BENTON LAKE NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

JANUARY - DECEMBER

1969

P E R S O N N E L

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Owen H. Vivion	2/	-	Refuge Manager
Robert L. Barber	3/	-	Assistant Refuge Manager
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T E M P O R A R Y P E R S O N N E L

Garry L. Patrick	-	Truck Driver (06/02 - 09/26/69)
Calvin A. Mertes	-	Laborer (07/07 - 09/20/69)
Bruce W. Dobney	-	Conservation Aid (07/22 - 09/19/69)
James A. Jacques	-	Laborer (09/22 - 12/24/69)

1/ Transferred to Red Rock Lakes National Wildlife Refuge - 12/14/69
2/ Transferred to Benton Lake National Wildlife Refuge - 11/16/69
3/ Transferred to the National Bison Range - 01/12/69
4/ Returned from military service E. O. D. - 12/01/69

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

GREAT FALLS, MONTANA

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NARRATIVE REPORT

January - December

1969

I. GENERAL

A. Weather Conditions

Weather data for Benton Lake Refuge is obtained from the U. S. Weather Bureau Station at the Great Falls International Airport, some twelve miles south of the refuge.

TABLE 1

1969 WEATHER SUMMARY

Month	Snowfall	Precipitation This Month	Precipitation Normal	Temperature Maximum	Temperature Minimum
January	22.6	2.05	.61	46	-37
February	5.2	.40	.74	42	- 5
March	5.5	.44	.92	68	-11
April	0.9	.38	.98	83	27
May		1.14	2.10	86	27
June	5.3	5.33	2.90	94	32
July		1.11	1.28	95	48
August		.03	1.26	106	41
September		.13	1.20	96	34
October	5.0	.89	.73	71	14
November	1.1	.11	.75	63	12
December	4.3	.40	.60	60	7
				(Extremes)	
TOTALS:	49.9	12.41	14.07	106	-37

Snowfall and precipitation were above normal during the late winter-spring period and temperatures ranged below normal. The extremes of temperatures recorded in 1969 are interesting - from a -37° to a +106°, a difference of 143°.

During the 1968-69 winter there were no chinook thaws to reduce the snow pack. Normally two or three thaws are experienced.

Populations of resident wildlife were apparently severely reduced by the heavy snow pack and low temperatures. Waterfowl remaining on the Missouri River at Great Falls were restricted to the emergency food put out by refuge personnel as feeding in area grain fields was made impossible by a deep snow cover.

B. Habitat Conditions

1. Water

The refuge began the year with an estimated 5,173 surface acres (12,380 acre feet) of water in the six impoundments.

Sheet runoff of winter snow accumulations began on March 18. By March 24 all six refuge water units had been filled to flood stage by runoff from the Lake Creek drainage. Snow runoff ended about April 8 after having flowed an estimated 6,630 acre feet of water into the refuge.

Between June 27 and 30 Benton Lake received an additional 2,970 acre feet of runoff water from spring rains in the Lake Creek drainage.

Total runoff water entering the refuge during the spring period approximated 9,600 acre feet as compared to a normal of about 2,000 acre feet.

When the strength of the runoff became evident all water control structures for Units III through VI were opened so the water would equalize in both sides of the dikes. This action avoided washouts and structure damage.

While water levels were high, muskrat burrowing into the dikes was increased. These burrows were above operational level, however, and should cause no trouble.

Spring flooding postponed start of seasonal pumping operations to August 4 when one pump was put on the line to bring water Units I and II back up to seasonal operational levels. The second pump was started on September 2 to hold operational levels in all water units. The third pump remained idle all season. All pumping was discontinued on October 31 with all six water units at operational levels.

A total of 3,660.70 acre feet of water was pumped this season at a total cost of $2.20 per acre foot; an increase of 35¢ per acre foot over 1968 costs. At $2.20 per acre foot, the spring runoff (free water) was worth about $21,000.00; a welcome windfall, but one that occurs only once in 10 to 20 years.

Table 2 presents the surface acres flooded during the report period.

2. Food and Cover

Food and cover were adequate throughout the year. Spring migratory waterfowl made heavy use of grain left standing in

refuge farming units. Aquatic vegetative growth was heavy in all units and aquatic animal food was abundant.

Pondweeds (P. pectinatus and P. pusillus) continue to be replaced by less desirable species such as milfoil and Elodea. This will continue until a suitable drain or dewatering pump is provided to allow drainage of water Units III through VI. As it now stands, once water enters these major units, there is no way of removing it except through evaporation.

Abundant spring moisture produced good nesting cover along the dikes and shorelines. Upland vegetative production was good and produced excellent nesting cover.

High water levels in the impoundments caused further changes in emergent vegetation. Shoreline beds of cattail and alkali bulrush were further reduced from a low in 1968.

TABLE 2

SURFACE ACRES FLOODED

UNIT	MAXIMUM CAPACITY	JAN. 1	MAY 1	JULY 1	SEP. 1	NOV. 1	DEC. 1
I	371	299	200	332	340	372	256
II	534	334	216	460	488	516	272
III	1,134	1,105	1,220	1,195	1,100	1,100	1,100
IV	1,792	1,695	1,860	1,840	1,745	1,730	1,750
V	1,093	1,075	1,183	1,148	1,071	1,070	1,078
VI	690	665	728	718	687	665	675
TOTALS	5,614	5,173	5,407	5,693	5,431	5,453	5,131
% of Maximum		92%	96%	101%	97%	97%	91%

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

Iceout occurred the third week in March with 1120 Pintails to herald the event. The following week the spring migration peaked at 26,830 ducks with Pintails in the main at 14,980.

Whistling Swans arrived the third week in March and the last observation of the spring was eight birds on May 7th. The peak of 50 birds occurred March 30th, a sharp decrease from the peak of 285 last year.

Only 15 Canada Geese accompanied the first ducks the third week in March. April 15th saw the arrival of 225 Snow Geese. The following week the Snows left, only to return in the late fall. Freezeout Lake, 30 miles west of the refuge, is the traditional Snow Goose migration point and many thousands stop there. In time more birds may shift over here.

On May 19th, 13 goslings and an adult pair taken from the captive flock at Slippery Ann Station were released in Unit V. The adults were caught during their molt and returned to the Charles M. Russell Game Range.

Three Canada Goose broods were hatched on the marsh this spring with 11 birds reaching flight stage. Two Canadas were killed on the refuge during the open hunting season and an undetermined number were taken in fields in the general area of the refuge. Perhaps to establish a breeding population of geese in this area, it might be desirable to close for a few years the hunting of geese on the refuge and on the surrounding area.

Duck breeding pair surveys produced 4,765 pairs actually sighted. It was assumed for production purposes that these birds all stayed and nested. Past nesting surveys on the refuge show that approximately 63% of the nests are successful. From brood counts it was determined that Class III birds were averaging at least six birds. The highest brood mortality apparently occurred among the diving ducks with Mallards and Shovelers doing the best. Duck production was estimated to be 17,700.

Total production, based on the breeding pair counts, was

TABLE 3a

COMPARATIVE USE-DAY FIGURES

SPRING MIGRATION PERIOD

	1969	1968	1967	1966	1965
SWAN	749	1,260	497	3,507	1,155
GOOSE	2,555	3,402	1,134	98	161
DUCK	686,175	1,726,620	812,063	925,810	578,095
COOT	132,545	129,570	35,105	53,410	27,125

TABLE 3b

COMPARATIVE PEAK FIGURES

SPRING MIGRATION PERIOD

	1969	1968	1967	1966	1965
SWAN	50	285	62	495	90
GOOSE	235	704	75	7	14
DUCK	26,830	43,860	26,870	41,270	26,020
COOT	5,850	8,470	2,500	4,575	2,310

TABLE 4

BREEDING POPULATION SUMMARY

SPECIES	UNIT I	UNIT II	UNIT III	UNIT IV	UNIT V	UNIT VI	TOTAL
Mallard	22	44	99	99	156	60	480
Gadwall	98	102	112	119	108	89	628
Widgeon	10	9	57	44	38	24	182
Pintail	36	34	82	120	106	113	491
G-W Teal	7	11	13	14	17	10	72
B-W Teal	106	183	202	215	240	102	1048
Cinn. Teal	42	34	50	60	53	55	294
Shoveler	90	115	150	203	166	155	879
Redhead	9	18	29	58	45	26	185
Canvasback	7	23	7	33	12	5	87
Scaup	74	49	45	79	40	22	309
Ruddy	4	8	17	33	31	14	107
TOTALS (Pairs)	505	630	863	1077	1012	675	4762

estimated at 11 Canada Geese, 17,700 ducks and 10,720 Coots.

TABLE 5

COMPARISON OF PRODUCTION

	1969	1968	1967	1966	1965	1964
Goose	11	11	5			
Duck	17,700	28,158	9,250	4,352	1,312	1,315
Coot	10,720	29,750	11,400	1,470	470	750

Beginning the first week in August, duck numbers (35,310) steadily increased until October 21st when the peak number (75,935) occurred. In the middle of August Blue-Winged Teal and Shovelers were dominant, however, by the second week in September, the early migrants were on the wane with Widgeon, Gadwalls, and Mallards increasing rapidly. The first week in October a deluge of Shovelers and Pintails arrived and the following week they, along with Gadwalls and Mallards, produced the peak number of the migration. The last week in October 54,160 ducks remained, but two weeks of gusty arctic air reduced the count to 8,000 birds on November 12th. The refuge lakes were all frozen by the end of November.

Whistling Swans arrived for the second time in two years in coincidence with the opening week of the waterfowl season. It was reported that the "Head Swan" was defeathered and a new flight leader elected. The Whistlers peaked at 90 on October 30th and all disappeared the second week of November.

Our pen raised and local geese were joined by approximately 120 new birds the first week in October along with 80 Snows. The last week in October geese peaked at 950 due to the arrival of 900 snows. The Snows left along with most of the ducks the first week in November. December 5th the last Canada Geese departed. A week later about 200 Canadas visited the frozen lake but resumed their southward movement in a few hours.

Total use-days for Swan, Goose, Duck and Coot was 9,712,752. Production was good, which is our primary objective.

TABLE 6a

COMPARATIVE USE-DAY FIGURES

FALL MIGRATION PERIOD

	1969	1968	1967	1966	1965	1964
SWAN	1,386	3,101	1,113	1,554	1,470	0
GOOSE	23,275	70,910	18,753	20,139	8,407	17,430
DUCK	3,896,655	4,855,550	3,249,295	1,634,535	4,204,200	1,272,880
COOT	1,367,695	1,351,315	1,617,665	353,640	362,285	320,250

TABLE 6b

COMPARATIVE PEAK FIGURES

FALL MIGRATION PERIOD

	1969	1968	1967	1966	1965	1964
SWAN	90	740	120	151	60	0
GOOSE	900	9,075	1,853	952	405	665
DUCK	75,935	81,125	57,450	37,215	80,445	33,135
COOT	51,400	30,200	38,500	7,350	8,600	9,150

2. Waterbirds

The first Coots arrived the third week in March and peaked at 5,850 April 23rd for the spring period. The last week in June, broods began to appear and production was estimated at 10,700.

A gradual buildup during the summer and fall peaked at 51,400 birds on October 1st. The Coots left Benton Lake in mass exodus the last week in October as the first cold snap occurred.

The Horned, Eared, Western and Pied-billed Grebes all used the refuge this year. Eared Grebes first appeared April 21 and peaked at 20,000 on July 22nd. Eared Grebe production was estimated to be 12,300 young. Horned Grebes peaked at 140 on May 29th and Pied-billed Grebes peaked at 210 on July 22nd. Only three Western Grebes were spotted this summer.

A few Great Blue Herons and Black Crowned Night Herons were present on this refuge this summer. American Bittern peaked at 14 on June 4th and seven White Faced Ibis were seen September 1st.

Soras appeared April 12 and gradually their numbers increased until a high of 600 was observed September 1st. The last birds were seen September 29th.

3. Shorebirds, Gulls and Terns

Killdeer and Ring-billed Gulls made their appearance March 21st. A few California Gulls followed on March 26th. Not until the middle of April did any number of shorebirds arrive. Long-billed Curlews, Willets, Lesser Yellowlegs, American Avocets and Franklin's Gulls were all present by the end of March. Franklin's Gulls were quite numerous, peaking at 21,000 on July 15th.

Killdeer peaked at 7,000 on July 22 and Wilson's Phalarope peaked at 6,500 on August 11th. Common Snipe were the last to depart on November 28th and Wilson's Phalarope departed on October 3rd.

Black Terns, Long-billed Dowitchers and American Avocet made up the most common birds next to the Phalaropes and Killdeer. A few Common Terns were also present this summer.

4. Mourning Doves

A scattering of birds were produced in the shelterbelt areas. The treeless prairie does not appear to be the ideal habitat for these Montana songbirds.

B. Upland Game Birds

Only a remnant flock of Sharptailed Grouse remain, with use both on and off the refuge. Only two birds were seen on the refuge this year. Gray Partridge are spreading out into previously unoccupied habitat and some increase is suspected, both on and off the refuge. Winter survival was excellent for the Huns. Ring-necked Pheasant are rare here and no verified sightings were made this year. There is some real concern in some quarters that mercury levels in local upland game birds are approaching a level where human consumption could be hazardous.

C. Big Game Animals

Pronghorns drifted on and off the refuge this year but less often than recent years. A few kids were seen early in June. On October 20, the day after antelope season opened, 30 animals moved into Unit G-5.

A few Whitetails and Mulies visit the refuge while traveling cross country. Two, a doe and fawn Whitetail, had a harrowing experience October 28th when they fell through thin ice on the lake. Refuge personnel used the airboat to break up the ice and the two exhausted critters finally made the shoreline to safety.

A black bear (disoriented, but not lost, mind you) arrived in a huff September 15th to roam the refuge shorelines policing up botulism ducks and the like. He could be spotted almost any day, going about his business. The bear's appearance on this treeless plain, 75 miles from the mountains, is something to wonder about. The blackie, somewhat more intelligent than the Swans, departed the day before the opening of waterfowl season.

D. Predators, Rodents and Other Mammals

Coyotes seem to be as numerous as ever after two years of control. The population outside the refuge come in like draft replacements. Past nesting surveys indicate about 40% depredation due to coyotes. Perhaps nesting surveys enable coyotes to find nests they might overwise be unable to locate, thus bias in the data might occur. The coyote is a part of the marsh ecology and might be less harmful than suspected.

Richardson's Ground Squirrel, Deer Mouse, rabbits and Yellow-belly Marmots seem to be on the population downswing. All things even, coyote populations should follow suit.

Badgers, Striped Skunks and Long-tailed Weasels are in low abundance. A fair mink population is growing with Muskrat increases. However, Muskrat numbers seem to have checked at about 2000 'rats, perhaps due to coyote pressure. Dike damage by Muskrats was an increasing problem but seems to be stabilizing now.

Whitetailed Jackrabbits and Cottontails live in fair numbers around the shelterbelt and boneyard near headquarters. Damage to plantings occur as snow piles higher allowing the hungry rodents to scale the plants.

E. Hawks, Eagles, Owls, Crows and Magpies

Golden Eagles are occasionally spotted, with three the most seen, on October 5th. These large birds seem to occur throughout the year.

In April and the last part of August, Swainson's Hawks predominated. Rough-legged Hawks were scarce this winter with no recorded sightings. Three Rough-legs were seen May 12th. Usually Rough-legged Hawks are fairly numerous during the winter.

Several Prairie Falcons were present most of the year. Sparrow Hawks hunted the refuge in June with seven the most sighted in one day. Marsh Hawks were fairly abundant during the warm summer months and undoubtedly some nested here.

Burrowing Owls were again in short supply although 18 were counted September 1st. The first Burrowing Owls (3) of the season were observed May 3.

A pair of Snowy Owls stayed on the Refuge from January 15th to February 17th. Usually we see their large cousins, the Great-Horned Owl, during the hunting season when he can pick up cripples.

The Short-Eared Owl was fairly numerous on the refuge in the fall with 15 sighted on October 1st. The Ferruginous Hawk, Crow and Magpie are rare on Benton Lake but several of each are seen each year.

F. Other Birds

None to Report.

H. Reptiles

Only one squashed prairie rattlesnake at the refuge entrance

attested to their presence. Numerous garter snakes live along the dikes in the summer. No other reptiles were observed.

I. Disease

Benton Lake experienced a hot dry summer that may have triggered the pecular conditions that seem to cause botulism. Approximately 800 birds were lost to botulism. Cool weather came late in the fall and the outbreak abruptly halted. The evaporation rate being quite high outstripped water coming from the pumps so shorelines were exposed to wind action, possibly affecting botulism conditions.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

No new development was accomplished this year.

1. Maintenance

Approximately 4,540 cubic yards of pit-run gravel and rock were placed on refuge dikes to build up sunken areas and serve as rip rap to prevent further dike erosion from wave action. With no means of disposing of excess water, rip rapping will be a continuing necessity.

The sump area of our Muddy Creek Dam was cleaned by dragline. Muddy Creek carries a relatively heavy load of silt into our sump area, continually filling it up. In the near future we will have to look for someplace to dispose of the dredged silt as our present disposal area is rapidly becoming filled.

Roads were bladed and fences maintained as necessary.

All equipment received routine servicing and SAFETY checks. Few major repairs were required.

All buildings and structures were maintained in excellent condition.

B. Plantings

1. Aquatics and Marsh Plants

Nothing to report this year.

2. Trees and Shrubs

A total of 13,650 trees and shrubs of 14 species were planted replacing a previous planting that had died. In deference to the heavy replacement of plants required in our 205 acres of shelterbelt, we have discontinued replacing species that appear unsuitable. It is desirable to have a diversity of plants for added wildlife benefits but the cost of obtaining it in some areas is too high. In the future, we will replace dead plantings with species that are doing well in that particular area.

3. Cultivated Crops

A total of 150 acres were planted to Gaines winter wheat with 150 acres left fallow. The yield was estimated at 40 bushels per acre. Some 220 acres were planted to sweet

clover that was left standing for cover.

Waterfowl use of refuge crops was light during the fall season. We do anticipate heavier use by spring migrating waterfowl in 1970. With all the waste grain available in this area, it is difficult to get the birds to move into our standing crops to feed. Mowing was tried with little success - swathing did but little better. That leaves burning, which we hesitate to use because of the attending loss of soil humus.

Depredation on adjacent private lands is light and usually restricted to fields lying to the west of the refuge.

C. Collections and Receipts

1. Seed and Other Propagules

Cereal grain seed collected was for future refuge plantings. Trees and shrubs purchased are listed on NR-7 and were mentioned previously.

2. Specimens

One Whistling Swan and one Golden Eagle were found dead in areas off the refuge. Both are being held frozen for future disposal.

D. Control of Vegetation

Approximately 25 miles of dikes and road sides were mowed and then sprayed with 24-D Amine applied at the rate of 2.5 pounds actual acid per acre. Kill of noxious weeds, mainly Canada Thistle, was excellent.

Ground sterilant, Ureabor, was applied to ten parking lots in the waterfowl hunting area, the headquarters courtyard, the supply yard and around the picnic shelters. Control of vegetation was excellent.

The 150 acres of cereal grain crops were sprayed with 24-D Amine to control noxious weeds, mainly Canada Thistle. Application rate was about 1.75 pounds actual acid per acre.

All shelterbelts (205 acres) were disked once and recultivated twice with a duckfoot cultivator. An inrow sterilant was tried in the headquaters shelterbelt with good success.

All fire breaks were cultivated in conjunction with cropland cultivation.

E. Planned Burning

None this year.

F. Fires

One small lightening set fire occurred on the refuge this year. Approximately 1.5 acres of grassland were burned before refuge personnel and equipment were able to extinguish the fire.

Fire hazards were normally high during the summer season.

IV. RESOURCE MANAGEMENT

Most of the refuge's grasslands are in good to excellent condition. Hilltops support dense stands of blue grama that will remain virtually unchanged unless spiked.

Western Wheatgrass, Koeleria, green-needle, Sandberg blue-grass and blue grama are the important grass species at Benton Lake Refuge.

Utilization this year ranged from full to moderate. New seedlings indicate that the ranges are improving. Bare areas are rare and usually associated with salt pans where alkali concentrations are heavy. Time and snow cover prevented completion of a detailed range utilization survey this year but this survey will be completed next year.

Our problem ranges are the 1,130 acre G-5 on the east side of the Bootlegger Trail and the 130 acre Muddy Creek Unit. Both units are in low condition. G-5 is plauged by lack of livestock watering facilities. The Muddy Creek Unit is not fenced to assure proper utilization.

The present refuge manager was familiar with Benton Lake Refuge grasslands while the refuge was managed as a satellite from the National Bison Range. The present condition of these same ranges proves they have had excellent management since about 1962 and have responded well.

A total of 540 head of cattle were grazed on the refuge over a four month period for a total of 1460.5 AUM's. Return to the Government for grazing was $4,089.18.

B. Haying

There is no haying on Benton Lake Refuge.

C. Fur Harvest through F. Other Uses are not applicable to this station

TABLE 8

1969 RECOVERIES OF
PRESEASON BANDED DUCKS

SPECIES	NUMBER	WHERE RECOVERED
Mallard	17	Benton Lake, Montana
	16	Idaho
	12	Other Montana
	9	Oregon
	4	Washington
	3	Colorado
	3	Kansas
	3	Wyoming
	3	Nevada
	2	California
	2	Utah
	2	Alberta, Canada
	1	Arkansas
	1	Texas
	1	Nebraska
	1	Minnesota
	1	Oklahoma
Pintail	16	California
	3	Mexico
	3	Montana
	1	Louisiana
	1	Texas
	1	Arizona
	1	Oregon
	1	Washington
Green-winged Teal	8	California
	2	Idaho
	1	Montana
American Widgeon	4	California
	1	Montana
	1	Mexico
Canada Goose	1	Montana

The majority of preseason banded Mallards were recovered in Montana, however, about 18% of the 81 recoveries were from Idaho. Last year only one bird was recovered from Idaho. A few birds were recovered in the midwest and south. The

large majority of the Pintails and other species were recovered in California where they apparently winter.

TABLE 9

1969 PRESEASON BANDING SUMMARY

SPECIES	AHY M	AHY F	HY M	HY F	TOTAL
Mallard	135	86	160	127	508
Pintail	67	126	52	66	311
B.W. Teal	1	6	2	4	13
Canada Goose		1			1
TOTALS	203	219	214	197	833

Foreign retraps taken during the post season banding at Giant Springs included twelve Mallards from Montana and one Mallard each from Idaho, Colorado and California.

Complete information on preseason retraps is not yet available, but reports have been received as follows:

TABLE 10

FOREIGN RETRAPS TAKEN
PRESEASON AT BENTON LAKE

SPECIES	NUMBER	WHERE BANDED
Mallard	1	Colorado
Pintail	1	Montana
Black Duck	1	Tennesee

V. FIELD INVESTIGATIONS

A. Waterfowl Banding

Banding was again conducted at Giant Springs on the Missouri River this year. Between January 2nd and March 14th, active banding was accomplished on only 25 days. Mallards were the target species for the winter banding program and they were caught in a three funnel swim-in bait trap.

Extreme cold temperatures, deep snow and winter feeding in the general area hampered this year's operation.

A total of 961 birds, 81% of which were male, were banded. 107 birds were retrapped from previous years and 18 were foreign retraps.

TABLE 7

1969 RECOVERIES OF
POSTSEASON BANDED MALLARDS

Where Recovered	Numbers
Montana	48
Saskatchewan, Canada	3
Alberta, Canada	3
Manitoba, Canada	2
Idaho	2
Washington	2
Illinois	2
Arkansas	2
Texas	2
Oregon	1
Colorado	1
Mississippi	1

This year's 69 recoveries were a considerable improvement over last year's 15 recoveries. About 10% of these birds seem to winter in the southern states. The majority, however, nest and winter in Montana and Western Canada. About 5% of the birds were recovered in the Columbia Basin during the hunting season. The limited migration of most of these birds can be attributed to the year round open water on the Missouri River.

VI. PUBLIC RELATIONS

A. Recreational Use

Recreation on Benton Lake Refuge continues to increase as development is completed and the refuge receives more public recognition. The refuge and its wildlife provide an interesting interruption to the monotonous flat farm lands of the area and provide an attractive "Sunday drive" for Great Falls residents.

The refuge is providing excellent waterfowl hunting for area gunners. Proximity to town and easy access to the hunting area allows the Great Falls hunters to get a morning and evening hunt and still be on the job all day.

A conservation education program has been developed with area school systems involving grades two through twelve. The refuge program is mainly an extension of regular class work and gives us a chance to add our weight to ten years of classroom conservation education for each student by the time he or she graduates from high school.

The refuge also works extensively with local sports and civic organizations spreading the "good word" whenever a listener can be cornered.

There were approximately 19,106 visitors recorded at the refuge during 1969. We estimate these visitors spent some 21,303 hours in wildlife oriented outdoor recreation at the refuge.

B. Refuge Visitors

DATE	NAME AND ORGANIZATION	PURPOSE
01/29/69	Merril Hush, Montana F & G Fairfield, Montana	Banding
02/04/69	W. Ashton Brann, B. S. F. & W. Helena, Montana	Enforcement
02/04/69	C. D. Getz, Montana F & G Helena, Montana	Enforcement
04/09/69	John B. Toenyes, Entomologist Great Falls, Montana	Mosquito abatement
04/09/69	M. D. Skinner, Epidemiologist Helena, Montana	Mosquito abatement

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

ANNUAL ~~MONTHLY~~ RECREATIONAL USE REPORT

Refuge name: BENTON LAKE
State: MONTANA

State Code (1-2)	Congressional District Code (3-4)	Refuge Code (5-7)	Report Period Yr. Mo. (8-11)
26	02	130	1969 SUMMARY

(Card Columns). . . . . (12-13) (14-18) (19-25)

ACTIVITY	Code	VISITS FOR THE MONTH Total Number	Total Hours
Hunting: Big Game	01		
Upland Game	02		
Waterfowl	03	2918	7650
Other Migratory	04	10	20
Other	05		
Bow	06		
Fishing: Salt Water	07		
Warm Water	08		
Cold Water	09		
Environmental Education	10		
Wildlife Photography	11	190	436
Wildlife Observation	12	440	585
Conducted Programs	13	124	304
Field Trials	14		
Wildlife Trails	15		
Wildlife Tours/Routes	16	9610	10,670
Visitor Contact Stations	17	4065	700
Camping (wildlife related)	18		
Picnicking (wildlife related)	19	230	305
Wildlife Interpretive Center	20		
Off-Site Programs	21	580	76

(Card Columns). . . . . (12-13) (14-18) (19-25)

ACTIVITY	Code	VISITS FOR THE MONTH Total Number	Total Hours
On-Site Programs	22	804	241
*Miscellaneous Wildlife	23	715	392
Swimming	24		
Boating	25		
Water Skiing	26		
Camping	27		
Group Camping	28		
Picnicking	29		
Horseback Riding	30		
Bicycling	31		
Winter Sports	32		
Fruit, Nut and Vegetable Collecting	33		
*Miscellaneous Non-Wildlife	34		
Peak Load Day	35	550 (October)	
Actual Visits	36	19,686	21,379
Fee Area Use	37		
Number of Fee Areas	38	(14-18)	
Fee Collections	39	$	
Collection Costs	40	$	

Form 3-123
(Revised July 1969)

*Use reverse side to indicate types of activities summarized under miscellaneous codes 23 and 34. MAKE NO OTHER ENTRIES ON FACE OF THIS FORM.

DATE	NAME AND ORGANIZATION	PURPOSE
04/10/69	Joel G. Peterson, B. S. F. & W. Roy, Montana	Courtesy Visit
05/02/69	Rex & Liz Campbell, Minnesota Bird Club, White Bear Lake, Minnesota	Birding
06/01/69	Mr. & Mrs. M. Bower, Maryland Ornithological Society Washington, D. C.	Birding
06/13/69	John B. Toenyes, Entomologist Great Falls, Montana	Mosquito abatement
06/13/69	Martin D. Skinner, Epidemiologist Helena, Montana	Mosquito abatement
06/13/69	Dave Blaquere, Source Reduction Great Falls, Montana	Mosquito abatement
07/31/69	Mr. & Mrs. A. Waller, B. S. F. & W. Medicine Lake, Montana	Courtesy Visit
08/05/69	Bob Miller, B. S. F. & W. Glasgow, Montana	Wetlands Program
09/29/69	David B. Marshall, B. S. F. & W. Portland, Oregon	Courtesy Visit
11/04/69	Boyd Crawford, Fort Benton, Montana Ronald Engellant, Geraldine, Montana John McLean, Brady, Montana Oscar Pederson, Fort Benton, Montana Vade Hamma, Brady, Montana Tom Whassam, Highwood, Montana Robert Anderson, Fort Benton, Montana Van Haderlie, Great Falls, Montana (S.C.S.) Cecil Rody, Fort Benton, Montana E. Erickson, County Agent, Fort Benton	S. W. C. District Group Visit
12/16-17/69	Crayton J. Lankford, B. S. F. & W. Portland, Oregon	O & M Inspection
12/22/69	Clair O. Clark, U. S. S. C. S. Great Falls, Montana	Range Survey
12/22/69	Joe A. Wirek, U. S. S. C. S. Great Falls, Montana	Range Survey

C. Refuge Participation

Eugene D. Stroops

Monthly	Attended all general meetings of the Cascade County Wildlife Association.
02/18/69	Attended ASCS Feed Grain Program meeting.
03/18/69	Attended meeting with Montana Fish & Game Department in Helena.
04/01/69	Conducted Conservation Tour for Great Falls Public School teachers.
05/03/69	Held field trial for German Shorthair Pointer Club in Unit G-5.
10/14/69	Conducted refuge tour for members of Chouteau County Soil Conservation Group.

We realize that there were other activities, however, we are unable to locate any records of them.

D. Hunting

Benton Lake Refuge provided waterfowl hunting to about 2850 hunters this year. Water Units IV and VI were open to waterfowl hunting during the regular season while the remainder of the water units remained closed to serve as a bird resting area.

A manned check station was operated on weekends and a voluntary self-check stand was used during the week. A wing board was provided to assist hunters to identify the ducks they had bagged. Data gathered on weekends is accurate but data gathered at the self-check station is sketchy at best. Many week-day hunters didn't bother to stop and write down the desired information.

E. Violations

Beginning in 1966 a concerted effort has been made to maintain good law enforcement in the refuge hunt. Refuge personnel put in many hours on law enforcement again this year.

Table 11 following lists the cases made on the refuge and their disposition.

TABLE 11

SUMMARY OF LAW ENFORCEMENT CASES

DEFENDANT	VIOLATION	OFFICER	JUDGE	RESULT
Windward, M.	Late shooting	Stroops	Larson	$25/0
Burkett, J.	No. Mont. license	Stroops	Larson	$25/0
Kelley, F.	No Mont. license	Stroops	Larson	$25/0
Westover, G.	No Mont. license	Stroops	Larson	Dismissed
Cantrell, S.	No Mont. license	Stroops	Larson	$25/0
Sather, L.	Take Eared Grebe	Stroops	Larson	$25/0
Bird, G.	No Mont. license	Stroops	Larson	Dismissed
Pankrhez, V.	No Mont. license	Stroops	Larson	Dismissed
Hissom, R.	No Mont. license	Stroops	Larson	Dismissed
Hopkins, W.	Take Eared Grebe	Stroops	Avery	Juvenile
Collins, R.	Late shooting	Stroops	Larson	$25/0
Sidor, T.	No Mont. license	Stroops	Avery	Juvenile
Shedd, H.	Hunt closed area	Stroops	Larson	$25/0
Dolderer, R.	No Mont. license	Stroops	Larson	$25/0
Smith, W.	Take Eared Grebe	Stroops	Larson	$25/0
Short, D.	Take Eared Grebe	Stroops	Larson	$25/0
Stroh, L.	No duck stamp	Stroops	Larson	$25/0
Longan, A.	No Mont. license	Stroops	Avery	Juvenile
O'Fallon, D.	No Mont. license	Stroops	Avery	Juvenile
Benthom, N.	No Mont. license	Stroops	Larson	Dismissed
Backner, C.	Unplugged gun	Rodman	Larson	$25/0

F. SAFETY

There were no lost time accidents at Benton Lake Refuge this year. As of December 31, 1969, our SAFETY record stood at 505 days without a lost time accident.

SAFETY meetings were held monthly with refuge personnel rotating responsibility for the meetings.

Our personnel are all SAFETY conscious. All equipment and facilities have been well provided with SAFETY features.

VII. OTHER ITEMS

A. Items of Interest

Personnel Changes

Robert Barber left us early in the year to accept the Assistant Manager's position at the National Bison Range, Moiese, Montana. He was sorely missed here at Benton Lake this year. We all wish he and his family the best in the new assignment.

Gene Stroops pulled up stakes in December and transferred to Red Rock Lakes NW Refuge, Monida, Montana, assuming the manager's position there. This was a promotion for Gene but after eight years at Benton Lake, it was a hard moveto make. Congratulations, Gene! (No - he didn't get married - not yet, anyhow!)

William T. (Ted) Schmidt returned from military duty in Alaska and was assigned to Benton Lake Refuge as Assistant Manager in December. Ted is a pilot and is in the process of obtaining his commercial pilot's license. We welcome Ted and his abilities and enthusiasm and are expecting great work from him.

Owen H. Vivion transferred from Red Rock Lakes NW Refuge, Monida, Montana, to the manager's position at Benton Lake NW Refuge in November. (Got out of the hills before snow time!) This was a lateral since the Benton Lake position had recently been elevated to GS-11. Between Benton Lake Refuge and Red Rock Lakes Refuge we really shook the bushes and shelled all the "fruits" out.

B. Credits

Owen Vivion prepared Sections I, III, IV, VI and VII with the able assistance of notes left by Gene Stroops and the information provided by Dean Rodman, John Rieger and Vincent Marko. He also edited the entire report.

Ted Schmidt prepared Sections II and V, digging material out of the files, field notes and from anyone who could answer any questions.

Betty Benway did all the typing, deciphering, file digging and kept the aspirin well stocked.

C. Photographs

All photos were taken by Gene Stroops.

SIGNATURE PAGE

Submitted by:

_____

Owen H. Vivion

Refuge Manager

January 28, 1970

Approved, Regional Office:

DATE:_____

_____

(Signature)

_____

(Title)

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

WATERFOWL

REFUGE BENTON LAKE

MONTHS OF JANUARY ~~XXX~~ THRU APRIL, 1969

(1) Species	(2) Weeks of reporting period: 12/29-1/04 (1)	1/05-11 (2)	1/12-18 (3)	1/19-25 (4)	1/26-2/01 (5)	2/02-08 (6)	2/09-15 (7)	2/16-22 (8)	2/23-3/01 (9)	3/02-08 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

ALL WATER AREA FROZEN

3 -1750a
Cont. [illegible]-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE BENTON LAKE MONTHS OF JANUARY TO THRU APRIL, 19 69

(1) Species	(2) Weeks of reporting period 3/09-15 11	3/16-22 12	3/23-29 13	3/30-4/5 14	4/06-12 15	4/13-19 16	4/20-26 17	4/27-5/03 18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:								Aerial			
Whistling			22	50	5	10	10	10	749		
Trumpeter											
Geese:											
Canada			15	15	11	10	12	12	525		
Cackling											
Brant											
White-fronted											
Snow						225	65		2,030		
Blue											
Other											
Total Geese			15	15	11	235	77	12	2,555		
Ducks:											
Mallard			200	3600	3500	2840	1360	1085	88,095		
Black											
Gadwall				25	275	1155	5000	3550	70,035		
Baldpate			10	5005	4550	650	1070	310	81,165		
Pintail			1125	14985	9985	10450	2270	1885	284,900		
Green-winged teal					50	715	955	995	19,005		
Blue-winged teal						50	610	1050	11,970		
Cinnamon teal						25	70	150	1,715		
Shoveler				785	1620	1505	1820	2525	57,785		
Wood											
Redhead			15	145	125	160	285	330	7,420		
Ring-necked							15	20	245		
Canvasback			20	335	830	855	625	445	21,770		
Scaup				10	40	65	200	1225	10,780		
Goldeneye			510	1925	310	25	50		19,750		
Bufflehead			5	15	10		30		420		
Ruddy							110	1480	11,130		
Other											
Total Ducks			1885	26830	21,295	18495	14470	15050	686,175		
Coot:			10	2295	2080	3850	5850	4850	132,545		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	740	50	
Geese	2,555	235	
Ducks	686,175	26,830	
Coots	132,545	5,850	

SUMMARY

Principal feeding areas Refuge farm units and surrounding stubble fields.

Principal nesting areas

Reported by Eugene D. Stroops

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-175
Form
(Rev. March 1953)

WATERFOWL

REFUGE BENTON LAKE MONTHS OF MAY THRU ~~TO~~ AUGUST, 19 69

(1) Species	(2) Weeks of reporting period: 5/04-10 (1)	5/11-17 (2)	5/18-24 (3)	5/25-31 (4)	6/01-07 (5)	6/08-14 (6)	6/15-21 (7)	6/22-28 (8)	6/29-7/05 (9)	7/06-12 (10)
Swans:										
Whistling	8									
Trumpeter										
Geese:										
Canada	10	6	21	21	28	28	26	38	37	35
Cackling										
Brant										
White-fronted										
Snow										
Blue										
////~~Other~~ TOTAL GEESE	10	6	21	21	28	28	26	38	37	35
Ducks:										
Mallard	1200	1065	1810	1075	1175	1375	1815	2415	2715	2815
Black										
Gadwall	3900	2255	2665	1410	1410	1410	1410	1470	1570	1720
Baldpate	200	185	335	420	420	420	420	420	420	475
Pintail	1650	975	1345	1095	1165	1315	1715	2315	2715	2865
Green-winged teal	900	455	725	160	160	160	160	160	220	285
Blue-winged teal	1200	1950	2460	2320	2320	2320	2320	2595	3095	4195
Cinnamon teal	150	215	300	645	645	645	645	645	800	1050
Shoveler	2250	1750	2270	1935	1935	1935	1935	2195	2945	3845
Wood										
Redhead	50	215	270	365	365	365	365	365	365	530
Ring-necked										
Canvasback	180	415	405	185	185	185	185	185	185	235
Scaup	950	755	830	690	690	690	690	690	740	890
Goldeneye										
Bufflehead		10								
Ruddy	800	470	360	215	215	215	215	215	215	215
Other										
TOTAL DUCKS	13430	10715	13775	10515	10685	11035	11875	13670	15985	19130
Coot:	6200	2850	5360	5360	5360	5760	6460	8060	12560	12560

3 -1750a
Cont. [illegible]-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE BENTON LAKE MONTHS OF MAY THRU TO AUGUST, 1969

(1) Species	(2) Weeks of reporting period: 7/13-19 11	7/20-26 12	7/27-8/02 13	8/03-09 14	8/10-16 15	8/17-23 16	8/24-30 17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling									56		
Trumpeter											
Geese:											
Canada	35	34	34	30	30	30	30		3,311	3	11
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other TOTAL GEESE	35	34	34	30	30	30	30		3,311	3	11
Ducks:											
Mallard	2900	2900	2900	2900	3250	3650	5155		287,805	61	1740
Black											
Gadwall	2070	2770	3370	3570	3870	3870	3870		298,970	102	2260
Baldpate	625	925	1075	1075	1075	2100	5875		115,255	28	655
Pintail	2865	2865	2865	2865	2865	2865	2865		260,470	75	1770
Green-winged teal	370	420	420	420	420	425	425		44,065	5	260
Blue-winged teal	4945	5595	6095	6095	6095	6150	6300		462,350	164	3775
Cinnamon teal	1550	1700	1700	1700	1700	1700	1700		122,430	19	1055
Shoveler	4445	4845	5095	5095	5095	5095	5095		404,320	152	3160
Wood											
Redhead	880	1030	1030	1030	1030	1030	1030		72,205	17	665
Ring-necked											
Canvasback	360	455	495	495	495	495	495		39,445	10	310
Scaup	1290	1740	1800	1800	1800	1800	1800		137,515	57	1110
Goldeneye											
Bufflehead									70		
Ruddy	215	240	300	450	600	600	600		42,980	14	385
Other Unidentified										86	
TOTAL DUCKS	22515	25485	27145	27495	28295	29780	35310		2,287,880	790	17145
Coot:	13260	15760	16080	16080	17500	19000	19000		1,310,470		10720

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	56	8	0
Geese	3331	38	11
Ducks	2,287,880	35,210	~~10,720~~ 17145
Coots	1310470		10720

SUMMARY

Principal feeding areas Refuge fields F-1, 2, 3, & 4 plus aquatic growth in all marsh units

Principal nesting areas Dike slopes, shoreline and rangeland surrounding marsh units.

Reported by Eugene D. Stroops, Refuge Manager

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

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

WATERFOWL

REFUGE BENTON LAKE MONTHS OF SEPTEMBER THRU DECEMBER, 1969

(1) Species	(2) Weeks of reporting period 8/31-9/06 (1)	9/07-13 (2)	9/14-20 (3)	9/21-27 (4)	9/28-10/04 (5)	10/05-11 (6)	10/12-18 (7)	10/19-26 (8)	10/26-11/01 (9)	11/02-08 (10)
Swans:										
Whistling						20	20	18	90	45
Trumpeter										
Geese:										
Canada	24	40	28	28	15	150	80	40	50	35
Cackling										
Brant										
White-fronted										
Snow						80	140		900	850
Blue										
~~Other~~ TOTAL GEESE	24	40	28	28	15	230	220	40	950	885
Ducks:										
Mallard	5155	5155	9540	11460	24200	9600	10650	19060	13250	8700
Black										
Gadwall	3970	5670	6180	7970	13930	21200	21560	14280	14250	8100
Baldpate	5875	9675	8200	8950	10375	4100	6390	7400	5300	3555
Pintail	2865	2865	4430	5100	3410	6380	10940	7100	5100	1200
Green-winged teal	425	425	310	40	720	1650	950	400	860	
Blue-winged teal	6090	6090	4120	1950	1230	5200	280	125	700	
Cinnamon teal	1400	1200	750	100						
Shoveler	5095	5095	6350	6540	3385	14700	16400	17670	9600	9500
Wood										
Redhead	1030	1030	950	810	205	2150	780	2800	710	480
Ring-necked										
Canvasback	495	495	600	800	145	740	430	1150	420	300
Scaup	1800	1800	1680	1840	510	1940	4500	5400	3250	4100
Goldeneye								65	50	160
Bufflehead								25	180	90
Ruddy	600	600	680	740	795	140	320	460	490	115
Other										
TOTAL DUCKS	34800	40100	42700	46300	58905	67800	73200	75935	54160	36300
Coot:	19000	30000	39500	51400	34200	16400	4560	325		

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(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE BENTON LAKE MONTHS OF SEPTEMBER, THRU 10 DECEMBER, 1969

(1) Species	(2) Weeks of reporting period 11/09-11/15	11/15-11/22	11/23-29	11/30-12/06	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling		5							1,386		
Trumpeter											
Geese:											
Canada	110	300	90	35					7,175		
Cackling											
Brant											
White-fronted											
Snow	230	100							16,100		
Blue											
~~Other~~ TOTAL GEESE	340	400	90	35					23,275		
Ducks:											
Mallard	6100	7000	6500	4500					986,090		
Black											
Gadwall	830	10							825,650		
Baldpate									488,740		
Pintail									338,100		
Green-winged teal									40,460		
Blue-winged teal									180,495		
Cinnamon teal									24,150		
Shoveler	495	40							664,090		
Wood											
Redhead									76,615		
Ring-necked											
Canvasback									39,025		
Scaup	635	100	40						193,165		
Goldeneye	100	105	10						3,430		
Bufflehead									2,065		
Ruddy									34,580		
Other											
TOTAL DUCKS	8160	7255	6550	4500					3,896,655		
Coot:									1,367,695		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	1,386	90	
Geese	23,275	950	
Ducks	3,896,655	75,935	
Coots	1,367,695	51,400	

SUMMARY

Principal feeding areas Farm Units F-1, F-3, F-4 and off-refuge grain fields

Principal nesting areas N/A

Reported by Eugene D. Stroops, Refuge Manager

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	3	5/12	20	7/15	Present				
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	Present		2	5/29	Present				
Duck hawk	1	5/03	4	8/04	Present				
Horned owl									
Magpie	Present		14	7/23	Present				
Raven									
Crow	Present		4	7/25	Present				
Swainson's Hawk	Present		9	8/18	Present				
Rough-legged Hawk	Present		3	5/12	1	5/19			
Marsh Hawk	Present		25	8/29	Present				
Prairie Falcon	Present		2	5/29	Present				
Sparrow Hawk	Present		7	6/03	Present				
Burrowing Owl	3	5/03	8	8/18	Present				
Short-eared Owl	Present		12	8/18	Present			4	

Reported by Eugene D. Stroops

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

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

INTERIOR--PORTLAND, OREGON

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge BENTON LAKE Months of MAY thru /// to AUGUST 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Horned Grebe	15	5/05	140	5/29	Present					
Eared Grebe	Present		20,000	7/22	Present				12,300	
Western Grebe	3	5/21	3	5/21	3	5/21				
Pied-billed Grebe	Present		210	7/22	Present					
Great Blue Herron	1	5/12	4	8/11	Present					
Black Crowned Night Herron	1	5/01	2	7/22	2	8/11				
American Bittern	1	5/12	14	6/04	Present					
White Faced Ibis	4	5/29	7	8/11	Present					
Sora	30	5/12	600	7/22	Present					
II. Shorebirds, Gulls and Terns:										
Killdeer	Present		6,000	7/22	Present				3,500	
Common Snipe	5	5/07	19	8/11	Present					
Long-billed Curlew	Present		16	7/22	Present				8	
Spotted Sandpiper	18	5/12	200	7/15	Present				120	
Willet	Present		300	7/22	Present				200	
Lesser Yellowlegs	1	5/05	85	7/22	Present					
Long-billed Dowitcher	8	5/02	350	6/04	Present					
American Avocet	Present		600	7/22	Present				350	
Wilson's Phalarope	20	5/02	6500	8/11	Present				3,500	
Northern Phalarope	60	5/12	60	5/12	Present					
Ring-billed Gull	Present		350	5/12	Present					
California Gull	Present		40	6/04	Present					
Franklin's Gull	Present		21,000	7/15	Present				12,500	
Common Tern	3	5/16	3	5/16	3	5/16				
Black Tern	10	5/02	600	7/15	Present				250	

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	2	4/30	10	4/30	Still Present				
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	1	2/09	2	2/27	2	2/27			
Duck hawk									
Horned owl									
Magpie	2	3/07	5	3/26	Still Present				
Raven									
Crow	1	4/01	14	4/22	Still Present				
Swainson's Hawk	4	4/13	6	4/22	Still Present				
Rough-legged Hawk	1	4/02	1	4/02	Still Present				
Marsh Hawk	3	4/21	10	4/30	Still Present				
Prairie Falcon	1	3/22	3	4/30	Still Present				
Sparrow Hawk	4	4/30	4	4/30	Still Present				
Snowy Owl	1	1/15	2	2/17	2	2/17			
Short-eared Owl	2	2/27	5	4/30	Still Present				

Reported by Eugene D. Stroops

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

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

INTERIOR--PORTLAND, OREGON

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge BENTON LAKE Months of JANUARY thru APRIL 19~~5~~ 69

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	4	4/21	575	4/30	Still Present					
Pied-billed Grebe	2	4/23	10	4/30	Still Present					
White Pelican	8	4/18	8	4/18	8	4/18				
Double-Crested Cormorant	1	4/21	1	4/21	1	4/21				
II. Shorebirds, Gulls and Terns:										
Killdeer	3	3/21	450	4/30	Still Present					
Long-billed Curlew	2	4/21	8	4/30	Still Present					
Willet	16	4/288	16	4/28	Still Present					
Lesser Yellow Legs	1	4/22	9	4/30	Still Present					
American Avocet	5	4/13	35	4/30	Still Present					
California Gull	5	3/26	110	4/18	Still Present					
Ring-billed Gull	10	3/23	250	4/30	Still Present					
Franklin's Gull	40	4/16	15,000	4/30	Still Present					

(over)

(1)	(2)	(3)		(4)		(5)		(6)
III. Doves and Pigeons:								
Mourning dove	Present	40	09/01	4	10/03			40
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Present	3	10/14	Present				3
Duck hawk	Present	3	10/03	3	11/04			3
Horned owl								
Magpie	Present	10	09/01	Present				10
Raven								
Crow	Present	7	09/22	7	09/22			7
Swainson's Hawk	Present	30	09/01	6	10/03			30
Rough-legged Hawk	Present	5	11/14	5	11/14			5
Marsh Hawk	Present	20	09/16	Present				20
Prairie Falcon	Present	2	10/03	2	10/03			2
Sparrow Hawk	Present	4	10/03	2	10/10			4
Burrowing Owl	Present	6	09/01	2	09/16			6
Short Eared Owl	Present	8	09/01	3	10/03			8

Reported by Eugene D. Stroops

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

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

INTERIOR--PORTLAND, OREGON

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge BENTON LAKE Months of SEPTEMBER THRU DECEMBER 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Horned Grebe	Present		40	09/01	5	09/29				40
Eared Grebe	Present		16,000	09/01	16	11/17				16,000
Pied-billed Grebe	Present		150	09/01	3	10/16				150
Great Blue Heron	Present		2	09/01	1	09/30				2
American Bittern	Present		10	09/01	1	09/11				10
White Faced Ibis	Present		7	09/01	2	09/11				7
Sora	Present		600	09/01	5	09/29				600
II. Shorebirds, Gulls and Terns:										
Killdeer	Present		3,500	09/01	9	11/20				3,500
Common Snipe	Present		50	09/01	3	11/28				50
Long Billed Curlew	Present		30	09/01	2	09/30				30
Upland Plover	3	09/02	3	09/02	1	09/16				3
Spotted Sandpiper	Present		300	09/01	10	10/03				300
Willet	Present		30	09/01	5	09/15				40
Greater Yellowlegs	25	09/08	25	09/08	25	09/08				25
Lesser Yellowlegs	Present		350	09/01	14	10/14				350
Long-billed Dowitcher	Present		800	09/01	150	10/14				800
Marbled Godwit	Present		70	09/01	20	09/30				70
American Avocet	Present		700	09/01	60	10/14				700
Wilson's Phaparope	Present		6,000	09/01	250	10/03				6,000
Ring-billed Gull	Present		250	09/01	35	10/28				250
California Gull	Present		40	09/01	20	10/03				40
Franklin's Gull	Present		3,500	09/01	60	10/14				3,500
Black Tern	Present		700	09/01	30	09/22				700

(over)

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge BENTON LAKE For 12-month period ending August 31, 1969

Reported by E. D. Stroops Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
I	Crops	0	Ducks	626,368	1010	1809
	Upland	769	Geese	22,131	2	4
	Marsh	371	Swans	1,953	0	0
	Water	0	Coots	139,717	170	340
	Total	1140	Total	790,169	1182	2153
II	Crops	0	Ducks	861,257	1266	2280
	Upland	266	Geese	11,065	0	0
	Marsh	534	Swans	977	0	0
	Water	0	Coots	279,433	880	1760
	Total	800	Total	1,152,732	2146	4040
III	Crops	320	Ducks	1,565,921	1726	3108
	Upland	2440	Geese	7,377	0	0
	Marsh	1134	Swans	391	0	0
	Water	0	Coots	419,150	1020	2040
	Total	3894	Total	1,992,839	2746	5148
IV	Crops	0	Ducks	2,740,362	2154	3876
	Upland	1154	Geese	11,753	4	7
	Marsh	1792	Swans	204	0	0
	Water	0	Coots	838,299	1740	3480
	Total	2946	Total	3,590,618	3898	7356
V	Crops	100	Ducks	1,096,145	2024	3642
	Upland	552	Geese	17,755	0	0
	Marsh	1093	Swans	198	0	0
	Water	0	Coots	698,583	1030	2060
	Total	1745	Total	1,812,681	3054	5702
VI	Crops	100	Ducks	939,552	1350	2430
	Upland	920	Geese	3,688	0	0
	Marsh	690	Swans	183	0	0
	Water	0	Coots	419,148	510	1040
	Total	1710	Total	1,362,571	1860	3470
TOTAL	Crops	520	Ducks	7,829,605	9530	17145
	Upland	6101	Geese	73,769	6	11
	Marsh	5614	Swans	3,906	0	0
	Water	0	Coots	2,794,330	8200	10720
	Total	12235	Total	10,701,610	17736	27,876

(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.

Interior Duplicating Section, Washington, D. C. 27580

3-1750c
Form NR[illegible]
(Sept. 1960)

WATERFOWL [illegible]NTER KILL SURVEY

Refuge BENTON LAKE

Year 196 9

(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
1 10/04-10/10	1164	3213	Gadwall (796) Shoveler (487) Mallard (229) Pintail (180) Blue-winged Teal (157) Widgeon (119) Redhead (86) Scaup (79) Green-winged Teal (59) Coot (25) Canvasback (28) Bufflehead (13) Ruddy (11) Cinnamon Teal (1)	2270	538	2808	Estimated number of hunters included in reported figure.	2190
2 10/11-10/17	809	2122	Gadwall (311) Shoveler (249) Pintail (109) Mallard (108) Widgeon (77) Scaup (60) Green-winged Teal (38) Blue-winged Teal (28) Redhead (22) Canvasback (20) Coot (14) Ruddy (12) Bufflehead (11) Cinnamon Teal (1)	1060	212	1272		1355
3 10/18-10/24	392	1022	Gadwall (172) Shoveler (115) Mallard (113) Widgeon (47) Pintail (41) Redhead (23) Scaup (21) Green-winged Teal (11) Canvasback (8) Ruddy (8) Blue-winged Teal (7) Coot (4) Bufflehead (3) Goldeneye (1) Canada Goose (1) Snow Goose (1)	576	202	778		831
4 10/25-10/31	209	518	Mallard (43) Gadwall (43) Shoveler (40) Green-winged Teal (18) Widgeon (14) Bufflehead (9) Green-winged Teal (3) Coot (3) Blue-winged Teal (2) Redhead (2) Goldeneye (2) Snow Goose (2) Canvasback (1) Ruddy (1)	182	49	231		262

(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. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1750c
Form N[illegible]C
(Sept. [illegible]960)

WATERFOWL[illegible]NTER KILL SURVEY

Refuge BENTON LAKE

Year 196 9

(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
5 11/01-11/07	162	378	Shoveler (30) Gadwall (21) Mallard (17) Scaup (17) Pintail (9) Ruddy (3) Widgeon (2) Redhead (1) Goldeneye (1)	101	43	144		155
6 11/08-11/14	77	196	Gadwall (22) Mallard (16) Shoveler (12) Scaup (8) Widgeon (7) Pintail (5) Bufflehead (4) Canvasback (3) Canada Goose (1) Snow Goose (1) Coot (1)	80	27	107		127
7 11/15-11/21	26	64	Mallard (8) Snow Goose (3) Gadwall (2) Pintail (1) Scaup (1) Bufflehead (1)	16	17	33		36
8 11/22-11/28	7	11	Mallard (2) Green-winged Teal (1)	3	3	6		6
TOTALS	2846	7524	Gadwall (1367) Shoveler (933) Mallard (536) Pintail (363) Widgeon (266) Scaup (199) Blue-winged Teal (194) Redhead (134) Green-winged Teal (112) Canvasback (60) Bufflehead (41) Ruddy (35) Snow Goose (7) Goldeneye (4) Canada Goose (2) Cinnamon Teal (2) Coots (47)	4288	1091	5379		4962

(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. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form
(Apr 946)

UPLAND GAME BIRDS

1613

Refuge BENTON LAKE Months of JANUARY xx to thru APRIL, 19 67

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifioally requested. List introductions here.
Sharp-tailed Grouse Ring-necked Pheasant Gray Partridge	6,200 acres of short grass prairie, 520 acres of agriculture land, 200 acres of trees and shrubs, 5,400 acres of marsh.								5 10 120	Only a reminant flock of Sharptail remain, with use both on and off the refuge. Huns are spreading out into previously unoccupied habitat and some increase is suspected, both on and off the refuge. Winter survival excellent.

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.

3-17
Form
(April 1946)

UPLAND GAME BIRDS

1613

Refuge BENTON LAKE Months of MAY thru ~~to~~ AUGUST, 1969

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sharp-tailed Grouse	5876 acres of grassland, 520 acres of farm land, 225 acres of trees and shrubs and 5614 acres of marshland		2	14					20	Only a reminant flock remains with use both on and off the refuge.
Ring-necked Pheasant			0	5					10	Lack of brood stock and suitable escape cover seem to limit total population.
Gray Partridge			11	140					200	Excellent nesting success contributing to increased population.

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.

3-1752
Form [illegible]-2
(April 1946)

UPLAND GA[illegible] BIRDS

THRU

1613

Refuge BENTON LAKE Months of SEPTEMBER ~~to~~ XX DECEMBER, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sharp-tailed Grouse	6380 acres grass-land, 520 acres farmland, 200 acres trees and shrubs and 5200 acres marsh								8	No hunting for these species on refuge.
Ring-necked Pheasant									2	
Gray Partridge									150	

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.

3-175[illegible]
Form [illegible]-3
(June 1945)

BIG[illegible]ME

Refuge BENTON LAKE Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Pronghorn Antelope	6380 acres grassland, 520 acres cropland, 200 acres trees and shrubs 5200 acres marsh	6										30	0	
White-tailed Deer												2	0	
Black Bear												1	0	

Remarks:

Reported by Eugene D. Stropps

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 <u>each</u> <u>species</u> 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.

3-175
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge BENTON LAKE Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Long tailed Weasel Mink Striped Skunk Badger Coyote Raccoon Yellowbelly Marmot Richardson's Ground Squirrel Deer Mouse Muskrat Whitetail Jackrabbit Mountain Cottontail	6,200 acres grassland, 520 acres agriculture land, 200 acres of trees and shrubs and 5,400 acres of marsh.	2.7			19				N	O	N	E		All species relatively low in total number except Muskrats 2,000

* List removals by Predator Animal Hunter

REMARKS: Coyote control necessary to protect nesting population. A Bureau aircraft was used and Wildlife Services personnel did the shooting.
Estimate of muskrat population based on fall house count and spring observations.

Reported by Eugene D. Stroop

INSTRUCTIONS

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

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

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

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

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

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

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

INTERIOR--PORTLAND, OREGON

3-1755
Form [illegible]-5

DISEA[illegible]

Refuge BENTON LAKE Year 19.69

Botulism

Period of outbreak August

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl		800
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
None hospitalized		
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage)

Southwestern refuge

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

All impoundments receding from flooded to operational levels.

Condition of vegetation and invertebrate life Unknown

Remarks

Lead Poisoning or other Disease

Kind of disease

Species affected

Number Affected

Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge BENTON LAKE Year 19 69

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	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
Honeysuckle	300	R	April	Montana	18.00	None	Field shelter-		All stock		May	Fair	*
Sandcherry	1500			Forest	90.00		belts and		used for				
Am. Plum	500			Nursery	30.00		wildlife		replacement				
Caragana	3400			and	136.00		habitat		and fill-in				
Am. Elm	50			Plum-	2.00		plantings in		purposes				
Green Ash	1300			Field	52.00		fence						
Russ. Olive	4700			Nurs-	188.00		corners						
Sib. Elm	50			eries	2.00								
Colo. Blue Spruce	500				30.00								
Juniper	200				12.00								
Lilac	100				12.00								
Chokecherry	500				45.00								
Manking Cherry	50				4.00								
Cotoneaster	500				67.50								

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

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: *Cause of loss due to dry soil and lack of precipitation.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-6
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge BENTON LAKE County CASCADE State MONTANA

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Gaines Winter Wheat					100	35 bu./A.	80	Millet Clover	20 20
								Fallow Ag. Land	100

No. of Permittees: Agricultural Operations 0 Haying Operations 0 Grazing Operations 5

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle		1,051.02	$3,727.74	5733
				2. Other				
				1. Total Refuge Acreage Under Cultivation				240
Hay - Wild				2. Acreage Cultivated as Service Operation				240

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.

3-1758
Form Nh-o
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge BENTON LAKE County CHOUTEAU State MONTANA

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
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Campana Barley					80	40 bu./A.	12	Gaines Winter Wheat	25
Gaines Winter Wheat					18	35 bu./A.	25	Yellow Sweet Clover	27
								Fallow Ag. Land	100

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

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				280
Hay - Wild				2. Acreage Cultivated as Service Operation				280

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.

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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.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge BENTON LAKE County TETON State MONTANA

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	26	28.16	$77.44	129.69
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

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.

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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.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge BENTON LAKE Months of JANUARY through DECEMBER, 195/69

(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
Gaines Winter Wheat	2,300				146 bu.	1,054	1,200	1,100	*	*	
Campana Barley	1,400				100 bu.	200	300	1,000	*	*	
		Following used in 1969 feeding program at Giant Springs									
Mixed Grain - USDA Testing Lab		1,600#	1,600#			1,600#					
Oats - ASCS - Big Sandy		89,290#	89,290#			89,290#					
Oats - ASCS - Chester		73,680#	73,680#			73,680#					
Wheat - Refuge		72,700#	72,700#			72,700#					
	73,680# were fed at Tiber Reservoir to 12 - 15,000 ducks 50,000# were fed at Freezeout Lake to 15 - 18,000 ducks 74,500# were fed at Giant Springs to 8 - 10,000 ducks										

(8) Indicate shipping or collection points Great Falls, Montana

(9) Grain is stored at Headquarters granary

(10) Remarks See above

*See instructions on back.

16—61482-1

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.

16—61482–1 U S. GOVERNMENT PRINTING OFFICE

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildli

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: BENTON LAKE

Proposal Number:

Reporting Year: 1969

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)
May	Mustard, Fanweed, Russian Thistle Canada Thistle	Farm Units F-1, F-2, F-3, F-4	170	2,4-D, Amine	30 Gal.	0.75#/A	Water 10 Gal./A	John Bean Boom Sprayer
May	Mustard, Fanweed, Russian Thistle Canada Thistle	Road Shoulders	12	2,4-D, Amine	4 Gal.	1.5#/A	Water 10 Gal./A	John Bean Boom Sprayer

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

Good results.
Road shoulders mowed prior to spraying - little regrowth noted.