

SAN LUIS NATIONAL WILDLIFE REFUGE
MERCED NATIONAL WILDLIFE REFUGE
KESTERSON NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

January 1 to December 31, 1970

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
LOS BANOS, CALIFORNIA

1970 WATERFOWL USE DAYS

| | <u>Jan./Apr.</u> | <u>May/Aug.</u> | <u>Sept./Dec.</u> | <u>1970 Total</u> |
|-----------------------|------------------|-----------------|-------------------|-------------------|
| <u>SAN LUIS:</u> | | | | |
| Swans | | | 455 | 455 |
| Geese | 784,000 | 112 | 216,230 | 1,000,342 |
| Ducks | 4,039,350 | 309,392 | 37,104,725 | 41,452,467 |
| Coots | <u>395,850</u> | <u>20,370</u> | <u>606,200</u> | <u>1,022,420</u> |
| | 5,219,200 | 328,874 | 37,927,610 | 43,475,684 |
| <u>MERCED:</u> | | | | |
| Swans | 336 | | 350 | 686 |
| Geese | 446,789 | | 292,810 | 739,599 |
| Ducks | 960,512 | 74,236 | 3,046,407 | 4,081,155 |
| Coots | <u>113,120</u> | <u>2,296</u> | <u>216,300</u> | <u>331,716</u> |
| | 1,520,757 | 76,532 | 3,555,867 | 5,153,156 |
| <u>KESTERSON:</u> | | | | |
| Swans | 105 | | 2,170 | 2,275 |
| Geese | 745,745 | | 44,205 | 789,950 |
| Ducks | 773,066 | 16,800 | 612,815 | 1,402,681 |
| Coots | <u>568,050</u> | <u>7,420</u> | <u>315,700</u> | <u>891,170</u> |
| | 2,086,966 | 24,220 | 974,890 | 3,086,076 |

GRAND TOTAL: 51,714,916

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I. GENERAL

A. Weather Conditions:

The data included in Table 1 were recorded at the San Luis Dam located 12 miles west of Los Banos. A weather station at the dam is operated by the California Department of Water Resources in cooperation with the U. S. Weather Bureau.

Temperatures during 1970 were quite normal, but precipitation was about 3.5 inches above normal. In general, the first three months and last two were wet ones. The period from April through October was hot, dry and somewhat windy. Morning fog was common during the cool, wet months and high winds accompanied the hot summer period. Below freezing temperatures occurred during January only.

B. Habitat Conditions:

1. Water:

Most of the water used on San Luis Refuge is pumped from Salt Slough which forms the Refuge's west boundary. Water in the slough is chiefly irrigation drainage during April through October and runoff the rest of the year. Monthly irrigation water analyses were performed on samples of Salt Slough water during 1970. These analyses indicated the water to be in the "fair" to "poor" classification range.

Contrary to our previous belief, the analyses showed that runoff water contained a higher concentration of dissolved salts than irrigation drainage. Special attention will be given to any changes in marsh ecology that might indicate an undesirable level of salt accumulation. We plan to continue this program of monitoring water by means of monthly water analyses.

After hunting ended in mid-January, water levels in the Loaf Lake area were allowed to recede. This area was dry during the summer to facilitate levee and control structure maintenance. Optimum water levels were maintained in all other marsh areas throughout the year. An annual total of 13,502.31 acre feet of pumped water was distributed on about 2,700 acres.

1970 CLIMATOLOGICAL OBSERVATIONS

| MONTH | PRECIPITATION (INCHES) | NORMAL PRECIPITATION | EVAPORATION (INCHES) | WIND MILES | MAX. TEMP. (DEGREES F) | MIN. TEMP. (DEGREES F) | MONTHLY MEAN TEMP. | NORMAL MONTHLY MEAN TEMP. |
|-----------------|---------------------------|-------------------------|-------------------------|---------------|---------------------------|---------------------------|-----------------------|---------------------------------|
| JANUARY | 4.19 | 1.67 | 1.07 | 1,333 | 69° | 29° | 49.8° | 45.2° |
| FEBRUARY | 0.65 | 1.39 | 2.35 | 1,978 | 72° | 33° | 51.6° | 50.2° |
| MARCH | 1.19 | 1.31 | 6.65 | 2,395 | 79° | 35° | 55.7° | 54.7° |
| APRIL | 0.15 | .76 | 10.13 | 4,931 | 81° | 32° | 57.3° | 60.4° |
| MAY | 0 | .37 | 15.04 | 6,473 | 98° | 36° | 66.5° | 66.5° |
| JUNE | 0.08 | ..06 | 15.74 | 7,012 | 103° | 42° | 71.2° | 72.8° |
| JULY | 0 | .01 | 21.19 | 6,063 | 106° | 56° | 79.6° | 78.7° |
| AUGUST | 0 | .01 | 18.25 | 5,413 | 103 | 55° | 76.9° | 77.1° |
| SEPTEMBER | 0 | .13 | 14.57 | 3,807 | 96° | 50° | 73.3° | 72.9° |
| OCTOBER | 0.10 | .40 | 7.68 | 3,734 | 93° | 40° | 63.3° | 64.3° |
| NOVEMBER | 3.05 | .98 | 2.84 | 2,327 | 75° | 42° | 56.9° | 53.4° |
| DECEMBER | 2.66 | 1.47 | 0.72 | 1,770 | 66° | 34° | 46.6° | 46.4° |
| TOTALS/EXTREMES | 12.07 | 8.56 | 116.23 | 47,236 | 106° | 29° | | |

TABLE 1. Weather data for San Luis - Merced - Kesterson National Wildlife Refuges for Calendar Year 1970.

REFUGE PERSONNEL

Permanent:

Melvin T. Nail..... Refuge Manager
Stephen R. Vehrs..... Assistant Refuge Manager
Gene A. Sipe..... Wildlife Biologist (Management)
Ann McConnell..... Clerk-Typist
Transferred 07/10/70
Jo Ann Barger..... Clerk-Typist
E.O.D. 07/26/70
James R. Mayle..... Maintenceman Foreman
Melvin Ford..... Engineering Equipment Operator
San Luis NWR
Edgar M. Derrick..... Maintenceman
Merced NWR
Raymond R. Fuller..... Engineering Equipment Operator
Kesterson NWR

Temporary:

Cathy T. Osugi..... Student Trainee (Wildlife Biology)
(06/08/70 - 09/16/70) San Luis NWR
Jefferson Perry..... Student Trainee (Wildlife Biology)
(06/18/70 - Resigned 09/15/70) Merced NWR
George W. Freeman..... Maintenceman
San Luis NWR
Harvey L. Haynes..... Maintenceman
Merced NWR
Craig A. Gephart..... Laborer
(06/08/70 - 09/12/70)
Ronald J. Brioso..... Laborer
(08/04/70 - 10/16/70)
Richard L. Posey..... Laborer
(08/04/70 - 09/04/70)

One minor water problem arose prior to the opening of the waterfowl hunting season in mid-October. At this time of year, when we needed water to raise all water areas to optimum levels for hunting, irrigation stopped and Salt Slough was not running sufficient water for our pumps to operate. A total of 170 acre feet of water, purchased from the San Luis Canal Company, provided the solution to our problem. Delivery, during the period of October 9 - 16, was at the rate of 12 cubic feet per second. Our cost was \$2.50 per acre foot, for a total of \$425.00.

January runoff overflowed the San Joaquin River channel and spread out to the flood control levees. By the first week of February the flood waters had receded; but all oxbows and pot-holes within the levees remained full of water.

2. Food and Cover:

Waterfowl food and cover conditions were excellent in Fields B, C and D, which contain a combined total of 175 acres. These three fields supported a lush growth of volunteer millet that was used extensively by ducks. Ring-necked pheasants also found the millet fields attractive.

All marsh units in Moffatt Field provided optimum food and cover for both waterfowl and marsh and water birds. After nesting was determined complete, water levels in this area were fluctuated to encourage the growth of jointgrass or knotgrass (Paspalum distichum). This practice was effective, and the first migrant pintails literally waded in jointgrass. The fluctuating water levels also encouraged just enough cattail and bulrush growth to afford good escape cover. Herons, egrets, stilts and avocets found that preferred feeding conditions accompanied the fluctuating waters, while rails and gallinules sought refuge in the "tule" patches.

Teal Lake and Big Lake did not have an abundance of available food, but both were havens for green-winged teal. Green browse, on the upland areas, was most attractive during December and January, and these two months accounted for about 75 percent of our total goose use.

As already mentioned, the Loaf Lake area was dry during the summer to facilitate dike and control structure maintenance. At the same time, vegetation control was accomplished by burning dense cattail and bulrush stands, and then dozing the top layer of soil

into small islands. We think the result is about a five-year setback in succession. Re-flooding attracted swarms of shore-birds, and the area was favored as a loafing spot by wintering waterfowl. By November, good cover was again present where the marsh had not been disturbed; and sandhill cranes began using the areas as a roost site during December.

In the area north of "E" Canal, a piece of plywood over the end of a culvert and a few boards in a deteriorated wooden structure backed water into about 20 acres of slough channels. The resulting waterfowl use was spectacular!

Habitat areas referred to in this section are depicted on the following map:

SAN LUIS NATIONAL WILDLIFE REFUGE

MERCED COUNTY, CALIFORNIA

UNITED STATES
DEPARTMENT OF THE INTERIOR

U. S. FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

120° 50'

RIOE RII

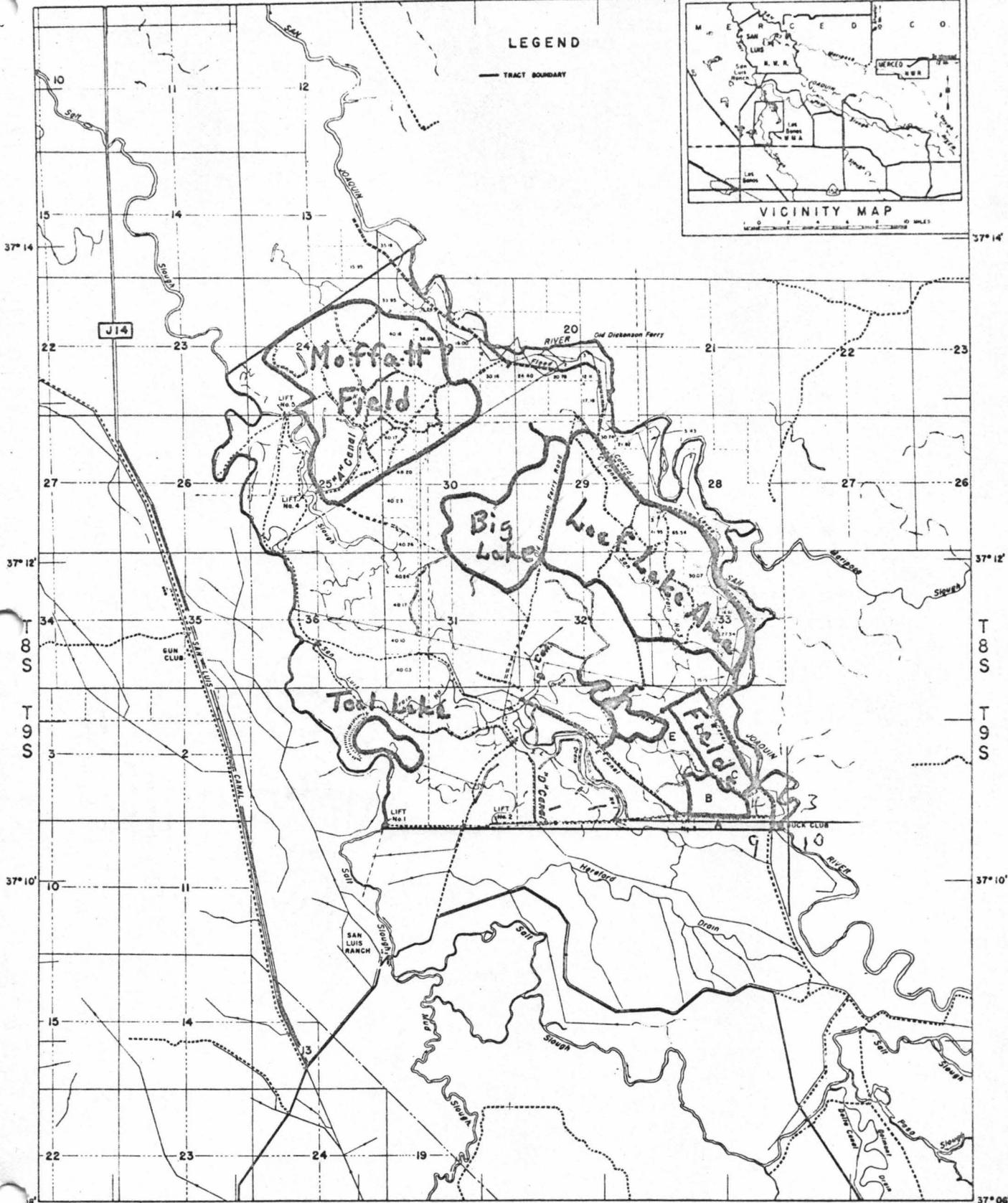
120° 48'

120° 46'

120° 44'

LEGEND

— TRACT BOUNDARY



COMPILED IN THE BRANCH OF ENGINEERING
FROM SURVEYS BY AERIAL PHOTOGRAPHY,
B.L.M., U.S.G.S., CE. AND F.W.S.

MT. DIABLO MERIDIAN



PORTLAND, OREGON DECEMBER, 1961
REVISED: 4-67, 2-70

II. WILDLIFE

A. Migratory Birds:

1. Waterfowl:

a. Swans: Use days by whistling swans decreased from 896 in 1969 to 405 this year. It is interesting to note that all of last year's use occurred in January and this year all use was during December. The peak population this year was 25, as compared to 30 last year.

b. Geese: Wintering geese were last seen during the week of April 12 - 18 and the first fall migrants were seen on September 23. Four cackling geese, obviously non-breeders, showed up during mid-June and stayed throughout the summer. Our first fall migrants were cacklers, so we lost track of the summer visitors after September 23. The first migrant snow geese were seen on October 9, and five "honkers" were spotted on October 16. White-fronted geese, normally the first species seen in the fall, did not arrive until October 21.

Total goose use decreased by about 25 percent this year. Use days totaled 980,342 as compared to 1,317,400 last year. Abnormal rainfall during November and December, created excellent conditions for grazing geese. However, these same conditions existed off the refuge also and goose populations were dispersed. The following table shows goose use days, by species, for the years 1968 - 1970.

| SPECIES | TOTAL ANNUAL USE DAYS | | |
|---------------|-----------------------|----------------|---------------|
| | 1968 | 1969 | 1970 |
| CANADA | 50,750 | 6,125 | 2,140 |
| CAACKLING | 1,025,521 | 878,500 | 531,857 |
| WHITE-FRONTED | 522,958 | 81,200 | 50,775 |
| SNOW | 579,376 | 167,300 | 384,945 |
| ROSS' | <u>6,195</u> | <u>184,275</u> | <u>10,625</u> |
| TOTALS: | 2,184,800 | 1,317,400 | 980,342 |

c. Ducks: Our duck population declined from about 200,000 in early January to less than 1,000 throughout the summer. Production was estimated to be 775 this year, as compared to 2,500 last year. Predominant nesting species were mallard, cinnamon teal and gadwall. Migrant pintails first appeared in mid-August,

and reached a peak of 289,300 in mid-October. This species accounted for 16,183,900 use days at San Luis this year. Total duck use days numbered 40,634,367; an increase of 11,585,237 over 1969. The wintering population peaked at 586,725 during the week of December 13 - 19. Last year's peak of 493,000 was recorded during the week of November 16 - 22.

The following table shows total annual use days for the more important species during the period 1968 - 1970:

| SPECIES | TOTAL ANNUAL USE DAYS | | |
|-------------------|-----------------------|------------|------------|
| | 1968 | 1969 | 1970 |
| Mallard | 2,322,740 | 3,444,910 | 5,592,205 |
| Gadwall | 799,890 | 840,000 | 2,189,745 |
| American Widgeon | 1,372,700 | 1,090,950 | 1,595,070 |
| Pintail | 7,987,910 | 14,846,650 | 16,183,900 |
| Green-Winged Teal | 3,818,325 | 4,016,950 | 7,990,690 |
| Cinnamon Teal | 810,600 | 605,500 | 320,945 |
| Shoveler | 2,693,005 | 3,843,875 | 6,703,580 |

d. Coots and Gallinules: Coot use decreased from 1,312,500 use days in 1969 to 1,010,420 use days this year. The peak coot population numbered 8,000 during the week of January 18 - 24. Last year's peak was 10,000.

Common gallinules, although not abundant, were seen throughout the year. The peak population was estimated to be 175 during early February.

2. Water and Marsh Birds:

Great blue herons, common and snowy egrets, pied-billed grebes, American bitterns and black-crowned night herons were the resident species that used San Luis Refuge. Migrant species included white pelicans, sandhill cranes and eared grebes. White-faced ibises used the refuge in 1968 and 1969, but were not seen this year.

Sandhill crane use increased over 1969 and a peak population of 4,000 occurred on November 18. The 1969 peak was 3,000 and occurred on November 19. White pelicans peaked at about 500 for the third consecutive year. Several wing-tagged white pelicans were observed throughout the year. All of these were birds banded in connection with the pesticides monitoring program that our Bureau is conducting.

On May 12, a dead white pelican was found at San Luis. During a period of about a month following this first find, a total of 18 dead or sick pelicans were found. All dead birds, that were considered suitable laboratory specimens, were frozen. One of these was sent to the California Department of Fish and Game Disease Laboratory in Sacramento. Tests showed that the bird contained a high level of pesticide residues. However, records indicated that live, apparently healthy birds had shown equal levels of pesticide residues. Thus we could not say for certain what caused the death of any of the birds picked up. The remaining specimens are awaiting pesticide analysis by personnel of the Bureau's Davis Research Center.

3. Shorebirds, Gulls and Terns:

Large concentrations of dowitchers and sandpipers occurred during the spring and fall migration periods. Some species, namely killdeer, American avocets, black-necked stilts, greater yellowlegs, long-billed dowitchers and common and least sandpipers were present most of the year. Dunlins were seen during migration periods, and the common snipe was a winter visitor.

California and ring-billed gulls were seen intermittently throughout the year. Two sightings of Forester's Terns were recorded. The first was on April 30 and the second on August 21. Both sightings were of two terns each.

4. Doves:

Mourning doves used the refuge throughout the year, but a minimal amount of nesting occurred. The period of greatest use was during the fall migration, which peaked in early September.

B. Upland Game Birds:

Ring-necked pheasants and California quail are the only upland game bird species at San Luis. The peak pheasant population was estimated to be about 125 during early summer. On September 5 and 6, a total of 73 "ring-necks" was released by members of the San Luis Field Trial Association during their field trials. It is doubtful that these birds contributed much to our wild population.

Since San Luis Refuge is mostly upland grasses and marsh, the adjacent croplands seem to be more attractive to pheasants. Thus,

it is possible that the Refuge pheasant population may continue at a low level. In general, the birds use our area for nesting at a time when croplands are barren or being worked. By the time broods hatch, most of the croplands are attractive to brooding hens and they leave the refuge.

Quail numbers have increased during the past three years. When the area was first acquired in 1967, the population was estimated to be about 20 birds. We now have approximately 150 birds, comprising three separate coveys.

C. Big Game Animals:

No big game species inhabit the Refuge or adjacent lands, It is worth mentioning, however, that various groups and organizations as well as individuals have been pressuring to get tule elk re-introduced onto San Luis Refuge. This pressure has resulted in the preparation of a Tule Elk Management Plan for San Luis.

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

Coyotes and California ground squirrels were seen frequently. Muskrats and ground squirrels burrowed into dikes and levees, thus causing some damage. Permitted trapping is considered adequate muskrat control, but we plan to control some of the ground squirrels with carbon disulfide gas. The San Joaquin Flood Control Levee is the planned site for squirrel control early in 1971. Our agreement with the Levee District stipulates that we maintain the levee in exchange for its use as part of our visitor tour route. One thing they insist on is squirrel control on the levee.

A mammal list was begun this past summer and the 17 species identified are listed below. These refuge lists never seem to reach completion, due to additions and/or deletions. However, we plan to at least expand our list during the next few years, and then attempt to keep it current.

Opossum (Didelphis virginiana)
Raccoon (Procyon lotor)
Longtail Weasel (Mustela frenata)
Mink (Mustela vison)
Badger (Taxidea taxus)
Striped Skunk (Mephitis mephitis)

Coyote (Canis latrans)
San Joaquin Kit Fox (Vulpes macrotis mutica)
California Ground Squirrel (Citellus beecheyi)
Valley Pocket Gopher (Thomomys bottae)
Heermann Kangaroo Rat (Dipodomys heermanni)
Western Harvest Mouse (Reithrodentomys megalotis)
Deer Mouse (Peromyscus maniculatus)
California Vole (Microtus californicus)
House Mouse (Mus musculus)
Blacktail Jackrabbit (Lepus californicus)
Desert Cottontail (Sylvilagus auduboni)

E. Hawks, Owls, Eagles and Kites:

The most common and abundant hawk, again this year, was the "red-tail". Sparrow hawks, Cooper's hawks and sharp-skinned hawks were also seen throughout the year. A pair of Swainson's hawks nested and fledged four young at San Luis, This was the first record of this species nesting on the Refuge.

Great-horned owls, barn owls and burrowing owls were present all year, but seen only occasionally. A winter visitor was the short-eared owl.

A lone golden eagle was seen on three separate occasions; September 28, October 2 and November 9.

White-tailed kites appear to be increasing in numbers in western Merced County, and numerous kite observations were recorded at San Luis during the last six months of 1970.

F. Other Birds:

Species in this general group are too numerous to discuss individually and nothing worthy of detailed reporting was observed this year. It is worthwhile to mention, however, that a good portion of our non-consumptive public use was dependent upon this group of birds. Birding groups and individuals from many parts of the state visited San Luis regularly this year. In addition, tourists passing through this area were attracted by the abundance of birds in natural surroundings.

G. Fish:

Channel catfish, carp, largemouth bass and black crappie continued

to dominate the fishermen's catches. We did not accomplish, as planned, the Fish, Reptile and Amphibian List for our Refuge Complex.

H. Reptiles and Amphibians:

This portion of the list just mentioned, was begun this past summer. Admittedly, accomplishments were somewhat minimal, but it's a start. Specimens collected at San Luis were identified as the following:

Western Pond Turtle (Clemmys marmorata)
California Red-sided Garter Snake (Thamnophis sirtalis)
Gopher Snake (Pituophis melanoleucus)
California Side-batched Lizard (Uta stansburiana)
Western Yellow-bellied Racer (Coluber constrictor)
Bullfrog (Rana catesbeiana)
Western Skink (Eumeces skiltonianus)

I. Disease:

A minor outbreak of fowl cholera occurred during the second week of January. Field "B", which contained wild millet, was reflooded after the regular waterfowl hunting season closed. Goose concentrations in this 60-acre field numbered as high as 7,000 and in addition, 10,000 ducks (mostly mallards) were using the field. When the first dead and sick birds were noticed on January 6, immediate draining was begun and exploders were installed. Total mortalities were estimated to be 250 ducks, geese and coots. A total of 155 dead birds were picked up and burned. The following list shows the species and number of dead birds.

| | |
|---------------------|-----------|
| Cackling Goose | 55 |
| White-Fronted Goose | 2 |
| Snow Goose | 9 |
| Ross' Goose | 15 |
| Mallard | 4 |
| American Widgeon | 11 |
| Pintail | 10 |
| Green-Winged Teal | 2 |
| Coot | <u>47</u> |
| Total | 155 |

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

1. Canals and Water Control Structures:

a. Rehabilitation of the East Marsh area was the major work program for the year. Four miles of low levee were rebuilt with the use of dozers and carry-alls. Existing water control structures were replaced with 48-inch C.M.P. and flash-board risers.

b. Pumps on the lift canal required major repairs during the year. Lift Pump 1A required replacement of impeller, bowls, shaft and bearings. Pump 1B required new bowls and shaft and the impeller was rebuilt. The 10 hp motor on Pump 2B burned out and had to be rewired.

c. The electric panel at Lift Pumps 1 burned out and required complete replacement. The existing panel was replaced with a larger panel capable of supplying the planned pumping capacity at this lift station.

d. The refuge truck-mounted dragline was used to clean A-Canal and a rental dragline was hired to clean B-Canal.

e. Fifty tons of riprap were hauled to riprap newly installed water control structures to prevent washing and erosion.

f. In addition to the above many lesser water control structures were replaced or installed and the normal amount of maintenance and repairs to existing structures was required.

2. Road Construction and Maintenance:

a. Four miles of the fishing access road were graveled. This gravel was obtained free of charge from the Bureau of Reclamation and hauled and tailgate spread by a contractor on a formal contract.

b. One-half mile of road from the Dickenson Ferry Road into the Loaf Lake area was graveled to provide wet-weather access into major water control structures in this area.

c. The lift canal road from the field headquarters to Lift Station 1, .6 miles, was graveled to provide access to this pump station during periods of wet weather.

d. The east slope of 1.4 miles of the Dickenson Ferry road was widened and sloped to a 5:1 slope. This road previously had little or no slope and was subject to severe erosion since the road also serves as a levee to create water-fowl impoundments.

e. The north end of the Dickenson Ferry road was extended .37 miles from C-Canal to the San Joaquin levee. An old road-base was already present, but it required raising and widening to be suitable for public travel.

f. A total of 66 cubic yards of 3/4-inch minus rock was hauled and spread on the driveways and parking area at the field headquarters.

g. All roads were graded whenever needed and weather conditions permitted.

3. Fence Construction and Maintenance:

a. Approximately 200 yards of new fence was built along Salt Slough. The slough bank had eroded back and washed out the bank under the fence. The new fence was moved back well away from the bank.

b. Routine repairs were made to all fences as required.

4. Building Maintenance:

a. The exterior of the shop-service building was painted. This building is in very poor condition and was a real eyesore. It was painted at very little expense, since the aluminum paint used was acquired from excess.

b. The septic tank was replaced for the concrete block house which serves as a storeroom for refuge supplies. This restroom is not suitable for public use, but it does provide sanitary facilities for refuge personnel which previously were not available.

5. Miscellaneous:

The normal amount of routine maintenance tasks were performed. Although these smaller tasks do not warrant discussion, they collectively require a great deal of time and money to keep the refuge operation moving.

B. Plantings:

1. Aquatic and Marsh Plants:

Nothing to report.

2. Trees and Shrubs:

Nothing to report.

3. Upland Herbaceous Plants:

Nothing to report.

4. Cultivated Crops:

Of the total 266 acres of cropland on the refuge, only 175 acres was farmed during the year. Fields B, C and D produced excellent stands of wild millet, Echinochloa crusgalli. Preparation of these fields involved grading up the contours with the grader. The fields were neither disced or seeded. Wild millet will volunteer good stands for several years in a row, the actual length of time being determined by how heavily they are used by feeding waterfowl and on annual weed problems.

Water was first turned into these fields on April 6. This early irrigation allowed plenty of time to have a mature millet crop before the arrival of migrant waterfowl. The fields were flooded as soon as waterfowl arrived and kept flooded until hunting season opened. The fields were used extensively by ducks during this pre-season period. Having this early crop of mature millet accomplishes two purposes: (1) The availability of this highly preferred food lessens the threat of waterfowl depedation on local rice growers and (2) the birds are held on the refuge and they do not feed so heavily on the private duck clubs. In years of high duck populations, as we have experienced for the past few years, large numbers of ducks concentrate on the early

flooded duck clubs and consume all their feed prior to the opening of the hunting season. Private duck clubs provide much of the waterfowl habitat in the San Joaquin Valley, and we feel we have a responsibility to keep them satisfied and operating as much as possible.

The fields were dried up during the waterfowl hunting season in an effort to attract fewer ducks onto the refuge. Immediately after the hunting season closes, the fields will be reflooded to provide feed during the rest of the winter.

Fields A and E were not used this year for wild millet production. Field A cannot be flooded without raising the water table on adjoining croplands and bringing up salts harmful to their crops. Field E is very sandy and requires too much water to keep it flooded. These fields will be planted to fall barley next year and allowed to volunteer for several years.

C. Collections and Receipts:

1. Seed or Other Propagules:

Nothing to report.

2. Specimens:

Nothing to report.

D. Control of Vegetation:

Dichlobenil soil sterilant was used around pump stations, buildings and some signs to control the growth of annual weeds.

The refuge has assumed maintenance responsibility on the San Joaquin River levee in exchange for the use of the road as a public use route. The levee district is insistent that the growth of broad-leafed plants not be allowed on the levee. They do not want the broad-leaves competing with the sod-forming grasses and a dense growth of broad-leaves make the detection and control of ground squirrel damage difficult. This levee and portions of the lift canal bank was sparyed with 2, 4-D isoctyl ester on March 19 and again on May 12.

Approximately 25 acres of cattail in the East Marsh were mowed with a rotary mower, the residue burned to reduce the threat of botulism, and then rapidly flooded to drown-out the cattail.

This technique worked well in this situation, but in order to be successful you must be able to rapidly flood the unit.

Approximately 10 acres of cattail were eliminated by dozing dense stands of cattail, sod and dirt into mounds. This created open areas in previously dense stands and islands for nesting and loafing.

E. Planned Burning:

Cattail residue in the east marsh was burned to reduce the amount of decaying matter in the water. Decaying vegetation in the water produces a medium in which botulism toxin is formed.

F. Fires:

No wild fires occurred on the refuge during the year.

IV. RESOURCE MANAGEMENT

A. Grazing:

One permittee, former owner Butler Noble, grazed cattle on the refuge during the year. He utilized 9,157 AUMs out of a maximum allowable total of 11,033 AUMs. At the rate of \$3.75 per AUM, the total grazing income was \$34,340.27.

The following table shows total AUMs of grazing and total grazing income for 1967 through 1970.

| | <u>Total AUMs</u> | <u>Total Revenue</u> |
|--------|-------------------|----------------------|
| * | | |
| 1967 | 7,466 | \$27,997.50 |
| 1968 | 9,685 | 36,318.75 |
| 1969 | 10,552 | 39,571.98 |
| 1970 | <u>9,157</u> | <u>34,340.27</u> |
| Totals | 36,860 | \$138,228.50 |

*March 1 - December 31 only.

Forage growth was substantially poorer during 1970 than it was in 1969. The last rains which had any noticeable effect on grass growth occurred during the first week of March. By the first of April upland grasses were dormant due to lack of moisture. During April .15 inches of precipitation was received and in June .08 inches fell. These amounts had no noticeable effect on grass growth. Rainfall sufficient to stimulate grass growth did not occur until early November. During November and December adequate moisture was available for good grass growth, but growth remained slow due to cool temperatures.

As discussed in previous narratives it is a losing battle to try and raise waterfowl food and create good waterfowl habitat with cattle grazing the year around. It simply cannot be done. We have established two grazing exclosures on the refuge to demonstrate what could be done if we did not have to contend with the cattle. The present grazing permit will expire in December 1972.

B. Fur Harvest:

No trapping was permitted on the refuge during the 1969 - 1970 trapping season. A trapping permit was issued to Ray Delmas, Stevenson, California, on January 4, 1971, and the results of this trapping will be reported next year.

Muskrats cause extensive damage to levees, dams and roadways through their burrowing activity. They are of no value in marsh management. If we let muskrat numbers get high enough to be of some value in marsh management, the damage would be intolerable.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

Mr. Don Knapp, Davis Research Center, Davis, California, collected eggs from the nests of red-tailed hawks and great-horned owls. Don's work was the continuation of a study started in 1969. The primary objective of this study is to determine the effects of pesticide on eggshell thickness. We have not received any of the results from this study.

Personnel from the Division of Fishery Services gill-netted fish from Deadman Slough for pesticide analysis again this year. This work is part of the national Pesticide Monitoring Program.

ANNUAL RECREATIONAL USE REPORT

Refuge name

SAN LUIS

State

CALIFORNIA

State Code
(1-2)

Congressional District Code
(3-4)

Refuge Code
(5-7)

Report Yr.
Mo.
Period
(8-11)

| (Card Columns) (12-13) (14-18) (19-25) | | | | (Card Columns) (12-13) (14-18) (19-25) | | | |
|--|------|----------------------|-------------|--|------|----------------------|-------------|
| ACTIVITY | Code | VISITS FOR THE MONTH | | ACTIVITY | Code | VISITS FOR THE MONTH | |
| | | Total Number | Total Hours | | | Total Number | Total Hours |
| Hunting: | | | | | | | |
| Big Game | 01 | | | On-Site Programs | 22 | | |
| Upland Game | 02 | | | *Miscellaneous Wildlife | 23 | 855 | |
| Waterfowl | 03 | 6,131 | | | | | |
| Other Migratory | 04 | | | Swimming | 24 | | |
| Other | 05 | | | Boating | 25 | | |
| Bow | 06 | | | Water Skiing | 26 | | |
| Fishing: | | | | Camping | 27 | | |
| Salt Water | 07 | | | Group Camping | 28 | | |
| Warm Water | 08 | 5,317 | | Picnicking | 29 | | |
| Cold Water | 09 | | | Horseback Riding | 30 | | |
| Environmental Education | 10 | 509 | | Bicycling | 31 | | |
| Wildlife Photography | 11 | 110 | | Winter Sports | 32 | | |
| Wildlife Observation | 12 | 4,462 | | Fruit, Nut and Vegetable Collecting | 33 | 125 | |
| Conducted Programs | 13 | | | *Miscellaneous Non-Wildlife | 34 | | |
| Field Trials | 14 | 90 | | Peak Load Day | 35 | 490 | |
| Wildlife Trails | 15 | 886 | | Actual Visits | 36 | 15,931 | |
| Wildlife Tours/Routes | 16 | 2,542 | | | | | |
| Visitor Contact Stations | 17 | | | Fee Area Use | 37 | | |
| Camping (wildlife related) | 18 | | | Number of Fee Areas | 38 | | (14-18) |
| Picnicking (wildlife related) | 19 | 6,450 | | Fee Collections | 39 | \$ | |
| Wildlife Interpretive Center | 20 | | | Collection Costs | 40 | \$ | |
| Off-Site Programs | 21 | 400 | | | | | |

Two grazing exposures were constructed and data collection was begun in an effort to demonstrate the degree that cattle grazing effects the production of important waterfowl food plant species. We believe the information acquired will be beneficial in formulating future grazing management plans.

VI. PUBLIC RELATIONS

A. Recreational Uses:

There was 15,931 actual visits to the refuge during the year. This is slightly below the 16,927 visits in 1969. Warm water fishermen accounted for 5,317 visits which is about the same as last year. The attached recreational use form illustrates the type of activity the visitors participated in. (see previous page)

During the 1970-71 waterfowl hunting season, 6,826 hunters hunted on the refuge compared to 5,401 during the 1969-70 hunting season. Since opening of the refuge to hunting in 1967, the number of hunters using the refuge has increased by approximately 1,000 hunters each year.

B. Refuge Visitors:

The following list is a list of the more important visitors to the refuge or the refuge office:

| Date | Name | Affiliation | Purpose of Visit |
|---------|---|----------------------------------|----------------------------------|
| 1/3 | Lawrence C. Wills Tumwater, Washington | USGMA BSF&W | Enforcement |
| 1/3 | Eugene V. Cofer Bakersfield, Calif. | USGMA BSF&W | Enforcement |
| 1/3 | Tom Harper Los Banos, Calif. | USGMA BSF&W | Enforcement |
| 1/15-16 | Robert Shields Portland, Oregon | Assistant Regional Supervisor | O&M Inspection |
| 2/8 | Ron Reuther San Francisco, Calif. | Director San Fran- cisco Zoo | Tour San Luis and Merced NWRs |
| 2/8 | Max Williams London, England | Ornithologist | Tour San Luis and Merced NWRs |

(Continued)

| Date | Name | Affiliation | Purpose of Visit |
|------|--|---|----------------------------------|
| 2/12 | Nathan Bickford Fresno, Calif. | Bureau of Reclamation | Mgt. of Kesterson NWR |
| 2/13 | Don Mumby Gustine, Calif. | Atlantic Richfield | Oil Exploration Kesterson NWR |
| 3/3 | C. R. Estheimer Portland, Oregon | Division of Realty BSF&W | Land Acquisition |
| 3/5 | Riley Patterson Bakersfield, Calif. | Division of Wild- life Services BSF&W | San Joaquin Kit Fox Release |
| 3/5 | Richard Fiant Bakersfield, Calif. | Division of Wild- life Services BSF&W | San Joaquin Kit Fox Release |
| 3/8 | Don Tiller & family Ilwaco, Wash. | Willapa NWR | Courtesy |
| 4/11 | Cathy Osugi San Jose, Calif. | College Student | Student Trainee Program |
| 5/7 | Gene Morris San Jose, Calif. | San Jose City College | Arrange Field Trip |
| 5/12 | Lester Travis El Nido, Calif. | Newhall Land & Cattle | Sell land to Merced NWR |
| 5/13 | John Mack Portland, Oregon | Division of Engine- ering BSF&W | Gravel Contract |
| 6/12 | Alvaro Souza Los Banos, Calif. | Private Business & Refuge Supporter | Courtesy |
| 6/22 | John Mack Portland, Oregon | Division of Engineer- ing BSF&W | Gravel Contract & inspection |
| 6/22 | Mr. Colby Washington, D.C. | Division of Engineer- ing BSF&W | Inspection |
| 6/30 | Riley Patterson Bakersfield, Calif. | Division of Wildlife Services BSF&W | San Joaquin Kit Fox Release |
| 8/4 | Grant Birmingham Fresno, Calif. | Division of Wildlife Services BSF&W | Rodent Control |
| 8/19 | W. K. Ruston Sacramento, Calif. | Calif. Div. of Tax Collection & Refund | Tax Audit |
| 8/19 | Bob McVein Portland, Oregon | Division of Engineer- ing BSF&W | Water Rights |
| 8/19 | Dick Kerfoot Sacramento, Calif. | Calif. Dept. of Water Resources | Water Rights |
| 9/4 | Fred Coleman San Gabriel, Calif. | San Luis Field Trial Association | Field Trials |
| 9/14 | C. E. Van Atta Dos Palos, Calif. | Lea Act Committee | Merced NWR Hunting |
| 9/14 | Robert Nordman Merced, Calif. | Lea Act Committee | Merced NWR Hunting |
| 9/14 | George Mack Merced, Calif. | Lea Act Committee | Merced NWR Hunting |
| 9/15 | Charles Watson Lemay, Mo. | National Public Lands Task Force | Native Grass- land |

(Continued)

| Date | Name | Affiliation | Purpose of Visit |
|-------|------------------------------------|---------------------------------------|--------------------------------|
| 9/23 | Edward Smith Portland, Oregon | Regional Refuge Super- visor BSF&W | Flood Damage Repair |
| 9/23 | Harry Stiles Washington, D. C. | Division of Wildlife Refuges BSF&W | Flood Damage Repair |
| 10/14 | Dave Selleck Fresno, Calif. | Calif. Dept. of Fish and Game | Tour San Luis and Kesterson |
| 10/14 | Eldrige Hunt Sacramento, Calif. | Calif. Dept. of Fish and Game | Tour San Luis and Kesterson |
| 10/14 | A. E. Naylor Fresno, Calif. | Calif. Dept. of Fish and Game | Tour San Luis and Kesterson |
| 10/14 | Trev Wright Sacramento, Calif. | Calif. Dept. of Fish and Game | Tour San Luis and Kesterson |
| 10/17 | Warren Shanks Portland, Oregon | Div. of Fishery Services BSF&W | Pesticide Monitoring |
| 11/2 | William Graff San Jose, Calif. | San Jose State College | Arrange Tour of San Luis |

In addition to those listed above, the following persons were frequent visitors to the refuges or the refuge office:

| | |
|-------------------|--|
| Charles Stribling | USGMA, Fresno, California |
| Robert Freeman | USGMA, Merced, California |
| Jerry Cawthon | Calif. Dept. of Fish & Game, Los Banos, Calif. |
| Dan Hinz | Calif. Dept. of Fish & Game, Los Banos, Calif. |
| Barney Bryan | Calif. Dept. of Fish & Game, Los Banos, Calif. |
| Bob Hudson | Calif. Dept. of Fish & Game, Gustine, Calif. |
| Jack Smith | Calif. Dept. of Fish & Game, Los Banos, Calif. |
| Buttler Noble | Permittee Mantica, Calif. |

C. Refuge Participation:

Refuge personnel attended and/or participated in the following meetings, speaking engagements, or tours. To avoid duplication, the activities of personnel on San Luis, Merced and Kesterson National Wildlife Refuges are combined here.

a. Melvin T. Nail - Refuge Manager:

| | |
|---------------|--|
| January 30-31 | Attended the California-Nevada Section of the Wildlife Society meeting in Fresno. |
| February 2 | With Asst. Manager Vehrs, met with personnel of the California Department of Fish and Game personnel to discuss past public hunting program. |

February 8 Conducted a tour of San Luis NWR for Ron Reuther, Director of the San Francisco Zoo, and Max Wilson from London, England.

February 12 Attended a businessmen luncheon sponsored by the Chamber of Commerce to acquaint local business people with recreation available in the Los Banos area. Gave a talk on recreation opportunities on the San Luis Refuge Complex.

February 25 Attended the 16th Annual Sausage Feed for Soil Conservation Districts sponsored by the San Luis Soil Conservation District.

March 25-26 Attended a meeting in Sacramento between California Refuge Managers and the California Department of Fish and Game personnel to discuss refuge hunting programs.

April 3 With Asst. Manager Vehrs, Wildlife Biologist Sipe and Foreman Mayle, attended the retirement dinner in Portland, Oregon for retiring Regional Refuge Supervisor, Vernon Ekedahl.

April 18 With Asst. Manager Vehrs, conducted Mr. Alan Baldrige and 12 members of the Monterey Peninsula Audubon Society on a tour of San Luis NWR.

May 4 Attended luncheon with president and directors of Grassland Water District, Director and the personnel of the Louisiana Fish and Game Commission and California Department of Fish and Game personnel. Accompanied the same people on a tour of Los Banos Wildlife Area and the San Luis Wasteway Wildlife Area.

July 14 Toured the grasslands with Martin Winton, President of the Grassland Water District; Grassland Water District Directors; and Jerry Cawthon, California Department of Fish and Game.

July 15 With Wildlife Biologist Sipe, attended a mosquito control coordination meeting in Fresno. Federal, state, and county personnel discussed mutual problems and cooperative detail regarding mosquito abatement operations.

September 8 With Wildlife Biologist Sipe, attended the regular monthly meeting of the Grassland Water District and showed the film "So Little Time".

September 14 Conducted Lea Act Committee meeting to decide on date to open hunting on Merced NWR.

September 15 Conducted Mr. Charles Watson of the Public Lands Task Force on a tour of San Luis NWR to look at remnants of native California grasslands.

September 16 With Asst. Manager Vehrs, met with Bureau of Reclamation personnel in Fresno to discuss joint management of Kesterson NWR.

September 20-22 With Asst. Manager Vehrs, attended Systems Management workshop in Sacramento.

September 23 Conducted Regional Refuge Supervisor, Ed Smith and Harry Stiles from the Central Office on a tour of San Luis and Merced Refuges.

September 29 At regular meeting of the Merced County Board of Supervisors, presented a check for \$26,047.79 as annual payment to the county under the Refuge Revenue Sharing Act.

October 13 With Asst. Manager Vehrs, Wildlife Biologist Sipe and Foreman Mayle, attended annual pre-season law enforcement meeting at Los Banos Wildlife Area.

October 14 Conducted Jerry Cawthon, Dave Selleck, Eldridge Hunt, A. E. Naylor and Trev Wright of the Calif. Dept. of Fish and Game on a tour of San Luis and Kesterson Refuges.

October 29 Showed the films "Visiting the National Bison Range" and "The Warm Coat" to Sunday School Class of the Assembly of God Church.

November 2 Showed films "Visiting the National Bison Range" and "The Warm Coat" to 3rd grade class at McSwain Elementary School.

November 21 Helped serve breakfast at pheasant hunters breakfast sponsored by Los Banos Rotary Club to raise funds for the Los Banos Hospital.

December 1 Attended the annual Lions Club duck dinner with host speaker Martin Winton, President of the Grassland Water District. Showed the Ducks Unlimited film, "Sprig Tail".

December 10 Presented slide talk on Kesterson NWR at District Meeting of California Department of Fish and Game employees in Fresno.

December 11 With Foreman Mayle, showed the films "The Story of the Mourning Dove" and "Wilderness Elk Hunt" to men's group at the Assembly of God Church in Livingston.

In addition to the above activity, Manager Nail attended regular monthly meetings of the Grassland Water District. On May 19, he became an official member of the Los Banos Rotary Club and attended all weekly meetings. On December 4, Mr. Nail joined the Los Banos Toastmasters Club and attended regular weekly meetings.

b. Stephen R. Vehrs - Asst. Refuge Manager:

January 30-31 Attended the California-Nevada Section of the Wildlife Society meeting in Fresno.

February 9 With Wildlife Biologist Sipe, conducted a tour of Merced Refuge for 80 students from the Merced Elementary School.

February 10 Conducted 20 students from Merced Junior College on a tour of Merced NWR.

May 14 Conducted 12 Cub Scouts on a tour of Merced NWR.

July 1 Conducted a tour of San Luis NWR for a summer ecology class from Hoover Junior High School in Merced.

July 7 With Wildlife Biologist Sipe and Student Trainee Cathy Osugi, conducted 40 students of a summer ecology class at Hoover Junior High School on a tour of San Luis NWR.

September 9 Showed the film "So Little Time" and gave a talk on San Luis Complex refuges to Dos Palos Rotary Club.

September 24 Video-taped a talk on the San Luis Complex refuges and the film "So Little Time". The tape was later shown to 200 students at Dos Palos High School.

October 1 Conducted 25 students from Merced Junior College on a tour of Merced NWR.

October 29 With Wildlife Biologist Sipe, conducted 66 third grade students from McSwain School on a tour of Merced NWR.

November 23 Conducted 35 students from West Valley Junior College in Saratoga on tour of San Luis NWR.

c. Gene A. Sipe - Wildlife Biologist (Management):

January 30-31 Attended the California-Nevada Section of the Wildlife Society meeting in Fresno.

February 23-26 Attended Wing Bee at Coleman National Fish Hatchery in Anderson, California.

March 13 Constructed two Wildlife Week displays and displayed them in business firms in Los Banos and Merced.

March 15 Conducted a group from the Sacramento Audubon Society on a tour of San Luis NWR.

July 1 With Student Trainee Cathy Osugi, conducted a biology class from Turlock High School on a tour and insect collection trip on San Luis NWR.

September 22 Accompanied Bureau of Reclamation personnel Ed Roper, Lou Wentzel and Bob Evans on an inspection tour of Kesterson NWR.

October 14-15 Attended a wildlife habitat enhancement training session in Los Banos conducted by California Department of Fish and Game personnel.

November 19 Conducted Dr. William Graff and 10 students from San Jose State College on a tour of San Luis NWR.

November 24 Escorted 18 Campfire and Bluebird girls and four mothers on a tour of Merced NWR.

December 21 Escorted 10 Girl Scouts and one adult leader from Troop No. 2 in Merced on a tour of Merced NWR.

d. James R. Mayle - Maintenance Foreman:

January 30 Attended the California-Nevada Section of the Wildlife Society meeting in Fresno.

November 20 Conducted a tour of San Luis NWR for 53 fourth grade students and four adults from the Westport School in Ceres.

D. Hunting:

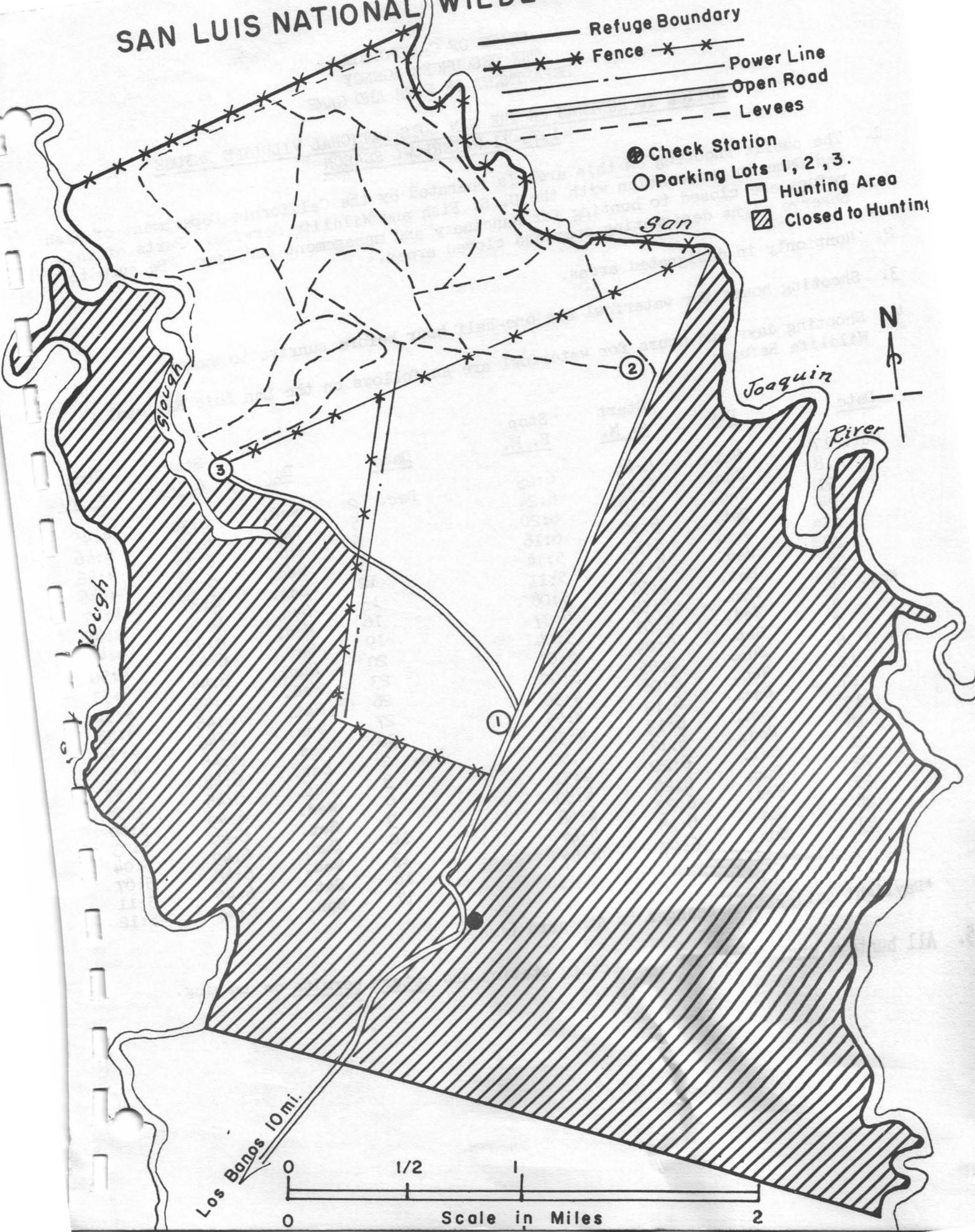
The migratory waterfowl hunting season in Merced County opened on October 17 and ran through January 17, 1971. The season was one week longer than it has been in past years.

The California Department of Fish and Game again operated the actual hunting program. They issued reservations and permits, collected a \$3.50 fee for hunting on the area and manned the checking station. The quota for the number of hunters on the area at one time was 150, the same as past years. Enforcement was a joint effort between the California Department of Fish and Game and the Bureau.

On opening day, 325 hunters checked through the checking station. This was 29 more than last year and was, as usual, the busiest day of the year. At least four hunters checked in through the "south forty" and were apprehended hunting in the closed area.

Total hunter visits for the year has been increasing by about 1,000 each year. A total of 6,826 hunters bagged 13,619 ducks, 319 geese and 445 coots for a total of 14,383 birds. The average hunter kill per day was 2.10 birds for the season. The highest success for a single day was on November 4 when 92 hunters

SAN LUIS NATIONAL WILDLIFE REFUGE



averaged 4.8 birds.

Hunter success of 2.10 birds per hunter per day was considerably below the 2.4 bird average of last year. The poorer hunting success was probably a result of poorer weather for duck hunting. Each day the check station crew records the weather in general terms. The following table summarizes the weather conditions during the season.

| <u>Weather Condition</u> | <u>Days of Occurrence</u> |
|--------------------------|---------------------------|
| Clear | 16 |
| Cloudy or Overcast | 11 |
| Foggy | 6 |
| Rain | 5 |
| Rain and Wind | 3 |
| | <u>41</u> |

On the three days when both rain and wind occurred, the averages were 4.8, 3.4 and 3.4 birds per hunter.

No pheasant hunting was allowed on the refuge during the year. We do not feel a huntable population exists.

The following table is a tabulation of waterfowl kill by species for the 1967 - 1968, 1968 - 1969, 1969 - 1970, and 1970 - 1971 waterfowl hunting seasons.

| <u>Kill by Species</u> | <u>1967-68</u> | <u>1968-69</u> | <u>1969-70</u> | <u>1970-71</u> |
|------------------------|----------------|----------------|----------------|----------------|
| DUCKS: | | | | |
| Mallard | 1,507 | 751 | 1,053 | 1,067 |
| Gadwall | 1,079 | 249 | 576 | 710 |
| Pintail | 1,655 | 588 | 2,038 | 1,479 |
| G. W. Teal | 3,116 | 5,639 | 5,641 | 6,149 |
| B. W. Teal | 1 | -- | -- | -- |
| Cin. Teal | 469 | 205 | 256 | 431 |
| Baldpate | 424 | 381 | 792 | 1,273 |
| Shoveler | 1,646 | 1,028 | 1,836 | 2,071 |
| Wood Duck | 6 | 1 | 11 | 1 |
| Redhead | 5 | 7 | 12 | 4 |
| Ring-necked Duck | 22 | 12 | 21 | 41 |
| Canvasback | 32 | 13 | 17 | 50 |
| Scaup | 5 | 10 | 8 | 13 |

| Kill by Species | 1967-68 | 1968-69 | 1969-70 | 1970-71 |
|------------------------------|------------|------------|------------|------------|
| DUCKS: (Continued) | | | | |
| C. Goldeneye | -- | -- | 1 | 2 |
| Bufflehead | 5 | 1 | 2 | 7 |
| Ruddy Duck | 146 | 154 | 209 | 299 |
| Mergansers | 12 | 40 | 14 | 22 |
| Coots | <u>152</u> | <u>171</u> | <u>296</u> | <u>445</u> |
| TOTAL | 10,282 | 9,250 | 12,783 | 14,064 |
| GEESE: | | | | |
| Common Canada | 7 | 2 | 3 | 3 |
| Cackling Goose | 66 | 108 | 142 | 105 |
| W. F. Goose | 45 | 59 | 93 | 37 |
| Snow Goose | 43 | 55 | 101 | 123 |
| Ross' Goose | <u>6</u> | <u>31</u> | <u>27</u> | <u>51</u> |
| TOTAL | 167 | 255 | 366 | 319 |
| Total Waterfowl | 10,449 | 9,505 | 13,149 | 14,383 |
| Total Hunters | 3,769 | 4,503 | 5,401 | 6,826 |
| Average Waterfowl/ hunter | 2.77 | 2.11 | 2.43 | 2.10 |
| No. Pheasants Killed | 7 | 10 | No hunting | No hunting |

E. Violations:

The current trend of law violations in our country was felt on the refuge this year. Besides the normal amount of game violations, offenses consisted of destruction of government property, theft of government property, possession of dangerous drugs and assault of a federal officer.

On January 28, we discovered the storage building at the refuge field headquarters had been broken into. Entry was gained by kicking in a door. This building contains a wide variety of supplies some of which are fairly valuable. We were unable to identify anything as being missing. The incident was reported to the FBI Agent in Merced who was too busy with major crimes to investigate it.

On July 6, vandals hit the field headquarters and did considerable damage. They took side mirrors, battery, hydraulic jack and wheel wrenches from the stake-dump and poked holes in the radiator. They stole one battery from a jeep and two batteries from a portable water pump. They attempted to remove a spotlight from the fire truck, but they were not successful. An estimated 75 gallons of gas was siphoned from vehicles. We can expect this to happen periodically until a residence is provided for someone to live on the area.

The refuge received excellent cooperation during the year from California Department of Fish and Game Warden Barney Bryan, Mike Macias, and Bob Hudson. During the summer considerable illegal night use was occurring on the refuge. To combat this illegal use, frequent night patrol was carried out especially on weekends. The state wardens assisted refuge personnel in much of this night patrol. As a safety precaution, we have adopted the policy of patrolling in pairs at night. People act differently at night, especially with a little beer in the belly or a little narcotic in the system. At least in this part of the COUNTRY, individual night patrol is dangerous.

Game Management Agents Stribling and Freeman visited the refuge frequently and made numerous enforcement patrols during the waterfowl hunting season. They filed most cases with the U. S. Commissioner and completed all case reports.

Refuge personnel made an extra effort on law enforcement during the year. Many violations were no doubt prevented, but it is difficult to measure the results of a preventive law enforcement effort. The following list of violations is our measure of the success of the apprehension phase of our lawenforcement program:

| Date | Name | Violation | Agent | Disposition |
|-------|-------------------------------|---------------------|-------|---|
| 05/30 | Kenneth Jantzen Sunnyvale | Fishing w/o License | Vehrs | Gustine Justice Court 06/19/70 \$25 fine. |
| 05/30 | Aubry Jarvis Sunnyvale | Fishing w/o License | Vehrs | Gustine Justice Court 06/22/70 \$25 fine. |
| 06/06 | Karl Corey San Jose | Fishing w/o License | Vehrs | Gustine Justice Court 07/06/70 \$25 fine. |
| 06/06 | Florida Marshall Fresno | Fishing w/o License | Sipe | Pending--Bench Warrant issued |
| 06/07 | Benjamin Lairson Sunnyvale | Fishing w/o License | Vehrs | Gustine Justice Court 06/23/70 \$25 fine. |

(Continued)

| Date | Name | Violation | Agent | Disposition |
|-------|---------------------------------|-----------------------------|-----------------|---|
| 06/13 | Troy Evans Turlock | Fishing w/o License | Sipe | Gustine Justice Court 08/13/70 \$25 fine. |
| 06/20 | James Bell Palo Alto | Fishing w/o License | Vehrs | Gustine Justice Court 07/13/70 \$25 fine. |
| 06/20 | Daniel Flynn Mountain View | Fishing w/o License | Vehrs | Gustine Justice Court 07/13/70 \$25 fine. |
| 06/20 | James Miller Mountain View | Unattended fishing Pole | Vehrs | Pending--Bench Warrant Issued |
| 06/20 | William Dunham Mountain View | Unattended fishing Pole | Vehrs | Pending--Bench Warrant Issued |
| 06/27 | Rosa Easley Oakland | Fishing w/o License | Sipe | Gustine Justice Court 08/03/70 \$25 fine. |
| 06/27 | Jeffery Easley Oakland | Fishing w/o License | Sipe | Gustine Justice Court 08/03/70 \$25 fine. |
| 06/27 | Frank Honnes Hilmar | Fishing w/o License | Sipe | Pending--Bench Warrant Issued |
| 06/27 | Han Pranschke Seaside | Fishing Prohibited Hours | Nail- Sipe | U.S. Commissioner 08/24/70 \$50 fine. |
| | | Assault Fed. Off. | Nail- Sipe | Pending <i>Action Dropped</i> |
| 06/27 | John Bucchino Seaside | Fishing Prohibited Hours | Nail- Sipe | U.S. Commissioner 08/24/70 \$50 fine. |
| | | Fishing w/o License | Nail- Sipe | U.S. Commissioner 08/24/70 \$25 fine. |
| 07/11 | Lloyd Gash Monterey | Overlimit Frogs | Nail- Bryan* | Gustine Justice Court 07/27/70 \$50 fine. |

(Continued)

| <u>Date</u> | <u>Name</u> | <u>Violation</u> | <u>Agent</u> | <u>Disposition</u> |
|-------------|-------------------------------|---------------------------------|--------------------|--|
| 07/11 | Gerald Gash Monterey | Overlimit Frogs | Nail- Bryan | Gustine Justice Court 07/31/70 \$50 fine. |
| 07/11 | Allen Aarii Salinas | Possessing Dan- gerous Drugs | Nail- Bryan | Los Banos Justice Court 09/15/70 1 yr. probation 90 da. jail suspended \$182 fine. |
| 07/19 | Bernie Olmos Mountain View | Fishing w/o License | Vehrs- Bryan | Gustine Justice Court 08/03/70 \$25 fine. |
| 08/07 | Mel Williams Fresno | Seining Fish | Vehrs- Hudson** | Los Banos Justice Court 08/28/70 \$20 fine. |
| 08/07 | Ernest Johnson Fresno | Seining Fish | Vehrs- Hudson | Los Banos Justice Court 08/18/70 \$20 fine. |
| 08/09 | Trez Davis Sunnyvale | Fishing Pro- hibited Hours | Vehrs- Sipe | U.S. Commissioner Court 11/19/70 \$50 fine. |
| 08/09 | Dale Pelphrey Sunnyvale | Fishing w/o License | Vehrs- Sipe | Pending--Bench Warrant Issued. |
| 09/25 | Robert Simmons Concord | Fishing Pro- hibited Hours | Nail- Mayle | U.S. Commissioner 12/17/70 \$25 fine. |
| 09/25 | Jack Martin Castro Valley | Fishing Pro- hibited Hours | Nail- Mayle | U.S. Commissioner 12/17/70 \$25 fine. |
| 10/07 | Mike Prien Los Banos | Hunting closed Area | Nail | U.S. Commissioner 01/05/71 \$25 fine. |
| 10/17 | Mike Solgaard Los Banos | Hunting closed Area | Nail | U.S. Commissioner 01/05/71 Work 8 hrs. on Refuge. |

(Continued)

| Date | Name | Violation | Agent | Disposition |
|-------|--|-----------------------------|----------------|---|
| 10/17 | Rocky Rocha Los Banos | Hunting Closed Area | Nail | U.S. Commissioner 01/05/71 Work 8 hrs. on Refuge. |
| 10/17 | Randy Rose Los Banos | Hunting Closed Area | Nail | U.S. Commissioner 01/05/71 Work 8 hrs. on Refuge. |
| 10/31 | Galen Hallett Los Altos | Hunting Closed Area | Sipe | U.S. Commissioner 01/05/71 \$25 fine. |
| 10/31 | Barrett Hart Mountain View | Trespass | Sipe | U.S. Commissioner 12/17/70 \$25 fine. |
| 11/08 | Jan Smotherman Redwood City | Hunting Closed Area | Vehrs | U.S. Commissioner 12/21/70 \$25 fine. |
| 11/08 | Charles Davenport Redwood City | Hunting Closed Area | Vehrs | U.S. Commissioner 12/17/70 \$25 fine. |
| 11/08 | Thomas Daven- port, Redwood City | Hunting Closed | Vehrs | U.S. Commissioner 12/17/70 \$25 fine. |
| 11/08 | David Moore Redwood City | Hunting Closed Area | Vehrs | U.S. Commissioner 12/17/70 \$25 fine. |
| 11/08 | Theofanis Tsaboukos San Jose | Killing Sandhill Cranes | Vehrs | U.S. Commissioner 12/12/70 \$25 fine. |
| 11/08 | Carlo Del Giorgio San Jose | Shooting Sandhill Cranes | Vehrs | U.S. Commissioner 12/21/70 \$25 fine. |
| 11/08 | Tony Pappas San Jose | Shooting Sandhill Cranes | Vehrs | U.S. Commissioner 12/21/70 \$50 fine. |
| 11/15 | Stanley Gesario Los Banos | Shooting after hours | Vehrs- Sipe | Juvenile--Not Prosecuted |
| 11/15 | Christophes Gesario, Los Banos | Shooting after hours | Vehrs- Sipe | Juvenile--Not Prosecuted |

(Continued)

| Date | Name | Violation | Agent | Disposition |
|-------|-----------------------------------|-----------------------------|----------------|---|
| 11/15 | Sherman Burns Dos Palos | Shooting After Hours | Vehrs- Sipe | U.S. Commissioner 01/05/71 \$50 fine. |
| 11/15 | Donald McCullough | Shooting After Hours | Vehrs- Sipe | U.S. Commissioner 01/05/71 \$50 fine. |
| 11/15 | Roger Lambert Winton | Shooting After Hours | Vehrs- Sipe | Pending <i>U.S. ATTORNEY Declined Prosecution</i> |
| 11/15 | Lex Freitas Atwater | Shooting After Hours | Vehrs- Sipe | Pending <i>U.S. ATTORNEY Declined Prosecution</i> |
| 11/21 | Herbert Edmon- son, San Rafael | Hunting w/o State Permit | Vehrs | Pending <i>U.S. COMM. 4/23/71 \$25 FINE</i> |
| 11/22 | Patrick Gorman Atwater | Shooting after Hours | Vehrs | U.S. Commissioner 01/05/71 \$10 fine. |
| 11/22 | Louis Williams Merced | Shooting after Hours | Vehrs | U.S. Commissioner 01/05/71 \$50 fine. |
| 11/25 | Russell Allan San Jose | Hunting Closed Area | Nail- Mayle | U.S. Commissioner 01/05/71 \$25 fine. |
| 11/27 | Larry Parady St. Helena | Shooting After Hours | Sipe | U.S. Commissioner 01/05/71 \$50 fine. |
| 12/06 | Don Farnham Los Banos | Shooting after Hours | Sipe- Mayle | Juvenile-Not Prosecuted |
| 12/06 | Chester Crocker Los Banos | Shooting After Hours | Sipe- Mayle | Pending - <i>BENCH WARRANT ISSUED</i> |
| 12/06 | William Canady Los Banos | Shooting After Hours | Sipe- Mayle | Pending <i>U.S. COMM. 4/23/71 \$50 FINE</i> |
| 12/20 | Milton Beach Morgan Hill | Hunting Closed Area | Mayle | Pending <i>U.S. COMM. 4/23/71 \$25 FINE</i> |
| 12/20 | Robert Beach Morgan Hill | Hunting Closed Area | Mayle | Juvenile-Not Prosecuted |
| 12/23 | Howard Sobrera Cupertino | Possession of Yellowlegs | Sipe | Pending <i>U.S. COMM. 4/23/71 \$50 FINE</i> |
| 12/26 | Audrey Hunter Dinuba | Killing Sandhill Crane | Mayle | Pending <i>U.S. COMM. 4/24/71 \$25 FINE</i> |

(Continued)

| <u>Date</u> | <u>Name</u> | <u>Violation</u> | <u>Agent</u> | <u>Disposition</u> |
|-------------|-------------------------------|--------------------------|--------------|---|
| 12/26 | Greg Dafoe Sunnyvale | Possession of Bittern | Mayle | Pending <i>U.S. Comm. 2/23/71 \$25 Fine</i> |
| 01/02/71 | Kerry Grissom Baldwin Park | Possession of Grebe | Nunes*** | Pending |

* California Dept. of Fish and Game, Warden - Barney Bryan

** California Dept. of Fish and Game, Warden - Bob Hudson

*** California Dept. of Fish and Game - Joe Nunes

F. Safety:

Joint safety meetings of all San Luis, Merced and Kesterson Refuges personnel were held each month during the year. The San Luis Refuge Station Safety Plan was revised during the year to include the total San Luis Complex of refuges.

In accordance with Bureau instructions, roll-bar canopies were installed on five crawler tractors. One more crawler tractor still remains to be done, but we will be able to operate without this tractor until next fiscal year when hopefully funds will be available to purchase the roll-bar canopy.

On July 20, all refuge employees attended a Defensive Driving (Refresher Course) training session, sponsored by the Bureau of Reclamation.

On November 16-17, all personnel except Clerk-Typist Jo Ann Barger and Maintenceman Edgar Derrick attended a Bureau of Mines First Aid Class sponsored by the Bureau of Reclamation.

On November 19, Clerk-Typist Jo Ann Barger, Maintenceman George Freeman, and Maintenceman Harvey Haynes, attended the Basic Defensive Driving Course also sponsored by the Bureau of Reclamation.

Two minor accidents to refuge employees occurred during the year. None, however, resulted in a lost-time accident. On March 16, Melvin Ford got dirt particles in his eye. Doctors services were required for removal. On October 26, Edgar Derrick sprained his back while lifting a battery out of a tractor.

Two fatalities occurred on the refuge during the year. Neither involved refuge personnel. On March 5, Fred Villa was tending the permittee's cattle and was drowned when he attempted to cross Deadman Slough. Exact circumstances of his death are not known since he was alone at the time of the accident.

A fisherman, Woodrow Ables, was killed on June 5, when he was crushed between two cars. Mr. Woodrow Ables car would not start and he got Mr. Claude Ables to pull it. After the car started, Woodrow Ables was unhooking the chain when the two cars came together and crushed him.

A less serious vehicle accident occurred to another refuge visitor on November 21. Mr. Curtis Chaney was driving to a hunter parking lot in dense fog at 4:30 a.m. He was unable to see the road and he ran off the road wrecking his pickup and camper.

The combined lost-time accident record for the San Luis Complex at the end of the year was 462-days.

VII. OTHER ITEMS

A. Items of Interest:

Miss Cathy Osugi, to our knowledge, became the first female student trainee with the Division of Wildlife Refuges in Region 1 on June 8. Cathy was outstanding in all respects. Some of you male biologists and refuge managers better knuckle down to work because they do have what it takes.

Clerk-Typist Ann McConnell transferred to the Forest Service at Quincy, California on July 10. Ann's husband transferred from the Bureau of Reclamation to the Forest Service and Ann was also able to continue her government career with the Forest Service.

Jo Ann Barger filled the Clerk-Typist position on July 27. Jo Ann transferred from the Bureau of Reclamation and the move for her only involved moving down the hall. Jo Ann has seven years service with the Bureau of Reclamation. In addition to

the valuable experience Jo Ann brought with her she knows all the angles to scrounge goodies and services from Reclamation.

In November, Maintenance Foreman Jim Mayle received a 5-year Safety Award pin.

On January 9, 1971, Assistant Manager Steve Vehrs transferred to Modoc National Wildlife Refuge at Alturas, California.

B. Credits:

Credits for the preparation of this report are as follows:

Refuge Manager Nail - Sections III, IV, VI and VII.

Wildlife Biologist Sipe - Sections I, II and V.

Clerk-Typist Barger - Edited, typed and assembled the entire report.

Maintenance Foreman Mayle - Provided many helpful notes and assisted in locating and compiling much information for the body of the report.

Photograph credits are shown with each photograph in the photograph section.

WATERFOWL

REFUGE San Luis National Wildlife Refuge

MONTHS OF January through April, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|---------------------|----------------------------------|---------|---------|---------|--------|--------|---------|---------|--------|--------|
| | 1/4-10 | 1/11-17 | 1/18-24 | 1/25-31 | 2/1-7 | 2/8-14 | 2/15-21 | 2/22-28 | 3/1-7 | 3/8-14 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Swans: | | | | | | | | | | |
| Whistling Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | 50 | 50 | 25 | | | | | | | |
| Cackling | 7,000 | 7,000 | 3,000 | 1,750 | 1,750 | 1,800 | 9,000 | 9,000 | 6,000 | 3,750 |
| Brant | | | | | | | | | | |
| White-fronted | 200 | 200 | 250 | 675 | 675 | 500 | 275 | 275 | 500 | 650 |
| Snow | 2,000 | 2,000 | 1,500 | 700 | 700 | 1,000 | 10,000 | 10,000 | 4,000 | 2,000 |
| Ross | 200 | 200 | 200 | 150 | 150 | 100 | | | | |
| Total | 9,450 | 9,450 | 4,975 | 3,275 | 3,275 | 3,400 | 19,275 | 19,275 | 10,500 | 6,400 |
| Ducks: | | | | | | | | | | |
| Mallard | 30,000 | 30,000 | 15,000 | 4,200 | 4,200 | 3,700 | 2,900 | 1,750 | 800 | 400 |
| Black | | | | | | | | | | |
| Gadwall | 4,000 | 4,000 | 2,500 | 300 | 300 | 300 | 200 | 200 | 175 | 175 |
| Baldpate | 15,000 | 15,000 | 10,000 | 450 | 450 | 2,500 | 4,500 | 2,800 | 1,250 | 675 |
| Pintail | 20,000 | 20,000 | 10,000 | 7,000 | 5,200 | 4,000 | 3,875 | 2,250 | 900 | 425 |
| Green-winged teal | 30,000 | 30,000 | 10,000 | 2,500 | 2,000 | 2,000 | 1,900 | 1,200 | 950 | 725 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 500 | 500 | 600 | 700 | 850 | 900 | 1,150 | 950 | 700 | 450 |
| Shoveler | 100,000 | 100,000 | 25,000 | 5,000 | 1,350 | 1,100 | 950 | 1,200 | 1,550 | 2,050 |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | 250 | 250 | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | 500 | 500 | 250 | 150 | 150 | 150 | 100 | 100 | 100 | 100 |
| Other | | | | | | | | | | |
| Total | 200,250 | 200,250 | 73,350 | 20,300 | 14,500 | 14,650 | 15,575 | 10,450 | 6,425 | 5,000 |
| Coot: | | | | | | | | | | |
| | 5,000 | 5,000 | 8,000 | 5,000 | 2,750 | 3,000 | 3,000 | 3,000 | 3,500 | 3,750 |

Cont. R-1
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WATERFOWL
(Continuation Sheet)

REFUGE San Luis National Wildlife Refuge

MONTHS OF January through April, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production Broods: Estimated seen : total | |
|-------------------|----------------------------------|---------|----------|--------|---------|---------|----------|--|---|--|--|
| | 3/15-21 | 3/22-28 | 3/29-4/4 | 4/5-11 | 4/12-18 | 4/19-25 | 4/26-5/2 | | | | |
| Swans: | | | | | | | | | | | |
| Whistling | | | | | | | | | | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | | 875 | | |
| Cackling | 2,300 | 2,000 | 1,100 | | | | | | 388,150 | | |
| Brant | | | | | | | | | | | |
| White-fronted | 375 | 350 | 325 | 500 | 725 | | | | 45,325 | | |
| Snow | 8,050 | 5,500 | 1,500 | | | | | | 342,650 | | |
| Ross | | | | | | | | | 7,000 | | |
| Total | 10,725 | 7,850 | 2,925 | 500 | 725 | | | | 784,000 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 175 | 175 | 150 | 150 | 175 | 200 | 250 | | 659,575 | | |
| Black | | | | | | | | | | | |
| Gadwall | 125 | 75 | 50 | 75 | 100 | 75 | 50 | | 88,900 | | |
| Baldpate | 450 | 300 | 250 | 250 | 250 | 125 | 75 | | 380,275 | | |
| Pintail | 275 | 200 | 150 | 125 | 100 | 75 | 50 | | 522,375 | | |
| Green-winged teal | 875 | 900 | 1,000 | 750 | 450 | 300 | 100 | | 599,550 | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 400 | 350 | 275 | 200 | 175 | 150 | 125 | | 62,825 | | |
| Shoveler | 1,300 | 1,200 | 1,050 | 800 | 575 | 350 | 125 | | 1,705,200 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | 3,500 | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | 100 | 50 | 50 | 50 | 50 | 25 | 25 | | 17,150 | | |
| Other | | | | | | | | | | | |
| Total | 3,700 | 3,250 | 2,975 | 2,400 | 1,875 | 1,300 | 800 | | 4,039,350 | | |
| Coot: | | | | | | | | | | | |
| | 3,500 | 3,000 | 2,800 | 2,000 | 1,400 | 1,000 | 850 | | 395,850 | | |

3'200 3'000 5'200 5'000 1'400 1'000 820 322'820

| | (5) | (6) | (7) |
|------------------|---------------|------------------|-----|
| Total Days Use : | Peak Number : | Total Production | |
| Swans | | | |
| Geese | 784,000 | 19,275 | |
| Ducks | 4,039,350 | 200,250 | |
| Coots | 395,850 | 8,000 | |
| | 5, 219, 200 | | |

SUMMARY

Principal feeding areas Ducks used marsh areas and millet fields. Geese used Teal Lake, millet fields and upland.

Principal nesting areas

Reported by Gene A. Sipe

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) **Species:** In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) **Weeks of Reporting Period:** Estimated average refuge populations.
- (3) **Estimated Waterfowl Days Use:** Average weekly populations x number of days present for each species.
- (4) **Production:** Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) **Total Days Use:** A summary of data recorded under (3).
- (6) **Peak Number:** Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) **Total Production:** A summary of data recorded under (4).

(CONTINUATION SHEET)
MULTIPLE COPY

W A T E R F O W L

REFUGE San Luis National Wildlife Refuge

MONTHS OF May THROUGH August, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|---------------------|----------------------------------|------------------|------------------|------------------|-------------------|-----------------|------------------|------------------|-------------------|------------------|
| | : 5/3-9 : 1 | : 5/10-16 : 2 | : 5/17-23 : 3 | : 5/24-30 : 4 | : 5/31-6/6 : 5 | : 6/7-13 : 6 | : 6/14-20 : 7 | : 6/21-27 : 8 | : 6/28-7/4 : 9 | : 7/5-11 : 10 |
| Swans: | | | | | | | | | | |
| Whistling Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | | | | |
| Cackling | | | | | | | 4 | 4 | 4 | 4 |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Total | | | | | | | 4 | 4 | 4 | 4 |
| Ducks: | | | | | | | | | | |
| Mallard | 250 | 300 | 400 | 300 | 250 | 175 | 140 | 150 | 200 | 225 |
| Black | | | | | | | | | | |
| Gadwall | 50 | 100 | 150 | 100 | 75 | 100 | 135 | 125 | 125 | 150 |
| Baldpate | 75 | 50 | 25 | 25 | 10 | | | | | |
| Pintail | 50 | 25 | 25 | 25 | 25 | 25 | | | | |
| Green-winged teal | 100 | 50 | 25 | 35 | 35 | | | | | |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 125 | 150 | 175 | 175 | 175 | 150 | 135 | 150 | 150 | 200 |
| Shoveler | | | | | | | | | | |
| Wood | | | | | | | | | | |
| Redhead | | | 10 | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | 25 | 25 | 25 | 10 | 10 | 10 | 5 | | | |
| Other | | | | | | | | | | |
| Total | 800 | 777 | 885 | 720 | 620 | 460 | 415 | 425 | 475 | 600 |
| Coot: | | | | | | | | | | |
| | 850 | 650 | 525 | 350 | 100 | 75 | 30 | 30 | 25 | 25 |

WATERFOWL
(Continuation Sheet)

REFUGE San Luis National Wildlife Refuge

MONTHS OF May THROUGH August, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production Broods: Estimated seen : total | |
|---------------------|----------------------------------|---------|----------|-----------|--------|---------|---------|----------|---|--|-----|
| | 7/12-18 | 7/19-25 | 7/26-8/1 | 8/2-8 | 8/9-15 | 8/16-22 | 8/23-29 | 8/30-9/5 | | | |
| Swans: | | | | | | | | | | | |
| Whistling Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | | | | |
| Cackling | | | | | | | | | 112 | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Total | | | | | | | | | 112 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 300 | 350 | 500 | 750 | 1,600 | 2,500 | 5,000 | | 93,730 | 13 | 225 |
| Black | | | | | | | | | | | |
| Gadwall | 175 | 175 | 150 | 150 | 200 | 400 | 500 | | 20,020 | 10 | 200 |
| Baldpate | | | | | | | | | 1,295 | | |
| Pintail | 25 | 25 | 50 | 75 | 5,000 | 8,500 | 10,000 | | 167,125 | 0 | 25 |
| Green-winged teal | 25 | 25 | | | | | | | 2,065 | | |
| Blue-winged teal | | | | | | | | | 14 | | |
| Cinnamon teal | 250 | 250 | 200 | 175 | 150 | 100 | 250 | | 20,720 | 15 | 300 |
| Shoveler | 25 | | | | | | | | 2,555 | 1 | 25 |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | | | | | | | | | | | |
| Merganser | 1 | 1 | 1 | 1 | | | | | 770 | | |
| Total | 801 | 326 | 901 | 1,151 | 6,950 | 11,500 | 15,750 | | 308,392 | 39 | 775 |
| Coot: | | | | | | | | | | | |
| | 25 | 25 | 50 | (over) 75 | 25 | 25 | 25 | | 20,370 | 0 | 25 |

| | (5) | (6) | (7) |
|-------|----------------|-------------|------------------|
| | Total Days Use | Peak Number | Total Production |
| Swans | | | |
| Geese | 112 | 4 | 0 |
| Ducks | 308,392 | 15,750 | 775 |
| Coots | 20,370 | 850 | 25 |
| | <u>328,874</u> | | |

SUMMARY

Principal feeding areas Moffatt Field and millet fields.

Principal nesting areas Moffatt Field and Big Lake area.

Reported by Gene A. Sipe

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

WATERFOWL

REFUGE San Luis National Wildlife Refuge

MONTHS OF September through December, 1950

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|-------------------|----------------------------------|--------|---------|---------|-----------|---------|----------|----------|----------|---------|
| | 8/30-9/5 | 9/6-12 | 9/13-19 | 9/20-26 | 9/27-10/3 | 10/4-10 | 10/11-17 | 10/18-24 | 10/25-31 | 11/1-7 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Swans: | | | | | | | | | | |
| Whistling | | | | | | | | | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | 5 | | | |
| Cackling | 3 | 3 | 3 | 20 | 3 | 3 | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | 25 | 25 | |
| Snow | | | | | | 5 | 5 | | 75 | 150 |
| Blue | | | | | | | | | | |
| Total | 3 | 3 | 3 | 20 | 3 | 8 | 10 | 25 | 100 | 150 |
| Ducks: | | | | | | | | | | |
| Mallard | 2,000 | 3,150 | 5,500 | 7,500 | 5,850 | 4,700 | 3,800 | 60,700 | 60,000 | 50,900 |
| Black | | | | | | | | | | |
| Gadwall | 1,000 | 1,500 | 1,500 | 1,250 | 375 | 800 | 350 | 7,000 | 10,000 | 13,200 |
| Baldpate | | | 100 | 100 | | 150 | 100 | 2,000 | 5,000 | 12,000 |
| Pintail | 15,000 | 35,000 | 30,000 | 30,000 | 15,000 | 22,000 | 7,000 | 289,300 | 225,000 | 195,800 |
| Green-winged teal | 2,500 | 4,700 | 4,500 | 4,100 | 3,300 | 7,000 | 675 | 99,500 | 85,000 | 81,300 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 500 | 700 | 1,000 | 1,750 | 1,000 | 2,000 | 250 | 2,000 | 3,000 | 5,500 |
| Shoveler | | | 100 | 400 | 600 | 350 | 400 | 10,000 | 10,000 | 11,100 |
| Wood | 25 | | 10 | 10 | 10 | | | 100 | 100 | 100 |
| Redhead | | | | | | | | 100 | 100 | |
| Ring-necked | | | | | | | | 200 | 200 | 100 |
| Canvasback | | | | | | | | 300 | 300 | 300 |
| Scaup | | | | | | | 10 | 100 | 100 | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | 10 | 25 | 25 | 25 | 25 | 75 | 50 | 200 | 200 | 300 |
| Other | | | | | | | | | | |
| Total | 21,035 | 45,075 | 42,735 | 45,135 | 26,160 | 37,075 | 12,635 | 471,500 | 399,000 | 370,600 |
| Coot: | | | | | | | | | | |
| | 150 | 400 | 1,000 | 2,400 | 4,850 | 5,500 | 3,100 | 6,000 | 6,000 | 6,000 |

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(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE San Luis National Wildlife Refuge

MONTHS OF September through December, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production Broods: Estimated seen : total |
|-------------------|----------------------------------|----------|----------|------------|------------|----------|----------|----------|---|--|
| | 11/8-14 | 11/15-21 | 11/22-28 | 11/29-12/5 | 12/6-12/13 | 12/13-19 | 12/20-26 | 12/27-31 | | |
| Swans: | | | | | | | | | | |
| Whistling | | | 5 | 20 | | | 15 | 25 | 405 | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | 50 | 15 | 25 | 50 | 50 | 1,265 | |
| Cackling | 250 | 1,000 | 1,000 | 800 | 4,000 | 4,500 | 5,000 | 5,500 | 143,595 | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | 100 | 200 | 250 | 250 | 5,450 | |
| Snow | 50 | | | | 300 | 800 | 1,800 | 4,000 | 42,295 | |
| Ross | 25 | | | | 100 | 100 | 150 | 200 | 3,625 | |
| Total | 325 | 1,000 | 1,000 | 850 | 4,515 | 5,625 | 7,250 | 10,000 | 196,230 | |
| Ducks: | | | | | | | | | | |
| Mallard | 57,000 | 71,200 | 65,000 | 50,100 | 65,000 | 70,300 | 65,000 | 61,000 | 4,838,900 | |
| Black | | | | | | | | | | |
| Gadwall | 20,000 | 28,500 | 50,000 | 60,000 | 45,000 | 35,000 | 15,000 | 9,500 | 2,080,825 | |
| Baldpate | 15,000 | 15,000 | 15,000 | 10,000 | 15,000 | 30,050 | 31,000 | 32,000 | 1,213,500 | |
| Pintail | 195,000 | 200,100 | 150,000 | 200,000 | 200,000 | 175,000 | 150,000 | 111,000 | 15,494,400 | |
| Green-winged teal | 85,000 | 100,150 | 75,000 | 95,000 | 100,000 | 125,000 | 110,000 | 102,000 | 7,389,075 | |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 4,500 | 3,000 | 2,500 | 2,000 | 1,500 | 1,000 | 1,000 | 1,000 | 237,400 | |
| Shoveler | 20,000 | 35,000 | 75,000 | 110,000 | 125,000 | 150,025 | 100,000 | 92,000 | 4,995,825 | |
| Wood | | | | | | | | | 2,485 | |
| Redhead | | | | | | | | | 1,400 | |
| Ring-necked | | | | | | | | | 3,500 | |
| Canvasback | 150 | | | | | | | | 7,350 | |
| Scaup | | | | | | | | | 1,470 | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | 250 | 250 | 300 | 300 | 400 | 500 | 19,545 | |
| Merganser | | | | | | 50 | 50 | 50 | 950 | |
| Total | 396,650 | 452,950 | 432,750 | 527,350 | 551,800 | 586,725 | 472,450 | 409,050 | 36,286,625 | |
| Coot: | | | | | | | | | | |
| | 6,000 | 6,500 | 6,500 | 7,200 | over 7,000 | 6,000 | 6,000 | 6,000 | 594,200 | |

| | (5) | (6) | (7) | SUMMARY | |
|-------|----------------|-------------|------------------|-------------------------|----------------------------------|
| | Total Days Use | Peak Number | Total Production | | |
| Swans | 455 | 25 | | Principal feeding areas | Loaf Lake area, Moffatt Field |
| Geese | 216,230 | 10,000 | | | and Millet fields. |
| Ducks | 37,104,725 | 586,725 | | Principal nesting areas | |
| Coots | 606,200 | 7,200 | | | |
| | 37,927,410 | | | Reported by | Gene A. Sipe, Wildlife Biologist |
| 1970 | | | | | |
| TOTAL | 43,475,684 | | | | |

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

MIGRATORY BIRDS

(other than waterfowl)

Refuge San Luis N.W.R.

Months of January through April 1970

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|---|-------------------|------|---------------------|------|------------------|------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Pied-billed Grebe | Resident | | 4 | 3/13 | | | | | | 75 |
| White Pelican | 200 | 2/2 | 250 | 3/31 | 250 | 3/31 | | | | 300 |
| Great Blue Heron | Resident | | 53 | 3/18 | | | | | | 1,000 |
| Common Egret | Resident | | 10 | 3/18 | | | | | | 150 |
| Snowy Egret | Resident | | 35 | 3/31 | | | | | | 200 |
| Black-crowned Night Heron | Resident | | 150 | 2/16 | | | | | | 400 |
| American Bittern | Resident | | 4 | 3/13 | | | | | | 50 |
| Sandhill Crane | | | 89 | 2/12 | 30 | 3/18 | | | | 250 |
| Virginia Rail | Resident | | 3 | 4/30 | | | | | | 75 |
| Common Gallinule | Resident | | 10 | 2/6 | | | | | | 175 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 50 | 3/31 | | | | | | 250 |
| Common Snipe | | | 5 | 3/31 | Still Present | | | | | 75 |
| Long-billed Curlew | | | 125 | 3/18 | Still Present | | | | | 400 |
| Greater Yellowlegs | | | 10 | 3/18 | Still Present | | | | | 50 |
| Least Sandpiper | | | 125 | 4/17 | Still Present | | | | | 500 |
| Dunlin | | | 625 | 3/18 | Still Present | | | | | 2,000 |
| Dowitcher | | | 640 | 3/31 | Still Present | | | | | 2,000 |
| Western Sandpiper | | | 200 | 4/17 | Still Present | | | | | 750 |
| American Avocet | 3 | 2/16 | 150 | 3/31 | Still Present | | | | | 500 |
| Black-necked Stilt | | | 20 | 3/31 | Still Present | | | | | 125 |
| California Gull | | | 75 | 3/31 | Still Present | | | | | 150 |
| Ring-billed Gull | | | 45 | 4/17 | Still Present | | | | | 125 |
| Forester's Tern | 2 | 4/30 | 2 | 4/30 | Still Present | | | | | 10 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|------|------|---------------|-----|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | Resident | 3 | 3/31 | | 150 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | | | | | |
| Duck hawk | | | | | |
| Horned owl | Resident | 3 | 3/31 | | 50 |
| Magpie | Resident | 10 | 2/11 | | 100 |
| Yellow-billed Raven | | | | | |
| Crow | | | | | |
| Cooper's Hawk | Resident | 3 | 2/2 | | 10 |
| Red-tailed Hawk | Resident | 14 | 3/18 | | 50 |
| Swainson's Hawk | 2 | 4/17 | 2 | 4/17 | 4 |
| Marsh Hawk | Resident | 2 | 2/6 | Still Present | 25 |
| Sparrow Hawk | Resident | 15 | 2/2 | | 75 |

Reported by Gene A. Sipe

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

MIGRATORY BIRDS
(other than waterfowl)

Refuge San Luis National Wildlife Refuge Months of..... May..... through..... August..... 1970.....

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|---|-------------------|------|---------------------|------|------------------|------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Pied-billed Grebe | Resident | | 8 | 8/4 | | | | | 10 | 25 |
| White Pelican | 350 | 5/20 | 500 | 6/30 | | | | | | 800 |
| Great Blue Hron | Resident | | 84 | 6/5 | | | | | | 175 |
| Common Egret | Resident | | 1 | 5/20 | | | | | | 25 |
| Snowy Egret | Resident | | 107 | 7/17 | | | | | | 250 |
| Black-crowned Night Heron | Resident | | 91 | 5/20 | | | | | | 200 |
| American Bittern | Resident | | 1 | 6/18 | | | | | | 10 |
| Common Gallinule | | | 7 | 8/4 | | | | | | 25 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 72 | 8/4 | | | | | 100 | 300 |
| Long-billed Curlew | | | 25 | 7/17 | | | | | | 100 |
| Greater Yellowlegs | | | 27 | 7/17 | | | | | | 75 |
| Least Sandpiper | 245 | 8/4 | 245 | 8/4 | | | | | | 400 |
| Long-billed Dowitcher | 27 | 7/17 | 525 | 8/21 | | | | | | 775 |
| Western Sandpiper | 150 | 7/17 | 150 | 7/17 | | | | | | 250 |
| Wilson's Phalarope | 15 | 8/4 | 15 | 8/4 | | | | | | 40 |
| American Avocet | | | 159 | 8/4 | | | | | 30 | 400 |
| Black-necked Stilt | | | 68 | 8/4 | | | | | 15 | 300 |
| California Gull | | | 10 | 8/4 | | | | | | 75 |
| Ring-billed Gull | | | 51 | 6/5 | | | | | | 125 |
| Forester's Tern | 2 | 8/21 | 2 | 8/21 | | | | | | 10 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|------|------|------|-----------|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | | 200 | 8/21 | | 100 1,500 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | | | | | |
| Duck hawk | | | | | |
| Horned owl | Resident | 2 | 8/21 | | 13 20 50 |
| Magpie, Yellow-billed | Resident | 4 | 5/20 | | 25 |
| Raven | | | | | |
| Crow | | | | | |
| White-tailed Kite | 1 | 7/30 | 1 | 7/30 | 5 |
| Red-tailed Hawk | Resident | 16 | 8/4 | | 18 35 75 |
| Swainson's Hawk | | 5 | 7/17 | | 1 4 10 |
| Marsh Hawk | Resident | 5 | 8/4 | | 25 |
| Sparrow Hawk | Resident | 4 | 5/20 | | 50 200 |

Reported by..... Gene A. Sipe

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

MIGRATORY BIRDS

(other than waterfowl)

Refuge..... San Luis NWR

Months of September through December 19 70

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|---|-------------------|-------|---------------------|-------|------------------|------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Eared Grebe | 1 | 10/16 | 1 | 12/6 | | | | | | 10 |
| Pied-billed Grebe | Resident | | 25 | 12/15 | | | | | | 150 |
| White Pelican | 60 | 10/2 | 200 | 10/16 | | | | | | 250 |
| Great Blue Heron | Resident | | 44 | 10/2 | | | | | | 75 |
| Common Egret | Resident | | 15 | 10/16 | | | | | | 50 |
| Snowy Egret | Resident | | 40 | 9/11 | | | | | | 100 |
| Black-crowned Night Heron | Resident | | 150 | 12/15 | | | | | | 200 |
| American Bittern | Resident | | 3 | 10/9 | | | | | | 40 |
| Sandhill Crane | 26 | 9/13 | 4,000 | 11/18 | | | | | | 5,000 |
| Common Gallinule | Resident | | 6 | 10/2 | | | | | | 75 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 119 | 10/9 | | | | | | 350 |
| Common Snipe | | | 4 | 10/9 | | | | | | 150 |
| Long-billed Curlew | | | 30 | 12/15 | | | | | | 100 |
| Greater Yellowlegs | | | 22 | 10/2 | | | | | | 75 |
| Least Sandpiper | | | 300 | 10/16 | | | | | | 800 |
| Dunlin | 150 | 12/15 | 150 | 12/15 | | | | | | 250 |
| Long-billed Dowitcher | | | 1,225 | 10/16 | | | | | | 3,000 |
| Western Sandpiper | | | 60 | 12/15 | | | | | | 400 |
| Black-necked Stilt | | | 10 | 9/23 | | | | | | 50 |
| American Avocet | | | 115 | 9/23 | | | | | | 350 |
| Ring-billed Gull | | | 27 | 10/16 | | | | | | 100 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|------|------|-----------|-----|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | | 76 | 9/11 | | 400 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | 1 | 9/28 | 1 | 10/2&11/9 | 5 |
| Duck hawk | | | | | |
| Horned owl | Resident | | 1 | 9/11 | 30 |
| Magpie: Yellow-billed | Resident | | 7 | 10/16 | 75 |
| Raven | | | | | |
| Crow | | | | | |
| White-tailed Kite | | | 2 | 12/7 | 4 |
| Cooper's Hawk | | | 1 | 10/16 | 2 |
| Red-tailed Hawk | Resident | | 18 | 10/16 | 75 |
| Swainson's Hawk | | | 6 | 10/16 | 10 |
| Marsh Hawk | Resident | | 8 | 10/9 | 30 |
| Sparrow Hawk | Resident | | 6 | 10/9 | 50 |
| Short-eared Owl | 1 | 9/11 | 2 | 12/23 | 10 |

Reported by Gene A. Sipe, Wildlife Biologist....

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750b
 Form NR-1B
 (Rev. Nov. 1957)

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge San Luis N. W. R. For 12-month period ending August 31, 19 70

Reported by Gene A. Sipe Title Wildlife Biologist

| (1) Area or Unit Designation | (2) Habitat | | | (3) Use-days | (4) Breeding Population | (5) Production |
|------------------------------------|----------------|---------|-------|-----------------|-------------------------------|-------------------|
| | Type | Acreage | | | | |
| I | Crops | 175 | Ducks | 16,911,744 | 80 | 75 |
| | Upland | 2,745 | Geese | 767,345 | | |
| | Marsh | 1,600 | Swans | 7 | | |
| | Water | 160 | Coots | 376,018 | | |
| | Total | 4,680 | Total | 18,055,114 | 80 | 75 |
| II | Crops | 0 | Ducks | 11,274,498 | 400 | 700 |
| | Upland | 1,000 | Geese | 255,782 | | |
| | Marsh | 1,560 | Swans | 0 | | |
| | Water | 120 | Coots | 407,352 | 20 | 25 |
| | Total | 2,680 | Total | 11,937,632 | 420 | 725 |
| Totals | Crops | 175 | Ducks | 28,186,242 | 480 | 775 |
| | Upland | 3,745 | Geese | 1,023,127 | | |
| | Marsh | 3,160 | Swans | 7 | | |
| | Water | 280 | Coots | 783,370 | 20 | 25 |
| | Total | 7,360 | Total | 29,992,746 | 500 | 800 |
| | 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.

Refuge San Luis National Wildlife Refuge

Year 19 70

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 10/17-21 | 715 | 2,860 | Green-winged teal (461); Pintail (400); Mallard (189); Shoveler (153); Gadwall (132); Cinnamon Teal (130); Baldpate (60); Canvasback (9); Ruddy (5); Coot (4); Ring-necked Duck (4); Redhead (1); Scaup (1) | 1,549 | 774 | 2,323 | 715 | 2,323 |
| 10/24-28 | 572 | 2,288 | Green-winged Teal (119); Pintail (63); Mallard (46); Gadwall (38); Baldpate (29); Cinnamon Teal (18); Coot (19); Shoveler (14); Ring-necked Duck (5); Ruddy (4); Canvasback (2); Scaup (1) | 358 | 179 | 537 | 572 | 537 |
| 10/31- 11/4 | 353 | 1,412 | Green-winged Teal (258); Pintail (172); Mallard (64); Baldpate (55); Shoveler (44); Gadwall (43); Ruddy (15); Coot (12); Cinnamon Teal (6); Ring-necked Duck (5); Canvas back (5); Scaup (2); Snow Goose (2); Buffle-head (1); Canada Goose (1) | 685 | 343 | 1,028 | 353 | 1,028 |
| 11/7-11 | 568 | 2,272 | Green-winged Teal (237); Mallard (105); Pintail (70); Cinnamon Teal (37); Baldpate (35); Gadwall (34); Shoveler (32); Coot (22); Canvasback (10); Ruddy (4); Ring-necked Duck (3); Scaup (2); Ross' Goose (2); Buffle-head (1) | 594 | 297 | 891 | 568 | 891 |
| 11/14-18 | 323 | 1,292 | Green-winged Teal (222); Mallard (60); Pintail (50); Gadwall (43); Baldpate (26); Shoveler (23); Coot (20); Cinnamon Teal (14); Canvasback (7); Ruddy (6); Cackling Goose (5); Ross' Goose (2); Redhead (1); Ring-necked Duck (1); Snow Goose (1) | 481 | 240 | 721 | 323 | 721 |

(over)

Refuge San Luis NWR

Year 19'70

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 11/21-25 | 339 | 1,356 | Green-winged Teal (176); Pintail (114); Mallard (105); Coot (50); Shoveler (46); Gadwall (44); Ruddy (35); Baldpate (25); Cinnamon Teal (13); Ring-necked Duck (7); White-fronted Goose (3); Canvasback (2); Cackling Goose (2); Scaup (1) | 623 | 312 | 935 | 339 | 935 |
| 11/28- 12/2 | 545 | 2,180 | Green-winged Teal (565); Shoveler (225); Mallard (215); Pintail (190); Gadwall (87); Baldpate (40); Coot (45); Cackling Goose (22); Snow Goose (22); Cinnamon-Teal (20); White-fronted Goose (6); Ring-necked Duck (4); Canvasback (4); Ross' Goose (3) | 1,447 | 723 | 2,170 | 545 | 2,170 |
| 12/5-9 | 435 | 1,740 | Green-winged Teal (408); Shoveler (88); Baldpate (66); Mallard (63); Gadwall (43); Coot (39); Ruddy (33); Cinnamon Teal (13); Cackling Goose (11); Snow Goose (4); Ring-necked Duck (3); Scaup (3); Redhead (2); White-fronted Goose (2); | 778 | 389 | 1,167 | 435 | 1,167 |
| 12/12-16 | 414 | 1,656 | Green-winged Teal (576); Shoveler (158); Baldpate (70); Gadwall (43); Pintail (43); Ruddy (25); Mallard (23); Coot (23); Cinnamon Teal (11); Cackling Goose (10); Snow Goose (5); Buffle-head (3); Ross' Goose (2); Wood Duck (1); American Merganser (1); Ring-necked Duck (1) | 995 | 498 | 1,493 | 414 | 1,493 |

(over)

Refuge San Luis NWR

Year 1970

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 12/19-23 | 479 | 1,916 | Green-winged Teal (433); Shoveler (237); Baldpate (66); Gadwall (58); Mallard (52); Coot (47); Pintail (40); Ruddy (30); Cinnamon Teal (10); Snow Goose (10); Ross' Goose (7); Canvasback (5); Ring-necked Duck (3); American Merganser (4); White-fronted Goose (2); Scaup (1) | 1,005 | 502 | 1,507 | 479 | 1,507 |
| 12/26-30 | 525 | 2,100 | Green-winged Teal (790); Shoveler (236); Baldpate (97); Gadwall (50); Mallard (36); Pintail (33); Ruddy (27); Snow Goose (23); Coot (21); Cinnamon Teal (8); Cackling Goose (5); White-fronted Goose (5); American Merganser (7); Ross' Goose (3); Scaup (2); Canada Goose (1) | 1,344 | 672 | 2,016 | 525 | 2,016 |
| 01/02-06 | 500 | 2,000 | Green-winged Teal (414); Shoveler (340); Baldpate (247); Pintail (192); Mallard (63); Gadwall (54); Snow Goose (42); Cackling Goose (24); Coot (23); Ross' Goose (19); Cinnamon Teal (18); White-fronted Goose (8); American Merganser (5); Ring-necked Duck (4); Canvasback (4); Golden-eye (2); Buffle-head (1); Canada Goose (1) | 1,461 | 731 | 2,192 | 500 | 2,192 |
| 01/09-13 | 603 | 2,412 | Green-winged Teal (955); Shoveler (357); Baldpate (333); Coot (77); Ruddy (73); Pintail (68); Cinnamon Teal (46); Mallard (28); Gadwall (24); Cackling Goose (20); Snow Goose (14); Ross' Goose (11); White-fronted Goose (6); Canvasback (2); Buffle-head (1); Ring-necked Duck (1); American Merganser (1) | 2,017 | 1,008 | 3,025 | 603 | 3,025 |

(over)

Refuge San Luis NWR

Year 1970

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|--|------------------------|---|----------------------|-------------------------------|---------------------------|
| 01/16-17 | 455 | 1,820 | Green-winged Teal (536); Baldpate (124); Shoveler (118); Cinnamon Teal (87); Pintail (44); Coot (43); Ruddy (42); Mallard (18); Gadwall (17); Cackling Goose (6); White-fronted Goose (5); American Merganser (4); Ross' Goose (2) | 1,046 | 523 | 1,569 | 455 | 1,569 |
| TOTALS: | 6,826 | 27,304 | Green-winged Teal (6,149); Shoveler (2,071); Pintail (1,479); Baldpate (1,273); Mallard (1,067); Gadwall (710); Coot (445); Cinnamon Teal (431); Ruddy (299); Snow Goose (123); Cackling Goose (105); Ross' Goose (51); Canvasback (50); Ring-neck (41); White-fronted goose (37); American Merganser (22); Scaup (13); Buffle head (7); Red-head (4); Canvasgoose (3); Golden eye (2); Wood Duck (1); | 14,383 | 7,191 Crippling Loss est. at 50% | 21,574 | 6,826 | 21,574 |

(over)

Refuge San Luis N.W.R.

Months of January through April, 19 70

* UPLAND GAME BIRDS - FORM NR-5

| (1) Species | (2) Density | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|----------------------|--|------------------------|-----------------|------------------|-----------------|-----------------|--------------|--------------|--|
| | | Number broods obs'y'd. | Estimated Total | | Hunting | For Re-stocking | For Research | | |
| Common Name | Cover types, total acreage of habitat | Acres per Bird | | Percentage | | | | | Pertinent information not specifically requested. List introductions here. |
| Calif. Quail | Wooded areas and adjacent upland, 300 acres. | 3 | | | | | 100 | | Total estimated from incidental observations only. |
| Ring-necked Pheasant | Cultivated fields, 60 acres and portions of upland, 5,000 acres. | 40.5 | | | | | 125 | | Total estimated from incidental observations only. |

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | (1) SPECIES: | Use correct common name. |
|---------------------|--|
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

Refuge San Luis National Wildlife Refuge Months of May through August, 19 70

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|---|----------------------|-----------------------------|--------------------|---------------------|-----------------|---------------------|-----------------|--|---|
| | | | Number broods obs'vd. | Estimated Total | | Hunting | For Re- stocking | For Research | | |
| Common Name | Cover types, total acreage of habitat | Acres per Bird | | | Percentage | | | | Estimated number using Refuge | Pertinent information not specificoally requested. List introductions here. |
| Calif. Quail | Wooded areas and adjacent upland, 300 acres. | 2 | 6 | 75 | | | | | 150 | Estimates from incidental observations. |
| Ring-necked Pheasant | Cultivated fields, 60 acres and por- tions of upland, 5,000 acres. | 33.7 | 10 | 50 | | | | | 100 | Estimates from incidental observations. |

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

Refuge San Luis NWR

Months of September through December, 19 70

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|---|----------------------|-----------------------------|--------------------|---------------------|-----------------|---------------------|-----------------|--|--|
| | | | | | | Hunting | For Re- stocking | For Research | | |
| Common Name | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'vd. | Estimated Total | Percentage | | | | Estimated number using Refuge | Pertinent information not specifically requested. List introductions here. |
| Calif. Quail | Wooded areas, 300 acres | 2 | | | | | | | 150 | Estimated from incidental observations. |
| Ring-necked Pheasant | Grain field, 175 acres. Uplands & marsh, 5,000 acres. | 51.75 | | | | | | | 100 | Estimated from incidental observations. |

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

Form R-3
(June 1945)

Refuge San Luis NWR

Calendar Year 1970

| (1) Species | (2) Density | (3) Young Produced | (4) Removals | | | (5) Losses | | | (6) Introductions | (7) Estimated Total Refuge Population | | (8) Sex Ratio |
|--|--|--------------------------|-----------------|---------------------|------|-----------------|-----------|---------|----------------------|--|--------|---------------------|
| | | | Hunting | For Re- stocking | Sold | For Research | Predation | Disease | | Winter Loss | Number | |
| Common Name | Cover types, total Acreage of Habitat | Number | | | | | | | | | | |
| No big game species inhabit this refuge or adjacent lands. | | | | | | | | | | | | |

Remarks:

Reported by Gene A. Sipe, Wildlife Biologist

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

| (1) Species Common Name | (2) Density | | (3) Removals | | | | | (4) Disposition of Furs | | | | | (5) Total Popula- tion | |
|-----------------------------------|---|------------------------|-----------------|----------------|-----------------------|---------------------|-------------------|----------------------------|-------------------|-----------------|------------------------------|--------------|---------------------------------|-------------------|
| | Cover Types & Total Acreage of Habitat | Acres Per Animal | Hunting | Fur Harvest | Predator Control * | For Re- stocking | For Re- search | Share Trapping | | | Total Refuge Furs Shipped | Furs Donated | | Furs Destroyed |
| | | | | | | | | Permit Number | Trappers Share | Refuge share | | | | |
| Muskrat | Marsh & water, 2,500a. | 2 | | | 50* | | | | | | | | | 1,200 |
| Mink | Marsh & water, 2,500a. | | | | | | | | | | | | | 10 |
| Striped Skunk | Upland & shallow Marsh, 5,860 a. | | | | | | | | | | | | | 25 |
| Longtail Weasel | " " | | | | | | | | | | | | | 25 |
| Coyote | " " | | | | | | | | | | | | | 15 |
| Kit Fox | " " | | | | | | | | | | | | | 2 |
| Raccoon | " " | | | | | | | | | | | | | 100 |
| Opossum | " " | | | | | | | | | | | | | 25 |
| Blacktail Jackrabbit | Upland, 4,860 acres | 9.7 | | | | | | | | | | | | 500 |
| Desert Cottontail | " " | 16 | | | | | | | | | | | | 300 |
| Badger | " " | | | | | | | | | | | | | 10 |
| Calif. Ground Squirrel | " " | 1 | | | 250* | | | | | | | | | 3,000 |

* List removals by Predator Animal Hunter

REMARKS: *Removed by refuge personnel for dike damage control

All population estimates are based on incidental observations only.

Reported by Gene A. Sipe

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

Refuge San Luis National Wildlife Refuge Year 19 70

Botulism

Lead Poisoning or other Disease

Period of outbreak None detected.

Period of heaviest losses _____

Losses:

| | Actual Count | Estimated |
|----------------|--------------|-----------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

| Number Hospitalized | No. Recovered | % Recovered |
|---------------------|---------------|-------------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

| | | |
|----------------|-------|-------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease Fowl cholera.

Species affected Ducks, geese and coots.

| Number Affected Species | Actual Count | Estimated |
|-------------------------|--------------|------------|
| Geese | <u>81</u> | <u>100</u> |
| Ducks | <u>27</u> | <u>50</u> |
| Coots | <u>47</u> | <u>100</u> |

Number Recovered 155

Number lost 250

Source of infection Infected immigrant birds.

Water conditions Fair.

Food conditions Good.

Remarks All recovered dead birds were burned and buried.

Refuge San Luis NWR

Year 19 70

| Species | Collections and Receipts (Seeds, rootstocks, trees, shrubs) | | | | | Plantings (Marsh - Aquatic - Upland) | | | | | | | |
|---------|--|---------------------|------|------------------------|------|---|-----------------------------|--------------------------------------|--|---------------------------------------|------|----------|------------------|
| | Amount (Lbs., bus., etc.) | (2) C or R | Date | Method or Source | Cost | (3) Total Amount on Hand | Location of Area Planted | Rate of Seeding or Planting | Amount Planted (Acres or Yards of Shoreline) | Amount and Nature of Propagules | Date | Survival | Cause of Loss |
| | Nothing to report. | | | | | | | | | | | | |

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Remarks: _____

Total acreage planted:

Marsh and aquatic _____

Hedgerows, cover patches _____

Food strips, food patches _____

Forest plantings _____

3-1758
 Form NR-8
 (Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge San Luis NWR County Merced State California

| Cultivated Crops Grown | Permittee's Share Harvested | | Government's Share or Return | | | | Total Acreage Planted | Green Manure, Cover and Water-fowl Browsing Crops Type and Kind | Total Acreage |
|------------------------|-----------------------------|----------|------------------------------|----------|-------------|----------|-----------------------|---|---------------|
| | Acres | Bu./Tons | Harvested | | Unharvested | | | | |
| | | | Acres | Bu./Tons | Acres | Bu./Tons | | | |
| | | | | | | | | | |
| | | | | | | | Fallow Ag. Land | | |

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 1

| Hay - Improved (Specify Kind) | Tons Harvested | Acres | Cash Revenue | GRAZING | Number Animals | AUM'S | Cash Revenue | ACREAGE |
|-------------------------------|----------------|-------|--------------|--|----------------|---------|--------------|---------|
| | | | | 1. Cattle | 1,167 | 9,118.8 | \$34,195.50 | 7,080 |
| | | | | 2. Cattle Horses | 8 | 38.6 | \$144.75 | 7,080 |
| | | | | 1. Total Refuge Acreage Under Cultivation | | | | |
| Hay - Wild | | | | 2. Acreage Cultivated as Service Operation | | | | |

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge San Luis NWR

1970
Months of January through December, ~~1955~~

| (1) VARIETY* | (2) ON HAND BEGINNING OF PERIOD | (3) RECEIVED DURING PERIOD | (4) TOTAL | (5) GRAIN DISPOSED OF | | | | (6) ON HAND END OF PERIOD | (7) PROPOSED OR SUITABLE USE* | | |
|--------------------|--|-------------------------------------|--------------|--------------------------|--------|-----|-------|------------------------------------|----------------------------------|------|---------|
| | | | | Transferred | Seeded | Fed | Total | | Seed | Feed | Surplus |
| Nothing to report. | | | | | | | | | | | |

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number _____ Reporting Year 1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

| Date(s) of Application | List of Target Pest(s) | Location of Area Treated | Total Acres Treated | Chemical(s) Used | Total Amount of Chemical Applied | Application Rate | Carrier and Rate | Method of Application |
|------------------------|-------------------------|---|---------------------|------------------|----------------------------------|--|--|-----------------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 3/3 | All Plants | Around all pump structures, buildings & signs. | 1/4 acre | Dichlobenil | 20 lbs. | 4% active ingredients 96% inert ingredients. | Granular | Hand spread |
| 3/19-30 | Annual broad-leaf weeds | Along San Joaquin & Lift Canal levees | 70 | 2-4-D | 47 gal. | 2/3 gal/acre | H ₂ O 10 gal/ 190 gal | Tank sprayer |
| 5/12&13 | Annual broad-leaf weeds | Along San Joaquin & Lift Canal levees and roads | 55 | 2-4-D | 37 gal. | 2/3 gal/acre | H ₂ O 10 gal/ 190 gal | Tank sprayer |

10. Summary of results (continue on reverse side, if necessary)

3/3 Total kill
3/19-30 95% kill
5/12&13 90% kill

Ducks on a slough northeast of E-Canal. This waterfowl habitat is created by putting a piece of plywood over a culvert and a few boards in a deteriorated, wooden water control structure.

December 30, 1970

Lee Nielsen
Bureau of Reclamation

MERCED NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

January 1 to December 31, 1970

C O N T E N T S

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I. GENERAL

A. Weather Conditions:

Refer to the San Luis N.W.R. Narrative Report.

B. Habitat Conditions:

1. Water:

Twenty deep-well pumps were operated intermittently during every month except February and March. A total of 14,218.68 acre-feet of water was pumped at an average cost, for electrical power, of \$2.00 per acre-foot. In addition, a portable pump, powered by a diesel engine was operated approximately 45-days during the last four months of the year.

Water levels in the marsh units and fields were optimum during the period of peak waterfowl use. Marsh acreage in the east and west marsh areas was increased some this year to replace habitat lost in Fields 2, 3 and 6, which were kept dry for cattail control.

2. Food and Cover:

Marsh areas were dry from late March until September. Flooding of the west marsh, grazing unit No. 1 and east grasslands was started in September and continued through the end of the year. The first water on these areas prompted an abundant growth of cattails and hardstem bulrush. These were followed by some volunteer wild millet (Echinochloa crusgalli) and alkali bulrush (Scirpus paludosus). Overall results were about 1,225 acres of excellent cover that also provided some food.

Since Merced National Wildlife Refuge is a Lea Act area, we are obligated to attract early migrating waterfowl in an effort to reduce depredation on local rice crops. An extensive refuge farming program has resulted from this obligation. Wild millet and barley were cultivated during 1970. The millet, a total of 443 acres, was seeded during the summer and the mature grain was flooded prior to arrival of the first migrants. Fall seeding of 250 acres of barley provided green browse for wintering widgeon and geese.

Fields 2, 3 and 6 were kept dry for a full year to control cat-tails. These three fields were planted with fall barley and will be reseeded with millet in the summer of 1971.

An additional 473 acres of permanent pasture also provided green browse. The pastures support annual and perennial ryegrasses, akaroa orchard grass, narrowleaf bird's foot trefoil, salina stawberry clover, rose clover, lodino clover and alsike clover.

Although habitat conditions were comparable to last year, waterfowl use decreased considerably. Goose use was especially disappointing this year. Use by ducks did not decrease as drastically but the decrease was substantial.

II. WILDLIFE

A. Migratory Birds:

1. Waterfowl:

a. Swans: A peak of 35 whistling swans was recorded during the week of November 15 - 21. The 1969 peak was 45, and swan use days last year totaled 1,169. Total use days this year was 656.

b. Geese: Use days by geese decreased almost 55 percent from last year. However, this year's peak number (22,350) was the same as in 1969. It was probably the same birds, since last year's peak was recorded the first week of January. A fall peak of 10,025, recorded during the week of November 29 through December 5, depicts more accurately this year's use decline.

We believe the decrease in goose use was an indirect result of the 5.71 inches of rain received during late November and early December. This abnormal precipitation, accompanied by mild temperatures, resulted in an early growth of preferred upland grasses. Consequently, the extensive grassland areas to the north and west of Merced Refuge were grazed by an estimated 50,000 geese. These same birds would use our permanent pastures during a year when rainfall was normal.

Goose use days, by species, for 1965 - 1970 are shown in the following table:

| SPECIES | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Canada | 1,302 | 196 | 287 | 546 | 462 | 819 |
| Cackling | 1,066,499 | 394,646 | 724,500 | 744,520 | 677,978 | 269,650 |
| White-fronted | 697,151 | 441,084 | 675,430 | 226,884 | 82,845 | 15,445 |
| Snow | 556,346 | 636,356 | 1,157,863 | 437,920 | 451,675 | 84,485 |
| Ross | <u>376,922</u> | <u>171,332</u> | <u>244,776</u> | <u>540,540</u> | <u>670,600</u> | <u>360,000</u> |
| TOTALS | 2,698,220 | 1,643,614 | 2,802,856 | 1,950,410 | 1,883,560 | 730,399 |

c. Ducks: Annual use days totaled 4,055,105 which is 36 percent less than last year. Mallards and pintails, with 1,358,000 and 1,120,735 respectively, accounted for more than half of this year's duck use days. An additional 1,244,540 use days were by American widgeon and green-winged teal.

A peak population of 69,075 ducks occurred during the week of October 25 - 31. Hunting season opened at Merced Refuge on October 31 and the following week the population was only 13,750. The 1969 population peak was 110,000 and occurred during the last week of October. Hunting probably had a more marked effect on waterfowl activity this year than any year since 1957. This year the Mariposa Bypass was open to hunting. Area in the Bypass replaced the dry fields (discussed in habitat section), thus not reducing waterfowl habitat in the open area. It did, however, reduce waterfowl habitat in the closed area and the ducks reacted accordingly - - they went elsewhere.

We consider this decline in waterfowl use at Merced more than compensated for by the increase at San Luis Refuge. At San Luis waterfowl habitat is nearly all a natural tule-marsh type, which is preferable to the intermittent marsh and grain fields at Merced. This shifting use pattern will probably become more apparent as habitat enhancement continues on San Luis and Kesterson Refuges.

A fulvous tree duck, considered a rare visitor at Merced, was seen by Assistant Manager Vehrs on October 3. This is the first recorded sighting of a tree duck in several years.

d. Coots and Gallinules: Coot use days decreased from 834,400 last year to 327,816 this year. The peak population showed an accompanying decrease from 8,000 to 3,450.

Common gallinule numbers peaked at an estimated 125 during the week of February 1 - 7. The 1969 peak was 200 during the first week of January.

2. Water and Marsh Birds:

Many species in this group used Merced Refuge. The more common ones were great blue herons, common and snowy egrets, American bitterns, black-crowned night herons and sandhill cranes. Sandhill crane use was substantially less this year than in 1969. Last year the peak crane population was 5,950 and this year's peak was only 1,454. This decrease was probably a result of the hunting area change already mentioned. Last year sandhill cranes roosted in the Bypass, which was open to hunting this year. Cattail patches in the Glory Hole area were used, for the second consecutive year, by a colony of black-crowned night herons. The peak number recorded was 125 as compared to 150 last year.

Assistant Refuge Manager Vehrs observed four double-crested cormorants on October 3. This was the first recorded sighting of cormorants on Merced Refuge and adds another species to the bird list.

Another addition to the bird list was the cattle egrets observed by Mr. Carroll Littlefield on January 28. The five seen on that date was the first reported sighting of the species in this vicinity. A peak number of seven seen on February 3 also marked the last time this species was seen during the year.

3. Shorebirds, Gulls and Terns:

Avocets, dowitchers and killdeer were the most common shorebirds seen. Stilts, sandpipers, yellowlegs, dunlin and a variety of other species were present intermittently. California and ring-billed gulls used the refuge, but sightings were few this year. The only tern observation was of three Forester's terns seen on August 8.

4. Doves:

Mourning doves were numerous during the July - August migration period. (This year's peak number was 225 recorded on July 9. Last year the peak was 700 on August 30.) The spring dove migration is less obvious, but a few birds stayed to nest on the refuge. Production, however, was negligible due to a lack of suitable habitat.

B. Upland Game Birds:

Ring-necked pheasants and California quail used the refuge throughout the year. The quail population was minimal and this year's peak number was estimated to be ten. Good habitat is lacking, thus contributing to the small population. One field containing 36 acres has been reserved for upland habitat plantings, which should benefit the quail population.

Pheasants, however, find abundant, suitable habitat in the grain fields, marsh areas, grasslands and irrigated pastures. An estimated 1,300 pheasants were using the area prior to the start of hunting this fall. Production this year was about 800. Data from sex ratio counts, crow counts and brood counts are used to compute production and the fall population. The formula for this computation is: P (population) = C (avg. no. cocks) + CH (H is avg. no. hens per cock) + CHY (Y is avg. brood size). The CHY portion of this formula represents production.

C. Big Game Animals:

No big game species inhabit this refuge or adjacent lands.

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

Muskrat, mink, long-tailed weasel, raccoon, striped skunk, opossum, coyote and badger are the predatory and fur animals that use the refuge. Desert cottontails, black-tailed jack-rabbits and California ground squirrels are abundant. Various species of mice, shrews, pocket gophers and voles are present but seldom seen.

Two species, the muskrat and ground squirrel, damage dikes and roads. Permittee trappers help control muskrats, but we depend upon predators and raptors for squirrel control.

E. Hawks, Owls, Eagles, Crows and Magpies:

Red-tailed hawks, marsh hawks, sparrow hawks, cooper's hawks, great horned owls, barn owls and burrowing owls are all resident species. Swainson's hawks use the refuge during summer and fall, and this year a pair nested successfully at Merced.

White-tailed kite numbers are increasing on and adjacent to the refuge. The 1969 peak population was four and this year the recorded peak was 12. A nesting record was also documented this year. The nest, which was located about 10-feet above

ground in a small willow tree, held five eggs on April 1. On April 29, the nest contained five downy young and on May 17, the nest was empty. It is obvious these birds did not develop flight capabilities in the short period of 19 days. However, no evidence was found to indicate nest predation. The nest was intact and there was no blood, feathers, down, etc. on the ground beneath the tree.

Three separate sightings each of one golden eagle occurred on January 24, November 12 and December 15. A prairie falcon was observed on January 24 and one crow was seen on November 12. Although there were no observations recorded, yellow-billed magpies do use the refuge intermittently.

F. Other Birds:

A variety of smaller birds are present on a seasonal basis. Some of the most common species in this broad category are white-crowned sparrows, horned larks, water pipits, mockingbirds, house finches, long-billed marsh wrens, meadowlarks and a variety of blackbirds.

G. Fish:

The waters of Deadman and Mariposa Sloughs support such rough fish species as carp and catfish and during flood periods other species probably move into these slough channels. Both sloughs, however, go dry nearly every summer thus making them unimportant as sport fishing areas.

Glory Hole, the only permanent water area on the refuge, contains introduced "mosquito fish". These little fish are used extensively as a mosquito control measure in our vicinity.

H. Reptiles and Amphibians:

The common garter snake, gopher snake and bullfrog are present at Merced. Other species very likely occur, but have not been recorded or identified.

I. Disease:

A total of 11 dead or dying birds (6 Ross' geese, 1 pintail and 4 unknown ducks) was picked up during the last two weeks of January. It was determined that the birds were victims of fowl cholera, and the carcasses were burned. We are certain these birds immigrated to Merced after being infected elsewhere.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

No development was accomplished during the year due to a lack of development funds. All work projects consisted of either maintenance or rehabilitation.

Considerable maintenance on deep-well pump was accomplished during the year. Motors were rewound on Pumps 7, 9 and 11 and Pumps 10 and 12 required minor repairs. Automatic oilers were installed on all deep-well pumps with each oiler having a 15 gallon reservoir. These oilers will reduce the man-hours required to service the pumps.

An irrigation supply ditch was dug from Pump No. 11 to Grazing Unit 1 to facilitate flooding of the unit during the winter for waterfowl use. This ditch was required to bypass Field 6 with water from Pump No. 11. Field 6 is being fallowed for cattail control. The supply ditch from Pump No. 2 to Field 5 was cleaned to facilitate water movement.

Water from Pumps 1A and 4 was used to irrigate and flood Field 1 by pumping into Deadman Slough then lifting the water from Deadman with a portable diesel pump. These pumps could not be used otherwise since Field 2 is being fallowed for cattail control.

Individual plastic water lines were installed to irrigate the trees behind the office. This will result in fewer man-hours being required to water the trees and it will insure survival of these trees during the hot, dry summer months.

Approximately four miles of interior roads were graveled to provide better access to the refuge during the rainy season. Gravel was obtained free of charge from the Bureau of Reclamation and hauled and tailgate-spread by contract haulers.

The Merced County Road Department completed repair and re-surfacing of Sandy Mush Road which runs past the entrance to the refuge. The refuge supplied the county with water to sprinkle the road and they returned the favor by oiling the road and driveway at refuge headquarters.

An addition was added to the rear of the equipment storage building. This pole-type-construction addition provides additional storage space for refuge equipment. Steel material obtained from excess property was used in construction of the addition.

The residence was vacant most of the year and this provided an opportunity to do some needed painting and repairs.

A new Farmall tractor, an offset disc, and a Dodge 4 X 4 pickup were purchased during the year. All were replacements for existing equipment.

B. Plantings:

1. Aquatic Marsh Plants:

None.

2. Trees and Shrubs:

None.

3. Upland Herbaceous Plants:

None.

4. Cultivated Crops:

Crops grown during the year of 1970 are shown in the following table:

| <u>FIELD:</u> | <u>CROP:</u> | <u>ACREAGE</u> | <u>YIELD/GROWTH</u> |
|---------------|----------------------|----------------|---------------------|
| 1 | Millet | 60 | Good |
| 2 | Fallow Winter Barley | 105 | Good |
| 3 | Fallow Winter Barley | 60 | Good |
| 4 | Millet | 45 | Fair |
| 4a | Millet | 50 | Good |
| 5 | Millet | 70 | Fair |
| 6 | Fallow Winter Barley | 60 | Good |
| 7 | Fallow | 103 | |
| 8 | Millet | 98 | Fair |
| 9 | Fallow | 36 | |
| 10 | Winter Barley | 55 | Good |
| 11 | Millet | 110 | Poor |
| West Marsh | Millet | 260 | Fair |
| A-B-C-D-E | Perm. Pasture | 393 | Good |

C. Collections and Receipts:

1. Seeds and Propagules:

Approximately 12,550 pounds of barley was purchased from Pacheco

Feed and Seed Company in Los Banos for seeding of fields. Cost of the grain was \$72.00 per ton.

In early March, 10,880 pounds of rice screenings were purchased for wild millet seed at Woodland, California for \$40.00 per ton.

2. Specimens:

Nothing to report.

D. Control of Vegetation:

Roads and roadsides were mowed and irrigation ditches cleaned with grader. Minor vegetation control around the pumps, oil house, registration booth and storage yard was accomplished by using 4 percent dichlobenil soil sterilant.

Millet Fields 2, 3 and 6 were dried up during the summer and seeded to fall barley as a routine vegetative control measure. Portions of grazing unit 1 and Field 6 were burned to eliminate dense stands of cattail and hardstem bulrush.

E. Planned Burning:

Portions of grazing unit 1 were also burned to eliminate rank cattail and hardstem bulrush growth prior to the arrival of fall migrants and the waterfowl hunting season.

F. Fires:

None.

IV. RESOURCE MANAGEMENT

A. Grazing:

The Favier Brothers Ranch was once again issued a Special Use Permit to graze 393 acres of irrigated permanent pasture. A charge of \$4.00/AUM was collected. The pastures were grazed from March 23 to November 15, for a total of 2,289.83 AUMs, and a revenue of \$7,359.32.

Another permit was issued to the Favier Ranch for grazing unit 1. A charge of \$3.75/AUM was collected. The area was grazed from April to August 5, for a total of 298.03 AUMs, and a revenue of \$817.61.

The reduced grazing fee from \$4.50 to \$4.00/AUM in the permanent pastures, allowed for the permittee to furnish an irrigator and move his cattle from field to field as forage required. In the past, refuge personnel performed this work at an additional labor cost of .4 man-years. This year's program has proved to be successful and will be handled in a similar fashion next year.

Haying, fur harvest, timber removal, commercial fishing and other uses are not applicable to this station.

V. FIELD INVESTIGATIONS

Nothing to report.

VI. PUBLIC RELATIONS

A. Recreational Uses:

Recreational use at Merced Refuge consists of bird watching, photography and hunting. Since the refuge is a wintering area for waterfowl, the fall and winter months receive the most visitor use.

B. Refuge Visitors:

All official visitors are included in the San Luis Report.

C. Refuge Participation:

Refer to San Luis Report.

D. Hunting:

1. Waterfowl:

As Merced Refuge is a Lea Act refuge, the opening date of public hunting is decided upon by the Lea Act Committee, which is composed of eight local sportsmen and farmers. The committee predicts when 75 percent of the local rice crops will be harvested and recommends this date for opening the waterfowl season on the refuge. The hunting season was delayed two weeks upon recommendation of the committee and therefore, opened on October 31.

The following is a comparison of waterfowl kill data for the past seven years:

| <u>Year</u> | <u>Hunters</u> | <u>Ducks</u> | <u>Geese</u> | <u>Coots</u> | <u>Total Kill</u> | <u>Ave. Per Hunter</u> |
|-------------|----------------|--------------|--------------|--------------|-------------------|------------------------|
| 1970-71 | 2,484 | 4,511 | 279 | 148 | 4,938 | 2.0 |
| 1969-70 | 2,213 | 3,705 | 491 | 70 | 4,266 | 1.9 |
| 1968-69 | 1,814 | 2,033 | 367 | 74 | 2,474 | 1.4 |
| 1967-68 | 1581 | 3,002 | 144 | 20 | 3,166 | 2.0 |
| 1966-67 | 1,277 | 1,525 | 399 | 7 | 1,931 | 1.5 |
| 1965-66 | 1,264 | 1,743 | 173 | 50 | 1,966 | 1.6 |
| 1964-65 | 1,414 | 1,337 | 212 | 52 | 1,601 | 1.1 |

The public hunting program on Merced Refuge is jointly managed by the Bureau and the California Department of Fish and Game. The Department of Fish and Game issues reservations, sells permits, and mans the checking station. Refuge employees perform most of the law enforcement. State wardens frequently patrol the area during the hunting season. The hunting fee on the refuge was \$3.50 the same as all other public hunting areas in the state.

The hunting area was enlarged this year to include the area within the Mariposa Bypass. Fields 2, 3 and 6 within the hunting area were dried up this year to control cattail. These fields took a large area out of the heart of the hunting area. Rather than cut the quota of hunters allowed on the area, the public hunting area was enlarged by opening the area within the Mariposa Bypass (see map).

Waterfowl use of the refuge was much lower this year as a result of the small closed area. Merced Refuge is small anyway, only 2,561 acres. When most of this small area is open to hunting, waterfowl are unable to utilize the area to any large extent. Even with the lesser waterfowl use, hunting was slightly better than last year.

Pheasant season was considerably longer this year than it has been in past years. This year's season was 30 days. The daily bag limit for the opening weekend was two roosters, and the bag limit for the rest of the season was four roosters. Many hunters enjoyed successful hunts on the refuge. The majority of the pheasant hunters are also waterfowl hunters who enter the area to hunt both types of birds.

The following table gives the pheasant kill on Merced Refuge for the past seven years:

| <u>Year</u> | <u>Pheasant Kill</u> |
|-------------|----------------------|
| 1970 | 124 |
| 1969 | 168 |
| 1968 | 146 |
| 1967 | 203 |
| 1966 | 70 |
| 1965 | 180 |
| 1964 | 147 |

E. Violations:

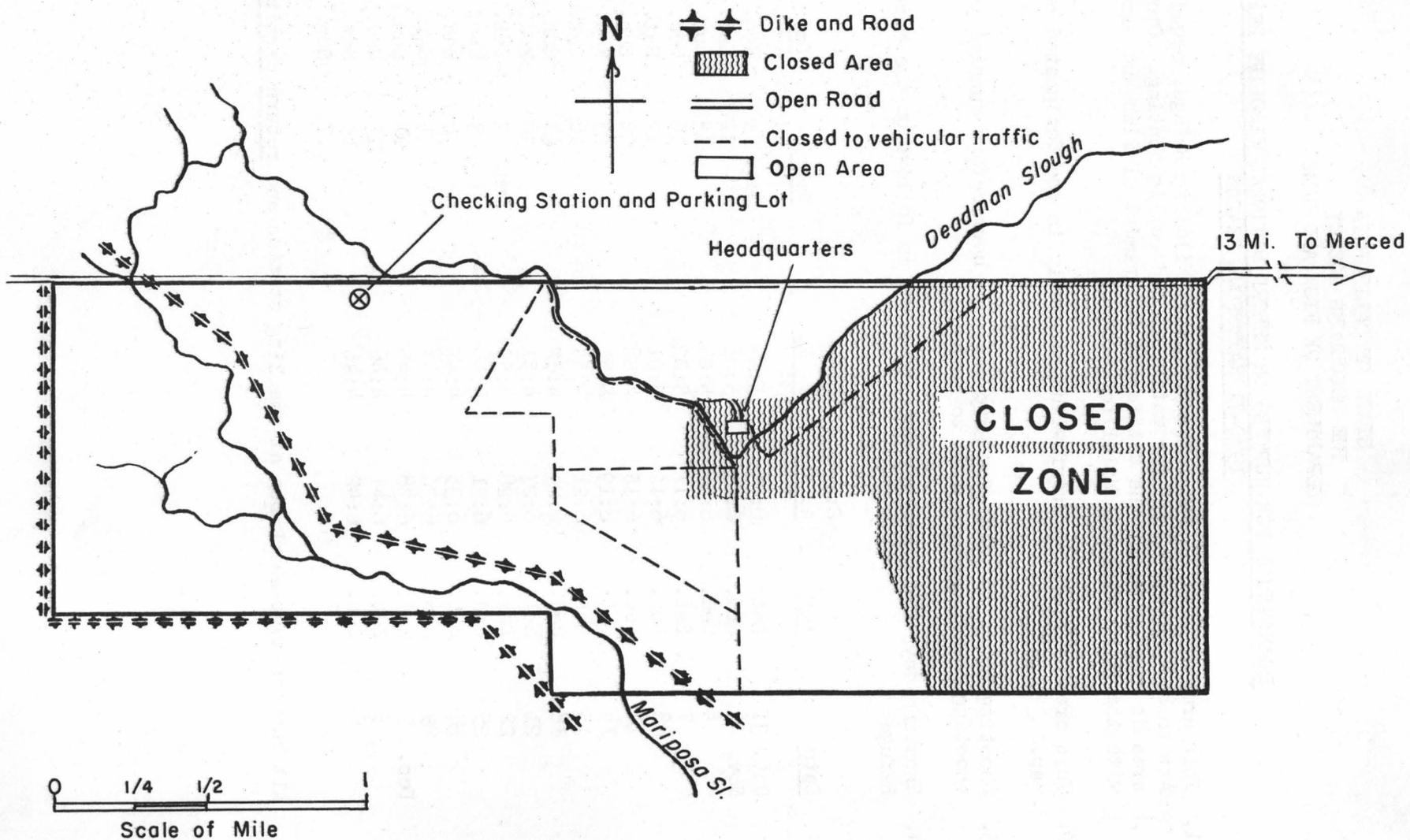
Law enforcement duties on Merced Refuge public hunting area are a cooperative effort between refuge personnel and personnel of the California Department of Fish and Game. Although refuge personnel perform most of the law enforcement duties, excellent cooperation and assistance was provided by California Department of Fish and Game Warden, Frank Dutra.

The following is a list of violators apprehended on and adjacent to the refuge:

| <u>Date</u> | <u>Name</u> | <u>Violation</u> | <u>Agent</u> | <u>Disposition</u> |
|-------------|----------------------|--------------------|--------------|---|
| 11/21/70 | Gary Hadley | Hunting w/o Permit | Vehrs | U.S. Commissioner 01/05/71 \$25 Fine |
| 11/21/70 | Mark Dominquez | Hunting w/o Permit | Vehrs | U.S. Commissioner 01/05/71 \$25 Fine |
| 11/21/70 | Piedad Castro | Hunting w/o Permit | Vehrs | U.S. Commissioner 01/05/71 \$25 Fine |
| 11/21/70 | David Krueger | Hunting w/o Permit | Vehrs | U.S. Commissioner 01/05/71 \$25 Fine |
| 12/09/70 | William Campbell | Late Shooting | Sipe | Pending <i>U. S. Comm. 02/24/71 \$25 Fine</i> |
| 12/26/70 | Victor Maresca | Unplugged Shotgun | Nail | Pending |
| 01/03/71 | Florentino Castellon | Possessing Swan | Vehrs | Pending |
| 01/13/71 | Arthur Wilson | No Hunting License | Nail | Pending |

HUNTING MAP

MERCED NATIONAL WILDLIFE REFUGE AREA



STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

INFORMATION FOR HUNTERS ON MERCED NATIONAL WILDLIFE REFUGE
1970-71 WATERFOWL SEASON

1. This area is part of the Merced National Wildlife Refuge, acquired under the Lea Act to help provide feed for waterfowl and public hunting. Operation of this area is carried on by the California Department of Fish and Game in cooperation with the U. S. Fish and Wildlife Service.
2. This area is open to waterfowl hunting only in the designated areas shown on the map.
3. Shooting hours for waterfowl are one-half hour before sunrise to sunset. Pheasant shooting hours are 8:00 A.M. to sunset.
4. Shooting days and hours for waterfowl are as follows on the Merced National Wildlife Refuge:

| <u>Date</u> | <u>Day</u> | <u>Start</u> A. M. | <u>Stop</u> P. M. | <u>Date</u> | <u>Day</u> | <u>Start</u> A. M. | <u>Stop</u> P. M. |
|-------------|------------|-----------------------|----------------------|-------------|------------|-----------------------|----------------------|
| Oct. 31 | Sat. | 6:04 | 5:09 | Dec. 9 | Wed. | 6:45 | 4:46 |
| Nov. 1 | Sun. | 6:05 | 5:08 | 12 | Sat. | 6:47 | 4:47 |
| 4 | Wed. | 6:08 | 5:05 | 13 | Sun. | 6:48 | 4:47 |
| 7 | Sat. | 6:11 | 5:02 | 16 | Wed. | 6:50 | 4:48 |
| 8 | Sun. | 6:12 | 5:01 | 19 | Sat. | 6:52 | 4:49 |
| 11 | Wed. | 6:15 | 4:58 | 20 | Sun. | 6:53 | 4:49 |
| 14 | Sat. | 6:19 | 4:55 | 23 | Wed. | 6:54 | 4:51 |
| 15 | Sun. | 6:21 | 4:54 | 26 | Sat. | 6:55 | 4:53 |
| 18 | Wed. | 6:24 | 4:52 | 27 | Sun. | 6:56 | 4:53 |
| 21 | Sat. | 6:27 | 4:51 | 30 | Wed. | 6:57 | 4:56 |
| 22 | Sun. | 6:28 | 4:50 | Jan. 2 | Sat. | 6:57 | 4:56 |
| 25 | Wed. | 6:31 | 4:48 | 3 | Sun. | 6:57 | 4:56 |
| 28 | Sat. | 6:35 | 4:47 | 6 | Wed. | 6:57 | 5:00 |
| 29 | Sun. | 6:36 | 4:47 | 9 | Sat. | 6:57 | 5:03 |
| Dec. 2 | Wed. | 6:38 | 4:46 | 10 | Sun. | 6:57 | 5:04 |
| 5 | Sat. | 6:41 | 4:46 | 13 | Wed. | 6:57 | 5:08 |
| 6 | Sun. | 6:42 | 4:46 | 16 | Sat. | 6:55 | 5:11 |
| | | | | 17 | Sun. | 6:55 | 5:12 |

5. All hunters must check out at checking station and return permits on leaving.

F. Safety: (Also refer to the San Luis Report)

Merced Refuge personnel attended monthly safety meetings at the San Luis Complex office in Los Banos.

Porcelain safety signs were purchased during the year to warn of safety hazards in the refuge shop and to warn the visiting public of high voltage at all deep-well pumps.

VII. OTHER ITEMS

A. Items of Interest: (Also refer to San Luis Report)

Mr. Jefferson Perry was assigned to Merced Refuge during the summer as a student trainee. Mr. Perry resigned at the end of his summer assignment.

B. Credits:

Credits for the preparation of this report are as follows:

Refuge Manager Nail wrote final draft of Sections III, IV, VI and VII.

Assistant Refuge Manager Vehrs wrote rough draft of Sections III, IV, VI and VII.

Wildlife Biologist Sipe wrote Sections I, II and V.

Clerk-Typist Barger edited, typed and assembled the entire report.

Photograph credits are shown with each photograph in the photograph section.

WATERFOWL

REFUGE Merced National Wildlife Refuge

MONTHS OF January through April, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|------------------------|----------------------------------|----------|----------|----------|--------|---------|----------|----------|--------|---------|
| | :1/4-10 | :1/11-17 | :1/18-24 | :1/25-31 | :2/1-7 | :2/8-14 | :2/15-21 | :2/22-28 | :3/1-7 | :3/8-14 |
| | : 1 | : 2 | : 3 | : 4 | : 5 | : 6 | : 7 | : 8 | : 9 | : 10 |
| Swans: | | | | | | | | | | |
| Whistling Trumpeter | 16 | 16 | 16 | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | 50 | 50 | | | 7 | 5 | 5 | | | |
| Cackling Brant | 7,000 | 7,000 | 3,000 | 2,500 | 2,500 | 1,500 | | | | |
| White-fronted Snow | 300 | 300 | 100 | | | | 10 | | | |
| Ross | 3,000 | 3,000 | 1,000 | | | | | | | |
| Total | 12,000 | 12,000 | 7,000 | 500 | 500 | 500 | | | | |
| | 22,350 | 22,350 | 11,100 | 3,000 | 3,007 | 2,005 | 15 | | | |
| Ducks: | | | | | | | | | | |
| Mallard | 3,800 | 3,800 | 2,500 | 2,500 | 1,900 | 1,700 | 1,500 | 1,000 | 350 | 175 |
| Black Gadwall | 500 | 500 | 250 | 250 | 150 | 150 | 200 | 150 | 75 | 25 |
| Baldpate | 12,000 | 12,000 | 5,000 | 2,500 | 1,750 | 3,500 | 5,000 | 3,500 | 2,000 | 1,200 |
| Pintail | 500 | 500 | 1,000 | 2,500 | 3,100 | 3,100 | 3,000 | 2,300 | 900 | 375 |
| Green-winged teal | 5,500 | 5,500 | 3,000 | 1,500 | 975 | 900 | 1,000 | 1,000 | 1,200 | 1,200 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 50 | 50 | 100 | 300 | 350 | 700 | 1,500 | 900 | 450 | 160 |
| Shoveler | 2,500 | 2,500 | 1,500 | 1,000 | 850 | 950 | 1,000 | 650 | 550 | 355 |
| Wood Redhead | | | | | | | | | | |
| Ring-necked Canvasback | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 25 | 25 | 10 |
| Scaup Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | 150 | 150 | 100 | 100 | 100 | 100 | 150 | 100 | 50 | 50 |
| Other | | | | | | | | | | |
| Total | 25,050 | 25,050 | 13,500 | 10,700 | 9,225 | 11,150 | 13,400 | 9,625 | 5,600 | 3,550 |
| Coot: | | | | | | | | | | |
| | 3,500 | 3,500 | 2,500 | 1,000 | 750 | 1,000 | 1,000 | 850 | 500 | 375 |

WATERFOWL
 (Continuation Sheet)

REFUGE Merced National Wildlife Refuge

MONTHS OF January through April, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production : Broods: Estimated : seen : total | |
|-------------------|----------------------------------|---------|----------|------------|---------|---------|----------|----|---|--|--|
| | 3/15-21 | 3/22-28 | 3/29-4/4 | 4/5-11 | 4/12-18 | 4/19-25 | 4/26-5/2 | 18 | | | |
| Swans: | | | | | | | | | 336 | | |
| Whistling | | | | | | | | | | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | 819 | | |
| Canada | | | | | | | | | 164,500 | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | 4,970 | | |
| Snow | | | | | | | | | 49,000 | | |
| Ross | | | | | | | | | 227,500 | | |
| Total | | | | | | | | | 446,789 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 100 | 100 | 100 | 100 | 135 | 160 | 160 | | 140,560 | | |
| Black | | | | | | | | | | | |
| Gadwall | 50 | 50 | 25 | 25 | 10 | 50 | 50 | | 17,570 | | |
| Baldpate | 2,050 | 1,500 | 400 | 400 | 485 | 275 | 100 | | 375,620 | | |
| Pintail | 150 | 100 | 25 | 10 | 10 | 25 | 25 | | 123,340 | | |
| Green-winged teal | 375 | 350 | 200 | 175 | 135 | 100 | 50 | | 162,120 | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 200 | 200 | 125 | 100 | 85 | 75 | 45 | | 37,730 | | |
| Shoveler | 450 | 400 | 200 | 125 | 45 | 50 | 75 | | 92,400 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | 1 | | | | 2,877 | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | 50 | 50 | 25 | 10 | | | | | 8,295 | | |
| Other | | | | | | | | | | | |
| Total | 3,425 | 2,750 | 1,100 | 945 | 906 | 735 | 505 | | 960,512 | | |
| Coot: | | | | | | | | | | | |
| | 325 | 300 | 250 | 100 (over) | 70 | 70 | 70 | | 113,120 | | |

| | (5) | (6) | (7) | SUMMARY | | | |
|-------|----------------|-------------|------------------|--|--|--|--|
| | Total Days Use | Peak Number | Total Production | | | | |
| Swans | 336 | 16 | | Principal feeding areas Ducks used marsh and grain fields. | | | |
| Geese | 446,789 | 22,350 | | Geese and widgeon browsed pastures. | | | |
| Ducks | 960,512 | 25,050 | | Principal nesting areas | | | |
| Coots | 113,120 | 3,500 | | | | | |
| | 1,520,757 | | | Reported by Gene A. Sipe | | | |

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

WATERFOWL

REFUGE Merced National Wildlife Refuge

MONTHS OF May through August, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|-------------------|----------------------------------|-----------------|-----------------|-----------------|------------------|------------------|-------------------|-----------------|------------------|-------------------|
| | :5/3-9 : 1 | :5/10-16 : 2 | :5/17-23 : 3 | :5/24-30 : 4 | :5/31-6/6 : 5 | :6/7-6/13 : 6 | :6/14-6/20 : 7 | :6/21-27 : 8 | :6/28-7/4 : 9 | :7/5-7/11 : 10 |
| Swans: | | | | | | | | | | |
| Whistling | | | | | | | | | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | | | | |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Total | | | | | | | | | | |
| Ducks: | | | | | | | | | | |
| Mallard | 160 | 100 | 75 | 50 | 35 | 35 | 25 | 25 | 50 | 80 |
| Black | | | | | | | | | | |
| Gadwall | 50 | 35 | 25 | 15 | 15 | 5 | 5 | | | |
| Baldpate | 100 | 50 | 25 | 5 | | | | | | |
| Pintail | 25 | 25 | 15 | 5 | 5 | | | | | |
| Green-winged teal | 50 | 25 | 15 | 10 | 10 | | | | 5 | 5 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 45 | 45 | 35 | 30 | 30 | 15 | 10 | 10 | 10 | 15 |
| Shoveler | 75 | 50 | 15 | 5 | 5 | | | | 10 | 10 |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | | | | | | | |
| Other | | | | | | | | | | |
| Total | 505 | 330 | 205 | 120 | 100 | 55 | 40 | 35 | 75 | 110 |
| Coot: | | | | | | | | | | |
| | 70 | 50 | 25 | 10 | 10 | 10 | 4 | 4 | 15 | 30 |

WATERFOWL
 (Continuation Sheet)

REFUGE Merced National Wildlife Refuge

MONTHS OF May through August, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production Broods: Estimated seen: total | |
|-------------------|----------------------------------|---------|----------|-----------|--------|---------|---------|--------|---|---|--|
| | 7/12-18 | 7/19-25 | 7/26-8/1 | 8/2-8 | 8/9-15 | 8/16-22 | 8/23-29 | 18 | | | |
| Swans: | | | | | | | | | | | |
| Whistling | | | | | | | | | | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | | | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Other Total | | | | | | | | | | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 75 | 100 | 200 | 510 | 650 | 1,500 | 4,150 | 54,740 | 6 | 50 | |
| Black | | | | | | | | | | | |
| Gadwall | | | | | | | | 1,050 | 0 | 10 | |
| Baldpate | | | | | | | | 11,260 | | | |
| Pintail | | | 10 | 150 | 200 | 400 | 575 | 9,870 | | | |
| Green-winged teal | | | | | | | | 840 | | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 10 | 25 | 50 | 150 | 150 | 100 | 25 | 5,285 | 2 | 15 | |
| Shoveler | | | | | | | | 1,190 | | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| Total | 85 | 125 | 260 | 810 | 1,000 | 2,000 | 4,750 | 74,236 | 8 | 75 | |
| Coot: | | | | | | | | | | | |
| | 30 | 20 | 10 | 10 (over) | 10 | 10 | 10 | 2,296 | 0 | 10 | |

| | (5) | (6) | (7) |
|-------|----------------|-------------|------------------|
| | Total Days Use | Peak Number | Total Production |
| Swans | | 82 | 590 |
| Geese | | | |
| Ducks | 74,236 | 4,750 | 75 |
| Coots | 2,296 | 70 | 10 |
| | <u>76,532</u> | | |

SUMMARY

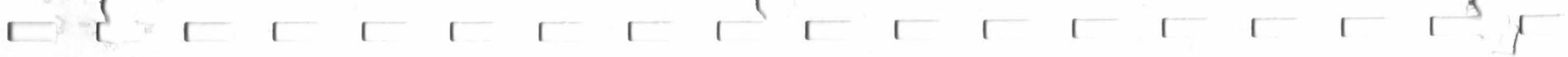
Principal feeding areas Glory Hole and Field No. 4.

Principal nesting areas Glory Hole and West Marsh.

Reported by _____ Gene A. Sipe

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).



W A T E R F O W L

REFUGE Merced National Wildlife Refuge

MONTHS OF September through December, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|-------------------|----------------------------------|---------|----------|----------|------------|---------|-----------|-----------|-----------|---------|
| | :8/30-9/5 | :9/6-12 | :9/13-19 | :9/20-26 | :9/27-10/3 | 10/4-10 | :10/11-17 | :10/18-24 | :10/25-31 | :11/1-7 |
| | : 1 | : 2 | : 3 | : 4 | : 5 | : 6 | : 7 | : 8 | : 9 | : 10 |
| Swans: | | | | | | | | | | |
| Whistling | | | | | | | | | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | | | | |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | 100 | 100 | 50 | 250 |
| Snow | | | | | | | | 5 | 100 | 350 |
| Blue | | | | | | | | | | |
| Total | | | | | | | 100 | 105 | 150 | 600 |
| Ducks: | | | | | | | | | | |
| Mallard | 3,075 | 3,700 | 5,075 | 15,350 | 15,350 | 3,750 | 7,950 | 37,900 | 42,500 | 3,000 |
| Black | | | | | | | | | | |
| Gadwall | 100 | 100 | 200 | 300 | 300 | 300 | 400 | 400 | 1,000 | |
| Baldpate | | | | | | | 175 | 1,000 | 1,000 | 3,000 |
| Pintail | 350 | 1,500 | 2,025 | 28,075 | 28,075 | 3,100 | 4,250 | 12,200 | 15,000 | 5,000 |
| Green-winged teal | 50 | 250 | 725 | 5,150 | 5,150 | 3,050 | 2,700 | 6,100 | 8,300 | 2,500 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 50 | 100 | 275 | 1,550 | 1,550 | 650 | 775 | 300 | 500 | |
| Shoveler | | | 75 | 200 | 200 | 300 | 350 | 300 | 700 | 100 |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | 25 | 25 | 100 |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | 25 | 50 | | | | | 50 | 50 | 50 |
| Tree Duck | | | | | | 1 | | | | |
| Total | 3,625 | 5,675 | 8,425 | 50,625 | 50,625 | 11,151 | 16,600 | 58,275 | 69,075 | 13,750 |
| Coot: | | | | | | | | | | |
| | 25 | 50 | 100 | 650 | 1,075 | 1,900 | 1,350 | 1,800 | 3,000 | 2,500 |

WATERFOWL
(Continuation Sheet)

REFUGE Merced National Wildlife Refuge

MONTHS OF September through December, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production : Broods: Estimated seen : total | |
|-------------------|----------------------------------|----------|----------|------------|---------|----------|----------|----------|-------------------------------------|--|--|
| | 11/8-14 | 11/15-21 | 11/22-28 | 11/29-12/5 | 12/6-12 | 12/13-19 | 12/20-26 | 12/27-31 | | | |
| Swans: | | | | | | | | | | | |
| Whistling | | 35 | | | | | | 15 | 320 | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | | | | |
| Cackling | 250 | 500 | 2,000 | 4,000 | 3,500 | 1,500 | 1,700 | 2,200 | 105,150 | | |
| Brant | | | | | | | | | | | |
| White-fronted | 150 | 150 | | 225 | 200 | 100 | 100 | 100 | 10,475 | | |
| Snow | 1,000 | 500 | 1,000 | 1,000 | 500 | 200 | 200 | 300 | 35,485 | | |
| Ross' | 500 | 500 | 3,000 | 4,800 | 4,800 | 1,900 | 2,000 | 2,000 | 132,500 | | |
| Total | 1,900 | 1,650 | 6,000 | 10,025 | 9,000 | 3,700 | 4,000 | 4,600 | 283,610 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 8,050 | 6,250 | 6,250 | 2,350 | 2,200 | 1,400 | 1,200 | 1,050 | 1,162,700 | | |
| Black | | | | | | | | | | | |
| Gadwall | 800 | 1,050 | 1,050 | 200 | 200 | 150 | 150 | 150 | 47,650 | | |
| Baldpate | 2,250 | 3,500 | 3,500 | 10,000 | 5,000 | 5,550 | 5,500 | 5,700 | 311,825 | | |
| Pintail | 2,800 | 15,100 | 15,100 | 1,250 | 3,500 | 950 | 1,300 | 2,100 | 987,525 | | |
| Green-winged teal | 5,900 | 3,150 | 3,150 | 1,650 | 2,500 | 1,950 | 2,100 | 2,450 | 392,875 | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 125 | 200 | 200 | | | | | | 43,925 | | |
| Shoveler | | | | 1,050 | 2,000 | 850 | 1,000 | 1,200 | 55,875 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | 25 | | | | | | | | 1,225 | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | 100 | 300 | 300 | 300 | 300 | 300 | 300 | 375 | 16,750 | | |
| Other | | | | | | | | | 7 | | |
| Total | 20,050 | 29,550 | 29,550 | 16,800 | 15,700 | 11,150 | 11,550 | 13,025 | 3,020,357 | | |
| Coot: | | | | | | | | | | | |
| | 1,450 | 2,600 | 2,600 | 2,100 | 3,450 | 2,200 | 2,100 | 1,950 | 212,400 | | |

| | (5) | (6) | (7) | SUMMARY |
|-------------------------|----------------|-------------|------------------|---|
| | Total Days Use | Peak Number | Total Production | |
| Swans | 350 | 35 | | Principal feeding areas Millet fields, grazing Unit 1 |
| Geese | 292,810 | 10,025 | | and irrigated pastures. |
| Ducks | 3,046,407 | 69,075 | | Principal nesting areas |
| Coots | 216,300 | 3,450 | | |
| | 3,555,867 | | | |
| 1970 TOTAL 5,153,154 | | | | Reported by Gene A. Sipe, Wildlife Biologist |

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

MIGRATORY BIRDS

(other than waterfowl)

Refuge Merced NWRMonths of January thru April 19 70

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|-----------------------------------|-------------------|------|---------------------|------|------------------|---------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| <u>I. Water and Marsh Birds:</u> | | | | | | | | | | |
| Pied-billed Grebe | Resident | | 3 | 3/11 | | | | | | 50 |
| White Pelican | | | 85 | 2/11 | | | | | | 200 |
| Great Blue Heron | Resident | | 7 | 3/11 | | | | | | 50 |
| Cattle Egret | 5 | 1/28 | 7 | 2/13 | | | | | | 25 |
| Common Egret | Resident | | 12 | 2/15 | | | | | | 75 |
| Snowy Egret | " | | 45 | 2/16 | | | | | | 150 |
| American Bittern | " | | 25 | 2/5 | | | | | | 75 |
| Black-crowned Night Heron | " | | 125 | 2/16 | | | | | | 250 |
| Sandhill Crane | | | 99 | 2/7 | 2 | 3/11 | | | | 300 |
| Virginia Rail | Resident | | 1 | 2/2 | | | | | | 15 |
| Common Gallinule | " | | 40 | 2/5 | | | | | | 125 |
| <u>II. Shorebirds, Gulls and</u> | | | | | | | | | | |
| <u>Terns:</u> | | | | | | | | | | |
| Killdeer | Resident | | 31 | 2/5 | | | | | | 150 |
| Common Snipe | | | 18 | 2/5 | | | | | | 75 |
| Long-billed Curlew | | | 100 | 1/5 | 1 | 4/1 | | | | 300 |
| Greater Yellowlegs | | | 5 | 3/20 | | | | | | 25 |
| Least Sandpiper | | | 50 | 2/2 | Still | Present | | | | 150 |
| Dunlin | | | 350 | 4/1 | " | " | | | | 1,200 |
| Western Sandpiper | | | 22 | 4/29 | " | " | | | | 125 |
| Dowitcher | | | 325 | 3/20 | " | " | | | | 1,500 |
| American Avocet | | | 75 | 3/20 | " | " | | | | 250 |
| Black-necked Stilt | 3 | 4/1 | 5 | 4/29 | " | " | | | | 25 |
| California Gull | | | 3 | 2/2 | | | | | | 25 |
| Ring-billed Gull | | | 10 | 3/11 | | | | | | 50 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|------|------------------|------|--------------|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | Resident | 11 | 4/29 | | 50 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | 1 | 2/4 | 1 | 2/4 | 1 |
| Duck hawk | | | | | |
| Horned owl | | | | | |
| Magpie | | | | | |
| Raven | | | | | |
| Crow | | | | | |
| White-tailed Kite | Resident | | 7 | 4/29 | 7 |
| Cooper's Hawk | " | | 2 | 3/11 | 5 |
| Red-tailed Hawk | " | | 6 | 2/5 | 25 |
| Marsh Hawk | " | | 5 | 3/20 | 15 |
| Prairie Falcon | 1 | 2/4 | Only Observation | | |
| Sparrow Hawk | Resident | | 5 | 2/5 | 25 |
| Burrowing Owl | 2 | 2/4 | Only Observation | | |
| Short-eared Owl | 1 | 4/29 | Only Observation | | |
| Reported by..... | | | | | Gene A. Sipe |

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

MIGRATORY BIRDS
(other than waterfowl)

Refuge Merced N. W. R. Months of May through August 1970

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated |
|---|-------------------|------|---------------------|------|------------------|------|-------------------|------------------|----------------|---------------------------|
| | Number | Date | Number | Date | Number | Date | Colonies | Total # Nests | Total Young | Number |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Pied-billed Grebe | Resident | | 1 | 8/29 | | | | | | 10 |
| Great Blue Heron | Resident | | 17 | 6/22 | | | | | | 75 |
| Common Egret | Resident | | 5 | 6/22 | | | | | | 40 |
| Snowy Egret | Resident | | 6 | 6/3 | | | | | | 50 |
| Black-crowned Night Heron | Resident | | 120 | 6/22 | | | | | | 200 |
| American-Bittern | Resident | | 3 | 7/9 | | | | | | 10 |
| Common Gallinule | Resident | | 1 | 6/22 | | | | | | 25 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 55 | 8/8 | | | | | | 300 |
| Long-billed Curlew | 1 | 8/8 | 1 | 8/8 | | | | | | 25 |
| Greater Yellowlegs | | | 5 | 8/8 | | | | | | 50 |
| Least Sandpiper | 40 | 8/8 | 40 | 8/8 | | | | | | 1,300 |
| Dowitcher | 500 | 8/8 | 500 | 8/8 | | | | | | 1,500 |
| Western Sandpiper | 15 | 8/23 | 15 | 8/23 | | | | | | 75 |
| Wilson's Phalarope | 10 | 8/8 | 10 | 8/8 | | | | | | 50 |
| American Avocet | | | 50 | 6/22 | | | | | | 250 |
| Black-necked Stilt | | | 150 | 6/22 | | | | | | 500 |
| California Gull | | | 3 | 6/22 | | | | | | 25 |
| Forester's Tern | 3 | 8/8 | 3 | 8/8 | | | | | | 10 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|-----|------|-----|-------|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | | 225 | 7/9 | | 3,000 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | | | | | |
| Duck hawk | | | | | |
| Horned owl | | | 8/29 | 1 | |
| Magpie | | | 6/22 | 17 | |
| Raven | | | 6/22 | 2 | |
| Crow | | | 6/3 | 6 | |
| White-tailed Kite | Resident | 7 | 8/4 | 120 | 15 |
| Cooper's Hawk | Resident | 1 | 8/8 | 3 | 5 |
| Red-tailed Hawk | Resident | 6 | 8/29 | 1 | 50 |
| Swainson's Hawk | Resident | 5 | 8/29 | | 10 |
| Marsh Hawk | Resident | 8 | 7/9 | | 25 |
| Sparrow Hawk | Resident | 9 | 8/23 | | 50 |
| Barn Owl | Resident | 3 | 8/23 | | 10 |
| Burrowing Owl | Resident | 12 | 6/22 | | 25 |
| Reported by Gene A. Sipe | | | | | |

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge Merced NWR

Months of September through December 19 70

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|---|-------------------|-------|-------------------------------------|-------|------------------|------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Pied-billed Grebe | Resident | | 16 | 12/4 | | | | | | 75 |
| Double-crested Gormorant | 4 | 10/3 | Only observation during this period | | | | | | | 4 |
| Great Blue Heron | Resident | | 7 | 9/5 | | | | | | 50 |
| Cattle Egret | 5 | 1/28 | 7 | 2/3 | | | | | | 7 |
| Common Egret | Resident | | 4 | 9/5 | | | | | | 25 |
| Snowy Egret | Resident | | 2 | 9/5 | | | | | | 25 |
| Black-crowned Night Heron | Resident | | 125 | 10/12 | | | | | | 200 |
| American Bittern | Resident | | 11 | 11/3 | | | | | | 75 |
| Sandhill Crane | 30 | 9/14 | 1,454 | 10/12 | Still present | | | | | 2,000 |
| Common Gallinule | Resident | | 12 | | | | | | | 125 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 28 | 9/28 | | | | | | 200 |
| Common Snipe | | | | | Still present | | | | | 250 |
| Whimbrel | 3 | 11/12 | 75 | 12/23 | Still present | | | | | 175 |
| Greater Yellowlegs | | | 16 | 10/5 | Still present | | | | | 75 |
| Least Sandpiper | | | 5 | 10/5 | Still present | | | | | 50 |
| Long-billed Dowitcher | | | 275 | 12/31 | Still present | | | | | 600 |
| Western Sandpiper | | | 9 | 9/5 | Still present | | | | | 75 |
| American Avocet | | | 1 | 9/5 | | | | | | 50 |
| Black-necked Stilt | | | 5 | 9/28 | | | | | | 50 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|------------------------------------|----------|-------|------|-------|------------------|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | | 111 | 9/28 | 10 | 11/12 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | 1 | 11/12 | 1 | 12/15 | |
| Duck hawk | | | | | |
| Horned owl | Resident | | 1 | 9/16 | |
| Magpie | | | | | |
| Raven | | | | | |
| Crow | | | 1 | 11/12 | Only observation |
| White-tailed Kite | Resident | | 8 | 10/5 | |
| Cooper's Hawk | Resident | | 1 | 10/12 | |
| Red-tailed Hawk | Resident | | 10 | 11/24 | |
| Swainson's Hawk | | | 4 | 11/3 | |
| Marsh Hawk | Resident | | 11 | 11/24 | |
| Sparrow Hawk | Resident | | 8 | 10/12 | |
| Barn Owl | Resident | | 2 | 9/5 | |
| Burrowing Owl | Resident | | 6 | 9/28 | |
| Reported by..... Gene A. Sipe..... | | | | | 15 |

Wildlife Biologist

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Merced N.W.R. For 12-month period ending August 31, 1970

Reported by Gene A. Sipe Title Wildlife Biologist

| (1) Area or Unit Designation | (2) Habitat | | | (3) Use-days | (4) Breeding Population | (5) Production |
|------------------------------------|----------------|---------|-------|-----------------|-------------------------------|-------------------|
| | Type | Acreage | | | | |
| I | Crops | 0 | Ducks | 2,218,681 | 20 | 35 |
| | Upland | 100 | Geese | 26,320 | | |
| | Marsh | 374 | Swans | 0 | | |
| | Water | 120 | Coots | 121,565 | | |
| | Total | 594 | Total | 2,366,566 | 20 | 35 |
| II | Crops | 667 | Ducks | 2,077,063 | 25 | 40 |
| | Upland | 40 | Geese | 13,160 | | |
| | Marsh | 441 | Swans | 448 | | |
| | Water | 50 | Coots | 170,191 | 4 | 10 |
| | Total | 1,198 | Total | 2,260,862 | 29 | 50 |
| III | Crops | 0 | Ducks | 424,854 | | |
| | Upland | 695 | Geese | 1,276,576 | | |
| | Marsh | 75 | Swans | 0 | | |
| | Water | 0 | Coots | 113,460 | | |
| | Total | 770 | Total | 1,814,890 | | |
| Totals | Crops | 667 | Ducks | 4,720,598 | 45 | 75 |
| | Upland | 835 | Geese | 1,316,056 | | |
| | Marsh | 890 | Swans | 448 | | |
| | Water | 170 | Coots | 405,216 | 4 | 10 |
| | Total | 2,562 | Total | 6,442,318 | 49 | 85 |
| | 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 | | | |

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.

Refuge Merced National Wildlife Refuge

Year 1967

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 10/31- 11/04 | 243 | 972 | Mallard (231); Pintail (192); Green-winged Teal (123); Baldpate (44); Coot (36); Cinnamon Teal (30); Shoveler (23); Snow Goose (10); Gadwall (9); Canvasback (4); Ruddy (1); Scaup (1); Wood Duck (1); Cackling Goose (1) | 706 | 353 | 1,059 | 243 | 1,059 |
| 11/7-11 | 195 | 780 | Mallard (114); Pintail (75); Green-winged Teal (36); Baldpate (26); Shoveler (10); Cinnamon Teal (5); Scaup (5); Coot (4); Gadwall (4); Ruddy (2); Canvasback (1); A. Merganser (1); Cackling Goose (1) | 284 | 142 | 426 | 195 | 426 |
| 11/14-18 | 176 | 704 | Mallard (133); Pintail (61); Baldpate (47); Green-winged Teal (32); Coot (14); Cackling Goose (15); Shoveler (7); Ruddy (7); Snow Goose (7); Ross' Goose (5); Gadwall (1); Ring-necked Duck (1); Canvasback (1); Buffle-head (1); White-fronted Goose (1) | 333 | 166 | 499 | 176 | 499 |
| 11/21-25 | 244 | 976 | Mallard (201); Pintail (88); Green-winged Teal (43); Coot (13); Gadwall (7); Cackling Goose (5); Shoveler (4); Cinnamon Teal (3); Ross' Goose (3); White-fronted Goose (3); Hooded Merganser (1) | 371 | 185 | 556 | 244 | 556 |
| 11/28- 12/02 | 254 | 1,016 | Mallard (183); Green-winged Teal (169); Pintail (107); Baldpate (14); Shoveler (13); Gadwall (8); Cackling Goose (5); Ross' Goose (7); Cinnamon Teal (4); Coot (4); Snow Goose (4); White-fronted Goose (2) | 520 | 260 | 780 | 254 | 780 |

(over)

Refuge Merced National Wildlife Refuge

Year 19670

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 12/05-09 | 192 | 768 | Mallard (77); Green-winged teal (57); Baldpate (37); Pintail (27); Snow Goose (18); Shoveler (12); Gadwall (7); White-fronted Goose (6); Cackling Goose (4); Ross' Goose (3); Coot (1) | 249 | 124 | 373 | 192 | 373 |
| 12/12-16 | 190 | 760 | Mallard (66); Green-winged teal (53); Baldpate (39); Shoveler (28); Pintail (24); Ross' Goose (10); Cackling Goose (8); Coot (8); Snow Goose (7); Gadwall (6); Cinnamon Teal (4); Buffle-head (3); Ring-necked duck (2); Wood Duck (1); European Widgeon (1) | 260 | 130 | 390 | 190 | 390 |
| 12/19-23 | 189 | 756 | Green-winged Teal (96); Mallard (77); Shoveler (66); Baldpate (50); Cackling Goose (20); Pintail (19); Snow Goose (15); Ross' Goose (10); Gadwall (10); White-fronted Goose (5); Coot (7); Ruddy (4); Cinnamon Teal (2) | 381 | 190 | 571 | 189 | 571 |
| 12/26-30 | 216 | 864 | Green-winged teal (140); Shoveler (82); Mallard (60); Baldpate (57); Pintail (37); Ruddy (11); Snow Goose (9); Cackling Goose (7); Ross' Goose (5); Cinnamon Teal (5); Coot (3); White-fronted Goose (3); Buffle-head (3) | 422 | 211 | 633 | 216 | 633 |
| 01/02-06 | 217 | 868 | Green-winged Teal (203); Shoveler (137); Pintail (109); Baldpate (88); Mallard (78); Cackling Goose (22); Coot (17); Gadwall (13); White-fronted Goose (11); Snow Goose (10); Cinnamon Teal (8); Ross' Goose (7); Ruddy (7); Canvasback (1); American Merganser (1) | 712 | 356 | 1,068 | 217 | 1,068 |

(over)

Refuge Merced National Wildlife Refuge

Year 19670

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|--|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 01/09-13 | 211 | 844 | Baldpate (184); Green-winged Teal (112); Shoveler (88); Pintail (22); Mallard (17); Coot (16); Cinnamon Teal (10); Ruddy (8); Cackling Goose (4); Snow Goose (4); White-fronted Goose (3); Ross' Goose (2); Gadwall (2) | 472 | 236 | 708 | 211 | 708 |
| 01/16-17 | 157 | 628 | Baldpate (59); Green-winged Teal (44); Shoveler (33); Coot (25); Cinnamon Teal (21); Pintail (15); Mallard (9); Ross' Goose (6); Snow Goose (4); Cackling Goose (4); White-fronted Goose (3); Ruddy (3); Canvasback (1); Gadwall (1) | 228 | 114 | 342 | 157 | 342 |
| TOTALS: | 2,484 | 9,936 | Mallard (1,246); Green-winged Teal (1108); Pintail (776); Baldpate (645); Shoveler (503); Coots (148); Cackling Goose (96); Cinnamon Teal (92); Snow Goose (88); Gadwall (68); Ross' Goose (58); Ruddy (43); White-fronted goose (37); Canvasback (8); Bufflehead (7); Scaup (6); Ring-neck (3); A. Merganser (2); Wood Duck (2); Hooded Merganser (1); European Widgeon (1) | 4,938 | 2,467 | 7,405 | 2,484 | 7,405 |

(over)

Refuge Merced National Wildlife Refuge Months of January through April, 19 70

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|---|----------------------|------------------------------|--------------------|---------------------|-----------------|---------------------|-----------------|--|--|
| | | | | | | Hunting | For Re- stocking | For Research | | |
| Common Name | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | Percentage | | | | Estimated number using Refuge | Pertinent information not specifically requested. List introductions here. |
| Calif. Quail | Wooded sloughs, 25a | 5 | | | | | | | 5 | Total estimated from incidental observations only. |
| Ring-necked Pheasant | Croplands, 820 a.; Marsh, 1,000 a.; Grassland, 120 a. | 5.5 | | | | | | | 350 | Total from planned inventory. |

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

Refuge Merced National Wildlife Refuge Months of May through August, 1970

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|---|----------------------|------------------------------|--------------------|---------------------|-----------------|---------------------|-----------------|--------------|---|
| | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | | Hunting | For Re- stocking | For Research | | |
| Calif. Quail | Wooded sloughs, 25 acres. | 2.5 | 1 | 6 | | | | | 10 | Pertinent information not specificoally requested. List introductions here. |
| Ring-necked Pheasant | Croplands, 670 acres. Marsh, 1,000 acres. Grassland, 770 acres. | 1.9 | 25 | 1,000 | | | | | 1,300 | |

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

Refuge Merced NWR Months of September through December, 19 70

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks | |
|----------------------|--|---------------------------------------|-----------------------|------------------------|------------------|-----------------|---------|-----------------|--------------|-------------------------------|--|
| | Common Name | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | Percentage | Hunting | For Re-stocking | For Research | Estimated number using Refuge | Pertinent information not specifically requested. List introductions here. |
| Calif. Quail | Wooded slough, 25 acres | 6.25 | | | | | | | | 4 | Estimate from incidental observations. |
| Ring-necked Pheasant | Croplands, 670 acres. Marsh, 1,000 acres Grassland, 770 acres. | 1.9 | | | | | 124 | | | 1,300 | |

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-17-55
Form R-3
(June 1945)

P-C GAME

Refuge Merced National Wildlife Refuge Calendar Year 1970

| (1) Species | (2) Density | (3) Young Produced | (4) Removals | | | | (5) Losses | | | (6) Introductions | (7) Estimated Total Refuge Population | | (8) Sex Ratio |
|--|--|--------------------------|-----------------|---------------------|------|-----------------|---------------|---------|----------------|----------------------|--|--------|---------------------|
| | | | Hunting | For Re- stocking | Sold | For Research | Predation | Disease | Winter Loss | | Number | Source | |
| Common Name | Cover types, total Acreage of Habitat | Number | | | | | | | | | | | |
| NO BIG GAME SPECIES INHABIT THIS REFUGE OR ADJACENT LANDS. | | | | | | | | | | | | | |

Remarks:

Reported by Gene A. Sipe, Wildlife Biologist

| (8) Sex Ratio | Estimated Total Refuge Population | (4) Introductions | (5) Losses | INSTRUCTIONS Removals | (3) Young Produced | (6) Density | (1) Species |
|----------------------|---|----------------------|---------------|--|--------------------------|----------------|----------------|
| Form NR-3 - BIG GAME | | | | | | | |
| | | | | (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer. | | | |
| | | | | (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. | | | |
| | | | | (3) YOUNG PRODUCED: Estimated total number of young produced on refuge. | | | |
| | | | | (4) REMOVALS: Indicate total number in each category removed during the year. | | | |
| | | | | (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year. | | | |
| | | | | (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured. | | | |
| | | | | (7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31. | | | |
| | | | | (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals. | | | |

(June 1945)

SMALL MAMMALS

Refuge Merced N. W. R.

Year ending April 30, 1970

| (1) Species Common Name | (2) Density Cover Types & Total Acreage of Habitat | Acres Per Animal | (3) Removals | | | | | (4) Disposition of Furs | | | | | (5) Total Popula- tion | |
|-----------------------------------|---|------------------------|-----------------|----------------|-----------------------|---------------------|-------------------|----------------------------|-------------------|-----------------|------------------------------|--------------|---------------------------------|-------------------|
| | | | Hunting | Fur Harvest | Predator Control * | For Re- stocking | For Re- search | Share Trapping | | | Total Refuge Furs Shipped | Furs Donated | | Furs Destroyed |
| | | | | | | | | Permit Number | Trappers Share | Refuge share | | | | |
| Muskrat | Marsh & water, 1060 a | 3.5 | | | 12* | | | | | | | | | 300 |
| Mink | Marsh & water, 1060 a | | | | | | | | | | | | | 5 |
| Striped Skunk | Upland & shallow Marsh, 2,000 a. | | | | | | | | | | | | | 25 |
| Longtail Weasel | Upland & shallow Marsh, 2,000 a. | | | | | | | | | | | | | 10 |
| Coyote | Upland & shallow Marsh, 2,000 a. | | | | | | | | | | | | | 10 |
| Raccoon | Upland & shallow Marsh, 2,000 a. | | | | | | | | | | | | | 25 |
| Opossum | Upland & Shallow Marsh, 2,000 a. | | | | | | | | | | | | | 15 |
| Blacktail Jack rabbit | Upland, 1,500 a. | 3 | | | | | | | | | | | | 500 |
| Desert Cottontail | Upland, 1,500 a. | 7.5 | | | | | | | | | | | | 200 |
| Badger | Upland, 1,500 a. | | | | | | | | | | | | | 5 |
| Calif. Ground Squirrel | Upland, 1,500 a. | 1.5 | | | 12* | | | | | | | | | 1,000 |

* List removals by Predator Animal Hunter

REMARKS: *Removed by Refuge personnel for dike damage control.

All population estimates are based on incidental observations only.

Reported by Gene A. Sipe

INSTRUCTIONS

Form NR-4 - **SMALL MAMMALS** (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) **SPECIES:** Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) **DENSITY:** Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) **REMOVALS:** Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) **DISPOSITION OF FUR:** On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) **TOTAL POPULATION:** Estimated total population of each species reported on as of April 30.
- REMARKS:** Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

Refuge Merced National Wildlife Refuge

Year 1970

Botulism

Lead Poisoning or other Disease

Period of outbreak None observed this period.

Period of heaviest losses _____

Losses:

| | Actual Count | Estimated |
|----------------|--------------|-----------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

Number Hospitalized No. Recovered % Recovered

| | | |
|----------------|-------|-------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease Fowl Cholera

Species affected Geese and Ducks

| Number Affected Species | Actual Count | Estimated |
|-------------------------|--------------|-----------|
| Ross' Goose | <u>6</u> | <u>10</u> |
| Pintail | <u>1</u> | <u>5</u> |
| Unknown Ducks | <u>4</u> | <u>10</u> |

Number Recovered 11

Number lost 25 (estimated)

Source of infection Immigrating birds.

Water conditions Good (Fresh from deep wells)

Food conditions Good (Mature millet and green browse)

Remarks Dead birds were picked up and burned.

Refuge Merced NWR Year 19 70

| Species | Collections and Receipts (Seeds, rootstocks, trees, shrubs) | | | | | | Plantings (Marsh - Aquatic - Upland) | | | | | | |
|---------|--|---------------------|---------|------------------------|------|-----------------------------------|---|--------------------------------------|--|---------------------------------------|------|----------|------------------|
| | Amount (Lbs., bus., etc.) | (2) C or R | Date | Method or Source | Cost | (3) Total Amount on Hand | Location of Area Planted | Rate of Seeding or Planting | Amount Planted (Acres or Yards of Shoreline) | Amount and Nature of Propagules | Date | Survival | Cause of Loss |
| | | | Nothing | Nothing to report. | | | | | | | | | |

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Remarks:

Total acreage planted:

Marsh and aquatic _____
 Hedgerows, cover patches _____
 Food strips, food patches _____
 Forest plantings _____

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Merced NWR County Merced State California

| Cultivated Crops Grown | Permittee's Share Harvested | | Government's Share or Return | | | | Total Acreage Planted | Green Manure, Cover and Water-fowl Browsing Crops Type and Kind | Total Acreage |
|------------------------|-----------------------------|----------|------------------------------|----------|-------------|----------|-----------------------|---|---------------|
| | Acres | Bu./Tons | Harvested | | Unharvested | | | | |
| | | | Acres | Bu./Tons | Acres | Bu./Tons | | | |
| Barley | | | | | | | 280 | Browsing-Barley | 280 |
| Wild Millet | | | | | 693 | 6,930 bu | 693 | Browsing-Irrigated Pasture | 393 |
| | | | | | | | | Fallow Ag. Land | 139 |

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 1

| Hay - Improved (Specify Kind) | Tons Harvested | Acres | Cash Revenue | GRAZING | Number Animals | AUM'S | Cash Revenue | ACREAGE |
|-------------------------------|----------------|-------|--------------|--|----------------|----------|--------------|---------|
| | | | | 1. Cattle | 388 | 2,587.86 | \$10,276.93 | 1,243 |
| | | | | 2. Other | | | | |
| | | | | 1. Total Refuge Acreage Under Cultivation | | | | 973 |
| Hay - Wild | | | | 2. Acreage Cultivated as Service Operation | | | | 973 |

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Merced NWRMonths of January through December, 1970
~~195~~

| (1) VARIETY* | (2) ON HAND BEGINNING OF PERIOD | (3) RECEIVED DURING PERIOD | (4) TOTAL | (5) GRAIN DISPOSED OF | | | | (6) ON HAND END OF PERIOD | (7) PROPOSED OR SUITABLE USE* | | |
|-----------------|--|-------------------------------------|--------------|--------------------------|--------|-----|--------|------------------------------------|----------------------------------|------|---------|
| | | | | Transferred | Seeded | Fed | Total | | Seed | Feed | Surplus |
| Barley | 10,000 | 12,550 | 22,550 | | 20,550 | | 20,550 | 2,000 | 2,000 | | |
| Wild Millet | 0 | 10,880 | 10,880 | | 10,880 | | 0 | | | | |

(8) Indicate shipping or collection points Merced, California(9) Grain is stored at Headquarters granary.(10) Remarks Barley and millet seed was purchased from Pacheco Feed & Seed Co., Los Banos, California

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

2-1979 (ND-12)
(9/63)

Bu of t F rie d W life

Merced National Wildlife Refuge

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number
Reporting Year
1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

| Date(s) of Application | List of Target Pest(s) | Location of Area Treated | Total Acres Treated | Chemical(s) Used | Total Amount of Chemical Applied | Application Rate | Carrier and Rate | Method of Application |
|------------------------|-------------------------|--|---------------------|------------------|----------------------------------|--|--|-----------------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 3/2-3 | All plants | Immediately around shop buildings and boneyard, also around all pump structures. | 2 acres | Dichlobenil | 100 lbs. | 4% active ingredients 96% inert ingredients | Granular | Hand spread |
| 5/14-21 | Annual broad-leaf weeds | Around headquarters, permanent pasture and along interior roads. | 18 | 2-4-D | 12 gal. | 2/3 gal/acre | H ₂ O 10 gal/ 190 gal | Tank sprayer |

10. Summary of results (continue on reverse side, if necessary)

3/2-3 Total kill
5/14-21 90% kill

Aerial view north of Glory Hole. Refuge Headquarters in trees at the left side of photograph, Fields at bottom of photograph were summer fallowed for cattail control.

August 26, 1970

Nail

Aerial view northwest over the permanent pasture and the east grasslands.

August 26, 1970

Nail

KESTERSON NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

January 1 to December 31, 1970

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I. GENERAL

A. Weather Conditions:

The weather conditions are covered in the San Luis section of this report.

B. Habitat Conditions:

1. Water:

Spill from adjacent duck clubs was the main water source for that portion of the Refuge lying west of Mud Slough. A portable, diesel powered, pump transported this water where gravity flow was impossible. The east side was supplied water from the San Luis Canal and Well No. 2. Well No. 1, which formerly helped supply the west side, was abandoned in April when it began to yield more sand than water.

Rainfall received during January and February filled upland pot-holes that persisted until April. By mid-May, the entire refuge was dry except for a small marsh area supplied by Well No. 2. Marsh acreage remained at about 126 acres throughout the summer.

Water was scarce until November and waterfowl hunting season opened on less than optimum water conditions. The California Department of Fish and Game, in an effort to protect the public hunting program at Kesterson, furnished some mitigation water and by the second week of hunting, conditions were somewhat improved.

Throughout the remainder of 1970, water conditions continued to improve as duck clubs began spilling water. Also during November, delivery was started through the San Luis Canal, and newly developed ponds and marsh areas on the east side were filled. By year's end, a total of nearly 1,500 acres was inundated.

C. Food and Cover:

Nearly half of the fall and winter marsh acreage at Kesterson is seasonally flooded grassland. These areas provided an abundance of food for early migrants, especially pintails.

Due to the scarcity of summer water, aquatic and emergent food plants were almost nonexistent. Fish and invertebrates, that

accompanied incoming water, supplied adequate food for waterfowl and marsh and water birds.

Another important food source was the luxuriant growth of upland grasses that appeared after the first winter rains. Geese and widgeon concentrated on these grasslands and utilization was excellent.

II. WILDLIFE

A. Migratory Birds:

1. Waterfowl:

a. Swans: This year's total use days by whistling swans was 1,875. We do not have an annual total for 1969, since the refuge was not established until July of that year. One means of comparison, however, might be this year's peak of 200 and last year's peak of 50. The period of greatest use was November 8 through the end of the year.

b. Geese: The last wintering geese left the week of March 22 - 28, and fall migrants were first seen the week of October 11 - 17. This year's peak number was 20,050 and use days totaled 789,950. Kesterson has a past history of good goose use and shows promise of being an excellent goose area.

c. Ducks: American widgeon, green-winged teal, pintail and shoveler, in that order, were the most important species with respect to use days. Annual use days numbered 1,402,681 and the four species just mentioned accounts for 1,239,030 of this total. The peak duck population was 14,151 during the period of February 1 - 14.

Duck use during the last four months this year exceeded last year's use during the same months by 166,490 use days. The refuge is located on a major local flyway and continued habitat development will undoubtedly be rewarded by increased use.

The California Department of Fish and Game assumed management of the public hunting program this year and most of the refuge was opened to waterfowl hunting. Otherwise, we might have seen a more marked increase in waterfowl use, as a result of habitat development work accomplished during the summer.

d. Coots and Gallinules: This year's coot population reached a peak of 9,100 during the week of March 8 - 14. Use days totaled 891,170. No known nesting occurred.

Suitable habitat is lacking so common gallinules were seldom seen at Kesterson. Permanent water and the accompanying cattail and bulrush growths should remedy this since the species is common on adjacent duck clubs.

2. Water and Marsh Birds:

Great blue herons, common and snowy egrets and pied-billed grebes were seen throughout the year. White pelicans, black-crowned night herons and eared grebes were seen during migration. The last recorded observation of wintering sandhill cranes was on March 19, and fall migrants were first seen on September 30. A peak population of 215 was recorded on March 12. The increased size of the hunting area probably discouraged roosting cranes from using new refuge marsh areas.

3. Shorebirds and Gulls:

Killdeer, American avocets, greater yellowlegs and black-necked stilts were the common species. Long-billed curlew, least and western sandpipers, dunlin and long-billed dowitchers, although less common, occurred in greater numbers than other shorebirds.

Both California and ring-billed gulls were seen occasionally during the year. These species were not numerous and no migration pattern was apparent. They merely appeared and/or disappeared at various times during the year.

4. Doves:

Mourning doves used Kesterson, but use was limited.

The refuge is almost devoid of trees and shrubs and most important dove foods in our locality are cultivated grains. Consequently, the grasslands at Kesterson offered little to attract doves.

B. Upland Game Birds:

The only species known to use Kesterson Refuge was the ring-necked pheasant. They were rarely seen and probably number about 25 or less.

C. Big-Game Animals:

No big-game species inhabit the refuge or adjacent lands.

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

Except for muskrat and mink, species and abundance of these animals were about the same as at San Luis NWR. Refer to the San Luis NWR narrative report for a current list of mammals.

E. Hawks, Eagles, Owls, Kites and Magpies:

Red-tailed hawks, marsh hawks and sparrow hawks were common. Occasionally a sharp-skinned hawk was observed, and during migration rough-legged hawks were seen. Two recorded sightings of a prairie falcon occurred on February 20 and March 25. One white-tailed kite was seen on November 1.

One golden eagle was seen on each of the following dates: March 12, March 19 and September 18.

Barn Owls, burrowing owls and yellow-billed magpies were also seen but observations were not recorded.

F. Other Birds:

Refer to the bird list included in the San Luis NWR narrative report.

G. Fish:

Mud Slough contains catfish, carp and very likely other warm water species. Salmon were seen several times in the rushing water below control structures. We believe these fish reached the refuge by migrating up the San Joaquin River, then into Salt and Mud Sloughs. One duck hunter informed us, from personal experience, that these fish were quite palatable despite the muddy water they were living in.

H. Reptiles:

Refer to the San Luis NWR narrative report. In addition the following species were collected and identified at Kesterson.

California Tiger Salamander (Ambystoma tigrinum)

California Horned Lizard (Prynosoma coronatum)

I. Disease:

No disease was noted during the year.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

1. Canals and Water Control Structures:

a. The Bureau of Reclamation let a contract for the construction of twelve holding reservoir cells of approximately 100 acres each. This 1,300 acre reservoir should be available to the refuge next year to impound water and create waterfowl habitat. Construction was approximately 90 percent complete when wet weather forced the contractor to halt work. The contractor will probably complete the project by early summer, and we are presently negotiating with the Bureau of Reclamation to work out details on our management of the reservoir cells.

b. Approximately one-half mile of the San Luis Canal was cleaned with dozer, grader and mobil crane. This canal was used to deliver water received from the Grassland Water District to waterfowl impoundments on the east side of the refuge. Delivery of this water enabled the refuge to create considerably more waterfowl habitat than last year and to save pumping costs on the deep well we used before.

c. Installed two 36" X 20' C.M.P. with flashboard risers and three 15" X 18' C.M.P. with flashboard risers to regulate water levels in and divert water from San Luis Canal.

d. Installed three 24" X 20' C.M.P. with flashboard risers to create and enlarge existing waterfowl impoundments on the east side of Mud Slough.

e. Rebuilt approximately 1-1/2 miles of levee around existing waterfowl impoundments.

2. Road Construction and Maintenance:

a. Approximately one-mile of road from hunter parking lot two to the five-pardners water control structure was graveled.

b. Two parking lots sites were leveled by refuge employees. In accordance with the terms of the public hunting agreement with the California Department of Fish and Game, these parking lots were graveled by the state.

c. All improved roads and trails were graded two times during the year.

3. Fence Construction and Maintenance:

a. No new fence was built during the year by the refuge. The Bureau of Reclamation began construction of a fence between the Kesterson Reservoir site and the remainder of the refuge.

b. All fences were checked periodically and repaired as necessary.

4. Sign Construction and Maintenance:

a. Two 4' X 8' standard refuge recognition signs were installed along Highway 140.

b. The Merced County Road Department was contacted and they installed two directional signs to the refuge at the junction of County Road J-14 and State Highway 140. (See photo section).

c. The California Highway Department was contacted and they installed two refuge approach signs where the refuge entrance road turns off State Highway 140. These signs made it much easier for hunters to find the entrance road to the check station in the dark and dense fog which is so common in the winter. (See photo section).

5. Building Construction and Maintenance:

a. An old duck club cabin was moved from along Gun Club Road to the present check station site along State Highway 140. The building was modified by a local contractor and painted inside and out by refuge personnel. The building is sound and with a minimum of investment we now have an excellent hunter check station.

b. A garage was moved from the same site along Gun Club Road

to the north end of the refuge. A four-inch concrete slab was poured to set the garage on before it was moved. This garage serves as a place to store the government vehicle used on the area as well as tools and miscellaneous supplies.

6. Miscellaneous:

A 525 gallon gasoline tank and a 525 gallon diesel tank was purchased and installed. Prior to this diesel was hauled from San Luis Refuge in barrels and gasoline was purchased in Gustine on a credit card. Although there is no government fuel contract for this refuge, the contractor for San Luis Refuge delivers to this area under that contract price.

B. Plantings:

1. Aquatic and Marsh Plants:

Nothing to report.

2. Trees and Shrubs:

Nothing to report.

3. Upland Herbaceous Plants:

Nothing to report.

4. Cultivated Crops:

Nothing to report.

C. Collections and Receipts:

1. Seed or Other Propagules:

Nothing to report.

2. Specimens:

Nothing to report.

D. Control of Vegetation:

Nothing to report.

E. Planned Burning:

Nothing to report.

F. Fires:

There were no fires on refuge lands during the year.

IV. RESOURCE MANAGEMENT

A. Grazing:

Grazing on the refuge was greatly reduced from last year. The Cooperative Agreement for joint administration of the Kesterson area by the Bureau of Reclamation and the Bureau of Sport Fisheries and Wildlife granted our bureau the authority to manage grazing on the land.

At the beginning of the year two grazing leases were in effect on the refuge. A partnership, Bernard Erreca and Jack Izoco had a grazing lease on 2,940 acres. They paid \$1,500 per month, and there were no restrictions as to type of livestock, number of animals at any one time or total use. This lease was not actually used by Erreca and Izoco, but it was sub-leased to Frank J. Freitas. This lease was terminated on April 30, 1970. No grazing was permitted on this land throughout the remainder of the year.

The other grazing lease in effect at the beginning of the year was a lease to Frank J. Freitas to graze 1,950 acres with payment to be made on the basis of actual use at \$3.75 per AUM. Under this lease, Mr. Freitas was required to pay a minimum payment of \$750.00 per month. Overuse was of no concern since essentially all the land involved was within the reservoir construction area. This lease was terminated by the Bureau of Reclamation on June 15, 1970, so they could begin reservoir construction.

During the period January 1 through June 15, Mr. Freitas utilized 1,391 AUM's for a total grazing revenue of \$5,310.00. Mr. Freitas

failed to use the minimum amount in March, and he paid the minimum payment of \$750.00 for that month.

On November 15, 1970, the refuge issued Mr. Freitas a grazing permit to graze 1,000 acres of Tract KR-1 from November 15 through March 31, 1971. The purpose of this grazing is to remove winter growth and promote feeding on the area by geese. The total number of cattle on the area cannot exceed 100 head at any one time and total use under the permit cannot exceed 500 AUM's. By the end of the year, approximately 150 AUM's were utilized. Final billing and payment will be made on the basis of actual use at the termination of the permit.

All income from refuge grazing permits will be transferred to the Bureau of Reclamation at the end of each fiscal year.

Haying, fur harvest, timber removal, commercial fishing and other uses are not applicable to this refuge.

V. FIELD INVESTIGATION AND APPLIED RESEARCH

Refer to the San Luis field investigations section.

VI. PUBLIC RELATIONS

A. Recreational Uses:

Public recreational use at this new refuge was light this year, and it will continue to be light until development progresses to the point where more forms of recreational use are available. Under the present development, the only public use available is public hunting. During the 1970-71 waterfowl hunting season, 2,643 hunters visited the refuge.

A hunting and fishing plan for the refuge has been approved which will allow fishing in Mud Slough. Publishing a regulation in the Federal Register is all that is needed now to open the area to public fishing.

B. Refuge Visitors:

All important visitors to the refuge are included in the visitor list for San Luis Refuge.

C. Refuge Participation:

All refuge participation concerning this refuge is included in the San Luis Refuge report.

D. Hunting:

Approximately 4,500 acres of the refuge was open to hunting during the 1970-71 waterfowl hunting season. The only portion of the refuge closed was the 1,300 acre Kesterson Reservoir construction site. Between October 17, 1970, and January 17, 1971, 2,643 hunters bagged 5,907 birds for a season average of 2.23 birds per hunter per day. According to the California Department of Fish and Game, Kesterson National Wildlife Refuge had the second highest success ratio of all the public waterfowl hunting areas in the state. The highest success was obtained on the San Luis Wasteway Wildlife Area, and the third highest in the state was San Luis National Wildlife Refuge.

The California Department of Fish and Game managed the public hunting program this year as they have on San Luis and Merced Refuges in past years.

The following table shows the waterfowl kill by species for the 1969-70 and 1970-71 waterfowl hunting seasons:

| <u>Kill by Species</u> | <u>1969-70 Season</u> | <u>1970-71 Season</u> |
|------------------------|-----------------------|-----------------------|
| DUCKS: | | |
| Mallard | 45 | 97 |
| Gadwall | 46 | 81 |
| Pintail | 1,168 | 1,288 |
| G.W. Teal | 1,319 | 1,820 |
| Cinn. Teal | 31 | 70 |
| Baldpate | 335 | 737 |
| Shoveler | 414 | 1,092 |
| Wood Duck | 1 | 3 |
| Redhead | 8 | 6 |
| Ring-Neck | 1 | 8 |
| Canvasback | 7 | 6 |
| Scaup | 11 | 10 |
| C. Goldeneye | 1 | 7 |
| Ruddy Duck | 59 | 138 |
| Coots | 48 | 235 |
| Other | -- | 89 |
| Total | 3,494 | 5,687 |

(Continued)

| <u>Kill by Species</u> | <u>1969-70 Season</u> | <u>1970-71 Season</u> |
|------------------------------|-----------------------|-----------------------|
| GEESE: | | |
| Common Canada | 2 | 5 |
| Cackling Goose | 59 | 140 |
| W.F. Goose | 9 | 6 |
| Snow Goose | 16 | 29 |
| Ross' Goose | <u>7</u> | <u>40</u> |
| Total | 93 | 220 |
| | | |
| Total Waterfowl | 3,587 | 5,907 |
| Total Hunters | 1,414 | 2,643 |
| Average Waterfowl Per Hunter | 2.5 | 2.3 |

*Other includes 88 ducks not identified by check station personnel due to lack of time and 1 Bufflehead.

On January 6, 47 hunters bagged a total of 239 ducks and geese for an average of 5.0 birds per hunter, the highest average on any one day this year. The poorest days hunting occurred on November 8, when 55 hunters bagged 22 ducks and geese for a .4 bird per hunter average.

E. Violations:

Excellent cooperation with game management agents and state wardens was experienced throughout the year. The following list of violators were apprehended during the year:

| <u>Date</u> | <u>Name</u> | <u>Violation</u> | <u>Agent</u> | <u>Disposition</u> |
|-------------|----------------------------------|------------------------|----------------|---|
| 10/23/70 | Gregory Wagoner Modesto | Hunting closed Area | Sipe | U.S. Commissioner 12/21/70 \$25 fine. |
| 10/23/70 | Laurence Hollander Modesto | Hunting closed Area | Sipe | U.S. Commissioner 12/21/70 \$25 fine. |
| 10/31/70 | Alexis Lubimoff San Francisco | Unplugged Shotgun | Nail | U.S. Commissioner 11/23/70 \$25 fine. |
| 12/16/70 | Orin Hatfield Turlock | Hunting closed Area | Sipe- Mayle | U. S. Commissioner 01/05/71 \$25 fine. |

(Continued)

| <u>Date</u> | <u>Name</u> | <u>Violation</u> | <u>Agent</u> | <u>Disposition</u> |
|-------------|----------------------------|--------------------------|--------------|---|
| 01/02/71 | James Rudd Visalia | Shooting Swan | Sipe | Pending U. S. Comm. 4/23/71 \$50 FINE |
| 01/10/71 | Temple Page Madera | Possessing Swan | Nail | Pending U. S. Comm. 4/23/71 \$100 FINE |
| 01/16/71 | Domenic Massei Whittier | Possessing Sandpipers | Mayle | Pending |

F. Safety:

Safety meetings and fire drills are held jointly with the San Luis-Merced Refuges. The safety record is also combined, and it is listed in the San Luis Report.

VII. OTHER ITEMS

A. Items of Interest:

Nothing to report.

B. Credits:

Credit for the preparation of this report is as follows:

Refuge Manager Nail - Sections III, IV, V, VI and VII.

Wildlife Biologist Sipe - Sections I and II.

Clerk-Typist Barger - Edited, typed and assembled the entire report.

Maintenance Foreman Mayle - Provided many helpful notes and assisted in locating and compiling much information for the body of the report.

Photograph credits are shown with each photograph in the photo section of this report.

W A T E R F O W L

REFUGE Kesterson National Wildlife Refuge

MONTHS OF H January through April, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|------------------------|----------------------------------|--------------|--------------|--------------|------------|-------------|--------------|--------------|------------|--------------|
| | 1/4-10 1 | 1/11-17 2 | 1/18-24 3 | 1/25-31 4 | 2/1-7 5 | 2/8-14 6 | 2/15-21 7 | 2/22-28 8 | 3/1-7 9 | 3/8-14 10 |
| Swans: | | | | | | | | | | |
| Whistling Trumpeter | | | | 5 | 5 | 5 | 5 | | | |
| Geese: | | | | | | | | | | |
| Canada Cackling Brant | | | | | | | | | | |
| White-fronted Snow | 50 | 50 | 5,000 | 15,050 | 15,050 | 15,050 | 4,600 | 4,000 | 3,500 | 2,850 |
| Blue | 25 | 25 | | | | | 100 | 75 | 75 | 35 |
| Total | 100 | 100 | 3,000 | 5,000 | 5,000 | 5,000 | 6,800 | 5,500 | 2,500 | 1,800 |
| Ducks: | | | | | | | | | | |
| Mallard | 175 | 175 | 8,000 | 20,050 | 20,050 | 20,050 | 11,500 | 9,575 | 6,075 | 4,685 |
| Black | | | | | | | | | | |
| Gadwall | 700 | 500 | 400 | 250 | 175 | 175 | 150 | 150 | 150 | 130 |
| Baldpate | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 25 |
| Pintail | 500 | 700 | 1,500 | 8,000 | 10,725 | 10,725 | 4,250 | 3,500 | 2,000 | 4,000 |
| Green-winged teal | 200 | 300 | 500 | 650 | 875 | 875 | 900 | 500 | 450 | 375 |
| Blue-winged teal | 3,500 | 3,500 | 2,500 | 1,000 | 650 | 650 | 325 | 350 | 700 | 1,000 |
| Cinnamon teal | 50 | 50 | 50 | 75 | 125 | 125 | 150 | 150 | 200 | 255 |
| Shoveler | 1,000 | 1,000 | 1,200 | 1,400 | 1,400 | 1,400 | 1,725 | 1,800 | 1,800 | 1,800 |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked Canvasback | | | | | | | | | | |
| Scaup Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | 1 | 1 | | | | |
| Ruddy | 200 | 200 | 200 | 150 | 150 | 150 | 150 | 250 | 400 | 500 |
| Other | | | | | | | | | | |
| Total | 6,200 | 6,300 | 6,400 | 11,575 | 14,151 | 14,151 | 7,700 | 6,750 | 5,750 | 8,085 |
| Coot: | | | | | | | | | | |
| | 7,000 | 8,000 | 5,000 | 5,000 | 4,625 | 4,625 | 6,750 | 7,000 | 8,500 | 9,100 |

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 Cont. 1-1
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WATERFOWL
 (Continuation Sheet)

REFUGE Kesterson National Wildlife Refuge

MONTHS OF January through April, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production Broods: Estimated seen : total |
|-------------------|----------------------------------|---------|----------|--------|---------|---------|----------|---------|---|--|
| | 3/15-21 | 3/22-28 | 3/29-4/4 | 4/5-11 | 4/12-18 | 4/19-25 | 4/26-5/2 | | | |
| Swans: | | | | | | | | | | |
| Whistling | | | | | | | | 105 | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | | | | |
| Cackling | 3,000 | 50 | | | | | | 477,750 | | |
| Brant | | | | | | | | | | |
| White-fronted | 150 | | | | | | | 3,395 | | |
| Snow | 3,000 | | | | | | | 264,600 | | |
| Blue | | | | | | | | | | |
| Total | 6,150 | 50 | | | | | | 745,745 | | |
| Ducks: | | | | | | | | | | |
| Mallard | 75 | 75 | 75 | 50 | 50 | 25 | 20 | 22,050 | | |
| Black | | | | | | | | | | |
| Gadwall | 25 | 100 | 75 | 50 | 25 | 25 | 10 | 5,495 | | |
| Baldpate | 3,750 | 2,550 | 1,000 | 450 | 200 | 50 | | 377,300 | | |
| Pintail | 275 | 200 | 125 | 75 | 30 | 25 | 25 | 44,660 | | |
| Green-winged teal | 750 | 1,550 | 1,000 | 600 | 250 | 100 | 60 | 129,395 | | |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 475 | 250 | 200 | 150 | 50 | 50 | 35 | 17,080 | | |
| Shoveler | 1,950 | 2,175 | 1,700 | 1,000 | 450 | 125 | 35 | 153,720 | | |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | 14 | | |
| Ruddy | 175 | 325 | 225 | 100 | 50 | 50 | 60 | 23,345 | | |
| Other | | | | | | | 1 | 7 | | |
| Total | 7,475 | 7,225 | 4,400 | 2,475 | 1,105 | 450 | 246 | 773,066 | | |
| Coot: | | | | | | | | | | |
| | 5,000 | 5,400 | 2,500 | 1,250 | 650 | 450 | 300 | 568,050 | | |

| | (5) | (6) | (7) | SUMMARY | |
|-------|----------------|-------------|------------------|---|--|
| | Total Days Use | Peak Number | Total Production | | |
| Swans | 105 | 5 | | Principal feeding areas Ducks used marsh areas. Geese and | |
| Geese | 745,745 | 20,050 | | widgeon browsed uplands. | |
| Ducks | 773,066 | 14,151 | | Principal nesting areas | |
| Coots | 568,050 | 9,100 | | | |
| | 2,086,966 | | | Reported by Gene A. Sipe | |

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

WATERFOWL

REFUGE Kesterson National Wildlife Refuge

MONTHS OF May through August, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|---------------------|----------------------------------|----------------|----------------|----------------|-----------------|---------------|----------------|----------------|-----------------|----------------|
| | 5/3-9 : 1 | 5/10-16 : 2 | 5/17-23 : 3 | 5/24-30 : 4 | 5/31-6/6 : 5 | 6/7-13 : 6 | 6/14-20 : 7 | 6/21-27 : 8 | 6/28-7/4 : 9 | 7/5-11 : 10 |
| Swans: | | | | | | | | | | |
| Whistling Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | | | | |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | |
| Snow - | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Total | | | | | | | | | | |
| Ducks: | | | | | | | | | | |
| Mallard | 20 | 20 | 20 | 20 | 20 | 15 | 15 | 15 | 10 | 10 |
| Black | | | | | | | | | | |
| Gadwall | 10 | 15 | 20 | 10 | 5 | | | | | |
| Baldpate | | | | | | | | | | |
| Pintail | 25 | 20 | 15 | 15 | 15 | 15 | 15 | 15 | 5 | |
| Green-winged teal | 60 | 35 | 10 | | | | | | | |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 35 | 25 | 10 | 10 | 10 | 15 | 20 | 20 | 15 | 10 |
| Shoveler | 35 | 15 | 5 | 5 | | | | | | |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | 60 | 25 | 5 | 5 | 5 | 5 | 5 | 5 | | |
| Other | | | | | | | | | | |
| Total | 245 | 155 | 85 | 65 | 55 | 50 | 55 | 55 | 30 | 20 |
| Coot: | | | | | | | | | | |
| | 300 | 250 | 185 | 100 | 75 | 40 | 20 | 20 | 20 | 25 |

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WATERFOWL
(Continuation Sheet)

REFUGE Kesterson National Wildlife Refuge

MONTHS OF May through August, 19 70

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated | (4) Production | |
|-------------------|----------------------------------|---------|----------|-------|--------|---------|---------|-----------|------------------|-------------------|-------|
| | 7/12-18 | 7/19-25 | 7/26-8/1 | 8/2-8 | 8/9-15 | 8/16-22 | 8/23-29 | waterfowl | Broods: | Estimated | |
| | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | days use | seen | total |
| Swans: | | | | | | | | | | | |
| Whistling | | | | | | | | | | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | | | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Total | | | | | | | | | | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 20 | 15 | 10 | 25 | 25 | 75 | 100 | | 3,045 | 25 | 30 |
| Black | | | | | | | | | | | |
| Gadwall | | | | | 25 | 25 | 50 | | 1,120 | | |
| Baldpate | | | 5 | | | | | | 35 | | |
| Pintail | | | 5 | 50 | 250 | 250 | 400 | | 7,665 | 5 | 10 |
| Green-winged teal | | | | | | 25 | 50 | | 1,260 | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 10 | 10 | 10 | 25 | 25 | 50 | 50 | | 2,450 | 5 | 10 |
| Shoveler | | | | | | | | | 420 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | | | | | | | | | 805 | | |
| Other | | | | | | | | | | | |
| Total | 30 | 25 | 30 | 100 | 325 | 425 | 650 | | 16,800 | 35 | 50 |
| Coot: | | | | | | | | | | | |
| | 25 | | | | | | | | 7,420 | | |

(over)

| | (5) | (6) | (7) |
|-------|----------------|-------------|------------------|
| | Total Days Use | Peak Number | Total Production |
| Swans | | 30 | 100 |
| Geese | | | |
| Ducks | 16,800 | 650 | 50 |
| Coots | 7,420 | 300 | 0 |
| | 24,220 | | |

SUMMARY

Principal feeding areas Sprig Lake and Mud Slough.

Principal nesting areas Sprig Lake and Mud Slough.

Reported by Gene A. Sipe

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

WATERFOWL

REFUGE Kesterson National Wildlife Refuge

MONTHS OF September through December, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | | |
|-------------------|----------------------------------|--------|---------|---------|-----------|---------|----------|----------|----------|--------|
| | 8/30-9/5 | 9/6-12 | 9/13-19 | 9/20-26 | 9/27-10/3 | 10/4-10 | 10/11-17 | 10/18-24 | 10/25-31 | 11/1-7 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Swans: | | | | | | | | | | |
| Whistling | | | | | | | | | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | 25 | | | |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | 1,000 |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Total | | | | | | | 25 | | | 1,000 |
| Ducks: | | | | | | | | | | |
| Mallard | 150 | 200 | 125 | 125 | 100 | 100 | 250 | 250 | 200 | 200 |
| Black | | | | | | | | | | |
| Gadwall | 75 | 100 | | | | 25 | 50 | 75 | 100 | |
| Baldpate | | | | | | | 25 | 50 | 75 | |
| Pintail | 500 | 1,000 | 1,000 | 1,000 | 500 | 350 | 1,500 | 5,000 | 7,000 | 3,000 |
| Green-winged teal | 200 | 500 | 250 | 250 | 50 | 75 | 150 | 700 | 1,000 | 1,500 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | 75 | 100 | 50 | 50 | 25 | 25 | | 50 | 100 | 150 |
| Shoveler | | | 25 | 25 | 25 | 25 | | 100 | 200 | |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | 10 | 10 | | 50 | 75 | 200 | 400 |
| Other | | | | | | | | | | |
| Total | 1,000 | 1,900 | 1,450 | 1,460 | 710 | 600 | 2,025 | 6,300 | 8,875 | 5,250 |
| Coot: | | | | | | | | | | |
| | | | 50 | 100 | 150 | 200 | 600 | 1,000 | 2,500 | 3,000 |

WATERFOWL
(Continuation Sheet)

REFUGE Kesterson National Wildlife Refuge

MONTHS OF September through December, 1970

| (1) Species | (2) Weeks of reporting period | | | | | | | | (3) Estimated waterfowl days use | (4) Production Broods: Estimated seen : total | |
|-------------------|----------------------------------|----------|----------|------------|--------------|----------|----------|----------|---|--|--|
| | 11/8-14 | 11/15-21 | 11/22-28 | 11/29-12/5 | 12/6-12 | 12/13-19 | 12/20-26 | 12/27-31 | | | |
| Swans: | | | | | | | | | | | |
| Whistling | 25 | 13 | | 12 | 20 | 15 | 25 | 200 | 1,770 | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | 15 | 250 | | |
| Cackling | | | | 200 | 200 | 200 | 200 | 300 | 7,100 | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | 50 | 75 | 725 | | |
| Snow | 1,000 | 500 | 200 | 500 | 400 | 300 | 350 | 500 | 32,250 | | |
| Ross' | | | | 100 | 50 | 50 | 50 | 50 | 2,000 | | |
| Total | 1,000 | 500 | 200 | 800 | 650 | 550 | 650 | 940 | 42,325 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 200 | 300 | 300 | 200 | 150 | 125 | 100 | 100 | 22,025 | | |
| Black | | | | | | | | | | | |
| Gadwall | | 300 | 300 | 200 | 200 | 250 | 150 | 100 | 13,275 | | |
| Baldpate | | 100 | 200 | 1,000 | 1,000 | 900 | 2,000 | 4,500 | 59,950 | | |
| Pintail | 3,000 | 2,500 | 2,500 | 1,500 | 1,200 | 500 | 600 | 1,200 | 234,550 | | |
| Green-winged teal | 1,500 | 3,500 | 3,500 | 5,000 | 3,000 | 1,700 | 1,500 | 1,400 | 177,625 | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 150 | 50 | | | | | | | 5,775 | | |
| Shoveler | | 350 | 500 | 500 | 500 | 600 | 2,500 | 3,000 | 52,450 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | 25 | | | 175 | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | 400 | 300 | 250 | 500 | 425 | 300 | 350 | 500 | 25,390 | | |
| Total | 5,250 | 7,400 | 7,550 | 8,900 | 6,475 | 4,400 | 7,200 | 10,800 | 591,215 | | |
| Coot: | | | | | | | | | | | |
| | 3,000 | 3,500 | 3,500 | 5,000 | (over) 5,000 | 5,500 | 6,000 | 6,000 | 303,700 | | |

| | (5) | (6) | (7) | SUMMARY | |
|-------|----------------|-------------|------------------|-------------------------|----------------------------------|
| | Total Days Use | Peak Number | Total Production | | |
| Swans | 2,170 | 200 | | Principal feeding areas | Sprig Lake, Teal Pond and |
| Geese | 44,205 | 1,000 | | | Windmill Ponds. |
| Ducks | 612,815 | 10,800 | | Principal nesting areas | |
| Coots | 315,700 | 6,000 | | | |
| | 974,890 | | | Reported by | Gene A. Sipe, Wildlife Biologist |
| 1970 | | | | | |
| TOTAL | 3,084,076 | | | | |

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

MIGRATORY BIRDS

(other than waterfowl)

Refuge Kesterson NWRMonths of January thru April 19 70

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total |
|-----------------------------------|-------------------|------|---------------------|------|------------------|------|--------------------|------------------|----------------|---------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | Estimated Number |
| I. Water and Marsh Birds: | | | | | | | | | | |
| White Pelican | 125 | 2/9 | 125 | 2/9 | 125 | 2/9 | | | | 200 |
| Great Blue Heron | Resident | | 7 | 3/12 | | | | | | 50 |
| Common Egret | " | | 4 | 3/12 | | | | | | 50 |
| Snowy Egret | " | | 2 | 4/30 | | | | | | 25 |
| Black-crowned Night Heron | " | | 5 | 4/30 | | | | | | 25 |
| Sandhill Crane | | | 215 | 3/12 | | | | | | 400 |
| II. Shorebirds, Gulls and | | | | | | | | | | |
| Terns: | | | | | | | | | | |
| Killdeer | Resident | | 14 | 3/25 | | | | | | 75 |
| Common Snipe | | | 3 | 3/12 | | | | | | 50 |
| Long-billed Curlew | | | 100 | 2/9 | | | | | | 300 |
| Greater Yellowlegs | | | 2 | 3/12 | | | | | | 15 |
| Least Sandpiper | | | 50 | 4/30 | | | | | | 175 |
| Dunlin | | | 1,275 | 3/25 | | | | | | 3,500 |
| Dowitcher | | | 1,050 | 4/17 | | | | | | 3,500 |
| Western Sandpiper | | | 575 | 4/30 | | | | | | 1,500 |
| American Avocet | | | 125 | 4/30 | | | | | | 500 |
| Black-necked Stilt | | | 16 | 4/30 | | | | | | 75 |
| Wilson's Phalarope | | | 6 | 4/30 | | | | | | 10 |
| California Gull | | | 2 | 4/30 | | | | | | 25 |
| Ring-billed Gull | | | 200 | 3/19 | | | | | | 500 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|------|------------------|------|-----|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | Resident | 2 | 4/30 | | 50 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | 1 | 3/12 | 1 | 3/19 | 1 |
| Duck hawk | | | | | |
| Horned owl | | | | | |
| Magpie | | | | | |
| Raven | | | | | |
| Crow | | | | | |
| Bald Eagle | 1 | 3/25 | Only Observation | | |
| Red-tailed Hawk | Resident | | 4 | 2/20 | 25 |
| Marsh Hawk | " | | 2 | 2/20 | 15 |
| Prairie Falcon | 1 | 2/20 | 1 | 3/25 | 2 |
| Sparrow Hawk | Resident | | 1 | 3/12 | 25 |

Reported by Gene A. Sipe

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

MIGRATORY BIRDS

(other than waterfowl)

Refuge Kesterson N.W.R.Months of May through August 1970

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|---|-------------------|------|---------------------|------|------------------|------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Pied-billed Grebe | Resident | | 7 | 8/10 | | | | | | 25 |
| Great Blue Heron | Resident | | 5 | 7/31 | | | | | | 35 |
| Snowy Egret | Resident | | 2 | 7/31 | | | | | | 25 |
| Black-crowned Night Heron | Resident | | 2 | 5/18 | | | | | | 50 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 58 | 6/22 | | | | | | 250 |
| Long-billed Curlew | | | 25 | 6/22 | | | | | | 100 |
| Greater Yellowlegs | | | 1 | 8/10 | | | | | | 10 |
| Least Sandpiper | 30 | 8/10 | 30 | 8/10 | | | | | | 125 |
| Dowitcher | 120 | 7/13 | 120 | 7/13 | | | | | | 200 |
| Western Sandpiper | 200 | 7/13 | 200 | 7/13 | | | | | | 300 |
| American Avocet | | | 59 | 7/31 | | | | | | 200 |
| Black-necked Stilt | | | 73 | 7/13 | | | | | | 350 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|-----|------|-----|-----|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | | 2 | 5/18 | | 50 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | | | | | |
| Duck hawk | | | | | |
| Horned owl | | | | | |
| Magpie | | | | | |
| Raven | | | | | |
| Crow | | | | | |
| Red-tailed Hawk | Resident | 4 | 6/22 | | 15 |
| Marsh Hawk | Resident | 1 | 7/13 | | 5 |
| Sparrow Hawk | Resident | 1 | 8/10 | | 10 |

Reported by Gene A. Sipe

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

MIGRATORY BIRDS

(other than waterfowl)

Refuge Kesterson NWR

Months of September through December 1970

| (1) Species Common Name | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total Estimated Number |
|---|-------------------|-------|---------------------|-------|------------------|-------|--------------------|------------------|----------------|-------------------------------------|
| | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Eared Grebe | 6 | 9/30 | 6 | 9/30 | 2 | 10/6 | | | | 10 |
| Pied-billed Grebe | Resident | | 10 | 9/18 | | | | | | 50 |
| Great Blue Heron | Resident | | 9 | 12/31 | | | | | | 25 |
| Common Egret | Resident | | 1 | 10/6 | 1 | 11/10 | | | | 5 |
| Snowy Egret | Resident | | 50 | 10/6 | | | | | | 100 |
| Black-crowned Night Heron | | | 1 | 10/27 | | | | | | 10 |
| Sandhill Crane | 5 | 9/30 | 198 | 10/27 | | | | | | 400 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Killdeer | Resident | | 77 | 10/27 | | | | | | 200 |
| Long-billed Curlew | 100 | 10/16 | 100 | 10/16 | | | | | | 250 |
| Greater Yellowlegs | | | 13 | 10/6 | | | | | | 30 |
| Least Sandpiper | | | 110 | 9/30 | | | | | | 500 |
| Long-billed Dowitcher | | | 300 | 11/27 | | | | | | 800 |
| Western Sandpiper | | | 100 | 11/27 | | | | | | 250 |
| American Avocet | | | 6 | 9/30 | | | | | | 50 |
| Ring-billed Gull | | | 50 | 11/27 | | | | | | 75 |

(over)

| (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|----------|------|------|-------|-----|
| III. <u>Doves and Pigeons:</u> | | | | | |
| Mourning dove | | 5 | 9/18 | | 100 |
| White-winged dove | | | | | |
| IV. <u>Predaceous Birds:</u> | | | | | |
| Golden eagle | 1 | 9/18 | | | 2 |
| Duck hawk | | | | | |
| Horned owl | | | | | |
| Magpie | | | | | |
| Raven | | | | | |
| Crow | | | | | |
| White-tailed Kite | 1 | 11/1 | 1 | 11/10 | 2 |
| Sharp-skinned Hawk | | | 1 | 10/16 | 2 |
| Red-tailed Hawk | Resident | | 8 | 12/31 | 25 |
| Rough-legged Hawk | | | 1 | 12/31 | 1 |
| Marsh Hawk | Resident | | 5 | 11/27 | 15 |
| Sparrow Hawk | Resident | | 2 | 9/18 | 10 |

Reported by Gene A. Sipe, Wildlife Biologist

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes) II. Shorebirds, Gulls and Terns (Charadriiformes) III. Doves and Pigeons (Columbiformes) IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Kesterson N.W.R. For 12-month period ending August 31, 1970

Reported by Gene A. Sipe Title Wildlife Biologist

| (1) Area or Unit Designation | (2) Habitat | | (3) Use-days | (4) Breeding Population | (5) Production | |
|------------------------------------|----------------|---------|-----------------|-------------------------------|-------------------|----|
| | Type | Acreage | | | | |
| I | Crops | 0 | Ducks | 16,800 | 35 | 50 |
| | Upland | 3,700 | Geese | | | |
| | Marsh | 800 | Swans | | | |
| | Water | 20 | Coots | 7,420 | | |
| | Total | 4,600 | Total | 24,220 | 35 | 50 |
| II | Crops | 0 | Ducks | | | |
| | Upland | 1,300 | Geese | | | |
| | Marsh | 0 | Swans | | | |
| | Water | 0 | Coots | | | |
| | Total | 1,300 | Total | | | |
| Totals | Crops | 0 | Ducks | 16,800 | 35 | 50 |
| | Upland | 5,000 | Geese | | | |
| | Marsh | 880 | Swans | | | |
| | Water | 20 | Coots | 7,420 | | |
| | Total | 5,900 | Total | 24,220 | 35 | 50 |
| | 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 | | | |

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.

Refuge Kesterson National Wildlife Refuge

Year 19 70

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 11/28- 12/02 | 175 | 700 | Green-winged Teal (89); Shoveler (72); Pintail (55); Baldpate (34); Coot (18); Ruddy (7); Mallard (6); Gadwall (4); Cackling Goose (2); Ross' Goose (2); Snow Goose (1); Ring-necked Duck (1) | 291 | 72 | 363 | 175 | 363 |
| 12/05-09 | 160 | 640 | Green-winged Teal (58); Coot (48); Shoveler (28); Baldpate (27); Pintail (16); Ruddy (15); Mallard (11); Cackling Goose (9); Gadwall (7); Snow Goose (5); White-fronted Goose (1) | 205 | 56 | 281 | 160 | 281 |
| 12/12-16 | 139 | 556 | Green-winged Teal (129); Shoveler (84); Baldpate (37); Cackling Goose (29); Coot (29); Pintail (23); Mallard (12); Gadwall (10); Snow Goose (7); Ross' Goose (5); Ruddy (2); Cinnamon Teal (1); Scaup (1) | | | | | |
| 12/19-23 | 197 | 788 | Shoveler (136); Green-winged Teal (125); Baldpate (53); Pintail (33); Cackling Goose (26); Ruddy (18); Snow Goose (9); Gadwall (6); Ross' Goose (6); White-fronted Goose (1); Scaup (1); American Golden-eye (1) | 415 | 104 | 519 | 197 | 519 |
| 12/26-30 | 233 | 932 | Green-winged Teal (250); Shoveler (173); Baldpate (108); Pintail (53); Unidentified (48); Cackling Goose (16); Ross' Goose (7); Gadwall (7); Mallard (5); Canvasback (2); Scaup (2); American Golden-eye (1); Coot (1); White-fronted Goose (1) | 674 | 168 | 842 | 233 | 842 |

(over)

Refuge Kesterson NWR

Year 19 70

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|--|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 10/17-21 | 146 | 584 | Pintail (186); Green-winged Teal (30); Baldpate (11); Mallard (9); Shoveler (8); Gadwall (3); Cinnamon Teal (3); Ruddy (2); Ring-necked Duck (1); Canvasback (1); Ross Goose (1); Other (18) | 273 | 69 | 342 | 146 | 342 |
| 10/24-28 | 176 | 704 | Pintail (143); Green-winged Teal (41); Coot (21); Baldpate (13); Shoveler (11); Ring-necked Duck (4); Gadwall (3); Cinna- mon Teal (2); Mallard (2); Ruddy (1); Canvasback (1); Scaup (1) | 243 | 60 | 303 | 176 | 303 |
| 10/31- 11/04 | 126 | 504 | Pintail (97); Green-winged Teal (35); Baldpate (17); Coot (16); Shoveler (8); Ruddy (5); Gadwall (5); Mallard (2); Canvasback (1); Cackling Goose (1) | 187 | 46 | 233 | 126 | 233 |
| 11/07-11 | 239 | 956 | Pintail (79); Green-winged Teal (33); Baldpate (24); Ruddy (16); Mallard (11); Shoveler (5); Coot (4); Scaup (4); Cinnamon Teal (3); Gadwall (2); Golden-eye (1); Wood Duck (1) | 183 | 46 | 229 | 239 | 229 |
| 11/14-18 | 147 | 588 | Pintail (79); Green-winged Teal (50); Mallard (12); Ruddy (12); Shoveler (7); Gadwall (6); Baldpate (6); Coot (3); Cackling Goose (3); Ring-necked Duck (2); Wood Duck (1); Snow Goose (1) | 182 | 46 | 228 | 147 | 228 |

(over)

Refuge Kesterson NWR

Year 19 70

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|--------------------------|----------------------|-------------------------------|---------------------------|
| 11/21-25 | 111 | 444 | Pintail (131); Green-winged Teal (52); Baldpate (14); Cinnamon Teal (7); Coot (5) Mallard (5); Gadwall (4); Cackling Goose (4); Shoveler (3); Canada Goose (1) | 226 | 56 | 282 | 111 | 282 |
| 01/02-06 | 211 | 844 | Pintail (256); Shoveler (215); Baldpate (206); Green-winged Teal (162); Gadwall (15); Mallard (14); Cackling Goose (13); Coot (12); Ruddy (9); Redhead (6); Ross' Goose (5); Snow Goose (4); American Golden eye (2); Canada Goose (1); Canvasback (1); Scaup (1); Buffle-head (1); Wood Duck (1) | 924 | 231 | 1,155 | 211 | 1,155 |
| 01/09-13 | 355 | 1,420 | Green-winged Teal (522); Shoveler (237); Baldpate (86); Pintail (83); Coot (46); Ruddy (27); Cackling Goose (20); Cinnamon Teal (16); Unknown (15); Ross' (10); Mal- lard (6); Gadwall (5); Canada Goose (2); Golden eye (2); White-fronted Goose (1); Snow Goose (1) | 1,079 | 270 | 1,349 | 355 | 1,349 |
| 01/16-17 | 228 | 912 | Green-winged Teal (244); Shoveler (105); Baldpate (101); Pintail (54); Cinnamon Teal (38); Coot (32); Ruddy (24); Cackling Goose (17); Unknown (7); Gadwall (4); Ross' Goose (4); Mallard (2); White- fronted Goose (2); Snow Goose (1); Snow Goose (1) | 636 | 159 | 795 | 228 | 795 |

(over)

Refuge Kesterson NWR

Year 1960

| (1) Weeks of Hunting | (2) No. Hunters Checked | (3) Hunter Hours | (4) Waterfowl Species and Nos. of Each Bagged | (5) Total Bagged | (6) Crippling Loss | (7) Total Kill | (8) Est. No. of Hunters | (9) Est. Total Kill |
|----------------------------|-------------------------------|------------------------|---|------------------------|---|----------------------|-------------------------------|---------------------------|
| | TOTALS: 2,643 | 10,572 | Green-winged Teal (1,820); Pintail (1,288) Shoveler (1,092); Baldpate (737); Coot (235); Cackling Goose (140); Ruddy (138); Mallard (97); Unidentified Ducks (88); Gadwall (81); Cinnamon Teal (70); Ross' Goose (40); Snow Goose (29); Scaup (10); Ring-necked (8); Golden-eye (7); canvas back (6); Red-head (6); White-fronted Goose (6); Canada Goose (5); Wood Duck (3); Buffle-head (1): | 5,907 | 1,475 Crippling Loss est. at 25% | 7,382 | 2,643 | 7,382 |

(over)

Refuge Kesterson N. W. R. Months of January through April, 19 70

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|--|----------------------|------------------------------|--------------------|---------------------|-----------------|---------------------|-----------------|--|--|
| | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | | Hunting | For Re- stocking | For Research | | |
| Common Name | | | | | Percentage | | | | Estimated number using Refuge | Pertinent information not specifically requested. List introductions here. |
| Ring-necked Pheasant | Upland, 5,000 a. | | | | | | | | 25 | Total estimated from incidental observations only. |

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

Refuge Kesterson National Wildlife Refuge Months of May through August, 19 70

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|--|----------------------|------------------------------|--------------------|---------------------|-----------------|---------------------|-----------------|--------------|---|
| | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | | Hunting | For Re- stocking | For Research | | |
| Ring-necked Pheasant | Upland, 5,000 acres. | 200 | | | | | | | 25 | Estimate from incidental observations. |

Pertinent information not
specifically requested.
List introductions here.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

Refuge Kesterson NWRMonths of September through December, 1970

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|-------------------------|---------------------|--|--------------------------|------------------------------|---------------------|-----------------|---------|---------------------|-----------------|--|
| | Common Name | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | Percentage | Hunting | For Re- stocking | For Research | Estimated number using Refuge |
| Ring-necked Pheasant | Upland, 4,400 acres | 176 | | | | | | | 25 | Estimated from incidental observations. |

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|--|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

| (1) Species | (2) Density | (3) Young Produced | (4) Removals | | | | | (5) Losses | (6) Introductions | (7) Estimated Total Refuge Population | | (8) Sex Ratio | |
|----------------|--|--------------------------|-----------------|---------------------|------|-----------------|-----------|---------------|----------------------|--|----------------|---------------------|--------|
| | | | Hunting | For Re- stocking | Sold | For Research | Predation | | | Disease | Winter Loss | | Number |
| Common Name | Cover types, total Acreage of Habitat | Number | | | | | | | | | | | |
| | No big game species inhabit this refuge or adjacent lands. | | | | | | | | | | | | |

Remarks:

| (8) Sex Ratio | (7) Estimated Total Refuge Population | (6) Introductions | (5) Losses | INSTRUCTIONS | (4) Young Produced | (3) Density | (2) Species |
|----------------------|--|--------------------------|---|--------------|--------------------------|----------------|----------------|
| Form NR-3 - BIG GAME | | | | | | | |
| | (1) | SPECIES: | Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer. | | | | |
| | (2) | DENSITY: | Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. | | | | |
| | (3) | YOUNG PRODUCED: | Estimated total number of young produced on refuge. | | | | |
| | (4) | REMOVALS: | Indicate total number in each category removed during the year. | | | | |
| | (5) | LOSSES: | On the basis of known records or reliable estimates indicate total losses in each category during the year. | | | | |
| | (6) | INTRODUCTIONS: | Indicate the number and refuge or agency from which stock was secured. | | | | |
| | (7) | TOTAL REFUGE POPULATION: | Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31. | | | | |
| | (8) | SEX RATIO: | Indicate the percentage of males and females of each species as determined from field observations or through removals. | | | | |

(June 1945)

SMALL MAMMALS

Refuge Kesterson N. W. R.Year ending April 30, 1970

| (1) Species Common Name | (2) Density Cover Types & Total Acreage of Habitat | Acres Per Animal | (3) Removals | | | | (4) Disposition of Furs | | | | | (5) Total Popula- tion | | |
|-----------------------------------|---|------------------------|-----------------|----------------|-----------------------|---------------------|----------------------------|------------------|-------------------|-----------------|------------------------------|---------------------------------|-----------------|-------------------|
| | | | Hunting | Fur Harvest | Predator Control * | For Re- stocking | For Re- search | Share Trapping | | | Total Refuge Furs Shipped | | Furs Donated | Furs Destroyed |
| | | | | | | | | Permit Number | Trappers Share | Refuge share | | | | |
| Muskrat | Marsh & water, 900 a. | 4.5 | | | | | | | | | | | 200 | |
| Mink | Marsh & water, 900 a. | | | | | | | | | | | | 10 | |
| Striped Skunk | Upland & shallow Marsh, 5,500 a. | | | | | | | | | | | | 15 | |
| Longtail Weasel | Upland & shallow Marsh, 5,500 a. | | | | | | | | | | | | 10 | |
| Coyote | Upland & shallow Marsh, 5,500 a. | | | | | | | | | | | | 15 | |
| Raccoon | Upland & shallow Marsh, 5,500 a. | | | | | | | | | | | | 25 | |
| Opossum | Upland & shallow Marsh, 5,500 a. | | | | | | | | | | | | 20 | |
| Blacktail Jack- rabbit | Upland, 5,000 a. | 6.7 | | | | | | | | | | | 750 | |
| Desert Cottontail | Upland, 5,000 a. | 10 | | | | | | | | | | | 500 | |
| Badger | Upland, 5,000 a. | | | | | | | | | | | | 10 | |
| California ground Squirrel | Upland, 5,000 a. | 2 | | | | | | | | | | | 2,500 | |

* List removals by Predator Animal Hunter

REMARKS: All population estimates are based on incidental observations only.

INSTRUCTIONS

Form NR-4 - **SMALL MAMMALS** (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) **SPECIES:** Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) **DENSITY:** Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) **REMOVALS:** Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) **DISPOSITION OF FUR:** On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) **TOTAL POPULATION:** Estimated total population of each species reported on as of April 30.
- REMARKS:** Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

Refuge Kesterson NWR

Year 19 70

Botulism

Lead Poisoning or other Disease

Period of outbreak None detected.

Kind of disease None detected.

Period of heaviest losses _____

Species affected _____

Losses:

| | Actual Count | Estimated |
|----------------|--------------|-----------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

| Number Affected Species | Actual Count | Estimated |
|----------------------------|--------------|-----------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

| Number Hospitalized | No. Recovered | % Recovered |
|---------------------|---------------|-------------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

Number Recovered _____

| | | |
|----------------|-------|-------|
| (a) Waterfowl | _____ | _____ |
| (b) Shorebirds | _____ | _____ |
| (c) Other | _____ | _____ |

Number lost _____

Source of infection _____

Areas affected (location and approximate acreage) _____

Water conditions _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Food conditions _____

Condition of vegetation and invertebrate life _____

Remarks _____

Remarks _____

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Kesterson NWR Year 1970

| Collections and Receipts (Seeds, rootstocks, trees, shrubs) | | | | | | | Plantings (Marsh - Aquatic - Upland) | | | | | | |
|--|------------------------------------|---------------------|------|------------------------|------|-----------------------------------|---|--------------------------------------|--|---------------------------------------|------|----------|------------------|
| Species | Amount (Lbs., bus., etc.) | (2) C or R | Date | Method or Source | Cost | (3) Total Amount on Hand | Location of Area Planted | Rate of Seeding or Planting | Amount Planted (Acres or Yards of Shoreline) | Amount and Nature of Propagules | Date | Survival | Cause of Loss |
| Nothing to report. | | | | | | | | | | | | | |

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Remarks: _____

Total acreage planted:
 Marsh and aquatic _____
 Hedgerows, cover patches _____
 Food strips, food patches _____
 Forest plantings _____

3-1758
 Form NR-8
 (Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Kesterson National Wildlife Refuge County Merced State California

| Cultivated Crops Grown | Permittee's Share Harvested | | Government's Share or Return | | | | Total Acreage Planted | Green Manure, Cover and Water-fowl Browsing Crops Type and Kind | Total Acreage |
|------------------------|-----------------------------|----------|------------------------------|----------|-------------|----------|-----------------------|---|---------------|
| | Acres | Bu./Tons | Harvested | | Unharvested | | | | |
| | | | Acres | Bu./Tons | Acres | Bu./Tons | | | |
| | | | | | | | | | |
| | | | | | | | | Fallow Ag. Land | |

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 1

| Hay - Improved (Specify Kind) | Tons Harvested | Acres | Cash Revenue | GRAZING | Number Animals | AUM'S | Cash Revenue | ACREAGE |
|-------------------------------|----------------|-------|--------------|--|----------------|---------|--------------|---------|
| | | | | 1. Cattle | 435 | 1,541.5 | \$5,778.75 | 2,675 |
| | | | | 2. Other | | | | |
| | | | | 1. Total Refuge Acreage Under Cultivation | | | | |
| Hay - Wild | | | | 2. Acreage Cultivated as Service Operation | | | | |

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1570
NR-88
(1/51)

REFUGE GRAIN REPORT

Refuge Kesterson National Wildlife Refuge

Months of January through December, 1970
~~XXXX~~

| (1) VARIETY* | (2) ON HAND BEGINNING OF PERIOD | (3) RECEIVED DURING PERIOD | (4) TOTAL | (5) GRAIN DISPOSED OF | | | | (6) ON HAND END OF PERIOD | (7) PROPOSED OR SUITABLE USE* | | |
|--------------------|--|-------------------------------------|--------------|--------------------------|--------|-----|-------|------------------------------------|----------------------------------|------|---------|
| | | | | Transferred | Seeded | Fed | Total | | Seed | Feed | Surplus |
| Nothing to report. | | | | | | | | | | | |

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1970

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

| Date(s) of Application | List of Target Pest(s) | Location of Area Treated | Total Acres Treated | Chemical(s) Used | Total Amount of Chemical Applied | Application Rate | Carrier and Rate | Method of Application |
|------------------------|------------------------|--|---------------------|------------------|----------------------------------|--|------------------|-----------------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 3/2 | All plants | Immediately around refuge signs for fire control | 1/4 | Dichlobenil | 15 lbs. | 4% active ingredients 96% inert ingredients | Granular | Hand Spread |

10. Summary of results (continue on reverse side, if necessary)

3/2 Total kill immediately around signs for fire control and maintenance problem.