

NARRATIVE REPORT
PRIME HOOK NATIONAL WILDLIFE REFUGE
JANUARY - DECEMBER 1972

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The Prime Hook National Wildlife Refuge is administered through the
Bombay Hook National Wildlife Refuge, Smyrna, Delaware.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES & WILDLIFE
SUSSEX COUNTY, MILTON, DELAWARE

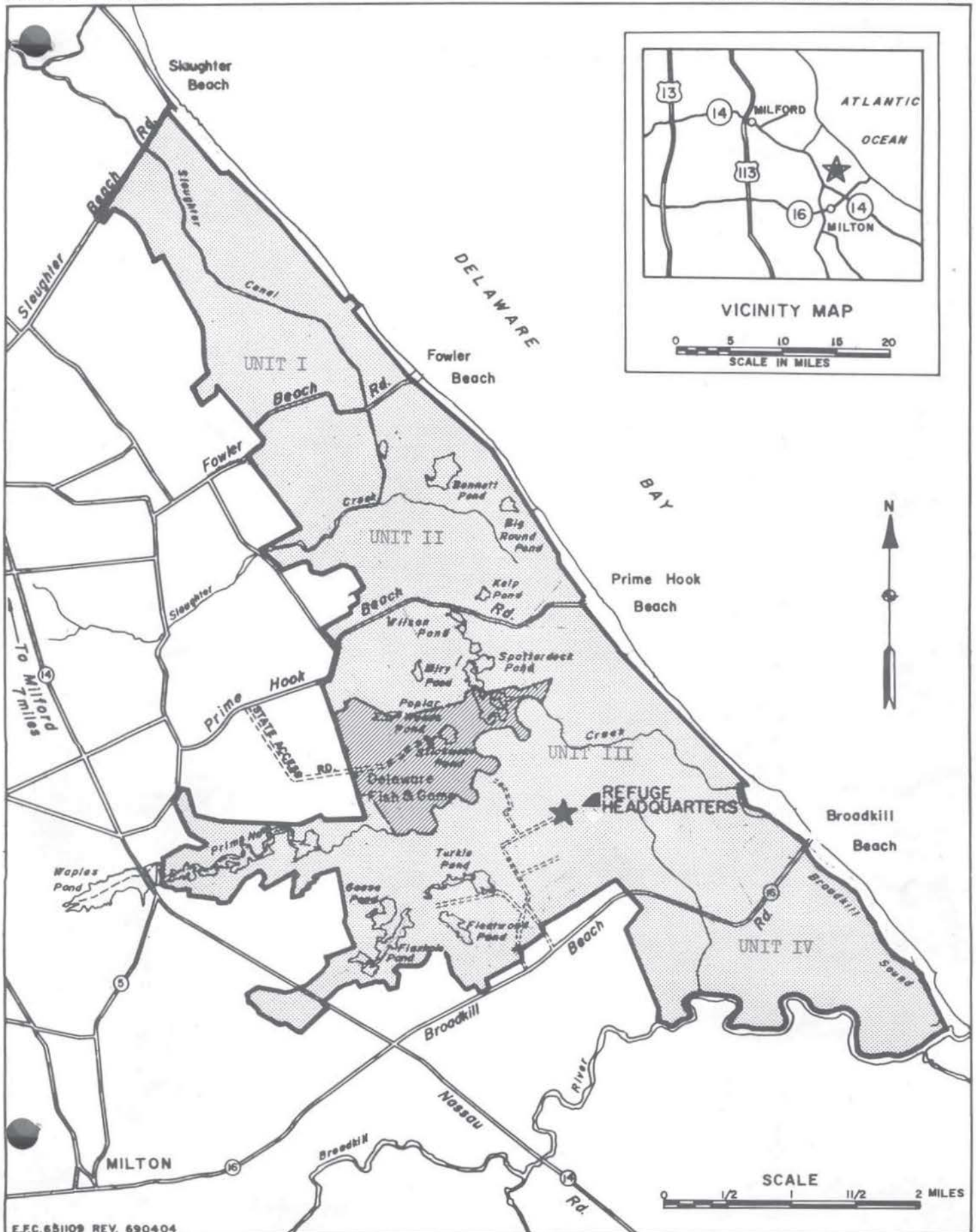
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I. GENERAL

A. Weather Conditions.

<u>Month</u>	<u>Precipitation</u> <u>Inches</u>		<u>Snowfall</u> <u>Inches</u>	<u>Temperatures</u>	
	<u>1972</u>	<u>Normal</u>		<u>Max.</u>	<u>Min.</u>
January	3.35	2.88		63	8
February	5.88	3.52	4	61	11
March	2.98	3.57		77	20
April	4.77	2.70		81	27
May	7.47	2.91		80	36
June	6.28	2.90		87	44
July	2.67	4.40		92	53
August	5.71	6.91		90	50
September	4.12	1.97		87	45
October	4.37	3.09		73	26
November	7.55	2.62		71	22
December	<u>5.58</u>	<u>4.51</u>		<u>65</u>	<u>16</u>
Totals	60.73	41.98	4	Extremes 92	8

The above statistics were collected from the Refuge's weather station. The "normal" precipitation column represents a five-year average (1967-71).

January was devoid of snow; the last snowless January was in 1968. Some climatologists attribute the exceptionally mild winter to stationary position of the jet stream: a river of air that flows from the west to the east, reaching velocities of 150 mph. It can act as a barrier between the wintry blasts from the north and warm flow of air from the south. The stream normally goes south for the winter. Occasionally the stream remains at its northern habitat in the winter, blocking the cold fronts from heading south.

The year's first trace of snow was recorded on Ground Hog Day (February 2). Approximately 4" of snow fell, in three separate squalls, between February 17 and 24. Rain was plentiful throughout the month.

A snow flurry was recorded on March 10. Even though March's rain precipitation was less than normal the deficit was hardly noticeable due to February's extreme wetness and the near predictable pattern

of rain occurring on the average of every four days during March.

A number of April showers produced 4.77" of rain (2" above normal). Farmers experienced a 2-3 week time lag in their tilling and planting operations due to the extreme wetness. A post-winter snow flurry occurred on April 8 when temperatures dropped to 27 degrees (last frost).

May's rainfall totalled 7.47" -- the most precipitation recorded for that month since Refuge records were initiated in 1967. The watertable was extremely high, further hampering the farmers' planting schedule. At month's end, many agricultural fields still remained to be planted.

Another record-breaking amount of rain fell during June (6.28"). Between June 21 and 23 Hurricane Agnes passed through the area; the Refuge was spared the brunt of the storm, receiving a mere 2" of rain accompanied by 40-50 mph. winds.

July had the distinction of being the driest month of the year with precipitation falling 40% short of the average. Extreme humidity persisted between July 19 and 25 when daily temperatures peaked in the low 90's with relative-humidity reading in the 80's and 90's.

In August, the Refuge (located in southern Sussex County) experienced an inordinate amount of rain when compared with the two northern counties of Kent and New Castle. The latter county recorded the month to be the driest ever, with a rainfall of .25". Upstate corn and soybean farmers were seriously affected.

Climatically speaking, the remainder of 1972 was uneventful. Precipitation was above normal, hindering the farmers' harvest. First frost came October 24, when the mercury dipped to 26 degrees. No snow fell during the winter months of 1972.

B. Habitat Conditions.

1. Water.

Total rainfall (60.72") was 45% above normal; correspondingly inland water levels were high -- highest in May and lowest in August. The non-tidal Prime Hook Creek displayed a relatively consistent depth, fluctuating less than a foot during the May to August period. Waterfowl and shorebird nesting sites were limited by the high spring water table, but more surface acres were available for foraging.

Accessibility, by airboat, to all semi-marsh areas within Unit III was possible during most of the year. The marshlands of the other Units were much less contiguous.

2. Food and Cover.

In 1972, the Refuge was replete with natural and cultivated forage. The above normal precipitation caused a marsh acreage increase, allowing the semi-aquatics to extend their holdings e.g., the wild millet and common threesquare in Unit IV.

The spring migrant dabblers were better able to utilize the sorghum and buckwheat in Fields 315 and 317 due to their partial flooding; whereas, the fall migrants of 1971 passed by both dry fields opting for wetter sites elsewhere.

This spring Unit II (Fields 201 and 202) contained approximately 60 acres of standing corn -- a carryover from last year. Both low-lying fields were flooded and unharvested. Estimated loss to the farmer was 1,200 bushels and a similar gain for the waterfowl.

Vegetative cover appeared luxuriant; phragmites continued to spread and thicken within Units II and III; cattail is regaining its threshold in Unit III; rose mallow is plentiful in Unit III; upland game benefited from sections of Unit III laden with multi-flora rose and set aside croplands (as necessitated by land condemnation proceedings) now reverting to weeds and successional brush.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl.

Canada Goose. Canada goose use was .5 million use days, 70,000 less than in 1971. The two-thirds increase in winter use did not compensate for the 75% decrease in spring use.

The expected high fall peak based on the alternating high-low cycle of the past seven years did not occur, and the maximum population, as in 1971, was 5,000 geese.

The Unit 4 grass pastures were the major on-Refuge feeding and resting areas. The marsh west of Slaughter Canal in Unit 2 was an important fall resting area. There was no fall goose grazing on Unit 2 pastures because of the tall

unmowed growth of seaside goldenrod and there was little autumn use in Unit 3 corn stubble and clover fields.

Snow Goose. The 250 snow geese that fed in Unit 4 in early February was the highest spring population in the history of the Refuge. Conversely, the fall population was the lowest ever with only a few birds observed.

Blue Goose. No blue geese were seen in the autumn for the first time in six years and only two were observed in the spring.

Whistling Swan. The usual small number of migrating whistling swans were observed during November. An immature summered on Unit IV, molting from a grey to a white plumage and attaining a yellow bill spot.

Ducks. Total duck use increased approximately fifteen percent compared with 1971, from 322 thousand to 372 thousand use days, with gains in all seasons. Fall use almost doubled because of higher numbers of mallards and blacks and a larger December population of green-winged teal. Greater use by mallards and blacks in January and by green-winged teal in late February caused the winter increase despite a low pintail population in February. The increased spring use was attributable mainly to the larger green-winged teal population. Both the spring peak of 3,445 ducks and the fall peak of 1,995 were close to the average peaks of the preceding five years.

It was a good nesting season with excellent water and brood cover conditions on the marshes throughout the summer. The estimated production, based on limited brood surveys, was 700 ducks, mainly blacks and blue-winged teal. Fewer gadwall broods were noted this year. Most of those observed were in Virge's Pond in Unit IV and none were seen in Bennett Pond in Unit II which was a concentration area last year.

Late May nest searches in sample habitats revealed four blue-winged teal nests in 14 acres of upland pasture and five blue-winged teal nests in 29 acres of sedge-meadow.

Four fulvous tree ducks were observed in a stock pond on Unit II on November 16 and three were still present there on November 20.

2. Shorebirds and Other Waterbirds.

Because of the abundant, well distributed rainfall, water levels in ponds and marshes remained high and there was limited feeding habitat for shorebirds and long-legged wading birds. Shorebird variety was fair but numbers were poor

especially during the late summer and autumn. Wading bird populations were generally low with below average numbers of the glossy ibis, common egret and snowy egret. The only large concentrations were the flock of 225 cattle egrets in Unit IV pastures in August and the 100 black-crowned night herons in Unit III in mid-October.

Two shorebird species were observed for the first time. An oystercatcher was on the sands at Prime Hook Beach on March 8 and an adult ruff, a European shorebird, was flushed from a rainwater pool in a Unit II pasture on May 24. A Baird's sandpiper observed at a Unit IV pond on September 14 was the second Refuge record.

3. Other Migratory Birds.

Mourning doves frequented the hedgerows and red cedar groves and fed in the many agricultural fields.

Clapper and black rails inhabited the salt marshes and the King, Virginia and sora rails were found in the fresh marshes.

B. Upland Game Birds.

Ring-necked Pheasants. Natural production of pheasants is limited in Sussex County. The State's Division of Fish and Wildlife released approximately seventy-five cockbirds for October's special pheasant hunt on the Refuge. Few birds survived the hunt. No self-sustaining population will exist until the bird is given some protection and until hens comprise a portion of the release.

Bobwhite Quail. Quail were observed within all management units. Production appeared good. Many coveys seemed to favor the edge-habitat of the woods and marshland.

C. Big Game Animals.

White-tailed Deer. The Refuge maintains a viable deer population. Statewide, their numbers are at an all time high. Liberalization of State hunting regulations, on a statewide basis, is being considered in order to keep them in check.

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

Musk rats. An aerial muskrat house count, taken on January 10, 1973, showed that the Refuge contained 810 houses within Units II, III, and IV; Unit III contained 625. It appears that the muskrat has made a strong comeback subsequent to the devastating storm of March 1962. A muskrat trapping program within Unit III is imminent.

Conservative harvest quotas will be issued to insure an adequate population for maintenance and enlargement of openings within the dense stands of phragmites.

Otter and Weasel. Both species were infrequently observed. An otter was seen within Tract 54 during the spring. A sighting of the longtail weasel was made on Tract 89; and two roadkills were also seen.

Fox, Raccoon, Opossum and Striped Skunk. Denning activities of the red fox were seen on the elevated portions of Unit IV's grasslands. Their forage forays were periodically observed in Unit III. A roadkill gray fox was found on the Prime Hook Beach Road -- the single sighting for the year.

Raccoon numbers are moderate. In early May, a litter of five was removed from the chimney of the vacant Reed Farm (Unit IV); according to Mrs. Virgie Reed, approximately two dozen young raccoons have been taken from the same flue over the years. The extent of nesting predation by raccoons is not known; several blue-winged teal clutches were known to have been destroyed within Unit III. The responsible culprit(s) was not ascertained; crows are suspect as based on the egg-breakage pattern. Raccoons, however, have been pin-pointed, by a local trapper, as being responsible for the ruination of many trapped muskrat pelts.

Opossums and striped skunks are both common on the Refuge. An adult female skunk with four day-old sucklings was captured in May by this writer. These skunks were taken from the same general area (Unit IV) from which the albino male skunk was live-trapped in November of 1971. It is hoped that the albino skunk will breed with the two females of the most recent capture. Chances of having an albino offspring is slight (50:1) but the odds may be bettered if the females are related to "albi" carrying a recessive albinism gene.

E. Hawks and Owls.

The more commonly observed hawk species were the red-tailed, red-shouldered, rough-legged, sparrow and marsh hawk.

One pair of ospreys nested on the Unit IV platform and one pair was present at the Unit II nest pole but perhaps did not nest. No young were produced on the Refuge.

The owls observed were the great-horned, barred, barn, screech, and short-eared.

F. Other Birds.

The Cape Henlopen-Prime Hook Christmas Count, which includes 80% of the Refuge, tallied 133 species on December 31.

The twenty-six songbird nesting boxes provided abodes for twelve pairs of tree swallows and four families of house wrens.

- G. Fish. Tidal and non-tidal fishing is a favored sport for many Refuge visitors. Natural reproduction of largemouth bass, chain pickerel and yellow perch appears to be good -- good enough to lure many of the same vacationing fishermen back from year to year. Fresh water fishing opportunities will be greatly enhanced when Tract 73, within Unit III, is purchased ... two, thirty-odd acre ponds (Goose Pond and Flaxhole Pond) are renown by certain piscatorians to be excellent fishing ponds.

The blue crab was again sought after by many people (usually in family groupings). Most major tidal ditches were heavily crabbed during the summer months.

Late-spring, early-summer offshore bay fishing was excellent. Party boats, numbering over 100, were often congregated at the "coral beds" off Fowlers Beach, a good weakfish and kingfish area.

H. Reptiles and Amphibians.

Mr. Willard Wyatt of Milton was issued a Special Use Permit for the trapping of snapping turtles with fyke nets. Seventy-seven turtles, weighing a total of 1,280 lbs. were fyked. The average weighed was 16 lbs.; a whopping 47-pounder was netted near Foord's Landing. All trapping was on the western half of the Prime Hook Creek.

No new species were recorded this year.

I. Disease.

The fall/winter migratory goose populations displayed no symptoms of lead poisoning..... a first, since 1965; the unseasonably mild winter, with no periods of physical stress, is partially accountable for its absence.

Although not directly Refuge-related, the following disease had many Delawareans on edge during the fall months: Southern Delaware experienced an unprecedented number of bat sightings and five incidents of bats attacking and biting people. Only one of the attacking bats was captured and proved rabid by laboratory tests; all of the bitten persons were subjected to the series of 14-21 injections of duck-embryo vaccine.

Scores of reports of bat roosts were investigated including one from a Refuge neighbor living in a house recently moved off the Refuge. More than a dozen colonies were located in Sussex County. The only accessible group, 23 big brown bats, occupied a temporary roost on the outside of an attic window screen in Elades, Delaware. Seventeen bats were captured on October 27, and tested in the laboratory of the Bureau of Disease Control. Three showed an advanced stage of rabies, and another three were suspect. This high rate of rabies infection prompted a State bat alert.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. Real Property.

A single, wood-framed house (R.P. #20) was removed from the Shop area on February 4. The off-site sale was conducted last year. Resident managers formerly occupied the house.

2. Buildings.

a. Headquarters Area.

The gray-shingled roofs of the pump house (R.P. #177) and office (R.P. #191) were painted brick-red, to conform with Bureau tradition. Other painting projects included the flagpole.

A two-tiered, sixteen compartment martin house was constructed and erected on a 20' post at headquarters, replacing an older house which was relocated in the Shop area.

b. Shop Area.

Shop: Improvements and additions included: (1) reshingling of roof; (2) topping the planked work bench with 3/8" plywood; (3) construction of two wooden trussel benches; (4) procurement of: (a) a 3/4 h.p. air compressor; (b) a 7"9" sander-polisher and (3) a 1½ ton portable one-end lift jack.

Boat Landing: Two boat racks were erected adjacent to the dock. A new 15' Smoker-Craft canoe occupies one of the berths.

3. Fencing and Posting.

The grazing permittee of Units I and II, J. Howard Isaacs, supplied the manpower to refence approximately 1.6 miles of four-strand barbed wire on grazing areas Nos. 3 and 7 within Unit II. The government supplied the materials.

Grazing area No. 3 was transected by a 500-foot straight-line fence; forming a fourteen-acre sub-area within its north end.

A two-tiered, 30' x 40', split rail fence was erected around the Cronwell Cemetery, located on Tract 80 of Unit III.

The dilapidated 100' x 100' corral loading chute on Unit II was dismantled and replaced with a 80' x 100' like improvement.

Old barbed wire fencing was removed from the northwest end of Tract 34 (Unit III) as was one-half mile of fencing and cedar posts from Tract 12a (Unit I).

All redwood signs and their frames were refinished, painted and lacquered. All directional and blind-number signs, for the waterfowl hunting program, were repainted and stenciled.

Two new signs were posted at the Fowlers Beach parking lot -- a routed "Parking Area" redwood sign and a stenciled "No Overnight Camping" plywood sign.

Routine replacement of defaced and stolen signs occurred as required.

4. Roads and Trails.

Four-hundred cu. yds. of "select-bar" material were hauled, spread and graded on the former one-quarter mile cart path leading into Tract 34 (Unit II). Wooden bulkheads were placed on each end of a 12" CMP, underlying the roadway. A pole-gate was placed at the road's entrance.

The unpaved interior roadways of Unit III were graded as required. A tractor-mounted stone rake gave excellent results on weed removal and general upkeep of parking areas.

5. Waterways and Drainage Facilities.

Waterway maintenance consisted in the removal of snags from the Prime Hook Creek and the unclogging of ditches leading to the waterfowl hunting blinds within Unit III.

6. Maintenance and Equipment.

Routine 3,000 mile and 5,000 mile vehicular checks and necessary maintenance were performed on both pickup trucks throughout the year.

7. Miscellaneous Improvements.

- a. Duck trap: a 12' x 8' x 5' walk-in duck trap was made with vinyl-coated chicken wire wrapped about a 3/4" pipe frame.
- b. Boat rack: a removable cab-tailgate rack was made for the 1970 Chevrolet pickup to transport the 15' canoe.
- c. Flat-bed wagon: a former grain body wagon was converted to a 13' x 8' flat-bed wagon.
- d. Bluebird boxes: ten additional bluebird nesting boxes were constructed and erected. A total of twenty-six boxes are now in place.

B. Plantings.

1. Aquatics and Marsh Plants. None.

2. Trees and Shrubs.

Two four-foot red cedars were transplanted from Tract 85 (Unit IV) to the Fowlers Beach Road parking lot (Unit II). Both were planted adjacent to the redwood "Parking Area" sign.

3. Upland Herbaceous Plants.

The following services were performed by the Refuge's four cooperative farmers:

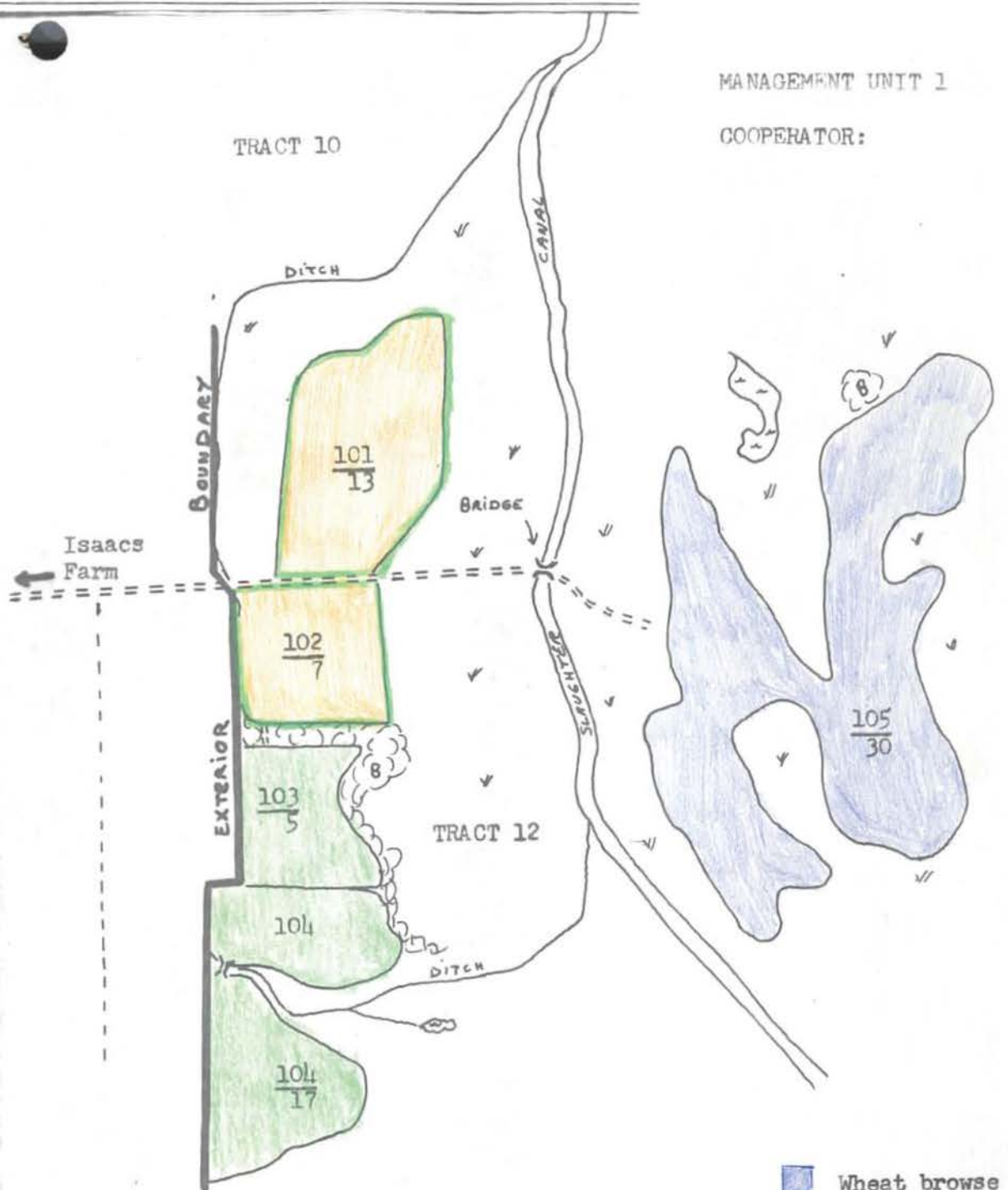
<u>Service</u>	<u>Acres</u>
Sowing browse wheat	30
Sowing browse rye (cover cropping)	213
Sowing browse rye grass (cover cropping)	42
Liming (one ton/acre)	105
Maintenance of wildlife pasture (mowing)	162
Topdressing wildlife pasture	13
Establishment of wildlife pasture	46
Reinforcement-seeding of wildlife pasture	5

Refuge personnel applied 7.5 tons of 10-10-10 fertilizer to 35 acres of wildlife pasture in Unit III.

PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

MANAGEMENT UNIT 1

COOPERATOR:



- Wheat browse
- Corn (cereal)
- Mow


LEGEND: $\frac{101}{13}$ = $\frac{\text{unit} + \text{field no.}}{\text{acres}}$

PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

MANAGEMENT UNIT 1&2

COOPERATOR:



 Corn (cereal)

 Mow

PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

MANAGEMENT UNITS 2 & 3.

COOPERATOR:

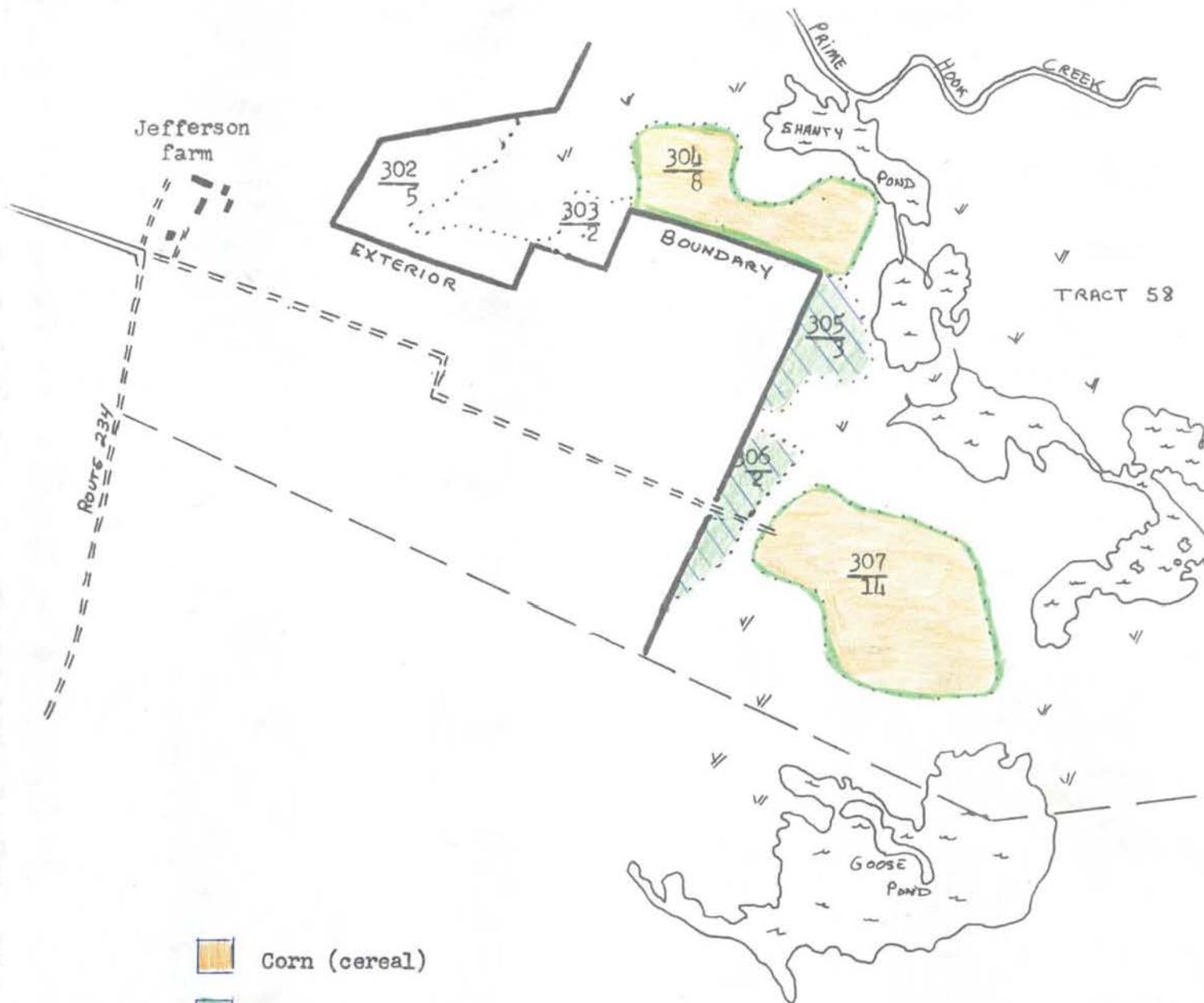



LEGEND: $\frac{204}{11}$ = $\frac{\text{unit} + \text{field no.}}{\text{acres}}$

PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

MANAGEMENT UNIT 3

COOPERATOR:



 Corn (cereal)

 Mow

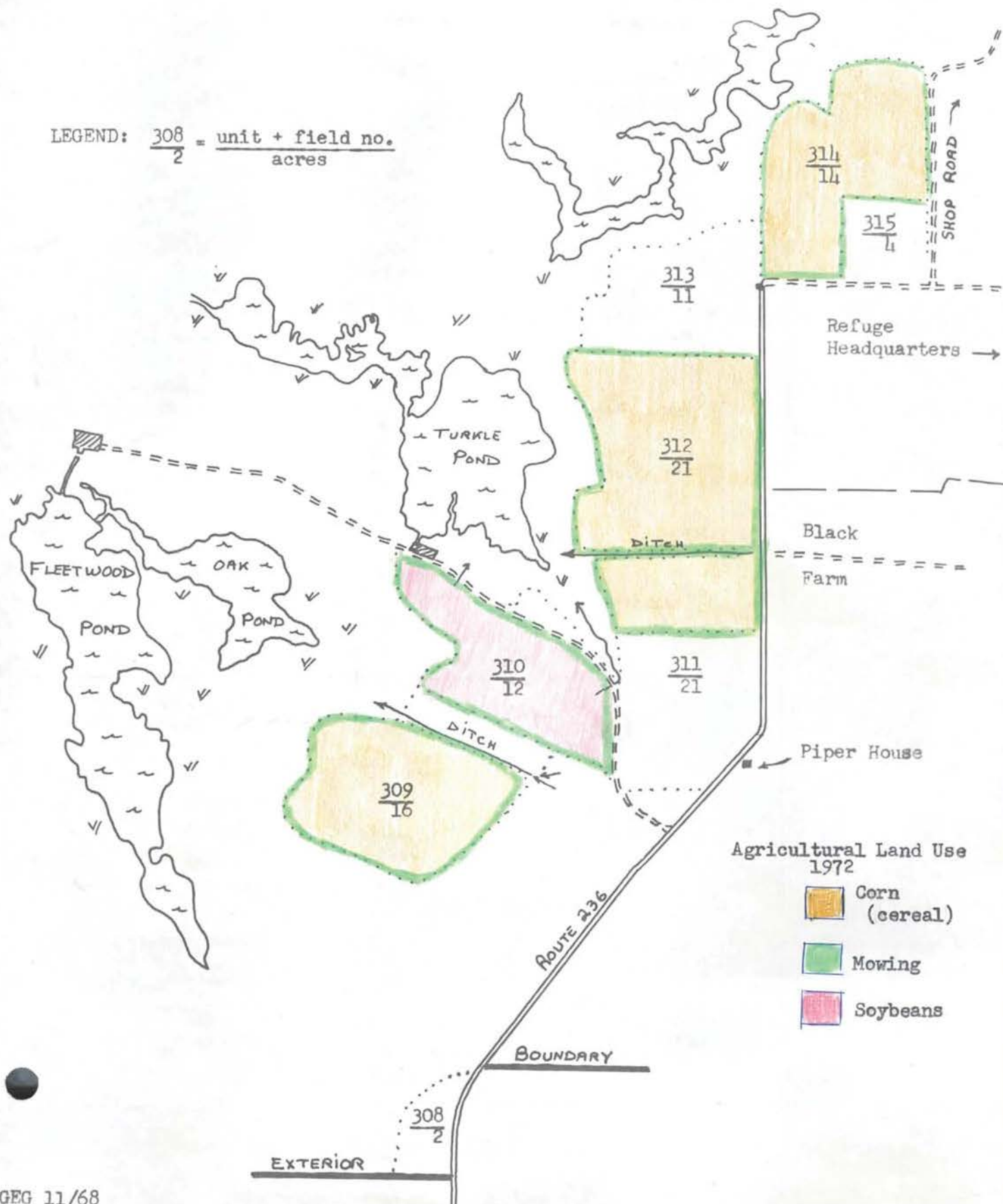
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PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

MANAGEMENT UNIT 3

COOPERATOR:

LEGEND: $\frac{308}{2} = \frac{\text{unit} + \text{field no.}}{\text{acres}}$

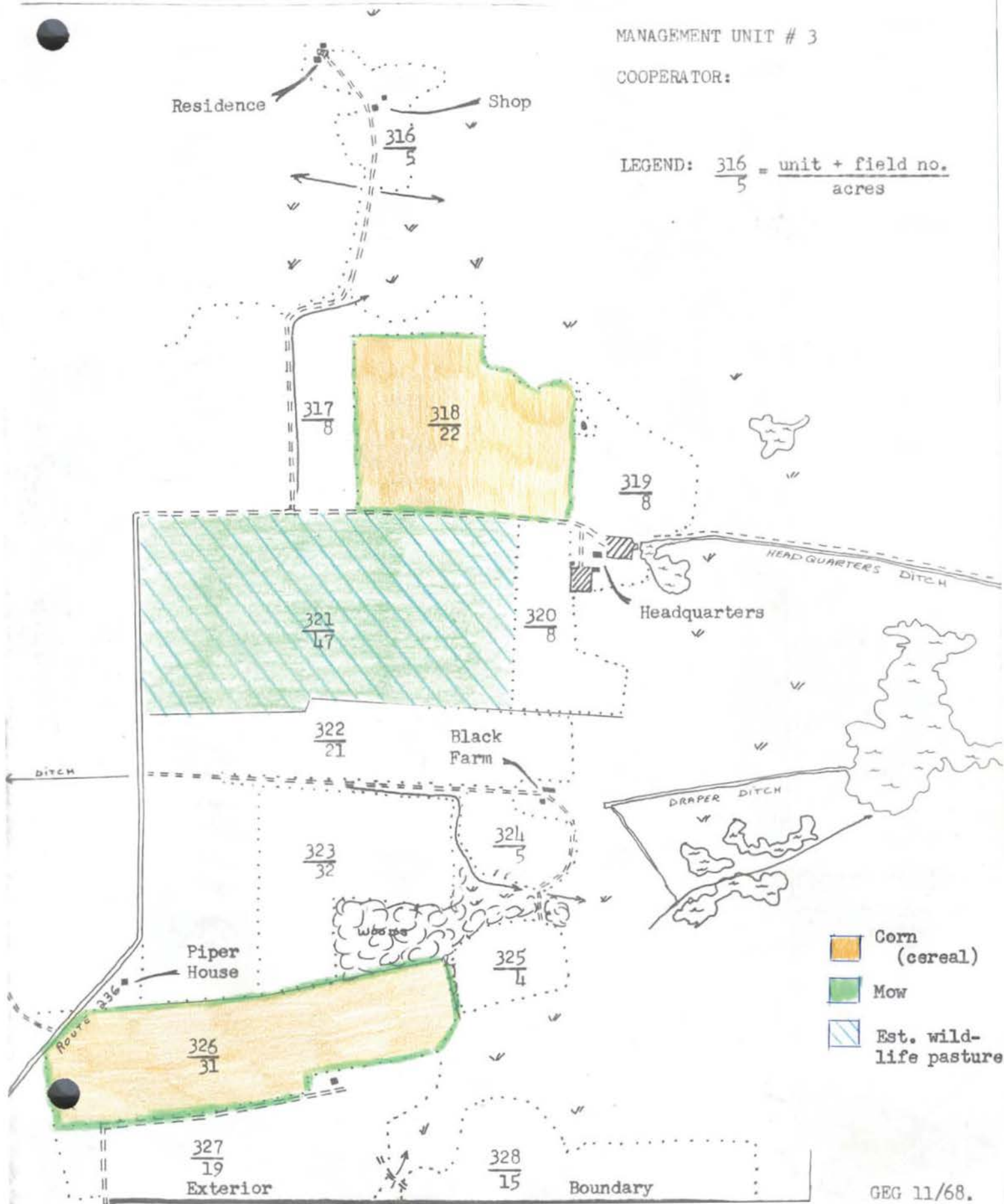


PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

MANAGEMENT UNIT # 3

COOPERATOR:

LEGEND: $\frac{316}{5} = \frac{\text{unit} + \text{field no.}}{\text{acres}}$



GEG 11/68.

4. Cultivated Crops.

The Refuge's cooperative farming program reached its seventh year. The number of cooperative farmers declined from five to four.

Joseph Pennel, who since 1968, farmed Fields 106 and 107 (49 acres) declined to participate because of poor yields. These wet fields will be placed in wildlife pasture.

The four Refuge farmers planted 316 acres to corn and 12 acres to soybeans. The Refuge's share of standing corn was six acres. Corn yields ranged from 40 bu./ac. to 100 bu./ac. Heavy rains early in the season, cool weather in June, and a drought in July were influencing factors in yields.

Other harvested crops, by special use permits, were: 11 acres of alfalfa and 20 acres of saltmarsh hay.

C. Collections and Receipts.

1. Seeds and Other Propagules. None.

2. Specimens. None.

D. Control of Vegetation.

Johnsongrass. No chemical control was used. Mechanical control by mowing and hand-pulling sufficed. Field #321, infamous for its Johnsongrass infestation, was sown to a wildlife pasture this spring. Subsequent to 1969, the field had been left fallow. Frequent spot-spraying with Dalapon and numerous discings failed to check the weed in the past. This year's control was most encouraging. The excellent catch of grass/clover apparently reduced the Johnsongrass' area for expansion and gave competition to the existing rhizomes. Two mowings prevented the weed's development.

Scattered infestations of Johnsongrass were hand-pulled from Fields 205, 301, 312, 313 and 318.

Purple Loosestrife. No chemical control of purple loosestrife was necessary this year. Only 65 scattered plants were found in the infestation area in Unit II. These were pulled up or broken off to prevent seeding. The loosestrife sprayed with ammonium sulfamate (Ammate X) in 1971 was dead as were the plants sprayed in 1970.

E. Planned Burning. None.

F. Fires.

On April 12 a marsh fire on the north side of the Broadkill Beach Road was unintentionally started by a party of fishermen fishing Petersfield Ditch. A lighted match was carelessly discarded into the dry marsh grass and a brisk easterly wind quickly spread the fire. The blaze originated within the boundary of the Refuge and burned approximately seven acres before igniting over twenty acres of private marsh. The Milton Volunteer Fire Department responded to the call and extinguished the blaze without incident. The State Fire Marshall interrogated the responsible party and declined prosecution.

IV. RESOURCE MANAGEMENT

A. Grazing.

Two individuals were again issued special use permits for the grazing of their cattle during the non-conflicting (waterfowl-use versus cattle-use) months of late April through October. This six-month management tool has aided in maintaining open, non-brushy fields for goose grazing during the other six month period. A total of 360 acres is open to grazing. Pertinent statistics are as follows:

<u>Permittee</u>	<u>Tract(s)</u>	<u>Acreage</u>
J. Howard Isaacs	12	138
Island Farms, Incorporated	79 & 79c	222

A conservative carrying capacity limit as determined, in part, by a Soil Conservation Service Agronomist, has been set and adhered to by both permittees. A total of 1,697 Animal Unit Months grossed \$2,402.00.

B. Haying.

A special use permit was issued to J. Howard Isaacs for the cutting of 25 acres of marsh hay at \$2.00/acre. Twenty acres were cut, producing \$40.00 in return.

Another special use permit was issued to J. Nailor Wells, a cooperative farmer, to cut and bale alfalfa from Field 204. The 11-acre field was leased at \$20.00/acre; \$220.00 was realized. The fee was reduced 20% from previous years due to a decreased yield.

C. Fur Harvest. None on the acquired portions of the Refuge. Several trappers, however, trapped private in-holdings for muskrat and otter.

G. Maintenance and Equipment.

Routine 3,000 mile and 5,000 mile vehicular checks and necessary maintenance were performed on both pickup trucks throughout the year. Specific repairs occurred as follows:

1. 1965 Chevrolet 4 x 4 Pickup: the carburetor was rebuilt; replaced hand brake cable and starter drive, mounted three new tires, faulty flasher lights replaced, cab floor reinforced with sheet metal, and rebuilt transfer case.
2. 1970 Chevrolet 4 x 2 Pickup: new fan belt, mounted two new tires, repairs made to carburetor and manifold.
3. J.D. 3010: a new carburetor was installed and repairs made to starter switch.
4. J.D. 1010: replaced connector link, mounted a tool box and fire extinguisher.
5. Lilliston rotary mower (7'6"): replaced center spindle and blades.
6. Brillion off-set rotary mower (9'4"): a new acquisition; accessories include a back-and chain guard and attached lift-jack; a new hydraulic cylinder was purchased for it.
7. Airboat: The 14' airboat, on loan from the Brigantine National Wildlife Refuge had its starter rebuilt, a new ignition switch and fan belt installed, the metal frame of the propeller shield reinforced, and its leaky 20 gallon gas tank replaced with three 6-gallon gas cans.
8. Johnson 3.5 h.p. outboard motor: replaced head gasket.
9. Cox trailer: replaced wheel bearings.
10. Gruman, 14', v-bottom, boat: replaced old flotation flooring with a liquid compound styrofoam covered by 5/8" exterior plywood; added safety devices are a pair of oars w/locks, night-time signal flares and an anchor.

- D. Timber Removal. None.
- E. Commercial Fishing. None.
- F. Other Uses. None.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

- A. Banding Program. An attempt was made to pre-bait ducks in Unit IV. Off-and-on efforts were made between September 15 and October 15 with no success.
- B. Research.

On June 6, Mr. Alan Richter, a Master's Degree candidate, from the University of Delaware's Geology Department, gathered core samples of the marsh's sub-strata from within Unit III. The data will be incorporated in his thesis on Delaware's coastal plain.

VI. PUBLIC RELATIONS

- A. Recreation.

The following figures portray 1972's annual public use:

<u>Output Type</u>	<u>No. Visits</u>
<u>Recreation-Wildlife/Wildlands</u>	
Hunting Migratory Birds - Waterfowl	
Ducks	1,200
Hunting Resident Game	
Upland Gamebirds	550
Big Game	
Deer - Gun	500
Deer - Bow	50
Small Game	520
Other Game - Fox Chase	60
Fishing	
Warmwater	1,100
Saltwater	570
Clams, Crabs, Oysters, Frogs	1,850
Other Consumptive w/w Rec.	60

Wildlife Observation

Foot	550
Auto	3,900
Boat, non-motor	290

Photography

5

TOTAL VISITS TO REFUGE 11,205

Credibility of the above figure ranges from high (number duck hunters) to low (number wildlife observers via auto). The former figures are derived from a check station's tally and the latter by educated guess.

Initially, the output of "Wildlands Appreciation - Auto" was claimed. It was originally thought that users of the Slaughter Beach Road, Fowlers Beach Road, Prime Hook Beach Road, and Broadkill Beach Road attained some degree of wildlands appreciation as they traveled Refuge ownership to reach their homes. The summertime beach population of the three resort areas abutting the Refuge, is about 10,000; only 400 persons live there year around. A conservative 38,800 activity hours was determined to be the current annual output. It was later decided by the Regional Office that when people pass through or by a refuge on roads not maintained by the Bureau to points outside the Refuge, they should not be considered as refuge users and no REU's should be attributed to them.

B. Refuge Visitors.

<u>Date</u>	<u>Name</u>	<u>Organization</u>	<u>Purpose</u>
1/7	George Gage	Target Rock NWR	Courtesy
1/25-28	David Janes	R.O., Div. of Realty	Land Acquisition
2/8	Thomas Groutage	Fishery Serv., Warren, PA	Refuge stocking
2/8	John Andersen	"	"
2/8	Jerry Maranick	"	"
2/14-15	Vance Zook	C.O., Div. of Engrg.	Survey
2/14-15	Roger Tornstrom	R.O., Div. of Engrg.	"
2/14-15	Joseph Ireland	"	"
2/14-15	Tim Volpe	"	"
2/15	Howard Weon	R.O., Div. of Refuges	Inspection
2/15-16	Robert Rich	R.O., Div. of Realty	Land Acquisition
2/15-16	David Janes	"	"
3/21	Albert Hester	R.O., Div. of Refuges	Visit/tour
5/1-4	David Janes	R.O., Div. of Realty	Land Acquisition
5/11	Joseph Collins	M&E, JFK Airport, N.Y.	Bird Watching
5/17	Roger Tornstrom	R.O., Div. of Engrg.	Survey
5/17	George Perry	"	"
5/15-17	Louis Catalanotto	R.O., Div. of Realty	Land Acquisition

5/19	Bernard Meltzer	Meltzer, Inc., Phila., PA	Appraisal
5/19	William Yetke	"	"
5/19	Arnold Goldsborough	Goldsborough, Inc., Wilm., DE	"
5/19	Eugene Connor	"	"
5/19	Robert Appel	"	"
5/22	Boyd Gibbons	Pres. Council on Environmental Quality	Courtesy
5/26-29	Charles Walker	C.O., Fish Pest. Research	Field trip
5/26-29	Donald Kuntzelman	E.P.A., Wash., D.C.	Field trip
7/6	Peter Suich	R.O., Div. of Refuges	Obj. Setting
8/8	Oliver Cricton	U. of Del., College of Marine Sciences	Consultation
8/10	Louis Cacezi	Army Corps of Engrs., Phila., Pa.	Coastal vegetation
8/10	Thomas Schina	"	Island Farm
8/10	Albert Rensch	"	Inspection
8/15	Murray Schartz	Dept. of Justice, Commis.	Island Farm
8/15	Robert Hackett	"	Condemnation
8/15	Ralph Gottshall	"	Hearing
8/15	Charles MacMullan	Dept. of Justice, Lawyer	"
8/15	Harry McKee	Dept. of Justice, Lawyer	"
8/15	James Tunnell	Wilmington, DE	"
8/15	Ralph Luttrell	H.C. Draper's Lawyer	"
8/15	H. James Conoway	Wash., D.C.	"
8/15	Richard Levine	H.C. Draper's Lawyer	"
8/15	H. C. Draper	Wilmington, DE	"
9/18-22	Donald Brødernitz	Layton-Thompson Lawyer	"
11/24	Allen Sherman	Wilmington, DE	"
12/5	Donald Steigleman	Defendant	"
		R.O., Div. of Realty	Land Acquisition
		Bur. of Mines, Wash., D.C.	Visit/tour
		Nat. Aud. Soc., Lambertville, NJ	Visit/tour

C. Refuge Participation.

- 1/21: Manager Nugent presented a talk/film on "The Future of Delaware's Marshes and Wildlife" to approximately 30 9th grade students of the Milton High School, Milton, DE.
- 2/1,
3/21,
& 4/11: Manager Nugent attended Delaware State College's Man and His Planet lecture series, Dover, Delaware.

- 2/10: Manager Nugent attended the Executive Committee Meeting of the Delaware Conservation Education Association, Dover, Delaware.
- 3/10: Manager Nugent and Maintenanceman Clifton attended the Smith-Douglass Fertilizer's (Division of Borden, Inc.) annual dinner/new-product presentation program, Seaford, Delaware.
- 5/19: Manager Nugent gave lecture/tour to 32 third grade students of the Benjamin Banneker Elementary School, Milford, Delaware.
- 7/13 &
7/27: Manager Nugent attended University of Delaware's College of Marine Studies lecture series, Rehoboth Beach, Delaware.
- 8/16: Manager Nugent testified as a government witness at the Island Farm, Inc. trial, Wilmington, Delaware.
- 9/13: Refuge staff attended a pre-hunting season State-Federal Law Enforcement Meeting, Felton, Delaware.
- 11/16: Manager Nugent attended Sussex County's Planning and Zoning Commission's public hearing and expressed opposition to the Hudson-Thompson rezoning application as affecting Unit IV, at Georgetown, Delaware.

D. Hunting.

1. Waterfowl. The mechanics of, and procedures for the sixth 1971-72 Federal-State Waterfowl Hunting Program at Prime Hook were the same as written in last year's narrative. This year, however, will be the last year that the check station will be located at the junction of Rt. 14 and Rt. 5. The State's Department of Highways and Transportation has contracted for the dualization of Rt. 14 from the Milford by-pass to the junction of Rt. 14 and Rt. 16. The former check station site will soon become part of Rt. 14's south-bound lane. It is hoped that the check station can be relocated in the same immediate off-Refuge area due to its centralized location for access to all blinds.

In anticipation for opening day's issuance of permits on a first come first served basis, the first hunting party arrived at the check station 70 hours in advance! Their wait, along with others, was made a bit more comfortable this year with the installation of a flood light and rental of a chemical toilet.

The waterfowl hunting season was split. The Refuge was only hunted during the duck season ... November 4 - 25, December 16 - January 12. The goose season coincided with and extended past the duck season. Thusly, geese could also be taken during the duck season. Hunting was ended on January 8 due to the extreme icing of ditches and ponds.

Comparative hunting statistics for the past six years are offered:

Years	Total No. Hunter Days	Ducks Bagged			Misc. Ducks	Geese Bagged	Total Bag
		G.W. Teal	Black	Mallard			
1967-68	803	139	50	44	98	11	342
1968-69	1,167	230	120	57	55	87	531
1969-70	1,105	250	122	73	153	39	637
1970-71	1,472	287	133	89	122	209	840
1971-72	1,521	334	108	80	266	66	854
1972-73	1,317	252	116	151	160	11	690

A tally was kept on the hunting success from each individual blind as based on total hunter usage. Blind use varied in proportion to blind accessibility and personal preference. It ranged from seven man-days for Blind #27 to 111 man-days for Blind #16. Average bag was .52 bird (ducks and/or geese) per hunter; extreme bags, based on individual blinds, ranged from .08 bird/hunter (Blind #22) to 1.38 birds/hunter (Blind #26).

2. Big Game.

Approximately twelve deer were taken on the Refuge by shotgun hunters during the eight-day season; an archer claimed one during the two and one-half month season.

The State-wide deer kill in 1972 was 1,280; 378 deer were taken in Sussex County.

3. Upland Game.




The fourth annual State-sponsored, Refuge hosted "Special Pheasant Hunt" was held from October 14 through the 21st. Seventy-five cock birds were released. Over 200 hunter use-days were recorded and 56 birds were known to have been harvested.

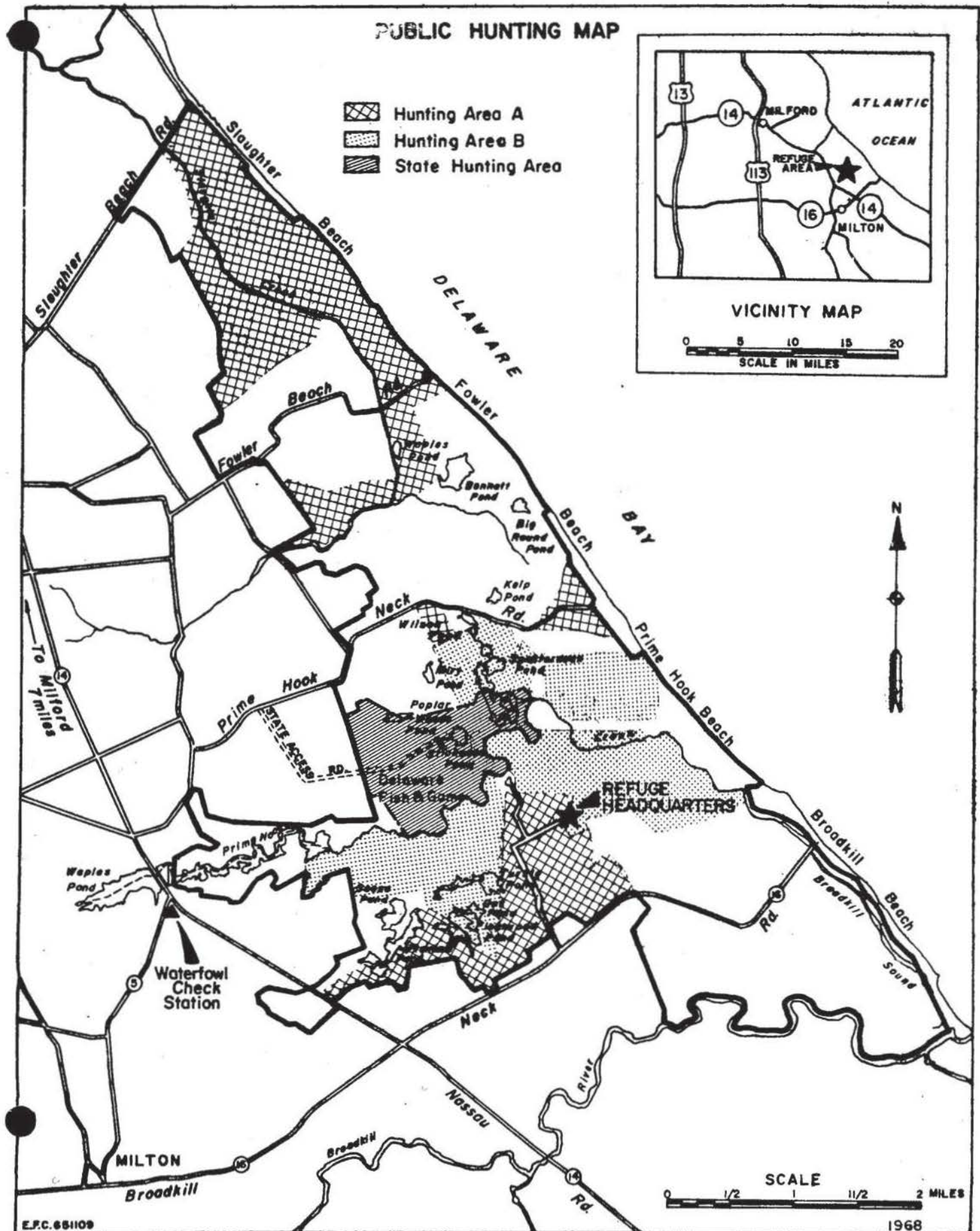
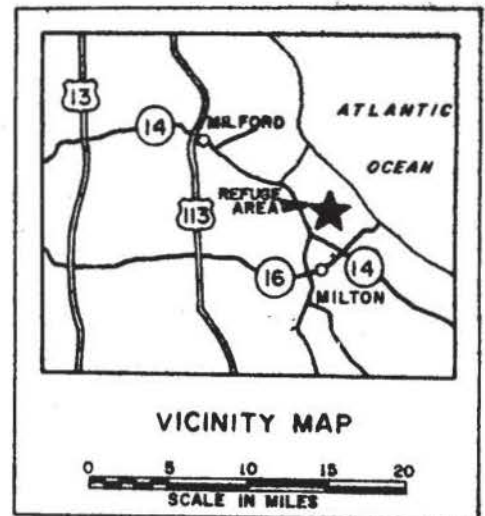
Other upland game hunted on the Refuge were bobwhite quail, grey squirrel, cottontail rabbit and red fox (chase only).

PRIME HOOK NATIONAL WILDLIFE REFUGE
SUSSEX COUNTY, DELAWARE

18.

PUBLIC HUNTING MAP

-  Hunting Area A
-  Hunting Area B
-  State Hunting Area



U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

PRIME HOOK NATIONAL WILDLIFE REFUGE
MILTON, DELAWARE

PUBLIC HUNTING AREAS

These areas will be open to hunting in accordance with Federal and State regulations and special conditions listed below.

AREA A. Permits are not required. (See map on reverse.)

Upland Game. The hunting of only white-tailed deer, cottontail rabbits, squirrel, raccoon, red fox, quail, and pheasant is permitted.

AREA B. Special permits are required except for upland game hunting. (See map.)

1. Waterfowl, coot, rail, gallinule, mourning dove, woodcock, and snipe.

Permits. Issued from two hours before sunrise until 3:00 p.m. each hunting day at the checking station at intersection of Routes 5 and 14. All persons during the waterfowl hunting season must check out at the checking station prior to one hour after sunset.

Blinds. Permit holders may gain access to the blinds at (1) the State access point off Prime Hook Road, or (2) refuge headquarters off Route 16. Not more than three persons per blind.

Boats. Necessary to reach all blinds. Small outboard motors and stout poles are recommended.

Guns. Possession of a loaded gun outside a blind while hunting migratory game birds is prohibited.



2. Upland Game (deer, rabbit, squirrel, raccoon, red fox, quail, and pheasant).

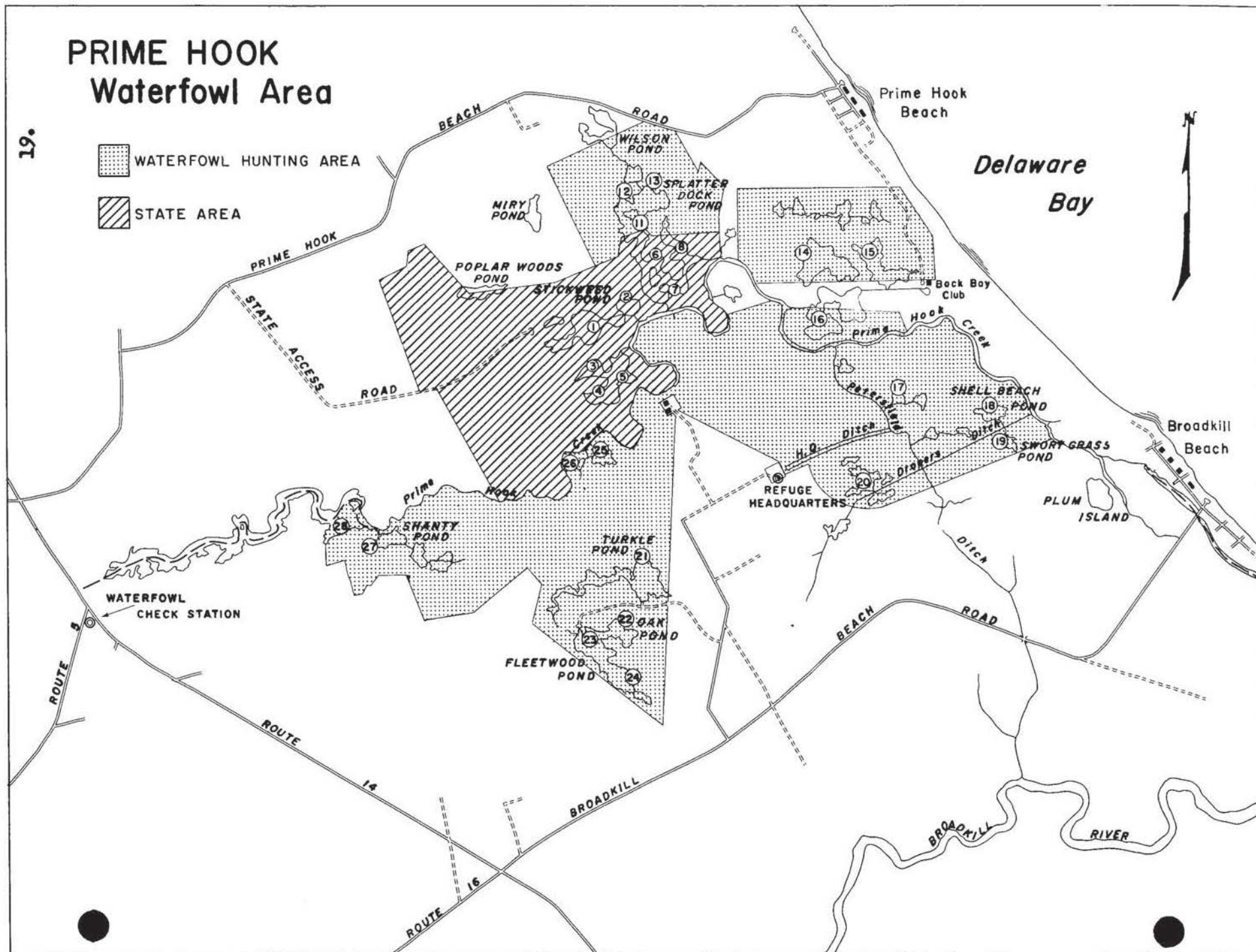
Permits are not required.

May be hunted on sections accessible by foot travel.

PRIME HOOK Waterfowl Area

19.

-  WATERFOWL HUNTING AREA
-  STATE AREA



E. Violations.

Several verbal warnings were issued during the year for minor infractions; two individuals were prosecuted for violation of hunting regulations:

<u>Defendant</u>	<u>Prosecution</u>	<u>Violation</u>	<u>Fine</u>
Charles M. Weatherell	Federal Court	Unplugged gun	\$25.00
James H. Lewis	Federal Court	Loaded gun outside of blind	\$25.00

F. Safety.

Monthly safety meetings were conducted throughout the year at Prime Hook or in coordination with Bombay Hook's safety meetings. Chairmanship was rotated on a monthly basis. The Refuge maintains its unblemished Safety Record of 2,768 days without a lost-time accident.

VII. OTHER ITEMS

A. Items of Interest.

1. Land Acquisition. A total of 513 acres came into government custody during the year. The 290 acre J. Nailor Wells farm, Tract 38, was purchased on January 26, 1972. A one-year residency lease was granted to the Wells.

In September, a Declaration of Taking was filed in U. S. District Court on Tracts 19, 19a and 19a-1 totalling 223 acres, formerly owned by Mr. and Mrs. Henry C. Bennett. Condemnation proceedings were deemed necessary due to deficiencies in the chain-of-title.

In August, a three-man commission hearing was held in U. S. District Court, Wilmington, Delaware as related to the fair-market value of the Island Farm (as condemned on May 6, 1968). Recommendations of the commissioners will be presented to an appointed judge at a later date.

Present Refuge ownership is 6,875 acres; total acreage will approximate 10,000 acres.

2. Death. We would like to acknowledge the death of James C. Reed, 77, of Milton, Delaware. Jim and his wife, Vergie, resided on the Island Farm for 38 years. Jim was employed by H. Carlton Draper, owner of the farm, and served him well as a farmer and cattleman. The Reeds maintained a five-acre life-time occupancy reservation subsequent to the Island Farm's condemnation in 1968.

Jim's "one-arm-on-the-cab-door" conversations, laden with his "down-homeness", are greatly missed. He died on March 14, after a short period of illness.

3. Youth Conservation Corps.

The twenty students that participated in Bombay Hook's initial YCC program were of great assistance when assigned to Prime Hook. Jobs completed included the razing of the dilapidated corral in Unit II, hand pulling of Johnsongrass from several cropfields, clearing of aquatic vegetation from waterways leading to waterfowl hunting blinds and litter control along interior roadways.

4. Revenue Sharing Act.

Manager Nugent presented the Sussex County Council the 1972 Refuge Revenue Sharing Act check in the amount of \$15,440.73 on December 5, 1972.

5. Training.

Manager Nugent attended: (1) Program Schedule Workshop, October 10-13, Boston, Massachusetts, and (2) "The Supervisor's Job, Part II" training program, June 5-9, Boston, Massachusetts.

6. Credits.

Wildlife Biologist Norman E. Holgersen prepared Sections II, A. 1-3, II. E. and F. and NR Form 12. Manager Richard F. Nugent prepared the remainder of the text and NR Forms and assembled the report. Refuge Manager Thomas J. McAndrews edited the report. Refuge Clerk Virginia E. Baughman typed the report.

B. Narrative Report Forms. Appended.

C. News Articles. Appended.

D. Photographs. Appended.

Reviewed by: _____

Submitted by: _____

Date: _____

Date: _____

NR's Checked in R.O. by: _____

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Prime Hook

Year 19 72-73

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species	(5) No. Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. Hunters	(9) Est. Total Kill
7	1,317	5,268	Green-winged teal	252				
			Mallard	151				
			Black duck	116				
			Shoveler	22				
			Blue-winged teal	20				
			Gadwall	20				
			Pintail	16				
			Wood duck	14				
			Baldpate	13				
			Ring-necked duck	12				
			Coot	12				
			Bufflehead	11				
			Canada goose	11				
			Scup	10				
			Merganser	4				
			Goldeneye	2				
			Unidentified	4				
TOTALS:	1,317	5,268		690	164	854	1,317	854

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 per cent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 per cent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spend hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 per cent.
$$\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$$

3-1758

Form NR-8

(Rev. Jan. 1956)

5RF-10/64

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Prime HookCounty SussexState Delaware

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			
Field Corn (Cereal)	316	25,280			6	480	322	Wheat Browse	30
Soybean (Cereal)	12	360					12	Rye-Grass Cover Crop	42
Winter Wheat (Browse)					30		30	Rye Browse	213
Wildlife Pasture (Browse)					46		46	Semi-permanent grasslands	360
								Fallow Ag. Land Fields #106 & 107	49

No. of Permittees: Agricultural Operations 4 Haying Operations 1 Grazing Operations 2

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	100	11	220.00	1. Cattle	328*	1,697	2,402.00	360
				2. Other	* over 6 mo. of age.			
				1. Total Refuge Acreage Under Cultivation				553
Hay - Wild	20	20	40.00	2. Acreage Cultivated as Service Operation				325

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

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

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

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

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

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

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

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

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

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

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Refuge **Prime Hook**

Proposal Number
PH-72-1

Reporting Year
1972

Dates of Application	List of Target Pests	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 1 through May 31	Broad-leaved weeds	Fields 309, 310, 311, 312, 314, 318, 326	124	Alachlor	248 qts.	2 qts/ac.	Water 20 gal./acre	Bean sprayer
	"	Fields 205, 301	42	"	84 qts.	"	"	"
	"	Fields 101, 102, 201, 202	146	"	292 qts.	"	"	"
	"	Fields 304 & 307	22	"	44 qts.	"	"	"

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

Control was satisfactory

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Refuge

Prime Hook

Proposal Number

PH-72-2

Reporting Year

1972

Dates of Application	List of Target Pests	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 1 through June 30	Broad-leaved weeds	Fields 309, 311, 312, 314, 318, 326	112	2,4-D low volatile ester	56 lbs. a.c.	.05 lbs.a.c.	Water 10-30 gal./ac.	Boom Sprayer
"	"	Fields 205, 301	42	"	21 lbs. a.c.	"	"	"
"	"	Fields 101, 102, 201, 202	146	"	73 lbs. a.c.	"	"	"
"	"	Fields 304 & 307	22	"	11 lbs. a.c.	"	"	"

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

Control was satisfactory.

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

Bureau of Sport Fisheries and Wildlife

Refuge

Prime Hook

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Proposal Number
PH-72-3

Reporting Year
1972

Dates of Application	List of Target Pests(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)
September 11	Salt marsh mosquito (<i>Aedes sollicitans</i>)	50% of Unit 4	600	Naled	30 lbs.	.05 lbs./A.	2 qts. fuel oil /A.	Airplane

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

Control good. Young adults in grass prior to spray and a wing count of only 5 after the spray.

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Refuge

Prime Hook

Proposal Number
PH-72-4

Reporting Year
1972

Dates of Application	List of Target Pests(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)
August 4	Salt marsh mosquito (<u>Aedes sollicitans</u>)	Southeast quarter of Unit 3 and most of Unit 4.	1,920	Naled ULV	209.3 lbs.	.109 lbs./A.	None	Airplane
August 12	"	75% of Unit 4	640	"	69.8 lbs.	"	"	"

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

Control success unknown as no post spray checks were made.

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Refuge

Prime Hook

Proposal Number
PH-72-5

Reporting Year
1972

Dates of Application	List of Target Pests(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 30	Salt marsh mosquito (<u>Aedes sollicitans</u>)	Southeast quarter of Unit 3 and most of Unit 4	1,950	Abate 4E	93.6 lbs.	.048 lbs./A.	Sufficient water for	Airplane
September 6	"	"	"	"	"	"	"	"

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

June 30: Control excellent with 20 to 25 larvae per dip prespray and 2 larvae per dip post spray.

September 6: Control good with 25 larvae per dip prespray and 5 per dip post spray.

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Refuge

Prime Hook

Proposal Number
PH-72-6

Reporting Year
1972

Dates of Application	List of Target Pests(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 27	Salt marsh Mosquito (Aedes sollicitans)	Unit 1 east of Slaughter Canal	775	Abate 2% granular	77.5 lbs.	0.1 lbs./A.	Caletan 5 lbs./A.	Airplane
August 2	"	Northwest corner and central portion of Unit 4	425	"	42.5 lbs.	"	"	"
August 4	"	Northeast corner of Unit 1	100	"	10.0 lbs.	"	"	"
August 9	"	Northeast corner of Unit 1	200	"	20 lbs.	"	"	"
August 18	"	Northwest corner of Unit 4	200	"	20 lbs.	"	"	"
August 31	"	Southeast corner of Unit 3 and 50% of Unit 4	550	"	55 lbs.	"	"	"
September 6	"	Unit 1 east of Slaughter Canal	750	"	75 lbs.	"	"	"

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

June 27: Control excellent with 50 to 75 larvae per dip prespray and 0 per dip post spray.

August 2,4: Control good with 25 larvae per dip prespray and 2 to 5 per dip post spray.

August 9,18: Control success unknown. No post spray check.

August 31: Control excellent with 100 larvae per dip prespray and 2 per dip post spray.

September 6: Control excellent with 15 to 30 larvae per dip prespray and 0 per dip post spray.

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

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

Refuge **Prime Hook**

Proposal Number

PH-72-7

Reporting Year

1972

Dates of Application	List of Target Pests	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 1 through June 30	Grass, broad-leaved weeds	Headquarters	.12	Ureabor (dry granular)	15 lbs.	10 lbs./1,000 sq.ft.	-	Hand spread

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

Satisfactory control. Chemical employed to prevent weed growth next to buildings and on parking areas to enhance appearance and to decrease fire hazards.

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

Bureau of Sport Fisheries and Wildlife

Refuge

Prime Hook

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

PH-72-9

Reporting Year

1972

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

Dates of Application	List of Target Pests	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)
July 7	Phragmites	Boundary signs along public highways, all units	1	Dalsapon	6 lbs. a.c.	6 lbs. a.c./ac.	Water 40 gal. per ac.	Handwand

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

Satisfactory control.

Youth Zero In on Bombay Hook And Prime Hook for Improvements

Maintaining mosquito ditches may not be everyone's idea of how to spend the summer, but it makes sense to twenty young people at Bombay Hook Wildlife Refuge, Leipsic.

The group will concern itself with identifying trees, building a visitor's center and other similar duties at Prime Hook Wildlife Refuge, Milton and at Bombay Hook.

The youths ages 15 through 18 years are Delaware's share in a national pilot program for the Youth Conservation Corps, enrolling 3,000 teenagers in ecology work across the nation this summer.

The eight-week program is a federal plan with three primary goals: providing summer jobs for young people, accomplishing needed work on federal lands and providing an increase in environmental knowledge and attitudes.

After the first week of the pilot study, Bombay Hook manager, Tom McAndrews is enthusiastic about it. "I'm very impressed with the enthusiasm that these young people have shown. They've expressed a sense of pride in getting their teeth into a job that is both important and tangible. We have high hopes for the program."

Although the national program was begun last year, this is Bombay Hook's first year under it, and Delaware's only camp of its kind. Initially, 2,600 youths were included under the pilot study. Current legislation is pending in Congress to raise the total participants to 100,000 teens.

Work is presently limited to federal lands, but there is talk of allowing state and even lower governmental bodies to take part in the program.

The 1972 Youth Conservation camp is at once different, and at the same time, reminiscent of the old CCC camps from the 1930s.

Persons taking part in the program are limited by age only. There are no family income levels imposed on the young men or women who want to take part.

Neither is there any intention of teaching the participants a trade during the eight-week program.

"It's possible that some of

these young men or women may decide to continue in environmental studies," says McAndrews, "but our interest is in getting work accomplished right now."

Participants in the program earn \$420 for their part in the eight-week program. Delaware's program is a non-residential plan, with enrollees coming from nearby areas: Smyrna, Capitol and Caesar Rodney school districts.

If the legislation now before Congress is approved and the number of camps is expanded for next year, Prime Hook in downstate Delaware is considered a likely location for a second state camp.

Work being handled there this summer is under the supervision of the Bombay Hook management. The pilot study itself is under the auspices of the Department of Interior and Agriculture.

Adult leaders work along with the twenty enrollees, in small groups of six or seven.

18 The Morning News, Wilmington, Del. * * * Thursday, Sept. 21, 1972

U.S. files suit for refuge land

A suit has been filed in U.S. District Court to acquire by condemnation another 223 acres for the Prime Hook National Wildlife Refuge in Sussex County.

The government proposes to pay \$50,152 for the land, which is in two separate tracts near Fowlers Beach. However, the actual purchase price will be determined by a jury.

The suit was drafted by U.S. Atty. Bruce Thall for the U.S. Interior Department's Bureau of Sport Fisheries and Wildlife, which runs the refuge in northeast-

ern Sussex County.

IT describes Mr. and Mrs. Harry C. Bennett, of Milford, as the "purported owners" of the land, but says there may be other unknown persons with an interest in it.

The suit says the Interior Department entered into an agreement with the Bennetts in 1966 to buy the acreage, but "deficiencies in the chain of title" prevented the deal from going through.

"Efforts to cure the defects have been unsuccessful, so acquisition by condemnation is

necessary," according to the suit.

The government has been buying land for the refuge since 1963 and had enough by 1966 to open it to the public. So far, however, only about 5,000 of the 9,500 acres which are wanted have been purchased.

Although land acquisition has been at a virtual standstill for the past four years, an official suggested yesterday that it may soon resume in earnest.

DON Bredernitz, a real estate officer for the Bureau of

Sport Fisheries, said the federal priority until the end of the last fiscal year was to acquire land for the Great Swamp National Wildlife Refuge in New Jersey. Now the government can turn its attention toward refuges elsewhere, Bredernitz said.

Recently, he said, the only land added to Prime Hook has been land the owners were willing to sell — and few owners were willing. The government will proceed now to acquire the necessary property through condemnation, Bredernitz said.

Rejected by Sussex Zoners

By ERICH SMITH
Sussex Bureau

GEORGETOWN — The Sussex County Planning and Zoning Commission last night voted against a proposed Elks Lodge near Seaford and against a proposed commercial zone near Oak Orchard.

Requests for rezoning for both have been pending for weeks, as has a request for a conditional-use permit for a trailer park near Dagsboro, which the commission approved last night.

As midnight approached last night, the commission deferred action on all four rezoning requests that had been the topic of public hearings earlier in the evening. Protests had been registered at each hearing.

At one of the hearings the federal government opposed a combination trailer park-campsite near Broadkill Beach. Another hearing centered on the Bethany Beach Town Commission's opposition to a 5-acre rezoning from MR (medium-density residential) to HR (high-density residential) almost inside town limits.

The Elks have been seeking a conditional-use permit to build a lodge on the shore of Hearn Pond north of Seaford, but in two successive sessions of the commission, residents of the nearby Lake Shores development have opposed the lodge, saying it would increase traffic in the area and lower property values.

ELKS' representatives have suggested that, if denied the lodge, they may seek to put in MR-zoned housing. The County Council would have the final say, as it does on all planning and zoning matters.

In the Oak Orchard case, Manufactured Homes, Inc., has been seeking C-1 (general commercial) zoning at the intersection of Delaware 5 and 24. It presently is AR (agricultural-residential).

be worked out between Mr. Hickman and Bethany Beach." William C. Collins, Bethany's mayor, sent a letter making much the same request.

There is some concern in Bethany that the land, if rezoned, may later be used to erect a high-rise building. Hickman agreed to wait until Sussex County can pass a modified HR zoning amendment which would allow a second kind of HR zones that would probably permit town houses but not high-rises.

Richard Nugent, assistant refuge manager for Primehook National Wildlife Refuge, opposed a conditional use permit for half the land owned by Joseph Hudson and Stanley Thompson on the grounds that the government plans to buy it.

HUDSON and Thompson want a permit for 343 acres in all — 128 acres of campsite and 215 acres of trailer park. The area would enclose 750 camper sites and 1,500 mobile home sites.

Nugent said the government plans to buy 162 acres — the eastern half of the tract — for the wildlife refuge within the next few years.

Developers said the government's plans would take out all of the camper area and about 150-200 of the trailer lots, and said they never have been contacted officially about the land.

But Hudson and Thompson have owned the land only since July, when they bought it from what was known as the Robert King Ranch. Nugent said King has known about the government's plans for years and said he assumed the developers were advised of the situation.

THE federal government has been acquiring land at Primehook since 1962.

In two other hearings last night, a proposed rezoning from AR to C-1 south of Ocean

Off-site removal of manager's residence.

Nugent 2/4/72
PH-72-81-3

Betcha' two-bits it's a northern diamondback terrapin.

Nugent 6/13/72
PH-72-R2-4



YCC crew razing old corral in Unit II ...

Nugent 7/2/72
PH-72-R2-5

Maintenancemen Sipple and Clifton constructing new corral and loading chute.

Nugent 8/24/72
PH-72-R2-12





A ditch-clearing operation in Unit III by YCC members.

Prime Hook Refuge resident staff.
L. to rt: Nugent, Clifton, Sipple

Holgersen Jan. 1971
BH-25-70-9



PRIME HOOK

National Wildlife Refuge



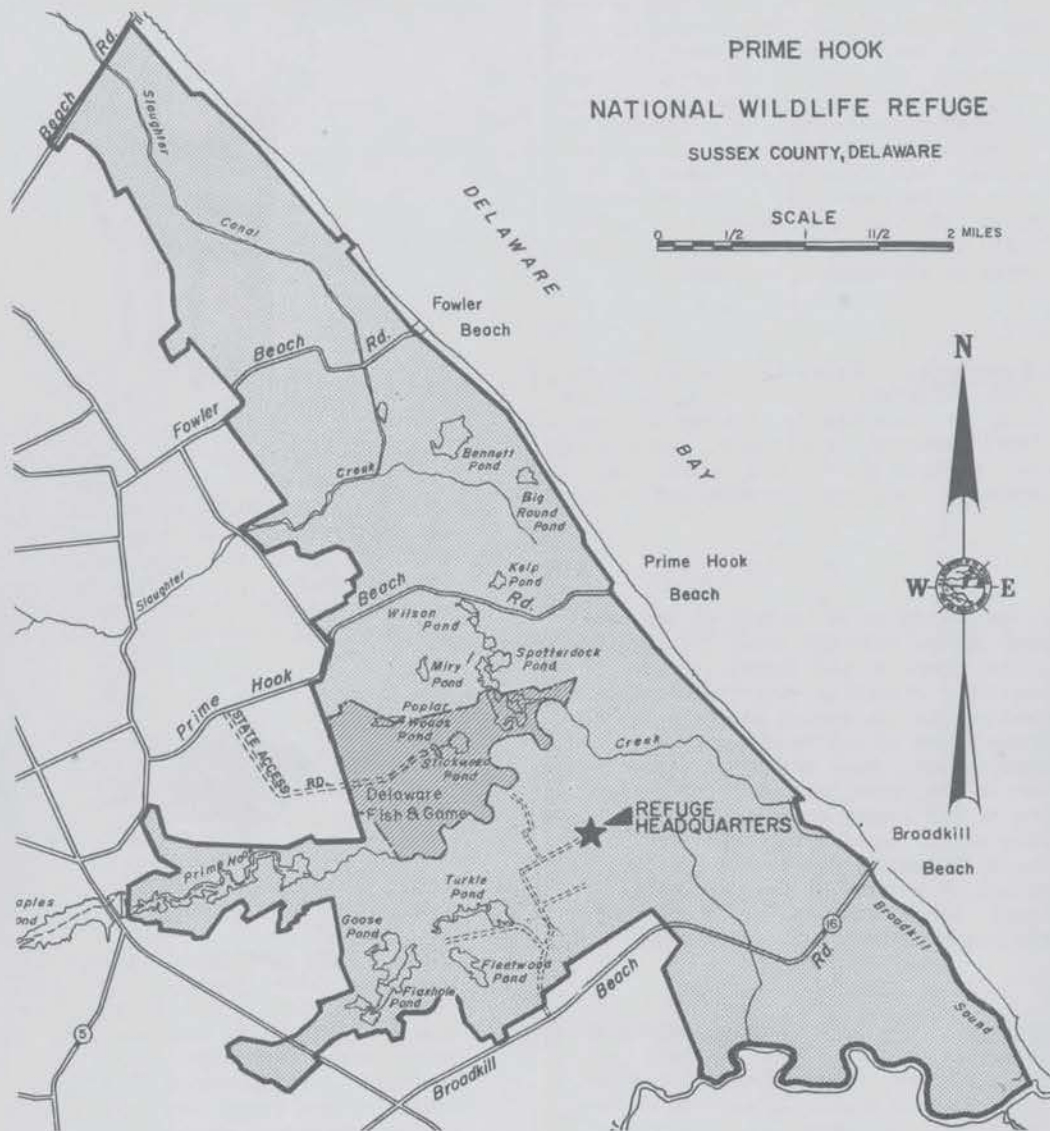
THINGS TO DO ON THIS REFUGE

FISH--four convenient sites.

BOAT-LAUNCHING--four areas provided.

CANOEING--over 15 miles of canoe waterways.

OBSERVE & PHOTOGRAPH--waterfowl, shorebirds, muskrats, and many other species of wildlife in their natural habitat.



The Prime Hook National Wildlife Refuge was established in 1963 primarily to preserve coastal wetlands that are historically of high value as waterfowl habitat. It is located on the west shore of Delaware Bay, approximately 22 miles southeast of Dover, the State capitol, and 64 miles southeast of Wilmington, Delaware. The 10,700 acres include 7,300 acres of marsh and water; 1,200 acres of timber and brush; 2,100 acres of pasture and cropland.

Management. Since the marshes are now good waterfowl habitat, improvements will be essentially limited to scattered pothole development, provision for nesting sites, and production of crops as food for migratory waterfowl.

WILDLIFE

The varied marsh habitat of the Prime Hook Refuge provides homes for numerous birds, mammals, and fishes of many species. Migrating waterfowl concentrations in the spring and fall, on or about March 15 and November 1, are spectacular. Many waterfowl winter on the refuge, providing wintertime viewing to the nature enthusiast. The rare osprey nests along Prime Hook Creek, Broadkill River, and Petersfield Ditch. A variety of herons, shorebirds, terns, and song birds provides additional interest to the visitor.

Mammals. Resident mammals include the white-tailed deer, red fox and gray fox, raccoon, river otter, muskrat, opossum, gray squirrel, eastern cottontail, striped skunk, and woodchuck.



Muskrat houses are notable and abundant throughout the marsh areas. Their activities benefit waterfowl and other wetland species by their eating out small clearings into dense water-surface vegetation. Their houses provide nesting and loafing sites for waterfowl and other birds.

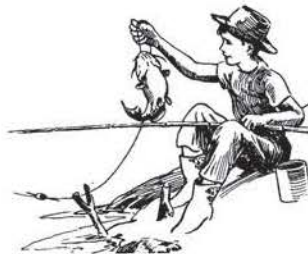


Birds. Of particular interest during migration are Canada geese, black ducks, mallards, and pintails, while several species of waterfowl and other waterbirds commonly nest in the marshes. A large variety of song and insectivorous birds may also be seen by the careful observer.

PUBLIC USES

FISHING--All freshwater streams and ponds throughout the refuge are open to sport fishing in accordance with state regulations. Largemouth bass and pickerel are most sought after and abundant. Favorite sites are Prime Hook Creek, Petersfield Ditch, Turtle Pond, and Fleetwood Pond.

Warm-water fish are plentiful in Turtle Pond, Fleetwood Pond, Headquarters Ditch, and Waples Pond. Largemouth bass and pickerel are most popular with fishermen.



CANOEING--Over 15 miles of streams and ditches provide the canoe-enthusiast with hours of potential pleasure. Favorite routes are along Prime Hook Creek and Petersfield Ditch.

BOATING--Permitted in all freshwater areas. Boats may be launched from designated access points along public roads and at Turtle Pond, Fleetwood Pond, Headquarters Ditch, and Waples Pond.

SIGHTSEEING--Vehicle travel provides delightful sightseeing opportunity on refuge roads in all seasons. Frequently waterfowl and shorebirds are best observed from the shaded interior of an automobile.

HIKING--Hiking is permitted in all areas except those marked closed by posting. Hiking is a pleasurable and healthful exercise which provides the finest viewing of a refuge and its wildlife in undisturbed activities. Foot-access into wooded areas is best from Headquarters Road and Turtle Pond and Fleetwood Pond Roads.

PHOTOGRAPHY--The hiking trails and vehicle routes all offer excellent opportunities for wildlife photography. Waterfowl, shorebirds, muskrats, and many other species of wildlife may be observed relatively undisturbed in their natural habitat. The Broadkill Beach Road is excellent for observation of feeding shorebirds. Other areas of interest are along Slaughter Beach Road and Fowler Beach Road.

Hunting is permitted in certain seasons in accordance with state and special regulations. Further information is available at refuge headquarters.

Additional information and current regulations may be obtained Monday through Friday at Refuge Headquarters located 1.6 miles north of Broadkill Beach Road, Route 16. Correspondence should be addressed to Refuge Manager Prime Hook National Wildlife Refuge Box 195, Milton, Delaware 19968. The telephone number is (302) 684-8415.