ROUTING SLIP — DIVISION OF WILDLIFE REFUGES — DATE: 9-10 1940

✓	~~MR. SALYER~~	JCS	✓	SECTION OF HABITAT IMPROVEMENT:	
✓	~~MRS. WOODEN~~	Nbw		Mr. Kubichek	
✓	~~MR. ELMER~~	ACE		~~Mr. Smith~~	PNT
	MRS. GARVIN			~~Mr. Griffith~~	PEG
✓	~~MR. DUMONT~~	PAD		~~Miss Cook~~	JWC
	SECTION OF OPERATIONS:			SECTION OF ERA:	
	~~Mr. Ball~~			Mr. Regan	
	~~Mr. Krumes~~	WK	✓	Dr. Bourn	
	Mrs. Watkins			Mrs. Fishman	
	Mrs. Kricun				
✓	SECTION OF LAND MANAGEMENT:			STENOGRAPHERS:	
	~~Mr. Barnshaw~~	B	✓	Miss Price	
	~~Mr. Gabrielson~~	EVO	✓	~~Miss Whorley~~	V.W.
✓	SECTION OF STRUCTURES:				
	~~Mr. Taylor~~	WWJ			
	~~Mr. Gustafson~~	RBG			

REMARKS: Lake Breeding Quarterly
May - July 1940

Return to: Cook

LAKE BOWDOIN NATIONAL WILDLIFE REFUGE
MALTA, MONTANA
AUGUST 9, 1940

BIOLOGICAL NARRATIVE REPORT
PERIOD MAY 1 TO JULY 31, 1940

I. General.

A. Weather Conditions.

Unusual rainfall that prevailed earlier in the spring and preceeding the period covered by this report was followed by somewhat normal precipitation and temperatures as shown below:

	Snowfall	Rainfall	Max. Temp.	Min. Temp.
May	- - -	1.5	83	30
June	- - -	3.59	91	43
July	- - -	2.75	96	44
Total	- - -	7.84	96	30

B. Water Conditions.

I have succeeded in my efforts to keep the main lake at approximately the 2206.5 foot contour thus far throughout the summer but due to uncompleted structures in connection with the Dry Lake Supply Canal and the turnout from which we obtain our water supply from the Dodson South Canal of the Reclamation Service, it has been impossible to maintain water levels either in Dry Lake or the newly established marsh area at the upper end of the supply canal, so-called Lakeside Marsh. It has also been possible to maintain water levels in the small lake area separated from the main lake by the Great Northern Railway grade and lying to the south of this structure at approximately 2206.5 foot contour. For this purpose water has been obtained from an irrigation latteral bordering the Refuge to the south by permission and the usual fine cooperation of the local Reclamation officials. Water for maintaining levels in the main lake area have, of course, been supplied by the Reclamation Service through their main canal by way of the main spillway structure on the west side of the Refuge in the vicinity of the Headquarters.

Since the new Fresno Dam has now been completed near Havre, Montana and from which we are supposed to receive a minimum of 3500 acre feet of water each year, I am assuming that the water received both in the main lake and the small lake south of the tracks, as well as various amounts of water received for irrigation at the Headquarters and various food and tree patches in the Black Creek area and other points on the south of the Refuge, will be charged against this water to be received from the Fresno Dam;

however, there is some uncertainty as to whether the Fresno Project is efficiently operating since only comparatively small amount of water has been stored in this reservoir. On contacting the local Reclamation authorities relative to this matter, they advise it depends on the decision of higher officials as to whether the Fresno Project can be declared officially in operation and as to whether this water shall be charged to the Fresno Project. The procedure thus far in the past years has been outright donation by the Reclamation Service of all water furnished to the lake area and we have paid a nominal fee to the local Reclamation District for water used for irrigation.

Water levels compare very similiar to those maintained last year in the main lake and the lake south of the railway. Dry Lake has been somewhat lower than that of the levels of last year.

C. Fires.

No fires have occurred on the Refuge during this period, but as the fire season approaches every possible precaution will be taken during the fall period and all fire suppression equipment and plans are now being checked over and brought to attention in preparation for any outbreak.

II. Wildlife.

A. Waterbirds.

1. Population and behavior.

With improved food and cover conditions on the area as a result of protection of natural growth from range stock as well as some supplemental planting of rush, millet, smartweed and sago, nesting conditions have been ideal this season; and with the added protection of the broods from predators that were removed during the winter months large clutches of young ducks and geese are commonly seen throughout the area.

Especially gratifying is the splendid increase in canvasback, scaup, redhead and ruddy ducks as well as avocet, curlew, willett and several other shore birds. A little discouraging is the fact that the mallard population is slightly below that of last year and for which I cannot account.

Both Woody and Pelican Islands have carried their full capacity of nesting pelicans, cormorants, blue herons, gulls and terns and garnished by an ocassional goose or duck nest. (Picture No. 467 and 468) These various birds nest more or less contentedly on the various island areas with very little conflict~~tion~~ or trouble among the various species and very

little molestation by gulls on the other birds or nests has been noted.

Of particular interest and somewhat discouraging is the fact that between four and five hundred eared grebe nests which were established as a new colony in rushes in the main lake area near the mouth of the Reclamation spillway were completely destroyed by wind and resulting wave action during the nesting season. These birds nested on last year's growth of rushes that had fallen over among this year's growth in approximately four feet of water and, of course, nothing could be done to protect these nests.

2. Food and cover.

The usual fine growth of sago is prevalent throughout the entire main lake as well as the lake area south of the railroad grade and many species of birds are taking advantage of this excellent food supply. Exceptionally fine growth of both hardstem and prairie bulrush was made this season which will supplement the abundant supply of sago and other similiar aquatic foods in these areas. The various grasses and shrubs are gradually increasing on the upland nesting areas which has aided materially in nesting facilities this season and will be a great benefit for next year. The growth of hardstem and prairie bulrush in Dry Lake is rapidly recovering from the previous several years of drowth, and it is not considered necessary to make supplemental plantings in this area.

The newly established Lakeside Marsh has produced an excellent supply of spikerush in the lower areas which have been flooded periodically in previous years, and some scattered clumps of water smartweed have produced a splendid growth this season. This has been supplemented by plantings of prairie bulrush and Pennsylvania smartweed in some of the newly flooded higher levels--the latter having responded very noticably and is producing some food and cover this season. (Picture No. 469)

In some of these shallower newly flooded marshes I have discovered a somewhat new type of vegitation which was identified by Mr. Hotchkiss on his recent visit as water hyssop (bacopa). (Picture No. 470 and 471) While Mr. Hotchkiss was not entirely familar with the value of this bacopa as feed for waterfowl, I find as reference on page 68 of Mr. W. L. McAtee's recent publication "Waterfowl Food Plants" information to the effect that various observers consider bacopa a favorite wild duck food.

Bacopa rotundifolia

3. Botulism.

I was somewhat discouraged to find a slight outbreak of botulism as early as June 2 when a half dozen ducks were picked up on the dual shore line between Lake Bowdoin and the Dry Lake areas. Two of these birds were sent to Dr. Quortrup at the Bear River Refuge to positively identify their ailment, and I received a report to the effect that both birds were definitely affected with botulism. There were no alarming outbreaks, however, until the early part of July which as usual came at a time when no assistance was available for rescue and control operations. The temporary hospital and pens were reestablished at the Headquarters storage reservoir. (Picture No. 472 and 473)

I was finally successful in obtaining six men out of Mr. Rodgers' quota at Roundup for continuing his project out of last year's carry-over W.P.A. funds. I received these men on July 12 and they immediately began rescue and disposal operations. (Picture No. 474 and 475) The outbreak continued somewhat severe throughout the first part and middle of July and undoubtedly considerable more birds were lost than would have been necessary if adequate assistance had been available. I was also successful somewhat late in the stage of operations in obtaining four N.Y.A. assignments to assist the W.P.A. men with this work. Dr. Quortrup, Mr. Hotchkiss and Mr. Lakin conducted investigations throughout the Refuge area on July 24 to 26 and various tests and experiments were made. (Picture No. 476)

The severity of this epidemic seemed to slacken considerably during the latter part of July and the peak period has thus far been the week of July 14 to 20. Present records show that during the period of July 7 to 31 that 3,341 birds were buried in the field and 547 birds hospitalized out of which 149 succumbed which will give an idea of the extent of the outbreak this year, which, unless we have a sudden change for the worst, will undoubtedly be somewhat less severe than the outbreak of a year ago when 16,000 birds were affected.

The method of treatment this year has been somewhat similiar to that followed last season. The administration of cool, fresh water mixed with the proper proportion of potassium permanganate is administered upon entering the hospital and succeeding treatment consists of washing the throat and nostrils with 3% salt solution; and, of course, any birds having leeches are given additional treatment as required. Birds recovering are promoted to No. 1 outside pen and from there to No. 2 and 3 pens--the latter of which completes their hospitalization and from which they are banded and released. So far our bird recovery has been somewhat low due to insufficient help not only in the hospital but in the field.

The probable cause of infection this year seems to be the same as in the past and points directly toward an alkaline condition agitated by decayed vegetable, and probably animal matter. The worst outbreaks usually occurr in small bays or secluded areas where very little circulation exists and where great quantities of drifted sago and other vegetable matter are deposited from year to year. Dr. Quortrup's investigation showed the Lakeside Marsh area to be the most highly infected area on the Refuge at the time of his visit and upon his recommendation this was drained through the Dry Lake Supply Canal into Dry Lake in an effort to remedy this condition. Since this was done at the close of this report no information is, as yet, available as to the results obtained.

B. Upland-game Birds.

Chinese Pheasants and Hungarian Partridge have shown very favorable increase during this period especially in the immediate vicinity of the Headquarters where considerable plantings of fruit and seed bearing shrubs and vines, as well as grain plantings, are beginning to develop nicely. Sage grouse also show some increase over last year and a few clutches of young birds have recently been observed in the immediate vicnity of the Headquarters.

C. Big-game animals.

Although it is somewhat difficult to keep a permanent record on the antelope as they continue to increase and to range more to the north and east sides of the Refuge and due to the fact that with present water elevations it is impossible to reach the Big Island to check on these animals except by boat, it is believed practically all of the 25 animals that wintered on the Refuge are still within the boundaries and while no definite count has been made of the increase this season there is known to be at least 12 fawns at the present time. These animals appear to all be doing very well and with increased grass and other range conditions it is felt that this small herd will continue to multiply rapidly in the coming years, especially if predator control activities are continued as they have been during the past three winters.

D. Fur-bearing animals.

Muskrats have increased very rapidly this season, but since they were almost exterminated by local trappers when the Refuge was established in 1936 it will probably be at least a year or two before any control activities are necessary--except for protection to dikes, dams, structures, etc. Badgers have shown little increase and no control of them has been necessary as yet and none is anticipated for some time.

E. Fish.

Large numbers of carp have been observed throughout the lake area this summer and especially large concentrations have been noted below the Reclamation spillway in the canal entering the lake. These fish seem to concentrate here in an effort to make their way back up the spillway and into the canal. Their movements in this respect are prevented, however, by the spillway drop and weir below.

It has been Mr. Kubichek's suggestion that attempts be made to seine out as many of these carp as possible at times when they were concentrated in the spillway in an effort to protect aquatic vegitation from being destroyed by these fish. I question somewhat the results that might be obtained on this small scale and I am inclined to believe that it will probably be necessary to resort to more effective action such as granting permits to local fisherman to seine out these carp during the winter months as has been done in the past when on certain ocassions as high as nine carload have been removed during one winter season by seining beneath the ice. If this should not be desirable or effective, my next suggestion would be to control our water levels at such time as our Dry Lake development is completed so that we may drain the lake area to sufficient extent so that these fish would be frozen out during the winter months. This might however, have certain ill effects on the growth of sago and other vegitation in the lake as well as to muskrats and other animal life. Also these decaying fish carcasses would possibly have a direct bearing toward agitation of botulism conditions.

III. Refuge development.

A. Physical development.

During this period and prior to July 1 the various Dry Lake Supply Canal structures were completed consisting of 1 pole-deck bridge with rubble masonry abutments, 1 pole-deck combination bridge and drop structure also of rubble masonry design and 1 combination check and drop. (Picture No. 477 and 478) The 100 foot flashboard structure in Dike "C", providing for inlet-outlet to Dry Lake from the southwest, was completed except for installation of the catwalk and railing which could have been completed had the necessary material been on hand. Some riprap also remains to be completed on the lower side of this structure. (Picture No. 479)

Chief maintenance activities on the Refuge during this period has consisted of maintenance of patrol trails, replacement and cultivation of tree patches (Picture No. 480 and 481), construction of an additional cesspool in connection with the residence Headquarters sewer disposal system, maintenance of various equipment on the Refuge, Headquarters landscape consisting of various tree and shrub plantings as well as flowers and lawn at the residence. (Picture No. 482 and 483)

B. Plantings.

1. Aquatics and marsh plants.

Due to the abundance of aquatic and marsh plants throughout the main lake area and the improved conditions of Dry Lake together with the considerable amount of supplemental plantings made during the past few years, very little aquatic or marsh plantings were made this season. This consisted of about 250 pounds of prairie bulrush and 150 pounds of Pennsylvania smartweed planted in the newly established Lakeside Marsh area. The results of this smartweed planting can be seen in picture No. 469. No results are noticed as yet of the bulrush plantings.

2. Cultivated crops.

Grain patches planted on the Refuge were made as follows:

Corn---------- 4 acres
Spring Wheat--------12 acres
Barley----------10 acres
Winter Wheat-------- 4 acres, planted fall 1939.

All of these crops are expected to yield well and to provide sufficient feed during the fall and spring migrations.

3. Trees and shrubs.

A total of tree and shrub plantings for this season, a part of which were included in the last period narrative report, are as follows:

S.C.S. Pullman Wn
Russian Olive (elaeagnus angustifolia)------3,000
Caragana (caragana arborescens)----------2,900
Snowberry (symphoricarpos racemosa)---------1,000
Green Ash (fraxinus lanceolata)---------- 400
Raspberry---------- 400
Refuge propagation
Hybrid Poplar Trees (1 year)---------- 800
Hybrid Poplar Cuttings----------4,000

All the above plantings are doing well, especially the trees planted in plowed patches where they have been kept cultivated. (Picture No. 484 and 485)

4. Grasses.

General range and grass conditions continue to improve generally throughout the upland areas which is adding to considerable extent toward improved nesting facilities as well as increased forage and range for the antelope.

C. Collections.

No collections of seeds, tubers, or root stalks were made during this period since necessary help was not available for making collections of root stalks for transplanting to easement areas, nor was sago or bulrush seed sufficiently matured for the harvest of seed, had sufficient help been available. Plans are being made, however, to use the very limited amount of N.Y.A. assistance now occupied in connection with botulism control in harvesting sago and rush seed as soon as the botulism season is over. It is also planned to combine prairie bulrush seed during the winter months.

IV. Public Relations.

A. Recreational Uses.

1. Number of visitors.

Approximately 280 cars visited the Refuge during this period with an average of three persons to a car or a total of 840 visitors.

Mr. Salyer spent June 18 inspecting the Bowdoin Headquarters and development as well as visiting the Hewett Lake and Black Coulee easement areas. Dr. Quortrup, Mr. Hotchkiss and Mr. Lakin were at the Refuge from July 24 to 26 conducting investigations in connection with botulism. (Picture No. 486) Mr. Kubichek was on the Refuge and was assisted in connection with his photography work from July 1 to 5 and he again returned on July 15 and 16 to finish up with this work. Mr. Taylor and Mr. Winsor inspected water development and structures in the evening of June 20.

V. Economic Uses of Refuge.

A. Grazing.

Because of the lack of demand and the desirability to give range and cover conditions a further opportunity to recover from over-grazing in the past, no grazing permits have been issued this season. Permission has been granted however to local residents for the cutting of approximately 10 ton of hay, authority for which has been obtained from the Regional Office and permits have been issued by the Reclamation Service for this hay cutting on areas designated by me where it is considered no ill effects will result to nesting cover or feed for the birds.

VI. Field Investigation or Applied Research.

B. Bird Banding.

Bird banding activities during this period has consisted of banding 30 double-crested cormorants, 70 white pelicans, 40 common terns, 260 ring-billed gulls, 98 blue herons and approximately 300

ducks and shore birds have been banded and released from the hospital that have recovered from the botulism. A tabulation record of banding activities and returns will be shown in the succeeding report for the period August 1 to October 31

VII. Other Items.

A. General.

A trip was made over the proposed Fort Peck Game area on June 10 to the 14th to conduct Mr. Pulling to various points over the lower portion of the river to assist in his inspection of this area. (Picture No. 487)

B. Photographs.

A selection of photographs taken during this quarter are attached hereto.

1. A check list of birds for the Bowdoin Refuge follows the selection of photographs and this in turn is followed by the quarterly report covering easement areas under my administration.

REPORT ON EASEMENT REFUGE AREAS ADMINISTERED FROM AND IN CONNECTION WITH LAKE BOWDOIN REFUGE

Lake Thibedeau

The Diversion Reservoir is holding up well and is inhabited by a comparatively large number of duck broods and shore birds. This water supply will undoubtedly last throughout the season and will provide refuge for many birds now inhabiting small shallow lakes and ponds in the vicinity.

Lake Thibedeau Proper is practically dry--which is to be expected since practically no run-off reached this unit this spring.

Grassy Lake unit, of course, still remains dry. The lake bed is, however, producing a fine growth of spike-rush that would provide considerable cover for the coming year except for the fact that it is being grazed heavily by livestock that will eventually consume all of this growth.

The Mud Lake unit is holding up fairly well and is supporting a large number of shore birds such as avocet, curlew, western willett, yellowlegs and sandpipers as well as comparatively numerous ducks.

Greedman Reservoir

As usual this area is carrying an exceptionally large number of duck broods--chiefly mallards, pintails, gadwalls, redheads, and canvasback. Avocet, curlew, willett, and eared grebe are also observed in plentiful numbers. This water supply is holding up exceptionally well considering that it is also operated in part as a private irrigation unit.

Black Coulee

A plentiful water supply, combined with a splendid growth of millet, sago and other supplemental plantings, has attracted many birds to this fine area where they breed and nest unmolested by human beings or stock as provided by isolation and entire fencing of the area. In addition to the benefits to waterfowl as mentioned above this area provides an exceptionally fine resting grounds each fall. All structures and fence on this unit are standing up very well.

Hewett Lake

Undoubtedly this area located as it is, adjacent to the Nelson Reservoir and Milk River, as well as being conveniently close to Lake Bowdoin, together with the fact that it has the past two years had an adequate water supply, should be one of the best producing easement areas in the northwest. While a fairly heavy concentration of birds are to be found here, I have especially noticed the scarsity of nesting birds and their broods. Plantings of prairie bulrush, hardstem rush, millett and sago made a year ago responded nicely but all this has been, or is in the process of being grazed off, by a large band of sheep as well as a heavy concentration of horses and cattle--which I hold directly responsible for the scarsity of birds on this area. As stated in previous reports, I feel this unit will fail to function until labor and material are made available for fencing a portion of it as nesting and breeding grounds, which is possible on certain county and government land.

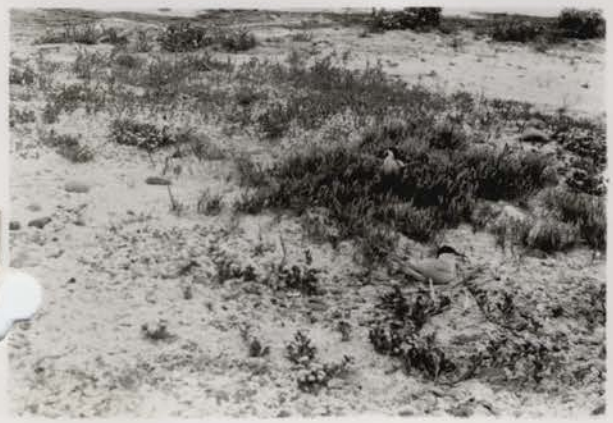
August 9, 1940

B. M. Hazeltine

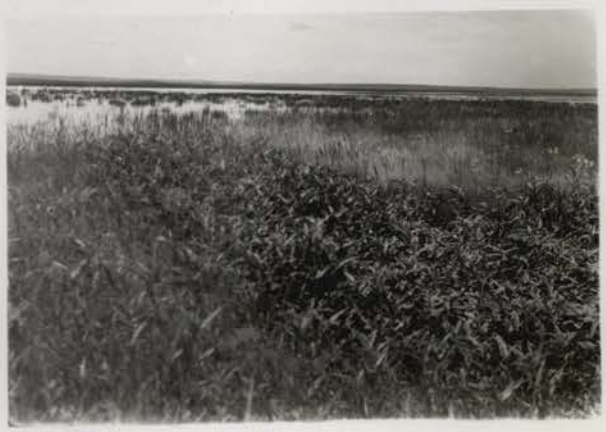
B. M. Hazeltine
Under Refuge Manager

PHOTOGRAPHIC EXPOSURES

Picture No. 467. Pelican colony on Woody Island. 6-22-40

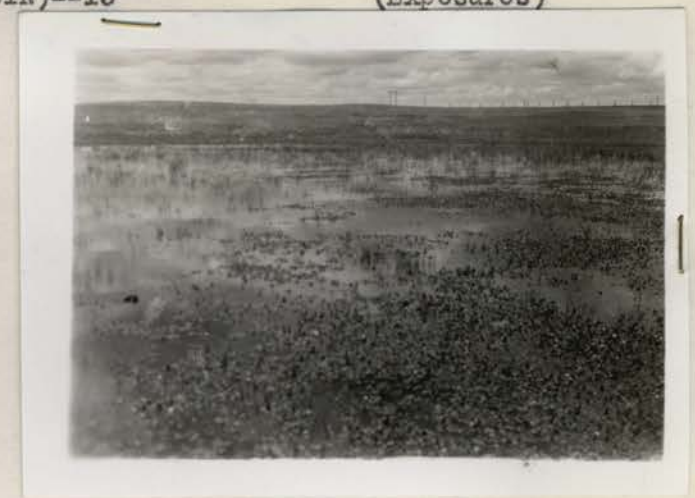


Picture No. 468. Close-up of nesting common terns on Woody Island, Lake Bowdoin Refuge. 7-16-40



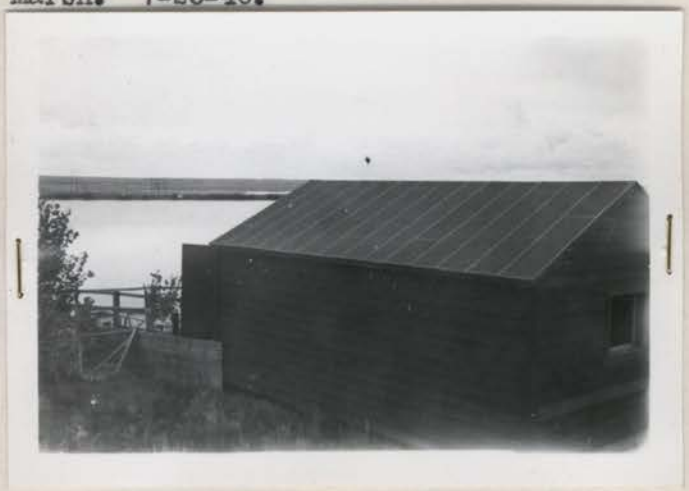
Picture No. 469. Spring planting of Pennsylvania smartweed in Lakeside Marsh Area. 7-25-40

Picture No. 470



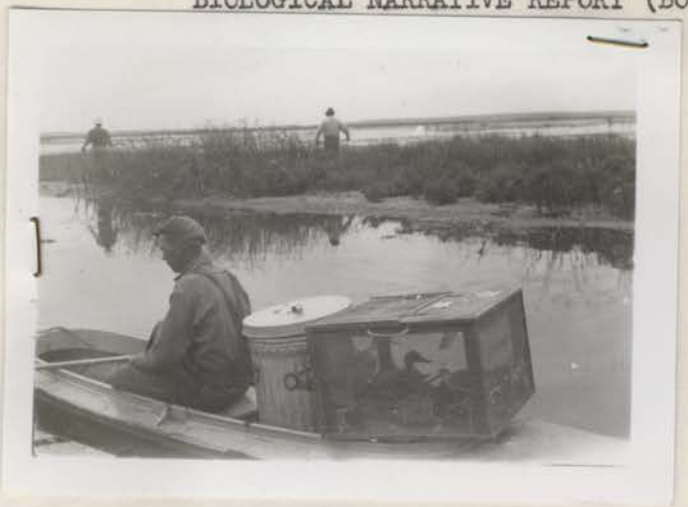
Picture No. 471

Water hyssop (bácopa) found growing in newly established Lakeside Marsh. 7-25-40.

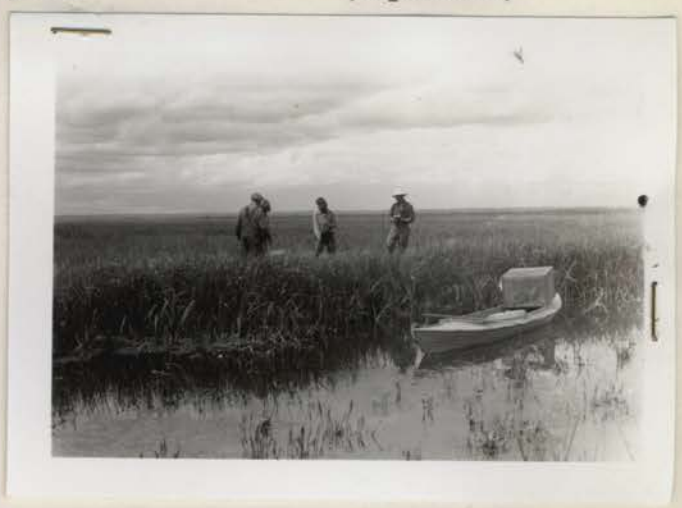


Picture No. 472. Temporary hospital reestablished at irrigation storage reservoir-Bowdoin Hdqts. 7-1-40.

Picture No. 473. Outside hospital pens at Bowdoin botulism Hdqts.

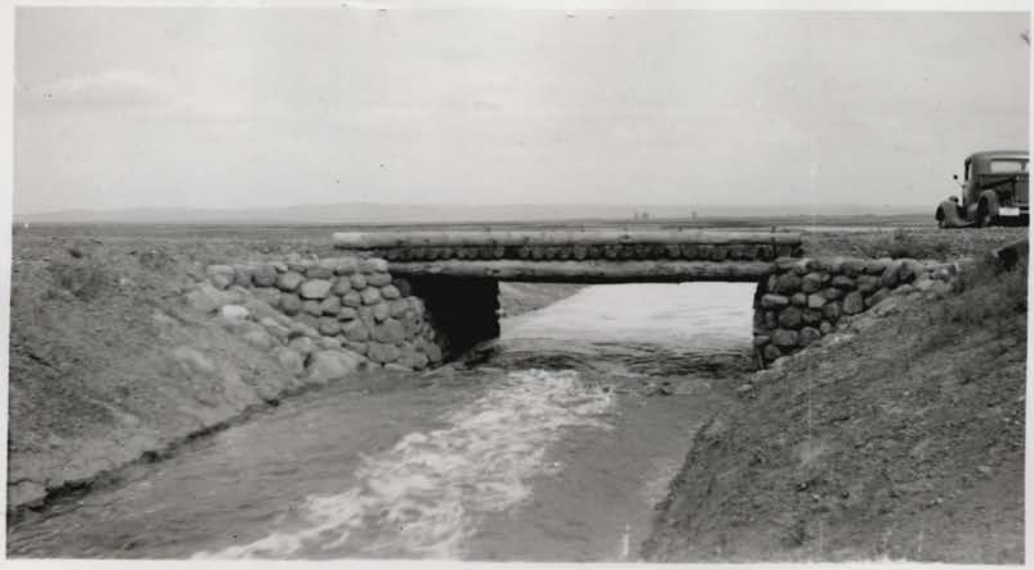


Picture No. 474. Collecting dead and sick birds from infested marsh area on east side of Lake Bowdoin. July 1940.

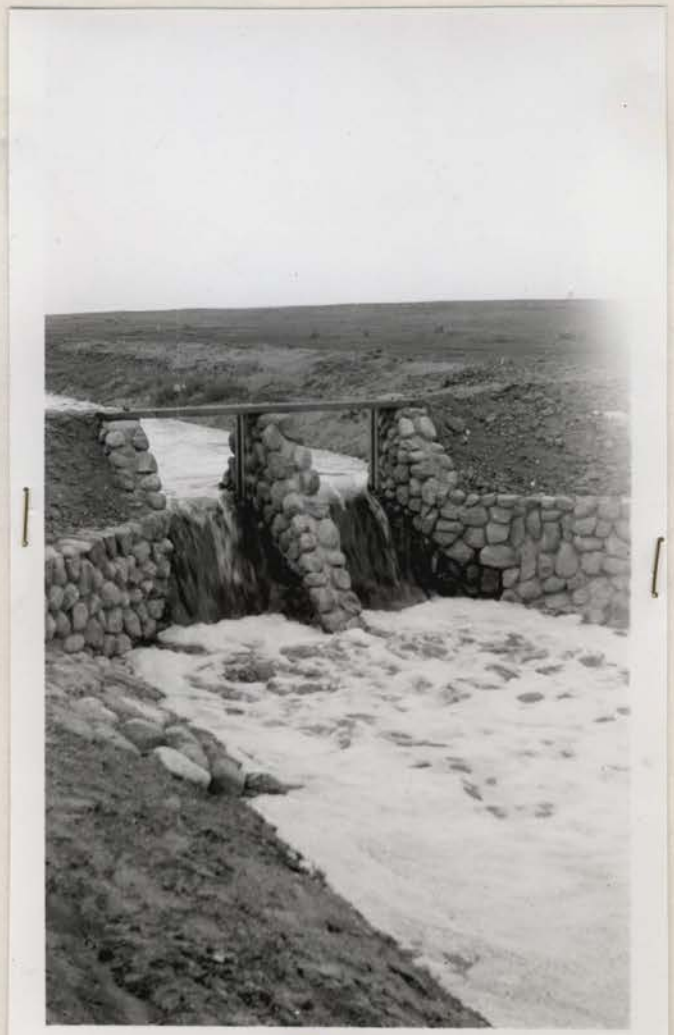


Picture No. 475. Checking and burying dead birds picked up effected with botulism in Bowdoin marshes. July 1940.

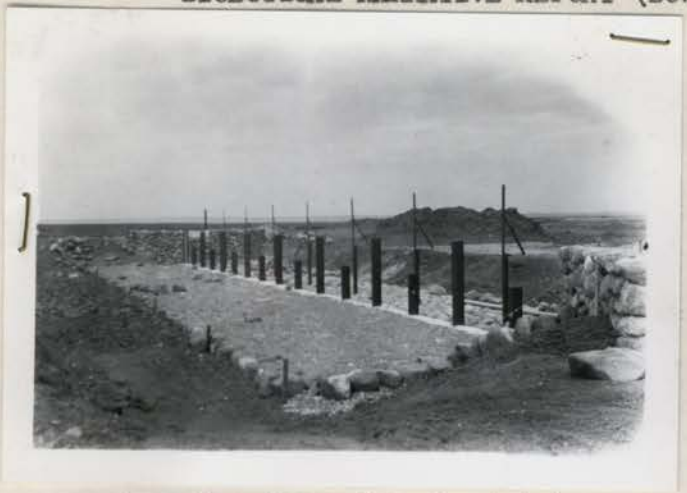
Picture No. 476. Mr. Lakin taking soil samples on south side of Bowdoin Lake as tests for botulism. Mother and young duck lay dead at shoreline in foreground. July 25, 1940



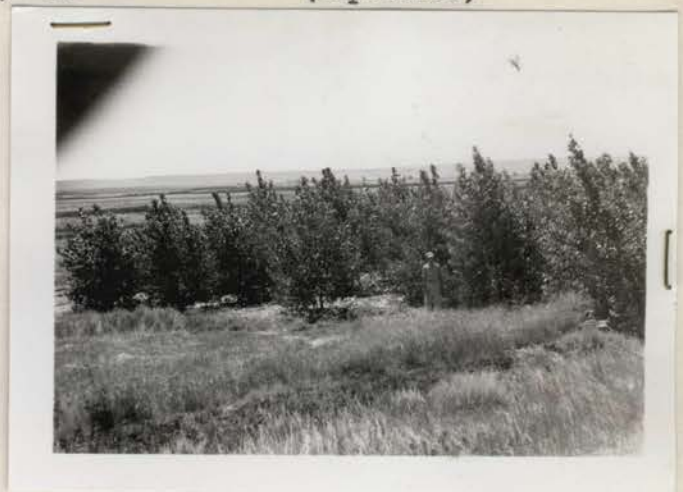
Picture No. 477. Combination bridge and drop structure--Lake Bowdoin Dry Lake Supply Canal. 7-31-40.



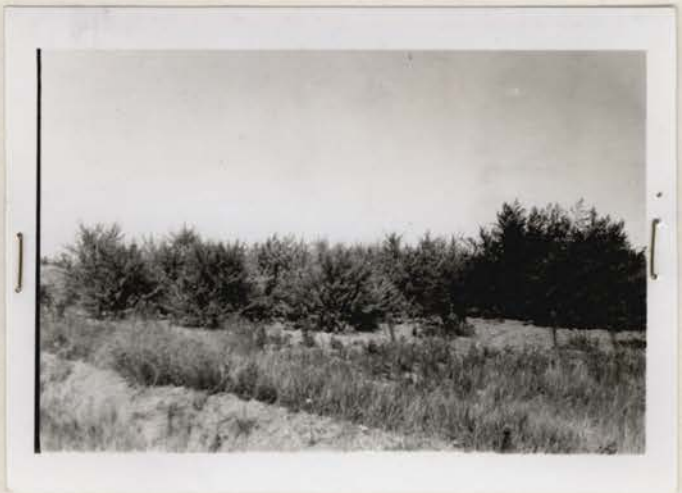
Picture No. 478. Combination check-drop at Lake Bowdoin Dry Lake Supply Canal. 7-31-40



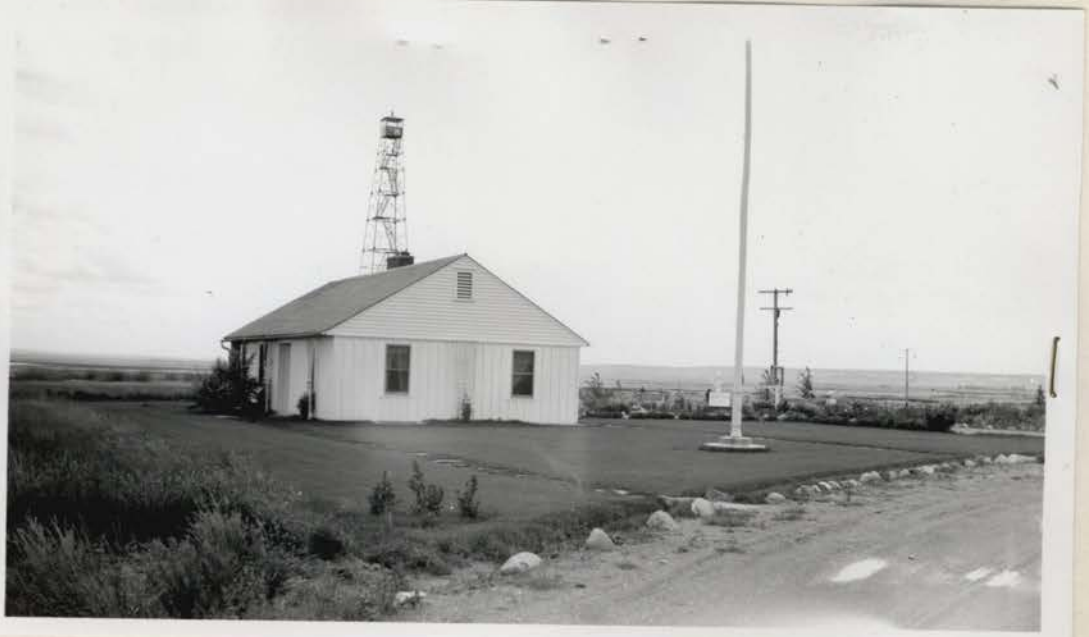
Picture No. 479. 100 ft. inlet-outlet flashboard water control structure in Dike "C" at Dry Lake. July 30, 1940.



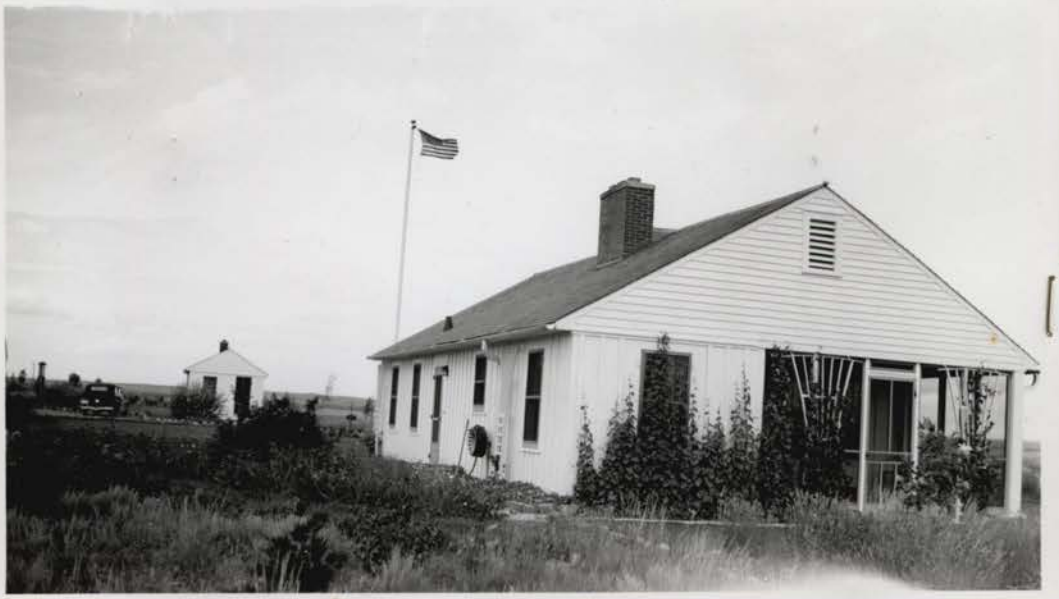
Picture No. 480. 3 year old cottonwood plantings inter-planted and bordered with caragana, snowberry, Russian olive, and Chinese Elm. July 1940.



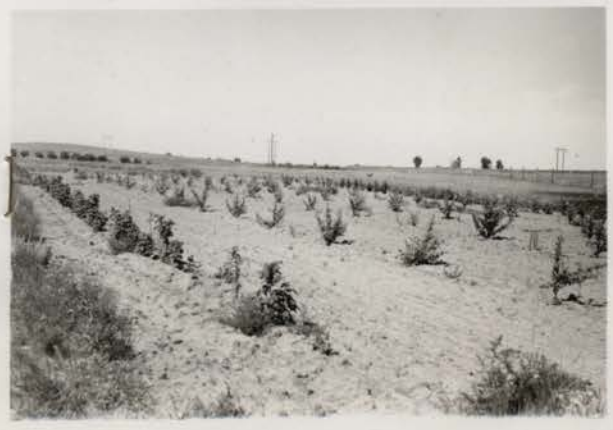
Picture No. 481. 3 year old mixed plantings of Russian Olive, caragana, and Chinese Elm planted as landscape near Bowdoin Headquarters and to attract and for the protection of upland game birds. July 1940.



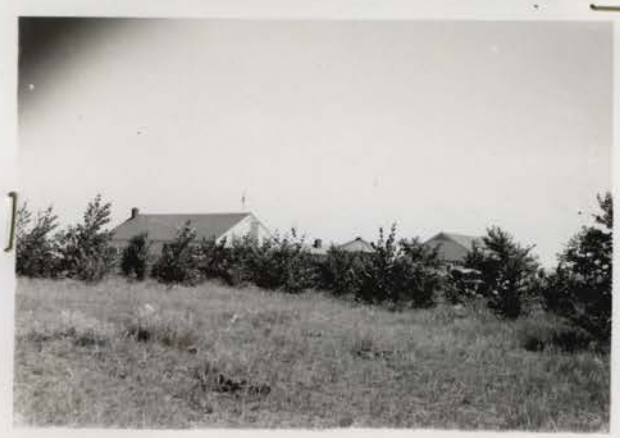
Picture No. 482. Front and west end view of the Bowdoin residence showing lawn, flower and some landscape plantings. 7-31-40



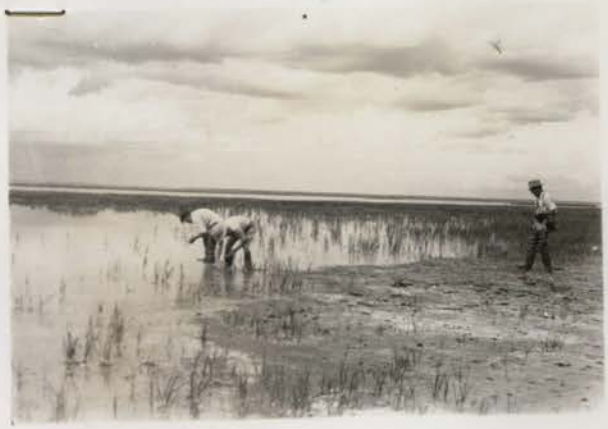
Picture No. 483. Rear and east end view of Bowdoin residence also showing flowers and other landscape plantings. 7-31-40.



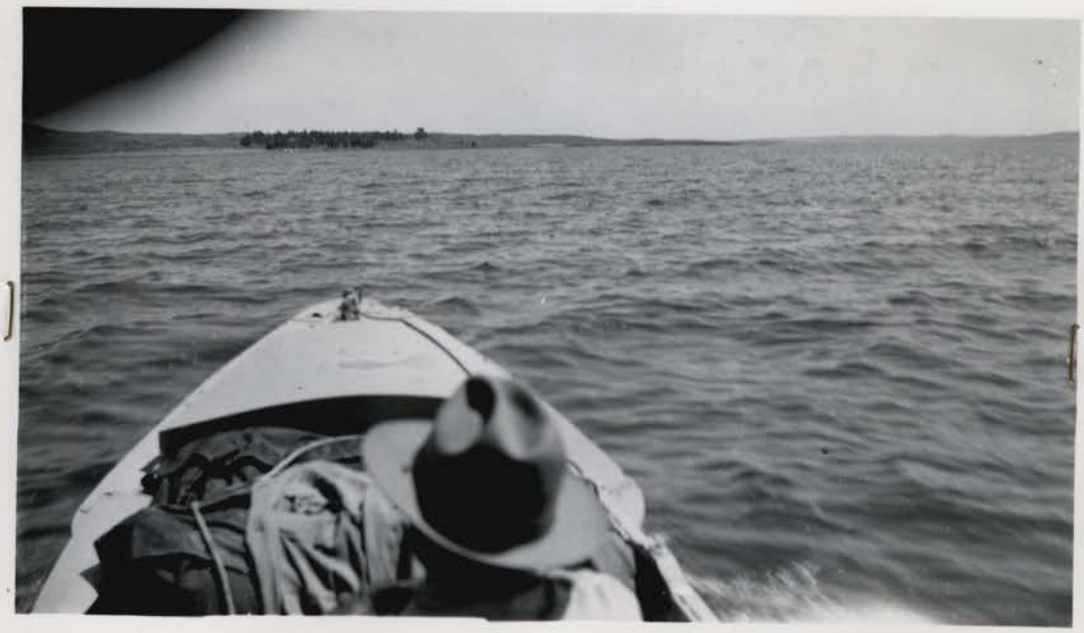
Picture No. 484. New (1940 spring) planting of Russian Olive bordered by raspberry plants obtained as surplus from private garden at Bowdoin Headquarters. July 1940.



Picture No. 485. Two year old windbreak and landscape plantings at Bowdoin Headquarters. July 1940.



Picture No. 486. Dr. Quortrup, Mr. Hotchkiss and Mr. Lakan making tests and investigating botulism conditions on Bowdoin Refuge. 7-25-40.



Picture No. 487. Cruising the upper Big Dry Creek country of the Fort Peck Game Range with Mr. A. Pulling. 6-13-40.

LAKE BOWDOIN REFUGE MIGRATORY WATERFOWL RECORD

1940

DUCKS

	SPECIES	FALL MIGRATION 1939	SPRING MIGRATION	SUMMER RESIDENT	DATE FIRST SEEN IN SPRING	LATEST DATE OBSERVED IN FALL
1.	Pintail	5,000	4,000	2,500 ✓	3-10-40	
2.	Shoveler	3,000	3,000	2,000 ✓		
3.	Baldpate	5,000	4,000	1,500 ✓		
4.	Teal, Blue Winged	3,000	3,000	2,000 ✓		
5.	Gadwall	2,000	1,000	1,000 ✓		
6.	Mallard	6,000	3,000	1,000 ✓	3-10-40	
7.	Scaup	1,500	2,000	500 ✓		
8.	Redhead	1,000	1,000	500 ✓		
9.	Ruddy	500	500	300 ✓		
10.	Canvasback	500	800	300 ✓		
11.	Teal, Green Winged	1,000	1,000	50 ✓		
12.	Teal, Cinnamon	200	200	50 ✓		
13.	Bufflehead	500	500	30 ✓		
14.	Goldeneye	300	500	20 ✓	3-6-40	
15.	Merganser, American	300	300			
	TOTAL	29,800	24,800	11,750		

GEESE

1.	Goose, Canada	1,000	800	275 ✓	3-5-40	
2.	Goose, Lesser Snow	1,000	1,500	0	3-29-40	
3.	Brant, Black	300	0	0		
	TOTAL	2,300	2,300	275		

SWAN

1.	Swan, Whistling	100	100	0		

LAKE BOWDOIN REFUGE MIGRATORY WATERFOWL & GAME BIRD RECORD
1940

CRANES, RAILS, SHOREBIRDS, AND OTHER GAME BIRD

	SPECIES	FALL MIGRATION 1939	SPRING MIGRATION	SUMMER RESIDENT	DATE FIRST SEEN IN SPRING	LATEST DATE OBSERVED IN FALL
1.	Avocet	300	500	300 ✓	4-14-40	
2.	Coot, American	2,500	2,500	2,000 ✓		
3.	Cranes, Sandhill	1,000	500	0	4-16-40	
4.	Curlew, Long-Billed	300	300	200 ✓	4-25-40	
5.	Godwit, Marbled	400	300	250 ✓	4-25-40	
6.	Killdeer	1,000	1,000	800 ✓	4-25-40	
7.	Mourning Dove	300	200	200 ✓		
8.	Phalarope, Wilson's	800	1,000	800 ✓		
9.	Plover, Black-bellied	500	400	100 ✓		
10.	Sandpiper, Spotted	200	200	100 ✓		
11.	Sandpiper, Stilt	100	100	50 ✓		
12.	Snipe, Wilson	200	200	100 ✓		
13.	Willett, Western	300	300	200 ✓		
14.	Yellowleg, Lesser	100	200	100 ✓		
15.	Yellowleg, Greater	200	200	200 ✓		
	TOTAL	8,200	7,900	5,400		

LAKE BOWDOIN REFUGE NON-GAME BIRD RECORD

1940

	SPECIES	FALL MIGRATION 1939	SPRING MIGRATION	SUMMER RESIDENT	DATE FIRST SEEN IN SPRING	LATEST DATE OBSERVED IN FALL
1.	Bittern, American	30	25	25 ✓		
2.	Grebes, Eared	2,500	3,000	2,500 ✓		
3.	Grebes, Western	200	200	100 ✓		
4.	Gull, Ring-billed	2,500	2,500	2,500 ✓	3-23-40	
5.	Gull, California	2,500	2,500	2,500 ✓		
6.	Gull, Herring	500	500	500 ✓		
7.	Gull, Franklin	400	500	400 ✓		
8.	Heron, Great Blue	500	400	250 ✓	3-29-40	
9.	Loon, Common	10	5	0		
10.	Pelican, White	1,500	1,500	1,500 ✓	4-14-40	
11.	Tern, Common	2,000	2,000	2,000 ✓		
12.	Tern, Black	200	300	150 ✓		
	TOTAL	12,840	13,430	12,425		

LAKE BOWDOIN REFUGE INSECTIVOROUS BIRD RECORD

1940

	SPECIE	EXTENT OF INHABITATION RARE	MODERATE	COMMON	DATES OBSERVED OR OTHER REMARKS
1.	Bunting, Snow			X	
2.	Bull-Bat			X	
3.	Blackbird, Red-winged			X	
4.	Blackbird, Yellow-headed			X	
5.	Blackbird, Brewer's		X		
6.	Crow		X		
7.	Grackle		X		
8.	Horned Lark, Prairie			X	
9.	Junco			X	
10.	Kingbird			X	
11.	Lark Bunting			X	
12.	Longspur, McCown's			X	
13.	Longspur, Chesnut-collared			X	
14.	Meadowlark, Western			X	
15.	Pipit, American		X		
16.	Pheebe			X	
17.	Robin	X			Observed 5-5-40.
18.	Swallows, Barn			X	
19.	Sparrow, English			X	
20.	Sparrow, Gambel's	X			Observed 5-6-40.
21.	Warbler, Northern Yellow-Throat			X	

LAKE BOWDOIN REFUGE MISCELLANEOUS BIRD AND MAMMAL RECORD

1940

OWLS

	SPECIE	EXTENT OF INHABITATION RARE	MODERATE	COMMON	DATES OBSERVED OR OTHER REMARKS
1.	Owl, Burrowing			X	
2.	Owl, Short-eared			X	
3.	Owl, Snowy	X			
4.	Owl, Richardson's		X		

HAWKS

1.	Hawk, March			X	
2.	Hawk, Cooper's		X		
3.	Hawk, Western Red-tailed		X		
4.	Hawk, Swainson's		X		
5.	Hawk, American Rough-legged		X		N.G. Wintering farm
6.	Hawk, Duck			X	
7.	Hawk, Prairie Falcon		X		
8.	Hawk, Sparrow			X	

EAGLES

1.	Eagle, Golden		X		

UPLAND GAME BIRDS

	SPECIE	WINTER POPULATION	NESTING POPULATION	REMARKS
1.	Pheasant, ring-necked	50	30	
2.	Partridge, Hungarian	40	30	
3.	Sage Grouse		25	
	TOTAL	90	85	

MAMMALS

	SPECIE	WINTER POPULATION	SUMMER POPULATION NOT INCLUDING YOUNG	REMARKS
1.	Antelope	25	25	2 killed fall 1939.
2.	Coyote	20	8	12 removed winter 1939 & '40.
3.	Badger	12	12	
4.	Muskrat	800	800	
5.	Mink	10	10	1 shipped to Washington
6.	Weasels, Common	40	36	4 removed winter 1939 & '40
7.	Weasels, Least	20	19	
8.	Skunks	25	21	4 removed winter 1939 & '40
	TOTAL	952	931	