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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG apparently increasing on small grains in some central Texas counties; some damage in Rolling Plains area. (p. 69).

WINTER GRAIN MITE heavy on small grain in central and Rolling Plains areas of Texas. (p. 69).

COMMON CATTLE GRUB adults active in Oklahoma. (p. 70).

Special Reports

Summary of Insect Conditions in Hawaii - 1969. (pp. 73-77).

Distribution of European Apple Sawfly. Map. (p. 78).

Reports in this issue are for week ending February 6 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING FEBRUARY 9

HIGHLIGHTS: The West continued mild. A cooling trend over the East produced colder than normal average temperatures. A damaging wind and rain storm struck New England. Several tornadoes occurred in Florida.

PRECIPITATION: Moderate rain fell on several days early in the week along the northern Pacific coast and in the inland valleys with snow in the nearby Cascades and eastward to the Rocky Mountains. Isolated light showers fell in Utah but no important precipitation occurred farther south. The Great Plains received little or no precipitation except some locally moderate to heavy showers in eastern Texas on Thursday and Friday and in parts of south-central Texas on Saturday and Sunday. Light snow fell on several days early in the week in Kentucky and Tennessee with rain farther south. Rain covered much of the East on Sunday. A storm hit New England early in the week. Heavy rain accompanied by high winds caused erosion and local flooding. The wind damaged buildings, trees, and utility lines. Blue Hill Observatory, Milton, Massachusetts, measured gusts of 92 m.p.h. on Monday and 102 m.p.h. on Tuesday.

TEMPERATURE: Mild temperatures continued over the western half of the Nation. It was the fourth consecutive week with above-normal temperatures. A large area which included southern Idaho and nearby parts of neighboring State averaged 9° to 12° warmer than normal. Mid-America warmed gradually during the week. Maximum temperatures at Devils Lake, North Dakota, warmed from -8° on Monday to 33° on Friday. Valentine, Nebraska, warmed to 56° on Friday and temperatures over western Kansas reached the low 60's. The western Great Plains averaged a few degrees above normal. The lower Missouri and Mississippi River Valleys averaged near normal. Below-normal average temperatures occurred over the East. In general, mild temperatures prevailed over the East early and late in the week and bitter cold at midweek. On Wednesday morning, the zero line pushed southward into northern Georgia where Blairsville registered -3°. On that morning, subzero temperatures prevailed from the Red River of the North Valley to northern Vermont. Sault Ste. Marie, Michigan, registered -24°. Gradual warming brought above-normal temperatures to the East by Sunday afternoon. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Light, ranged 0-3 per linear foot, on small grains in Limestone, Bosque, Brazos, Burleson, Washington, and Grimes Counties. (Green, Jan. 30).

GREENBUG (Schizaphis graminum) - ARIZONA - Survey of grain shows no buildup on Yuma Mesa; averaged 20 per linear foot on 10-inch grain and 3 per linear foot on 3 to 5-inch grain in lower Gila Valley; one field in Parker Valley averaged 6 per linear foot on 5-inch grain in Yuma County. (Ariz. Coop. Sur.). TEXAS - Damaged some small grain January 17-23 in Dickens, Haskell, Jones, and Motley Counties; some control applied. Light to medium in Young County, heavy in Knox County. (Boring). Light on small grains in 10 central area counties; ranged 0-3 per linear foot. Ranged 5-20 per linear foot in Bosque, Hamilton, and Lampasas Counties. Appeared to be building up in these areas. (Green). Currently light in central area small grain. Light to medium and scattered in counties near Denton in north-central area. Damage moderate to severe in Foard County; some controls applied. Light to moderate in Jones, Haskell, Hardeman, and Motley Counties. (Boring et al.). Appeared to be building up in some central area counties. (Green). OKLAHOMA - Ranged up to 100 per linear foot in isolated wheatfields in some southwest and west-central counties; light in most fields. (Okla. Coop. Sur.). KANSAS - Surveys negative in 6 northwest counties, 6 southwest counties, and 1 west-central county. Ranged 0-2 per row foot of wheat in Greeley and Meade Counties week of January 24-30. Currently, survey negative in 2 northeast counties, 1 west-central county, 4 east-central counties, and 3 southwest counties. Ranged 1-5 per linear foot of wheat in Atchison and Ottawa Counties. (Martinez et al.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Light on alfalfa in Payne County. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - KANSAS - No heavily infested fields found in fall survey of southeast and south-central districts. All fields checked infested. Sampled 5 cornfields per county for plants infested, girdled, or lodged. (Redding).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Light to medium in Young and Archer Counties; damage severe on oats in eastern Archer County. Spotted and heavy on small grains in McLennan County; ranged 30-150 per linear foot in northwest part of county. Spotted and light on barley in Limestone, Coryell, and Bosque Counties; ranged 5-30 per linear foot week ending January 30. Currently scattered and heavy on small grain in Archer and Jones Counties. Light and scattered in Limestone, McLennan, and Bosque Counties; somewhat heavier in northern part of McLennan County. (Boring, Green).

TURF, PASTURES, RANGELAND

FIRE ANT (Solenopsis geminata) - TEXAS - Heavy on pastures near Edna, Jackson County. (Green).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Adults averaged 1.1 per square foot in alfalfa from 10 (1 square foot) samples. (Pitre).

DECIDUOUS FRUITS AND NUTS

WOOLLY APPLE APHID (Eriosoma lanigerum) - CALIFORNIA - Nymphs and adults heavy on apple trees in Vista, San Diego County. (Cal. Coop. Rpt.).

ORNAMENTALS

GELECHIID MOTHS - OREGON - Survey of 12 nurseries for Dichomeris marginella (juniper webworm) in Gresham and Troutdale area of eastern Multnomah County revealed 2 infestations. None found in landscape plantings around 10 homes. (Larson). CALIFORNIA - General infestation of Eucordylea huntella in Kruse Rhododendron Reserve near Fort Ross, Mendocino County. Larvae causing 50-75 percent bud kill. (Cal. Coop. Rpt.).

BAGWORM (Thyridopteryx ephemeraeformis) - ALABAMA - Examination of eggs on some juniper indicates high overwintering survival in Lee and Chambers Counties. (McQueen).

WALNUT SCALE (Aspidiotus juglansregiae) - CALIFORNIA - Medium on Prunus cerasifera trees in San Bernardino, San Bernardino County. (Cal. Coop. Rpt.).

CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) - CALIFORNIA - Medium on Ficus nitida at Monrovia, Los Angeles County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

A WEEVIL (Cylindrocopturus eatoni) - CALIFORNIA - Generally infested ponderosa pine in 20-acre stand in Quality Mills area of Tuolumne County. Infestation increasing. (Wood, USFS).

A CYNIPID WASP (Callirhytis perdens) - CALIFORNIA - Medium in live oak trees in Solvang, Santa Barbara County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. February 1-7. Total of 18 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico January 25-31 as follows: Sonora 14, Chihuahua 3, Tamaulipas 1. Total of 5 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 89,250,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Counts per head in cattle ranged 1-7 in Garvin County, 0-3 (average 0.7) in Sequoyah County. Moderate in Mayes County. Numbers in backs of cattle slaughtered at packing plant in Oklahoma City, Oklahoma County, decreasing. Adults active January 27 in Rattan area, Pushmataha County. (Okla. Coop. Sur.).

HARD-BACKED TICKS - OKLAHOMA - Most Dermacentor albipictus (winter tick) dropped off cattle and horses in Pushmataha County. Amblyomma americanum (lone star tick) ranged 3-4 per head on cattle January 27. (Okla. Coop. Sur.).

EAR TICK (Otobius megnini) - OKLAHOMA - Ranged 1-6 per ear on 3 of 6 cows in Vian area of Sequoyah County. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurysternus (short-nosed cattle louse) moderate on cattle in Garvin and Mayes Counties. Light on 4 of 6 cows in Sequoyah County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - OKLAHOMA - Swarming reported at Lawton, Comanche County, January 21. (Okla. Coop. Sur.). CALIFORNIA - Workers, probably R. hesperus (western subterranean termite), damaged shelves, records, and boxes in bank at Isleton, Sacramento County. (Cal. Coop. Rpt.).

AUSTRALIAN COCKROACH (Periplaneta australasiae) - CALIFORNIA - Nymphs light in residence in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GIANT AFRICAN SNAIL (Achatina fulica) - FLORIDA - Two snails in estivation found in trash dump at Opa-locka, Dade County, January 30. This is about 2.5 miles northwest of original infestation. (PPD).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TENNESSEE - Mound surveys negative in Bradley, Bedford, Davidson, Fayette, Giles, Hamilton, Lincoln, Marion, Maury, Polk, Tipton, and Wilson Counties. (Gordon). ARKANSAS - Mound surveys during January in Columbia, Lafayette, and Miller Counties negative. (Loftin).

CORRECTIONS

CEIR 19(44):813 and 20(2):21 - A FLEA BEETLE (Chaetocnema opacula) ... Josephine County ... should read ... Jackson County. (Horning).

HAWAII INSECT REPORT

Corn, Sorghum - CARMINE SPIDER MITE (Tetranychus cinnabarinus) light to heavy in seed corn and CORN LEAF APHID (Rhopalosiphum maidis) heavy in whorls of small planting of foot-high sorghum at Kaunakakai, Molokai. (Fujimoto, Funasaki, Jan. 30).

General Vegetables - All stages of GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) medium in 1 acre of cucumber and trace in 1 acre of snap beans at Waimanalo, Oahu. BEAN FLY (Melanagromyza phaseoli) adults light in 0.25 acre of young snap beans at Waimanalo, Oahu; 1-2 per seedling. All stages moderate in backyard planting of yardlongbeans at Waikapu, Maui. (Miyahira, Funasaki). CARMINE SPIDER MITE adults trace in 5,000 square feet of eggplant at Waikapu; less than 1 per leaf. (Ah Sam, Miyahira).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) colonies generally light on leaves of avocado and mango, heavy on some, in residential area at Waipahu, Oahu. First report of infestation on mango in State. (Rokui, Funasaki, Jan. 30). PALM MEALYBUG (Palmicultor palmarum) heavy on young leaf shoots of 25 percent of 200+ coconut trees surveyed at Kahului, Maui; light or none on remaining trees. (Miyahira). FLORIDA RED SCALE (Chrysomphalus aonidium) light to heavy on 200 coconut trees at Kahului airport and 100 trees in Kaanapali area, Maui. Up to 45 scales per square inch on 5 percent of trees; 75 percent with 6 per leaflet. (Ah Sam, Miyahira). COCONUT LEAF MINER (Agonoxena argaula) larvae heavy, up to 18 per leaflet, on young coconut trees at Mahukona, Hawaii. (Yoshioka).

Ornamentals - ORCHID WEEVIL (Orchidophilus aterrimus) adults and larvae heavy on backyard dendrobium orchid plants at Lahaina, Maui. Sporadic chemical spray program employed. (Miyahira).

Forest and Shade Trees - Populations of a NOCTUID MOTH (Melipotis indomita) increasing in several areas on Oahu. Larvae abundant under bark of old kiawe (Prosopis pallida) trees. Adults numerous in tall grass and weed growths at Koko Head, Waianae, Ewa, and airport area of Honolulu, Oahu; numerous in light traps in Honolulu and Ewa. (Funasaki, Au, Jan. 30).

Beneficial Insects - Fifteen adults of a KLAMATH-WEED BEETLE (Chrysolina quadrigemina) noted on Klamath-weed (Hypericum perforatum) in vicinity of release site on Hualalai, Hawaii; no larvae or pupae. (Yoshioka). Normally in hibernation this time of year. (Kawamura).

Miscellaneous Insects - Adults of a GRASSHOPPER (Trimerotropis pallidipennis) heavy, up to 7 per square yard, in Bermuda grass along road shoulders and ditches in sugarcane fields at Ewa, Oahu. Adults of a LONGHORN GRASSHOPPER (Euconocephalus nasutus) reported "buzzing" at night on Oahu, mostly from windward areas. (Funasaki, Jan. 30). Collected and destroyed 1,002 individuals of GIANT AFRICAN SNAIL (Achatina fulica), mostly juveniles, on Kauai during January; 996 at Poipu, 6 at Wahiawa, none at Nawiliwili. Baiting continues at Poipu and Wahiawa. Destroyed 44 juveniles during January in North Kona, Hawaii. (Sugawa, Yoshioka).

SUMMARY OF INSECT CONDITIONS IN HAWAII - 1969

Highlights

NEW GUINEA SUGARCANE WEEVIL caused much damage on Kauai. A GRASS WEBWORM was less damaging than in 1968. DIAMONDBACK MOTH heavily damaged many cole crops. GREENHOUSE WHITEFLY and CARMINE SPIDER MITE damaged many vegetables. COCONUT SCALE spread on Oahu and infested papaya and banana for the first time.

Corn, Sugarcane

CORN EARWORM (Heliothis zea) ranged light to heavy on all seed, field, and sweet corn all year. CORN PLANTHOPPER (Peregrinus maidis) was light on Oahu, Kauai, and Molokai from January to July but was heavy by September and October. Cyrtorhinus lividipennis, a capsid bug predacious on P. maidis eggs, was numerous in August. TUMID SPIDER MITE (Tetranychus tumidus) was severe on sweet corn in the Waianae district on Oahu from August to October, and annoyed field workers during harvest.

NEW GUINEA SUGARCANE WEEVIL (Rhabdoscelus obscurus) caused much damage on windward Kauai, and was light to moderate in some fields on Oahu, Maui, and Hawaii.

Turf, Pasture, Rangeland

A MUSCID FLY (Lispe leucospila) collected from a lawn at Hickam Air Force Base, Honolulu, Oahu, in April 1968 was a new Western Hemisphere record. A CYNIPID WASP (Gillettea taraxaci) collected at 6,000 feet on Mauna Loa, Hawaii, in June 1966, was a new State Record. Adults emerged from false-dandelion (Hypochoeris radicata) collected in May 1969 on Mt. Haleakala, Maui, at 10,000 feet, for a new island record.

A GRASS WEBWORM (Herpetogramma licarsisalis) was less damaging to pastures. Numbers were light all year on Oahu. Damage was heavy in some pastures on Kauai in June and August but trace to light in most. Damage was moderate to heavy on windward Maui in January and March and from August to October, and at high elevations at Pahoia and in the North and South Kona districts on Hawaii from August to October. Damage was light to moderate on central Molokai in August.

COTTONY-CUSHION SCALE (Icerya purchasi) was heavy to severe on greenleaf desmodium (Desmodium intortum) in 100 acres of pasture at Honomalino, Hawaii, in December. A BILLBUG (Sphenophorus venatus vestitus) caused moderate to heavy damage to Tifgreen lawns at Hilo in January and February. In other areas on Hawaii and on all other islands, populations were trace to light in lawns and pastures.

General Vegetables

GREEN PEACH APHID (Myzus persicae) was severe, 50-650 per leaf, on eggplant at Pearl City and Punaluu, Oahu, in August, and light to moderate in other fields on Oahu, Kauai, and Maui. TOBACCO FLEA BEETLE (Epitrix hirtipennis) was moderate, up to 30 per leaf, on eggplant at Kaumakani, Kauai, and at Koko Head and Halawa, Oahu, during summer, and light in other plantings.

BEAN FLY (Melanagromyza phaseoli) was trace to light on commercial beans and soybeans statewide due to scheduled sprays. Damage was medium to heavy in home and community gardens and abandoned fields, but counts were trace on wild beans.

CABBAGE WEBWORM (Hellula rogatalis) severely stunted daikon and destroyed the mustard cabbage crop at Koko Head in August and September and at Waimanalo, Oahu, in October and November. Controls were too late to be effective. Counts were light elsewhere on these 2 hosts statewide. DIAMONDBACK MOTH (Plutella xylostella) heavily damaged Chinese mustard, Chinese and head cabbages, watercress, radish, daikon, and broccoli on all major islands. Controls were needed all year. IMPORTED CABBAGEWORM (Pieris rapae) was light on head cabbage and other cole crops on Maui, Hawaii, and Oahu. Larvae and adults were heavy in some fields during spring.

MELON FLY (Dacus cucurbitae) egg laying injured 60 percent of the pumpkins and bittermelons at Pearl City in April. Nearby wild momordica was heavily infested. Egg laying injured 30 percent of the watermelons at Kahuku, Oahu, in August.

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was severe, especially on eggplant, tomato, snap beans, cucumber, and bittermelon, statewide during spring and summer. Heavy numbers prevailed on tomatoes in Kona, Hawaii, during winter. Controls had to be intensive. CARMINE SPIDER MITE (Tetranychus cinnabarinus) increased on eggplant and snap beans from February and on other crops from April in lowland farms on Oahu, Kauai, and Maui. Several snap bean fields on Oahu were unmarketable due to feeding scars. Heavy to severe numbers stunted watermelon, cucumber, pumpkin, and squash during summer. Controls were needed until November.

LEAF MINER FLIES (Liriomyza spp.) were moderate to heavy during summer in commercial tomatoes, snap and long beans, mustard cabbage, cucumbers, watermelons, Chinese squash, dishcloth gourd, and green onions on Maui, Kauai, and especially Oahu. Intensive sprays were not effective.

SWEETPOTATO VINE BORER (Omphisa anastomosalis) was heavy after rains in January and February in all sweetpotatoes on windward Oahu where most of the State's sweetpotato is grown. Trace to light numbers prevailed for the rest of the year. TUMID SPIDER MITE (Tetranychus tumidus) was heavy to severe on sweetpotatoes at Waiahole, Oahu, in May and trace during other months.

GIANT AFRICAN SNAIL (Achatina fulica) surveillance and bait applications continued all year in locally infested areas on Kauai and Hawaii. On Kauai, over 6,800 were picked up in residential areas of Poipu, 300 in weeds at Wahiawa, and 81 in harbor grounds at Nawiliwili. Over 500 were picked up in weeds at North Kona, Hawaii. Controls were needed to protect crops after heavy winter rains on Oahu and Maui.

Fruits and Nuts

LARGE MANGO TIP BORER (Bombotelia jocosatrix) has not become a serious mango pest. Only trace numbers prevailed on mango foliage. It occurs only on Oahu and Kauai.

Moderate numbers of COCONUT LEAF ROLLER (Hedylepta blackburni) damaged up to half of the coconut fronds on leeward Oahu from Aiea to Makaha during summer. Infestations were generally light on all other islands. COCONUT SCALE (Aspidiotus destructor) became widespread on coconuts on Oahu. Light to heavy colonies infested many trees not infested before. Light to medium numbers infested papaya and banana for the first time on windward Oahu in September. Some papaya growers applied controls.

BARNACLE SCALE (Ceroplastes cirripediformis) was light in a 140-acre passionfruit farm at Kahului, Maui, but heavy in 15 of these acres at the end of the year.

An APHID (Pentalonia nigronervosa) was spotty and heavy in leaf axils of young banana in fields at Waimanalo, Waiahole, Kaneohe, and in yards at Laie, Oahu, in March. Heavy to severe numbers, 50-75 per square inch, infested fields at Waikane, Oahu, in November. It was generally light on Kauai, Maui, and Hawaii.

A STINK BUG (Plautia stali) which occurs only on Oahu, caused no significant damage to fruit. Light numbers were widespread on common guava on roadsides at Waimanalo and Kaneohe from April to August. Counts were heavy on some strawberry guava in residential areas at Koko Head in April, but damage was light. Numbers were trace to light on beans, ornamentals, pomegranate, and litchi during 1969.

ORIENTAL FRUIT FLY (Dacus dorsalis) was controlled by protein insecticide baits sprayed on borders of commercial fruits. Damage was light. However, numbers were moderate to heavy in wild guava, rose apple, mountain-apple, and other wild fruits. MEDITERRANEAN FRUIT FLY (Ceratitidis capitata) was light in plums at Waimea, Hawaii, elevation 2,700 feet, and in peach and loquat at Kula, Maui, at 4,000 feet. C. capitata has become a minor pest of fruit production in Hawaii.

Ornamentals

Three new State records were reported in 1969. An ERIOPHYID MITE (Eriophyes gardeniella) was intercepted March 23, 1962, on gardenia flowers at Honolulu, Oahu, destined for outside of the State. A LEAFHOPPER (Empoasca stevensi) was moderate on plumeria foliage at Honolulu in January 1969. Light numbers later infested plumeria at Kaneohe, Waianae, Waimanalo, Pearl City, and several areas in Honolulu. A WHITEFLY (Paraleyrodes perseae) was light on plumeria in the lower Manoa area of Honolulu in January. OLEANDER APHID (Aphis nerii) was light on oleander at Poipu, Kauai, in October for a new island record.

KOA HAOLE LOOPER (Anacamptodes fragilaria) was moderate on Oahu and at Keauhou, Hawaii, during spring. Larvae fed on leaves of rose, hibiscus, and pear in residential areas and on koa haole, kiawe, tree tobacco, and slender mimosa in wasteland and wayside areas. Numbers were trace for the rest of the year.

Heavy numbers of WEEVILS (Orchidophilus spp.) prevailed in some greenhouses. Damage was sporadic to Vanda and Dendrobium orchids, especially on Oahu and Hawaii.

WESTERN FLOWER THRIPS (Frankliniella occidentalis) was generally light in commercial roses, chrysanthemums, and carnations throughout 1969 on Oahu and Maui. HAWAIIAN THRIPS (Taeniothrips hawaiiensis) was light to heavy on flowers of maunaloa, gardenia, and other ornamentals on all islands during spring and summer.

Forest and Shade Trees

A NOCTUID MOTH (Melipotis indomita) was reported from Honolulu, Oahu, and Lihue, Kauai, in June, Molokai in August, and Maui in September for new State and island records. Adults were common in wastelands with dense growths of kiawe (Prosopis pallida). Larvae were heavy under the bark of older trees. KIAWE FLOWER LOOPER (Cosymbia serrulata) adults per light trap ranged 0-66 in March, 2-293 in July, and 0-61 in October on Oahu.

BARNACLE SCALE (Ceroplastes cirripediformis) was light on fiddlewood trees at Koko Head, Oahu, in January and heavy in March. Pruning and chemical controls effectively reduced numbers. Counts on fiddlewoods were light to moderate and scattered in residential and business areas on Oahu throughout the year and severe at Wailuku, Maui, in November.

CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) increased on Chinese banyan at Hilo, Hawaii, and at Honolulu, Oahu, in April but remained light for the rest of 1969. In April, there were as many as 87 nymphs and 40 adults per leaf at Hilo and 52 nymphs and 25 adults per leaf at Honolulu. Numbers were light on other islands. Montandoniola moraguesi (an anthocorid bug) preyed on the thrips in many areas.

General Pests

CHINESE ROSE BEETLE (Adoretus sinicus) adults continued to cause moderate to heavy foliar damage to ornamentals, crops, and fruit and shade trees. Controls were needed all year on commercial roses, sweet corn, edible ginger, and beans.

A PLATASPID BUG (Coptosoma xanthogramma) was heavy on jade vine in March and maunaloa vine at various times on Kauai, Oahu, Maui, Lanai, and Hawaii. On Oahu, this pest was heavy on sesban trees at Kaneohe during spring and damaged soybeans for the first time at Waimanalo in September. A heavy buildup on Mucuna sp. in December annoyed hotel guests in the bayfront area at Hilo, Hawaii. SOUTHERN GREEN STINK BUG (Nezara viridula) was light on ornamentals, fruits, and vegetables on all islands. Slight buildups lightly damaged Dendrobium orchids, citrus, mustard cabbage, and long beans.

Man and Animals

MOSQUITOES were taken in 51 light traps on Oahu from December 1968 to October 1969. VEXANS MOSQUITO (Aedes vexans nocturnus) averaged 9.4 per trap per month. The monthly average per trap was highest (39.1) in December and lowest (0.9) in October. Collections were higher in windward areas during winter and spring and low in all areas during summer and fall. SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) averaged 102.6 per trap per month. The monthly average per trap was highest (364.1) in January and lowest (23.0) in October. Collections were higher in windward areas and the Waianae district during winter and spring and in the central area during summer and fall.

A BITING MIDGE (Forcipomyia indecora) was a nuisance in homes at Honolulu and Kaneohe, Oahu, in February and March. After heavy rains it was the most abundant and widespread midge. CLUSTER FLY (Pollenia rudis) annoyed residents at North and South Kohala, Hawaii, from December 1968 until May 1969. Another outbreak occurred in early November. Numbers remained heavy until the end of the year at Volcano, Paaui, Waimea, North Kohala, and South Kona.

HORN FLY (Haematobia irritans) adults were generally light to medium, 50-75 per head, on pastured cattle on Maui. Generally light numbers prevailed on cattle on Oahu, Kauai, and Hawaii. Heavy numbers of STABLE FLY (Stomoxys calcitrans) annoyed horses and cattle in pastures at Makawao, Maui, in December.

A SPHECID WASP (Pison punctifrons) was collected in March 1960 and in August 1961 at Ewa, Oahu, for a new Western Hemisphere record. A EULOPHID WASP (Tetrastichus chrysopae), reared from Chrysopa lanata (a green lacewing), was reported as a new State record. The parasitized cocoon was collected at Honolulu in April 1969.

Large numbers of a MILLIPED (Trigoniulus lumbricinus) moving from weeds into residential areas were a nuisance in the North Kona area on Hawaii during January.

Stored Products

Larvae of a DERMESTID BEETLE (Trogoderma inclusum) taken from a trogotrap in a feedstore at Honolulu, Oahu, in February was reported as a new State record.

Beneficial Insects

All stages of a LADY BEETLE (Coccinella septempunctata brucki), introduced in 1958 to control aphids, were recovered from cucumbers infested with Aphis gossypii (melon aphid) at Halawa, Oahu, in October. Larvae of a LADY BEETLE (Cryptolaemus montrouzieri) built up on Planococcus citri (citrus mealybug) infesting monkeypod trees at Honolulu in May. Thousands crawled along sidewalks and on buildings. A HISTERID BEETLE (Hister nomas), a predator of Haematobia irritans (horn fly), was found for the first time on Kauai in pastures at Kalaheo in June.

A EULOPHID WASP (Bestiola mira) reared from Odonaspis greeni (an armored scale) was reported as a new Western Hemisphere record. The scale was infesting a bamboo plant at Honolulu, Oahu, in January. An ENCYRTID WASP (Aphycus portoricensis), reared from Asterolecanium pustulans (a pit scale) collected at Barbers Point, Oahu, in April 1965, was reported as a new State record. Adults of an ENCYRTID WASP (Tachinaephagus zealandicus) were recovered in a light trap at Honolulu in December 1968 for the first time since it was introduced in November 1967 to control muscoid flies. Adults of a BRACONID (Opius melanagromyzae) were recovered from bean fly-infested snap beans and yardlongbeans from several backyards on Oahu. It was introduced in April 1969 to control Melanagromyza phaseoli (bean fly). Adults of a PTEROMALID WASP (Halticoptera patellana) emerged from about 25 percent of bean fly pupae collected from backyard and volunteer snap and long beans on Oahu. By the end of 1969, it was the main parasite of bean fly on Oahu. Recorded from Maui for the first time in November, H. patellana now occurs on Oahu, Kauai, Maui, and Hawaii. A PTEROMALID WASP (Muscidifurax raptor) was recovered for the first time on Hawaii at Kawaihae and Keaau in March. It was released on Hawaii in January 1968 to control Musca domestica (house fly).

Adults of a TACHINA FLY (Trichopoda pennipes var. pilipes) were common on flowers of rattlebox (Crotalaria sp.), bur-marigold (Bidens pilosa), and other weeds in farm areas on all islands. About 75 percent of Nezara viridula (southern green stink bug) adults observed or collected bore eggs of this parasite. Adults of a SCIOMYZID FLY (Sepedon sauteri) were recovered for the first time on Hawaii in November at Kulani Puu, elevation 4,600 feet. It is now established on Oahu, Maui, Kauai, and Hawaii. This species was introduced in September 1966 to control Lymnaea ollula (liverfluke snail).

Adults of a TEPHRITID FLY (Tetraeuresta obscuriventris), a seed feeder, were heavy on flowers of elephants-foot (Elephantopus mollis) and in pastures at Kalaheo, Kauai, in June and July. MELASTOMA BORER (Selca brunella) almost completely defoliated about 200 acres of Indian rhododendron (Melastoma malabathricum), a rangeland weed, on Kauai in late spring and early summer. Numbers were light for the rest of the year on Kauai and throughout the year on Hawaii. LANTANA DEFOLIATOR CATERPILLAR (Hypena strigata) was medium in pastures at Ulupalakua and Waihee, Maui, in February but light on lantana elsewhere. Almost all of the eggs collected from several islands were parasitized by Trichogramma semifumatum (a minute egg parasite). LANTANA HISPID (Uroplata girardi) was medium to heavy on lantana on Maui and Hawaii during spring and summer. Damage was heavy on about 75 percent of the leaves.

Miscellaneous Insects

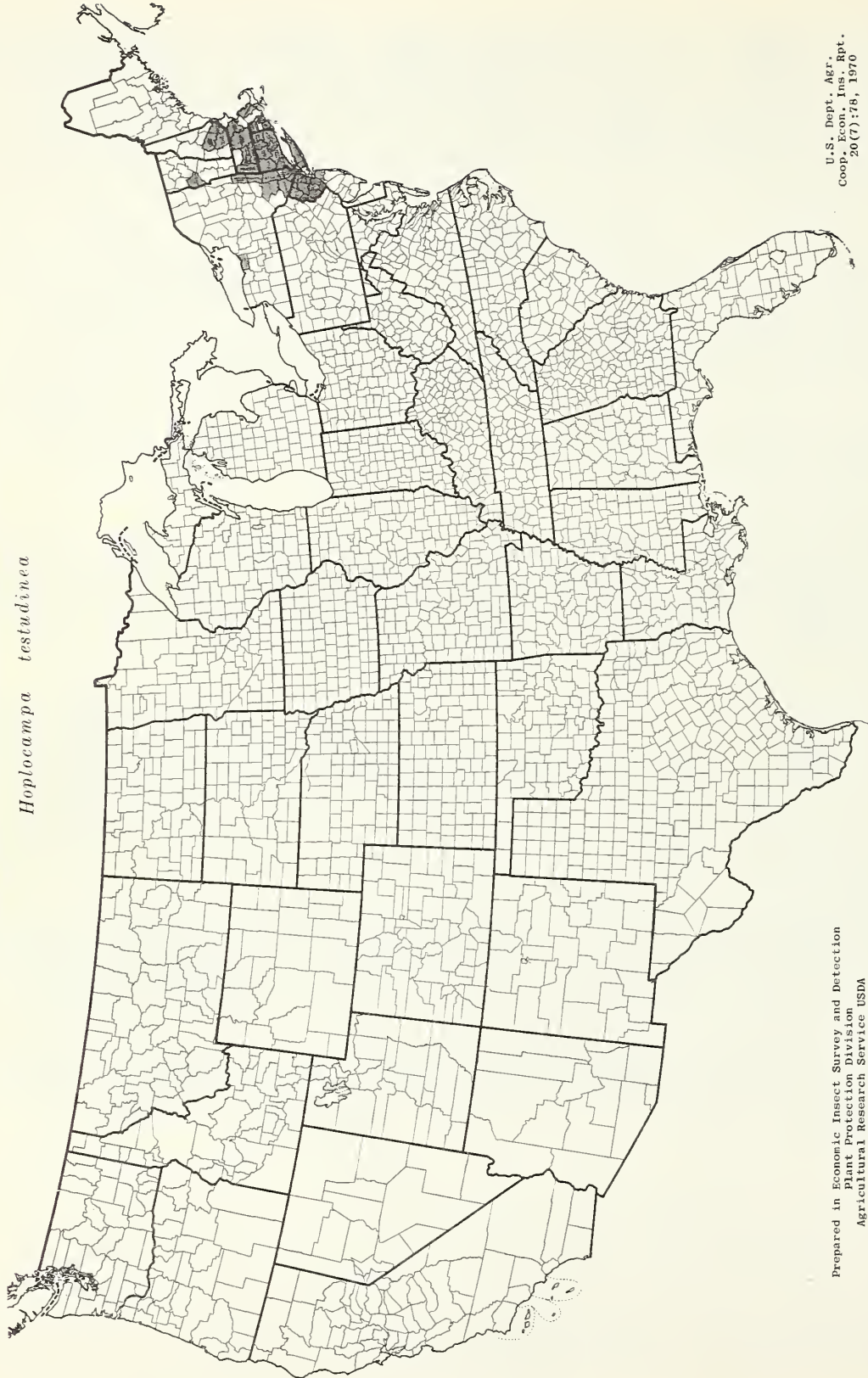
An ASSASSIN BUG (Oncocephalus pacificus), collected at Waikiki, Oahu, in September 1968, was reported as a new Western Hemisphere record. A second adult was captured at Wahiawa in October 1968. None has been captured since. A CYDNID BUG (Rhytidoporus indentatus), collected in a light trap at Hilo, Hawaii, in October 1969 was a new State record. A RHOPALID BUG (Jadera haematoloma) was generally light on balloonvines on Oahu and Kauai.

Two LONCHAEID FLIES were reported as new State records. Lonchaea polita was collected on Oahu, Maui, and Hawaii and L. striatifrons on Maui, Lanai, Molokai, and Hawaii. Original collections were in 1953. A MIDGE (Goeldichironomus holoprasinus) taken in a light trap at Honolulu, Oahu, in March 1969 was also a new State record. It has since been found breeding in moats, ponds, and containers of water. It is common in Honolulu, and on windward Oahu. Larvae and adults of a TEPHRITID FLY (Ensina sonchi) were heavy all year on flower heads of sowthistle at Waimanalo, Honolulu, Pearl City, and Ewa on Oahu. It has not been found infesting other composites.

Loud stridulations by a LONGHORN GRASSHOPPER (Euconocephalus nasutus) at night in wastelands annoyed residents and led to the capture of specimens from many areas on Oahu. Loud stridulations heard in several areas of Kauai beginning in September led to the capture of a male in November. A GRASSHOPPER (Oedaleus abruptus) was light in brush and grass at Hickam Air Force Base, Oahu. Eradication efforts attempted from January to May ended in July after adults were found outside the base. VAGRANT GRASSHOPPER (Schistocerca vaga) was heavy mostly in wastelands, especially in areas with dense growths of slender mimosa (Desmanthus virgatus). Adults were occasionally taken in residential areas. It was found for the first time on Molokai in March and on Lanai in May. Previously, it occurred only on Oahu and Kauai.

Distribution of European Apple Sawfly

Hopllocampa testudinnea

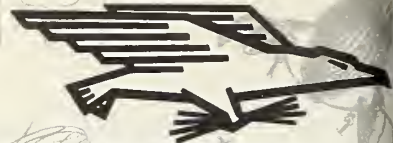


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