KERN - PIXLEY NATIONAL WILDLIFE REFUGES
DELANO, CALIFORNIA

# NARRATIVE REPORT

## January 1, to April 30, 1963

### REFUGE PERSONNEL

Regular

Refuge Manager- - - - -Leon C. Snyder
Asst. Ref. Mgr. - - - - -Ben H. Crabb
Clerk-Typist- - - - - -Betty L. Leal
Maintenanceman II - Willard H. Lewis
Maintenanceman II - - - Carl L. Ayres
Maintenanceman II -Vernon L. Dickson

Temporary

Maintenanceman II - James C. Thurman

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU SPORT FISHERIES AND WILDLIFE

DELANO, CALIFORNIA

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PIXLEY NATIONAL WILDLIFE REFUGE . . . . . 17-23

KERN NATIONAL WILDLIFE REFUGE

# I GENERAL

## A. Weather Conditions:

All climatological weather data for refuges in Kern and Tulare Counties is obtained from records received from the U. S. Weather Bureau Station at Kettleman City, California.

Weather conditions were not unusual during January so far as temperatures and foggy days were concerned. Evaporation from ponds, however, was above normal due to below normal precipitation. The fall and early winter drouth period persisted through January.

On February 1, .60 inches of rain was received; followed with 2.23 inches during the week of February 10 to 17. This amount brought the February total well above the average for February, but still 1.66 inches below the amount received in 1962. The month was frost free. Maximum temperatures reached 75 degrees on several occasions, thus grasslands greened up rapidly during mid month. Average evaporation for February 1955 through 1960 is 3.10 inches, however, for the second February in two consecutive years, rainfall exceeded evaporation.

From mid February throughout March we experienced another drouth period with only .58 inches rainfall. Temperatures averaged 4.10 degrees above normal. Evaporation, also, was above normal. This type of weather stunted the mid February growth and caused an early rapid browning up of grasslands.

April weather was unusual. Rainfall was recorded on twelve days totaling 1.54 inches which more than made up for the deficiency of January and March, bringing the period total to 1.21 inches above normal. However, because of the fall and early winter drouth, the yearly total from July through April is still below average for this area. Both day and night temperatures wer unusually cold. Farmers are extremely concerned regarding prospects for a good cotton crop this year. Rain and cold weather delayed seeding. In instances where seeding was accomplished seedrot occurred or top soils crusted over prohibiting the sprouted plant from pushing through surface soils. Grasslands greened up again to some extent; but on the whole, we will not have a good grass year.

CLIMATOLOGICAL DATA

Table No. 1

| Month | Max. Temp. | Min. Temp. | Mean Max. | Mean Min. | Mean Mo. | Ave. Mean Monthly* |
|---|---|---|---|---|---|---|
| January | 65 | 24 | 53.2 | 28.2 | 40.7 | 40.2 |
| February | 75 | 35 | 66.1 | 46.2 | 56.1 | 58.2 |
| March | 82 | 32 | 67.1 | 43.1 | 55.1 | 50.9 |
| April | 78 | 35 | 69.0 | 45.0 | 57.0 | 58.1 |

| Month | Precip. | Ave. Precip. | Evap. | Ave.** Evap. | Miles Wind | Ave. Miles of Wind** |
|---|---|---|---|---|---|---|
| January | .51 | 1.46 | 2.01" | 2.01" | 1564 | 1960 |
| February | 2.83 | 1.04 | +.15" | 3.10" | 1857 | 1849 |
| March | .58 | .84 | 5.71 | 5.34" | 2498 | 2004 |
| April | 1.54 | .91 | 4.71 | 8.89 | 2416 | 2482 |
| Total | 5.46 | 4.25 | 12.28 | 19.34 | 8335 | 8295 |

* Average mean monthly temperatures and average precipitation data are for a period of ten years obtained from U. S. Department of Commerce, Weather Bureau Station, Kettleman City, California. (1951-1960)

** Average evaporation and average miles of wind data are for a six year period (1955-1960) and obtained from the same source as above.

B. Habitat Conditions:

1. Water:

Stream flows from mountain watersheds generally were below normal through the forehalf of the period. Because of the long early season drouth and extremely dry and porous ground conditions; ponded areas on the valley floor were few and far between. While mountain areas did receive some early season heavy rains, runoff from these were confined behind the many dams in anticipation of continued drouth. Then during late March and all of April storms in the "Sierras" increased in both frequency and force. Runoff was very heavy because snows were unpacked and many of the storms consisted only of heavy rains. Dams filled to capacity very rapidly and it was necessary to make heavy releases throughout the latter half of April. These releases were made into the Friant-Kern distribution system. Water thus made available for irrigation at this early date was really not appreciated by most farmers. By mid April, irrigation districts were offering water free from charge if used on grasslands for percolation and recharge of underground storage basins. The foregoing type of water was not available in the Kern refuge area due to lack of transportation facilities. Thus the only ponded water in the vicinity of the refuge south of the Tulare Lake basin was the carryover in duck club ponds.

Within the Kern refuge approximately 360 acre feet of water was pumped into two ponding sites from refuge wells 7 and 10. To conserve funds, these pumps were shut down on February 1. We fully anticipated that water levels in these ponds would hold up sufficiently to see waterfowl through the spring migration. This, however, was not the case as refuge ponds were almost completely dry by February 20. Since there was a gain in rainfall over evaporation, the water loss must be attributed entirely to percolation.

2. Food and Cover:

No cultivated crops or natural aquatics were available this period. Native grasses and flowering plants were very late getting started and the favorable growing season extremely short. In spite of poor food and cover conditions, refuge bird concentrations held up extremely well as long as ponded water was available.

## II WILDLIFE

A. Migratory Birds:

1. Ducks:

Wells, number 7 and 10, which were pumped during the preceding period,

were shut down, February 1. The duck population showed a decrease until April 18, when the last birds were observed. Pintail and green-winged teal were the predominant species throughout the report period.

Rainfall was scarce in the vicinity of the refuge. Only a few scattered ponds from well number 7, unit 1 and well number 10, unit 9 were available to waterfowl during February, March, and April.

The number of ducks and coots in the adjacent duck clubs and the Pixley refuge made it obvious that we will have no difficulty in concentrating waterfowl on the refuge after food and water is made available.

Geese:

Sixty-five Canada geese were observed on unit 9 on January 10. This was the only sighting during the period. Several flights of White-fronts were seen to the north of the refuge during January and early February.

3. Water and Marsh Birds:

None observed

4. Shorebirds, Gulls and Terns:

Least and Western Sandpipers and Avocets were seen on the refuge until the ponds and pot holes dried up late in the period. One or two Avocets could be found in the display pond at the headquarters site throughout the entire period. Population figures will be found on the enclosed NR 1A form.

5. Doves:

Small numbers of doves were seen in the wooded area of the southwestern area of the refuge.

B. Upland Game Birds:

None observed this period. NR-2 form is not applicable to the area at this time.

C. Big Game Animals:

Not applicable.

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

Several coyotes and one kit fox were seen in the south eastern portion of the refuge near Goose Lake canal. Rodents, especially ground squirrels are numerous.

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

Species noted during the period include marsh hawk, sparrow hawk, Swainson's hawk, red-tailed hawk, raven and turkey vulture.

On April 11, 56 Swainson's hawk were observed. These birds were believed to be part of a migration through the area. The marsh hawk remains the most common, but none of the species can really be considered numerous.

F. Other Birds:

The following species were seen during the period January through April:

Song Sparrow - White-crowned Sparrow
Red-winged Blackbird - Tri-colored Blackbird

This list is in addition to those listed in the preceding narrative report. The horned lark and Brewer's blackbird remain most common to the area.

G. Fish:

Not applicable.

H. Reptiles:

Gopher snakes and Pacific rattlesnakes were seen throughout April. Four rattlesnakes were killed by the refuge crew during the second week of April.

I. Diseases:

None observed.

## III REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development:

1. Buildings:

No. buildings were added during the period, however, contract no. 14-16-0001-467 was awarded to Wallace and Smith of Bakersfield for

construction of a 40' x 100' metal shop and equipment storage building. Construction should get under way early in May.

2. Canals and Dikes:

Equipment rental contracts 14-16-0001-434 and 441 continued in affect throughout the period. Five TD8 or equivalent tractors with 20 cu. yd. scrapers worked full time except for breakdowns and wet weather. A total of 2561½ productive operating hours were utilized at a contracted cost of $39,383.83. Work accomplished consisted of: (1) Dike 2C approximately 1 mile long with 10 foot top and containing approximately 45,000 cu. yds; (2) Dike 1D, 1½ miles long with approximately 68,000 cu. yds.; (3) Dikes 1A-4A; 1B-4B; and canal dikes C1A-C4A, each 2½ miles long with approximately 48,000 cu. yds. each. Total dike length is 10 miles with approximately 257,000 cu. yds. of fill. The three latter dikes mentioned above incorporate a canal for Poso Creek flood water and a canal for pump water.

Refuge personnel contributed considerable assistance toward the construction of the above dikes and canals. Two refuge TD18A tractor-doser units were operated by refuge maintenance men and used a pushers to assist the loading of scrapers. This was necessary because of extremely hard ground conditions. In addition the refuge motor patrol grader was operated by refuge personnel for smoothing down dike slopes and canal bottoms. The major portion of one refuge maintenanceman's time was required to service, maintain and repair refuge equipment working on this dike project. In connection with construction of the dikes and canals, 4 foot high fills were put in around three of the south boundary wells and 4 pump discharge basins put in to connect pumps with pump canal.

One and one-half miles of 3 foot high by 9 foot top meandering levee totaling 10,500 cu. yds. was dozed up by refuge personnel in unit F4. The purpose of this levee is to prevent free flow of irrigation water into the meandering channel in this unit. Contour levees will have to be put in and tied to this levee prior to planting of wild millets.

3. Control structures:

On rainy days part of the refuge maintenance staff were kept busy constructing 2½'x2¼'x4½' redwood contour levee check boxes; 20 of these were completed.

4. Wells:

Wells number 4-5-6-8-9 were drilled under contract #14-16-0001-425.

by the Wilkinson Drilling Company of Wasco, California. These are gravel packed wells with 16 inch casings varying in depth from 800 to 900 feet.

5. Maintenance:

Headquarters Grounds:

Sand on headquarters grounds was bladed and leveled after three of the heavier rains to get it mixed and packed into surface soils.

Signs and Fences:

Work on signs and fences this period was insignificant in comparison to other work, however, maintenance was performed where needed.

Equipment Repairs:

The major portion of one maintenanceman's time was required on equipment servicing, maintenance, and repair. All motor vehicles were serviced regularily, 5000 mile tuneup jobs and safety inspections were performed as per mileage and time requirements. A 5 ton White truck-tractor unit was obtained through excess property channels early in January. Front axels of an equipment transport trailer obtained last period were removed and the trailer converted to a fifth wheel unit for operation with the White truck-tractor. This unit was used on numerous occasions for hauling TD18A tractors to work sites, at Kern and Pixley and to Delano for major repairs. We, also, made one trip to Mc Clellan Air Force Base to transport a truck fork lift to Kern refuge. In connection with acquiring excess heavy equipment, the refuge manager made several trips to military installations in central and southern California for preinspection of available excess equipment.

Our TD18A tractors with dozer units worked throughout the period under difficult operating conditions. Frequent repairs and adjustments were necessary as follows:

Tractor #1 - Ser.#TDR33302
Removed two cap bolts from clutch housing, tapped out, rethreaded and installed new bolts.

Tractor#2 - Ser.#TDR26349
Repaired magnet and retimed engine.

Tractor #4 - Ser.#30480
Relined and adjusted brakes. Replaced drive shaft and coupling on

hydralic dozer pump. Removed and replaced clutch disk, pressure plate and throughout bearing, relined clutch brakes. Engine overhaul including new pistons, sleeves, rings, bearings and fuel adjustments.

Tractor #5 - Ser.#31956
Removed and replaced clutch disc. Welded dozer frame both sides. Installed new cutting edges on dozer blade; overhauled clutch in starting engine.

Major repair jobs on motor vehicles consisted of new valves installed on the 1951 Chevrolet stake truck; and new water pump, clutch including throughout and pilot bearing; two speed electric shift, and shortened drive shaft, all on White truck-tractor.

B. Plantings:

None to date. Physical developments have not reached the stage wherein water for irrigation of plantings is possible. Refuge personnel ran a topography survey at 100 foot intervals in unit F-4 for the purpose of laying out contour levees for wild millet plantings, however, it now appears that we cannot get the levee job completed in time for planting this spring.

C. Collections and Receipts:

2.35 tons wild millet and alkali bulrush seed mixture was purchased from Cal Oro of Dos Palos, California for use at Kern and Pixley.

D. Control of Vegetation:

Not necessary this period.

E. Planned Burning:

None this period.

F. Fires:

No wild fires occurred during this period. Grass fire hazard was low early in the period due to absence of old grasses. The greening up of grasslands in mid February and grazing of sheep throughout the period further reduced fire hazards. Hand fire fighting equipment was inspected and maintained regularly. We, also, had a quarterly fire drill.

## IV RESOURCE MANAGEMENT

A. Grazing:

Special use sheep grazing permit number 38042 for grazing of 28,000

AUM'S during the period February 1 through September 30, was issued to the E.R.E. Sheep Company of Bakersfield. Four bands totaling 3605 head were turned into the refuge on February 11, and one band of 877 on February 14. These were bands of ewes with lambs. Because of short feed and early drying up of the feed, these ewe-lamb bands were removed from the refuge in late March and early April. During the period February 11, to April 7, total use amounted to 6742.74 AUM'S. On April 8, one dry band containing 1388 head was turned in. Use during April for this band totaled 1064.12 AUM'S. Total use during period was thus 7806.86 AUM'S. Fee for sheep grazing is .30 per AUM. Total revenue for period amounts to $2342.06. The permittee made a down payment of $2100.00. It appears now that we will fall far short of anticipated seasonal use. This can be attributed only to poor grass growing conditions.

B. Haying: None

C. Fur Harvest: None

D. Timber Removal: Not Applicable

E. Commercial Fishing: Not Applicable

F. Other Uses: None

## V FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Report:

The California State Board of Water Resources are still making field studies on soil types, water penetration to subsoil stratas, and rate of pond evaporation in the Kern refuge area. Results of these studies are not yet available to us. They will be included in a future report when completed.

## VI PUBLIC RELATIONS

A. Recreational Uses:

No recreational facilities are available as yet. General public use has been insignificant as we have nothing to show except dike construction activities. Conducted tours were extended to one small group of boy scouts working on Nature Merit Badges, and to the pupils of the Milrose School in Bakersfield. Objectives of the Kern-Pixley refuges were explained to these groups.

B. Refuge Visitors:

| Date | Name | Organization or Agency | Purpose of Visit |
|---|---|---|---|
| 1-15 | E. V. Cofer | GMA, Bakersfield | Deliver safety material. |
| 1-16 | J. Van den Akker<br>H. A. Goodwin<br>A. G. Huey | Asst. Reg. Super.<br>Chief, Div.Tech.Serv.<br>Regional Engineer | Inspect contract work at Kern and Pixley refuges |
| 1-21 | E. A. Schara | Tulare Co. Rd. Comm. | Special Use Permit-Sand. |
| 1-21 | Mtnee. Henson | Salton Sea N.W.R. | Deliver equipment. |
| 1-22 | Howard Leach<br>Floyd McCullough | S.F.&G., Sacramento<br>Dept.Wtr.Res. " | Drain water use at Kern refuge. |
| 1-23 | Howard Sprague- | Reclassification Off. | Inspection. |
| 2-7 | John Mack | Engineer, Portland | Inspect contract work. |
| 2-20 | Mr. Gillett<br>Ray Glahn | Washington<br>Bio.-Pilot, Portland | Inspect Kern and Pixley Refuges. |
| 2-26 | Art Gieb | Mosq.Abate.,Bksfld. | Discuss Mosquito control. |
| 2-26 | R.E.Shackelford | S.F.&G.,Bakersfield | Kern refuge status. |
| 3-4 | Pat Campbell | S.F.&G., Wasco | Kern refuge status. |
| 3-13 | Mr. La Barre | Consolidated Serv. | Wage Survey. |
| 3-21 | Joe Burnett<br>Henry Beger | S.F.&G., Tulare<br>Pilot,Tulare.Mosq. | Mosquito control-Pixley. |
| 3-29 | Jerry Novy | Photographer,Bksfld. | Photos of Kern refuge. |
| 4-5 | E. V. Cofer | GMA, Bakersfield | Attended Safety meeting. |
| 4-9 | Philip DuMont | Chief, Section of Public Use, Wash. | Inspect Kern-Pixley refuges. |
| 4-23 | Howard Leach<br>Floyd McCullough<br>Nick Ermecoff | S.F.&G., Sacramento<br>Wtr.Res., "<br>S.F.&G.,Mendota Ref. | Drain water use at Kern refuge. |
| 4-23 | D. S. Davis | Hyd. Eng., Portland | Inspect Kern & Pixley |
| 4-24 | K. F. MacDonald | Regional Supervisor | Attend meetings and insp Kern and Pixley refuges. |

C. Refuge Participation:

Refuge Manager Snyder maintained active membership in the Delano Toastmasters Club and attended just about all of the weekly 6:30 a.m. breakfast meetings. During this period he was elected to serve as administrative vice-president for a 6 month term. Three speechs were made before the club, all of which pertained to wildlife and Bureau activity.

Manager Snyder and Assistant Manager Crabb both maintained a 100 percent attendance record at weekly meetings of the Delano Lions Club. Both participated in all club projects during the period. The Manager is completing a term as club Lion Tamer and member of the Board of Directors. Mr. Crabb has recently been elected to the office of Tail Twister. Also, with another member of the club, he has been delegated to choose a candidate for the Harvest Holidays Festival.

The Manager and Assistant Manager both participated in Delano High School's annual Career Day Program. Opportunities for federal employment in conservation agencies and the Bureau's Student Trainee Programwere presented to a group of 40 high school boys.

Manager Snyder attended no less than 10 California Central Valley Wildlife Council and Kern and Tulare County Wildlife Council meetings held in various location of Kern and Tulare Counties. Short talks on progress of refuge developments were given at each of these meetings.

Several conferences were held in the refuge office at which officials of the California Department of Fish and Game and State Board of Water Resources from Sacramento discussed proposals and plans with the Refuge Manager relative to creation of a 30,000 acre wildlife management area adjacent to Kern refuge through utilisation of irrigation drain waters.

The Manager, also, held similar conferences in the refuge office with officials representing three Tulare Lake basin water districts.

Refuge Manager Snyder is the Bureau representative working in cooperation with the State Fish and Game Department and the Elk Hills Petroleum Reserve for the purpose of making up Master Plans for development of wildlife and recreation on the Elk Hills Naval project. One conference was attended at this Naval Reserve headquarters and another is scheduled for May 9.

The Refuge Manager is the local boy scout councilor for scouts working for Merit Badges in wildlife management, bird study, and nature. Twelve boys are presently working for these badges.

D. Hunting:

No hunting permitted on refuge lands. Hunter success on surrounding duck clubs during the last week or so of the waterfowl hunting season was much improved over the fore part of the season. We believe that the refuge duck population contributed considerably to this latter success. The annual winter waterfowl census in the local area as a whole disclosed 100 percent more birds present than last year. Since we had no food on the refuge, ducks had to feed in outside areas.

E. Violations:

None.

F. Safety:

We had no accidents this period. Safety record to date shows 508 days without a lost time accident. Safety meetings are held once each month. All members of the staff are given an opportunity to participate. Maintenanceman Lewis presented a program on bleeding pressure points and use of tourniquets. Maintenanceman Ayres had a program on snake bite and use of snake bite kits. Clerk Betty Leal presented the program illustrated in Safetygraph #14, "Only a Scratch." The Manager and Assistant Manager reviewed safety bulletins and other literature sent out by the Central and Regional Office Safety Committees. Other personnel matters pertaining to efficiency, conduct, grievances, awards, or operational problems were discussed at safety meetings.

## VII OTHER ITEMS

Items of Interest:

At the close of the period the first of our canals and dikes necessary for the transportation of water to initial pond and food planting areas are nearing completion. Contracts are in the negotiating stage for installation of four 150 h.p. pumps on 5 of the Kern wells drilled this period and one at Pixley. While completion of this work will not be in time to make much of a showing on spring plantings, we will be in a position to get in a substantial acreage of fall barley and winter ponds.

North-south levee through section 20, Pixley Refuge with approximately 300 acres ponded water. View is from south end of levee looking north.

Roll 14-1 Snyder

Completed Dike 2C, Kern Refuge. View is from east to west at junction of Dike 2D and 3C.

Roll 14-2 Snyder

Completed Dike 1D, Kern Refuge. View is from east to west at junction of Dikes 1E and 2D.

Roll 14-3 Snyder

East end pump canal 1A looking west, Kern Refuge.

Roll 14-4 Snyder

East end Poso flood channel and Dikes 1A-1B, Kern Refuge. Pump canal is to right of flood channel.

Roll 14-5 Snyder

About mid point of Poso flood channel looking east, Kern Refuge. Tractor and scraper performing finish work to channel and dikes.

Roll 14-6 Snyder

February, Sheep grazing, Kern refuge, under special use permit.

Roll 14-7 Snyder

Sixty feet by thirty-six inch CMPA with flashboard riser installed by refuge personnel so as to receive irrigation district or flood waters available from Deer Creek. Installation is at southeast corner section 21, Pixley Refuge. Water is being ponded across the eastern portion of section 21.

Roll 14-8 Snyder

East cross levee section 21, Pixley Refuge. View is from Southeast corner looking north. Levee had to be reinforced after water started ponding. A finished job could not be attempted at this time due to water against levee.

Roll 14-9

Crabb

North end of pond in east portion section 21, Pixley Refuge looking east to refuge headquarters site. All water at Pixley refuge this period has been received through purchase from Pixley Irrigation District. A total of approximately 500 acre feet was received between February 8, through April 30.

Roll 14-10

Crabb

# PIXLEY NATIONAL WILDLIFE REFUGE

## I GENERAL

### A. Weather Conditions:

Because the Pixley refuge is only 20 miles from Kern, we have used the same general weather data; this being from the U. S. Weather Bureau Station at Kettleman City. It is very evident, however, that rainfall is heavier at Pixley than at Kern. Also, that Kern received more rain than recorded at Kettleman City. When personnel are assigned to live on these refuges, we feel that rain gauges should be maintained on each refuge. For this report, however, please refer to the Kern weather section.

### B. Habitat Conditions:

#### 1. Water:

Rain and snowfall in the mountain areas of Yosemite, Kings, and Sequoia National Parks was earlier and heavier than in the more southern portions of the Sierras. Stream flows were thus stronger and storage reservoirs filled earlier. The Friant-Kern water users association started taking water early in February. The Pixley Irrigation District had 2,500 acre feet of water unused from their 1962 contract. This was released to the District during February.

The District uses the Deer Creek Storm Drain Canal for transportation of irrigation water from the Friant-Kern canal. The Pixley refuge is located at the very tailend of the Irrigation District. This year water surplus to the needs of farmers in the District was purchased by the refuge. First of such water was received February 9. This date coincided with a heavy rain period and was on a weekend too. Farmers were not ready to receive the water. Consequently we were hit with a flow much larger than anticipated. Our temporary facilities for handling the water were inadequate. Levees broke and we could not manage the water as desired. The result was that all water received during February ponded in the low end of section 20. Approximately 300 acres were ponded from zero to three feet deep. Luckily our perimeter dikes around sections 20 and 21 were completed during February. We believe we received closer to 400 acre feet.

No water was received from March through April 16. Ponded area decreased about 50 percent during this 45 day period. The drop in elevation against the west levee was approximately 10 inches. Evaporation during that period amounted approximately 8.3 inches, thus only 1.7 inches was percolated to the underground.

On April 12, the Irrigation District advised us that they were purchasing another 2500 acre feet of class two water. They requested we again take whatever was left at the end of their delivery system. They expected this head of water would reach the refuge turnout on April 15. Refuge personnel worked throughout the Easter weekend to repair the February breaks. We, also, added two feet in height to the 5800 feet of cross levee number 1 in section 21 and installed two redwood turnout boxes. We encountered considerable difficulty in retaining these turnouts due to inexperience of the staff in setting these structures and due to loose, hurriedly constructed fills. These turnouts were replaced several times, but inspite of this, we were able to get a good irrigation on approximately 500 acres of grasslands in section 20 and 21 between levee number one and the west perimeter dike. Numerous old canals and ditches in this area in some instances facilitated irrigation, but in other cases prevented us from getting water over the entire area. One hundred eighty-three acre feet was measured out to us from April 17 to 30. The flow ranged from 4 to 24 c.f.s. Water level of the pond in section 20 was brought back up to the March 2nd level from the grassland irrigation overflow. Exhibit number one following shows approximate water levels on April 30, along with water management practices instigated.

2. Food and Cover:

The only food and cover on the major portion of the refuge was that available in native grasslands. Like at Kern, native grasses were late in starting and due to climatic conditions, growth was below normal. As ponded water receded in section 20, mud flats were exposed and good growth of fringe vegetation appeared. Ducks, some geese, coots, and shorebirds worked this fringe area heavily throughout March and early April. Irrigation and ponding during the latter half of April produced immediate results in green vegetation which is again being utilized by ducks and coots. Several thousand shorebirds, mainly stilts, avocets, dowitchers, and sandpipers apparently are going to remain for the summer. Several duck broods have already been seen. One field of green barley adjacent to the refuge, north of section 20, received extremely heavy use by coots during February and March.

## II WILDLIFE

A. Migratory Birds:

1. Ducks:

Water was available from the Pixley Irrigation District during February and April providing suitable pond habitat for waterfowl throughout the entire period.

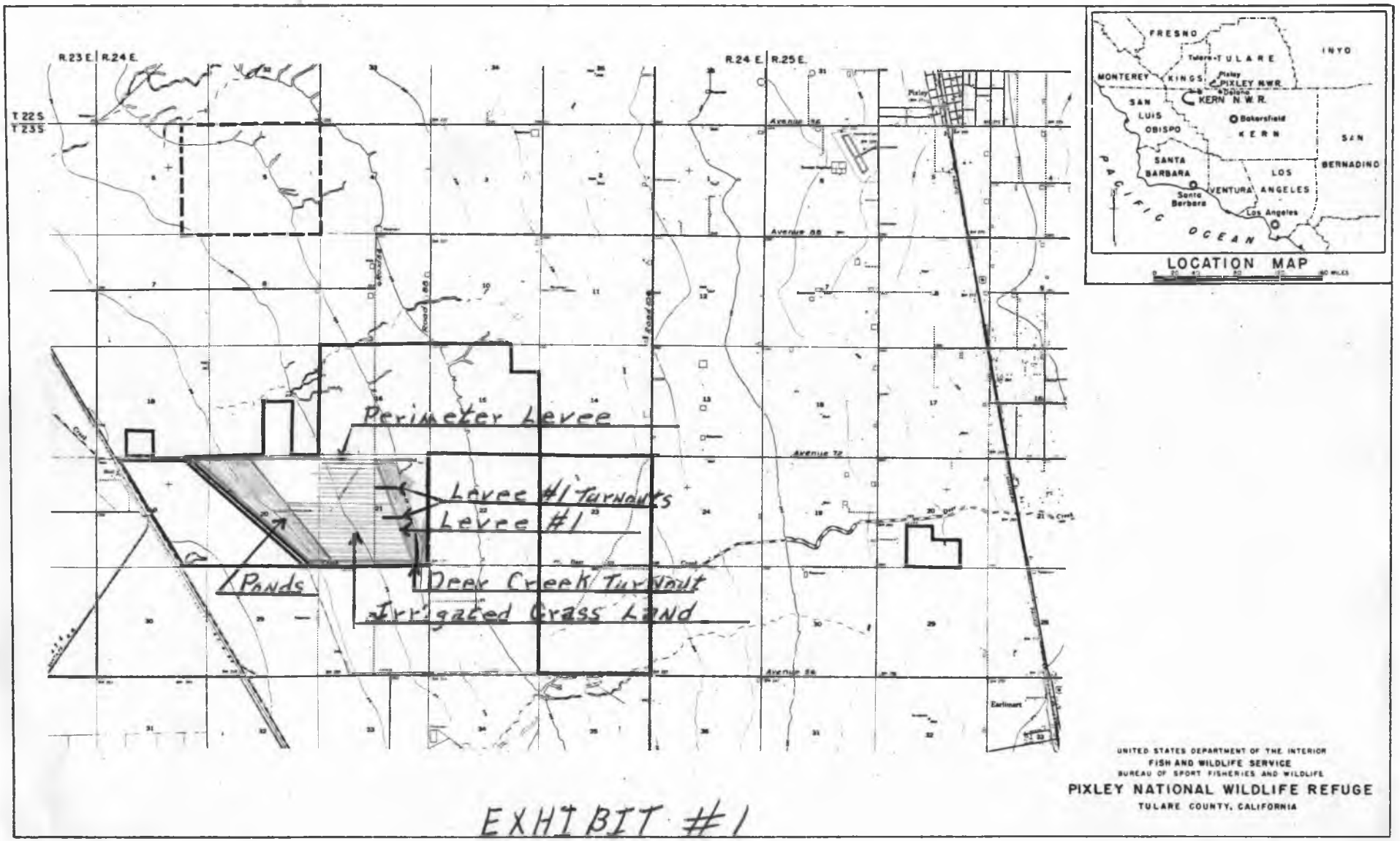


EXHIBIT #1

IR CALIF 516 410

Pintail and green-winged teal were the first species observed on the new pond on February 19. An immediate increase was noted both in species and numbers as north-bound migrants made their appearance. By the end of the month of March, the refuge had some 10 to 12 thousand ducks utilizing the ponded area.

It is evident that this will develop into a very important wintering and resting area when sufficient water and feed is made available.

Observations made during the period indicate that some depredation by ducks took place on adjoining barley fields.

A limited amount of nesting by mallard, pintail, and teal is expected on the refuge. While no nests were located, information from neighboring farmers indicate mallards and pintail are nesting in the fields adjacent to the refuge.

With habitat development and availability of water insured by wells, we anticipate quite a few nesting pairs will use the area in the future.

2. Geese:

Several hundred Canada geese and about fifty White-fronted geese were observed during the latter part of February. These were the only sightings of geese made in the vicinity of the refuge.

3. Coots:

Coots were present during the entire period. The population built up rapidly until 7,000 were present during late March and early April. Depredation to an adjoining barley field was a serious factor during this time and it appears that we will have some problem along this line in the future. It is evident that as more water and habitat is made available, we will have a large nesting population of coots. It will be necessary to set up management plans to control nesting as development progresses.

4. Water and Marsh Birds:

With water available throughout the period, a few water and marsh birds were observed. On several occasions a single Snowy egret was seen in Deer Creek where it passes through the northwest portion of the refuge.

Eared Grebes were seen throughout April. On April 30, one Western Grebe and thirty Eared Grebes were present on the west pond.

5. Shorebirds, Gulls, and Terns:

Avocets and black-necked stilts along with long-billed dowitchers and least and western sandpipers were present throughout the report period. On April 4, 700 black-bellied plover made their appearance. This colorful shorebird soon built up a population of about 1200. Hudsonian curlews were present throughout April.

Late in the period Wilson phalaropes, common terns, and a few black terns were observed on the refuge. All indications point to a good nesting population of shore birds as habitat is developed.

6. Doves:

Mated pairs of doves were found throughout the refuge. Heaviest concentration of the birds was along the south and east boundaries of the refuge.

B. Upland Game Birds:

Several California Valley quail were seen during April. Form NR-2 is not applicable at this time as only one sighting of upland game birds has been made.

C. Big Game Animals:

None observed.

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

Ground squirrels were again present in large numbers along the south boundary and Deer Creek. The Tulare County Agriculture Commission was to set up poison stations along Deer Creek, however, to our knowledge, this has not yet been done.

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

Marsh hawks and an occasional sparrow hawk and Swainson's hawk were seen. Burrowing owls are common along the dikes and old reservoirs. One golden eagle was observed several times during April.

F. Other Birds:

The Savannah sparrow, red-winged blackbird, yellow-headed blackbird, tri-colored blackbird, American goldfinch, cliff swallow, loggerhead shrike, house finch and lesser nighthawk were observed this period. Two pair of lesser nighthawks are nesting on the refuge.

G. Fish:

Not applicable.

H. Reptiles:

None observed.

I. Deseases:

None observed.

## III REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development:

Contract no. 14-16-0001-434 for construction of perimeter dikes around sections 20 and 21 totaling 5 miles was completed the first week of February. Approximately 140,000 cu. yds. of earth went into the construction of this dike. The refuge furnished one pusher tractor to facilitate loading of scrapers. Although no special surfacing material was used on the dike top, shaping was such that winter rains drained off immediately,aallowing motor vehicle travel within a few hours after rains ceased. Winds and wave action had little, if any, affect on the west dike but did chop away some on the north dike.

The Kern-Pixley well contract no. 14-16-0001-425 completed the drilling of one well at Pixley. Well was drilled to 800 feet, cased with a 16" casing perforated from 500 to 800 feet, and gravel packed. Development pumping had to go into extra hours, but after repeated heavy surging, the desired flow was obtained.

In connection with managing water purchased from the Pixley Irrigation District, refuge personnel reinforced slightly over 1 mile of cross levee in section 21 by raising it an average of 2 feet. Two temporary redwood control structures were set in their levee for management of irrigation water to grasslands below. Also, a 48" x 60' CMPA with flash board riser was installed at the south-corner of section 21 to take in water from the Deer Creek Storm Drain channel.

Fence Construction:

Approximately 7,700 feet of new interior fence was constructed at Pixley during February. This is a unit division fence located in section 20 paralleling the east bank of the Deer Creek storm drain channel. The purpose of this fence is to manage grazing. For instance, this season it is desirable to exclude grazing from units in section 20 and 21 east of Deer Creek, but not in unit G19-20.

west of Deer Creek. Construction materials include steel posts placed 2 rods apart, redwood anchor posts and braces every quarter mile, and four strands of barb wire. Three steel wire stays were spaced between steel posts. Routine patrol, fence, and boundary sign maintenance was accomplished throughout the period.

B. Plantings:

A two acre test plot immediately below cross levee number 1 in section 21 was sowed to a mixture of wild millet and alkali bulrush. This is all the planting accomplished this period.

C. Collections and Receipts:

None.

D. Control of Vegetation:

None.

E. Planned Burnings:

None

F. Fires:

None. Please refer to Kern report for general discussion on fires.

## IV RESOURCE MANAGEMENT

A. Grazing:

Seven special use grazing permits were issued this period. Termination of all current permits is June 30. Early determination of carrying capacity of all grazing units at Pixley this season was difficult due to lateness of rains and growing season. For this reason initial permits were only for a two month period. Grazing fees were raised from $1.00 per A.U.M. to $1.50 per A.U.M. The seven permits issued authorise a total use of 2126 A.U.M. through June 30. This will be a somewhate smaller total use than we normally have from January through June. The decrease must be attributed to a much poorer grass growth season. Also, section 21 and that portion of section 20 east of the Deer Creek storm drain canal is withheld from grazing this season. There was no competition between cattle grazing and wildlife use this period.

B. Haying:

None.

C. Fur Harvest:

None.

D. Timber Removal:

Not Applicable.

E. Commercial Fishing:

Not Applicable.

F. Other Uses:

Special Use Permit No. 34397 was executed in favor of Tulare County for removal of 25,000 cu. yds. of sand for road surfacing use from the refuge pit in the southeast quarter of section 19. A total of 22,976 cu. yds. sand including the overburden was removed in accordance with terms of the permit. A fee of five cents per cu. yd. brought in a total revenue of $1,148.80.

## V FIELD INVESTIGATION OR APPLIED RESEARCH

None to date.

## VI PUBLIC RELATIONS

A. Recreational Uses:

A group of 7 boy scouts and leader made one field trip over the refuge for bird identification and nature studies. This tour was conducted by the refuge manager.

B. Refuge Visitors:

Please refer to Kern report.

C. Refuge Participation:

This subject discussed in full in Kern report.

D. Hunting:

None.

E. Violations:

No citations were issued. Two men with rabbit hounds were cautioned relative to use of refuge for running rabbits with hounds.

## VIII ITEMS OF INTEREST

It appears at this time that the Pixley Irrigation District will be in a position to furnish us irrigation and ponding water for limited development throughout the remainder of the present summer season and early fall. This means that we will be able to maintain the present 300 acre pond in section 20 from grassland irrigation overflow and possibly preirrigate up to 140 acres for fall barley planting. This barley acreage would be in the northeast quarter of section 20. Should water for gravity flow not be available from section 21, we anticipate we can use one of our portable lowlift ditch pumps to boost it up from the lower pond in section 20.

Credit for preparation of the M.R. forms and wildlife section of the Kern and Pixley report is given to Assistant Manager Crabb. Clerk Betty Leal typed the entire report from rough draft notes prepared by the Manager and Assistant Manager.

## SIGNATURE PAGE

Submitted by:

_____
(Signature)

_____
(Title)

Date: _____

Approved, Regional Office:

Date: _____

_____
(Signature)

_____
(Title)

3-1750
Form NR-1
(Rev. March 1953)

# WATERFOWL

REFUGE Kern MONTHS OF January TO April, 1963

| (1) Species | Weeks of reporting period (2) 1/1-5 (1) | 1/6-12 (2) | 1/13-19 (3) | 1/20-26 (4) | 1/27-2/2 (5) | 2/3-9 (6) | 2/10-16 (7) | 2/17-23 (8) | 2/24-3/2 (9) | 3/3-9 (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Swans: | | | | | | | | | | |
| Whistling | | | | 4 | | | | | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | 65 | | | | | | | | |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | | | |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Other TOTAL GEESE | | 65 | | | | | | | | |
| Ducks: | | | | | | | | | | |
| Mallard | | 250 | 250 | 100 | 75 | 25 | | | | |
| Black | | | | | | | | | | |
| Gadwall | | | | | | | | | | |
| Baldpate | | | | 1,200 | 1,200 | 1,800 | 750 | 100 | 25 | 25 |
| Pintail | | 12,000 | 2,500 | 2,250 | 2,500 | 3,000 | 1,500 | 200 | 1,200 | 1,200 |
| Green-winged teal | | 5,000 | 1,000 | 975 | 900 | 800 | 600 | 200 | 2,000 | 1,500 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | | 100 | | 200 | 200 | 200 | 125 | 75 | 250 | 150 |
| Shoveler | | 2,000 | 250 | 700 | 700 | 900 | 750 | 200 | 250 | 150 |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | | |
| Scaup | | | | | | | | | | |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | | | | | | | |
| Other TOTAL DUCKS | | 19,350 | 4,000 | 5,425 | 5,575 | 6,725 | 3,725 | 775 | 3,725 | 3,025 |
| Coot: | 300 | 300 | 500 | 875 | 1,000 | 1,750 | 1,000 | 250 | 1,000 | 1,500 |

INT.-DUP., D.C.-53824-59

3 -1750a
Cont. NR-1
(Rev. March 1953)

# WATERFOWL
(Continuation Sheet)

REFUGE [illegible] MONTHS OF January TO April, 19 63

| (1) Species | (2) Weeks of reporting period: 3/10-16 (11) | 3/17-23 (12) | 3/24-30 (13) | 3/31-4/6 (14) | 4/7-13 (15) | 4/14-20 (16) | 4/21-27 (17) | 4/28-5/4 (18) | (3) Estimated waterfowl days use | (4) Production: Broods seen | Estimated total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Swans: | | | | | | | | | | | |
| Whistling | | | | | | | | | 28 | | |
| Trumpeter | | | | | | | ALL POT HOLES | | | | |
| Geese: | | | | | | | DRIED UP. | | 455 | | |
| Canada | | | | | | | | | | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Other TOTAL GEESE | | | | | | | | | 455 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | | | | | | | | | 4,900 | | |
| Black | | | | | | | | | | | |
| Gadwall | | | | | | | | | | | |
| Baldpate | 25 | 125 | 125 | 40 | 40 | 25 | | | 38,360 | | |
| Pintail | 25 | 65 | 90 | | | | | | 115,430 | | |
| Green-winged teal | 25 | 100 | 50 | 25 | 25 | 15 | | | 92,505 | | |
| Blue-winged teal | | 15 | | 2 | 2 | | | | 9,231 | 133 | |
| Cinnamon teal | | | | | | | | | | | |
| Shoveler | 25 | 10 | 10 | 6 | 10 | 10 | | | 41,797 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | | | | | | | | | | | |
| Scaup | | | | | | | | | | | |
| Goldeneye | | | | | | | | | | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | | | | | | | | | | | |
| Other TOTAL DUCKS | 100 | 315 | 235 | 73 | 77 | 50 | | | 372,225 | | |
| Coot: | 200 | | 25 | | | | | | 60,900 | | |

(over)

| | (5) Total Days Use | (6) Peak Number | (7) Total Production |
|---|---|---|---|
| Swans | [illegible] | [illegible] | |
| Geese | [illegible] | [illegible] | |
| Ducks | [illegible] | [illegible] | |
| Coots | | | |

SUMMARY

Principal feeding areas [illegible]

Principal nesting areas

Reported by [illegible]

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).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. March 1953)

# WATERFOWL

REFUGE Pixley MONTHS OF January TO April, 19 63

| (1) Species | (2) Weeks of reporting period: 1/1-1/5 (1) | 1/6-1/12 (2) | 1/13-19 (3) | 1/20-26 (4) | 1/27-2/2 (5) | 2/3-9 (6) | 2/10-16 (7) | 2/17-23 (8) | 2/24-3/2 (9) | 3/3-3/9 (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| Swans: | | | | | | | | | | |
| Whistling | | | | | | | | | | |
| Trumpeter | | | | | | | | | | |
| Geese: | | | | | | | | | | |
| Canada | | | | | | | | 200 | 4 | 4 |
| Cackling | | | | | | | | | | |
| Brant | | | | | | | | | | |
| White-fronted | | | | | | | | 50 | | |
| Snow | | | | | | | | | | |
| Blue | | | | | | | | | | |
| Other | | | | | | | | | | |
| TOTAL GEESE | | | | | | | | 250 | 4 | 4 |
| Ducks: | | | | | | | | | | |
| Mallard | | | | | | | | | 50 | 75 |
| Black | | | | | | | | | | |
| Gadwall | | | | | | | | | | |
| Baldpate | | | | | | | | | 2900 | 3100 |
| Pintail | | | | | | | | 250 | 4200 | 4200 |
| Green-winged teal | | 25 | 25 | 25 | | | | 250 | 4400 | 4400 |
| Blue-winged teal | | | | | | | | | | |
| Cinnamon teal | | | | | | | | | 250 | 350 |
| Shoveler | | | | | | | | | 100 | 175 |
| Wood | | | | | | | | | | |
| Redhead | | | | | | | | | | |
| Ring-necked | | | | | | | | | | |
| Canvasback | | | | | | | | | 31 | 35 |
| Scaup | | | | | | | | | | 50 |
| Goldeneye | | | | | | | | | | |
| Bufflehead | | | | | | | | | | |
| Ruddy | | | | | | | | | 44 | 50 |
| Other | | | | | | | | | | |
| TOTAL DUCKS | | 25 | 25 | 25 | | | | 500 | 11,975 | 12,435 |
| Coot: | | | | | | | | | 2,700 | 3,200 |

INT.-DUP., D.C.-53824-59

3 -1750a
Cont. NR-1
(Rev. March 1953)

# WATERFOWL
(Continuation Sheet)

REFUGE Pixley MONTHS OF January TO April, 19 63

| (1) Species | (2) Weeks of reporting period: 3/10-16 (11) | 3/17-23 (12) | 3/24-30 (13) | 3/31-4/6 (14) | 4/7-4/13 (15) | 4/14-4/20 (16) | 4/21-27 (17) | 4/28-5/1 (18) | (3) Estimated waterfowl days use | (4) Production: Broods seen | Estimated total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Swans: | | | | | | | | | | | |
| Whistling | | | | | | | | | | | |
| Trumpeter | | | | | | | | | | | |
| Geese: | | | | | | | | | | | |
| Canada | | | | | | | | | 1456 | | |
| Cackling | | | | | | | | | | | |
| Brant | | | | | | | | | | | |
| White-fronted | | | | | | | | | 350 | | |
| Snow | | | | | | | | | | | |
| Blue | | | | | | | | | | | |
| Other | | | | | | | | | | | |
| TOTAL GEESE | | | | | | | | | 1806 | | |
| Ducks: | | | | | | | | | | | |
| Mallard | 125 | 125 | 100 | 125 | 100 | 100 | 125 | 200 | 7875 | | |
| Black | | | | | | | | | | | |
| Gadwall | 25 | 25 | | | 3 | 5 | 5 | 5 | 476 | | |
| Baldpate | 2200 | 2400 | 4300 | 3400 | 25 | 25 | 15 | 10 | 128,625 | | |
| Pintail | 2300 | 2300 | 2400 | 2400 | 200 | 150 | 150 | 125 | 130,785 | | |
| Green-winged teal | 2500 | 2500 | 2700 | 1400 | 300 | 200 | 175 | 50 | 132,650 | | |
| Blue-winged teal | | | | | | | | | | | |
| Cinnamon teal | 300 | 200 | 50 | 100 | 75 | 50 | 75 | 50 | 10,500 | | |
| Shoveler | 750 | 750 | 350 | 350 | 200 | 150 | 75 | 50 | 20,650 | | |
| Wood | | | | | | | | | | | |
| Redhead | | | | | | | | | | | |
| Ring-necked | | | | | | | | | | | |
| Canvasback | 35 | 35 | 25 | | | | 2 | 5 | 1,176 | | |
| Scaup | 35 | 35 | 15 | 5 | 1 | | | | 997 | | |
| Goldeneye | | | | 8 | 8 | | | | 112 | | |
| Bufflehead | | | | | | | | | | | |
| Ruddy | 250 | 300 | 400 | 250 | 175 | 100 | 75 | 175 | 12,733 | | |
| Other | | | | | | | | | | | |
| TOTAL DUCKS | 8520 | 8670 | 10,340 | 8,038 | 1,087 | 780 | 697 | 670 | 446,509 | | |
| Coot: | 4900 | 5100 | 7,000 | 7,000 | 5,000 | 2,500 | 1,000 | 900 | 274,400 | | |

(over)

| | (5) Total Days Use | (6) Peak Number | (7) Total Production |
|---|---|---|---|
| Swans | | | |
| Geese | 1806 | 250 | |
| Ducks | 446509 | 12,435 | |
| Coots | 274,400 | 7,000 | |

SUMMARY

Principal feeding areas Adjacent farm lands and refuge ponds.

Principal nesting areas Adjacent farm lands and refuge grasslands.

Reported by Ben H. Crabb

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).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

# MIGRATORY BIRDS
(other than waterfowl)

Refuge Kern Months of January to April 1963

| (1) Species | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Common Name | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | Estimated Number |
| I. Water and Marsh Birds: | | | | | | | | | | |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Long-billed Dowitcher | Last Period | | 1500 | 1-9 | 50 | 4-11 | | | | 2000 |
| Least Sandpiper | Last Period | | 1000 | 1-9 | 25 | 4-11 | | | | 1500 |
| Western Sandpiper | Last Period | | 1000 | 1-9 | 30 | 4-11 | | | | 1500 |
| American Avocet | Last Period | | 50 | 1-9 | 20 | 4-11 | | | | 75 |
| Black-necked stilts | Last Period | | 25 | 1-9 | 5 | 3-14 | | | | 50 |
| Hudsonian Curlew = whimbrel | | | 200 | 4-30 | | | | | | 300 |
| Mtn. Plover | Last Period | | 300 | 1-23 | 300 | 1-23 | | | | 350 |
| Killdeer | Last Period | | 1500 | 2-20 | | | | | | 1500 |
| Long-billed Curlew | Last Period | | 300 | 2-20 | 50 | 3-18 | | | | 300 |

(over)

| (1) | (2) | | (3) | | (4) | (5) | | (6) |
|---|---|---|---|---|---|---|---|---|
| III. Doves and Pigeons: | | | | | | | | |
| Mourning dove | | | | | | | | |
| White-winged dove | | | | | | | | |
| IV. Predaceous Birds: | | | | | | | | |
| Golden eagle | | | | | | | | |
| Duck hawk | | | | | | | | |
| Horned owl | | | | | | | | |
| Magpie | | | | | | | | |
| Raven | | | | | | | | |
| Crow | 10 | 4-10 | 10 | 4-10 | | | | |

Reported by Ben H. Crabb

## 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 Gruiiformes)
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.

INT.-DUP. SEC., WASH., D.C.

3-1751
Form NR-1A
(Nov. 1945)

# MIGRATORY BIRDS
(other than waterfowl)

Refuge Finley Months of January to April 1963

| (1) Species | (2) First Seen | | (3) Peak Numbers | | (4) Last Seen | | (5) Production | | | (6) Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Common Name | Number | Date | Number | Date | Number | Date | Number Colonies | Total # Nests | Total Young | Estimated Number |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Snowy Egret | 1 | 4-11 | 1 | 4-11 | | | | | | |
| Eared Grebe | 10 | 4-11 | 30 | 4-11 | | | | | | |
| Western Grebe | 1 | 4-30 | 1 | 4-30 | | | | | | 30 |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| American Avocet | 50 | 3-19 | 150 | 4-23 | | | | | | 225 |
| Black-necked Stilt | 35 | 3-18 | 200 | 4-23 | | | | | | 275 |
| Long-billed Dowitcher | 1200 | 3-27 | 2000 | 4-11 | | | | | | 2800 |
| Least Sandpiper | 700 | 3-27 | 1000 | 4-11 | | | | | | 1500 |
| Western Sandpiper | 700 | 3-27 | 1000 | 4-11 | | | | | | 1500 |
| Dunlin | 25 | 4-10 | 50 | 4-23 | | | | | | 75 |
| Black-bellied Plover | 700 | 4-3 | 1000 | 4-11 | | | | | | 1500 |
| Whimbrel | 100 | 4-3 | 200 | 4-23 | | | | | | 350 |
| Wilson Phalarope | 100 | 4-23 | 200 | 4-30 | | | | | | 300 |
| Common Tern | 10 | 4-23 | 20 | 4-30 | | | | | | 25 |
| Black Tern | 3 | 4-23 | 6 | 4-30 | | | | | | 15 |
| Killdeer | Last Period | | 200 | 4-11 | | | | | | 250 |

(over)

| (1) | 1st seen Number (2) | 1st seen Date | Peak numbers Number (3) | Peak numbers Date | Last seen Number (4) | Last seen Date | Production (5) | Totals Estimated |
|---|---|---|---|---|---|---|---|---|
| III. Doves and Pigeons: | | | | | | | | |
| Mourning dove | No Estimate Made. | | | | | | | |
| White-winged dove | | | | | | | | |
| IV. Predaceous Birds: | | | | | | | | |
| Golden eagle | 1 | 4-3 | 1 | 4-3 | | | | |
| Duck hawk | | | | | | | | |
| Horned owl | | | | | | | | |
| Magpie | | | | | | | | |
| Raven | 1 | 4-11 | 1 | 4-11 | | | | |
| Crow | | | | | | | | |

Reported by Ben H. Crabb

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 Gruiiformes)
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.

INT.-DUP. SEC., WASH., D.C.

3-1754
Form NR-4
(June 1945)

# SMALL MAMMALS

Refuge Kern Year ending April 30, 1963

| (1) Species | (2) Density | | (3) Removals | | | | | (4) Disposition of Furs | | | | | | (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Share Trapping | | | | | | |
| Common Name | Cover Types & Total Acreage of Habitat | Acres Per Animal | Hunting | Fur Harvest | Predator Control * | For Re-stocking | For Re-search | Permit Number | Trappers Share | Refuge share | Total Refuge Furs Shipped | Furs Donated | Furs Destroyed | Total Population |
| Coyote | Atriplex, Iodine Bush Fox Tail Chess | | | NONE | | | | | NONE | | | | | 10 4 |
| Fisher Ground Squirrel | | | | | | | | | | | | | | 150 400 |
| San Joaquin Squirrel | | | | | | | | | | | | | | 250 800 |
| Jackrabbit | | | | | | | | | | | | | | 1500 900 |
| Kit Fox | | | | | | | | | | | | | | 25 25 |

* List removals by Predator Animal Hunter

REMARKS:

Reported by Ben H. Crabb

# INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

# INSTRUCTIONS

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

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3-1754
Form NR-4
(June 1945)

# SMALL MAMMALS

Refuge Pixley Year ending April 30, 1963

| (1) Species | (2) Density | | (3) Removals | | | | | (4) Disposition of Furs | | | | | | (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Share Trapping | | | | | | Total Population |
| Common Name | Cover Types & Total Acreage of Habitat | Acres Per Animal | Hunting | Fur Harvest | Predator Control * | For Re-stocking | For Re-search | Permit Number | Trappers Share | Refuge share | Total Refuge Furs Shipped | Furs Donated | Furs Destroyed | |
| Coyote | Short grasslands | | | | | | | | | | | | | 6 2 |
| Kit Fox | | | | | | | | | | | | | | 25 25 |
| Jackrabbit | | | | | | | | | | | | | | 2000 1000 |
| Fisher Ground Squirrel | | | | | | | | | | | | | | 300 500 100 |

S.J.

* List removals by Predator Animal Hunter

REMARKS:

Reported by Ben H. Crabb