

SALTON SEA NATIONAL WILDLIFE REFUGE

AND

WATERFOWL DEVELOPMENT AREAS

NARRATIVE REPORT

JANUARY, FEBRUARY, MARCH, APRIL, 1953



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UNITED STATES DEPARTMENT OF THE INTERIOR
FISH & WILDLIFE SERVICE
BRAWLEY, CALIFORNIA

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REFUGE PERSONNEL

Regular Personnel

EDWARD J. O'NEILL.....	Refuge Manager
EUGENE KRIDLER.....	Refuge Manager, Asst.
CLYDE W. STEWART.....	Foreman, Farming Oper.
MICHAEL KARI.....	Mechanic
JAMES W. HAMILTON.....	Dragline Operator
LEO E. COX.....	Tractor Operator
W. CARL FORD.....	Tractor Operator
MELVIN FORD.....	Tractor Operator
CHESLEY WILLIAMS.....	Tractor Operator
PAUL WILLIAMS.....	Tractor Operator
JOHN BARROS.....	Irrigator
JOSE BARROS.....	Irrigator
SYLVESTER BARROS.....	Irrigator
MANUEL CARDONZO.....	Irrigator
WILLIAM LYNCH.....	Irrigator
JULIO RIBEIRO.....	Irrigator

Temporary Personnel

JOHN C. DIN.....	Clerk
ALVIN HOFFMAN.....	Irrigator
ALVA E. WOODS.....	Irrigator

COVER....."DESERT FOX".....(Photo) By..EUGENE KRIDLER

N A R R A T I V E R E P O R T

I GENERAL CONDITIONS

A. Weather Conditions

Weather was pleasant throughout the period. For the first time in years no killing frost hit this section of the country.

High temperatures, winds, and storms spelled out the most unusual weather in the memory of old timers.

On March 4th, a light earthquake which resulted in two rather sharp "jolts" tested every rafter in the residence house at subheadquarters.

A total of five (5) cloudy days were noted during the period.

Strong winds blasted all corners of Imperial Valley and dumped airborne desert sand and silts everywhere. The resurrection of television aerials or removal of downed tree limbs from parkways became a constant chore.

Memorable dates of strong winds were: January 14, February 18, 19, 20, March 16, 28, 29.

Strong winds of March 16 pushed the waters of Salton Sea through the remaining North-South dike west of Red Hill in Unit II until the fresh water contours were punctured and drained. During the last days of March, winds blew continuously for some 30 hours. Gusts were recorded up to 70 miles per hour, the hardest winds of the year. This time waters of the sea backed up Vail 6 canal, topped it's banks, and flooded about 200 feet of the road at the end of "K" lateral and Vail 6 road.

Crop dusting planes at the county and city airports broke loose and became damaged. One plane at the Navy base was blown over on its back. The mudpots at Mullet Island are now completely covered except for a few steaming cones which protrude through salty water.

Strong winds in April twisted and rolled new windrows of alfalfa hay like loose strands of rope. Young melons became scratched or dislodged, and many an acre of irrigated barley and flax fell flat. It appears as though retarded growth has eliminated one full hay crop for some growers.

Tabulated below is the weather data for the period as compiled by the El Centro Naval Air Station at El Centro.

<u>Month</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Precipitation</u>
January	83°	42°	.01
February	86°	33°	.04
March	92°	37°	.14
April	97°	45°	.00
Total.....			<u>.19</u>

B. Precipitation and Water Conditions

On March 1st, heavy snows fell on mountains in San Diego County to the west of Salton Sea. A pure white mantle over the hills and mountains down to elevations of 1500 to 2000 feet in the Fish Creek and Chocolate Mountains was visible from here.

C. Fires

No fires occurred on the refuge during the period.

State Refuge Manager Larry Rubke created a real cattail fire on the State's Imperial Refuge, south of Calipatria on January 20th. In an attempt to keep Baldpates off of the area, Rubke discharged a few signal flares. One landed in dry cattails around the ponds, and in no time the entire area was a raging inferno. Before the excitement was over, Calipatria City Fire Department trucks were called out to protect the residences and other buildings which were rapidly reaching the scorching point.

* * * * *

II WILDLIFE

A. Migratory Birds

1. Populations and Behavior

On January 16th we flew the Salton Sea and Imperial Valley, with Pilot-biologist Ray Glahn, for more than 4 hours on waterfowl census-survey work. The figures obtained during the previous period when hunters were afield, and post seasonally, are as follows:

	<u>Jan. 16, 1953</u>	<u>Dec. 8, 1952</u>
Mallard	10	--
Gadwall	90	--
Green-winged Teal	20	250
Baldpate	44,000	75,230
Shoveller	5,000	10,000
Pintail	2,160	7,330
Redhead	200	90
Canvasback	3,500	1,810
Scaup	28,000	29,600
Cinnamon Teal	--	--
Goldeneye	10	10
Bufflehead	10	250
Ruddy Duck	20,000	17,680
Unidentified Ducks	5,000	8,540
Coot	15,000	10,890
Snow Goose	8,000	11,100
Cackling Goose	--	--
White-fronted Goose	50	100
Canada Goose	2,000	2,340
Totals	<u>133,050</u>	<u>175,220</u>

There is evidence from the totals and surveys of other years, that less birds might be seen during post-seasonal surveys. Wintering populations normally reach a peak here in January. For a period of 19 stormy days the Service plane was unsuccessful in getting through to Salton Sea for an earlier comparative flight.

No changes appeared to have taken place in the Snow Goose populations although we found less on the later flight.

2. Geese and Swans

On January 8th we were surprised to find a Black Brant among several hundred Canada and 2 White-fronted Geese in Tract 3 of Unit II. When irrigator Jose Barros approached the flock closer than 50 yards, the brant flew away with other frightened geese. Again, on January 12th, Refuge Manager Kridler was successful in locating the brant. Jim Hunsacker and John Parrish of California Fish and Game approached the bird to a point where they stood within a 60-foot land opposite it. The specimen was seen almost daily throughout January. During its stay, we observed it feeding on alfalfa, green barley stubble, and canary grass--depending upon which field was being occupied. February 6th appeared to be the latest record for this individual until Mr. Gerald Watson, photographer, re-discovered it on March 3rd in

the Red Hill unit. At that time one wing was injured and the bird appeared incapable of sustained flights.

Blue Geese were observed on Refuge Units I and II barley fields during January and February. At least three separate individuals were identified among Snow Geese. It is noted that the only previous record for this species was during February of 1945. One male bird was observed on the present Unit I area. It was collected on February 11th, 1945 by Gilbert H. Wardwell of Game Management and sent to Stan Jewette at Portland for confirmation. Volume 49, No. 6 of Condor Magazine records the bird as a "4-pound, 12-ounce typical Blue Goose (Chen caerulescens)", according to Mr. Jewette.

The beginning of the period saw 8500 Snow Geese present, all of which were using the refuge farmed tracts exclusively except for daily flights to the edge of the desert near Brawley, Niland, and Westmorland.

Refuge populations dropped to about one-half after the hunting season closed. In early February about 6500 were still being held on the thousand acres of refuge green crops. About February 10th, migration of Snows from this region appeared in progress. On February 14th, about 4000 were here. On the 27th of that month 5100 were estimated. One week later no Snow Geese were seen. On March 13, 200; March 28, 10; no further observations were made. In general, Snow Geese wintered well. Again, the percentage of juveniles was good---(average of about 23% immatures, from spot checks).

During the period, 19 more dead and crippled birds were found. Hunters checked reported an additional kill of 62 birds, bringing the total known kill of Snow Geese to 695 this season.

An unusual goose specimen was observed among Snow Geese during January and February. At first it appeared completely black. From inside the shop building of subheadquarters, with Agent Fred Kreller, we were able to observe the bird at less than 150 feet through binoculars and it was discovered that under-parts were light, almost white, near the vent. The black feathers were actually dark-gray rather than black. Otherwise the bird was uniformly dark-gray, and as concluded, merely a Snow in immature plumage.

Canada Geese were present to the extent of about 2,000 in early January. The population remained stable in numbers

until the first part of February when a decline in numbers was apparent. On the 21st of February 920 were here. A week later an air survey with Pilot Glahn disclosed 1277 for the entire Imperial Valley. Early March saw only 54. April 4th, 3 were seen. Last note of the species was April 21 when a lone, crippled bird was seen at Tract 18, Unit I where irrigation water was running in a plowed barley field. Final known kill figure for this species amounted to 358 birds.

The first week of January a single Cackling Goose and two Ross Geese were seen on the refuge.

Some White-fronted Geese appeared to have left this area during the previous period. In early January only 80 were using the refuge. On January 17th a peak population of 200 was recorded. Like the other Geese the species very abruptly vacated our wintering grounds in early February when the 110 birds using the area dropped down to 30. Latest record this season was March 29 when one was seen with a flock of 10 Snows.

No figures were obtained on additional kill of the species during the last days of the hunting season.

3. Ducks

Pintails using the refuge increased slightly during January. About 5,000 were here January 3rd. One week later, the population swelled to 14,100 on the refuge units. During the following week, we noted but a very slight upward change in population. Toward the end of the month the species again dispersed, dropping to about 5,000 birds. Declines were gradual, but the species definitely appeared on the move from this vicinity. An air survey on February 27, for the entire Valley showed 12,090 Pintails.

By the last of March only 40 were using refuge units, and the numbers remained very low throughout the remainder of the period.

During trapping operations of the previous period, a banded, immature, female Pintail bearing a light colored neck-band was taken. Mr. William Anderson of California Fish and Game referred the band to Patuxent. Upon advice, he in turn corresponded with the bander for further details. A letter of January 13, 1953 from Bernard Gallop, University of Saskatchewan, Saskatoon, Saskatchewan related the following: "At the time of banding, the bird was about five weeks old, and a plastic neck-band was stapled around its neck as a part of a program designed to determine the part played by locally raised Mallards and Pintails in depredation on cereal crops in the Kindersley area...."

Mr. Frank Kozlik of California Fish and Game advised later that two more birds with neck-bands had been taken up-state this year. One was found entangled in a growth of weeds where its tag had apparently held it until dead. The second bird had somehow managed to hook its lower bill through the neck-band and also perished.

In the previous period a Pintail-Mallard cross was trapped and banded.

Baldpates were at a population peak during January. Toward the end of the month numbers dropped on refuge units, and they seemed to shift their habitat more to the heavy growths of vegetation around the deltas of the New and Alamo rivers. The first week of January saw 30,000 present, mostly on Unit I. Only about half that number were using the refuge the last of the month. Through February the species showed gradual population declines until by the 21st, we estimated about 10,000 present. One week later, on an air survey, we estimated a total of about 21,050 in the Valley...about half the number seen on the winter inventory flight of late December. During March, the decline in numbers was very noticeable. Only about 3,000 were here March 7th; 200 on the 22nd.

Several White-cheeked Baldpates were noted again this year. The birds all appeared identical to normal Baldpates in other plumage characteristics. From our examinations we believe that the coloration could be a mild form of partial albinism or diminished pigmentation rather than an unusual plumage development. It is not improbable that 8 to 10 such individuals have been seen in the past 5 years.

European Widgeon. In early February Mr. Bob Froeling of the U.S. Navy spotted a male widgeon among the several thousand Baldpates at Unit I. The bird was seen several times during the next two weeks.

A lone Fulvous Tree Duck showed up in one of the live traps during February and promptly received a token band. This makes the second February record in two years.

Shovellers were here in higher numbers than before.

A White-winged Scoter was observed February 27th near the north end of Salton Sea.

Throughout the period air census-survey work was carried on as in previous years. The following tabulations cover observation figures obtained since the Service's aircraft and Pilot Ross Hanson first initiated flights to Salton Sea in 1950.

TABULATION OF EIGHTEEN AERIAL WATERFOWL CENSUS FLIGHTS
IMPERIAL VALLEY, CALIFORNIA

Species	Date of Flights									
	2/10/50	3/16/50	11/17/50	2/8-9/51	3/14/51	11/13/51	12/22/51	1/21/52	2/18/52	
	(2)	(1)	(1)*	(1)	#	(1)*	(1)*	(2)*	(2)	
Canada Goose	320	640	130	70	10	860	2,230	2,500		
White-fronted Goose		160	200				120	50		
Snow Goose	4,200	10	2,800	5,000	30	300	7,500	8,500		
Mallard	40	20			300			10		
Gadwall		120						10		
Baldpate	20,720		15,000	16,460	6,550	47,000	43,800	38,000	22,000	
Pintail	7,600	8,500		9,340	1,900	43,550	5,000	2,800	1,200	
Green-winged Teal		2,060		4,350) 1,000	1,600	300	60	
Cinnamon Teal		1,280)	200			
Shoveller	450	1,800		6,350		200	1,500	4,600	1,350	
Redhead	40			600	750	280	70	150	240	
Canvasback	860			1,170	700	300	1,000	800	1,600	
Scaup	8,660			9,700	4,650	2,600	10,000	8,060	13,000	
Goldeneye	60	170				170	150	60	320	
Bufflehead	18,280	16,000		15,230	17,700	9,800	23,000	18,000	36,000	
Ruddy Duck	7,760	2,600		6,750		1,000	300	3,900	8,800	
Goat	3,200	1,200				80,000	4,500			
Unidentified Mergansers		10	27,500							
Total Geese	5,420	810	3,130	5,070	40	1,160	9,800	11,050	85,070	Hanson- O'Neill
Total Ducks	67,670	33,760	42,500	69,950	50,200	185,900	91,130	79,890		Hanson- O'Neill
Observers										

- (1) Indicates entire Imperial Valley
 (2) Indicates Salton Sea only
 # Indicates North half of Salton Sea only
 * Indicates counts plotted on map attached

TABULATION OF EIGHTEEN AERIAL WATERFOWL CENSUS FLIGHTS
IMPERIAL VALLEY, CALIFORNIA

Species	Date of Flights									
	9/12/52 (1)	11/24/52 (1)*	12/2/52 (1)	12/28/52 (1)*	1/8/53 (2)*	1/16/53 (2)*	2/27/53 (1)	3/23/53 (2)	4/8/53 (2)	
Canada Goose		1,800	2,200	2,340	2,470	2,000	1,280	4		
White-fronted Goose		600	100	100	569	150				
Snow Goose		5,500	8,000	11,100	5,080	8,000	5,100	10		
Mallard		50	10		50	10				
Gadwall					30	10				
Baldpate		54,000	48,000	73,230	27,960	50,000	34,050	5,700		10
Pintail	41,000	9,000	4,000	7,330	850	3,000	12,090	990		2,600
Green-winged Teal		4,500	2,000	250	1,600	120	3,800	1,700		300
Cinnamon Teal	140	500			500	10	710	500		200
Shoveller	820	5,000	18,000	10,000	2,010	1,200	2,490	3,310		500
Redhead		10		90	100	20	360	20		100
Canvasback		50	1,250	1,810	860	1,500	3,800	440		20
Scaup		8,000		29,600	2,840	20,000	30,900	5,200		50
Goldeneye				10		10	10	10		1,700
Bufflehead				250	60	20	940	230		10
Ruddy Duck	500	14,000		17,680	4,110	10,000	9,820	10,080		70
Coot	1,500	5,000		10,890	2,220	5,000	6,400	3,900		28,000
Unidentified				8,540	26,450	60				2,400
Mergansers			70,000				10			1,000
										10
Total Geese		7,900	10,300	13,540	8,110	10,150	6,380	14		
Total Ducks	43,960	100,110	143,210	159,650	59,640	90,960	104,850	105,380		36,970
Observers	Anderson, Wilber, O'Neill	Glahn- O'Neill	Glahn- O'Neill	Anderson, Corzo, Simons, O'Neill	Glahn- O'Neill	Glahn- O'Neill	Glahn- O'Neill	Glahn- O'Neill	Glahn- O'Neill	

Below is a tabulation of Birds Banded during the period.

POST SEASONAL BANDING

SPECIES	JANUARY	FEBRUARY	MARCH	APRIL	TOTAL
Pintail	418	1,557	180		2,155
Baldpate	196	873	521	8	1,598
Green-winged Teal	388	648	573	31	1,670
Ruddy Duck		1		1	2
Cinnamon Teal	9	9	44	32	94
Mallard	4	2	4		10
Redhead			1	2	3
Shoveller	1	2	3		6
Fulvous T. Duck		1			1
Scaup				1	1
Total Ducks	1,016	3,093	1,326	75	5,435
Total Coots		291	127	18	436
Grand Total					5,871

Returns continue to come in from Mexico, Arkansas, Texas, etc.

In addition to the above the following species were banded.

Gallinule	Burrowing Owl
Roadrunner	Mourning Dove
Yellow-headed Blackbird	Redwings
Meadowlarks	Stilt Sandpiper
Dowitcher	Glossy Ibis

4. Disease

On January 17, Merton Rosen, California Fish and Game Parasitologist, with two technicians, started collecting blood samples for a cooperative study of Newcastle disease (*Salmonella typhimurium*) with Dr. E. R. Quortrup, the Director of the San Diego County Livestock Department.

On January 18 and 19, Drs. Quortrup, G. L. Ryerson of Pomona College, and Martin Goetz of San Diego joined the group at Unit I of the refuge where blood samples were being taken in conjunction with waterfowl banding operations.

To say the least, the operations on the part of State men during the first day were certainly not in keeping with the practices of even fair research personnel. Managers Rubke and John Parrish reportedly handled the birds in very crude fashion tossing them high into the air to fly out over a plowed field or into strong winds.

Upon arrival, Dr. Quortrup put a stop to the practice of drawing 10 cc's of blood direct from the heart of all species. It developed that only 2 cc's were necessary to conduct the proposed tests. Thanks to Dr. Quortrup the mortality factor decreased immensely too!

Under date of February 25th Dr. Quortrup wrote, "We have completed all the Newcastle disease tests with the following results:

176 Coots, all negative *
313 Ducks, 7 positive as follows:

#1 Pintail H. I. Titer 1:128
#3 Pintail H. I. Titer 1:128
#17 Pintail H. I. Titer 1:64
#116 Widgeon H. I. Titer 1:128
#221 Pintail H. I. Titer 1:64
#242 Widgeon H. I. Titer 1:128
#289 Pintail H. I. Titer 1:128

"We do not run our titrations higher than 1:128 in routine diagnostic procedures for poultry as we consider this dilution more than adequate for a positive diagnosis. We also consider a titer of 1:64 positive.

In view of this it appears that these seven ducks at one time or another were exposed to and became infected with Newcastle disease. Whether they were active carriers or not could of course only be determined by virus isolations which would not be justified under the circumstances in view of the small percentage involved. If ducks displaying nervous symptoms are encountered in the future we would like to try virus isolations.

* Collected by Rosen near San Francisco

Years ago in Utah I saw large numbers of ducks with nervous manifestations but I did at that time not have facilities for virus isolation."

Very few sick botulism-stricken birds were observed on the units during the period, however, as mentioned in previous reports we continue to see a surprising large number of flightless Ruddy Ducks along the sea. Word has reached us that sick pintails were found at Sweetwater Lake in San Diego County and sick-botulistic birds were found scattered along the coastline from San Diego to Long Beach during the previous period.

5. Shorebirds, Gulls, and Terns

A few Avocets remained here throughout the winter period. There were 40 present January 3rd.

White-Faced-Glossy-Ibis still are comparatively low in numbers. On January 7th the most that could be found was 1500. It is not improbable that the top population using the Valley was 3000 in place of the "thousands" of individuals recorded in literature and seen in fields as recent as 5 years ago.

Stilt Sandpipers wintered again at Salton Sea. William Anderson and Jim Bauer of California Fish and Game counted 20 in one flock near Subheadquarters. The species was seen on numerous occasions. One individual entered a duck trap and provided us with a good close-hand examination.

About 300 Mountain Plover wintered on Unit II of the refuge in early season. In February they either migrated from this area or moved to other fields.

Laughing Gulls showed up April 6th.

A single California Gull was seen March 29th.

Forester's Terns were seen often throughout the entire period. On excursions out on the sea we recorded "colonies" of 30 to 50. This appears to be a new wintering species for this area. Although literature records wintering occurrences as far north as San Francisco and Stockton, it has only been during the last few years that we have observed more than a few stragglers spending the winter here.

Black Terns were common by April 24th.

Caspian Terns appeared about April 17, when 13 were observed.

About 30 Black-necked Stilts were here March 27.

First note of the Wilson's Phalarope, absent last period, came in when Mr. Kridler observed 20 on April 4th. On April 23 some 200 were present.

6. Marsh and Water Birds

Sandhill Cranes arrived on January 27 when 9 were noted. On December 17, 5 were present; February 3, 20 were recorded. Three individuals remained until April 2nd.

Eared Grebes as usual wintered in large numbers on the sea. In an attempt to census birds on the water we gave up the species as a "bad job." For more than one hour we flew over Grebes which seemed to dot the entire north half of the sea. Conservatively, we concluded that close to 500,000 were here in March. Ray Glahn, pilot, observed a couple of very light, possible albinos which were unmistakably Eared Grebes. Even on the most windy of days we noted that Grebes seemed to prefer to stay way out on the unsheltered rough sea.

Pied-billed Grebes, Western Grebes, White Pelicans, Hérons, and Egrets were all present in about the usual concentrations.

Green Herons showed up January 31st and were seen regularly throughout the period.

By the last of the period Snowy and American Egrets, Black-Crowned Night Herons, Great Blue Herons, and Cormorants were nesting in heavy tamarix growths out along the delta of New River.

7. Food and Cover

Usual cold snaps of December and January failed to occur in Imperial Valley this winter. Alfalfa and other winter crops thrived well.

On refuge units it can be said in submission, that the green crops grew the best and received the most grazing ever in the existence of the development units. Refuge agricultural crops utilization is covered under "Refuge Development and Maintenance."

Hunting pressure on Snow Geese became so pronounced that the birds actually took to feeding on the refuge by night and large numbers stayed out on the Sea by day. Around each refuge field, geese left a strip of barley or alfalfa which marked the "safety" distance. At times the harassed geese almost grazed into the Subheadquarter's inclosure.

8. Green Feed Experiment

Mr. Adolph Zajanc of Game Management requested cooperation to make a trial feeding of chopped alfalfa on the refuge's Tract II, Unit I during the period. We suggested that Mr. H. H. Ripple of Central Mills, Westmorland be contacted for further details and offered our assistance and cooperation.

Mr. Ripple was reportedly most cooperative. He furnished some chopped alfalfa and kept Mr. Zajanc posted on where the crop was being harvested. Main donor, however, was the individual farmer who in all cases gladly supplied one or two heaping pickup truck-loads of green feed.

The following is a list of Westmorland district farmers who contributed:

Mat Kobayshi	Clarence Walker
William Youtzler	Topham and Son
James Simons	Vance Moore
Bernard Larron	Joe Elder
Vern Monte	Ralph Congreve
George Sattire	

In view of the fact that Mr. Adolph Zajanc was not able to submit a report on his observations and conclusions as he agreed and planned to do, we rely upon our memory for this summary. Mr. H. H. Ripple of Central Mills is here credited with most of the negotiations with growers.

Artificial feeding was conducted by Mr. Zajanc to determine, (1) If the Baldpates could be enticed to feed on dumped green alfalfa; (2) To make some conclusions for future guidance or speculation on the practicability of trying to hold a concentration of crop damaging Baldpates through artificial feeding.

A refuge pickup was used by Messrs. Zajanc, Ray Lawhorn, and Ed Carter to haul green, chopped alfalfa direct from farmers to the refuge water areas. Each truck load contained an estimated 1000 pounds. Green alfalfa was pitched out into the water in two selected areas of Baldpate concentrations. At first, however, due to warm temperatures and the resultant wilt factor, the forage was dumped under the shelter of Tamarix and Atriplex growth at the waters edge. On windy days the chopped, floating feed was carried well out from shore with little apparent loss through sinking. This provided excellent opportunity for utilization.

From day to day there was a loss factor of perhaps 10% depending largely on drying winds and visitor disturbances involved.

We can only estimate the amount of feed used throughout the experiment. Mr. Ripple advised that perhaps 13,000 pounds of green alfalfa were obtained. The crop, sold on a dry-weight basis, often runs about 70% moisture content. An average yield per acre of dry forage might be about 1/2 to 3/4-ton.

During the experiment Messrs. William Anderson, Kridler, Zajanc, and the writer noted that the Baldpates definitely were attracted to the feed and consumed it regularly. In several instances a pickup truck load lasted several hours or at times 24 hours per feeding. It appeared that a few birds responded well invariably; 1000 to 2500 birds could be flushed from the sites in late evening and early mornings. This includes coots. It is not improbable these small flocks were eating all of the alfalfa. Large concentrations of Baldpates throughout the experiment failed to move shoreward for the feed. The great bulk of them preferred to loaf in the shelter of tall cattail and weed growths. We have estimated that perhaps 300 baldpates were fed each day.

A continuation of artificial feeding was conducted with lettuce culls. Mr. Zajanc in this instance used the refuge 1 1/2-ton GMC and Ford dump trucks. Hauling started January 27 from a Brawley lettuce packing shed. The operation was conducted until January 29th and it was reported the birds did consume most of the lettuce. Wilt and sinking of material accounted for some losses. A total of about 5 one and one-half ton loads of culls were dumped on the refuge.

AGE- During the first week of February, Clinton Lostetter and Carter of Game Management hauled 3 loads of lettuce culls in the refuge Ford stake to a point above the delta of New River, in the vicinity of the Vail Ranch, where it was dumped into the water and allowed to float to the delta. Two days later Lostetter made a plane trip over the river delta and reported concentrations of ducks and geese, and all lettuce cleaned up. These conclusions are weakened, we think, by the fact that no observations were made of the delta area prior to supplying the lettuce culls. Both river deltas have been favorite concentration areas for years according to A. W. Elder, Luther Goldman, and others who know the area.

B. Upland Game Birds

No notable change in the population status since previous period.

Mourning Doves started mating and calling about the 2nd week of January. On January 13th along Highway 111 between Brawley and Calipatria about 75% of the doves seen were apparently paired and courtship antics were common. A few days later,

after strong winds had dumped cool coastal air into the Valley, all courting seemed to have ceased until the latter part of January when calling was resumed.

The population of doves appeared to be on the increase due to influx of migrants the week of March 23rd.

The first dove nest of the season was found April 4th near Calipatria. Only previous nesting data regards note of a pipped egg shell found April 1. The nest contained 2 eggs and incubation was apparently in progress. On April 24, Mr. Kridler trapped a matured juvenile dove at refuge headquarters.

The dove-banding project initiated during the previous period has resulted in the banding of 292 doves to date. The trapping efforts were appreciated by two Mexican "wetbacks" who discovered a catch early one morning. Partaking of the opportunities at hand they promptly rounded up 10 doves, gave their necks a twist and were just about to prepare themselves a good "ole" feast of Huilotas when Mr. Kridler confronted them.

White-winged Doves were first seen here April 25th.

First brood of Gambel's Quail appeared about April 20th when irrigator William Lynch observed 12 newly hatched young in the vicinity of Mullet Island.

C. Other Birds

The partial albino Audubon Warbler seen the previous period was observed here as late as March 26, however, most of the population stayed well into April.

A full albino Mocking Bird wintered near Los Angeles this year.

First arrival of the Night Hawk was noted March 27.

Blue Grosbeaks were here March 30 and apparently left to return again about the first week of May.

A Vermillion-Flycatcher showed up at Headquarters March 30.

A Red-naped Sapsucker was observed feeding on an Athel tree January 1st. This is the first time we've noted the species using the very bitter, pungent, introduced Athel (Tamarix articulata).

Roadrunners were noted mating the first week of April. During May, ~~three nests~~ containing young were found. A number of times during the period these birds entered dove traps and killed White-crowned Sparrows.

D. Fur Animals, Predators, Etc.

No notable change in status....desert foxes entered dove traps twice during the period and had to be released.

A "Glass-eyed" bobcat was observed several times north of headquarters. On one occasion he plunged into a deep drain. During the few brief moments we held him captive we discovered he was completely blind in one eye.

E. Fish

One commercial fisherman, Mr. Packwood of Long Beach, was active on Salton Sea from January through April 30th. After having poor success at the southern end of the sea, Packwood moved his gill nets to the extreme north end where very few fish were taken. Nets were moved the latter part of January to the vicinity of Alamo river and Mullet Island. During March and April, fishermen scouted the south half of the sea constantly and found Mullet in schools from the mouth of New River on the south around to Truck Haven on the northwest side. A number of loads containing 1500 to 2000 fish were hauled to Central Market, Los Angeles.

A large number of "glass-eyed" mullet were again observed during fishing operations. It is believed the condition is becoming more prevalent each year.

Permission was obtained for Carp removal from Unit I during the period, however, strong winds in March pushed salt water back into the major fresh water estuary of the refuge and killed hundreds of carp and catfish. No commercial fishing was undertaken.

F. Waterfowl Depredations

Crop depredations by waterfowl occurred over a rather wide area during the period. Night feeding ducks did varying amounts of damage near Calipatria, Niland, Brawley, El Centro, Westmorland, and Holtville.

Hardest hit alfalfa fields occurred on the Ray Jamison place at I lateral, gate 16, east of Calipatria. One 320-acre field was about 20% stripped and one 160-acre plot about 50% stripped of leaves according to the owners estimates. On the Robert Sperry place, east of Calipatria along the Weist road, ducks stripped about 70% of a 160-acre field. Another hard hit field was the Chuck Seibert place south of Westmorland where ducks stripped an 80-acre field except for the four corners.

A survey is in progress and it now appears as though green alfalfa losses will approximate about 3000 acres. Damages by puddling will run perhaps to about 2000 acres.

All areas protected or herded escaped damages, and in many instances fields were hit just after irrigation, where run-off water remained and no herding was done.

Waterfowl depredation meetings were held again during the winter period to discuss problems and proposals. On January 12th a get together was held by farmers and sportsmen. Chairman Loveland called upon individual farmers to list their crop damages and then asked what they would like to do about the damages. Opinions varied between hunting the federal refuge and throwing the season open.

Local State Fish and Game Warden Jim Reynolds strongly urged "drastic action" by the group. He remarked that farmers in the past have, "failed to show real concern and voice their complaints." "It's now or never...", he urged. Someone suggested that perhaps farmers should carry on an all-out shooting spree. Mr. Loveland quoted men of the Service as being of the opinion that there are too many Baldpates in the flyway.

Both Service and State Fish and Game officials listened for three and one-half hours to farmers who individually presented their damage complaints when called upon by the Chairman of the January 15th meeting.

Principal complaints centered around night-feeding ducks "which rest under protection on the federal refuge during the day" while disgruntled hunters "patrol" the boundary in quest of an occasional stray. Sportsmen felt certain that through liberalization of regulations they could disperse waterfowl concentrations by hunting the federal refuge and Salton Sea. Some farmers favored a trimming of the Baldpate population. The 80-odd agriculturists and hunters present heard and discussed just about everyone's duck damage problems. In conclusion there was presented a list of four recommendations, to wit:

1. More flexible management of all developments and waterfowl areas including opening of 50% of federal refuges to hunting when necessary. Committee to decide when.
2. Proper timing of waterfowl hunting season to coincide with migration influxes and population peaks, including special zoning of the state.
3. Change in shooting hours to one hour before sunrise and one hour after sunset, or, if necessary, throughout the night in farmers' fields.
4. A special bag limit on Baldpates.

Assistant Regional Director Paul Quick cautioned those in attendance that shooting on the refuge might lead to more depredations of crops. He favored the proposal of a special bonus for Baldpates if the numbers were too high.

At a later date an emergency order was approved for a special Baldpate season. Mr. Clinton Lostetter, biologist, was given full charge of the special season order. At his discretion the Service has been empowered to throw open the season within 48 hours, provided other methods cannot satisfactorily eliminate the damage.

Game Management Agents Edward Carter, Washington; T. R. Lawhorn, Oregon; and James Kelly, Fred Kreller, and Bud Elder of California all assisted in aiding the farmers and keeping posted on crop damages. Biologist Adolph Zajane spent most of January and February in the Valley checking damages and assisting farmers.

During January Mr. Butler, foreman of the L. E. Sinclair ranches, west of Calipatria, received an injury while firing Service-issued signal flares from a 30.06 rifle. It was reported that Butler lost the end of one finger when the flare failed to dislodge from the launching adapter on the end of the rifle.

On January 17 State Fish and Game personnel started herding Baldpates from the Imperial Refuge supposedly to prevent depredations in the eastern portion of the Valley.

Throughout the period the Service's waterfowl policies and the refuge were blasted by quotes in the local papers.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Cultivated Crops During Period

Cropping of tracts and acreages as reported in the previous period was continued.

In Unit I all of the green barley and mixed barley-alfalfa or clover were consumed or killed out by over-utilization to an extent which warranted plowing under.

Barley in Tracts 18-19 Unit I was developing a good crop of grain by early February. Yellow-headed and Redwing Blackbirds completely "milked" the entire crop of grain heads as they reached the early stages of maturity. As though enjoying a final pre-migration fling, Snow Geese consumed the remaining new grain heads and left just the stripped or cut off stocks. This field, of about 100 acres, was more than utilized and could only be plowed under.

Tracts 26 and 27 were pre-irrigated, and barley was planted in the mulch. During the period, the crop received heavy utilization by Snow, Canada Geese, and Cranes, but it did manage to produce a fair crop. This is the only acreage of mature barley which will be available for the fall migration of pintails. If funds are available, some of the lost grain acreage will be replaced by sorghum grains.

All acreages of barley in Unit II were lost due to utilization beyond the practical point of further irrigation. As the weather warmed up and grazing by geese continued, wild beets (*Beta maritima*), soon dominated the barley on Tracts 8, 9, 12, 13, and 15 of Unit II. During late January and February, Canada Geese turned to the tender wild beets and consumed large amounts of the weed species.

Despite the fact that barley was being grazed down and even killed, the purple vetch was all but ignored by geese. In instances where plants were clipped off, one could often find the removed portion discarded nearby.

The Italian ryegrass-barley experiment strips were watched throughout the period; however, the ryegrass strips became so badly infested with weeds that it was decided to plow and replant. Despite the tender green growth which resulted, adjacent to the tall maturing barley, Snow Geese still preferred the leaves and and bearded heads of barley.

Alfalfa was planted in the 160 acre Tract 7-14 of Unit II, and despite much wind damage, it appears as though a fair crop will survive for winter grazing.

Alfalfa in Tracts 4 and 28 of Unit I was lost due to overuse by waterfowl, and it is planned to replant part of this acreage next fall.

2. Other Developments

The usual cultivation operations were continued. Tracts 1, 2, A, and B of Unit I have been contoured on .5 grade preparatory to leaching.

Contours in Tract 9 and Tract 3, Unit I have been removed for fall barley planting.

Tract 8 of Unit I is being contoured on .5 grade for leaching and wild millet crop.

Tracts 15-22 of Unit II are in the process of leveling with tractors and carry-alls to the extent of filling low spots and bringing the 300 acre tract up to proper grade.

Dragline operations completed a small levee and drain west of Tract 28, Unit I. In Unit II a drain is now being constructed between Tracts 6 and 9 to prevent further rise of the water table during the leaching process at Tract 6.

Tracts 4 and 5, Unit II are being joined to make one large field of about 160 acres. Tract 5 was leached during the early part of this period and the latter part of the previous four months.

Irrigators have been constantly busy with irrigation, ditch cleaning, irrigation box removals, and drop-box installation in new contours.

The usual road maintenance, building painting, etc. has been a part of the over-all activities during the period.

Further negotiations were made with Superlite Corporation, and it now appears as though that firm will not object to refuge developments around Red Hill.

B. Receipts of Seed and Stock

Two bags of Sego Pondweed seed were received from Bear River Refuge, Utah for further seeding experiments.

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IV ECONOMIC USE OF THE REFUGE

A. Grazing and Haying

No activities under this heading.

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V PUBLIC RELATIONS

A. Recreational Uses

There are no recreational facilities on the refuge.

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B. Refuge Visitors

Gerald Watson	2/16-28	Former USF&WS Biologist	Photography & sound recording
Merton Rosen	2/17-19	Cal. F&G. Biologist	New Castle disease study
Dr. E. R. Quortrup	2/17-19	San Diego Co. Vetrinarian	" " " "
Dr. Martin Goetz	2/17-19	San Diego Co. Lab. Tech.	" " " "
Dr. G. L. Ryerson	2/17-19	Pomona State College, Prof.	" " " "
Mr. Rolland C. Ross	3/29	Los Angeles City College	Tour refuge enroute to Mexico
Dr. Woodhouse and 120 students	3/29	Los Angeles City College	" " " "
Sandy Sprunt	4/29	Nat'l. Audubon Society Rep.	Contact
Mr. and Mrs. Arnold Small	4/29	Taft Junior College Teacher & Editor of Audubon Field Notes	Tour

Messrs. Ray Chapin and Claude M. Kreider, Sports Writer, were here from January 12 to 20 to take pictures for a popular hunting story.

In addition to the above, a number of individuals visited the area to observe birds or inspect general operations.

On January 11, 60 members of the San Diego Audubon Society visited the refuge.

Messrs. Ross Hanson and Bob Smith, enroute to Mexico for the annual waterfowl census flight, stopped over at Imperial Airport.

Mrs. Ambrewster of El Centro brought 30 students from the Lincoln School on January 9 to see the large number of Snow and Canada Geese present on Unit II.

During February, the Holtville Seventh Day Adventist school children and parents, the San Bernardino Audubon Society, the Whittier Audubon Society, and the Los Angeles Audubon Society (some 420 members in all) visited the refuge.

One visitor from Wyoming drove off the dike in Unit I. We worked until 9:30 P. M. to get the vehicle back on the road.

In March, Biology classes from San Diego and Los Angeles spent some time here.

Only one group, about 20 boys and girls of the Los Angeles YMCA and YWCA on a Y-vagabond tour, went over the area in April.

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C. Official Visitors

<u>Name</u>	<u>Date</u>	<u>Identification</u>	<u>Purpose</u>
Adolph Zajanc	Numerous	USF&WS, Biologist, Berkley	Feeding experiment, shop work
Fred Kreller	Numerous	USF&WS, Game Mgt. Agent, L.A.	Law enforcement
Bruce & Eugene Cardiff	1/31	Bird Collectors-Taxidermists	Contact
Paul Quick	1/15	USF&WS, Ass't Reg. Dir.	Inspection
Ben Glading	1/15	Cal. F&G, Game Management	Inspection
John Laughlin	1/15	Cal. F&G, District Manager	Inspection
Laurence Rubke	1/15	Cal. F&G, Local Game Manager	Inspection
Clinton Lostetter	1/15	USF&WS, Biologist, Berkley	Inspection
A. W. Elder	1/15	USF&WS, Game Mgt. Agent, L.A.	Inspection
Willard Greenwald	1/15	Cal. F&G, Captain, San Diego	Inspection
Mr. Fowler	1/15	Cal. F&G, Mgr. State's Imperial Refuge	Inspection
John Janssen	1/15	Cal. F&G, Regional Manager, L.A.	Inspection
John Knox	1/15	Cal. F&G, Commissioner	Inspection
Chet Smith	1/19	Imperial Grain Growers Assn. Brawley	Inspection
Dave Marshall	1/24	Stillwater Mgt. Area, Biologist	Inspection
Robert Pyle	1/24	Audubon Society, L.A., Writer	Inspection-Bird Migration data
Mr. & Mrs. Devereux			
Butcher	2/3	Nat'l Parks Assn. Field Rep.	Tour & Photo.
Ray Lawhorn	2/4	Game Mgt. Depredations Detail	Tour
Edward Carter	2/4	USF&WS, Game Mgt, Seattle	Insp., Law enf.
Clinton Lostetter	2/4	(see above)	
Fred Kreller	2/4	(see above)	
Leo Laythe	2/12	USF&WS, Regional Director	Inspection
Paul Quick	2/12	(see above)	
K. F. MacDonald	2/12	USF&WS, Reg. Refuge Supervisor	Inspection
Ben Glading	2/12	(see above)	
John Janssen	2/12	(see above)	
Dan Tillotson	2/12	Cal. F&G, Pittman Robertson	Inspection
Ray Glahn	2/27	USF&WS, Pilot-Biologist	Air surveys
John Laughlin	2/12	(see above)	
Laurence Rubke	2/12	(see above)	
James Reynolds	4/24	Cal. F&G Warden	Contact
Mr. Thomas	2/1	Reporter, San Francisco Chronicle	Tour & interview
Vernon Ekedahl	3/1	Sacramento Refuge	Truck delivery
Frank Koslik	3/13	Cal. F&G, Biologist	Waterfowl data
Bob LeDonne	3/13	Cal. F&G, Biologist	Waterfowl data
Ray Glahn	3/23	(see above)	

A State and Federal Agriculture inspection tour, consisting of 11 members of local experiment stations, county agents etc. toured the units on February 14.

D. Refuge Participation

On February 14 a meeting of Service and State Fish and Game officials was held at the State's Hazard Area. Mutual management procedures, waterfowl harvest, cropping programs, etc. were discussed. Again on February 25 and 26 a similar meeting was held at San Francisco in the State's Ferry Building offices.

Mr. Ben Glading proposed that the Baldpate population be held to a maximum of 30,000 and that other states in the fly-way of the species be given a bonus bag to help control numbers.

The Service was asked to relinquish lease of lands in Unit III in exchange for "anything" which the State controlled by lease. This would allow the State to operate on one solid tract of land, with access to the sea. Above presently leased Service lands, the State is now negotiating to purchase a private tract (as mentioned under "Other Items"), extending from Wister on the north, along Highway 111 and west as far as the Service's -230 contour holdings.

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Talks were given to the local Agricultural Seminar group at El Centro on April 21 and 40 members of the Seventh Day Adventist Congregation on April 25 at Brawley.

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During February, members of the Reseda Gun Club, east of Headquarters, requested information relative to planting duck foods in their club impoundments. We suggested wild millet with transplants of native bulrush and assume the project will be undertaken.

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As noted elsewhere in this report a number of Waterfowl Depredations Meetings were attended.

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E. Violations

Several apprehensions were made for simple trespassing.

Only one violation appears on State Justice Court dockets; that of Mr. Perry O. Fralick of National City, a retired Naval Commander. Accompanied by two young couples, close relatives, Fralick deliberately drove into Unit II and shot a male pheasant within 50 feet of a refuge marker sign. The case was processed by State Warden Reynolds in the Court of Judge Kuns of Calipatria. A fine of \$35 was levied.

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VI OTHER ITEMS

A. Other Items

The State's Wildlife Conservation Board voted \$1,064,000 to purchase 5600 acres of land on the east side of Salton Sea, near Wister for a new waterfowl management area.

Two weeks later the Board authorized an additional \$150,000 for the Valley Waterfowl areas. These funds are derived from the share of State proceeds of pari-mutuel receipts.

Senator Ben Hulse (R-El Centro) came to the aid of departmental personnel stating: "I want to dispell any ideas the Valley is going to be destroyed by Salt water." He declared he had no fear the land above the -220 contour would ever be submerged.

Baxter Loveland, chairman of the local depredations committee, in a subsequent newspaper article praised the acquisition which, "should greatly decrease damage to crops here by waterfowl. Although only 800 acres of the 5600 voted by the commission is suitable for production of waterfowl foods designed to keep ducks off Imperial Valley crops, it will do a great deal towards cutting crop depredation here."

* * * * *

Irrigator Sylvester Barros relates the best "Wet Back" story of the season. It seems a farmer hauled one of the boys out from town, checked him out on an irrigation stream in a 160 acre field of alfalfa with specific instructions not to neglect the very large amount of water, and instructed him not to allow the ducks to move in. Well, Señor---had just changed the water and was frightening a flock of ducks from one end of the field when the Border Patrol spotted him. In due time he wound-up below the International Boundary. The story goes that he made it back in time to handle the next water change. To top it all off, the ducks were just starting to return to the field as he arrived so obligations were met, and no one apparently was the wiser.

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A 2 $\frac{1}{2}$ mile long settling basin is to be built above the Coachella branch of the All-American Canal to clear moss and tules from the irrigation water. The Coachella Valley County Water District, after much debate, reversed it's stand on moss, sago pondweed, etc., January 17. The basin is to be located above the present detention basin southeast of Box Canyon highway crossing. Despite the length, it will have a capacity of only about 500 acre-feet with maximum depth of 5 feet. The \$50,000 project

will divert moss and weed laden canal water to a quiet basin where unwanted debris will settle. Last year the District reportedly spent \$200,000 for moss and vegetation elimination alone. Such an area may net some fair fishing and perhaps a place for a few ducks to loaf.

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In the Brawley News issue of February 3rd, under heading of "Brawley 10 years ago", appeared the following item: "A revolving light device has been set up in fields in the Brawley area to discourage ducks and other species of wildfowl which congregate for feeding at night. Frank Rutter, assistant State Game Warden, has arrived here from San Francisco to make his headquarters, his special mission being to assist farmers in protection of crops from damage by wildfowl."

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On March 14, a San Bernardino doctor posed a task for officers of the County Sheriff's Department that had the best of them shuddering. To begin with, Mrs. John Marshall of Rimforest was bitten by an unruly squirrel. The attending physician promptly called the sheriff's office and made a request. He asked that, as a safety measure, all squirrels in that area of the mountains be rounded up or trapped and checked for rabies.

* * * * *

In early January conflicts arose over re-appointment of the local Imperial County Game Warden. On January 5th, Robert Jefferson, secretary-treasurer of the county fish and game association, stated that his group, "believes a county game warden is useless so long as state wardens are making all of the arrests."

Supervisors withheld re-appointment and on January 19th heard from County Warden Womack of El Centro. In defense Womack advised he had turned a number of cases over to State men; thus, his arrest report showed much lower cases than the regular wardens.

Jefferson claimed that a survey shows State men in 1952 made 226 arrests while the county warden is credited with only 46.

At a later hearing Captain Willard Greenwald, supervisory State Warden from San Diego, refused State cooperation with a county warden which the State Fish and Game had no voice in appointing. That brought forth the wrath of board members, and Womack was given an indefinite appointment pending further consideration. An editorial in the Brawley News blasted State officials, and particularly Captain Willard Greenwald for attempting to threaten the the board and influence it's decisions in such

a manner. The article emphasized the fact that such employees should spend more time serving the county officials, not trying to run them!

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A bill to compensate farmers whose crops were damaged by deer was tabled at the request of its author, Assemblyman Francis C. Lindsay, R-Loomis, after a fish and game department official testified the cost might run as high as \$800,000 annually.

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On January 17 plans for a desert primitive area near Palm Springs where only horseback riders and hikers will be able to view a section of desert habitat preserved from encroaching civilization were announced by the Palm Springs Desert Museum.

The site is south of Palm Desert and east of the Pines-to-Palm highway at the mouth of Deep Canyon where it is proposed to protect all bird and animal life and propagate desert plants.

The Coachella Valley County Water District indicated that they will grant a 50-year lease at \$1 per year for the 240 acre project.

* * * * *

According to old Indian legend, burros are composed somewhat of odds and ends similar to the "snips and snails and puppy dogs' tails" of nursery rhyme formula. It is believed by them that an Indian youngster fashioned the first donkey from desert scraps.

The bitter wrangling over the fate of the burro in California this winter appears not so fanciful or adapted to any sing-song rhyme. As a matter of fact, the beast has provoked torrents of oratory, an avalanche of correspondence, and some rather rampant demonstrations of emotions in Sacramento.

The whole upheaval came when Department of Fish and Game invited hunters to make targets of the desert burros. Embellishing the invitation was a promise of fine "sport and good eating." It was claimed by some that burros were ruining springs and water holes, harassing more desirable wildlife, and making a general nuisance of its self. State wildlife men were quoted in statements that the hee-haw of the jackass "even ruffles the serenity of the Mojave and Colorado Deserts!". (Tsk, tsk!).

This, to say the least, was too much for desert lovers. In no time the Fish and Game people realized they had a donkey by the tail. They too were tenacious and through Assemblyman Stewart Hickley of Redlands, a bill was introduced in the Legislature amending the Fish and Game Code to allow a property owner

or tenant to kill wild burros as well as deer, elk, bear, wild-pigs, and beaver to protect his property.

Burro-lovers sighted the bill with the view of an ulterior motive, hinting darkly at the interest of cattle and sheep men and pet-food companies.

In the meantime, State Senator Jess R. Dorsey of Bakersfield introduced another bill which would make the slayer of any undomesticated burro liable to maximum imprisonment of one year and/or a fine \$1000.

Out on the desert the long-eared, pot-bellied object of said ruckus goes his obstinate way. A little research indicated the first burros came here with early missionaries some 400 years ago. The stubborn descendant multiplied unmolested until about 20 years ago when they are said to have nearly dominated the parched plateaus around Death Valley, Mohave, etc. Their competition with native game animals and livestock for water holes has prompted organized hunts and they've been pursued ever since, not withstanding the credit for keeping many a desert rat from becoming a rack of bleached bones.

Burro-boosters fear that once they get on the game animal list the only ones left will be the plaster models in novelty shops and on flap-jack advertisements.

Meanwhile, it looks from here like the derisive hee-haws heard on the desert may well be inspired by the frustrations of the hunter, not the hunted, as lawmakers wage a battle in Sacramento.

* * * * *

The January 5th issue of the Los Angeles Times Newspaper carried an article entitled, "Farmers Battle Fowl Invaders... Imperial Valley Crops Periled By Flocks Of Wild Geese And Ducks." The writeup, by Ed Ainsworth, who never set foot in the Valley during the period, set in Los Angeles and learnedly started out thus: "The invasion has begun. B-Day is here. It is man against the birds..." The article was poor publicity, misrepresented the Service's activities and over-played crop damages.

* * * * *

The 13th annual Niland Tomato Festival held April 24th, 25th, and 26th carried articles on local wildlife and the two agencies serving the Valley.

One article entitled, "World's largest Game Farm--Below Sea Level", by Albert Farres, Game Farm Manager, reviewed the

history and growth of the local pheasant farm, described breeding operations, and commented on stock releases.

Mr. William Anderson of California Fish and Game supplied an article entitled, "Bracelets for Waterfowl." Banding operations were described and a short resume of information and migrations discussed. Mr. Anderson humorously commented: "A Dane... Wortensen ... banded the first birds, a number of storks, back in 1899.... probably he wanted to know where babies come from but instead he learned where storks go!"

Larry Rubke, Manager of State Refuges in the Valley, supplied a short, short write-up under "Waterfowl Management." It was stated that, "Since 1945 the California Department of Fish and Game has created areas to feed, nest, and harvest the waterfowl migrating from the Northern breeding grounds."

Warden James Reynolds, in "Fishermen's Haven", described fishing spots and species caught in the Valley as well as introduction of game fish into Salton Sea.

The refuge's contribution was an article entitled "Waterfowl in the Desert." Conservation of waterfowl and their requirements and values were stressed. Refuge crop production and feeding programs, to aid in crop protection, also were brought out.

* * * * *

Respectfully submitted,


EDWARD J. O'NEILL
Refuge Manager

oved: _____

W E E K L Y W A T E R F O W L C E N S U S

REFUGE Halton Sea

MONTHS OF Jan 1 TO Apr 30 1955

Species Common Name	Weeks of Reporting Period																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<u>Swans:</u>																		
Whistling																		
Trumpeter																		
<u>Geese:</u>																		
Canada	2000	1920	2200	2100	1900	1500	500	920		54	20		3	3				
Cackling																		
Brant																		
White-fronted																		
Snow	9000	7300	8000	7000	6500	6500	4000	3800			200		1	10				
Blue																		
Other																		
<u>Ducks:</u>																		
Mallard	10	10	10	10	10	10	10	10	10									
Black																		
Gadwall	10	200	10	160	300	10	10	10	10									
Baldpate	30000	24000	20000	20000	20000	20000	10000	10000	10000									
Pintail	5000	4100	4200	7000	5000	3400	3000	4000	4000									
Green-winged teal	400	1000	700	1100	2000	2000	1000	1500	1500									
Blue-winged teal																		
Cinnamon teal	100	30	100	50	450	1000	250	500	500									
Shoveller	6000	5000	7000	4000	2500	4000	1500	2000	2000									
Wood																		
Redhead	10	10	10	10	10	10	10	10	10									
Ring-necked																		
Canvas-back	10	10	2	10	3	10	10	10	10									
Scaup	140	10	30	10	60	50	20	20	20									
Golden-eye																		
Buffle-head	10	3	10	3	10	10	10	700	700									
Ruddy	700	500	800	1200	1800	600	500	500	500									
Pulvous Tree																		
Unidentified																		
<u>Coot:</u>																		
TOTALS	14390	57192	5174	46377	39574	32441	21840	25450		9354	7820	3302	2854	1134	1181	1213	1175	860

Reported by EDWARD J. O'NEILL Refuge Manager

(1) Species Common Name	(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Estimated Waterfowl Days
	Number	Date	Number	Inclusive Dates	Number	Date	Broods Seen	Estimated Total	
1. Swans: Whistling swan									
2. Geese:									
Canada goose	Previous	Period	2200	1/17					
Cackling goose	1	1/10	1	1/10-1/24					
Brant	1	1/10	1	1/10-2/7					
White-fronted goose	Previous	Period	200	1/17					
Snow goose	Previous	Period	9000	1/3					
Blue goose	2	1/10	2	1/10-1/24					
Rees									
3. Ducks:									
Mallard	Previous	Period	10	1/2-2/21					
Black Duck	Previous	Period	300	1/31					
Gadwall	Previous	Period	30,000	1/3					
Baldpate	Previous	Period	14,200	1/10-1/17					
Pintail	Previous	Period	2,000	1/31-2/7					
Green-winged teal	Previous	Period							
Blue-winged teal	Previous	Period	1,000	2/7					
Cinnamon teal	Previous	Period	7,000	1/17					
Shoveller	Previous	Period							
Wood duck	Previous	Period	60	1/30					
Redhead	Previous	Period	5	1/10					
Ring-necked duck	Previous	Period	10	2/7-2/14					
Canvas-back	Previous	Period	140	1/3					
Scaup	Previous	Period	10	1/10					
Golden-eye	Previous	Period	10	1/21-2/7					
Buffle-head	Previous	Period	1,800	1/31					
Ruddy duck	Previous	Period	4	1/30					
Pulvius free									
4. Coot:	Previous	Period	3,000	1/21-1/31					

4. Coot:

3-1750
(Aug. 1952)

(over)

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl days use during period _____

Peak waterfowl numbers _____

Areas used by concentrations _____

Principal nesting areas this season _____

No. of inventories this period _____ % of refuge covered
Reported by _____

INSTRUCTIONS (See Sec. 7532, 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) First Seen:

The first refuge record for the species during the reporting period, and the number seen. This column does not apply to resident species.

(3) Peak Concentration:

Estimated number and inclusive dates when peak population of the species occurred.

(4) Last Seen:

The last refuge record for the species during the reporting period.

(5) Young Produced:

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.

(6) Total:

Estimated waterfowl days use (average population X no. of days present) of refuge for reporting period based. (See Sec. 7532, Wildlife Refuges Field Manual.)

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

1613

Refuge Salton SeaMonths of January to April, 19453

(1) Species	(2) Density		(3) Young Produced	(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
	NO CHANGE		IN	STATUS					

Form NR-2 - UPLAND GAME BIRDS.*

INSTRUCTIONS

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

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

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula tion
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

NO CHANGE IN STATUS

* List removals by Predator Animal Hunter

REMARKS:

Reported by

INSTRUCTIONS

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

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

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

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

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

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

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

REFUGEE GRAIN REPORT

Refuge Saltwater Sea Months of January through April, 1953

(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		Seed	Feed	Surplus
Marion Barley	400				400					
Henschen "	100				25		75		X	
Wild Millet	100						100	X		
Irish Alfalfa	349				340		9	X		
Italian Ryegrass	8				4		4	X		

(8) Indicate shipping or collection points Beauley or Westport, California(9) Grain is stored at Refuge subheadquarters and headquarters

(10) Remarks _____

* See instructions on back.

REFUGE GRAIN REPORT

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

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

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



Contrast of moderate to intense barley utilization in Tract 15,
Unit 11 of refuge is examined here by Eugene Kridler. Jan. 1953



Because of heavy boundary hunting an ungrazed strip of bar-
ley 2-feet tall was left along the borders of Tracts 15-20.



Pilot-Biologist Glahn (left) and Refuge Mechanic Karl examine new alfalfa crop which geese closely cropped, Tract 4, Unit I. January 1953



Comparison of grazed and ungrazed barley from refuge Tract 8-13, Unit II. Jan. 1953



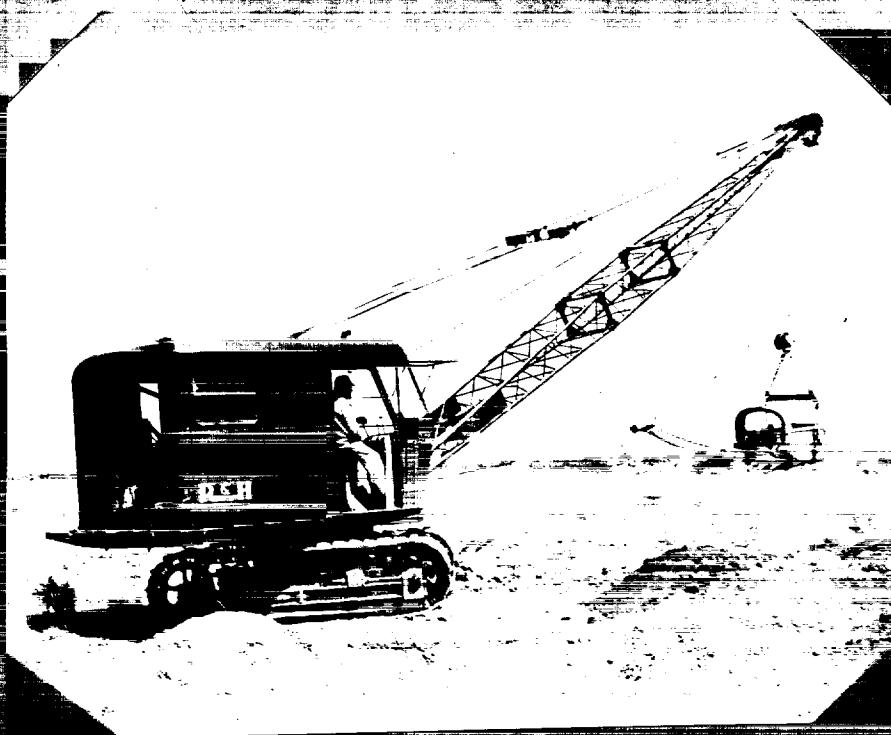
Workers chopped alfalfa during
the first experiment on refuge.



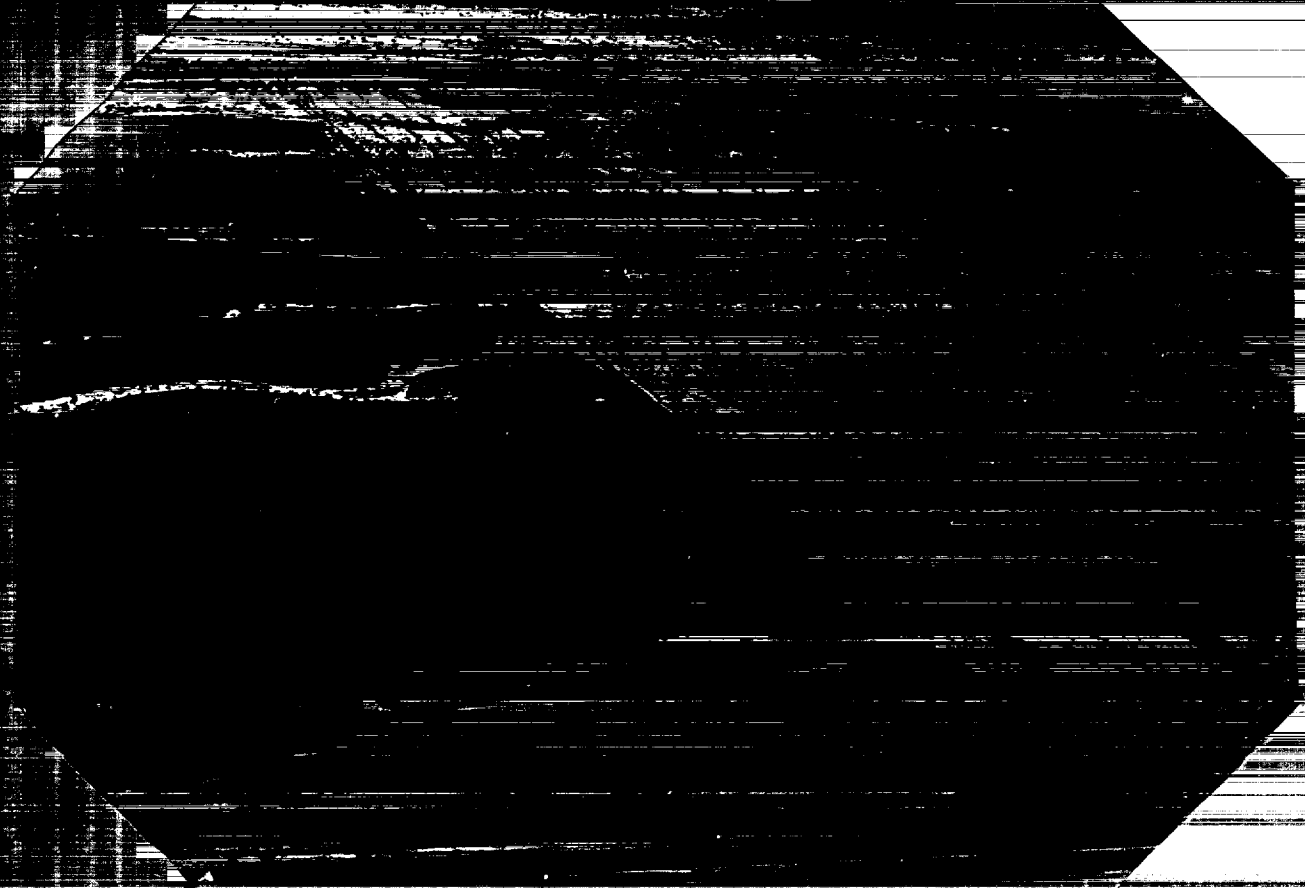
On windy days chopped alfalfa was carried out from
mats providing excellent opportunity for utilization.



Mr. Ade Zajanc inspects chopped alfalfa being
utilized by ducks during refuge feeding experiment.



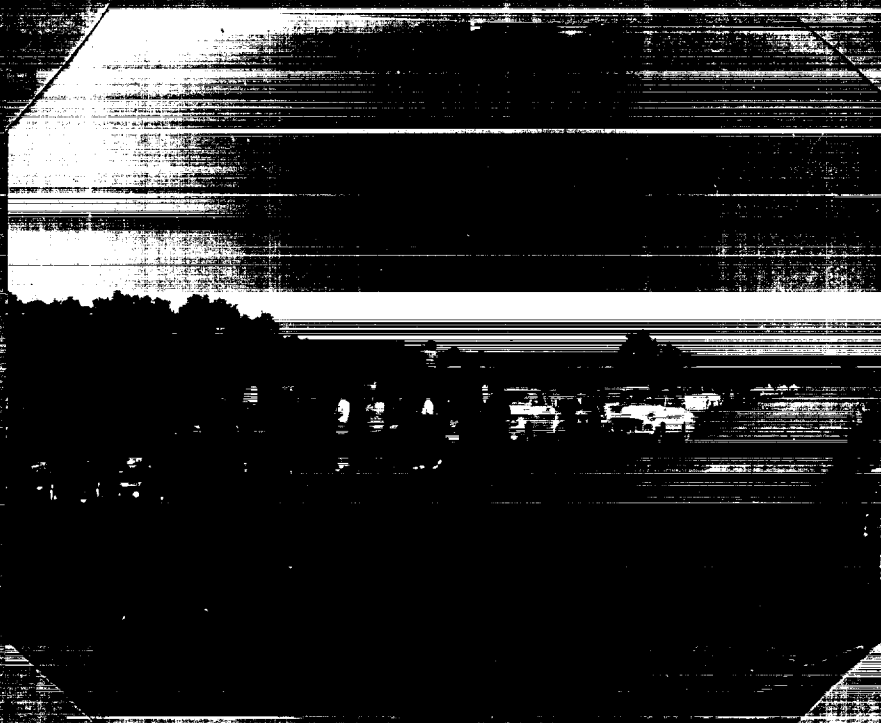
Machine conducting operations Tract 6, Unit 1.
on tract machine, April 1953



Aerial view of Unit III which Cal. Fish and Game requested be
relinquished in favor of new State land acquisitions. March 1953



Air view of Tracts 29-31, Unit I showing dragline
operations & dike to protect Tract 28. Feb. 1953



Los Angeles Audubon Society group at Unit II. During the period some 420 members participated in these tours.