

HAGERMAN NATIONAL WILDLIFE REFUGE, TEXAS

NARRATIVE REPORT

July 1, 1974 thru June 30, 1975

UNITED STATES DEPARTMENT OF INTERIOR

FISH AND WILDLIFE SERVICE

SHERMAN, TEXAS 75090

PERSONNEL

Bert M. Anduss

Refuge Manager

Jeffrey W. Fleischer

Assistant Refuge Manager

Alice T. Groves

Refuge Clerk

Preston O. Lawrence

Maintenance Worker

Billy E. Stallings

Maintenance Worker

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I. General

A. Weather Conditions

Summer temperatures ranged in the 90's through the end of August, with a five day period of 100° plus weather recorded in late July. Late August and September rains cooled temperatures to the 60's and 70's. Temperatures increased to the 80's in early October and then finally entered the normal gradual decline to the 30's and 40's in December and January, when night temperatures dipped to the 20's and mid teens. Temperatures started upward in February and climbed to the 80's by June. This year's frost period ran from November 29 to April 3.

Precipitation totaled 47.77 inches, a 7.53 inch (18.7%) increase over last year. Five inches of snow fell in February. Fifty-five percent (26.29 inches) of this years rain fell from August through October and seriously hampered our farming program (see section IIIB4). A total of 6.88 inches fell the last week of October. Rainfall averaged 3 - 5" a month from December through June.



A quiet February day covered by 5" of snow.

B. Habitat Conditions

1. Water

Lake Texoma started the year at 616.72' msl but dropped to this year's low of 613.77' msl by late August due to a hot dry summer. Late August and almost daily September rains increased the level to 618.53' msl by September 30. Levels receded slightly but late October rains forced the lake past the 619' msl flood level to 623.17' msl, this winter's peak, by November 4. Refuge roads were subsequently closed and under water for all of November. Levels receded to the 617-618' msl level by early December and held static until late May when spring rains forced levels up to 620.69' msl, this spring's peak. Roads were closed for two weeks. The lake level finished the year near the 618' msl level. Total lake deviation for the year was 9.4 feet.



Installation of a road closure gate for high water periods resulted in an assault on the refuge manager and vandalism of the gate.

This year's high water levels caused water control structure and dike inundation, road closures and erosion, and crop inundation. Our road erosion problem was helped this year by some extra funding, however, future plans by the U.S. Army Corps of Engineers to maintain higher lake levels is going to take its toll on refuge roads and water structures and it is doubtful that extra money will be available for effective maintenance.

In connection with Lake Texoma water levels four Division of River Basin Studies personnel from the Tulsa, Oklahoma office visited the refuge in November to discuss ramifications of a re-study by the Corps of Engineers, which would decrease the proposed mean pool level at the Denison Dam from 620' msl to 619' msl. Both levels are detrimental to the main refuge central service road which is inundated at 619' msl. The lake level is presently held at 617' msl. No word was received about the re-study after the visit.

2. Food and Cover

Natural waterfowl food production, principally smartweed, continued declining. Production is virtually non-existent along the lake shoreline because of increased lake water levels and limited mud flats. Only a few ponds, where water levels were controllable, yielded marginal production and this was barely utilized because of late duck arrivals and better food sources elsewhere.

Upland habitat supplied sufficient cover and food for resident species of wildlife. A good acorn crop on the west side of the refuge helped supplement food supplies. Cultivated fields were planted but toad-strangling fall rains and earlier than normal peak goose populations seriously limited winter wheat browse production (see section IIIB4).

The timbered Sandy and Big Mineral Creek bottoms on the southern and western portions of the refuge provided excellent waterfowl feeding/resting areas this winter because of the sustained high water levels. The noise of quacking mallards was sometimes deafening during winter safaris into these jungled areas.

II. Wildlife

A. Migratory Birds

1. Waterfowl

Canada Geese

Canada goose use days totaled 458,273. This compares with 545,320 in FY-74 and 664,103 in FY-73. Geese first arrived September 24 and peaked at 200 by the month's end. They continued to arrive in October, reaching the fall peak of 5500 by November 1, three weeks earlier than normal. Numbers dramatically declined to 2,000 by mid November as extreme rainfall and a poor food source forced them from the area. Numbers fluctuated between 1500 and 2500 through mid-January when a sharp increase to 4500 birds occurred. This increase was short lived as numbers fell back to the 1500 level by February 5. Late February marked the start of spring migration. Numbers increased to the year's peak of 6000 by March 4, declined to 4000 by March 11, and finally to only a few by March 25. A bright note to this year's low use was the raising of four goslings on the refuge by two pair of Canada geese. Not since 1969 have goslings been reared at Hagerman.

Snow Geese

Snow goose use days totaled 13,410, a dramatic increase from 2,130 in FY-74 and 3,158 in FY-73. Snows first arrived September 23 and reached a fall peak of 200 by mid October. A quick reduction to six birds occurred by November 1. Numbers fluctuated between six and thirteen birds through mid January when an increase between 20 and 35 occurred, lasting until late February. The last week of February marked the start of spring migration as 350 birds passed through. On March 4 a new refuge peak of 1000 birds was monitored. This record was short-lived, however, as numbers increased further to 1200 by March 11. By March 15 only 400 remained and they finally disappeared by March 23.

White-fronted Geese

Use days totaled 3,663. This compares with 1,318 in FY-74 and 4,780 in FY-73. Birds were first observed September 30 and gradually increased to the year's peak of 85 on November 2. Numbers dropped to five by November 10 and finally disappeared on November 25. Birds did not reappear until early January when their numbers ranged from 1 to 12 through the end of February. On March 4, 70 birds were observed as spring migration got underway. The spring peak of 80 was reached on March 12 and the birds were gone on March 14.

Ross' Geese

Two Ross' geese used the refuge during December and January. They have not been recorded at Hagerman since 1965.

Ducks

Summer production totaled six Wood ducks. Duck use days totaled 697,219. This compares with 749,177 in FY-74 and 829,815 in FY-73. Blue-winged teal first arrived in early August and reached 100 by the month's end. They continued to increase, peaked at 400 in early October, and disappeared by November. Duck numbers increased during October, totaling 2900 with major species being redhead, ring-necks, blue and green-winged teal, and American wigeon. Numbers increased to 7400 during November as redhead (900), ring-necks (600), and green-winged teal (400) reached winter peaks and the first real influx of mallards (4500) and pintails (500) arrived. Pintails peaked (500) during November and December. Mallards reached their winter peak of 20,000 during January, dropped to 1,000 through February, and finally disappeared by the end of March. Spring migration was very marginal as blue (400) and green-winged (150) teal and northern shovelers (150) were the only species reaching significant numbers.

2. Other Water Birds

Marsh and Water Birds

Use by these species more than doubled that of last year. Major species were horned grebe (21,000 UD), double-crested cormorant (15,000 UD), great blue heron (12,300 UD), white pelican (5,500 UD), and little blue heron (5,400 UD). Horned grebes, double-crested cormorants, and great blue herons peaked during winter. The other species peaked during summer and spring migration periods.

Shorebirds, Gulls, and Terns

Use by these species was also more than twice that of last year. Ring-billed gulls accounted for nearly 75% of this year's 450,000 use days. They peaked during December at 10,000 but were present from November through February, averaging from 1000 to 5000 birds. Other major species were killdeer, Franklin's gull, Forster's tern, and a host of different sandpipers that utilized the refuge in late summer when mudflats were numerous during periods of lower lake levels.

B. Upland Game Birds

The bobwhite quail population showed a definite increase over FY-74. Production was up as numerous broods were observed during early summer. The peak population was estimated at 1000 birds. As summer waned and fall approached, a definite reduction in brood numbers and size was evident. By winter only the heartiest coveys survived as prolonged cold wet days took their toll. The 1975 spring breeding population was definitely smaller than in 1974, lending evidence to a possible population reduction this coming year.

C. Big Game Animals

This year's white-tailed deer fawn production was estimated at 25. Numerous twins and one set of triplets were observed, lending evidence to the good production. The refuge population, which

includes transient animals, peaked at an estimated 115 animals. No deer poaching was detected on the refuge, however, it did continue to be a local county problem. Because of this, a few refuge deer ranging off refuge were probably "collected".

D. Fur Animals, Predators, Rodents, and Other Animals

Beaver continued plugging refuge structures and digging tunnels through numerous impoundment dams, requiring several loads of rock to repair. Plans are being developed for a removal program should the refuge population continue to rise.

Mink were sighted several times along marsh and oil pad shorelines.

Raccoon, opossum, skunk, and armadillo tracks and sightings were common refuge wide in fields, uplands, and around water.

Coyotes were heard or observed throughout the year. A slight population increase over 1974 was noted. Bobcats and red fox were rarely seen. Two bobcat young were observed in early August near the Big Mineral Access Area. The refuge was blessed with a herd of wild domestic hogs this year. Ownership could not be determined and the herd continues to grow.

E. Hawks, Eagles, Owls, and Vultures

A notable increase in red-tailed and marsh hawks was evident this summer, probably due in part to a higher than normal rodent population in the area. Other raptors observed included red-shouldered, broad-winged, Swainson's, rough-legged, and sharp-shinned hawks and American kestrels. Two Mississippi kite observations were made in August. A single osprey was noted during the months of September and April. Two adult bald eagles resided on the refuge from mid-November through mid-March, with an immature sighted once with the pair on January 3. At least six other bald eagles wintered on other parts of Lake Texoma.

Great-horned owls were common and at least six barred owls resided throughout the year. Several observations of short-eared owls were also made.

Peak turkey (100) and black (35) vulture populations were noted in November and September respectively. Meadow Pond and Sandy Marsh continued to be the main roost sites.

F. Other Birds

The 1974 Christmas Bird Count yielded 97 species as it continues to be the annual birding event. The refuge bird list was revised with the help of Karl Haller, our local expert ornithologist from Austin College. A total of 17 new species were added to the 1969 list for a revised total of 282 birds. A visit was made of the refuge by Fish and Wildlife Service biologist Robert L. Downing concerning his study of the inland subspecies of the least tern. Several nesting attempts in the last few years, along with the summer use by adults and young, make Hagerman an area for possible future study.

G. Fish

Several species of game and panfish attract fishermen to the refuge during the April 1 to September 30 season. See section VIA for fishing information.

H. Reptiles

Nothing to report.

I. Diseases

Concentrations of waterfowl were monitored for possible DVE symptoms but no problems were noted. No other diseases or problems occurred.

III. Refuge Development and Maintenance

A. Physical Development

Routine work completed when necessary included grading roads, hauling garbage, painting, maintaining refuge fences and signs, repairing refuge vehicles and equipment, and mowing roadsides, waterways, and the headquarters lawn.

Major expenditures for heavy equipment included repair of the power steering motor and the oil cooling lines in the radiator of our 1974 Ford tractor and the purchasing of blades, and a tire and rim for our Adams road grader.

Other projects or expenditures included transportation and installation of a 10 x 47 foot house trailer, reroofing and installation of floor covering for the refuge living quarters, installation of two large solar-cool windows in the office, purchase of fifty three loads of rock for repair of refuge roads and installation of two 16' aluminum gates and a 21' pipe gate to contain cattle and prevent unauthorized access to refuge lands. At present there are only twelve uncontrolled access points into the refuge.



Removal of an oil company owned cattleguard on the Goode Access Area road necessitated installation of a gate to contain livestock and prevent future traffic disturbance of planned goose use in two newly developed farm fields. The Access Area will be open only during the peak of fishing season, April through June.



Proposed assistant's quarters at headquarters.

B. Plantings

1. Aquatic and Marsh Plants - None.

2. Trees and Shrubs

Several cedar and redbud trees were transplanted to the headquarters lawn for wind breaks and beautification.

3. Upland and Herbaceous Plants - None.

4. Cultivated Crops

The 1974-75 refuge farming program totaled 510 acres and was divided as follows: Contract - 106 acres wheat, Cooperative Farming (refuge) - 111 acres wheat, Cooperative Farming (permitted) - 238 acres wheat and oats, and Refuge Farming - 48 acres wheat and 7 acres maize. Approximately 600 bushels of wheat were obtained from the Washita NWR for this year's program. All farming was completed by early September, however, 6.7 inches of rain in a two-week period following planting and peak numbers of Canada geese which arrived three weeks earlier than normal, helped flood seed and devastate seedlings respectively. As a

result 171 acres were replanted to wheat by refuge personnel under poor farming conditions. Wheat browse production for the winter was marginal, resulting in increased off-refuge goose use and depredation work. Maize production was also unsuccessful due to flooding and cold temperatures.

Terrace work continued this year in farm fields F-17a, b, c, and F-13 as part of a program to curtail sheet erosion. One permittee saw fit to deliberately plow the terraces constructed in his fields down to ineffectiveness because they "hampered" his plowing operations. He was warned to cooperate or lose his refuge farming privileges.

Following initial development of RF-14 in FY-74, wheat was planted by September. A good stand developed and provided the only really good source of refuge winter goose browse. Plans to harvest this wheat to help support the 1975-76 farming program fell through as excessive spring rains and subsequent weed growth just before harvest time prevented its harvest. Wheat (700 bushels) was again obtained from the Washita NWR in June for the 1975-76 farming program.

A decision was made to eliminate farm fields RF-1, parts of 3 and 4, 8, and 10 from the 1975-76 wheat farming program because of recurring crop loss due to flooding Lake Texoma water levels. Tentative plans call for a September planting of Kentucky -31 fescue in RF-1 and parts of 3 and 4 in hopes of providing a more water tolerable browse plant for geese.

Contract farming was eliminated from the 1975-76 farming program due to lack of funds. Fields involved will be planted to fescue or wheat by refuge personnel as money and time permit.

A new farm field, RF-7 (five acres), was initiated in old grazing unit G-7 to help compensate for the lost flooded acreage previously mentioned. Future development of farm fields in this unit is planned because

of the unit's isolation from public access and flooding water. The field was fertilized with one ton of 16-20-0 and then planted with 200 pounds of Chinese red peas in May. May and June rains created excellent growing conditions and a good crop was growing by the end of June. FY-76 plans call for plowing the peas under in September and then planting wheat for winter goose browse.

Refuge farm fields F-17 a, b, and c were sprayed for grain mites in April, with the permittee assuming all costs.

C. Collections and Receipts

1. Seed

Mixed grain (8,400 pounds) was received throughout the year from the Fort Worth office of the U.S.D.A. Grain Division. The seed is used to supplement farming activities, to feed small birds around headquarters during the winter, and will be used in FY-76 post season banding operations. The only seed purchased for farming operations was 400 pounds of Chinese red peas.

2. Specimens

Five bird specimens found dead on or near the refuge were donated to Austin College through Mr. Karl Haller, local ornithologist and instructor at the school.

D. Control of Vegetation

Approximately 325 pounds of the chemical Chlorea Granular were used to successfully retard Johnson grass and weed growth in the headquarters equipment yard, residence parking lot, and around refuge signs and buildings.

American lotus has established itself in several refuge ponds and marshes the past several years. In June, approximately four acres were treated in Mineral Marsh and Meadow and Wood Duck Ponds with 400 pounds of the chemical Aquathol Plus Granular. Technical assistance during application was received from Texas Parks and Wildlife Department regional •

fisheries biologist Ed Bonn. A definite kill was obtained in the two ponds but not in Mineral Marsh, probably because of late application. Future use of this chemical is questionable due to cost.



Staff and state biologist applying Aquathol Plus Granular at Meadow Pond to control American lotus (Nelumbo lutea).

Roadsides, waterways, and several deferred farm fields were mowed periodically to curtail Johnson grass and weed growth.

E. Planned Burning

The only attempt at controlled burning concerned removal of vegetation from selected portions of the lakeshore to provide loafing space for waterfowl. Vegetation was too wet and/or sparse for a successful burn.

F. Fires

The only fire on the refuge this year involved a hot oil tank truck which sustained \$10,000 worth of damage. No damage occurred to refuge property or vegetation.

IV. Resource Management

A. Grazing

A total of 28 grazing permits were issued this year for 420 animals or 3,654 AUM's on 6,962 acres. Grazing fees were \$1.75/AUM, revenue being \$6,394.50.

Stocking rates, for the most part, were adhered to by permittees. Unannounced cattle counts showed few cases of overstocking. Several trespass cattle problems arose but were rectified after notifying permittees and a landowner adjacent to the refuge.

A planned AUM fee increase from \$1.75 to \$2.00/AUM for FY-76 (based on a 1973 grazing fee survey of local ranchers) was delayed due to national economic conditions, therefore, the grazing fee will remain at \$1.75/AUM.

Major changes made after the FY-75 grazing season included combining grazing unit G-22 with G-21, G-23 with G-20, and all but 74 acres (deferred from future grazing) of G-28 with G-27. Unit G-7 was reverted to farmland and wildlands.

- B. Haying - None.
- C. Fur Harvest - None.
- D. Timber Removal - None.
- E. Commercial Fishing - None.
- F. Other Uses - None.

V. Field Investigation or Applied Research

A. Research

A one year study entitled "Fishes, Amphibians, Reptiles, and Mammals of the Hagerman National Wildlife Refuge", was initiated on the refuge in September by Grayson County College biology students and faculty. The study is an attempt by the college personnel to develop a complete refuge list of these species. As of June 1, seventy nine species had been identified and/or collected. Appendix I is the most recent study progress report. The end product of this study, providing funds are available, will be a printed leaflet for distribution to refuge visitors.

VI. Public Relations

A. Recreational Uses

The 1974 refuge fishing season activity had peaked and started a declining trend by July 1, due mainly to hot summer temperatures and decreasing water levels. Rainfall in late August and early September provided fishermen with one last opportunity as runoff occurred in the creeks, causing fish to migrate upstream. Refuge fishing closed September 30. The 1975 season opened April 1, with hundreds of fishermen present. Success was marginal as later than normal cold spring temperatures kept the fish inactive. As spring temperatures rose fishing success increased but heavy spring rains put a damper on spring spawning activity by muddying the water during May and June and keeping spring fishing success low. A total of 53,475 fishing activity hours was recorded.

One successful refuge fisherman (see photo on next page).



BIG CATFISH—Gary Spangler of Sherman shows off this 34-pound catfish he caught last weekend on a trot line at Hagerman Wildlife Refuge. He caught the big cat using a worm. (Staff photo)

Wildlife observation accounted for 15,789 activity hours to rank second in visitor use. Approximately 95% of this use occurred between October and March when major waterfowl concentrations, principally Canada geese, attracted large numbers of weekend visitors.

The 1974 refuge mourning dove hunt, annually held during September, received about the same pressure as last year but with less results. A total of 178 hunters harvested 66 birds during the oft times wet and windy month. The population buildup of birds during August departed for better territories as inclement weather hit the area in early September.

The North Texas Retriever Club again held successful trials during October and March. The March trial was the club's largest ever as 300 dogs were entered. Many residents from the Sherman-Denison area visited the refuge to watch the trials. Problems occurring during the trials included some traffic congestion, dog exercising in restricted areas, and one citation issued to a trial gunner by a state game warden for not being properly licensed.

A total of fourteen programs, tours, and/or talks were presented by the refuge staff. One fifteen minute video tape program for a local junior high school occupation orientation class was made by Assistant Manager Fleischer for airing on the local educational television station. Topics discussed included history of national wildlife refuges, objectives and operations at Hagerman, and job opportunities and requirements with the Fish and Wildlife Service.

B. Violations

Patrol work during the refuge mourning dove hunt discouraged possible violations. Patrol during the waterfowl season on areas adjacent to the refuge (the refuge has no waterfowl season) revealed only a few unsigned duck stamps. Waterfowl confiscated from a local taxidermist by the Fort Worth senior resident agent for improper tagging were held by refuge personnel and dispersed to owners after regulations were explained to them. State game wardens issued citations on the refuge for fishing without licenses, boating without personal floatation devices, and two trespass to hunt violations involving raccoons and quail. No federal citations were issued, however, numerous warnings were made to people fishing off of Harris Creek bridge.

On several occasions low flying aircraft were spotted hazing birds on the refuge. Registration numbers were turned over to the FAA in Dallas, Texas for action. One federal violation for assault on the refuge manager in June was pending in federal court at the close of the year. Trotlines present in refuge waters after the close of the refuge fishing season were removed with the help of a state game warden.

C. Safety

Numerous safety topics were discussed during monthly safety meetings. In June, the entire refuge staff completed the National Safety Council's Self-Instruction Course in Defensive Driving. A Safety Management Gold Award was received from the Central Office as the refuge completed its 22nd consecutive year without a vehicle accident and went through another year without a lost-time accident.

One automobile accident occurred on the refuge but it did not involve refuge personnel. Locked brakes resulted in a rollover on the curve east of headquarters. Luckily, no injuries were sustained.



Aftermath of accident.....

VII. Other Items

A. Items of Interest

Shell Oil Company had two oil spills, one involving three to five barrels and the other a major oil spill involving 60 barrels that cost the company more than \$10,300 for clean up. Oil entered the lake on the major spill but was quickly contained and recovered, keeping pollution to a minimum.

Shell Oil Company completed construction of a salt water injection plant which will service a major portion of the companies wells on the refuge. In conjunction with this plant a new powerline and electrical substation were installed on the refuge by the Texas Power and Light Company. The powerline met standards set for raptor electrocution prevention.

Shell Oil Company purchased more than \$10,000 worth of road rock to repair their private roads on the west side of the refuge.

Sun Oil Company plugged two wells and held an oil spill training session on the refuge.

Refuge sanitary facilities were inspected in January by five members of the Texas State Department of Health. Except for a few minor changes (replacement of improper toilet seats), state standards were met.

Personnel actions included full time employment for Refuge Clerk Alice T. Groves from a GS-4 36-hour appointment and hiring Jeffrey W. Fleischer as the first Assistant Refuge Manager at Hagerman in six years. Jeff transferred from the Malheur NWR in Oregon where he was a manager trainee for a year and a half.

The Assistant and his wife, Sue, were blessed with a 7 lb. 15 oz. boy, Jeremy William, on April 23rd. Needless to say, the proud parents have been kept busy the last few months.

In May, the refuge received word that it was scheduled to have a YCC camp this summer. A hectic month of interviewing twenty-eight candidates for camp staff positions and getting other aspects of the camp organized followed. The program received a setback in early June when President Ford vetoed the funding bill. A veto

override vote in late June fell short by only a few votes, seemingly ending the camp's existence, but, final word on the camp's cancellation was not received until July 3. The last minute type planning that was involved with this program could have only hurt the success of the camp. We are hopeful that if a camp is scheduled at Hagerman for the summer of 1976, ample time and planning will be available to prepare a successful program.

Spencer Smith, Western Field Coordinator, visited Hagerman on May 20, 1975. Refuge programs and problems were discussed during his one hour visit.

Credits: All photos taken by the refuge manager -
All sections of narrative - Fleischer -
Typing - Groves

SIGNATURE PAGE

Prepared by:

Jeffrey W. Fleischer
Jeffrey W. Fleischer
Assistant Refuge Manager

Date:

9/15/75

Submitted by:

Bert M. Anduss
Bert M. Anduss
Refuge Manager

Reviewed by:

Date:

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Hagerman For 12-month period ending ~~April 30~~ ^{June 30} 1975
Reported by Bert M. Anduss Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	583	Ducks	697,219	6
	Upland	7,671	Geese	475,470	4
	Marsh	316	Swans	0	
	Water	2,750	Coots	50,110	
	Total	11,320	Total	1,222,799	
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

- (2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

- (3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

- (4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

- (5) Production: Estimated total number of young raised to flight age.

TO: Mr. Mike Anduss, Manager
Hagerman National Wildlife Refuge
Route 3, Box 123
Sherman, Texas 75090

FROM: Barry L. Bates, Instructor
Biology Department
Grayson County College
Denison-Sherman, Texas 75090

SUBJECT: Quarterly progress report on the species collection
and identification of "FISHES, AMPHIBIANS, REPTILES,
AND MAMMALS OF HAGERMAN NATIONAL WILDLIFE REFUGE".

DATE: 1 June 1975

These vertebrates have been found present on Hagezman National Wildlife Refuge

FISHES

*Category

Spotted Gar	<u>Lepisosteus productus</u>	B
Gizzard Shad	<u>Dorosoma cepedianum</u>	B
European Carp	<u>Cyprinus carpio</u>	B
Channel Catfish	<u>Ictalurus punctatus</u>	B
Black Bullhead	<u>Ictalurus melas</u>	B
Mosquitofish	<u>Gambusia affinis</u>	A-1
Brook Silversides	<u>Labidesthes sicculus</u>	A-1
White Bass	<u>Roccus chrysops</u>	B
Striped Bass	<u>Roccus saxatilis</u>	C
Largemouth Bass	<u>Micropterus salmoides</u>	B
White Crappie	<u>Pomoxis annularis</u>	A-1
Green Sunfish	<u>Lepomis cyanellus</u>	B
Bantam Sunfish	<u>Lepomis symmetricus</u>	A-1
Orangespotted Sunfish	<u>Lepomis humilis</u>	B
Blackstripe Topminnow	<u>Fundulus notatus</u>	B
Golden Shiner	<u>Notemigonus crysoleucas</u>	B
Longnose Gar	<u>Lepisosteus osseus</u>	B
Smallmouth Buffalofish	<u>Ictiobus bubalus</u>	B
Threadfin Shad	<u>Dorosoma petenense</u>	B
Largemouth Buffalofish	<u>Ictiobus cyprinellus</u>	B
River Carpsucker	<u>Carpionodes carpio</u>	B
Goldfish	<u>Carassius auratus</u>	B

FISHES (Cont'd)*Category

Ghost Shiner	<u>Notropis buchanani</u>	B
Red Shiner	<u>Notropis lutrensis</u>	B
Blue Catfish	<u>Ictalurus furcatus</u>	B
Flathead Catfish	<u>Pylodictis olivaris</u>	B
Spotted Bass	<u>Micropterus punctulatus</u>	B
Warmouth	<u>Chaenobryttus coronarius</u>	B
Bluegill	<u>Lepomis macrochirus</u>	B
Redear Sunfish	<u>Lepomis microlophus</u>	B

AMPHIBIANS

East Texas Toad	<u>Bufo woodhousei velatus</u>	B
Southern Cricket Frog	<u>Acris gryllus gryllus</u>	A-1
Blanchard's Cricket Frog	<u>Acris crepitans blanchardi</u>	A-1
Bullfrog	<u>Rana catesbeiana</u>	B
Texas Toad	<u>Bufo compactilis</u>	B
Strecker's Chorus Frog	<u>Pseudacris streckeri</u>	B
Spotted Chorus Frog	<u>Pseudacris clarki</u>	B

REPTILES

Ornate Box Turtle	<u>Terrapene ornata ornata</u>	B
Red-eared Turtle	<u>Pseudemys scripta elegans</u>	B
Ouachita Map Turtle	<u>Graptemys pseudogeographica ouachitensis</u>	A-1
Green Anole	<u>Anolis carolinensis carolinensis</u>	B
Ground Skink	<u>Lygosoma laterale</u>	A-1
Diamond-backed Water Snake	<u>Matrix rhombifera rhombifera</u>	A-1
Eastern Checkered Garter Snake	<u>Thamnophis marcianus</u>	B
Prairie Kingsnake	<u>Lampropeltis calligaster calligaster</u>	A-1

REPTILES (Cont'd)*Category

Coachwhip	<u>Masticophis flagellum</u>	C
Texas Spiny Lizard	<u>Sceloporus olivaceus</u>	B
Texas Horned Lizard	<u>Phrynosoma cornutum</u>	C
Common Snapping Turtle	<u>Chelydra serpentina</u>	C
Smooth Softshell Turtle	<u>Trionyx muticus</u>	B
Stinkpot Turtle	<u>Sternotherus odoratus</u>	B
Five-lined Skink	<u>Eumeces fasciatus</u>	B
Texas Brown Snake	<u>Storeria dekayi texana</u>	A-1
Broad Banded Water Snake	<u>Natrix sipedon confluens</u>	B
Eastern Hognose Snake	<u>Heterodon platyrhinos</u>	A-1
Rough Green Snake	<u>Opheodrys aestivus</u>	B
Broad-Banded Copperhead	<u>Agkistrodon contortrix laticinctus</u>	C
Western Cottonmouth	<u>Agkistrodon piscivorus leucostoma</u>	C

MAMMALS

Opossum	<u>Didelphis marsupialis</u>	C
Eastern Mole	<u>Scalopus aquaticus</u>	B
Raccoon	<u>Procyon lotor</u>	C
Striped Skunk	<u>Mephitis mephitis</u>	C
Coyote	<u>Canis latrans</u>	C
Bobcat	<u>Lynx rufus</u>	C
Thirteen-lined Ground Squirrel	<u>Citellus tridecemlineatus</u>	B
Fox Squirrel	<u>Sciurus niger</u>	C
Beaver	<u>Castor canadensis</u>	C
Brush Mouse	<u>Peromyscus boylei</u>	A-1
Eastern Cottontail	<u>Sylvilagus floridanus</u>	B

MAMMALS (Cont'd)*Category

White-tailed Deer	<u>Odocoileus virginianus</u>	C
Nine-Banded Armadillo	<u>Dasypus novemcinctus</u>	C
Swamp Rabbit	<u>Sylvilagus aquaticus</u>	B
Spotted Skunk	<u>Spilogale putorius</u>	C
Ringtail	<u>Bassariscus astutus</u>	C
Eastern Gray Squirrel	<u>Sciurus carolinensis</u>	C
Plains Pocket Gopher	<u>Geomys bursarius</u>	B
House Mouse	<u>Mus musculus</u>	B
Florida Wood Rat	<u>Neotoma floridana</u>	B
Deer Mouse	<u>Peromyscus maniculatus</u>	B

*Category

- A. These species have been collected, identified, fixed, and placed in the vertebrate museum of the biology department at Grayson County College. The number represents the number of each species placed in the museum.
- B. These species have been collected, identified and released.
- C. These species have been identified by sight observation.

Thus far the project is continuing without serious problems or difficulties.