Sierra, Nevada, and Pacer counties, California.

Management Implications.—Habitat areas are subject to varying degrees of livestock grazing (some heavy). Other

threats include urbanization, conversion of meadows to agriculture lands, timber harvesting, and loss of vernal pools. A bi-regional management plan with the Intermountain and Pacific Southwest regions is needed that identifies management and protection objectives and projected cost for each region.

References.

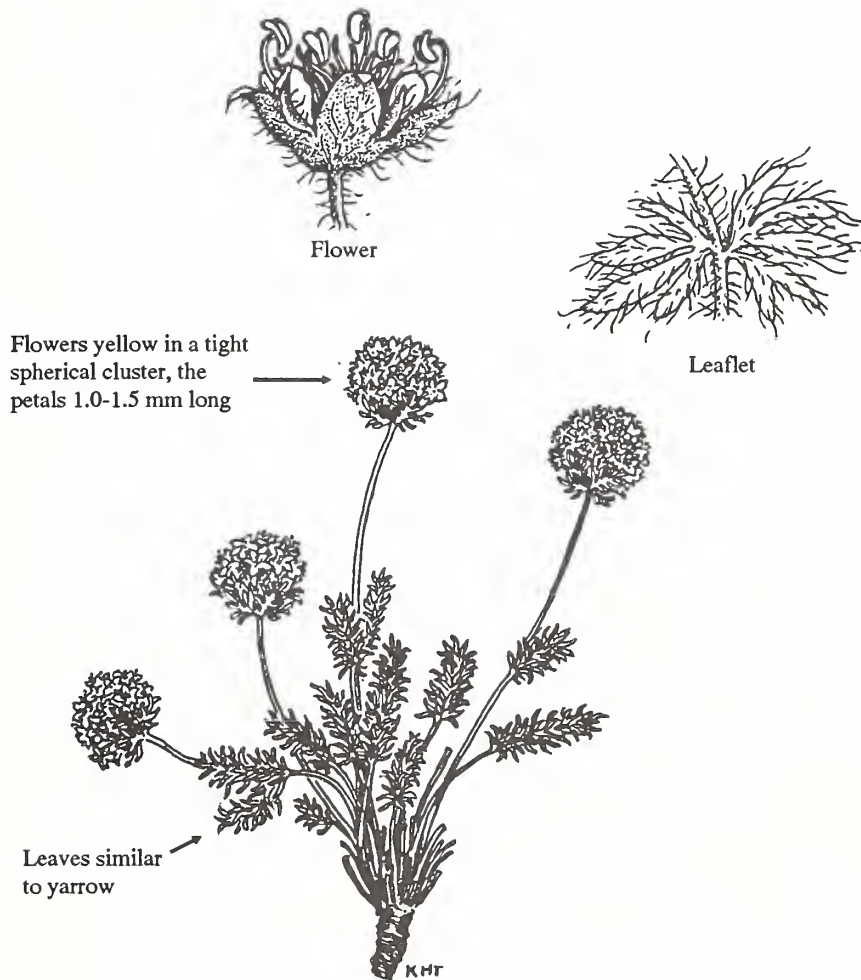
Munz, P.A. 1975. A California flora. Univ. of Calif. Press, Berkeley, Calif. 1681 pp.



Distribution of *Ivesia sericoleuca*.

WEBBER IVESIA

Ivesia webberi Gray
Rosaceae



USWFS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S?, CA-S1.2

Description.—A member of the rose family, Webber ivesia has several stems which lie flat on the ground with the tips turned up. The basal leaves are 2.5-4.0 cm long with 5-10 pairs of grayish, silky leaflets. The flower cluster is spherical in shape. The sepals are 11 mm long and the petals are yellow, barely exceeding the sepals.

Reproduction.—A long-lived perennial, flowering occurs from May to July. The fruit is an achene, 2.2-5.0 mm long, plump, and smooth.

Habitat.—Dry barren ground in open patches of volcanic ash in sagebrush-scrub zone. Elevation between 5,000-6,000 feet.

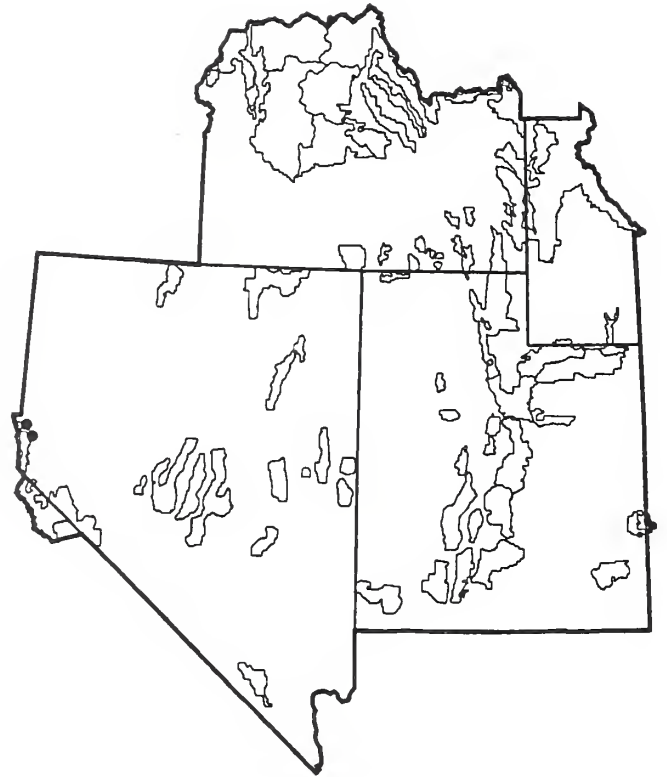
Distribution.—Douglas and Washoe counties in Nevada and Plumas and Sierra counties in California.

Management Implications.—Impacted by ORV's, grazing, and a proposed dam in Dog Valley. The species has been extirpated from portions of its range in California. Surveys are inadequate for Webber ivesia. A high prob-

ability exists that the U.S. Fish and Wildlife Service will propose this species for federal listing as endangered in the near future. Baseline data on potential habitat areas within the National Forest System should be gathered prior to the listing proposal.

References.

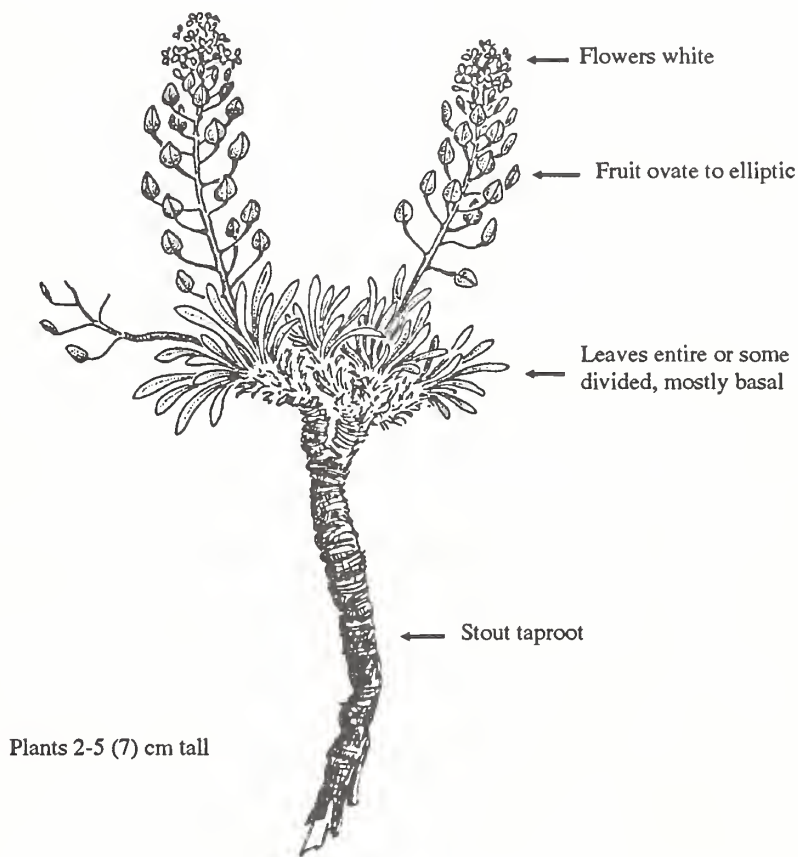
Munz, P.A. 1975. A California flora. Univ. of Calif. Press, Berkeley, Calif. 1681 pp.



Distribution of *Ivesia webberi* in the Intermountain Region.

NEESES' PEPPERGRASS

Lepidium montanum Nutt. var. *neeseeae* Welsh and Reveal
Brassicaceae (Cruciferae)



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T1/UT-S1

Description.—A member of the mustard family, Neeses' peppergrass grows from a somewhat woody base, 2-5 cm tall. The leaves are entire or some divided and mostly basal. The sepals are green or variously tinged. The petals are white, 2.5-3.5 mm long. There are 6 stamens.

Reproduction.—A perennial herb from a stout taproot, flowering begins for this peppergrass in May and continues into early June. It produces 2.8-4.1 mm long, ovate to

elliptic silicles. Seed is ripe and scattered by mid-July. Seeds appear to germinate readily, reproducing young plants. The perennial roots overwinter for several seasons.

Habitat.—Dry, sandy sites, mostly open with little cover in ponderosa pine, manzanita, and spruce-alpine fir plant communities mainly on the pink and white limestone members of the Wasatch Formation and also on the Navajo Sandstone Formations. Elevation between 7,300-9,000 feet.

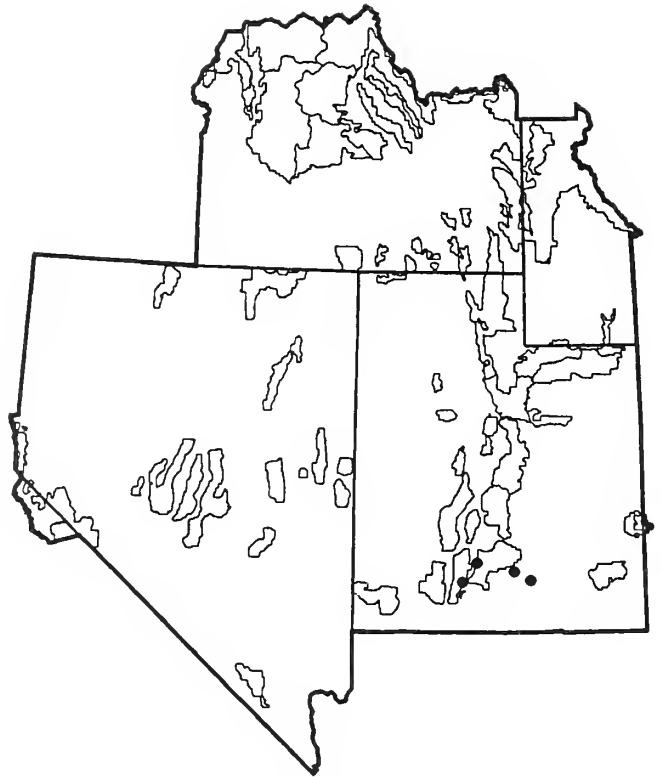
Distribution.—This plant is endemic to south central Utah in Garfield County.

Management Implications.—Loss of essential habitat by road building and logging activities pose a threat to this plant

species. The scattered and isolated populations of the species occur in an area proposed for CO₂ gas development.

References.

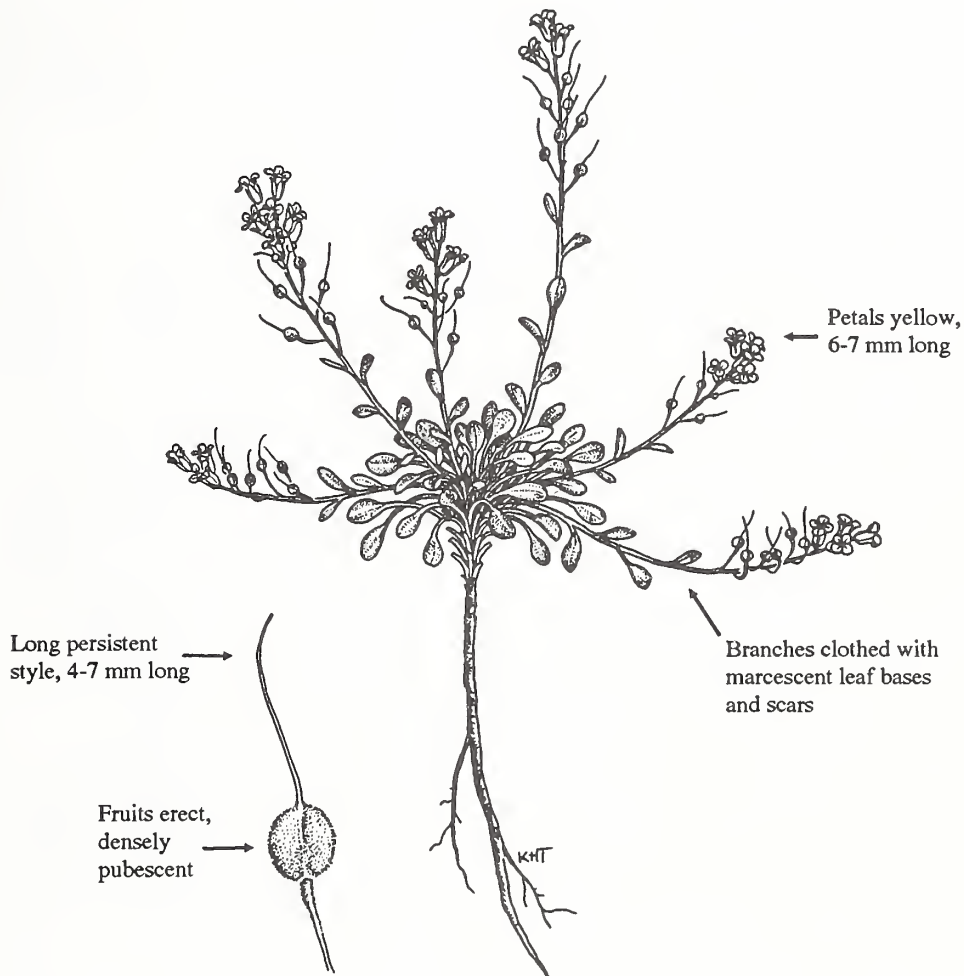
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987.
A Utah flora. Great Basin Natur. Mem. No. 9:272.



Distribution of *Lepidium montanum* var. *neeseae*.

GARRETT BLADDERPOD

Lesquerella garrettii Payson
Brassicaceae (Cruciferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the mustard family, Garrett bladderpod grows from slender, unbranched stems, 3-5 cm long, which is clothed with persistent leaf bases and scars. The terminal bud develops a fertile stem. The basal and stem leaves are different, the basal being 1-4 cm long while the stem leaves are 0.3-1.3 cm long. Flowers occur 3-7 per cluster. The petals are yellow, 6-7 mm long.

Reproduction.—A perennial, the bladderpod flowers in June and July. Its fruit, a silicle, is densely covered with erect hairs, and produces 2-4 seeds. Young plants are produced by germinating seeds. Plants last from 1 to several years.

Habitat.—Moist loamy soils in cracks of rocks on mountain sides in sub-alpine meadow, mountain shrub, and pine communities. Elevation between 9,700-11,500 feet.

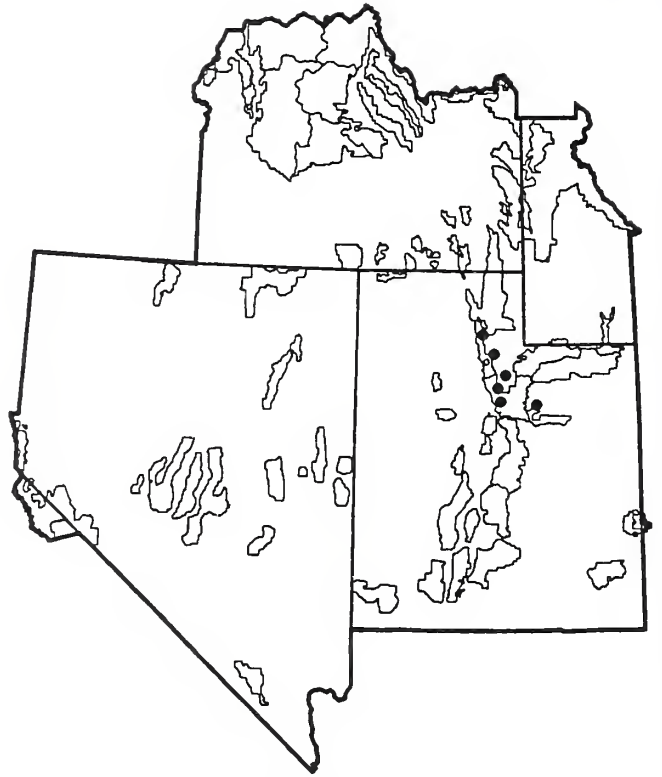
Distribution.—Endemic to Utah in Davis, Salt Lake, Utah, and Wasatch counties.

Management Implications.—Past sightings need to be relocated. Its total extent needs to be determined and a

monitoring program should be established. Further development of ski and recreational facilities and increased ORV and other recreation use threatens its survival.

References.

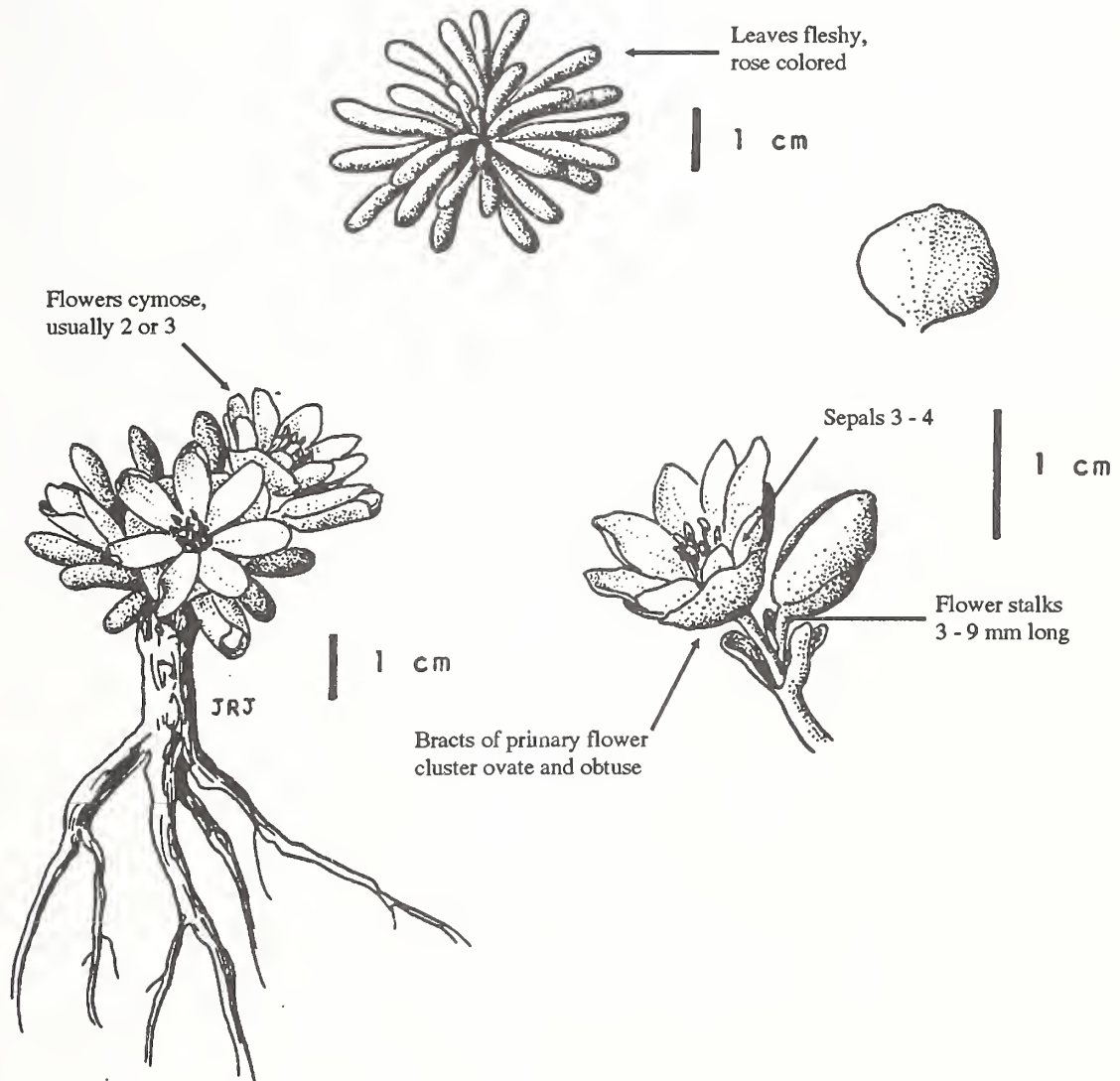
Payson, E.B. 1921. *Lesquerella garrettii*. Ann. Mo. Bot. Gard. 8:213.



Distribution of *Lesquerella garrettii*.

MAGUIRE LEWISIA

Lewisia maguirei Holmgren
Portulacaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1/NV-S1

Description.—A member of the purslane family, Maguire lewisia grows with fleshy, 1-2 cm long leaves at the top of a succulent branched taproot. The leaves and flower clusters are rose colored. The leaves have a fleshy, prominent midrib. There are 2 or 3 flowers borne on each flowering stalk. The bracts are below the main flower cluster. Each individual flower also has a linear-oblong bract below it. There are 3-4 broad sepals and 7-9 white to pinkish petals

which are 8-12 mm long. The pistil has 4-6 styles surrounded by 7-9 stamens.

Reproduction.—A long-lived perennial, flowering for Maguire lewisia occurs in June. It produces a capsule with usually fewer than 10 seeds, which ripen within 2 weeks after flowering and are blown around by the wind before they open. The plants vanish soon after flowering by pulling back under the ground where they lay dormant until the following year.

Habitat.—In well-drained, fine-textured soil derived primarily from dolomite, near pinyon-juniper, and sagebrush communities. The shallow soil is stoney and its

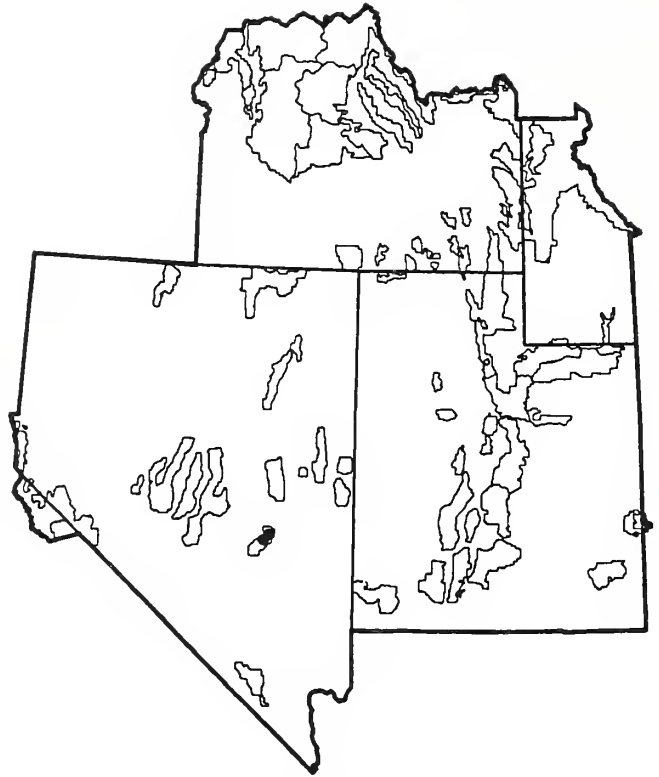
surface is covered with small rocks. More plants are found on steeper slopes and in some areas the trees and shrubs are thick. Elevation between 7,600-7,800 feet.

Distribution.—Endemic to the Cherry Creek Summit area which separates the Quinn Canyon Range and the Grant Range in Nye County, Nevada.

Management Implications.—Plants should be monitored periodically. The limited area in which it occurs makes it particularly vulnerable to environmental disturbances. Although the plants grow in fairly inaccessible areas, the potential for damage by animals grazing on the steep slopes still remains. Increase in mining activities and population growth may also pose additional threats.

References.

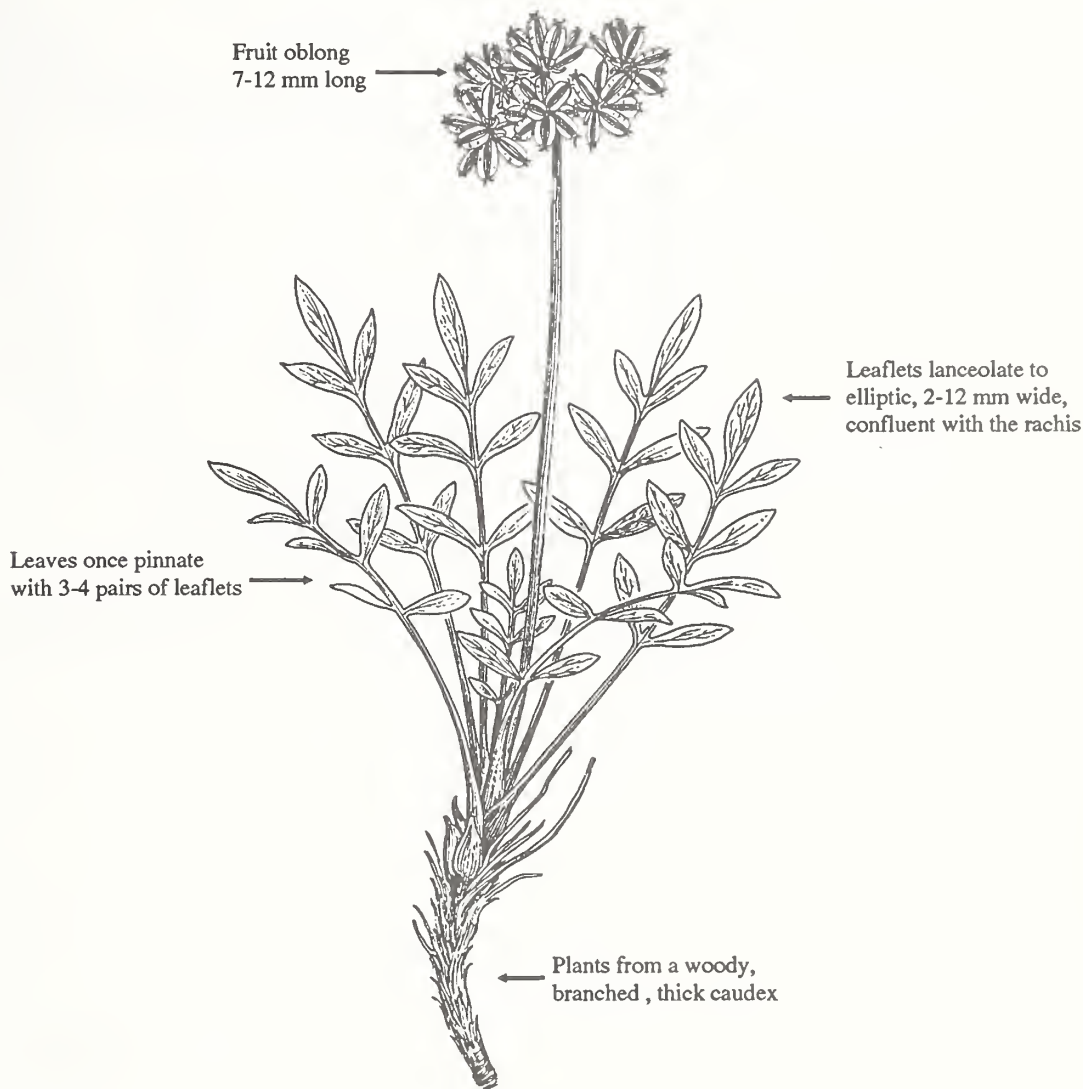
Holmgren, A.H. 1954. A new *Lewisia* from Nevada. *Leafl. West. Bot.* 6:135-137.



Distribution of *Lewisia maguirei*.

CANYONLANDS LOMATIUM

Lomatium latilobum (Rydb.) Mathias
Apiaceae (Umbelliferae)



USWFS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the parsley family, Canyonlands lomatium grows 10-30 cm tall from a branched woody rootstock with persistent leaf-bases. The leaves are pinnate with 3-4 pairs of lateral leaflets. The flower cluster consists of 4-13 flowers on a 5-12 mm stalk, and is 0.5-2.0 cm long. The petals are yellow when fresh and white when dry.

Reproduction.—A long-lived perennial, flowering begins in late April and early May. Seed is set in 15-20 days

following flowering and scattered by mid to late June. The fruit is 8-12 mm long with lateral wings 1 mm wide.

Habitat—Sandy, rocky sites in pinyon-juniper and desert shrub communities. The species prefers sites on mostly level areas and on south and west exposures. Elevation 4,800-7,000 feet.

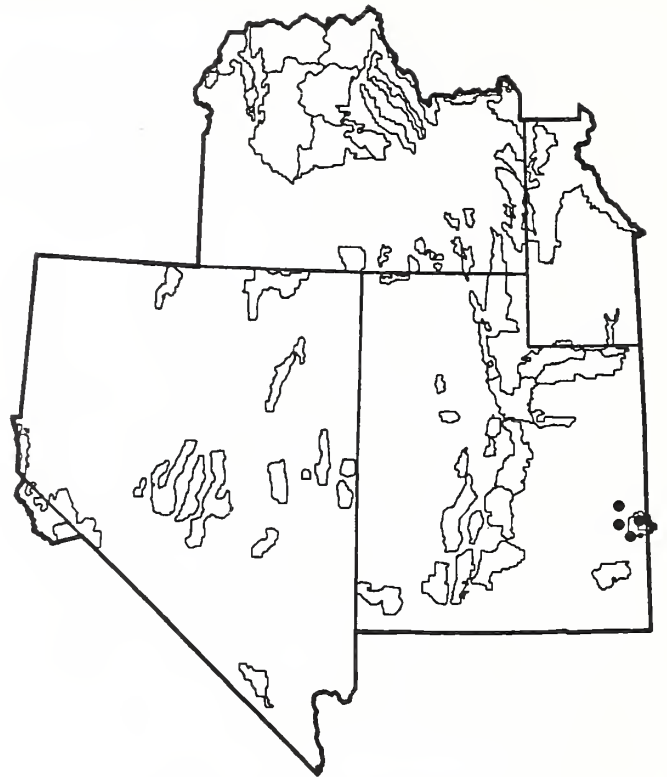
Distribution.—Endemic to Grand and San Juan counties, Utah and Mesa County, Colorado.

Management Implications.—This plant has no value for livestock grazing. Big game, deer, and elk may use the plant slightly. Other activities that may have impacts on this plant are road construction and any other land-disturbing ac-

tivities such as pinyon-juniper conversions. The plants are easily uprooted and do not survive when their native habitat is disturbed. Survey data for this lomatium are inadequate. A joint effort between the Forest Service and BLM is needed to determine the species distribution, use, condition, and trend.

References.

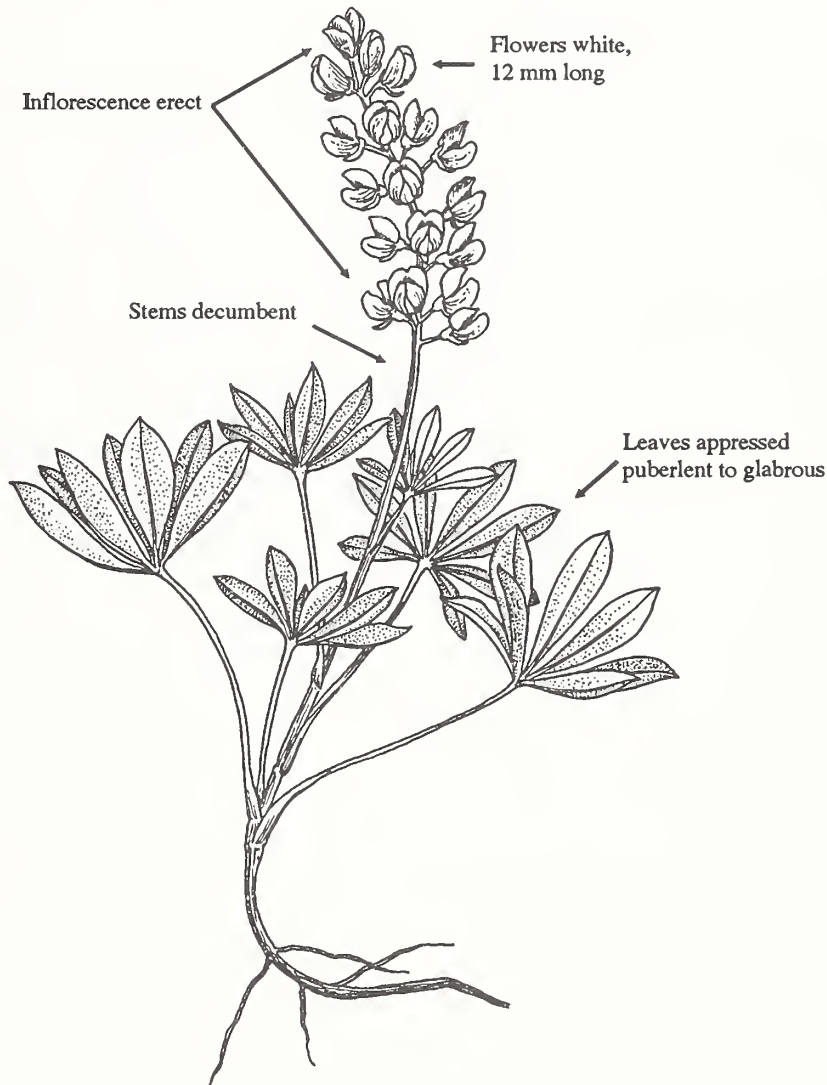
Mathias, M.E. 1938. A revision of *Lomatium*. *Ann. Mo. Bot. Gard.* 25:281-282.



Distribution of *Lomatium latilobum* in the Intermountain Region.

THICK-LEAVED LUPINE

Lupinus crassus Payson
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G?/CO-S?

Description.—A member of the pea family, thick-leaved lupine forms a dense mat from which arise many unbranched, rather stout, erect stems to a height of 3-4 dm. The leaves occur 5 or 6 on a stem. The petioles of the lower leaves are 8-10 cm long, the upper ones are generally longer than the leaflets. The leaflets occur 5-10 per leaf, are thickish, 3-4 cm long, ovate to oblanceolate, and somewhat folded with silky hairs below. The flowers occur many per stalk with spreading white hairs. The bracts are purplish,

lanceolate, and 10-12 mm long. The sepals are spurred, 7-8 mm long, and slightly exceeding the upper lip. The petals are white, fading brownish, and 12 mm long with the triangular, purple-tipped keel included.

Reproduction.—A perennial, this lupine flowers from mid-May through late June. Seed is set in 10-15 days and ripe by mid-August. Bumblebees have been observed in the flowers. Probably a short-lived species.

Habitat.—This species seems to prefer soils that are somewhat gypsiferous alluvium derived from the Paradox Chinle Formation in pinyon-juniper-black sagebrush communities. Plants grow on all exposures, but the denser populations are

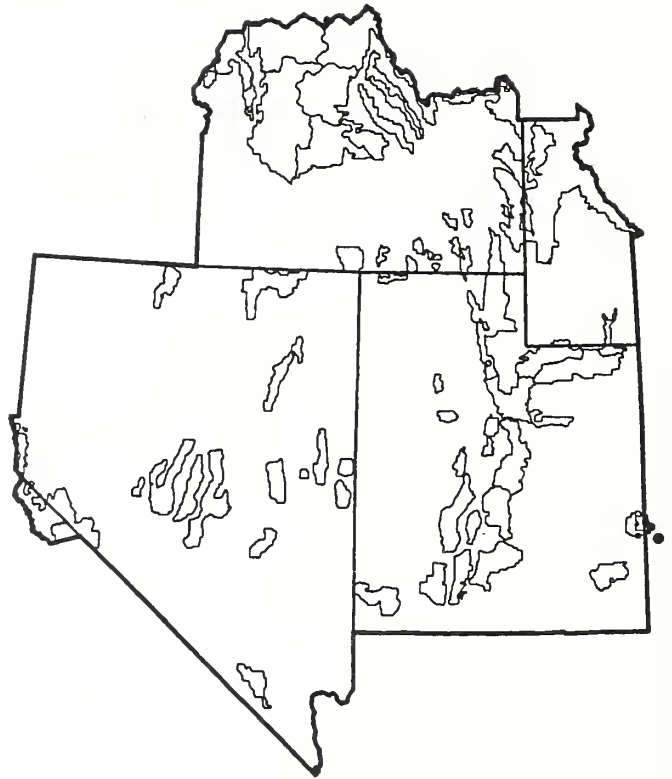
found on the north and east aspects, particularly in draws and washes and often in association with eroded substrates. Elevation between 4,700-6,000 feet.

Distribution.—This plant is endemic to Montrose County, Colorado in Paradox Valley, from Naturita to Paradox.

Management Implications.—Livestock do not use this plant. Birds or small mammals may use the seed. Studies are needed to determine the species' status and distribution on National Forest administered lands, if any.

References.

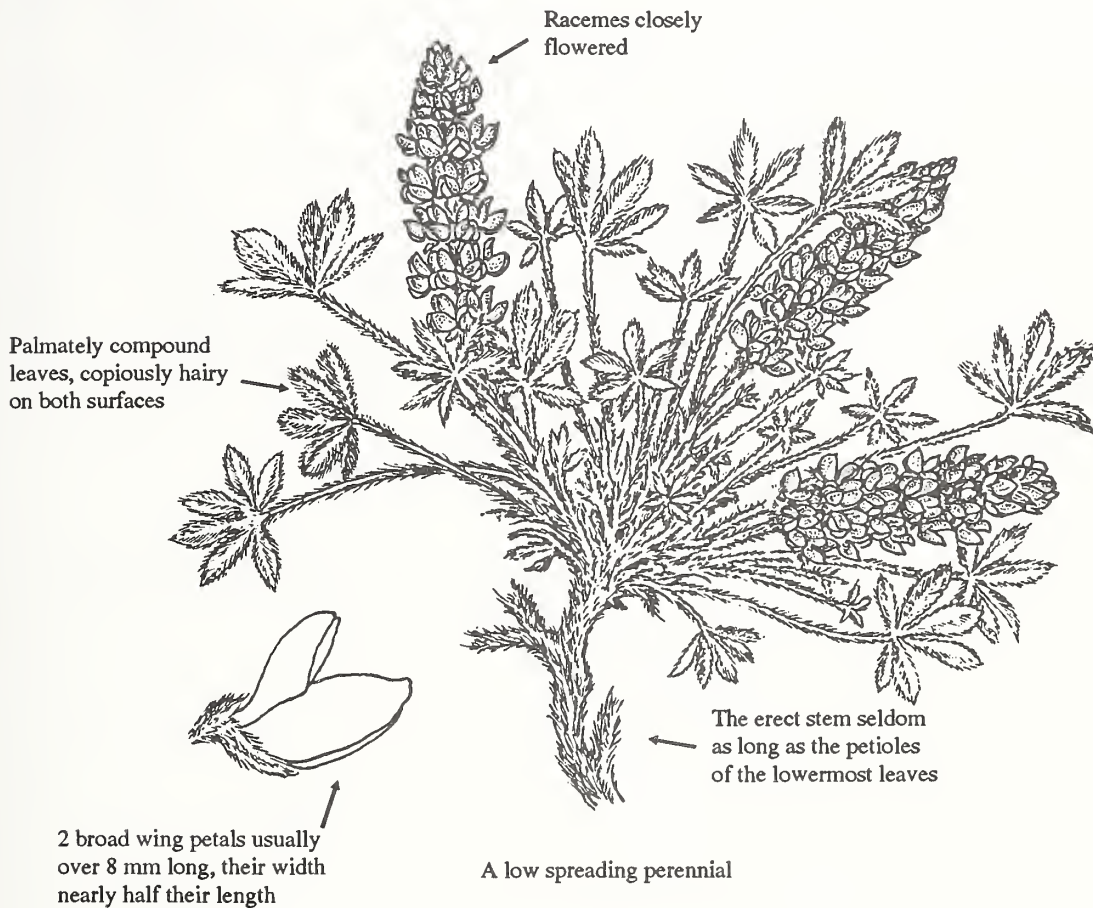
Payson, E.B. 1915. New and noteworthy plants from southwestern Colorado. *Bot. Gaz.* 60:374-376.



Distribution of *Lupinus crassus*.

CUSICK'S LUPINE

Lupinus cusickii S.Wats var. *cusickii*
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2T1/ID-S1

Description.—A member of the pea family, Cusick's lupine grows low and spreading. It has a short, erect stem (9-12 cm tall). The leaves are palmately compound and hairy on both surfaces. The flowers are 8-10 mm long and occur in close clusters which are completely surpassed by the foliage. The 2 broad wing petals are usually over 8 mm long, their width nearly half the length. The banner is broadly ovate.

Reproduction.—A perennial herb, presumably flowering in June and July. The fruit is a laterally compressed, 2 to several-seeded legume. Probably long-lived.

Habitat.—Open, dry valleys particularly along southern and western slopes. Barren, volcanic, or gravelly clay bluffs and gullied riverbanks.

Distribution.—North Owyhee Desert in north Harney and Malheur counties Oregon extending north and east in the Blue Mountains and the lower Salmon River in central Idaho, Valley County.

Management Implications.—Very little data are available to evaluate use, condition, or trends. Existing data suggest a downward trend in population numbers.

References.

Hitchcock, C.L. 1951. *Lupinus lepidus* ssp. *cusickii*. Detl. Amer. Midl. Natur. 45:493-494.

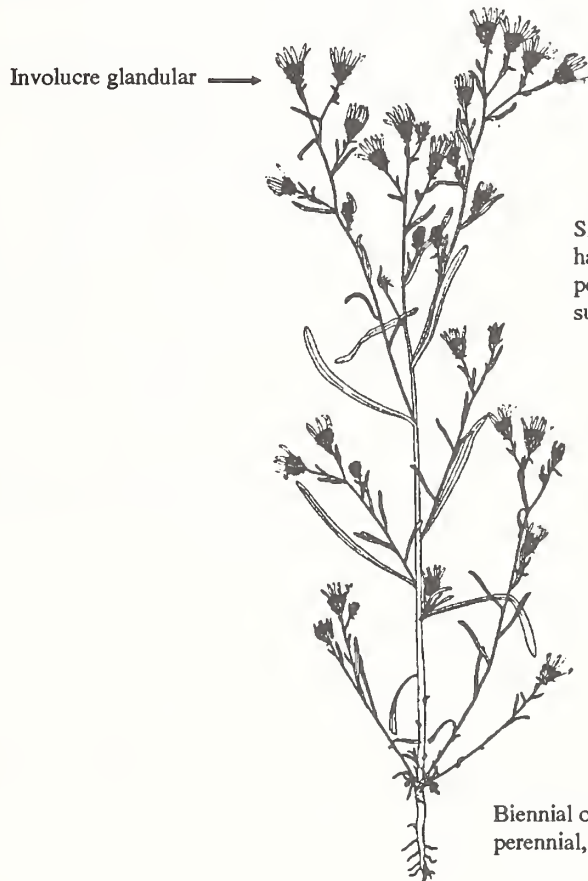
Hitchcock, C.L. 1961. *Lupinus lepidus* var. *cusickii*. Univ. Wash. Publ. Biol. 17(3):31



Distribution of *Lupinus cusickii* var. *cusickii* in the Intermountain Region.

VIVID GREEN ASTER

Machaeranthera laetevirens Greene
Asteraceae (Compositae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G1/ID-S1

Description.—A member of the sunflower family, vivid green aster grows from creeping rhizomes to a height of 4-10 dm. The stem and leaves are glandular and often hairy. The leaves are lanceolate, 5-13 cm long, thin, and clasping the stem. There are several flowering heads which occur in a leafy cluster, 7-11 mm high. The bracts are purplish and the rays (mostly 20-45) are purple or violet, 8-15 mm long.

Reproduction.—A perennial with creeping rhizomes, this aster flowers from July to August. It produces numerous achenes.

Habitat.—Moist woodlands, often along streams and unstable slopes in a sagebrush community. Elevation above 7,000 ft.

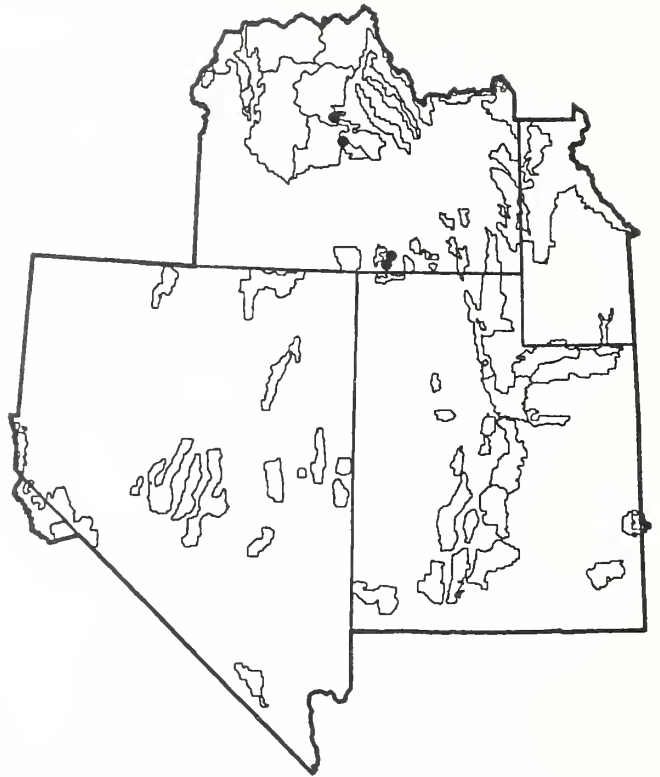
Distribution.—Cassia, Custer, and Blaine counties in Idaho and Elko County in Nevada.

Management Implications.—This species may be impacted by livestock grazing and mining. Historic collection sites have not been relocated. Only recent collections are

known for the species. Both of these occur on the Sawtooth national Forest. Additional work is needed before the species' status and trends can be assessed.

References.

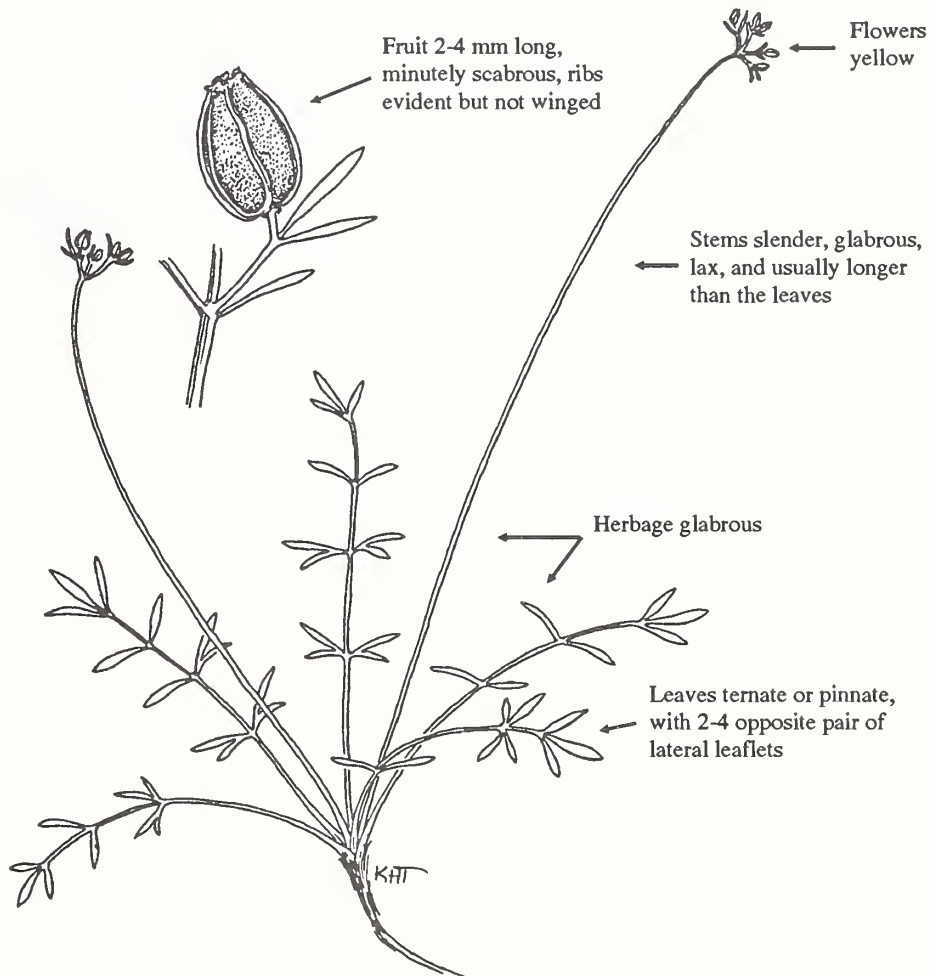
Blake, S.F. 1925. *Aster leiodes*. Contr. U.S. Natl. Herb. 25:563.



Distribution of *Machaeranthera laetevirens* in Idaho.

RYDBERG MUSINEON

Musineon lineare (Rydb.) Mathias
Apiaceae (Umbelliferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the parsley family, Rydberg musineon grows in mats, 0.8-2.5 dm high from a branched root. The stems are slender, lax, and usually longer than the leaves. The leaves are oblong in general outline, 2.5 cm long, and simple pinnate. Flowers occur on several rays which are 2-5 mm long. The flowers are yellow with bracts which greatly exceed them.

Reproduction.—A perennial, this plant flowers from July to August. It produces an ovoid to linear-oblong, ribbed fruit (schizocarp of 2 mericarps), 3-4 mm long. Plants apparently live for several seasons.

Habitat.—Rydberg musineon occurs on limestone cliff faces, rock crevices, ridgetops, and ledges of variable (steep) slopes between 6,000-9,300 feet elevation.

Distribution.—It is endemic to the Bear River Range in Cache County, Utah.

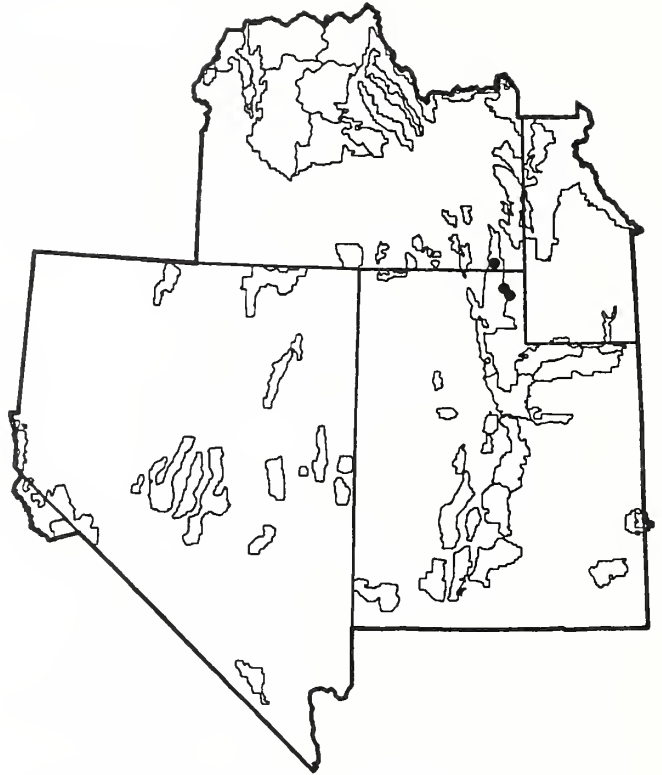
Management Implications.—Construction due to urban expansion, highway construction and maintenance, and in-

dustry and development may threaten this species habitat. All known populations occupy habitat on or adjacent to National Forest administered lands on the Logan Ranger District. General surveys have been conducted in both northern Utah and southeastern Idaho to determine the species' range. Monitoring studies are needed to determine the species' trends.

References.

Mathias, M.E. 1930. Studies in the Umbelliferae. Ann. Mo. Bot. Gard. 17:215-476.

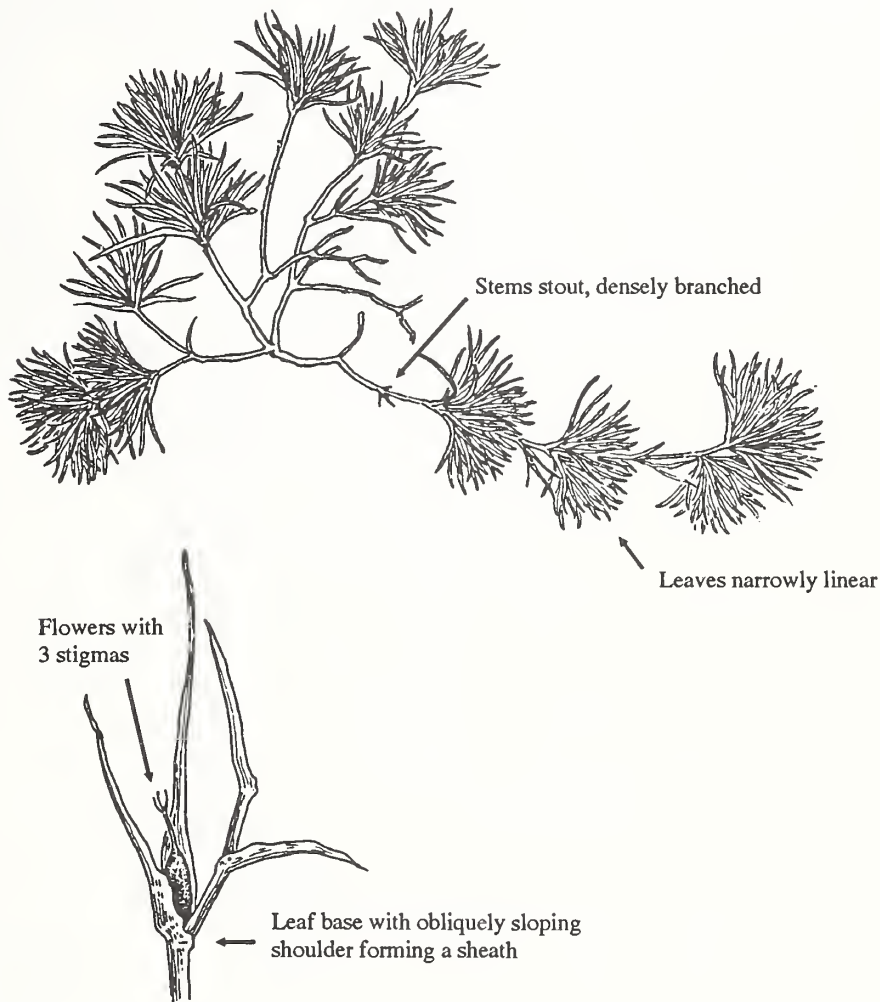
Rydberg, P.A. 1913. Studies in the Rocky Mountain flora XXVIII. Bull. Torr. Bot. Club 40:1-69.



Distribution of *Munineon lineare*.

FISHLAKE NAIAD

Najas caespitosa (Maquire) Reveal in Welsh, Atwood, and Reveal
Najadaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: GH/UT-SH

Description.—A member of the water-nymph family, Fish Lake naiad is a submersed aquatic plant. The stems are stout and densely branching, 2-5 cm long. The leaves are narrowly linear, 0.3-1.0 cm long with a few scattered minute spines. The male flowers are 2.0-2.5 mm long with a single, 1-celled anther. The female flowers are 2.0-2.5 mm long with 3 unequal stigmas.

Reproduction.—An annual, this najas flowers and fruits in July and August. The fruits are narrowly elliptic, 2.0-2.5 mm long, with smooth, shiny seeds.

Habitat.—The reported habitat is in shallow water (to 9 inches) with a sand-gravel bottom at about 8,800 feet elevation.

Distribution.—Endemic to Fishlake, Sevier County, Utah.

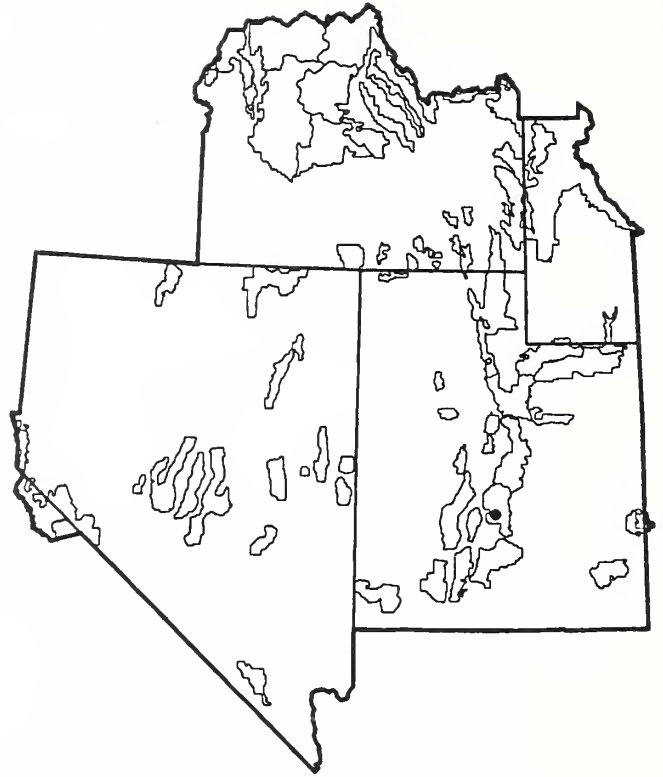
Management Implications.—Use of the lake for recreation and livestock watering appears to be a threat. Changes in the water quality due to organic wastes and changes in the water level are also potential threats. This taxon may be

extinct. It is known from historic collections made in the 1940's. Recent efforts to relocate the population have been unsuccessful

References.

Welsh, S.L., N.D. Atwood, and J. Reveal. 1975. Endangered, threatened, extinct, endemic, and rare or restricted Utah vascular plants. *Great Basin Natur.* 35:357.

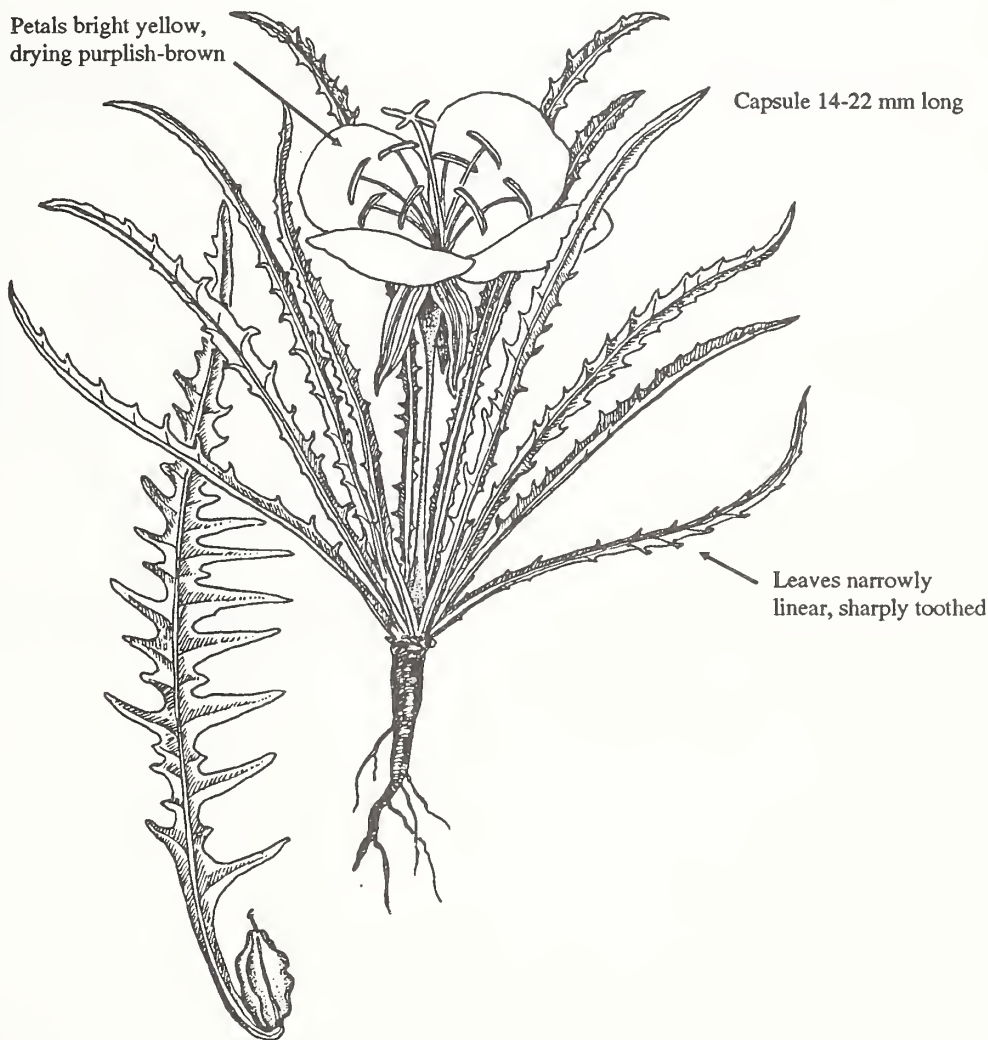
Maquire, B. 1942. Great Basin plants-V. Aquatics. *Rhodora* 44:7.



Distribution of *Najas caespitosa*.

YELLOW EVENING-PRIMROSE

Oenothera flava (A. Nels.) Garrett var. *acutissima* (W.L. Wagner) Welsh
Onagraceae



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G5T3/UT-S2

Description.—A member of the primrose family, yellow evening-primrose grows from a taproot or branched rootstock. The leaves are all basal, 5-30 cm long, and commonly toothed or pinnatifid. The flowers occur solitary in the leaf axils and are large and showy. The hypanthium is 3-10 cm long or more. The sepals are 2.5-5.0 cm long, bent back as a unit, and each with red margins. The petals

are 2.8-5.0 cm long and yellow, fading red-orange to bronze or pink. The petals occur on a long floral tube.

Reproduction.—A perennial, this primrose's fruit is a capsule, 1-3 cm long with wings 1-5 mm wide above the middle. The seeds occur in 2 rows and are 1.0-2.6 mm long. This plant sometimes spreads by rootstocks. Numerous seedlings appear each year from the thousands of seeds produced. Individual plants last for several years.

Habitat.—It grows in coarse sands, rock crevices or dark loamy soils closely associated with red quartzite of the Uinta Mountain group in dry rocky meadows in ponderosa pine

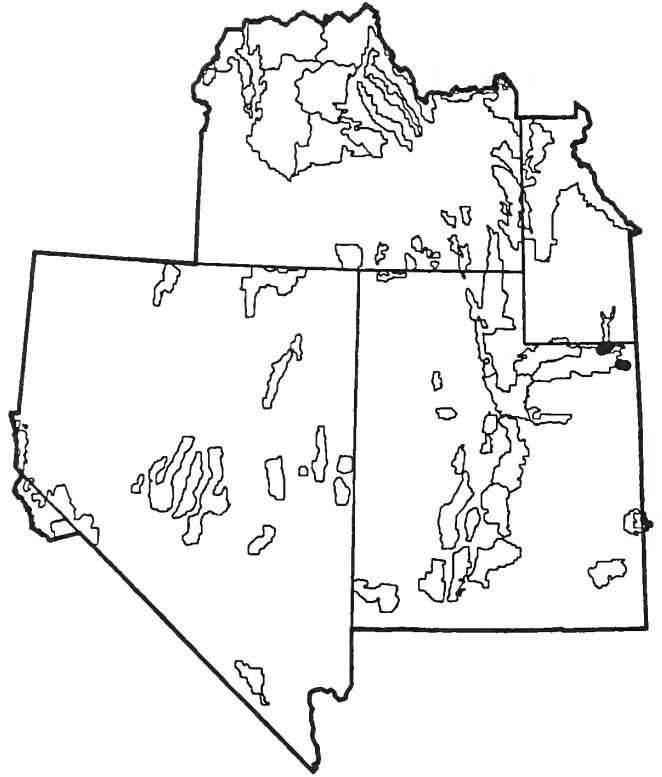
and mountain big sagebrush communities. It is found at elevations ranging from 6,000-8,500 feet.

Distribution.—Yellow evening-primrose is endemic to Daggett and northeast Uintah counties, Utah and Moffatt County, Colorado.

Management Implications.—This plant does well with moderate to heavy grazing which it receives on some allotments on the Ashley National Forest and Vernal District of the Bureau of Land Management. Increasing populations of elk also use habitats occupied by this primrose. Some populations occur in areas of heavy recreation use. Surveys were conducted by the Utah Natural Heritage Program in 1989. These data indicate populations appear to be stable. The majority of habitat occurs on the Vernal District of the BLM, Dinosaur National Monument, and the Ashley National Forest.

References.

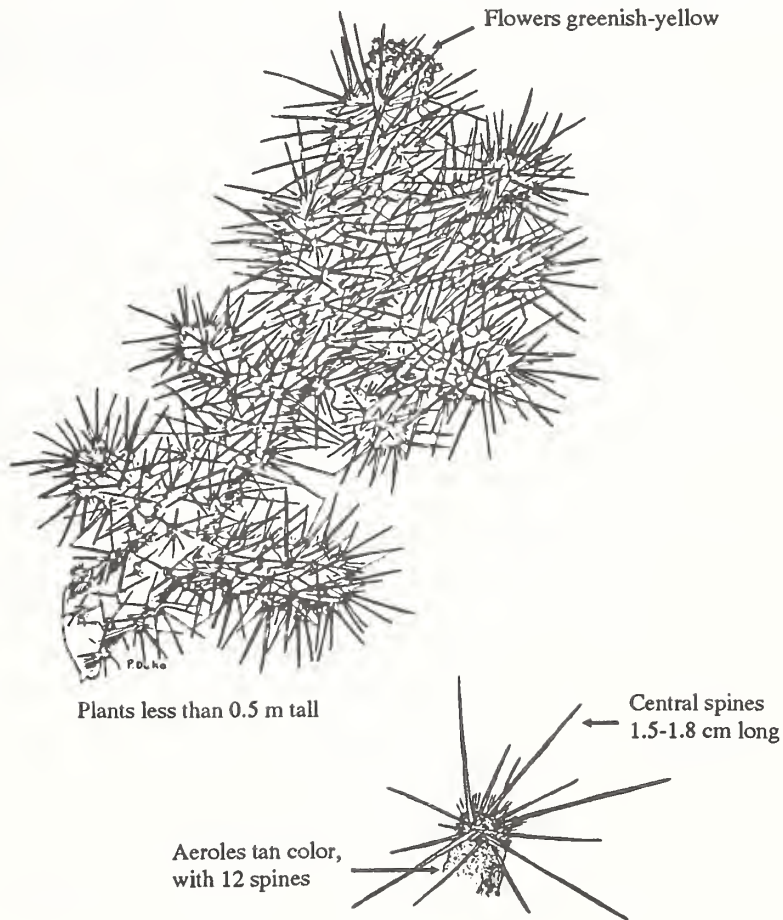
Welsh, S.L., D. Atwood, L. Wiggins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:447.



Distribution of *Oenothera flava* var. *acutissima* in the Intermountain Region.

BLUE DIAMOND CHOLLA

Opuntia whipplei Engelm. and Bigel. var. *multigeniculata* (Clokey) L. Benson
Cactaceae



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2T1/NV-S1

Description.—A member of the cactus family, the blue diamond cholla is bushy, sometimes scrubby, 3-6 (or rarely 15) dm high. The stems are compactly arranged with numerous short lateral branches. There are 10-14 spines per areole which nearly conceals the surface of the joint. The spines are densely crowded, 2.0-2.5 cm long with 2-4 central spines. The sheaths are tan or yellowish-pink and straight.

The flower is 2-3 cm in diameter, light greenish-yellow, and narrowly obovate.

Reproduction.—A long-lived perennial, flowering occurs in May and fruiting begins in July and continues through September. The fruit is yellow and fleshy at maturity. The seeds are pale tan, about 2 mm long, dull, and smooth.

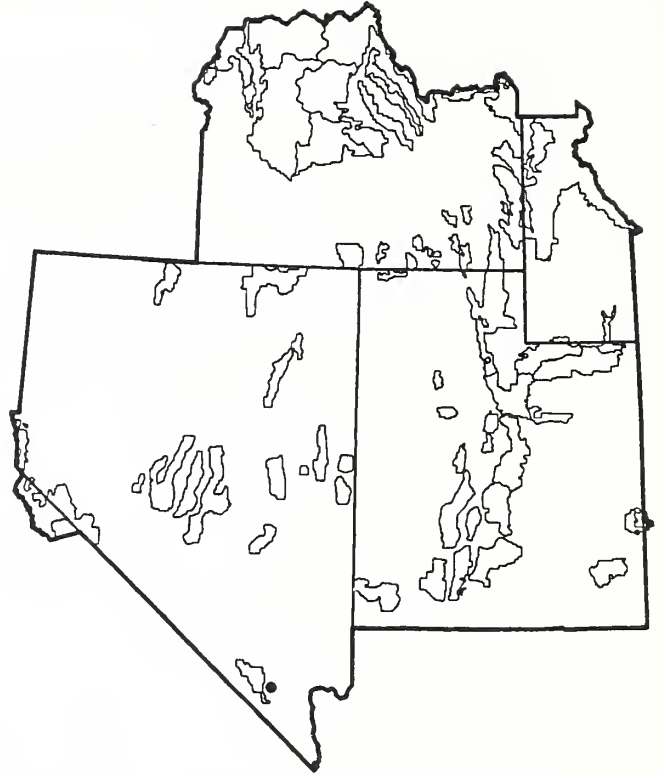
Habitat.—Warm desert shrub community with blackbrush as the dominant species. Growing in limestone-gypsum gravels and outcrops. Elevation between 4,600-4,675 feet.

Distribution.—Endemic to Blue Diamond along the road from Blue Diamond mill to the mine, southwest of Las Vegas, Clark County, Nevada.

Management Implications.—Gypsum mining activities have threatened the habitat, but protective measures are being taken to protect the species. Expansion of mining activities poses the greatest threat, particularly if protective measures are not enforced.

References.

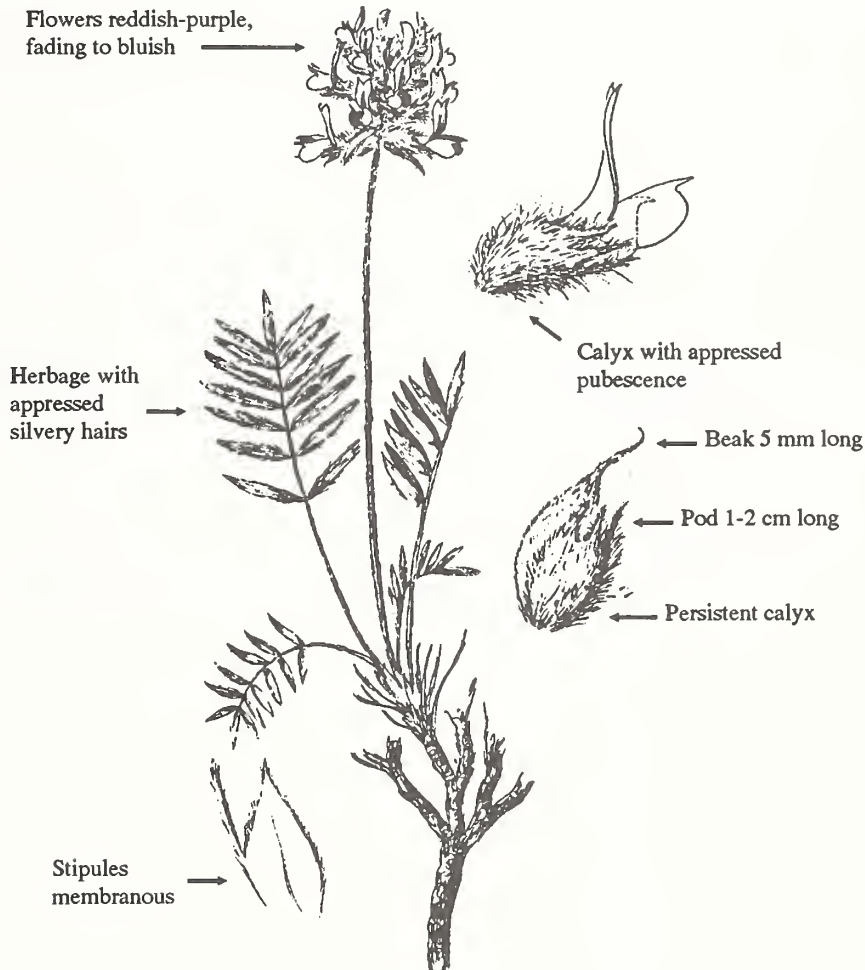
- Clokey, I.W. 1943. Notes on the flora of Charleston Mountains, Clark County, Nevada. *Madrono* 7:69-70.
- Benson, L. 1969. The cacti of Arizona. Third ed. Univ. of Ariz. Press, Tucson. pp. 20, 37-38.



Distribution of *Opuntia whipplei* var. *multigeniculata*.

CHALLIS CRAZYWEED

Oxytropis besseyi (Rydb.) var. *salmonensis* Barneby
Fabaceae (Leguminosae)



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G5T2/ID-S2

Description.—A member of the pea family, Challis crazyweed grows in tufts covered with silvery hairs. The leaves are 2-11 cm long with 5-21 leaflets, each 5-20 mm long. The flowering stalk is 5-30 flowered. The flowers are deep reddish-purple, fading to bluish. The sepals are 10-15 mm long. The stipules are membranous.

Reproduction.—A long-lived perennial, this *Oxytropis* flowers from June to July. It produces a pod which is 1-2 cm long.

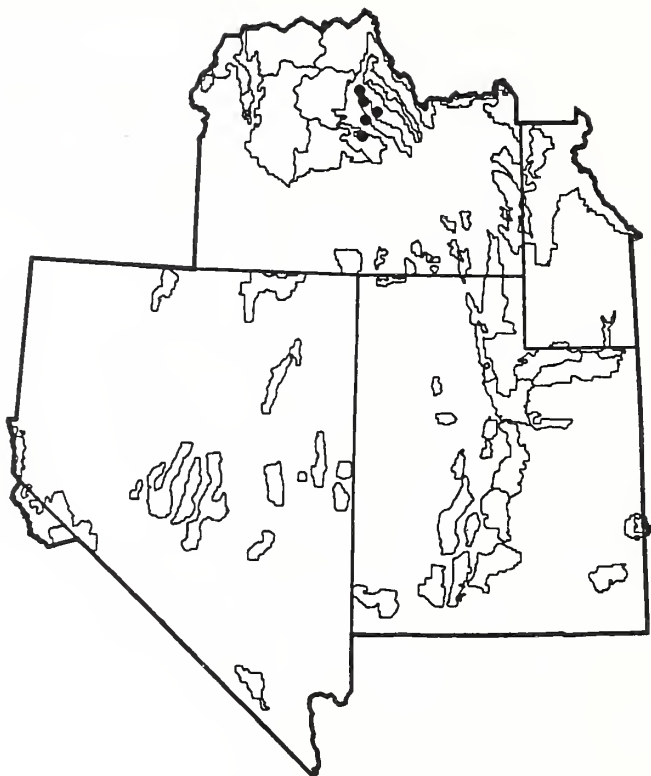
Habitat.—Fine talus and ash in sandy wash or open lower slopes within the shrub-steppe, often where subject to rapid erosion. Elevation ranges from 5,400-6,750 feet.

Distribution.—A relatively narrow endemic variety restricted to the immediate vicinity of the Salmon River Canyon generally between Clayton downstream to north of Challis and Mackay, Custer County, Idaho.

Management Implications.—Habitat areas are subject to livestock grazing and grazing by antelope. The degree of threat and impacts have not been evaluated.

References.

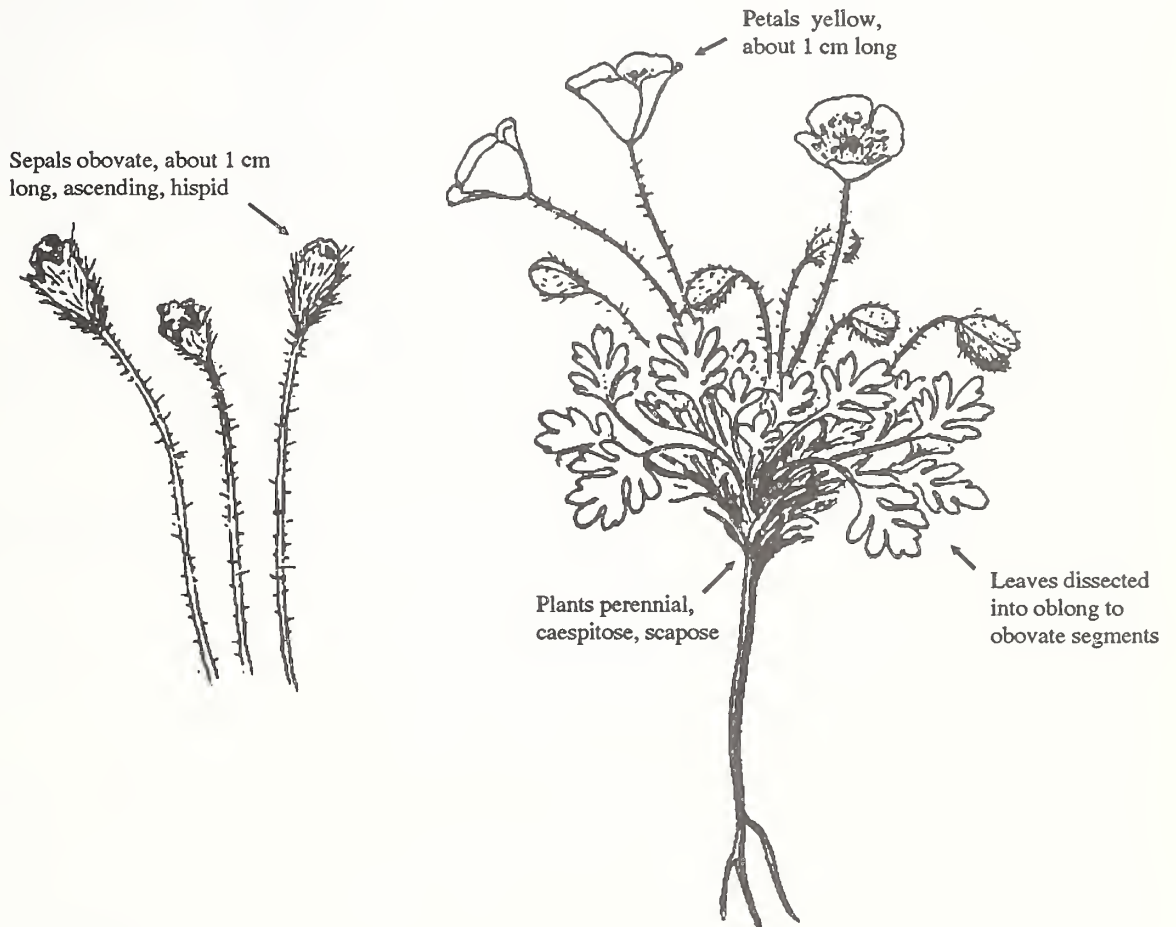
Barneby, R.C. 1952. *Oxytropis besseyi* var. *salmonensis*.
Proc. Calif. Acad. Sci. IV 27:234.



Distribution of *Oxytropis besseyi* var. *salmonensis*.

ARCTIC POPPY

Papaver kluanense (Tolm) North
Papaveraceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G4/ID-S1

Description.—A member of the poppy family, arctic poppy is dwarf (mostly 4-11 cm tall) from a branching root system with persistent leaf bases. The leaves are all basal, forming a tuft 1-3 cm long and pinnately lobed with coarse hairs. The flowering stalks are 3-10 cm long with spreading blackish hairs. The sepals also have black hairs and are 1-10 mm long. The petals are yellow, 10-13 mm long.

Reproduction.—A perennial, this poppy flowers from July to August. Its fruit is an obconic capsule, 11-13 mm long with stiff, black hairs.

Habitat.—Rocky ledges and cliffs on near vertical quartzite rock and rocky summits and ridges in association with several grasses. Strictly alpine in Idaho.

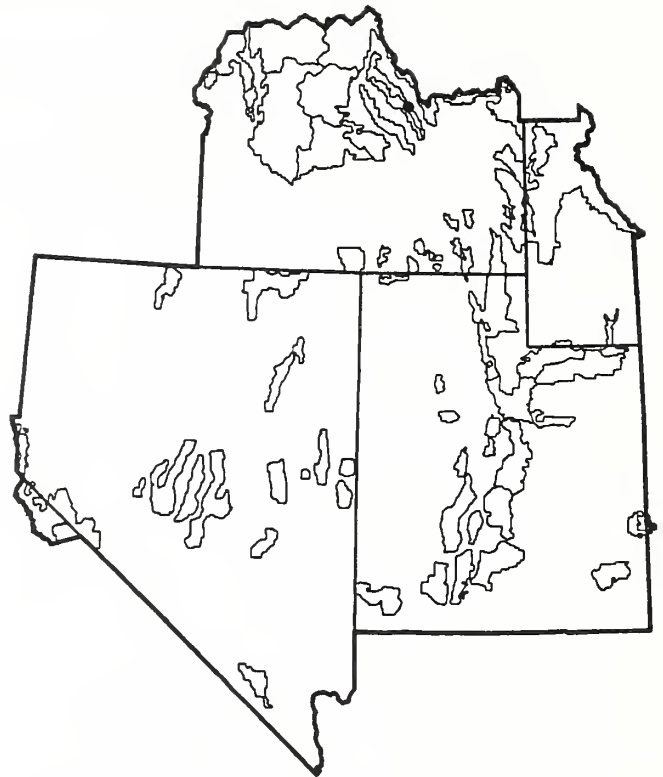
Distribution.—Known from the American Arctic, disjunct south to the Canadian Rockies of British Columbia and Alberta, and disjunct to central Idaho in Lemhi County.

Management Implications.—The Idaho population consists of a few individual plants. Recent attempts to locate

plants have been unsuccessful. The species may have been extirpated in Idaho by wild sheep and goats. Continued searches should be made to determine if the population still exists or has been extirpated.

References.

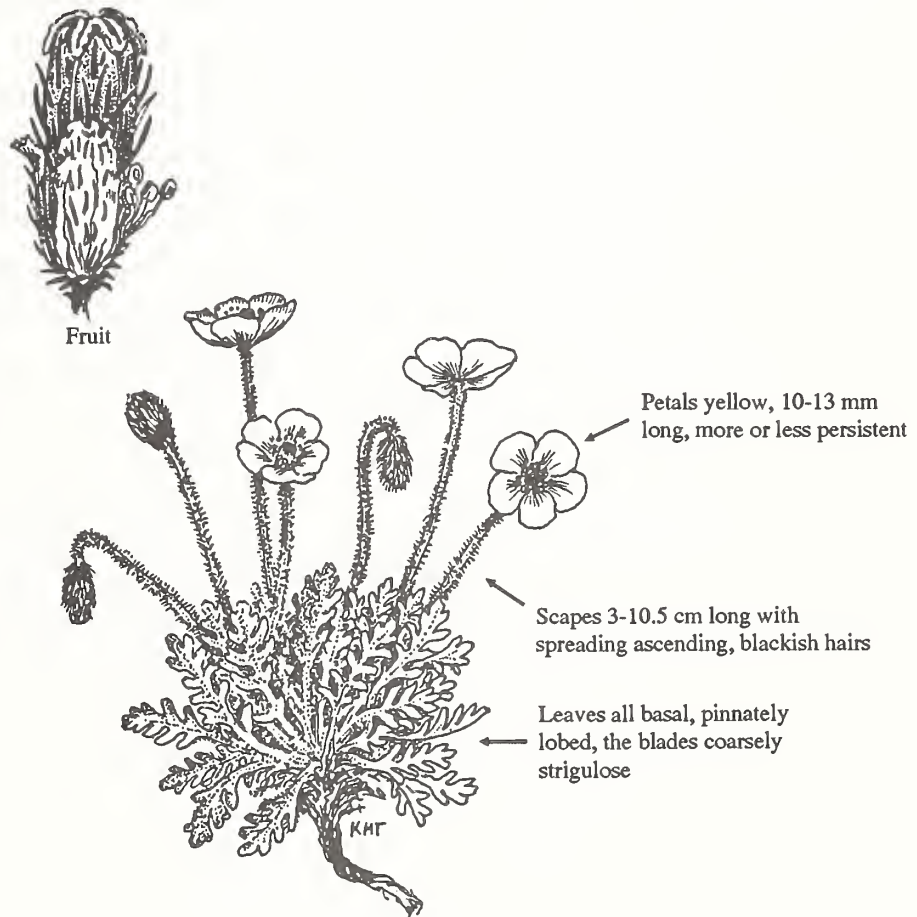
Steele, R., et al. 1981. Vascular plant species of concern in Idaho. Forest, Wildl., and Range Exp. Station, Bull. No. 34.



Distribution of *Papaver kluanense* in the Intermountain Region.

ARCTIC POPPY

Papaver radicatum Rottb. var. *pygmaeum* (Rydb.) Welsh
Papaveraceae



Dwarf, scapose perennials, 4-11 cm
high with persistent leaf bases

USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G5T1/UT-S1

Description.—A member of the poppy family, arctic poppy grows from a branched root. The leaves are numerous, all basal, more or less matted, and deeply dissected with coarse hairs. The flower stalks are 3-6 cm tall and, along with the sepals, are covered with long, spreading blackish hairs. The petals (of which there are 4) are about 1 cm long and orange-yellow in color.

Reproduction.—A long-lived perennial, this poppy flowers from July to August. Its fruit is a linear capsule about 1 cm long.

Habitat.—Rockstrips in alpine tundra communities. Elevation between 11,100-12,800 feet.

Distribution.—This species is widespread in arctic portions of North America and extends south to Colorado and Utah. Variety *pygmaeum* is only known from Duchesne and Summit counties, Utah in the Uinta Mountains, Ashley and Wasatch-Cache national forests.

Management Implications.—Studies of this phase need to be conducted to determine its biological requirements. The plants occur on areas of heavy historic grazing. Domestic sheep currently graze the poppy's habitat along with wild goats recently transplanted in the Uintas. Cumulative effects of these impacts need to be assessed before viable options for management can be made.

References.

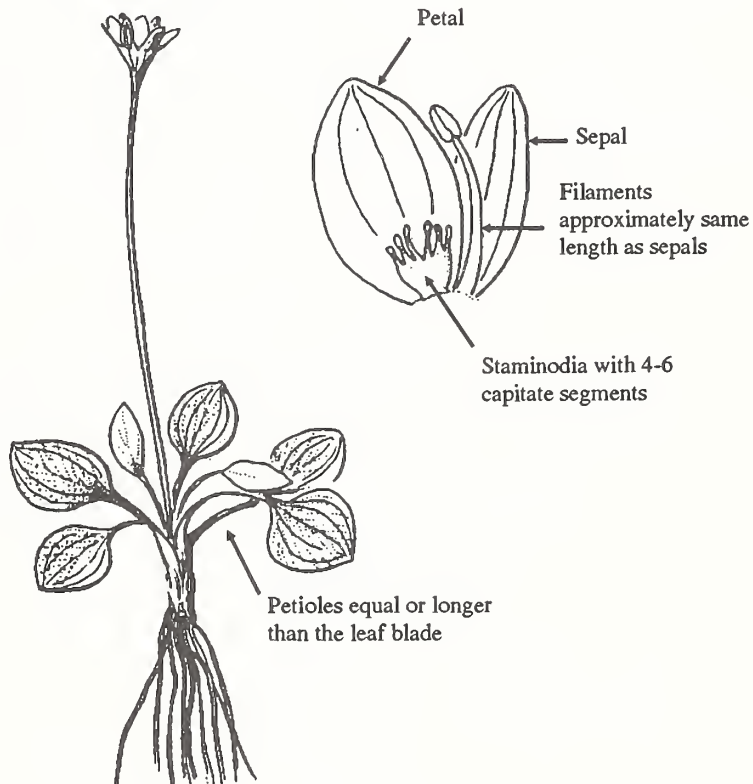
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich.
1987. A Utah flora. Great Basin Natur. Mem. No.
9:452.



Distribution of *Papaver radicatum* var. *pygmaeum*.

KOTZEBUE'S GRASS OF PARNASSUS

Parnassia kotzebuei Cham. var. *kotzebuei*
Saxifragaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G4T4/ID-S1

Description.—A member of the saxifrage family, Kotzebue's grass-of-parnassus grows with mostly single flowering, bractless stems. The petals are white, 1-3 nerved, elliptic-lanceolate, and mostly equal in size to the sepals (3.5-7.0 mm long). The stamen filaments are approximately as long as the sepals.

Reproduction.—A perennial herb, flowering from late July to August. The fruit is a many-seeded capsule about 1 cm long. Perennial roots overwinter for several seasons.

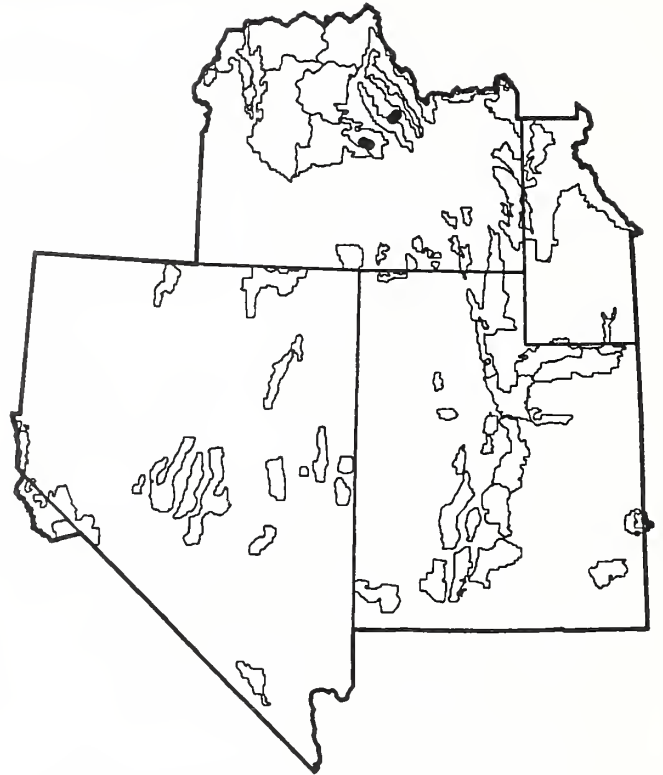
Habitat.—Moist, rocky ledges and crevices, and grassy lake shores in subalpine to alpine zones.

Distribution.—Alaska to Alberta and British Columbia with a few localities in Washington, Idaho, Montana, Wyoming, and Nevada. Also located in northeastern North America, Labrador and the Gaspé Peninsula to Greenland and Asia. In Idaho it is known from the Lost River Range and the Pioneer Mountains.

Management Implications.—Because of the remote nature and absence of mineral potential at the known sites, no threat due to any kind of human disturbance is likely, except possibly heavy recreational use at the Kane Lakes area.

References.

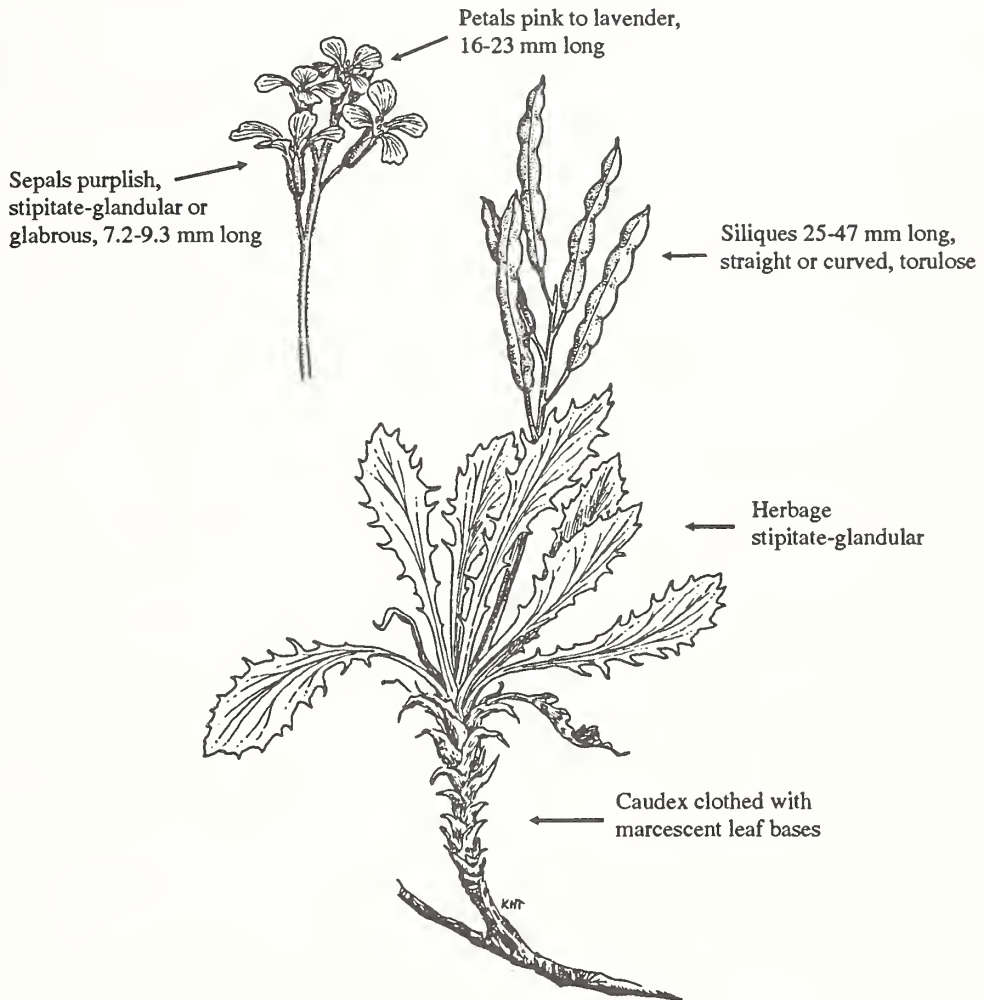
Hitchcock, C.L., et al. 1977. Vascular plants of the Pacific Northwest, Vol. 3. Univ. of Washington Press, Seattle and London.



Distribution of *Parnassia kotzebuei* var. *kotzebuei* in Idaho.

UINTA PARRYA

Parrya rydbergii Botsch.
Brassicaceae (Cruciferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2Q/UT-S2

Description.—A member of the mustard family, *Uinta parrya* grows low from a stout taproot. The base is clothed with persistent leaf bases. The stems are 7-12 cm tall. The leaves have coarse teeth and are 3-10 cm long. Flowers occur in clusters of 3-10 per stalk. The sepals are 7.2-9.3 mm long and purplish. The petals are 16-23 mm long and pink-lavender in color.

Reproduction.—A long-lived perennial, this plant flowers soon after snowmelt and produces siliques 25-47 mm long which are either straight or curved with a prominent midrib. Numerous seeds are produced in each silique.

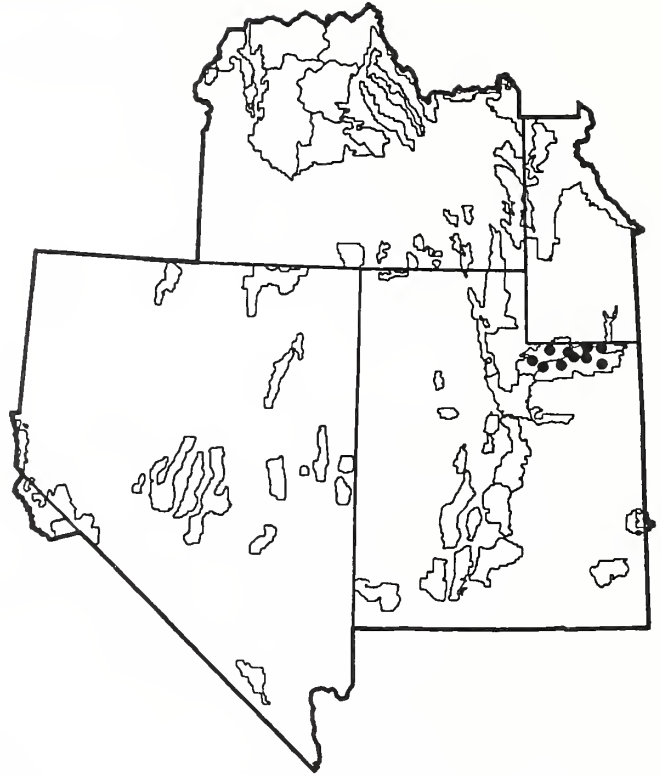
Habitat.—Alpine slopes of rocky *Carex* cushion plant communities, margins of rock stripes near talus slopes mostly on northerly and easterly exposures. The plant is rarely found in areas where turf is continuous. It does much better in open soil or gravel of talus slopes. Elevation between 10,900-13,000 feet.

Distribution.—Endemic to the Uinta Mountains of Daggett, Duchesne, Summit, and Uintah counties, Utah on the Ashley and Wasatch-Cache National Forests.

Management Implications.—For the most part, the species is well protected by its habitat. Sheep grazing of the past has not seemed to have had much, if any, impact to the species. Disturbance from sheep grazing may have been more beneficial than harmful. Monitoring studies could determine these relationships and provide data for management of the species.

References.

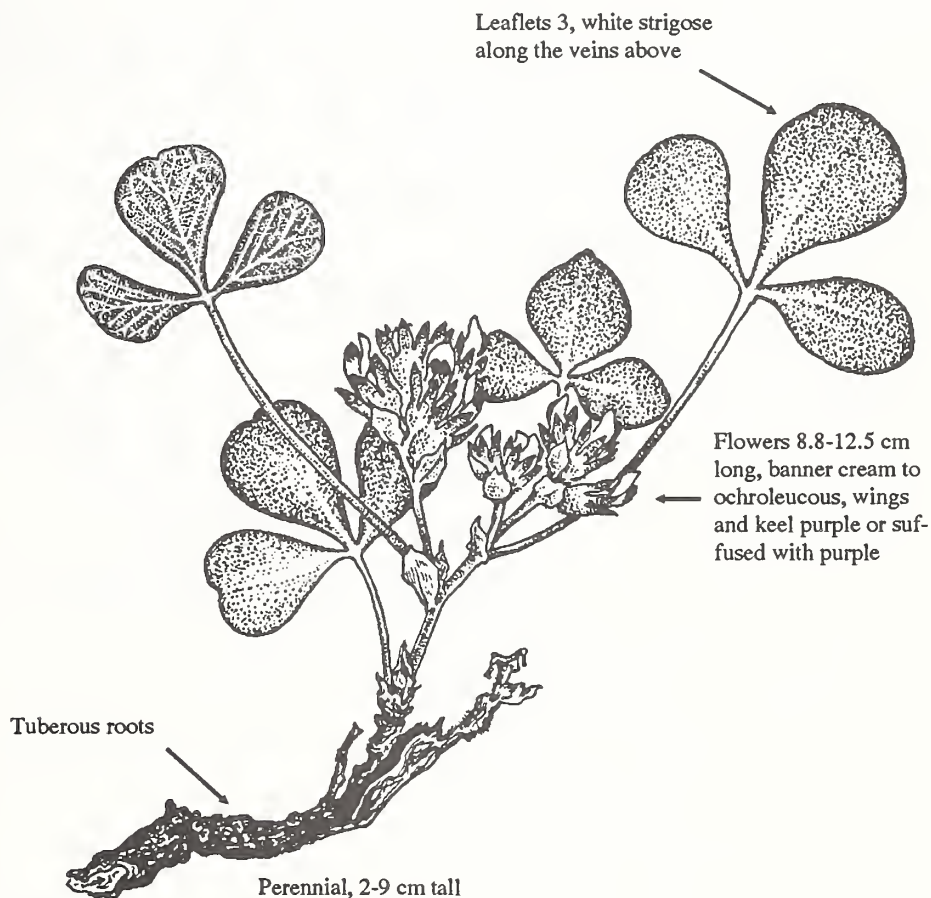
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:278.



Distribution of *Parrya rydbergii*.

PARIA BREADROOT

Pediomelum pariense Welsh and Atwood
Fabaceae (Leguminosae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the pea family, Paria breadroot grows from a slender rootstock arising from deep-seated tuberous roots. The stems are hairy with short internodes. The leaves have 3 leaflets which are gray-green, glandular-hairy beneath and yellow-green, glandular above. Flowers occur 6-15 per cluster. The flowers are cream to yellow-white with purple wings and keel.

Reproduction.—A long-lived perennial, flowering for this breadroot occurs from June through July. The pods ripen in late July to early August and are about 9 mm long.

Habitat.—Ponderosa pine and juniper woodlands in calcareous or sandy soils on the Pink Limestone member of the Wasatch Formation, Navajo Sandstone and Quaternary alluvium. Elevation between 5,500-8,000 feet.

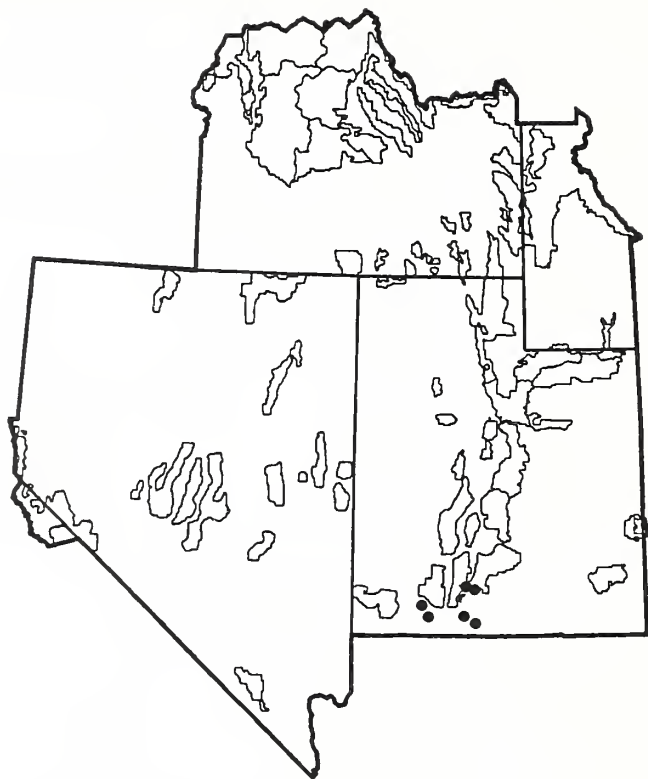
Distribution.—Known only from Garfield and Kane counties, Utah.

Management Implications.—ORV use, mineral exploration, and industrial development threatens the habitat. Some

trampling potential also exists from livestock grazing in areas with heavy use. Additional data are needed before management directions for this species can be established.

References.

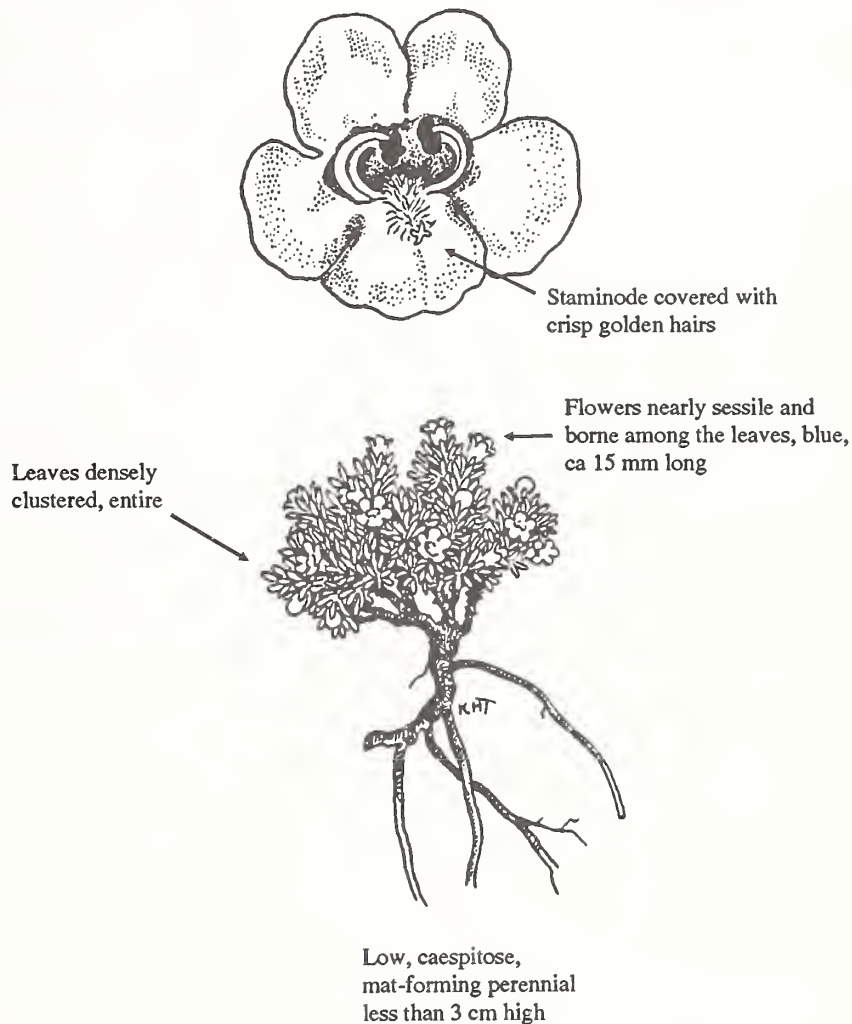
Welsh, S.L. 1978. Utah Plants-Fabaceae (Leguminosae).
Great Basin Natur. 38:225-367.



Distribution of *Pediomelum pariense*.

STEMLESS BEARDTONGUE

Penstemon acaulis L.O. Williams var. *acaulis*
Scrophulariaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G3T2/UT-S2

Description.—A member of the figwort family, stemless beardtongue grows in dwarf mats from a fibrous rootstock. The old stems' are buried in the duff and are clothed with remnants of previous leaves and flowers. The current years growth is tufted. The leaves are 0.3-2.0 cm long, linear, and densely clustered. The flowers are usually solitary and borne among the leaves. The sepals are 5-8 mm long. The petals are 12-15 mm long, moderately 2-tongued, blue with

a paler palate, and rounded throat. The staminode is sparsely orange bearded.

Reproduction.—This plant is a long-lived perennial. The capsules are persistent on the old stems and retain the seeds for several years. The seeds are apparently released by eventual decomposition of the capsule.

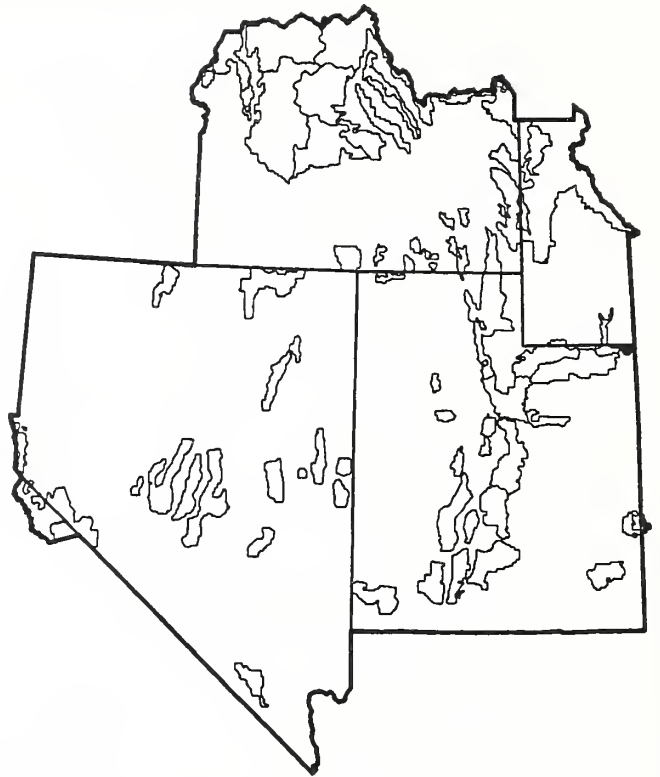
Habitat.—It occupies semi-barren substrates and sandy and rocky ridges in sagebrush-grass and pinyon-juniper communities at elevations of 5,500-7,200 feet.

Distribution.—Stemless beardtongue is found in Daggett County, Utah, adjacent Sweetwater County, Wyoming, and Moffat County, Colorado.

Management Implications.—Roads through population areas, increased visitor use, and unprotected populations on private property are all threats to this species.

References.

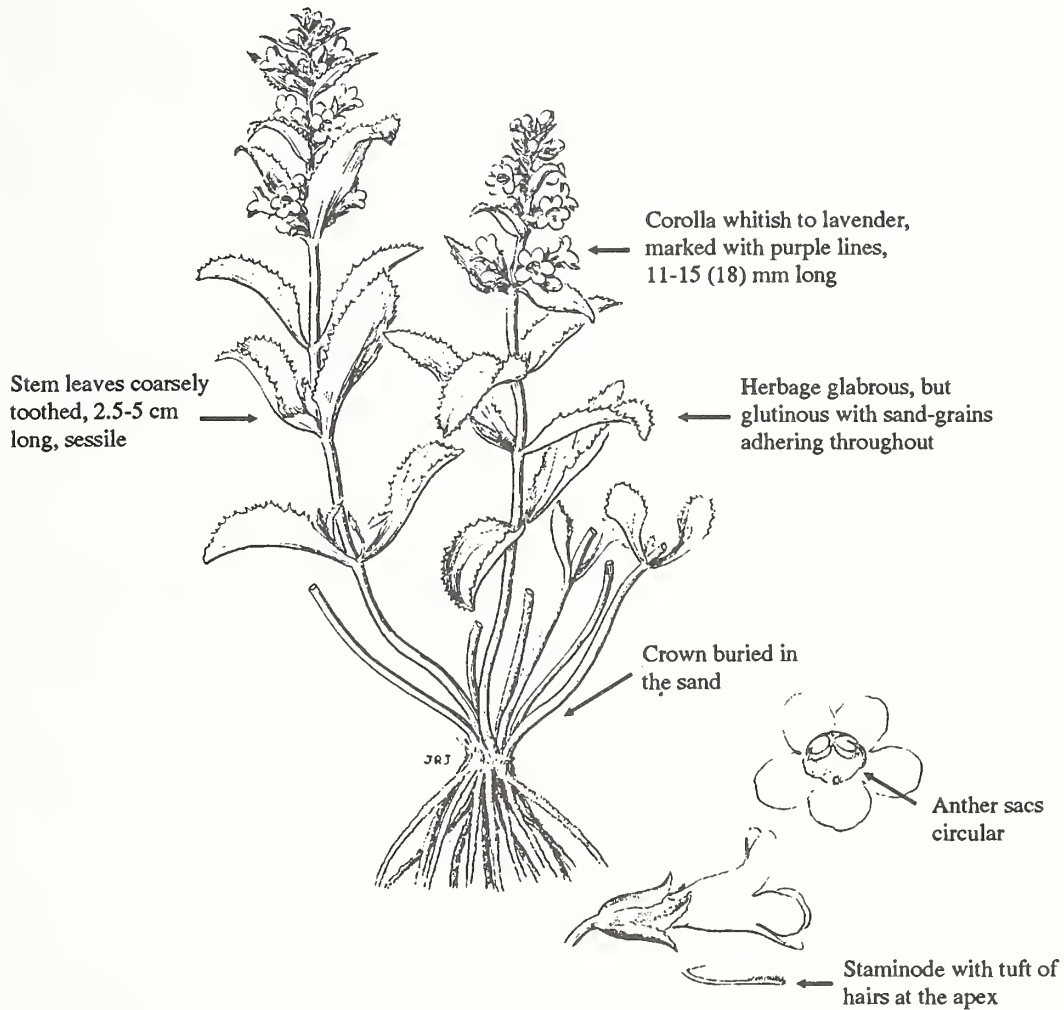
Williams, L.O. 1934. Field and herbarium studies - III. *Ann. Mo. Bot. Gard.* 21:343-346.



Distribution of *Penstemon acaulis* var. *acaulis* in Utah.

DUNE BEARDTONGUE

Penstemon arenarius Greene
Scrophulariaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G3/NV-S3

Description.—This member of the figwort family is a sub-shrubby perennial which may grow up to 3 dm in height. The leaves are lanceolate-shaped and coarse-toothed along the leaf margin. The stem leaves are 2.5-5.0 cm long and attached directly to the stem. This plant has many branches and the leaves have many hairy glands. The flower cluster is short and leafy and the individual flowers are yellowish to white marked with purple lines. The petals are united at

the base, creating a funnel shape, and are 11-15(18) mm long. It has a sterile stamen, which is bearded at the tip, and circular-shaped anther sacs, which help to set this species apart from similar penstemons with the same color of flowers.

Reproduction.—A long-lived perennial which blooms in May and has mature fruit by mid-July. Fruit is a many-seeded capsule.

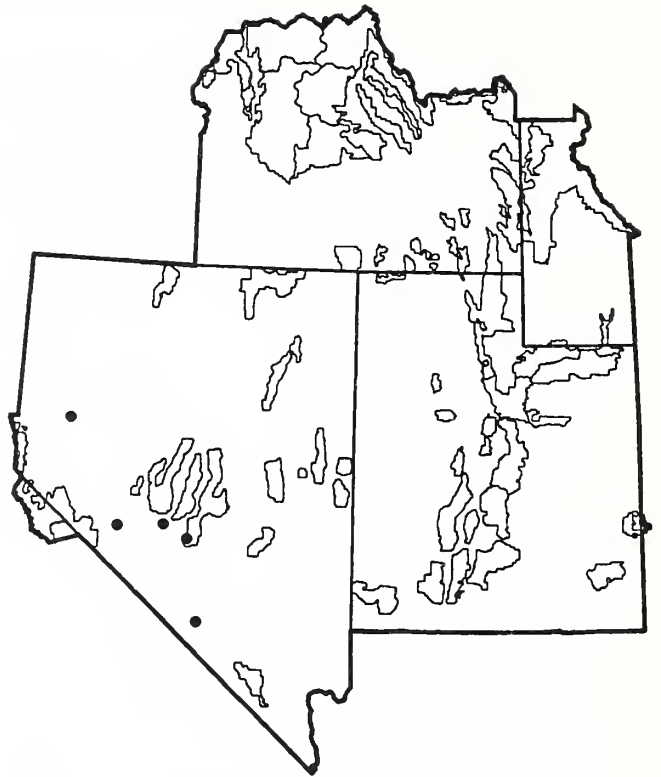
Habitat.—Dune beardtongue grows in shadscale, greasewood, and saltbrush communities on sandy soils, sometimes near dark gravelly pavements. The range of elevation is between 3,990-4,400 feet.

Distribution.—Endemic to Nevada in Churchill, Mineral (Esmeralda), and Nye counties.

Management Implications.—Existing threats include over-grazing and trampling by cattle, road construction, and ORV's. Additional data are needed to evaluate the species status.

References.

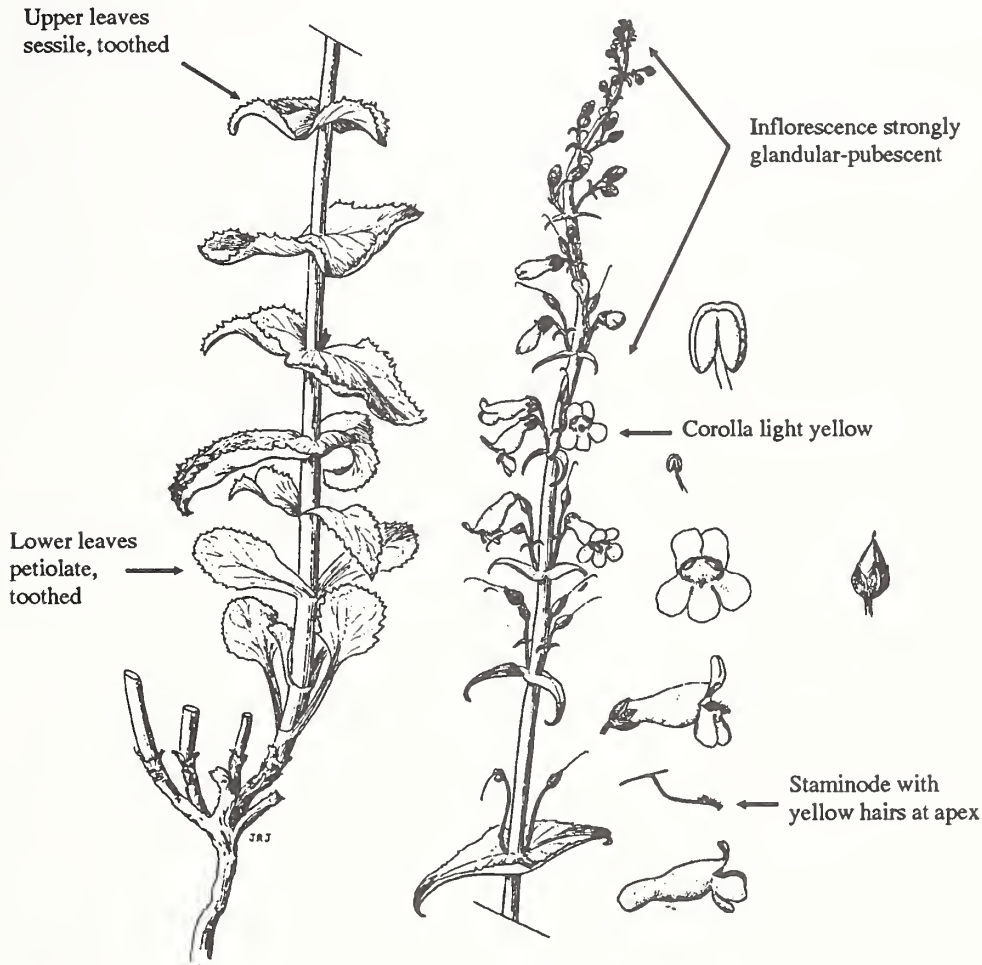
Greene, E.L. 1889. *Pittonia* 1:282.



Distribution of *Penstemon arenarius*.

BICOLORED BEARDTONGUE

Penstemon bicolor (Bdg.) Clokey and Keck ssp. *bicolor*
Scrophulariaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G?/NV-S?

Description.—This figwort stands 12 dm in height and has thick stems and grayish leathery leaves. The leaves are irregularly toothed. The lower basal leaves have petioles or stalks, while the upper stem leaves are sessile or clasping. The flower cluster is glandular-hairy and yellow in color. The flower is abruptly inflated above the basal portion and is sparsely hairy across the base of the lower lip. The lip measures 4.7-7.0 mm long. The flowers may be glandular-

hairy internally with the sterile stamen longer than the petals. The staminode is prominently bearded with long, yellow hairs.

Reproduction.—A long-lived perennial, flowering occurs in May and June. Mature capsules containing numerous seeds are produced in July.

Habitat.—Grows in upper creosote bush and lower juniper areas in shallow gravelly washes and roadsides. The range of elevation extends to 5,480 feet.

Distribution.—Endemic to Clark County, Nevada.

Management Implications.—Burros and personal collecting are the greatest threats to the species at this time. The foothills of the Charleston Mountains are receiving very heavy grazing by burros and wild horses. These impacts need to be brought into check with what the land can support without degradation of the vegetative resources. Currently even unpalatable plant species are receiving heavy grazing pressure, especially in some locations on BLM lands and enhancement lands now administered by the Las Vegas Ranger District of the Toiyabe National Forest.

References.

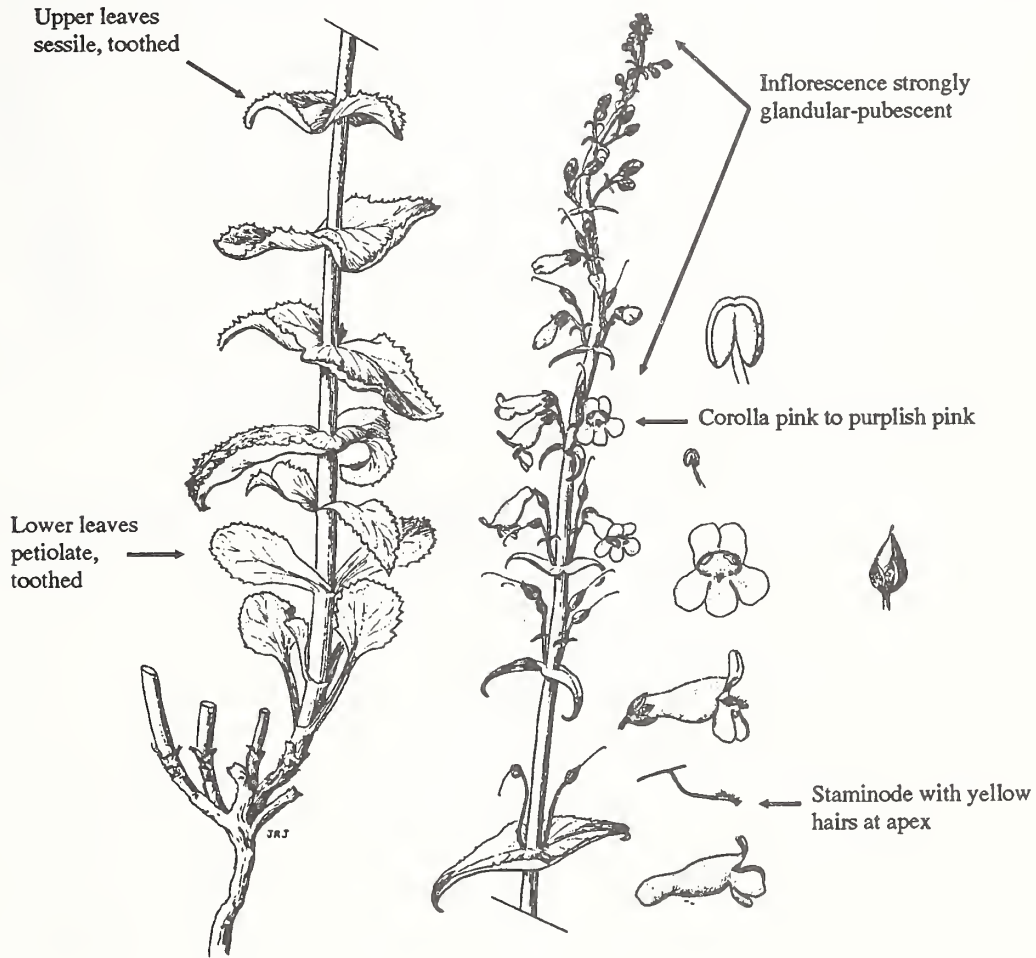
Clokey, I.W. 1951. Flora of the Charleston Mountains. Univ. of Calif. Press, Berkeley and Los Angeles. 274 pp.



Distribution of *Penstemon bicolor* ssp. *bicolor*.

ROSE COLORED BEARDTONGUE

Penstemon bicolor (Bdg.) Clokey and Keck ssp. *roseus* Clokey and Keck
Scrophulariaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G?/NV-S?

Description.—This figwort stands 12 dm in height and has thick stems and grayish leathery leaves. The leaves are irregularly toothed. The lower basal leaves have petioles or stalks, while the upper stem leaves are sessile or clasping the stem. The flower cluster is glandular-hairy and pink to purplish-pink in color. The flower is abruptly inflated above the basal portion and is sparsely hairy across the base of the lower lip. The lip measures 4.7-7.0 mm long. The flowers

may be glandular-hairy internally with the sterile stamen longer than the petals. The staminode is prominently bearded with long, yellow hairs.

Reproduction.—A long-lived perennial flowering occurs in May and June. Mature fruit (capsules) containing many seeds are produced in July.

Habitat.—This penstemon grows in creosote bush communities in shallow washes and drainage areas. The range of elevation is 1,970-5,480 feet.

Distribution.—Found in Clark County, Nevada and adjacent Arizona.

Management Implications.—Burros and personal collecting are the existing threats. The foothills of the Charleston Mountains are receiving very heavy grazing by burros and wild horses. These impacts need to be brought into check with what the land can support without degradation of the vegetative resources. Currently even unpalatable plant species are receiving heavy grazing pressure, especially in some locations on BLM lands and enhancement lands now administered by the Las Vegas Ranger District of the Toiyabe National Forest.

References.

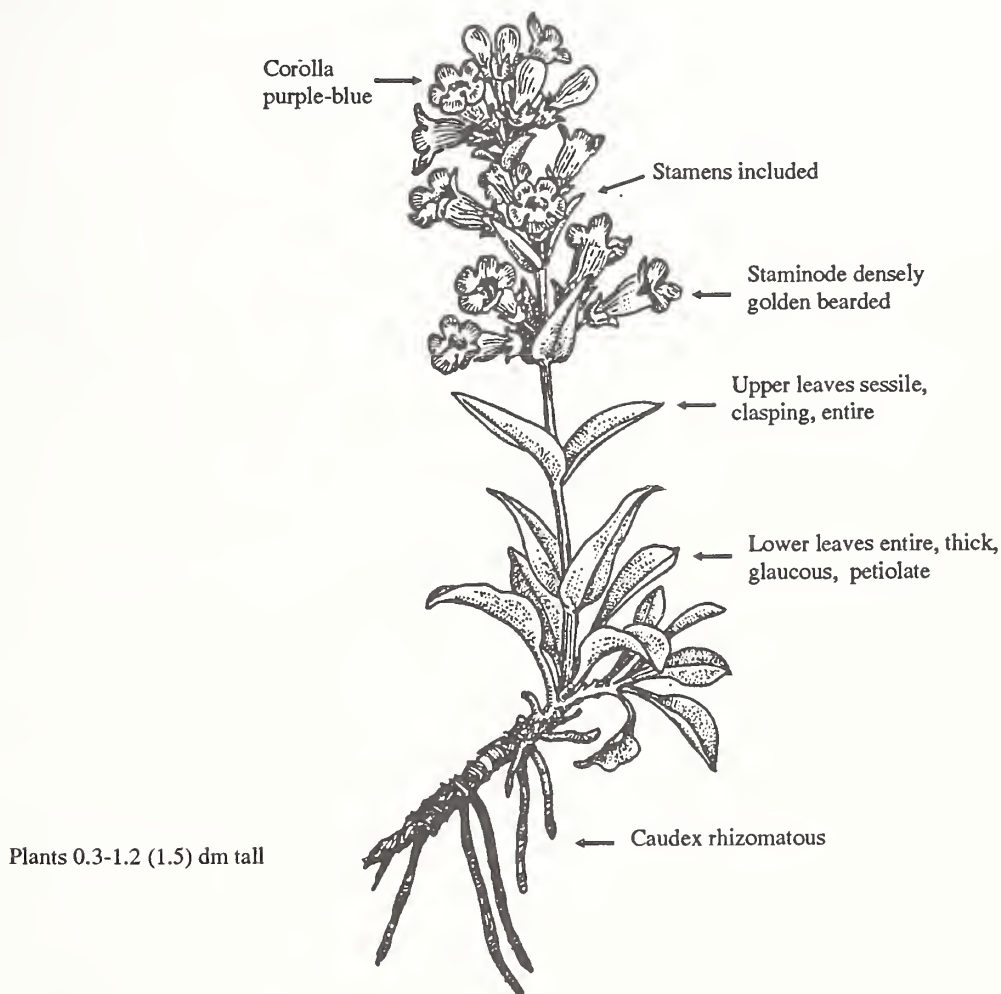
Clokey, I.W. 1951. Flora of the Charleston Mountains. Univ. of Calif. Press, Berkeley and Los Angeles. 274 pp.



Distribution of *Penstemon bicolor* ssp. *roseus* in the Intermountain Region.

RED CANYON BEARDTONGUE

Penstemon bracteatus Keck
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the figwort family, Red Canyon beardtongue grows 0.3-1.2 dm tall. There are 1 or few stems from a rhizomatous root system. The leaves are 0.3-4.0 cm long, thick, and spatulate to obovate. The lower leaves narrow to a petiole while the upper are sessile and clasping. The flowering stalk has 1-4 whorls of flowers each with 1 to few flowers. The sepals are 3-5 mm long with lobes which are ovate to broadly lanceolate with dry, thin margins.

The petals are 14-17 mm long, moderately enlarged, and blue to blue violet with a sparsely white bearded pallet. The stamens are included. The staminode is included or reaches the tip and is densely golden bearded on the distal third.

Reproduction.—A long-lived perennial herb, flowering for this penstemon begins in late May into early June. The fruit is a capsule whose seed is ripe and scattered by mid-July. The plant has a strong rhizomatous root system and will spread by underground rhizomes.

Habitat.—Stone slides and calcareous, gravelly slopes with clay loam textured soils, covered with pine needles and duff. Ponderosa pine-manzanita plant community with scattered

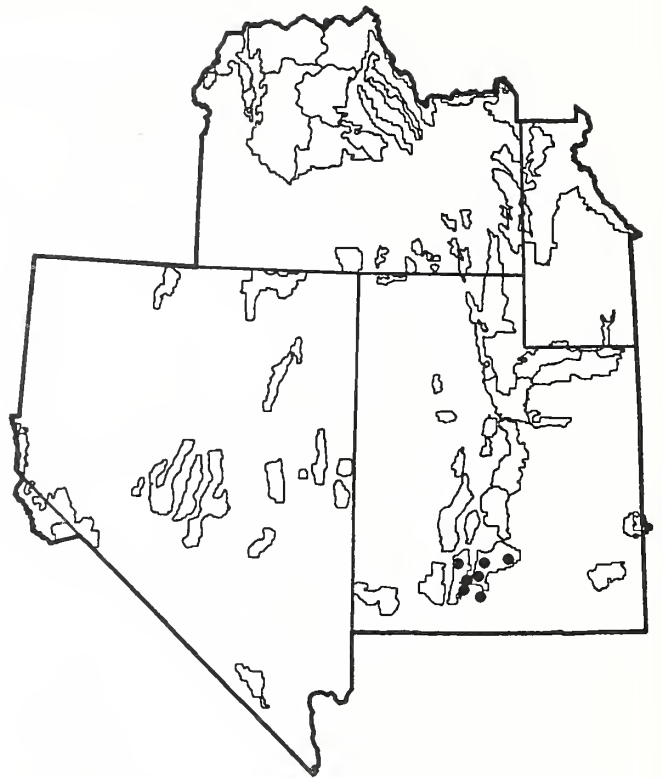
limber and bristle cone pine. Elevation between 7,800-8,500 feet.

Distribution.—This plant is endemic and restricted to the pink member of the Wasatch Limestone Formation in Red Canyon and Bryce Canyon in Garfield County, Utah.

Management Implications.—Loss of habitat by road building and logging activities poses a threat to this species. Also, increased recreational activities have an impact on the species. The scattered and isolated population of this plant makes it difficult to develop any management criteria. A management/monitoring plan is needed for this species and other endemics to the Red Canyon/Bryce Canyon area. Perhaps a joint plan with the National Park Service should be considered. Such a plan could provide an avenue for shared funding and management responsibilities.

References.

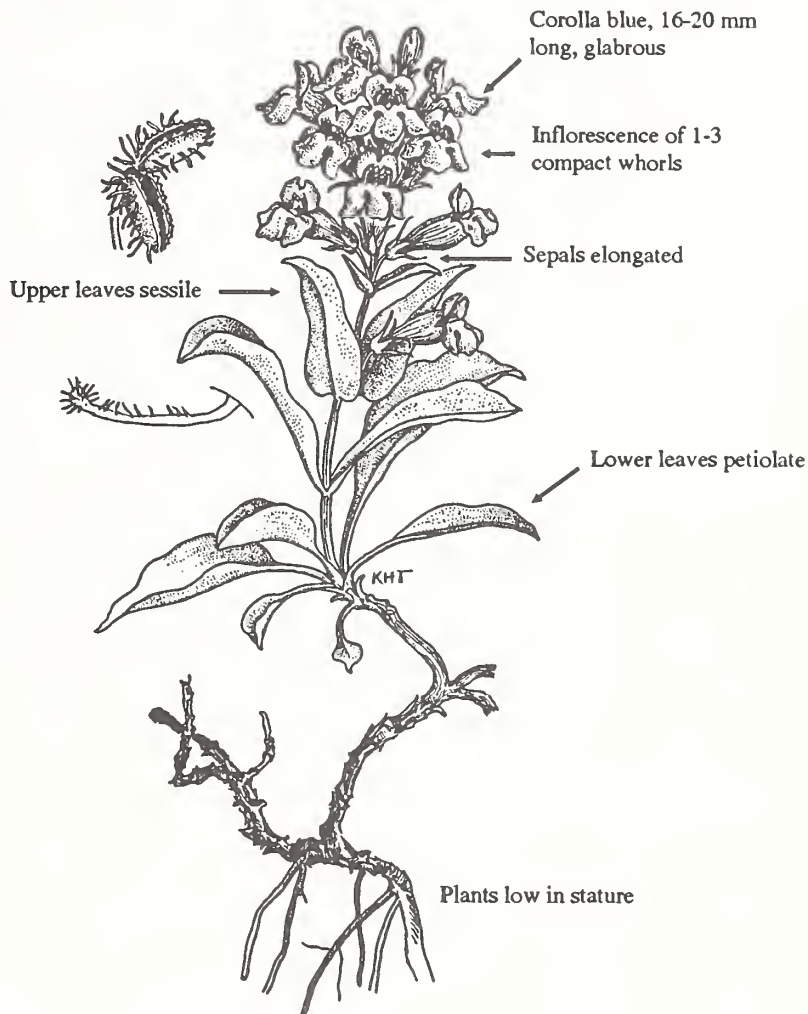
Keck, D.D. 1934. A New *Penstemon* from Utah. Leaflet. West. Bot. 1:82.



Distribution of *Penstemon bracteatus*.

CACHE BEARDTONGUE

Penstemon cyananthus Hook. var. *compactus* Keck
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T2T3/UT-S2S3

Description.—A member of the figwort family, Cache beardtongue grows from a woody rootstock to a height of 10-32 cm tall. The basal leaves are 4-9 cm long and oblanceolate to spatulate. The stem leaves are shorter (2-7 cm long). The flower stalks contain 1-3 compact whorls of flowers. The sepals are elongated (6-11 mm long) with small glands and eroded margins. The petals are 20-26 mm long. The staminode is feebly bearded.

Reproduction.—A long-lived perennial, flowering for this penstemon begins in July and continues through August. The fruit is a several seeded capsule 5-6 mm long.

Habitat.—Dry soil in spruce needles and dry, rocky soil above and among cliffs in coniferous woodland openings on carboniferous limestone and dolomites. In association with alpine fir, Engelmann spruce, columbines, and penstemons. Elevation between 6,700-9,500 feet.

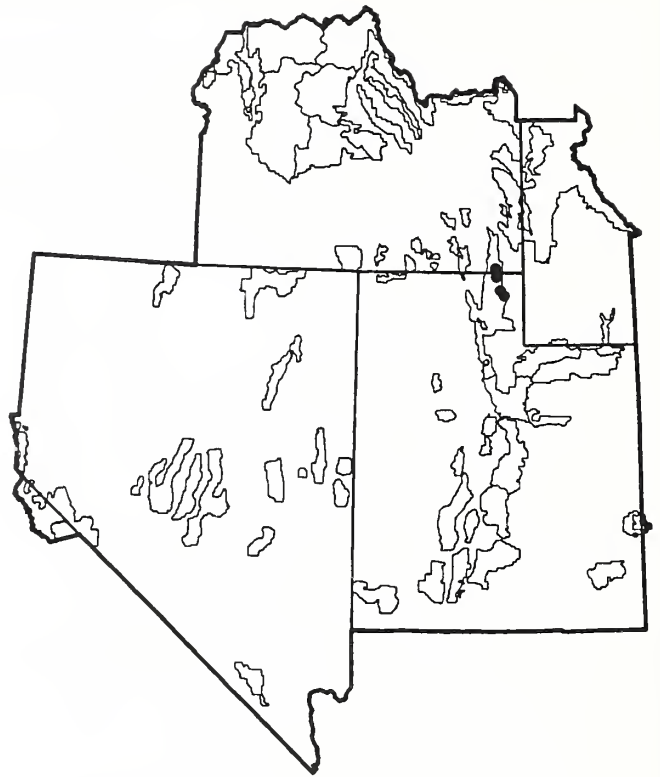
Distribution.—Endemic to Cache County, Utah and adjacent areas in Idaho.

Management Implications.—Increased recreational use, timber operations, and urban expansion all pose potential threats to this species, especially in heavily used areas such as Tony Grove. Populations at higher, more remote locations appear to be more stable.

References.

Crosswhite, F.S. 1967. Revision of *Penstemon*, Section *Habroanthus* (Scrophulariaceae) I:Conspectus. *Amer. Midl. Natur.* 77:1-11.

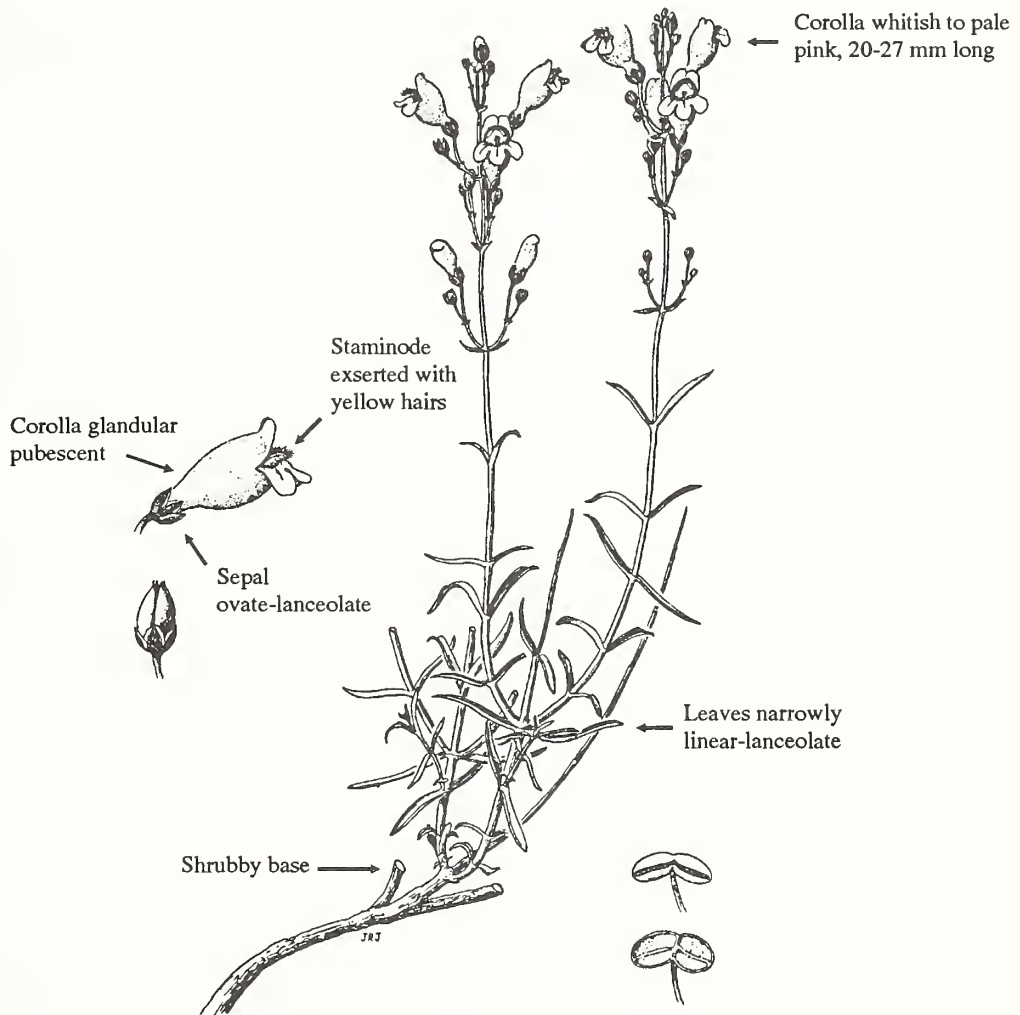
Keck, D.D. 1940. Studies in *Penstemon*. VII. The subsections *Garidneriani*, *Deusti*, *Arenarii* of the *Graciles* and miscellaneous new species. *Amer. Midl. Natur.* 23:594-616.



Distribution of *Penstemon cyananthus* var. *compactus* in Utah.

DEATH VALLEY BEARDTONGUE

Penstemon fruticiformis Cov. ssp. *amargosae* Keck
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3T2/NV-S2, CA-S?

Description.—This member of the figwort family is 3-6 dm tall. It has branched stems from a shrubby base. The leaves are entire or slightly toothed on the margins and linear to lanceolate in shape. The leaf margins curl upwards and measure 6 mm in width. The upper stem leaves are sessile while the lower ones appear winged. Flowers occur 1-3 per cluster and range from whitish to pale pink in color.

Reproduction.—A long-lived perennial, flowering occurs from April to June. Hundreds of seeds are produced in the many capsules that develop each year.

Habitat.—Found in juniper and creosote bush communities in sandy or gravelly washes. The range of elevation is between 3,300-5,200 feet.

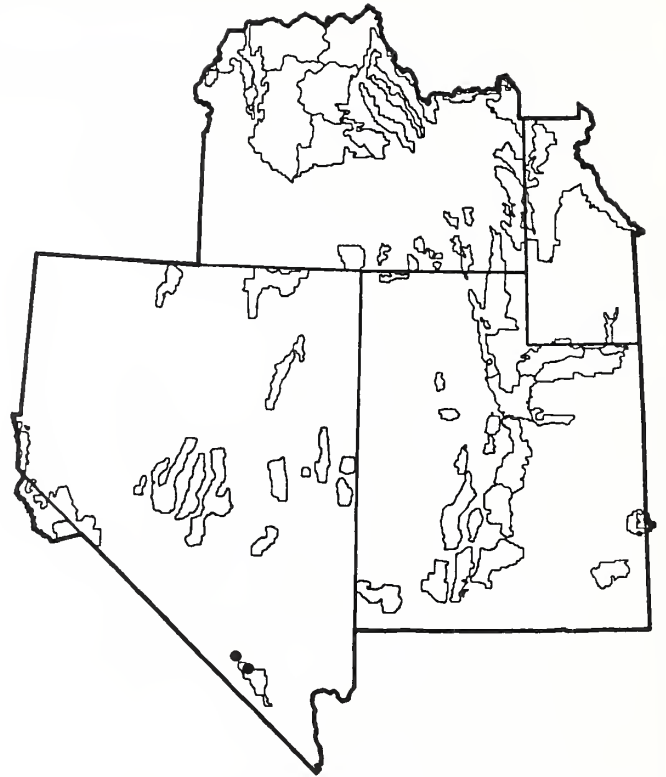
Distribution.—Restricted to Clark and Nye counties, Nevada and San Bernardino County, California.

Management Implications.—Populations are impacted by grazing animals, mainly wild burros, ORV use, and other recreational uses. Monitoring studies are needed to assess

the degree of impacts and to develop management prescriptions to ensure viability of the species.

References.

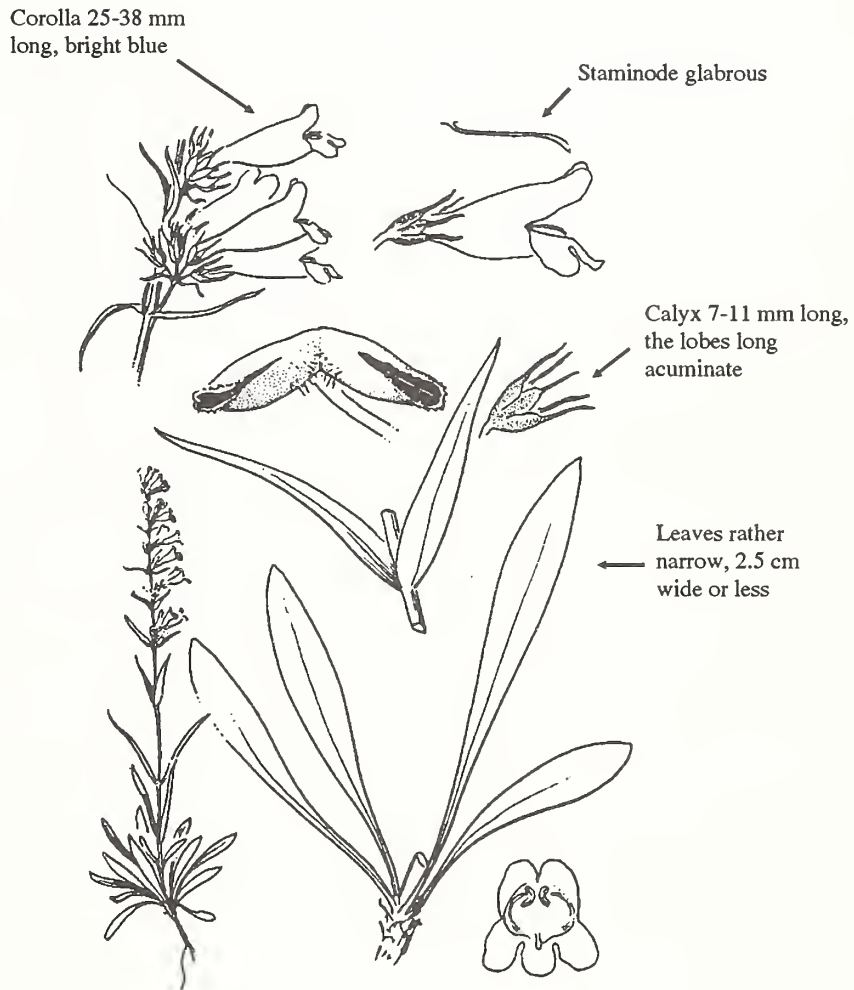
Keck, D.D. 1937. *Penstemon fruticiformis* ssp. *amargosae*.
The Amer. Midl. Natur. 18:801.



Distribution of *Penstemon fruticiformis* ssp. *amargosae* in Nevada.

LEMHI PENSTEMON

Penstemon lemhiensis (Keck) Keck and Cronquist
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3/ID-S2

Description.—A member of the figwort family, Lemhi penstemon is tall (4-8 dm in height) and grows from a branched woodstock. The herbage is lightly covered with short hairs and occasionally a bluish wax. The basal leaves reach 15 cm in length and surround 1 to several stems. The stem leaves are narrow, lance-shaped, and reduced in size as they near the top. Clusters of large, bright blue-purple

flowers arise above the upper leaves. The sepals are green with pointed tips and about 1/3 the length of the petals

Reproduction.—A short-lived perennial herb, this penstemon flowers from early June to early July and fruits in August. Plants have been observed to be cross-pollinated by wasps. The capsules are 10-14 mm long with 1-2 mm long narrowly winged seeds.

Habitat.—Open sagebrush and grassland-coniferous forest communities on stable to semi-disturbed sites, mostly in deep soils of varying parent materials on steep to gradual

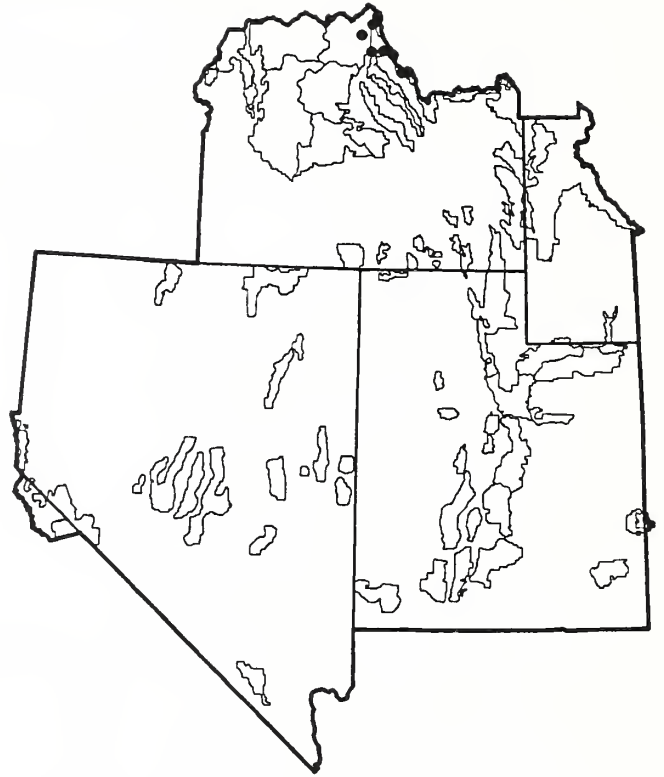
slopes, often near the lower edge of treeline. Elevation between 4,000-8,100 feet.

Distribution.—Southwestern Montana, in Beaverhead, Deerlodge, and Ravalli counties and adjacent Idaho in Lemhi County.

Management Implications.—Grazing and livestock trampling along with road building projects threaten this plant and its habitat. Noxious weeds have invaded roadsides and slopes occupied by Lemhi penstemon. Competition for space and moisture and spraying for noxious weeds are impacting this species.

References.

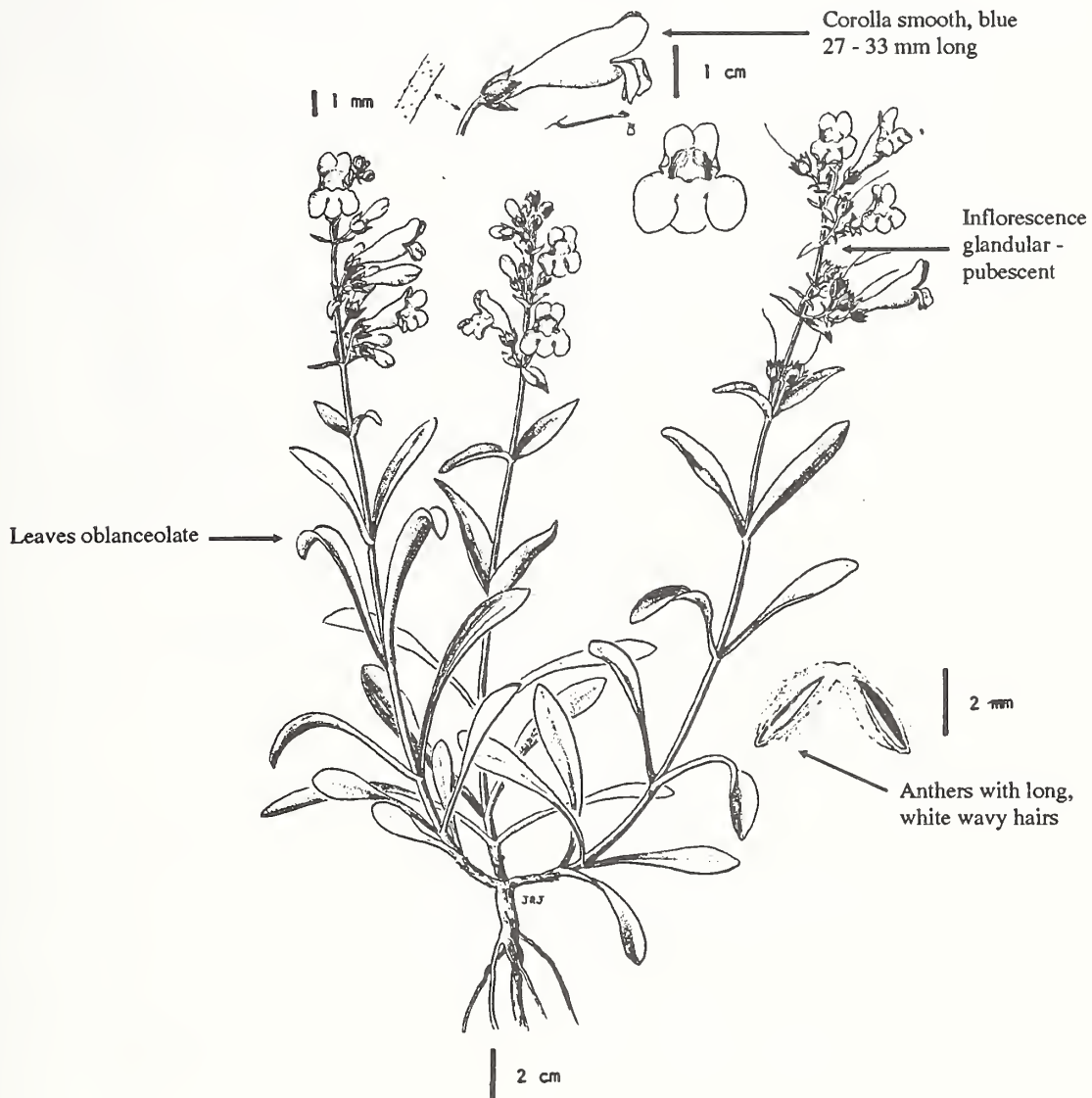
- Keck, D.D. and A. Cronquist. 1957. *Penstemon lemhiensis*. Brittonia 8:248.
- Keck, D.D. 1940. Studies in Penstemon VIII. Amer. Midl. Nat. 23:612.



Distribution of *Penstemon lemhiensis* in the Intermountain Region.

MT. MORIAH PENSTEMON

Penstemon moriahensis N. Holmgren
Scrophulariaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: NV
Heritage Global/State Status: G2/NV-S1

Description.—A member of the figwort family, Mt. Moriah penstemon stems are erect and 3.5-5.0 dm tall with sparingly developed basal leaves. The leaves are 4-11 cm long. The flowers occur in whorls around the flowering stalk, each whorl containing 2-5 flowers. The sepals are 7-10 mm long with thin, dry, eroded margins. The petals are bell-shaped and blue. The staminode is bearded with fine whitish hairs.

Reproduction.—A short-lived perennial, flowering is from June to July. The fruit is a capsule containing numerous seeds.

Habitat.—Associated with sagebrush in mountain mahogany woodlands and open ponderosa pine. Elevation between 8,200-9,200 feet.

Distribution.—Known only from the northern Snake Range near Mount Moriah, White Pine County, and White Pine Peak area, Currant Mountain, Nye County, Nevada on the Humboldt National Forest.

Management Implications.—Protect and maintain the species and habitat until more information is gathered on its distribution and biological needs.

References.

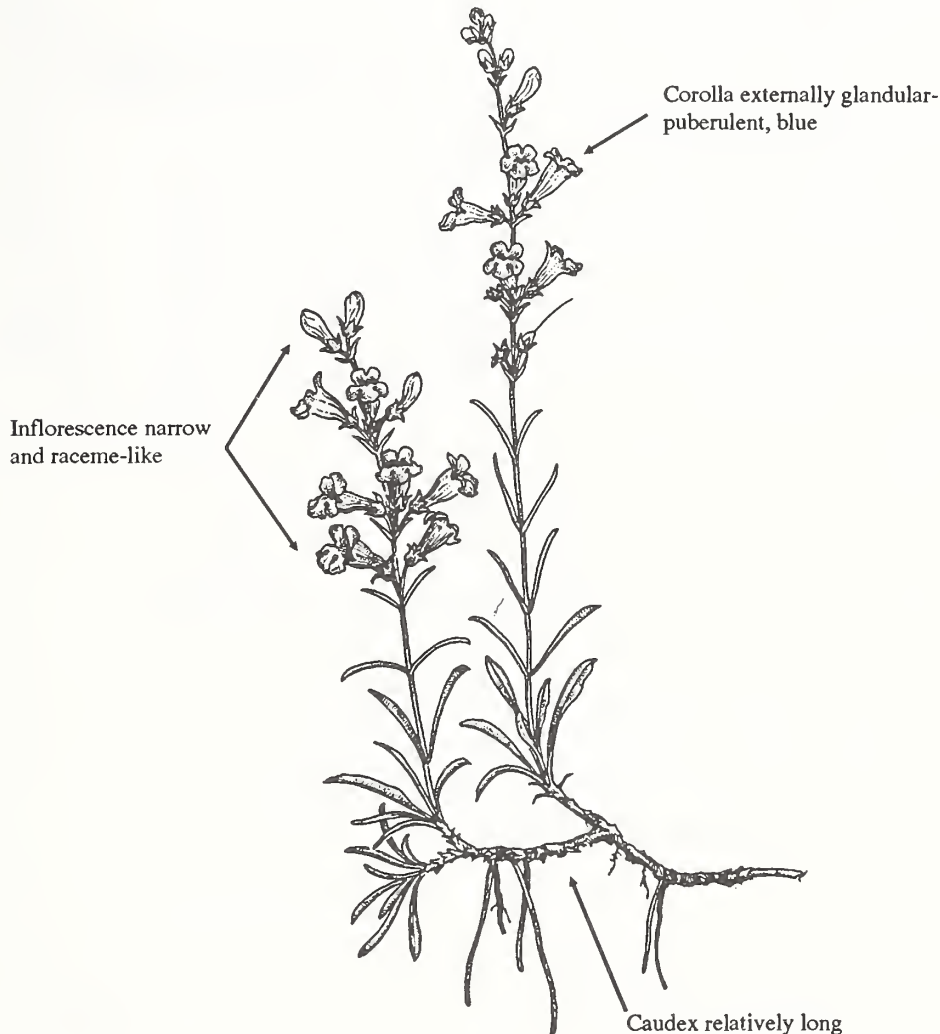
Holmgren, N. 1978. *Penstemon moriahensis*. Brittonia 30:422.



Distribution of *Penstemon moriahensis*.

LITTLE PENSTEMON

Penstemon parvus Pennell
Scrophulariaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/UT-S2

Description.—A member of the figwort family, little penstemon has several stems, 5-10 cm tall, from a relatively long, slender root system. The leaves are green, obscurely veined 2.0-2.5 cm long, and reduced in size upwards. The flowering stalk has 1-2 whorls consisting of 1-2 single-flowered branches. The sepals are 4 mm long with fine glandular hairs. The petals are blue and 20 mm long.

Reproduction.—Flowering occurs from late June to August. The fruit is a several seeded capsule. Individual plants live several years and these perennials are replaced upon death by seedlings developing from germinating seeds.

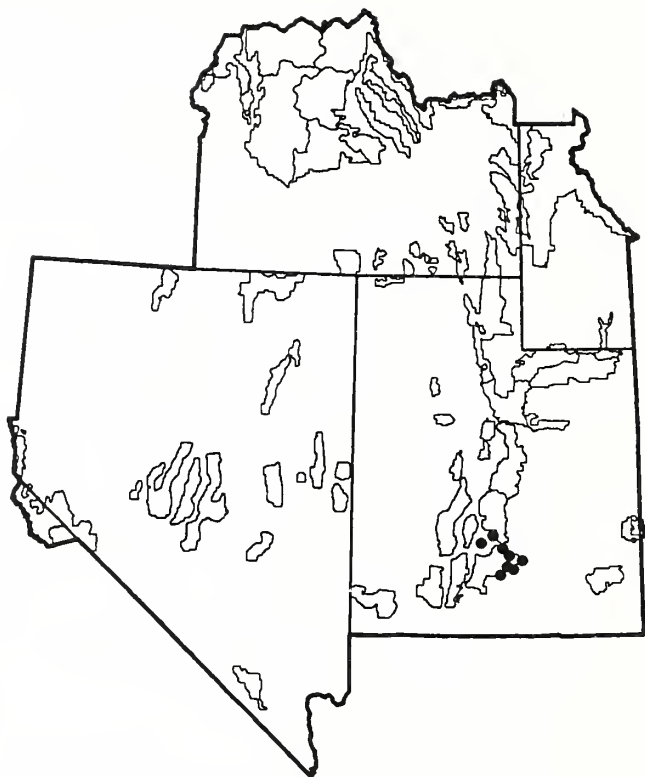
Habitat.—Sagebrush-grass, pinyon-juniper, and spruce communities on tertiary volcanic gravels in sandy, gravelly loam. Elevation between 8,200-11,500 feet.

Distribution.—Endemic to Utah in Piute, Garfield, and Wayne counties. Apparently endemic to the Fishlake and Dixie National Forests.

Management Implications.—Reclamation projects, roads, and excessive grazing in the past, currently threaten its survival. A complete survey is needed to determine the species range before specific recommendations can be made. Populations in sheep allotments have been depleted significantly. Grazing use patterns and numbers are currently being evaluated for the Boulder Mountain.

References.

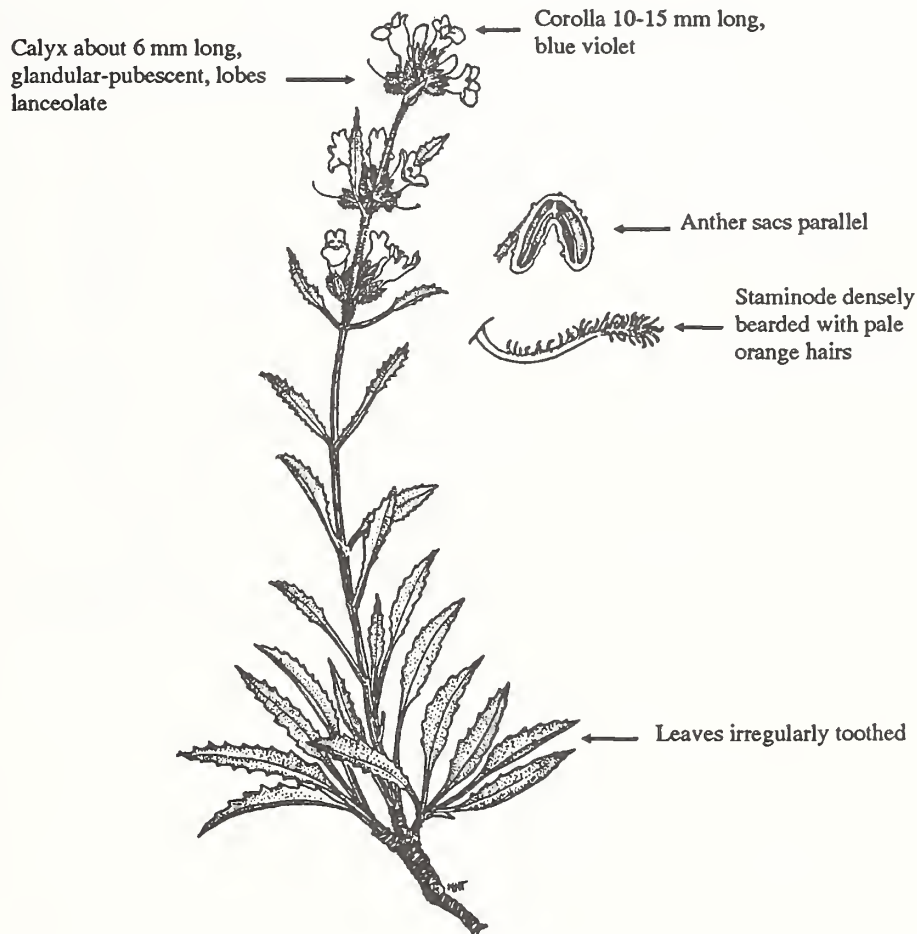
Pennell, F.W. 1920. Scrophulariaceae of the central Rocky Mountain states. *Contr. U.S. Nat. Herb.* 20:313-381.



Distribution of *Penstemon parvus*.

PINYON PENSTEMON

Penstemon pinorum L. Schultz and J. Schultz
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the figwort family, pinyon penstemon grows from a loosely branched woody base. The vegetative branches are short, bearing leaves (4-8 cm long), larger than those of flowering stems. The flowering stems are variable in length, as short as 7 cm and as long as 21 cm. The herbage is hairy and glandular. The flowering stalk has 5-7 whorls of compact to widely spaced, 2-7 flowered branches. The sepals are lanceolate and 7-8 mm long. The

petals are 10-15 mm long and blue-violet with a bearded palate. The staminode is well exerted with a recurved tip and pale orange hairs.

Reproduction.—A perennial herb, this penstemon flowers in May and early June. The capsule is ovoid, about 4 mm long. Hundreds of seeds are produced per plant in years when good precipitation and temperature conditions exist.

Habitat.—Locally abundant in the shade and litter accumulations of mountain brush, pinyon, and juniper trees, and open areas. Scattered in protected sites along washes. In reddish, gravelly soils weathered from the Conglomerate Claron Formation and the volcanic rubble of the adjacent

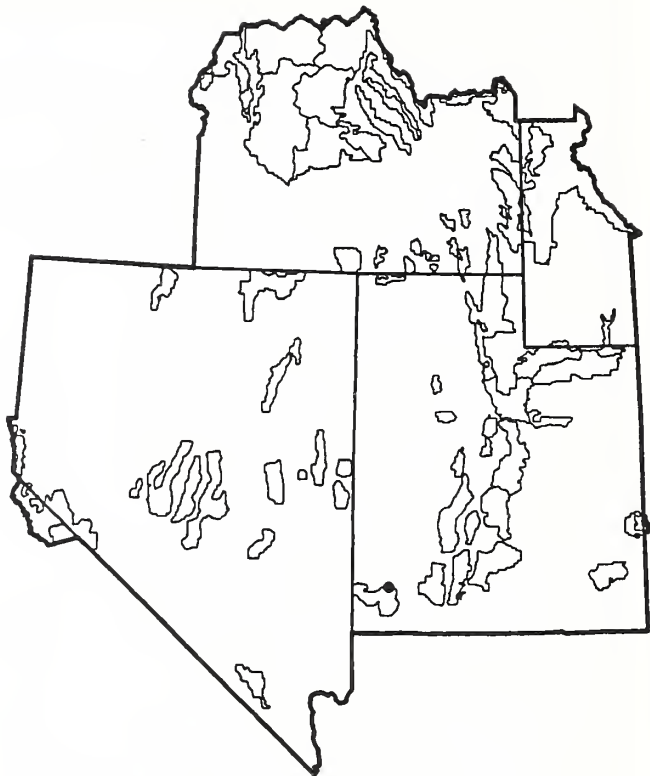
Quichapa Group (volcanics). Ranging in elevation from 5,620-6,700 feet.

Distribution.—Endemic to southwestern Utah on the north foothills of the Pine Valley Mountains. Four populations occur just southwest of Newcastle and 1 population occurs southeast of old Irontown.

Management Implications.—The species is scattered on less than 600 acres, mostly National Forest administered lands. Populations southwest of Newcastle appear to be stable (B. Franklin, pers. commun. 1991). The old Irontown population has been grazed by livestock and shows evidence of other man-caused impacts from post cutting and/or firewood cutting. Essential habitat should be determined and protected.

References.

Shultz, L. and J. Shultz. 1985. *Penstemon pinorum* (Scrophulariaceae) a new species from Utah. *Britt.* 37(1):98-101.

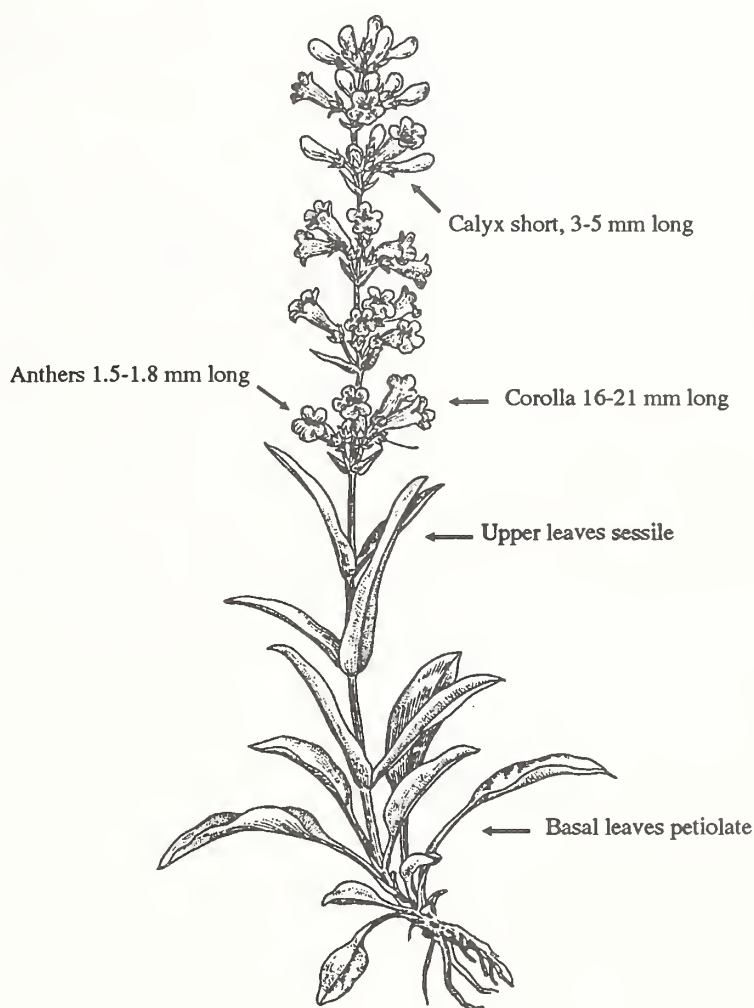


Distribution of *Penstemon pinorum*.

TIDESTROM BEARDTONGUE

Penstemon tidestromii Pennell

Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the figwort family, Tidestrom beardtongue grows 2-6 dm tall with several stems from a branched root system. The leaves are pale, dull green, and 1.5-7.0 cm long. The basal ones are oblanceolate and narrow to a petiolar base while the stem ones are lanceolate to oblanceolate. The flower stalks are 2 to several flowered. The sepals are 3-5 mm long and the lobes are ovate to lanceolate with dry, thin margins. The petals are 13-21 mm

long with blue to deep blue lobes. The stamens are included. The staminode is yellow-bearded at the tip and for 3/4 of its length.

Reproduction.—A short-lived perennial herb, flowering begins in late May and early June and continues into early July. Seed is set in 10-15 days and is ripe by mid-August. Small birds and mammals may use the seed from this plant.

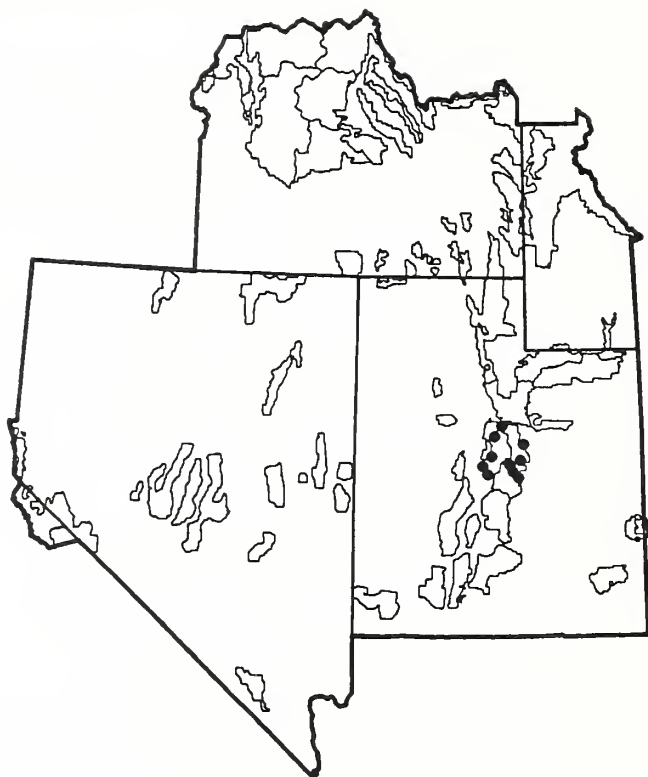
Habitat.—This plant occurs in open sagebrush/pinyon-juniper and oakbrush plant communities on a variety of substrates. Plants have been observed growing on all aspects. Elevation between 5,600-8,000 feet.

Distribution.—The species is endemic to the Sanpitch Mountains in Sanpete, Juab, and Utah counties, Utah.

Management Implications.—This taxon has, because of its habitat requirements, been heavily impacted by livestock grazing in the past. Sheep grazing still exists on habitat occupied by *Tidestrom penstemon* with heavy use occurring in several population areas. Range improvement projects have also impacted it. Studies need to be initiated to determine its present status.

References.

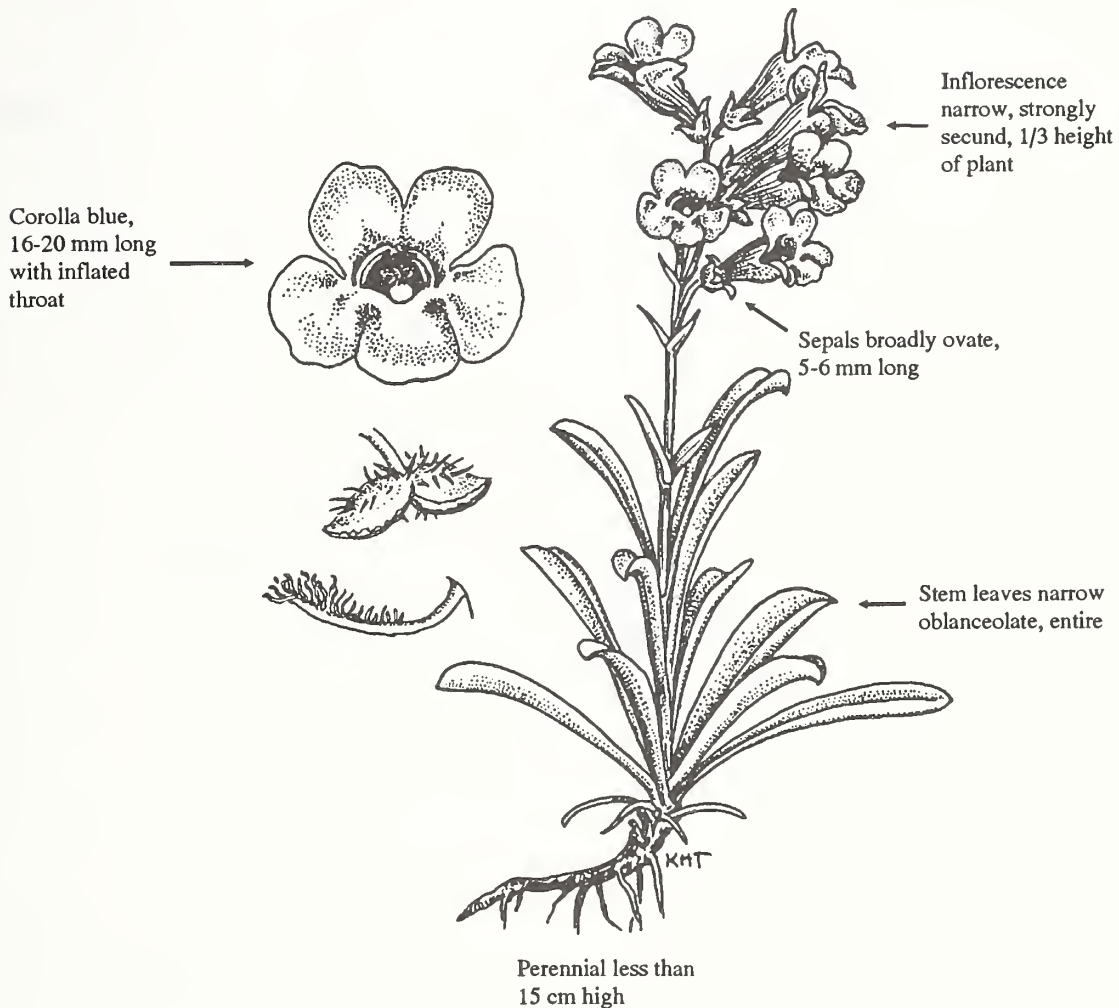
Pennell, F.W. 1920. Scrophulariaceae of the Central Rocky Mountain states. Cont. U.S. Nat. Herb. 20:313-381.



Distribution of *Penstemon tidestromii*.

UINTA BEARDTONGUE

Penstemon uintahensis Pennell
Scrophulariaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S3

Description.—A member of the figwort family, Uinta beardtongue has several stems, 10-20 cm tall from a short woody stock. The leaves are green and very obscurely veined. The basal leaves are narrow, oblanceolate, and 3-5 cm long. The stem leaves are smaller. The flower cluster is 1/3 the height of the plant. The sepals are 5-6 mm long and broadly ovate with slightly defined, short, acute-tipped,

white to pinkish margins. The petals are 18-20 mm long with the tube 12-13 mm long and blue in color.

Reproduction.—A short-lived perennial, flowering for this penstemon occurs from June to August. The mature many-seeded capsules are produced in late August into September.

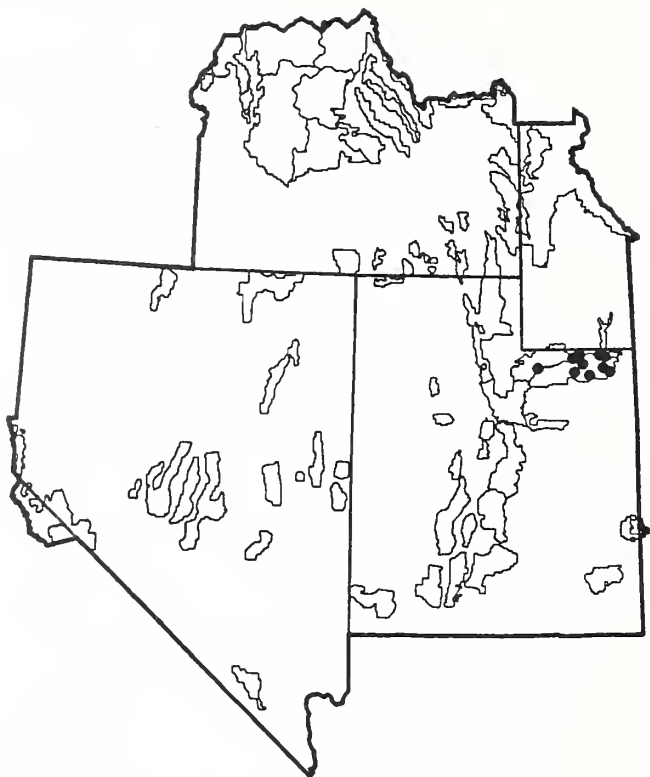
Habitat.—It grows on gravelly ridges, talus slopes, and moraines in open coniferous forests, mostly near timberline.

Distribution.—Uinta beardtongue is endemic to the Uinta Mountains in Daggett, Duchesne, Summit, and Uintah counties, Utah.

Management Implications.—This species has survived high numbers of domestic sheep which grazed in the Uinta Mountains historically. If the current reduction in the number of sheep grazing allotments continues, serious impacts to the species seems remote. Introductions of wild sheep and goats should be limited in essential habitats occupied by Uinta beardtongue.

References.

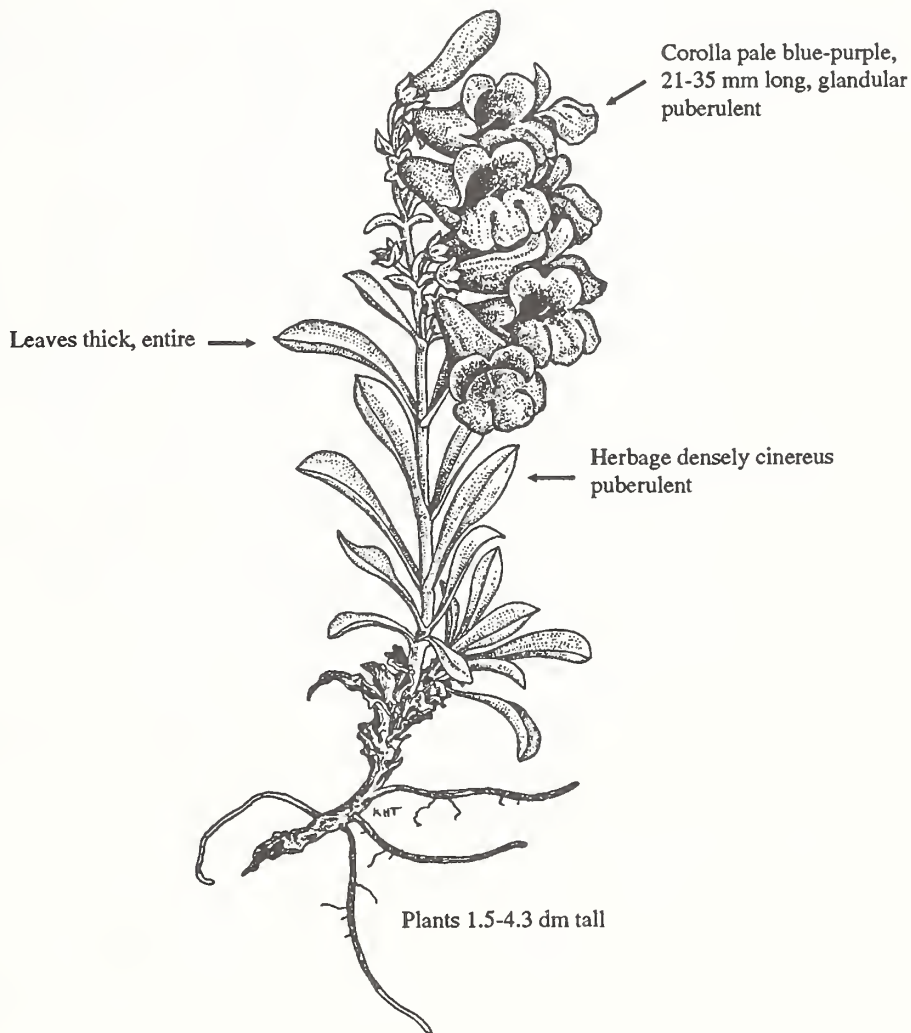
Pennell, F.W. 1920. Scrophulariaceae of the central Rocky Mountains states. *Contr. U.S. Nat. Herb.* 20:350.



Distribution of *Penstemon uintahensis*.

WARD BEARDTONGUE

Penstemon wardii A. Gray.
Scrophulariaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/UT-S2

Description.—A member of the figwort family, Ward beardtongue stems are 1-3 dm tall and densely covered with minute, rough hairs. The leaves are opposite, thick, and oblong to oblong-lanceolate. The basal leaves are 3.0-9.8 cm long. The flowers are large, blue-purple, and 21-25 mm long.

Reproduction.—A perennial herb, flowering for this penstemon occurs from May to June. The 12-14 mm long

capsule produces many seeds, 2.2-3.0 mm long. Plants appear to live for several years.

Habitat.—Pinyon-juniper and sagebrush-greasewood communities on gypsiferous shales and clays. Located on sparsely vegetated outcrops and rounded hills in the Bald Knoll, Arapien Shale, and Colton formations. Elevation between 5,200-6,400 feet.

Distribution.—Known only from Sanpete and Sevier counties, Utah.

Management Implications.—The area this plant is located in is subject to road, potential railroad, and urban expansion.

Increased utilization of gypsum will also tend to reduce the habitat and population size. Gypsum mining has and may continue to pose the major threat to endemic plants on the Arapien Shale Formation. Essential habitat areas should be designated and protected to ensure the species' survival.

References.

Gray, A. 1876. Contributions to the Botany of North America II. Characters of New Species, etc. Proc. Amer. Acad. Arts. 12:54-84.

Jones, M.E. 1908. Contributions to Western Botany, No 12. Contr. W. Bot. 12:1-100.

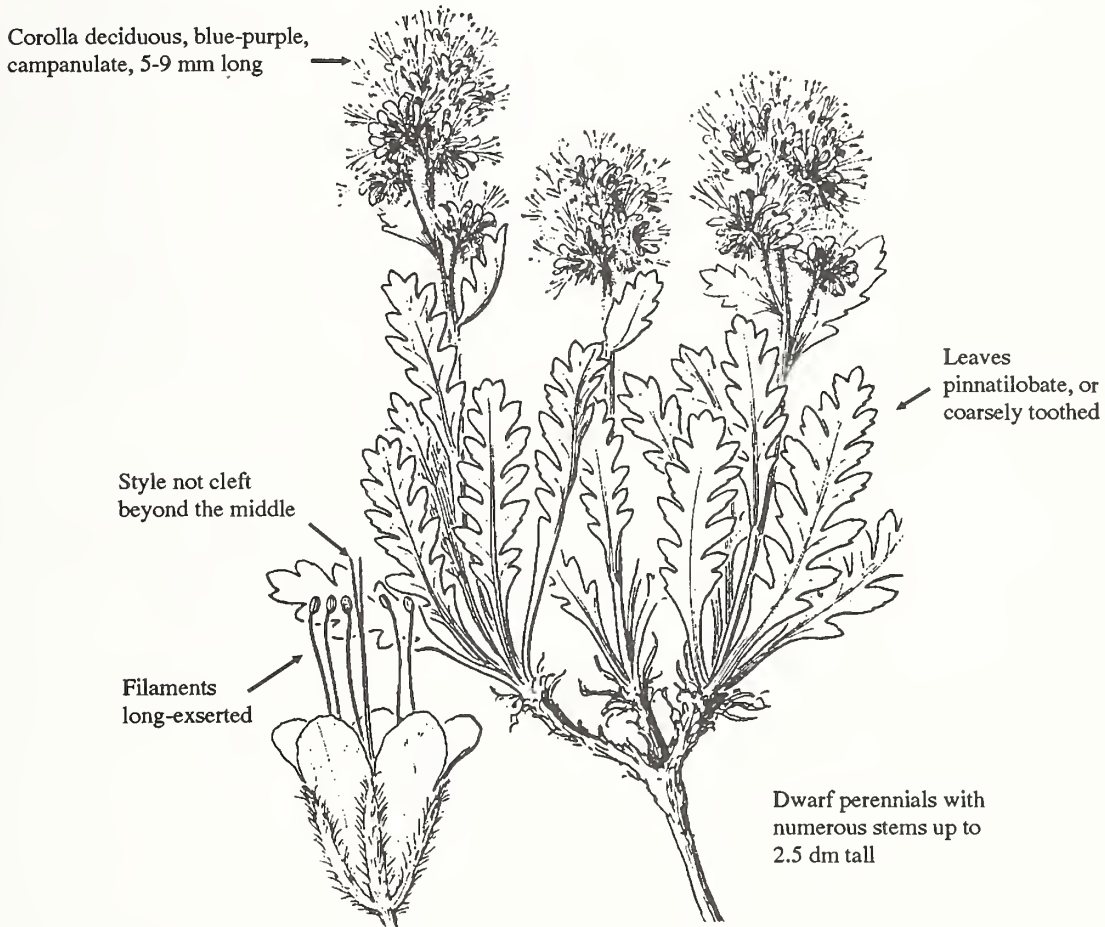
Pennell, F.W. 1920. Schrophulariaceae of the Central Rocky Mountain states. Contr. U.S. Natl. Herb. 20:313-381.



Distribution of *Penstemon wardii*.

LYALL'S PHACELIA

Phacelia lyallii (Gray) Rydb.
Hydrophyllaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G2/ID-S1

Description.—A member of the waterleaf family, Lyall's phacelia is a small plant (up to 2.5 dm) with numerous stems. The herbage is green with long hairs. The leaves are both basal and on the stem, are pinnately lobed or coarsely toothed and up to 10 cm long. The flowers are tightly clustered in numerous coiled branches. The petals are bell-shaped, bluish-purple, and 5-9 mm long. The stamens are conspicuously exserted.

Reproduction.—A perennial from a taproot, this phacelia flowers from July to August and produces a several seeded capsule. Seeds ripen and are dispersed in late August and early September.

Habitat.—Subalpine to alpine talus and rock crevices only from quartzite rocks.

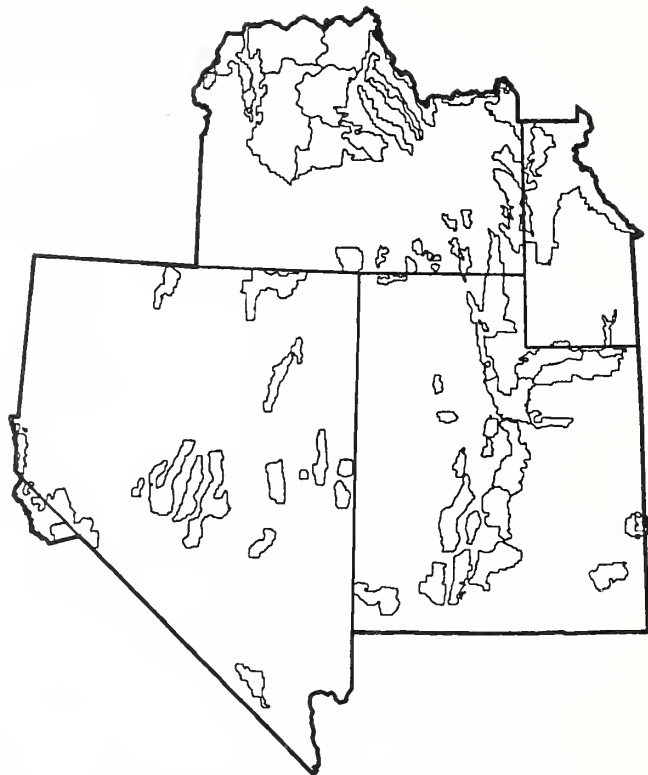
Distribution.—Southern Canadian Rockies south to Montana and a few locations in east central Idaho, Lemhi County.

Management Implications.—Although only a few populations are known in Idaho, the remoteness and disturbed nature of the habitat protect this species. Potential

use by wild sheep and goats need to be determined by establishing monitoring studies on selected populations where wild sheep and goats occur. Results of the 1990 Challenge Cost Share Report by the INHP was not available for review and these data are not included. The forest should review the report and recommendations from these studies.

References.

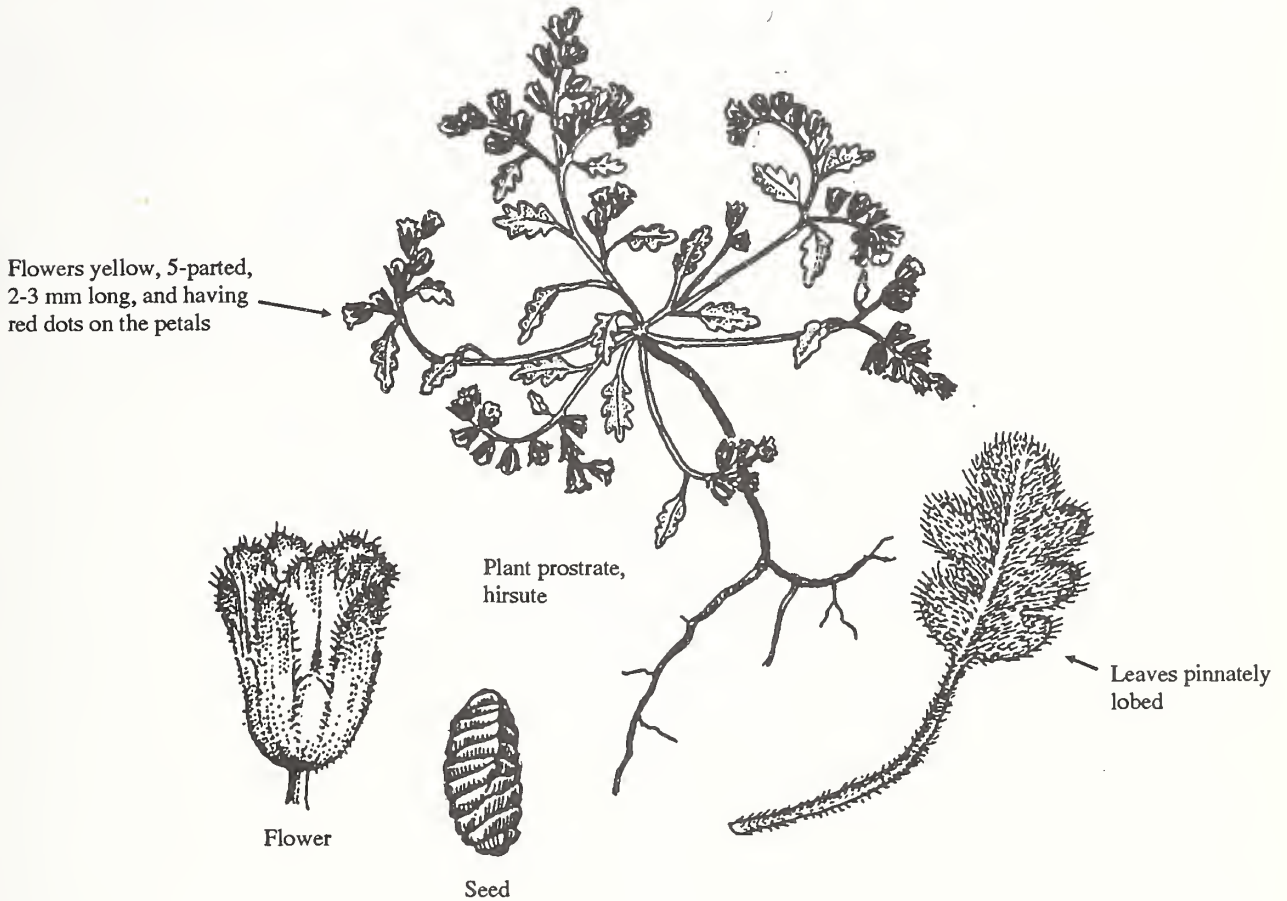
Rydberg, P.A. 1900. *Phacelia lyallii*. Mem. New York Bot. Gard. 1:325.



Distribution of *Phacelia lyallii* in the Intermountain Region.

MONO PHACELIA

Phacelia monoensis Halse
Hydrophyllaceae



USFWS Status: C2

USFS Region4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G2/NV-S2, CA-2.1

Description.—This waterleaf grows flat and close to the ground with few to several branched stems. The leaves are pinnately lobed, entire, or toothed on the margins. They have short coarse, shaggy hairs. The flower parts occur in 5's with sepals 2-4 mm long. The flowers are tubular to bell-shaped and yellow in color. The petals are hairy both internally and externally. The filaments are 1.5-2.5 mm long and the style is 0.5-1.5 mm long.

Reproduction.—This is an annual herb flowering May through July. The fruit is a capsule 2.5-4.0 mm long. The capsule is hairy and produces seeds with 8-11 lateral ridges or corrugations. Seeds germinate each spring when soil moisture and temperature conditions are right.

Habitat.—Mono phacelia occurs in caked, clayey soils which possess a high pH and salt concentration. It grows among sagebrush, pinyon-juniper, and rabbitbrush communities. The range of elevation is 6,200-7,000 feet.

Distribution.—Known from a few populations in Lyon, Mineral, and Nye counties in Nevada and in adjacent California.

Management Implications.—Motor vehicle activity is a threat to the species, since it grows so close to the road. Also overgrazing by cattle and road construction may cause alteration to the habitat. Roads dissect several populations resulting in a loss of 40-50% of the habitat in these populations. Additional studies are needed to determine the species distribution and cumulative effects from impacts.

References.

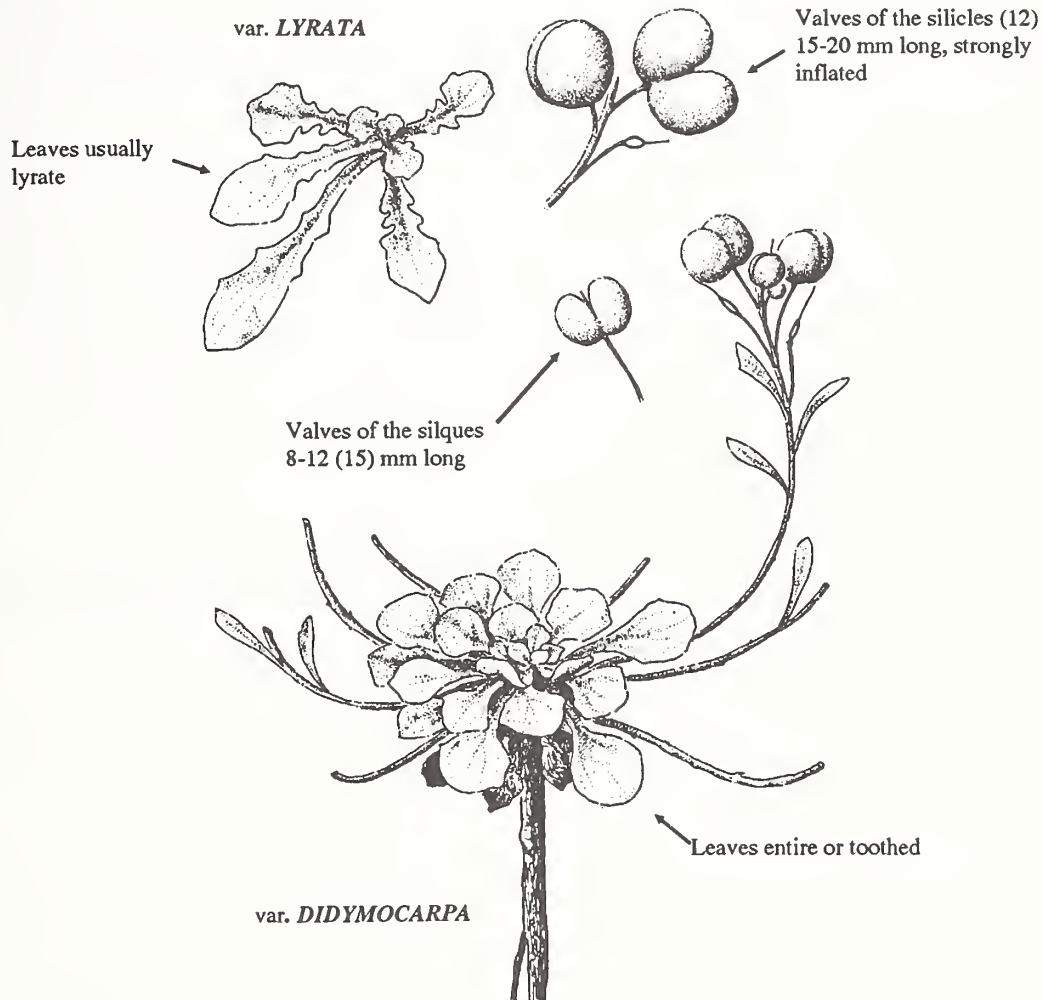
Halse, R. 1981. Taxonomy of *Phacelia* Sect. *Miltizia* (Hydrophyllaceae). *Madrono* 28:124-125.



Distribution of *Phacelia monoensis*.

SALMON TWIN BLADDERPOD

Physaria didymocarpa (Hook.) Gray var. *lyrata* C.L. Hitchc.
Brassicaceae (Cruciferae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G5T1/ID-S1

Description.—A member of the mustard family, the Salmon twin bladderpod grows from a branching rootstock with 1 to several stems. The basal leaves are numerous, 2-8 cm long, and varying in shape from toothed to (usually) lyrate. The stem leaves are reduced, mostly oblanceolate to entire. The sepals are green and the petals are yellow, 9-12 mm long.

Reproduction.—A perennial, this physaria flowers from June to August. It produces a much-inflated silicle, 15-22 mm long. Its pollinators are non-specific. Seeds germinate whenever soil and moisture conditions are right.

Habitat.—Scabland, shale banks, talus slopes, and gravelly soil, only on stable substrates in *Artemisia tridentata* habitat. Elevation between 4,050-5,000 feet.

Distribution.—Salmon and Lemhi River valleys near Salmon, Idaho in Custer and Lemhi counties.

Management Implications.—Frequent movement of the substrate is a hazard, therefore mining, ORV use, erosion,

or any major animal traffic could threaten the population. Road side spraying will also destroy the plant. Recent removal of gravel by the county has reduced the number of plants and habitat, resulting in closure of the area by the BLM.

References.

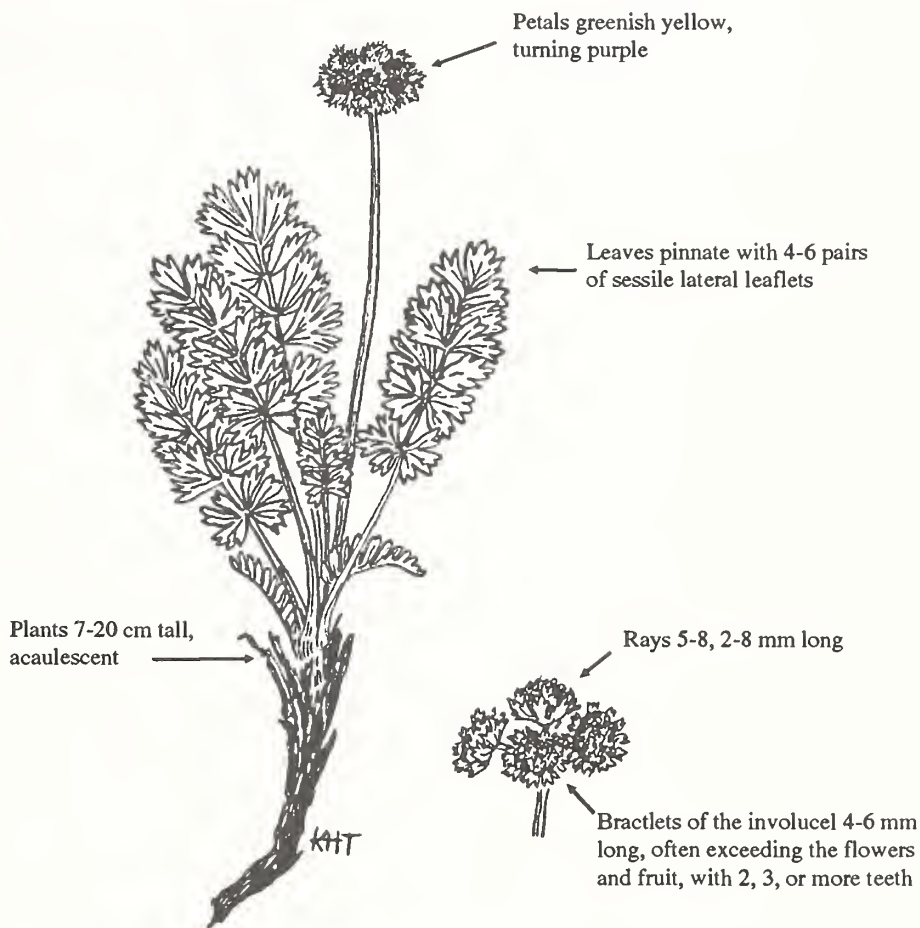
Rosentreter, R. 1982. The status report and recovery plan for the twin bladderpod flower in the Salmon District of the BLM. 21 pp.



Distribution of *Physaria didymocarpa* var. *lyrata*.

EASTWOOD PODISTERA

Podistera eastwoodiae (Coul. and Rose) Mathias & Const.
Apiaceae (Umbelliferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G[?]/UT-S1

Description.—A member of the parsley family, Eastwood podistera grows from a thickened taproot or branched rootstock to a height of 7-20 cm. The leaves are oblong in outline and pinnate with 4-6 pairs of sessile, lateral leaflets. The leaflets are 1-2 cm long and ternately or palmately lobed. The petals are greenish yellow, turning purple.

Reproduction.—A perennial, this species flowers from mid-July into August. The fruit is 3-4 mm long with evident

ribs. The perennial rootstock overwinters for several seasons.

Habitat.—Toe slopes of rock slides and subalpine to alpine forb-grass communities. Elevation between 9,500-11,000 feet.

Distribution.—Disjunct populations occur in the higher mountains of Colorado, New Mexico, and the LaSal Mountains in Grand and San Juan counties of Utah.

Management Implications.—Little is known about this plant species. Studies are needed to determine its occurrence and status. Eastwood podistera is rarely collected and

may be extirpated from some areas. Recent attempts to relocate the populations in the LaSal Mountains have been unsuccessful.

References.

Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987.
A Utah flora. Great Basin Natur. Mem. 9:636.



Distribution of *Podistera eastwoodiae* in the Intermountain Region.

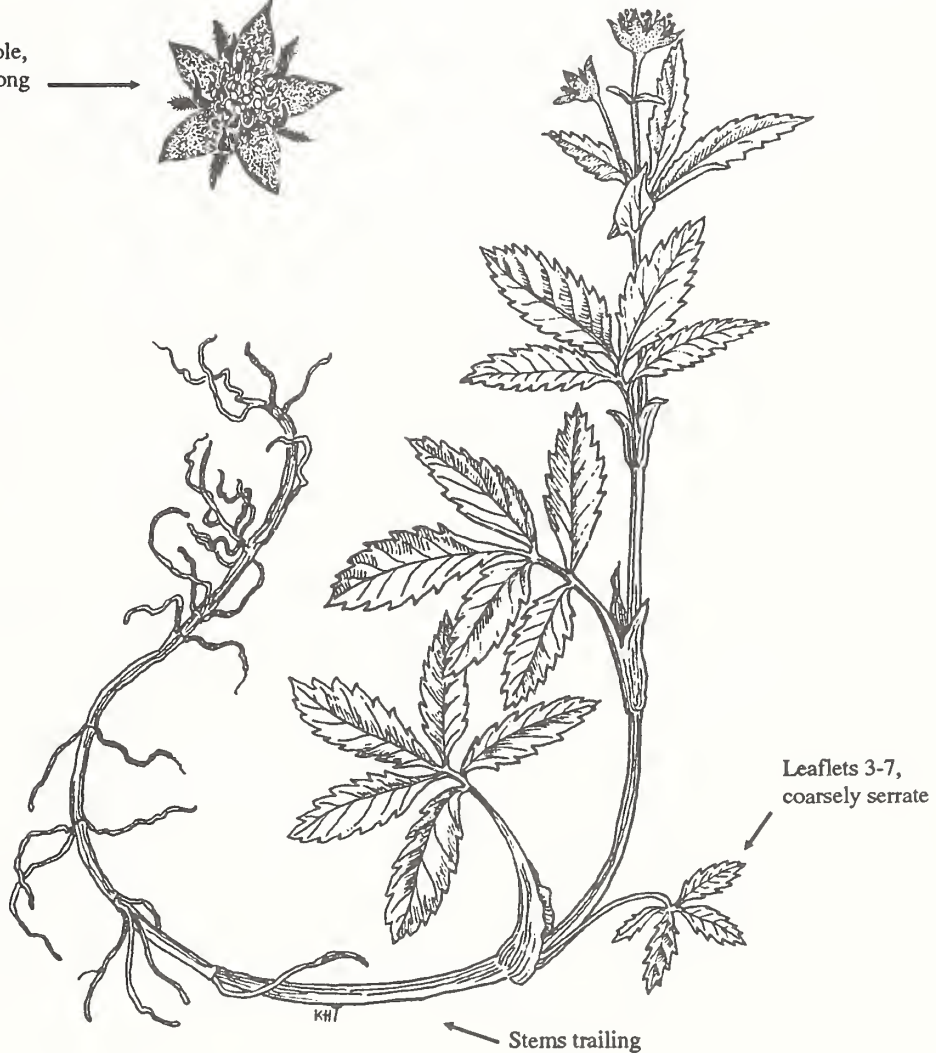
MARSH CINQUEFOIL

Potentilla palustris (L.) Scop.
Rosaceae

Petals red to purple,
less than 1/2 as long
as the sepals



Herbaceous,
rhizomatous
perennial



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G5/UT-S1

Description.—A member of the rose family, marsh cinquefoil grows from rhizomes often with floating stems. The stems are purplish, mostly 1-10 dm long. The leaves are pinnate with 3-7 leaflets, 0.5-2 dm long, and are found mostly along the stem. The leaves are green and hairy above, and paler and hairy beneath. The flowers occur few to several per stalk and are showy. The sepals are 7-15 mm

long and purplish. The petals are red or purple, 2.5-5.0 mm long.

Reproduction.—A long-lived perennial, this cinquefoil produces achenes, 1.0-1.5 mm long. One to several achenes are produced from each flower. Rhizomes spread and produce new growth for several years.

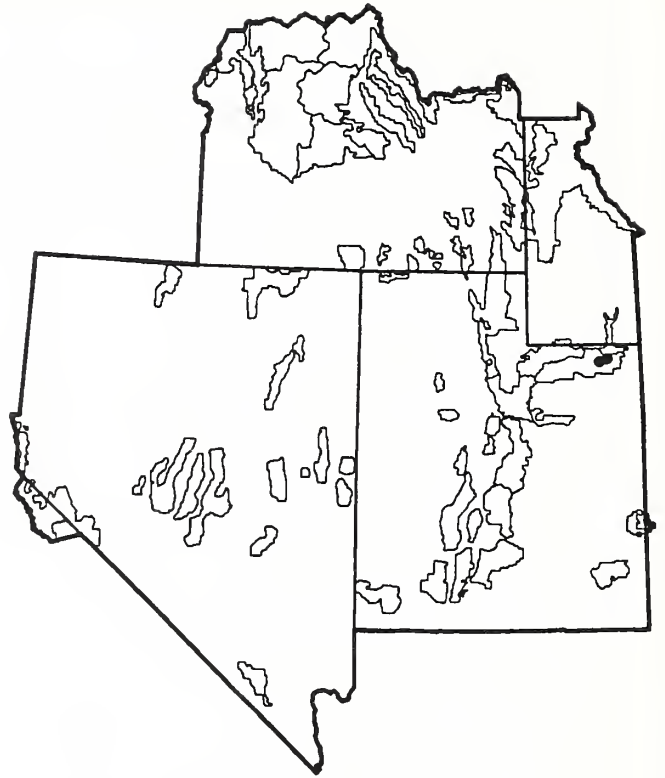
Habitat.—Wet meadows and bogs. Elevation between 9,400-9,600 feet.

Distribution.—Circumboreal in North America from Alaska and Yukon east to Labrador, south to California and the Uinta Mountains of Utah.

Management Implications.—Although of limited distribution in Utah, this species has an extensive distribution. Threats to the species seem very unlikely. Protection of its wetland habitats will meet the needs of the limited populations in Utah. These occur within the Sims Peak RNA on the Ashley National Forest. Delisting from Forest Service Intermountain Region sensitive status may be appropriate.

References.

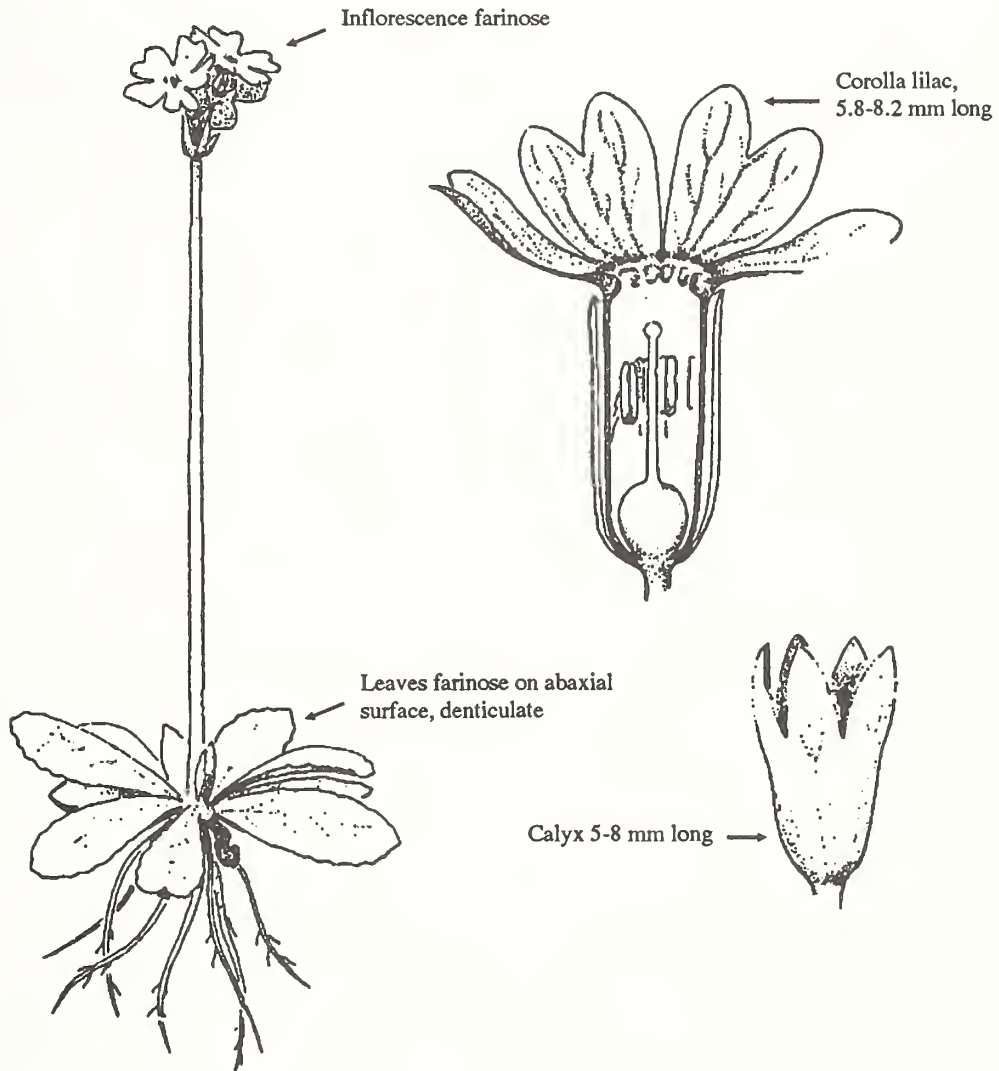
Welsh, S.L., D. Atwood, L. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Natur. Mem. No. 9:535.



Distribution of *Potentilla palustris* in Utah.

ALKALI PRIMROSE

Primula alcalina A. Cholewa and D. Henderson
Primulaceae



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G1/ID-S1

Description.—A member of the primrose family, alkali primrose grows with fibrous roots. The leaves are numerous, crinkled, light green, and basal. The flower cluster of 3-10 flowers top a leafless stem. The sepals are bell-shaped, hairy, and sometimes have purplish blotches or striations. The petals are white with a yellow throat, fading with age.

Reproduction.—A perennial, this primrose flowers early, usually in May. Fruits (capsules) mature June through August and seed set takes place in August or September.

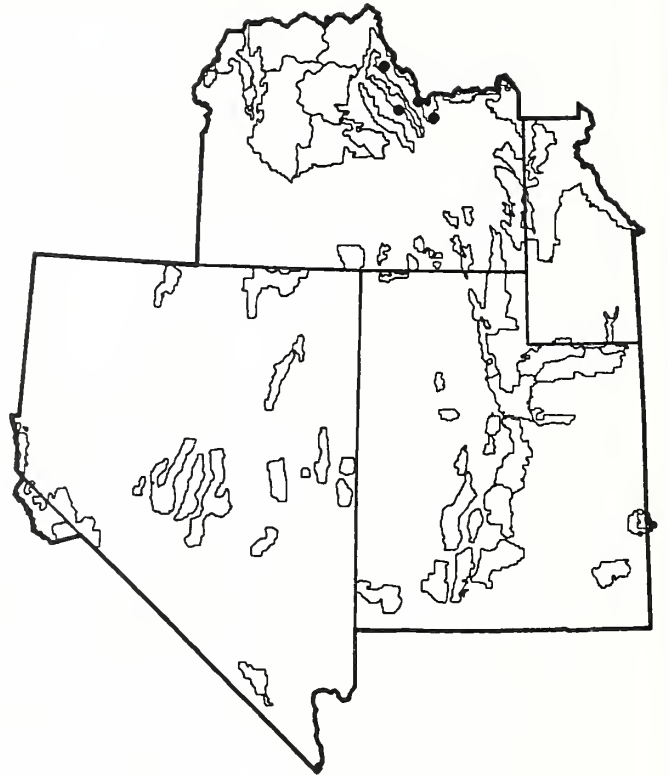
Habitat.—Wet, alkaline meadows at the headwaters of 3 spring-fed creeks in the large, intermontane valleys. It is found from the low saturated soil to the hummocks in grass-sagebrush communities. Elevation between 6,294-6,720 feet.

Distribution.—Currently known from meadows at the headwaters of 3 spring creeks in east central Idaho in Clark, Custer, and Lemhi counties.

Management Implications.—Threats to the habitat and species include livestock and recreational trampling and campground construction. Water diversion causing a lowering of the water table could eliminate existing habitat. Efforts are currently being made by the BLM to acquire essential habitat under private ownership. Acquisition of these areas would provide valuable protection and help ensure species viability.

References.

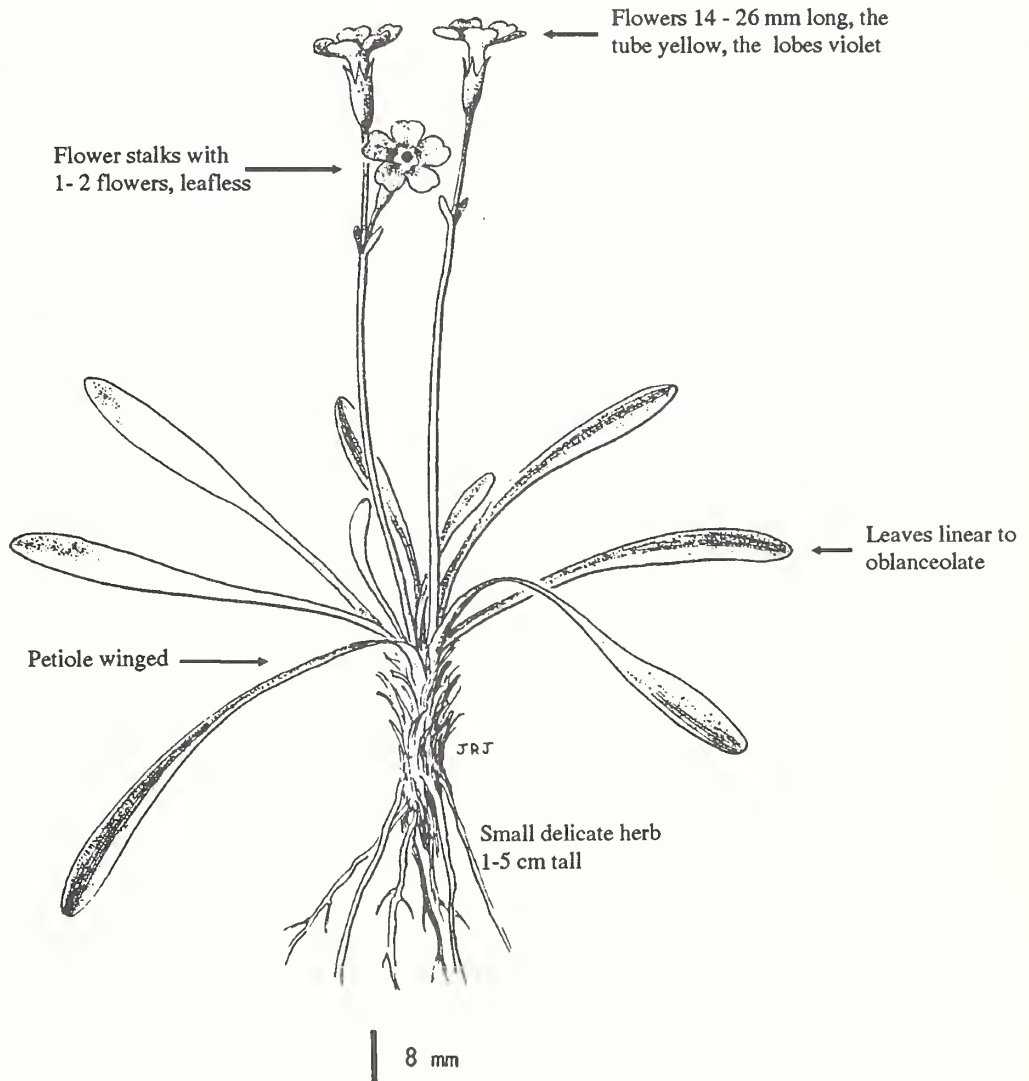
Cholewa, A. and D. Henderson. 1984. *Primula alcalina* (Primulaceae): a new species. *Britt.* 36(1):59-62.



Distribution of *Primula alcalina*.

RUBY MOUNTAIN PRIMROSE

Primula capillaris N. Holmgren and A. Holmgren
Primulaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: NV

Heritage Global/State Status: G1/NV-S1

Description.—A member of the primrose family, Ruby Mountains primrose is small, growing 1-5 cm in height with linear leaves, 1.8-5.0 cm long. The flower stalks are leafless with 1, rarely 2 flowers. The petal lobes are violet and the tube is yellow.

Reproduction.—A perennial, flowering for this primrose is from July to August. The mature capsules contain many small seeds. Individual plants live for several years.

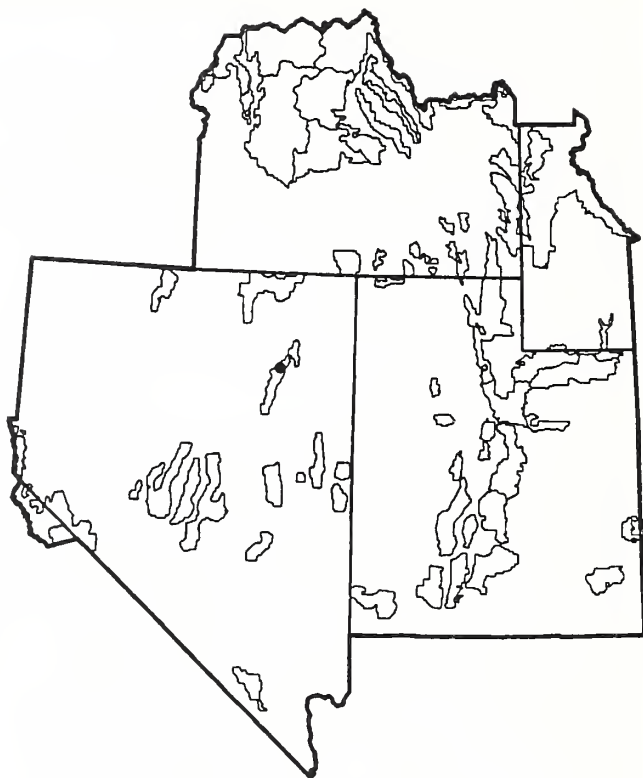
Habitat.—Soils of granitic origin in high mountain meadows growing in association with *Selaginella* mats on grass sod with a north facing exposure. Elevation 10,000 feet.

Distribution.—Known only from Thomas Creek in the Ruby Mountains of Elko County, Nevada, Humboldt National Forest.

Management Implications.—Subject to heavy collection due to its possible commercial values. It is also subject to damage by trampling and grazing of sheep. Monitoring studies are needed to determine the species' trend and status.

References.

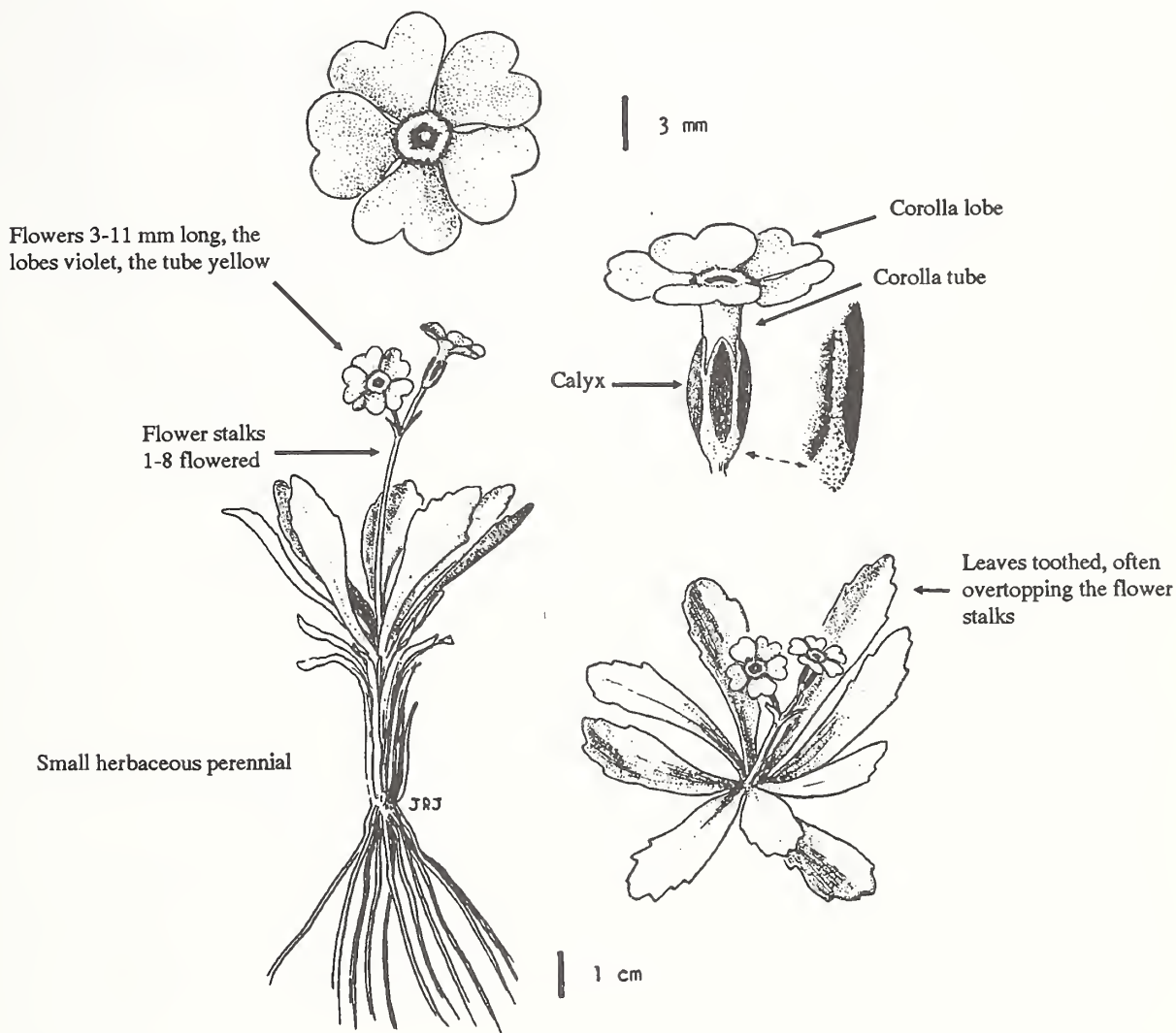
Holmgren, N. and A. Holmgren. 1974. New species from the Great Basin. *Britt.* 29:313.



Distribution of *Primula capillaris*.

NEVADA PRIMROSE

Primula nevadensis N. Holmgren
Primulaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: NV

Heritage Global/State Status: G1/NV-S1

Description.—A member of the primrose family, Nevada primrose grows 3-11 cm tall with glandular leaves longer than the plant is high (5-10 cm). The flowers occur atop a leafless stem usually in clusters of 2-3. The petals are 1 and 1/2 times as long as the sepals and violet with a yellow throat and a dark purple ring around the throat. The anthers are yellow to yellow-orange.

Reproduction.—Apparently a short-lived perennial, flowers for this primrose are produced in July and some years in late June depending on snow depth and spring melt. Hundreds of seeds are produced on each plant within the small capsules.

Habitat.—Limestone in talus, cracks of rocks, loam under *Pinus longavea*, and on alpine turf on all exposures. Elevation between 10,300-11,000 feet.

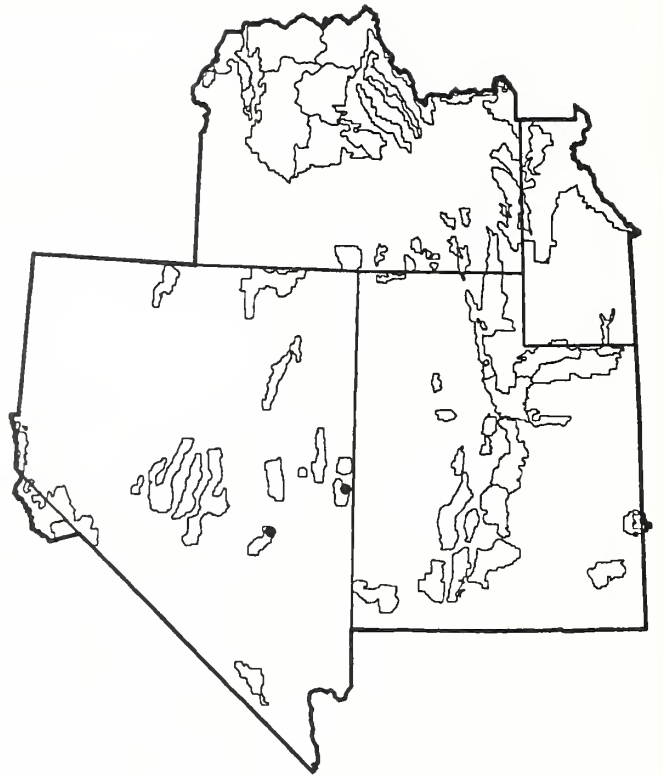
Distribution.—Troy Peak of Grant Range, Nye County and Lincoln Peak and Mt. Washington of the Snake Range,

White Pine County, Nevada. All populations occur on the Humboldt National Forest.

Management Implications.—Mining activities and removal of the plant for horticultural purposes pose the greatest threats. Monitoring studies should be established to assess species' trends and biological needs.

References.

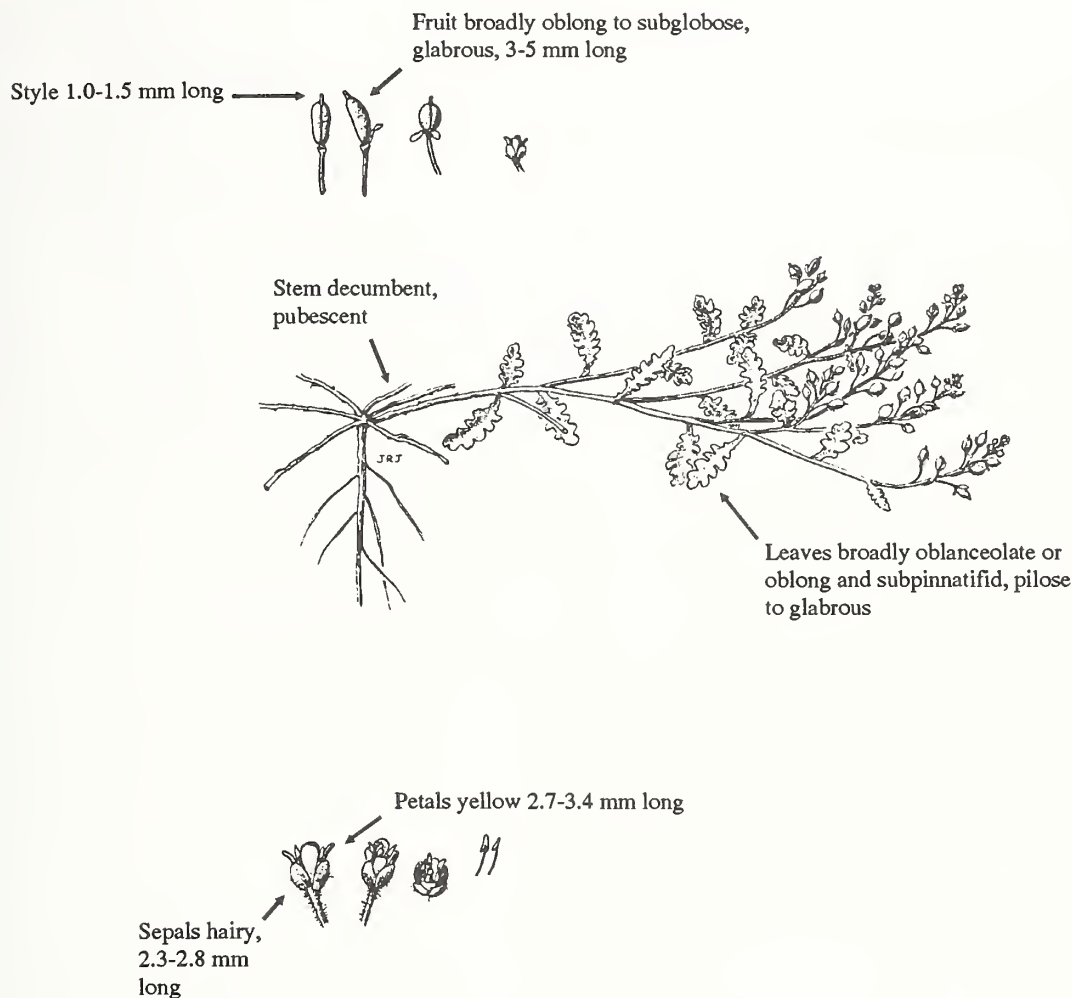
Holmgren, N.H. 1967. A new species of primrose from Nevada. *Madrone* 19:27-29.



Distribution of *Primula nevadensis*.

TAHOE YELLOWCRESS

Rorippa subumbellata Rollins
Brassicaceae (Cruciferae)



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: NV
Heritage Global/State Status: G2/NV-S2, CA-S1.1

Description.—This member of the mustard family is a perennial plant with creeping rootstocks, which may extend from 0.5-1.5 dm tall. The stems possess little to no hair. The leaves may have short stalks or may be attached directly to the stem. The leaves are 1-3 cm in length and 3-10 mm in width. Leaf shape is oblong to broadly oblanceolate with smooth leaf margins. Sepals are 2-3 mm long and the petals are yellow to white in color. This species is set apart from

other *Rorippas* due to its petals being greater in length than the sepals.

Reproduction.—An herbaceous perennial, flowering and fruiting occurs from June to September. The fruit is broadly oblong to near spherical in shape, with little to no hair and 3-5 mm in length. Healthy plants spread by the creeping rootstocks. Older, dying plants are replaced by new seedlings from viable seeds.

Habitat.—Occurs in loose or coarse sand on beaches. It grows close to the lakeshore, but above storm debris deposits among *Salix*, *Carex*, and *Juncus* communities. Elevation 6,100 feet.

Distribution.—Found in Washoe or Douglas counties in Nevada and El Dorado and Placer counties in California.

Management Implications.—Commercial development and recreational use around Lake Tahoe shoreline have impacted this species significantly. If expansion of commercial and recreational development continues and protection measures are not initiated and enforced, this species will be extirpated. Federal listing appears to be very appropriate for this yellowcress.

References.

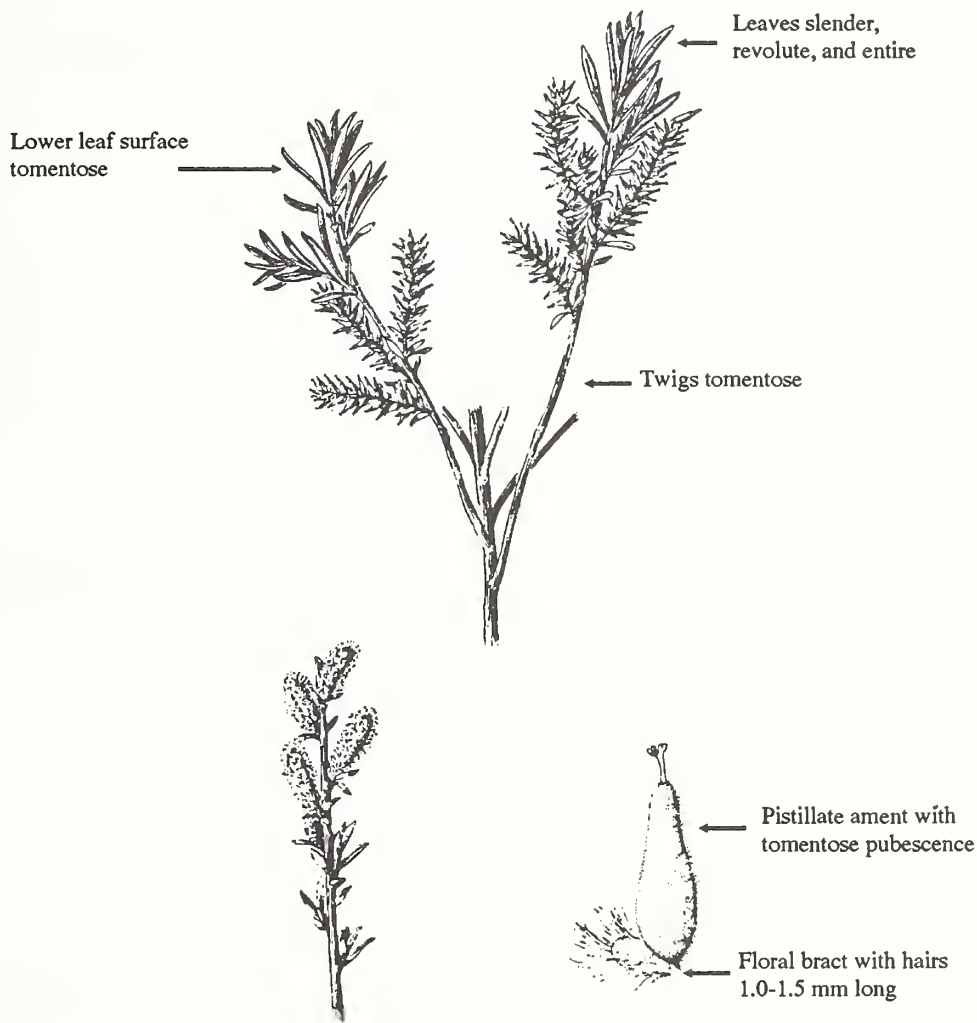
Stuckey, R.L. 1972. Taxonomy and distribution of the genus *Rorippa* (Cruciferae) in North America. *Sida* 4:279-430.



Distribution of *Rorippa subumbellata*.

HOARY WILLOW

Salix candida Fluegge ex. Willd.
Salicaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5/ID-S1

Description.—A member of the willow family, hoary willow is a freely branching low shrub (0.2-15 dm tall). The twigs are dense and closely white-woolly. The leaves are narrow, 3.5-10 times as long as wide with inrolled margins and a white-woolly lower surface. The scales are brown and persistent. The male catkins are 1.5-2.5 cm long with 2 stamens each. The female catkins are 2-6 cm long.

Reproduction.—A long-lived perennial shrub, flowering for this willow occurs from June to August. The fruit is a capsule 5.0-7.5 mm long and reddish in color. Thousands of capsules are produced each year. The species also spreads by underground rootstocks.

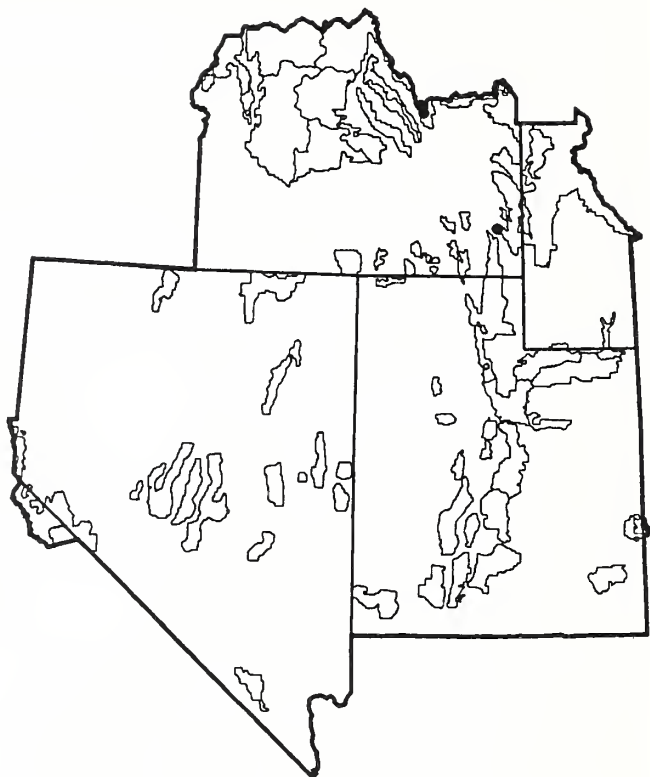
Habitat.—Bogs, swampy places, and meadows.

Distribution.—Labrador to Arkansas, south to New Jersey, Indiana, and South Dakota and west to Colorado, Idaho, and southern British Columbia. In Idaho known from Bonner, Caribou, and Lemhi counties.

Management Implications.—Idaho populations are subject to moderate to heavy livestock grazing. Monitoring studies are needed to determine use, condition, and trends for populations.

References.

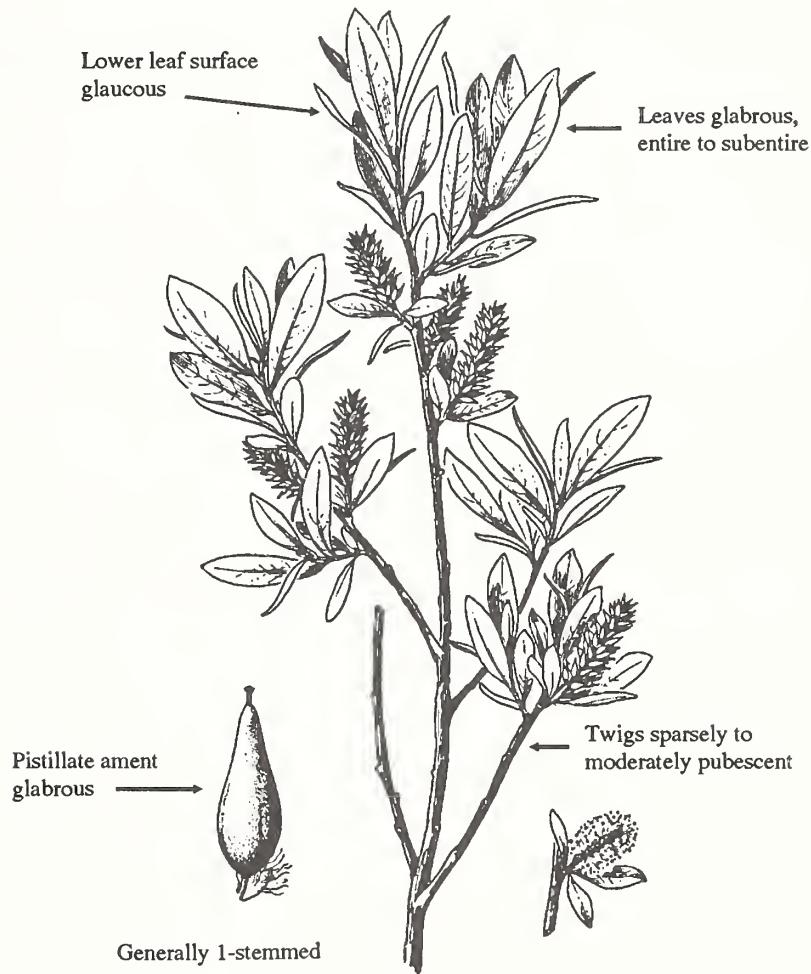
Nieuwland, J.N. 1914. *Salix candidula*. Amer. Midl. Natur. 3:225.



Distribution of *Salix candida* in the Intermountain Region.

FARR'S WILLOW

Salix farriae Ball
Salicaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4/ID-S1

Description.—A member of the willow family, Farr's willow is a branching shrub, 3-10 dm tall. The young twigs are slightly hairy becoming less so with age. The leaves are relatively small, often slightly hairy at first. The leaf blades are elliptic, 3-5 cm long. The scales are brown or blackish, or often with a brown tip above a yellowish base, with long hairs. The male aments are 1-2 cm long while the female aments are 1.5-3 cm long.

Reproduction.—A long-lived perennial, flowering for this willow occurs from July to August. The fruit produced is a capsule, 4-6 mm long. It spreads by underground rootstocks and viable seeds that germinate under the right environmental conditions.

Habitat.—Moist to wet subalpine meadows along streams and lake shores in association with other willows and grasses. Elevation between 9,000-9,300 feet.

Distribution.—Alaska and Canada, disjunct in western Montana, Fremont County, Wyoming, and Custer County, Idaho. In Idaho it is known only from 2 populations on the Challis National Forest.

Management Implications.—Trampling and overgrazing may adversely affect the species. Additional data are needed to assess impacts, use, condition, and trends.

References.

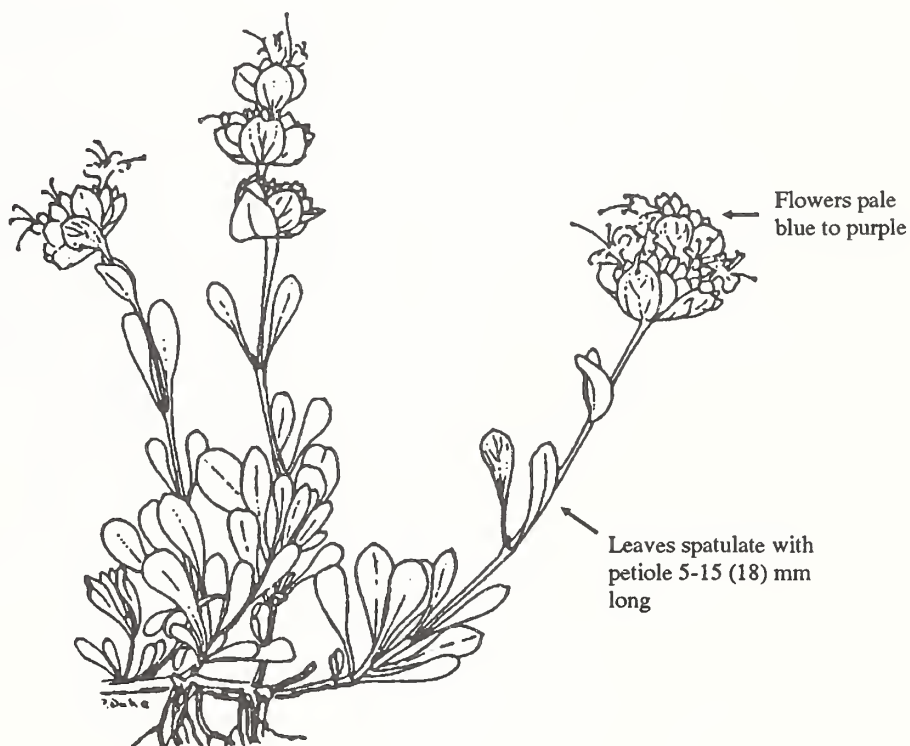
Ball, C.R. 1921. *Salix farriæ*. Contr. U.S. Natl. Herb. 22:321.



Distribution of *Salix farriæ* in Idaho.

CLOKEY'S MOUNTAIN SAGE

Salvia dorrii (Kellogg) Abrams var. *clokeyi* Strachan
Lamiaceae (Labiatae)



Shrubs, 1-2 (3) dm tall, 2-4 dm wide, often rooting at the nodes

USFWS Status: PC2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4T2/NV-S?

Description.—This member of the mint family is a mat-forming shrub which grows 1-2(3) dm tall and 2-4 dm in width. Leaves are spatulate with short stalks at the base 11-20 mm long. Flowers are pale blue to purple in color.

Reproduction.—Flowers in May to July producing hundreds of few to several seeded capsules. Individual plants are long-lived, shrubby perennials.

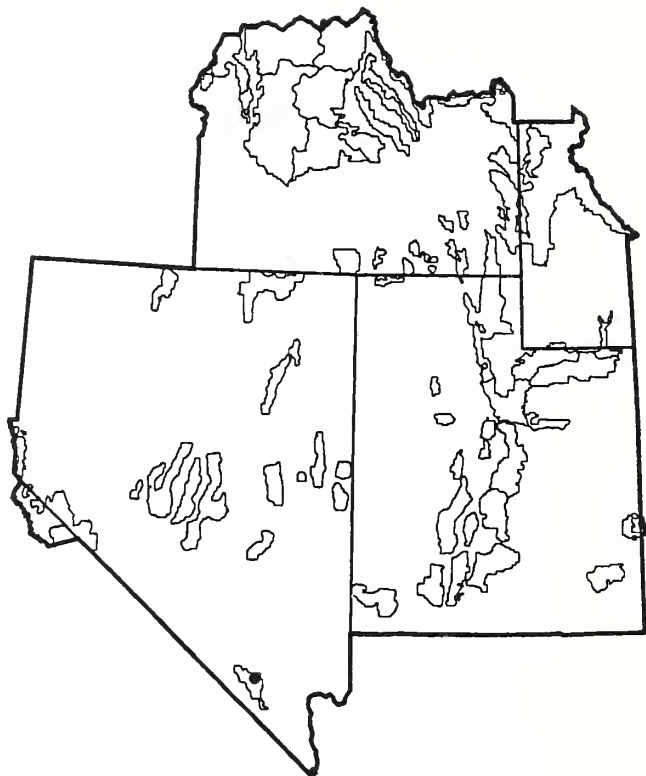
Habitat.—Clokey's Mountain sage grows in limestone outcrops and can be found at a range of elevations between 7,050-10,000 feet.

Distribution.—Endemic to Clark County, Nevada in the Charleston (Spring) Mountains.

Management Implications.—This species may be subject to heavy grazing pressure by wild burros and horses. Additional surveys and monitoring are essential to determining the species use, condition, trends, and status.

References.

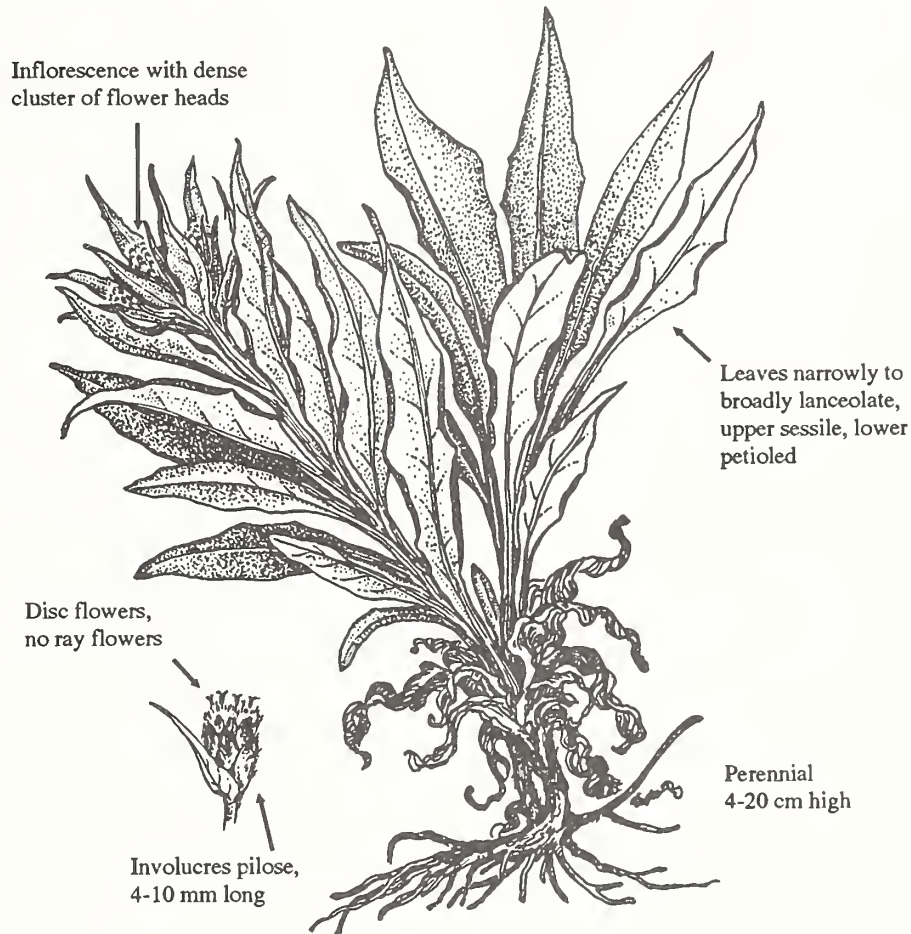
Clokey, I. W. 1951. Flora of the Charleston Mountains.
Univ. of Calif. Press, Berkeley and Los Angeles.
274 pp.



Distribution of *Salvia dorrii* var. *clokeyi*.

WEBBER'S SAUSSUREA

Saussurea webberii Hulten
Asteraceae (Compositae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G4/WY-S1

Description.—A member of the sunflower family, Webber's saussurea grows 4-20 cm high from a woody rootstock. The main stem is typically unbranched, yet it is rather leafy from top to bottom. The long leaves (up to 15 cm long) are dark green, reduced in size upwards, and are often densely clustered as to appear whorled. The midrib on the leaf underside is covered with fine, woolly hairs. Flowers occur in dense clusters, are purple, and contain only

disk flowers. When in bloom it looks like a rounded cottony ball.

Reproduction.—A long-lived perennial, this species flowers late in July or August. Later it forms fruits of achenes, 3 mm long.

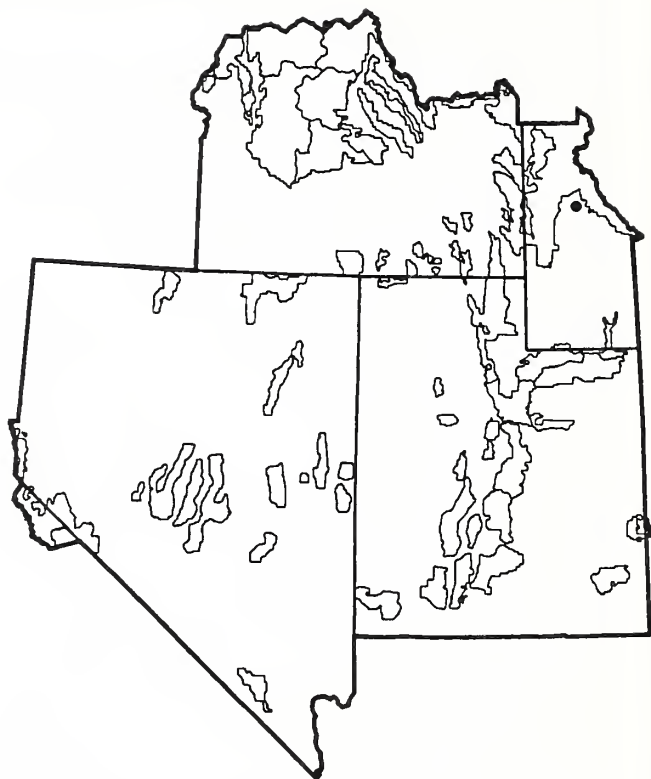
Habitat.—On lips of rocky benches in alpine grasslands or on disturbed gravelly sites on a variety of parent materials. Soils are variable from rocky to gravelly in ponderosa pine-Douglas fir communities. Elevation between 10,200-11,200 feet.

Distribution.—Central Colorado to west central Wyoming and southwest Montana.

Management Implications.—Due to the small population sizes, any catastrophic event from grazing to mineral exploration could extirpate several of the known populations. Additional information is needed on distribution, cumulative effects from impacts, and biological needs.

References.

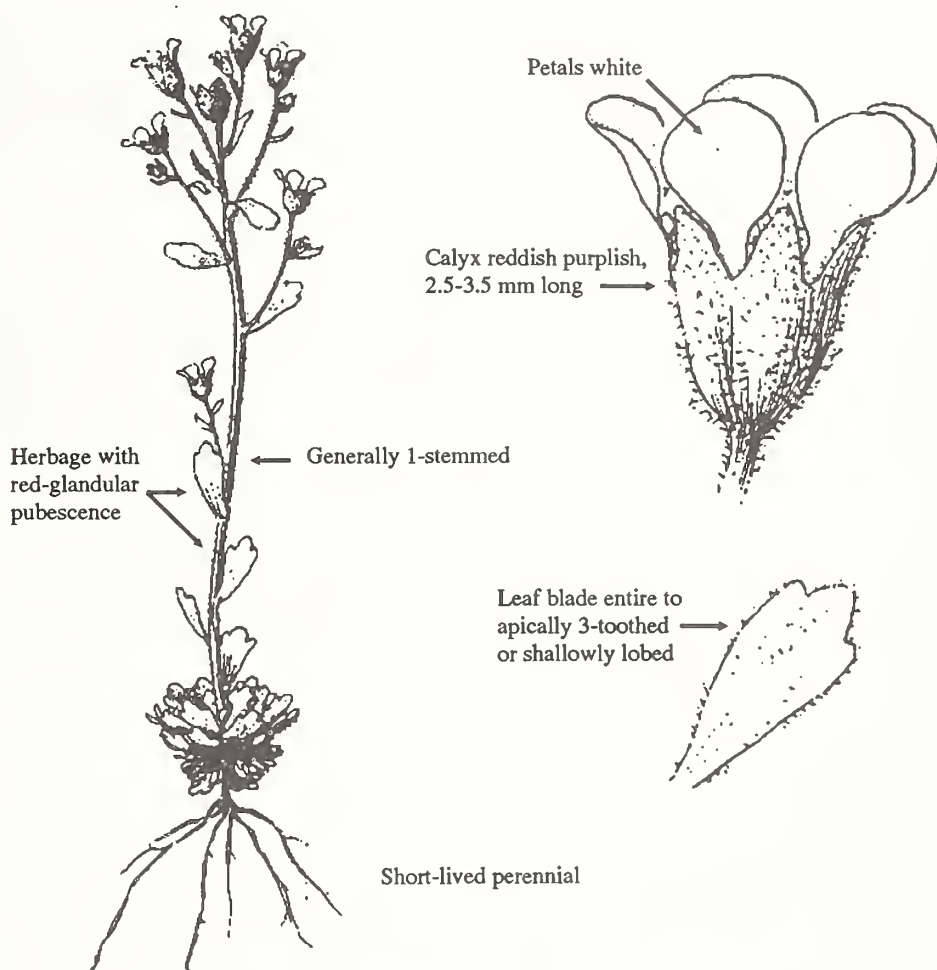
Hulten, E. 1959. A new species of *Saussurea* from Colorado. *Svensk. Bot. Tidskrift*. 53(2):200-202.



Distribution of *Saussurea webberii* in the Intermountain Region.

WEDGE-LEAF SAXIFRAGE

Saxifraga adscendens L. var. *oregonensis* (Raf.) Breitung
Saxifragaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G4T4/ID-S1

Description.—This member of the saxifrage family generally has 1 stem growing up from a basal rosette of leaves to a height of 3-10 cm. Both the stem and foliage have red glandular hairs. The leaves are attached directly to the stem or nearly so. The leaf blades may be entire, 3-toothed, or shallow-lobed at the tip. The sepals are usually reddish-purple and are 2.5-3.5 mm long. The petals are white, 2-3 times as long as the sepals, and narrowed abruptly

to a claw about half as long as the sepals. The stamens are inserted with slender filaments.

Reproduction.—A short-lived perennial, this saxifrage flowers from July to August. The fruit is a capsule 3.5-5.0 mm long with obovoid, dark brownish-black seeds, 0.5 mm long.

Habitat.—It occupies moist ledges and rock crevices with moss along streams in subalpine forests and alpine gravelly meadows.

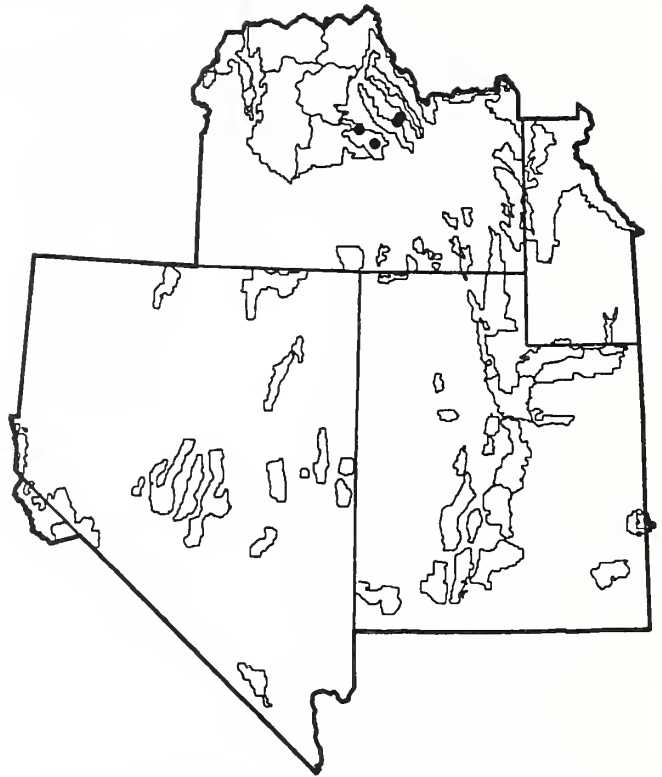
Distribution.—Wedge-leaf saxifrage is found in the central and northern Rocky Mountains and Cascade Mountains

from British Columbia to Oregon and eastward to Utah and Colorado. In Idaho it is known only from 4 locations in the Lost River Range and from 2 locations in the Pioneer Mountains.

Management Implications.—Mining activity seems to be the only potential threat to this species. The degree of impacts should be determined.

References.

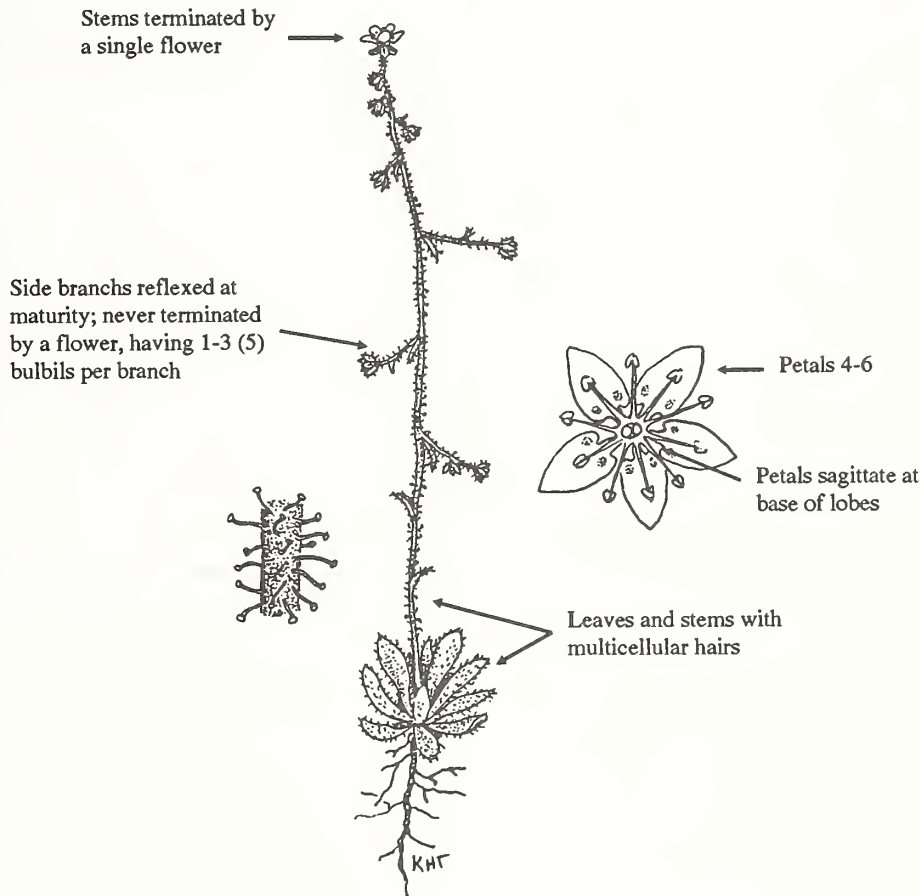
Peck, M.E. 1934. *Rhodora* 36:267.



Distribution of *Saxifraga adscendens* var. *oregonensis* in Idaho.

TOBIAS' SAXIFRAGE

Saxifraga bryophora A.Gray var. *tobiasiae* Grimes and Packard
Saxifragaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5T1/ID-S1

Description.—A member of the saxifrage family, Tobias' saxifrage grows 4-11 cm tall with 1, rarely more, unbranched stems. The herbage is covered with glandular hairs. The stem is terminated by a single flower. Side branches are bent back and have 1-5 bulbils per branch. The leaves are basal, up to 15 mm long, covered with multicellular hairs. There are 4-6 petals with arrow-shaped bases which are up to 0.25 mm long.

Reproduction.—An annual, flowering and fruiting for this saxifrage occurs from late July to August. The fruit is a many-seeded capsule. New plants are produced each year from seeds and bulbils.

Habitat.—Open rocky slopes of small terraces and on granitoid gravel on ridge tops. Elevation between 7,540-7650 feet.

Distribution.—Endemic to Bruin Mountain, Idaho County, Idaho.

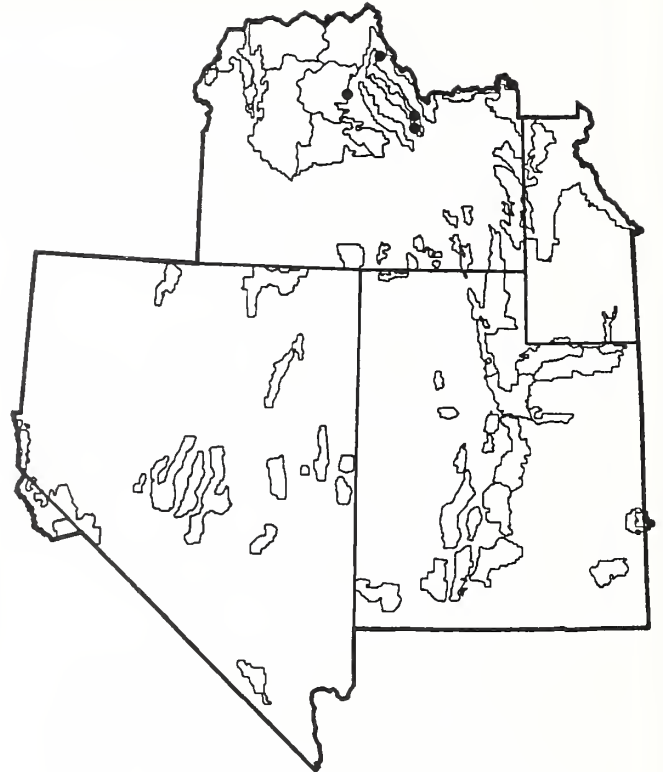
Management Implications.—Because this is known only from a single population, it is easily subject to any man

Distribution—Circumboreal, south in the Rocky Mountains to New Mexico, Idaho, and in the north Cascades of Washington.

Management Implications.—Owing to its habitat, this species is subject to impacts from excessive grazing by domestic and wild ungulates. The species range and management needs should be determined.

References.

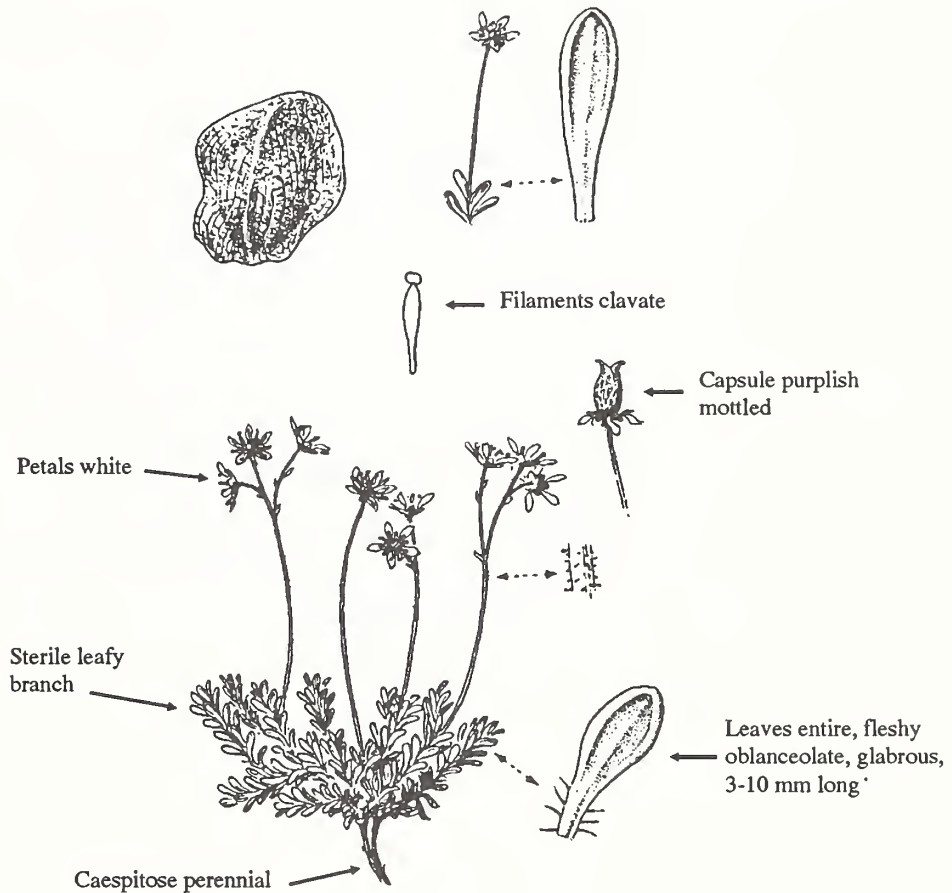
Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1977. Vascular plants of the Pacific Northwest Vol. 3:39-40.



Distribution of *Saxifraga cernua* in the Intermountain Region.

TOLMIE'S SAXIFRAGE

Saxifraga tolmiei T. and G. var. *ledifolia* (Greene) Engelm. and Irmsch.
Saxifragaceae



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G5T4/ID-S4

Description.—A member of the saxifrage family, Tolmie's saxifrage grows in dense tufts with short, branched, leafy stems giving rise to erect, mostly leafless flower stalks. The leaves are thick and succulent, crowded, 3-10 mm long, and often slightly rolled on the margins. The flower stalks are 5-10 cm high with fine glandular hairs, bearing 1-6 flowers. The petals are white, 4.0-5.5 mm long, narrowing to a claw-like base.

Reproduction.—A long-lived perennial, flowering for this saxifrage occurs from June to July. The fruit is a capsule with purple splotches, 8-10 mm long.

Habitat.—Mountain meadows, near streams or in moist alpine talus, scree, or rock crevices in spruce-fir communities.

Distribution.—Montana, Oregon, California, and central Idaho in Idaho and Valley counties.

Management Implications.—Idaho populations occur in areas where excessive grazing could have significant im-

pects on species viability. These activities should be monitored to determine severity of impacts.

References.

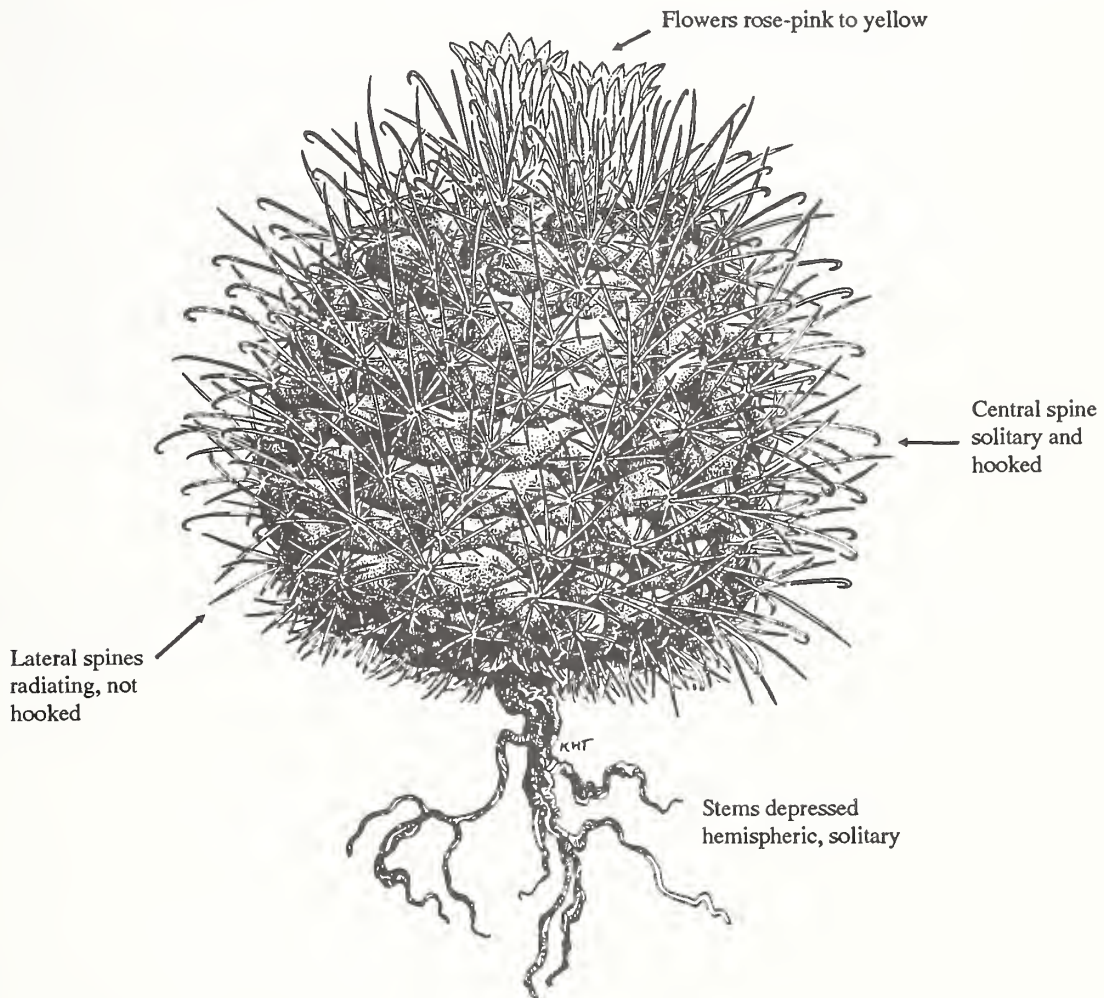
Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1971. Vascular plants of the Pacific Northwest Vol. 3:55.



Distribution of *Saxifraga tolmiei* var. *ledifolia* in Idaho.

GREAT BASIN FISHHOOK CACTUS

Sclerocactus pubispinus (Engelm) L. Benson var. *pubispinus*
Cactaceae



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G4T4/UT-S3

Description.—A member of the cactus family, the Great Basin fishhook cactus has depressed hemispheric stems, 6-13 cm in diameter with 1/3 to 1/2 above ground. The tubercles are spirally arranged. The central spine is solitary and hooked at the tip. The lateral spines are radiating. The flowers are solitary arising from the tubercle. The flowers are rose-pink to yellow.

Reproduction.—Long-lived perennials, flowering and fruiting for this cactus occurs from April to June. The fruit is dry and persistent at maturity. The seeds are dispersed by birds.

Habitat.— Calcareous and silty calcareous gravel in sagebrush-shadscale and sagebrush-juniper-wheatgrass communities along ancient shoreline and islands of Pleistocene Lakes. Elevation between 5,000-6,500 feet.

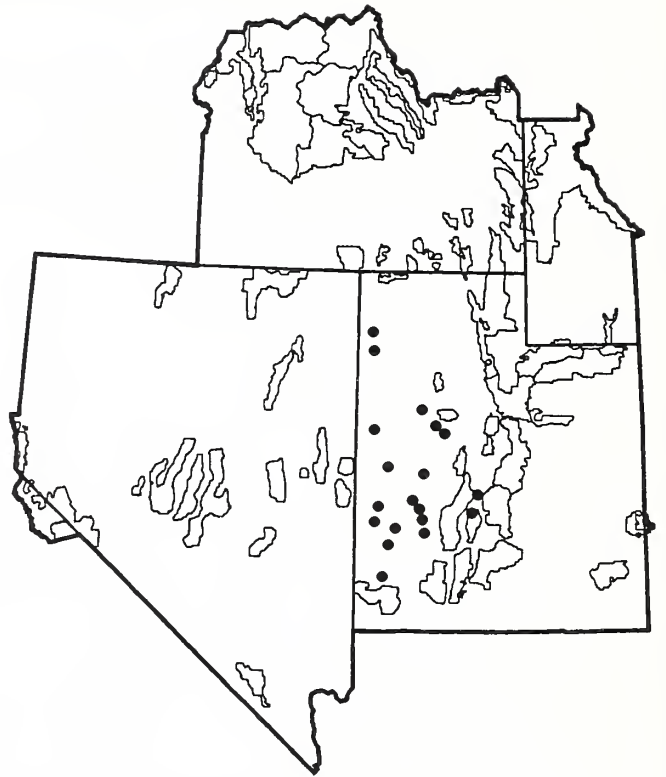
Distribution.—Known from western Utah in Juab, Box Elder, Beaver, Sevier, Millard, and Tooele counties and in Nevada from White Pine and Elko counties.

Management Implications.—Collection and commercial exploitation pose the greatest threats.

References.

Benson, L. 1966. Revision of *Sclerocactus*. *Cact. Succ. J.* 38:50-57, 100-106.

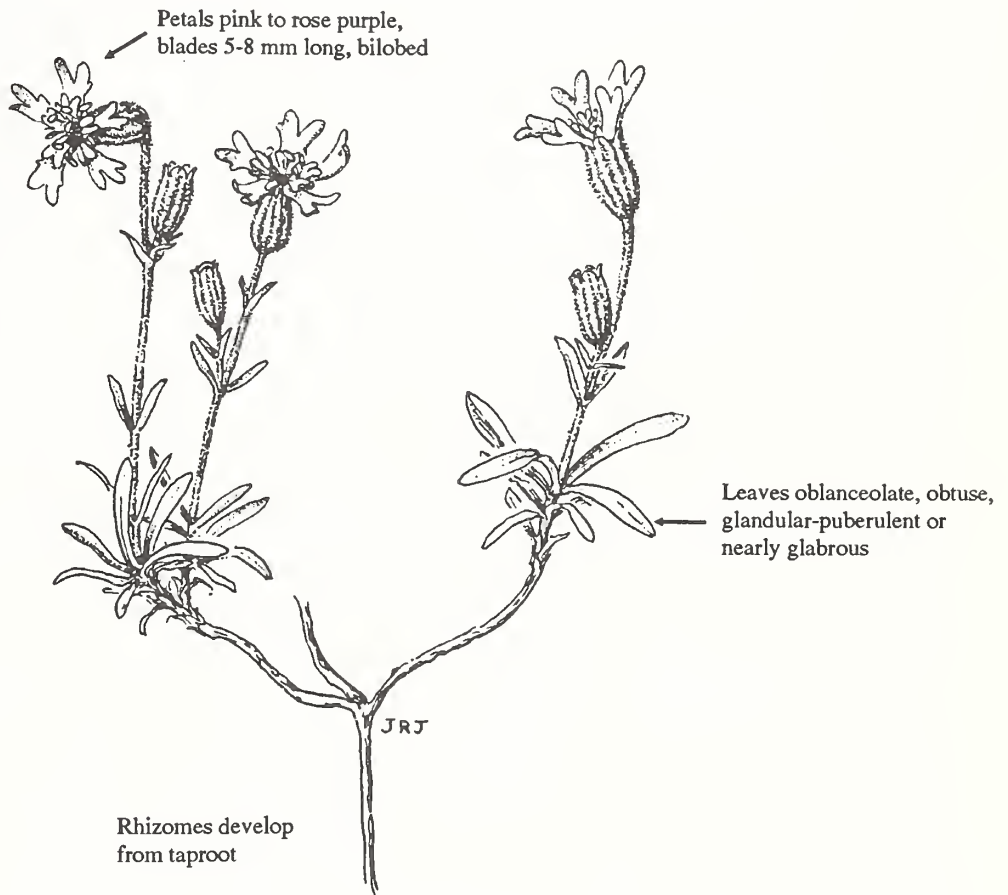
Englemann, G. 1863. Additions to cactus flora of the United States. *Trans. Acad. Sci. St. Louis.* 2:199.



Distribution of *Sclerocactus pubispinus* var. *pubispinus* in Utah.

CLOKEY SILENE

Silene clokeyi C.L. Hitchc. and B. Maguire
Caryophyllaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1G2/NV-S2

Description.—This member of the pink family has rhizomes developed from a deep-seated taproot. Each rhizome produces 1 or more stems, 5-12 cm tall. The stems are sparsely to moderately hairy. The basal leaves are narrowly oblanceolate in shape and are usually mixed with dried leaves from the previous season. The 3-4 pairs of stem leaves are linear-oblong to lanceolate, 1.0-2.5 cm long, and 2-4(5) mm wide. The flowering stems usually have a single

flower per cluster, which takes on a nodding position when open. The bilobed petals are pink to rose-purple in color with the upper blade 5-8 mm long and a narrow basal portion. The sepals are 12-15 mm long with 10 green nerves and somewhat inflated at maturity.

Reproduction.—A perennial spreading by rhizomes, flowering occurs in June and July. The mature, many-seeded capsules are produced in late July to early August. The deep-seated taproots overwinter for several seasons.

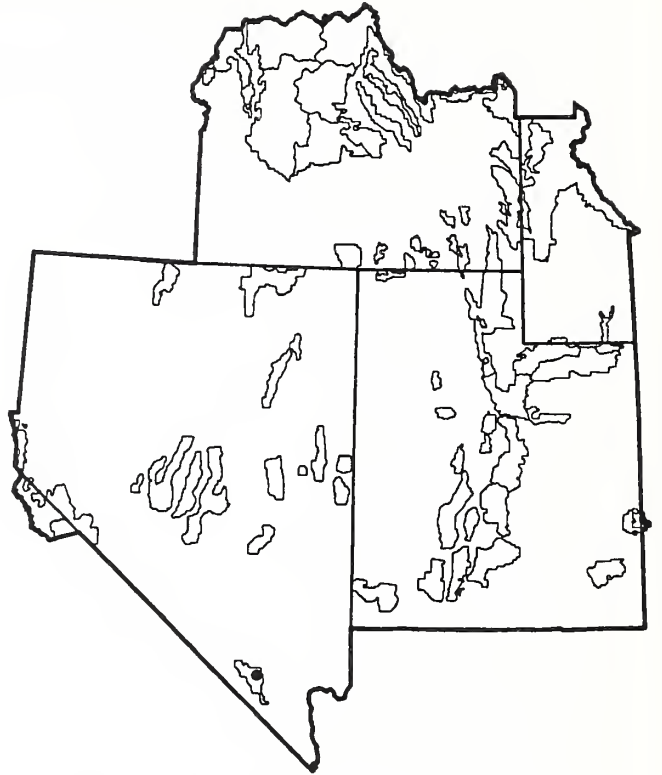
Habitat.—It grows in bristlecone pine communities among limestone rocks near timberline. The range of elevation is between 11,150-11,550 feet.

Distribution.—Endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—Heavy recreation use and increasing wild horse populations are the most significant impacts on this taxon. Essential habitat areas should be determined and management strategies established to ensure species viability.

References.

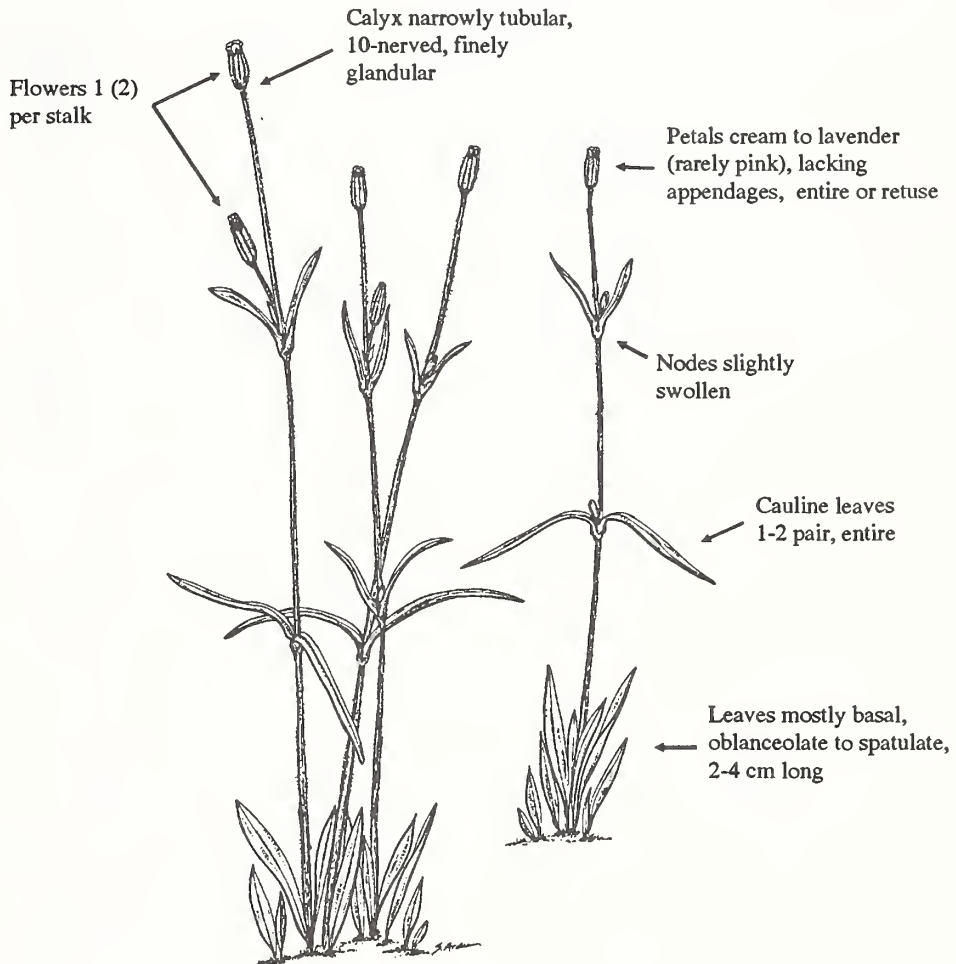
Hitchcock, C.L. and B. Maguire. 1947. North American species of *Silene*. Univ. Wash. Pub. in Biol. 13:38.



Distribution of *Silene clokeyi*.

SODA SPRINGS SILENE

Silene invisia C.L. Hitchcock and B. Macguire
Caryophyllaceae



Slender erect grasslike perennial

USWFS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/CA-S3.1

Description.—A member of the pink family, Soda Springs silene is sparsely leafy, about 10-60 cm high. The leaves are long and narrow and are found clustered close to the ground. One or 2 pairs of opposite leaves occur mid-way up the flowering stem. Each flowering stem has 1-5 flowers (or up to as many as 20). The sepals have 10 distinct dark-green ribs and are sticky to the touch. The petals are slightly longer than the sepals and are cream-white to lavender, rarely pink.

Reproduction.—A perennial herb, plants arise after the snow melts and begins to flower in mid-July. Flowering occurs for 2-3 weeks and is followed by a short fruiting period. The fruit is a many-seeded capsula.

Habitat.—Upper montane red fir zone and/or subalpine zone on slight to moderately-steep slopes. This species thrives under or near canopies that provide midday and afternoon shade (which is critical). Moist or dry meadow edges, stream banks, and flood plains in grass-forb cover communities on coarse volcanic soils. Elevation between 5,800-9,000 feet.

Distribution.—Northern Sierra and very southern cascades from Shasta County south to Alpine County, California.

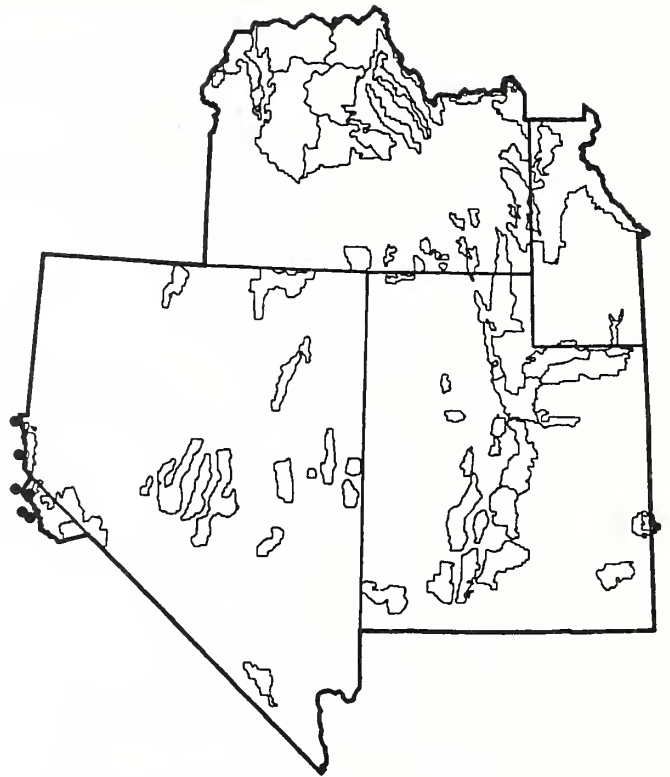
Management Implications.—Alteration to the soil or existing vegetation will affect the species. Ski area development, timber harvest, mining, and road construction may destroy the habitat. Grazing and trampling reduces the vigor of the plant. Closer coordination, for establishing management strategies with the Pacific Southwest Region is needed.

References.

U.S. Forest Service. 1988. Interim management guide for *Silene invisia*. Tahoe National Forest. 29 pp.

U.S. Forest Service. 1986. A survey of *Silene invisia* in the Lakes Basin Recreation Area of Plumas National Forest, California. Beckworth Ranger District.

Taylor, D.W. and R.E. Palmer. 1983. Endangerment status of *Silene invisia* on the Eldorado National Forest, California.

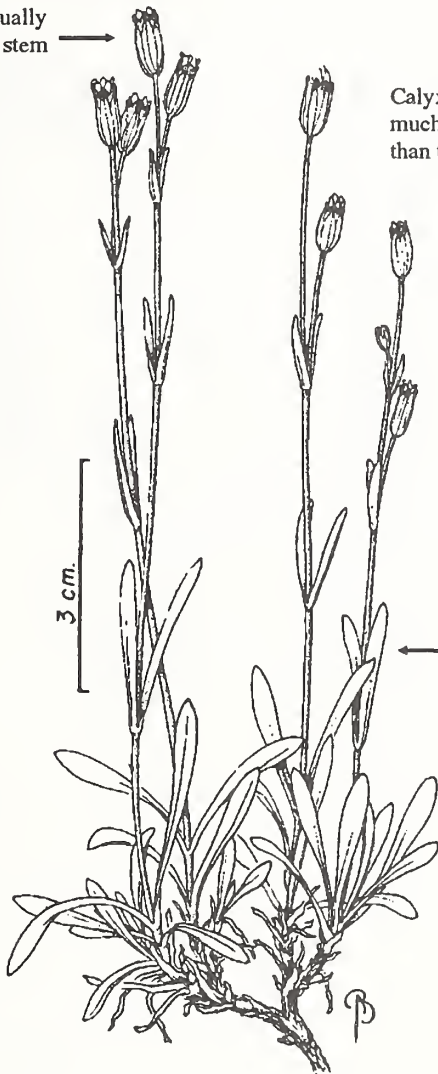


Distribution of *Silene invisia*.

NACHLINGER SILENE

Silene nachlingerae Tiehm
Caryophyllaceae

Flowers usually
2-4 (1) per stem



Calyx lobes
much shorter
than the tube

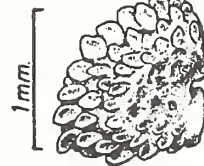


Petals lacking auricles or
appendages, lobes pink to light
purple, tubes white

Herbage densely retrorsely
puberulent, nonglandular

Stem
leaves

Basal leaves
short, narrow



Seed

USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/NV-S2

Description.—A member of the pink family, Nachlinger silene grows from a simple or usually branched rootstock. It has 1 to several stems, 6-25 cm tall. The leaves are oblanceolate to linear, opposite, 1-nerved, and 14 mm long, reduced upwards. The upper leaves are purple tipped. Flowers occur 2-4 per stem. The sepals are tubular, with mostly purple dense hairs and dark green nerves and lobes. The petals are white, except for the exerted portion which

is pink to light purple or occasionally white with a few scattered hairs at the base.

Reproduction.—A perennial, flowering for this species occurs in August. The fruit is a capsule with brown seeds.

Habitat.—Limestone derived soils in pine communities.

Distribution.—Endemic to the Humboldt National Forest on the Ruby Mountains, Elko County and the Grant Range, Nye, County, Nevada.

Management Implications.—Additional information is needed to determine the species status. All habitat for this species is under National Forest management.

References.

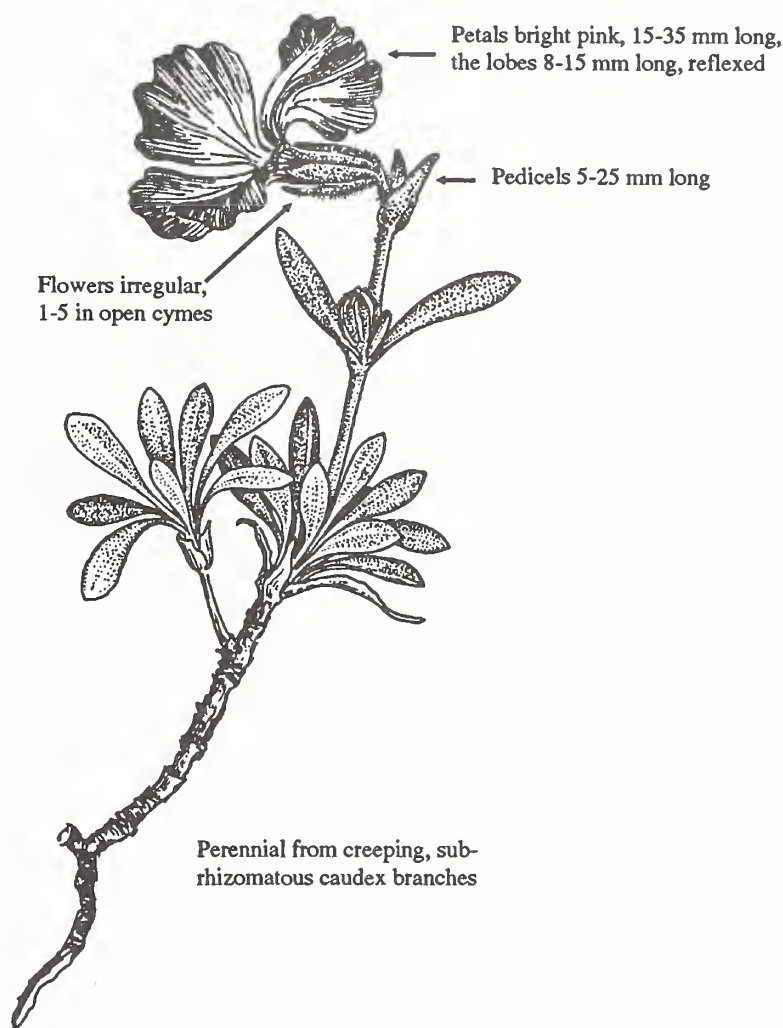
Tiehm, A. 1985. A new species and a new combination in western North American *Silene* (Caryophyllaceae). *Britt.* 37(4):344-346.



Distribution of *Silene nachlingerae*.

MAGUIRE CAMPION

Silene petersonii Maguire
Caryophyllaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S3

Description.—A member of the pink family, Maguire campion grows from creeping, sub-rhizomatous root branches and tap roots. The stems are 3-15 cm tall, hairy and more or less glandular. The leaves are mainly along the stem in pairs of 2-6, 1-5 cm long and hairy like the stems. The upper petal is bent backwards. The flower is nodding both in bud and when open. The sepals are bell-shaped, 13-19 mm long,

10-veined, and green or purplish. The petals are 15-33 mm long, pink to purplish.

Reproduction.—A perennial, this plant begins flowering 5-10 days after snow leaves the site. The seeds are brown and 2.0-2.5 mm wide. Seed is set in about 10 days and dispersed after the first frosts. Small birds, mammals, and winds will scatter the seed. The creeping rhizomes and perennial taproots persist for several seasons.

Habitat.—Open calcareous limestone and igneous gravels. Preferred sites are near or around snowdrift areas, in ponderosa pine, aspen, and spruce-fir plant associations. Elevation between 7,000-11,200 feet.

Distribution.—This plant is endemic to the Flagstaff Limestone Formation in Sanpete County and the Wasatch Limestone Formation in Iron and Garfield counties, Utah.

Management Implications.—Livestock do not use this plant. It has a very tight rhizomatous root system and has a good soil binding and holding capacity. Studies are needed to determine the population status and distribution. Potential threats include limestone and mineral exploitation, timber harvesting, and ORV use.

References.

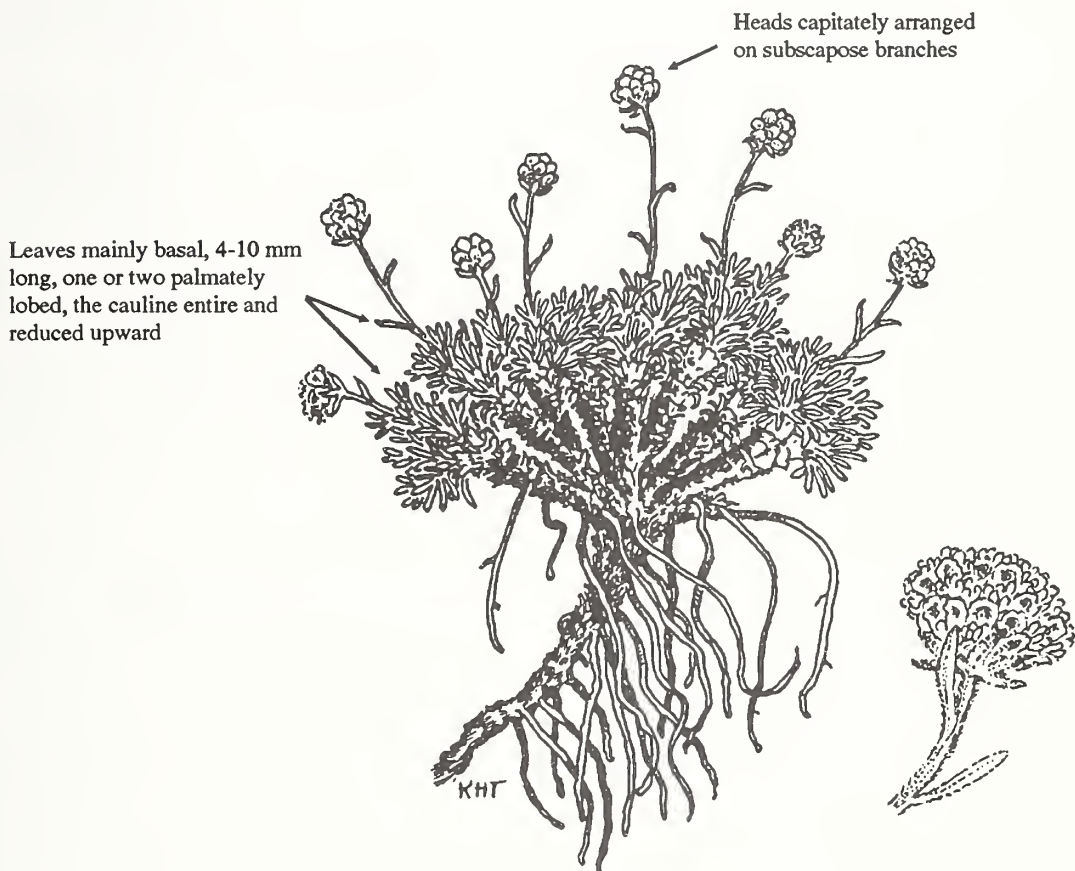
Maquire, B. 1941. Great Basin plants—III. Caryophyllaceae. Madrono. 6:22-27.



Distribution of *Silene petersonii*.

ROCK-TANSY

Sphaeromeria capitata
Asteraceae (Compositae)



Leaves mainly basal, 4-10 mm long, one or two palmately lobed, the cauline entire and reduced upward

Heads capitately arranged on subscapose branches

Plants pulvinate-caespitose, mainly less than 12 cm tall

USFWS Status: None

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G3/UT-S1

Description.—A member of the sunflower family, rock-tansy grows in mats from a woody rootstock. The stems are 2-12 cm tall. The leaves are mainly basal, 4-10 mm long, and palmately lobed. The few stem leaves are reduced upwards. Flower heads are few to numerous in a compact cluster. The bracts have translucent margins and the corollas are 2.5-3.0 mm long.

Reproduction.—A long-lived perennial, flowering occurs in July with achenes maturing in August.

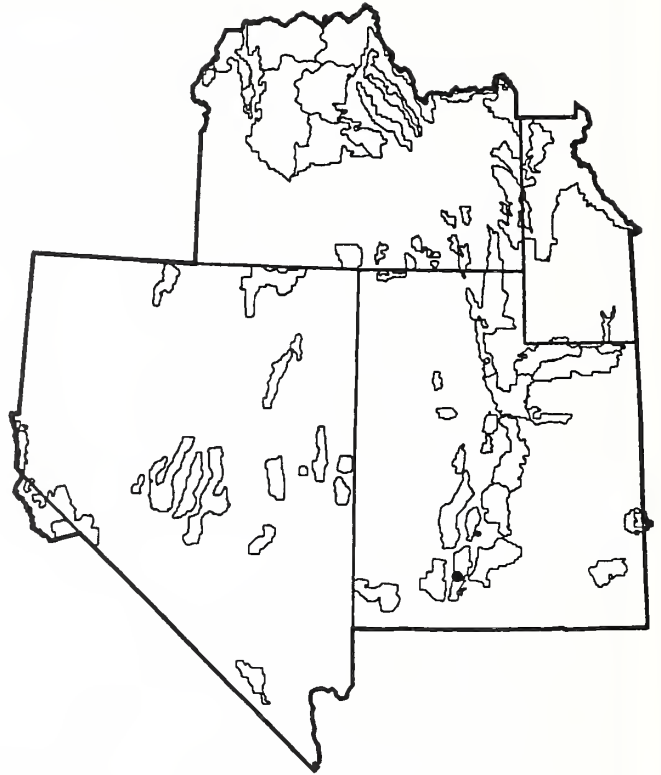
Habitat.—On Cedar Breaks limestone with bristlecone pine at 7,800 feet elevation.

Distribution.—Beaverhead and Custer counties, Montana, south to Sweetwater and Albany counties, Wyoming, and disjunctly in Garfield County, Utah.

Management Implications.—Utah populations are impacted by ORV use, livestock grazing, and land disturbances associated with harvesting timber. Additional data are needed for establishing management needs for the species.

References.

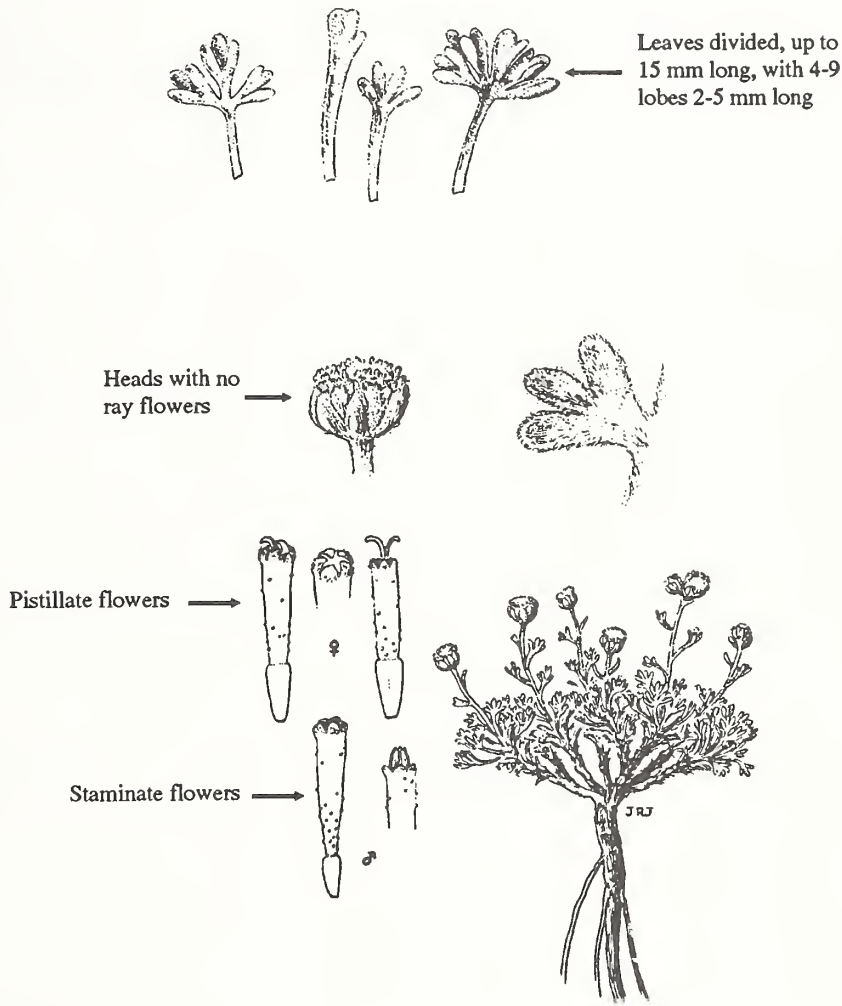
Holmgren, A., L. Schultz, and T. Lowrey. 1976.
Sphaeromeria, a genus closer to *Artemisia* than to
Tanacetum (Asteraceae: Anthemidea). Britt.
28(2):255-262.



Distribution of *Sphaeromeria capitata* in Utah.

LOW SAGEBRUSH

Sphaeromeria compacta (Hall) Holmgren, Schultz, and Lowrey
Asteraceae (Compositae)



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G1G2/NV-S1

Description.—This member of the sunflower family grows in dense silvery tufts. Its fan-shaped leaves have 4-9 marginal lobes each 2-5 mm in length. There is 1 flower per stem, the stems reaching a height of 2-4 cm. The flowering heads are subtended by bracts or reduced leaves. These bracts are hairy, predominantly white with a brown mid-rib and thin pinkish margins. Each flowering head has 5-10 strap-shaped ray flowers, along with various straw-colored

disc flowers in the center. Upon the removal of the ray and disc flowers, there are no hairs or scales inside the receptacle.

Reproduction.—A long-lived perennial, flowering occurs in late July and August. The fruit is an achene which is smooth with 5 awl-shaped scales at the top.

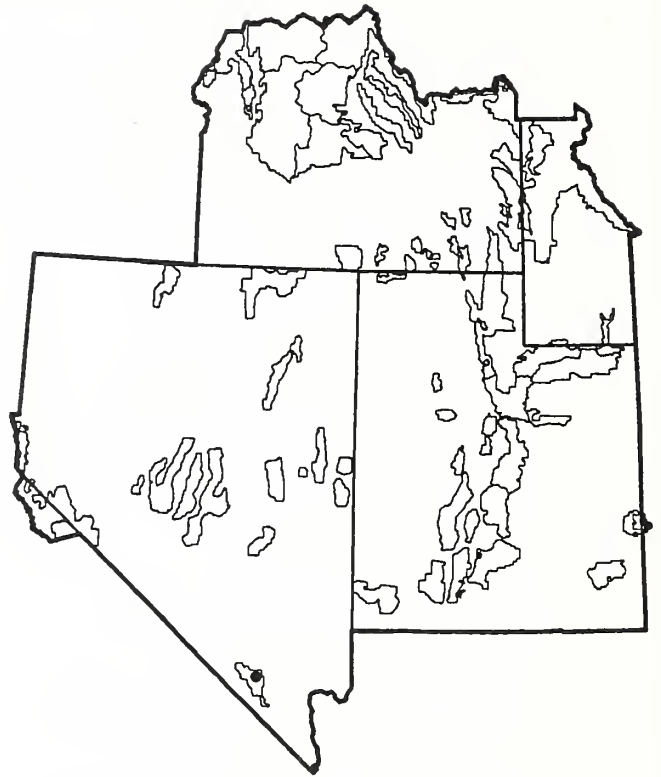
Habitat.—Preferred habitat is on gravelly hillsides, talus slopes, or in crevices of limestone at or above timberline. The range of elevation is between 9,840-11,550 feet.

Distribution.—Endemic to the Charleston (Spring) Mountains Clark County, Nevada.

Management Implications.—Free roaming horses and recreational use are the greatest existing threats. The continuation of urban expansion in the Las Vegas area is a potential threat to the species.

References.

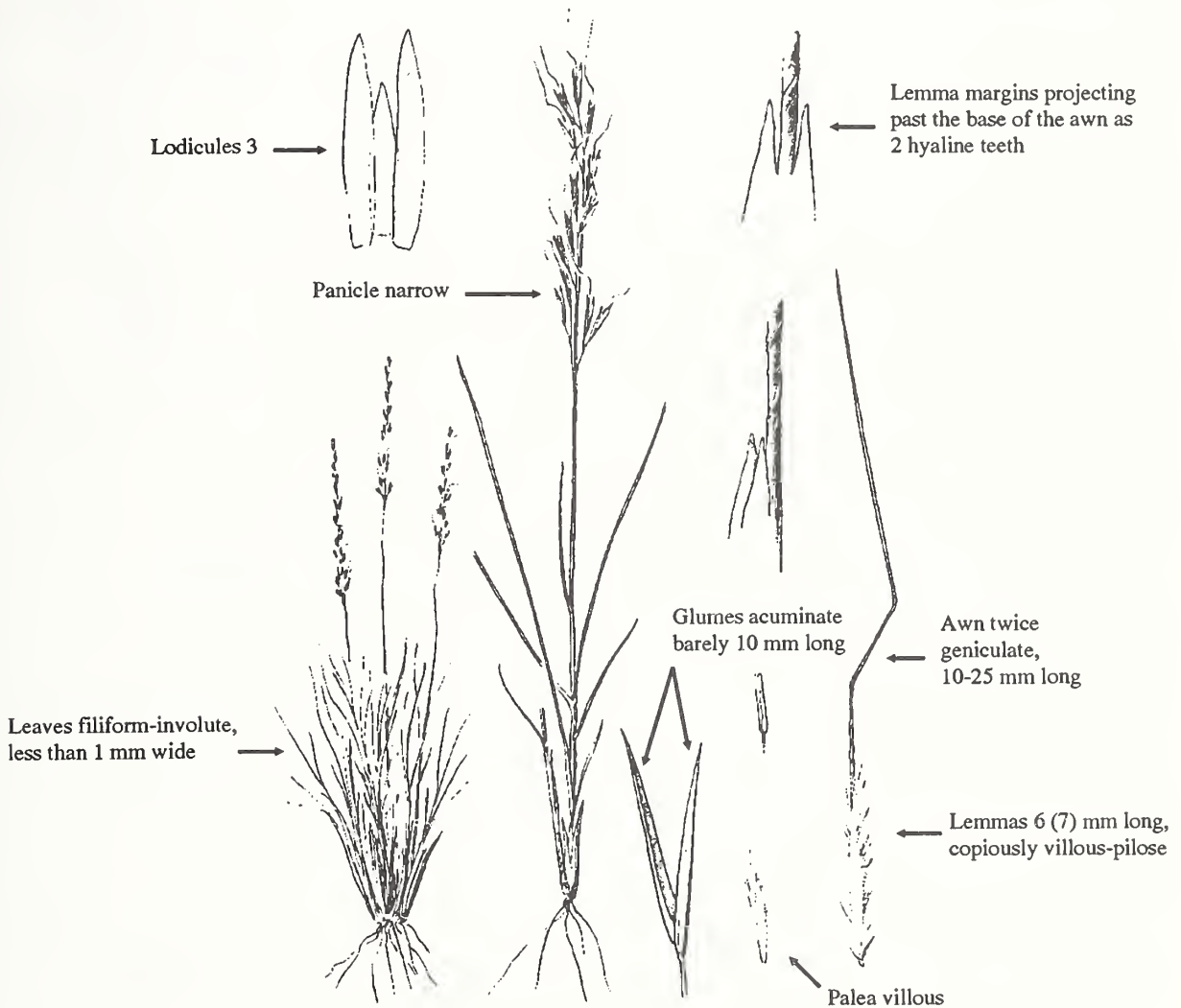
Holmgren, A., L. Shultz, and T. Lowrey. 1976.
Sphaeromeria compacta. *Britt.* 28:261.



Distribution of *Sphaeromeria compacta*.

PINE NEEDLEGRASS

Stipa pinetorum M.E. Jones
Poaceae (Gramineae)



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G4/ID-S1

Description.—A member of the grass family, pine needlegrass grows in tufts often forming large circular clumps. The culms are slender, 1-6 dm tall. The old sheath bases are short, slender, usually grayish, and often inconspicuous. The leaves are typically less than 1 mm wide, smooth or hairy. The ligule is 0.1-0.6 mm long and the panicle is narrow. The glumes are 7-12 mm long, tapering to a sharp tip. The lemma is papery and light brown. The awn is 10-25

mm long. The palea is hairy and at least 2/3 as long as the lemma.

Reproduction.—A perennial, flowering for this stipa occurs from late June through September.

Habitat.—Dry, often rocky, benchlands and foothill slopes, shale barrens in sagebrush, mountain brush, pinyon-juniper, and ponderosa pine communities. Elevation between 6,560-12,000 feet.

Distribution.—Disjunct populations occur in Oregon, Idaho, Wyoming, California, Nevada, and Utah.

Management Implications.— Sensitive in Idaho due to the limited populations and impacts from livestock grazing and other man caused impacts resulting in habitat loss.

References.

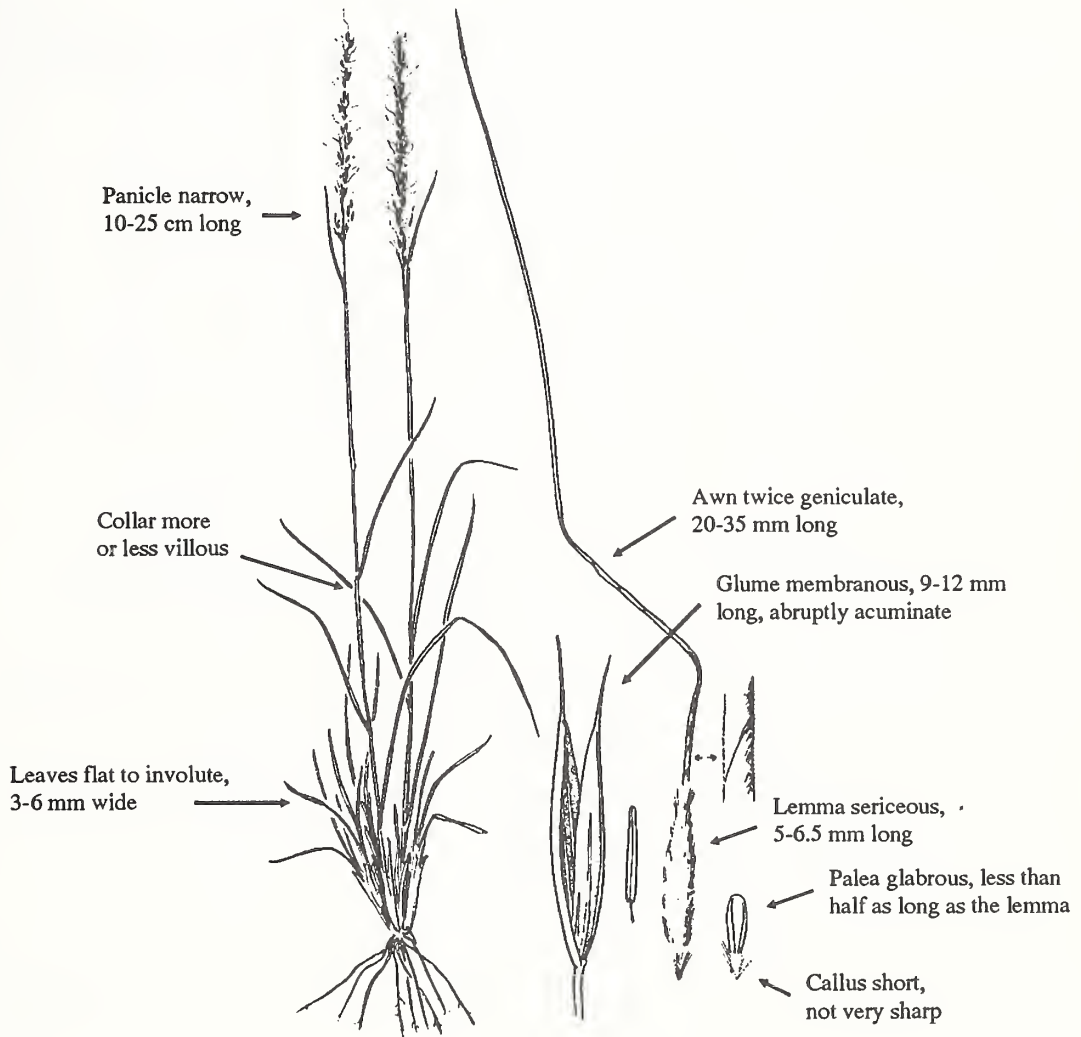
Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1977. Vascular plants of the Pacific Northwest Vol. 1:715-717.



Distribution of *Stipa pinetorum* in Idaho.

GREEN NEEDLEGRASS

Stipa viridula Trin.
Poaceae (Gramineae)



USFWS Status: None
USFS Region 4 Status: Sensitive
State List: ID
Heritage Global/State Status: G4/ID-S1

Description.—A member of the grass family, green needlegrass grows in tufts, 5-11 dm tall. The sheaths are hairy along the margins and the old sheath bases are persistent. The leaf blades are flat to curled, 2-6 mm wide. The ligule is 0.5-2.0 mm long and the panicle is narrow, 10-25 cm long. The glumes are membranous, 8-13 mm long, and taper to a sharp tip. The lemma is brown and leathery, 5.0-6.5 mm long, narrowing to a “whitish” neck. The awn is 20-35 mm

long with the 2 lower segments twisted. The callus is short and the palea is less than 1/2 as long as the lemma.

Reproduction.—A perennial, flowering for this stipa occurs from June to July. The fruit is a caryopsis.

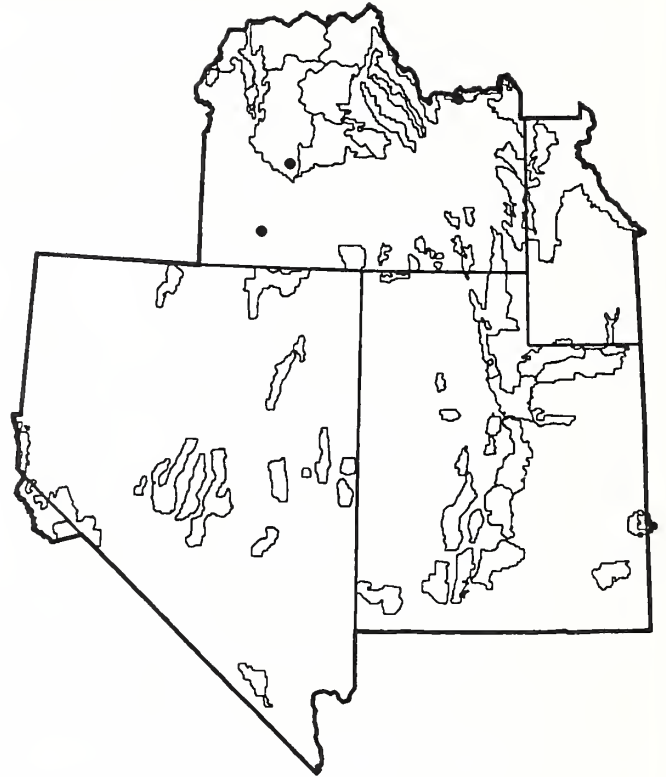
Habitat.—Adapted to a wide range of soil textures, but does especially well on clay soils. Found along roads, in grass and sagebrush communities, it can survive with little moisture. Elevation between 4,500 and 7,050 feet.

Distribution.—Disjunct in Canada from British Columbia to Saskatchewan, south through the Rocky Mountain States.

Management Implications.—Based on current information this species is rare in Idaho and probably subject to impacts from livestock and other man caused disturbances. Additional data are needed to assess use, condition, and trends.

References.

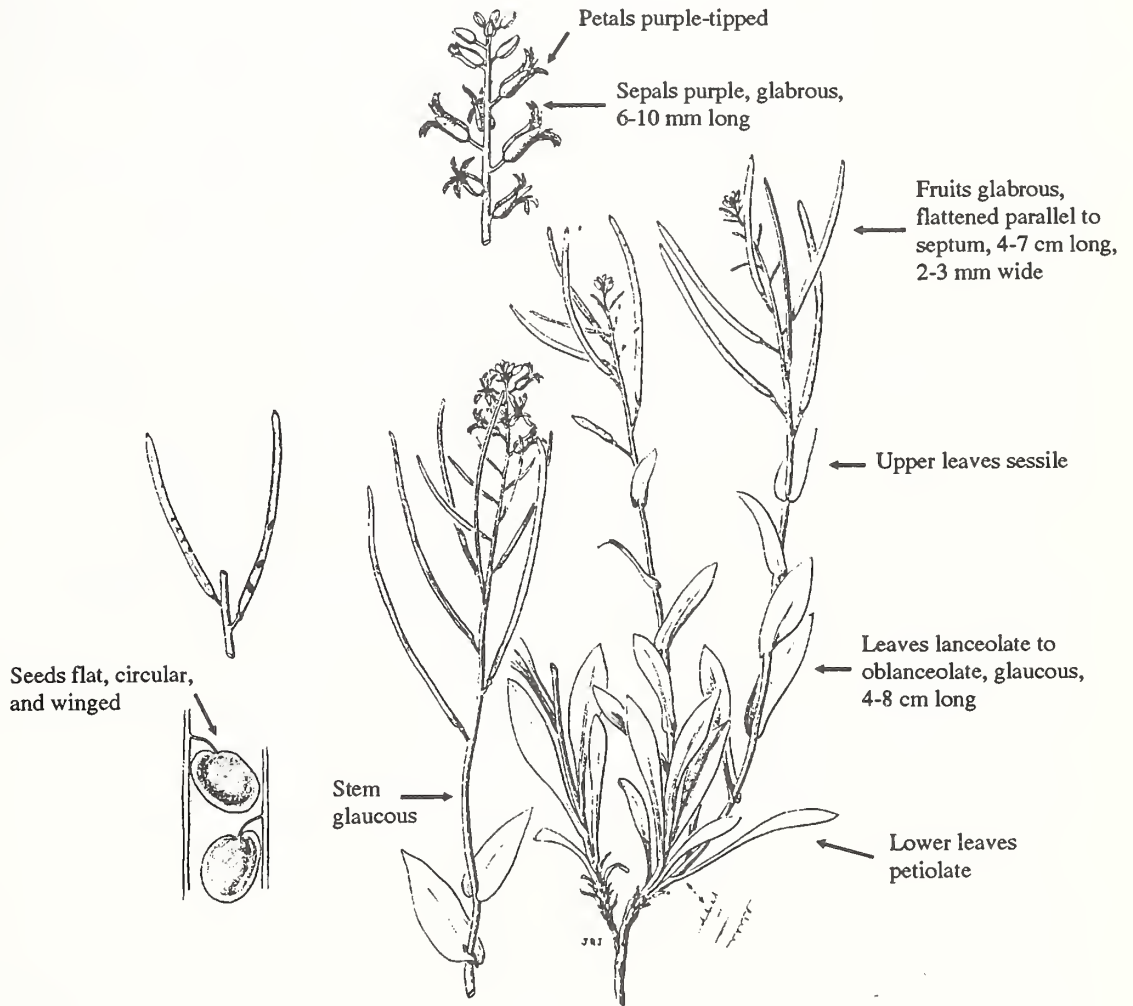
Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1977. Vascular plants of the Pacific Northwest Vol. 1:719-722.



Distribution of *Stipa viridula* in Idaho.

FEW-FLOWERED STREPTANTHUS

Streptanthus oliganthus Rollins
Brassicaceae (Cruciferae)



USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: NG2G3/NV-S2, CA-S2.2

Description.—This mustard has few stems and branches. The stems and leaves are glabrous except the petiole margin of the basal leaves. The basal leaves are lanceolate to oblanceolate in shape and 4-8 cm long. The stem leaves are smaller becoming sessile and arrow-shaped toward the top. The flower cluster is few-flowered and purple in color. The petals are 1.0-1.5 cm long with purple tips and paler below. The sepals are oblong, purple, smooth, and 6-10 mm long.

Reproduction.—A short-lived perennial, flowering occurs in June and July. Siliques are smooth and flat, obtuse at the apex, and measure 4-7 cm in length. The seeds are circular, winged, and 2 mm in width.

Habitat.—This streptanthus grows in pinyon-juniper communities on flat sloping areas in andesite soils. The range of elevation is between 7,000-8,200 feet.

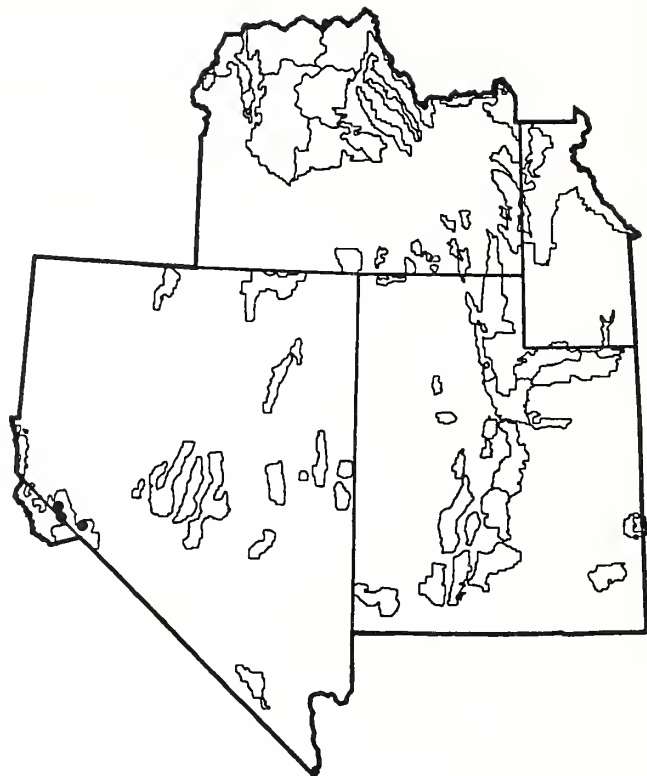
Distribution.—Disjunct in Lyon and Mineral counties in Nevada and Mono and Inyo counties in California.

Management Implications.—Mining, grazing, and logging are the greatest threat to the species at this time.

Additional surveys are required to determine distribution, use, condition, and trend for this taxon.

References.

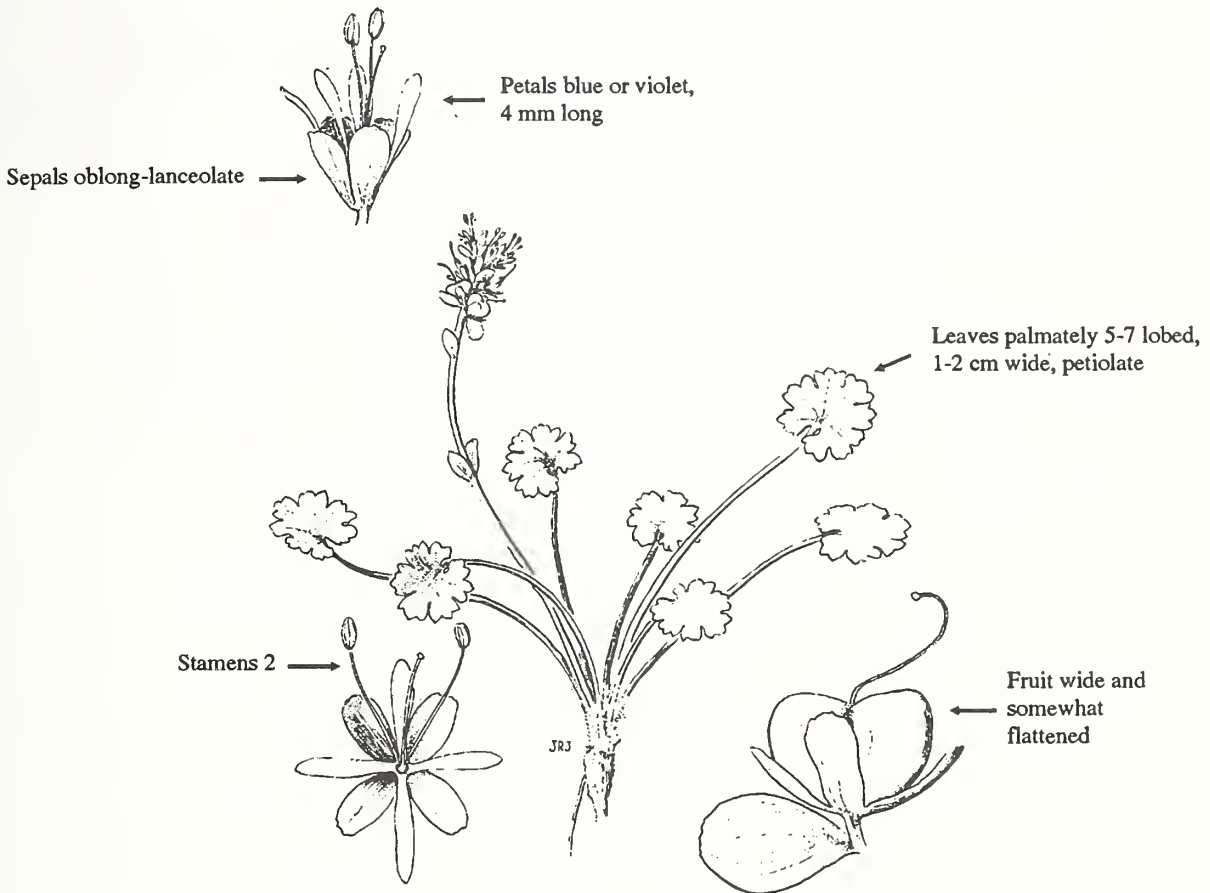
Munz, P.A. 1975. A California flora, p.218.



Distribution of *Streptanthus oliganthus*.

CHARLESTON KITTENTAILS

Synthyris ranunculina Pennell
Scrophulariaceae



USFWS Status: C1
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2/NV-S2

Description.—This figwort comes from slender branching rootstocks to form a basal tuft of smooth, roundish, or kidney-shaped stalked leaves. The leaf stem is 4 cm long, while the flowering stem is 6-8 cm long. The leaf blade is 1-2 cm in width and the leaf margin is coarsely toothed with 5-7 lobes. The flowers are blue or violet in color. The petals are fused together at the base separating into 4 linear

lobes 4 mm long. The sepals are oblong to lanceolate in shape and grow to 2.5 mm in length.

Reproduction.—These perennial herbs flower from late June into August, depending on the season and elevation. The fruit is a compressed capsule and the seeds are few and flattened.

Habitat.—Grows in bristlecone pine communities on permanently damp banks, moist meadows, and moss covered rocks. The range of elevation is between 8,600-11,700 feet.

Distribution.—Endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—Recreational use and wild, free roaming horses and burros in the Charleston Mountains are the greatest existing threats at this time. This is one of the rarest Charleston Mountain endemics. Unless specific management and protection measures are identified and implemented by the Toiyabe National Forest, the U.S. Fish and Wildlife Service will probably be required to list it as endangered. Survey work has been completed and adequate information is available for development of a listing package.

References.

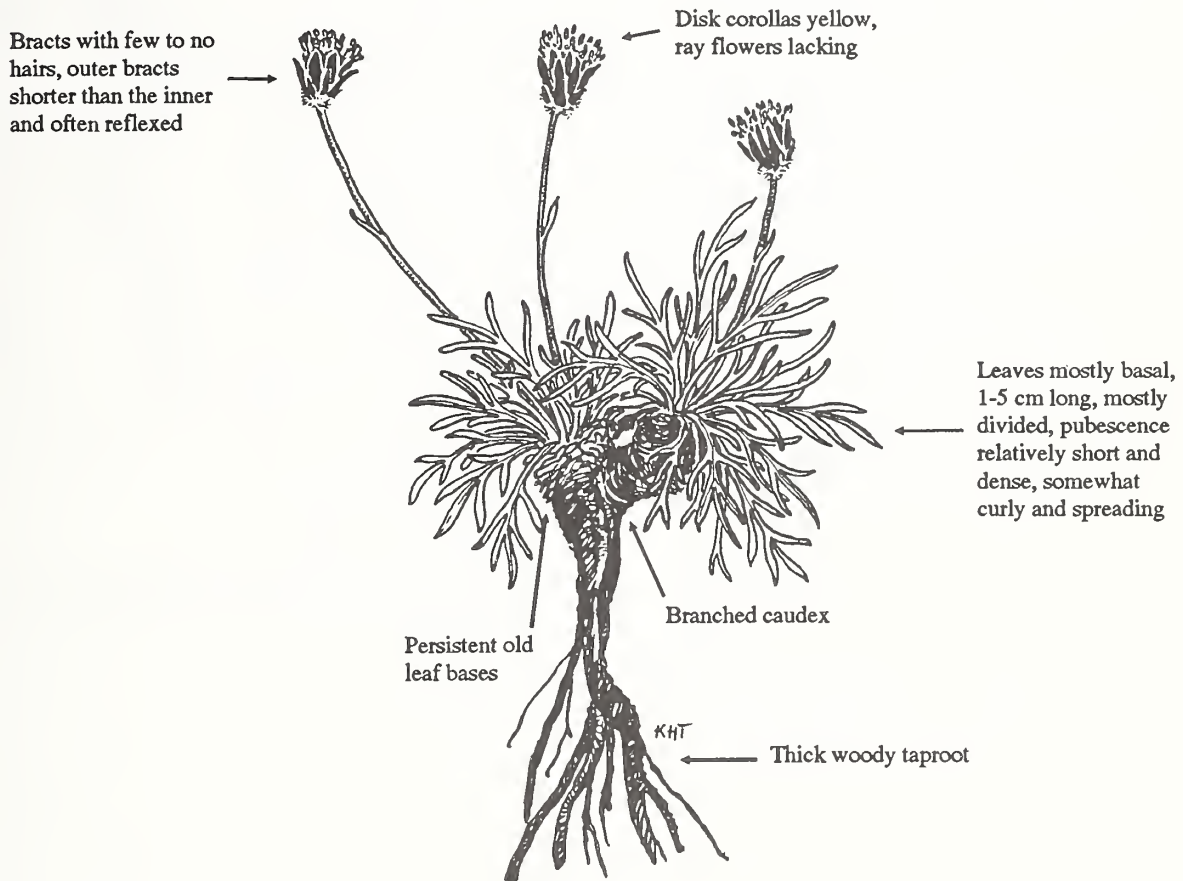
Pennel, F.W. 1933. A revision of *Synthyris* and *Besseyia*.
Proc. Acad. Nat. Sci. Phila. 85:92.



Distribution of *Synthyris ranunculina*.

UINTA GREEN THREAD

Thelesperma pubescens Dorn
Asteraceae (Compositae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G1/UT-S1

Description.—A member of the sunflower family, Uinta green thread has a thick, woody taproot and branching rootsock. The stems are 3-12 cm high with old leaf bases present at the base. The new leaves are mostly basal, 1-5 cm long, divided, and densely covered with hairs. The outer bracts are shorter than the inner and are often bent downward. The disk flowers are yellow with reddish brown veins, and there are no ray flowers. The pappus is lacking.

Reproduction.—A long-lived perennial, flowering for this species occurs in July. The fruit is an angled achene, about 4 mm long. It appears that this species reproduces, in part, by underground rootstocks.

Habitat.—Grassland, sagebrush-grassland, or low forb communities on the Oligocene Bishop Conglomerate on cobbly soils. Elevation between 8,300-8,850 feet.

Distribution.—Endemic to southwestern Sweetwater and extreme southeastern Uinta counties, Wyoming and Summit County, Utah.

Management Implications.—This taxon is threatened by oil and gas development and domestic sheep and cattle grazing. Negative impacts on populations should be avoided. A regular monitoring program to track population trends should be established on key populations. These actions, along with completion of survey work, should be scheduled and funded in coordination with the BLM.

References.

Dorn, R. 1983. A new species of *Thelesperma* (Asteraceae) from Wyoming. *Great Basin Natur.* 43(4):749-750.

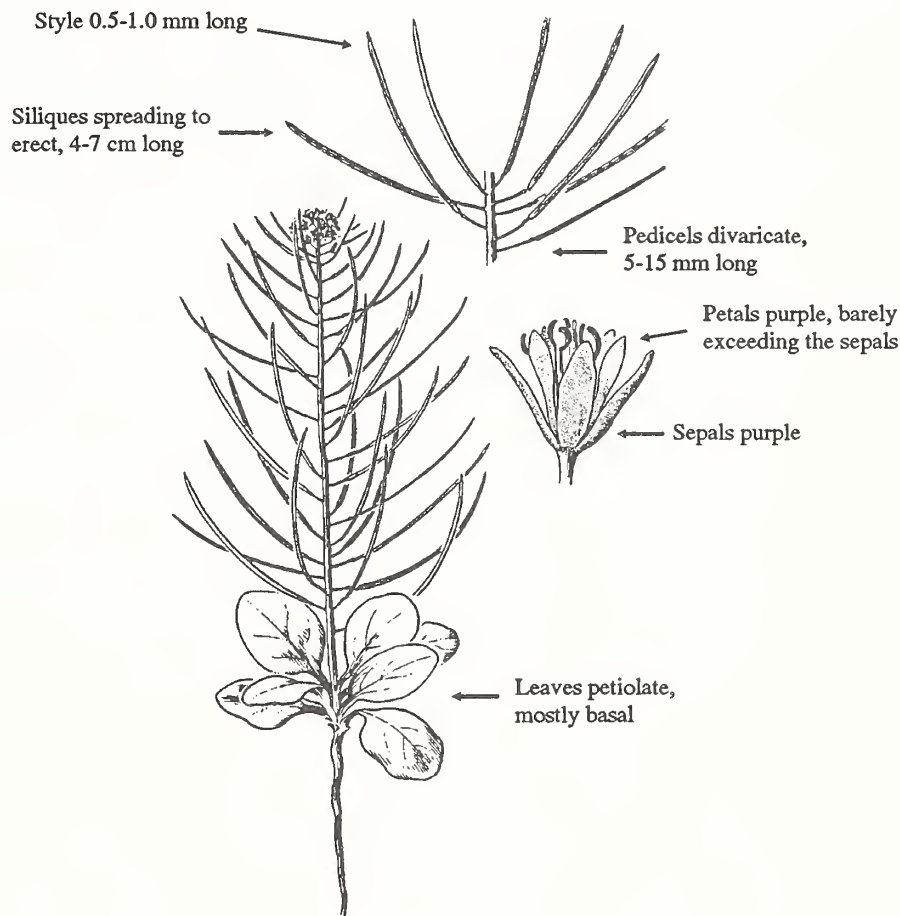
Marriott, H. 1988. Inventory and monitoring of *Thelesperma pubescens*. Wyoming Natural Diversity Database, Rocky Mountain Task Force. 55 pp.



Distribution of *Thelesperma pubescens* in the Intermountain Region.

WAVY-LEAF THELYPODY

Thelypodium repandum Rollins
Brassicaceae (Cruciferae)



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G2/ID-S2

Description.—A member of the mustard family, wavy-leaf thelypody has 1 to few stems and grows 2-6 dm tall. The leaves are fleshy, mostly basal with a somewhat wavy margin. The sepals and petals are lavender-purplish or sometimes white, occurring in dense clusters. The petals barely exceed the sepals in length.

Reproduction.—A biennial, flowering for this species occurs from late May to early June. The fruit is a flattened

siliqua, 4-7 cm long. Seed set and dispersal occurs in late June. Plants are produced irregularly from year to year depending on available moisture.

Habitat.—Dry, mostly unstable, steep slopes, usually on volcanic and metamorphic material, road cuts, and fills within the shrub-steppe zone. Elevation between 4,900-7,000 feet.

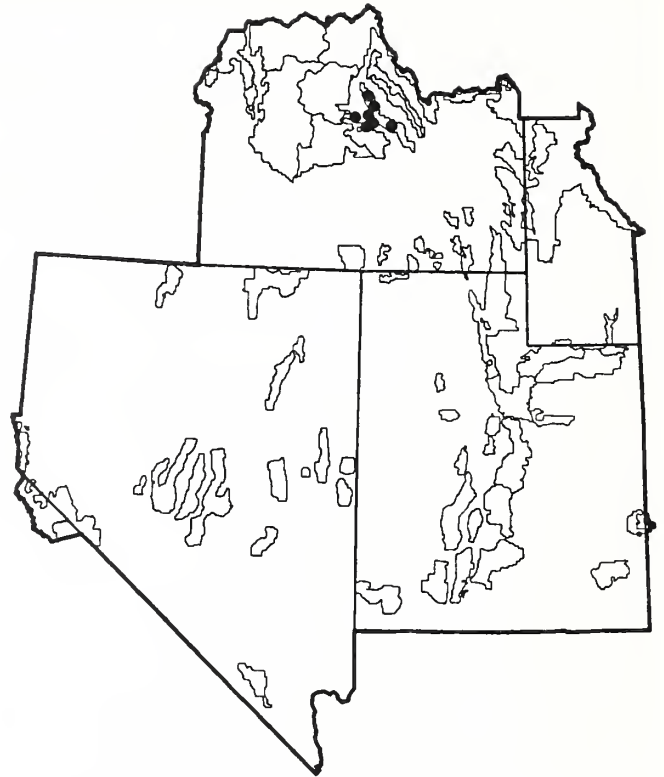
Distribution.—A narrow endemic in the Challis region of Custer County, Idaho near the Salmon River and tributaries.

Management Implications.—Some populations are subject to trampling and herbivory. Road construction and

maintenance along with mining, borrow pit development, and spraying for noxious weeds may destroy the habitat. An interagency management plan should be developed and implemented.

References.

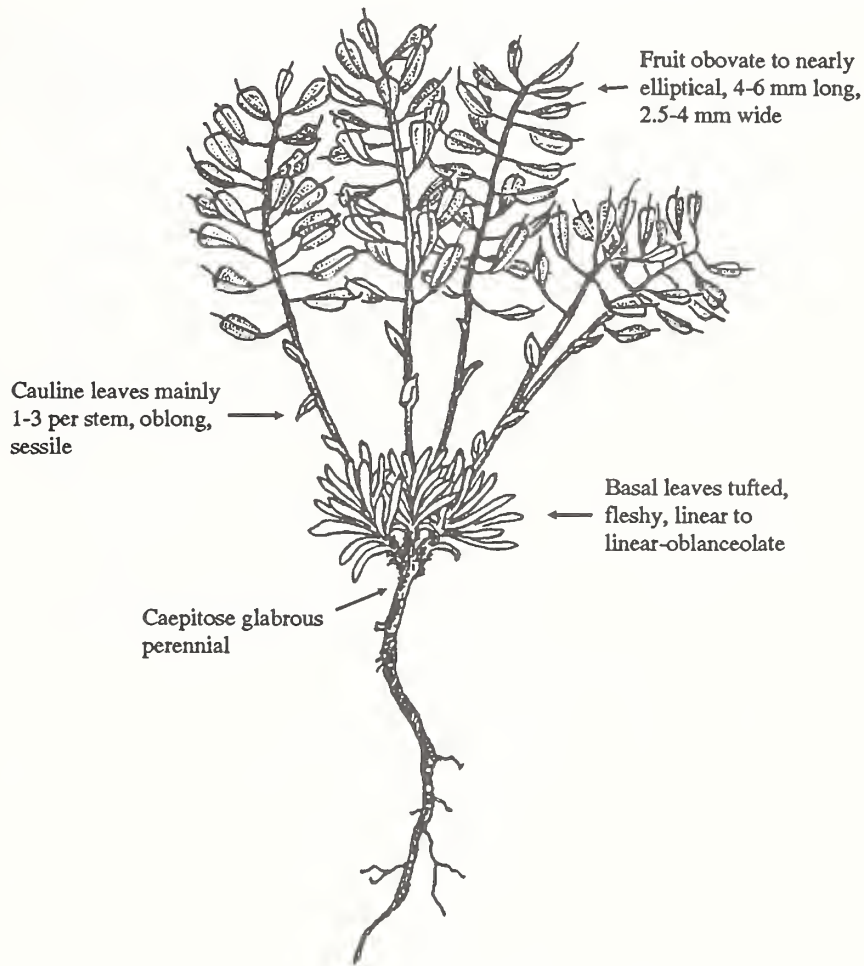
Rollins, R.C. 1946. *Thelypodium repandum*. Contr. Dudley. Herb. 3:371.



Distribution of *Thelypodium repandum*.

STANLEY THLASPI

Thlaspi aileeniae Rollins
Brassicaceae (Cruciferae)



USFWS Status: None

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G3Q/ID-S3

Description.—A member of the mustard family, Stanley thlaspi has few to many upright stems. The woody rootstock branches are congested below ground level. The stems are simple, rigid, slender, and 2-5 cm tall including the flowers. The basal leaves are tufted, fleshy, and 1.0-1.5 mm wide, narrowing to a point at insertion. The stem leaves occur mainly 1-3 per stem and are 3-7 mm long.

Reproduction.—A perennial, flowering for this species occurs from May to July. The fruit is a silique which is obovate to nearly elliptical. The seeds are plump, brown, wingless, 1.5-2.0 mm long, and tapered at each end.

Habitat.—It occupies steep slopes on whitish sand among small rocks on sagebrush flats.

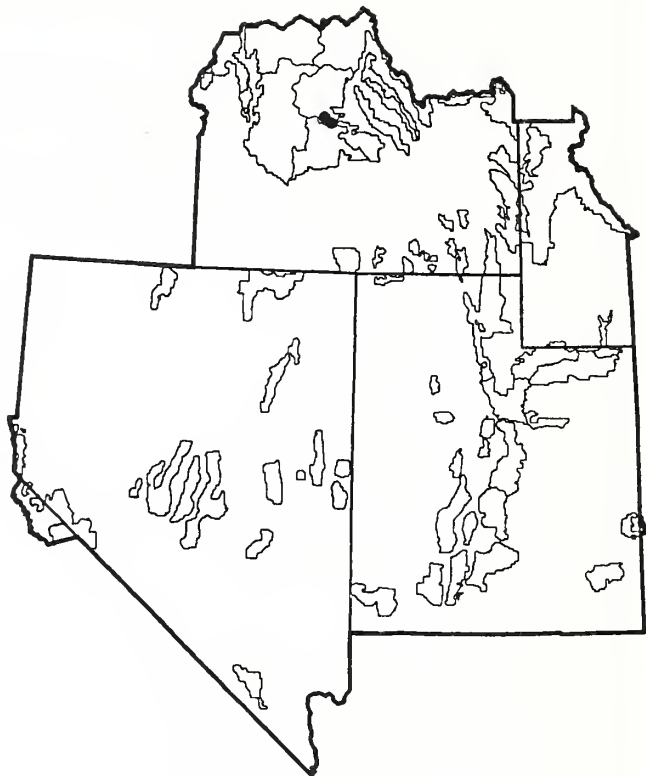
Distribution.—Stanley thlaspi is endemic to Stanley Basin, central Idaho in Custer County.

Management Implications.—Restricted to a few small populations vulnerable to catastrophic events. A management/monitoring plan for the Stanley Basin endemics is

needed to provide information on management direction and protection requirements.

References.

Rollins, R.C. 1984. Studies in the Cruciferae of western North America II. Contr. Gray Herb. 214:16-17.

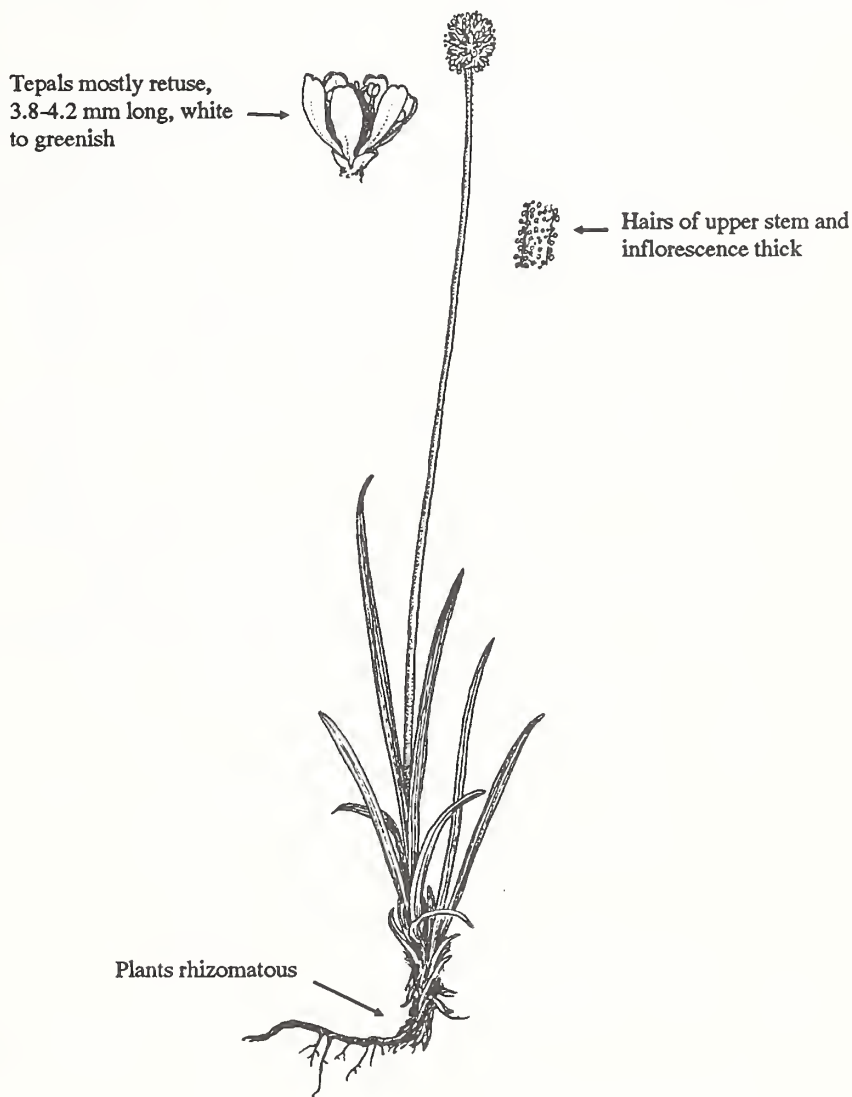


Distribution of *Thlaspi aileeniae*.

OUT-OF-TUNE STICKY TOFIELDIA

Tofieldia glutinosa (Michx.) Pers. var. *absona* Davis

Liliaceae



USFWS Status: C2

USFS Region 4 Status: Sensitive

State List: ID

Heritage Global/State Status: G5T1/ID-S1

Description.—A member of the lily family, out-of-tune sticky tofieldia is a single stemmed plant, 1-5 dm tall. The leaves are mostly basal, 15 cm long, and very thin. The upper portion of the stem is covered with numerous sticky hairs. Flowers occur in terminal clusters consisting of many white to greenish flowers. Individual flowers are surrounded by green bracts.

Reproduction.—A rhizomatous perennial, flowering for this lily occurs in July and August. It produces numerous seeds in capsules.

Habitat.—Bogs and mossy seeps usually in stands of sub-alpine fir and western hemlock. Elevation between 5,000-6,360 feet.

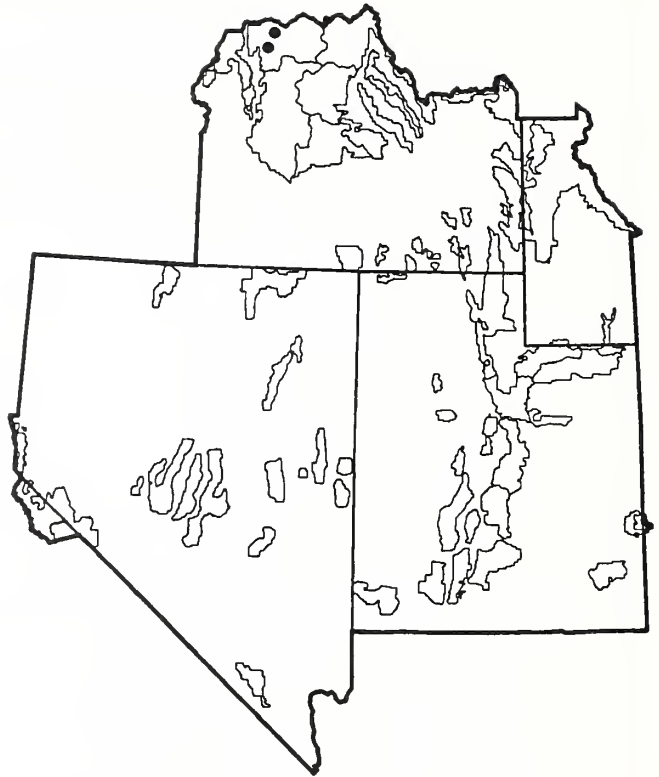
Distribution.—Endemic to Banner and Valley counties in Idaho.

Management Implications.—Subject to habitat loss through overstory removal or alterations in the water regime associated with timber harvesting and associated roads, skid

trails, and log decks. Survey work is currently being completed and these data will be available in 1991.

References.

Reveal, J.L. 1971. A new combination in *Tofieldia glutinosa* (Liliaceae). *Rhodora* 73:53-55.



Distribution of *Tofieldia glutinosa* var. *absona*.

CHARLESTON GROUND DAISY

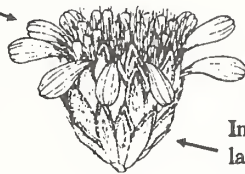
Townsendia jonesii (Beaman) Reveal var. *tumulosa* Reveal
Asteraceae (Compositae)

Leaves oblanceolate to spatulate, entire, up to 2.5 cm long, 2-4 mm wide, hairy on both surfaces

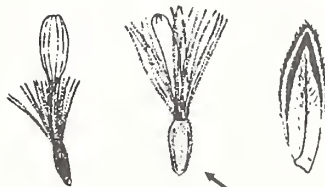


Rosette-forming perennial

Ray flowers white, pink or violet



Involucral bracts broadly lanceolate to obovate with thin, dry, and hairy-fringed margins



Achenes oblanceolate compressed, 2 or 3-ribbed, hairy

USFWS Status: C2
USFS Region 4 Status: Sensitive
State List: Not listed
Heritage Global/State Status: G2T2/NV-S2

Description.—This member of the sunflower family, forms into a rosette with oblanceolate to spatulate leaves up to 2.5 cm in length and 2-4 mm wide. The leaves are entire and acute, uniformly hairy on both sides. The flowers have a whorl of scale-like appendages which are lanceolate to obovate with dry, thin margins. The ray flowers are white, pink, or violet in color and the flowers number 13-21. Individual ray flowers are 8-12 mm long and 1 mm wide.

The disc flowers are yellow and 4-6 mm in length with a purplish tip.

Reproduction.—A perennial, flowering occurs from March to June. The fruit is an achene which is small and only produces 1 seed. The achenes are oblanceolate and compressed with 2-3 ribs, and are hairy with 15-30 pappus bristles at the apex. Plants persist for several years.

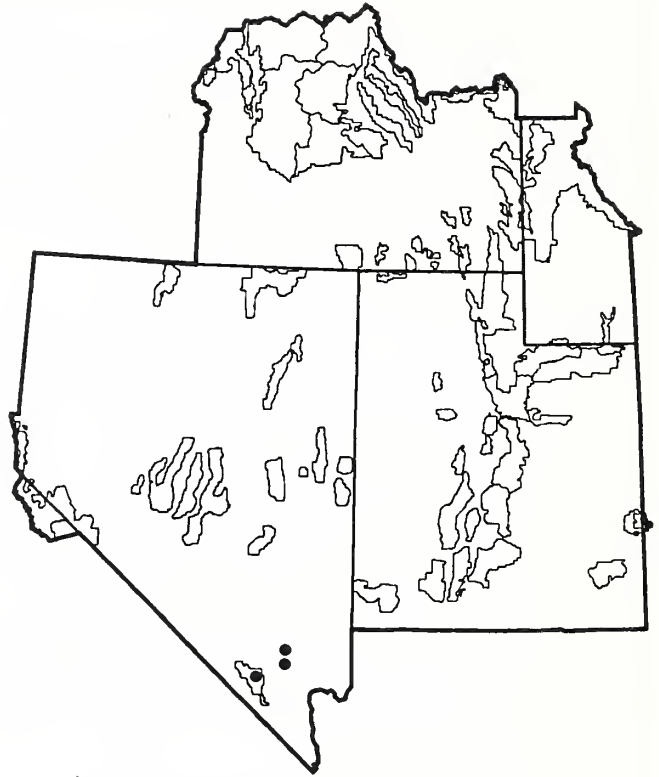
Habitat.—Grows among the pinyon, ponderosa, and bristlecone pine communities on ridges, slopes, saddles, and washes. The range of elevation is 6,500-10,000 feet.

Distribution.—Endemic to the Charleston (Spring) Mountains in Clark County, Nevada.

Management Implications.—The greatest existing threat is recreational use and wild, free roaming horses and burros in the area. Cumulative effects from these impacts should be assessed and protective measures implemented to ensure viable populations are maintained.

References.

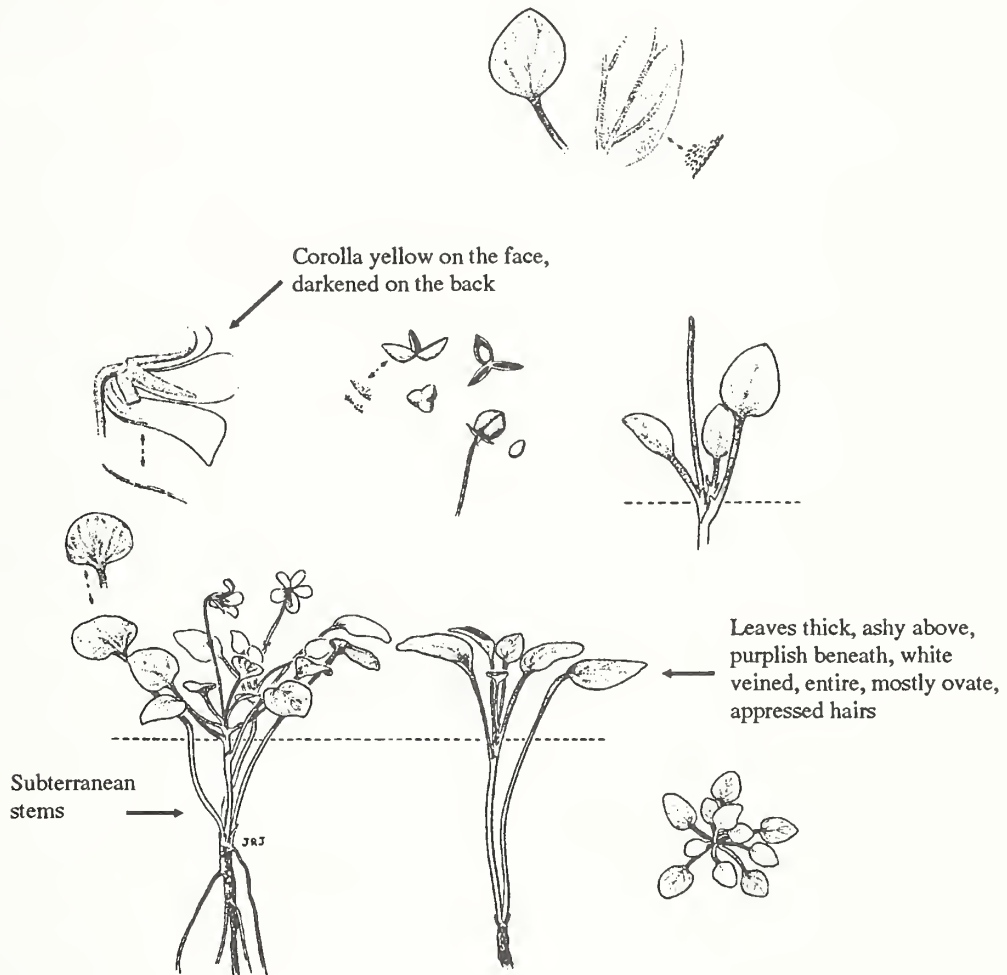
Reveal, J. 1970. *Great Basin Natur.* 30(1):37.



Distribution of *Townsendia jonesii* var. *tumulosa*.

CHARLESTON MOUNTAIN VIOLET

Viola purpurea Kellogg var. *charlestonensis* (Baker & Clausen) Welsh and Reveal
Violaceae



USFWS Status: 3C

USFS Region 4 Status: Sensitive

State List: Not listed

Heritage Global/State Status: G5T2/NV-S2, UT-S2

Description.—This member of the violet family is an herbaceous perennial with 1-8 above ground stems from a deep taproot, and grows up to 10 cm high. The leaves are thick and ashy with whitish veins above and purple-colored beneath. The basal leaves are obovate with a blunt tip, 1.0-2.5 mm long. The stem leaves are obovate, but narrower with a sharper tip, 8-25 mm long. The flowers on this violet are abundant, but mostly infertile. The petals reach 12-17

mm across with yellow on the front of the petals and darkened toward the back, especially the upper petals. The lower petal produces a short spur with hair-like processes, while the upper and lateral petals are more rounded with the lateral possessing beards.

Reproduction.—A perennial herb, flowering occurs in May to June. The fruit consists of an unusually large capsule, as wide as long, hairy, and 8 mm across each face. The seeds are black in color and 3.4 mm in length.

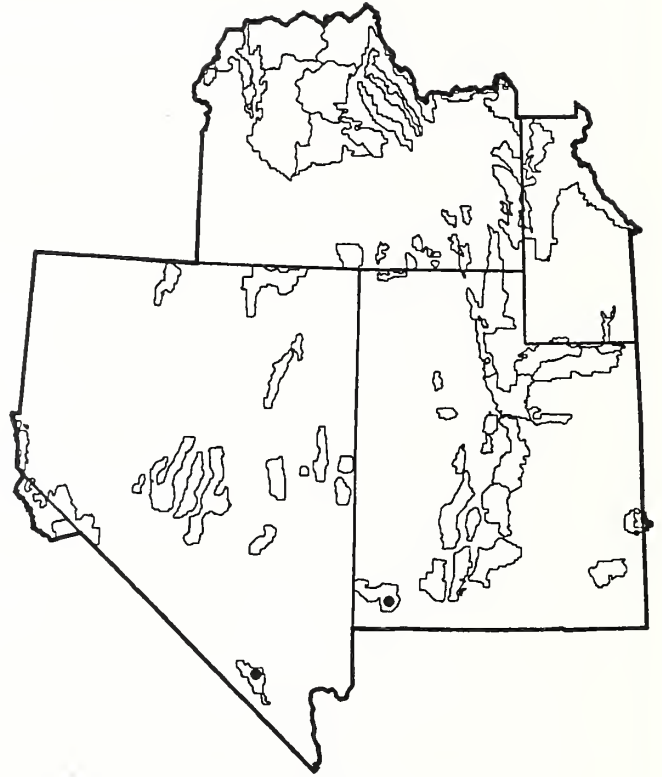
Habitat.—Grows in the ponderosa pine and oakbrush communities on limestone faces, hills, slopes, and dry washes. The range of elevation is 6,560-9,510 feet.

Distribution.—The type specimen was collected in the Charleston (Spring) Mountains of Clark County, Nevada; disjunct in Washington County, Utah.

Management Implications.—The greatest existing threat at this time is foot or ORV traffic where it occurs near recreational facilities and livestock grazing and/or trampling. Surveys have been conducted on the Fishlake National Forest. These data will be available in 1991.

References.

Reveal, J. 1970. Utah species of *Townsendia*. *Great Basin Natur.* 30(1):37.



Distribution of *Viola purpurea* var. *charlestonensis*.

GLOSSARY OF PLANT TERMS

Abaxial - On the side away from the axis.

Acuminate - A small, dry, hard, one-loculed, one-seeded indehiscent fruit.

Acaulescent - Without a stem, the leaves are basal.

Achene - A small dry, hard, 1-loculed, 1-seeded indehiscent fruit.

Acute - Sharp; tapering to the apex with straight sides.

Adventitious - Organs unusual in position, as roots developing from stems or leaves.

Alternate - Borne between, not in front of, as with stamens when between the petals.

Ament - Catkin; usually deciduous, dense spike or raceme.

Amplexicaul - Clasping the stem, as a leaf base or stipule.

Androgynous - With staminate flowers borne above the pistillate ones, as in many species of *Carex*.

Annual - Plants growing from seed and producing flowers and seeds and drying out the same year.

Anther - The pollen-bearing part of the stamen.

Anthesis - Flowering; when the flower is expanded completely and typically functional.

Apical - Located at the tip.

Appendage - A secondary attached part.

Appressed - Lying close and flat against another part.

Areola - A small space on or beneath the surface, as between the veins in cacti, which bears the flowers, spines, glochids, or all three.

Armature (armed) - Spines, barbs, prickles, or thorns (or bearing them).

Ascending - Growing obliquely upward, often curving.

Attenuate - Gradually narrowing to a tip or base.

Auricles - An ear-shaped appendage.

Auriculate - One or more auricles.

Awn - A bristle like appendage; the tips of glumes and lemmas on grass.

Axile - Belonging to, or situated in the axis, as with a placenta situated in the axis of a pistil.

Axis - The central line around which organs are borne, as with the stem area supporting the inflorescence.

Banner - Upper petal of a papilionaceous flower, as in the sweet pea.

Basal - Related to, or located at the base.

Beak - A prolonged, usually narrowed tip of a thicker organ, as in some fruits and petals.

Beaked - Ending in a beak.

Bearded - Bearing long hairs, usually in tufts.

Bidentate - Having two teeth.

Bladdery - Thin and inflated.

Blade - The expanded part of a leaf or petal.

BLM - Bureau of Land Management.

Bract - A reduced leaf subtending a flower, usually associated with the inflorescence.

Bracteate - With bracts.

Bracteolate - Provided with bractioles, as the base of a flower near the apex of a pedicel.

Bracteole - A small bract, especially on a floral axis; also called a bractlet.

Bractlet - See bracteole.

Bristles - Stiff hairs.

Bulb - An underground leaf bud with thickened scales, as in the onion.

Bulblet - A small bulb, usually axillary and above ground.

Caespitose - Growing in tufts.

Caducous - Falling off early or prematurely.

Callus - The thickened extension at the base of the lemma in some grasses.

Calyx - Outer whorl of flowering parts; collective term for all sepals of a flower.

Campanulate - Bell-shaped.

Capitate - Head-shaped, or in a head, as the stigma of many flowers or the inflorescence of many Compositae.

Capsule - A dry fruit of more than one carpel, which opens to release the seeds.

Carpophore - That part of the receptacle prolonged between the carpels.

Catkin - A deciduous dense spike or raceme with bracteate, apetalous, unisexual flowers as in Salicaceae.

Caudex - The woody base of an otherwise herbaceous perennial.

Cauliscent - With a definite leafy stem.

Cauline - Belonging to or on the stem.

Ciliate - Fringed with marginal hairs.

Cinereous - Ash colored; light gray.

Clasping - Leaf partly or wholly surrounding the stem.

Clavate - Club-shaped, gradually thickened toward the tip.

Cleft - Split nearly to the middle.

Conic - Cone-shaped, with the point of attachment at the broad base.

Connate - The union of like structures.

Contracted - Narrowed in a particular place.

Copious - Abundant, plentiful.

Corm - A short, bulblike, underground stem with only papery scale leaves.

Corolla - Inner whorl of floral parts; collective name for petals.

Culm - The type of hollow or pithy, slender stem found in grasses and sedges.

Cuneate - Wedge-shaped.

Cuspidate - Tipped with a cusp or a sharp, short, rigid point.

Cylindric - Elongate and circular in cross section.

Cyme - A flat topped or convex paniculate flower cluster, with the central flowers opening first.

Cymose - With flowers in a cyme.

Deciduous - Falling off; not evergreen.

Decumbent - Resting on the ground, but with tip of the stem ascending.

Decurrent - Extending down the stem below the insertion, as with leaves or stipules.

Deflexed - Turned abruptly downward.

Dehiscent - Opening spontaneously when ripe, to discharge the contents (fruit and anthers).

Deltoid - Equilaterally triangular; shaped like the Greek letter Delta.

Dentate - Having the margins cut with sharp teeth, which are not directed forward.

Denticulate - Minutely toothed.

Depauperate - Small or poorly developed, usually due to environmental conditions.

Depressed - Low and flattened from above.

Dilated - Flattened and broadened, as an expanded filament.

Discoid - Disklike; having disk flowers.

Disk - A fleshy development of the receptacle about the base of an ovary; in Compositae the tubular flowers of the head as distinct from the ray flowers; also disc.

Dissected - Deeply divided into numerous fine segments.

Distinct - Separate; not united with parts in the same whorl.

Divergent - Extending away from each other by degrees.

Divided - Separated to the base.

Dorsal - Pertaining to the back; the surface turned away from the axis.

Dorsiventral - Having an upper and lower surface.

Drupe - Fleshy fruit in which the inner layer of the ovary wall becomes hard, as in the peach.

Elliptic - A flattened circle form, more than twice as long as broad, widest in the center and two ends equal.

Emarginate - With a small notch at the apex.

Entire - Undivided, the margin continuous, not incised or toothed.

Erect - Upright in relation to the ground, or sometimes perpendicular to the surface of attachment.

Explanate - Spread out flat.

Exserted - Protruding, as stamens projecting from the corolla; not included.

Falcate - Sickle-shaped.

Farinose - Covered with meallike particles as in some *Chenopodium*.

Federally Listed Species - Any species processed through the proposed and final rulemaking stages by the U.S. Fish and Wildlife Service (FWS) as threatened or endangered.

Filament - A thread, especially the stalk of an anther.

Filiform - Threadlike.

Fimbriate - Fringe.

Fleshy - Thick and juicy; succulent.

Flexuose - Zigzag.

Follicles - A dry, dehiscent fruit with locule opening on one suture line.

Fruit - The ripened pistil with all its accessory parts.

Galea - The upper lip in certain 2-lipped corollas, as in *Castilleja*.

Geniculate - Abruptly bent.

Glabrous - Without hairs.

Gland - A depression, protuberance, or appendage which secretes a usually sticky fluid.

Glandular - Bearing glands.

Glaucous - Covered or whitened with a bloom, as a cabbage leaf.

Globose - Spherical or rounded.

Glumes - The pair of bracts at the base of a grass spikelet.

Glutinous - Sticky, with a sticky exudation.

Granular - Covered with very small grains or granules; minutely mealy.

Gynophore - The stalk of the pistil of rectangular origin, as in the *Astragalus* species.

Habitat - The part of the environment where a plant grows.

Hemispheric - Half spherical.

Herbaceous - Pertaining to an herb; opposed to woody; having the texture or odor of a foliage leaf; dying to the ground each year.

Hirsute - Rough, with coarse, stiff hairs.

Hispid - Rough, with stiff or bristly hairs.

Holotype - The one specimen on which a species or taxon is based.

Hyaline - Translucent, when seen in transmitted light.

Hypanthium - A cup-shaped enlargement of the receptacle on which the calyx, corolla, and often the stamens are inserted; in perigyny, the "calyx tube."

Inflated - Blown up; bladdery.

Inflorescence - The flower cluster of a plant.

Innate - Borne on the apex of the support; in an anther the antithesis of adnate.

Internode - The portion of stem between two connective nodes.

Involucel - A secondary involucre, as the bracts subtending the secondary umbels in the Apiaceae.

Involucre - A whorl of bracts subtending a flower cluster, as in the heads of Compositae.

Involute - With the edges rolled inward toward the upper side; not revolute.

Keel - A prominent dorsal ridge, analogous to the keel of a boat; the two lower united petals of a papilionaceous corolla.

Lanate - Woolly; densely clothed with long entangled hairs.

Lanceolate - Lance-shaped; much longer than broad, tapering from below the middle to the apex and to the base.

Leaflet - Segment of a compound leaf.

Lemma - In grasses, the lower of the two bracts immediately enclosing the floret.

Ligneous - Woody, or resembling wood.

Ligules - Thin collarlike appendage inside of the blade found at the junction with the sheath in grasses; the strap-shaped part of a ray corolla in Compositae.

Linear - Resembling a line; long and narrow, of uniform width, as the leaf blades of grasses.

Lobe - A division or segment of an organ, usually rounded or obtuse.

Locule - The cavity or cell of an organ, in reference to the pistils and stamens.

Lodicule - Paired rudiments at the base of the ovary of grass flowers, which spread the palea and lemma by swelling at anthesis.

Lyrate - Lyre-shaped; pinnatifid, with the terminal lobe large and rounded, the lower lobes small.

Marcrescent - Withering without dropping off, especially basal leaves.

Marginate - Distinctly margined.

Membranous - Of the nature of a membrane; thin, soft, and pliable.

Midrib - The central rib of a leaf or other organ.

Mottled - Marked with colored spots.

Muricate - Rough with short and firm sharp outgrowths.

Nerve - A simple vein or slender rib of a leaf or bract.

Node - The joint of a stem; the point of insertion of a leaf or leaves.

Nut - A hard, indehiscent, usually 1-seeded fruit, produced from a compound ovary.

Nutlet - A small nut.

Obconic - Conical, but attached at the narrower end.

Obcordate - Inversely cordate, with the notch at the apex.

Oblanceolate - Inversely lanceolate.

Oblique - With unequal sides, slanting.

Oblong - Much longer than broad, with nearly parallel sides.

Obovate - Shaped like the longitudinal section of an egg, but with the broadest part toward the tip.

Obovoid - Inversely ovoid.

Obtuse - Blunt or rounded at the end.

Ochroleucous - Yellowish white.

Opposite - Set against, as leaves when two at a node; one part in front of another, as a stamen in front of a petal.

Orbicular - Approximate circle in outline.

Ovary - The part of a pistil containing the ovules.

Ovate - With the outline of an egg in a longitudinal section, the broadest end downward.

Palate - An appendage in the throat of an irregular flower partly or completely closing the throat.

Palea - One of the chafflike scales on the receptacle of many Compositae; the inner bract of a grass floret, often partly surrounded by the lemma.

Palmate - Lobed or veined where the branches arise from a central point; like the fingers on a hand.

Panicle - A compound racemose inflorescence.

Papilionaceous - Butterflylike corolla of the pea; with banner, wings, and keel.

Pappus - Modified calyx limb of Compositae; with a crown of bristles or scales at the summit of the achene.

Pectinate - With narrowly set divisions, as in the teeth of a comb.

Pedicel - The stalk of a single flower in a cluster, or of a spikelet in grasses.

Peduncle - The stalk of a flower or flower cluster.

Pendulous - Hanging downward; pendent.

Perennial - Of three or more years duration.

Perianth - The floral envelopes; collectively, the calyx and corolla, especially when they are alike.

Perigynium - The scalelike organ surrounding the pistil in *Carex*.

Perigynous - Borne around the ovary, not beneath it; as when the stamens, corolla, and sepals are inserted on the floral tube.

Persistent - Remaining attached, as a calyx on the fruit.

Petal - One of the leaves of a corolla, usually colored.

Petiolate - With a leaf stalk or petiole.

Petiole - A leaf stalk.

Petiolule - The petiole of a leaflet of a compound leaf.

Pilose - Bearing soft and straight spreading hairs.

Pinnate - A compound leaf, having leaflets arranged on each side of a common petiole; featherlike.

Pinnatifid - Pinnately cleft into narrow lobes not reaching the midrib.

Pinnatlobate - With pinnately arranged lobes.

Pistil - The ovule-bearing organ of a flower, consisting of a stigma and ovary, usually with a style between; gynoecium.

Pistillate - Provided with pistils and without stamens; female.

Phyllary - An individual bract of the involucre of a Compositae.

Plumose - Feathery; having fine hairs on each side as a plume.

Pod - Any dry, dehiscent fruit, especially a legume.

Prickle - Sharp outgrowth of the bark or epidermis.

Procumbent - Trailing on the ground, but not rooting.

Proposed Species - Any species of fish, wildlife, or plant that is proposed by the FWS or the National Marine Fisheries Service to be listed as threatened or endangered.

Prostrate - Lying flat upon the ground.

Pseudoscape - A false scape, as in a tulip where not all the leaves are basal.

Puberulent - Minutely pubescent.

Pubescent - Covered with short, soft hairs; downy.

Pulvinate - Cushion-shaped.

Punctate - Dotted with punctures, translucent pitted glands, or colored dots.

Raceme - A simple, elongated, indeterminate inflorescence with each flower sub-equally pedicelled.

Rachis - The axis of a spike or raceme or of a compound leaf.

Ray - A primary branch of an umbel; in Compositae, the ligule of a ray flower bearing the flowers in the head.

Reniform - Kidney-shaped.

Reticulate - With a network; not veined.

Retorse - Bent backward or downward.

Revolute - Rolled backward from both margins toward the underside.

Rhizomatous - Having rhizomes.

Rhizome - An underground stem or rootstock, with scales at the nodes and producing leafy shoots on the upper side and roots on the lower side.

Rosette - A crowded cluster of radiating leaves appearing to rise from the ground.

Rosulate - With a collection of clustered leaves; a rosette.

Rugose - Wrinkled.

Sagittate - Arrowhead-shaped, with the basal lobes turned downward.

Salverform - A corolla with slender tube, abruptly expanding into a flat limb.

Scaberulose - Intermediate between scabrous and minutely pilose.

Scabrous - Rough to the touch, owing to the structure of the epidermis or to the presence of short stiff hairs.

Scale - Any thin scarious bract; usually a vestigial leaf.

Scape - A leafless peduncle rising from the ground in acaulescent plants.

Scapose - With the flowers borne on a scape.

Scarious - Thin, dry, and membraneous; not green.

Scurfy - Clothed with small branlike scales.

Secund - Arranged on one side only; unilateral.

Sensitive Species - A plant species, subspecies, or variety for which the Regional Forester has determined there is a concern for the species viability within a state, as evidenced by a significant current or predicted downward trend in populations or habitat. This includes federal candidates (C1, C2 and some C3) and federally proposed species.

Sepal - A leaf or segment of the calyx.

Sericeous - Silky with long, slender, soft, more or less appressed hairs.

Serrate - Saw-toothed, the sharp teeth pointed forward.

Sessile - Attached directly by the base, not stalked, as a leaf without a petiole.

Setose - Beset with bristles.

Setose - Beset with bristles.

Sheath - The tubular basal part of the leaf enclosing the stem, as in grasses and sedges.

Shrub - A woody plant smaller than a tree and with several to many stems.

Silicle - A short silique, typically less than twice as long as wide.

Silique - A many seeded capsule of Cruciferae, with two valves splitting from the bottom and leaving the placentae with the false partition (replum) between them.

Simple - Unbranched, as a stem or hair; not compound, as a leaf; single, as a pistil of one carpel.

Soboliferous - Bearing sobols; elongate caudex branches.

Sorus (pl. sori) - The fertile portion of a fern frond; the place where sporangia are borne.

Spathaceous - Like a spathe; bracts enclosing a flower cluster.

Spatulate - Like a spatula, a blade rounded above, gradually tapering to the base.

Spicate - Having the form of or arranged in a spike.

Spike - An elongated rachis of sessile flowers or spikelets.

Spikelet - A secondary spike; the ultimate flower cluster in grasses, consisting of two glumes and one or more florets, also in sedges.

Spinulose - Having spinules.

Spreading - Diverging almost to the horizontal; nearly prostrate.

Spur - A slender, saclike, nectariferous process from a petal or sepal.

Stamen - The male organ of the flower which bears pollen.

Staminate - Having stamens but no pistils; male, not seed bearing.

Staminode - A sterile stamen, or what corresponds to a stamen.

Stellate - Star-shaped.

Stigma - The receptive part of the pistil on which the pollen germinates.

Stipe - The stalk beneath an ovary inserted on the receptacle.

Stipitate - Without a stipe or a stalk.

Stipule - One of the pair of usually foliaceous appendages found at the base of the petiole on many plants.

Stolon - A modified stem bending over and rooting at the tip or creeping and rooting at the nodes; a horizontal stem giving rise to a new plant at its tip.

Stoloniferous - Having stolons.

Stramineous - Strawlike as color or texture.

Striate - Marked with fine longitudinal lines or furrows.

Strigillose - Minutely strigose.

Strigose - Clothed with sharp and stiff appressed straight hairs.

Strigulose - Intermediate between strigose and pilose.

Style - The contracted portion of the pistil between the ovary and the stigma.

Stylopodium - An enlargement or disklike expansion at the base of the style as in the Apiaceae.

Sub - A prefix signifying somewhat, slightly, rather, or almost.

Succulent - Juicy; fleshy and soft.

Suffrutescent - Obscurely shrubby; vs. slightly woody, but not necessarily low.

Taproot - The primary root from which the secondary roots arise.

Tepal - A division of the perianth, sepal, or petal, as in the Poly gonceae.

Terete - Cylindric; round in cross section.

Ternate - Occurs in three's, as a leaf consisting of three leaflets.

Throat - The orifice of a gamopetalous corolla; the expanded portion between the limb and tube proper.

TNC - The Nature Conservancy.

Tomentose - With tomentum; covered with a short, densely matted, soft white wool.

Tooth - Any small marginal lobe.

Torulose - Constricted between the seeds.

Trigonous - Three-angled.

Triquetrous - Three-edged.

Truncate - As if cut squarely on the end.

Tubercle - A small tuberlike prominence or nodule; the persistent base of the style in some Cyperaceae.

Tuberous - Producing or resembling a tuber or underground stem.

Turbinate - Top-shaped.

Umbel - A flat or convex flower cluster in which the pedicels arise from a common point, like the rays of an umbrella.

USFS - U.S. Forest Service.

USFWS - U.S. Fish and Wildlife Service.

Valve - One of the segments into which a dehiscent capsule or legume separates.

Vein - A vascular bundle of a leaf or other flat organ.

Venation - The arrangement of the veins of a leaf; nervation.

Villous - Bearing long, soft, and unmatted hairs; shaggy.

Viscid - Sticky, glutinous.

Whorl - A ring of similar organs radiating from a node.

Wing - A thin, usually dry extension bordering an organ; a lateral petal of a papilionaceous flower.

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