

BLACKWATER NWR - NARRATIVE REPORT -
1968

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Blackwater National Wildlife Refuge

Narrative Report

1968

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U. S. Department of the Interior

Fish and Wildlife Service

Bureau of Sport Fisheries and Wildlife

Admin. Glen L. Martin Refuge

Blackwater National Wildlife Refuge

R. F. D. #1

Cambridge, Maryland

21613

Established January 23, 1933

Total Acreage - 11,216

Blackwater National Wildlife Refuge

Narrative Report

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Blackwater National Wildlife Refuge

Narrative Report

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I. General

A. Weather Conditions.

January. This month could be called a typical winter month for the Eastern Shore, with extremes of 56 to 6 degrees. The 6 degrees represents the lowest temperature recorded for the year 1968. Snow was recorded only two months of 1968 and this was one of the two months. Snow amounted to 1 inch during the month.

February. The lowest amount of precipitation (0.47) for any given month of 1968 was recorded during February. No snow fell during this month as compared to 21 inches for February, 1967. On February 12th. prevailing northwest winds reached 45 m.p.h.

March. The maximum temperature reached a mild 76 degrees as compared to a minimum of 19 degrees. This month was one of the wettest (5.06") months of 1968. The greatest amount of snow occurred during this month which was 5 inches.

April. Although seven periods of precipitation occurred during the month, the total precipitation only measured 1.26". This is more than 2.5" below normal. Northwest winds were the dominant winds during April. April 9th., the high for the month was recorded (76 degrees) as compared to 30 degrees on April 7th which was the minimum temperature for April.

May. On May 28th, the heaviest rain fall (2.79") for one day was recorded. The frequent showers which totalled 4.12" during the month made ideal water level conditions for the nesting waterfowl near the fresh water ponds on the area. The high temperature for the month was 83 degrees and the low was 36 degrees on May 7th and 8th.

June. Ten showers produced 5.07" which was 2" above the normal precipitation for the month of June and also it was the wettest month of the year. Many of the crops had to be replanted because of the heavy precipitation that occurred in the latter part of May to the first part of June. The maximum temperature for June came on the 27th with 93 degrees and the minimum of 50 degrees was recorded on the 21th.

July. Northeast winds were the prevailing winds for the month of July. Approximately 3" of rain fell during the month which is 1" above normal for the month. This precipitation delayed much of the intended cultivation of the croplands.

August. August was the only month that the precipitation (4.5") was nearest to normal (4.8") for any particular month of 1968. The high temperature for the month was 93 degrees on the 25th and the low was 48 on the 30th.

September. Only 3 showers occurred during the entire month for a total of 2". This month began a 4 month drought period. The flood gates were closed to no avail to catch excess runoff for Dieffenbach Pool. Northwest winds were the dominating winds during September.

October. The maximum temperature for October occurred on the 4th with 82 degrees and the minimum of 26 degrees was recorded on the 31st. Another month of below normal rainfall. The second driest month of 1968. Impoundments were considerably below normal.

November. A northeast storm with winds up to 60 m.p.h. hit the Eastern Shore on the 12th and 13th. The impoundments remained at a below normal level. The high temperature for the month was 73 degrees on the 2nd and the low was 27 degrees on November 26th.

December. December was another month of below normal precipitation. Still not enough rain to fill Dieffenbach Pool. Northwest winds were the dominating winds for the last month of the year. For December, the temperature rose to a high of 62 degrees on the 29th and a low of 9 degrees on the 11th.

Precipitation				Max. Temp.	Min. Temp.
	<u>Snowfall</u>	<u>This Month</u>	<u>Normal</u>		
January	1.00	2.96	3.47	56	6
February		0.47	4.22	53	9
March	5.00	5.06	3.82	76	19
April		1.26	3.82	76	30
May		4.12	5.61	83	36
June		5.07	3.45	93	50
July		3.19	2.00	98	59
August		4.50	4.75	93	48
September		2.04	4.03	84	44
October		1.90	5.13	82	26
November		3.65	5.33	73	27
December		2.13	3.43	58	9
Totals	6.00	36.35	48.96	98	6

B. Habitat Conditions.

1. Water. For the first half of the year, the refuge received a normal amount of rainfall but this did not hold true for the latter half of the year. Precipitation was down more than 7" the last six months of 1968. The dry weather for the latter part of July created excellent conditions for planting of millet (100 acres) in the Dieffenbach Pool. By late fall, water was present in Dieffenbach Pool but only covered a few acres. By December 31st, water had just reached the first flashboard of the water control structure. Adequate water levels were maintained in the Headquarters and Kuehle Tract ponds throughout the year. Very little runoff was obtained from the yearly snowfall. Average number of high and low tides occurred during year. A severe northeast storm hit the Eastern Shore but did not cause any notable fluctuations in the tides.

2. Food and Cover. Food on Blackwater Refuge could be classified as abundant. Most of the cultivated crops produced good yields. Some reseeding (sorghum and corn) had to be done because of heavy rains. Crops planted in 1968 were as follows: 207 acres ryegrass, 189 acres millet, 134 acres ladino clover, 87 acres sorghum, 74 acres corn, 67 acres wheat, and 44 acres of buckwheat. Native vegetation was very abundant on the refuge in 1968 with Panicum (Panicum spp.) being a major species used by the waterfowl. Aquatic vegetation was abundant in both the ponds and marsh areas on the refuge and furnished much food for the waterfowl. Some major aquatics found on the refuge are: Widgeon grass (Ruppia maritima), Sago Pondweed (Potamogeton pectinatus), and Redhead-grass (P. perfoliatus). Controlled burning of the three-square (Scirpus olneyi, and S. americanus) marsh caused new growth which in turn provided food in the early spring. Lespedeza and fescue growing on the dikes provided food and cover for small game.

II. WILDLIFE

A. Migratory Birds. The production of waterfowl broods at Blackwater Refuge has decreased somewhat over that of 1967. Brood counts indicate that approximately 560 Mallards, 320 Black Ducks, 105 Blue-winged Teal, and 5 Wood Ducks were reared. Records show that this a total production drop from 1500 ducklings in 1967 to 990 in 1968. Of particular interest were three broods of goslings reared near headquarters pond. The broods were of seven, six, and five birds respectively. The goslings production was up from 5 in 1967 to 17 in 1968. Although total waterfowl production was down in 1968, a predator control program carried out in the spring no doubt helped uphold the waterfowl production.

There were 40 Whistling Swans using the refuge during the last two weeks of November to the first of December. Swan use days were 3,731. In 1967, 50 swans were reported using Dieffenbach Pool during November and December. Since Dieffenbach Pool was not flooded in 1968 due to the lack of rain, all of the swans were observed in the marsh habitat.

The peak population of Canada Geese in 1968 was 75,000 birds which was an increase of 5,000 geese from 1967. This peak was reached during the last three weeks of November. Canada Goose use days this year were 8,020,051 as compared to 8,065,750 use days last year and 10,010,200 use days in 1966. Three hundred Canada Geese stayed at Blackwater during the summer and are considered a resident flock.

A drastic reduction in the Blue and Snow Goose populations occurred on Blackwater Refuge in 1968. From a peak population of 1,000 Snows and 1500 Blues in 1967 to a small number of 250 and 500 respectively in December, 1968. Blue and Snow Goose use days were 78,901. These species were observed many times near the Visitor Center.

The highest population of ducks, which was 139,400, occurred around the middle of November. This was 6,600 more ducks than the peak population for 1967 and 20,000 more birds than the 1966 peak population. Total duck use days for 1968 was 11,167,280.

Migration of Mallards started the third week in September 1968 as compared to early October in 1966 and 1967. A peak population of 60,000 birds was reached in November. This is the most abundant species of ducks present on the refuge, and is usually found in Headquarters Pond and Dieffenbach Pool. Mallard use days increased 527,800 over last year. It is estimated that Blackwater has a resident population of Mallards numbering approximately 1,500.

Another species that rates high in relation to numbers and hunter preference is the Black Duck. But, for the second year in a row, these ducks have decreased. From a record population of 50,000 in 1966 to 25,000 in 1967 and finally this year a peak population of only 20,000 was achieved in early November. Marsh areas are considered the preferable habitat of this species, and because of this it is seldom seen by the visitors.

American Widgeon, also known as Baldpate, are found mostly in the marsh because this duck prefers aquatic vegetation. Occasionally American Widgeon are observed feeding on the planted crops. A peak population of 15,000 birds was reached in the latter part of October and this is 7,000 more Baldpates than the peak in 1967.

Pintails arrived in large numbers late in September and reached a peak of 30,000 birds in November. This is 10,000 birds less than the peak Pintail population in 1967 and resulted in a decrease of approximately 902,805 use days for this species. This duck is usually found in Dieffenbach Pool.

Green-Winged Teal are probably the earliest species to arrived at Blackwater and are also the first to leave the refuge to fly farther south in December. The refuge was host to a peak population of 15,000 birds by mid-November but by mid-December this species had disappeared from Blackwater.

Blue-Winged Teal had a peak population of 8,000 birds which was more birds than the last two years (5,000) combined. Blackwater has quite a few Bluewings that nest on the refuge. Blue-Winged Teal, same as the Green-Winged Teal, begins migration very early.

Before 1966, Gadwalls were not seen at Blackwater but since that time this species has steadily increased to 2,000 birds in 1968. Gadwalls were observed in the Dieffenbach Pool area.

Wood Ducks are very popular with the public at Blackwater Refuge. The refuge had a peak population of only 250 birds. Total use days for the woody in 1968 was 17,675 as compared to 2,450 in 1967.

The diving ducks that were present on the refuge in 1968 were Ring-necks, Canvasbacks, Scaups, Goldeneyes, Buffleheads, Ruddies, and three species of Mergansers. Total use days for the divers was 58,625 well below 1967. These species used the refuge in small concentrations.

Total waterfowl use days on Blackwater Refuge for 1968 were 19,215,282. This was 221,429 less than 1967.

For the second year in a row, the Mourning Dove population has decreased. In 1966, doves residing on the refuge reached a peak population of 1,000 birds as compared to 800 in 1967 and 750 birds for this year. The farming program provided the doves with more than enough food.

B. Upland Game Birds. Because of the ideal nesting conditons during the late spring and summer, the Bob-White Quail (Colinus virginianus) population at the end of the year has increased by 100 birds over the previous year (900 birds). The reduced cover and food supply has concentrated the birds around the agricultural areas. Bob-White Quail are not heavily huhted adjacent to the refuge.

C. Big Game Animals. There are 250 White-tailed deer (Odocoileus virginianus) residing on 1,500 habitat acres. This is approximately the same number as last year. The deer herd is controlled by heavy hunting around the refuge. More deer are killed in Dorchester County than any other county in the state of Maryland. Twin fawns are very common on Blackwater during late Spring.

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

1. Muskrat. Muskrat (Ondatra zibethica) populations remained at a low level for 1968. An estimate of 7,100 muskrats (November, 1967) were residing on the refuge as compared to 7,275 in November 1966. A total of 1,452 muskrats were harvested from nine units in 1968. These animals were trapped near the dikes and roads.

2. Raccoon. Raccoons (Procyon - lotor) are considered to be very plentiful on Blackwater Refuge. This animal is a known enemy of nesting waterfowl and is being kept at a moderated number because of this season. In 1968, approximately 50 raccoons from a population of 400, were removed from the refuge in conjunction with the predator control program.

3. Red Fox. A decrease of this species (Vulpes fulva) was observed by the refuge personnel in 1968. This predator went from a population of 50 in 1967 to 25 animals in 1968. Foxes were also removed from Blackwater during the predator control program. It is believed that they will again be reduced in numbers during the 1969 control program.

4. Squirrel. There are 3 species of squirrels found on the refuge. The Delmarva Peninsula Fox Squirrel (Sciurus niger bryanti) is the most important because of its status as an endangered species. Blackwater has an estimated population of 225 animals on its 818 acres of squirrel habitat. The Gray (S. carolinensis) and Flying (Glaucomys volans) Squirrels are common on the refuge. There has been an increase of 25 S. n. bryanti from 1967 but a decrease of 50 S. carolinensis in 1968.

Blackwater Refuge transferred seven male and six female Delmarva Peninsula Fox Squirrels to Chincoteague Refuge. This program was carried out in hopes that a resident population of S. n. bryanti could be established on the habitat now available at Chincoteague National Wildlife Refuge. Trapping was done in mid-October. A high trapping success was obtained with a 2 males: 1 female ratio.

5. Cotton-Tailed Rabbit. In 1968, it was estimated that there were 375 Eastern Cottontails (Sylvilagus floridanus mallus) residing on the refuge. It is believed that this lagomorph acts as an important "buffer" species between predators and waterfowl.

6. Skunk. The declining population trend of the skunk (Mephitis nigra) has continued to fall since 1960 and is thought to have reached its lowest numbers since the start of the decline. In the spring, these mammals destroy eggs of the resident flocks of waterfowl.

7. Miscellaneous Fur Bearers.

1. Opossum. There are approximately 100 opossums (Didelphis virginiana) living on the 1418 acres of habitat which consist of mixed pines - hardwood forest and croplands. They cause some damage to the field crops and ground - nesting birds.

2. Otter. It is estimated that 30 otters (Lutra canadensis) have used the refuge at one time or another during 1968. Since otters are known as shy creatures, they are seldom observed by visitors or refuge personnel.

3. Nutria. Nutria (Myopotanas coypii) are considered to be at approximately the same number (250) as in 1967. Blackwater Refuge

trys to maintain a static population through the trapping program because of their known destructiveness to marsh vegetation.

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

1. Hawks. The hawks which are commonly seen on Blackwater are (in order of abundance) Sparrow, Marsh, Red-Tailed, Red- Shouldered. Copper's and Sharp-Shinned Hawks. Sparrow Hawks reached a peak population of 150 in 1968. These raptors appeared to be more prominent during the fall and winter months.

2. Eagles. The refuge has both the Golden Eagle, which is a winter visitor and the Bald Eagle which is a resident species. Three pairs of Bald Eagles nested on the refuge during late winter and early spring, but none of these attempts were successfull. Of the eleven Bald Eagles seen on the refuge, six were immatures. The dead pine snags behind the Visitor Center is a favor resting area for the Eagles. This resting area is well know by the public.

3. Owls. The population of owls on the refuge remain at a low level for 1968. Barn, Barred, Screech and Great Horned Owls are the species found on the refuge during the year. These are frequently seen around the old buidlings and observation towers in which they nest.

4. Crows. Only 400 crows were estimated during May, 1968 which is referred to as the peak period for these birds. This number is far below the 1966 and 1967 estimates of 1000 and 800 birds respectively.

F. Other Birds. On May 23, 1968 an unusual crane was sighted on the refuge while maing a tour of the dikes. It was identified by Mr. W. O. Morbach of Capetown, South Africa and Mr Edward Unger of Federalsburg, Md. They stated that the large crane was the national bird of South Africa and is referred to as a Paradise Crane, also known as the Stanley Crane and Blue Crane (Anthropoides paradisica). The crane was observed many times feeding along side of deer and waterfowl in the Dieffenbach Pool area. Its orgin remains a mystery. Much interest and enthusiasm has been aroused by its presence. Some people have traveled as far as 100 miles just to see the crane.

G. Fish. No sport fishing is allowed on the refuge due to waterfowl. Commerical fishing consist of one permittee removing small numbers of White Perch, Striped-Bass, Carp and Catfish.

H. Reptiles. Snapping turtle population remains about static with a few females depositing eggs on the dike areas during the nesting season. Raccons and skunks destroy most of the eggs, therefore, keeping this reptile in check.

I. Diseases. None to report.

III. Refuge Development and Maintenance

A. Physical Development.

Twenty-three wood duck boxes were constructed during the late winter period. All boxes were erected shortly thereafter. The boxes were inspected twice during the spring but none had been used by wood ducks.

The shutters on Quarters #2 were removed and repainted. Some of the window shutters had to be rebuilt before being put back in place. The exterior trim of Quarters #2 was also painted.

A new dock at the refuge boathouse was completed during the spring of this year. The old structure had decayed badly. The new creosote treated dock should last for many years.

Routine mowing of the vast amount of lawn area at Blackwater Refuge takes considerable time during the spring and summer months. Again this year, Blackwater hired two minority group members to aid the refuge with additional tasks such as lawn maintenance. Also, both dike and road edges received mowing at various times throughout the spring and summer months.

Two chain-link fence partitions were erected between gates located on Old Mill Road. Then sections of fence completed the barrier which led to the dike road.

The Sea Flyer boat normally stationed at the refuge boathouse was pulled, scraped, and painted during June. Scraping of the barnacles is an annual affair of boats left in salt or brackish water.

An overhead electric line which ran from the old office building to the seaplane hangar was placed underground during late June. This was undertaken as a safety factor to aid the Game Management float plane when making take-off and landings under certain wind conditions.

Quarters #4 located within the headquarters complex was removed and surveyed as suggested by the Regional Office. The structure was in very poor condition and not in satisfactory shape for refuge personnel to occupy.

An additional waterfowl trapping site was constructed during early October. The area is located on the north side of Dieffenbach Pool near the Visitor Center. Additional fill was hauled into the area and slag was added to the surface.

Much remodification work was accomplished on the observation tower during the summer and fall months. This tower was modified with side fencing on the stairways, protective railing at the turn arounds, and a fenced in platform on the third tier of the previous fire tower. An explanatory sign of the proper use of the observation platform was placed at the base of the tower. Many favorable comments were made by the public of the observation tower.

The Visitor Center received paint on the exterior trim and also to all rooms on the interior of the building. Because of the heavy public use this building receives, a contract was awarded by competitive bid so that a professional job could be done.

Slag was applied to several refuge roads during the fall months. Gravel was applied to the dike roads at Kuehule Tract and also to the dike directly behind headquarters pond.

One of two compressors was replaced to the air conditioner at the Visitor Center. Fortunately the unit was still under warranty and the company delivered the \$600.00 compressor at no charge.

Three buildings were declared surplus to our needs at the refuge and invitations to bid were submitted to local residents. All were frame structures and removed by commercial moving sources for the high bidders.

As directed by Regional Office memorandum, protective roll bars were placed on all three tractors now being operated by the refuge. A commercial source was used to acquire the roll bars and a very neat and satisfactory job was realized.

Farm tractors and other farm machinery have been repaired as necessary throughout the year. Routine maintenance and repairs have also been performed on refuge vehicles.

B. Plantings.

1. Aquatics and Marsh Plants. None this period.

2. Trees and Shrubs. None this period.

3. Upland Herbaceous Plants. None this period.

4. Cultivated Crops. Total refuge acreage under cultivation during 1968 was 870. Green manure and waterfowl browsing crops planted on the refuge was 134 acres of Ladino Clover, 207 acres of ryegrass, 67 acres of wheat, and 67 acres of soybeans. Hot foods included 44 acres of buckwheat, 75 acres of corn, 189 acres of millet, and 87 acres of sorghum. Yields were up on millet, buckwheat and sorghum. Corn crop was greatly damaged due to the heavy rainfall of late May and early June. Replanting was necessary on approximately

45 acres of corn and 40 acres of sorghum because of the excessive amount of rain. However, this was the last of the heavy rainfall for the growing season and other crops were planted on schedule and made an excellent growth. Both the sorghum and millet produced good yields. Ladino Clover, buckwheat, ryegrass and wheat all made good growth before the drought conditions of September, October and November arrived. Overall, the refuge cultivated crops were above average except for the corn crop which was off in two fields and this dropped the average yield below normal. By mid-December most of the fields had been picked clean and off-refuge feeding was heavy throughout most of the waterfowl hunting season. Listed below is a breakdown of refuge cropping by field number and acreage.

<u>Name of Crop</u>	<u>Field No. or Name</u>	<u>Acreage</u>
Buckwheat	7,15,16	44
Corn	10,19,23,26,28	75
Ladino Clover	8,17,22,33,34, 39,40,41,47,54	134
Millet	28,29,30,31,35,36,37	189
Ryegrass	Aerial seeding corn, buckwheat, and milo lands	207
Sorghum	10,19,21,23,27	87
Wheat	9,12,13,14,21	67
Soybeans	9,12,13,14,21	67
Total		870

Soybeans plowed down as green manure under the Soil and Moisture program and planted in winter wheat under the regular farming operation.

C. Collections and Receipts.

1. Seed and other Propagules. Approximately 85 bushels of mixed grain was received from the U.S. Grain Appraisers, Baltimore, Md. during 1968. 300 bushels of corn was transferred to Chincoteague Refuge for banding purposes. Another 500 bushels was harvested for post-season banding. The following seed was purchased and planted in refuge fields during the year.

Buckwheat.....	60 Bushels
Corn.....	20 "
Ladino Clover.....	8 "
Millet.....	165 "
Sorghum.....	16 "
Ryegrass.....	142 "
Wheat.....	150 "
Soybeans.....	150 "

D. Control of Vegetation. 163 acres of corn and sorghum were sprayed during 1968. They were fields 10,11,19,20,23,24,26,27 and 28. Target pests were Pig Weed (Amaranthus retroflexus), Rag Weed (Ambrosia artemisiifolia), (A. trifida) and Morning glory (Ipomoea lacunosa). Treatment dates were June 20 thru July 18 with plant growth 4 to 6" high. Chemical used was 2,4 - Dichlorophenoxyacetic Acid. Water was used as a carrier, 2,4 -D was applied at a rate of 1/2 pint and 8 gallons of water per acre by use of tractor mounted sprayer.

Cost Breakdown

Labor	\$175.00
Materials	50.00
Equipment	50.00
Total	<u>\$275.00</u>

A 90% kill estimate was made after the above treatment. Spraying increased both corn and sorghum yields. It is felt that no weed control and production would be off at least 25-30 bushels.

E. Planned Burning.

1. General. Control burning program during 1968 consist of 3,248 acres of marsh. They were units number 3,6,7,11,13a,13b, 14,20,21,22,23,24,25,32,33,34,35, and 35a. Burning was carried out on 1,262 acres in early January and completed on all the approved unit prior to February 21, 1968. Heavy goose use (10,000) was observed on unit #3 in late February and throughout the month of March. All the burnt marsh areas had heavy use after the warmer weather late in February and March. Burning provides supplementary feeding for waterfowl when other foods are scarce and also relieves depredation on the local farmer's wheat and green browse crops adjacent to the refuge since large numbers of geese stop over at Blackwater on the migration trip North in the spring.

2. Condition Prior to Burning. Excellent growth of three-square (Scirpus olineyi) and small patches of bend grass and cattail were present on the areas burned. Marsh was very dense and ranged in height from 3 to 6 feet. Waterfowl use was limited to only a few Blacks, Mallards and G.W. Teal prior to burning. Burning conditions were good early in January and again about February 10. All the burning was carried out in the period when there is no danger to nesting birds and limited use by other animals. No burning is recommended after February since nesting normally begins in early March.

3. Conditions Following Burning. Estimated burn on all the units was 85% in early January on units # 3,6,7,11,13a,13b,20, and 21. Burn of 80% was estimated on 23,24,25,32,33,34,35 and 35a which was completed in February.

Waterfowl use of the burned marsh areas was extremely high during late February with 10,000 Canada geese, 500 Blues and Snows and a small number of Mallards and Blacks observed on unit #3. On March 8, approximately 2,000 Canadas, 500 Blacks and a few Mallards were presnet on unit 20 and 21. Smaller numbers of waterfowl both ducks and geese were observed daily on most of the areas once the ice is gone and tides become normal. This is due to the demand for the green browse which is preferred over hot foods when the weather becomes warm. Control burning is very valuable in that it is cheap when compared to planting of green browse crops of clover, wheat or ryegrass.

F. Fires. There were no uncontrolled fires on the refuge during 1968. The fire index was very high during February and the State of Maryland placed a restriction on all burning late in February. This ban was removed in March after more than five inches of rainfall was recorded. Drought conditions late in September, October and November raised the index and at the end of the year the fire danger was high.

IV. Resource Management

A. Grazing. None to report.

B. Haying. None to report.

C. Fur Harvest. Blackwater's Fur Management Program in 1968 consisted of a trapper removing muskrats from nine of the trapping units of the refuge. These units were those adjacent to roads and dikes where burrowing could damage these facilities. Units designated and approved for trapping were 2,3,8,9,16,17,18,19 and 36. The following is a tabulation of the 1968 muskrat harvest on Blackwater.

<u>Trapper</u>	<u>Permit No.</u>	<u>Unit.</u>	<u>Muskrat Catch.</u>	<u>Nutria</u>
Ray Willey	T-11376	2	231	2
		3	296	13
		8	86	18
		9	461	21
		16	78	4
		17	83	
		18	53	
		19	46	
		36	118	15
		Totals	1452	73

As was the case last year we again sold the refuge share of the furs was sold locally. Average price per pelt was \$0.96 compared to \$0.76 in 1967. Government's share of the pelts was 726 which they received a total of \$697.44. Trapper received \$607.70 for his 726 pelts and \$560.00 for the carcasses or total of \$1,167.70 for both the furs and carcasses. Nutria were destroyed by the trapper due to the low value of the pelt.

Refuge personnel removed an additional 250 Nutria during the extreme cold weather. Due to the low market price, it did not justify fleshing nutria for the hides. Therefore, they were destroyed. A breakdown of the units where nutria were removed follows:

<u>Unit No.</u>	<u>Number of Nutria Removed</u>
3	40
8	22
9	95
17	18
36	75
Total	<u>250</u>

In accordance with Amendment No. 1 of the Basic Fur Management Plan the Government share of the furs were sold locally. Quotations were first received from the New York Auction Company and it was again decided that a local sale by way of a bid invitation would be the most profitable. A local sale eliminate such items as packing, shipping and administrative overhead. We presently feel that the sale of furs on the local market should definitely continue until conditions warrant a change.

D. Timber Removal. None to report.

E. Commerical Fishing. One permit was issued to a local fisherman to catch fish by use of gill nets. Although ice conditions were present early in the year he had fair success with perch, carp, catfish, herring and striped-bass in the amount of 1,000 pounds taken.

F. Other Uses. None to report.

V. Field Investigation or Applied Research

A. Progress Report. A total of 2,185 waterfowl were banded by this station in calendar year 1968. The breakdown by species is as follows:

Canada Goose.....	858
Mallard.....	1200 (Quota)
Black Duck.....	47
Pintail.....	43
American Widgeon.....	17
Blue-winged Teal.....	17
Green-winged Teal.....	3
Total	<u>2,185</u>

The banding quota of 1200 Mallards was reached early in the banding season. Trapping of geese continued throughout the year with a final count of 858. However, another 184 was trapped for the State of Florida Inland Game and Freshwater Fish Commission. Therefore, the quota of 1000 would have been exceeded if we had been able to band all the birds trapped. Only 16 doves were banded during 1968 compared to 240 last year. Hot weather and abundance of food made trapping conditions poor. Also the dove population was very low during the trapping season of July thru September.

On March 8, 1968 an animal control program was approved as outlined in the Animal Control Plan for Blackwater. With assistance from the Division of Wildlife Services a program was started on April 10 and completed by April 30. A dummy nest study was begun on May 8, 1968 and after a 35 day interval a report submitted showing that results of the program was not as good as the 1967 program. This was due to the late time of placement, 1967 method of preparation which "educated" many adult animals. The following is an estimate of the predators removed:

<u>Animal Removed</u>	<u>Est. No. Removed</u>	<u>Est. Pop. Start of Program</u>
Red Fox	15	30
Raccoon	50	475
Opossum	15	90
Skunk	3	55
Total Est. N.	<u>83</u>	

Placement of baits were reduced from 2,500 in 1967 to 300 in 1968. As noted by our NR-1 waterfowl population dropped from 1505 in 1967 to 1005 in 1968. We feel that production can be greater if predation was kept down during the nesting period. Therefore, future programs will be geared for completion in late February and early March to accomplish our objective - increase waterfowl population.

VI Public Relations

A. Recreational Uses. Blackwater Refuge experienced an estimated 13% increase in visitor load over the past year. Total visitation fluctuated with the migration of waterfowl and reached corresponding peaks during the months of October, November and December. The heaviest period of visitation was during the month of November when an estimated 15,000 people funneled through the refuge.

The most popular type of recreation sought by the visiting public was wildlife watching with emphasis placed on spectaculars offered by the large concentrations of Canada geese. The Visitor Center was well received by most visitors as it acted as the focal point for dispersing information on Blackwater, the refuge system and the conservation story. Wildlife movies, impromptu discussions, explanation's and other hospitable gestures exhibited by refuge personnel added much to the delight of the visitor. These personal contacts usually resulted in a greater display of enthusiasm for the refuge story.

Picnicing was most popular during the months of June and July when many of the local industrial groups gather for their annual picnics. The refuge plays host to groups ranging in size as high as 500 people, however, with the advent of summer and warmer temperatures, the picnic area becomes less desirable because of a mass infestation of biting insects. Spraying alleviates the problem only temporarily. Although inflicted with a seasonal problem, the picnic area is well appreciated and heavily used by both the local community and distant traveler. With the opening of the observation tower adjacent to the picnic area, an elevated area become available to the using public in October. An excellent view of the marsh and wildfowl added much to the overall interpretive program offered by the refuge.

Photography and the pureaesthetics of being on a semi-natural area are the two remaining types of recreational activities available on Blackwater today. A two and one half mile interpretive nature drive is in the planning and should soon become a reality. This drive should fulfill the appetite of the visitor who frequently asks, "Where else can I go".

B. Visitors. Official visitors to Blackwater Refuge during 1968 included:

February. Mr. Robert Schaefer, Washington, D. C.

March. Mr. Chandler Robbins, Migratory Bird Populations Station, Laurel, Maryland.

May. Mr. Jim Pulliam, Washington, D.C.
Mr. Holm, Washington, D.C.
Dr. Lou Locke, Patuxent Wildlife Research Center
Laurel, Maryland.

July. Mr. Ken Butts, Atlanta, Georgia
 Mr. Jack Woody, Washington, D.C.
 Mr. Jesse Grave, Washington, D.C.

September. Mr. George Wiseman, Atlanta, Georgia
 Mr. Walter O. Stieglitz, Atlanta, Georgia

October. Mr. Jim Salyer, Washinton, D.C.
 Mr. Ken Marek, Atlanta, Georgia
 Mr. Robert Scott, Washington, D.C.
 Mr. William Anderson, Washinton, D.C.
 Mr. Jim Pulliam, Washington, D.C.
 Mr. Art Hughlet, Washington, D.C.
 Mr. Otto Florchut, East Coast Biologist,
 Washington, N.C.
 Mr. Samuel Carney, Migratory Bird Populations Station,
 Laurel, Maryland
 Mr. Elwood Martin, " " " "
 Mr. Robert Croft, " " " "

November. Mr. & Mrs. Akernecht, Washington, D.C.
 Mr. Luther Goldman, Washington, D.C.
 Mr. Howard Huenecke, Washington, D.C.

December. Mr. Edward Yaw, Okefenokee Refuge, Georgia
 Mr. Larry Givens, Atlanta, Georgia

In addition to the above list of official visitors there were other people of considerable interest who stopped by to see the refuge.

Dr. Lars Lindberg, from Sweden.
 Mr. George Sozio, N.B.C., Washington, D.C.
 Mr. John Lery, N.B.C., Washington, D.C.
 Mr. Fred Tepper, N.B.C., Washington, D.C.
 Mr. & Mrs. Eastman, British Broadcasting Co.
 Mr. Parsons, British Broadcasting Co.
 Mr. Backmore, Capetown, South Afreica.
 Mr. & Mrs. R.C. Rosche, Auduban Society, New Jersey.
 Dr. & Mrs. F.C. Whitmore, U.S. Geological Survey, Washington, D.C.
 Mr. Merrin Stevens, U.S. Forest Service, Wisconsin.
 Mr. G.D. Bailey, U.S. Soil Conservation Services, Maryland.
 Mr. Fredrick Malkus, Maryland State Senator, Annoplis, Md.
 Mr. Roy S. Metzzer, State Planning Dept., Baltimore, Md.

Other groups or organizations represented on the refuge included:
 The Boy Scouts, Cub Scouts, local schools, churches, Hospitals,
 Garden Clubs, Sportsman clubs and the Auduban Society.

Bureau of Sport Fisheries and Wildlife
Division of Wildlife Refuges

MONTHLY PUBLIC USE REPORT

Refuge name

Blackwater

State

Maryland

(This block completed by Washington Office)

State

Code **20**
(1-2)

Congressional

District Code **12**
(3-4)

Refuge

Code **430**
(5-7)

Report

Period **68**
(8-11)

Yr. | Mo.

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

ACTIVITY	Code	VISITS FOR THE MONTH	
		Total Number	Total Hours
Hunting: Big Game	01		
Upland Game	02		
Waterfowl	03		
Other Migratory	04		
Bow	05		
Fishing: Salt Water	06		
Warm Water	07		
Cold Water	08		
Bird and Animal Calling	09		
Wildlife Photography	10		
Wildlife Observation	11	63,300	80,800
Dog Training	12		
Field Trials	13		
Wildlife Trails and Walks	14		
Wildlife Tours	15	1,756	4,621
Wildlife Scenic Veh. Rts.	16		
Camping (related to above)	17		
Picnicking (related to above)	18		
Wildlife Interpretive Center	19	16,050	10,325
*Miscellaneous Wildlife	20		

(Card Columns) 26-27 28-32 33-39

ACTIVITY	Code	VISITS FOR THE MONTH	
		Total Number	Total Hours
Swimming	21		
Boating	22		
Water Skiing	23		
Camping	24		
Group Camping	25		
Picnicking	26	4,195	8,000
Horseback Riding	27		
Bicycling	28		
Skiing, Sledding, etc.	29		
Ice Skating	30		
Fruit, Nut & Veg. Collecting	31		
Non-Recreational Use (inspections, audits, etc.)	32	33	126
Actual Visits	33	75,600	
Peak Load Day	34	6,075	
* Miscellaneous Non-Wildlife	35		

C. Refuge Participation. The entire refuge staff participated in the overall refuge interpretive program. Most employees had the opportunity to give talks, tours, demonstrations, and present slide illustrated program and conservation films. These programs extended from the refuge to the nearby communities. Speakers were represented at schools and civic clubs as well as confrontation with similar groups on the refuge. The refuge was well represented before some 6,000 persons at the local Outdoor Show held in Cambridge. Approximately 20 feet of displays and literature explain the significance of the Blackwater Refuge and the system. Some 20 newspaper articles appeared in local papers, 10 of which were submitted from the refuge. Refuge personnel aided the British Broadcasting Company (B.B.C.) and the National Broadcasting Company (N.B.C.) in making several films about waterfowl and the Blackwater Refuge. The B.B.C. film was shown in England and still remains to be seen in this country.

On January 8, 1968, Blackwater Refuge played host to the state of Maryland's Department of Forests and Parks and on March 30, hosted the Maryland Ornithological Society.

D. Hunting and Fishing. No hunting or fishing is allowed on the refuge.

E. Violations. Twenty-two deer violations occurred during the regular deer season. The majority of these cases were concerned with the artificial lighting of deer in refuge fields at night (Jacklighting). Six of these cases dealt with persons having firearms in possession. Several hunters were picked up for hunting on the refuge. No violations occurred on the refuge concerning waterfowl. However, refuge personnel assisted in three waterfowl cases near the refuge.

Game law violations tended to occur at only about one half the frequency in 1968 as compared to 1967. This is a hopeful sign and we indeed hope that the trend will continue.

Only one incident of vandalism occurred and this was at the Visitor Center where someone had cut a window screen, apparently with a knife.

F. Safety. Blackwater Refuge has regularly held a safety meeting each month, or 12 meetings for the year. During 1968 no reportable accidents occurred on the refuge. The number of calendar days since the last lost time accident was 3,046. The number of employee hours since the last lost time accident was 82,880. Blackwater's last motor vehicle accident occurred almost three years ago.

Several hazardous conditions existed on the refuge and the corrective measures taken against these perils have been discussed in part under the section of Refuge development and maintenance. Some of the conditions and corrective measures are as follows:

1. A 600' section of power line put underground as a safety factor for the M & E float plane.
2. Roll bars were mounted on the three refuge tractors.
3. Extensive fencing was erected in connection with the public observation tower as a safety factor against falling.
4. Hard hats were purchased and used on construction jobs where applicable.

VII Other Items

Hubert F. Brohawn, Jr. the new refuge Clerk-Typist, reported for duty on January 15, 1968. Mr. Brohawn has assumed his responsibilities well and is doing an excellent job on the staff.

Refuge Manager Trainee Ronnie Shell helped work for the refuge during his semester break at college. Ronnie generally worked in the office from January 18 through 26 and greatly aided the staff in completing the 1967 Narrative Report.

Biological Technician Guy Willey fell ill at work during late January and shortly thereafter was operated upon for removal of a stomach ulcer. Mr. Willey spent almost three months recovering from the operation and returned to the refuge on April 22. We were most happy to have him back after his extended absence.

Assistant Manager Leon Rhodes attended the annual "Wing Bee" at Patuxant Wildlife Research Center from January 29 to February 2.

During June, two temporary laborers were hired for 700 hour appointments on Blackwater Refuge. Messrs. Joe Cornish and Edward Ward worked from Jun through August on various refuge assignments.

Mr. William H. Tate, Jr. of Texas A & M was appointed Assistant Refuge Manager and reported for duty on October 1, 1968. Mr Tate has filled a key position and is doing extremely well in his new job.

Mr. Edward C. Murczek, formerly of Loxahatchee Refuge in Florida, was appointed Public Use Specialist of Blackwater Refuge. Mr Murczek arrived at his new position on December 19 and immediately become involved in the many public use programs of this refuge.

Maintenanceman Owens P. Hughes retired from Blackwater Refuge via disability on December 27. Mr. Hughes had been suffering from a serious back condition for some time. Owens had worked at the refuge for 18 years.

A farewell retirement banquet was given Cornelius "Key" Wallace on December 19 in Cambridge, Maryland. Lawrence Givens and Walt Stieglitz were able to attend from the Regional Office and Mr. Givens acted as Master of Ceremonies. Approximately 75 of Key's friends and associates attended the banquet including several from the Central Office. Key retired after serving 27 years at Blackwater and a total of 31 years with the Bureau.

Those assisting in the preparation of this report are as follows:

Assistant Refuge Manager - Leon I. Rhodes
 Assistant Refuge Manager - William H. Tate, Jr.
 Public Use Specialist - Edward C. Murczek
 Biological Technician - Guy W. Willey
 Clerk-Typist - Hubert F. Brohawn, Jr.

Photographs. The following photographs were taken by Assistant Manager Leon Rhodes, Biological Technician Guy Willey, and Public Use Specialist Ed Murczek.

Respectfully submitted,

Leon I. Rhodes

Leon I. Rhodes

LIRhodes; hfb

Walter O. Stieglitz
 Regional Refuge Supervisor
 Assistant Regional Supervisor

FEB 4 1969
 Date

Regional Director

Date

Susquehanna National Wildlife Refuge

Harford County

Harve de Grace, Maryland

Susquehanna National Wildlife Refuge is a satellite refuge administered by Blackwater. Susquehanna is located approximately 4 miles southeast of Harve de Grace, Maryland in Harford County. Susquehanna Refuge is characterized as a resting and feeding area for waterfowl in the fall and winter months. Battery Island, consisting of two acres, is the only upland area on the refuge. The remainder of the refuge is made up of shallow tidal flats, greatly favored by waterfowl. Management of waterfowl is the only concentrated program presently being actively employed at the island refuge.

Our station was fortunate to have been able to recruit the services of Roger S. Mason during the waterfowl hunting seasons of 1968. Maintenance man Mason worked during the 1967-68 hunting season from January 1 to January 11, 1968. Mr. Mason also patrolled the refuge during the 68-69 waterfowl season from November 4 thru December 31, 1968. Roger Mason's time was generally spent on patrolling and law enforcement and thus his payroll was cost coded in that category.

During 1968 a permit was issued to the Parks and Recreation Department of Harford County. The permit was issued so that the County could develop recreational potential on the island during the times of the year when waterfowl activity was slack. The permit is in effect from May 1 to November 1 of each year until 1973. Certain limitations and conditions are placed upon the county as to administration but no serious difficulties have arisen to date.

Some maintenance of the buildings and grounds was accomplished during 1968. The patrolman's cabin was completely painted white and routine maintenance was performed on the light plant located in the lower level of the structure. The lawns and ground were routinely mowed and cleaned up.

New piling were driven at the boat landing and a new dock established for use in conjunction with the boat landing. Some dredging was done in the basin which approaches the island but this was not completed before the permit terminated in November. A new refuge sign was ordered for Battery Island but to date has not arrived.

Just prior to the waterfowl season of 1968-69, refuge personnel Blackwater aided Mr. Mason in posting the boundaries of Susquehanna flats so that hunters would know where they could and could not hunt. All posting was done from the refuge Glassmaster boat. This patrol boat received routine maintenance and repairs before being assigned to Susquehanna for the winter.

Eurosion water milfoil was once a serious problem in many areas of the Chesapeake Bay area. However, it was quite apparent this year that the milfoil had decreased in density and wild celery was slowly coming back in the Susquehanna flats area.

Attached to the back of this narrative are those NR forms applicable to Susquehanna Refuge. It should be noted that severe ice conditions existed on the refuge from January thru March and the NR forms reflect this extreme weather with a lack of waterfowl.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge **Blackwater N. W. Refuge**

Months of **January**

to **May**

19 **68**

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Great Blue Heron	55	1/1/68	65	4/1-4/30	65	4/30/68				7,200
Little Blue Heron	2	4/28/68	2	4/30/68	2	4/30/68				6
Common Egret	2	4/16/68	25	4/25-4/30	25	4/30/68				165
Snowy Egret	4	4/22/68	15	4/25-4/30	15	4/30/68				85
Cattle Egret	6	4/26/68	20	4/30/68	20	4/30/68				65
II. Shorebirds, Gulls, and Terns:										
Killdeer	75	1/1/68	325	4/1-4/30	325	4/30/68				18,000
Herring Gull	75	1/1/68	350	3/10-4/30	350	4/30/68				21,750
Laughing Gull	15	1/1/68	200	4/15-4/30	200	4/30/68				10,200
Lesser Yellowlegs	25	1/1/68	250	4/15-4/30	250	4/30/68				9,900
Greater Yellowlegs	20	1/1/68	300	4/10-4/30	300	4/30/68				12,600
Sanderling	25	3/1/68	150	4/1-4/30	150	4/30/68				9,100
Wilson Snipe	2	4/10/68	20	4/20-4/30	20	4/30/68				230
Least Tern	2	4/15/68	10	4/20-4/30	10	4/30/68				118

(over)

	(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u>							
Mourning dove	150	1/1/68	250	4/5-4/30	250	4/30/68	21,000
White-winged dove							
IV. <u>Predaceous Birds:</u>							
Golden eagle	1	1/1/68	1	1/1-2/15	1	2/15/68	45
Duck hawk							
Horned owl	2	1/1/68	2	1/1-4/30	2	4/30/68	240
Magpie							
Raven							
Crow	200	1/1/68	400	4/1-4/30	400	4/30/68	33,000
Bald Eagle	10	1/1/68	10	1/1-4/30	10	4/30/68	1,200
Red-Tailed Hawk	20	1/1/68	30	4/1-4/30	30	4/30/68	2,750
Marsh Hawk	100	1/1/68	100	1/1-2/15	25	4/30/68	7,250
Sparrow Hawk	35	1/1/68	50	2/1-2/30	30	4/30/68	4,500
Osprey	1	3/31/68	4	4/15-4/30	4	4/30/68	90
Barn Owl	10	1/1/68	10	1/1-1/30	6	4/30/68	880

Reported by **Wallace - Willey - Rhodes**

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Blackwater N. W. Refuge

Months of

May

to

September

19 68

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>										
Great Blue Heron	65	5/1/68	115	7/1-8/30	115	8/31/68				11,550
Little Blue Heron	2	5/1/68	40	7/1-7/30	25	8/31/68				3,150
Green Heron	2	5/15/68	90	8/1/68	75	8/31/68				6,450
Common Egret	25	5/1/68	390	7/20-7/30	300	8/31/68				23,850
Snowy Egret	15	5/1/68	275	8/1-8/31	275	8/31/68				18,900
Cattle Egret	20	5/1/68	65	7/15-8/15	20	8/31/68				4,350
Glossy Ibis	5	5/1/68	5	5/1-5/20	2	6/15/68				150
Blue Crane	1	5/23/68	1	5/23-8/31	1	8/31/68				102
II. <u>Shorebirds, Gulls,</u> <u>and Terns:</u>										
Killdeer	325	5/1/68	325	5/1-6/15	100	8/31/68				27,000
Herring Gull	350	5/1/68	350	5/1-5/30	150	8/31/68				30,750
Laughing Gull	200	5/1/68	600	6/15-6/30	250	8/31/68				45,000
Lesser Yellowlegs	250	5/1/68	350	7/1-8/30	350	8/31/68				37,500
Greater Yellowlegs	300	5/1/68	400	7/15-8/30	400	8/31/68				43,500
Sanderling	150	5/1/68	350	8/1-8/30	350	8/31/68				31,500
Wilson Snipe	20	5/1/68	100	7/1-7/30	75	8/31/68				7,950
Least Tern	10	5/1/68	250	7/15-8/30	250	8/31/68				20,550
Virginia Rail	20	5/25/68	100	7/1-8/30	100	8/31/68				8,400
Clapper Rail	5	6/1/68	30	7/10-8/15	20	8/31/68				1,650
King Rail	10	5/30/68	150	7/5-7/30	100	8/31/68				8,250

(over)

(1)	(2)	(3)	(4)	(5)	(6)
II. Doves and Pigeons:					
Mourning dove	250	5/1/68	750	8/10-8/31	750
White-winged dove				8/31/68	48,000
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl	2	5/1/68	2	5/1-8/31	2
Magpie				8/31/68	240
Raven					
Crow	100	5/1/68	100	5/1-6/30	250
Bald Eagle	10	5/1/68	10	5/1-5/20	8/31/68
Red-Tailed Hawk	30	5/1/68	30	5/1-8/31	8/31/68
Marsh Hawk	25	5/1/68	25	5/1-5/10	6/5/68
Sparrow Hawk	30	5/1/68	30	5/1-8/31	8/31/68
Osprey	4	5/1/68	10	5/20-7/15	8/31/68
Barn Owl	6	5/1/68	6	5/1-8/31	8/31/68
					10,500
					720
					3,600
					630
					3,600
					780
					720

Reported by Wallace Rhodes, Waller

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

3-1751
Form NR-1A
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Blackwater N. W. Refuge

Months of September

to December

19 68

(1) Species		(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name		Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>											
Great Blue Heron		115	9/1/68	115	9/1-9/30/68	40	12/31/68				8,650
Little Blue Heron		25	9/1/68	25	9/1-9/15/68	2	10/25/68				900
Green Heron		75	9/1/68	75	9/1-10-15-68	5	10/20/68				2,100
Common Egret		300	9/1/68	300	9/1-9/20/68	3	12/15/68				17,045
Snowy Egret		275	9/1/68	275	9/1-9/30/68	5	12/20/68				18,750
Cattle Egret		20	9/1/68	20	9/1-10/15/68	2	11/10/68				1,100
Blue Crane		1	9/1/68	1	9/1-12/31/68	1	12/31/68				120
II. <u>Shorebirds, Gulls, and Terns:</u>											
Killdeer		100	9/1/68	100	9/1-10/30	5	12/31/68				7,150
Herring Gull		150	9/1/68	150	9/1-10/20	100	12/31/68				15,500
Laughing Gull		250	9/1/68	250	9/1-9/30	5	11/20/68				10,630
Lesser Yellowlegs		350	9/1/68	350	9/1-9/30	20	12/31/68				21,100
Greater Yellowlegs		400	9/1/68	400	9/1-10/30	10	12/31/68				30,500
Sanderling		350	9/1/68	350	9/1-10/20	25	11/20/68				20,100
Wilson Snipe		75	9/1/68	75	9/1-10/15	5	12/31/68				5,400
Least Tern		250	9/1/68	250	9/1-10/30	2	11/15/68				14,030
Virginia Rail		100	9/1/68	100	9/1-10/10	20	12/31/68				6,500
Clapper Rail		20	9/1/68	20	9/1-10/15	1	12/1/68				980
King Rail		100	9/1/68	100	9/1-10/5	5	12/15/68				6,600

(over)

(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u>						
Mourning dove	750	9/1/68	750	9/1-9/30	75 12/31/68	45,750
White-winged dove						
IV. <u>Predaceous Birds:</u>						
Golden eagle	1	12/5/68	1	12/5-12/31	1 12/31/68	120
Duck hawk						
Horned owl	2	9/1/68	2	9/1-12/31	2 12/31/68	240
Magpie						
Raven						
Crow	250	9/1/68	250	9/1-10/31	100 12/31/68	22,500
Bald Eagle	4	9/1/68	11	12/5-12/31	11 12/5/68	870
Red Tailed Hawk	30	9/1/68	30	9/1-11/30	20 12/31/68	3,300
Marsh Hawk	2	10/21/68	125	12/1-12/31	125 12/31/68	5,270
Sharp Shinned Hawk	2	12/10/68	2	12/10-12/31	2 12/31/68	40
Sparrow Hawk	30	9/1/68	150	11/1-11/25	40 12/31/68	9,100
Osprey	2	9/1/68	2	9/1-10/15	2 10/15/68	90
Barn Owl	6	9/1/68	6	9/1-12/31	6 12/31/68	720

Reported by

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Blackwater N. W. Refuge For 12-month period ending August 31, 1968

Reported by G. W. Wallace Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat			(3)	(4)	(5)
	Type	Acreage		Use-days	Breeding Population	Production
	Crops	564	Ducks	11,724,460	420	990
	Upland	1,098	Geese	8,018,215	6	17
	Marsh	6,816	Swans	5,208	0	0
	Water	2,738	Coots	34,160	0	0
	Total	11,216	Total	19,782,038		1,007

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

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

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.

3-1752
(Form NR-2)
(April 1946)

UPLAND GAME BIRDS

Refuge Blackwater N. W. Refuge

Months of January to May, 19 68

(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 observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob-White Quail <u>Colinus</u> <u>virginianus</u> <u>virginianus</u>	600 acres of cropland and 250 acres of second growth and dikes.	1.13	0	0	60%	0	0	0	750	Quail have paired and started nesting at end of reporting period.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1752
(Form NR-2)
(April 1946)

UPLAND GAME BIRDS

Refuge Blackwater N. W. Refuge

Months of May to September, 19 68

(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 observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob-White Quail <u>Colinus</u> <u>virginianus</u> <u>virginianus</u>	600 acres of cropland and 250 acres of second growth and dikes.	.77	14	350	5:5	0	0	0	1,100	Ideal nesting conditions were experienced during late spring and the summer months.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1752
(Form NR-2)
(April 1946)

UPLAND GAME BIRDS

Refuge Blackwater N. W. Refuge

Months of September to December, 1968

(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 observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob White Quail <u>Colinus</u> <u>virginianus</u> <u>virginianus</u>	600 acres of cropland and 250 acres of second growth & dikes	.85	-	-	50:50	0	0	0	1,000	Populations down slightly since the last reporting period. Quail seen frequently along road and dike edges.

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 Blackman N. W. Refuge Cal. ar Year 1968

(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	Mixed hardwood-coniferous swamps and woodlots comprise approximately 800 acres habitat. The remainder is 600 acres cropland and several hundred acres edge marsh habitat.	150	0	0	0	0	0	0	3	0	-	January, February, December	250	50:50
<u>Odocoileus</u> <u>virginianus</u>														

Remarks: Deer populations of 1968 were very comparable to those of 1967. The deer herd became very evident during the winter months because of a shortage of food in the local area and the protection provided by the refuge. Twins fawns were much in evidence during late Spring.

Reported by Rhodes, Willey & Tate

INSTRUCTIONS

Form NR-3 - BIG GAME

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Blackwater N. W. Refuge

Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Popula- tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
								Permit Number	Trappers Share	Refuge share				
Muskrat	9,692 Acres of Marsh and Water	1		1453				F-11377	726	727	727	0	0	7,250
Delmarva Peninsula Fox Squirrel	818 Acres mixed Pines and Hardwood Forest	4												225
Grey Squirrel	"	5												150
Raccoon	8,628 Acres Marsh, Forest, and Cropland	21							1					400
Red Fox	"	344												25
Otter	9,692 Acres of Marsh and Water.	320												30
Nutria	"	39		323									323	250
Opossum	1418 Acres Mixed Pine, Hardwood Forest	14												100
Cotton-Tail Rabbit	"	4												375
* List removals by Predator Animal Hunter														

* List removals by Predator Animal Hunter

REMARKS:

Reported by Wallace - Willey - Rhodes

INSTRUCTIONS

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

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

DISEASE

Refuge Blackwater N. W. Refuge

Year 19⁶⁸

Botulism

Lead Poisoning or other Disease

Period of outbreak None to report this period.

Kind of disease None to report this period.

Period of heaviest losses _____

Species affected _____

Losses:

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

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

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

Number Recovered _____

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

Number lost _____

Source of infection _____

Areas affected (location and approximate acreage) _____

Water conditions _____

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

Food conditions _____

Condition of vegetation and invertebrate life _____

Remarks _____

Remarks _____

PUBLIC RELATIONS
(See Instructions on Reverse Side)

 Refuge Blackwater N. W. Refuge

 Calendar Year 1968

1. Visits

a. Hunting Noneb. Fishing Nonec. Miscellaneous 75,753d. TOTAL VISITS 75,753

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game			
Other			

 Number of permanent blinds None

 Man-days of bow hunting included above None

 Estimated man-days of hunting on lands adjacent to
refuge 27,500

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

None

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

1c. Miscellaneous Visits

 Recreation 75,600 Official 33

 Economic Use 120 Industrial _____

2. Refuge Participation (groups)

On Refuge

Off Refuge

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs	5	40		
Bird and Garden Clubs	2	58		
Schools	12	410	2	42
Service Clubs	1	35	1	30
Youth Groups	9	342	1	125
Professional-Scientific	4	101		
Religious Groups	5	225		
State or Federal Govt.	3	280	1	60
Private Industry				
Other Groups	6	1450	1	20

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	20	Radio Presentations	
Newspapers (P.R.'s sent to)	10	Exhibits	1
TV Presentations	1	Est. Exhibit Viewers	6,000

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

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

NONAGRICULTURAL COLLECTIONS, RECEIPTS, and PLANTINGS⁽¹⁾

Refuge Blackwater N. W.

Year 1968

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
<u>None to report this period.</u>													

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

Total acreage planted:

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

Remarks: _____

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

Fish and Wildlife Service Division of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Blackwater

County Dorchester

State Maryland

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			
Buckwheat					44	1320	44	Ladino Clover	134
Corn			27	1100	48	2400	75	Ryegrass	207
Millet					189	3780	189	Wheat	67
Sorghum					87	6960	87	Soybeans	67
								Fallow Ag. Land	0

No. of Permittees: Agricultural Operations None Haying operations None Grazing Operations None

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
None	None	None	None	1. Cattle	None	None	None	None
				2. Other	None	None	None	None
				1. Total Refuge Acreage Under Cultivation				870
Hay - Wild	None	None	None	2. Acreage Cultivated as Service Operation				870

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 Blackwater

Months of January through December **1968**

(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
uckwheat	0	60	60	0	60	0	60	0	0	0	0
corn	1668	1120	2788	300	20	2000	2320	468	0	468	0
adino Clover	0	8	8	0	8	0	8	0	0	0	0
ixed Grain	0	85	85	0	0	85	85	0	0	0	0
oybeans	0	150	150	0	150	0	150	0	0	0	0
illet	0	165	165	0	165	0	165	0	0	0	0
orghum	0	16	16	0	16	0	16	0	0	0	0
yegrass	0	142	142	0	142	0	142	0	0	0	0
heat	0	150	150	0	150	0	150	0	0	0	0

(8) Indicate shipping or collection points Cambridge, Maryland

(9) Grain is stored at Blackwater N.W. Refuge, R.F.D. #1, Cambridge, Maryland. The 468 bushels of corn will used in post-season banding.

(10) Remarks 300 bushels of cron was transferred to Chincoteague N.W. Refuge, Va. Approximately 2,000 bushels of corn was fed during the banding program of 1968.

*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.

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

Bureau of Sport Fisheries and Wildlife

Refuge

Blackwater

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

2

1968

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 20 July 18*	Pig Weed Ragweed Morning Glory Dock	Refuge corn and sorghum fields Nos. 10,19,23,26,28,11, 20,24 and 27	163	2,4 Dichlorop-henoxyacetic acid	10 gallons	$\frac{1}{2}$ pint or 8 oz. per acre	Water 8 gals per acre	Tractor Mounted Sprayer

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

Spraying increased corn and milo yields and eliminated an estimated 90% of the pest weeds listed under Item (2). Although corn yield was down due to damaging rainfall causing flooding conditions we were able to gain a better yield since we eliminated pest weeds which could have caused even lower yields. Milo crop was the best on record for the refuge and weed control was a big factor. Corn yield was estimated on an averaged of only 50 - 60 bushel whereas milo was better than 80 bushels per acre.

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

Bureau of Sport Fisheries and Wildlife

Refuge

Blackwater N. W. Refuge

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1

1968

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(Weekly) June 1 - Sept. 15	Mosquitoes (all types)	Headquarters area (grounds around office, Equipment buildings, Qtrs. #1,2, and 3 and Recreation Area.) Dieffenbach Pool (Visitor Center) treatment of grounds and parking areas.	10	Malathion Dibrom	16 gallons Malathion 16 gallons Dibrom	1 gallon Malathion 1 gallon Dibrom	Water 98 gals. per 100 gallon tank	Mist Type Sprayer

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

Spraying performed by the County approved by the Maryland Mosquito Control Division. A total of 16 sprayings was carried out during the period June 1 thru September 15, 1968. Control of the mosquitoes resulted in more use of the recreational facilities, and also benefitted the personnel and their families. No adverse effects were noted.

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

WATERFOWL

REFUGE Susquehanna N. W. Refuge

MONTHS OF January TO May, 1968

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	500									
Trumpeter										
Geese:										
Canada	1,000									
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	300									
Black	500									
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback	500									
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot	1,000									

Severe ice conditions - No report this period.

3-1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Susquehanna N. W. Refuge

MONTHS OF January TO May, 19 68

(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:									3,500		
Whistling											
Trumpeter											
Geese:									7,000		
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard									2,100		
Black									3,500		
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback									3,500		
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											
									7,000		

(Over)

	(5) Total Days Use :	(6) Peak Number :	(7) Total Production :	SUMMARY
Swans	_____	_____	_____	Principal feeding areas _____
Geese	_____	_____	_____	_____
Ducks	_____	_____	_____	Principal nesting areas _____
Coots	_____	_____	_____	_____
				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).

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

W A T E R F O W L

REFUGE Susquehanna N. W. Refuge

MONTHS OF May TO September, 1968

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
<u>Ducks:</u>										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>										

3-1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Susquehanna N. W. Refuge

MONTHS OF May TO September, 1968

(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											
Trumpeter											
Geese:											
Canada				No report this period.							
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard											
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											

(Over)

	(5) Total Days Use	:	(6) Peak Number	:	(7) Total Production	SUMMARY
Swans	_____	:	_____	:	_____	Principal feeding areas _____
Geese	_____	:	_____	:	_____	_____
Ducks	_____	:	_____	:	_____	Principal nesting areas _____
Coots	_____	:	_____	:	_____	_____
						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).

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

W A T E R F O W L

REFUGE Susquehanna N. W. Refuge

MONTHS OF September TO December, 19 68

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										100
Trumpeter										
Geese:										
Canada						1,500		300		400
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard					500	100				
Black			500	2,000	3,000	500	4,000	3,500	3,500	4,000
Gadwall										
Baldpate		500	1,000	1,500	3,000	20,000	3,500	3,000	3,000	3,000
Pintail						8,000				
Green-winged teal						500				
Blue-winged teal						500				
Cinnamon teal										
Shoveler										
Wood										
Redhead						50				100
Ring-necked										
Canvasback			300	1,000	2,000	2,000	1,500	2,000	2,000	2,500
Scaup						100				100
Goldeneye										
Bufflehead										
Ruddy										
Other										
Mergansers						100				
Coot:					4,000	500	3,500	4,000	4,000	5,000

3-1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Susquehanna N. W. Refuge

MONTHS OF September TO December, 19 68

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods : Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling	100	200	1,200	2,000	1,500	1,000	1,000		49,700		
Trumpeter											
Geese:											
Canada	2,000	3,500	5,000	4,000	3,000	2,500	2,500		172,900		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	50	400	500	300	500				16,450		
Black	4,000	2,500	2,000	2,500	1,000	300	300		235,200		
Gadwall											
Baldpate	13,000	3,500	2,000	1,500	1,200	500	500		424,900		
Pintail	5,000								91,000		
Green-winged teal									3,500		
Blue-winged teal									3,500		
Cinnamon teal											
Shoveler											
Wood											
Redhead	100	200	400	100	100		100		8,050		
Ring-necked											
Canvasback	5,000	3,000	1,000	500	400		200		163,800		
Scaup	100		50						2,450		
Goldeneye											
Bufflehead											
Ruddy											
Other Mergansers									700		
Coot:	5,000	3,500	3,000	3,500	2,500				259,500		

(Over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	_____	_____	_____	Principal feeding areas _____
Geese	_____	_____	_____	_____
Ducks	_____	_____	_____	Principal nesting areas _____
Coots	_____	_____	_____	_____
				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).

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Susquehanna Refuge

For 12-month period ending August 31, 1968

Reported by Roger Mason

Title Maintenanceman

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage			
	Crops		Ducks	517,580	
	Upland	2	Geese	257,950	
	Marsh		Swans	58,772	
	Water	16,000	Coots	277,200	
	Total		Total	1,111,502	
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

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

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.



• JAN • 69

Photo #1. Canada geese frequently browse on the Visitor Center lawn, a real treat for out of town visitors.



• JAN • 69

Photo #2. The Visitor Center parking lot was filled to capacity on several occasions during the fall months.



• JAN • 69

Photo #3. Dike tours were given frequently throughout the year to organized groups interested in wildlife observation.



• JAN • 69

Photo #4. The observation tower is a favorite with youngsters. This Boy Scout Troop enjoys the view.



• JAN • 69

Photo #5. Jim Salyer of the Central Office address an Aquatic Ecology class on a field trip to Blackwater Refuge.



• JAN • 69

Photo #6. College students examine the aquatic life in a brackish water community.



JAN • 69

Photo #7. Mr. Eastman of the British Broadcasting Company films waterfowl from the rear of his vehicle. Shortly thereafter he was nicknamed "Tail Gunner".



JAN • 69

Photo #8. The field camera crew for NBC shoots pictures of waterfowl over headquarters pool. A three minute documentary on the Huntley-Brinkley Report followed shortly after this filming.



• JAN • 69

Photo #9. Liming of refuge fields was undertaken wherever there was a need for increasing pH.



• JAN • 69

Photo #10. Commercial application of fertilizer proved to be the most economical method of applying soil nutrients.



• JAN • 69

Photo #11. Maintenanceman Franklin Hughes plows ground in preparation for corn planting.



• JAN • 69

Photo #12. Maintenance-Foreman William Richardson disks ground which was later planted in Japanese millet.



• JAN • 69

Photo #13. Both corn and sorghum are sown by the same piece of machinery on refuge fields.



• JAN • 69

Photo #14. Franklin Hughes applies anhydrous ammonia to a corn field. Sorghum fields also received the same treatment.



• JAN • 69

Photo #15. Sorghum is planted as a row crop at Blackwater Refuge and thus requires cultivation.



• JAN • 69

Photo #16. Biological-Technician Guy Willey inspects a ripening stand of buckwheat.



• JAN • 69

Photo #17. Buckwheat matures quite rapidly and is usually not planted until mid-summer.



• JAN • 69

Photo #18. An excellent stand of soybeans was produced on soil and moisture fields.



• JAN • 69

Photo #19. Soybeans were turned under as green manure and later planted in winter wheat.



• JAN • 69

Photo #20. Biological Technician Willey and Laborer Joe Cornish load biplane with rye grass seed.



• JAN • 69

Photo #21. Joe Cornish directs additional seed being backed into position for loading.



• JAN • 69

Photo #22. Rye grass was overseeded on corn, sorghum, and buckwheat lands. Aerial application proves to be the least expensive method of seeding.

• JAN • 69



Photo #23. Various fill operations took place throughout the year. This load was destined to fill chuckholes in the dike roads.



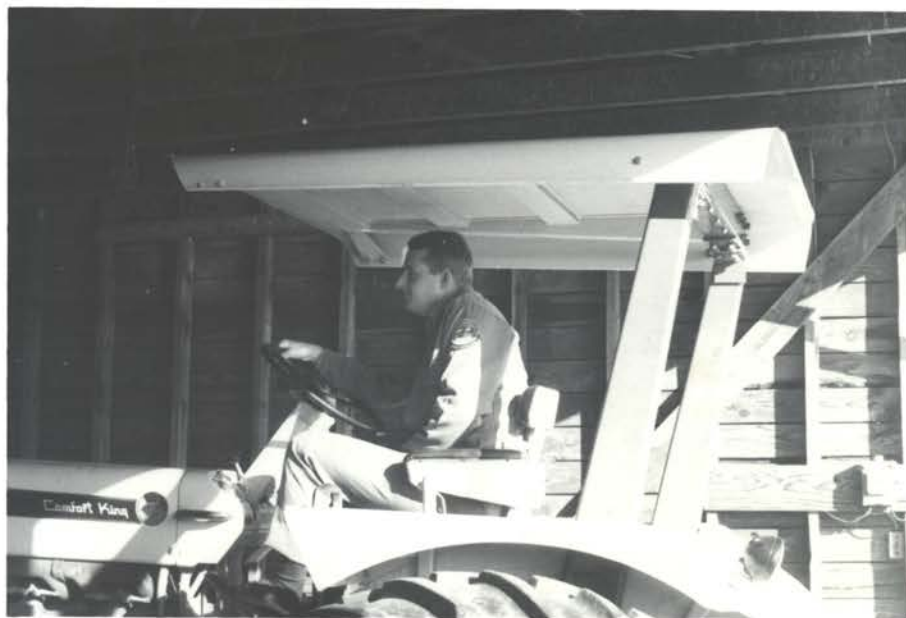
• JAN • 69

Photo #24. A new cannon net sight is being constructed at the Dieffenbach Pool area. A slightly elevated area was needed and thus fill was hauled in.



• JAN • 69

Photo #25. Modification work was accomplished to the existing fire tower during the summer months. The public now uses this structure as an observation tower.



JAN • 69

Photo #26. Commercial type roll bars were installed on all three refuge tractors. These safety items appear to be more than satisfactory.



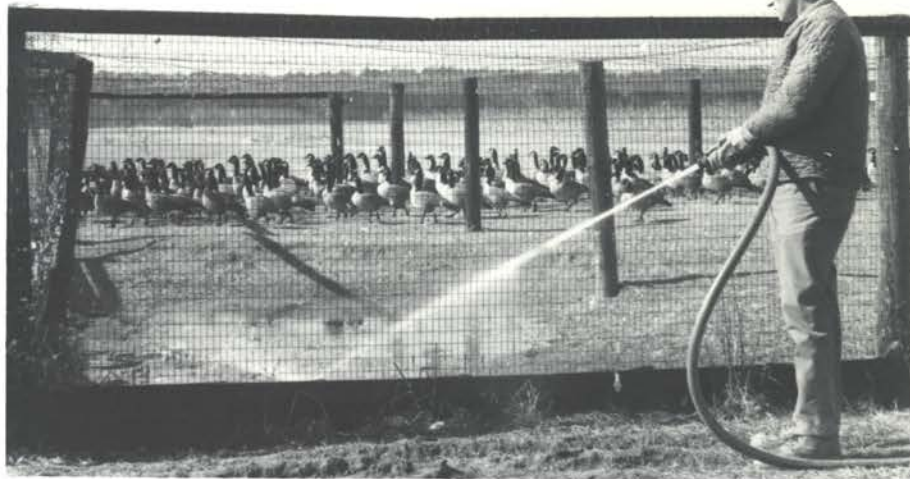
JAN • 69

Photo #27. Three refuge buildings were declared excess and removed by local bidders. This building had to be cut in two before removal.



• JAN • 69

Photo #28. The power line leading across the Headquarters Pool dike was installed underground. This was done as a safety factor for the Management & Enforcement float plane.



• JAN • 69

Photo #29. William Richardson provides water to 184 Canada geese awaiting shipment to Florida.



• JAN • 69

Photo #30. Blackwater donated 184 of the 600 Canada geese which were shipped to Florida via truck. The State of Florida will attempt to establish a resident goose flock.



• JAN • 69

Photo #31. The blue crane seemed to be a very compatable creature and was often seen browsing with geese or deer.



• JAN • 69

Photo #32. George Wiseman and Walt Stieglitz of the Regional Office inspect browse at Kuehnle Tract with Guy Willey.

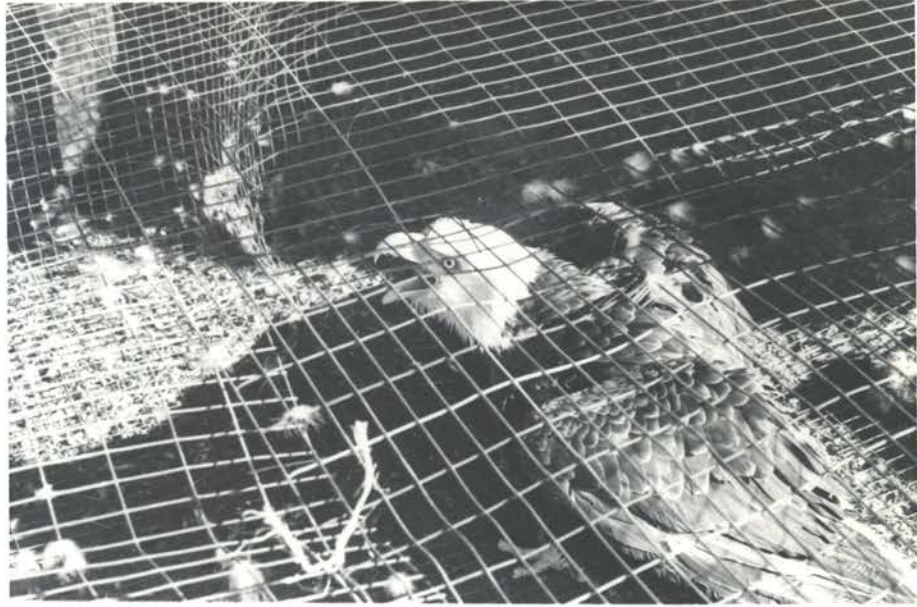


Photo #33. An injured bald eagle was brought to the refuge after being found in a helpless condition. The eagle was taken to Patuxent Wildlife Research Center by refuge personnel.

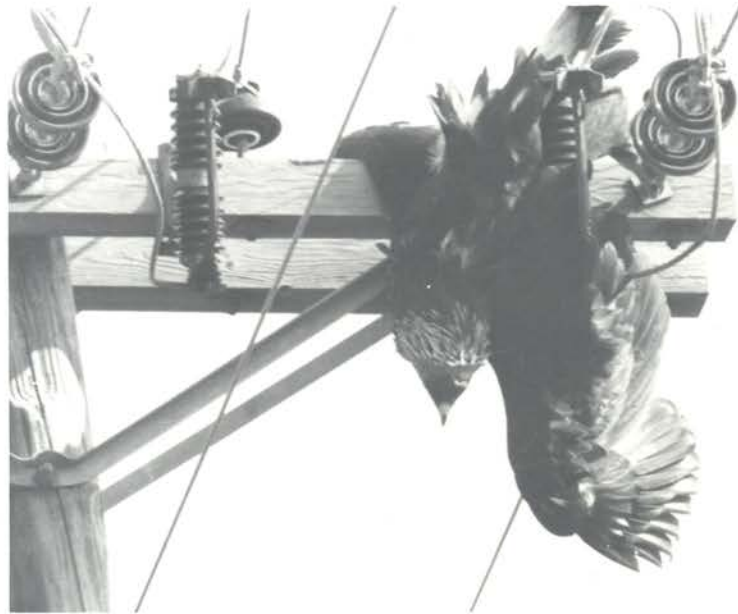


Photo #34. Probably the most unusual fatality of the year was this golden eagle which accidentally electrocuted itself on a power line which runs through the refuge.



• JAN • 69

Photo #35. Maintenanceman Wallace Stewart shows three deer which were killed by a poacher on the refuge. All were field dressed where they fell. The violator was apprehended.



JAN • 69

Photo #36. These are the remains of one field dressed deer. Note the unborn twin fawns in the foreground.



JAN • 69

Photo #37. Assistant Manager Leon Rhodes sets a squirrel trap. The staff was able to catch twenty squirrels in a short period of time.



• JAN • 69

Photo #38. Blackwater personnel sack shelled corn for Chincoteague Refuge. A total of 300 bushels were transferred.



• JAN • 69

Photo #39. Headquarters Pool was a favorite area for the common and snowy egrets to congregate in.



• JAN • 69

Photo #40. Laughing gulls tended to feed behind the cultivator in the fields.



• JAN • 69

Photo #41. Fur trapper permittee Ray Willey examines muskrat hides before storing in the fur house.



• JAN • 69

Photo #42. Marsh burning has proven itself to be a very successful waterfowl management tool on Blackwater Refuge.



• JAN • 69

Photo #43. Wood duck boxes are erected and set in place within a fresh water impoundment at Huehnle Tract.



• JAN • 69

Photo #44. All boxes were numbered and provided with predator guards.



• JAN • 69

Photo #45. Manager Key Wallace watches thousands of geese which have flocked together behind Quarters #1.



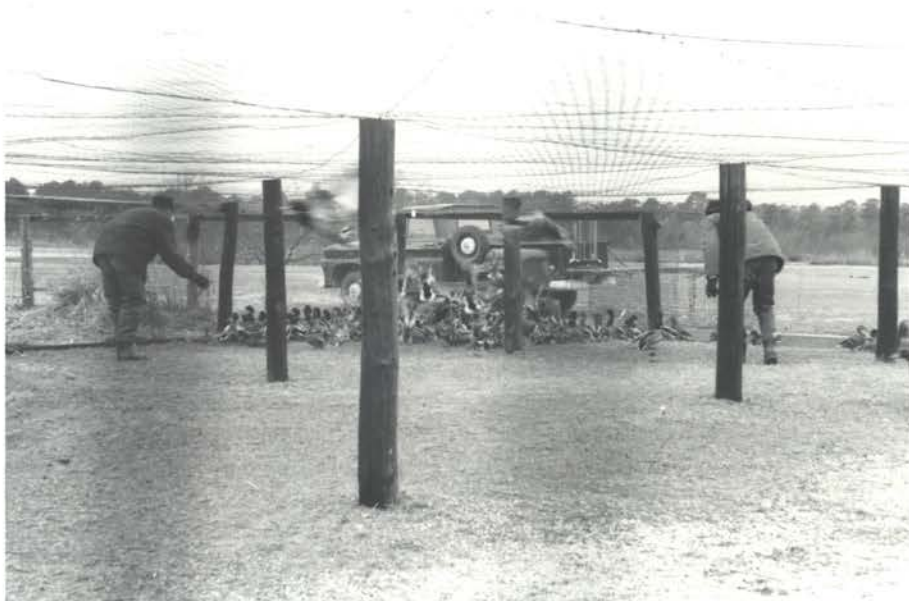
• JAN • 69

Photo #46. Assistant Manager Rhodes removes geese captured by a cannon net.



* JAN * 69

Photo #47. Maintenanceman Stewart untangles geese captured in the net. Blackwater's quota of 1,000 Canada geese was nearly met.



* JAN * 69

Photo #48. Ducks are driven from this holding pen into a cage where they will be banded and released.



• JAN • 69

Photo #49. Waterfowl banding is a cooperative affair. A number of waterfowl can be banded quickly and accurately in this manner.



• JAN • 69

Photo #50. Clerk-Typist Hubert F. Brohawn helps William Richardson in completing the banding of 1200 mallards, Blackwater's quota for 1968.



• JAN • 69

Photo #51. Both goose and gander are wary of intruders and watch their brood carefully.



• JAN • 69

Photo #52. This brood of five goslings was reared successfully near Headquarters Pool. In all, seventeen goslings were reared at Blackwater this year.