

UNITED STATES GOVERNMENT

Memorandum

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MANAGER
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ASSISTANT
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CLERK
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BIOLOGIST

TO : Refuge Manager, Stillwater Wildlife Management Area, Fallon, Nevada

DATE: May 28, 1969

FROM : Assistant Regional Refuge Supervisor, Portland, Oregon

SUBJECT: 1968 Narrative Report

FILE _____ DESTROY _____

Your 1968 Narrative Report is informative and well documents events at Stillwater during the past year. We note that Biologist Napier has contributed significantly to the writing as has Assistant Manager Good and Clerk Cress. Their enthusiasm for the refuge program is displayed in their contributions.

In view of the limited time of Regional and Central office reviewers, we suggest that future reports be somewhat less voluminous. The Stillwater section of the 1967 Narrative Report comprised 28 pages whereas the 1968 report consisted of 37 pages. It is difficult, if not impossible, for this office to dictate the volume of a report. We can only urge that brevity be tempered with the inclusion of pertinent information.

Since monthly Safety Reports are forwarded to the Regional Office, you should not include details of Safety Meetings in the Narrative Report. A statement that monthly Safety Meetings were held plus any noteworthy Safety events that occurred during the year would suffice.

Suggested condensations under "Refuge Participation" would be similar to the following: Worden attended 18 sessions at various times during the year related to the Washoe Project and water distribution problems. (18 paragraphs are condensed into one).

It is acceptable to include significant personal events which pertain to refuge personnel. We question, however, the inclusion of five references to the Likes Lake outing (pgs. 28, 37, and photographs #33 - 35).

Your picture section, though somewhat lengthy, was impressive. You should concentrate photographic efforts, but not necessarily limit them to examples as found on pgs. 17, 18 and 41 and photo numbers 14, 16, 18, 19, 21, 22, 23, 28 and 29. Avoid duplication such as 14 and 15, and 20 and 21. In these cases, 15 and 20 could be omitted without impairing the report.

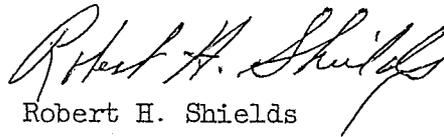
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Incidentally, NR-6 forms are no longer required.

We believe you are on shaky ground by permitting Gus Bundy and Mrs. Nappe privileges on Anaho Island which are not extended to other requestors. This is a sticky problem as you are well aware. A firm policy is needed.

We trust you will receive the critical remarks in a constructive view in order that your already very good report will become even better.


Robert H. Shields

STILLWATER WILDLIFE MANAGEMENT AREA
*ANAHO ISLAND NWR
FALLON NWR

REFUGE NARRATIVE REPORT

CALENDAR YEAR

1968

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
UNITED STATES DEPARTMENT OF THE INTERIOR
FALLON, NEVADA

NARRATIVE REPORT

STILLWATER WILDLIFE MANAGEMENT AREA

Calendar Year

1968

PERSONNEL

Larry H. Worden	- - - - -	Refuge Manager
James R. Good	- - - - -	Refuge Manager
Larry D. Napier	- - - - -	Wildlife Biologist (Management)
Illa E. Cress	- - - - -	Refuge Clerk
Manuel Olano	- - - - -	Foreman II, Maintenceman
Ernest J. Brooks	- - - - -	Maintenceman II
Eugene E. Duffney	- - - - -	Maintenceman II
Coy C. Dyer	- - - - -	Operator General (Heavy Duty)
Stanley G. Ford	- - - - -	Laborer (06-11 to 09-13-68)
Harold W. Freeman	- - - - -	Maintenceman III
Eusebio Gonzalez	- - - - -	Student Aid (YOC) (06-10 to 08-30-68)
Jeanette Hooper	- - - - -	Neighborhood Youth Corps (NYC)

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I GENERAL

A. Weather Conditions

Weather in 1968 was very normal.

The following chart summarizes weather data obtained from the U. S. Weather Bureau Station maintained at the Nevada State Experimental Farm at Fallon.

	<u>Precipitation</u>		<u>Temperatures</u>	
	<u>1968</u>	<u>Normal</u>	<u>Max.</u>	<u>Min.</u>
January	0.32	0.60	64	4
February	.96	.59	70	6
March	.14	.49	79	17
April	1.00	.44	80	20
May	.53	.57	94	30
June	.20	.33	100	36
July	.07	.16	102	42
August	.58	.16	97	37
September	.03	.24	97	27
October	.19	.45	83	22
November	.47	.33	73	14
December	<u>.35</u>	<u>.59</u>	<u>62</u>	<u>- 2</u>
Totals	4.84	4.95	102	- 2 Extremes

B. Habitat Conditions

Water. Habitat conditions were in a sorry shape for the most part this year considering the fact that the year began with all units full, a sizeable acreage was taken out of production early in the spring, and intensive efforts were made to economize on water in many ways. The Truckee-Carson Irrigation District released their full allotment of irrigation water. Stillwater has no water in storage and with normal runoff, will not get much return flow until April. It should now be obvious to everyone that Stillwater cannot survive receiving only waste and return flow from irrigation.

The table of water data on Page 2 is computed on the standard water year, October 1 to September 30. This has been changed to January 1 through December 31 for next year because the irrigation season extends into November. Confusing and misleading data result from records of one irrigation season split into two water years.

Sierra snowpacks were light last winter with early forecasts of average runoff in the Truckee and Carson Basins. By April 1, forecasts fell to

STILLWATER WILDLIFE MANAGEMENT AREA WATER SUPPLY
WATER YEAR ENDING SEPTEMBER 30, 1968
(Acre Feet)

	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEPT</u>	<u>TOTAL</u>
CARSON RIVER BELOW LAHONTAN	29390	13310	540	324	269	9790	36360	57150	53750	63230	48010	42810	354,933
PRIMARY MARSH WATER SUPPLY													
Diagonal Drain	6800	3260	715	301	325	595	970	2830	3190	3890	3380	2790	29,046
Canvasback Club	2260	1963	1000	220	260	50	234	1709	954	237	238	145	9,270
Paiute Drain	1060	967	91	31	4		298	629	980	639	587	464	5,750
Indian Lakes	930	700	715	630	466			505	296	14	120	52	4,428
Sub-Total	11050	6890	2521	1182	1055	645	1502	5673	5420	4780	4325	3451	48,494
Less Can. Club Delivery	520	340	380	60		100	108	560	334	648	902	300	4,252
Receipts, Primary Marsh	10530	6550	2141	1122	1055	545	1394	5113	5086	4132	3423	3151	44,242
Marsh-Pasture Water Req.	4608	2151	717	717	1434	3585	6657	10087	11725	13312	12493	9318	76,804
Surplus or Deficiency	5922	4399	1424	405	379	3040	5263	4974	6639	9180	9070	6167	32,562
INDIAN LAKES WATER SUPPLY													
Less Irr. Del. (Private)	1730	965	835	766	115	235	1240	877	984	725	1040	1158	10,670
Sub-Total	100	50				80	60	30	23	20	40		403
Delivered to Primary Marsh	1630	915	835	766	115	155	1180	847	961	705	1000	1158	10,267
Receipts, Indian Lakes (Net)	930	700	715	630	466			505	296	14	120	52	4,428
Water Requirement	700	215	120	136	351	155	1180	342	665	691	880	1106	5,839
Surplus or Deficiency	306	153	51	51	102	255	459	663	765	867	816	612	5,100
Surplus or Deficiency	394	62	69	85	453	100	721	321	100	176	64	494	739
PELICAN ISLAND WATER SUPPLY													
Water Requirement	1640	1580	465	656	1070	649	383	828	256	92	389	227	8,235
Surplus or Deficiency	568	284	95	95	190	474	852	1231	1421	1611	1515	1137	9,473
Surplus or Deficiency	1072	1296	370	561	880	175	469	403	1165	1519	1126	910	1,238
TOTAL AREA WATER RECEIPTS	12870	8345	2726	1914	1774	1349	2957	6283	6007	4915	4692	4484	58,316
TOTAL AREA WATER REQUIREMENT	5482	2588	863	863	1726	4314	7968	11981	13911	15790	14824	11067	91,377
SURPLUS OR DEFICIENCY	7388	5757	1863	1051	48	2965	5011	5698	7904	10875	10132	6583	33,061

Calendar Year 1968

"Official" Water Receipts

Stillwater Diversion Canal	-	22,320
Paiute Diversion	-	3,440
Indian Lakes	-	10,130
Canvasback Gun Club ¹	-	9,440
Carson R. below Fallon ²	-	<u>4,060</u>
		49,390
10% - Unmeasured Receipts		<u>4,940</u>
		54,330
Private Deliveries		
Canvasback + Serpa		<u>3,890</u>
		<u><u>50,440</u></u> A.F.

1 Stillwater Slough - 23,670, but
Canvasback Club used 14,226 A.F. (60%).

2 Recorder showed 7,160 A.F., but
3,100 A.F. went to Carson Sink
where it was not useable.

STILLWATER WILDLIFE MANAGEMENT AREA WATER SUPPLY
OCTOBER 1 TO DECEMBER 31, 1968
(Acre Feet)

	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>Calendar Year Total</u>
CARSON RIVER BELOW LAHONTAN	24330	9380	172	345,575
PRIMARY MARSH WATER SUPPLY				
Diagonal Drain	2010	1470	587	- 2,338
Canvasback Club	1695	2338	1364	- 9,444
Paiute Drain	151	62	57	
Indian Lakes	665	958	509	
Sub-Total	4521	4828	2517	
Less Can. Club Delivery	498	126		3,636
Receipts, Primary Marsh	4023	4702	2517	
Marsh-Pasture Water Req.	4608	2151	717	
Surplus or Deficiency	585	2551	1800	
INDIAN LAKES WATER SUPPLY	1470	1220	530	- 10,360
Less Irr. Del. (Private)				- 253
Sub-Total	1470	1220	530	
Delivered to Primary Marsh	665	958	509	
Receipts, Indian Lakes (Net)	805	262	21	
Water Requirement	306	153	51	
Surplus or Deficiency	499	109	30	
PELICAN ISLAND WATER SUPPLY	1050	1210	180	- 6,990
Water Requirement	568	284	95	- 9,473
Surplus or Deficiency	482	926	85	2,483
TOTAL AREA WATER RECEIPTS	5878	6174	2718	- 49,145.
TOTAL AREA WATER REQUIREMENT	5482	2588	863	- 91,377
SURPLUS OR DEFICIENCY	396	3586	1855	42,232

NOTE

This sheet was prepared so that record of water receipts for this three-month period would not be lost.

This is necessary as water recording was changed effective January 1, 1969, from a Water Year (October 1 to September 30) to a Calendar Year basis thereby excluding these months from inclusion in a Stillwater Wildlife Management Area Water Supply table.

Useable Supply 3881
9473
5592

Unusable to Sink.
3,109

should be

about 71% of normal on the Truckee River and 48% on the Carson at Fort Churchill. Low point of Lahontan Reservoir storage was November 2 with 80,124 acre feet being recorded. Flows to Stillwater were minimal during January with Indian Lakes receipts being cut off at Sagoupe Dam allowing Truckee-Carson Irrigation District to clean out the D-Line Canal. Stillwater Point Reservoir dropped one foot in February with releases to refill Pintail Bay and Nutgrass Unit. Refilling of Pintail Bay and Nutgrass Unit began on March 20. Reservoir storage gradually decreased the entire year due to low receipts.

The table shows releases from Lahontan Reservoir and receipts and distribution to the Management Area by the month. Twelve and one-half percent of the Lahontan releases went to the Stillwater primary marsh. A deficiency of 32,562 acre feet was the result. Actually, this figure is misleading. Two units, Willow-Millen and Swan Lake were drained because of the expected water shortage. Also, East Alkali Flats 1 and 2, and for the most part Division Pond, were dry the entire year. Actually, the deficiency is not as high as it might appear. Marsh requirement is water needed to maintain all units at operational level. Since some of the units were dry during the year, the water requirements were reduced. The shortage of water was really felt during summer months when certain areas supporting aquatic growth could not be maintained at deep enough levels and were lost.

Monthly salt readings were taken with a Solu Bridge throughout the primary marsh to keep track of salinity increases or decreases. The highest reading was in northeast Nutgrass Unit in July when water temperature at 4" of depth was 100° F., and 100,000 micromhos/cm were recorded. Water should have been spilled from the Nutgrass and replaced with fresher water to reduce salinity.

Pelican Island showed a deficiency of only 1,238 acre feet in water receipts this year. The actual deficiency was much greater proving that the calculated requirement for this area is far too low. Ducks, geese and shorebirds were using this area all the time in fair numbers until the middle of June. Water receipts to the lower Carson were almost cut in half by April. This affected livestock forage as well as goose, duck, and shorebird food and habitat. By the end of July, water conditions warranted permittees to ask for a meeting with refuge personnel to let their cattle graze in the marsh. This was agreed on starting September 1. Water in excess of requirements reached the unit from October through December, resulting in a small amount spilling past the dike.

Unit occurrences during 1968:

Stillwater Point Reservoir. The reservoir was never completely filled during the entire year. Its highest level was in January when it was 0.28 feet below operating level. It dropped slowly from this through the rest of the year until December when it was 8.0 feet below operating level.

Upper Foxtail. Was full in January with a steady decrease and some fluctuations in May, June, and July of between 0.15' and 0.45', then a decrease through December when it was 1.85' below operating level.

Foxtail and Dry Lakes. Over operating level 0.16' to 0.66' during entire year. At end of December 0.1' below operating level.

East Alkali Flat No. 1. Over operating level 0.66' with steady decline until it was completely drained in May.

East Alkali Flat No. 2. Dry all year.

Division Pond. Was 0.06' below operating level in January and with a steady decline was 2.1' below operating level at end of December. Most of year this unit was a damp mudflat.

Cattail Lake. Below operating level 0.12' in January, increased to 0.04' below in April, then fluctuated 0.04' to 1.56' rest of year until reaching 0.64' below operating level in December.

Goose Lake. Was 0.04' over operating level in January, went to 0.98' over in February, decreased to 0.36' below operating level in May then increased with some fluctuations to the end of December when recorded level was 0.60' over operating level.

Tule Lake. Full all year except May, June, and July when level was between 0.32' and 0.02' below operating level.

Lead Lake. Was below full level all year except November and a few weeks in May and June. Levels vary in this unit with water received and distributed to other units.

Willow-Millen. Was 0.26' below operating level in February--its peak level for 1968. It was decided to dry up this unit because of the lack of water so there was a steady decrease in water level until it was below staff gauge in July. Some leakage through structures kept water in deepest channels all year.

Swan Lake. At beginning of year this unit was full. This unit was also dried up in 1968 because of water shortage. Swan Lake Check. Water was received from Swan Lake by draining and by using portable ditch pump. Water was also delivered through this unit from the 4-Way Structure (No. 5) to the 3-Way Structure (No. 16) then into Pintail Bay and West Nutgrass. It was below operating level most of the year until November and December when it was above.

Pintail Bay. Was 1.15' above operating level in January but declined after that until November and December when it was filled to 1.50' over operating level.

Nutgrass Unit. West and South Units were kept as full as possible to maintain level in North Unit, but they fluctuated with deliveries most of the year. North Unit was above operating level in January and was kept around the 3875.5' summer operating level with some variations. Due to high salinity, the northern portion of the North Unit was drained in July but we did not have enough water to refill it to its prior level until late in August. An attempt to raise Nutgrass Unit to hunting season level, 3876.0', started in early October, but due to low reserves above, this was not accomplished until December.

The U. S. Geological Survey has a contract with Bureau of Sport Fisheries and Wildlife to measure receipts from the various sources into Stillwater Wildlife Management Area. This requires five Stevens A-35 water stage recorders.

Water Negotiations. Considerable progress has been made on regulating the use of the Truckee and Carson Rivers. Work by Interior on these problems will continue--probably indefinitely.

Department of Interior Operating Criteria Committee for the Truckee-Carson Rivers met six times during the year. This Committee, composed of Interior Agency Regional Directors and Chaired by Bureau of Reclamation, has the job of finding ways to minimize the amount of Truckee River water diverted to the Carson Basin. The primary objective is to slow the decline of Pyramid Lake.

Diversions to Lahontan Reservoir are permitted only when the reservoir level, plus certain runoff predictions, indicate the need. This has been determined by computer studies made by a technical work group headed by Bureau of Reclamation and including hydrologists or technicians from U.S. Geological Survey, Bureau of Sport Fisheries and Wildlife, Bureau of Indian Affairs, and Federal Water Pollution Control Administration. This regulation will reduce the number and size of spills from Lahontan but will also cause deficiencies to the Irrigation District. The Work Group will continue to refine criteria intended to minimize both spills and deficiencies.

Waterusers of Truckee-Carson Irrigation District approved a nine-point program which, among other things, limits the annual water supply to 406,000 acre feet; limits water right acreage; provides for rehabilitation of certain irrigation works; and requires a renegotiation of the Three-Party Agreement for Stillwater Wildlife Management Area. An acceptable amendment to the Stillwater Agreement is being worked out by BSWF, Nevada Fish and Game and TCID. It will spell out the division of drain and spill water and require a measurement system. USGS measures the inflow to Stillwater under a contract with BSWF. USBR is working with TCID on measurement of drain flows reaching Carson Lake Pasture.

An economic study group has the job of determining the comparative value of sending water to Pyramid Lake at the expense of resources elsewhere on the Truckee and Carson Rivers--especially the waterfowl and fishery

resource in Lahontan Valley. Stillwater is being hit the hardest by these attempts to slow the decline of Pyramid. Our River Basin Studies Division represents BSWF interests on this team of Interior technicians. Bureau of Outdoor Recreation has released a voluminous study of Pyramid Lake's recreation potential. This ambitious plan is discussed in the Anaho Island Refuge section.

After thirteen years of negotiation, the California-Nevada Compact Commission approved an interstate compact on the waters of Lake Tahoe and the Truckee, Carson and Walker Rivers. The Pyramid Lake Indians are opposed because the Compact recognizes a legal right to only 30,000 acre feet for the Tribe. This amount was adjudicated for irrigation by an early court decree on the Truckee. The Compact must be ratified by Congress. Objections by federal agencies have not yet been released.

Due to Department of Interior's Rules and Regulations, no water was released from Lahontan Reservoir last winter. The entire fishery in the Carson River below the Dam was lost. Local sportsmen finally woke up and protested loudly. Through letters to Congressmen, local agencies and groups asked Interior to reconsider the ban on winter releases. They asked that 50 cfs be released during the off-irrigation period, November 15 to March 15. This would amount to about 12,000 acre feet--most of which would reach Stillwater. The proposal is still under consideration. Approval is not likely because on a long term average at least half would be water otherwise going to Pyramid Lake. The other half would have to come from a combination of shortages to TCID and excess Carson River water. The possibility of pumping this amount, about 17 cfs year around, from wells upstream from Lahontan is being studied. The main problem with this proposal is: Who will foot the bill? Although 12,000 acre feet received through the winter would not be a panacea for Stillwater--it would be mighty good medicine. Even with this winter water and a workable split of drain flows with the Irrigation District, Stillwater must continue to refine water management, develop more water control facilities and modify objectives.

Food and Cover. Marsh conditions were not as good as last year. The principal reason was that less water was received this year. The greatest deficiency came during the summer when water was critical for plant growth. Adequate flows are necessary to hold water salinity down and for sufficient depth in ponds to keep water temperatures down.

Sago pondweed (Potamogeton pectinatus) and widgeongrass (Ruppia maritima) were the most abundant aquatic food plants. Muskgrass (Chara spp.) and western pondweed (Potamogeton latifolius) were present in lesser amounts. Horned pondweed (Zannichellia palustris) was found in several small bays of Willow Lake and Indian Lakes. This was the first known occurrence of this plant in several years.

Last year an annual, Chenopodium spp., grew over much of the dry bottom of Willow-Millen. The unit was flooded that fall and through mid-summer

of this year. The plants produced many seeds which were eagerly sought by green-winged teal and pintail during the spring migration. Later, the dead plants were used for nesting cover by coots.

Foxtail, Tule and Goose Lakes had excellent beds of sago pondweed. Plant production in the west bay of Dry Lake responded to increased water flow to the unit from West Canal. Heavy algae growth was partially replaced by muskgrass. Production in Pintail Bay was not as good as last year. High water salinity during the summer curtailed growth of aquatics. Good beds of widgeongrass grew early in the summer in the main Nutgrass Unit. However, the heat of July raised the temperature in shallow water to 100° degrees which cooked the vegetation.

Some water remained at Pelican Island all year. Alkali bulrush (Scirpus robustus) continues to be overgrazed there. Widgeongrass and sago pondweed provided food in channels and deeper ponds. A summary of aquatic plant production is shown on the following page.

Cattail (Typha spp.) and hardstem bulrush (Scirpus acutus) stands remained about the same as last year. The only unit where change was noticeable was in West Nutgrass. New growth of hardstem bulrush was several weeks later than that in adjacent Pintail Bay. Stands were not as dense as previous years' growth. Again, soil and water salinity plus water circulation seem to be the factors causing different plant growth. Bulrush in Pintail Bay is near the inlet so water is constantly flowing through the bulrush, reducing salinity. West Nutgrass is a smaller unit with small outflows, so salinity is higher with less water movement.

Alkali bulrush grew poorly this year. After the excellent expansion of stands in the Main Nutgrass Unit last year, the only growth this year was along channels where there was good water movement. We did not have sufficient water to reduce salinities in this unit. Several nice stands of bulrush grew in Pintail Bay and produced good seed heads.

The East Pasture provided green forage and received moderate Canada goose use. Few snow geese were seen using the pasture this year.

II WILDLIFE

A. Migratory Birds

1. Swans. This spring the last whistling swan departed during the first week of April. The peak number of 475 was counted on February 16. Use was about the same as last spring. Foxtail Lake, Swan Lake and Pintail Bay was preferred by the swans.

They returned on September 28 which was about a month earlier than usual. Numbers increased sharply from 400 to 2,600 during mid-November and remained high through the rest of the year. Total use during the fall and winter was 88,515 use days, 83% above this period last year. Foxtail and Goose Lakes received nearly 70% of the fall swan use.

STILLWATER WILDLIFE MANAGEMENT AREA
Fallon, Nevada

SUMMARY OF VEGETATIVE SURVEY, 1968

<u>Unit</u>	<u>Habitat Rating</u>	<u>Dominant Food Species</u>
Stillwater Pt. Res.	Fair	Western Pondweed
Upper Foxtail Lake	Poor	Western Pondweed
Foxtail Lake	Excellent	Sago Pondweed, Widgeongrass
Dry Lake	Good	Muskgrass, Sago Pondweed
Cattail Lake	Fair	Sago Pondweed
Division Pond	Dry	
East Alkali Flat No. 1	Dry	
Goose Lake	Excellent	Sago Pondweed, Widgeongrass
Tule Lake	Excellent	Sago Pondweed, Muskgrass
Nutgrass Unit	Fair-Good	Widgeongrass, Muskgrass
Swan Lake	Dry	
Swan Lake Lock	Fair	Sago Pondweed
Pintail Bay	Good	Widgeongrass, Sago Pondweed
Lead Lake	Poor	Barren
Willow-Millen	Fair	Trace Horned Pondweed
Indian Lakes	Poor	Sago Pondweed
Pelican Island	Fair	Widgeongrass

2. Geese. Snow geese were present in the spring from mid-February through March. They reappeared at the end of September and stayed into December. Use dropped this year when the peak was only 2,500 compared to 8,000 birds last year. Our census figures do not include all of the white geese in this Valley. Most use occurs on the Carson Lake Pasture south of our Area. Birds trade back and forth between the two marshes. State Fish and Game counts on the Carson Lake Pasture also showed a drop in numbers this year.

Canada geese were also present in fewer numbers than last year. Annual use dropped 29%. They peaked at 940 during mid-November compared to last year's peak of 1,400 about the same date.

There are two areas of consistent goose use. About 200 geese use the Pelican Island area and range along the lower Carson River to Leter Reservoir. Some use is also reported around Timber Lake. Improvements here could greatly increase habitat.

The other areas receiving good goose use are Foxtail and Upper Foxtail Lakes and Stillwater Point Reservoir. These areas are primarily used for resting and loafing. Some feeding takes place in East Pasture but most birds fly to nearby ranches to feed. Most of the Canada goose harvest in the Valley takes place on these ranches.

Practically all the nesting occurred on Leter Reservoir and Willow-Millen. Pairs were seen around South Lead Lake Landing. Geese probably would nest on Lead Lake but disturbance by fishermen prevents this. Leter Reservoir ranges from 1 to 6 feet in depth. Islands are interspersed throughout the body of water. Vegetation is heavily overgrazed. Very little submergent vegetation grows here. Willow-Millen is a similar lake. It is relatively deep with little aquatic vegetation.

The geese prefer deep, open water for brood escape habitat. They also restrict nesting to ponds that are practically barren. Relatively deep ponds with dense beds of aquatics are not used.

The breeding population was 18 pairs. Fifteen broods were found for a production rate of 83%. Average brood size was 4.5 goslings. The first brood seen was on April 22 and the hatching peak was April 22-27. Total production was 67, slightly less than last year. The production rate and brood size are very good, so it appears that the limiting factor to an increase in breeding population may be either: 1) a deficiency in habitat to hold breeding birds on this Area; or 2) the population may be experiencing heavy mortality through the year. An example of the latter factor may be an overharvest of local geese. More local geese should be banded to check this possibility.

3. Ducks. Migrations. Extremely cold weather in January prevented any early buildup of duck numbers. Less than 350 ducks stayed during early January. During mid-February, numbers began increasing. The peak migration period was late March to mid-April when ducks

peaked at 75,400. Principal species were green-winged teal, 28,975; shoveler, 12,650; and ruddy duck, 11,850. Earlier, during late February, pintail, 12,675 and canvasbacks, 4,600, passed through.

The duck population dropped to the summer low of 8,340 during late May. An influx of pintails occurred in late June. After several weeks they dropped from 10,100 to 4,700.

The steady fall migrational increase began in August, but quickly jumped during early September when numbers reached 100,000. Although the peak of nearly 154,000 at the beginning of October was much lower than last year's peak of 210,850, use during this September was 97% above last year. This was due to extremely poor water conditions in the West. Many birds that normally stop in eastern Oregon probably came directly to Stillwater.

Principal species during the fall migration were green-winged teal, 38,850; pintail, 34,375; shoveler, 26,675. Canvasbacks peaked at 18,250 compared to 21,000 a year ago. After reaching the peak in early October, ducks left steadily until only 7,000 remained at the end of the year.

Several uncommon ducks were seen this year. A male European widgeon was observed in February on Foxtail Lake. This is a new refuge record. A total of 5 males and 2 pairs of blue-winged teal was seen during the spring and early summer. Some of these most likely nested in the marsh. These are the most blue-wings seen in several years. During the hunting season, several surf scoters, greater scaups and an oldsquaw were seen. While not common, a few scoters and greater scaups show up each year.

Production. The breeding population was determined to be 2,547 pairs from a ground count and two aerial counts. We feel this figure is more reliable than last year's pair count which was based on only one aerial count.

From a study begun this year (see Section V) nesting success will be determined for each major nesting species. The total success for all ducks was 59%. Before you look at the abstract of the nesting study and see that it says the nesting success was 50.9%, let me explain. From the results of nest searches, the nesting success was determined to be 50.9% and the nest destruction rate, 41.5%. To estimate total duck production, we assumed that the 41.5% of the hens whose nests were destroyed did reneest and that some of them were successful. This raised the total nesting success for all ducks to an estimated 59%.

Last year production estimates were based primarily on brood counts and success was thought to be 25%. I now feel that we overestimated the percentage of observed broods to the total brood production. Nesting success was underestimated.

To determine total production for 1968, the production rate was applied to the number of breeding pairs by each species to obtain the number of

broods produced. The number of broods were then multiplied by average brood sizes to get a production estimate. A summary by species follows.

DUCK PRODUCTION - 1968

<u>Species</u>	<u>Breeding Pairs</u>	<u>Nesting Success-%</u>	<u>Estimated No. Broods</u>	<u>Average Brood Size</u>	<u>Total Production</u>
Cin. Teal	780	60	468	6.0	2,808
Redhead	694	48	333	6.7	2,231
Gadwall	428	55	236	7.2	1,699
Mallard	280	55	154	6.2	955
Ruddy Duck	186	65	121	4.9	593
Pintail	122	60	73	6.2	453
Shoveler	40	55	22	6.1	134
G-W Teal	13	60	8	6.0	48
Canvasback	2		2	7.0	14
Am. Widgeon	<u>2</u>	<u>—</u>	<u>2</u>	<u>4.0</u>	<u>8</u>
Total	2,547	59	1,502	5.95	8,943

Cinnamon teal was the top producer at 2,808 as redheads dropped to second, 2,231 and gadwall remained in third position at 1,699. Most production occurred on the Nutgrass Unit, Tule Lake and Pintail Bay. Most of the diving duck nesting habitat is found in Nutgrass and Pintail Bay. Since vegetation in these units grew poorly, redhead production also dropped. Six redhead nests were found in saltgrass on dry land. The extent of this nesting by divers is not known but will be investigated next summer.

4. Coots. This year, use was down 11%. The spring peak of nearly 29,000 came during the last week of March and the summer low of 4,200 in late May. During the first half of the year, population data was very similar to last year. However, fall migrants arrived earlier this year, probably due to poor water conditions at their usual early stop-overs farther north. The population rose to 50,000 in early August, about a month earlier than last year. Coots peaked at 114,150 early in September and quickly dropped off compared to last year's lower peak of 96,300 but with a longer period of higher use. This year's use during September-December was 30% below last year.

To estimate coot breeding pairs, the summer population was assumed to have an equal sex ratio and was then divided by two to obtain the number of pairs. The productive rate was estimated to be 80%. Average brood size was 4.0. The estimates for the productive rate may be high, but the brood size is conservative so the differences should make the overall production estimate fairly accurate. In summary, the breeding population of 2,100 pairs produced 1,680 broods with 4.0 chicks per brood for a total production of 6,720. Production was 9% below last year. The principal reason being a reduction of habitat due to poor water conditions.

5. Other Waterbirds. Eared grebes were not as abundant as last year and no production was noted. Western grebes were abundant. Young began appearing on May 15 and the sight of one or two riding on the adult's back was common.

White pelicans were not as abundant as last year. They peaked at 2,500 late in August which was below last year's peak of 3,600.

Great blue herons can be seen during any month of the year. By mid-February, birds began repairing nests at the rookery on West County Road. Production was believed to be disrupted for we had several reports of people shooting herons at the rookery, but we were never able to catch anyone. We cannot see into the nests for they are on top of tall cottonwood trees so we were not able to assess the damage done by intruders.

Two other rookeries were located in the surrounding area. About 10 nests were located in trees north of Harmon Reservoir. A larger rookery was found in a group of cottonwoods south of Tarzyn Road near the junction to Indian Lakes Road.

Since the hardstem bulrush was poor in West Nutgrass, the black-crowned night herons and egrets moved to the bulrush in Pintail Bay to nest. The egret nesting appears to be decreasing over recent years.

No nesting by white-faced ibis was noted. Yet, in a similar marsh on Carson Lake Pasture they nest in abundant numbers. Total estimated use was down 64% from last year.

Conditions were good for nesting rails. Broods of Virginia rails were common in the Nutgrass Unit and around any stand of emergent vegetation. They were estimated to be about twice as abundant as Soras, which were not seen as often.

6. Shorebirds, Gulls and Terns. The spring migration was small. Sandpipers and snowy plovers arrived in early April while dowitchers and phalaropes did not appear until the end of the month. On May 11, three black-bellied plovers and two willetts were seen. These birds are not commonly seen. A willet was observed on several occasions throughout the summer around a seep pond in Indian Lakes. We believe that it possibly was nesting there but no evidence was found to confirm this.

The first killdeer egg was found on April 5th. Avocets and Wilson's phalaropes were incubating eggs by mid-May. Avocet and black-necked stilt production was estimated to be 3,500 and 2,000 respectively, which was lower than last year.

A long-billed curlew nest with four eggs was found on May 27. A few birds nested on the flat west of Foxtail Lake and also northwest of Millen's Boat Landing.

Forster's and Caspian terns arrived during mid-April, about two weeks earlier than usual. No tern nests were located, but we believe they nested on Lead Lake and Tule Lake.

7. Mourning Doves. Most use occurred along the Carson River. The desert produced little feed this year. The result was that there were fewer doves than last year. Hunting was not very good as many birds left the Area when temperatures dropped to near freezing late in August.

B. Upland Game Birds

Ring-necked pheasants maintain themselves at a low stable level. The population remains about 50 birds along our boundaries adjacent to farmland.

This year was considered to be an excellent year for California quail in the Valley but since our quail habitat is limited, we see little of this increase. Most birds are seen around Indian Lakes and the Carson River. Birds were seen on several occasions along the East Canal near Foxtail Lake which is unusual. Numbers at the end of the year were estimated to be 500.

C. Big Game Animals

Seven mule deer does and five fawns were seen at Timber Lake this summer. This was the only observation this year. We heard a report that a hunter shot a young buck in that area.

D. Fur Animals, Predators, Rodents and Other Animals

Fur Animals. Muskrat transects described in the Wildlife Inventory Plan were completed by mid-November. Results of these transects were used to estimate numbers for all units. Lead, Tule and Goose Lakes had the highest numbers. Tule Lake has no cattail or bulrush so muskrats made houses of sago pondweed, algae and some saltgrass, while in Lead and Goose Lakes, houses were constructed of hardstem bulrush and cattail.

The refuge biologist and a Nevada Fish and Game technician estimated that 1,975 muskrats live on Stillwater. This is over 100% more than last year's estimate of 900. The biologist does not feel this increase is correct. From general impressions in the field it appears that the population is below last year's. He feels that this year's survey is more accurate than last year's aerial house count which underestimated the population because of the large number of bank-dwelling 'rats. Future surveys should be more realistic for estimated numbers can be compared by the habitat unit.

Predators. The coyote is the principal large mammal on the Area. We are finding that we do not know as much about this animal as we thought we did. Stillwater is being used as a census study area by Ray Alcorn, Division of Wildlife Services. Indications are that these coyotes are highly mobile, moving about in the Lahontan Valley.

Prior to this spring, we thought coyote predation on waterfowl nests was minor. However, this year's nesting study showed differently. Coyotes accounted for nearly 80% of all nests destroyed. It would seem that more coyote control is necessary prior to, and during, the nesting season. The timing of this control is important. Highest concentrations occur from October through February but they apparently drop to the lowest population level around April and May. Control during the periods of high density would have little effect on the density during waterfowl nesting. Target animals should be those raising young on the Management Area.

No raccoons were seen this year, but a skeleton was found on the south shoreline of Millen Lake. A few probably live on the Canvasback Gun Club and drift on and off the Area.

Rodents. The most commonly seen rodents are the antelope ground squirrel and several species of kangaroo rats. This winter we have begun using snap traps to gather data for a refuge mammal list.

Rabbits. Black-tailed jackrabbits, while common, are not abundant. Most are seen from the Paiute Pasture area through Indian Lakes. Mountain cottontail rabbits remain unchanged. Small populations thrive around the refuge service yard, Paiute Pasture, and along the Carson River.

E. Predaceous Birds

Eagles. Five bald eagles were the most seen last spring. The last bird was seen on March 18, until one reappeared on December 5th. This was nine days earlier than the first fall observation last year.

Golden eagles can be seen almost any month of the year but are most common from November to April. Immature goldens are fairly common, but almost all bald eagle sightings are adults.

This summer we received two immature golden eagles that US Game Management Agent John Wendler had confiscated. They were unable to fly so had to be fed. After they were capable of flight, we released them but they were not able to fend for themselves. The birds found their way to the shop and harassed the crew begging for food. After several days of attempted landings on personnel's heads or shoulders, they were returned to their cage and eventually shipped to the Denver Wildlife Research Center. One bird subsequently found its home at the Oklahoma City Zoo and the other was last known to still be at the Denver Center.

Hawks. Rough-legged hawks and prairie falcons were again common throughout the winter months. Several Swainson's hawk nests were seen at Indian Lakes. They, and red-tailed and sparrow hawks also nested in cottonwood trees along the river. Marsh hawks were common all year.

Owls. Barn owls used several wood duck nest boxes placed along the Carson River. A female nested in one. She laid four eggs but deserted the nest before they hatched. Short-eared owls were not seen during summer months but were common the rest of the year.

F. Rare and Endangered Species

While the western burrowing owl is on the rare and endangered list, it is quite common although not abundant on Stillwater. Most birds are migratory, leaving during the winter. The peak number was estimated at 30 and production, 18.

G. Other Birds

We have several changes in the refuge bird list. New additions include a male European widgeon (seen on Foxtail Lake by Biologist Napier, February 25, 1968) and a lark sparrow (seen along East Canal by Biologist Napier and Trainee Ford, July 12, 1968). A rufous-sided towhee was seen along East Canal by Biologist Napier on September 20, 1968. This is listed on the current bird list as occurring in the vicinity, but not on the Area.

H. Fish

Carp continue to be abundant in most ponds. One application of Pro-Noxfish was applied to a concentration below water control structure No. 12. The kill was poor. For best results to prevent fish from escaping into the lake, they should be fenced within the canal where chemical is being applied.

We have no record of any fish plants this year. Indian Lakes and Lead Lake continue to produce good catches of largemouth bass, channel and

white catfish and bullheads. A few catchable white crappie are showing up, but most are under eight inches.

I. Reptiles

Desert areas support high numbers of horned toads and various lizards. Next summer we will attempt to make a reptile collection for the office.

Gopher snakes were occasionally seen in the marsh during the summer, but their numbers are few. We believe they have little or no effect on nesting here.

J. Disease

No evidence of disease was found during the year.

III DEVELOPMENT and MAINTENANCE

A. Physical Development and Maintenance

Water Facilities Maintenance. Jobs in this category were repairing canal banks, cleaning aquatic vegetation from canals to facilitate water movement, riprapping structures, building up canal banks, installation of water control structures and replacing broken boards on certain structures and replacing loose riprap for our crew's and public SAFETY.

Structures throughout the Area were riprapped in January. During February and March two miles of Paiute Canal banks were repaired and built up with the dozer-carryall, dragline and motor patrol. The Paiute Canal was cleaned with the dragline and a new redwood drain box was installed. In April 0.2-mile of South Nutgrass dike was leveled; West Nutgrass subdike, 0.3-mile, was built, a pipe with riser was installed and riprapped. In May, six new mats were made for the Northwest dragline work. June, Structure No. 11 was repaired and new redwood wingwalls installed; two pipes with redwood opening boxes were installed under Nutgrass Road for water circulation out of North Nutgrass into Big Water. In July a 1000' canal was dug and a pipe with riser installed between Doghead Pond and Division Pond. During October a pipe with redwood control box was installed for better water circulation in Tule Lake under the road between Lead and Tule Lakes.

Salinity buildups are a constant problem each year at Stillwater. The water source containing highest salt content year-long is Hunter Drain. It varies in late winter and early spring from 50,000 to 90,000 micromhos/cms. During the summer the salt content usually averages around 40,000 micromhos/cms. This canal which collects very highly saline drainage from upstream farms, goes into the Nutgrass Unit, our

largest. During winter and early spring the salt content in this drain is highest due to lack of water flowing through the irrigation system.

It was decided last spring to determine a solar evaporating area where this drain water could be dumped before reaching Nutgrass Unit. It could then be evaporated during the summer. The location decided on is southeast of the intersection of Hunter Drain and Lead Lake Canal which flows directly into South Nutgrass.



The above photo shows Hunter Drain flowing into Lead Lake Canal. The area developed for the evaporation pan (sump) is to the left. A dike was put up between Lead Lake Canal and the sump for 1.3 miles. The canal received a much needed desilting as the dike was built. The dike was also needed to increase head at the inverted siphon (Structure No. 7). A redwood control structure installed at the end of Hunter Drain diverts water out into the sump.

The picture below shows water flowing into the sump. Eliminating this water from Nutgrass Unit is just another of many past and future efforts to decrease the amount of dissolved salts to restore production of desired submerged aquatics and emergents in this marsh.



Around 60 flashboards, of various lengths, were made for different sized structures. Six miles of canals were chained to remove aquatic growth during the summer. See cost breakdown in Control of Vegetation section.

Road Maintenance. Roads are maintained constantly and we try to keep them in the SAFEST conditions possible because of the unrestricted public use of the Area.

All roads were graded and maintained during the year as moisture permitted, gravel or sand was applied as needed. The Division and Hunter Road turn, which was unSAFE, was widened along with East County Road during January.

A 20-foot length of pipe was put under East County Road, covered over and made passable. This section of road had constantly been washing out before and this pipe should end the annual repair. A low dike was built up and a raised section of road was constructed around part of East Lake to eliminate its inundation. See photo 28 in photo section.

Paiute Pasture Road was graded and repaired. In October the C-R and Hunter Roads were extensively graded.

Starting in November and continuing through December, 4 miles of the C-R Dike Extension Road was raised, widened, and sanded to allow 2-way traffic and to eliminate the subbing which occurs when Lead Lake and Millen Lake are full.

Public Use Facilities Maintenance. Chemical toilets were maintained year around by refuge personnel.

A vacuum tank built at the Refuge Shop is used to service these units. This, along with emptying trash barrels, is an all-day job for two men. Their entire run covers about 40 miles. During waterfowl hunting season and during the busiest part of the fishing season, this is a must! During June two of the outhouse doors had to be repaired because someone had just about torn the hinges completely off. In July, bridge railings were painted and broken reflectors were replaced. South Lead Lake Boat Landing was cleaned out with the Northwest dragline. The parking area at South Lead Lake was leveled and gravelled once.

Signs. Signs were made and riveted to the walls in the public toilets asking people not to throw cans or bottles into the chemical reservoir. No Hunting signs were made and new refuge signs installed around the entire refuge boundary before hunting season. Two signs limiting public use on C-R Extension Road during wet weather were put on gates at either end of this section of road. See Photo 31.

Equipment Maintenance. No major overhauls were made during 1968. However, routine maintenance, repairs, and modifications needed on our ageing equipment keeps the shop in a "busy" condition.

A vacuum tank equipped with vacuum pump--affectionately called the "Honeywagon" was built on a surplus weapons carrier at the Refuge Shop. This was constructed from a 550-gallon fuel tank, equipped with a Briggs and Stratton engine and Gast vacuum pump. These were all salvaged from other equipment and put together with miscellaneous iron, pulleys, hoses and clamps by Foreman Olano, who did his usual exceptional job of improvising. The unit works great and really saves money when compared to a commercial firm's cost of \$100 per trip for pumping our public toilets.

A bed was put on the new Dodge stake-bed truck. A new 3/4-yard bucket was purchased for the Northwest Dragline. In August the International truck-tractor and trailer were painted. A 1963 International 4x2, 2-seat pickup was obtained from excess, repaired, painted and put into use for carrying the work crew between the office and the Stillwater Area. See Photo 26.

Buildings. During January the Refuge Shop was insulated and the interior painted. In April new shop lights were installed, new shelves were built, cabinets rearranged and painted. During November the shop storage yard was leveled, lumber, posts, culverts, etc., were rearranged, old materials were gotten rid of and the old garbage pit was covered and a new one was dug.

Fencing. In February $1\frac{1}{2}$ miles of drift fence was constructed on the west side of the Management Area. Interior and boundary fences were maintained and repaired during the rest of the year. During August the old drift fence around the shop was moved and a new one built along with extending it farther south toward Diagonal Drain. Fifteen new metal gates (Photo 30) were installed throughout the Area.

B. Plantings

Last year we planted a combination of grasses and legumes in experimental plots on the East Pasture. The result for everything but alta fescue was poor. This spring, 25 acres of these plots were reseeded to alta fescue.

C. Collections and Receipts

Seeds and Other Propagules. During the summer we received 75 bushels of milo from the Sacramento Refuge. This grain will be used as bait for duck trapping operations.

Specimens. To aid in nest identification, an egg collection began this year. An egg from the following species was taken: common teal, wood duck, sparrow hawk, killdeer, avocet, Wilson's phalarope and barn owl.

The following birds were collected to be mounted for display in the Churchill County Museum: western grebe, pied-billed grebe, snowy egret, pintail and green-winged teal.

D. Control of Vegetation

Our main target pest plant is Tamarisk (Tamarix gallica) which is a constant problem because of the upstream seed source. Control of this plant is a yearly job at Stillwater. We spray this pest in two ways, one is with a truck-mounted, motor driven spray rig, which to be efficient, requires one man driving and the other doing the spraying. The second method, aerial spraying, is used for big spray jobs or on units which cannot be reached with the ground rig. Spraying is done in June and July when young plants are most susceptible. Aerial spraying was about two-thirds cheaper than ground spraying per acre.

Fourteen acres were sprayed with the ground rig in June. This was a spot control method and it was very effective. We got kills of between 90% to 100%. Chemical used was 2,4,5-T Butyl ester R-H Brush Rhap B-4 diluted 1:100 with water and applied at a rate of 1 gallon/acre, 4# a.e./acre. A spreader was not used because the ester formulation is an oil base product. Plants were thoroughly wetted at close range.

Two hundred and forty acres were aerially sprayed in the West Marsh Unit. There was much new growth and it followed the water's edge which involved many curves, edges of high spots, and along the edges of many small islands. The pilot who did the spraying flew over the area before spraying and said he had difficulty seeing the new young growth. Spraying was accomplished July 1. Chemical used was 2,4,5-T Iso-Octyl ester applied at a rate of one-half gallon/acre, 2# a.e./acre. No spreader was used, reason listed above. We were not satisfied with the results of this spraying. A spot ground check made in August and September showed that we got kills of between 25% and 30%. This is very low considering aerial applications before have given us kills of between 90% to 100%. The reason for the low success was probably due to an insufficient amount of the chemical reaching the plants, which was due to the difficulty of application because of the irregular plant growth along the water's edge. Also, the pilot said it was very difficult to see the young plants which have a slender and fine-leaved growth form. This area will have to be sprayed again next year.

About 6 miles of ditch were dragged with an anchor chain between two crawler tractors to clean out thick aquatic vegetation. We got the chain from the Fallon Naval Auxiliary Air Station. Cost/mile was higher than usual because the expenses of equipping the chain and tractors with proper hardware to do the job are included.

TAMARISK CONTROL COSTS

	<u>Ground</u>	<u>Aerial</u>
Herbicide - No cost, Military Excess	\$	\$ 1,020.00
Labor (Aerial includes labor)	239.04	
Equipment Operation	<u>43.06</u>	<u>600.00</u>
Total Cost	\$ 282.10	\$ 1,620.00
Acres Sprayed	14	240
Cost/Acre	\$ 20.15	\$ 6.75

CHAINING OF AQUATIC VEGETATION COSTS

Labor	\$ 324.96
Equipment Operation	<u>656.00</u>
Total Cost	\$ 980.96
Miles	6
Cost/Mile	\$ 163.49

E. Planned Burning

This spring 10 acres of saltgrass were burned along the shoreline of Foxtail and Tule Lakes as an attempt to improve duck nesting cover. Last year's growth was rank and coarse. It was burned to improve growing conditions for new grass which we hoped would make better nesting cover.

Results were unfavorable, for new grass did not provide adequate cover until mid-June. By this time duck nesting was well underway. Last year's growth was well used for nesting cover. Only in areas where growth is particularly tall and rank would burning be beneficial. The north shores of Dry Lake may benefit from such a practice for nesting is negligible here.

IV RESOURCE MANAGEMENT

A. Grazing

Above normal precipitation in April produced a good stand of annual forbs throughout most of the Area. There was no spill or drawdown from Lahontan, therefore, there was no water for use on the waterspreading areas. The Indian Lakes which support most grazing plants on the Area were virtually dry by the first of May and many of the annuals which provide important feed for livestock during late spring and early summer were soon gone. The upper part of the Pelican Island area provided excellent feed, particularly along its stream and canal banks. Excellent stands of strawberry clover (Trifolium fragiferum) as well as Baltic juncus (Juncus balticus) were noted along the canal banks. Saltgrass (Distichlis stricta) was abundant in drier portions of the Area. This area provided good grazing during the summer and into the fall, both for cattle and horses. The Carson Sink part of this unit was also grazed by cattle and horses. Horses used the Sink heavily. They prefer the juncus which is very abundant along with spikerush (Eleocharis palustris). The Sink provided good grazing until midway through the summer when water flow down the Carson River became almost nonexistent and the plants dried up.

In our two irrigated pastures, East Pasture provided very good grazing with 732 AUM's being taken. Four hundred fifty-five AUM's were used in Paiute Pasture. Winter grazing which has been allowed in this pasture before, was cut off at the end of December to give the plants a rest.

Due to shortage of water in the Pelican Island and Sink areas in the late summer, the permittees who grazed there called a meeting to discuss letting them move the cattle into the marsh until December 31. The meeting was held at Stillwater headquarters and after a very good discussion, it was decided to allow the grazier's request.

A roundup was held in March to make a count of permittees' cattle out on the Area. A meeting was held prior to the roundup and all parties,

after some very lively debating, agreed on a time. Manager Worden, Assistant Manager Good, Maintenceman Duffney and Foreman Olano all helped in rounding up and counting the cattle. As it turned out, two permittees were found to be running cattle in large excess of what their permits called for. They subsequently lost their grazing permits and their cases are now before the U.S. Commissioner along with a case brought against one of them on similar charges by Bureau of Land Management. It is hoped that this action will help curb similar practices thought to be used by some of the other permittees. Making actual counts once cattle are turned out, as well as knowing when other cattle in excess of those under permit are turned out is really difficult on approximately 200,000 acres, but these two being caught may change much of this activity.

Special regulations for grazing were sent as part of each permit at the onset of the grazing season and permittees understood that they were to comply with them and that we were going to enforce them (see next page).

Permittee Frank Erb went out of the cattle business and removed his fences and corrals from the Timber Lake Tract. Parts of these 560 acres will be refenced into holding fields for use by all the permittees. A part supporting a good stand of cottonwoods will be set aside for wood ducks, the few deer on the Area, and recreation.

Cattle grazing on the Stillwater Area numbered 2,426; horses, 98 for a total of 20,483 AUM's, bringing in \$10,557.65 revenue. These figures are both lower than last year's.

B. Haying - None

C. Fur Harvest

Information on muskrat numbers appears in Section II-D. No surplus of animals exists to warrant trapping. Any future plans for removal will probably be on Lead Lake, Tule Lake and possibly Goose Lake. These units have the highest muskrat numbers and may need some control eventually to balance the limited emergent vegetation.

D. Timber Removal - None

E. Commercial Fishing - None

STILLWATER WILDLIFE MANAGEMENT AREA
Fallon, Nevada

SPECIAL CONDITIONS APPLICABLE TO SPECIAL USE PERMITS FOR GRAZING.

(The term "Area" means all lands covered by permits issued from this office)

1. Permits must be obtained before turning livestock onto the Area.
2. Before turning livestock onto the Area, you must give us 48 hours advance notice. Rate of charge shall apply to all stock except nursing animals less than 6 months old.
3. Livestock removed from the Area will be reported to the Refuge Office in no less than 7 days after removal.
4. If conditions warrant, all livestock out on winter permits will be gathered and counted before April 1. Each permittee will be notified no less than 7 days in advance of the roundup. Stock must not be removed from the Area after notice of--or during--the roundup without permission from the Refuge Manager.
5. All livestock will be counted once during the summer and the count will be final. No livestock will be removed during the count without permission from the Refuge Manager.
6. Permit to graze will be cancelled for anyone with livestock in unreasonable excess of the record maintained at the Refuge Office. The Refuge Manager will determine what is "unreasonable".
7. Proof of vaccination for anthrax and redwater must be given Refuge Manager on request.
8. One bull must be turned in for each 30 head of cows during the approximate period May through September. Bulls in poor condition or under age may not be counted as a bull.
9. No livestock will be permitted north of the East-West Fence (Pelican Island Unit) between March 31 and June 1. The Refuge Manager may demand the removal of livestock from the Pelican Island Unit at any time in the interest of waterfowl habitat.
10. No gates on the Area shall be left open without specific approval from Refuge personnel.
11. Permittees are responsible for removal or disposal of livestock carcasses. Failure to comply may result in billing the owner for costs to the Government for proper disposal.

Violation of these rules and regulations may cause cancellation of your permit.
Note: See Condition No. 6 - Revocation Policy - on the back of your Special Use Permit.

V FIELD INVESTIGATION or APPLIED RESEARCH

A. Wildlife Management Study 1 - Duck Nesting Success on the Stillwater Marsh

ABSTRACT - Progress Report No. 1

"A three-year study was initiated in the spring of 1968 to determine nesting success of major breeding ducks on Stillwater Marsh. Results will be used to develop a new method for estimating waterfowl production.

"Duck pair counts were conducted to define the size and location of the breeding population. The goal was to locate nests of 10% of the pairs. Our results sampled 5.1% of the total population, but we did find 10.7 and 8.0% of the gadwall and cinnamon teal nests.

"Most nests were found in saltgrass (Distichlis stricta) and saltgrass-iodine bush (Allenrolfea occidentalis) cover types. No nests were present in cover less than 8 inches high and most were found in cover 13-18 inches high. Highest nesting density, .49 nests per acre, occurred in this cover type.

"Average nesting success for all species was 50.9%. Success for cinnamon teal and gadwall were 50.0 and 42.8% respectively.

"Nest destruction was the highest cause of loss at 41.5% for all nests. Coyotes were blamed for 79.6% of all destroyed nests. Desertion rate was 6.8% for all species. Flooding of nests was minor--less than 1%."

Results of this study will point the way toward a different method of determining duck production. Emphasis will be placed on breeding pair counts which will be combined with the percentage of nesting success to estimate the number of broods produced. Brood counts will be necessary only to obtain hatching peaks and brood sizes. In the past, the emphasis was on a pair count and brood counts to determine production. It was difficult to estimate what percentage of the total broods was counted.

We feel this new method will greatly reduce field data collecting time and results will be equally, if not more, reliable.

B. Banding

The assigned quota for ~~winter~~ banding in Western Nevada was 500 pintails. Trapping results were very poor. Only 16 pintails (8 males and 8 females) were banded during March. Thirty bushels of barley were used as bait. A minimum of 36 hours of labor resulted in a cost of \$12.15 per banded bird.

Poor success was attributed to the low population of pintails which was widely dispersed over the marsh. Another factor seemed to be low palatability of the barley. Ducks often rested on the area without touching the grain.

A review of banding objectives seems necessary to evaluate the importance of winter banding in this area where we are sampling migrating birds.

The pre-season banding went considerably better. Traps were put into operation on August 31st and attended for three days. A total of 186 pintails (32 immature males, 101 adult males, 21 immature females, 32 adult females) and 2 mallards (1 immature male, 1 adult male) was banded. Twenty-six bushels of milo were used as bait. Costs were 85¢ per banded bird.

The trapping sites were two small islands in Pintail Bay where several thousand pintails loafed around the edges. Four traps were placed in about 6 inches of water. Milo was accepted much better than barley by the birds. Nevada Fish and Game is also having good use of wheat.

Nevada Fish and Game banded 646 pintail, 95 mallards and 105 redheads on other areas. The quota for Western Nevada was 500 pintails, 200 mallards, and 200 redheads. We stopped trapping because the pintail quota was met and there were no mallard or redhead concentrations to warrant continued efforts.

On Stillwater Refuge's permit, Ray Alcorn, Division of Wildlife Services, banded 17 starling nestlings in wood duck nest boxes.

Refuge Manager Worden took our airthrust boat to Washoe Lake this summer to assist Nevada Fish and Game personnel with their goose trapping operation. Twenty-six flightless Canada geese were captured and sent to a State Management Area. They later lost all the geese from an outbreak of coccidiosis.

C. Wood Duck Nest Boxes

This spring we put 15 nest boxes on trees along the lower Carson River. They were erected off the Management Area because we have no assurance of permanent water during the summer after the river enters the Stillwater Area. A brood of wood ducks was hatched in one of the 15 new boxes. Over several years, 65 boxes were previously put up along the river below Lahontan Dam on the Harriman and Kent Ranches. No wood duck use was recorded. The opening in the boxes was a circular hole three inches in diameter. Last spring we enlarged the holes to a 4"x4½" oval. Four of these boxes were used this year by wood ducks. Apparently, by enlarging the holes, we made the boxes usable. Predation is a minor problem for raccoon sign is rarely found.

D. Banding Maps

A project that we have long wanted to accomplish was to map our band returns. Summer Laborer Ford did an outstanding job on this assignment. Tacks representing band returns were placed on two wall maps. These have limited scientific use but great "eye appeal" for public relations work. A folder was made of smaller maps for individual species showing: 1) location of direct returns of birds banded at Stillwater; 2) locations of indirect returns of birds banded at Stillwater; and 3) locations of birds banded elsewhere and recovered at Stillwater.

A file was also set up to show similar comparisons. Cards are arranged by state for each species and each category. The number of returns from each locality are tabulated.

This information gives us an idea of the migration routes, nesting and wintering areas of birds using Stillwater. Most of this work involved processing old returns. With present banding operations reduced, it should require only a small amount of time to keep this "system" current.

E. Vegetative Survey

For the past several years, the Clark Webster method was used to survey annual production of aquatic vegetation. While this method was reliable and gave accurate results, it was very time consuming.

We desired a method that would require less time and still give us species composition and distribution, and relative abundance. The method of collecting data that we used was a modification of the time-lag transect method described by Wildlife Management Biologist Dr. William Green in Region III.

We feel this procedure gave us adequate results and was fast. Sampling began on July 31st by the Refuge Biologist and summer laborer and required $10\frac{1}{2}$ days to complete the entire Management Area. Results are discussed in the Food and Cover Section of this report, but the survey was prepared under separate cover.

VI PUBLIC RELATIONS

A. Recreational Uses

Total visits to Stillwater decreased from 21,691 in 1967, to 17,875 in 1968. This is an 18% decrease. Fishing visits dropped from 8,250 in 1967 to 4,186 in 1968, a decrease of 49%, while waterfowl hunter visits increased from 10,136 in '67 to 11,668--a 13% increase. This is puzzling because fishing use appeared to have been equal to or above last year's. Road counters were operated all of last year, but were used only for the hunting season in 1968. We intend to keep the counters out on the

Area through 1969 to get more accurate tallies of actual use. The new Public Use Report Form 3-123 was a real help in keeping track of monthly visits.

We had some vandalism on the road counters which are property of Nevada Fish and Game Commission. Hoses which stretch across the road were cut several times. Two counters were destroyed. One was torn from its chain around a post and submerged in a ditch of salt water which took care of the recording mechanism. The other counter was shot, through its steel protective case, four times with a high powered rifle or pistol and completely destroyed.

Visitors other than fishermen and hunters included outdoor photographers, bird watchers, various group tours and just interested people driving around along the dikes enjoying the water and marsh habitat in this desert sink area.

Likes and Papoose Lakes in the Indian Lakes chain are receiving increased recreational use. Likes Lake in particular was very popular during the summer. People with their families were seen swimming, fishing, lounging under the Russian olive trees, barbecuing and really enjoying themselves at this small but unique spot on our Area. We held our summer picnic at Likes Lake (see photo section) and had a great time. Water skiing was part of the fun. This lake is about 7 miles from the main marsh units so there were not any disturbing effects to waterfowl or other marsh birds due to skiing.

B. Refuge Visitors

<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>	<u>Date</u>
R. McVein	BSFW, Portland	Engineering	1/10/68
J. Mack	BSFW, Portland	Engineering	1/10/68
M. Marston	BSFW, Washington	Area Tour	2/9/68
D. Burgess	BSFW, Portland	Area Tour	2/9/68
N. Nilsson	NFG, Reno	Area Tour	2/9/68
F. Wright	NFG, Reno	Work Program	2/21/68
B. Long	State Dept. Ag.	Tree Planting	3/4/68
C. York	CC Ext. Agent	Tree Planting	3/4/68
B. Harris	BR, Carson City	Pasture Data	3/19/68
R. Glahn	BSFW, Portland	Aerial Census	3/28/68
R. Glahn	BSFW, Portland	Aerial Census	4/17/68
J. Findlay	BSFW, Portland	Orientation	4/22/68
F. Wright	NFG, Reno	Work Program	5/7/68
R. McVein	BSFW, Portland	Water Data	5/21/68
-W. Harris	RBS, Sacramento	Winter Water	6/10/68
D. Knapp	BSFW, Davis, Calif.	Avocet Nesting	6/11/68
F. Ryser	U of N, Reno	Bird Census	6/17/68
G. Hollister	Smith, Nevada	Water Data	6/24/68
E. Cunningham	Yazoo Refuge	Area Tour	6/29/68

<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>	<u>Date</u>
J. Gottschalk	BSFW Director	Area Tour	7/2/68
R. McVein	BSFW, Portland	Area Tour	7/2/68
R. Batchelor	SCS, Phoenix	Area Tour	7/11/68
V. Davis	SCS, Portland	Area Tour	7/11/68
M. Marlar	FWPCA, San Francisco	Area Tour	7/25/68
J. O'Brien	BOR, San Francisco	Area Tour	7/25/68
R. Glahn	BSFW, Portland	Aerial Census	8/8/68
T. Mendenhall	CBS TV	Photos	8/15/68
G. Osborne	BR, Carson City	Small Tract Sale	8/19/68
R. Shields	BSFW, Portland	Inspection	8/20/68
R. Glahn	BSFW, Portland	Aerial Census	9/4/68
R. Glahn	BSFW, Portland	Aerial Census	10/9/68
F. Groves	NFG, Reno	Area Tour	10/17/68
E. Smith	BSFW, Portland	Area Tour	10/22/68
R. Glahn	BSFW, Portland	Aerial Census	10/22/68
F. Gillett	BSFW (Ret.)	Area Tour	10/27/68
R. Porter	BSFW, Sacramento	Economic Report	11/4/68
W. Johnson	FWPCA, San Francisco	Water Samples	11/13/68
R. Prosser	FWPCA, San Francisco	Water Samples	11/13/68
R. McVein	BSFW, Portland	Water Recorder Data	11/18/68

C. Refuge Participation

Refuge participation for various personnel during 1968 was as follows:

January 29-30	Attended Operating Criteria Meeting in Reno - Worden
February 27-28	Attended Work Group Meetings in Reno - Worden
February 29	Attended Nevada Fish and Game Commission meeting in Reno on problems of no winter water flow in Carson River below Lahontan Dam. - Worden
March 1	Conducted Waterfowl Management Class from University of Nevada on tour of Area. - Napier
March 7-8	Attended Federal-State Coordination Meeting in Carson City - Worden
March 13	Acted as judge on Churchill County School System's Science Fair - Worden
March 19	Attended Operating Criteria Meeting in San Francisco - Worden
March 21	Attended meeting of Nevada Fish and Game Commission and Nevada Refuge Managers - Worden

- Made an inspection tour with Truckee-Carson Irrigation District Board of Directors over Newlands Project water system - Good and Napier
- March 26 Attended local meeting sponsored by Nevada Fish and Game Commission and other sportsmen's groups to discuss the loss of fishery below Lahontan Dam due to Interior's Rules and Regulations prohibiting winter water releases below Lahontan Dam - Worden
- Attended Churchill County Conservation Needs Committee Meeting sponsored by Soil Conservation Service - Napier
- April 18 Attended Interstate Compact Commission meeting in Reno - Worden
- April 21-May 17 Attended Basic Refuge Manager Training School, Arden Hills - Good
- April 24 Attended Churchill County Resource Action Council meeting - Napier
- May 9 Conducted group of 40 students from Reno Junior Academy on tour of Stillwater - Napier
- May 11 Conducted a tour of Area for 18 members of the Lahontan Chapter of Audubon Society - Napier
- June 14-15 Made two Breeding Bird Surveys in cooperation with National Breeding Bird Survey conducted by Migratory Bird Population Station, Laurel, Maryland - Napier
- June 18 Attended Operating Criteria Meeting in Reno - Worden
- June 27 Attended Resource Action Council Meeting in Fallon - Worden
- July 1 Attended Resource Action Council Meeting in Lovelock with USFS District Ranger Walter Pierson to discuss marsh development plans in Humboldt Sink - Good
- July 10 Attended meeting of Western Association of Fish and Game Commissioners in Reno - Worden
- July 11 Went on field examination of watergrass and nutgrass planting in Canvasback Gun Club with SCS Biologists Ron Bachelor and Vern Davis - Worden and Good
- July 17 Conducted group of 24 Girl Scouts on tour of the Management Area - Napier and Good

July 19 Attended Churchill County Resource Action Council in Fallon - Worden

July 25 Attended Interstate Compact Commission Meeting in Reno - Worden

Conducted representatives of Federal Water Pollution Control Administration and Bureau of Outdoor Recreation on tour of Stillwater Marsh - Napier

August 6-7 Attended Operating Criteria Meeting in Reno - Worden and Good

August 14 Attended Churchill County Sportsmen Meeting - Worden

September 5 Attended signing of Joint Interstate California-Nevada Compact as Bureau representative - Worden

September 10 Attended meeting of Governor's Natural Resources Council in Reno - Worden

September 20 Attended Churchill County Resource Action Council Meeting in Fallon - Worden

October 2 Attended Churchill County Sportsmen Meeting - Worden

October 8 Conducted tour for 30 Game Management students from University of Nevada - Napier

October 11 Attended law enforcement meeting concerning regulations for 1968 waterfowl hunting season on Management Area conducted by Nevada Fish and Game personnel and US GMA Wendler - Worden, Good and Napier

October 14-17 Attended Blasting Workshop at Grays Lake Refuge - Worden

October 15 Participated in Annual Condor Census in Central California - Napier

October 17 Took Nevada Fish and Game Commission Director Frank Groves on tour of Management Area - Good

October 25 Attended Resource Action Council Meeting in Fallon - Good

November 19 Attended meeting with Bureau of Reclamation, BSWF, and Nevada Fish and Game in Carson City - Worden and Good

November 20 Attended meeting with Nevada Fish and Game Commission on revision of Three-Way Agreement - Worden

November 21 Attended meeting of Interior's Economic Work Study Group in Reno - Good

- November 26 Was initiated as Knight of the 1st Degree in Knights of Columbus at St. Patrick's Catholic Church, Fallon - Good
- December 9-13 Attended Bureau of Reclamation Irrigation Operators Workshop held at Denver Federal Center, Denver, Colorado - Good
- December 12 Attended Operating Criteria Meeting in Reno - Worden
- December 13 Attended Operating Criteria Advisory Board Meeting in Reno - Worden
- December 18 Attended Fallon Jaycees first organizational meeting in Fallon - Good

D. Hunting

Nevada Fish and Game Commission again set up a waterfowl hunter check station at the junction of Stillwater Road and Freeman Lane. Refuge personnel assisted during weekends early in the hunting season. Later in the season, hunting pressure was not sufficient for us to continue work at the station. A Fish and Game technician ran the check station on weekends throughout the waterfowl hunting season.

An estimated 11,985 persons hunted waterfowl on Stillwater. Most hunters came from Reno and Carson City. The importance of Stillwater Marsh to hunting in Western Nevada is shown by the 21% increase in hunters over last year.

Hunters reported a crippling loss of 15.9%. The total kill for the season was 17,542. The average bag for the season was 1.3 birds per hunter.

Principal species in the bag were: green-winged teal, shoveler, mallard, pintail and canvasback.

Hunter activity changed somewhat this year. With Swan Lake and most of Willow-Millen dry, more hunting was concentrated on Tule Lake. Best hunting took place on Nutgrass Unit and Tule Lake. Canvasbacks concentrated on Tule Lake on the public hunting area.

Hunting was good the opening weekend, but quickly dropped off. The season opened two weeks later than last year. Ducks peaked at 153,910 two weeks before the season and had dropped to 103,500 by opening day. Success was generally considered to be fair to poor.

E. Violations

Several verbal warnings were given to persons for minor infractions during the waterfowl season. It was felt more good was done in this manner than giving persons involved a citation.

As part of the Agreement with Nevada Fish and Game Commission under which Stillwater Wildlife Management Area was set up, the State handles most of the law enforcement work on the Area. The US GMA from Reno helps out as do refuge personnel with enforcement authority, but most of their enforcement work is during the waterfowl hunting season. Nevada Fish and Game Warden Earl Dudley does an excellent job, not only on the Stillwater Area, but also all around the Fallon area. He greatly helped the writer with his work prior to disposition of the late shooting cases listed in this section.

<u>Officer</u>	<u>Violator</u>	<u>Violation</u>	<u>Disposition</u>
Good, BSWF	Lewis Nagy S. Lake Tahoe, Calif.	Shooting waterfowl after legal hours	\$50 fine; 5 days in jail suspended
Good, BSWF	Gene Eppler S. Lake Tahoe, Calif.	Shooting waterfowl after legal hours	\$50 fine
Good, BSWF	Keith Olsen S. Lake Tahoe, Calif.	Shooting waterfowl after legal hours	\$50 fine; 5 days in jail suspended
Dudley, NFG	George R. Manes Reno, Nevada	Hunting waterfowl before legal hours	\$25 fine
Dudley, NFG	Greg E. Vroman Reno, Nevada	Hunting waterfowl before legal hours	\$25 fine
Dudley, NFG	John J. Hackett Carson City, Nev.	Hunting waterfowl before legal hours	\$50 fine
Dudley, NFG	Lee Hildreth Reno, Nevada	Fishing - no license in possession	Warning
Lauman, NFG	Irene Hines Reno, Nevada	Fishing - no license in possession	Warning

F. SAFETY

Stillwater has had 1,030 days without a lost time accident, but we had one reportable accident involving one of the eagles grabbing Foreman Olano with its talons while he was transferring it into a small cage. The talon punctured Manuel's "grand" finger but didn't require stitches. No work time was lost but our accident-free days as of December 31 are only 105.

Several sharp curves were rounded on Hunter Road since this is the main public access to Stillwater Marsh. They included the junction of Hunter and East County Roads, junction of Hunter and Division Roads and the crossing of Hunter Road over Hunter Drain. The road was widened at these junctions and guardrails were installed along the drain.

During the year all members of Stillwater's "permanent" staff with the exception of Refuge Manager Worden completed a Defensive Driving Techniques training course given by GSA in Reno, Nevada.

Monthly SAFETY meetings were held and included all personnel. Some of the topics covered were:

- January - Demonstration of signs around coyote getters and other signs needed at poison bait stations.
- February - Home SAFETY discussed; film "Lifting, Man's Age Old Problem" shown; lifting techniques discussed.
- March - Use of SAFETY goggles reviewed; boat SAFETY equipment check suggested
- April - Importance of SAFETY attitudes discussed; unsafe worker is a hazard to others and himself; hazard analysis forms reviewed.
- May - Temporary employee accident rate discussed as well as SAFETY items.
- June - Film "You Are The Lifeguard" shown; merits of "sea anchor" for use in Pyramid Lake discussed; injury costs in Government work reviewed.
- July - Revised Station SAFETY Plan required reading for all personnel; slide series "Keep It Clean For SAFETY'S Sake" shown.
- August - Station SAFETY Plan discussed; slick roads following summer thundershowers reviewed.
- September - Film "SAFETY Everywhere, All The Time" shown; artificial respiration discussed; poster showing mouth-to-mouth resuscitation placed in shop.
- October - First aid supplies needed for shop discussed; tractor roll bars and warning devices discussed.
- November - Report of installation of SAFETY screen on wheel tractor given; discussion on articles from "Family SAFETY" followed.
- December - Purchase of medicine cabinet for shop approved; tractor roll bars discussed further; report on tractor accidents read and discussed.

Quarterly SAFETY station checks and fire drills were conducted as needed. New life vests were purchased and a SAFETY screen was installed on the IHC 2706 wheeled tractor for use with the rotary brushbeater (see photo). Roll bars will be installed in the near future, as this tractor with its narrow space between the rear wheels presents problems for operator entrance and exit and for hydraulic control operation with installed roll bars.

VII OTHER ITEMS

At the close of January, Manager Worden's wife, Carol, completed her Licensed Practical Nurse's training and soon was employed as nurse in a local doctor's office. She has enjoyed her work there and is still "hard at it" as the year closes.

On March 10 James R. Good transferred to Stillwater from Kern-Pixley Refuge to fill our Assistant Refuge Manager position which has been vacant since January, 1967. Jim has been a welcome addition to our staff and has been busy these past months becoming acquainted with Stillwater's complicated water controversy and our grazing problems.

Since Stillwater has a sizeable area on which cattle graze it only seems natural that some of its personnel be buckaroos of sorts. Well, two of its members--Manager Worden and Assistant Manager Good--found out why cowboys walk a little bowlegged. Stillwater graziers have had a history of needing to be watched since their cattle and horses use such a large area of open range. It was decided in early March to have an all out roundup of cattle and see just how many each permittee had. Neither Larry nor Jim had been horseback riding for a time, and Good said he hadn't been on a horse for over two years. But they were both game and arrangements were made to rent two horses with saddles and bridles from a local rancher. Maintenceman Eugene "Duff" Duffney and Foreman Manuel Olano of the refuge staff also helped in the roundup. The permittees were all ready for this ride, because there were a couple of "fellow graziers" whom they felt had cattle on the Area they weren't supposed to have. Well, the roundup started on March 25. By the evening of the 26th, our two "old hands" were noted to be walking a little funny and were rubbing certain parts of their anatomy. On the 27th and 28th, with a strong wind blowing, they were still out riding along with the others. Cattle were rounded up, brought into corrals and counted by everyone. As fate would have it, the two graziers who were suspected of having too many head out, actually did! They have lost their permits and their cases are now pending before the U.S. Attorney. By Thursday evening our two cowboys were acting like the "real McCoy" and by Friday they were sort of sorry to see the roundup end. Both our "cowboys" enjoyed the week's events and, oh yes, we now have a 3-year Appaloosa gelding, which we use for riding on the Area in cooperation with Ray Alcorn of Wildlife Services.

On April 22 we hired Harold W. Freeman as a full time temporary Maintenance III. We have been hard pressed to keep him employed due to the personnel ceiling imposed on our Bureau. Since his initial employment in April, Freeman has been shifted to the "Intermittent" and back to the "Full Time" categories.

April was the month in which our Foreman I, Manuel Olano, completed his twenty years of Federal service. His 20-year pin was presented at our monthly Staff-SAFETY meeting held May 3. In October, he was promoted from Foreman I to Foreman II. Manuel is a very versatile employee and his ability for "improvisation" is greatly appreciated at this station.

Due to unforeseen circumstances, no student trainee was assigned to Stillwater this year. So as summer approached, we began a frantic search for extra help. We were fortunate to find Stanley Ford, a senior at Humboldt State College. Stan has a background that proved most valuable to the refuge program. He has worked as an engineer for California's Department of Highways. Before changing to wildlife management, he majored in math with emphasis in statistics. In the Air National Guard, he is presently the unit photographer and camera repairman. He is also very adept at bird identification.

The primary purpose of Stan's employment was to assist Biologist Napdár with a duck nest study. He also assisted with an aquatic vegetative survey. Other special projects were mapping band returns, making maps of habitat units, and engineering some structures and canals using level and transit. He gave instruction in the use of the level, transit and several mapping instruments. We could have used his abilities more, but the summer ended too soon. We feel that Stan has good potential and would be an asset to the Bureau. We wish him luck in his future endeavors.

Stillwater was honored with a visit by Director Gottschalk in July. This is a "first" for this station. In years gone by we have had many visits from Central Office personnel, but this is the first time the Director has "Come to call".

Churchill County opened a historical museum during the month of July. Stillwater was asked to put in a display. Our display is in two sections. One is a marsh scene containing various mounted waterfowl specimens; the other is a mammal display of study skins and tanned furs which was prepared by Ray Alcorn, Division of Wildlife Services. We hope in the future to replace the mammal section with mounted paired specimens of waterfowl, other marsh birds and mammals of the Area. This is something that is very much needed by students in this locality for use in conjunction with their classroom work.

During the summers of 1967 and 1968 Stillwater employed a Mexican youth under the YOC program. Eusebio Gonzalez became quite a favorite with all the staff. Although not yet out of high school, Eusebio took a

wife this summer and has really "settled down" into married life. He is a very industrious young man and we all wish him the best.

Stillwater hosted a picnic at Likes Lake in July. It was well attended and everyone enjoyed the games of horse shoes and the water skiing.

Our Assistant Refuge Manager Good is very "participation-minded". When the annual Lions Club Labor Day celebration became the local / topic of conversation, he thought it a very good idea that Stillwater enter a float. Jim enlisted the assistance of the local Nevada Fish and Game personnel and the Stillwater staff and came up with a prize winner. The theme of the float was "Wildlife Is For You" and took first prize in the Civic Organization category.

In September Stillwater accepted the responsibility of providing supervision and training to give an Indian high school girl an opportunity to learn office procedures and methods under the Neighborhood Youth Corps. Charlotte Brown came into our office after school in an attempt to learn some of the things that are required when one is hired for clerical work. Due to Charlotte's extremely shy nature, she was not "happy" in her work at Stillwater and requested her VISTA advisor to place her in other work. After a lapse of six weeks, Jeanette "Cindy" Hooper replaced Charlotte on December 9. Cindy likes to work with figures and has become quite adept using the adding machine. She also uses the calculator and the photocopying machine as well as the duplicator. Her sunny disposition sees the bright side of events and the "fellas" delight in shocking her with scorpions, dead mice, etc. Under the Neighborhood Youth Corps these students are limited to nine hours work a week. The only cost to our Bureau is for supervision and training as Bureau of Indian Affairs picks up the tab for salary, insurance, and other related items.

The Stillwater Refuge leaflet has recently been revised and submitted for printing. The current leaflet was written in 1953 and habitat conditions have changed greatly since they were described at that time, making this revision necessary.

The annual no-host Christmas Party was held December 14. This year an exchange of "fun" gifts added to the merriment of the crowd who spent the evening dining and dancing.

ANAHO ISLAND NATIONAL WILDLIFE REFUGE

I GENERAL

A. Weather Conditions

Weather at Pyramid Lake is not significantly different from Stillwater.

B. Habitat Conditions

Water. Pyramid Lake lost 2.7 feet in elevation during the year. A high point of 3788.8 was reached in March and maintained into early May. The level fell to the low of 3786.1 by early December.

January 3, 1968	3787.7	July	No reading
February 5	3788.0	August 8	3787.7
March 5	3788.6	September 4	3787.2
April 3	3788.8	October 3	3786.8
May 3	3788.8	November 6	3786.4
June 26	3788.4	December 5	3786.1

Total inflow for the water year October 1, 1967 to September 30, 1968 was about 240,000 acre feet. According to Bureau of Reclamation, this is 75,000 to 125,000 acre feet more than would have occurred if the Operating Criteria and Procedures had not been in effect.

II WILDLIFE

A. Migratory Birds

Waterbirds. The white pelican, double-crested cormorant and great blue heron returned to Anaho Island to nest. Cormorant and heron production was about the same as last year, 1,140 and 66 respectively.

Pelican production was more successful than last year. The number of nests increased and production at 3,090, was up 87%. We feel a major reason was less human disturbance during the nesting period. Little evidence was found of nest mortality. Hatching dates of nests in the several colonies appeared to be quite close together, for on July 8 there were two general sizes. One group was grown and almost able to fly. The other group was still down-covered but highly mobile.

This year, there appeared to be a blending of the colonies. Instead of the seven distinct colonies present last year, nesting activities appeared to occur all along the base of the mountain with two small outlying colonies.

Gulls and Terns. The location and size of the California gull and Caspian tern colonies was about the same as last year. Gull production was estimated to be 4,200 and terns, 24.

B. Reptiles

Rattlesnakes were commonly seen on the visits to Anaho Island.

III DEVELOPMENT and MAINTENANCE

Most work in this category is placement and maintenance of recognition signs, no trespassing signs, and refuge boundary markers. Some planning for needed improvements in signs was accomplished, but no field work was undertaken.

An excess 60 h.p. Mercury outboard motor was obtained from the Charles M Russell Range and installed on the 16-foot cruiser to replace the underpowered, unreliable 40 h.p. Scott.

V FIELD INVESTIGATIONS or APPLIED RESEARCH

The Stillwater staff assisted Bureau Research Biologist James O. Keith and his crew with pelican banding. A Nevada Fish and Game technician stationed at Pyramid Lake also helped.

On July 8th 383 local pelicans were banded. Green patagial markers were placed on the left wing and green streamers on the leg band of 75 of the banded birds. The marking was done to help obtain additional knowledge of breeding data on young birds.

On June 1st, 24 pelican eggs were collected for James Keith. The eggs were sent to a graduate student at a university in the Lake States. He seems to have found a significant difference in the thickness and composition of recent eggshells compared to older ones. The purpose of his study is to develop a correlation between increased use of pesticides and the changes in recent eggshells.

VI PUBLIC RELATIONS

A well known local photographer, Gus Bundy, and writers Anthony Amaral and Tina Nappe, accompanied the banding crew to gather material for a magazine article. At last word the article is to be published in American Forests. Mrs. Nappe, who is Mr. Bundy's daughter, has requested additional time on the Island to prepare material for a children's book. Beside being competent in the arts of writing and photography, these people are among the most sincere and hard working conservationists in Nevada.

Many other requests to visit the Island to take photos for private collections and strictly commercial ventures were denied.

A much needed Anaho leaflet was printed in October. The text was based on a wilderness study report also submitted this year.

Violations. No citations were issued, but a Nevada Fish and Game Warden issued a warning to one man the second time he was found walking his dog on the beach. The Fish and Game has been asked to give citations on the first or second offense, depending on circumstances. We have also advised the Coast Guard Auxiliary Officer and the Tribal Game Warden that no one should be on the Island at any time without written permission from the Bureau of Sport Fisheries and Wildlife. Some people who were permitted to make unescorted visits many years ago have continued to claim authorization.

VII OTHER ITEMS

The Bureau of Outdoor Recreation has drafted a large volume reporting on their study of Pyramid Lake's recreation potential. If their predictions of use and proposals for development are realized, a large section of the lake and some shoreline would need to be set aside as resting and feeding areas for the birds. Also, a buffer zone around the Island would be essential. A buffer is needed to some degree now and is being considered. However, cost to establish and maintain buoys in the deep, windswept lake will be high.

The locations of the nesting colonies were mapped during several visits to Anaho Island. All nesting activity was several weeks earlier than last year.

White Pelican - Shown in _____

Colonies were generally blended together along the base of the mountain. The two isolated colonies are small and produce few young. Production was 3,090 from 2,059 nests.

Double-crested Cormorant - Shown in _____

Production - 1,140 from 475 nests

Great Blue Heron - Shown in _____

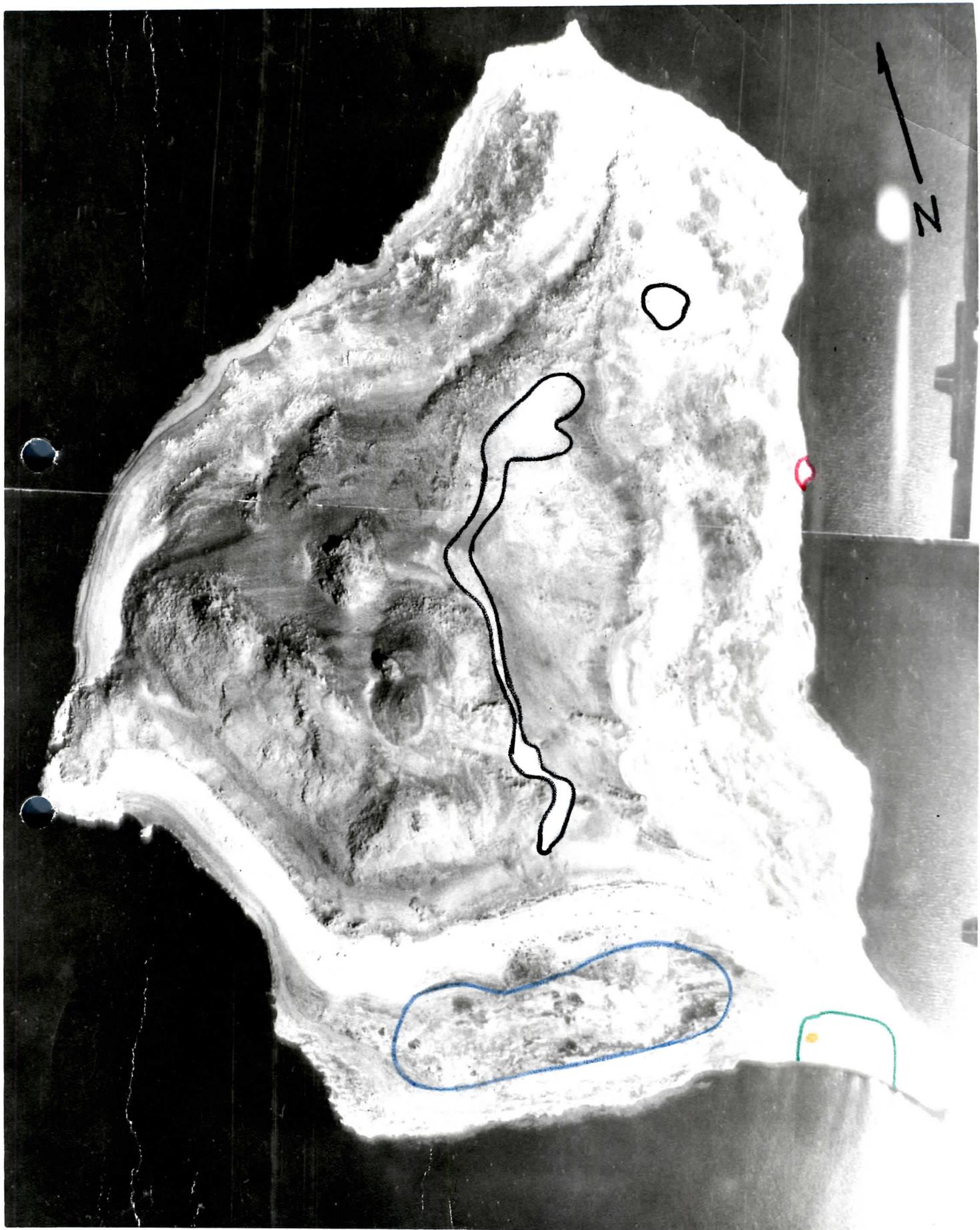
Production - 66 from 30 nests

California Gull - Shown in _____

Production - 4,200 from 2,800 nests

Caspian Tern - Shown in _____

Production - 24 from 12 nests



MIGRATORY BIRDS
(other than waterfowl)Refuge Anaho Island N. W. Refuge Months of May to August 19568

(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>										
White Pelican			8,000	7/10			3	2,059	3,090	8,500
Double-crested Cormorant			2,100	7/15			1	475	1,140	2,300
Great Blue Heron			130	7/15			1	30	66	150
II. <u>Shorebirds, Gulls and Terns:</u>										
California Gull			7,000	7/15			1	2,800	4,200	9,000
Caspian Tern			50	7/15			1	12	24	75

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove					
IV. <u>Predaceous Birds</u> : Golden eagle Duck hawk Horned owl Magpie Raven Crow					
				Reported by.....	

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.

FALLON NATIONAL WILDLIFE REFUGE

Fallon Refuge data and narrative is included with that for the Pelican Island Unit. These areas overlap and cannot realistically be separated.

SIGNATURE PAGE

Credits - Refuge Manager Worden - Sections I-A; I-B (Water Negotiations);
 III-B; Sections I, III, VI and VII of
 Anaho Island Refuge; Fallon Refuge

Refuge Manager Good - Sections I-B; III-A; IV; VI-A; VI-C; VI-E;
 VI-F; NR-6; NR-7; NR-8; NR-12

Biologist Napier - Sections I-B (Food and Cover); II; III-C;
 III-E; IV-C; V; VI-D; Section II of Anaho
 Island Refuge; NR-1; NR-1A; NR-1B; NR-1C;
 NR-2; NR-3; NR-4; NR-5; NR-8A

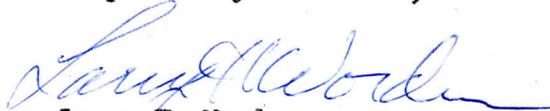
Clerk Cress - Sections VI-B; VI-C, VII-A; Typing and assembly
 of report

NYC Hooper - Mounting of photos

Photography Credit - As shown

Photo Captions - Good

Respectfully submitted,



Larry H. Worden
 Refuge Manager

Date: February 11, 1969

Approved, Regional Office:

Date: _____

 (Signature)

 (Title)

WATERFOWL

REFUGE Stillwater Wildlife Management Area

MONTHS OF January TO April, 1968

(1) Species	(2) Weeks of reporting period									
	12/31-1/6	1/7-13	1/14-20	1/21-27	1/28-2/3	2/4-10	2/11-17	2/18-24	2/25-3/2	3/3-9
	1	2	3	4	5	6	7	8	9	10
Swans:		Aerial								
Whistling Trumpeter	250	130	150	175	200	245	475	225	86	58
Geese:										
Canada	600	200	225	300	325	400	350	280	169	157
Cackling										
Brant										
White-fronted										
Snow								75	300	600
Blue										
Other Total Geese	600	200	225	300	325	400	350	355	469	757
Ducks:										
Mallard	200	135	125	175	200	235	2,250	2,225	2,205	1,475
Black										
Gadwall			50	75	100	100	350	750	1,225	1,125
Baldpate	25	13	10	20	25	25	400	1,200	1,915	750
Pintail	25	8	25	50	60	85	5,750	8,900	12,675	10,150
Green-winged teal	50	25	50	125	175	215	4,525	8,500	13,800	10,475
Blue-winged teal										
Cinnamon teal							455	1,450	2,700	1,825
Shoveler	50	25	50	125	175	225	350	425	900	525
Wood										
Redhead			15	25	25	35	310	870	1,630	1,275
Ring-necked							10			5
Canvasback	75	28	100	300	500	825	2,510	4,600	3,400	1,825
Scaup							10			25
Goldeneye										
Bufflehead	50	8	10	5	5	5	35	190	375	475
Ruddy	100	90	125	150	200	275	1,515	1,700	1,900	2,250
Other Mergansers			200	450	600	725	550	575	500	325
Total Ducks	575	332	760	1,500	2,065	2,750	19,020	31,385	43,225	32,505
Coot:	75	35	100	400	800	1,565	4,775	5,600	6,250	5,125

3 -1750a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE Stillwater Wildlife Management AreaMONTHS OF January TO April, 19 68

(1) Species	(2) Weeks of reporting period							(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	3/10-16: 11	3/17-23 12	3/24-30 13	3/31-4/6 14	4/7-13 15	4/14-20 16	4/21-27 17	18		
Swans:			Aerial			Aerial			14,203	
Whistling	30	2	1	2						
Trumpeter										
Geese:										
Canada	120	100	33	33	30	27	40		23,723	
Cackling										
Brant										
White-fronted										
Snow	400	200							11,025	
Blue										
Other Total Geese	520	300	33	33	30	27	40		34,748	
Ducks:										
Mallard	895	630	725	740	580	460	500		96,285	
Black										
Gadwall	1,085	1,065	2,450	3,400	1,800	620	800		104,965	
Baldpate	875	825	3,450	4,550	2,750	50	50		118,531	
Pintail	8,215	5,550	7,650	5,875	2,900	785	300		483,021	
Green-winged teal	7,475	4,050	28,975	25,400	19,700	13,625	5,000		995,155	
Blue-winged teal										
Cinnamon teal	2,390	2,390	4,400	6,600	4,150	1,850	2,500		214,970	
Shoveler	735	960	11,150	12,650	8,400	2,525	350		277,340	
Wood										
Redhead	1,175	1,075	2,050	2,875	2,575	1,300	1,500		117,145	
Ring-necked						10			175	
Canvasback	1,835	1,500	2,050	1,245	950	245	75		154,441	
Scaup	30	25	25	25	25	25	10		1,400	
Goldeneye			25		25	15	5		490	
Bufflehead	430	200	105	130	90	65	50		15,596	
Ruddy	3,650	5,025	12,125	11,850	8,700	7,100	4,000		425,285	
Other Mergansers	300	450	125	75	50				34,475	
Total Ducks	29,090	23,745	75,305	75,415	52,695	28,675	15,140		3,039,274	
Coot:	9,475	14,000	28,650	26,900	24,200	19,025	14,000		1,126,825	
				(over)						

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	14,203	475	
Geese	34,748	757	
Ducks	3,039,274	75,415	
Coots	1,126,825	28,650	

SUMMARY

Principal feeding areas Willow-Millen, Pintail Bay and
Nutgrass Unit

Principal nesting areas _____

Reported by Larry D. Napier, Wildlife Biologist

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

W A T E R F O W L

REFUGE Stillwater Wildlife Management Area

MONTHS OF May TO August, 19 68

(1) Species	(2) Weeks of reporting period									
	4/28-5/4	5/5-5/11	5/12-5/18	5/19-5/25	5/26-6/1	6/2-6/8	6/9-15	6/16-22	6/23-29	6/30-7/6
	1	2	3	4	5	6	7	8	9	10
Swans:							Aerial			
Whistling Trumpeter										
Geese:										
Canada	55	70	90	120	140	150	150	165	175	175
Cackling Brant										
White-fronted Snow										
Blue										
Other Total Geese	55	70	90	120	140	150	150	165	175	175
Ducks:										
Mallard	500	600	800	1,150	1,600	1,925	2,275	2,400	2,750	2,775
Black										
Gadwall	1,150	1,000	950	875	850	875	900	1,000	1,125	1,975
Baldpate	50	40	25	10	30	45	55	40	40	225
Pintail	300	400	800	1,600	2,900	4,600	6,275	8,500	10,100	8,700
Green-winged teal	3,500	2,000	600	100	50	50	40	50	50	50
Blue-winged teal		2	2				2	6	2	5
Cinnamon teal	2,600	2,425	2,100	1,950	1,800	1,600	1,680	1,800	1,975	2,450
Shoveler	200	225	200	150	125	100	100	125	175	350
Wood										
Redhead	2,000	1,875	1,650	1,600	1,500	1,450	1,500	1,600	1,750	2,225
Ring-necked										
Canvasback	25	15	5	5	5	5	10	10	10	50
Scaup	10	5								
Goldeneye	5									
Bufflehead	25	10								
Ruddy	2,800	1,725	1,350	900	675	550	415	450	500	1,175
Other C. Merganser										
Total Ducks	13,165	10,322	8,482	8,340	9,535	11,200	13,252	15,981	18,477	19,980
Coot:	9,000	7,500	6,200	5,300	4,200	4,450	4,600	4,800	7,450	14,900

3 -1750a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE Stillwater Wildlife Management AreaMONTHS OF May TO August, 19 68

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	7/7-13	7/14-20	7/21-27	7/28-8/3	8/4-10	8/11-17	8/18-24	8/25-31	waterfowl days use	Broods: seen	Estimated total
Swans:					Aerial 1					7	
Whistling											
Trumpeter											
Geese:											
Canada	180	200	345	425	500	500	425	675	31,780	15	67
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other Total Geese	180	200	345	425	500	500	425	675	31,780	15	67
Ducks:											
Mallard	2,810	3,050	2,400	2,625	2,955	3,450	3,975	3,650	291,830	26	955
Black											
Gadwall	4,325	4,975	4,450	3,750	2,375	2,700	3,025	3,200	276,500	19	1,699
Baldpate	725	875	300	250	325	350	375	750	31,570	2	8
Pintail	6,460	7,650	4,700	7,875	10,850	14,250	18,800	17,300	924,420	6	453
Green-winged teal	60	75	200	475	700	2,425	3,550	4,050	126,175		48
Blue-winged teal									133		
Cinnamon teal	3,100	3,625	4,800	5,600	6,850	8,175	9,300	8,950	495,460	44	2,808
Shoveler	525	700	700	1,425	2,050	3,250	4,550	4,800	138,250	8	134
Wood											
Redhead	3,410	3,925	2,450	2,550	2,750	3,700	4,500	4,100	311,745	39	2,231
Ring-necked											
Canvasback	160	175	525	275	125	475	825	675	23,625	2	14
Scaup									105		
Goldeneye									35		
Bufflehead									245		
Ruddy	3,975	4,375	3,475	3,250	2,825	3,075	3,250	2,055	257,740	15	593
Other C. Merganser							1		7		
Total Ducks	25,550	29,425	24,000	28,075	31,805	41,850	52,151	49,530	2,877,840	161	8,943
Coot:	26,975	28,750	36,350	43,650	51,475	63,550	72,100	81,350	3,308,200	24	6,720
				(over)							

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	7	1	
Geese	31,780	675	67
Ducks	2,877,840	52,151	8,943
Coots	3,308,200	81,350	6,720

SUMMARY	
Principal feeding areas	Foxtail, Dry and Tule Lakes and Pintail Bay
Principal nesting areas	Tule and Goose Lakes, Nutgrass Unit and Pintail Bay
Reported by <u>Larry D. Napier, Wildlife Biologist</u>	

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

W A T E R F O W L

REFUGE Stillwater Wildlife Management Area

MONTHS OF September TO December, 19 68

(1) Species	(2) Weeks of reporting period									
	9/1-7	9/8-14	9/15-21	9/22-28	9/29-10/5	10/6-12	10/13-19	10/20-26	10/27-11/2	11/3-9
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling				Aerial* 1	1					
Trumpeter									15	411
Geese:										
Canada	800	745	725	450	445	410	420	275	500	500
Cackling										
Brant										
White-fronted										
Snow				75	75	75	200	100	300	575
Blue										
Other Total Geese	800	745	725	525	520	485	620	375	800	1,075
Ducks:										
Mallard	5,650	6,425	7,450	6,300	6,050	4,975	3,900	4,050	5,100	4,600
Black										
Gadwall	10,625	10,850	11,125	8,150	9,325	10,825	4,000	4,075	4,175	3,300
Baldpate	2,675	4,100	5,500	9,650	7,750	16,050	6,000	1,400	2,700	3,750
Pintail	20,550	24,575	26,825	33,625	34,375	21,875	18,000	8,625	7,100	15,675
Green-winged teal	23,300	28,650	33,700	36,750	38,850	30,100	25,000	34,200	28,850	20,325
Blue-winged teal										
Cinnamon teal	6,100	5,475	4,850	2,375	1,925	975	525	725	200	100
Shoveler	20,000	21,750	24,925	25,425	26,675	25,800	16,500	15,425	16,850	11,500
Wood										
Redhead	10,775	11,250	11,775	9,150	10,575	7,125	5,500	4,225	3,575	1,750
Ring-necked										
Canvasback	1,275	2,050	2,775	4,075	6,875	14,875	16,000	18,250	13,525	11,800
Scaup							25	75	50	50
Goldeneye										
Bufflehead							50	75	65	200
Ruddy	2,150	2,500	3,275	8,250	11,500	11,750	8,000	7,075	7,275	5,500
Other C. Merganser				5	10	25	25	25	25	75
Hooded Merganser										
Total Ducks	103,100	117,625	132,200	143,755	153,910	144,375	103,525	98,225	89,490	78,625
Total:	114,150	108,600	103,750	65,800	49,575	23,725	35,000	18,850	10,775	14,000

Coat: **Nevada Fish and Game Aerial

WATERFOWL
(Continuation Sheet)REFUGE Stillwater Wildlife Management AreaMONTHS OF September TO December, 19 68

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	11/10-16:	11/17-23:	11/24-30:	12/1-7:	12/8-14:	12/15-21:	12/22-28:	18			
Swans:	Aerial*				Aerial*						
Whistling	1,500	2,625	2,150	1,780	1,400	1,425	1,175		88,515		
Trumpeter											
Geese:											
Canada	580	940	775	600	305	300	400		64,190		
Cackling											
Brant											
White-fronted											
Snow	2,500	900	750	600	600				47,250		
Blue											
Other Total Geese	3,080	1,840	1,525	1,200	905	300	400		111,440		
Ducks:											
Mallard	4,200	4,475	3,950	3,575	2,725	1,785	1,550		537,320		
Black											
Gadwall	2,475	4,050	2,175	550	320	330	275		606,375		
Baldpate	3,350	1,050	550	150	275	50	25		455,175		
Pintail	14,200	6,450	5,400	4,550	2,175	1,325	1,150		1,725,325		
Green-winged teal	24,000	14,600	9,250	3,000	3,950	2,035	1,650		2,507,470		
Blue-winged teal											
Cinnamon teal	50	60	25		15	10			163,870		
Shoveler	11,200	7,600	4,350	1,025	1,050	825	675		1,621,025		
Wood											
Redhead	625	300	175	25	150	25	10		539,070		
Ring-necked		25	25		5				385		
Canvasback	5,700	3,200	1,900	525	350	550	375		728,700		
Scaup	100	250	200	150	50	75	50		7,525		
Goldeneye	50	50	75	75	25	75	50		2,800		
Bufflehead	450	725	550	375	125	50	25		18,830		
Ruddy	4,200	2,600	2,100	1,750	400	1,300	800		562,975		
Other C. Merganser	350	500	400	325	250	525	400		20,580		
Hooded Merganser	10				5				105		
Total Ducks	70,960	45,935	31,125	16,075	11,870	8,960	7,035		9,497,530		
Coot:	8,700	3,100	1,950	650	600	650	475		3,922,450		

* Aerial by Nevada Fish and Game

(over)

	(5)	(6)	ANNUAL USE DAYS (7)
	Total Days Use	Peak Number	Total Production
Swans	88,515	2,625	102,725
Geese	111,440	3,080	177,968
Ducks	9,497,530	153,910	15,414,644
Coots	3,922,450	114,150	8,357,475
1968 Use Days			24,052,812

SUMMARY	
Principal feeding areas	Foxtail Lake, Nutgrass Unit, Tule and Goose Lakes.
Principal nesting areas	
Reported by	Larry D. Napier, Wildlife Biologist

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Stillwater W. M. Area Months of January to April 1968

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
<u>I. Water and Marsh Birds:</u>										
Eared grebe	2	3/20	500	4/30	Still Present				800	
Western grebe	3	2/29	600	4/18	Still Present				900	
Pied-billed grebe	1	late Feb.	50	4/30	Still Present				75	
White pelican	5	3/16	500	4/30	Still Present				900	
Double-crested cormorant	2	3/27	2	3/27	Still Present				5	
Great blue heron	Previous Period		300	4/20	Still Present				400	
Common egret	2	3/22	35	4/30	Still Present				50	
Snowy egret	1	3/27	50	4/30	Still Present				70	
Black-crowned night heron	Previous Period		200	4/30	Still Present				300	
Sora	1	4/27*	Unknown	April	Still Present				Unknown	
* Believed to have heard calling in March										
<u>II. Shorebirds, Gulls and Terns:</u>										
Snowy plover	1	4/4	75	4/30	Still Present				150	
Killdeer	5	2/12	800	4/6	Still Present				1,000	
Common snipe	4	4/24	30	4/30	Still Present				60	
Long-billed curlew	1	4/1	10	4/30	Still Present				30	
Spotted sandpiper	1	2/3	150	4/30	Still Present				250	
Greater yellowlegs	1	1/20	75	4/10	Still Present				150	
Least/Western sandpiper	2	4/4	3,000	4/30	Still Present				5,000	
Long-billed dowitcher	1	3/24	250	4/30	Still Present				400	
American Avocet	12	2/25	2,500	4/30	Still Present				3,500	
Black-necked stilt	2	3/27	1,000	4/30	Still Present				1,500	
Wilson's phalarope	100	4/30	1,500	4/30	Still Present				2,500	
Ring-billed gull	10	2/18	300	4/30	Still Present				400	
Forster's Tern	1	4/10	40	4/30	Still Present				60	
Caspian Tern	3	4/18	15	4/30	Still Present				25	

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	2	Early Mar.	50	4/30	Still Present				60
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle	Permanent Resident		3	2/18	Permanent Resident				10
Duck hawk									
Horned owl	Permanent Resident		None Seen		Permanent Resident				5
Magpie	Permanent Resident		200	Early Mar	Permanent Resident				250
Raven	Permanent Resident		25	Early Mar	Permanent Resident				50
Crow									
Red-tailed hawk	Previous Period		5	Early Mar	Still Present				15
Rough-legged hawk	Previous Period		15	Late Feb	2 3/30				30
Bald eagle	Previous Period		5	2/7	1 3/18				15
Marsh hawk			25	Mid-Mar	Permanent Resident				40
Prairie falcon	Previous Period		5	Early Feb	2 2/18				15
Sparrow hawk			75	Mid-Mar	Permanent Resident				125
Barn owl	1	4/8	1	4/8	Still Present				5
Burrowing owl	2	3/25	6	Early Apr	Still Present				20
Short-eared owl	Previous Period		1	1/14	1 1/14				15

Reported by Larry D. Napier, Biologist

INSTRUCTIONS

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

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Stillwater W. M. Area Months of May to August 19568

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Eared Grebe	Previous Period		200	8/12	Still Present					350
Western Grebe	"	"	1,200	7/12	"	"		250	700	1,800
Pied-billed Grebe	"	"	500	8/23	"	"		75	300	600
White Pelican	"	"	2,500	8/23	"	"				4,000
Double-crested Cormorant	"	"	20	8/12	"	"				50
Great Blue Heron	"	"	700	7/26	"	"	3	135	400	750
Common Egret	"	"	100	8/12	"	"		10	30	150
Snowy Egret	"	"	500	7/26	"	"		75	225	700
Black-crowned Night Heron	"	"	800	7/26	"	"		125	500	1,000
White-faced Ibis	32	7/12	500	8/23	"	"				700
Virginia Rail	2	5/10	600	8/31	"	"		100+	400+	700
Sora	Previous Period		350	8/31	"	"		50+	200+	400
II. Shorebirds, Gulls and Terns:										
Snowy Plover	Previous Period		400	8/12	Still Present				225	500
Killdeer	"	"	1,800	8/12	"	"			900+	2,200
Common Snipe	"	"	30	5/1	"	"				75
Long-billed Curlew	"	"	70	7/12	"	"		15	30	125
Spotted Sandpiper	"	"	150	5/5	1	5/20				200
Greater Yellowlegs	"	"	50	8/12	Still Present					100
Least/Western Sandpiper	"	"	4,000	8/31	"	"				6,000
Long-billed Dowitcher	"	"	3,800	8/23	"	"				4,500
Marbled Godwit	50	7/26	60	7/26	"	"				125
American Avocet	Previous Period		6,000	8/23	"	"			3,500	8,000
Black-necked Stilt	"	"	3,500	7/26	"	"			2,000	4,000
Wilson's Phalarope	"	"	3,000	7/12	"	"			1,200	5,000
Northern Phalarope	50	7/6	6,000	7/18	"	"				10,000
Ring-billed Gull	Previous Period		800	7/26	"	"				1,000
Forster's Tern	"	"	500	8/13	"	"			250	700
Caspian Tern	"	"	25	7/19	1	8/14				50
Black Tern	25	7/12	250	(over) 8/13	4	8/19				300

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Previous Period	300	8/9	Still Present	200
White-winged dove					500
IV. <u>Predaceous Birds:</u>					
Golden eagle	Permanent Resident	1	8/23		2
Duck hawk					
Horned owl	Permanent Resident			Unknown	10
Magpie	Permanent Resident	175	7/10-20		200
Raven	Permanent Resident	60	7/1-10		70
Crow					
Red-tailed Hawk	Previous Period	1	7/10	Still Present	10
Swainson's Hawk	3 5/11	3	5/11	Still Present	15
Marsh Hawk	Permanent Resident	15	8/31	Unknown	25
Sparrow Hawk	Permanent Resident	60	8/20-31		75
Barn Owl	Previous Period	2	5/6	Still Present	18
Burrowing Owl	Previous Period	6	5/11	Still Present	30
Short-eared Owl	Previous Period	1	8/23	Still Present	10

Reported by Larry D. Nanier

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
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- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

MIGRATORY BIRDS
(other than waterfowl)Refuge Stillwater W. M. Area Months of September 1 to December 31 1968

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
<u>I. Water and Marsh Birds:</u>										
Eared grebe	Previous Period		100	9/1	15	10/31				150
Western grebe	Previous Period		175	9/30	2	12/2				250
Pied-billed grebe	Previous Period		200	9/1	1	12/20				250
White pelican	Previous Period		2,200	9/4	1	12/20				2,300
Double-crested cormorant	Previous Period		30	10/31	3	11/8				50
Great blue heron	Previous Period		125	9/20	Still Present					150
Common egret	Previous Period		125	9/4	2	12/13				140
Snowy egret	Previous Period		175	9/4	2	10/22				200
Black-crowned night heron	Previous Period		40	9/30	Still Present					75
White-faced ibis	Previous Period		25	9/1	12	9/3				25
Virginia rail	Previous Period		50	9/30	Unknown Late Oct.					100
Sora	Previous Period		Unknown		Unknown					Unknown
<u>II. Shorebirds, Gulls and Terns:</u>										
Snowy plover	Previous Period		100	Early Sept. Unknown		Mid-Sept.				125
Killdeer	Previous Period		1,000	9/1	10	12/20				1,200
Common snipe	Previous Period		150+	11/22	Unknown		Early Dec.			300+
Long-billed curlew	Previous Period		25	9/1	10	10/22				35
Greater yellowlegs	Previous Period		50	Early Oct.		3	12/9			100
Least/Western sandpiper	Previous Period		4,000	9/1	2	11/14				6,000
Long-billed dowitcher	Previous Period		34,000	9/20	2	11/14				45,000
Marbled godwit	Previous Period		150	9/1	3	11/24				175
American avocet	Previous Period		10,000	9/4	100	11/22				13,000
Black-necked stilt	Previous Period		900	9/4	4	9/10				1,000
Wilson's phalarope	Previous Period		200	9/1	150	9/4				250
Northern phalarope	Previous Period		400	9/1	15	10/9				450
Ring-billed/Calif. gulls	Previous Period		175	10/4	Still Present					300
Forster's tern	Previous Period		2	9/2	1	9/4				3

(over)

(1)	(2)	(3)	(4)	(5)	(6)		
III. <u>Doves and Pigeons:</u>							
Mourning dove	Previous Period	25	9/1	1	9/17	40	
White-winged dove							
IV. <u>Predaceous Birds:</u>							
Golden eagle	Permanent Resident	5	11/21			10	
Duck hawk							
Horned owl	Permanent Resident	1	10/11			5	
Magpie	Permanent Resident	275	December			325	
Raven	Permanent Resident	35	Early Sept.			40	
Crow	8	10/4	8	10/4	8	10/4	8
Red-tailed hawk	Previous Period	2	10/8	1	10/16		10
Swainson's hawk	Previous Period	None Observed		Unknown			5
Rough-legged hawk	1	10/26	10	12/19	Still Present		30
Bald eagle	1	12/5	1	12/19	Still Present		5
Marsh hawk	Permanent Resident	20	12/19				30
Prairie falcon	1	10/26	5	Late Nov.	Still Present		10
Sparrow hawk	Permanent Resident	50	9/1				60
Barn owl	Permanent Resident	None Observed					10
Burrowing owl	Previous period	2	Early Sept.	2	Late Sept.	Reported by Larry D. Napier, Biologist	10
Short-eared owl	Previous period	20	Late Dec.	Still Present			40

INSTRUCTIONS

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- (6) Total: Estimated total number of the species using the refuge during the period concerned.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Stillwater W. M. Area

For 12-month period ending August 31, 1968

Reported by Larry D. Napier

Title Wildlife Biologist

(1) Area or Unit Designation	(2) Habitat			(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage				
1 Stillwater Point Reservoir	Crops		Ducks	1,193,640	104	186
	Upland	46	Geese	38,507	2	
	Marsh	180	Swans	7,595		
	Water	1,659	Coots	473,060	160	256
	Total	1,885	Total	1,712,802	266	442
2 Upper Foxtail	Crops		Ducks	338,835	134	240
	Upland	30	Geese	17,605	2	4
	Marsh	60	Swans	735		
	Water	340	Coots	120,155	60	96
	Total	430	Total	477,330	196	340
3 Foxtail Lake	Crops		Ducks	3,085,565	150	264
	Upland		Geese	87,220		
	Marsh	181	Swans	25,662		
	Water	930	Coots	1,959,650	240	384
	Total	1,111	Total	5,158,097	390	648
4 Dry Lake	Crops		Ducks	1,230,670	148	264
	Upland	45	Geese	1,400		
	Marsh	60	Swans	9,709		
	Water	494	Coots	1,359,575	200	320
	Total	599	Total	2,601,354	348	584
5 Cattail Lake	Crops		Ducks	304,045	30	54
	Upland	15	Geese	3,129		
	Marsh	10	Swans	7		
	Water	260	Coots	144,725	100	160
	Total	285	Total	451,906	130	214
6 Division Pond	Crops		Ducks	54,880		
	Upland	10	Geese			
	Marsh	1	Swans	350		
	Water	99	Coots	8,050		
	Total	110	Total	63,280		
7 Goose Lake	Crops		Ducks	618,009	420	744
	Upland	98	Geese	5,012		
	Marsh	250	Swans	1,596		
	Water	806	Coots	782,425	350	560
	Total	1,154	Total	1,407,042	770	1,304

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

- (5) **Production:** Estimated total number of young raised to flight age.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Stillwater W. M. Area For 12-month period ending August 31, 1968

Reported by Larry D. Napier Title Wildlife Biologist

(1) Area or Unit Designation	(2) Habitat			(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage				
8 Tule Lake	Crops		Ducks	826,980	762	1,363
	Upland	153	Geese	2,499		
	Marsh	1	Swans	3,402		
	Water	1,213	Coots	939,050	300	500
	Total	1,367	Total	1,771,931	1,062	1,863
9 Nutgrass	Crops		Ducks	1,639,379	914	1,520
	Upland	250	Geese	56,987	2	
	Marsh	1,400	Swans	2,093		
	Water	2,050	Coots	418,950	800	1,280
	Total	3,700	Total	2,117,409	1,716	2,800
10 Swan Lake	Crops		Ducks	434,805	154	270
	Upland	225	Geese	2,051		
	Marsh	10	Swans	2,044		
	Water	1,522	Coots	438,760	50	80
	Total	1,757	Total	877,660	204	350
11 Pintail Bay	Crops		Ducks	2,584,302	698	1,236
	Upland	150	Geese	1,610		
	Marsh	75	Swans	5,320		
	Water	1,425	Coots	2,250,150	550	760
	Total	1,650	Total	4,841,382	1,248	1,996
12 Lead Lake	Crops		Ducks	167,790	362	642
	Upland	140	Geese	3,836	4	4
	Marsh	485	Swans	1,750		
	Water	540	Coots	112,175	200	320
	Total	1,165	Total	285,551	566	966
13 Millen Lake	Crops		Ducks	573,685	206	366
	Upland	507	Geese	4,837	4	8
	Marsh	75	Swans	210		
	Water	1,150	Coots	297,850	200	360
	Total	1,732	Total	876,582	410	734
14 Willow Lake	Crops		Ducks	630,700	218	384
	Upland	425	Geese	3,318	4	9
	Marsh	15	Swans	35		
	Water	1,096	Coots	292,950	750	1,260
	Total	1,536	Total	927,003	972	1,653

(over)

INSTRUCTIONS

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- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

- (5) **Production:** Estimated total number of young raised to flight age.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Stillwater W. M. Area For 12-month period ending August 31, 1968

Reported by Larry D. Napier Title Wildlife Biologist

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage			
15 East Alkali Flat (N. of Division Road)	Crops		Ducks		
	Upland	3,200	Geese		
	Marsh		Swans		
	Water		Coots	DRY THROUGHOUT PERIOD	
	Total	3,200	Total		
16 Big Water	Crops		Ducks	45,150	
	Upland	1,600	Geese		
	Marsh		Swans		
	Water	200	Coots		
	Total	1,800	Total	45,150	
17 Indian Lakes and Vaughn Slough	Crops		Ducks	577,675	478
	Upland	3,400	Geese	8,015	
	Marsh	10	Swans	1,505	
	Water	1,090	Coots	208,355	80
	Total	4,500	Total	795,550	558
18 Pelican Island	Crops		Ducks	1,286,005	40
	Upland	250	Geese	58,198	
	Marsh	1,085	Swans	112	
	Water	2,480	Coots	161,525	80
	Total	3,815	Total	1,505,840	120
19 Sand Dunes	Crops		Ducks		
	Upland	2,200	Geese		
	Marsh		Swans	DRY THROUGHOUT PERIOD	
	Water	400	Coots		
	Total	2,600	Total		
20 East Alkali Flat (S. of Division Road)	Crops	430	Ducks	572,999	74
	Upland	2,140	Geese	49,245	
	Marsh	50	Swans	280	
	Water	680	Coots	58,275	40
	Total	3,300	Total	680,799	114
21 OTHER Leter Reservoir Lower Carson Adjacent Ponds All Other Upland	Crops	200	Ducks	64,330	202
	Upland	124,532	Geese	9,884	18
	Marsh	50	Swans	70	
	Water	600	Coots	18,725	40
	Total	125,382	Total	93,009	260

(over)

INSTRUCTIONS

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- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

- (5) **Production:** Estimated total number of young raised to flight age.

3-1750b
 Form NR-1B
 (Rev. Nov. 1957)

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE

Sheet 4 of 4

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Stillwater W. M. Area For 12-month period ending August 31, 1968

Reported by Larry D. Napier Title Wildlife Biologist

(1) Area or Unit Designation	(2) Habitat			(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage				
MANAGEMENT AREA TOTALS	Crops	630	Ducks	16,229,444	5,094	8,943
	Upland	139,416	Geese	353,353	36	67
	Marsh	3,998	Swans	62,475		
	Water	19,034	Coots	10,044,405	4,200	6,720
	Total	163,078	Total	26,689,677	9,330	15,730

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

- (5) **Production:** Estimated total number of young raised to flight age.

WATERFOWL HUNTER KILL SURVEY

Refuge Stillwater Wildlife Management Area

Year 1968

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/19-25	1,001	6,006	Green-winged teal (1,130); shoveler (322); mallard (152); gadwall (110); pintail (101); redhead (96); canvasback (85); ruddy duck (67); widgeon (43); cinnamon teal (39); coot (16); bufflehead (6); snow goose (2); lesser scaup (2); greater scaup (1); Canada goose (1); common merganser (1); surf scoter (1); and mallard-gadwall hybrid (1)	2,176	398	2,574	4,100	10,543
11/26-11/1	210	1,260	Green-winged teal (36); shoveler (29); mallard (24); canvasback (23); pintail (19); coot (10); gadwall (9); widgeon (7); cinnamon teal (6); ruddy duck (5); redhead (3); bufflehead (1); Canada goose (1)	173	43	216	1,876	1,930
11/2-11/8	219	1,314	Green-winged teal (29); shoveler (29); canvasback (24); pintail (16); mallard (5); gadwall (5); ruddy duck (5); widgeon (5); coot (5); bufflehead (3); common merganser (3); redhead (2); surf scoter (1); snow goose (1)	133	25	158	925	667
11/9-11/15	156	936	Pintail (24); green-winged teal (21); shoveler (20); mallard (15); canvasback (12); ruddy duck (7); widgeon (3); lesser scaup (3); gadwall (2); Canada goose (2); coot (2); Ross goose (1); redhead (1); bufflehead (1); common merganser (1)	115	16	131	850	713

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

WATERFOWL HUNTER KILL SURVEY

Refuge Stillwater Wildlife Management Area

Year 1968

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
11/16-11/22	213	1,278	Shoveler (91); pintail (23); mallard (20); green-winged teal (17); canvasback (8); gadwall (8); widgeon (6); coot (5); ruddy duck (3); redhead (2); cinnamon teal (2); Canada goose (1); snow goose (1); lesser scaup (1); common goldeneye (1); hooded merganser (1); surf scoter (1)	191	40	231	865	938
11/23-11/29	228	1,140	Shoveler (56); green-winged teal (24); pintail (20); mallard (17); canvasback (15); widgeon (8); coot (6); common merganser (5); ruddy duck (4); gadwall (3); redhead (2); snow goose (2); bufflehead (2); cinnamon teal (1); Canada goose (1)	166	32	198	1,000	868
11/30-12/6	164	820	Green-winged teal (29); shoveler (15); mallard (12); pintail (6); canvasback (4); redhead (4); gadwall (3); widgeon (3); Canada goose (1); cinnamon teal (1); bufflehead (1); common goldeneye (1); lesser scaup (1); common merganser (1)	82	23	105	850	544
12/7-12/13	72	288	Shoveler (14); green-winged teal (12); pintail (9); mallard (5); gadwall (2); bufflehead (2); redhead (1); ruddy duck (1); lesser scaup (1); snow goose (1)	48	7	55	479	365
12/14-12/20	59	236	Shoveler (9); green-winged teal (7); ruddy duck (7); pintail (6); mallard (5); coot (3); common merganser (3); gadwall (2); widgeon (2); redhead (1); bufflehead (1); snow goose (1)	47	7	54	469	429

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

Refuge Stillwater Wildlife Management Area

Year 1968

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
12/21-12/27	10	40	Mallard (5); pintail (3); gadwall (3); bufflehead (1)	12	2	14	275	385
12/28-1/3	33	132	Shoveler (8); mallard (3); ruddy duck (3); green-winged teal (1); pintail (1)	16	1	17	180	93
1/4-1/10	39	156	Redhead (4); ruddy duck (4); shoveler (3); green-winged teal (2); pintail (1); widgeon (1); coot (1)	16	1	17	69	30
1/11-12	47	188	Mallard (8); shoveler (6); widgeon (5); pintail (2); Canada goose (2); gadwall (1); green-winged teal (1); canvasback (1)	26	11	37	47	37
TOTALS	2,451	13,794	Green-winged teal (1,309); shoveler (602) mallard (271); pintail (231); canvasback (172); gadwall (148); redhead (116); ruddy duck (106); widgeon (83); cinnamon teal (49); coot (48); bufflehead (18); common merganser (14); Canada goose (9); snow goose (8); lesser scaup (8); surf scoter (3); common goldeneye (2); greater scaup (1); Ross goose (1); hooded merganser (1); mallard-gadwall hybrid (1)	3,201	606	3,807	11,985	17,542

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
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- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

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.

UPLAND GAME BIRDS

Refuge Stillwater W. Area Months of May to August, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total		Hunting	For Re- stocking	For Research		
California Quail	Saltgrass, desert shrub, irrigated pasture		3	175					600	Pertinent information not specifically requested. List introductions here. Quail and pheasants range on and off the Area from adjacent private farmlands.
Ring-necked Pheasant	Saltgrass, desert shrub, irrigated pasture		1	25					65	

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.

UPLAND GAME BIRDS

Refuge Stillwater W. M. Area Months of September to December, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specificoally requested. List introductions here.
California Quail	No change					25			500	Quail and pheasants range on and off the Area from adjacent private farmland
Ring-necked Pheasant	No change					10			50	

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.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Stillwater W. M. Area Calendar Year 1968

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Mule Deer	Brushy areas along Carson River	5	1									12	12	

Remarks:

Reported by Larry D. Napier

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: 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 at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Stillwater W. M. Area

Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion
			Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal						Permit Number	Trappers Share	Refuge share			
Muskrat	All water areas												900
Coyote	Entire Area		20		30								150
Bobcat	Entire Area												5
Raccoon	Marsh edge and Carson River												5

Division of Wildlife Services shot 25 coyotes in aerial control work and 5 from the ground.

* List removals by Predator Animal Hunter

REMARKS: The coyotes seem quite migratory; they move to the marsh in late fall and winter, and disperse in February and March. Numbers have increased over last year and the population estimate is conservative. No live raccoons have been seen for years, but the remains of one was found in West Marsh and tracks are occasionally seen.

Reported by Larry D. Napier, Wildlife Biologist

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.

DISEASE

Refuge Stillwater Wildlife Management Area Year 1968

Botulism

Lead Poisoning or other Disease

Period of outbreak None Observed

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized No. Recovered % Recovered

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease None Observed

Species affected _____

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

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

PUBLIC RELATIONS
(See Instructions on Reverse Side)

Refuge Stillwater W. M. AreaCalendar Year 1968

1. Visits

a. Hunting 11,989 b. Fishing 4,186 c. Miscellaneous 1,700 d. TOTAL VISITS 17,875

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	11,668	138,000	BSPW-NFG
Upland Game	15	138,000	BSPW-NFG
Big Game	60	138,000	BSPW-NFG
Other			

Number of permanent blinds 0Man-days of bow hunting included above 0Estimated man-days of hunting on lands adjacent to
refuge 4,000

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	4,000	
Streams and Shores		

1c. Miscellaneous Visits

Recreation 1,529 Official 72Economic Use 89 Industrial 10

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	ON REFUGE		OFF REFUGE	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs	1	18		
Schools	3	88		
Service Clubs				
Youth Groups	3	26		
Professional-Scientific				
Religious Groups				
State or Federal Govt.			2	22
Other			1	8

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	2	Radio Presentations	0
Newspapers (P.R.'s sent to)	3	Exhibits	3
TV Presentations	0	Est. Exhibit Viewers	4,000

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and week-end samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Refuge Stillwater Wildlife Management Area Year 19 68

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Milo	75 bu	R	8/28	Sacra- mento NW Refuge	None	49 bu.	None						

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

Remarks: Milo was received from Sacramento National Wildlife Refuge with 26 bushels being used for duck trapping, leaving a balance of 49 bushels.

Total acreage planted:

Marsh and aquatic N.A.

Hedgerows, cover patches N. A.

Food strips, food patches N. A.

Forest plantings N. A.

Acres grazed - agreed upon after
telephone conversation with Shields 7/15/69

163,078 - our lands within SLAMP Boundary

+ 12,640 - Adminstrative T.C.L. lands - Rattlesnake
Reservoir, 2107 Ponds

+ 9,600 - Fallon N.O.R. that is outside
Mgt. Area Boundary.

185,318 Acres -

- 23,032 Acres - water

162,286 - Grazed Acres

CULTIVATED CROPS - HAYING - GRAZING

Refuge Stillwater W. M. Area County Churchill State Nevada

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Alta fescue (Reseeded)	N.A.		N.A.		N.A.		25	Browse crops planted in past years used by cattle and water-fowl. The 25 A. reported in Cultivated Crops Grown are included in this total acreage. They were reseeded this year	535.00
								Fallow Ag. Land	0

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 23

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	2,426	18,936	\$9,484.39	185,318
				2. Other Horses	98	1,547	709.26	150,318
				1. Total Refuge Acreage Under Cultivation				535.00
Hay - Wild				2. Acreage Cultivated as Service Operation				535.00

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Stillwater Wildlife Management Area

Months of January through December, 1956

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley	55		55			55	55	0			
Milo		75	75			26	26	49		49	0

(8) Indicate shipping or collection points Milo received from Sacramento National Wildlife Refuge and used for duck trapping

(9) Grain is stored at Stillwater Refuge Service Yard Granary

(10) Remarks Barley had rotted and was full of weevils. Ducks would not eat it so it was dumped.

*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.
- (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 break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

1 and 2

Reporting Year

1968

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/11-14/68	Tamarisk (<u>Tamarix gallica</u>)	Diagonal Drain East Canal						
6/17/68	Tamarisk	Along dike between Upper Foxtail and Foxtail Units, Swan Lake, Still- water Pt. Reservoir West Pasture and Doghead Pond (Spot spraying at these locations.)	14 A.	2,4,5-T Butyl ester R-H Brush Rhap B-4	14 gal.	1 gal./A 4# a.e./A	Water 4# a.e. 100 gals. water/A	Motor driven sprayer on truck
7/1/68	Tamarisk	West Marsh (Around edges of water.)	240 A.	2,4,5-T IOC Iso-octyl ester 4# a.e./gal.	120 gals.	$\frac{1}{2}$ gal/A 2# a.e./A	Water 4# a.e. 100 gals. water/A.	Aerial

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

A spreader was not used with either application method because the ester formulation is an oil base product.

Spraying done with ground rig gave kills of between 95%-100%; plants were thoroughly wetted at close range.

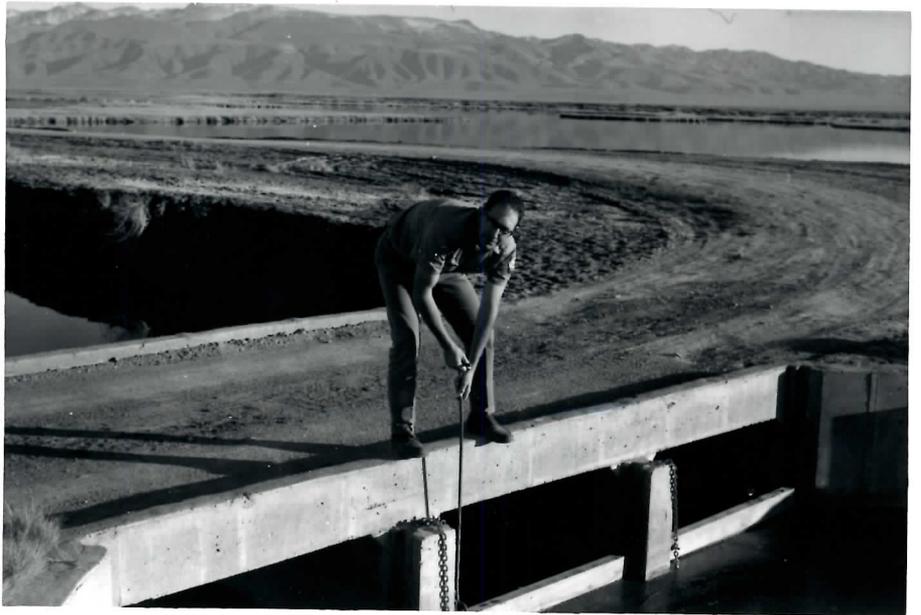
Aerial spraying was far from satisfactory. We got from between a 25%-30% kill which is not satisfactory. Getting at the plants presented a problem for the pilot. These plants were mostly under one year old and were hard to see from the air. The water's edge was not a straight line, but followed many curves and the edges of high spots, and the plants were also along the edges of many small islands. They weren't thick, but they were numerous along the water's edge. To really have gotten on top of this constant infestation, we should have gotten at least an 85%-90% kill. The West Marsh is too wet to get ground rigs close to the plants so aerial spraying is the only way.

1. Larry H. Worden, Refuge Manager (Good)

2. James R. Good, Assistant Refuge Manager (Napier)



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3. Larry D. Napier
Wildlife Biologist(Management) (Good)

4. Ila E. Cress, Refuge Clerk (Good)



5. Ray Alcorn, Wildlife Biologist
Division of Wildlife Services (Good)

6. Manuel Olano (on right)
Foreman II Maintenceman (Good)

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7. Coy C. Dyer
Operator General(Heavy Duty) (Olano)

8. Eugene E. Duffney
Maintenanceman II (Good)

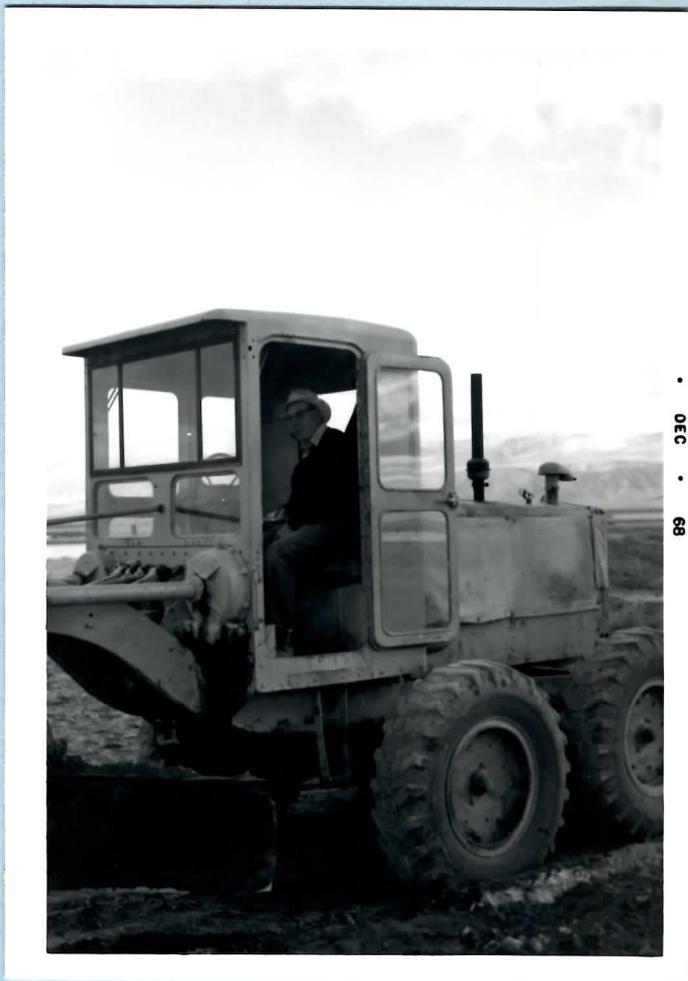
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9. Ernest J. Brooks
Maintenance II (Olano)

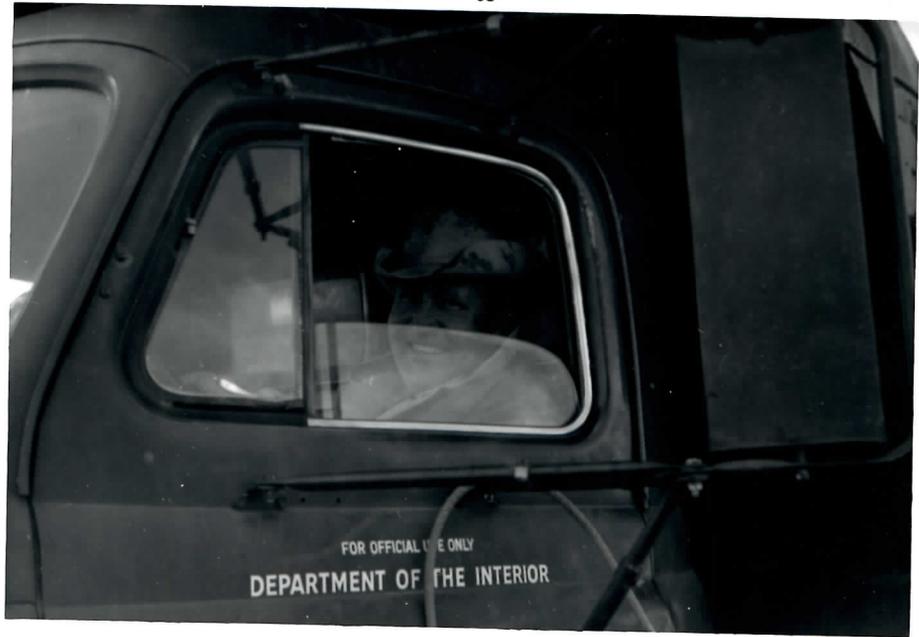


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10. Harold W. Freeman
Maintenance III (Olano)

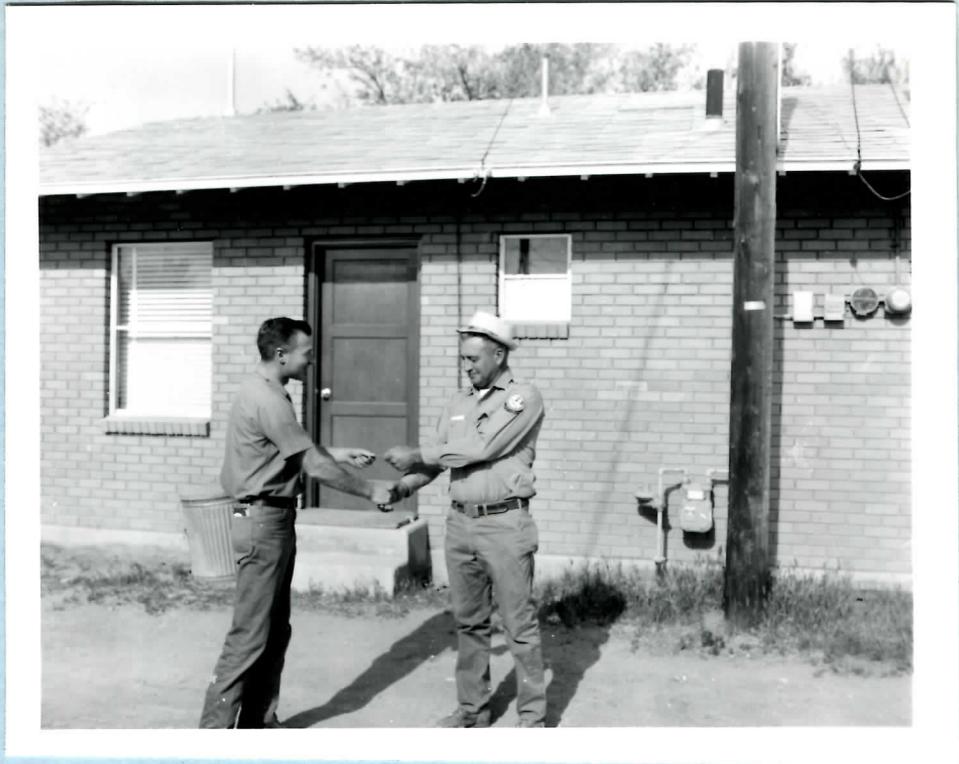
11. Jeanette "Cindy" Hooper
Neighborhood Youth Corps (NYC) (Good)

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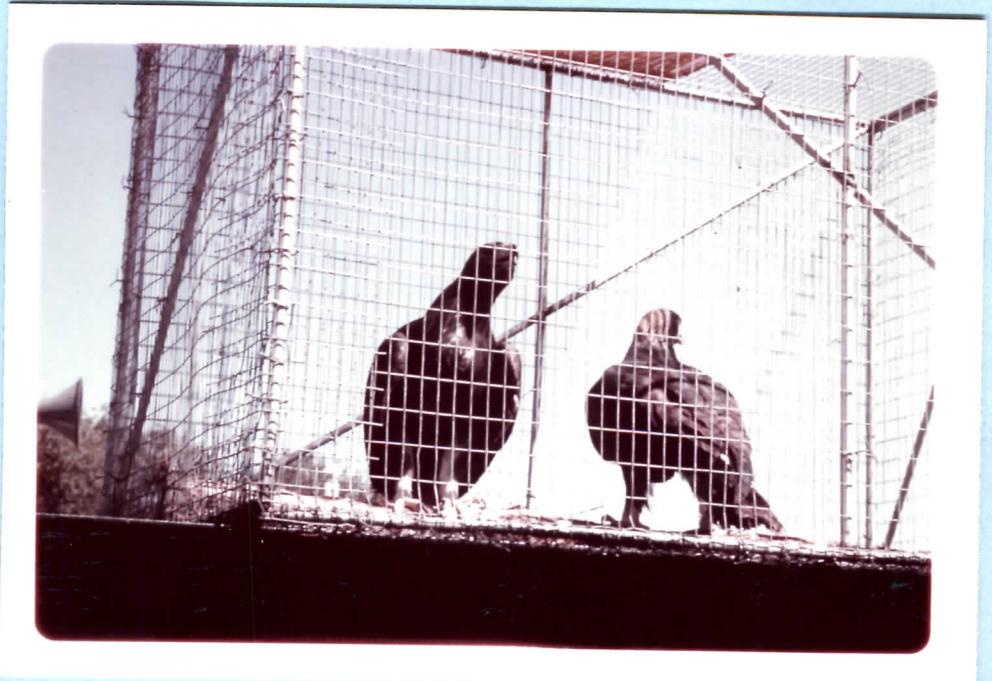
12. Foreman Olano receiving his 20-year federal service pin from Manager Worden. (Ford)

13. Larry Napier proudly holding the 1st place trophy which our float "Wildlife is for You" won in the Lions Club Labor Day Parade. It is now on display in our office. (Ford)



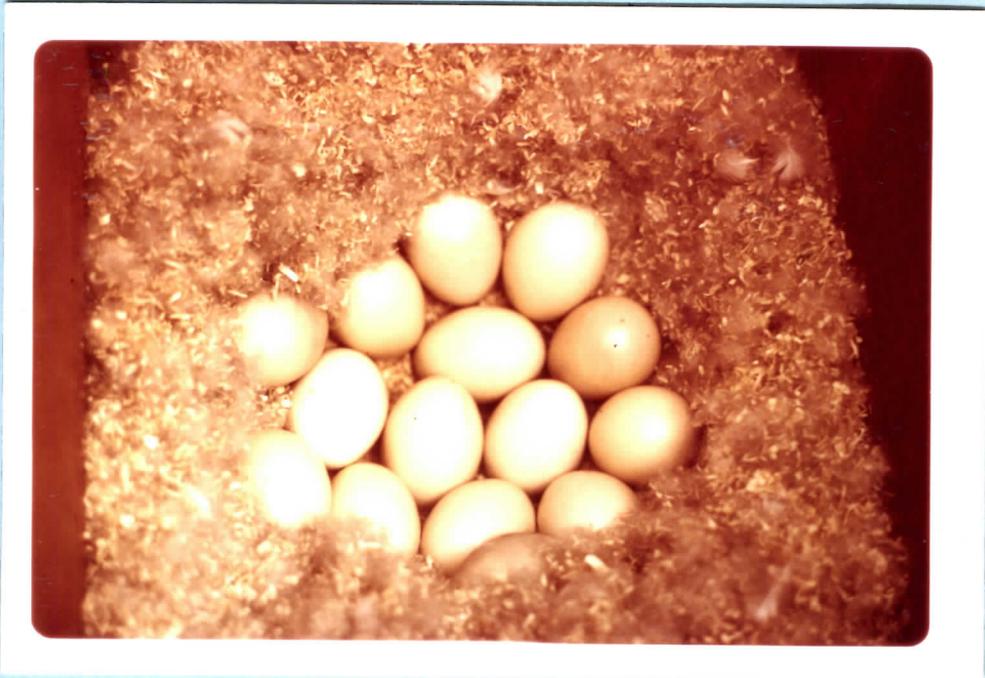
14. Here she is, the float that took first place on Labor Day, 1968, in the Civic Division. It was sponsored by the Bureau and the Nevada Fish and Game Commission. Our crew and Nevada Fish and Game personnel worked hard on its preparation and it paid off. Theme of the float was "Wildlife Is For You". (Ford)

15. These two immature golden eagles were part of the float and really stole the show. Adults and children all along the parade route came up close to the float to see and photograph them. (Ford)



16. These wood duck nest boxes were two of fifteen placed along the Carson River on the Wolf Ranch this spring. A hen successfully hatched a brood in box #84. (Napier)

17. Here you're looking inside the nest box. Four of the fifteen eggs did not hatch. (Napier)



18. Churchill County opened an historical museum this summer and here is the mammal display prepared by Ray Alcorn, Division of Wildlife Services. Ray is a recognized authority on mammals and he is a constant source of information and learning for us all. (Napier)

19. This marsh scene shares the display case in the Churchill County Museum. All members of the staff helped put this together. A local artist, Mrs. Cheryl Josh, painted the background and birds were prepared by Ray Alcorn and Norman Saake, Nevada Fish and Game, Fallon. We've had many compliments from the community on these two displays. (Napier)



20. SAFETY is an important part of our everyday job. This is a before picture of a SAFETY screen to be installed on our IHC 2706 tractor. It was picked up from a local highway construction company at no cost. The mesh measures 1"x1"x $\frac{1}{4}$ ". (Good)

21. SAFETY first! The screen installed for use with a rotary brush beater. About 20 acres of tall vegetation in our East Pasture Unit was cut, then left and flooded. This provided good goose and duck browse and will add some humus to the soil. Up to 300 Canada geese were observed using this pasture after beating and flooding. Some of the plants here are alta fescue, alkali sacaton, sweet clover, tall wheatgrass, alkali weed and some Rumex. (Good)

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22. East Pasture before the rotary brush beater treatment. (Good)

23. Here's the finished job, all we had to add was water and we were in business. (Good)

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24. Men from Space? Not quite, it's Larry Napier (left) and Stan Ford (right) summer trainee, conducting the nesting study. The work was very successful with Larry and Stan putting in many extra hours on this project. Note the mosquito head gear. (Olano)

25. Annual white pelican banding and marking on Anaho Island National Wildlife Refuge in Pyramid Lake. Colored identification wing marker is being attached by Biologist Jim Keith (right) and assistant from Division of Pesticide Research, Davis, California. (Napier)

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26. Before picture of 1963 International 4x2,
2-seat, pickup obtained from excess from
Hawthorne Naval Depot. It is used to carry
field crew from Fallon headquarters to
Stillwater Area shop. (Good)

27. Here's the finished product. All work done
at Stillwater Shop by Foreman Olano and his
crew. (Good)

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28. Station wagon is on new road built around portion of East Lake. It was raised and moved to end the constant inundation of the old road whenever East Lake storage was increased. Note old road under water in right hand portion of photo. (Good)

29. New canal which was dug between Doghead and Division Ponds. New riser and pipe also installed. This enables us to take water out of Foxtail Lake and bypass Dry and Cattail Units. It lets us have more flexibility in distributing water. (Good)

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30. Maintenceman Brooks putting finishing touches on one of the 15 metal gates installed this year throughout the Area. They decrease maintenance costs over standard barbed wire gates. (Good)

31. Metal gate installed and locked. This section of road gets to be a mess in rainy weather, so we close it to the public. At the time of this writing, it is being raised and sanded. (Good)

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32. The arrival of our new "Aircat" with a 150 h.p. Lycoming engine. A Company representative delivered it to us personally from Florida. We'll put this up against Gentle Ben's airboat any day. (Good)

33. Refuge picnic at Likes Lake in July. That's Manager Worden at the barbecue "doing his thing". Everyone had a great time this day and they vowed to be back next summer. (Good)

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34. Napier showing his horse shoe style while wife Kathy watches from over by the Chevy pickup. This was at the picnic where another popular attraction, besides the cans of liquid refreshment, was the "Frisbee". (Good)

35. Some more picnic fun--water skiing. Everyone who tried this thoroughly enjoyed it. Refuge personnel, GMA Wendler and family, Reno, US Forest Service personnel and family guests all enjoyed this day in the Nevada sunshine. (Good)

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