

BACK BAY

NARRATIVE REPORTS

JANUARY-DECEMBER 1959

BRANCH OF WILDLIFE REFUGES
Narrative Report Routing Slip

Mr. Salyer _____

~~Mr. Ackerknecht~~ *OR*

Mr. Crawford

Administrative Services

~~Miss Baum~~

Operations

Mr. Fermanich

Mr. Regan *NR*

Public Use

Mr. Duffont *PAD*

Mr. Kubichek

Mr. Stollberg *BS*

Resource Management

Dr. Morley *LCM*

Mr. Hickok

Wildlife Management

Mr. Banko

Mr. Stiles *S*

Mr. Goldman *Key*

Refuge BACK BAY

Period Sept.-Dec. 1959

BACK BAY NATIONAL WILDLIFE REFUGE

REFUGE NARRATIVE REPORT

SEPTEMBER - DECEMBER 1959

PERSONNEL

Refuge Manager.....	Carl S. Yelverton
Refuge Aid.....	Donald A. Miketa
Refuge Maintenceman.....	Romio L. Waterfield

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Back Bay National Wildlife Refuge

Refuge Narrative Report

September - December 1959

I. GENERAL

A. Weather Conditions.

	Snowfall	Precipitation		Temperature	
		This Month	Normal	Maximum	Minimum
September	0	3.32	3.86	89	55
October	0	5.98	2.45	84	38
November	0	2.28	2.67	78	28
December	0	2.46	2.88	67	29
TOTAL	0	14.04	11.86	EXT. 89	28

The average monthly temperature for each month during the period was from 2° to 5° above normal. Average temperature for the 4-month period, September-December, was 3° above normal. The greatest departure from normal was recorded during the month of October, 4 5°.

Rainfall during the period was 2.18 inches above normal, the 2.53 surplus inches in October making up for the slight precipitation deficits recorded in September, November, and December. In general, distribution of rainfall was good.

Probably the most important weather information to be reported relates to hurricanes and damaging storms from the northeast. We had neither during the period. All in all, it has been a most pleasant fall and winter--no snow, only a trace of sleet, no bay ice, and only a few short-lived blasts of arctic air. Come spring, when the first squadron of mosquito

group two moves up from the marshes, we will pay the supreme penalty for our attenuated winter weather.

B. Habitat Conditions.

1. Water.

The average bay level for the period, \nearrow .208 ft., was .20 ft. higher than the average level recorded for the period last year, \nearrow .031 ft. Departure from mean level for the period, \nearrow .064 ft., was .27 ft.

Average bay levels in September, November, and December were approximately normal. The average October level, \nearrow .839 ft., departed from the mean level for this month by \nearrow .80 ft., and was the highest October average recorded during the past 9 years.

Average water fluctuation during the period was 1.61 ft., or approximately the same as last year. Maximum fluctuation, 2.02 ft., occurred in November. Last year during the Sept.-Dec. period maximum fluctuation was 2.74 ft. and was associated with an extratropical storm which pounded this area from October 19 through October 21.

Bay waters have not become as turbid as they were last year. Information received from Sincock indicates that, for each bay area, ^{Avg} Secchi disc readings for the September-December period just past are from 2 inches to 18 inches greater than similar averages recorded last year. The average Secchi disc reading for North Bay (Sept.-Dec., '59) was 16 inches greater than the average recorded during the same period last year; the Shipps Bay average increased 18 inches; the average for Great and Fishers Coves was the same, 31 inches; the average for Red Head Bay increased 10 inches; and the Back Bay average was up 3 inches.

Average salinity of bay waters during the September-December period just past was about 250 ppm greater than the average salinity recorded for the same period last year.

A rainfall deficit in August, -3.73 inches, and subnormal rainfall the first $3\frac{1}{2}$ weeks in September resulted in severe dewatering of the artificial pools. High bay levels in October resulted in flooding of island marshes and the lower beach marsh, but conditions within the pools did not improve until after 4.60 inches of rain fell during the period October 9-15.

Water conditions in the pools were excellent throughout the second half of October and most of November, but low rainfall in November resulted in a noticeable reduction in water levels. Pool levels increased after .6 inches of rain fell on December 6, and the 1.81 inches of rain which fell during the remainder of December resulted in much improved conditions for waterfowl feeding.

Rehabilitation of the dikes has definitely resulted in improved water conditions for there is considerably less loss of water from runoff. Conditions can be further improved by throwing up a dike along the lower reaches of the beach marsh and by installing a water control gate in the structure. During periods when bay levels are high, the control gate can be opened, permitting flooding of the lower reaches of the marsh. When bay levels begin to fall, the gate can be closed, thus trapping the water which otherwise would be lost. This past October, for instance, bay levels were quite high and there was a considerable amount of water--much more than could be supplied by rainfall--standing on the beach marsh. When bay waters receded abruptly on November 7,--the level decreased 1.92 ft. within 24 hours--we lost a valuable supply of water. After the water receded there was no appreciable increase in bay level until November 25. When a water loss such as that mentioned is followed by a rainfall deficit, the impairment to management is compounded.

2. Food and Cover.

There was an abundant supply of submersed aquatics awaiting waterfowl when they arrived this year. As Miketa indicated in the May-August report, growth of Najas and celery was excellent in many parts of the refuge, especially in all Ragged Island coves, in Shipps Bay immediately west of Long Island canal, in Great Narrows, in Gaulbush Cove, in East and West Sandy Coves, in Green Gill Cove, in Sand Bay immediately south of Long Island and especially to the east and northeast of Little Narrows, and in all coves and channels immediately west and northwest of headquarters. Since there were no damaging storms during or after the growing season, a great part of the growth produced was available for consumption by waterfowl--water levels permitting.

When waterfowl first arrived in September the bay level was down, and tons of celery and Najas were readily available. It is interesting to note, however, that although there was plenty of food available in open water areas, most of the feeding activity in September occurred in very shallow water

along the edges of coves.

Growth of Potamogeton perfoliatus was excellent in coves immediately west and northwest of headquarters, in parts of Fishers and Great Coves, and in parts of the Great Narrows. Total growth of this species was at least 100% greater this year than last. Much of the growth produced has been consumed by waterfowl, but at the end of December green, rank stands could be observed in a number of places, especially in areas immediately west of headquarters.

Much of the good to excellent growth of Sago which was produced in northern Sand Bay, in Sand Bay to the southeast of Ragged Island and immediately east of Ragged Island, in Back Bay southwest of Ragged Island, and in Buck Island Bay fell before waterfowl arrived. Sago seed production was good, although not as good as that reported in Currituck, and there can be no doubt that large quantities of these seed were washed into shallow water areas where they were available to tipping ducks and geese. I have observed windrows of sago seed in a number of places along the beach and island marshes. The abundance of these seed along the shores of Rock Island Haul may account for the attractiveness of this area to blacks and mallards. Biologist Sincock reports that Sago in Back Bay produced no tubers this year, at least none were found in areas where vegetative growth of Sago was excellent. This very excellent waterfowl food, therefore, was not available to the small numbers of diving ducks which frequented the bay area.

A good growth of Eleocharis parvula, the submerged sterile form, was produced in East and West Sandy Coves, Green Gill Cove, parts of Fishers and Great Coves, and some Ragged Island coves and was available to ducks and geese during periods of low water. Several times during late summer I observed large quantities of this species floating on the surface of the water in several of the aforementioned coves. Evidently it had been uprooted by carp.

Availability of submersed aquatics, except in very shallow water areas, became poor in late September when the level of the bay increased to .7 ft. above sea level. Availability of submersed aquatics was very poor in October when the bay waters were abnormally high. There were 11 days in October when the water level was more than 1 foot above sea level, and for 13 days during that month the water level was more than .5 ft. above sea level.

Low water levels during the period November 7-24 resulted in much improved feeding conditions on the bay. Water levels were sufficiently low throughout December, especially from December 14-29, to permit waterfowl easy access to submerged food resources.

Production of Najas was excellent in Landing Cove this year, but the cove has not been used extensively by either ducks or geese. I observed 3,000 Canada geese in this cove one day in October; no use by geese has been observed since that time.

During the week of October 11, the writer checked food conditions in Ragged Island coves and noted a very severe reduction in the quantity of Najas and celery growth. I hesitate using the word astounding to describe the severity of reduction---but that word is the most appropriate, I believe. Pictures of Najas and celery growth in several of these coves were included in the May-August report. The pictures, taken on August 3 and 20, showed that vegetative parts of these plants completely covered the surface of the water. At the time of my visit in October, however, almost no celery and very little Najas could be recovered from the water-- even by dragging a shove pole along the bottom. Large quantities of celery had been washed ashore, and I believe that the excellent growth of plants in these coves was severely damaged by carp.

Production of valuable food plants on the beach marsh was better than one might expect, considering the dry weather which prevailed during the May-August period. A good growth of Scirpus robustus was realized on the flats, and seed production by this species was excellent. Overall production of S. americanus was below that which might be expected during a wet growing season, but production was good to excellent on many sites on the lower reaches of the beach marsh which were inundated by bay water and in seeps on the upper reaches of the beach. On sites where soil had been disturbed by dike rehabilitation work, a late but very good volunteer growth of wild millet was produced.

The marsh areas mowed during the summer have proved to be attractive feeding sites for Canada geese and ducks. Some snow-geese use has been noted, also. Utilization of mowed areas was poor when they were dry but became good to excellent after they were covered with a few inches of water.

It was indicated in the May-August report that growth of clover and grasses on permanent pastures was retarded by drought conditions. The dry weather which prevailed during

September did not serve to improve the situation. Rainfall during that month was not only below normal, -.54 inches, but also poorly distributed. A good, soppy rain the latter part of September and heavy rains during October resulted in improved growth of grasses and clover. By the time rains came, however, the damage had been done, especially to clover, and total tennage of browse produced was far below that which could have been produced had weather conditions been more favorable. Topdressing during wet weather in October served to boost production of grasses but I don't think it had too much affect on clover production.

I wonder how much irrigation would benefit pasture management? In soppy places along the margin of the large pasture we produced a rank growth of clover and grasses, and plants growing in these situations were hardly affected by the drought. On the crown of the field, however, we had a "brownout" and Digitaria and Setaria assumed dominance.

Good use of permanent pastures by geese was observed through December. And, I might add, they continue to keep the grass under my airplane clipped short. And you might be interested to know that at the present time geese are feeding primarily on fescue and are browsing just as much coarse material as succulent regrowth. As a result of the mild weather, the fields have not, as yet, turned brown as they did last year; consequently, utilization by Canada geese during December of this year was greater than that observed during December, 1958.

Primary use of island marshes has been by black ducks and mallards and has occurred on sites opened up by muskrats. I will jump the gun a bit to report that recently burned areas on Ragged Island and Long Island are being used by blacks, mallards, and snow geese.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl.

In comparing this years waterfowl information with that recorded last year, I note that during both years the first Canada goose migrants were observed on September 17. In 1958 the first flight contained 13 birds; this year it contained 14 birds.

The main body of Canada geese arrived 1 week later this year, Oct. 18-24, than it did in 1958, Oct. 12-18. Small flights of Canada geese moved in all during the week of October 11, this year.

At the end of October when the bay level was quite high, .7 ft.-1.3 ft. above sea level, some 5,000 Canadas moved off the refuge into other parts of the bay. A similar thing occurred last year when 6,800 of the 12,000 geese frequenting the refuge took temporary leave the first week in November. The bay level at that time was .7 ft. above sea level. Those birds that took leave this year moved back onto the refuge the first week in November. The writer observed 6,500 geese during an inventory flight on November 14; Sincovek, however, made an inventory the day before and observed 15,655 on the refuge. This was our peak population for the period, and this year's peak was 30% above that reported for this period last year, 12,000. Total Canada goose use days this year, 763,322, was 0.8% above that of last year, 756,882. However, since total snow goose use days, to be discussed later, was less this year, total goose days use was 11% below that recorded last year.

Approximately 12,000-13,000 Canada geese frequented the refuge during the period November 15-28. During the last week in November and first week in December, the refuge population decreased by approximately one half; it ranged from 5,735 to 5,966. During the week of December 13, only 2,575 geese were counted during inventory, but during the last week in December, Canadas moved back onto the refuge and we posted a population of 14,665.

We have observed a considerable amount of Canada goose trading between the refuge and Currituck. During the hunting season it wasn't unusual to observe a total of 7,000 birds moving into the refuge from areas to the south. Movement began before sunrise and continued until 8 or 9 o'clock. Most flights came in high, well above gunning range.

Use of permanent pastures by Canadas has been excellent. Greatest use was observed shortly after geese arrived. Use of ryegrass plantings was excellent until the geese browsed it to a nub. Use of mowed sites by Canadas was poor when plots were dry, but good to excellent use was observed when plots were covered by a few inches of standing water.

Waterfield saw the first snow geese of the season, a flight of 100 birds, on October 29. This flight evidently did not stop at the refuge, for none were picked up on inventory until the week of November 8. This year, as in 1958, snow goose migration was heaviest during the third week in November. As is the custom, the first migrants, 12,000 strong, checked in at the refuge and puddled around until the last week in November. Shortly after Thanksgiving day they moved on down to Bald and Horse Island, and movement from these two islands to Knotts Island occurred after gunning began.

The peak snow goose population recorded during the period, 11,000, was 45% below the peak posted last year, 20,000. Total snow goose days use this year, 177,954, was 41% below that reported last year, 302,365.

Trading of snows between Knotts Island and the refuge was observed practically every day during the gunning season. Flights arrived early in the morning and the birds would get together and puddle around until 9 or 10 o'clock, then small flights of 30 to 100 birds would break away and head back to the "big congregation."

Whistling swans not only checked in early this year but also peaked out at the highest level recorded in years. The first 17 birds of the season were observed flying over Ragged Island on October 12. Three hundred more birds moved in with a passing cold front on October 17, and by the first week in November, we had 1500 swans on the refuge. This number was 1350 more than we had at the same time last year. By the second week in November, 4,500 swans frequented the refuge (Sincock reported 6415), and during an inventory flight on December 21, an estimated 6,700 swans were seen. Sincock also flew inventories on December 21 and 22, and reported 13,530 swans in the bay area on the 21st and 15,968 in the bay area on the 22nd. He stated that almost all swans seen on both days were in the refuge. It would be tempting to rationalize that John flushed some 8,00 swans off the refuge before I made my estimate---but a man must face the facts. And the facts in this case are quite evident--I definitely and severely underestimated the great white birds. May God have mercy on my soul! And now you ask yourself, "What else has that Yolverloski underestimated?" Oh, I tell you truthfully, sir, I don't know. I kept asking myself when roughing out this copy, "Of what value are these percentages of yours, boy, if the figures from which they are computed are grossly in error?" I can only state that I believe my estimates of other species more closely approximate actual numbers.

Well, having presented that damning bit of evidence and having entered it into the written record, I will get on with the matter at hand. I feel as naked and as vulnerable as a plucked chicken, but, naked or not, I'm going to set forth some more information, be it credible or not.

--Don't know why I indulge in this sort of thing; my tranquilizer bill is high enough as it is--

The peak swan population this year, 13,530 (credible), exceeded last years peak, 2,100 (no statement), by 544%. Total swan days use this year, 279,370 days, was 278% above that recorded last year, 73,892 days.

The swan population dropped off abruptly to 2,778 during the last week in November and continued to decrease through the week of December 20, when 448 birds were reported. During the last week of December, however, some 5,485 swans were using the refuge.

We have observed a considerable amount of swan trading between the refuge and Currituck and between the refuge and the southern, especially southwestern, part of the bay. During the hunting season, swans began to move northward into the refuge before sunrise and movement was usually terminated by 9 or 10 o'clock. Movement from the refuge occurred in the afternoon shortly before sunset; this movement was associated with feeding activity.

Total duck use days this period, 942,473, was 72% above that recorded last year, 546,763. The species for which the greatest increases in use were recorded were mallards, ringnecks, and canvasback; species for which greatest decreases in use were recorded were redheads and scaup.

Total mallard use this year, 43,638 days, was 140% above that recorded last year, 18,165 days. The peak mallard population, 2,080 birds, was 420% above last years peak, 400 birds. The average weekly mallard population for the period, 346 birds (total birds divided by 18 weeks), was 140% above the weekly average last year, 144 birds.

Black ducks were also more abundant this year. The average weekly population, 902, was 98% above that recorded in 1958, 455 birds. The peak black duck population this year, 3,096, was 209% above that of last year, 1,000. Total black duck use days, 113,673, showed an increase of 98% as compared with last year, 57,435 days.

The average weekly widgeon population, 4,139 birds, was 33% above last years weekly average, 3,090 birds. Total widgeon use days, (521,591, 1959; 390,040, 1958) increased 33%. The peak widgeon population (14,000, 1959; 11,000, 1958) was up 27%.

Pintail use days (28,238, 1959; 14,700, 1958) increased 92%; peak population (580, 1959; 400, 1958) was up 45%, and average weekly population (224, 1959; 116, 1958) increased 92%.

Green-winged teal peaked out 271% above last years figure (1,484, 1959; 400, 1958); average weekly population (287, 1959; 161, 1958) increased 78%, as did total use days (36,197, 1959; 20,370, 1958).

Redheads had an average weekly population, 17 birds, 75% below that recorded last year, 69 birds. Total days use (2,205, 1959; 8,715, 1958) was reduced by a similar amount. Peak population this year, 140 birds, was 72% below last years peak, 500 birds.

Canvasback, however, showed an increase in peak population (2,400, 1959; 150, 1958) of 1500%, and average weekly population (271, 1959; 23, 1958) was up 1099%, as was total use days (34,181, 1959; 2,849, 1958).

Ring-necked ducks posted a 1033% increase in average weekly population (1199, 1959; 106, 1958) and total use days (151,123, 1959; 13,335, 1958). The peak population (5,500, 1959; 300, 1958) increased 1733%.

There was little change in status of ruddy ducks. Total use days (9,870, 1959; 9,786, 1958) and average weekly population (1410, 1959; 1398, 1958) were approximately the same both years. Peak ruddy population (260, 1959; 200, 1958) was up by 30%.

What happened to scaup this year? I have 17 birds listed on 1 inventory and Sincock's inventories of the Back Bay area don't show many scaup. I note that Sincock did observe some 4,000 scaup in Currituck. Total scaup use days (119, 1959; 5901, 1958) decreased 99%, as did the average weekly population (0.9, 1959; 46, 1958). The peak number seen this year was 17, which is 91.5% below last years peak, 200.

Duck use of island coves to the west of headquarters was not as great as that observed last year. I believe this

reduction in use resulted, in part, from disturbance by boats and, in part, from periodic reductions in availability of submersed foods as the result of increased water levels. There were, of course, several periods of low water which permitted excellent feeding conditions in these coves; however, when the "table" was so "set" there were too many boats pounding across the "dinner table" to permit eating in peace. At times, it was not a case of too many boats, but one boat too many times.

Use of Ragged Island coves by blacks, mallards, ringnecks, and green-winged teal has been heavy, especially at the first of the season and during periods of low water. Feeding activity in open waters of Sand Bay south of Long Island has been heavy. Use of coves immediately west and northwest of headquarters has been excellent. Black, mallard, and pintail use of impoundments has been excellent, and utilization of all inlets along the beach marsh has been excellent. Impoundment use increased when bay levels were high and decreased when bay levels were low.

The number of scoters and mergansers which have been observed on or over the ocean has not been as great as the number observed in past years.

On October 23, Waterfield observed 78 brant flying in the direction of Currituck, and I guess that's where they touched down. None have been seen on the refuge during the period.

2. Other Waterbirds.

Coot use days (27, 062, 1959; 129,612, 1958) decreased 80% and the average weekly population (214, 1959; 1028, 1958) decreased a similar amount. Peak population this year, 900, was 70% below last years peak, 3,000.

Migration of cormorants was heavy during late September and early October but less than .1% of the migrants stopped at the refuge (I wonder just how credible that figure is?) Far fewer loons, horned grebes, and gannets were observed on or over adjacent ocean waters than have been observed in the past two years. Fewer pied-billed grebes were seen in the bay. American bitterns have been seen infrequently. Waterfield caught one in the large landing trap on November 26. American egrets and great blue herons have been, and still are, common, but not abundant. In the vicinity of Wash Woods, American egrets are common and abundant.

3. Shorebirds.

Shorebirds, except sanderlings, have been conspicuous by their absence. The sanderling population declined rather rapidly after the first of October and by the middle of that month only an occasional group was seen. The population increased slightly during the latter part of October, decreased again during the month of November and first half of December, and increased noticeably during late December.

Small numbers of black-bellied plovers, whimbrels, and yellowlegs were seen during the period. Among the gulls which were present, the ring-billed has occurred in largest numbers-- which is a switch, for usually herring gulls are the most abundant species. At least a 50% increase in the great black-backed gull population has been noted.

B. Upland Game Birds.

On September 30, six quail were observed crossing the road at headquarters. None have been seen since that time. Snipe, though not abundant, have been observed frequently on both beach and island marshes. Good production of Panicum amarum and P. amarulum seed and fair production of beach peas served to attract small numbers of doves to the dunes during September and early October.

C. Big-Game Animals.

On October 30, the Mrs., binoculars in hand, came tearing out of the house screaming at the top of her lungs and pointing toward the dunes. I was working in the boathouse at the time, and as I charged madly toward the open door I fully expected to see a diplodocus come lumbering across the dunes. But what to my wondering eyes should appear? A miniature diplodocus? Eight tiny dicusdopli? No. It was a deer, a spike buck. And, when to his wondering eyes did appear this jumping, pointing, jabbering, maniacal refugee clan, he lit out in the direction of Sandbridge. And we ain't seen hid nor hair of him since. Can't say as I blame him for going to any lengths to avoid this bug-eyed, rubber-jawed, hootin-n-hollerin band. Dog didn't behave either. I'll bet that when that creature sailed past the recognition sign at the north end of the refuge he took one look at it and snorted, "Man, them refugees is a cool bunch of cats, but I don't hold with no part of that kind of wild life!"

In regard to population trend, condition of animals, etc.,

that poor creature was the first deer which has been observed on the refuge. Condition of the animal when first seen was excellent, when last seen it was in a severe state of shock. Trend of population: up 100% one minute, down 100% within 30 seconds. In regard to movements-- he went that-a-way, and any movements he had enroute were justified.

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

The annual aerial muskrat inventory was made on January 3, and the results show that our present muskrat population is 860 animals, or 8% above last years population, 790 animals. Since the population is far below the basic breeding population, 3,000 rats, no trapping will be accomplished this year.

Populations of other fur bearers have been determined as closely as possible by field observation. Estimated populations are: raccoon, 150; gray fox, 15; otter, 6; mink, 40; opossum, 100. No trapping of any of the above species will be permitted this year. I believe, however, that raccoon are suppressing muskrat production and have requested permission to reduce the population on Long Island and Ragged Island through use of poisoned bait.

E. Hawks, Eagles, Owls, Crows, and Magpies.

Approximately 12 marsh hawks have frequented the refuge marshes during the period. A rough-legged hawk has been seen on the lower beach marsh from time to time, and several sparrow hawks have been observed on Long Island and around the headquarters site. The present bald eagle population is 2 birds. The Ragged Island observation tower is now inhabited by two barn owls and, judging from the "bone level" within the cab, these two old birds have been very busy indeed.

F. Other Birds.

Members of the Virginia Society of Ornithology observed a male and female redpoll on Long Island on December 5, and raised as much fuss over those two birds as we did when we sighted the deer. This subarctic wanderer is a new addition to our bird list.

Several weeks ago Waterfield heard that a hunter in upper Currituck had killed an unusual looking duck, which he could not identify. Another hunter had killed a similar duck.

Intel
PND

Waterfield arranged to pick up one of the ducks and brought it to headquarters. It was a fulvous tree duck. The bird is in excellent condition and we plan to have it mounted. It is interesting to note that this is not the first time this species has been taken in upper Currituck in the vicinity of Swan Island Hunting Club. Brimley (Birds of North Carolina, p. 56) reports: "A fulvous tree duck was taken near Swan Island Club in Currituck Sound in July, 1886, and forwarded to the National Museum in Washington, D. C." JBY

G. Fish.

Information received from State personnel and fishermen indicates that bay populations of white perch and bass are lower this year than last. The shad population is up this year and mullet are locally abundant. The writer observed large numbers of carp in Ragged Island coves in October, but information received from State Warden Saunders indicates that fishermen are not catching as many carp this year as they did last year.

H. Reptiles.

There is no significant information which should be included here at this time.

I. Disease.

No evidence of botulism has been observed. The writer collected a swan suffering from the effects of lead poisoning, but it was in very poor condition and succumbed after 1 day of "medical attention." Kate and I even tried benzoin inhalation in an attempt to relieve respiratory difficulties-- the bird had a considerable amount of matter in its nasal passages and trachea. And it worked! The old bird really perked up--perked me up too--got on its feet, and began to take food. The next morning Kate saw it standing on its feet and eating; when she "looked in on it" a few minutes later, it was slumped over dead. I also noted that the bird was heavily infested with lice.

Other lead-poisoned birds seen included a cygnet, approximately 12 Canada geese, and 1 canvasback.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.1. Dike Construction.

This work will be accomplished in the spring and early summer.

2. Brush Control.

This work will be accomplished in the spring.

B. Plantings.1. Aquatic and Marsh Plants.

None.

2. Trees and Shrubs.

None.

3. Upland Herbaceous Plants.

None.

4. Cultivated Crops.

The 10-acre ryegrass crop, which was seeded at the rate of 100 pounds per acre and fertilized at the time of planting with 400 pounds of 0-14-14 per acre, was topdressed with ammonium nitrate at the rate of 200 pounds per acre. Topdressing resulted in much better production of browse than was realized last year when no nitrate was applied. Mowing was accomplished after the plot had been seeded and fertilized.

Pasture maintenance during the period included topdressing with 400 pounds of 0-10-20 per acre and mowing of approximately 20 acres.

C. Collections and Receipts.1. Seed or Other Propagules.

None.

2. Specimens.

None.

Recorded
W. B. S. ✓D. Control of Vegetation.

During May and June work was completed on 68 of the 100 acres scheduled to be cleared of brush during fiscal year 1959. The TD-9 tractor and Rome disk were used. All work was accomplished on marsh areas to the north of headquarters. Total cost of the operation was \$332.84, or \$4.89 per acre.

Brushy vegetation consisted principally of myrtles, which were in flower and had fully developed leaves at the time work was initiated. Average height of the myrtles was 6 feet. Other brush species were *Baccharis halimifolia*, *Quercus virginiana*, *Acer rubrum*, and *Vaccinium marianum*. Approximately 25% of the area in which work was accomplished had been disked 4 years ago, and vegetation thereon consisted of myrtle regrowth and myrtle growth which had escaped destruction at the time of the first diskings. Approximately two thirds of the growth removed occurred on the low stabilized dune association; one third occurred on the beach marsh association.

Total estimated kill at the end of the year was 85%. I should explain, however, that we doubled back over some of the area in order to knock down the bigger stuff that was left standing after the first pass. The 15% not killed consists principally of very small myrtles, 1 to 2 feet in height, which passed between the disk blades unharmed. Kills of 95% to 100% were obtained where brush was rank and of sufficient size to be bulldozed from the ground.

As a result of dry weather conditions, volunteer plant growth on the treated site was poor. Growth of *Scirpus americanus* was best in wet sites and in the bottoms of the furrows left by the disk. These furrows were filled with water during periods of heavy rain. A fair crop of millet volunteered on wet sites, but total volunteer millet growth was poor. Disking of some of the drier sites appeared to stimulate volunteer growth and/or spread of *P. amarulum*.

Waterfowl use of the disked area has been poor. Low utilization has resulted from poor production of valuable food plants and lack of sufficient water to make the area attractive to ducks and geese.

Approximately 50 acres of beach marsh were mowed during the year. Mowing was accomplished to remove brush and coarse weeds which not only suppressed growth of valuable food plants but also suppressed waterfowl use. About 20 of the 50 acres had been mowed twice during 1958 and undesirable growth thereon consisted primarily of coarse weeds and a small amount, 15%, of short myrtle growth.

Use of mowed sites by waterfowl was poor when these areas were dry but became good to excellent when sites were covered by a few inches of standing water. And those people involved in needlerush control might be interested to learn that utilization of mowed Distichlis spicata by Canada geese and ducks (blacks, mallards, and pintails) increased noticeably after the treated site was covered by a few inches of water.

During the spring and summer of 1958, three experimental applications of herbicides were made. All were exploratory in nature and were made to determine the practicability of converting sizable acreages of cattail, needlerush, and salt reed-grass marsh to desirable waterfowl habitat, and to compare degree of kill, plant replacement, and duration of benefits with results obtained on other refuges. Data relating to results obtained and plant replacement at the end of the first growing season were included in the 1958 September-December narrative and in a special herbicide report.

On May ¹²22, 1958, aerial application of the isopropyl ester of 2,4-D was made to a 10-acre needlerush plot at the rate of 16.7 pounds acid equivalent per acre or 5 gallons undiluted chemical per acre. Apparent kill in October, 1958 was reported to be 95% uniform. The plot was burned during the winter of 1958. Observations were made on July 13 and October 6, 1959 to determine plant replacement and percentage of regrowth one year following treatment. Needlerush regrowth during 1959 was 20%; however, density of needlerush had been reduced sufficiently to permit increased growth and/or spread of S. robustus, Spartina patens, Distichlis spicata, and S. americanus.

Data relating to plant composition at time of treatment and at the time of the 1959 observations are set forth below. Only principal species of plants are listed.

	1958	1959
<u>Juncus roemerianus</u>	60	20
<u>S. alterniflora</u>	15	15
<u>S. patens</u>	10	25
<u>D. spicata</u>	15	35
<u>S. robustus</u>	Tr.	2
<u>S. americanus</u>	Tr.	2

Very little waterfowl use of the treated site has been observed.

On June 7, 1958, aerial application of Dowpon (74%) was made to a 10-acre cattail plot at the rate of 20 pounds acid equivalent per acre. Total amount of solution applied per acre was 8 gallons. The solvent used was water. On October 21, 1958, apparent kill of T. angustifolia and/or T. glauca, the most abundant cattail species, was 99%, uniform; apparent kill of T. latifolia was 100%. Estimated regrowth of T. angustifolia and glauca during the summer of 1959 was 20%. No T. latifolia regrowth was observed.

Desired kill was not realized but a sufficient amount of cattail growth was eliminated to release a whole "army" of plants, the growth of which had been prevented or severely suppressed by cattails. Many of the replacements are valuable food plants, but, unfortunately, some of the most abundant replacements are of little value to waterfowl.

The writer believed that reduction in cover density and increased growth of valuable food plants would result in increased use of the site by waterfowl, especially blacks and mallards. Little waterfowl use was noted during the waterfowl season immediately following treatment; however, at that time there was a considerable amount of standing or lodged dead growth which served to keep waterfowl out. The plot was burned in March, 1959, and in October, 1959, cover density was reduced considerably. When making aerial inventories this past winter I have noted use of this area and have observed that, when the bay level was high and the marsh was covered by a few inches of water, utilization was fair; when bay levels were down and no water stood on the marsh, utilization was poor. Waterfowl seen on the site were black ducks (principally) and mallards.

Plant composition (major species only) at time of treatment and on October 6, 1959, is set forth below.

	1958	1959
<u>T. angustifolia</u> - <u>glauca</u>	65%	15%
<u>T. latifolia</u>	2	0
<u>S. robustus</u>	10	1
<u>S. patens</u>	10	5
<u>D. spicata</u>	5	20
<u>J. roemerianus</u>	5	2
<u>Hibiscus moscheutos</u>	--	10
<u>Kosteletzkya virginica</u>	--	10
<u>Mikania scandens</u>	1	5
<u>Proserpinaca palustris</u>	--	5
<u>Lythrum lineare</u>	Tr.	3

Big or Prairie cordgrass

On July 10, 1958, four 1/10-acre plots of ~~salt reed-grass~~ (Spartina cynosuroides) were treated with Dowpon (74%) at rates from 10 to 50 pounds acid equivalent per acre. A fifth plot was treated with Dowpon at the 20 pound rate and Amino Triazole at the 10 pound rate. The Dowpon and ATA were not mixed and applied in a single solution but were applied separately; time elapsing between application of the two solutions was approximately 45 minutes. Total amount of solution applied per plot was 2 gallons, or 200 gallons per acre. The solvent used was water.

On October 22, 1958, apparent kills were:

(1) Dowpon-ATA	99%
(2) Dowpon 50#	95
(3) Dowpon 30#	95
(4) Dowpon 20#	90
(5) Dowpon 10#	50

On October 6, 1959, estimated regrowth was:

(1) Dowpon-ATA	15%
(2) Dowpon 50#	65
(3) Dowpon 30#	25
(4) Dowpon 20#	25
(5) Dowpon 10#	80

Results obtained with Dowpon-ATA look very promising. Results obtained with Dowpon at the 50# rate were little better than results obtained at the 10# rate. Where Dowpon-ATA or Dowpon alone at 20# and 30# was used, reduction in cover density was tremendous. At time of treatment growth was so thick that marker poles could not be seen at a distance of 10 feet. On October 6, 1959, all parts of plots 1, 3, and 4 could be observed while standing at any point on the perimeter of said plots. Principal valuable replacement species on all plots were P. hydropiperoides, P. pensylvanicum, E. walteri, S. robustus, S. olneyi, and P. dichotomiflorum. Volunteer weed species included Mikania scandens, Aster sp., Kosteletzyka virginica, Hibiscus moscheutos, and Pluchea purpurea.

millet

Smartweed

Aster

Seashore mallow
E. Planned Burning

bulrush

rose mallow

marsh-flabade

Climbing humpweed

Information relating to this subject will be included in the January-April report.

F. Fires.

There were no fires on the refuge during the period.

IV. RESOURCE MANAGEMENT

A. Grazing.

None.

B. Haying.

None.

C. Fur Harvest.

The refuge will not be opened to trapping this year since our muskrat population, 860 animals, is far below the basic breeding population of 3,000 animals.

D. Timber Removal.

None.

E. Commercial Fishing.

Commercial fishing success for white perch has been poor. The largest catch made during the period was 400 pounds, or about 4 boxes. Harvest of carp has been poor, also. Some good mullet hauls have been made; Waterfield reports that his brother took 800 pounds of mullet during a single set.

F. Other Uses.

Three 3-1400 permits were issued to persons authorizing the cutting of salt reed-grass for use in construction of hunting blinds.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report.

Duck banding success has been poor during the period. A total of 35 birds was banded during the period September through December. Of this number, 23 were black ducks; the remaining 15 birds included 5 Canada geese, 4 mallards, 2 green-winged teal, and 1 pintail. Since the close of the

waterfowl season four additional traps have been placed in operation, and as soon as this rash of reporting is completed we will break out the cannon net. I would also like to see what success we can realize by constructing a large trap from paper netting i.e., the same material we are using in experimental sand fence work.

VI. PUBLIC RELATIONS

A. Recreational Uses.

On August 14, 20 boys from Ingleside Baptist Church camped on the beach 2 miles south of refuge headquarters. On December 5, 43 members of the Virginia Society of Ornithology paid their annual visit to the refuge and evidently they really had a ball for we received more thank you notes than we have ever received in the past. Guess it was that ride in the Honker that did the trick. On December 26, 7 members of the VSO came to the refuge to conduct the annual Christmas bird count.

B. Refuge Visitors.

Date	Name	Address	Purpose of Visit
10/6	Mr. Neil Hotchkiss	Patuxent Refuge	Check marshes
10/9	Mr. Edwin W. Ball	Atlanta, Ga.	Check herbicide plots
11/9	Mr. & Mrs. J. H. Kemp, Jr.	Ridgewood, N.J.	Observe birds
11/24	Mr. Daniel W. Janzen	Washington, D.C.	See refuge

C. Refuge Participation.

Participation during the period has been restricted to conducting birdwatchers over the refuge. I had hoped to have at least two school groups down while the birds were concentrated on the refuge, but something was always popping up to interfere with these plans.

D. Hunting.

Information relating to hunting will be included in the January-April report.

E. Violations.

On November 23, 1959, Waterfield saw William Dean Davis shoot a crippled duck within the closed water area; the shooting was done from a boat with motor attached but said boat was not resting at anchor. Davis was charged with violation of CFR 50, 6.3b4 and 6.4c and was tried before the U.S. Commissioner, Norfolk, on December 15. He was found guilty as charged and a fine of \$25 was imposed on each count; however, the fine imposed on the second count was suspended.

On November 24, Mr. W. E. Davis (father of W.D., Jr.) and Mr. A. W. Temple were apprehended when they were observed taking geese in excess of the daily bag limit. They were charged with violation of CFR 50, 6.51c. They appeared before the U.S. Commissioner, Norfolk, on December 1, 1959, were found guilty as charged, and a fine of \$10 was imposed but suspended. They had just one bird over the limit and Temple stated that he ---that's right, two with 1 shot. And I know darn well he didn't kill two birds with one shot 'cause I was looking right down his gun barrel with a 15 power spotting scope!

On November 25, Messrs. Caleb C. Cartwright and Henry Royal Hartley were apprehended and charged with violation of CFR 50, 6.3b4, and on November 28, Mr. Lucian Wilhoite Graves was apprehended and charged with a similar violation. They appeared before the U.S. Commissioner, Norfolk, on December 15, and were found guilty as charged. Each man was fined \$10.

VII. OTHER ITEMS

A. Items of Interest.

On November 24, at approximately 4 p.m., or shortly after Mr. Janzen completed a visit to the refuge, the moment that Waterfield and I had been looking forward to for more than two years arrived. The boat Honker, which was converted from an inboard tunnel stern sedan to an outboard cruiser, rejoined the fleet. I am pressed for time, so I will not go into detail.

First of all, I would like to say that I am very pleased with the quality of work done by Maintenance man Waterfield. He did an excellent job. I am sure that a lot of people who saw the boat when we had the aft decking, tunnel, and transom torn out thought that the boat, like Humpty Dumpty, would never be put together again. I wonder what Romie could have done for Humpty Dumpty? Furthermore, since the boat is 27'-7" long and was originally driven by a 110 hp Gray 6-121 a number of

"sidewalk engineers" who checked our progress from time to time swore that we were going to end up with nothing more than a barge when we installed two 35 hp outboards.

Well, I would like for the reader to know that we have the fastest "barge" in the bay. She cruises easily at 15 mph and tops out with six people on board at 24.8 mph. She comes on, top and begins to plane as soon as power is applied. We put 17 birdwatchers on board on December 5, and she planed beautifully even with this load. Power, by the way, is supplied by two Evinrude 35 hp Big Twin motors. All cockpit space is utilizable since there is no inboard engine to stumble over. Steering is easy and positive; docking is a snap. The self-bailing motor well is of sufficient size to permit a person easy access to motors. Motors tip easily and, if one wants to, the boat can be operated with one engine tipped up. With two people aboard, she will come on top under power of one engine; it takes a little time, however, and she doesn't build up any speed.

Pictures of the boat are included for the reader's inspection. Time did not permit duplication of color work; so, pictures included in the regional office copy differ from those included in the central office copy.

Also included in this report are pictures of paper and jute netting which we are experimenting with in conjunction with dune stabilization. I think you will agree, after viewing the pictures, that these materials can profitably be employed in dune stabilization work. We believe that the paper netting can also be used to construct holding pens for waterfowl, waterfowl banding traps, cannon nets, and light-weight shipping crates or enclosures for waterfowl.

Mr. Miketa has reviewed all banding data on hand and has plotted all banding returns on 5 large maps, which are displayed in the office. I will submit a written report of his findings as soon as a few other matters are taken care of.

The writer is experimenting with Polaroid photography to determine its value in waterfowl census work. I know it will be of value to me for it will permit me to check some of my estimates immediately upon landing.

B. Photographs.

Photographs which should be of interest to the reader are included.

January 20, 1960
(Date)

Jan. 26, 1960
(Date)

Submitted by: Carl S. Telverton
Carl S. Telverton
Refuge Manager

Approved by: Victor W. Kay
Act. Regional Refuge Supervisor

PUBLIC USE - C. Y. 1959

Please supply figures, or your best estimates for the following categories when applicable to your refuge:

A. Back Bay National Wildlife Refuge.

B. Estimated total use of all types 4,200 visitor-days.

1. Hunting use (for those refuges having public or regulated hunting).

Estimated visitor-days 0.

2. Fishing use.

Estimated visitor-days 1,800.


3. Miscellaneous use (lump such uses as picnicking, swimming, wildlife observation, birdwatching, as well as those on the area for business or official use, including economic uses such as farming or trapping.)

Estimated visitor-days 2,400.

C. Remarks.

January 20, 1960

(Date)


Refuge Manager

WATERFOWL

REFUGE Pack Bay

MONTHS OF September TO December, 1959

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:							300	450	1,210	1,500
Whistling										
Trumpeter										
Geese:										
Canada			14	14	200	600	4,500	10,000	5,322	10,000
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard			10	18	20	40	40	130	75	150
Black		40	40	75	106	150	120	650	930	1,000
Gadwall										
Baldpate			230	330	600	2,350	5,000	8,000	5,655	10,000
Pintail			300	175	90	60	350	580		250
Green-winged teal				12	40	40	100	850	300	200
Blue-winged teal				31						
Cinnamon teal										
Shoveler										
Wood										
Redhead								140		100
Ring-necked								1,200	2,800	2,500
Canvasback								3	25	30
Scaup										
Goldeneye										
Bufflehead										
Ruddy						20	50	60	260	80
Other										
Coot:						14	30	250	700	300
Int. Dup. Sec..										

3 -1750a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE Back BayMONTHS OF September TO December, 19 59

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	4,500	6,700	13,530	2,778	1,809	1,200	448	5,485	279,370		
Trumpeter											
Geese:											
Canada	15,655	12,000	13,000	5,735	5,966	2,575	8,800	14,665	763,322		
Cackling											
Brant											
White-fronted											
Snow	300	10,000	11,000	2,000		22	300	1,800	177,954		
Blue	4	3	6	4				1	126		
Other											
Ducks:											
Mallard	150	350	1,100	606	692	424	2,080	349	43,638		
Black	900	1,300	2,500	1,092	1,893	1,027	3,096	1,420	113,673		
Gadwall		20	18	30	20	20	20	36	1,148		
Baldpate	10,370	13,680	14,000	1,312	1,065	438	1,028	455	521,591		
Pintail	140	175	420	170	320	100	404	500	23,238		
Green-winged teal	65	110	200	430	200	340	1,484	800	36,197		
Blue-winged teal									217		
Cinnamon teal											
Shoveler											
Wood											
Redhead				35	20	6	14		2,205		
Ring-necked	5,000	1,500	5,500	2,004	525	335	175	50	151,123		
Canvasback	40	80	2,400	1,636	450	60	27	132	34,181		
Scaup				17					119		
Goldeneye											
Bufflehead											
Ruddy	120	130	140	80	150	60	85	175	9,870		
Other			18		1	3	9	8	273		
Coot:	900	900	400	300	60	6	6		27,062		

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	279,570	15,530		Principal feeding areas
Geese	941,412	15,655 Canada 16,000 snow		
Ducks	942,473	17,345		Principal nesting areas
Coots	27,062	900		
				Reported by

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

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

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Back BayMonths of September to December 1959

(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. <u>Water and Marsh Birds:</u>										
Common Loon	Infrequent, usually common (ocean)									100
Red-throated Loon	Infrequent (ocean)									30
Horned Grebe	Infrequent, usually common (ocean)									200
Pied-billed grebe	Infrequent, usually common									50
Gannet	Very infrequent, usually common (ocean)									500
Double-crested Cormorant	Common during migration									2000
Great Blue Heron	Common									15
American Egret	Common									50
American Bittern	Infrequent									8
II. <u>Shorebirds, Gulls and Terns:</u>										
Whimbrel	Infrequent									15
Willet	Fairly common becoming infrequent									50
Greater Yellow Legs	Infrequent									70
Sanderling	Common									7,000
Turnstone	Common becoming infrequent									80
Black-bellied Plover	Infrequent									60
Herring Gull	Common									1000
Ring-billed Gull	Common									2,000
Laughing Gull	Common becoming infrequent									150
Royal Tern	Common becoming infrequent									100
Black Skimmer	Infrequent									25

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove					30
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow					30
Reported by _____					

INSTRUCTIONS

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

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Back Bay

Months of September to December, 19 59

(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'vd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob-white Quail	High Beach Marsh 200 Acres	13.3	0	0	50:50	0	0	0	15	Estimated number is half that for same period last year . Birds are infrequently seen.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Back Bay

Calendar Year 1959

(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	
White-tailed Deer	1942 acres beach marsh	0	0	0	0	0	0	0	0	0		1	1	1.0

Remarks:

Very rare. This was the frist sighting of a large game animal on record at the refuge.
Deer was seen on October 7, 1959 on the sand dunes at the ramp to the headquarters.

Reported by Carl S. Yelverton, Refuge Manager

Calendar Year 1945

INSTRUCTIONS

Form NR-3 - BIG GAME

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

116008

DISEASE

Refuge Back Bay

Year 19 59

Botulism

Lead Poisoning or other Disease

Period of outbreak None

Period of heaviest losses _____

Losses:

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

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease Lead Poisoning

Species affected Canada geese, Swan, Canvasback

Number Affected Species	Actual Count	Estimated
<u>Canada geese</u>	_____	<u>12</u>
<u>Swan</u>	<u>2</u>	_____
<u>Canvasback</u>	<u>1</u>	_____

Number Recovered Not Known

Number lost Not Known

Source of infection Consumption of shot while feeding in Bay Known

Water conditions Slightly above average.

Food conditions Food good in practically all bays and coves; food sparse on east shore of Sand Bay.

Remarks One Canada goose taken from ocean suffering from starvation was revived.

Refuge Back Bay Year 19 59

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Perch	Reduction	Unknown	Unknown	0	Unknown	0		0
Bass	Reduction	Unknown	Unknown	0	Unknown	0		0
Shad	Increase	Unknown	Unknown	0	Unknown	0		0

REMARKS:

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Back Bay Year 1959

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Plant- ing	Survival	Cause of Loss	Remarks
No planting were made.								

TOTAL ACREAGE PLANTED:

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

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Beck Bay County Princess Anne State Virginia

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Permanent pasture of Ladino Clover, Ky.-31 Fescue and Orchardgrass	0	0	0	0	48	42*	38**	Permanent pasture of Ladino Clover, Fescue and Orchardgrass.	48
Annual Italian Rye - grass	0	0	0	0	10	1	10	Annual Italian Ryegrass.	10
									58
*Yield reduced because of drought conditions during the summer. ** 38 acres seeded to additional Ladino Clover and Orchardgrass.								Fallow Ag. Land	

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
None				1. Cattle	None			
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				58

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

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

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

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

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

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

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

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

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

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

REFUGE GRAIN REPORT

Refuge Back BayMonths of September through December, 1959

(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
Mixed Grain	2,300 [#]	0	2,300	0	0	900	900	1,400	0	1,400	0
Ryegrass Italian	0	1,000 [#]	1,000	0	1,000	0	1,000	0	0	0	0
Ladino Clover	0	25 [#]	25	0	0	0	0	25	25		
Orchardgrass	0	100 [#]	100	0	0	0	0	100	100	0	0

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge Headquarters

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

BRANCH OF WILDLIFE REFUGES
Narrative Report Routing Slip

Mr. Salyer _____

~~Mr. Ackerknecht~~ *OR*

Mr. Crawford

Administrative Services

~~Miss Baum~~

Operations

Mr. Fermanich *7*

~~Mr. Regan~~ *WRS*

Public Use

Mr. Dufont *PAD*

Mr. Kubichek

Mr. Stollberg *BSF*

Resource Management

Dr. Morley *LCM*

Mr. Hickok

Wildlife Management

Mr. Banko

Mr. Stiles *S*

Mr. Goldman *Ley.*

Refuge BACK BAY

Period Sept.-Dec. 1959

3-1759
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge BACK BAY

Year 1959

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
NONE								

TIMBER REMOVAL

Refuge Back Bay Year 1959

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
	NONE							

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....

JAN 60 J



The Honker after conversion. Cockpit decking is painted with anti-skid paint. Steering wheel in cabin was removed. Windshield will be installed on top of cabin just in front of steering wheel and convertible top will be constructed at later date. Fuel lines across aft deck to be installed under deck when large fuel tanks are obtained. R-20-6, Dec., 1959.

JAN 60 J



Captain Waterfield heads down Sand Bay. Boat is just loafing along and is not on step. R-20-4, Dec. 1959.



The Honker on the step and rolling.
R-21-5, December 29, 1959



The Honker, just loafing along.
R-21-6, December 29, 1959.

JAN 60 J



Experimental sand fence panel of Ludlow Heavy Duty Soil Saver. Erected November 19, 1959; photo taken December 29, 1959. Material is jute, 45" wide; 150' / roll; weight/roll 90#; cost per roll for 3 or more rolls \$13.65. Same length of snow fence would weigh 390 lbs. and cost \$28.50. Also available in regular duty weight, which is of closer weave and, I believe, better adapted for this type of thing. Regular material is 50" wide, 225 ft./roll; 90#/roll; \$15.60/roll for 3 or more rolls. Sand was blown from viewer's right with NE wind. Note that sand is piled on both sides of panel. Pine slabs spaced 6'. Material secured to slabs with thin strips of wood. Note that material passes on alternate sides of pine slabs; this provides more strength. R-19-6, December 29, 1959.

JAN 60 J



Another view of above panel showing sand piled on downwind side. R-19-1, December 29, 1959.



r 09 - NVR -

Experimental sand fence panel constructed with Bemis Erosion Net, which is netting fabricated from twisted paper strands. Erected November 19, 1959; picture taken December 29, 1959. Material, which comes in 250 and 800 lineal yard rolls, is 45" wide. Weight of 250 yd. roll, 100 lbs.; weight of 800 yd. roll, 310 lbs. Material is shipped freight prepaid. Cost; single roll, \$.1250/yd.; 2,000' or more, \$.1050/yd.; 4,000' or more, \$.0950/yd. Mesh is $\frac{1}{4}$ ". Pine slabs spaced 6'. Material secured to slabs with thin strips of wood. Note broken pine slab. This happened during sleet storm when sleet closed openings in material, subjecting panel to tremendous pressure from 52 mph wind. Pressure broke slab but netting did not tear. R-19-2, December 29, 1959.



r 09 - NVR -

Another view of above panel. R-19-7, December 29, 1959.