

The Imperial Waterfowl Management Area has been under development by the Service since 1945. The primary purpose of the operations has been to provide food and cover for the waterfowl during the fall and winter months, and, incidentally, to give protection to the agricultural interests in the Valley which had previously suffered heavy losses through the waterfowl "raiding" the fields where vegetables and alfalfa are raised.

Until January 1, 1947, the management of the area was under the direction of E. S. Horn, Division of Game Management. Upon his request that he be relieved of the responsibilities at that time, the project was taken over by the Refuge Division and the administrative work handled from the Regional Office until Refuge Manager Edward J. O'Neill was transferred from the Muleshoe National Wildlife Refuge, Texas, to take over the management, and reported for the assignment September, 1947.

Because of the area not being administered previously by the Division of Wildlife Refuges, this is the first Narrative Report covering the activities and development. It is hoped that a history may be made available covering the period since work first started here to the time of this report. This would be of value for future reference - record just what brought about the establishment of the area - how the early efforts contributed toward providing for the birds and relieving the damage to agricultural crops and, highly important, to record commitments, if any were made, to the agricultural interests, sportsmen and the State Fish and Game Commission that would have application to future operations.

Kenneth F. MacDonald
Regional Refuge Supervisor

1/20/48



Resident Wildlife Inspector

1948



IMPERIAL WATERFOWL MANAGEMENT AREA

≡ARRATIVE REPORT

September, October, November, December, 1947

I. GENERAL CONDITIONS

A. Weather Conditions.

A few light, widely scattered showers occurred over the Imperial Valley early in the period. Showers of any consequence were extremely localised in nature and run-off negligible taking the valley as a whole.

During September and October no precipitation extended to the Management Area. The higher, desert country at the east and north ends of the valley proper witnessed most of the local storms.

By the end of the period showers had brought approximately one-half ($\frac{1}{2}$) inch of rain to the general area.

Hot weather, which held temperatures well up in the three-figure readings, persisted into October after which mild winter conditions prevailed for the balance of the period.

Twice temperatures dropped to freezing to nip exposed, tender crops and create a thin sheet of ice on ponds.

Brisk winds bringing dust storms to the area occurred four times during October and November, but on the main the weather was considered rather mild.

B. Water Conditions.

Surplus and irrigation drain waters dumped into the Alamo, New River and drains from both ends of the valley reportedly continue to gradually swell the shoreline of the Salton Sea. On the main however, engineers and many local residents feel that the Sea has nearly reached a point of stabilization wherein the tremendous evaporation should somewhat counter-balance the deposition. Infrequent heavy rains of any run-off always upset conditions, swelling the rivers and drains to capacity and increasing the shoreline of the Sea.

The meandering , muddy New River which passes through the north portion of the present development area, has deposited many tons of silt at it's mouth. Several times during the period the stream became obstructed at the delta and for miles upstream, threatened to overflow into farming areas.

In late October and November the Irrigation District made a partial cut in the New River bank, where it passes through Section 22 R 12 T 12, to divert the river into the lower Section 22 area for the dual purpose of silting in the low land and drying up the present river channel that the project of cutting a new course in the Section 13 area could be undertaken.

The ensuing weeks witnessed increased irrigation, very little precipitation and consequently a drop in the water level. Through the remainder of the period it didnot become necessary to effect the river diversion. The channel cut and river diversion is now proposed as a mid-summer project.

C. Fires.

There were no fires detrimental to property or wildlife witnessed on the area throughout the period.

II WILDLIFE

A. Migratory Birds.

1. Populations and Behavior.

In mid-September, when the writer started recording observations on the area, there was present some 23 Fulvous Tree Ducks, an estimated 10,000 Pintails, 15 Baldpates, 4 Gadwalls, 8 Ruddy Ducks, Pelicans and a variety of shorebirds using the area.

As the season advanced toward the winter months the duck population on the area steadily increased. September 21 saw an estimated 20,000 Pintails, Baldpates, Ruddy Ducks, Gadwalls and Green-winged and Cinnamon Teal present. One month later, October 21st, witnessed the presence of some 25 Snow and 350 Canada Geese. By now the ducks had decreased in numbers to about 3,700.

Throughout the following weeks the influx of ducks was rather gradual and reportedly not so pronounced as the late summer flight. On November 23 an estimated 5,530 ducks were present with Redheads, Shovellers and Mallards added to the list of species. An estimated

850 Snows, 175 Canadas and 2 Cacklers represented the geese of the area.

The December 20 estimates disclosed 12,810 ducks and 3,500 geese here. Progressively the numbers swelled until a peak of 6,370 geese of 4 species and 4,060 Coots were accounted for.

Two Whistler Swans used the area, one becoming sick or afflicted in late December.

Among the hunter's bag limits checked Buffleheads, Canvasbacks, Redheads, Scaups and Gadwall were all represented as well as all of the foregoing duck species. Diving ducks however, were never numerous on the development area.

Mourning Doves were present in sizable flocks through the period. During October the population was up to 2,800 birds and about 900 doves remained to winter here.

2. Food and Cover.

Early in the period natural foods in the form of bulrush (*Scirpus p.*), Wild Millet (*Echinochloa c.*), etc played an important part in the diet of ducks on the area judging from droppings collected and examined.

About mid-November the increasing geese and ducks began to heavily utilize the planted rice and Wild Millet on the area. Cat-tail (*Typha d.*) was turned to by both ducks and geese and many, many acres of the tender current-year growth were "grazed" to the ground. Green patches of bulrush likewise were heavily taken and this plant appeared the most important single seed-bearing species growing in the vicinity so far as ducks were concerned.

The hemp (*Sesbania m.*) fields on the area were attractive to ducks wintering here although only small traces of the seed were found in droppings collected in the fields.

Early morning flights of ducks which were feeding in surrounding agricultural fields frequently ended in these flooded hemp fields, supposedly for the loafing shelter provided by rank growth.

On November 18 supplementary feeding with barley seed at the rate of about 15 sacks per day was started. Seed was spilled along the patrol roads adjacent to land units where the ducks congregated daily. By mid-December the Pintails concentrated on the area began to leave considerable of the barley seed and the amount fed was proportionately decreased.

During the hunting season all feeding was stopped. Approximately 750 sacks of supplementary barley seed were fed to ducks during the period.

The rice and most of the Wild Millet or Water Grass growths planted on the area bore mostly sterile grain heads, which failed to develop beyond the floral stage, due presumably to the concentrations and upward movement of alkaline minerals in the soil.

3. Diseases.

Botulism accounted for an estimated 250 ducks in the lower flooded area.

B. Upland Game Birds.

1. Population and Behavior.

Valley Quail are relatively common as compared with the majority of the surrounding heavily farmed country. Some 250 resident birds were recorded on the area during the period covered. Most quail were observed in Section 22 where the burned barley seed had been dumped.

Piling of slash and downed trees in the area has provided some excellent escape cover near the feeding areas where water is also available.

Pheasants are relatively abundant on the area. Early in September some 400 mixed and 300 male hatchery-reared birds were released in the Section 22 area by the California Division of Fish and Game. Survival studies were not undertaken but up until mid-November only seven carcasses or feather remains of young birds were encountered.

For fully a month following release most of the young birds remained intact in a large group at the point of liberation. Once at night some 25 young birds were observed roosting on machinery and brush not more than 18 inches above the ground in this heavily populated raccoon area.

The regular hunting season and gun pressures swelled the population of pheasants on the development area and twice estimates indicated population of the "chinks" to be about 800 on the area proper.

2. Food and Cover.

Natural foods were supplemented by the salvaged, burned barley seed previously scattered in the Section 22 area. All upland upland birds

and many songsters spent many hours in the vicinity utilizing the best of the grain.

Spoiled lettuce seed turned over to the Service by growers provided some food for doves, quail and pheasants.

In early November when the tillage unit was in operation on the area, feeding pheasants followed the equipment in places during the early morning hours.

Twice pheasants were observed stripping the lower leaves from hemp (Sesbania m.) plants.

A single dove found dead at one of the storage lots had approximately 10% hemp seed in it's stomach, the balance being barley seed.

3. Disease.

No disease in evidence during the period.

C. Big Game Animals.

1. Population and Behavior.

On October 8 a half-grown bear appeared in a field adjoining the Management Area. Several accounts came in following the first sight record by a farm employee and the last sign of the bear in the vicinity was October 13 when the tracks of the young bear in accompaniment with an older adult bear was observed. Residents expressed the belief that the mammals had ranged in from the desert mountains to the west.

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

A number of escaped Chester White and Berkshire pigs range freely over the entire area. Occasionally hunting parties originating locally account for a few of the porkers although the general concensus of opinion would indicate they are now on the increase.

Raccoons are numerous. Scarcely a week-and passes that hunting parties with dogs and special regalia do not visit the area for the sport of tracking down these animals. *General*

As late as September 19 tracks of an adult with 2 young 'coons was noticed on the area.

Seat analysis early in the period showed a consistently high use of Screwbean (*Strombocarpa* o.). There can be little doubt that this species accounts for the vast majority of sick ducks prior to the time that scavengry species of hawks migrate into the area..

Jack Rabbits and Cottontails are common though not abundant at present. Hunters account for a large number of cottontails in season.

Coyotes and skunks inhabit the area but very few observations were made of the two species.

Desert Foxes are not uncommon in the higher desert country between El Centro and Yuma. The writer made almost daily trips between Imperial Valley and Yuma during the forepart of the period and tabulated below is the result of observations as recorded.

Desert Fox Observations

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Number Observed</u>
9/18	8:45 pm	12-mi. southwest Winterhaven	2
9/23	9:30 pm	" "	12
9/25	10:00 pm	" "	1
9/26	8:15 pm	15 "	1 (dead)
9/30	8:00 pm	" "	1
10/6	7:30 pm	22 "	1
10/8	8:00 am	10 "	1 (dead)
10/10	11:00 pm	11 "	4
10/10	7:30 pm	22 "	3
10/13	12:30 pm	" "	1 (dead)
10/15	12:45 am	22 & 3 "	2 & 1
10/17	7:30 pm	10 "	1
10/21	9:30 pm	16 "	1
10/24	10:00 pm	13 "	1
10/29	8:40 pm	11 "	1
10/30	7:30 pm	" "	2

E. Predaceous Birds.

No crows, ravens or magpies were recorded during the period.

F. Fish

The management area proper presently supports only an occasional fish which passes up the New River and into the irrigation ditches. Most of the fish are taken in the adjacent Salton Sea and New River where Mullet is the principal species concerned.

In early October one fisherman from Holtville, California took one 21-pound mullet from the Salton Sea. This appears to be somewhat of a large specimen since the average large mullet reported ranges from 8 to 12 pounds.

III. REFUGE DEVELOPEMENT AND MAINTENANCE

A. Physical Development.

No new roads, trails or structures were undertaken during the period.

B. Cultivated Crops.

Waterfowl wintering on the area made constant use of the food crops produced. Some 1360 acres of prepared agricultural crops and flooded areas provided considerable food, cover and resting space.

The 320 acres of rice were kept constantly flooded and throughout the previous period Wild Millet and Cattail became established in the fields. Surprisingly these two plant species held the heavy concentrations of geese long after the green rice had matured and built up considerable plant fiber.

Barley planting was started November 11 and two weeks later geese were utilizing the green tender growth. Periodically they completely "grazed" the 320 acres of green feed so closely that for days afterward the fields were without green color.

During the period Section 13 to the north, was added to the developments and by the end of the quarter about 160 acres of new ground was ready for irrigation and planting.

C. Collections.

No collection of propagules, specimens, etc was undertaken.

D. Receipts of Seed and Stock.

During September and October two shipments in the amount of 1340 sacks of barley seed arrived from the Tule Lake National Wildlife Refuge, Tule Lake, California.

IV. ECONOMIC USE OF REFUGE

No economic use permits are at present in effect on the area.

V. PUBLIC RELATIONS.

A. Recreational Uses.

No recreational facilities exist on the area and no similar activities took place during the period. An estimated 150 visitors toured the refuge during the heavy waterfowl concentrations.

B. Refuge Visitors.

Official visitors to come to the area are listed below.

<u>NAME</u>	<u>DATE</u>	<u>TIME SPENT</u>	<u>PURPOSE OF VISIT</u>
A. W. Elder U.S. Game Mgt. Agent L.A., California	9/24	1/2 hour	Contact, law enforcement & waterfowl observations.
Albert Farres Game Breeder-State Calipatria, Calif.	10/24	1 hour	Stocking area with pheasants.
E. B. Horn Biologist-Game Mgt. Berkeley, Calif.	10/7 10/8 11/17	1 hour 1 hour 1/2 hour	Contacts, observations, etc. " " " " " "
R. W. Hart Game Supervisor- State-S.P., Calif.	10/21 10/18	1 1/2 hour 1/2 "	" " "
D. E. Woodward Supervisor-Lands Portland, Oregon	11/19	2 1/2 "	" land acquisition insp.

<i>Blair</i> - Scharr Land Acquisition-Service Portland, Oregon	11/19	2 1/2 hours	Contact, land acquisition & inspection tour.
Harry D. Willis Regional Engineer Portland, Oregon	11/20 to 27	5 days	Land survey for contour borders
E.F. MacDonald Reg. Sup. Refuges Portland, Oregon	12/14 to 18	5 days	Inspection tour.
Gordon R. Bahr Calif. Legislature L.A., California	12/24	1/2 hour	Tour of area.
- Connors Federal Bureau Investigation El Centro, Calif.	12/26	1 hour	Investigation theft of Service tools & equipment.
John Laughlin Game Supervisor State-Riverside, California	12/15	1/2 hour	Contact & tour of area.
Laurence Rubke	12/15	"	" " " "

C. Violations.

A number of times during the last half of the regular season hunters entered the area and hunted both ducks and pheasants. On December 27 five hunters were apprehended on the area and the case turned over to the district Game Management Agent for Federal Court action.

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Report by:

Date : January 9, 1948

Edward J. O'Neill
Edward J. O'Neill
Refuge Manager

Approved:

MIGRATORY BIRDS

 Refuge Imperial National Wildlife Area, Months of September to October, 1947
California

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti- mated Total	Number Using Refuge
Mallard	50	11/14		100	12/13						150
Gadwall	4	9/23		500	9/21						700
Baldpate	15	9/23		6100	1/4						2000
Pintail	10,000	9/18		14,000	1/4						20,000
Green-winged Teal	8000	9/21		8000	9/21						9,000
Cinnamon Teal	500	9/21		500	9/21						900
Redhead	200	10/14		200	11/14						600
Canvasback	1	12/7		1		1	12/7				10
Scaup	8	11/10		75	11/14						100
Bufflehead	20	1/4		20							20
Ruddy Duck	8	9/19		1500	10/6						1500
Shoveller	15	10/14		700	12/27						7000
Swan, Whistling	1	12/29		2	1/4						2
Canada goose	7	10/12		200	11/29						200
Cackling goose	2	11/23		2							2
White-fronted goose	4	11/29		400	12/27						400
Snow goose	18	10/24		6000	12/26						6000

REMARKS: (Pertinent information not specifically requested)

(54884)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

- (1) SPECIES: Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
- (2) FIRST OBSERVED: The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
- (3) BECAME COMMON: The date the species became common on the refuge.
- (4) PEAK CONCENTRATION: The greatest number of the species present on any one date or limited interval of time.
- (5) LAST OBSERVED: The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.
- (6) YOUNG PRODUCED: Estimated number of young produced based upon 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 are to be omitted.
- (7) TOTAL: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

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

MIGRATORY BIRDS
 (other than waterfowl)

Refuge Imperial Waterfowl Mgt. Area, Months of September to December 1947
California

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Sandhill Crane	(verbal reports - October)									
II. <u>Shorebirds, Gulls and</u>										
<u>Terns:</u>										
Killdeer	8	9/18	120	12/7						200
Wilson's Snipe	3	12/16	6	12/29						10
Long-billed Curlew	15	11/5	60	12/14						75
Black-necked Stilt	9	10/14	9							10
American Avocet	9/	9/19	400	11/29						400
California Gull	300	9/21	800	11/16						2000
RING-BILLED	PREV PERIOD		15,000	12/10						15,000

(over)

(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	600	9/18	2000	11/19		3000
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	3	12/20	3			3
<p>NOTE: Numerous shorebirds used the area during fall migrations however, the lack of proper field equipment made specific identification impossible.</p>						
					Reported by Edward J. O'Neill	

INSTRUCTIONS

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

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

Refuge Imperial waterfowl management area, Calif. Year 1947

(1) Species	(2) Density	(3) Young Produced	(4) Removals					(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population as of Dec. 31	(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Losses	Number	Source		Percentage	
<p>NO BIG GAME ANIMALS ON THE AREA.</p>														

INSTRUCTIONS

Form NR-3 - BIG GAME

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

Refuge Imperial Waterfowl Mgt. Area, California Year 1947

Botulism

Lead Poisoning or other Disease

Period of outbreak September - October

Period of heaviest losses October

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	<u>250</u>
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized No. Recovered % Recovered

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

Areas affected (location and approximate acreage) 120

Western portion of area flooded by waste water from rice fields.

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

Condition of vegetation and invertebrate life No

natural vegetation established except sparse growths of Typha and Scirpus. Bush dead, flooded Tamarix, Atroplex.

Remarks _____

Kind of disease _____

Species affected _____

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

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

Refuge Imperial waterfowl Mgt. Area, California Year 1947

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
NO FISHING OR FISH ON AREA.								

REMARKS:

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Imperial Waterfowl Mgt. Area, California Year 1947

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
NO PLANTINGS DURING YEAR.								

TOTAL ACREAGE PLANTED:

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

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge ~~Special Waterfowl Management Area~~, California

Months of ~~September~~ thru ~~December~~ 1947.

(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 USE			
				TRANS- FERRED	SEEDED	FED		TOTAL	SEED	FEED	SURP.
Barley	6000 bu	2680 bu	8680 bu	0	600 bu	1500 bu	2100 bu	6580 bu	3000 bu	3580 bu	0
(Alfalfa)	2000 lbs	0	2000 lbs	0	0	0	---	2000 lbs	2000 lbs	0	0
(Water grass)	1000 lbs	0	1000 lbs	0	0	0	---	1000 lbs	1000 lbs	0	0

(8) Indicate shipping or collection points Westmorland, California

(9) Grain is stored at Property of Mr. James E. Hall Westmorland, California.

(10) Remarks.....

NR-8a

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 lbs., Corn (ear)—70 lbs., Wheat—60 lbs., Barley—50 lbs., Rye—55 lbs., Oats—30 lbs., Soy Beans—60 lbs., Millet—50 lbs., Cowpeas—60 lbs., and Mixed—50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)Refuge Imperial Waterfowl Mgt. Area, California Year 194 7

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Barley					2500 lbs	Fale Lake Refuge	2500 lbs	none
Water Grass (Millet)					1000 lbs	Open mkt.	1000 lbs	none
Alfalfa					2000 lbs	" "	2000 lbs	none
Sunflower (Giant)					15 lbs	Regional Office	0	none

HAYING AND GRAZING

Refuge ~~Imperial National Wildlife Area, California~~ Year 1947

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
<p>NO ECONOMIC USE OR HAYING DURING YEAR.</p>									

Totals:

Acreage grazed _____ Animal use months _____ Total income Grazing _____

Acreage cut for hay _____ Tons of hay cut _____ Total income Haying _____