

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

NARRATIVE REPORT

January 1 to December 31, 1969

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

REFUGE PERSONNEL

Permanent

Leon C. Snyder.Refuge Manager^a
Melvin T. Nail.Refuge Manager^b
Stephen R. Vehrs.Assistant Refuge Manager
Robert K. CoffmanAssistant Refuge Manager - Merced^c
Gene A. Sipe.Wildlife Biologist (Management)^d
Ann M. McConnell.Clerk-typist
James R. Mayle.Maintenance Foreman II
Melvin FordOperator General (HD) - San Luis
Edgar M. Derrick.Maintenanceceman II - Merced
Raymond R. FullerOperator General (HD) - Kesterson

Temporary

George W. FreemanMaintenanceceman I - San Luis^e
Harvey L. Haynes.Maintenanceceman I - Merced^f
~~Marcos D. HernandezMaintenanceceman I - Merced^g~~
Craig A. Gephart.Conservation Aid (Laborer)^h
Richard W. ChetteroLaborerⁱ
Ronald J. Brioso.Laborer^j

^aRetired January 11, 1969

^bEOD 04-20-69

^cTransferred, Loxahatchee NWR, Delray Beach, Florida, 09-07-69

^dEOD 09-21-69

^eEOD 04-06-69

^fEOD 04-10-69

^gEOD 03-24-69, Terminated 10-03-69

^hEOD 06-16-69, Terminated 09-12-69

ⁱEOD 08-12-69, Terminated 09-19-69

^jEOD 08-12-69, Terminated 09-19-69

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I GENERAL

A. Weather Conditions:

The following weather information was recorded at the San Luis Dam weather station located 12 miles west of Los Banos. This facility is administered by the California Department of Water Resources in co-operation with the U.S. Weather Bureau.

In general, weather for the year was cooler and wetter than normal for the area. Rain accumulations during January and February caused some flooding on all three refuges. Fog prevailed during late November and December. Freezing weather occurred during January and December only, with 30° being the lowest temperature recorded.

B. Habitat Conditions:

1. Water:

Salt Slough, our only water source at San Luis, flowed all year. The slough is principally a drain for irrigation water during summer months, and for rain and snow melt during winter and spring months. The quality of water varies with the time of year. During the irrigation runoff season, dissolved salts are of a much higher concentration than during the winter and spring months. Water quality analysis will be recorded by refuge personnel during 1970.

The U.S. Geological Survey maintains a gauging station upstream from our Pumping Plant No. 1, and it is hopeful these figures will become available to us during 1970, and future years.

The refuge has applied for a water right of 91.9 CFS. At present we are capable of pumping approximately 62.4 CFS at the two lifting stations.

Large accumulations of winter rain water caused shut down of Lift Stations No. 1, 2 and 3 during February and March. Lift Station No. 5 was shut down January through April because of excessive rain accumulations. These rains during January and February caused extensive flooding in the Moffat Field area. This was due to the small and generally poor condition of the existing water control facilities.

1969 CLIMATOLOGICAL OBSERVATIONS

Month	Precip.	Normal Precip.	Evaporation Inches	Wind Miles	Max. Temp.	Min. Temp.	Mean Monthly Temp.	Normal Mean Monthly Temp.
January	4.63	1.67	-2.66	2789	65	30	44.7	45.2
February	4.26	1.39	-2.42	2459	63	33	47.2	50.2
March	.46	1.31	+4.92	3091	79	33	53.8	54.7
April	.78	.76	+7.89	4600	82	39	58.5	60.4
May	0	.37	+13.38	6074	97	36	65.0	66.5
June	.08	.06	+14.31	8158	91	35	65.5	72.8
July	0	.01	+20.16	6959	99	35	76.2	78.7
August	0	.01	+19.07	4922	101	54	79.9	77.1
September	.77	.13	+12.21	4769	100	49	74.2	72.9
October	.98	.40	+6.43	3515	90	42	61.4	64.3
November	.72	.98	+2.08	1687	79	34	54.7	53.4
December	<u>.78</u>	<u>1.47</u>	<u>+1.09</u>	<u>1913</u>	69	30	49.5	46.4
Total	13.46	8.56	+96.46	50,936				

All marsh units were maintained through the spring. The Moffat Field and Teal Lake units were dried up for water control structure and low levee rehabilitation during the summer and early fall period. The remaining refuge water units were flooded during the summer.

The San Joaquin River was at flood stage January through June and offered some nesting habitat.

Fields A, B, C, D and E were first irrigated during July and continued through September when they were dried up. The mature crop was not reflooded until the close of the waterfowl hunting season.

Annual summary of water use indicated a total of 16,200 acre feet pumped during the year on approximately 2,720 acres.

2. Food and Cover:

San Luis National Wildlife Refuge is divided into three units for management purposes. (See map.) Management Unit I contains about 500 acres of marsh, 1,860 acres of upland, 66 acres of millet and 40 acres of wooded sloughs and river bottom. Unit II is made up of nearly 1,500 acres of marsh, 1,100 acres of upland and 50 acres of wooded river bottom. Unit III consists of approximately 1,000 acres of marsh, 1,275 acres of upland and 25 acres of wooded sloughs.

Excess cattle grazing had a most obvious adverse effect on upland food and cover. Grazing activity is also suspected as a deterrent to production of desirable emergent food species. Exclosures will be established during 1970 in an effort to determine the effects of grazing at San Luis. In the meantime, we are committed, as a condition of acquisition, to excessive grazing until December 1972.

Although grazing took its toll throughout most of the refuge, one area in the southeast corner of Unit II provided good upland bird cover. This was an area with little grass and the coarse forbes were unattractive to cattle. Consequently, the area provided excellent nesting and escape cover for ring-necked pheasants and it received extensive use by this species. In fact, we estimated that about 75 percent of the pheasants on the refuge could be found here.

The millet fields are located in the extreme southeast corner of the refuge. Early in January, before heavy rains dispersed them, large numbers of ducks and geese used these flooded fields of

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MERCED COUNTY, CALIFORNIA

UNITED STATES
DEPARTMENT OF THE INTERIOR

U.S. FISH AND WILDLIFE SERVICE
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120° 50'

RIOE RIE

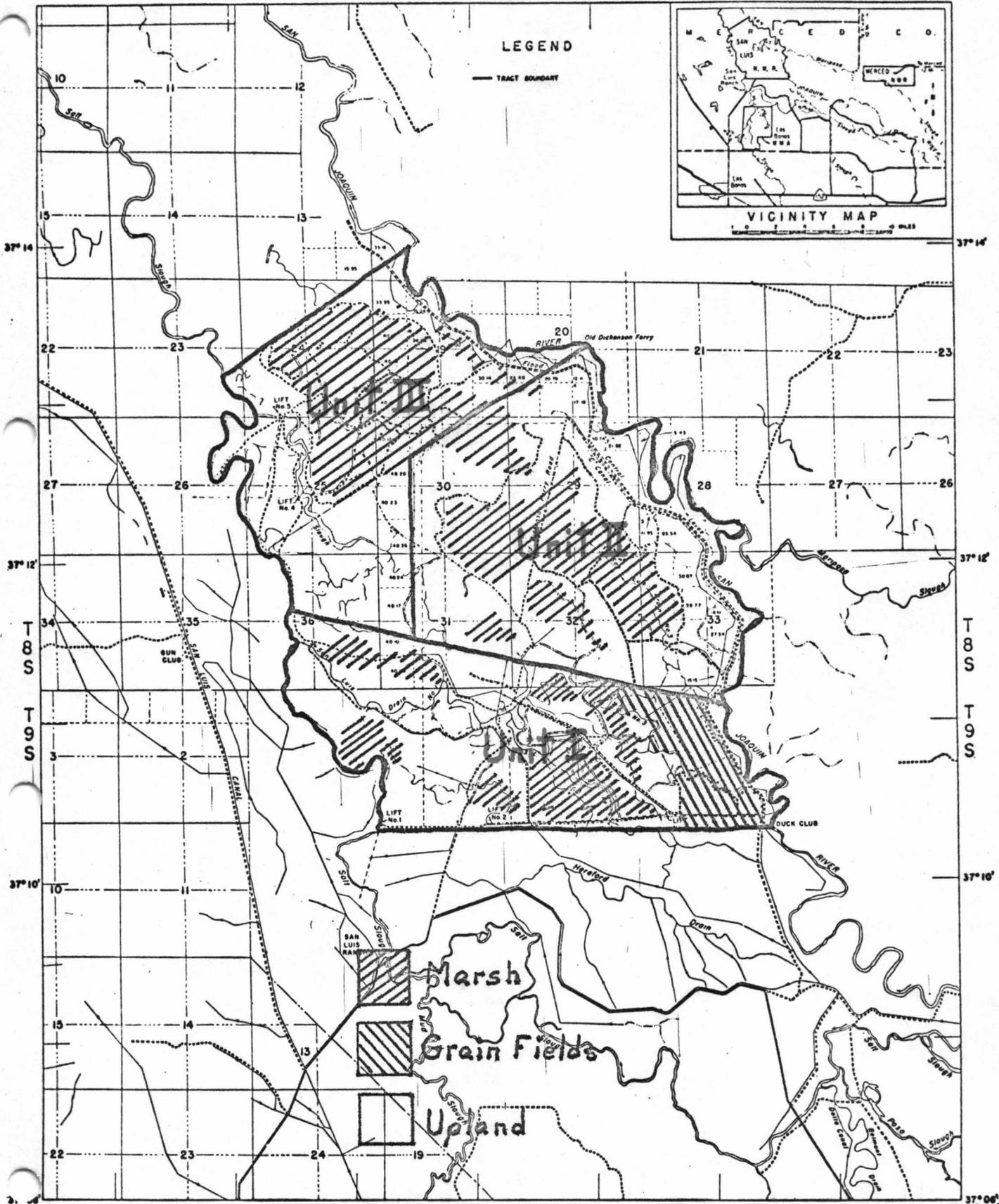
120° 48'

120° 46'

120° 44'

LEGEND

— TRACT BOUNDARY



Marsh
Grain Fields
Upland

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

PORTLAND, OREGON
REVISED: 4-67
DECEMBER, 1967

RIOE RIE

MT. DIABLO MERIDIAN



mature grain. An estimated 150,000 birds used the fields during the concentration peak. During the summer all fields were disced and 151 acres were reseeded with millet. The remainder volunteered and a good stand was available for birds returning this fall. Approximately 100 acres were flooded again during December and received moderate use by both ducks and geese. Geese also used the remaining unflooded acreage. A peak of about 7,000 geese and 30,000 ducks was estimated during the period of greatest use.

Upland areas received considerable use by geese, especially Moffat Field. Growing conditions were ideal during March and grazing geese utilized the abundant grasses produced. Goose use was also good on the upland areas in the south end of Unit III and northwest corner of Unit II, during the fall and early winter.

II WILDLIFE

A. Migratory Birds:

1. Waterfowl:

a. Swans: Whistling swans were present at San Luis from January 1 through March 8. A peak number of 30 occurred during the week of January 12-18. The only other swan observation was of a lone immature on November 30. Total swan use days this year was 896, which was considerably less than the 4,592 recorded during 1968. This year's peak number was also somewhat below last year's peak of 70 birds. We know on only one swan killed on San Luis Refuge during this hunting season. The violator obviously did not know what he had shot, because he brought it through the check station and told the attendant it was the biggest "snow goose" he had ever seen. Now that's the expensive way to learn the difference.

b. Geese: The last wintering geese departed during the week of April 13-19 and our first fall migrants arrived the last week in October. A peak number of 30,875 occurred the first week in January and a total of 1,317,400 use days was recorded for the year. This represents a peak decrease of 9,125 birds and also a decrease of 867,400 use days from 1968.

With respect to numbers, cackling geese predominated our wintering goose population. This species peaked at 27,500 and accounted for 878,500 use days this year. The following table shows peak numbers and use days for all species of geese using San Luis Refuge during the years 1967-69.

Species	1967*		1968		1969	
	Peak Number	Days Use	Peak Number	Days Use	Peak Number	Days Use
Canada	100	2,170	1,000	50,750	200	6,125
Cackling	300	9,905	35,000	1,025,521	27,500	878,500
White-fronted	1,800	34,440	11,000	522,958	1,200	81,200
Snow	2,500	48,860	12,000	579,376	2,400	167,300
Ross	--	--	450	6,195	3,000	184,275
Totals		95,375		2,184,800		1,317,400

*May thru December only

During the months of January through March, goose use on San Luis was concentrated in a portion of Management Unit II, between Loaf Lake and the San Joaquin Levee. However, most of the geese concentrated in the millet fields, in Management Unit III, during the last two months of this year. Teal Lake, in Management Unit I, also received moderate goose use throughout the year.

c. Ducks: San Luis' duck population numbered about 163,500 at the start of the year. This number decreased to approximately 6,300 by the first week in February and then increased gradually to about 47,000 by mid-March. A steady decline occurred from mid-March to mid-April when the population stabilized at about 2,500 to 3,000 burds. July marked the beginning of a three month period during which our duck population showed a gently fluctuating trend. Then came October and almost overnight we had nearly 300,000 ducks. A peak number of 493,000 was recorded during the week of November 16-22 and the year ended with about 200,000 ducks using the refuge. Duck days use totaled 28,949,130 this year as compared to 20,126,627 during 1968. Almost all of the use increase occurred during the last two months of 1969. Such a substantial increase, approximately 43 percent, tends to support the production increase indicated by this years breeding ground surveys. The following table is a compilation of waterfowl use days on San Luis Refuge since its inception in 1967.

Year	Ducks	Coots	Geese
1967*	21,113,750	1,106,550	95,375
1968	20,126,627	2,954,650	2,184,800
1969	28,949,130	1,312,500	1,317,400

*May thru December only

Duck production this year was down slightly from last years 3,000 birds to flight stage. Data from breeding pair counts and brood counts were used to compute this years production, which was about 2,500 ducks. Cinnamon teal, mallard and gadwall were, in that order, the most numerous nesting species. Other nesting species include the pintail, shoveler, green-winged teal, ruddy duck and wood duck. Mammalian predators are considered the most important limiting factor affecting our waterfowl production.

d. Coots and Gallinules: A major portion of the use by these two species occurred during February and March. Coot "depredation" shooting was allowed during this period, and birds sought the sanctuary of the refuge. The combined peak numbered 10,000, which is considerably less than the 30,000 recorded in 1968. A decrease in the numbers of coots and gallinules was apparent throughout 1969. Consequently, total use days for these species was considerably less than in 1968. Production, also, was less this year than in 1968. This year San Luis produced 300 coots and 200 gallinules as compared to 375 coots and 300 gallinules last year.

2. Water and Marsh Birds:

An abundance of both species and numbers of birds in this group is found on San Luis Refuge. The more common species are great blue heron, common and snowy egrets, American bittern and black-crowned night heron. Seasonal migrants include white pelicans, eared and western grebes, white-faced ibises, and sandhill cranes.

The sandhill crane population reached a peak of nearly 3,000 individuals this year. White pelicans numbered about 500 during their period of greatest abundance. These figures represent a decrease of about 2,000 in the sandhill crane peak and no change in pelican peak numbers. White-faced ibises numbered about 100 in December last year, but no sightings of this species were reported this fall. We speculate that development work in the Moffat Field area temporarily disturbed habitat previously attractive to this species.

3. Shorebirds, Gulls and Terns:

The killdeer is probably the most common shorebird resident at San Luis. However, such species as least sandpipers, long-billed dowitchers, western sandpipers, long-billed curlews, black-necked stilts and American avocets may be more numerous or conspicuous at certain times during the year. But then, these species are nearly absent at times while the killdeer is always relatively numerous.

Both California and ring-billed gulls frequent the refuge in their never-ending search for food. The "ring-bills" can be seen most of the year but "Californias" are observed mostly during the period from late spring through early fall.

Black terns were present during July and August and a peak number of 25 was recorded on July 17. It was interesting to watch these birds as they hovered and dived on some ill-fated minnow or other small fish. They seldom miss.

4. Doves:

Mourning doves, although resident to San Luis, usually increase to a migration peak during late August. This years peak number was about 2,000 or 500 less than the 1968 peak. Nesting doves produced an estimated 1,000 offspring during 1969.

B. Upland Game Birds:

Ring-necked pheasants are present in limited numbers. We estimated approximately 300 pheasants resident to San Luis Refuge this year. This figure represents a 25% decrease from 1968. Records show a corresponding production decrease from 200 last year to 150 this year. Mammalian predation is undoubtedly an important limiting factor on upland bird as well as waterfowl production.

The California quail is the only other known species of upland game bird on San Luis. This year they numbered about 150 as opposed to 100 last year. We are certainly pleased with the increased use by these little birds.

C. Big Game Animals:

Neither San Luis Refuge nor the lands adjacent to it support a big game population.

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

Muskrats, coyotes, striped skunks, badgers, opossums and raccoons are all present on the refuge. Skunks, raccoons and California ground squirrels are considered serious nest predators. Ground squirrels and muskrats also do considerable damage to our dikes and levees. Although some control of these two species is required, we do not anticipate a need for control of other species.

Other mammals known to occur on San Luis are the desert cottontail and black-tailed jackrabbit. We are convinced that there is also a variety of small, inconspicuous species. A mammal list for the area is presently being compiled and should be ready for printing during 1970.

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

Two golden eagles used the refuge during most of January before they departed. No other eagles were recorded until November 9 when two were seen along the south boundary. These two birds remained on or near the refuge and were seen several times through the end of the year.

Red-tailed, sparrow, and marsh hawks were seen in abundance throughout the year. The "red-tail", probably our most numerous hawk, peaked at 50 on December 23. Sparrow hawks are common also, but the number seemed to fluctuate considerably over short time intervals. One could usually see at least one marsh hawk on a trip through the marsh and occasionally a glimpse of a Cooper's hawk along the wooded sloughs.

Great-horned owls and barn owls, although rarely seen, were present most of the year. The small, odd-looking burrowing owl is also a resident of San Luis and this year an estimated 30 young were produced. We now estimate our total burrowing owl population to be 50.

Yellow-billed magpies use the refuge on an intermittent basis. This years peak of 75 was recorded on September 23. They also nest on San Luis, but no nesting data were collected.

F. Other Birds:

Loggerhead shrikes, red-shafted flickers and scrub jays are three of the common species within this group of many and varied birds. A refuge bird list is appended. Although the present list already shows 160 species, it is only the first printing and further efforts should increase this number substantially in the next few years.

G. Fish:

Striped bass, channel catfish, Sacramento blackfish, Sacramento perch, European carp, largemouth bass, goldfish, smallmouth bass, California sucker, white catfish, brown and black bullheads, black crappie and bluegill are known to inhabit refuge waters. A more complete list of fish should be available for the 1970 report.

H. Reptiles and Amphibians:

The bullfrog, Rana catesbeiana, is found in the sloughs and oxbows on the refuge. Numerous other species of frogs, toads, lizards, salamanders, snakes and turtles exist, but positive identification have not been made. In the near future, we hope to be able to provide at least a partial list of this important segment of our fauna.

I. Disease:

No disease observed during the year.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

1. Canals and Water Control Structures:

a. The major portion of this years work program consisted of renovating the water system in Moffat Field. Approximately 7.6 miles of low levees were rebuilt and extended or raised where necessary. Sixteen water control structures were installed to replace existing structures which had deteriorated beyond use. Existing structures were repaired and utilized wherever possible, but the number of structures with any useful life remaining were few. In order to accomplish this work, the Moffat Field was kept essentially dry throughout the summer and early fall. With adequate water control facilities, this field will now provide excellent waterfowl nesting and wintering habitat.

b. Rehabilitation of the lift canal was completed during the year. The majority of the rehabilitation work was completed on this canal last year. Approximately 990 yards of the south bank of the canal was raised to grade. This canal is now capable of carrying the full 71.7 CFS that we are asking for in our water right application for this division point. Our pumping capacity must now be increased from the present 42.3 CFS before we will be able to utilize the full amount.

c. Existing levee at Teal Lake was rebuilt and the existing levee was extended to increase the size of this marsh area. A total of .75 miles of low levee was rebuilt and constructed. Three water control structures were installed to allow manipulation of water levels for cattail or disease control.

d. Pump 1B at Lift Station No. 1 was completely rebuilt during the year. The bowls, impeller, bearings and shaft were replaced. The deck planks of Lift Station No. 1 were replaced during the year.

e. The electric motor on Pump 2B at Lift Station No. 2 was hit by lightning during a freak electrical storm in September. The motor was rewound and new bearings installed. The deck planks on Lift Station No. 2 were also replaced during the year.

f. The entire length of A Canal, 1-1/2 miles, was cleaned with the truck-mounted dragline. This dragline works very fine where an adequate roadbed is available, but in marshy areas this is usually not the case. A track-mounted dragline is urgently needed at this station.

g. Water hyacinth did not cause as much trouble this year as it has in the past. Dense mats of this plant build up at the pump station intakes and restrict water movement. Several days work were required this year to break the matted plants loose and float them away downstream. The water flow in Salt Slough was sufficient to float away many of the plants, and floating poles put across the pump intake to deflect the plants away has done much to alleviate this problem.

2. Road Construction and Maintenance:

a. An agreement between the Bureau and the San Joaquin Levee District was approved during the year which will allow the refuge to use the San Joaquin Levee District levee road as a public tour road in exchange for the Bureau assuming all maintenance responsibility. In conformance with the agreement, the refuge mowed, burned, and drug chains along both sides of the six mile levee road to control what the levee district considers to be undesirable weed growth. We plan to utilize the road as a public tour route during 1970 and determine whether or not the maintenance required is justified by the benefits received. If it is not, we will terminate the agreement and develop a tour route on other roads within the refuge.

b. Approximately 4.9 miles of refuge roads were graveled during the year. Continental Oil Company paid to gravel 1.9 miles of road under the terms of a permit issued to them to enter on the refuge and drill an exploratory oil well. The refuge gravelled an additional 3.0 miles under informal contract.

c. Prior to gravelling, approximately .5 miles of road were built up in low places to bring the road grade above the high water line. Flood damage received during the heavy rain in January and February was repaired, and the possibility of such damage occurring again was eliminated.

d. All roads were graded several times during the year. In addition, the road to Lift Station No. 1 was sanded in January to allow access to the pumping station during wet weather. Sanding is only a temporary measure as it is easily washed off and new sand must be added frequently. We plan to pursue a

program of graveling some roads every year, and hopefully in the future we will not have to resort to the less costly but temporary sanding of refuge roads.

3. Fence Construction and Maintenance:

a. Approximately 1.25 miles of boundary fence along the San Joaquin River was replaced this year. This fence was severely damaged by flood waters, and, since it was an old fence anyway, it was replaced rather than repaired. The fence line was moved back away from the river channel where each year portions of the bank supporting the fence was eroding away. The fence was straightened considerably, and the shorter length makes replacement and repair less costly.

b. Pump Lift Stations No. 1 and 2 were fenced with chain link fencing. These pump stations are along our public tour road, and the fencing was necessary in the interest of public Safety. The fences are not 100% effective barriers to keep people away from the pumps since the determined could still get over or around. It does, however, satisfy that the Bureau has made a reasonable effort to protect the visiting public.

c. Two cattle guards were installed on the San Joaquin levee road. These cattle guards replaced gates that visitors had to open and very often neglected to shut. The cattle guards or gates are necessary to separate grazing units for the refuge permittee's cattle.

4. Building Maintenance:

a. The shop-service building received extensive repairs and facelifting during the year. This building was purchased with the refuge. It was in very poor condition, and it was wholly inadequate for our use. Since development money is non-existent, we decided to fix it up enough to make it useable and hope someday for something better.

A concrete floor was poured in two stalls of the building. The two stalls were then boxed in with plywood and two overhead doors installed. The county building inspector condemned the building with its antique wiring system, and the building had to be completely rewired. Three phase power was incorporated into the rewiring job.

b. The windmill-storage tank water system at the hunter check station was removed and an electric pump and pressure system was installed. The building housing the storage tank was razed and the windmill was taken down and sold.

5. Miscellaneous:

- a. Two base sets and six mobile radio units were obtained from the Bureau of Reclamation. Since the radios were high frequency, the Bureau frequency could not be used. We applied for a radio frequency and was assigned a frequency of ML63.075. No one else in this area is on or near enough to this frequency to cause interference or skips. The total cost of putting the entire system in good operating condition and installing radios and antennas was approximately \$1,500. This is a pretty cheap radio system at today's prices. Communications between the three refuges and the refuge office has been good.
- b. A loading ramp was constructed at the field headquarters.
- c. An electric gas pump was purchased and installed.

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:

The total acreage of cropland on San Luis Refuge, 266 acres, was planted to wild millet, Echinochloa crusgalli, during the year. Fields C and D, containing 35 and 80 acres respectively, were seeded to millet in 1968. During the summer of 1969, these fields were disced and irrigated, and they both volunteered a good crop of millet. The 60 acre B Field volunteered a fair crop of barley in 1968. During 1969 this field was contoured and seeded to millet, an excellent stand resulted. The 55 acre E Field which was previously in barley and the 36 acre A Field which has been fallow were also contoured and seeded to millet. Field E produced a fair stand of millet and the stand in Field A was considered good.

Field A was the only field flooded before the end of hunting season. This field was flooded in mid-December and received excellent use by mallards. We received complaints from the adjacent landowner, Bowles Farming Co., that the ponding of water in this field was raising the water table on their field. Since salts

brought to the soil surface by the rising water table would have a serious adverse effect on their crops, we drained the field and assured them that we would convert the field to a use which would not require the ponding of water on it.

Crops at San Luis Refuge are of uncertain value. During some years and under the right set of circumstances, they could be very important. If millet is seeded to mature early, it could be flooded prior to or during the early part of the hunting season to hold birds off the rice and relieve depredation problems. In years of high winter waterfowl populations and limited natural food, the millet crops could provide an important source of food following the hunting season. Until we have more knowledge of the value of millet planting on the refuge, we plan to continue our present acreage, but we do not plan to expand it.

C. Collections and Receipts:

1. Seed or Other Propagules:

Nothing to report. All millet seed planted on the refuge during 1969 was purchased in 1968 and reported in last years report.

2. Specimens:

Nothing to report.

D. Control of Vegetation:

Some mechanical control of vegetation was accomplished during the year. Approximately 200 acres of cattail in the Moffat Field and 10 acres in Teal Lake were disced while these units were dried up for water control facilities repair. Actual discing was accomplished in August and September. Due to the botulism threat existing at the time, as much cattail residue as possible was burned prior to flooding of the units. This burning was done to reduce the amount of decaying matter in the water which produces a medium in which botulism toxin is produced. The cattail discing produced the desired open water area during the winter, but this type of control is temporary and regrowth will be rapid.

Roadsides were mowed several times during the year to keep down weed growth. Unimproved trails on the refuge were either mowed or disced to keep down grass and weed growth and keep the trails open enough to be followed.

Considerable time was spent on mechanical weed control on the San Joaquin Levee. This has already been discussed in another section. The levee will have to be sprayed with 2,4-D at least once, and perhaps twice, each spring to keep down weed growth to the satisfaction of the levee district.

E. Planned Burning:

Cattail residue in the Moffat Field and Teal Lake areas were burned to reduce the amount of decaying matter in the water. These fires were easily contained by the bare levees and fire breaks constructed with crawler tractor and scraper.

As previously discussed, both sides of the six mile San Joaquin Levee were burned to remove weed growth. This fire normally burned itself out when it hit green vegetation at the toe of the slope. A fire-fighting unit was on hand at all times to restrict fire to the desired area.

F. Fires:

No wild fires occurred on the refuge during the year.

IV RESOURCE MANAGEMENT

A. Grazing:

One permittee, former owner Butler Noble, grazed the refuge during the year. He utilized 10,552 AUMs out of a maximum allowable total of 11,033 AUMs. At the rate of \$3.75 per AUM, the total grazing income was \$39,571.98. The following table shows total AUMs of grazing and total grazing income for 1967 through 1969.

	<u>Total AUMs</u>	<u>Total Revenue</u>
1967*	7,466	27,997.50
1968	.9,685	36,318.75
1969	<u>10,552</u>	<u>39,571.98</u>
Total	27,703	\$103,888.23

*March 1 - December 31 only

Forage growth during 1969 was considerably better than during 1968. Late spring rains provided adequate moisture to extend the active growing season through mid-May. By late May upland grasses were dormant due to lack of moisture, and grass growth was confined to wetter areas around the marsh.

Cattle graze the marsh heavily during the drier summer months. Desirable waterfowl food plants are consumed and the value of the marsh to waterfowl is reduced. Although we are committed to the present grazing agreement through December 31, 1972, we have firm plans to establish two grazing exclosures in the marsh to document the conflict of interest between grazing the marsh and waterfowl food production. When the grazing permit expires in 1972, we will then have some factual information on which to base our restricting cattle from some areas and reducing their numbers in others.

The refuge seems to have passed the awkward period where the former landowner still thinks he owns the land and tries to dictate our management. Several incidents have happened during the past few years that have convinced Mr. Noble that we are running the refuge. He has now resigned himself to the position of a permittee leasing grazing privileges from the refuge. During the past year he has been exceptionally cooperative and a good working relationship exists between him and the refuge.

B. Fur Harvest:

One trapping permit was issued during the year to Ray Delmas, Stevenson, California. Heavy rains during January and February and flooding conditions prevented Mr. Delmas from carrying out an active trapping program. A total of 319 muskrats were taken under this permit. The permittee was given the full share of the pelts. Average price received by Mr. Delmas for the pelts was \$.95.

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

Mr. Carroll D. Littlefield spent the winter studying sandhill cranes in California's central valley. Carroll is a candidate for the Doctor of Philosophy Degree from the University of Arizona. While here in California he resided at Merced NWR and his observations included San Luis, Merced and Kesterson National Wildlife Refuges.

Some generalizations concerning the sandhill cranes in our area this winter are: (1) The population of lesser sandhill appeared to stabilize at about 3,500 late in November and (2) the wintering population of greater sandhill cranes numbered approximately 45. The following data was collected from roost counts and submitted by Mr. Littlefield.

Merced NWR #1

October 24	5,943±
November 1	1,800±
November 8	2,100
November 15	1,200
November 25	1,330
December 10	1,043

Merced NWR #2

October 29	400±
November 1	500±

Roost inactive after November 2

Merced NWR #3

November 1	2,100
November 9	554
November 16	260
November 25	2,000±
November 26	1,300±
November 27	755
November 28	200

Roost inactive after December 1.
Replaced by Greenhouse Roost.

Greenhouse

December 1	785
December 8	905

San Luis NWR

November 6	601
November 19	2,855
November 30	59
December 12	802

Kesterson NWR

October 31	800
November 12	121
November 29	790
December 11	183

Bowles Farm

November 2	4,000±
November 16	2,500
December 2	597
December 11	573

A nest study at San Luis and Merced Refuges was initiated by Mr. Don Knapp, Wildlife Biologist from the Davis Research Center, Davis, California. Don was especially interested in shorebirds and raptors and how they are affected by pesticide residues. His work on this project is still in the initial stages and no conclusions could be made.

Mr. Robert Ringo, Fisheries Serviced Biologist from Reno, Nevada, set gill nets in Deadman Slough again this year. Bob's work here was part of a pesticide monitoring program. Results of this study have not yet been made available.

VI PUBLIC RELATIONS

A. Recreational Uses:

Public use at San Luis in 1969 dropped from the 21,169 visitors of 1968 to 16,927. This drop in total use is primarily a result of a decrease in fishing pressure and a result of the storm and flood conditions which prevailed during the early part of the year. Fishermen accounted for 5,082 visits this year compared to 8,209 in 1968. Fishing during the summer was very good at San Luis Reservoir and O'Neill Forebay. Many fishermen who normally would have fished San Luis Refuge moved to the water project areas.

During the 1969-70 waterfowl hunting season 5,401 hunters hunted on San Luis compared to 4,503 during the 1968-69 hunting season.

B. Refuge Visitors:

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

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:

May 13: Attended regular monthly meeting of the Grassland Water District in Los Banos.

June 3-5: Conducted Assistant Regional Supervisor Russell, Wilderness Biologist Mazzoni, Refuge Manager Devan and U.S.G.M.A. Wills on a tour of the San Juan Island Refuges on Puget Sound, Washington.

VISITOR ROSTER

DATE	NAME	AFFILIATION	PURPOSE OF VISIT
1/22	Mr. Robert Shields	Asst. Regional Supervisor, Portland	Tule Elk
1/27-28	Mr. Frank Jacox	Refuge Mgt. Asst., Portland	Safety Inspection
1/27-28	Mr. John Jones	Bureau Safety Officer, Wash. D.C.	Safety Inspection
2/4	Mr. Robert Hulbert	SCS, Los Banos	Waterfowl Ident. Slides
2/11	Mr. Clay Crawford	Asst. Regional Director, Portland	GWD Water Agreement
2/14	Mr. Rex Lyndall	Merced Agri. Comm., Merced	Rodent Control
2/14	Mr. Allen Miller	Merced Agri. Comm., Merced	Rodent Control
3/21 & 27	Mr. Robert Hulbert	SCS, Los Banos	GSA Catalog
4/8-10	Mr. Robert Shields	Asst. Regional Supervisor, Portland	Refuge Manager Orientation
4/8-11	Mr. Melvin Nail	Willapa NWR, Ilwaco, Wash.	Orientation
5/2	Mr. Joe Buckner	Continental Oil Co., Ventura	Oil Well
5/28	Mr. Paul Woronecki	Div. Wildlife Research, Davis	Band Blackbirds
6/21-22	Mr. Robert Scott	Chief Div. Wildlife Refuges, Wash.	Orientation
6/21-22	Mr. Robert Shields	Asst. Regional Supervisor, Portland	Accompany Mr. Scott
7/7	Mr. Robert Pearson & Family	Browns Park NWR, Greystone, Colo.	Courtesy Visit
7/8	Mr. Bill Fuchs	USGMA, Lansing, Michigan	Courtesy Visit
7/17	Mr. Willian Sweet	San Joaquin Levee Dist., Los Banos	San Joaquin Levee Agreement
8/15	Mr. C. E. Trousdale	Continental Oil Co., Ventura	Oil Well
9/2	Mr. G. A. Larson	Standard Oil Co., San Francisco	Geophysical Exploration

- June 9: Accompanied Jerry Cawthon, California Dept. of Fish & Game, on a tour of proposed Kesterson National Wildlife Refuge.
- June 21: Escorted Robert Scott, Chief Division of Wildlife Refuges, and Robert Shields, Assistant Regional Supervisor, on a tour of proposed Kesterson National Wildlife Refuge.
- June 22: With Asst. Refuge Manager Vehrs, escorted Division Chief Scott and Asst. Regional Supervisor Shields on a tour of San Luis and Merced National Wildlife Refuges.
- June 25: With Asst. Regional Supervisor Shields and Richard Munding, Division of Realty, met with Bureau of Reclamation personnel in Sacramento to prepare a rough draft of agreement for BSWF to manage Kesterson Reservoir lands as Kesterson National Wildlife Refuge.
- July 2: Attended interagency meeting of federal and state organizations to discuss mutual problems.
- July 7: Conducted Bob Pearson, Browns Park National Wildlife Refuge and family on a tour of San Luis NWR.
- July 17: With Foreman Mayle, met with personnel of San Joaquin Levee District to discuss maintenance work they will require under our agreement with them for use of the levee as a public tour road.
- Aug. 6: With Asst. Refuge Manager Vehrs, met with California Dept. of Fish and Game personnel to discuss feeding program to hold waterfowl out of botulism infected Tulare Lake area.
- Aug. 7: With Asst. Refuge Manager Vehrs, met with Bureau of Reclamation personnel in Fresno to discuss our management of Kesterson National Wildlife Refuge.
- Sept. 18: Toured Kesterson NWR with Jerry Cawthon and Dave Selleck, California Dept. of Fish and Game to discuss BSWF hunting program on the refuge.
- Dec. 11: With Asst. Manager Vehrs, Wildlife Biologist Sipe and Foreman Mayle, visited the Tule Elk Reserve at Tupman, California, to obtain management information on tule elk.
- Dec. 27: With Asst. Refuge Manager Vehrs, Wildlife Biologist Sipe, and Foreman Mayle, attended a dinner in honor of Commissioner Charles Meacham. This dinner, sponsored by the Grassland Water District, was held in conjunction with the signing of the agreement between the Grassland Water District, Bureau of Reclamation, and BSWF.

b. Stephen R. Vehrs - Assistant Refuge Manager:

- Feb. 11: Attended meeting of Grassland Water District with Asst. Regional Director Clay Crawford and U.S.G.M.A. Charles Stribling. Attended banquet in evening.

- March 19: Conducted Mr. Leonard Clover and representatives of Pacific Telephone on tour of San Luis Refuge and discussed proposed tule elk introduction.
- March 22: Supervised Los Banos boy scout group in constructing and installing 66 dove nesting cones on San Luis NWR.
- March 27: With Asst. Refuge Manager Coffman and Dennis Becker, Soil Conservation Service, visited Mendota Wildlife Management Area to view and discuss marsh management techniques.
- March 30: Conducted a tour of San Luis Refuge for 55 members of the Sacramento Audubon Society.
- March 31: Supervised Los Banos boy scout group in planting trees at Merced Refuge.
- April 2: Assisted Don Knapp, Division of Wildlife Research, in night lighting shorebirds.
- April 15-16: Attended meeting at Sacramento between California refuge managers and California Dept. of Fish and Game to discuss refuge hunting programs.
- April 17: Conducted 10 Merced County school principals on a tour of San Luis Refuge.
- April 28-May 23: Attended Basic Refuge Manager Training Course at Arden Hills, Minn.
- June 1: Escorted 11 members of the Kenya National Parks Board of Trustees on a tour of San Luis Refuge and gave a talk on refuge management policies.
- June 10 & 12: Supervised 10 Los Banos boy scouts in conservation projects to qualify them for their conservation merit badges.
- June 23-July 2: Detailed to Tulare Lake to assist in botulism project.
- Aug. 28: Attended California condor survey training session at Mt. Pinos.
- Oct. 13-16: Participated as an observer in the annual California condor survey.
- Nov. 22: Conducted 62 cub scouts on a tour of San Luis Refuge.
- Dec. 5: Conducted San Mateo Audubon Society group on a tour of Merced Refuge.
- Dec. 6: Conducted San Mateo Audubon Society group on a tour of San Luis Refuge.

c. Robert K. Coffman - Assistant Refuge Manager:

- Feb. 17-19: Attended law enforcement workshop at Sacramento.
- April 15-16: Attended meeting at Sacramento between California refuge managers and California Dept. of Fish and Game personnel to discuss refuge hunting programs.

d. Gene A. Sipe - Wildlife Biologist:

- Oct. 8: With Asst. Refuge Manager Vehrs, conducted a tour of Merced Refuge for 85 students of Charles Wright School in Merced.
- Oct. 18: Conducted 60 boy scouts and 8 adults on a tour of Merced Refuge.
- Nov. 4: Conducted 19 Merced cub scouts on a tour of Merced NWR.
- Nov. 6-7: Assisted Jerry Gentry from Ambassador College in photographing birds on San Luis and Merced Refuges.
- Nov. 8: Conducted 30 campfire girls on a tour of Merced Refuge.
- Dec. 4: With Asst. Refuge Manager Vehrs, conducted a tour of San Luis Refuge for 43 students from Modesto Union Elementary School.
- Dec. 7: Conducted short tour and talk on San Luis Refuge to 41 students from Fresno Adventist Academy.

e. James R. Mayle - Foreman II, Maintenance:

- Feb. 17-19: Attended law enforcement workshop in Sacramento.
- April 8: Met with personnel of California Beaches and Parks to discuss establishment of a state park next to San Luis Refuge and the reintroduction of tule elk.
- May 5: Conducted Los Banos cub scout Pack 84 on a tour of San Luis Refuge.

D. Hunting:

Migratory waterfowl hunting season opened on October 18 and ran through January 11, 1970. The quota for the number of hunters on the area at one time was 150, the same as last year. On opening day 296 hunters checked through the checking station. This was, as usual, the busiest day of the year.

The California Dept. 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. Enforcement was a joint effort between the Dept. of Fish and Game and the Bureau. In reality, refuge personnel did almost all of the law enforcement.

A total of 5,401 hunters bagged 12,487 duck, 366 geese and 296 coots for a total of 13,149 birds. The average hunter kill per day was 2.4 birds for the season. The highest success for a single day was on December 10 when 103 hunters averaged 5.0 birds.

Pheasant hunting was not allowed on San Luis Refuge this year. A low population of pheasants and inadequate wet-weather access roads

into pheasant hunting areas were the main reasons for closing the refuge to pheasant hunting. During the two years pheasant hunting was permitted, hunters killed 7 birds in 1967 and 10 birds in 1968.

The following table is a tabulation of waterfowl kill by species for the 1967-68, 1968-69, and 1969-70 waterfowl hunting seasons. Last years narrative report listed the kill by calendar year rather than hunting season, and the data is not comparable. This table will provide the information for easy reference and future comparison.

Kill by Species		1967-68	1968-69	1969-70
Ducks:	Mallard	1,507	751	1,053
	Gadwall	1,079	249	576
	Pintail	1,655	588	2,038
	G.W. teal	3,116	5,639	5,641
	B.W. teal	1	--	--
	Cin. teal	469	205	256
	Baldpate	424	381	792
	Shoveler	1,646	1,028	1,836
	Wood Duck	6	1	11
	Redhead	5	7	12
	Ring-necked duck	22	12	21
	Canvasback	32	13	17
	Scaup	5	10	8
	C. Goldeneye	--	--	1
	Bufflehead	5	1	2
	Ruddy duck	146	154	209
	Mergansers	12	40	14
	Coots	<u>152</u>	<u>171</u>	<u>296</u>
	Total	10,282	9,250	12,783
Geese:	Common Canada	7	2	3
	Cackling Goose	66	108	142
	W.F. Goose	45	59	93
	Snow Goose	43	55	101
	Ross' Goose	<u>6</u>	<u>31</u>	<u>27</u>
	Total	167	255	366
Total Waterfowl		10,449	9,505	13,149
Total Hunters		3,769	4,503	5,401
Average Waterfowl/hunter		2.77	2.11	2.43
No. Pheasants Killed		7	10	No hunting

E. Violations:

San Luis Refuge has an excellent working relationship with both federal game management agents and wardens of the California Department of Fish and Game. Game Management Agents Stribling and Freeman visit the refuge frequently on enforcement patrol and they are always willing to cooperate in any way possible. State wardens Mike Macias and Barney Bryan gave considerable assistance both during the off-season and during the waterfowl hunting season.

Refuge personnel made a special effort on law enforcement during the 1969-70 waterfowl hunting season. We felt that by ~~pursuing an active enforcement program~~ in the field, we would prevent many violations from occurring, and at the same time apprehend those who insist on violating. It is difficult to judge the effectiveness of a preventive law enforcement program, but the following list of violations shows we were effective in apprehending violators.

Date	Name	Violation	Agent	Disposition
10/18	Philip Albarran, Salinas	Possession Overlimit of ducks	Vehrs	Gustine Justice Court 12/18/69 \$25 fine.
10/18	Thomas E. Russell, Yorba Linda	Unplugged shotgun	Vehrs	Gustine Justice Court 1/12/70 \$25 fine.
10/25	David McArthur	Refuge trespass	Freeman* Bryan**	Gustine Justice Court 11/3/69 \$25 suspended.
10/25	John G. Echert	Refuge trespass	Freeman Bryan	Gustine Justice Court 11/30/69 \$25 suspended.
10/25	James D. Bastick	Refuge trespass	Freeman Bryan	Gustine Justice Court 11/10/69 \$25 fine.

<u>Date</u>	<u>Name</u>	<u>Violation</u>	<u>Agent</u>	<u>Dispositions</u>
10/25	Neil F. Bastick	Refuge trespass	Freeman Bryan	Gustine Justice Court 11/6/69 \$25 Fine.
10/25	Daniel Geyer	Refuge trespass- no permit	Macias***	Gustine Justice Court 10/30/69 \$25 suspended.
10/25	Robert Amato	Refuge trespass- no permit	Macias	Gustine Justice Court 10/30/69 \$25 suspended.
10/25	Michael Calderone	Refuge trespass- no permit	Macias	Gustine Justice Court 10/30/69 \$25 suspended.
11/11	Samir Arikat, San Francisco	Unplugged Shotgun	Vehrs Sipe	U.S. Commissioner 1/12/70 \$25 sus- pended.
11/9	Evert Gantley, Mountain View	Late Shooting	Vehrs	U.S. Commissioner 1/12/70 \$25 Fine.
11/11	Said Arikat, San Francisco	Unplugged Shotgun	Vehrs Sipe	U.S. Commissioner 1/12/70 \$25 sus- pended.
11/16	Junior Bagwell, Alameda	Possession Grebe	Sipe	Pending U.S. Comm. 1/27/70 \$25 FINE
11/16	Thomas Ackley, San Mateo	Unplugged Shotgun	Sipe	Pending U.S. Comm. 1/27/70 \$25 FINE
11/16	Darwin Schaber, Turlock	Unplugged Shotgun	Sipe	Pending U.S. Comm. 1/27/70 \$25 FINE
11/22	Gary Whittenburg, Boulder Creek	Unplugged Shotgun-- Refuge trespass	Vehrs	Pending U.S. Comm. 7/20/70 \$25 FINE
12/3	Willian Dennison, Fresno	Unplugged Shotgun	Mayle	Pending U.S. Comm. 2/14/70 \$25 FINE
12/6	Leslie Morgon, Los Gatos	Refuge trespass	Vehrs	Pending OUTSTANDING WARRANT

Date	Name	Violation	Agent	Disposition
12/6	David Berge, Los Gatos	Refuge Trespass	Vehrs	Pending <i>OUTSTANDING WARRANT</i>
12/7	Doyle Sligar, Modesto	Unplugged Shotgun	Sipe	Pending <i>U.S. COMM. 2/16/70 \$25 FINE</i>
12/14	Robert True, Stockton	Late Shooting	Vehrs	Pending <i>U.S. COMM. 1/27/70 \$25 FINE</i>
12/14	Leo Veiss, Los Angeles	Refuge Trespass	Sipe	Warning letter
12/14	Ernest Kvskeyics Pasadena	Refuge Trespass	Sipe	Warning letter
12/17	Manuel Macedo, San Leandro	Refuge Trespass- hunting in closed area	Mayle	Pending <i>U.S. COMM. 2/25/70 \$25 FINE</i>
12/17	Manuel Simao, Hayward	Refuge Trespass- hunting in closed area	Mayle	Pending <i>U.S. COMM. 2/25/70 \$25 FINE</i>
12/20	Gustave Cabrol, Redwood City	Overlimit ducks	Vehrs	Pending <i>U.S. COMM. 2/25/70 \$25 FINE</i>
12/27	Jack Arnold, Los Banos	No water- fowl hunting stamp	Vehrs Macias	Pending <i>U.S. COMM. 1/27/70 \$25 FINE</i>
12/27	Stanley Blanchard San Jose	Overlimit Ross geese	Vehrs	Pending <i>U.S. COMM. 2/25/70 \$25 FINE</i>
12/28	Joseph Leonard Los Banos	Refuge trespass	Vehrs	Juvenile-Prosecution not recommended
12/28	Hector Castello Los Banos	Refuge trespass	Vehrs	Juvenile-Prosecution not recommended
12/28	Dennis Wiley Los Banos	Refuge trespass	Vehrs	Juvenile-Prosecution not recommended
12/28	Frank Spagnola San Jose	Refuge Trespass- Hunting in closed area	Sipe Vehrs Mayle	Pending <i>U.S. COMM. 2/16/70 \$25 FINE</i>

Date	Name	Violation	Agent	Disposition
12/28	Sam DeMarco San Jose	Refuge trespass- Hunting in closed area	Sipe Vehrs	Pending U.S. COMM. 2/25/70 \$25 FINE
1/1/70	David Crawford Los Gatos	No hunting License, no water- fowl hunting stamp	Vehrs	Pending U.S. COMM. 2/25/70 \$25 FINE
1/3	Rebel Freitas Atwater	Refuge trespass- Unplugged Shotgun	Vehrs	Pending U.S. COMM. 2/25/70 \$250 FINE
1/3	David Mello Morgan Hill	Late Shooting	Vehrs	Pending U.S. COMM. 4/17/70 \$25 FINE
1/3	Leroy Martin Salinas	Refuge Trespass	Vehrs	Pending U.S. COMM. 4/27/70 \$25 FINE
1/3	Gordon Oliver Merced	Refuge Trespass	Vehrs	Pending U.S. COMM. 4/5/71 \$50 FINE

*U.S. Game Management Agent Robert Freeman

**California Department of Fish and Game Warden Barney Bryan

***California Department of Fish and Game Warden Michael Macias

F. Safety:

Since San Luis, Merced, and Kesterson National Wildlife Refuges have been consolidated under the San Luis Complex, joint Safety meetings have been held for these three areas.

One lost time accident occurred on September 25. An equipment operator got a piece of metal in his eye which required removal by a doctor and subsequent lost time. The combined lost time accident record for the San Luis complex at the end of the year was 97 days.

Bureau Safety Officer John Jones and Division Safety Officer Frank Jacox made a Safety inspection of San Luis and Merced Refuges on January 27.

A radio system consisting of two base sets and six mobile units was obtained through excess from the Bureau of Reclamation and installed during the year. This means of communications is a definite asset to our Safety program.

VII OTHER ITEMS

A. Items of Interest:

Refuge Manager Snyder, after 31 years of federal service, retired on January 11. At a banquet in his honor at the Canal Farm Inn, Leon was presented a Meritorious Service Award by Regional Refuge Supervisor Ekedahl. A complete writeup on Leon's retirement was included in the 1968 narrative report.

On April 20 Melvin T. Nail transferred from Willapa National Wildlife Refuge to assume refuge manager duties at the San Luis-Merced Complex. Mel, his wife Mary, son Mark and daughter Teri, had almost purged their system of the Willapa moisture by the end of the year.

Assistant Refuge Manager Stephen Vehrs, Clerk-typist Ann McConnell, and Foreman II James Mayle were presented special act awards of \$100 each on June 22. This award was in recognition of their outstanding performance in carrying on the orderly management of the refuge in the absence of a refuge manager.

A 20-year service pin was presented to Operator General Melvin Ford on May 29.

Foreman Mayle received an outstanding performance award during the year. Mr. Mayle has truly done an outstanding job in all respects, and we are confidently looking forward to more of the same.

Assistant Refuge Manager Coffman transferred from Merced Refuge to Loxahatchee National Wildlife Refuge, Delray, Florida on Sept. 7.

Two refuge picnics were enjoyed by the refuge crew and their families during the year. Both picnics, one on July 19 and the other on August 30, were held at Hagan State Park. The August 30th picnic was combined with a going away party and baby shower for the Coffman family.

On September 20 Gene A. Sipe transferred to Los Banos to assume duties as refuge biologist on San Luis-Merced-Kesterson National Wildlife Refuges. Gene, his wife Betty and three sons J.R., Monte and Brent, moved here from Bowdoin National Wildlife Refuge, Malta, Montana.

On October 14, Manager Nail presented a lieu of taxes check for \$26,036.66 to the Merced County Board of Supervisors.

B. Credits:

Credit for the preparation of this report are as follows:

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

Asst. Refuge Manager Vehrs - Sections IA and IB1.

Wildlife Biologist Sipe - Sections IB2, II and V.

Clerk-typist McConnell typed and assembled the entire report.

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

WATERFOWL

REFUGE San Luis Refuge

MONTHS OF January 1 TO April 30, 1969

(1) Species	(2) Weeks of reporting period									
	12/29-1/4	1/5-1/11	1/12-1/18	1/19-1/25	1/26-2/1	2/2-2/8	2/9-2/15	2/16-2/22	2/23-3/1	3/2-3/8
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter	5	2	30	25	25	15	10	5	5	5
Geese:										
Canada	200	115	130	100	25	50	75	30	15	15
Cackling Brant	27,500	10,200	4,300	3,000	1,500	2,000	1,500	1,500	3,000	8,000
White-fronted	375	250	400	300	200	500	300	200	300	300
Snow	2,400	1,900	1,200	1,500	2,000	1,000	1,500	1,500	1,200	1,200
Ross	400	375	1,300	2,000	2,500	2,000	2,000	2,000	2,000	2,500
Total	30,875	12,840	7,330	6,900	6,225	5,550	5,375	5,230	6,515	12,015
Ducks:										
Mallard	10,200	15,500	5,100	1,200	700	600	500	500	1,000	1,500
Black Gadwall	9,000	8,000	1,500	300	200	200	200	200	2,500	3,000
Baldpate	9,500	9,300	4,000	2,000	1,000	2,000	1,000	1,000	2,500	4,000
Pintail	60,000	42,000	6,875	3,000	2,000	20,000	10,000	5,000	7,000	10,000
Green-winged teal	40,000	37,500	10,500	2,000	1,000	1,000	1,000	1,000	1,000	700
Blue-winged teal										
Cinnamon teal	750	900	500	100	50	250	500	1,000	3,000	5,000
Shoveler	32,000	10,500	5,500	2,000	1,000	2,000	1,000	1,000	4,000	8,000
Wood Redhead										
Ring-necked	75	100	50	25	25	25	10	10	15	20
Canvasback	40	25	25	25	25	10	10	10	15	20
Scaup Goldeneye	75	100	50	25						
Bufflehead										
Ruddy	1,500	1,500	650	200	300	500	200	300	400	400
Merganser	350	450	250	50	50	50	50	50		
Total	163,490	125,875	35,000	10,925	6,350	26,635	14,470	10,070	21,430	32,640
Coot:	1,300	1,200	850	5,000	8,000	8,000	9,000	10,000	9,000	9,000

WATERFOWL
 (Continuation Sheet)

REFUGE San Luis N.W.R.

MONTHS OF January 1 TO April 30, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	3/9-3/15	3/16-3/22	3/23-3/29	3/30-4/5	4/6-4/12	4/13-4/19	4/20-4/26	4/27-5/3	waterfowl	Broods:Estimated	seen: total
	11	12	13	14	15	16	17	18	days use		
<u>Swans:</u>											
Whistling									889		
Trumpeter											
<u>Geese:</u>											
Canada				50					5,635		
Cackling	11,000	8,000	10,000	6,500	5,000	1,000			728,000		
Brant											
White-fronted	400	400	450	500	300	50			36,575		
Snow	1,000	600	600	300	200				126,700		
Ross	3,000	2,000	1,500	1,500	700	100			181,475		
Total	15,400	11,000	12,550	8,850	6,250	1,150			1,078,385		
<u>Ducks:</u>											
Mallard	2,500	2,000	2,000	2,000	1,500	1,000	750	600	344,050		
Black											
Gadwall	4,000	3,000	2,000	1,500	1,500	1,250	500	250	273,700		
Baldpate	5,500	5,000	4,500	4,000	4,000	3,500	500	100	443,800		
Pintail	15,000	10,000	8,000	8,500	7,500	5,000	1,000	400	1,548,925		
Green-winged teal	500	500	500	500	500	300	100	50	690,550		
Blue-winged teal											
Cinnamon teal	7,000	7,000	7,000	6,500	5,500	3,500	2,000	750	359,100		
Shoveler	12,000	10,000	8,000	7,000	6,500	1,000	400	200	784,700		
Wood	10	10	10	10	10	10	10	10	560		
Redhead											
Ring-necked	25	25	25	25	25	10			3,430		
Canvasback	25	10	10	10	10	10			1,960		
Scaup									1,750		
Goldeneye											
Bufflehead											
Ruddy	500	500	400	400	300	250	150	50	59,500		
Merganser									9,100		
Total	47,060	38,045	32,445	30,445	27,345	15,830	5,410	2,410	4,521,125		
<u>Coot:</u>	9,000	10,000	8,000	7,000	5,000	4,000	4,000	4,000	786,450		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	889	30	
Geese	1,078,385	30,875	
Ducks	4,521,125	163,490	
Coots	786,450	10,000	

SUMMARY

Principal feeding areas Coots used mostly uplands while ducks concentrated on marsh and open water

Principal nesting areas Units 1 and 2. Low water limited production in Unit 3.

Reported by Stephen R. Vehrs, Asst. Manager

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 NWR

MONTHS OF May 1 TO Aug 30, 1969

(1) Species	(2) Weeks of reporting period									
	5/4-5/10	5/11-5/17	5/18-5/24	5/25-5/31	6/1-6/7	6/8-6/14	6/15-6/21	6/22-6/28	6/29-7/5	7/6-7/12
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	600	650	700	750	780	800	800	900	1,000	1,100
Black										
Gadwall	250	300	350	400	450	500	500	600	600	700
Baldpate	50	50	50							
Pintail	400	300	200	100	100	125	150	150	200	200
Green-winged teal	50	25	25							
Blue-winged teal										
Cinnamon teal	750	800	1,100	1,500	1,600	1,700	1,700	1,800	1,900	2,000
Shoveler	200	100	50	25	25	25	25	50	75	100
Wood	10	10	10	15	15	10				
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy	50	50	50	50	50	50	60	75	80	100
Other										
Total	2,360	2,285	2,535	2,840	3,020	3,210	3,235	3,575	3,855	4,200
Coot:	2,000	2,500	2,000	1,500	1,800	1,700	1,500	1,100	1,000	800

WATERFOWL
 (Continuation Sheet)

REFUGE San Luis NWR

MONTHS OF May 1 TO August 30, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	7/13-7/19	7/20-7/26	7/27-8/2	8/3-8/9	8/10-8/16	8/17-8/23	8/24-8/30	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											
Other											
Ducks:											
Mallard	2,000	4,000	5,500	4,000	3,000	1,500	3,000		217,560	65	1,300
Black											
Gadwall	750	600	600	200	100	50	50		49,000	8	150
Baldpate									1,050		
Fintail	300	350	450	3,000	3,000	3,000	5,000		119,175	11	200
Green-winged teal		50	100	50	50	50	500		6,300		
Blue-winged teal											
Cinnamon teal	2,200	2,400	2,500	2,000	1,000	500	250		179,900	36	800
Shoveler	100	125	125	50	50	50	50		8,575	3	50
Wood									490		
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy	100	100	100	50	50	50			7,455		
Other											
Total	5,450	7,625	9,375	9,350	7,250	5,200	8,850		589,505		
Coot:	1,000	1,000	1,000	1,000	1,000	1,000	800		158,900	42	300

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	0	0	0
Geese	0	0	0
Ducks	589,505	9,375	2,500
Coots	158,900	2,500	300

SUMMARY

Principal feeding areas Coots grazing on uplands and ducks feeding in open water and marsh units.

Principal nesting areas nesting carried out in Units 1 & 2.

Due to low water condition in Unit 3, it was not as productive as 1968.

Reported by Stephen R. Vehrs, Asst. Manager

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 San Luis NWR

MONTHS OF September thru December, 1969

(1) Species	(2) Weeks of reporting period									
	8/31-9/6	9/7-9/13	9/14-9/20	9/21-9/27	9/28-10/4	10/5-10/11	10/12-10/18	10/19-10/25	10/26-11/1	11/2-11/8
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted									100	300
Snow										
Total									100	300
Ducks:										
Mallard	2,500	2,000	1,700	3,500	7,000	12,000	2,000	10,000	50,000	50,000
Black										
Gadwall	50	50	50	50	50	50	100	4,000	5,000	5,000
Baldpate						50	50	5,000	3,000	3,000
Pintail	5,000	2,500	1,550	1,500	1,000	800	500	220,000	200,000	200,000
Green-winged teal	500	500	500	500	500	500	100	50,000	50,000	50,000
Blue-winged teal										
Cinnamon teal	200	100	50	50	50	50		2,000	1,500	1,500
Shoveler	50	50	50	50	100	100	100	3,000	2,000	2,000
Wood										
Redhead										
Ring-necked										
Canvasback									500	500
Scaup										
Goldeneye										
Bufflehead										
Ruddy									1,000	1,000
Total	8,300	5,200	3,900	5,650	8,700	13,550	2,850	294,000	313,000	313,000
Coot:	800	650	500	500	500	500	1,000	5,000	5,000	5,000

WATERFOWL
 (Continuation Sheet)

REFUGE San Luis NWR

MONTHS OF September thru December, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production
	11/9-11/15	11/16-11/22	11/23-11/29	11/30-12/6	12/7-12/13	12/14-12/20	12/21-12/27	12/28-1/3	waterfowl days use	Broods: Estimated seen : total
Swans:				1					7	
Whistling										
Trumpeter										
Geese:										
Canada						20		50	490	
Cackling				500	2,500	5,500	6,000	7,000	150,500	
Brant										
White-fronted	300	700	1,200	1,625	1,000	550	400	200	44,625	
Snow		25	100	175	500	1,500	1,500	2,000	40,600	
Ross'						50	150	200	2,800	
Total	300	725	1,300	2,300	4,000	7,620	8,050	9,450	239,015	
Ducks:										
Mallard	50,000	75,000	21,500	19,200	22,000	25,500	28,000	30,000	2,883,300	
Black										
Gadwall	10,000	25,000	10,500	1,800	2,000	2,500	3,700	4,000	517,300	
Baldpate	10,000	15,000	8,000	2,000	4,500	12,200	14,500	15,000	646,100	
Pintail	245,000	250,000	360,500	189,300	100,000	50,000	35,000	20,000	13,178,550	
Green-winged teal	50,000	100,000	30,000	25,200	27,000	29,000	30,000	30,000	3,320,100	
Blue-winged teal										
Cinnamon teal	500	500	500	500	500	500	500	500	66,500	
Shoveler	7,500	20,000	25,000	33,300	65,000	85,000	92,500	100,000	3,050,600	
Wood										
Redhead	500	500							7,000	
Ring-necked										
Canvasback	1,000	1,500	500	100					28,700	
Scaup	500	500					100	250	9,450	
Goldeneye										
Bufflehead										
Ruddy	5,000	5,000	3,000	1,000	1,000	700	500	500	130,900	
Other										
Total	380,000	493,000	459,500	272,400	222,000	205,400	204,800	200,250	23,838,500	
Coot:	5,000	5,000	3,500	3,500	3,500	3,500	4,000	5,000	367,150	
				(over)						

MIGRATORY BIRDS
(other than waterfowl)

Refuge..... San Luis Months of..... January 1 to..... April 30 19 69.....

(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:										
Pied-billed Grebe		Present	500	Jan.		Present				500
White Pelican		"	350	April		"				900
Great Blue Heron		"	50	April		"				100
Common Egret		"	50	April		"				75
Snowy Egret		"	150	April		"				200
Black-crowned Night Heron		"	800	April		"				800
American Bittern		"	150	April		"				200
White-faced Ibis		"	25	March		March				50
Sandhill Crane		"	2,500	Jan.		"				3,000
Virginia Rail		"	250	April		Present				250
Sora		"	100	April		"				150
Common Gallinule		"	500	April		"				600
II. Shorebirds, Gulls and Terns:										
Killdeer		Present	500	April		Present				800
Common Snipe		"	100	April		"				200
Long-billed Curlew		"	800	March		"				1,000
Whimbrel		"	25	April		"				25
Greater Yellowlegs		"	300	March		"				500
Least Sandpiper		"	2,000	April		"				2,500
Dunlin		March	300	April		"				500
Dowitcher		Present	4,000	April		"				5,000
Western Sandpiper		"	1,000	April		"				1,500
American Avocet		"	200	April		"				400
Black-necked Stilts		March	100	April		"				200
Ring-billed gull		"	200	April		"				300

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Present	300 April	Present		400
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Swainson's Hawk Red-tailed Hawk Marsh Hawk Sparrow Hawk	Jan. Permanent Resident Present " " Present " " "	2 15 25 10 25 30 50	Jan. April April April April April April	Jan. Present " " " " "	2 6 12 15 25 10 35 30 50
				Reported by	Melvin T. Nail

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 N.W.R.

Months of... May 1... to August 30... 1956

(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			400	8/25	Present all Period			60	250	550
White Pelican			150	7/15	"	" "				150
Great Blue Heron			200	8/15	"	" "				900
Common Egret			50	7/1	"	" "	1	10	35	85
Snowy Egret			350	8/15	"	" "	1	15	75	450
Black-crowned Night Heron			400	8/15	"	" "	1	30	150	600
American Bittern			75	7/15	"	" "		5	25	100
Virginia Rail			200	8/15	"	" "		15	100	300
Sora Rail			5	8/15	"	" "				5
Common Gallinule			100	8/15	"	" "		30	200	250
II. Shorebirds, Gulls and Terns:										
Killdeer			1,500	7/15	"	" "		600	1,500	2,500
Common Snipe	50	5/1	25	5/15	25	5/15				25
Long-billed Curlew			150	7/15	Present all Period					150
Greater Yellowlegs	6	7/20	750	8/31	Present end of Period					2,200
Least Sandpiper			5,000	8/31	Present all Period					7,000
Long-billed Dowitcher			4,000	8/15	"	" "				6,000
American Avocet			800	8/15	"	" "		50	150	2,000
Black-necked Stilt			1,000	8/31	"	" "		25	75	1,500
California Gull			100	8/15	"	" "				150
Ring-billed Gull			150	8/15	"	" "				200
Black Tern			25	7/15	"	" "				25

(over)

(1)	(2)	(3)		(4)			(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove		2,000	8/31	Present	all	Period	500	1,000	2,500
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl		40	7/15	"	"	"	8	16	40
Magpie, Yellow-billed		25	8/1	"	"	"			35
Raven		5	7/30	"	"	"			10
Crow		15	7/30	"	"	"			40
Barn Owl		130	7/30	"	"	"	15	90	140
Red-tailed Hawk		90	7/30	"	"	"	20	40	100
Marsh Hawk		10	8/30	"	"	"			15
Sparrow Hawk		75	7/30	"	"	"	15	45	80
Burrowing Owl		50	7/30	"	"	"	10	30	50

Reported by Stephen R. Vehrs, Asst. Mgr.

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)
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- (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..... Months of September 1 to December 31 19 69

(1) Species	(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:										
Eared grebe	10	10/7	50	11/21	5	12/4				150
Pied-billed grebe			200	12/30	Still Present					500
White pelican			500	10/8	1	11/30				1,000
Great blue heron			50	10/8	Still Present					125
Common egret			10	12/14	"	"				50
Snowy egret			50	12/14	"	"				100
Black-crowned night heron			250	12/4	"	"				450
American bittern			50	12/4	"	"				150
Sandhill crane	200	10/8	2,950	11/19	"	"				3,500
Virginia rail			50	12/4	"	"				200
Common gallinule			300	12/30	"	"				750
II. Shorebirds, Gulls and Terns:										
Killdeer			500	9/30	"	"				1,200
Common snipe			25	11/3	"	"				250
Long-billed curlew			150	11/3	"	"				500
Greater yellowlegs			50	9/23	"	"				250
Least sandpiper			2,500	9/23	"	"				3,000
Long-billed dowitcher			200	11/11	"	"				500
American avocet			300	9/30	"	"				1,500
Ring-billed gull			250	9/23	"	"				700

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove			1,000	10/8	Still	Present				5,000
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie, yellow-billed Raven Crow Cooper's hawk Red-tailed hawk Marsh hawk Sparrow hawk Barn owl Burrowing owl	2	11/9	2	11/9	"	"				10
			10	9/23	"	"				25
			75	9/23	"	"				200
			3	12/14	"	"				25
			50	12/23	"	"				150
			25	12/23	"	"				75
			50	11/14	"	"				100
			2	12/14	"	"				10
			15	10/7	"	"				25
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)
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- (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 San Luis For 12-month period ending August 31, 1969

Reported by Stephen R. Vehrs Title Asst. Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production	
	Type	Acreage				
Unit #1	Crops	200	Ducks	6,367,998	280	700
	Upland	1,700	Geese	336,287		
	Marsh	400	Swans	103		
	Water	260	Coots	210,840	36	90
	Total	2,560	Total	6,915,228	316	790
Unit #2	Crops	- - -	Ducks	9,551,997	700	1,750
	Upland	2,000	Geese	1,177,005		
	Marsh	640	Swans	1,464		
	Water	540	Coots	491,960	84	210
	Total	3,180	Total	11,222,426	784	1,960
Unit #3	Crops	- - -	Ducks	5,306,665	20	50
	Upland	800	Geese	168,143		
	Marsh	420	Swans	155		
	Water	400	Coots	702,800		
	Total	1,620	Total	6,177,763	20	50
Total	Crops	200	Ducks	21,226,660	1,000	2,500
	Upland	4,500	Geese	1,681,435		
	Marsh	1,460	Swans	1,722		
	Water	1,200	Coots	1,405,600	120	300
	Total	7,360	Total	24,315,417	1,120	2,800
	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			

(over)

Refuge San Luis

Year 1960

Page 1

(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
10/18- 10/24	575 100%	3,450	Pintail 398, G-W teal 345, Mallard 132, Shoveler 132, Baldpate 70, Cinn. teal 59, Gadwall 57, Ruddy duck 7, Wood duck 7, Ring neck 3, Canvasback 2, Scaup 2, White-front goose 1, Coot 1.	1216	608	1,824	Same as Column 2	Same as Column 7
10/25- 10/31	258 100%	1,548	Pintail 99, G-W teal 99, Shoveler 48, Baldpate 45, Mallard 41, Gadwall 24, Coot 23, Cinn. teal 17, Ruddy 9, Canvasback 2, Redhead 1, white-front 1.	409	204	613	"	"
11/1- 11/7	231 100%	1,386	G-W teal 231, Pintail 144, Mallard 75, Shoveler 55, Baldpate 43, Coot 39, Gdwall 23, Cin. Teal 17, Ruddy 10, Ringneck 2, Canvasback 1, Bufflehead 1.	641	320	961	"	"
11/8- 11/14	440 100%	2,640	G-W teal 309, Pintail 140, Baldpate 60, Shoveler 60, Mallard 57, Gadwall 31, Coot 23, Cin. Teal 16, Ruddy 12, Ringneck 9, canvasback 2, Scaup 2, Wood duck 1.	722	361	1,083	"	"
11/15- 11/21	351 100%	2,106	G-W teal 174, Pintail 117, Mallard 46, Shoveler 39, Coot 36, Baldpate 29, Gadwall 21, Cin. teal 14, Ruddy 11, Ringneck 2, Scaup 1, W.F. goose 1, Ross' goose 1.	492	246	738	"	"
11/22- 11/28	219 100%	1,314	G-W teal 153, Pintail 93, Shoveler 81, Mallard 55, Gadwall 26, Coot 23, Baldpate 22, Cin. teal 11, Ruddy 8, Redhead 5, W.F. goose 4, Ringneck 2, Cackling goose 1, Snow Goose 1.	485	242	727	"	"

(over)

Refuge San Luis

Year 1969

Page 2

(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
11/29- 12/5	314 100%	1,884	G-W teal 366, Pintail 185, Shoveler 161, Mallard 100, Gadwall 54, Baldpate 45, W.F. Goose 26, Snow goose 10, Cin. teal 8, Ruddy 8, Cackling goose 4, canvastack 2, Redhead 1.	970	485	1,455	Same as Column 2	Same as Column 7
12/6- 12/12	398 100%	2,388	G-W teal 400, Pintail 342, Shoveler 237, Mallard 172, Baldpate 85, Gadwall 67, Ruddy 16, W.F. goose 15, Snow goose 15, Cackling goose 13, Cin. teal 8, Canvasback 3, Coot 2, Redhead 1, Ross' goose 1, Canada goose 1.	1,378	689	2,067	"	"
12/13- 12/19	510 100%	3,060	G-W teal 503, Pintail 251, Shoveler 205, Mallard 110, Gadwall 84, Baldpate 79, Coot 77, Ruddy 19, Cackling goose 13, W.F. goose 13, Cin. teal 10, Snow goose 7, Canvasback 1, Scaup 1, Ringneck 1, Bufflehead 1.	1,375	687	2,062	"	"
12/20- 12/26	587 100%	3,522	G-W teal 1,306, Shoveler 192, Mallard 144, Pintail 112, Baldpate 84, Gadwall 72, Snow goose 16, Cin. teal 15, Ruddy 14, Cackling goose 13, W.F. goose 7, Wood duck 2, Goldeneye 1.	1,978	989	2,967	"	"
12/27- 1/2	594 100%	3,564	G-W teal 402, Shoveler 125, Pintail 76, Cackling goose 67, Baldpate 48, Gadwall 43, Mallard 36, Cin. teal 26, Snow goose 23, Ross' goose 20, Ruddy 15, Coot 14, W.F. goose 8, Redhead 4, Merganser 3, Scaup 1.	911	455	1,366	"	"

(over)

Refuge San Luis

Year 1969

Page 3

(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
1/3-9	459 100%	2,754	G-W teal 571, Shoveler 254, Baldpate 65, Pintail 57, Mallard 53, Coot 42, Ruddy 37, Gadwall 31, Cin. teal 26, W.F. goose 13, Snow goose 9, Merganser 8, Cackling g. 7, Ross' 1, Scaup 1, Wood duck 1, Canada 1.	1,177	588	1,765	Same as Column 2	Same as Column 7
1/10-11	465 100%	2,790	G-W teal 782, Shoveler 247, Baldpate 117, Gadwall 43, Ruddy 43, Mallard 32, Cin. teal 29, Cackling goose 24, Pintail 24, Snow goose 20, Coot 16, W.F. goose 4, Canvasback 4, Ross' goose 4, Merganser 3, Ringneck 2, Canada g. 1.	1,395	697	2,092	"	"
Total	5,401	32,406	G-W teal 5,641, Pintail 2,038, Shoveler 1,836, Mallard 1,053, Baldpate 792, Gadwall 576, Coot 296, Cin. teal 256, Ruddy 209, Cackling goose 142, Snow goose 101, W.F. goose 93, Ross' goose 27, Ring-neck duck 21, canvasback 17, Merganser 14, Redhead 12, Wood duck 11, Scaup 8, Canada goose 3, Bufflehead 2, Goldeneye 1.	13,149	6,571 Crippling loss est. at 50%.	19,720	"	"

Refuge San Luis N.W.R.Months of January 1 to April 30, 19 69

(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 specificoally requested. List introductions here.
California Quail									20	
Ring-necked Pheasant	barley, 60 acres. marsh, upland grasses, weeds & wooded sloughs, 2,500 acres.								200	No detailed survey made during period. Estimates based on observations in conjunction with routine operations.

UPLAND GAME BIRDS

Refuge San Luis NWR Months of May 1 to August 30, 19 69

(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	Brush along canals & drains, 300 acres	2	3	100					150	
Ring-necked Pheasant	Tule & cattail marsh, native upland grasses, weeds & wooded sloughs. 2500 acres	8.3	4	150					300	

UPLAND GAME BIRDS

Refuge San Luis

Months of September 1 to December 31, 19 69

(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 areas and portions of adj. uplands, 300 ac.	2							150	Total estimated from incidental observations
Ring-necked Pheasant	Cultivated areas, 60 ac. Portions of uplands and marsh, 5,000 acres.	25.3							200	Total estimated from incidental observations

BIG GAME

Refuge San Luis

Calendar Year 1969

(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	At period of Greatest use	
Common Name	Cover types, total Acreage of Habitat	Number											
No big game species inhabit the refuge or adjacent lands.													

Remarks:

3-17
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge San Luis Year ending April 30, 1969

(1) Species Common Name	(2) Density		(3) Removals						(4) Disposition of Furs					(5) Total Popula- tion Est.
	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	Ponds & marshes, 1600a, water courses, 30 mi.	2			10*									1,000
Beaver	Water course, 6 mi.													2
Striped Skunk														25
Short-tailed weasel														20
Coyote														10
Raccoon														100
Oposum														20
Badgers														10
Blk-tail Jackrabbit														200
Cotton-tail rabbit														500
Mink														5
Calif. Ground Squirrel	upland native grass areas, canals & levees, 5000a.													5,000

* List removals by Predator Animal Hunter

REMARKS: Total population estimates are based on occasional observations only.

*Removed by refuge personnel for levee damage control.

Reported by Melvin T. Nail

DISEASE

Refuge San LuisYear 19. 69

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 None observed this period.

Species affected _____

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

Refuge San Luis Year 19 69

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 this year												

- (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 _____

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge San Luis 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			
Wild Millet					266	2660 bu.	266	0	266
								Fallow Ag. Land	none

No. of Permittees: Agricultural Operations none Haying Operations none Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
None	none	none	none	1. Cattle	Variable 900 p/m av.	10,456.51	39,211.91	7360
				2. Other Horses	8	96	360.00	1200
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild	none	none	none	2. Acreage Cultivated as Service Operation				266

REFUGE GRAIN REPORT

Refuge San Luis

Months of January through December, 1969

(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
Field Barley	none	18,000	18,000			18,000	18,000	none			
Wild Millet	8,000 lb	6,000	14,000 lb		14,000		14,000	none			

(8) Indicate shipping or collection points Barley from Stockton Surplus commodities

(9) Grain is stored at Millet through purchase from local rice mills

(10) Remarks _____

*See instructions on back.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1969

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)
		None						

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

Melvin T. Nail
Refuge Manager

Stephen R. Vehrs
Asst. Refuge Manager

Ann M. McConnell
Clerk-typist

James R. Mayle
Foreman II (Maint.)

Gene A. Sipe
Wildlife Biologist (Mgt.)

Melvin Ford
Operator General (HD)
San Luis NWR

George W. Freeman
Maintenanceman I
San Luis NWR

Raymond R. Fuller
Operator General (HD)
Kesterson NWR

Edgar M. Derrick
Maintenanceman II
Merced NWR

Harvey L. Haynes
Maintenanceman I
Merced NWR

An example of the natural beauty so common to San Luis
Refuge. The flowers are water hyacinth in bloom in a
backwater along Salt Slough.

August 6, 1969 Nail

A portion of the San Luis-Merced Refuges display used
at the Los Banos May Day Fair and the Merced County
Fair at Merced.

May 2, 1969 Mayle

Chief Division of Wildlife Refuges, Robert F. Scott
presenting Assistant Refuge Manager Vehrs a \$100
special act award.

June 22, 1969 Robert Shields

Mr. Scott presenting \$100 special act award to
Foreman Mayle. Clerk-typist McConnell was also
given as award, but she was not available for
presentation by Mr. Scott.

June 22, 1969 Robert Shields

Former owner, Butler Noble, reserved the mineral rights of the refuge, and Continental Oil Company drilled a test well during the year.

August 4, 1969 Nail

A closeup of the drilling derrick. Drilling was stopped at about 14,000 feet when bedrock was hit. Fortunately, for the refuge, the well was a dry hole.

July 1969 Mayle

Refuge Manager Nail presenting a 20-year pin to Melvin Ford, Operator General. Mel started his career at Salton Sea, transferred to Merced, and he is presently stationed on San Luis Refuge.

May 30, 1969 Vehrs

The Board of Trustees, Kenya National Parks, toured San Luis Refuge. They were especially interested in management policies on our national wildlife refuges.

June 1, 1969 Vehrs

The shop building prior to renovation had a dirt floor, faulty electrical wiring, and was a poor facility for servicing and repairing equipment.

February 27, 1969 Vehrs

Two stalls were boxed in, a concrete floor was poured, and the building was completely rewired. It is better, but still is not good.

January 21, 1970

International tractor with the old rotary mower.
This mower with its drive system of belts and pulleys
was a definite Safety hazard.

May 30, 1969 Vehrs

The old mower shown above was replaced with this
Model 84, Servus mower. This mower is used to mow
pastures at Merced Refuge and for mowing roads and
trails on all three refuges.

January 1970 Mayle

MERCED NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

January 1 to December 31, 1969

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I GENERAL

A. Weather Conditions:

Refer to San Luis NWR narrative report.

B. Habitat Conditions:

1. Water:

Flooding during January and February, caused by record breaking rain accumulations, completely inundated the refuge except for the entrance road and headquarters site. At one time during January, the Mariposa Bypass was recorded as passing 18,500 CFS of flood water between its levees.

Flood waters entered the east grasslands and permanent pasture area from the northeast, flowed south, until it hit the east levee of the Mariposa Bypass and then backed north completely covering the marsh areas.

Water levels did not recede until late March over the west half of the refuge. The Mariposa Bypass continued to flow all year; however, by June the flow was contained in the channel, leaving the upland and marsh units exposed. Invasion by undesirable weed plants on the uplands followed the receding water within the bypass.

Twenty deep well pumps were operated during 1969. Pumping was held to a minimum during the first five months with only 675 acre feet of water pumped.

Below is a comparison of the acre feet of water pumped during the past five years.

<u>Year</u>	<u>Acre Feet</u>
1969	13,887
1968	15,029
1967	13,669
1966	15,699
1965	13,561

During 1969, Field 11, which during previous years was planted to barley, was put into millet production. With the added water used in Field 11, the refuge used 1,142 acre feet less water than in 1968. The main contributing factor was the unusually high

amount of winter and spring rains as previously mentioned. Electrical pumping charges for 1969 were \$25,040, averaging close to \$2.00 per acre feet of water pumped.

2. Food and Cover:

Waterfowl Unit No. 1 (west marsh) was completely inundated from mid-January through most of march, and within the Mariposa Bypass water did not recede until June.

Upland habitat was greatly disturbed within the bypass, and as water receded, undesirable plant species such as star thistle and cocklebur invaded the denuded landscape which once sustained solid stands of native grass.

Aquatic emmergents, such as alkali and hardstem bulrush, wild millet and cattail were unaffected by the flood waters, as abundant young growth showed up within a month after water receded.

Areas which were deep plowed in 1967 for vegetation control, remain partially open and species diversity is still quite apparent.

Waterfowl Unit No. 2 (farm fields) included 237 acres of mature barley and 548 acres of wild millet. During 1969, Fields 8 and 11 were converted from barley production to wild millet.

Since Merced is a Lea Act refuge, it was closed to public waterfowl hunting during the first two weeks of the 1969 season due to late rice harvest in the area. This sanctuary caused heavy waterfowl use during the period and the wild millet fields were utilized very heavily.

Unlike 1968, limited use of the mature barley fields by mallards and pintails was noted just prior to the opening of hunting season. All millet fields were fed-off by mid-November.

Early flood waters had little effect on vegetation within the farm fields, with the exception of flooding out approximately 35 acres of barley in Field 7. After water receded, this 35 acres was replanted to milo. The milo produced large seed heads and fall use by ducks and pheasants was surprisingly good.

Waterfowl Unit No. 3 (east grasslands) contains 393 acres of permanent pasture and approximately 377 acres of ponds and grasslands. Grasses recovered rapidly after repeated inundation by flood waters during January and February. Waterfowl use during this same period was limited on the grasslands because of more desirable native

grasses north and west of the refuge. The permanent pastures were grazed under special use permit from April 1 through November 4, 1969. Forage was in excellent shape for waterfowl use after the cattle were taken off.

We initiated an experiment this fall to determine if mowing these pastures prior to waterfowl use was necessary year after year. Results thus far have indicated that geese do not necessarily utilize the mowed pastures to any greater extent than the unmowed portions. Therefore, it would seem that by keeping cattle on the pastures for a longer period in the fall, to keep forage short until goose use starts; and by mowing every three or four years to keep rank vegetation within tolerable grazing limits, we could reduce pasture management costs. We will keep an open mind until long range results have been documented.

Waterfowl use by geese, widgeon, pintail and coots was relatively light this fall and early winter. Peak goose concentrations prior to December 31 were 22,350 birds.

II WILDLIFE

A. Migratory Birds:

1. Waterfowl:

a. Whistling Swans: The peak number of swans was 45 during the first week in January. Last year the peak was 175 and swan use days totaled 6,174. This year use days decreased to 1,169. Swans departed Merced Refuge early in February this year and were not seen again until the last week of December. We know of only one whistling swan killed by hunters at Merced this year. The violation was not witnessed, consequently no apprehension was made.

b. Geese: Goose use at Merced was about 325,000 use days less this year than in 1968. The peak population also decreased from 59,550 to 22,350. Heavy rains and flood conditions during the months of January, February and March caused the birds to disperse, resulting in less use on the refuge. Exceptionally mild weather during November and December resulted in a delayed migration to the wintering areas. These combined effects were likely the cause of our decreased goose use.

Large species of Canada geese were observed on three different occasions; and the peak number of 50 was seen on December 31. Use days totaled 462 this year as compared to 546 in 1968.

The number of cackling geese peaked at about 13,550 during the week of January 5-11. This number represents a decrease of 5,450 from last years peak. Use days also decreased approximatley 66,500.

White-fronted goose numbers peaked at 2,500 this year and use days totaled 82,645. Last year the peak was 4,500 and use days totaled 226,884.

Use days by snow geese totaled 451,675 this year as compared to 437,920 last year. The peak number, however, decreased from 11,000 in 1968 to about 3,000 this year.

Ross' goose use on Merced Refuge totaled 670,600 days this year. This is an increase of about 120,000 use days. The peak number of 12,000 this year was considerably less than the 25,000 recorded in 1968. Also, last years peak occurred about three weeks earlier than this year which was on December 28.

Goose use days, by species, for the years 1965-69 are given in the following table.

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

c. Ducks: Although flooding early in the year and "bluebird" weather at years end affected duck use, it was not as drastic as the effects on geese. Duck numbers peaked at 110,000 during the week of October 26 through November 1 this year. Last years peak was 111,500 and use days totaled 6,701,254. Use days this year totaled 6,332,893 which consisted of the following use by species: pintail 34%, mallard 27%, widgeon 16%, green-winged teal 9%, shoveler 5%, and all other species 9%. Hunting on Merced opened on November 2 and caused a marked decline in duck numbers during the week of November 2-8.

Duck production at Merced is negligible due to a lack of nesting habitat. Most of the refuge is dry throughout the summer and

what little nesting occurs is around the Glory Hole and in Mariposa Bypass. This year an estimated 500 ducks were produced.

d. Coots and Gallinules: Coot numbers peaked at 8,000 this year as compared to 9,200 in 1968. However, use days increased nearly 130,000 despite the decrease in peak numbers. Coot production was estimated at 20; but in view of the fact that the nesting population was in excess of 50 pairs, a more accurate production estimate might be 150.

Common gallinules reached a population peak of about 200 on January 2. Last years peak number was 400 recorded on December 22. Production data were not collected for this species.

2. Water and Marsh Birds:

Western grebes, pied-billed grebes, eared grebes, white pelicans, great blue herons, common and snowy egrets, American bitterns, black-crowned night herons and sandhill cranes all use Merced Refuge at various times of the year. A quiet early morning or late evening walk around Glory Hole might also afford a fleeting glimpse of a Virginia rail. Sandhill cranes were numerous during late October and throughout November, with a peak of 5,950 being recorded on October 24. A colony of black-crowned night herons used the heavy cattail growths around Glory Hole as a roost site. A peak of 150 herons was recorded on October 10, but with the opening of hunting season on November 2, these birds stopped using Merced. We are certain most of them moved to San Luis Refuge, because about this time an increase in night herons was noticed there.

3. Shorebirds and Gulls:

A variety of shorebirds are present in the ponds and Mariposa Bypass, which goes through the west end of Merced Refuge. Some of the common species are killdeer, common snipe, long-billed curlew, greater yellowlegs, least sandpipers, long-billed dowitcher and American avocet. Sandpipers and dowitchers are quite numerous during migration. Dunlins and black-necked stilts are also seen occasionally.

California and ring-billed gulls use the refuge on an intermittent basis, with most of the use occurring in the spring and early summer.

4. Doves:

Mourning doves are abundant at Merced and this year a peak of 700 occurred on August 30. Last years peak was 500. Doves are resident to the refuge and nest in the trees around headquarters. Production was estimated at 350 this year.

B. Upland Game Birds:

Both ring-necked pheasant and California quail use the refuge. Pheasant numbers have remained somewhat stable over the past several years. The quail, however, showed declining tendencies from 1966 through last year -- 1966 (25); 1967 (12); 1968 (3). This year has given us a more optimistic outlook, since several sightings of four and five birds were reported. The population is now estimated to be about 10. Pheasants, which are hunted on Merced, numbered about 1,500 prior to hunting season.

C. Big Game Animals:

No big game species inhabit the refuge or adjacent lands.

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

Coyotes are not often seen on the refuge, but adjacent ranches abound with them and abundant sign is evidence of their presence. They serve as a check for desert cottontails and black-tailed jackrabbits which inhabit Merced. California ground squirrels and muskrats are a constant nuisance through their burrowing habits. Other species present in limited numbers are opossum, badger, long-tailed weasel, raccoon and striped skunk. We are confident that other species of small mammals exist on the refuge, but no work has been done toward documenting their presence.

E. Hawks, Owls, Eagles and Magpies:

Sparrow hawks, marsh hawks, and red-tailed hawks are common residents. Cooper's hawks are seen occasionally, as are barn owls, short-eared owls, great horned owls and burrowing owls. About four white-tailed kites used the refuge this year and yellow billed magpies are considered intermittent visitors.

One Golden eagle was seen on March 10 and a second observation was recorded on October 18. The latter was probably the same individual that was seen regularly for the remainder of the year.

F. Other Birds:

Many species of birds present during all periods of the year, serve as an attraction for bird watchers. An interesting addition to the bird list resulted from the mist netting of an immature northern shrike. Mr. Carroll Littlefield captured and banded this bird on November 26, and it was observed daily through December 1.

G. Fish:

Fish are present in Deadman Slough and the Mariposa Bypass, both of which pass through the refuge. Information concerning species is

lacking, however. "Mosquito fish" thrive in Glory Hole, where they were introduced as a means of mosquito control.

H. Reptiles and Amphibians:

Common garter snakes and gopher snakes are present at Merced as well as an unidentified species of crayfish. Other species of this group undoubtedly occur but have not been recorded or identified.

I. Disease:

No disease was noted during this year.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

Due to limited development funding during 1969, no physical development was accomplished during the year on Merced Refuge. Because of flood damage, it was necessary to perform somewhat major repair and rehabilitation work on the area. Several wash-outs in east grasslands and pasture roads were repaired. Approximately 3/8 mile of low levee was built up on the north side of A Pasture, parallel to Sandy Mush Road. This levee is intended to keep flood water from entering the refuge in future years. The south boundary levee along the east grasslands was built up and graveled.

Drainage ditches between A and B Field, the east grasslands, and along the west side of A and B Field into the Glory Hole was cleaned out, due to flood water siltation.

The levee between Pumps 17 and 18 was repaired shortly after flood waters receded. The levee around the south and east side of Glory Hole was repaired.

Fields 8 and 11 were contoured on a .4 foot fall and several water control structures were installed. This enabled us to plant wild millet in the fields this year.

Lightening struck the motor on Pump No. 5 during September. The motor was rewound and at the same time the bowls were replaced. It was also necessary to rewind the motor on Pump No. 11 during the year. Hour meters were installed on all pumps.

A loading ramp was constructed at refuge headquarters to assist in transferring heavy equipment between Merced and our other two refuges.

B. Plantings:

1. Aquatic Marsh Plants:

None

2. Trees and Shrubs:

Twenty Arizona Cyprus trees, obtained from California Fish and Game Department, were set out with the aid of local boy scouts working on merit badge requirements. These trees will serve as nesting and roosting sites for mourning dove and other passerine birds using the refuge.

Fifteen fruit trees of various varieties were planted at refuge headquarters as a nesting site and food source for passerine birds.

3. Upland Herbaceous Plants:

None.

4. Cultivated Crops:

Crops grown during 1969 are shown in the following table:

<u>Field</u>	<u>Crop</u>	<u>Acreage</u>	<u>Yield/Growth</u>
1	Winter barley	60	- - -
2	Marsh	105	- - -
3	Millet	60	Poor
4	Millet	45	Good
4a	Millet	50	Good
5	Millet	70	Fair
6	Millet	60	Poor
7	Mature barley	103	Excellent
8	Millet	98	Excellent
9	Mature barley	36	Excellent
10	Millet	55	Excellent
11	Millet	110	Fair
West Marsh	Millet	260	Fair
A-B-C-D-E	Perm. Pasture	393	Excellent

208 acres of wild millet, Echinochloa crusgalli, was planted in Fields 8 and 11 this year. This brought our total millet production on the refuge up to approximately 808 acres.

C. Collections and Receipts:

1. Seeds and Propagules:

During April, 12,000 pounds of wild millet was purchased from Farmer's Rice Growers Cooperative in Dos Palos, California, at \$42 per ton. This seed was bought in combination with rice screenings, alkali bulrush and smartweed seed; however, the bulk of the seed was wild millet.

During late September, approximately 30,000 pounds of barley grain was delivered from the Surplus Commodities storage facilities at Stockton, California. This grain was used to feed waterfowl in an attempt to hold migrating birds on the refuges, rather than let them move into the botulism infected Tulare Lake area. This grain was made available to the Bureau without cost.

2. Specimens:

Nothing to report.

D. Control of Vegetation:

No chemical controls were applied. Roads were mowed and irrigation ditches were burned and cleaned with the mobile crane. Field No. 1, which was dried up all year for cattail control, was seeded to fall barley. Portions of Field No. 6 were burned in an attempt to reduce solid stands of cattail and hardstem bullrush, prior to fall migration and the waterfowl hunting season.

E. Planned Burning:

Fields 1, 2 and portions of 6 were burned to reduce rank vegetation, a total of approximately 186 acres.

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 \$4.50/AUM was collected. The pastures were grazed from April 1 to November 4, for a total of 2056.46 AUMs, and a revenue of \$7,454.08. High management costs over the years to irrigate and manipulate

cattle have caused us to take a hard look at the management practice. Normal practice has been to hire a temporary employee to irrigate and move cattle from field to field as forage required. We hope during 1970 to have the permittee furnish a man to irrigate the pastures and move his own cattle around at a reduced grazing fee. Under this type of program, we could safely reduce our labor costs by .4 man years.

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

V FIELD INVESTIGATIONS

Refer to San Luis field investigations section.

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:

Due to consolidation with San Luis Refuge, 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% 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 November 2.

The following is a comparison of waterfowl hunter kill data for the past six 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>
1969-70	2213	3705	491	70	4266	1.9
1968-69	1814	2033	367	74	2474	1.4
1967-68	1581	3002	144	20	3166	2.0
1966-67	1277	1525	399	7	1931	1.5
1965-66	1264	1743	173	50	1966	1.6
1964-65	1414	1337	212	52	1601	1.1

The hunting program ran rather smoothly this year, and with good hunter success. Once again, under cooperative agreement, California Department of Fish and Game personnel administered the hunting program and manned the hunter check station.

Pheasant hunters were also pleased with the abundance of roosters at Merced this season. The 16 day season opened on November 8.

Following is a breakdown of pheasant hunter kill for the past six years:

<u>Year</u>	<u>Pheasants</u>
1969-70	168
1968-69	146
1967-68	203
1966-67	70
1965-66	180
1964-65	147

The majority of pheasant hunters are also waterfowl hunters who enter the area to hunt both types of birds.

E. Violations:

Law enforcement duties are performed by both State Fish and Game personnel and ourselves. During the migratory waterfowl hunting season we try to use as much preventive law enforcement as possible; however, there are always a few who disregard game regulations. These folks are listed on the following page.

<u>Date</u>	<u>Name</u>	<u>Violation</u>	<u>Agent</u>	<u>Disposition</u>
10/25	Norman Miracle Anaheim	Unplugged Shotgun	Nail Vehrs	U.S. Commissioner 1/12/70 \$25 Fine
10/25	John Wald Anaheim	Unplugged Shotgun	Nail Vehrs	U.S. Commissioner 1/12/70 \$25 Fine
10/26	William Bing	Refuge Trespass	Freeman	Dos Palos Justice Court 11/3/69 \$50 fine
10/26	Salvator Tela	Refuge Trespass	Freeman	Dos Palos Justice Court 11/3/69 \$50 fine
11/2	Brian Wyhs Fremont	Overlimit Ducks	Nail	Pending U.S. Comm. 1/27/70 \$25 FINE
11/2	Gary Lawson Merced	Loaded gun in vehicle	Vehrs	U.S. Commissioner 11/24/69 \$25 fine
11/6	Earl Limme Merced	Late Shooting	Vehrs	U.S. Commissioner 1/12/70 Not Guilty*
11/16	Curt Carlson Merced	Unplugged Shotgun	Vehrs	U.S. Commissioner 1/12/70 \$25 fine
11/20	Allen Hayes Fresno	Overlimit Ross geese	Mayle	Pending U.S. Comm. 4/17/70 \$25 FINE
11/22	Lloyd Ivey Merced	Hunting with- out permit	Mayle Vehrs	Pending U.S. Comm. 1/27/70 \$25 FINE
11/29	Larry Reeves Fresno	Hunting in closed area	Mayle	Pending U.S. Comm. 2/25/70 \$25 FINE
11/29	Roger Croft Fresno	Hunting in closed area	Mayle	Pending U.S. Comm. 1/27/70 \$10 FINE
12/6	Larry Lassley Fresno	Late Shooting	Mayle	Pending U.S. Comm. 1/27/70 \$25 FINE
12/6	Micheal Miller Fresno	Late Shooting	Mayle	Pending U.S. Comm. 1/27/70 \$25 FINE

<u>Date</u>	<u>Name</u>	<u>Violation</u>	<u>Agent</u>	<u>Disposition</u>
12/7	Gary Arnold Santa Clara	Possessing Shorebirds	Vehrs	Juv., Prosecution not recommended
12/7	William Mede Cupertino	Possessing Shorebirds	Vehrs	Juv., Prosecution not recommended
12/21	Cyrus Davis Chowchilla	Late Shooting	Vehrs	Pending U.S. Comm. 2/25/70 \$35 FINE
12/21	Richard Davis Arcata	Late Shooting	Vehrs	Pending U.S. Comm. 4/17/70 \$35 FINE
12/28	Nick Allman Dos Palos	Unplugged Shotgun	Vehrs	Pending U.S. Comm. 2/25/70 \$10 FINE
12/28	Richard Blank Merced	No waterfowl hunting stamp	Vehrs	Pending U.S. Comm. 2/25/70 \$12.50 FINE
1/4/70	Henry Bestania Merced	No waterfowl hunting stamp	Vehrs	Pending U.S. Comm. 1/27/70 \$25 FINE

*Mr. Earl Limme was found not guilty by the U.S. Commissioner to a charge of late shooting on November 6. Mr. Limme was a 20 year Air Force veteran who was due to be transferred to Viet Nam. The Commissioner explained to Mr. Limme that he was giving him a real break. That he did!

F. Safety: (Also see San Luis--Safety)

During the past year the Safety record for Merced was incorporated into the San Luis record, and one record is now maintained for all three refuges.

Roll bars and safety belts were installed on the two farm tractors at Merced this year. A rear safety screen was also placed on the Farmall tractor for use while towing the rotary mower.

Three "White Cap" breathing filtration units were purchased and installed this year for use on the crawler tractors, motor patrol grader and farm tractor while working under dusty field conditions. These units were designed to be portable and can be quickly changed from one tractor to another.

VII OTHER ITEMS

A. Items of Interest:

Refer to the San Luis report.

B. Credits:

Credits for the preparation of this report are as follows:

Asst. Refuge Manager Vehrs - Sections I, III, IV, V, VI, and VII.

Wildlife Biologist Sipe - Section II.

WATERFOWL

REFUGE Merced

MONTHS OF January 1 TO April 30, 19 69

(1) Species	(2) Weeks of reporting period									
	12/29-1/4	1/5-1/11	1/12-1/18	1/19-1/25	1/26-2/1	2/2-2/8	2/9-2/15	2/16-2/22	2/23-3/1	3/2-3/8
Swans:										
Whistling	45	26	25	5	25	25				
Trumpeter										
Geese:										
Canada	10									
Cackling	10,000	13,554	10,000	50	100	5,000	2,000	1,000	500	500
Brant										
White-fronted	2,500	1,510	500		25	500	300	300	200	200
Snow	3,025	2,775	2,000	25	50	1,000	700	500	200	200
Ross	9,625	12,350	10,000	100	200	4,000	2,000	1,000	500	500
Total	25,160	30,189	22,500	175	375	10,500	5,000	2,800	1,400	1,400
Ducks:										
Mallard	5,400	3,600	3,000	300	4,000	8,000	6,000	1,000	800	1,500
Black										
Gadwall	500	210	200	50	500	500	500	100	50	100
Baldpate	19,300	9,650	9,000	300	8,000	10,000	8,000	1,500	500	4,000
Pintail	5,200	4,200	2,000	200	24,000	28,000	25,000	5,000	1,000	1,500
Green-winged teal	4,700	4,930	4,000	200	3,000	4,000	3,000	800	500	250
Blue-winged teal										
Cinnamon teal	1,500	1,525	500	50	500	1,000	1,000	500	300	500
Shoveler	11,300	2,900	2,000	100	3,000	3,000	2,500	250	50	500
Wood										
Redhead										
Ring-necked							1			2
Canvasback	75	46	50	25	25					
Scaup		2								
Goldeneye										
Bufflehead										
Ruddy	650	425	400	200	200	200	200	100	100	100
Merganser		1								
Total	48,625	27,489	21,150	1,425	43,225	54,701	46,200	9,250	3,300	8,452
Coot:	4,000	4,850	3,000	1,000	5,000	8,000	5,000	2,500	2,000	3,000

3 -1750a

Co: NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE MercedMONTHS OF January 1 TO April 30, 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimate seen: total	
	3/9-3/15	3/16-3/22	3/23-3/29	3/30-4/5	4/6-4/12	4/13-4/19	4/20-4/26	4/27-5/3			
	11	12	13	14	15	16	17	18			
Swans:									1,057		
Whistling Trumpeter											
Geese:									70		
Canada											
Cackling	500	300	400	500	500	250	50		316,428		
Brant											
White-fronted	100	100	150	200	200	500	200	25	52,570		
Snow	200	200	200	250	250	100	25		81,900		
Ross	500	400	500	500	500	250	50		300,825		
Total	1,300	1,000	1,250	1,450	1,450	1,100	325	25	751,793		
Ducks:											
Mallard	1,000	1,000	1,000	1,000	1,000	1,000	750	750	287,700		
Black											
Gadwall	250	200	200	250	250	250	200	200	31,570		
Baldpate	7,000	6,000	7,000	8,000	3,000	3,000	2,000	500	747,250		
Pintail	1,500	1,000	1,000	1,000	500	500	250	200	714,350		
Green-winged teal	100	100	100	100	100	100	100	50	182,910		
Blue-winged teal											
Cinnamon teal	200	500	500	750	750	750	750	750	86,275		
Shoveler	500	500	750	750	750	750	500	200	212,100		
Wood									21		
Redhead									1,547		
Ring-necked									14		
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy	100	100	100	100	100	100	100	50	23,275		
Merganser									7		
Total	10,650	9,400	10,650	11,950	6,450	6,450	4,650	2,700	2,287,019		
Coot:	5,000	5,000	5,000	5,000	5,000	5,000	3,000	3,000	520,450		
				(over)							

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	1,057	45	
Geese	751,793	30,189	
Ducks	2,287,019	54,701	
Coots	520,450	8,000	

SUMMARY

Principal feeding areas Marsh and millet fields

Principal nesting areas Ponds and millet fields

Reported by Robert K. Coffman, Asst. Manager

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 NWR

MONTHS OF May 1 TO August 30, 1969

(1) Species	(2) Weeks of reporting period									
	5/4-5/10	5/11-17	5/18-24	5/25-31	6/1-7	6/8-14	6/15-21	6/22-28	6/29-7/5	7/6-12
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard		500	903	900	1,000	1,100	1,150	1,200	1,200	750
Black										
Gadwall		100	154	150	150	150	200	200	250	300
Baldpate		20	2	5	5					
Pintail		50	155	150	200	150	200	150	100	25
Green-winged teal					25					
Blue-winged teal										
Cinnamon teal		250	90	100	100	200	150	150	200	100
Shoveler		25	53	50	50	50	25	25	25	
Wood										
Redhead		2	2	2	2					
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy		25	12	15	10	10	10	15	25	15
Other										
Total		972	1,371	1,372	1,542	1,660	1,735	1,740	1,800	1,190
Coot:		500	575	500	100	150	150	200	250	200

WATERFOWL
 (Continuation Sheet)

REFUGE Merced NWR

MONTHS OF May 1 TO August 30, 1969

(1) Species	(2) Weeks of reporting period							(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	7/13-19	7/20-26	7/27-8/2	8/3-9	8/10-16	8/17-23	8/24-30			
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	300	400	500	1,000	1,500	2,000	7,000	149,821	39	260
Black										
Gadwall	200	200	100	100	100	50	50	17,178	5	25
Baldpate								224		
Pintail	50	50	50	1,000	2,000	3,000	15,000	156,310	7	48
Green-winged teal						1,000	2,000	21,175		
Blue-winged teal										
Cinnamon teal	100	50	50	50	50	50	50	12,180	18	167
Shoveler								2,121		
Wood										
Redhead								56		
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy								959		
Other										
Total	650	700	700	2,150	3,650	6,100	24,100	360,024	69	500
Coot:	150	150	200	100	50	75	100	24,150	3	20
				(over)						

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans	0	0	0
Geese	0	0	0
Ducks	360,024	24,100	500
Coots	24,150	575	20

SUMMARY

Principal feeding areas Marsh & millet fields

Principal nesting areas Ponds & millet fields

Reported by Stephen R. Vehrs, Asst. Manager

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 NWR

MONTHS OF September thru December, 19 69

(1) Species	(2) Weeks of reporting period									
	8/3-9/6 1	9/7-9/13 2	9/14-9/20 3	9/21-9/27 4	9/28-10/4 5	10/5-10/11 6	10/12-10/18 7	10/19-10/25 8	10/26-11/1 9	11/2-11/8 10
Swans:										
Whistling Trumpeter										
Geese:										
Canada										
Cackling Brant										
White-fronted					25	50	50	600	800	250
Snow								25	100	200
Ross									25	50
Total					25	50	50	625	925	500
Ducks:										
Mallard	5,000	1,500	1,650	3,000	9,000	21,200	21,200	40,000	40,000	20,000
Black										
Gadwall	50	50	50	50	100	100	100	1,000	1,500	1,000
Baldpate				50	100	250	250	1,500	1,500	1,000
Pintail	10,000	7,500	7,400	7,000	7,000	5,300	5,300	2,000	56,400	45,000
Green-winged teal	2,000	2,000	1,650	2,000	2,000	3,500	3,500	5,000	6,500	5,000
Blue-winged teal										
Cinnamon teal	50	50	50	50	50				500	500
Shoveler				100	100	100	100	1,000	3,000	2,000
Wood										
Redhead										
Ring-necked										
Canvasback									100	100
Scaup										
Goldeneye										
Bufflehead										
Ruddy						250	250		500	500
Other										
Total	17,100	11,100	10,800	12,250	18,350	30,700	30,700	50,500	110,000	75,100
Coot:	100	500	500	1,000	1,500	1,800	1,800	3,000	3,000	2,500

WATERFOWL
 (Continuation Sheet)

REFUGE Merced NWR

MONTHS OF September thru December, 19 69

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11/9-11/15	11/16-11/22	11/23-11/29	11/30-12/6	12/7-12/13	12/14-12/20	12/21-12/27	12/28-1/3			
Swans:								16	112		
Whistling Trumpeter											
Geese:											
Canada		6						50	392		
Cackling	250	8,400	8,000	7,000	7,000	7,000	7,000	7,000	361,550		
Brant											
White-fronted	100	550	400	300	300	300	300	300	30,275		
Snow	600	1,400	1,500	1,500	1,500	2,500	3,000	3,000	107,275		
Ross	50	4,200	4,500	5,000	6,500	9,000	11,500	12,000	369,775		
Total	1,000	14,556	14,400	13,800	15,300	18,800	21,800	22,350	869,267		
Ducks:											
Mallard	9,500	9,000	1,600	2,600	3,000	3,500	3,800	3,800	1,395,450		
Black											
Gadwall	500	300	100	100	350	400	400	500	46,550		
Baldpate	1,000	1,500	1,500	1,550	3,500	10,000	10,500	12,000	323,400		
Pintail	22,700	12,000	5,800	800	650	550	500	500	1,374,800		
Green-winged teal	3,000	2,000	900	750	1,500	3,500	5,000	5,500	387,100		
Blue-winged teal											
Cinnamon teal	100	150	150	100	50	50	50	50	13,650		
Shoveler	500	500	500	500	800	2,300	2,500	2,500	115,500		
Wood											
Redhead											
Ring-necked											
Canvasback	100	200	50	50	50	50	50	50	5,600		
Scaup											
Goldeneye											
Bufflehead											
Ruddy	500	500	150	150	150	150	150	150	23,800		
Other											
Total	37,900	26,150	10,750	6,600	10,050	20,500	22,950	25,050	3,685,850		
Coot:	3,500	2,200	3,500	3,000	3,000	3,500	3,500	3,500	289,800		

(over)

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans	112	16	
Geese	869,267	22,350	
Ducks	3,685,850	110,000	
Coots	289,800	3,500	

SUMMARY

Principal feeding areas Permanent pasture and grain fields on refuge and on farmlands and duck clubs adjacent to the refuge.

Principal nesting areas

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).

1751
Form NR-1A
Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Merced Months of January 1 to April 30 19 69.

(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:										
Western Grebe	1	4/9	Only observation							2
Pied-billed Grebe		Present	50	4/30		Present				50
White Pelican	25	2/13	200	4/9	50	4/22				300
Great Blue Heron		Present	3	4/9		Present				10
Common Egret		"	100	4/9		"				400
Snowy Egret	100	1/30	100	4/28	50	4/28				500
American Bittern	5	4/9	5	4/28						50
Black-crowned Night Heron	1	4/14	100	4/22	50	4/28				200
Sandhill Crane		Present	500	1/31		Present				1,000
Virginia Rail	5	1/2	Only observation							25
Common Gallinule		Present	200	1/2		Present				400
II. Shorebirds, Gulls and Terns:										
Killdeer		Present	50	4/1		Present				500
Common Snipe		"	10	4/1		"				200
Long-billed Curlew		"	60	3/13		"				500
Willet	1	3/13	Only Observation							10
Greater Yellowlegs	5	4/28	Only Observation							50
Least Sandpiper	500	4/9	500	4/9	100	4/22				2,500
Dunlin	105	3/15	105	3/15	10	4/9				200
Western Sandpiper	100	4/9	100	4/9	50	4/22				1,000
Dowitcher		Present	500	4/28		Present				1,000
American Avocet		"	200	4/22		"				300
Black-necked Stilt	5	3/6	100	4/22	200	4/22				300
California Gull	25	1/30	25	1/30	5	4/1				25
Ring-billed Gull	50	1/30	75	4/9	25	4/22				100

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Present	30	4/28	Present	100
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle	1	3/10	Only observation		1
Duck hawk					
Horned owl	Present	2	4/1	Present	2
Magpie	1	1/8	2 4/20	2 4/20	10
Raven					
Crow	1	3/2	Only Observation		2
Bald Eagle	1	3/10	Only Observation		1
White-tailed Kite	Present	2	4/1	Present	4
Red-tailed Hawk	"	1	4/9	"	5
Marsh Hawk	"	10	3/13	"	35
Sparrow Hawk	"	5	4/1	"	25
Barn Owl	"	2	3/13	"	6
Burrowing Owl	"	2	4/22	"	50
Short Eared Owl	1	1/13	Only Observation		
				Reported by	Robert K. Coffman

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 1 to August 30 1969

(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	5	5/15	10	6/15	Present all Period					15
White Pelican			30	6/15	5	7/1				45
Great Blue Heron			5	7/15	Present all Period					15
Common Egret			10	7/30	"	"	"			25
Snowy Egret			30	7/15	"	"	"			75
American Bittern			2	8/15	"	"	"			20
Black-crowned Night Heron			75	8/15	"	"	"			100
Common Gallinule			30	6/15	"	"	"			200
II. Shorebirds, Gulls and Terns:										
Killdeer			95	7/15	"	"	"			250
Long-billed Curlew			20	7/15	"	"	"			100
American Avocet			40	7/15	"	"	"	10	20	100
Black-necked Stilt			150	7/15	"	"	"	15	30	200
California Gull			40	8/15	"	"	"			100

(over)

(1)	(2)	(3)		(4)			(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove		700	8/30	Present	all	Period	175	350	900
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl, Great		4	7/15	"	"	"			5
Magpie									
Raven									
Crow									
Red-tailed Hawk		5	8/1	"	"	"			10
Marsh Hawk		5	5/15	"	"	"			10
White-tailed Kite	1	4	8/30	Present	end of	Period			4
Barn Owl		4	7/15	Present	all	Period			30
Burrowing Owl		30	7/10	"	"	"			40
Reported by..... Stephen R. Vehrs, Asst. Mgr.									

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

Months of September 1 to December 31 19 69

(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:										
Horned grebe	2	11/21	2	11/21	2	11/21				10
Eared grebe	4	11/21	15	11/25	1	12/10				50
Pied-billed grebe			75	12/23	Still Present					250
White pelican	1	12/31	1	12/31	1	12/31				10
Great blue heron			15	11/21	Still Present					75
Common egret			10	11/7	"	"				75
Snowy egret			25	11/21	"	"				125
Black-crowned night heron			150	10/10	"	"				250
American bittern			75	12/3	"	"				150
Sandhill crane	500	10/10	5,950	10/24	"	"				6,500
Virginia Rail			25	12/3	"	"				125
Common gallinule			175	12/31	"	"				400
II. Shorebirds, Gulls and Terns:										
Killdeer			100	11/19	"	"				300
Common snipe	2	11/26	50	12/10	"	"				175
Long-billed curlew			100	12/31	"	"				250
Greater yellowlegs			10	12/4	"	"				125
Least sandpiper			400	10/28	"	"				2,500
Long-billed dowitcher	150	10/10	250	10/4	"	"				1,500
American avocet			15	10/28	"	"				100
Ring-billed gull			10	11/21	"	"				50

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove			350	10/10	Still	Present				1,200
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow White-tailed kite Red-tailed hawk Marsh hawk Sparrow hawk	1	10/18	1	10/18	"	"				2
			4	10/1	"	"				4
			5	12/24	"	"				25
			4	10/10	"	"				10
			5	11/19	"	"				15
						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 Merced For 12-month period ending August 31, 1969

Reported by Stephen R. Vehrs Title Asst. Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production	
	Type	Acreage				
Unit #1 (West Marsh)	Crops	0	Ducks	2,077,258	100	250
	Upland	100	Geese	255,803		
	Marsh	200	Swans	1,277		
	Water	550	Coots	422,905	8	20
	Total	850	Total	2,757,243	108	270
Unit #2 (Farm Fields)	Crops	842	Ducks	2,414,110	60	150
	Upland	30	Geese	85,267		
	Marsh	10	Swans	159		
	Water	70	Coots	265,545		
	Total	952	Total	2,765,081	60	150
Unit #3 (East Grass-lands)	Crops	400	Ducks	1,122,842	40	100
	Upland	60	Geese	1,364,284		
	Marsh	60	Swans	160		
	Water	240	Coots	295,050		
	Total	760	Total	2,782,336	40	100
Total (All Units)	Crops	1,242	Ducks	5,614,210	200	500
	Upland	190	Geese	1,705,354		
	Marsh	270	Swans	1,596		
	Water	860	Coots	983,500	8	20
	Total	2,562	Total	8,304,660	208	520
	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)

Refuge Merced

Year 1969

Page 1

(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
11/1-7	199 100%	1,194	Mallard 443, Pintail 285, GW teal 52, Baldpate 38, Cin teal 10, Canvasback 7, Gadwall 5, W.F. goose 5, Shoveler 4, Coot 1.	850	425	1,275	Same as Column 2	Same as Column 7
11/8-14	198 100%	1,188	Mallard 127, Pintail 63, GW teal 36, Shoveler 15, Baldpate 13, Canvasback 7, Cin teal 5, Ruddy 5, Snow goose 3, Gadwall 3, Cackling goose 2, W.F. goose 1, Coot 1	281	140	421	"	"
11/15-21	163 100%	978	Mallard 89, Pintail 39, GW teal 21, Coot 17, Canvasback 9, Baldpate 7, Cin. teal 6, Shoveler 6, WF goose 5, Canada goose 2, Gadwall 2, Ringneck 1, wood duck 1, Cackling goose 1, Snow goose 1, Unidentified goose 1.	208	104	312	"	"
11/22-28	198 100%	1,188	Mallard 65, GW teal 35, Pintail 26, Shoveler 15, Cackling goose 13, Baldpatell WF goose 7, Snow goose 5, Coot 5, Cin. teal 3, Ross' goose 2, Gadwall 2, Wood duck 1, Canvasback 1.	191	145	336	"	"
11/29- 12/5	211 100%	1,266	Mallard 99, GW teal 46, Pintail 38, Shoveler 21, Baldpate 18, Coot 12, Ruddy 10, Cackling goose 10, Gadwall 5, Cin teal 5, Canvasback 3, WF goose 3, Snow goose 2.	272	136	408	"	"

(over)

Refuge Merced

Year 1969

Page 2

(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
12/6-12	144 100%	864	Mallard 92, GW teal 60, Pintail 60, Cackling goose 59, Baldpate 50, Shoveler 48, Ross' goose 14, Snow goose 12, WF goose 12, Gadwall 5, Cin. teal 2, Canvasback 2, Ruddy 1, Coot 1.	418	209	627	Same as Column 2	Same as Column 7
12/13-19	197 100%	1,182	Mallard 136, Cackling goose 77, GW teal 72, Pintail 55, Shoveler 54, Baldpate 49, Ross' goose 12, Gadwall 12, Coot 10, Snow goose 7, WF goose 5, Canvasback 1, Ruddy 1.	491	245	736	"	"
12/20-26	292 100%	1,752	GW teal 112, Mallard 95, Cackling goose 61, Pintail 60, Baldpate 51, Shoveler 42, Snow goose 17, Ross' goose 15, Gadwall 8, WF goose 6, Ruddy 2, Cin. teal 1, coot 1, Canvasback 1.	472	236	708	"	"
12/27-1/2	226 100%	1,356	Mallard 74, GW teal 63, Cackling goose 44, Shoveler 36, Baldpate 30, Pintail 16, Cin. teal 8, Gadwall 6, Ross' goose 5, WF goose 4, Snow goose 2.	288	144	432	"	"
1/3-9	210 100%	1,260	GW teal 160, Mallard 101, Shoveler 73, Cackling goose 38, Baldpate 34, Pintail 28, Cin. teal 13, Ross' goose 9, Gadwall 9, Coot 4, WF goose 3, Scaup 3, Canada g. 1, Snow goose 1, redhead 1.	478	239	717	"	"

(over)

Refuge Merced

Year 1969

Page 3

(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
1/10-11	175 100%	1,050	GW teal 115, Mallard 45, Shoveler 45, Baldpate 22, Cin. teal 20, Pintail 18, Coot 18, Cackling goose 15, Gadwall 5, WF goose 4, Ross' goose 3, Canvasback 3, Ruddy 2, Canada goose 1, Snow goose 1.	317	158	475	Same as Column 2	Same as Column 7
Total	2,213 100%	13,278	Mallard 1,366, GW teal 772, Pintail 688, Shoveler 359, Baldpate 323, Cackling goose 320, Cin. teal 73, Coot 70, Gadwall 62, Ross' goose 60, White-front goose 55, Snow goose 51, Canvasback 34, Ruddy duck 21, Canada goose 4, Scaup 3, Wood duck 2, Ring-neck duck 1, Redhead 1, *Unidentified goose 1. *1 goose listed as unidentified by California Dept. of Fish & Game check station personnel.	4,266	2,181 Crippling loss est. at 50%.	6,447	"	"

Refuge Merced N.W.R.

Months of January 1 to April 30, 19 69

(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 specificoally requested. List introductions here.
Ring-necked Pheasant	Farm fields, marsh & sloughs, 1762 a.				30m-70f estimate				2,000	nesting will be reduced as late farming, due to flood waters, destroyed much habitat and many nests.

Refuge Merced NWR Months of May 1 to August 30, 19 69

(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'vd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name					Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Calif. Quail	Mainly in small pockets of brush & hardwood trees along Deadman Slough. 375 acres	15	2	20					3	Two broods were known to have been brought off this year, however, predation evidently took its toll.
Ring-necked Pheasant	Farm fields, marsh and along sloughs. 1760 acres	.84	10	350	50m, 50f				2,100	Heavy nesting cover this year due to abundant moisture.

Refuge Merced NWR

Months of September 1 to December 31, 1969

(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 specificoally requested. List introductions here.
Calif. Quail	Sparsely wooded sloughs, 25 acres	2.5							10	Total estimated from incidental observations
Ring-necked Pheasant	Croplands, 820 ac. Marsh, 1,000 ac. Grassland, 120 ac.	1.94				168			1,000	Total estimated from incidental observations

BIG GAME

Refuge Merced

Calendar Year 1969

(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	At period of Greatest use		As of Dec. 31
Common Name	Cover types, total Acreage of Habitat	Number													
No big game species inhabit the refuge or adjacent lands.															

Remarks:

SMALL MAMMALS

Refuge Merced

Year ending April 30, 1969

(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				
Badger													10	
Coyote													15	
Calif. Ground Squirrel													100	
Muskrat					25*								200	
Opossum													20	
B.T. Jackrabbit													300	
Desert Cottontail								2**					400	
Raccoon-													25	
Striped Skunk													50	
Long-tailed Weasel													10	

* List removals by Predator Animal Hunter

REMARKS: *Control by refuge personnel with .22 rifles.

**Die off of cottontail rabbits reduced population by 25%. Specimens are now in State lab in Sacramento undergoing tests to determine cause of sickness.

Reported by Robert K. Coffman

Refuge MercedYear 19. 69

Botulism

Lead Poisoning or other Disease

Period of outbreak None observed this periodKind of disease None observed this period

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 _____

Areas affected (location and approximate acreage) _____

Source of infection _____

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

Water conditions _____

Condition of vegetation and invertebrate life _____

Food conditions _____

Remarks _____

Remarks _____

Refuge Merced Year 19 69

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
Arizona Cypress	20 ea.	R	5/1	State F&G Dept.	0	0	Along Deadman Slough	12/mi.	1.75 mi.	nesting & escape cover	5/10	10	inade- quate irrig.
Fruit tree Varieties	15 ea.	R	5/1	Local Purchase	\$30.	0	E. of residence	15/ac.	1 acre	Food & nesting	5/15	12	inade- quate irrig.

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

Total acreage planted:

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

Remarks: _____

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Merced 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			5	300 lb.	134	9,380 bu.	139	Browsing barley	85
Wild Millet					638	6,380 bu.	375 volunteer 263 planted	Browsing irrigated pasture	393
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations none Haying Operations none Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
none	none	none	none	1. Cattle	300	2056.46	7,454.08	393
				2. Other	none	none	none	none
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild	none	none	none	2. Acreage Cultivated as Service Operation				862

REFUGE GRAIN REPORT

Refuge Merced

Months of January through December, 1969

(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	bait	Surplus
Field Barley	500 lb	46,000 lb	46,500		3,000	30,000	33,000 lb	13,500		6,000	7,500
Wild Millet	0	12,000	12,000		12,000		12,000 lb	none			

(8) Indicate shipping or collection points 16,000 lbs harvested at Merced. 30,000 lbs. transferred from Stockton surplus commodities.

(9) Grain is stored at Merced NWR grain bins.

(10) Remarks Millet through purchase from local rice mills.

*See instructions on back.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1969

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)
		None						

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

Flood damage to the road on the west end of Field A. Flood water from Field A flowed over the road at this point and washed out the hole Maintenceman Derrick is standing in.

January 1969 Coffman

Flood damage to the south boundary road near George Mac Duck Club. This road was later repaired and graveled.

January 1969 Coffman

Flood water flowing out of Field A and flowing towards
the old airstrip. View looking northeast across Field A.
The pasture was not damaged.

January 1969 Coffman

The same cattleguard as above after the flood water
subsided. Pump 20 is in the background.

January 1969 Coffman

View looking west along Sandy Marsh Road and north
boundary of Merced Refuge. Pump 15 is in the left
background. This levee was thrown up to prevent
flood water from entering the refuge.

February 1969 Coffman

Flood water surrounding hunter checking station.

January 1969 Coffman

KESTERSON NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

January 1 to December 31, 1969

HISTORY

The Kesterson National Wildlife Refuge was established in July 1969. It includes 5,900 acres in Merced County, San Joaquin Valley, California. It is located 4 miles east of Gustine and approximately 18 miles north of Los Banos, California. The refuge is located 6 miles north of the state-operated San Luis Wasteway Management Area and six miles northwest of their Los Banos Waterfowl Management Area. It is located 2 miles northwest of San Luis National Wildlife Refuge and 12 miles northwest of Merced National Wildlife Refuge.

The refuge is an over-layer on a Bureau of Reclamation project. The Bureau of Reclamation has primary jurisdiction and the BSWF has secondary jurisdiction. The land was purchased by the USBR to construct a series of holding reservoirs to operate in conjunction with their San Luis Drain project. The San Luis Drain is a canal to carry agricultural waste water from the San Joaquin Valley back to the Stockton delta. The Kesterson Reservoir would be used for storage and evaporation of drain water until the San Luis Drain is completed. After the drain is completed, the Kesterson Reservoir may or may not be needed for drain water storage. The holding reservoir units will be constructed so they could be used for waterfowl habitat purposes. The initial construction of holding reservoirs will utilize approximately 1,300 acres of the total 5,900. The remainder of the land will be available to the BSWF for waterfowl management purposes.

The final use of the Kesterson area and its value as a national wildlife refuge is uncertain. It could eventually end up with little or no value to waterfowl management, or it could end up as a very important link in the National Wildlife Refuge System. In any event, the BSWF has nothing to lose and everything to gain.

All the land within the Kesterson National Wildlife Refuge is native grassland that has never been used for agricultural purposes. The land has been utilized for cattle grazing and waterfowl hunting for many years. Private duck clubs leased hunting privileges from the landowners. The refuge is a unique segment of San Joaquin Valley grasslands, and to the extent possible, they should be preserved as such.

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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:

Except for Mud Slough, which bisects the refuge along the north-south axis, there was no water on the area when we assumed management responsibilities. Rehabilitation of contour dikes and replacement of decadent control structures facilitated the distribution of overflow water received from adjoining lands. Through this source of free water and another 120 acre feet pumped from Well No. 1, marsh areas totaling approximately 800 acres were formed by years end. An additional 78 acres were inundated by approximately 300 acre feet of water pumped from Well No. 2. A diesel powered portable pump was also used to lift water from a drainage canal which passes through the refuge enroute to Mud Slough.

The pump at Well No. 1 operated at a cost of about \$3.42 per acre foot of water pumped. Pump No. 2 operated much more economically at an average cost of \$0.31 per acre foot. Operating costs for the portable pump were \$0.17 per acre foot of water pumped.

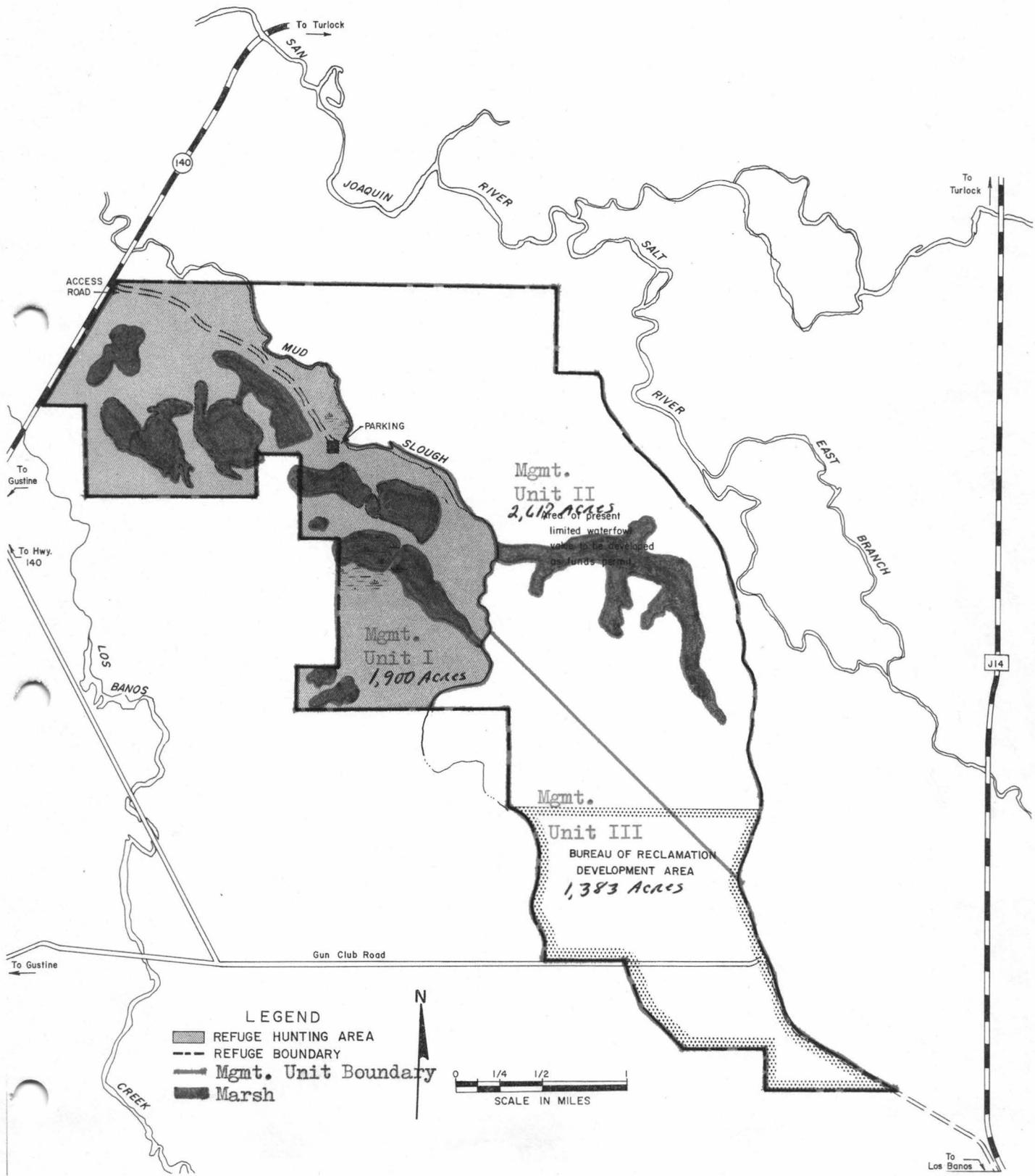
One disadvantage to the free water is the lack of control over incoming water. The drains through Kesterson to Mud Slough transport excessive amounts of water at times, and we are faced with maintaining adequate control facilities to manipulate this water to our advantage.

2. Food and Cover:

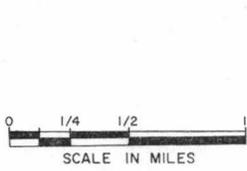
Kesterson Refuge was divided into three management units as shown on the attached map. Unit I contains about 800 acres of marsh that was originally native grassland. Pintail use on these newly flooded areas was extensive in November, and accounted for nearly 50% of the total pintail use. Sprig Lake and Teal Pond are in Unit I and they received considerable use throughout the period. As one would expect, this management unit received the bulk of total waterfowl use - 72%.

The marsh portion of Unit II totaled about 78 acres and provided 225,351 waterfowl use days. This area, which was exceptionally attractive to green-winged teal, accounted for 60% of the total teal use on the refuge.

UNITED STATES DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE
**KESTERSON
 NATIONAL WILDLIFE REFUGE**



- LEGEND**
- REFUGE HUNTING AREA
 - REFUGE BOUNDARY
 - Mgmt. Unit Boundary
 - Marsh



To Los Banos

Management Unit III is restricted from active management pending construction of settling ponds by the Bureau of Reclamation.

II WILDLIFE

A. Migratory Birds:

1. Waterfowl:

a. Whistling Swans: Swans were observed on two occasions at Kesterson. The first observation was of 50 individuals on November 19 and the second was 25 on December 7. Use days totaled 525 for the period of September thru December.

b. Geese: Goose use totaled 7,000 use days for the period covered by this report. The peak number was 175 during the last two weeks of the period. Snow geese were the first geese seen and they also attained the greatest numbers of all species. This area has a history of considerable goose use during the early part of the year when green browse is abundant.

c. Ducks: Total duck use days was 424,725 and the peak population was 8,400. Pintails accounted for the most use, followed closely by green-winged teal. Most of the pintail use was early in the migration and this species peaked at 4,400 during the week of November 23-29. Teal use came later as did most of the use by shovelers. A peak of 3,500 "green-wings" was recorded on December 28 and shovelers peaked at 1,000 on that same date. Use by other species was considerably less, except for widgeon which began to show an increase by years end.

d. Coots and Gallinules: Coot numbers reached a peak of 7,000 on December 28 and total use days by this species was 373,100. Use was centered around the inundated areas, but flocks numbering 200 to 300 coots were often seen feeding as far as a quarter mile from water. Gallinule use on the area was light.

2. Water and Marsh Birds:

Several species in this group found the newly flooded shallow ponds quite attractive. On November 9, 200 white pelicans were observed on Mud Slough, which runs through the refuge. At least one of these birds, and possibly as many as three, was carrying a pale blue wing tag. Nothing positive was recorded concerning the tagged bird because the flock flew when the observer tried to get closer, and they did not return

A sandhill crane roost at Kesterson was noted as having a peak number of 800 on October 31. Other species that occur in lesser numbers are eared grebe, pied-billed grebe, great blue heron, common and snowy egrets and American bittern.

3. Shorebirds:

Killdeer, common snipe, greater yellowlegs, dowitchers, American avocet and black-necked stilts were all seen during the period. Long-billed curlews were abundant in October and a peak number of 250 was observed on October 30. Least sandpipers were numerous the last half of the period and reached a peak of 350 on Dec. 18.

4. Doves:

Mourning doves used Kesterson Refuge throughout the period and attained a peak of about 300 on October 13.

B. Upland Game Birds:

Ring-necked pheasants are present in limited numbers. We estimate that about 20 used the refuge regularly, and it is likely that additional intermittent use occurred.

C. Big Game Animals:

Not applicable to this area.

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

Coyotes were seen regularly and at various hours during the day. They probably number about 10 on the refuge. Black-tailed jack-rabbits, desert cottontails and California ground squirrels are over abundant. Considerable dike damage by ground squirrels was evident, and control measures may be necessary in the future.

Although they were not seen, raccoons, opossums and striped skunks are probably part of the refuge fauna. This also holds true for a variety of smaller mammal species. Muskrats are resident to the sloughs, but thus far have not been seen in our ponded units.

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

Marsh hawks, red-tailed hawks and sparrow hawks are common. Yellow-billed magpies were also seen on several occasions. The little burrowing owl is probably more numerous at Kesterson than on either Merced or San Luis. After a complete years observations we will be able to make a more definite statement concerning their status. Two golden eagles were first seen on October 30 and continued to use the refuge through years end.

F. Other Birds:

The following is a brief list of the species which were seen: Horned lark, mockingbird, sage thrasher, water pipit, loggerhead shrike, Audubon's warbler, house sparrow, western meadowlark, red-winged blackbird, tri-colored blackbird, house finch, white-crowned sparrow, white-throated sparrow.

G. Fish:

Nothing positive is yet known about the fish in Kesterson waters. However, the sloughs quite likely support a population of warm water species.

H. Reptiles:

No observations were recorded.

I. Disease:

No evidence of disease was noted.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

1. Canals and Water Control Structures:

- a. The two existing water control structures on Sprig Lake were replaced with 36" CMP with flashboard risers. Since Sprig Lake is on a natural drain to Mud Slough, these structures must be capable of passing large volumes of water. During the season when duck clubs to the south of the refuge are full and spilling water and especially when the duck clubs drain at the end of the season, water flow fluctuates widely and reaches surprisingly large volumes.
- b. A 36" CMP and flashboard riser was installed further downstream in the Sprig Lake drainage. A control structure had previously been installed at this location, but had either washed or rotted out.
- c. A 36" CMP and flashboard riser was installed in the Gallo Pond. This pipe was installed after an existing 18" pipe failed to carry the run-off and washed out the levee. The culvert was installed as well as it could be done under existing conditions, and it did provide considerable waterfowl habitat throughout the winter. This pipe will be installed correctly and the levee repaired during the coming summer when this unit is dry.

d. Three additional smaller culverts with water control structures were installed to divert or pond water.

e. Three miles of existing contour levee were rebuilt with the grader. These levees had been damaged by cattle trampling and squirrel burrowing over a period of years, and they had received little or no maintenance.

f. One-half mile of ditch from Pump No. 1 to Sprig Lake was cleaned with the grader. This ditch carries water from Pump No. 1 to Sprig Lake, and water can be diverted from the ditch to other smaller units.

2. Road Construction and Maintenance:

a. One mile of entrance road was graveled on an informal bid. This road was graveled four inches deep and twelve feet wide. The road is used by waterfowl hunters to reach the public hunting area, and it is the only all-weather road on refuge property.

b. A 36" CMP culvert was installed under the access road to pass drain water from the east drainage of Sprig Lake. The roadbed on the crossing was raised approximately four feet to give additional freeboard during periods of heavy runoff.

3. Fence Construction and Maintenance:

a. One mile of new fence was built along the line between the 80 Gun Club and the refuge property. This fence was necessary to delineate the line and keep hunters from the public hunting area from trespassing on the private gun club and to keep refuge permittee cattle from straying onto gun club land.

b. Approximately one-quarter mile of fence was built near the refuge entrance to control hunter parking and access onto the public hunting area.

4. Sign Construction and Maintenance:

a. The entire refuge boundary, approximately 17 miles, was posted with national wildlife refuge boundary signs.

b. Two 2' x 6' recognition signs were installed along Gun Club Road where this road enters the refuge boundary. These signs simply state Entering or/Leaving Kesterson National Wildlife Refuge.

c. Two 4' x 8' standard refuge recognition signs were obtained from the Regional Sign Shop for installation along Highway 140. The signs had not been installed by the end of the period.

d. Several miscellaneous signs were made by refuge personnel to assist in operation of the public hunting program.

5. Miscellaneous:

As is true with most new refuges, many hours were spent on general cleanup of junk left by former owners. Vandals took care of some of this work for us. A few days before we actively began administering the area, someone set fire to four of the old duck club shacks and they were consumed before the County Fire Department arrived at the fire. It looks suspicious, but we really didn't do it.

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 wild fires on refuge lands during the year. Heavy grazing by both sheep and cattle prior to refuge administration

did not leave enough excess vegetation to present much of a fire hazard. However, with grazing now excluded from certain areas and reduced on others, the danger from fire will be much greater.

IV RESOURCE MANAGEMENT

A. Grazing:

When the BSWF took over the administration of Kesterson Reservoir lands as a national wildlife refuge, there was one outstanding grazing lease on the area. The Bureau of Reclamation had leased grazing rights on 3,860 acres of Tract KR-1 to Bernard Erreca and Jack Izoco, a partnership. The privilege of grazing 3,860 acres from February 1, 1967 to December 31, 1969, was granted for the fee of \$24,160. There were no restrictions as to type of livestock, numbers of animals at any one time, or total AUMs of use. Both cattle and sheep were grazed on the area, and needless to say, use was heavy.

The lease was written with an option to renew on a month to month basis until June 1970. We requested the Bureau of Reclamation to modify the lease to completely exclude grazing from 920 acres which has been most severely abused. They cooperated, and effective January 1, 1970, this 920 acres was closed to all grazing. The lessee continued the lease and began paying \$1,500 per month for grazing rights on the remaining 2,940 acres. When their lease expires in June we are sure the Bureau of Reclamation will follow our recommendations on any further grazing leases.

On November 1, 1969, Frank Freitas requested that the Bureau of Reclamation lease him grazing rights on the land they purchased from him. The Bureau of Reclamation contacted the refuge and asked for our recommendations on leasing grazing on this land. Since essentially all the land involved is within the reservoir construction site and since it will remain dry upland until construction commences, the refuge suggested that they approve the grazing request with certain restrictions. The Bureau followed our suggestions as requested. Mr. Freitas was leased grazing privileges on 1,950 acres with payment to be made on the basis of actual use at \$3.75 per AUM. The lease was effective from November 1, 1969, to December 31, 1969, with the option to extend the lease at two month intervals. Under the terms of the permit no more than 390 animal units may be permitted on the area at one time.

Since there are no restrictions on the Erreca and Izoco lease, the Bureau of Reclamation takes care of their lease completely. On the Freitas lease, the refuge cooperates with the Bureau of Reclamation in checking on cattle numbers, computing the charges for the permittee, and collecting and forwarding the check to the Bureau of Reclamation.

V FIELD INVESTIGATION AND APPLIED RESEARCH

A. Progress Report:

Nothing to report.

VI PUBLIC RELATIONS

A. Recreational Uses:

Public recreational use at this new refuge has been light, and it will continue to be light until development progresses to the point where some form of recreational use is available. Under the present development, the only public use available is public hunting. During the 1969-70 waterfowl hunting season, 1,414 hunters visited the refuge.

B. Refuge Visitors:

All important visitors to this 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 1900 acres of Kesterson National Wildlife Refuge was open to hunting during the 1969-70 waterfowl hunting season. Between October 18, 1969, and January 11, 1970, 1,414 hunters killed 3,587 birds. The average birds per hunter per day for the season was 2.5.

The following table shows the waterfowl kill by species for the 1969-70 waterfowl hunting season.

<u>Kill by Species</u>	<u>1969-70 Season</u>
Ducks: Mallard	45
Gadwall	46
Pintail	1,168
G.W. teal	1,319
Cinn. teal	31
Baldpate	335
Shoveler	414
Wood duck	1
Redhead	8
Ring-necked duck	1
Canvasback	7
Scaup	11
C. Goldeneye	1
Ruddy duck	59
Coots	<u>48</u>
Total	3,494

Geese: Common Canada	2
Cackling goose	59
W.F. goose	9
Snow goose	16
Ross' goose	<u>7</u>
Total	93

Total waterfowl	3,587
Total hunters	1,414
Average waterfowl per hunter	2.5

On December 10, 33 hunters bagged a total of 160 ducks and geese for an average of 4.85 birds per hunter, the highest average on any one day this year. The poorest days hunting occurred on November 11 when 32 hunters bagged 17 ducks and geese for a .5 birds per hunter average.

The refuge operated the hunting program this year rather than the California Department of Fish and Game. The game department was scheduled to operate the hunting program, but on September 12 we were notified it would be a refuge operation. We received many favorable comments about our hunting program.

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>
10/18	Donald R. Bradley	Overlimit	Macias*	Gustine Justice Court 10/27/69 \$25 fine.
10/18	Johnnie L. McGee	Loaded shotgun in vehicle	Macias	Gustine Justice Court 11/3/69 \$50 fine.
10/26	Daniel G. Vorhies Inglewood	Unplugged gun	Vehrs	Pending U.S. Comm. 1/27/70 \$25 FINE
11/7	Victor J. Kremer Dublin	Overlimit	Vehrs	Pending U.S. Comm. 1/27/70 \$25 FINE
12/3	Ernest E. Deacon San Jose	Killing Swan	Vehrs	Pending U.S. Comm. 1/27/70 \$50 FINE
12/6	Robert G. Flause Monterey	Killing Sandhill crane	Sipe Nail	Pending U.S. Comm. 2/14/70 \$50 FINE
12/17	Kenneth A. Welch Fremont	Unplugged gun	Vehrs	Pending U.S. Comm. 4/27/70 \$25 FINE
1/7/70	David A. Sandki San Leandro	Unplugged gun	Nail	Pending U.S. Comm. 4/17/70 \$25 FINE
1/11	Larry W. Hulberg Sunnyvale	Unplugged gun	Nail Mayle	Pending U.S. Comm. 2/25/70 \$25 FINE

*California Department of Fish & Game warden Mike Macias

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:

On October 5, 1969, Raymond R. Fuller, Maintenceman II WAE, at Merced Refuge was converted to a permanent position and promoted to Operator General (Heavy Duty). At this time his work station was transferred to Kesterson Refuge where he became the first full time employee on this new refuge. Ray was given this position because he has demonstrated an ability and willingness to do a high level and quality of work with a minimum of supervision. Ray is under the direct supervision of James R. Mayle, Foreman for the San Luis complex.

B. Credits:

Credit for preparation of this report is as follows:

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

Wildlife Biologist Sipe - Sections I & II.

SIGNATURE PAGE

Submitted by:

Melvin J. Hail
(Signature)

Deputy Manager
(Title)

January 29, 1970
(Date)

Approved, Regional Office:

Date: _____

(Signature)

(Title)

WATERFOWL

REFUGE Kesterson NWR

MONTHS OF September thru December, 1969

(1) Species	(2) Weeks of reporting period									
	8/31-9/6 : 1	9/7-9/13 : 2	9/14-9/20 : 3	9/21-9/27 : 4	9/28-10/4 : 5	10/5-10/11 : 6	10/12-10/18 : 7	10/19-10/25 : 8	10/26-11/1 : 9	11/2-11/8 : 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard						100	200	100	150	500
Black										
Gadwall								50	200	300
Baldpate							100	50	300	200
Pintail						1,800	3,500	600	3,200	3,500
Green-winged teal						100	100	100	950	1,500
Blue-winged teal										
Cinnamon teal									100	200
Shoveler								50	200	300
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										100
Goldeneye										
Bufflehead										
Ruddy							300		300	300
Other										
Total						2,000	4,200	950	5,400	6,900
Coot:						1,000	1,000	600	5,000	5,100

Area Dry During This Period

WATERFOWL
 (Continuation Sheet)

REFUGE Westerson NWR

MONTHS OF September thru December, 1969

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	11/9-11/15	11/16-11/22	11/23-11/29	11/30-12/6	12/7-12/13	12/14-12/20	12/21-12/27	12/28-1/2	waterfowl days use	Broods: seen	Estimated total
Swans:											
Whistling Trumpeter		50			25				525		
Geese:											
Canada											
Cackling Brant		100	50	50	50	50	50	50	2,800		
White-fronted		50				25	25	25	875		
Snow	25	50	25	50	50	75	100	100	3,325		
Blue											
Total	25	200	75	100	100	150	175	175	7,000		
Ducks:											
Mallard	400	350	450	500	550	650	650	700	37,100		
Black											
Gadwall	150	75	200	50	50	50	50	50	8,575		
Baldpate	100	50	300	200	200	250	475	500	19,075		
Pintail	2,500	1,650	4,400	1,500	1,000	500	350	200	172,900		
Green-winged teal	1,000	200	1,500	700	1,500	2,500	3,200	3,500	117,950		
Blue-winged teal											
Cinnamon teal	50	50	50	50	50	50	50	50	4,900		
Shoveler	150	50	800	600	650	750	950	1,000	38,500		
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup	50								1,050		
Goldeneye											
Bufflehead											
Ruddy	200	125	700	500	350	300	250	200	24,675		
Other											
Total	4,600	2,550	8,400	4,100	4,350	5,050	5,975	6,200	424,725		
Coot:	4,000	3,600	4,000	5,000	5,000	5,500	6,500	7,000	373,100		

(over)

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans	525	50	
Geese	7,000	200	
Ducks	424,725	8,400	
Coots	373,100	7,000	

SUMMARY

Principal feeding areas Inundated areas of refuge and
duck clubs adjacent to refuge

Principal nesting areas

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 KestersonMonths of September 1 to December 31 19 69

(1) Species	(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
<u>I. Water and Marsh Birds:</u>										
Eared grebe			50	11/19	Still Present					250
Pied-billed grebe			10	12/3	" "					100
White Pelican			200	11/9	5	11/25				500
Great blue heron			25	11/9	Still Present					150
Common egret			4	11/20	" "					50
Snowy egret			3	10/26	" "					75
American bittern			1	11/21	" "					50
Sandhill crane	3	10/31	800	10/31	" "					1,000
Common gallinule			75	11/21	" "					500
<u>II. Shorebirds, Gulls and Terns:</u>										
Killdeer			250	9/19	Still Present					700
Common Snipe	3	10/30	50	12/18	" "					150
Long-billed curlew			250	10/30	" "					550
Greater yellowlegs			75	11/18	" "					200
Least sandpiper			350	12/18	" "					1,500
Short-billed Dowitcher	200	12/5	200	12/5	200	12/5				300
Long-billed dowitcher			125	10/31	Still Present					650
American avocet			75	9/29	" "					350
Black-necked stilt			10	11/22	" "					75

(over)

(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove		300	10/13	Still Present	1,200	
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie, yellow-billed Raven Crow Red-tailed hawk Marsh Hawk Sparrow hawk Burrowing owl	2	10/30	2	10/30	" "	10
		15	11/21	" "	50	
		2	11/21	" "	25	
		3	11/29	" "	25	
		3	11/22	" "	25	
		4	10/2	" "	15	
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.

Refuge Kesterson

Year 1969

Page 1

(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
10/18-24	78 100%	312	Pintail 162, GW teal 31, Shoveler 15, Baldpate 8, Gadwall 7, Cin. teal 5, Mallard 4, Ruddy 2, WF goose 1.	235	58	293	Same as Column 2	Same as Column 7
10/25-31	97 100%	388	Pintail 167, GW teal 39, Baldpate 15, Shoveler 13, Mallard 10, Ruddy 6, Scaup 6, Gadwall 5, Canvasback 2, Coot 2, Cin. teal 1, Redhead 1.	267	67	334	"	"
11/1-7	75 100%	300	Pintail 172, GW teal 31, Baldpate 8, Shoveler 6, Redhead 2, Scaup 2, Mallard 1, Cin. teal 1, Gadwall 1.	224	56	280	"	"
11/8-14	118 100%	472	Pintail 138, GW teal 26, Baldpate 16, Shoveler 10, Ruddy 5, Coot 5, Mallard 4, Canvasback 4, Redhead 2.	210	52	262	"	"
11/15-21	109 100%	436	Pintail 181, GW teal 53, Baldpate 24, Shoveler 16, Cin. teal 4, Ruddy 4, Cackling goose 3, Scaup 3, Mallard 2, Gadwall 2, Coot 2.	294	73	367	"	"
11/22-28	85 100%	340	Pintail 43, GW teal 41, Shoveler 25, Ruddy 10, Coot 9, Baldpate 6, Gadwall 3, Redhead 1, Cin. teal 1, Canada goose 1, Cackling goose 1, WF goose 1.	142	35	177	"	"
11/29- 12/5	108 100%	432	GW teal 94, Pintail 84, Shoveler 32, Baldpate 13, Mallard 3, Gadwall 3, Cin. teal 3, Cackling goose 3, Ruddy 2, Redhead 1, Snow goose 1.	239	60	299	"	"
12/6-12	108 100%	432	GW teal 132, Pintail 70, Shoveler 42, Baldpate 17, Ruddy 11, Cackling goose 5, Snow goose 5, Mallard 4, Coot 4, Canvasback 1, Gadwall 1.	292	73	365	"	"

Refuge Kesterson

Year 1969

Page 2

(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
12/13-19	126 100%	504	GW teal 185, Pintail 55, Shoveler 48, Baldpate 16, Mallard 7, Gadwall 6, Coot 3, Ruddy 2, Ross'goose 1, Ringneck 1 Goldeneye 1, Cackling goose 1.	326	81	407	Same as Column 2	Same as Column 7
12/20-26	130 100%	520	GW teal 183, Shoveler 47, Pintail 30, Baldpate 23, Mallard 4, Gadwall 4, Coot 4, Snow goose 3, WF goose 2, Cin. teal 1, Redhead 1.	302	75	377	"	"
12/27- 1/2	137 100%	548	GW teal 152, Baldpate 44, Shoveler 44, Cackling Goose 25, Pintail 23, Ruddy 8, Gadwall 6, Mallard 3, WF goose 2, Snow Goose 1, Wood duck 1, Coot 1.	310	77	387	"	"
1/3-9	130 100%	520	GW teal 194, Baldpate 75, Shoveler 41, Pintail 29, Coot 18, Cackling goose 8, Cin. teal 6, Ruddy 5, Gadwall 3, Snow goose 3, WF goose 2, Mallard 2.	386	96	482	"	"
1/10-11	113 100%	452	GW teal 158, Shoveler 75, Baldpate 70, Pintail 14, Cackling goose 13, Cin teal 9, Ross' g. 3, Gadwall 5, Ruddy 4, Snow g. 3, WF goose 1, Canada goose 1, Mallard 1.	360	90	450	"	"
Total	1,414 100%	5,656	GW teal 1,319, Pintail 1,168, Shoveler 414, Baldpate 335, Cackling goose 59, Ruddy 59, Coot 48, Gadwall 46, Mallard 45, Cin. teal 31, Snow Goose 16, Scaup 11, White-front goose 9, Redhead 8, Canvasback 7, Ross' goose 7, Canada goose 2, Wood duck 1, C. Goldeneye 1, Ring-neck duck 1.	3,587	893 Crippling loss est. at 25%.	4,480	"	"

(over)

Refuge Kesterson

Months of September 1 to December 31, 19 69

(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.
None observed during this period.										

BIG GAME

Refuge Kesterson

Calendar Year 1969

(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 the refuge or adjacent lands.													

Remarks:

Refuge Kesterson

Year 19. 69

Botulism

Lead Poisoning or other Disease

Period of outbreak None observed this period

Kind of disease None observed this period

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

	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Recovered _____

Number lost _____

Areas affected (location and approximate acreage) _____

Source of infection _____

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 _____

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Kesterson 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			
None	--	--	--	--	--	--	--		
								Fallow Ag. Land	none

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 2

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
none	none	none	none	1. Cattle	*no record	*no record	25,551.25	5810
				2. Other Sheep	*no record	*no record	included above	3860
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild	none	none	none	2. Acreage Cultivated as Service Operation				0

*Grazing under Bureau of Reclamation lease without regard to total animal use.

REFUGEE GRAIN REPORT

Refugee Kesterson

Months of January through December, 1969

(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
Negative Report											

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1969

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)
		None						

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

Prior to refuge status coyote-getters were used on the refuge to protect sheep. This warning sign was posted at the gate on the entrance road from Hwy 140.

July 16, 1969 Nail

Evidence that the coyote-getters were successful. With refuge status, coyotes are completely protected, and by the end of the year they were commonly seen and heard.

July 16, 1969 Nail

Water control structure on Sprig Lake. This structure was replaced with a 36" CMP and flashboard riser.

July 16, 1969 Nail

One of the few functional water control structures on the refuge when we took over. This structure, designated as the "5 Pardner" structure, was designed to spill over the top during periods of heavy runoff. During the fall months this structure spilled 6-8" of water over the top.

May 16, 1969 Nail

Aerial view of Sprig Lake, the largest body of water on Kesterson Refuge. The fence in the lower right corner is the northwest corner of the 80 Gun Club.

October 22, 1969 Sipe

One of the signs fabricated by refuge personnel in conjunction with our public hunting program. This sign was located along Highway 140 at the entrance to the public hunting area.

October 1969 Mayle

Pump No. 2 is one of two pumps on the refuge. This pump when tested by PG&E was shown to pump 1,850 gallons per minute and was rated at 62% efficiency. This pump was our only source of water on the east side of the refuge.

October 1969 Mayle

Remains of an old bridge across Mud Slough. Other than this bridge, which is barely suitable for foot travel, we have no way of crossing Mud Slough on the north end of the refuge. The only useable crossing is on Gun Club Road. Note the sheep on the far side.

May 16, 1969 Mayle