

ROUTING SLIP

DIVISION OF WILDLIFE REFUGES

DATE: 2-5 1944☒ MR. SALYER☐ MRS. WOODIN☒ MR. ELMER☐ MRS. CARVIN☒ MR. DUMONT

SECTION OF HABITAT IMPROVEMENT:

Mr. Kubichek

Mr. Smith

☒ Mr. Griffith☒ Miss Cook

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☒ Mr. Krummes

Mr. Gustafson

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☒ Mr. Regen☒ Dr. Bourn

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☒ SECTION OF LAND MANAGEMENT:☒ Mr. Earnshaw☒ Mr. Ackerknecht

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REMARKS:

BOMBAY HOOK NARRATIVE REPORT

JANUARY-APRIL 1943

Return to: Habitat Improvement

Bombay Hook National Wildlife Refuge

January, February, March, and April, 1943

I. GENERAL

A. Weather Conditions

	Snowfall	Percipitation	Max. Temp.	Min. Temp.
January	.50	1.45	66	16
February		1.74	70	4
March	.50	3.37	73	10
April		1.32	81	23
Total	1.00	7.88	290	53

The percipitation and temperature records for this quarterly period, shown in the table above, were obtained from the Dover Station of the U. S. Weather Bureau, located seven and three-fourths miles air-line, southwest of Refuge Headquarters.

This period was ushered in by the usual Delaware winter, accompanied by a serious sleet storm, which began on January 27, and lasted until January 31. All surfaces were laden with a heavy coating of ice, which caused considerable damage to trees, and telephone and power lines. Although there was some breakage reported, power was interrupted most frequently by the lines being shorted by long streaks of ice falling from an upper wire to a lower one, and thus making a contact of sufficient duration to short the lines, or at least so we are told. The net result was that the headquarters was without electric current during the storm.

Snow was very light, and remained on the ground for short periods, so its effect on Wildlife conditions was almost negligible, but it did have a detrimental effect on road conditions.

During the month of April there was a series of mild northwest storms, during which there were extremely high tides, which, on one occasion reached elevation 4.8'. The bayshore areas were well inundated at that time, but no serious damage was caused.

B. Water Conditions

The salt marsh remained very wet throughout the entire period, save for a few days in early April. Mudflats and brackish pools were flushed repeatedly by tides, and at no time were dry enough to permit clean burning.

The water in Raymonds Pool remained at the usual spring elevation of from 3.0' to 3.60' during the entire period. No abnormal fluctuations have occurred.

It was hoped that the water table in Finis Swamp would be somewhat stabilized by the closing of Shearneck Gut, at its point of rise. This has not been noticeable however, and the spring accumulation has disappeared nearly as rapidly as it enters the wooded area, indicating that more fill is needed, on this more-or-less porous type of marsh.

II. WILDLIFE

A. Migratory Birds.

1. Population and Behavior. During the month of January, it was difficult to find waterfowl on the entire refuge. All water ways were frozen during the first two weeks, followed by a thaw, which under normal conditions would have increased the numbers considerably. But during this month, the thaw was followed by a sleet storm, the effects of which lasted until February 4. Starting on the 4th the Blacks, Pintails, Shovellers and Green-wings increased rapidly. The largest concentrations during the spring migration were seen on Raymond's Pool and in the mouths of Leipsic River and Simmons River.

It is quite obvious that full 95 percent of the spring waterfowl are migrants, since the only waterfowl in evidence during the freeze-up are small numbers of Blacks and Shovellers that remain at the few open-water holes which occur at the heads of a few tidal streams, or in sheltered woodland areas.

This immediately suggests a study that could be carried out by a banding project, since in this way we could determine whether the first birds to leave, are the first to return, or vice versa. We know of course, the order in which each species occurs and moves on, but the turnover in individual birds, is yet to be determined.

The general, overall picture presented by this spring migration is quite favorable. The season was later than usual, and luckily at that, because in April we had our storm tide which "topped" the marsh. Usually, many of the black ducks are nesting at that time, but due to the somewhat retarded spring, it is doubtful if any nests were damaged by the storm.

By the close of the period, the Shovellers, Gadwalls, Blue-winged Teal, and most of the black ducks had paired off, and are showing signs of courtship. Shovellers have not started to molt, and the number of hen mallards seems to exceed the number of drakes. Incidentally, this is just the opposite of what should be noted at the beginning of a nesting period, and all goes to show that the season is late, and the migration is still under way.

The Snow Geese were very inconsistent this spring. They would not remain on the marsh during clear days, and used the feeding grounds only at night. Areas chosen for feeding were farther inland than normal, although during heavy fog they reverted to form, and rested anywhere at all. At no time during the spring migration was it possible to look the flock over at close range, for the identification of Blue Geese, therefore none can be recorded for this period.

The movements and habits of shore-birds and waders were in no way spectacular, or different from former seasons. A glance at previous reports for this season of year, and at Form NR-1, attached will present as full a picture as can be presented.

The wintering population of Doves continued to use open fields in mild weather, and seek shelter in the timbered area bordering Finis Swamp Road, in rough weather.

Woodcock were present, one or two, during every week of the period, in spite of the frozen ground. They were found in heavy timber, where also were found many signs of their feeding operations. These signs occur in dry leaves and humus, where the woodcock seem to scratch away the leaves, apparently hen-fashion, and then make holes in the thick humus, about the diameter of a 20-penny spike.

2. Food and Cover. Perhaps the most important feeding area for waterfowl during the early part of this period is open, tillable upland, principally soybean and corn stubble. Refuge stubble fields were used extensively until early April, particularly right after the first thaw. At that time, ducks seemed quite anxious to feed on large, easily accessible grains. This seems to indicate that the first spring migrants are probably those ducks which have been spending the winter just off-shore in the Bay, or on the small water holes in the ice, thus they are very likely in need of the type of food found in the fields. Furthermore, marsh and aquatic foods, of the vegetative kinds, probably are not as easily accessible as grain, since the root foods must be dug or worked out, and seed material will have been washed away or disintegrated.

B. Upland Game Birds.

1. Population and Behavior. During the period, there were two days on which the ground was covered with a light blanket of wet snow, and temperatures were high enough to encourage a limited amount of game activity. Under these conditions it was possible to locate each covey of Quail, and nearly all of the Pheasants on the refuge. Activity was not great enough to obscure the range or territory which is normally used, or presided over by each

convey or individual bird, and under these conditions, interesting data concerning range relationships could also be observed, even though these data may be somewhat distorted by winter weather.

It was found that during periods of snow, both pheasants and quail will roost at night in the same territory, usually a woodland fringe with an abundance of honeysuckle and low growing shrubs ranging from blackberry vines to young gum and osage orange. In fact, pheasant and quail roosts in this type of cover, have been found within 177 paces of each other. While the quail were always flushed at the roost, or feeding adjacent thereto, the pheasants could not be located in that vicinity. Tracks in the snow indicate that the pheasant walks from its roost to open land, and then takes wing. Within a half-hour after daylight, pheasants are found on the border of marsh and upland fields, and hardly ever in or near the roosting area that is selected under winter conditions. The exception to this rule is an occasional hen bird, which when flushed, will inevitably strike out for the marsh border. Knowing pheasants as most of us do, it is rather difficult to think of them assuming the role of a King or Clapper Rail during most of the day, and reverting to the role of a pheasant or grouse at night. But that, in a sense, is the sort of "Dr. Jekle and Mr. Hyde" existence that is led by the Bombay Hook pheasants.

2. Food and Cover. During the sleet storm a large quantity of loose grain was distributed adjacent to the known roosting areas, and it was found that quail, Doves, and deer, (yes, deer) used the grain extensively, but not so with the pheasants. They would not tarry for long under these conditions. However, pheasants were seen to feed on the grain that was scattered along the marsh border. These observations were made from headquarters, and only one hen bird was flushed from grains scattered in wooded areas and near roosting cover.

C. Big Game Animals.

1. Population and Behavior. The number of deer on the refuge area was established during this period as five, two of which are antlered bucks. There may be more, but two groups have been seen almost simultaneously, containing a total of five. They appear to be well satisfied with their lot, and have suffered no predation. All stray dogs have long since been eliminated, and fox hounds, which cross the upper reaches of the refuge occasionally, have so far shown no interest in deer. We hope this continues. There is the danger of course, that some hunter may acquire, and import one of those "deer chasing" dogs that are used in New Jersey, and in the South.

2. Food and Cover. Although careful observations have been made, no signs of "deer-browsing" have as yet been detected. Of course, the usual browsing species of trees and shrubs do not occur in these lowlands, but, as in other instances of range extension and innitial stocking, it was felt that certain of the native varieties would be found acceptable for this purpose. However, the deer on the refuge prefer to graze on winter grains, much the same as cattle, and needless to say, this food is very abundant, and always accessible. That is to say, that snow in this locality is never too heavy so that a deer cannot "paw" through it to the forage beneath.

D. Fur Animals, Predators and Rodents.

1. Muskrats. To say that muskrat habitat on the Refuge as a whole, is gradually deteriorating, is to sum up observations made over a period of six years. The number of muskrats removed in connection with trapping operations is only one criterion, which in any one year, may be used to determine future management policies. The number of muskrats removed by traps can be greatly reduced by unfavorable trapping conditions during the trapping season, and when those conditions prevail, as they have in the past, the population should show a marked increase, corresponding to the number of rats that could not be trapped, and were therefore left to increase a normal breeding population. The failure of the muskrat population to increase substantially under this incentive, will in itself, indicate deficiencies in habitat on trapped areas. Furthermore, the failure of the muskrat population to increase as a result of suspending trapping operations on extensive areas, is even more indicative of gross shortcomings in the habitat on the area concerned.

The muskrats on the refuge have shown that they are quite versatile in their choice of foods. For instance, a very limited number of houses occur on extensive areas which support a pure stand of *Spartina cynosuroides* and *alterniflora*. These plants are apparently used exclusively as food, and also as house-material. Since the type of food is both satisfactory and abundant, there must be reasons other than food, which tend to suppress the muskrat population, and prevent its increase when breeders are allowed to remain unmolested, for a number of years, on an extensive area.

It has been the common belief that the most important muskrat food plants are these species, in pure or dominant stands of which,

population
trend or
Bonyon
hook
following
the same
cyclic
trend
evident
elsewhere
along the
section of the
coast
habitat
and
trapping
RCS

the greatest populations of muskrats are found to occur. From observations made on this refuge, it is evident that food plants are not the prime factor. A properly managed water-table on a given area is definitely the controlling factor. When water-tables are properly stabilized, there is an inducement for the recognized food plants to increase, and in most cases predominate. And under these conditions only (stabilized water-table) will muskrats remain, and flourish. Furthermore, the recognized food plants such as "cattail" and "t ree-square" will thrive quite well on areas which are not attractive to muskrats because of an insufficient supply of water. This may seem fantastic, but the evidence is clearly visible.

very true

Aside from the food-producing requirements, stabilized water tables are needed for insulation against cold, and this factor caused considerable damage to muskrats during this period. During January the marshes froze at a time when the tides were very low, and trappers were moved from tide-drained areas, to inner marshes. The results of the frozen marsh were seen in muskrats digging out of frozen burrows, reaching the surface, and then falling prey to marsh hawks and foxes.

2. Foxes. This is the period during which the greatest fox predation begins to occur. During a freeze-up, the foxes were found to prey extensively on waterfowl, particularly at the small openings in brush-banked tidal streams and drains. It is not feasible to assume that the birds taken were weaklings, or for some reason incapable of flight or escape, because frequent flushing, by both me and my Chesapeake dog, failed to reveal birds that were in any way incapacitated.

Late in period, March and April particularly, foxes were noted in increased numbers, especially on the bayshore marshes. This increase in sight records is probably due to greater activity and mobility on the part of the foxes, and probably does not represent an influx of animals.

III. REFUGE DEVELOPMENT MAINTENANCE

- A. Physical Development. The Finis Swamp Causeway, which was left incomplete by CCC, required considerable attention during this period. High spring floodwaters washed over the lower portions of the fill, and washed out an estimated 150 cu. yards of material. Attempts were made to replace the fill by using the 22 cletrac, and a very poor $\frac{1}{2}$ yard Fresno scraper. The condition of the fill was such that the scraper would become buried, and fail to trip. A light retaining wall was built out of scrap lumber, and installed to hold out some of the flow, and the temporary, makeshift retaining wall was reinforced by shovelling mud against it. Thus a portion of the lowest section of fill was protected.

After the work on the causeway could be left until the earth dried out, the Cletrac tractor suffered a mishap. Two of the track-links broke, and could not be replaced, so they were welded for temporary use.

Considerable erosion had occurred around the boathouse, and during this period we hauled fill with a dump truck, loading by hand, and moved some with the tractor and scraper. The newly graded areas were covered with manure to hasten and insure a catch of erosion-control vegetation.

The progress of the dike-construction-dredge repairs project suffered serious and unnecessary set-back and defeat. The revision of this project, that is, after it was abandoned by CCC in March 1942, was initiated by this office on the following July 30, at which time, an estimate was furnished covering the extension of the Sheariness Dike by one casting of earth, and the storing, or placing in dry dock of the dredge. At that time, trained personnel were available for this purpose and could have been hired at an unskilled laborer's rate of pay. This recommendation however, was finally rejected on September 26, reason being lack of funds. Ultimately however, on February 15, 1943, during the same fiscal year, funds were made available for this purpose. The tragic outcome of this delay (Sept. 30, 1942 to Feb. 15, 1943) was that the war program was fully underway when the work was finally authorized, which made it impossible for us to hire labor for this purpose. The facts in the matter are, that in the summer of 1942 a dragline operator could have been employed on a full-time basis at \$.50 per hr. In the spring of 1943 this labor was not available and dragline operators were being paid \$2.50 per hour when available, and there were none available for full-day service. It is indeed pathetic that our important Refuge project should have been bantered with in this manner. The second defeat for the Dredge-Dike project occurred when this office engineered through the War Manpower Commission the prospective transfer of Mr. Wyman A. Haley, former dragline operator at this refuge, from a defense plant some forty-five miles distant to employment with this Service as a full-time dragline operator. This suggestion, which certainly was an especially beneficial recommendation, was also rejected. Needless to say, the Sheariness Dike has not been extended and the dredge is still resting on bottom, in a shallow borrow-pit, subject of course to below water deterioration.

Much work was accomplished on the Refuge equipment during this period, the most important projects of which were the repair and painting of refuge boats, only two of which are in use; the installation of a new and highly improved brake system on the Refuge Ford Panel truck; the repair, caulking and painting of the barge and dragline (dredge); the repair and recapping of the tires on the 3-ton international truck; the removal of Service owned autos from permanent storage; and the painting of the equipment shed and service building.

Incidentally, many unsuccessful attempts were made to transfer our life-long "white elephant" the 48 ft. boat, RUDDY DUCK II to local War Dept establishments, after the boat together with numerous other such craft had been rejected by the Navy.

IV. Economic Use of Refuge

- C. Fur Harvest. There were three Special Use Permits issued on a cash fee basis, under the provisions of which the surplus muskrats on the Refuge were removed. There were ten trappers in all who operated under these permits, five of which were old-line experienced men. These five men trapped areas which were most heavily populated, and were capable of moving a large number of traps most expediently, in order to rotate their operations and guard against overtrapping any given area. The remaining five trappers were more-or-less itinerant workers who operated when and as weather and working conditions would permit. Approximately 28 percent of the total catch was taken by these five men.

As mentioned previously in this report sub-freezing weather and unfavorable tide fluctuations made trapping extremely difficult during this period, in that operations were largely confined to setting traps along deep streams and in deep leads.

Prices were fairly attractive throughout the season, ranging from an average of \$1.00 per pelt at the opening, to \$1.85 at the close.

- D. Timber Removal. Under this heading it can be explained that the dead and down timber in the refuge woodland and swampland was sold to permittees for firewood. It may be recalled that large amounts of wood, swamp varieties that is, were cut by CCC in connection with the clearing of refuge swampland for impoundments. Much of this material, even when freshly seasoned, is not regarded as good firewood. Cutting operations began in 1938 and continued, in a staggering, aimless, haphazard manner until the winter of 1941. The seasoning period for most of this material had long since expired and decay was well established when the material was finally cleared for sale. The supply of this type of material on the refuge has now been reduced to small amounts of rejected pieces.

VI. Public Relations

- A. Recreational Uses. Generally restricted travel which was caused by Gasoline Rationing in the East has caused drastic reduction in visitors at this refuge during this hitherto important period. Only two groups braved the formidable OPA regulations and remained faithful to our spring migration. These groups were a Biology class of 27 pupils which was escorted on a bird walk and nature trip on April 29. The other visitors were a group of 12 of our old standby bird students from Philadelphia, who visited the refuge on April 11.

- B. Refuge Visitors. On January 4, Mr. Locke arrived at the refuge in the afternoon, and he was joined by Jack Perkins in the forenoon of the following day, after which they departed for Back Bay.

In the afternoon of January 8, Mr. Locke and Eldon Clarke arrived at the refuge and discussed work programs and equipment for the Chincoteague refuge.

Mr. A. C. Elmer arrived in Bridgeville, Delaware on the afternoon of January 15 where he was met and brought to the Refuge. He spent the following day with refuge personnel, inspecting projects and equipment. In the evening Mr. Elmer was taken to the Bringantine Refuge in New Jersey.

Mr. Locke visited the refuge briefly during the evening of March 18 enroute to other locations.

Mr. Jay Gashwiler arrived at the refuge on the morning of March 25, and spent the day looking over marsh and aquatic habitat, water control structures, and discussing the management of tidal marsh areas.

- C. Refuge Participation. The refuge manager lectured to a group of farmers and club members in Smyrna on January 20, the chief topic being "Wildlife Habitat Improvement and Maintenance on the Farm". Following this the refuge manager conferred with State Fish and Game Officials concerning proposed new legislation.

The refuge manager participated in the "Wildlife Week Broadcast" which was delivered over station WDEL, Wilmington, Delaware at 1:00 p.m. March 23.

Doctor David Frey of the Division of Shellfishery Investigations arrived in the evening of March 25 for a periodic inspection of, and the collecting of samples from, the seed-oyster producing areas in upper Delaware Bay on which mission he was accompanied by the refuge manager on March 26.

On April 9 the Refuge Manager spent the day with the refuge "22" Cletrac tractor, working on the State administered upland game Refuge known as the "Petersburg Site" of the SCS.

VII. OTHER ITEMS

- A. Items of Interest. During this period the refuge suffered the loss of the services of Miss Weller, Jr. Clerk-Stenographer WAE, who had been with this office since early in 1938. Miss Weller resigned to except employment in the Dover office of ODT, which was a full-time War Service employment.

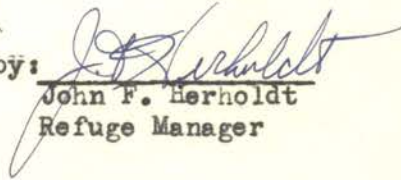
Miss Weller was thoroughly familiar with refuge clerical duties and her loss caused a serious set-back in all refuge reports and correspondence.

It may be recalled that Miss Weller served under WPa, NYA and regular refuge funds, and over extended periods a combination of these funds enabled her to devote almost full-time to this office. It was under these conditions that we had a glimpse of what a full-time stenographer could mean to an office such as this. Despite opinions to the contrary, we have full and clear justification for a full-time employee of this type. By coasting along with a WAE Clerk-Stenographer, many items of essential clerical work must be neglected, such as inventories, property cards and files, bird banding records and reports, detailed biological reports, narrative reports and such.

Consideration should be given to the fact that office work cannot be performed elsewhere but in the office; that field work, maintenance, and etc. must be neglected if the same person must perform office work; and most important of all is the fact that fully eighty-five per cent of the refuge maintenance duties are 2-man jobs and if one man is left alone, work must be neglected.

It should be clear to all concerned that a full-time clerical employee at refuge headquarters is just as essential to refuge operations, as either the Patrolman or Manager.

Submitted by:


John F. Herholdt
Refuge Manager

Date: 2-1-44

Regional Office _____

FORM NR-1

MIGRATORY BIRDS

 REFUGE Bombay Hook National Wildlife Month of January to April 1943
Refuge

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti- mated Total	Estimated Number using Refuge
Pied Billed Grebe	Wintering Bird			10	3/12						30
Great Blue Heron	"	"		7	3/12						15
Little Blue Heron	11	4/12		11	4/12						20
Black Crowned Night Heron	Wintering Bird		3/12	45	4/12						200
American Bittern	"	"	3/12	8	4/12	3000	4/12				20
Greater Snow Geese	2000	3/12		5000	4/12	5000	4/12				10,000
Canada Geese	13	1/9	3/12	200	3/12						500
Mallard	50	1/19	3/12	100	4/12						350
Black Duck	Wintering birds		1/19	10,000	4/12						20,000
Gadwall	25	1/19	2/9	250	4/12						500
Baldpate	7	1/19	2/9	300	4/12						500
Pintail	12	1/9	2/9	700	4/12						1000
Green-winged Teal	Wintering bird		1/19	2000	3/12						4000
Blue-winged Teal	10	3/12	4/12	1500	4/29						2000
Shovellers	Wintering bird		2/9	600	4/12						800
Wood Duck	4	3/4		20	3/12						50
Lesser Scaup	3	2/9		50	3/12						250
Bufflehead	2	2/9		9	3/12	4	4/12				20
Ruddy Duck	11	2/9		32	3/12	11	4/12				150
Hooded Merganser	Wintering bird		2/9	200	3/12	2	4/12				700
American Merganser	"	"	2/9	75	3/12	1	4/12				100
Red Breasted Merganser	Wintering bird			1	3/12	1	4/12				1
Turkey Vulture	Always abundant										200
Sharp-shinned Hawk	1	1/25		2	3/4						2 or 3

FORM NR#1

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 REFUGE Bombay Hook Nat'l Wildlife Month of January to April 1943
Refuge

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti- mated Total	Number using Refuge
Cooper's Hawk	1	1-1		4	3-4						6
Red Tailed Hawk	Wintering Bird-		No migration noticeable								8
Northern Red Shouldered Hawk	2	3-4		2	4-12						2
Northern Bald Eagle	No migration noticeable										4
Marsh Hawk	Always abundant										200
Osprey	2	3-21		4	4-12						4
Duck Hawk	1	2-9		3	4-12						6
Sparrow Hawk	Always abundant										200
King Rail	1	2-9	3-12	4	4-12						10
Clapper Rail	1	2-9	3-12	500	4-12						1000
Virginia Rail	1	1-19	3-12	200	4-12						700
Florida Gallinule	1	3-12	4-12	50	4-12						100
Wilson Snipe	3	3-4	4-12	20	4-12						50
Mourning Dove	Wintering Bird		3-4	100	4-12						1000
Barn Owl	"	"	Not Migrants								6
Great Horned Owl	"	"	"	"							4
Short Eared Owl	"	"	"	"							20

Refuge Bombay Hook Nat'l Wildlife Refuge Months of January to April, 1943

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Quail		4.2			20% male est.				83	Observations made while ground was covered with new, light snow, using bird dogs.
Pheasant		11.29			62% est.				31	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

Refuge

~~Bombay Hook Nat'l Wildlife Refuge~~

April 30, 194

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(1) Species Common Names	(2) Density Cover Types & Total Acreage of Habitat Acres Per Animal	(3) Removals					(4) Disposition of Fur							(5) Total Popula- tion (Estimate)
		Hunting	Fur Harvest	Predator Control	For Re- Stocking	For Research	Share Trapping Permit Number	Trappers Share	Refuge Share	Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed	
Muskrat	Tidal Salt Marsh approx. 11,000 acres	1.8	1,925				9537 9437 9434	all all all	none none none	none none none	450 350 500.			6500
Skunk, Eastern	Open and reverting farm land-500 acres	8												65
Red Fox	Entire 15,000 acres	100												150
Grey Squirrel	Swamp hardwoods approx. 400 acres	1.4												600
Raccoon	"	6												65
Cottontail Rabbit	Open and reverting farmland 500	3												170
Otter	Tidal salt marsh 3000 acres Wooded Swamp 150													7

REMARKS: