



UNITED STATES DEPARTMENT OF THE INTERIOR

Refuge Manager, Salton Sea Refuge,
Brawley, California

March 26, 1957

Regional Refuge Supervisor, Portland, Oregon

Narrative report -- September-December, 1956

(1-R)

We have just completed the preliminary review of the narrative reports for the subject period and feel compelled to commend you and your staff upon the excellency of the one for the Salton Sea Refuge.

The narrative section carries an excellent account of the accomplishments during the period with respect to both maintenance and development phases of the operation. The graphs, maps and photographs are of excellent quality and add materially to the quality of the report. The only complaint that we have to offer on this report is the fact that it was over a month late. It is of the utmost importance that these reports be received by the due date in order that the information extracted from these reports may be available for compilation and submission to the Washington Office by their due date. We ask that in the future you endeavor to guard against the report losing any of its value by having it submitted on time.

KPMacDonald:ld

SALTON SEA NATIONAL WILDLIFE REFUGE

AND

WATERFOWL DEVELOPMENT AREA

XXXXXXXXXXXX

NARRATIVE REPORT

SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER

1956

XXXXXXXXXXXX

UNITED STATES DEPARTMENT OF INTERIOR
FISH AND WILDLIFE SERVICE
BRAWLEY, CALIFORNIA

IN MEMORIAM

It was with deep regret that we learned of the death December 23, 1956 of our fellow employee, Frank Beals, who served as clerk-typist at this refuge from October 26, 1953 to February 25, 1955.

"Frank", as we affectionately called him, was a most congenial and loyal employee. His persistence with difficult tasks, genial attitude, and unselfish willingness to put in extra hours of duty to facilitate the work of others, has been unprecedented in the personnel history of Salton Sea Refuge.

Frank's years of refuge manager duty in Alaska and related experiences were invaluable, even here in the desert, so far from his beloved ocean.

The Service has indeed lost a faithful employee, we at Salton Sea will miss him as a warm friend and co-worker.

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REFUGEE PERSONNEL

Regular Personnel

EDWARD J. O'NEILL	Refuge Manager
WILLIAM NUSS	Refuge Manager (Asst.)
JOSEPH L. CUDDY	Clerk Typist
HENRY STEER	Mechanic

JOSE' BARROS	Tractor Operator
CARL W. FORD	Tractor Operator
CHESLEY WILLIAMS	Tractor Operator
PAUL E. WILLIAMS	Tractor Operator *
ALFRED W. MC FARLAND	Tractor Operator
CLYDE W. STEWART	Tractor Operator
LEO E. COX	Oiler
MELVIN FORD	Oiler *
JOHN BARROS	Irrigator
SYLVESTER BARROS	Irrigator
MANUEL CARDONZO	Irrigator
JULIO RIBEIRO	Irrigator

* Terminated due to reduction-in-force.

Temporary Personnel

None during period.

NARRATIVE REPORT

I GENERAL CONDITIONS

A. Weather & Conditions

September was recorded locally as the hottest month since 1914. Mean or average temperature was 90.5-degrees. This is 5.9-degrees higher than the past 43-year September average of 84.6-degrees. September average was 4-degrees above the highest recorded for the same period of 1955.

Maximum temperatures for September of this year did not drop below 100-degrees from September 17 to 29 inclusive.

There were 24 clear, cloudless days. September 5 and 27 saw slight traces of rain.

On September 8, starting at 3:12 AM, five separate earthquake shocks were felt in Imperial Valley. No damage resulted to refuge installations. A number of farmers over a wide area noted settled spots in fields which required leveling work.

Mild weather generally marked the months of October, November and December with moderately light winds, very few noticeable cloudy days and no precipitation.

Tabulated below is the weather data as compiled by the El Centro Naval Air Station, Seeley, California:

<u>MONTH</u>	<u>MAX.</u>	<u>MIN.</u>	<u>PRECIPITATION</u>	<u>DAYS OF-25MPH WINDS</u>
September	113°	69°	T	3
October	100°	49°	T	10
November	90°	34°	-	2
December	80°	34°	-	-

B. Precipitation and Water Conditions

Precipitation received was not in sufficient amount to affect conditions prevalent during the previous period.

The waste water or operational spillage control program being enforced by the Imperial Irrigation District has demonstrated clearly that the Salton Sea elevations can definitely be checked. Readings thus far would indicate a negligible rise (.1 ft), in the Salton Sea during the current winter months as compared to .3 ft. in 1955. I.I.D. claims to have delivered more water this year.

C. Fires

No fires occurred on the refuge during the period.

II WILDLIFE

(By William Nuss, Asst. Refuge Manager)

A. Migratory Birds

1. Populations and Behavior

a. Ducks

Aerial census of Imperial Valley showed no outstanding variants in populations during the report period. Comparative tabulations are shown on pages 11-17. Reference is directed, however, to Form NR-1 which shows a much heavier utilization of refuge units by most species. This is attributable to the usual heavy hunting pressure combined with the availability of 1320 acres of fresh water habitat most of which supported cattails and wild millet as mentioned in the previous report. This utilization was particularly evident on and just after shoot days on state-managed areas and private gun clubs. Had the weekly waterfowl census been conducted on any of these days an even higher "total days use" than was indicated would have been shown.

Large concentrations of widgeon made use of refuge Unit I, particularly during the last half of the report period. Several times the number approached the total populations known to be using Imperial Valley.

Tabulated below are the comparative winter inventories for 1952 through 1956.

	1952	1953	1954	1955	1956
<u>Ducks</u>					
Mallards	10	240	270	220	320
Gadwall		20	31	220	160
Am.Widgeon	75,230	71,330	62,550	34,250	14,910
G-W Teal	1,030	5,980	2,255	4,590	19,610
Shoveler	21,290	9,180	3,805	8,370	10,280
Pintail	16,440	37,530	19,645	8,970	27,240
Redhead	90	10	120	90	210
Canvasback	1,810	3,810	2,520	1,850	1,780
Scaup	29,600	18,040	8,030	15,450	13,460
Cin.Teal		10	100	20	40
Goldeneye	10	60		400	1,230

	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>
<u>Ducks (cont'd)</u>					
Bufflehead	260	450	160	180	350
Ruddy Duck	17,680	9,910	8,940	6,000	8,510
Ring-neck				10	
Surf Scoter			10		
Merganser		40	300	110	430
Unidentified	22,050	4,260	12,110	790	5,000
<u>Geese</u>					
Snow Goose	20,830	13,750	12,134	9,140	9,000
Canada Goose	4,150	1,490	1,625	1,320	1,380
W-F Goose	100	100		80	250
Ross' Goose					10
<u>Swans</u>					
Whistling Swan			16	30	60
TOTAL DUCKS	185,500	160,880	121,140	81,920	133,530
TOTAL GEESE	25,080	15,340	13,759	11,540	10,640
TOTAL SWANS			16	30	60
TOTAL COOTS	49,210	36,180	21,855	24,220	28,560

Graphs on pages 9 and 10 compare the sex age ratio of Pintails for this report period with those of previous years. It is interesting to note that both the sex and age ratios have remained fairly constant for the years 1954, 1955, and 1956.

b. Geese

The first goose of the season, a single snow, was observed on refuge Unit II, Friday, September 14th. Shortly thereafter he joined forces with the single Canada and three snow geese, all that remained of the game farm birds banded and released June 5th. They remained together until they met their fate on the second day of the hunting season, Sunday, October 21st. A plane, one of many during the season, flew low over Unit I driving them off the area and over the guns of hunters along Trifolium 13 canal.

White-fronted Geese first appeared on the scene September 21st when 200 were observed resting on Tract 8, Unit I. This particular flock apparently did not like what we had to offer for the next day they were gone. The next gathering of any size (65) was observed on an aerial census conducted October 4th and 5th. From this point on there were continuous additions to the flock until there were 1000 present on November 2nd. This was the peak of their movement through this area and there was a

gradual decline until there were only 200 accounted for on December 28th.

Canada Geese were first noted on October 22nd when 15 were seen. Accompanying them were two Cacklers. Their build-up was very gradual until an estimated 1000 were present on December 21st. There were several occasions when canadas were observed wearing colored neck bands. On December 2, 1956, 2 maroon, 5 red, and 4 white bands were noted. It is believed that these bands were placed on the birds by personnel of the Wyoming Game and Fish Commission. The states of Utah and Montana are also placing colored neck bands on canada geese.

Snow Geese followed their familiar pattern, first arrivals amounting to 150 being observed on October 22nd. In a matter of three weeks the population had grown to 5,000 where it remained until November 11th when it was estimated an additional 1000 had joined the flock from that point forward there appeared to be a gradual increase until there was a peak population of 9,000 on December 21st. This is somewhat below figures for 1955.

The geese, as they arrived, settled in on Unit I where they adopted a daily routine. Early morning would find them in the mature barley on Tract 4. The snows chose Tract 11 for a loafing area whereas the canadas and white-fronts settled for Tract 8. Early evening would again find them in the barley after which they would assemble in masse on Tract 2 of Unit I where they spent the nocturnal hours.

Complete utilization of the barley on Tract 4 was accomplished by the first week of December after which most of the birds moved to Unit II where they stayed the remaining days of the report period. The remainder, a few snows and white-fronts utilized the cattails on Tract 9, Unit I. A small segment of the canadas (150) and small flocks of snows utilized the fresh water cattail habitat on Unit A.

On Saturday December 22nd, the writer in company with Mr. O'Neill observed a flock of approximately 31 Ross' Geese pass over Rock Hill, Unit II. Identification was positive since there was one snow accompanying them and size difference was obvious. Identification of this flock was further verified through the subsequent killing of 17 of the little fellows by hunters on refuge Unit II. There were three others known to have been killed by hunters for a total of 20.

c. Swans

On November 25th 4 Whistling Swans were observed flying over Trifolium 13 canal. Hunters reported seeing swans

on other occasions during the report period. Several were reported shot at and badly crippled. One bedraggled specimen, apparently crippled was observed on Tract 11, Unit I on November 27. On several subsequent days it was seen sitting in the same spot.

d. Shorebirds, Gulls, and Terns

An aerial census showed 2300 Black-necked Stilts still present on September 6. Shortly thereafter their numbers declined rapidly, but throughout the period several of the hardy individuals remained on refuge Unit I.

The same aerial census disclosed a congregation of 10,000 Northern Phalaropes on Tract 7, Unit I and a total of 11,200 American Avocets in the Salton Sea area.

On October 13 a concentration of 250 Lesser Yellowlegs was observed on Tracts 8 - 13, Unit II.

Caspian Terns were last noted in the area on October 4 - 5 when an aerial census survey was conducted. There were 35 accounted for.

Twenty-five (25) Gull-billed Terns were seen on September 14th. No observations of this species were noted after this date.

e. Water and Marsh Birds

Roseate Spoonbills were observed again this period. On Saturday October 27th one was seen on Tract 8, Unit I. Hunters along Trifolium 13 canal reported a flock of 8 large pink birds flew over them on the same day.

The aerial survey of September 6 disclosed 800 Wood Ibis still present. A week later there were only 25 observed and by October 12 none were found.

On October 9th 1,000 White Pelicans were observed on the New River Delta.

On September 21st a Brown Pelican was caught on Tract 8 - 13, Unit II. It was ill and several days later succumbed to an unknown disease.

A single Sandhill Crane was seen on Unit II November 28th. On December 10th 4 more were observed in the same area.

2. Disease

Several dead pintails in an emaciated state were picked up on the refuge during the period. Conduction of an autopsy

revealed the presence of lead shot pellets in the gizzard. The writer assumes there is a high incidence of lead poisoning on the refuge and adjacent sea fronts considering the large amounts of shot deposited by hunters standing along the boundary. It would be interesting to see the results of a fluoroscopic survey of the birds using the area.

3. Banding

Attention is directed to the summary of birds banded at the Salton Sea Refuge for the years 1947 through 1956 on pages 12 and 13. The year 1956 proved to be a banner one during which 19,437 birds were banded.

Tabulated below are the species and numbers banded for this period.

<u>Species</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
Pintail	3037	113	976	2352	6,478
Gin. Teal	507		1		508
Am. Widgeon			227	110	337
G-W Teal	284		13	82	379
Mallard	8		12	3	23
Gadwall			1		1
Ruddy Duck		1	6	1	8
Ringneck			1		1
Redhead	117		1		118
Fulvous T. Duck	5				5
Coot			25	6	31
Total -					7,889

Interesting recoveries for the period include:

1. Green-winged Teal banded February 4, 1956 which was recovered November 22, 1956 at Indian Lake near Lima, Ohio.

2. Pintail banded August 23, 1956 was recovered (shot) 6-1/2 miles southeast of Pender, Nebraska on October 13, 1956.

3. A pintail banded August 26, 1956 was recovered (shot) at Grizzley Island, Suisun, Solano County, California on November 18, 1956.

4. A pintail banded August 31, 1956 was recovered (shot) 15 miles west of Lake Charles, Louisiana on November 6, 1956.

5. A pintail banded September 4, 1956 was recovered (shot) near Yorkton in Page County, Iowa on November 14, 1956.

6. A pintail banded September 6, 1956 was recovered (shot) 5 miles southwest of Bell City in Louisiana on November 21, 1956.

7. A pintail banded September 15, 1956 was recovered (shot) on the Black Mallard Gun Club, Wheeler Island, about 45 miles from San Francisco, California on October 28, 1956.

8. A pintail banded September 20, 1956 recovered (shot) on Clear Lake Refuge, Millard County Utah, on November 17, 1956.

B. Upland Game Birds

Gambel's Quail were exposed to heavy hunting pressure as a result of poor waterfowl shooting. Hunters spent the early morning hours in pursuit of the broad-billed species, but soon gave up in disgust. To relieve the boredom while waiting for the evening shoot many would turn to upland game, with quail of course being the most sought after.

Ring-necked Pheasants were seen here and there on Unit II by refuge personnel.

C. Other Birds

An aerial census survey conducted October 4--5th disclosed 4 ravens on Unit I.

A White-winged Dove was noted September 22nd on Unit II.

Twenty (20) Phainopepla were observed near Vandal's Service Station on the Los Angeles highway..

On October 26th, 10 Oregon Juncos were seen.

Duck Hawks and Golden Eagles were recorded several times during the report period. A Cooper's Hawk was seen November 25th.

A Short-eared Owl was seen November 14th. On this same date a concentration of 100 Mountain Bluebirds was observed.

On October 20th 500 Horned Larks were observed near Tract C, Unit I.

A Poor-will was extracted from the radiator of one of the refuge vehicles on November 12th.

D. Animals

Bobcats were much more in evidence this report period. Numerous observations were made by refuge personnel.

.....END.....(By William Nuess)

%

100

90

80

70

60

50

40

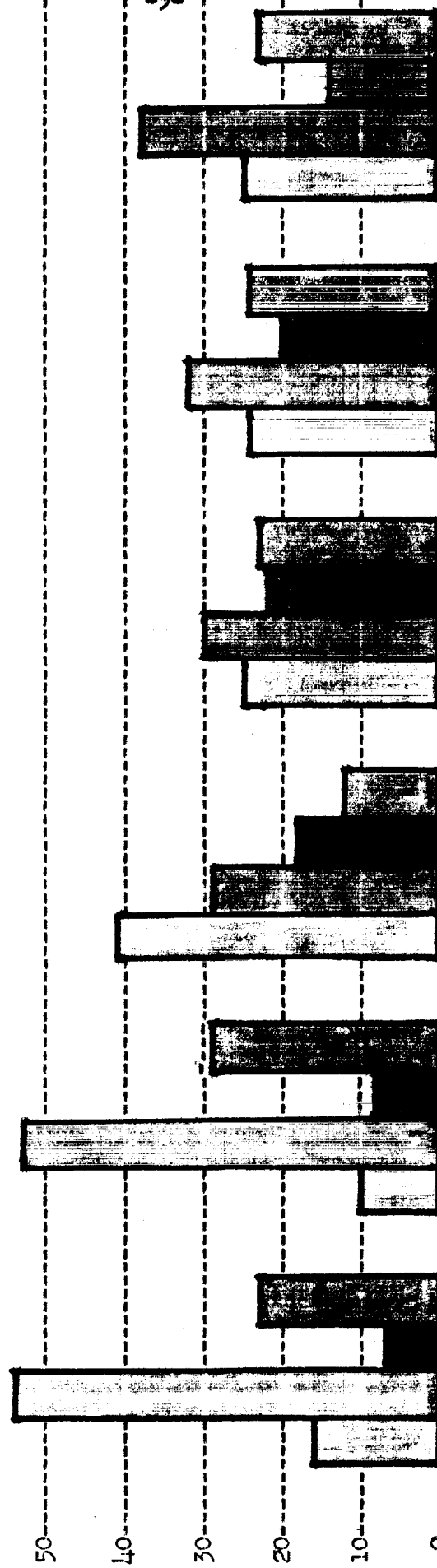
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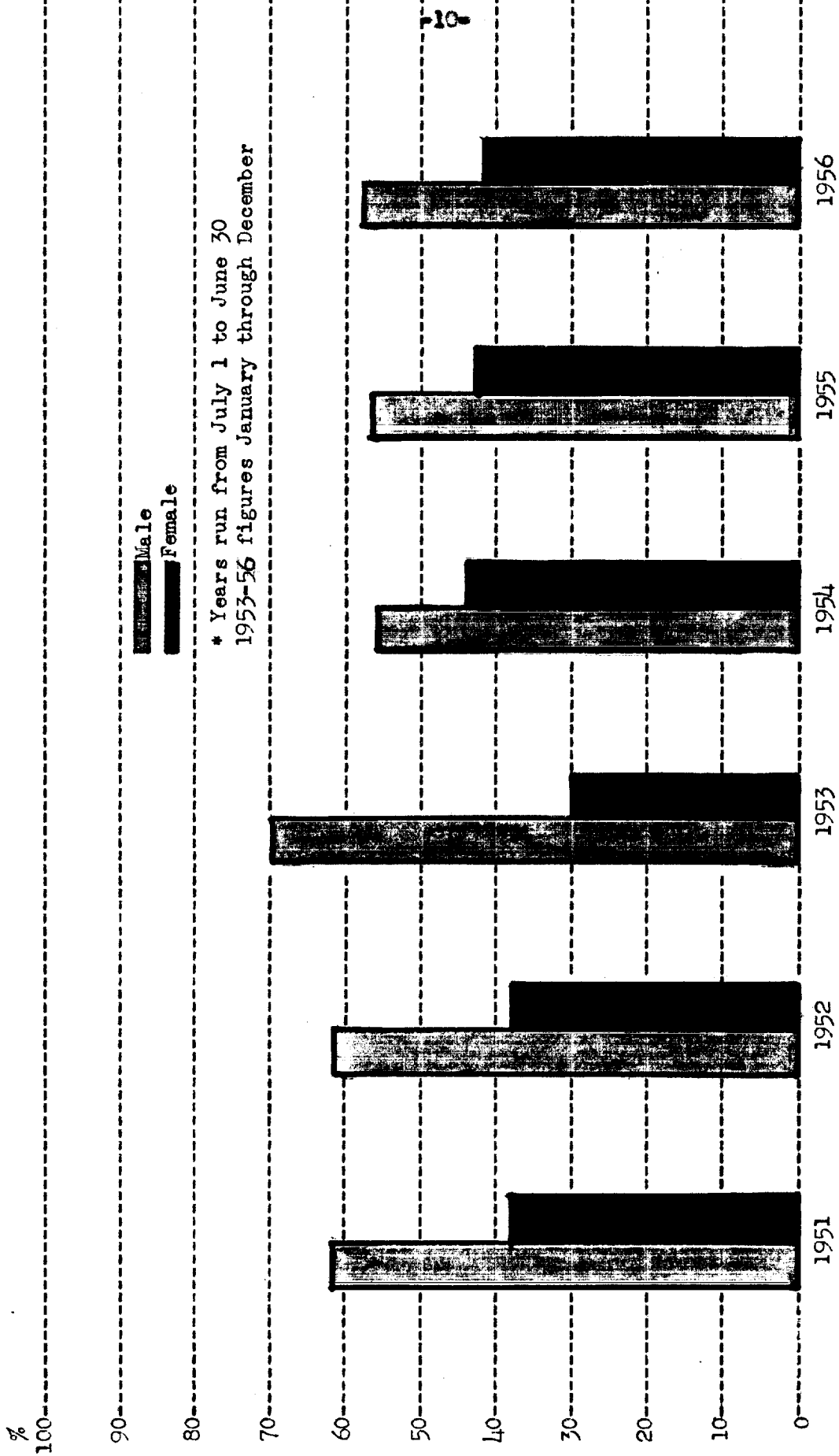
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Adult Male
 Immature Male
 Adult Female
 Immature Female



RATIO OF ADULTS TO IMMATURE
 1951 A-23 I-77
 1952 A-18 I-82
 1953 A-59 I-41
 1954 A-47 I-53
 1955 A-44 I-56
 1956 A-39 I-61

AGE RATIO OF PINTAILS BANDED AT SALTON SEA 1951 THROUGH 1956
(AUGUST THROUGH NOVEMBER)



SEX RATIO OF PINTAILS BANDED AT SALTON SEA 1951 THROUGH 1956

SEX-AGE RATIO OF

PINTAILS BANDED AT SALTON SEA REFUGE, 1948-56, INCL.

AUGUST THRU NOVEMBER 30TH

YEAR	MALE	FEMALE	TOTAL	RATIO	AM	FM	AF	IF	TOTAL A.	TOTAL I	TOTAL
1948-49	3	13	16	18:82							
1949-50	150	272	422	36:64	37	69	95	97	132	166	296
1950-51	107	245	352	30:70	0	5	0	28	0	33	33
1951-52	4278	2519	6797	62:38	523	1764	222	762	745	2526	3271
1952-53	3222	2017	5239	62:38	313	1636	230	897	543	2533	3076
1953	4619	1992	6611	70:30	2579	1812	1111	732	3690	2544	6234
1954	3795	3035	6830	56:44	1001	1197	900	878	1901	2075	3978
1955	4197	3199	7396	57:43	960	1274	779	945	1739	2219	3958
1956	6200	4463	10663	58:42	1233	1936	689	1183	1922	3119	5041
TOTALS	26571	17755	44326	60:40	6646	7693	4026	5522	10672	15215	25887

* Years from July 1 to June 30

1953-56 figures January through December

SUMMARY OF BIRDS BANDED AT SALTON SEA REFUGE, 1947-56 INCL.

<u>Species</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>Total</u>
E. Grebe							315		1	316
Gull-billed Tern		100	4							104
Casbian Tern		15	2							17
White Pelican		164	199	100	200	13	34		28	697
Mallard		50			4	1	11		4	106
Gadwall							2			7
Widgeon										
Green-winged Teal	107	25	23	6	267	2013	3393	1258	2101	9386
Blue-winged Teal		2	271	142	1956	1656	1601	1710	4200	11945
Cinnamon Teal	142			70	404	98	60	1260	640	5
Shoveler				2	77	6		19	15	2574
Pintail	199	553	234	3458	6805	9811	6030	7396	10656	119
Redhead					57	66	80	13	143	45958
Canvasback					11	2	2			359
Bufflehead							1			15
Lesser Scaup					5	7	2	1		1
Ring-necked Duck						1				15
Ruddy Duck			1		9	25	94	11	1	2
Fulvous Tree Duck		2	14	148	33	12	4	36	10	150
Mallard-Pintail Hybrid					1				97	346
Lesser Snow Goose						12	12	6	9	1
Ross' Goose						1	1	1	1	39
White-fronted Goose						1				4
Canada Goose				3	1		2		3	1
White-faced Ibis						2				9
Common Egret						6	109		49	51
Great Blue Heron.						2	25		37	152
Snowy Egret					1	2	27		211	27
Black-crowned Night Heron						5	3		21	241
Sora	1		1	2						29
Florida Gallinule	2		5			1	2			4
Double-crested Cormorant									31	10
										31

(Continued on next page)

SUMMARY OF BIRDS Banded AT SALTOM SEA REFUGE, 1947-56 INCL. (Cont'd)

<u>Species</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>Total</u>
Coot	8	121	236	58	101	537	359	303	835	2558
Northern Phalarope						8				8
Wilson's Phalarope						2				2
Long-billed Dowitcher						4				4
Stilt Sandpiper						1				1
Mourning Dove		2	2		9	332	28	132	44	556
Burrowing Owl						1				1
Roadrunner						2				2
Yellow-headed Blackbird		14				3				17
Red-winged Blackbird		9				49				58
Western Meadowlark						5				5
Loggerhead Shrike						2				2
TOTALS	656	1060	999	3989	9943	14,689	13,896	12,149	19,437	76,818 *

* Includes 16 Pintails banded in 1947 (only birds banded that year).

AERIAL CENSUS FOR SEPTEMBER

1950 THROUGH 1956

Species	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
<u>Swans:</u>										
<u>Mallard</u>					8	2	1			
<u>Geese:</u>										
<u>Canada</u>										
Cackling										
White-fronted				6	1	30	3			
Snow						7				
Other										
<u>Ducks:</u>										
<u>Mallard</u>										
Gadwall				10						
Baldpate				135	85	20,130	10			
Pintail	44,000			13,505	15,580		11,800			
C-W Teal				1,245	3,450	7,350	5,130			
Can. Teal				215	3,600	2,560	940			
Shoveler	140			7,670	2,370	16,090	2,400			
Redhead	820				30					
Ring-necked										
Curlew					1					
Goldeneye										
Bufflehead										
Puddy										
Other <u>Unident.</u>										
Pulvous	500			1,840	1,550	2,370	390			
Ferganese				1,270	140		375			
Other							25			
TOTAL	1,500			8,820	6,000	15,250	14,095			

AERIAL CENSUS FOR OCTOBER

1950 THROUGH 1956

Species	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Swans:										
Whistling				90	150		1			
Geese:										
Canada										
Cackling				500	600		65			
White-fronted				125	300		3			
Snow										
Other										
Ducks:										
Baldpate				3900	2050		2035			
Gadwall				6300	6750		6715			
Pintail				1800	3830		12615			
C-W Teal				1400	1850		6450			
Lin. Teal				2500	2100		11770			
Shoveler				1600	20		60			
Redhead										
Ring-necked										
Canvasback										
Scaup				2700	600					
Goldeneye										
Bufflehead										
Buddy				22900	1200		3125			
Other										
Pulvous					140		80			
Merganser										
Total:				20000	19050		11520			

AERIAL CENSUS FOR ~~MONITORING~~

1950 THROUGH 1956

Species	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Swans:										
Whistling										
Geese:										
Canada	130	860	1800	428	300	70	225			
Cackling					20					
White-fronted	200		600	1300	1300	500	700			
Snow	2800	300	5500	6000	3500	1250	5000			
Other										
Ducks:										
Mallard			50	425	300		95			
Gadwall				15	100	25	100			
Baldpate	15000	47000	51000	12025	12100	21925	38690			
Pintail		43550	9000	11125	9650	19335	33095			
C-W Teal		1000	4500	2225	6500	13000	6720			
Cin. Teal			500	365	250	70				
Shoveler		200	5000	2050	3150	11125	6970			
Redhead		280	10	15	200	500	710			
Ring-necked										
Canvasback		300	50	3525	50	825	605			
Scaup		2600	8000	4100	5850	11200	8500			
Goldeneye					10	180	65			
Bufflehead		170		375	50	110	85			
Ruddy		9800	11000	28580	3600	4775	12335			
Other Unident.	27500	80000								
Sulphur					50					
Merganser										
Not:		1000	5000	10000	18125	22160	11520			

AERIAL CENSUS FOR DECEMBER

1950 THROUGH 1956

Species	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Swans:										
Whistling										
Geese:										
Canada	2230	2200	2350	1175	770	750				
Cackling										
White-fronted	120	100	250	850	30	160				
Snow	7500	8000	7600	6030	28135	9000				
Other										
Ducks:										
Mallard										
Gadwall		10	60	450		270				
Baldpate			50	400		60				
Pintail	43800	48000	16700	47000	26150	38150				
G-W Teal	5000	4000	5950	18200	38730	23020				
Cin. Teal	1600	2000	1350	4450	10530	19130				
Shoveler	200		150	80	10	10				
Redhead	1500	1800	2650	4675	2630	7700				
Ring-necked	70		50	350	310	170				
Carvasback										
Scaup	1000	1250	4850	4750	915	6500				
Goldeneye	10000		8200	7700	1880	14680				
Bufflehead	10		4	1500	155	1880				
Ruddy	150		225	550	70	660				
Other	23000		4500	8100	1680	17060				
Unident.	4500	70000								
Fulvous										
Merganser			25							
Grand Total:	300		5000	9400	12686					

E. Fish

Dr. Boyd Walker, UCLA ichthyologist, reported on October 13 that Salton Sea was, "headed for certain fame as a deep sea fishery sports mecca". The boast followed a gill-net cast which reportedly yielded more than 100 corvina weighing up to 15 pounds.

The main problem now seems to be in promoting sports fishing. It has been next to impossible to interest fishermen in the idea of trying their luck on such a vast, unknown body of water.

On December 2 a Fishing Derby was held on Salton Sea and reports indicated a poor turnout of sportsmen with negative results for all.

During October biologists recovered 52 orange-mouth corvina at the delta of the Alamo River in a 12-hour setting of one 300-foot gill net. These fish were reported to be offspring of the adult ocean corvina transplanted in the sea. They varied from 1- $\frac{1}{2}$ to 8 pounds in size.

Scale studies indicate growth of approximately one pound the first year and three the second year. Largest recovered weighed nearly 17 pounds.

On December 6 a local news release indicated biologists had recovered the first Sargo or China Croker ever obtained in Salton Sea. The specimen was a small 5-inch fish which was believed to be an offspring of the 65 adult sargos transplanted from the Gulf of California on March 31, 1951.

Salton Sea is now open to year-round fishing with no limit established.

F. Waterfowl Depredations

Complaints of crop damages by waterfowl were the lowest in years. Puddling by pintail ducks was, we believe, the lowest on record since the establishment of the refuge area. The combined acreage of barley grain on both federal and state areas, amounting to some 1100 acres served the two-fold purpose of; (1) holding the species from surrounding private fields and, (2) maintaining a fair population within the general region.

The Hudson Ranch west of Niland, Fred Johnson place south of federal refuge Unit I, the Robert Reese ranch southwest of Unit "A", the Seibert Farms east of Unit I, the Elmore property east of Unit I and south of Unit II, and the Sinclair Ranch west of Calipatria all reported minor, spotted, puddling damages following early fall irrigations.

The usual, August influx of pintails being somewhat later than usual may have contributed somewhat to the decreased puddle-

damaged acreage. No appreciable number of pintails arrived here until mid-September.

The main early influx of pintails (15,000), which reached this area in mid-September were pretty well satisfied with matured grain barley available in fields on both state and federal areas.

To our knowledge snow geese caused no serious damages during the entire period. Canada and white-fronted geese moved into Valley fields over a wide area both southeast and southwest of Salton Sea Refuge units. Spotted damages occurred on the Russel Brothers, John Williams, Robert Reese, Mat Kobashi and Elmore Company properties adjacent to Unit I. Near Unit II the Parker Ranch, Sinclair Ranch and Elmore Company lands had green barley and alfalfa fields grazed lightly.

Widgeon damages have occurred as in previous years with less complaints, due mainly to mild growing weather and rapid regrowth of any damaged areas. Crop losses to waterfowl have been reported by the Elmore Company, Seybert Farms, John Williams and Fred Johnson places adjacent to refuge Units I and "A". Other spotty damages were noted by personnel south of Westmorland, California and in the Wiest area northeast of Brawley.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments

1. Cultivated Crops During The Period:

Unit "A"

Acres under lease	780
Acres under fallow	200
*Acres planted	220
Acres producing crops	150
Acres unimproved, sump, etc	320
Acres being leach-improved	40

<u>*Crops available (acres)</u>	<u>Green</u>	<u>Mature</u>	
Cattails	100		
Wild Millet		100	
Sudangrass		20	
Totals -	100	120	(220)

The soil reclamation program at this time appears to have progressed well. Water has covered the contoured area for 5 months. If after the cattails are utilized and the contours dried, the soils

are sufficiently free of salts, it will be our proposal to level, border, and farm as much as possible.

During September and October, an additional 40-acre tract, west of Poe Lateral, was contour-boardered and water access provided for next summers reclamation work. In order to put water on this tract a ditch was extended west from Poe lateral along the north property line of Mat Kobashi (NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 30 T12S, R 12E). To force water to the highest elevation of the field, a service ditch $\frac{1}{2}$ foot high across the north-south road was necessary. Imperial Irrigation District and county roads representatives held no objection to this project. Since construction, however, Mr. Kobashi has objected to the ditch across the road since in his opinion floodwaters might sometime be forced to back over his fields. To handle drain and moderate floodwaters two 18-inch concrete pipes have been placed under the ditch in question.

Sometime in the future if Kobashi releases his lease on I.I.D. lands to the west, the Service will have better access to water and the ditch across the Poe lateral road may be abandoned.

There is still the vexing problem of obtaining water for the S $\frac{1}{2}$ of NE $\frac{1}{4}$ of Sec. 29, (80 acres). This is ideal land in need only of leveling, leaching, and farming but lacks a water access. The key to water here lies in passing through the 80-acre tract to the west which is I.I.D. land now leased to Wm. Heise through 1958. To date negotiations for a water right have gone "up the wash".

Mr. Robert Reese has relinquished lease of the S $\frac{1}{2}$ of the NE $\frac{1}{4}$ of SW $\frac{1}{4}$ Sec. 19, however the Barth Lateral must be extended one-half mile at Service expense before there is access to water.

Unit I

Acres under lease	2560
Acres under fallow	60
Acres planted	1200
*Acres producing crops	670
Acres unimproved, sump, river, backwaters, etc.	1310

<u>*Crops Available (acres)</u>	<u>Green</u>	<u>Mature</u>	
Barley	240	150	
Cattails	140		
Wild Millet		120	
Sudangrass		20	
	<hr/>	<hr/>	
	380	290	(670)

Impoundment of leaching water mentioned in the previous period report was continued throughout the winter quarter through December 31. Tracts 1, 2, A, B, and the north half of C showed only slight improvements producing a negligible amount of emergent growth despite seeding to wild millet.

During November Tracts 1, which contained mature barley previously, was renovated, nitrate-fertilized, and seeded to certified Mariout barley.

Unit II

Acres under lease	1277
Acres under fallow	---
Acres planted to crop	930
*Acres producing crops	740
Acres unimproved, sump, river, backwater	347

<u>*Crops Available (acres)</u>	<u>Green</u>	<u>Mature</u>	
Barley	120	240	
Cattails	180		
Wild Millet		180	
Sudangrass		20	
	<hr/>	<hr/>	
	300	440	(740)

TOTAL ACRES CROPS AVAILABLE ON REFUGE FALL-WINTER MONTHS

<u>CROPS</u>	<u>GREEN</u>	<u>MATURE</u>	
Barley (Henshen)	150		
Barley (Mariout)	210	390	
Wild Millet (<u>Echinochloa c.</u>)		400	
Cattails (<u>Typha d.</u>)	400		
Sudangrass (<u>Sorgum v.</u>)		60	
	<hr/>	<hr/>	
Totals....	760	850	(1610)

(NOTE: See attached map showing food crops on State Wister Area for complete picture of foods produced locally).

A. Comments on Crops and Crop Use

Crop production this season has in some respects been poorer than last year due to limited germination of wild millet in highly alkaline fresh water areas, particularly Tracts 1-2, A-B, C, 3, and 8 on Unit I.

Cattails as a crop at first looked discouraging due presumably to poor or retarded germination. By September however,

emergent shoots were well established and considerable spread took place during October and November filling in the blank spots. The lack of dense cattail growth somewhat favored early production of submerged najas g. and najas m.

Outstanding cattail growths were noted in Unit A, Tract 9 Unit I, and all water areas in Unit II.

Henshen barley seed, brought in from Tule Lake Refuge produced satisfactory green forage at Tracts 5-6, 18-19, and 26 of Unit I. At Unit II Tracts 3, 6, and 9 produced favorably from early October to December at which time most of the grazed-over crop was replanted to certified marion barley seed for grain crop production. Tract 5-6 Unit I as is always the case, was grazed down and kept that way by Canada and white-fronted geese. Although there was some regrowth and a show of fair survival of green barley, past experience dominated the decision to abandon the crop.

Other green barley fields were planted or replanted by half-fields so that green forage food was available at all times.

Tracts 18-19 Unit I were only partly used due to the heavy hunting pressure on all sides of the field which discouraged birds from using the crop. By late December when the west half of the tract was disked, the henshen barley crop was already about 18-inches high and 10 percent headed out.

All dry barley crops, which matured last spring, were well utilized both by ducks and geese. All species of geese present, pintails, mallards, green-winged teal, American widgeon and coots used the grain extensively. Even after renovation ducks and geese cleaned the grain fields of wasted seed.

During December the abundant crickets present at Tract 15 Unit II consumed considerable amounts of grain from mature, standing barley before the birds did. It is estimated about 5 acres of the field was 75 percent taken.

All in all we considered crop utilization good throughout the period except for fields occupied by hunters which were used to a surprising degree by night feeding snow geese and ducks. On all fields there has been about average bird concentrations and utilization in comparison to previous years.

The state fish and game department's Wister Area was closed to the extent that no hunting was allowed in mature barley fields. As a result, a heavy concentration of pintails stayed on the Wister, cleaned up the grain and then moved wouth into federal refuge units I and II leaving the hunters "high and dry".

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The waterfowl tabulations for the period somewhat substantiate the importance and holding ability of the small refuge tracts in view of the food on the Wister and the manner in which clubs all around the area baited and protected the birds on non-shoot days.

A 20,000 pound shipment of oats from Tule Lake Refuge was fed in small amounts at the last of the period. The floating characteristics of oats seemed to be advantageous when used as a supplementary widgeon food. Widgeon readily consumed the oats which float one to two days before sinking.

B. Receipt of Seed and Stock

During the period some 40,000 pounds of henshen barley and 20,000 pounds of oats were shipped in from Tule Lake Refuge for seeding and supplementary feed.

A small bag of ohuffa seed was received from Chasshowitzka Refuge, Florida for use in experimental plantings next period.

Other seeds and stocks received were for planting and most of these were used during the period.

IV ECONOMIC USES

None during the period.

V. PUBLIC RELATIONS

A. Recreational Uses

<u>Public Uses</u> (Calendar Year 1956)	<u>Est. Visitor Days</u>
A. Hunting use	1193
B. Fishing use	150
C. Miscellaneous	3500
<hr/>	
Total	4843

B. Refuge Visitors (Official)

<u>NAME</u>	<u>DATE</u>	<u>IDENTIFICATION</u>	<u>PURPOSE</u>
Mr. Howard Sargeant	11/11/56	Asst. Reg. Supv.	Inspection tour
Mr. A.W. Elder	Several	Game Agent	On patrol
Mr. Tucker	11/29/56	Tucker Wrecking	Bid on property
Mr. Ray Lawhorne	11/29/56	Game Agent	Visit
Mr. Phil Douglas	12/5/56	State F.&G. Dept.	Survey-boat landing
Mr. John Parrish	Several	" " " "	Confer ref. hunting-Un.II

Refuge Visitors (cont'd)

Mr. John Jansson	9/19/56	State F.&G.	Ref. hunting Unit II
Mr. William Anderson	Several	" "	Bird banding
Mr. Ray Glahn	9/5, 10/4, 11/15	Pilot-Biologist	Aerial census

C. Refuge Participation

On September 19 a meeting was held with Messrs John Parrish and John Jansson of California Fish and Game. It was agreed the state would:

- (1) put out trash barrels at all checking stations.
- (2) not do any law enforcement work on the federal area except on shoot days (wed., Sat., Sunday).
- (3) stop driving over refuge cropped fields.
- (4) keep us posted currently on daily bag and number of hunters.
- (5) stop allowing personnel to hunt on refuge units without first obtaining a permit.

It was further agreed; 150 shooters per day on ponded areas would be capacity registration until December 1. After that date 50 additional open field permits were to be issued.

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Tractor operator A.W. McFarland was detailed with TD-18 tractor and carryall scraper to work at Ajo, Arizona constructing a bighorn sheep watering tank. Mr. McFarland was on detail in region 2 from October 7, 1956 to January 17, 1957. Mr. Leo Cox assisted on the detail from October 29, 1956 to January 17, 1957.

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A buffalo carcass was obtained for Calipatria, California Boy Scouts to stage a barbecue. Meat came from Wichita Mountains Refuge, Oklahoma and considerable publicity was received for the service.

- - - - 0 - - - -

Audubon Field Notes publication was contributed to with migration records for the refuge and immediate vicinity.

- - - - 0 - - - -

On December 26 an aerial census was made of the Valley and Salton Sea south of Squeaky Springs and Bombay Beach to complement ground counts for the Annual Audubon Society Christmas Bird Census.

D. Public Relations

On December 11, the writer gave a 30-minute talk to 100 members of the Calipatria, California Chamber of Commerce on U.S. Fish and Wildlife Service activities and operations in Southern California and Imperial Valley.

Several meetings were attended with Imperial Valley Boy Scout executives at various points in Imperial Valley and at Yuma, Arizona.

During November a talk was given to the Miland-Calipatria joint Lions Club meeting.

The annual Imperial Valley Game Depredations Committee meeting was attended September 27 at which time the writer discussed refuge operations, proposals, and acreages of crops available for wintering waterfowl.

Space (250 words), has been provided in the local Brawley Newspaper for a weekly column. To date 10 weekly articles under the by-line "Wildlife Comments" have been printed dealing with hunting, law-enforcement, banding, etc incorporating whenever possible, portions of the Service news releases.

E. Refuge Hunting

REPORT OF PUBLIC SHOOTING ON LEA ACT LANDS OF THE SALTON SEA NATIONAL WILDLIFE REFUGE 1956-57

By John Parrish, Calif. F. & Game
Calipatria, California

INTRODUCTION:

Upon recommendation of local sportsmen and farmer groups, the U.S. Fish and Wildlife Service released an order permitting hunting on Unit II of the Salton Sea National Wildlife Refuge during the 1956-57 waterfowl season. This order stipulated that no more than 50% of the acreage be open to hunting at any one time.

AREA OPEN TO HUNTING:

The area open to hunting was decided upon by mutual agreement between the managers of both the State and Federal areas and was changed from time to time during the season to suit the needs of both agencies.

POSTING:

Posting of the area was accomplished in the same manner as in the previous two years. The outside perimeter of the area was posted with 12" X 18" Department of Fish and Game Cooperative hunting

signs which were tied over the existing Fish and Wildlife Refuge signs. These signs indicated that hunting was allowed by written permission only and also acknowledged cooperation with the Fish and wildlife Service. In addition, the 40 acres of closed area adjacent to the refuge buildings were posted with similar red "Closed Zone" signs.

REGISTRATION OF HUNTERS:

Registration of the hunters took place at the Hazard headquarters office. Registration fee was \$ 2.00 per hunter excepting juniors, (under 16 years) who were issued a free permit if accompanied by an adult. The number of hunters allowed on the area varied throughout the season depending upon the acreage which was open. The exact number of shooters allowed in a dry or ponded field depended upon the physical characteristics of the field and was determined by the personnel in charge of the public shooting. Safety and probable success were the determining factors.

Temporary, makeshift blinds of arrow weed were constructed on the fields prior to the opening of the season in an effort to achieve proper dispersion of the hunters. This was not necessary on the ponded areas because of the presence of adequate natural growth.

RESULTS:

A total of 921 hunters killed the following:

<u>Species</u>	<u>Number</u>
Snow Goose	117
Canada Goose	100
White-fronted Goose	53
Ross' Goose	17
Cackling Goose	1
Green-winged Teal	608
Pintail	292
Shoveler	271
Ruddy Duck	94
American Widgeon	59
Cinnamon Teal	54
Gadwall	14
Mallards	12
Scoup	9
Goldeneye	8
Canvasback	4
Bufflehead	4
Redhead	1
Unclassified	1

Total..... 1,719

. END (By J. Parrish)

F. Violations

Violators apprehended by personnel during the period are listed below. No court reports have been received to date.

<u>NAME</u>	<u>VIOLATION</u>	<u>DATE</u>
Maria D. Hunt Van Nuys, Calif.	Possession Canada Goose out of season	12/26/56
Roderick A. Hunt Van Nuys, Calif.	"	"
R.A. Luke Redlands, Calif.	Late shooting	12/15/56
Pierce Sherman Malibu, California	" "	12/8/56
George Adams Beaumont, Calif.	Hunting on refuge-No duck stamp	-
Robert Lee Gebert San Diego, Calif.	Hunting on refuge	12/7/56
Robert Davis Long Beach, Calif.	Killing Black-crowned Night Heron	10/20/56
Paul Landers Garden Grove, Calif.	Hunting on refuge	11/17/56
Eugene J. Sneed Seal Beach, Calif.	" " "	"
Robert K. Derigo Anaheim, Calif.	" " "	"
Thomas K. Frank Garden Grove, Calif.	" " "	"
Jerry Lee Young Spring Valley, Calif.	" " "	11/24/56
Roland Logan Young Limon Grove, Calif.	" " "	"
Arlie R. Walling Los Angeles, Calif.	" " "	10/20/56
Albert N. Saunders Los Angeles, Calif.	" " "	"

Violations (cont'd)

<u>NAME</u>	<u>VIOLATION</u>	<u>DATE</u>
Ron Aland El Segundo, Calif.	Hunting on refuge-no permit	12/7/56
William Aruther Richards Redondo Beach, Calif.	" " " " " "	"
Richard E. Patterson Los Angeles, Calif.	" " " " " "	11/10/56
Roy S. Halloway Los Angeles, Calif.	" " " " " "	"
Donald R. Holland Los Angeles, Calif.	" " " " " "	"
Raymond G. Davis Los Angeles, Calif.	" " " " " "	"
Dr. Robert H. McKinney San Ysidro, Calif.	Possession 3-Snow Geese taken on refuge	"

Numerous airplane herding and rallying violations were in evidence during the period.

VII OTHER ITEMS

On December 30th Mr. Carl Payne, duck hunter from Glendale, California reportedly drowned in Salton Sea. The hunter's empty boat was found afloat near Desert Shores. Despite helicopter and some 12 CAP aircrafts searching the shoreline the body was never recovered.

-----c0o-----

On October 23 Mr. Joe Engle, Compton, California was treated for wounds suffered while hunting near Wiland. His companion, Richie Smith, of South Gate, accidentally shot him in the groin when Engle was in line-of-fire of a passing duck.

-----c0o-----

Two hunters, enroute to Salton Sea were burned to death in their car along Highway 99 not far from refuge Unit I. When the vehicle overturned a container of gasoline ignited burning them beyond recognition.

-----c0o-----

Violations (cont'd)

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-----oOo-----

Hundreds of dead fish floating on the waters of Wiest Lake, east of Brawley, California became a nuisance to recreationalists in late October. So unpleasant was the odor people discontinued swimming, fishing and water skiing on the lake until the county could clean up the fish.

-----oOo-----

Retired army Colonel R.A. Ellworth of Indio, California in a renewed effort to acquire a large tract of land along the west shore of Salton Sea just north of the AEC, appeared before the Imperial Irrigation District Board of Directors during the period to request further consideration from the group. Ellworth claims he and his constituents are interested in development of a resort. He has already obtained checker-boarded sections from the Southern Pacific and U.S. Bureau of Reclamation and will take over a solid block if I.I.D. does not object to public withdrawal.

-----oOo-----

California Fish and Game Department men announced through President Walter Collins, local California Farm Bureau, that their Hazard headquarters facilities will be moved to the north end of the new 7000-acre Wister Unit. Collins stated the department has been granted \$130,000 to pay for moving the headquarters several miles north to the State Highway 111 location on the Wister. The amount covers cost of residences, office, etc.

-----oOo-----

The Salton Sea State Park near Mecca has been extended several miles southward to Section 30, T9S, R12E where an access road from Highway 111 to the shore of the sea; establishment of a parking area for about 30 cars and boat trailers, and installation of a boat landing ramp are planned. Reports indicate the state park is gaining in popularity and has already exceeded expectations of public use.

-----oOo-----

The Pine-Tomas Production Company, with a complement of 70 actors, cameramen and Air Force technicians started production of an Air Force film entitled "Bailout at 40,000 Feet", starring John Payne.

Scenes are to include the Seeley Naval Auxiliary Air Base, Salton Sea AEC Base, desert terrain and the Salton Sea in general according to news reports.

-----oOo-----

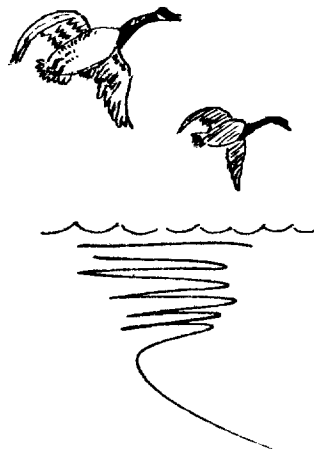
In the early hours of December 28th Mr. Bernard J. Skupen, operator of the Alamo River Duck Preserve, west of refuge Unit II, was found dead by a patronizing duck hunter. "Ben" had operated in the general vicinity of the Alamo River since back in 1926. Although inactive for some 30 years and living on a pension, he was connected with the printing industry and a member of the San Bernardino local of the International Typographical Union. He is survived by 5 brothers and a sister.

-----oOo-----

From San Diego County comes a different fish story of a trout which was tagged in Wyoming and retrieved along the coast of California.

The story came to light when California research workers obtained a merganser as part of a food study. The ingested, tagged fish, although intended for Wyoming's stream research work, served well for a check on merganser migrations.

-----oOo-----

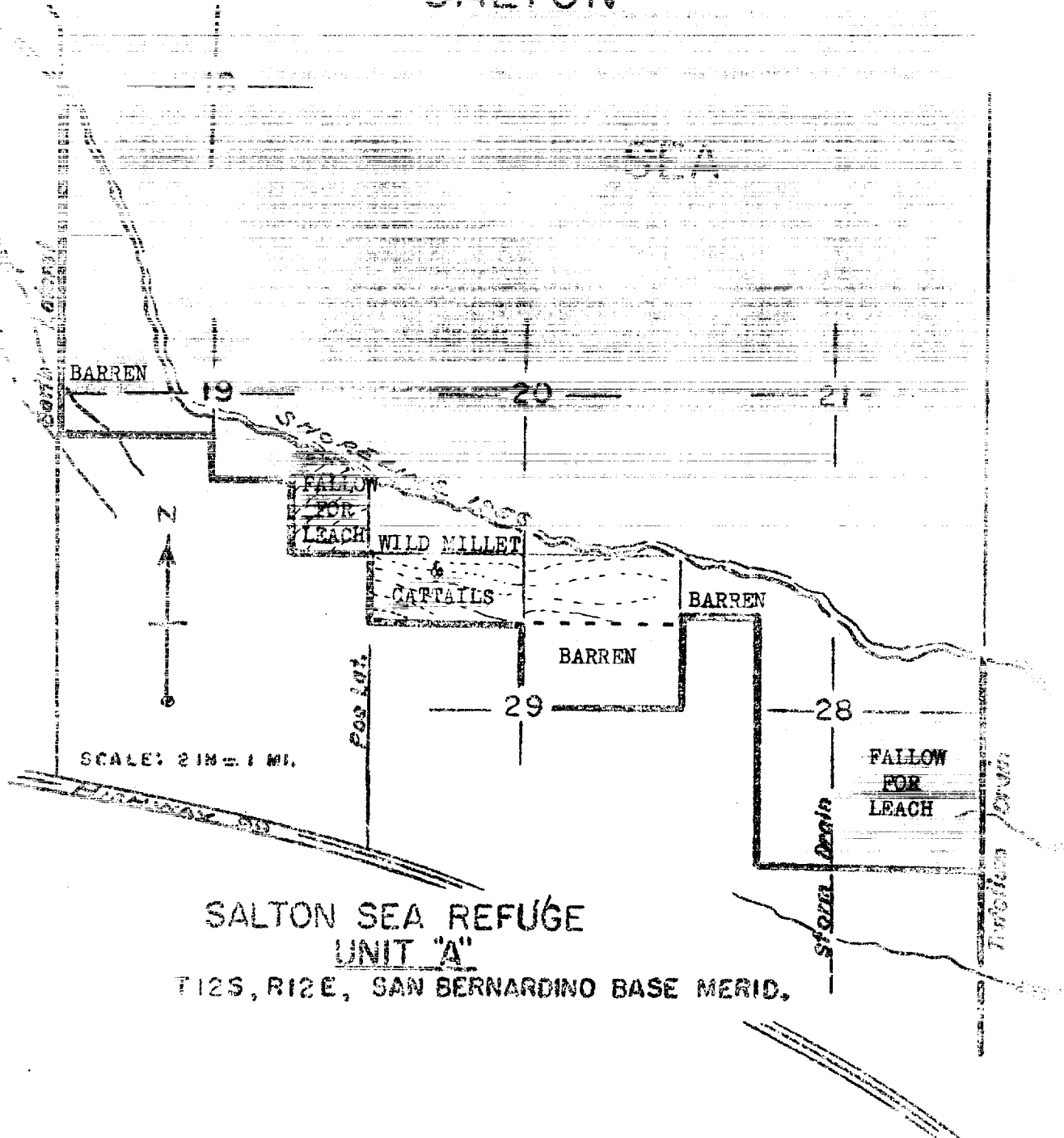


Respectfully submitted,


Edward J. O'Neill
Refuge Manager

Approved: _____

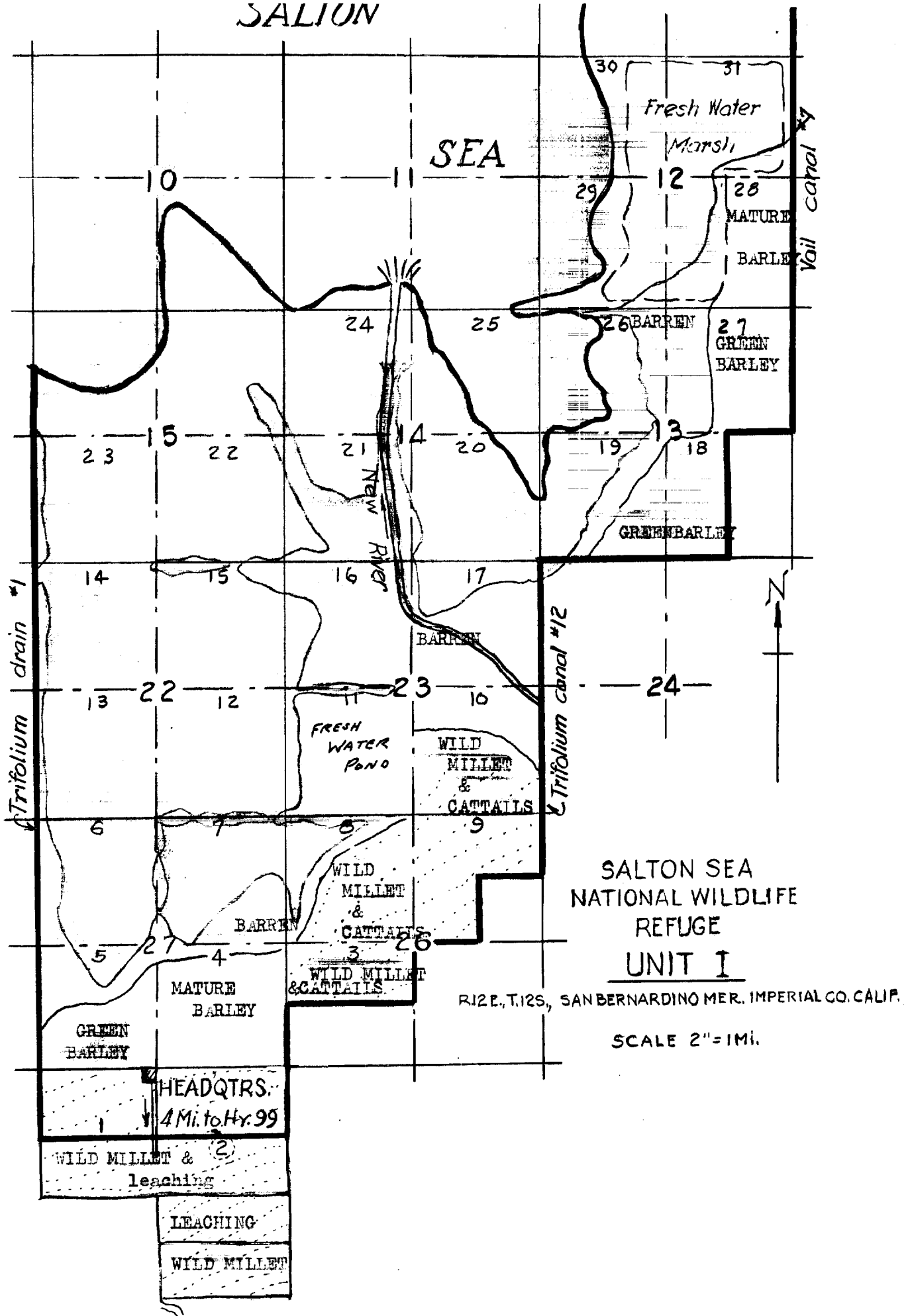
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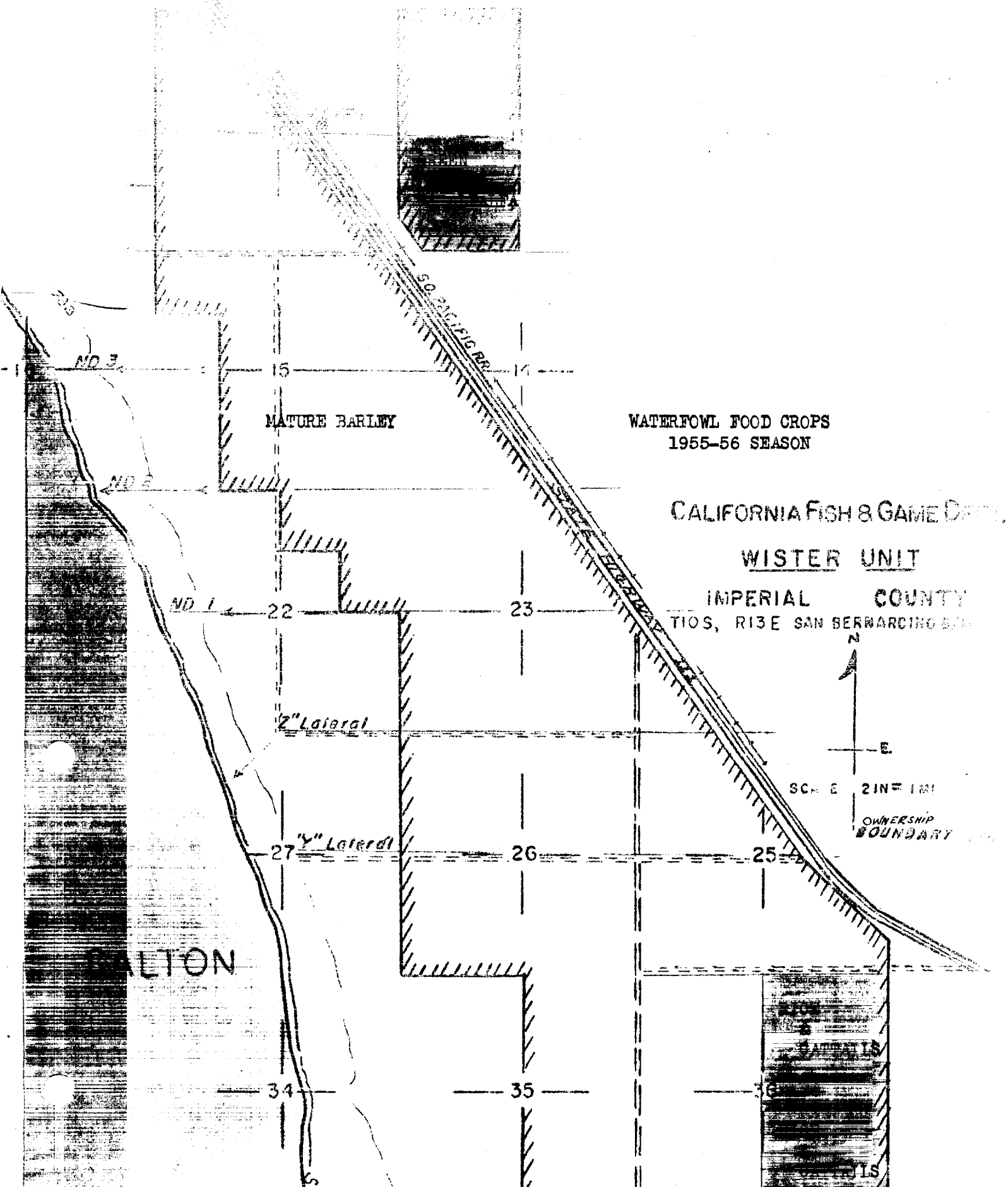


SALTON SEA REFUGE UNIT "A"

T12S, R12E, SAN BERNARDINO BASE MERID.

SALTON





MATURE BARLEY

WATERFOWL FOOD CROPS
1955-56 SEASON

CALIFORNIA FISH & GAME DEPT.

WISTER UNIT

IMPERIAL COUNTY
T10S, R13E SAN BERNARDINO BAS.



E

SCALE 2 IN = 1 MI

OWNERSHIP
BOUNDARY

SALTON

SEA

SHORELINE 1956

"Z" Lateral

"Y" Lateral

"U" Lateral

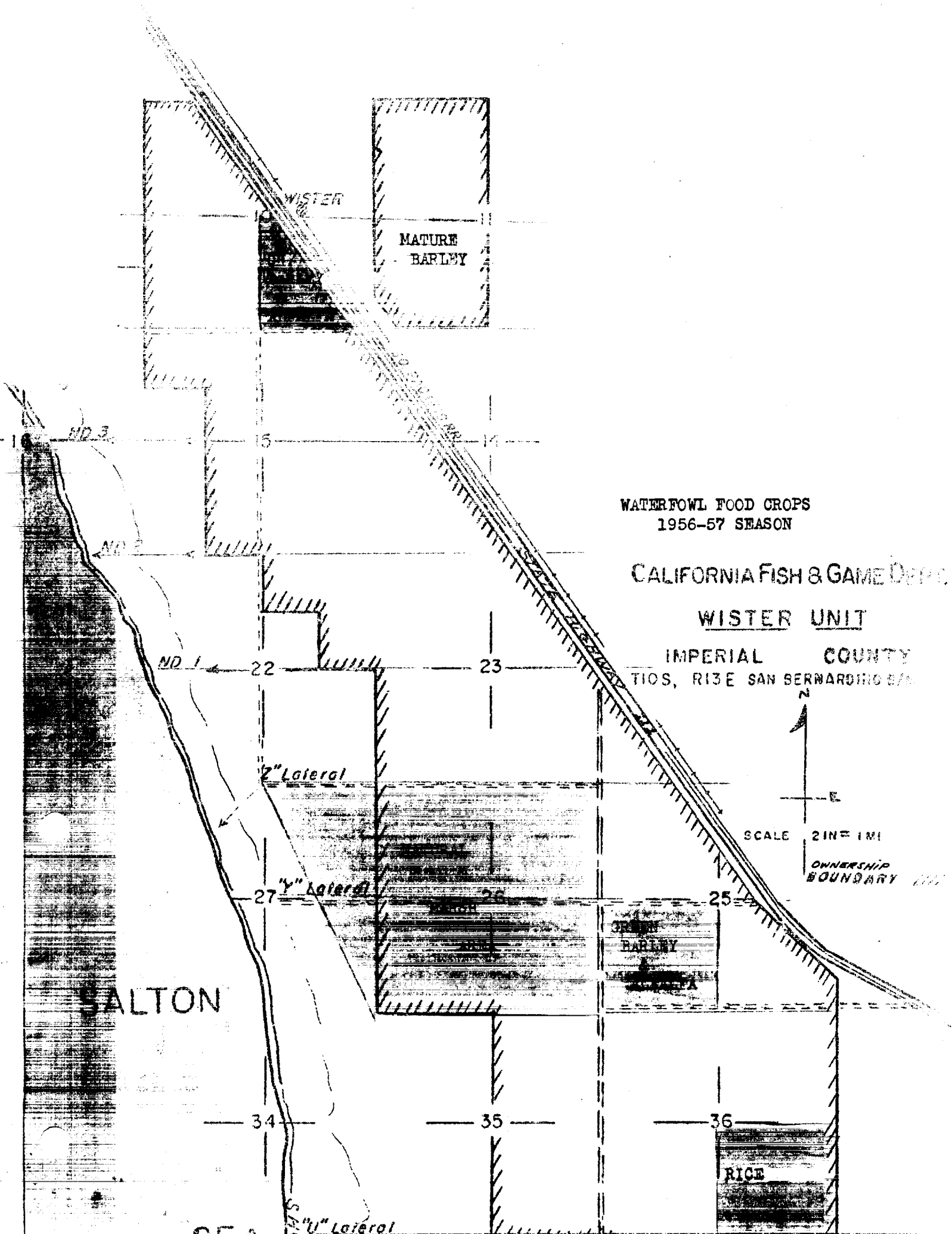
"T" Lateral

"S" Lat.

Drain

RICE
LABRATES
CANALS

RICE
CANALS



WATERFOWL FOOD CROPS
1956-57 SEASON

CALIFORNIA FISH & GAME DEPT.

WISTER UNIT

IMPERIAL COUNTY

TIOS, R13E SAN BERNARDINO S/M

N

E

SCALE 2 IN = 1 MI

OWNERSHIP
BOUNDARY

SALTON

SEA

6" Lateral

MATURE
BARLEY

GREEN
BARLEY

RICE

WATERFOWL FOOD CROPS
1956-57 SEASON

CALIFORNIA FISH & GAME DEPT.

WISTER UNIT

IMPERIAL COUNTY
T10S, R13E SAN BERNARDINO B/M

SCALE 2 IN = 1 MI

OWNERSHIP
BOUNDARY

SALTON

SEA

"U" Lateral

"F" Lateral

"S" Lateral

Drain

SHORELINE 1956

"2" Lateral

"4" Lateral

GREEN
BARLEY
&
WHEAT

RICE

MATURE
BARLEY

WILD
MILLET

MATURE
BARLEY

MATURE
BARLEY

ND 1

22

23

27

26

25

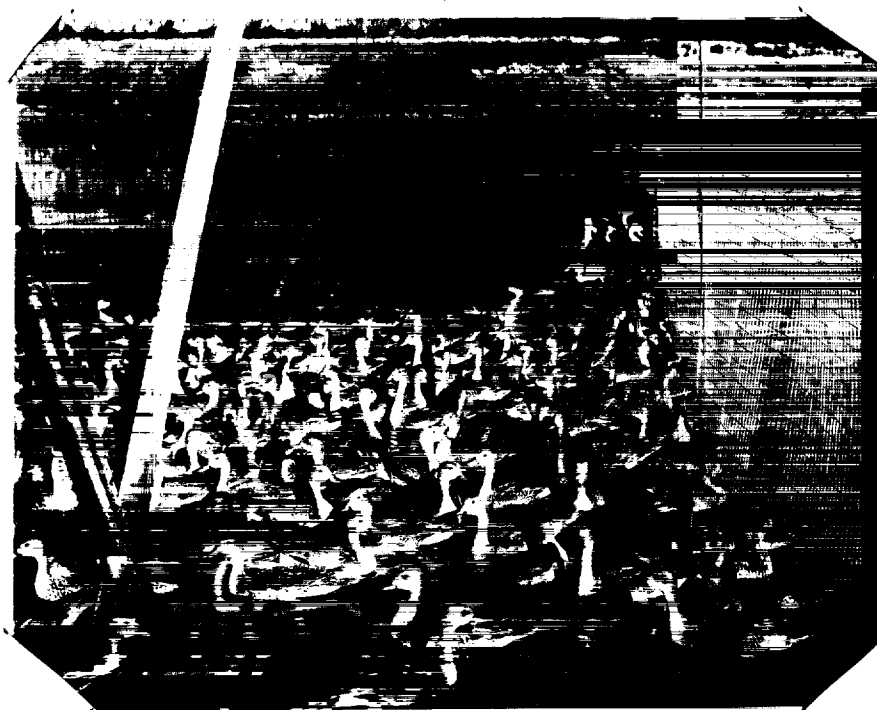
34

35

36

3

2



Some 19,000 birds were banded during 1956.
Above photo shows trapped, early fall arrivals.



Above illustrates manner in which a number
of old bands were found to have spread
apparently from temperature variations.



Snow goose taken by hunter. Contents of stomach verifies degree to which cattails were taken regardless of available mature barley, wild millet, and green forage present.



Elmore property east of Unit II. Posted area was baited heavily and shot one day each week. Blinds are located by arrows.



Snow goose taken by hunter. Contents of stomach verifies degree to which cattails were taken regardless of available mature barley, wild millet, and green forage present.



Elmore property east of Unit II. Posted area was baited heavily and shot one day each week. Blinds are located by arrows.



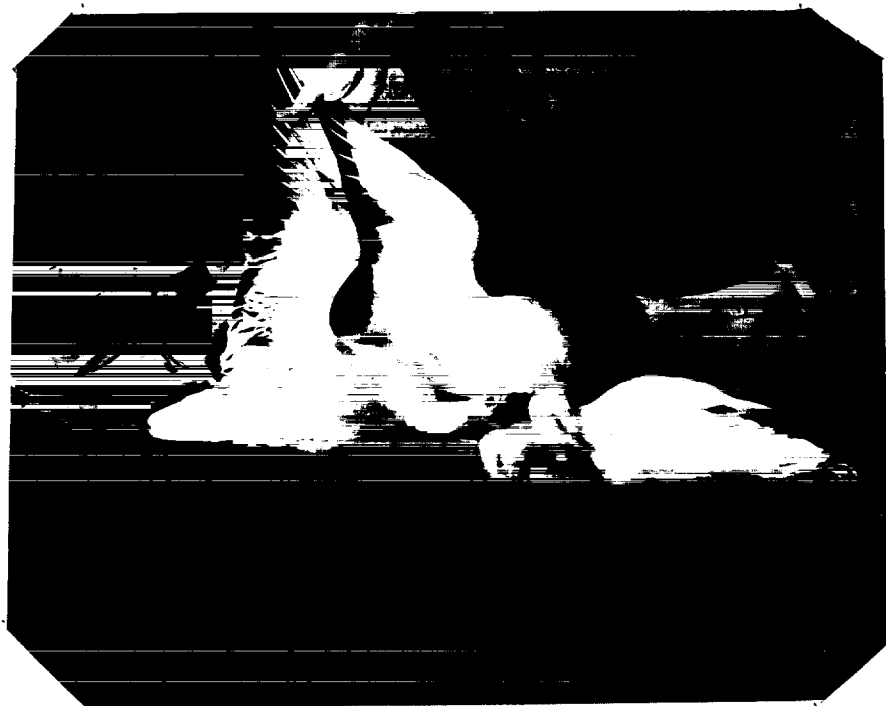
Hunters shack mounted on oil drums and anchored on Salton Sea west of old New River channel.



"Hunters" standing along east boundary of Unit II. Only place where kills can be legally retrieved is on road. State Hazard unit boundary at the right.



Mallard duck which flew into power line near refuge Unit II. Breast & neck were seared when bird made contact between wires causing power outage.



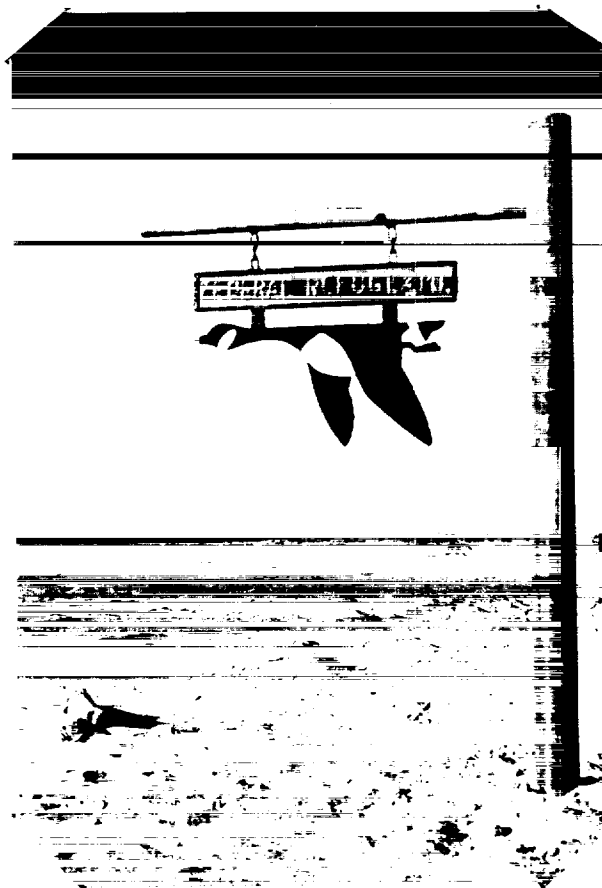
Three of the 20 Ross' Geese which were killed on refuge by hunters. Habit of flying with Canada Geese makes the species very vulnerable to gunners. Specimen in foreground shows considerable dark coloration.



Imperial Valley Game Depredations group on
refuge during October tour.



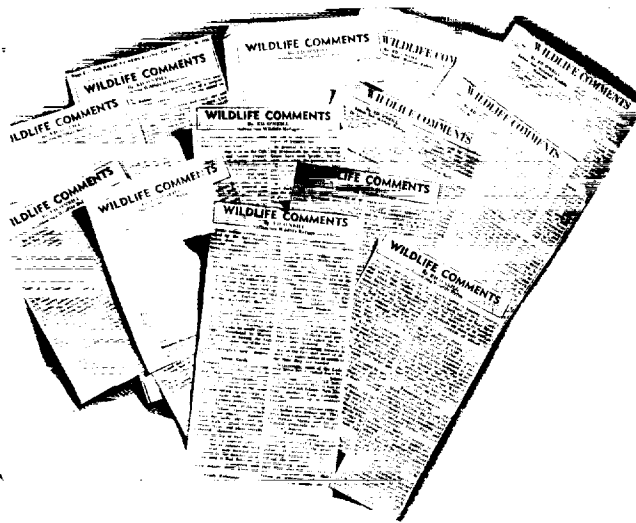
Same group as above on State Wister Unit. (L. to R.)
Wm. Nuess, Roudolph Miller, Bill Dickerson, Leslie
Edgerton, E.E. Horn, George Cason, James Houseman,
Clark Cooley, Pete Sprowl, John Parrish, Garrett,
Ward Casey, Baxter Loveland, Mack Lee, Bob Jefferson,
Jim Hunziker, Clinton Lostetter.



Two directional markers were erected on the main road to Unit I. Mechanic Steer constructed the markers from surplus-acquired stock.



One of several small directional markers indicating route over portion of Refuge Unit I.



Space for weekly column has been provided by local Brawley News. Column contains 250 words and covers various phases of Service operation, etc.