A NARRATIVE REPORT MINGO NATIONAL WILDLIFE REFUGE January - December, 1969

PERSONNEL

* * * * * * * * *

Seasonal Permanent (May thru September)

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



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I. GENERAL

A. Weather Conditions

	Month	Precipitati Normal	ion Snowfall	Max. Temp.	Min. Temp.
January	10.74	4.26		61	7
February	1.76	2.76		61	18
March	2.90	4.40		79	19
April	6.10	4.33		83	33
May	1.57	5.52		92	40
June	.81	3.57		100	44
July	3.28	4.03		102	63
August	.91	2.28		104	60
September	2.54	4.21		94	<u></u>
October	4.29	3.69		89	29
November	2.29	3.46			20
December	4.36	3.45	14	63	_16_
Annual Totals	41.55	46.71	<u> </u>	nes 104	7

The above data was obtained from the U. S. Corps of Engineers at Wappapello Dam located approximately 3/4 mile from the southwest corner of the refuge.

The annual precipitation was only slightly below normal but precipitation for the summer months was far below normal.

High and low temperatures were slightly above normal for this area.

B. Habitat Conditions

1. Water

Water conditions were not desirable this year. Heavy spring rains prevented an early draw-down of Monopoly Marsh. Because of dry weather this fall, Monopoly Marsh and several moist soil plant units were not reflooded early enough to allow substantial waterfowl utilization. (See Fig. 1.)



Figure 1. In November, only 300 acres of Monopoly Marsh (3,500 acres) were flooded.

Rockhouse Cypress Marsh (2,000 surface acres) was not drawndown this year but evaporation had reduced the water level by 1.8 feet by November.

Fall water levels were too low to flood any lowland forested areas; therefore, no "green tree impoundments" were created for waterfowl use.

In late October two moist soil plant units (160 acres) were flooded via our 1,800 g.p.m. pump. Flooding made the seed crop of wild millet (<u>Echinochloa sp</u>.) and smartweed (<u>Poly</u>-gonum sp.) available to waterfowl.

2. Food and Cover

The draw-down of Monopoly Marsh was not completed until August or three months too late for optimum wild millet and smartweed production. Some dense stands of smartweed did develop on the higher knolls. (See Fig. 2.)



Figure 2. Dr. Leigh Fredrickson (left), Manager Toll (center), and Carl Korschgen checking moist soil plants in Monopoly.

The late draw-down of Monopoly did produce an estimated 1,500 acres of meadow fescue (Festuca elatior) and 1,500 acres of cup plant or loose strife (Ammannia sp.) which yielded considerable amounts of seed.

Germination of wild millet and smartweed on our moist soil plant units was excellent this spring, but a prolonged drouth greatly reduced the seed production.

Although mast production was high, no mast was available to waterfowl because forest areas were not flooded. The mast crop was utilized heavily by deer, turkey, and squirrels.

Corn and soybean production on the refuge ranged from poor to good depending on the date of planting and the maturing rate of the seed. Early planted and fast maturing corn and soybeans had good yields, but late planted crops failed because of the summer drouth.

II. WILDLIFE

A. Migratory Birds

- 1. Waterfowl
 - a. Geese

Our wintering flock of Canada Geese peaked at 12,000 this spring. This was 4,000 less than the peak in 1968. The 1969 winter population has reached 12,000; hence, a 1970 spring peak may well exceed that of 1969.

Seven White-fronted Geese were seen this spring but none were observed this winter.

Blue and Snow Goose populations peaked at 300 or only 15 more than last year.

Peak goose populations during the last 10 years are shown in the following table.

YEAR	CANADA GEESE	BLUE & SNOW GEESE
1960	7,000	1,000
1961	7,000	250
1962	7,000	250
1963	6,000	150
1964	6,500	300
1965	8,000	100
1966	8,000	1,100
1967	12,000	4,000
1968	16,000	285
1969	12,000	300

This spring, as in the past, the majority of geese fed in corn fields located at the north end of the refuge. By mid-March large amounts of corn remained in fields. These fields were located primarily along the south end of the refuge. To minimize and possibly eliminate waste corn, our farming program was changed so that row crops were grown only on the north end of the refuge. The row crop fields on the south end have been converted to pasture and can be quickly changed back to row crops if necessary. This winter the geese continued to utilize corn on the north end. This should provide an ample supply to maintain the geese until migration begins. At least our present supply and demand is now in fairly good balance.

With our present objective to increase our wintering population of Canada's to 30,000, probably more corn will have to be grown in the future?

Rockhouse Cypress Marsh was the primary roosting site for geese during the spring, fall, and winter. This fall, when Monopoly began to flood, geese utilized the marsh heavily until it froze over in late December.

b. Ducks

High spring water levels resulted in good duck utilization on our rice fields, Rockhouse Cypress Marsh, and pin oak mast.

This summer all land that had been in rice production (530 acres) was converted to moist soil plants production. In late October two moist soil plant units (160 acres) were flooded to a depth of six inches. Excellent utilization by 10,000 to 15,000 ducks occurred on the units daily for 15 to 20 days. (See Fig. 3.)

Snow and cold weather occurred in late November and almost all open water on the refuge froze. The majority of ducks left the area. Later in November rainfall flooded about 1,600 acres of Monopoly Marsh. Although the water on the moist soil plant units was no longer frozen, all waterfowl on the refuge, and those being attracted to the area, began utilizing Monopoly. Daily utilization by 50,000 ducks occurred in late December when another cold wave moved into the area. Again, all open water on the refuge froze and almost all the ducks left.



Figure 3. Waterfowl use on moist soil plant unit #2. Good stands of wild millet and smartweed were produced.

In summary, the yearly overall refuge duck use days increased from 3,000,000 last year to 4,300,000 this year. However, fall and winter duck use days decreased by 500,000 from last year. Excellent spring conditions accounted for the boom, while abnormal fall conditions caused the bust.

Wood duck information is given in Section V.

c. Coots

No large concentrations of coots were observed this year. Populations peaked at 250 this spring and 100 this fall.

2. Other Water and Shore Birds

Estimates of the number of pied-billed grebes and little blue herons decreased from last year by 80 and 100 respectively. Fifteen cattle egrets were seen in the refuge pasture this fall. Sora rails were less numerous this year, probably due to the extreme variations of our marsh habitat and the elimination of rice farming. Although the Monopoly draw-down created 3,500 acres of mud flats, shore birds were relatively scarce because the draw-down occurred too late in the summer.

3. Doves

Mourning doves remained abundant on the refuge and in the surrounding area. Southeast Missouri has some excellent dove hunting but not many hunters participate in the sport.

B. Upland Game

1. Bobwhite Quail

Several large coveys were seen in abandoned fields on the higher ground throughout the refuge. Although the population has not increased from last year, the coveys seemed to be more evenly distributed.

2. Turkey

Our turkey population increased to an estimated 100 birds. In past years turkey were seen primarily on the refuge periphery; where as, this year turkeys were seen throughout the refuge. The increased population and wider distribution enabled many visitors to see turkeys as they toured the refuge.

C. Big Game

The refuge white-tailed deer population remained stable at an estimated 600. A newly planted clover-fescue pasture attracted deer throughout the summer and fall. The pasture is located along a public use road and many people enjoyed viewing the deer.

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

1. Raccoon

The raccoon population remained stable at an estimated 1,000. Trappers removed 259.

Raccoon predation on wood duck nests in artificial cavities continued to decrease with only 1 percent occurring this year. (See Wood Duck Study - Section V.) The amount of predation which occurred on natural cavity nests was not known.

2. Mink

Mink were occasionally seen crossing roads or along ditch banks. The population remained stable as it has in the past.

3. Muskrat

Muskrat burrows in moist soil unit levees were still a problem this year. We increased the size of the exterior levees to reduce the problem. Trappers removed only 12 muskrats from a population estimated at 1,500.

4. Beaver

Beaver dams, although in several of the refuge drainage ditches, did not hamper our draw-down efforts as they did in past years.

One large beaver hut, located in the Natural Area, was seen easily from a bluff overlook. The situation served as a good demonstration area for school groups.

5. Predators

Red and gray fox rarely were seen on the refuge but local foxhunters reported many in the area.

Coyotes, locally called "wolves" were seen on only a few occasions and are not abundant.

Bobcat are uncommon **but** were seen along refuge ditches. A female and her three kittens were observed several times this spring near Red Mill Pond.

6. Rodents

Gray and fox squirrels were very common and were estimated at 10,000 and 3,000 respectively. It was surprising to see the number of visitors that get just as excited about seeing a squirrel as they do a deer, turkey, or etc. when they are touring the refuge. It's very encouraging, to see people enjoy and show an appreciation for the less magnificent, but none the less interesting, animals of the forest.

Woodchucks were seen frequently in our pastures and caused no problem. Visitors enjoyed seeing these animals which seem to cooperate, or tolerate, being observed much more then most wildlife.

7. Other Mammals

Our swamp rabbit and cottontail populations remained stable. The refuge has the only sizeable "swamper" population remaining in Southeast Missouri, estimated at 2,000. The extensive land clearing which occurred, and is continuing, in this part of the state has almost eliminated swamp rabbit habitat.

Duck Creek Wildlife Area, which borders the refuge, is heavily hunted but does contain some fair swamp rabbit habitat. This year no rabbit hunting was allowed on Duck Creek in an attempt to let the swamp rabbit population expand.

Although a river otter was seen in 1967 and 1968, none was seen this year.

E. Hawks, Eagles, Owls, and Crows

Hawks, owls, and crows were present in about the same numbers as last year. One osprey was observed flying over Rockhouse Cypress Marsh this spring. 9

Our wintering bald eagle population peaked at 10, which was one less than last year. Eight of the 10 were immatures which was encouraging.

F. Other Birds

The large blackbird roost which developed in 1967 failed to materialize again this year. We are sure that the Division of Wildlife Services will be as glad as we were.

G. Fish

High water in early spring provided some good gigging of non-game fish. As Monopoly Marsh began to drain, channel and bullhead catfishing became excellent. Fishing pressure quickly built-up as the word got around. The water levels in Monopoly and its accompaning drainage ditches continued to slowly decrease when in late June we experienced a fish kill of an estimated 100,000 pounds of fish. The kill was made up of 99 percent carp and buffalo. (See Fig. 4.)



Figure 4. When the kill first started we notified the public that we were draining Monopoly to let moist soil plants grow for waterfowl. We also encouraged them to take fish from the refuge by any means possible. We had expected a fish kill due to the marsh drainage, but we had not expected one this large.

The fish kill could be attributed to the following factors: June temperatures were 90-100 degrees while only .81 inches of precipitation occurred, the silt load was excessive due to the cleanout of ditch #5, the draw-down was prolonged over a six month period, and Monopoly had not been drained since 1965.

In any event, the public outcry was tremendous. The sight of thousands of dead fish, let alone the smell, was far from pleasing. The Associated Press picked up the story and the news rapidly spread. (See Fig. 5.)

By early July no more fish were dying and the smell had become tolerable since high temperatures allowed for rapid decay. The whole event was climaxed by a visit from Congressman Bill Burlison who in a later news release commented on the fish kill and other refuge operations. (See Fig. 6.)

If our water management plan is approved, Monopoly will be drawn-down again in the spring of 1970. Fishermen will be encouraged to take rough fish by seining, gigging, dip-netting and snagging. News releases will be issued before the drawdown begins to inform the public of the liberalized fishing methods permitted. Since ditch #5 is now clean, hopefully a rapid draw-down can be achieved by mid-May; thereby, decreasing the possibility of a kill. However, if a late and prolonged draw-down occurred there would probably be another fish kill. But it would not be as large simply because there would not be as many fish in Monopoly because it was drained this year.

H. Reptiles

The most significant predator on wood duck nests in artificial cavities was the black rat snake. Fifteen percent predation lost was attributed to the black rat snake but this was still 18 percent less than last year. (See Wood Duck Study - Section V.)

Cottonmouth, copperhead, and canebrake rattlesnake populations remained in good numbers. Although they attract few refuge visitors, they are interesting to watch (at a safe distance).



OL. LX-No. 134 June 28, 1969

POPLAR BLUFF, MISSOURI 63901,



DEAD FISH FLOATING on the waters of the Mingo National Wildlife Refuge near Puxico are shown Friday afternoon. Refuge officials estimate at least 100,000 pounds of fish already have died, victims of oxygen depletion caused by overcrowding when the huge Monopoly Marsh was drained so that waterfowl food could be planted and

a ditch dredged out. Most of the fish shown are buffalo, but gamefish including crappie, channel catfish and bass also are dying. The view is at Flatbanks, a popular fishing spot in the refuge due west of Puxico. (Additional photo by John Stanard on Page 4 with The Outdoorsman column.

Figure 5. Corrections- we weren't going to plant anything and very few dead game fish were seen by any refuge personnel. But one picture is worth a thousand words. FROM THE OFFICE OF: BILL D. BURLISON, M. C. IOTH DISTRICT, MISSOURI

"BURLISON REPORTS ON MINGO INVESTIGATION"

WASHINGTON, D. C.---IOth District Congressman, Bill D. Burlison, today commented on the results of an investigation he began in response to numerous letters and petitions concerning the operation of the Mingo Wildlife Refuge in Stoddard County, Missouri. Burlison's investigation encompassed personal inquiries and extensive correspondence with the U. S. Department of interior and the Wildlife and Conservation subcommittee of the House Committee on Merchant Marine and Fisheries.

The outpouring of protest was triggered in late June when the huge Monopoly Marsh was drained, Burlison reported. The sudden drawdown in the midst of an unseasonable heat wave caused the destruction of over 100,000 pounds of fish. While insisting that the drawdown of Monopoly Marsh was in accordance with approved water management practices, the Department of Interior regretted the magnitude of the kill and admitted the public should have had more advance notice. Had adequate notice been given, Congressman Burlison belleves, many of the fish could have been salvaged by local fishermen. As it was, the fish rotted in the heat and in a'few days the stench was noticeable for miles.

Figure 6. A fair appraisal of the situation.

I. Disease

None observed.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

Refuge work projects accomplished by Mingo Job Corps were black topping two miles of road, re-blacktopping one mile of road, finishing construction of an eight stall equipment storage building (See Fig. 7.), building three miles of driveable dike around moist soil plant units, hauling railroad balast to headquarters, and making several signs for our archery deer hunting program.

The following list contains work projects accomplished by refuge personnel:

1. Development

- a. Constructed eight miles of levee around moist soil units
- b. Constructed six water control structures (See Fig. 8.)
- c. Posted six miles of hunting area boundary
- d. Developed two grassed waterways (See Fig. 9.)
- e. Seeded 30 acres of pasture to Garrison Grass
- f. Excavated 1,800 yds. of dirt at equipment building
- g. Extended airstrip 100 yards
- h. Dug 10 stock ponds
- i. Built portable photography blind
- j. Poured 100 foot curbing at headquarters
- k. Put in septic tank and new field at residence
- 1. Installed 6X8 wooden entrance sign
- m. Made Canada goose flyway display at headquarters
- n. Converted air compressor to water pump power unit (See Fig. 10.)
- o. Put up information signs for archers
- p. Installed eight inch drains in interior levees on moist soil plant units

2. Maintenance

a.

b. Clipped 50 miles of roadside
c. Graded 40 miles of road
d. Cleaned up bone yard
e. Took down four miles of fence
f. Repaired 4X4 Chevrolet rear-end
g. Repaired brakes on 4X4 Dodge
h. Adapted cutting blade to D-7
i. Overhauled D-7
j. Put oil seal in dragline
k. Repaired 3010 John Deere
l. Weekly clean-up of recreation areas
m. Built up rollers on D-4 dozer
n. Repaired two cattle guards

Cleaned out 2¹/₂ miles of Ditch #5. (See Fig. 11.)

- o. Installed new water gauges
- p. Constructed new dump site
- q. Cut brush along roadside at curves
- r. Replaced water line from shop to headquarters



Figure 7. Job Corps did an excellent job in constructing this 8-stall equipment storage building at refuge headquarters.



Figure 8. Levees were pushed-up and seeded, and stop-log structures were constructed on most of our moist soil plant units.



Figure 9. Spring rainfall caused severe erosion on a newly seeded pasture at Flatbanks. This 12 foot waterway eliminated the problem.



Figure 10. Audrey Walk, our heavy duty mechanic, converted a surplus air compressor and power unit into a water pump power unit at an estimated cost savings of \$2,300.00.



Figure 11. Ditch #5, the main drainage ditch for Monopoly Marsh, had not been cleaned since being constructed in 1915 and had completely silted full.

B. Plantings

1. Cultivated Crops

All farming was done by refuge permittees. Our program was changed so no green manure crops were planted and a straight two year corn-soybean rotation was initiated.

Soil samples were taken by the refuge on all farm units and fertilizer was applied in amounts indicated by the tests.

Even with the adverse summer weather conditions corn and soybean yields were only slightly below average at 48 bu./ acre and 22 bu./acre respectively.

2. Aquatics and Marsh Plants

None.

3. Trees and Shrubs

None.

4. Upland Herbaceous Plants

None.

C. Collections and Receipts

None.

D. Control of Vegetation

The Monopoly Marsh draw-down was too late to permit any mechanical vegetation control.

We had planned to spray 250 acres of willow in Rockhouse Cypress Marsh with 2,4-D, but now plan to cut the willow using a D-7 and cutting blade purchased with money that would have been used for 2,4-D.

Farm permittees used various approved herbicides to control weeds in corn and soybeans with good-to-fair success.

E. Planned Burning

None.

F. Fires

No fires occurred on the refuge but refuge personnel and equipment were used in assisting state firefighters on one occasion.

IV. RESOURCE MANAGEMENT

A. Grazing

Five hundred ninety-five acres of cropland where little waterfowl use had occurred were converted to pasture. Orchard grass, tall fescue, and ladino clover in respective 6-6-1 pounds/acre mixtures were sown. These pastures will be fenced this spring and will not be grazed until next spring. Ten stock ponds were dug to facilitate the program. (See Fig. 12.)



Figure 12. Howard Gaines, our operator general, fullthrottled a D-7 to build one pond per day.

Our four established pastures (372 acres) were subject to 1,061 A.U.M.'s of grazing by cattle. The grazing fee was \$1.00 per A.U.M; however, permittees were required to apply fertilizer top dressing in dollar amounts equal to their total A.U.M.'s X \$1.00.

B. Haying

None.

C. Fur Harvest

Trapping was permitted everywhere on the refuge except in the Natural Area. Eleven trappers participated in the program this year as compared to nine last year.

Water levels were low and a late December freeze-up resulted in a poor trapping success. The fur market crash added little incentive to the trappers enthusiasm. (See Table A.)

Table A.	1968 Season Unit Price	1969 Season Unit Price
Beaver	10.80 ea.	5.50 ea.
Muskrat	1.15 ea.	.55 ea.
Mink	12.00 ea.	5.00 ea.
Raccoon	5.25 ea.	1.80 ea.

D. Timber Removal

None.

E. Commercial Fishing

None.

F. Other Uses

None.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Moist Soil Plant Study

The climate and physiography of the Refuge are not conducive to stable production of row crops. During wet years low sites are flooded, and during dry years high sites are subject to drought. In 1969 530 acres of land with low topography were converted from rice and row crops to moist soil units for the production of naturally occurring vegetation for waterfowl food.

In June, 1969, a contract for research on productive capacities of moist soil habitats was established with Gaylord Laboratory through the Missouri Cooperative Wildlife Research Unit. Field work was initiated in March when areas were selected for the project.

The study has two phases. Initially, techniques will be developed for maximum production of moist soil plants for waterfowl food. The general requirements for production of moist soil plants are known from other studies but specific needs for Mingo are in question. Later the utilization of foods by waterfowl will be studied.

Only 30 acres of belt transect in the 530 acres of moist soil units will be studied intensively. Soil samples were taken prior to the growing season to determine numbers and diversity of seeds available. Samples were taken with a device designed from a grease gun by Audrey Walk. Workable samples can be taken rapidly from clay soils that are damp or those covered with a foot or more of water. (See Figs. 13 and 14.)

Water conditions on the units were monitored by aerial photos and water gauges along the transects. At the end of the growing season diversity and density of plants was measured. Because a graduate student was not found for the project, measurements of standing crop and seed production were not made.

Soil samples are not completely analyzed. Vegetation was sampled in a 2100 by 200 foot belt transect. Deversity was determined by a point count transect at one foot intervals parallel to the length of the belt. Density was measured in 20 X 50 cm. quadrats at 50 foot intervals along the line transect. In moist soil unit 2, the drier half of the transect (Section A) was not covered with water after April 4. The other half (Section B) had standing water until April 28, the date of draw-down.



Figure 13. Soil samples were taken to determine numbers and diversity of seeds available.



Figure 14.

This soil sampling "gun" made taking 480 samples a relatively easy job. The mean density of all plants was the same for both sections of the transect. (A with $\frac{1}{2}$ stems/m² vs. $\frac{1}{2.3}$ stems/m² for B) <u>Echinochloa frumentacea and E. crus-galli</u> were found in the same densities in each section. (Table 1.) Smartweed (<u>Polygonum pennsylvanicum and P. lapathifolium</u>) were found only in section A.

The diversity of plants throughout the transect was similar, but numbers of each species varied according to location. A greater percentage of plants (millet and smartweed) of known value to waterfowl was found in the wetter section (Table 2). <u>E. frumentacea</u> was evenly distributed along the line but <u>E.</u> <u>crus-galli</u> was more common in Section B according to point count data. The difference between the uniform stem counts in quadrats and the increased plants in the point count (26% vs. 55%) can be explained by the growth form of <u>E</u>. <u>crus-galli</u>. In the wetter section, this species tended to stool and form more heads from each individual plant. The result being an increased point count for <u>E</u>. crus-galli.

Table 1. Mean number of stems/m² of plants in moist soil unit 2 on Mingo National Wildlife Refuge after the 1969 growing season.

ste	ms/m ²	
Species	Section A	Section B
Panicum sp.	23.8	3.1
Digitaria sp.	8.5	33.8
Echinochloa frumentacea	4.0	0.5
Echinochloa crus-galli	1.0	4.0
Polygonum sp.	0.2	0.0
Cyperus sp.	2.6	0.2
Forbes	1.9	
Total	42.0	42.3

Table 2. Percentage of desirable waterfowl seed plants along a line transect in moist soil unit 2 on Mingo National Wildlife Refuge in 1969.

Pe	rcent	$\{0\}_{i=1}^{n},\dots,\{n_{i},n_{i},\dots,n_{i}\}$
<u>Species</u> <u>Echinochloa</u> <u>crus-galli</u> <u>Echinochloa</u> <u>frumentacea</u> <u>Polygonum</u> <u>sp</u> .	Section A 14 9 6	Section B 46 9 1
Total	26	56

23

Moist soil unit 4 was less productive of waterfowl foods than unit 2. Panic grass (Panicum sp.) and ragweed (Ambrosia sp.) were present at 75% of the points along a 3600 foot line transect. (Table 3) Both species are more xerophilous than waterfowl food plants and were found on the higher dry sites. Smartweed (Polygonum sp.), millet (E. crus-galli), and Ricecut Grass (Leersia oryzoides) were found at 10% of the points in the transect. In unit 4, millet usually grew as a single spike rather than in a clump.

The mean number of plant stems/ m^2 was 71.5 in unit 4. The greater density of plants in unit 4 was the result of dense stands of rank, non-branching panic grass. Both smartweed and millet have a density of 1.9 stem/m². Ricecut grass had a density of 9.6 stems/m² and was second only to panic grass (54 stems/m²) in density in unit 4.

Table 3. Percentage of plants along a line transect on moist soil unit 4 on Mingo National Wildlife Refuge after the 1969 growing season.

Species	Percentage
Panicum sp.	47
Ambrosia sp.	23
Digitaria sp.	2
Echinochloa crus-galli	3
Polygonum sp.	3
Leersia sp.	6
Bidens sp.	10
Cyperus sp.	1
Eleochris sp.	1
Other Forbes	1

Table 4. Mean number of stems/m² of plants in moist soil unit 4 on Mingo National Wildlife Refuge after the 1969 growing season.

Species	Stems/m ²
Panicum sp.	54
Digitaria sp.	0.4
Ambrosia sp.	1.9
Echinochloa crus-galli	1.9
Cyperus sp.	0.4
Leersia sp.	9.6
Carex sp.	0.6
Bidens sp.	0.4
Eleochris sp.	0.6
Polygonum sp.	1.9
Total	71.5

B. Wood Duck Study

The wood duck study started on Mingo National Wildlife Refuge in 1966 was continued in 1969. Primary objectives of the project are: (1) to study the results of increasing the number of nesting boxes on the Refuge in order to evaluate this technique as a means for expanding a wood duck population and (2) to develop a method for censusing wood ducks on the Refuge. This was the last year for some aspects of the study, but nest box checks and banding incubating females will continue in 1970.

Wood duck production from nest boxes increased again in 1969. Production of wood ducks for the four years has been 166, 320, 494, and 782. This increase occurred in 1969 even though the number of boxes available decreased from 270 in 1968 to 200 in 1969. Just before the 1969 nesting season, 62 old nest boxes in which predation had been the most severe were removed. The results was quite striking as nesting success in old boxes increased from 25 percent in 1968 to 58 percent in 1969, and nesting success in all boxes increased from 43 percent to 70 percent.

Seventy-two percent of the wood duck females captured in boxes in 1968 returned in 1969, suggesting a high survival rate for the population. Twelve web-tagged wood ducks also returned to nest in 1969 for the first time. Nine of these had hatched within two miles of the box where they nested, but three hatched in boxes at Duck Creek Wildlife Area, about five or six miles away. Severe competition for nest boxes at Duck Creek apparently resulted in some females searching elsewhere for nest sites.

Black rat snakes were again the major nest predators in the boxes, but they destroyed only 15 percent of the wood duck nesting attempts, compared to 33 percent the previous year. The reduction in predation rate was due primarily to removal of the 62 old boxes. Marking of individual snakes by removal of post-anal scales in 1967 and 1968 established that the same snakes continue to destroy wood duck nests from year to year. More evidence for this conclusion was collected in 1969, as 17 of 20 snakes found in nest boxes had been previously marked. Snakes found in nest boxes this year were collected and released about 15 miles away. This probably helped to reduce snake predation, and it should help in future years as well.

Spring flight counts, brood counts, and roost counts were continued in 1969, but counts were made less frequently. The flight counts suggested that there was little change from 1968 in the wood duck breeding population, but brood counts and roost counts indicated a decrease in wood duck production for the area. Spring flight counts and roost counts appear to be useful as population indices, but brood counts may be questionable because of changing water conditions on the Refuge.

WOOD DUCK NESTING DATA

Mingo National Wildlife Refuge

	1966	1967	1968	1969
Boxes available	125	263	270	200
Nesting Attempts	61(49%)*	73(28%)*	100(37%)*	98(49)*
Successful	15(25%)	31(42%)	43(43%)	69(70%)
PredationBlack rat	22(36%)	22(30%)	33(33%)	15(15%)
snake PredationRaccoon	11(18%)	4(5%)	3(3%)	1(1%)
PredationStarling	0	5(7%)	9(9%)	0
Desertion	13(21%)	11(15%)	12(12%)	13(13%)
Ducklings hatched and	166	320	494	782
left box Nesting females captur	red 23	38	47	69
Females returning from previous year		15(65%)	20(53%)	34(72%)

* = Percent usage (nesting attempts/available boxes)

IV PUBLIC RELATIONS

A. Recreational Uses

We had a considerable decrease in our overall public use from 89,000 last year to 76,000 this year. Over half of our total public use was by fishermen and the fish kill ended that type of recreation about two months early.

Our self-guided auto tour route (25-miles long) was open every Sunday afternoon during October and November. This year the route went through the Natural Area and attracted more visitors. The tour route was more enjoyable since it passed two moist soil units where heavy concentrations of waterfowl were located.

A two mile auto route around Red Mill Pond was left open all year. We had hoped that people interested in seeing waterfowl would take advantage of the short tour. But use by people and waterfowl was light.

A large cypress stump was transported from Monopoly Marsh to the lawn next to refuge headquarters. The stump has served as a visitor attraction and has also given visitors a true perspective of cypress that were once in the area. (See Fig. 15.)

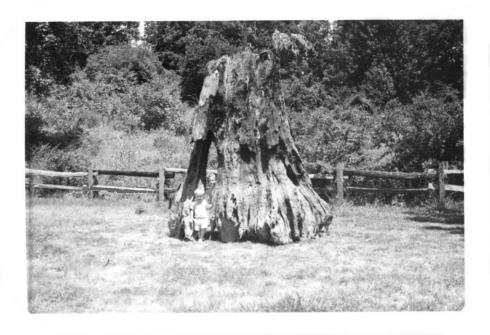


Figure 15. It makes a nice hidding place from mom too.

B. Refuge Visitors

Date

Name

1/15 1/23 2/4 2/26 3/3 3/5	Gerald Cummings Marvin Duncan Wayne Sanders Paul Bydler Phillip Morgan Donald Boyd	Havana, Illinois Regional Office Jeff. City, Mo. St. Louis, Mo. Regional Office	Area Biologist Public Use - Planning Enforcement Procurement - GSA Planning
3/5 3/5	Ed Stevenson Ray Wright	55 52 21 22	Engineering
3/20 3/20	Lynn Greenwalt Phillip Morgan	52 52 58 53	Planning "
6/4 7/4	C.H. Wilson Bill Burlison	Mo.Cons. Dept. Congressman, Mo. 10th District	Refuge tour Investigation of fish kill and closing of Egypt gate on refuge.
7/5 7/5	Joe Richey Clark Wingard	Regional Office	Contract Inspection
8/22 9/4	Douglas Duff R.W.Burwell & wife	Mo. University Regional Office	Study-tour Refuge Planning and meeting personnel
9/16 9/18 9/25 9/26	Ron Easton Mark Sulivan Lyle Miller V. Dorairaj	Regional Office Mo. Cons. Dept. Regional Office India - with Dept. of State, Agency for Interior Devel- opment.	Engineering Tour refuge Discuss Safety Refuge tour
12/17	John Umberger	Regional Office	Discuss location of Sanitary landfill for Job Corps.
12/17	John Langenback	Regional Office	

From

C. Refuge Participation

This year was one of our busiest for field work, but we still maintained a public relations program. A list of accomplishments for the year follows:

Month Event

January Toll, Berlinger, Shelton attended a Boy Scout dinner honoring Lonnie Hassel and Dr. Skillings (local Dr.) for many years of service. Toll acted as M. C. Berlinger and Shelton attended a Seminar at Gaylord Laboratory on parasitism in Redhead and Blackheaded Ducks by Dr. M. W. Weller.

Purpose

- February Shelton's son, Steve, made Eagle Scout. Shelton, his wife, and Manager Toll attended ceremonies and provided transportation for the troop to Cape Girardeau to participate in the activities.
- March Berlinger accompanied Dr. Crouch and 6 Eagle Scouts on a bird field trip on the refuge. Toll made a camp-out with Explorer Scouts on the area.
- April Shelton conducted tour of refuge with 55 fifth graders from Puxico.
- May Shelton went with 5 school groups of 270 children of different ages from southeast Missouri on tours of the refuge. Manager Toll presented slide talk to 15 Rotary Club members at Chaffee, Missouri. Shelton assisted with boy scout pre-camporee training, Mr. Toll went with this same group to Camp Lewallen on camporee. Ninety Wayne County Saddle Club members went on trail ride through the Refuge.
- June Toll went with group of Explorer Scouts on overnight campout at Jacks Fork river. Mr. Berlinger took instructor and 5 Biology students on studytour of Refuge.
- July Shelton and Berlinger accompanied Congressman Bill Burlison, Mr. Burlison's father and brother, Mayor Smith from Puxico, and Mr. Hodge from the Puxico Press on a general observation and information tour of Refuge concerning the fish kill. Mr. Toll spent day with newsman John Stanard from Poplar Bluff, explaining the fish kill, how it happened and the Refuge plans and objectives.
- August Manager Toll spent two days with Bill Royce, photographer for the Ozark Graphic Magazine, taking pictures for story about the refuge. Mr. Toll also made slide talk and toured the area with 12 Assembly of God Rangers and 7 adults from St. Louis.
- Sept. Numerous contacts were made by all refuge staff answering questions about the up-coming archery season.

- Oct. Mr. Toll gave talk and toured area with 15 Ecology students from Southwest Missouri State College, 12 members of the Business & Professional Womens Club of Cape Girardeau, and 25 State Game Agents and Duck Creek personnel. Steve Berlinger presented slide talk, toured and discussed the refuge with 10 members of the Kennett Federated Garden Club of Kennett, Missouri.
- Nov. Scheduled talks were discontinued for the month because all personnel assisted with the deer archery season.
- Dec. Berlinger presented slide talks and toured refuge with 34 Biology students from Jackson and 35 college students from Cape Girardeau, Missouri.

D. Hunting

This was the third year that archery deer hunting was permitted on the refuge. This year 2,500 additional acres were opened to hunting, bringing the total to 6,500 acres. Special permits were issued to 1,385 hunters, 175 less than last year. Archers were allowed to drive into the hunting area and parking was provided at five designated areas. (See Fig. 16.) Last years total kill was 25 deer. This year 36 deer were killed of which 26 were bucks. (See Fig. 17.)

The first refuge squirrel hunt will open in June, 1970. The squirrel hunting area will be the same as the area presently open to archery deer hunting.

Although no duck hunting was permitted on the refuge, this year we significantly contributed to the hunting success on Duck Creek State Wildlife Area which is adjacent to the refuge. The two moist soil plant units flooded in October were only one-half mile from the Duck Creek boundary. Several thousand ducks, after feeding in our moist soil plant units, would fly to Duck Creek. In the past, we have had enough water areas on the refuge to hold ducks both day and night. But this year with our lack of water and flooded waterfowl foods, the ducks moved to other areas to loaf. Hunter success on Duck Creek was the second highest in the area's history. A total kill of 6,775 made this year the fourth highest kill ever to occur on that area.



Figure 16. More gravel would have been needed if we would have had the normal amount of rainfall.



Figure 17. This little white-tail field dressed at 187 pounds. (Signs made by Job Corps)

E. Violations

Few violations occurred this year. The fine cooperation of the State Game Agents, plus an extra State Agent in Wayne County evidently was helpful in reducing violations.

The following cases were made on or near the Refuge:

Robert and Darrel Black, 10/21, litter on Mingo National Refuge, plead guilty, fine \$50.00, CC \$11.00 each.

William L. Walker, 11/16, hunt on Mingo National Refuge, plead not guilty, found not guilty.

Jackie Duane and Buddy Leon Walker, 11/16, interference with officer in line of duty, plead not guilty, found guilty, fine \$50.00, CC\$11.00 each.

Herbert Morris, 11/16, refuse inspection of camper pickup, plead guilty, fine \$25.00, CC \$11.00.

Herbert Morris, 11/16, illegal possession and transportation of wild deer meat, plead guilty, fine \$50.00, CC \$11.00.

F. Safety

Ten formal safety meetings were held this year on the first Monday of each month. In addition to the monthly meetings, safety problems and suggestions were discussed each Monday morning at our work meetings. Personnel were encouraged to discuss and correct unsafe practices.

This station had no lost time accidents for 1969. We now have 1,683 days without a lost time accident.

VII. OTHER ITEMS

A. Items of Interest

Lonnie Hassel died on May 30, 1969 from lung cancer. Lonnie had been with the refuge since 1954. His love and interest in all kinds of wildlife will long be remembered by refuge personnel. Richard Sebree was hired in May as our new maintenanceman. Richards first job was pouring a concrete curb next to headquarters. Rich did such a good job he ended up pouring concrete water control structures during the entire summer. Rich is a hard worker and we are glad to have him with us.

B. Job Corps

The refuge and Job Corps have become completely segregated. We no longer have work meetings together to discuss present or future projects. Much of their work is being done for the U. S. Forest Service at Poplar Bluff 25 miles away. We feel we have work projects on Mingo which could entail any kind of work Job Corps would care to do. But our suggested projects are either not acceptable or not adaptable to their program.

C. Egypt Gate

After receiving a petition from local residents protesting the closure of Egypt Gate, Congressman Bill Burlison challanged our right to close the gate at all. In fact, he suggested "that the complaintants remove the gate and force the government to demonstrate its authority in court".

The gate was legally closed by court order in 1953. Even after Congressman Burlison was notified that the gate had been legally closed, he said he would stand by his statement. At least the press seemed to be on our side this time and the gate is still standing. (See Fig. 18.)

D. Credits

Berlinger completed all of report except:

Shelton typed all of report and wrote I-A, VI-B,C,E,F

Fredrickson wrote V-A

Hansen wrote V-B

Toll wrote VII-B

THE SOUTHEAST MISSOURIAN

Issued by Naeter Bros. Publishing Co.

Evenings Except Sunday

An Independent Newspaper

34

Cape Gigardena Oct. 31, 1969

Jesus said unto him, Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind.-Matthew 22:37.

Who pays the piper?

We question the soundness of the advice Rep. Bill D. Burlison gave petitioners protesting a gate blocking a road into the Mingo Wildlife Refuge and doubt seriously his contention the route is a public road.

It is rather startling for a congressman, once a prosecuting attorney, to suggest that his constituents risk arrest in the quest of a remedy.

And that is exactly what the 10th District representative in Congress has suggested. He said he thought they should remove the gate to "force the government to demonstrate its authority in court."

What happens if the court finds the petitioners had no right to remove the gate — the probable result of any test of the government's authority? Is Rep. Burlison going to pay the fine or serve the sentence of those who took his advice?

Instances of this type are the cause of many problems facing the country today. If you don't believe in a law, or if something doesn't suit your fancy, break the law or take matters into your own hands.

We believe there are remedies in the courts available to the petitioners other than by removing the gate, being arrested and then letting the government bring the issue to trial.

Mr. Burlison might have been banking on the authorities at Mingo not to do anything if the gate were removed, thereby allowing the petitioners to win by default. But if the wildlife people, and the Department of the Interior did so, how could they ever expect to enforce any regulations on the refuge?

Apparently our congressman didn't do any homework on the status of the road before he made his suggestion that the gate be removed in his belief this was a public thoroughfare.

Stoddard County records, as The Missourian reported Tuesday, show the road was vacated by the County Court on Nov. 2, 1953. By doing so the court declared this no longer was a public road. Its use since that time has been at the discretion of Mingo authorities who have kept it closed, until this year, for 5½ months out of the year without protest. This year it was closed permanently to provide better control of refuge management.

Mingo authorities told The Missourian there are only five employes to manage 22,000 acres of refuge. They said they closed the road to help offset poaching and prevent accidents from hotrodders. Other control factors also were involved.

It is our opinion that the Mingo authorities acted properly and in the public interest to close this road. There is another route open to the public in general, one that is most commonly used.

While a few, including a relative of Rep. Burlison, may be somewhat inconvenienced by the gate across the Egypt Gate Road, the best interests of the public require the road to be closed.

Figure 18. Extra - Extra - Read all about it!

SIGNATURE PAGE

Submitted by:

Toll Joll

(Signature)

Title

Refuge Manager

Date:

February 5, 1970

Approved, Regional Office:

Date: 2-12-70

. Mugan (Signature)

A8880

Regional Refuge Supervisor

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WATERFOWL

(1)			Week	s of :	repor	ting	perio	đ		
Species	l	2	3	4	5	6	7	8	9	10
Swans:										1
Whistling								1		
Trumpeter				8						
leese:	8,000	10,500	12,000	12,000	12,000	12,000	8,000	8,000	8,000	8,00
Canada	a granara	201700	a	and the second	20,000					
Cackling										
Brant			7							
White-fronted				1	1	E.			P { 0	10
Snow				3	3				25	2
Blue									6.7	5.1
Other										
lucks:	20,000	14,500	10,000	24,500	28,000	35,000	22,000	37,500	38,000	30,00
Mallard	100	200	200	1,050	750	750	100	500	1,920	1,00
Black Gadwall	300	300	100	A3030	1,000	500		500	259	50
	500	1,000	100	1,750	2,000	1,500		1,000	250	
Baldpate Pintail	2,000	1,000	500	7,000	8,000	10,000	6,000	8,000	8,000	2,00
	100	1,000	700	700	500	500	200	0,000	03000	6.910
Green-winged teal	200	-		100	200	200	644			
Blue-winged teal Cinnamon teal										
Shoveler						50				10
Wood	1010	300	50		200	200	200	200	200	- 2
Redhead		300	20					200	6.99	+- ""
Ring-necked						800	300	3,000	2,000	3,00
Canvas back						680.0		23000	6.9000	290
Scaup, Leaser									100	- 2
Goldeneye										<u>+</u> −− [−]
Bufflehead		+								
Ruddy				<u> </u>						
Other								+		+
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WATERFOWL (Continuation Sheet)

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White-fronted Snow								1.04.191	296 012		
Blue Other				1	1000				2,515		
acks: Mallard	10,000	1,000	50	50	<i>b</i> 0	50	20		1,894,760		
Black	300	20		Teent	nind rup	Filoso T	elect.	Closnee,	11,110 26,550 53,120		
Gadwall	300	30	10110		an ap	Propriet.	3.0	ices. 9	Decis Kuyy JA	an shown	1.06
Baldpate		30	- Hade	1.1.1.1.1.1	0.02	9 OF 5	1.1. C.1.7.	195 000	7.23464.54	the general	6.12136
Pintail	3,000	239							389,900		
Green-winged teal	200	100			이 변화하는 것	14,1914	Ce Ref	1068 <u>11</u> 6	27,500		
Blue-winged teal		100	300	100	700	A CON	900		26,200		
Cinnamon teal				10	at an	0.00	5.00		1.050		
Shoveler		450	20	50	50	200	200		1,060 30,800	20	200
Wood	2,30	300	350	350	-400-	- 100	600	15/232	303000	-	Allen Contest
Redhead		-		12 AL	8.cm	· · · · · · · · · · · · · · · · · · ·			75,530		
Ring-necked	1,000	time.	300	30	- 7 9	1 1287.0	1000		1 100		
Canvasback	200								2,690		
Scaup . Lesser	50		-		1.1	- J - 11 10	1.1		2,730	Part and a	10.000
Goldeneye											
Bufflehead						1.1			000		······
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					over)						

(5) Total Days Use :	(6) Peak Number : Tota	(7) al Production	SUMMARY
ans	0	0	Principal feeding areas Boekhouse Cypress, edges of
ese 718,083	12,009	0	Menopoly Loke, and refuge corn fields.
cks 2,558,290	50,000	280	Principal nesting areas Artificial meeting boxee and
ots 6,580 :	250	0 20	natural cavitics.
Reog SPOC CAL ST Contract Cal St			Reported by John E. Tall - Nefuge Manager
INSI	IRUCTIONS (See Sec:	s. 7531 through	7534, Wildlife Refuges Field Manual)
) Species:			on form, other species occurring on refuge during the
			d in appropriate spaces. Special attention should be and national significance.
) Weeks of Reporting Period:		pecies of local	and national significance.
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Reporting Period:	given to those sp Estimated average	pecies of local e refuge popula	and national significance.
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Interior Duplicating Section, Washington, D. C. 1953 3-1750 Form NR-1 (Rev. Mar > 1953)

WATERFOWL

Sec.

REFUGE	ingo					MONTHS OF	May 1	TO Augus	31 , 196	9
(1)	*		Week	sof	(2) repor	ting	perio	d		
Species	1	2	3	4	5	6	7	8	9	10
Swans:						İ	1			1
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										-
Brant								-		
White-fronted										
Snow										
Blue										
Other						1				
Ducks:										
Mallard	10	10	10	10	10	10	10	10	10	10
Black										
Gadwall	10			7.		1				
Baldpate						1				
Pintail					1	1 1				
Green-winged teal										
Blue-winged teal	50		-				-			
Cinnamon teal							a.			
Shoveler	20									
Wood	700	850	850	900	900	900	900	900	900	900
Redhead										
Ring-necked										
Canvas back										
Scaup					8					
Goldeneye										
Bufflehead										
Ruddy										
Other										
Hooded Merganser	08	120	120	150	150	120	120	750	150	120
Coot:	20	10	10							+-

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Redhead Ring-necked Canvasback					1000	192.07	1040.01	551 A			
Scaup Goldeneye Bufflehead										1705 05	
Ruddy Hooded Mergenper	120	120	120	120	120	300	300	300	14,420	5	169
oots: Doney Laba Laba Laba			i Godine					3			
					over)						

Total Days Use :	(6) <u>Peak Number</u> : <u>Tot</u>	(7) al Production	SUMMARY
Swans	120 735	730 - 532	Principal feeding areas Red Kill Pond Area.
Ducks 130,831	1,310	951	Principal nesting areas Artificial nesting boxes
280 :	20 :	0	and natural cavities.
		-35	Reported by Stephen 3. Berlinger - Aset. Refuge Manag
INST	RUCTIONS (See Sec	s. 7531 through	7534, Wildlife Refuges Field Manual)
(1) Species:	reporting period	should be adde	on form, other species occurring on refuge during the d in appropriate spaces. Special attention should be and national significance.
2) Weeks of Reporting Period:	Estimated average	e refuge popula	tions.
			tions. mber of days present for each species.
Reporting Period: (3) Estimated Waterfowl	Average weekly p Estimated number sentative breedi	opulations x nu of young produ ng areas. Broo	
Reporting Period: (3) Estimated Waterfowl Days Use:	Average weekly p Estimated number sentative breedi	opulations x nu of young produ ng areas. Broo ing habitat. E	mber of days present for each species. ced based on observations and actual counts on repre- d counts should be made on two or more areas aggregating stimates having no basis in fact should be omitted.
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Interior Duplicating Section, Washington, D. C. 1953 3-1750 Form NR-1 (Rev. Mar

1953)

WATERFOWL

REFUGE	ngo					MONTHS OF	Sept. 1	TO	n , 19	
(2)			Weeks	of r	(2) e port	ing	perio	đ		
(l) Species	ı :	2	3	4	5	6	7	8	9	10
Swans: Whistling Trumpeter										
Geese: Canada Cackling					50	50	120	1,500	2,000	2,000
Brant White-fronted Snow								5	5	10
Blue Other								20		
Ducks: Mallard Black	100	100	100	100	100	250	250	600	7,000	16,000
Gadwall Baldpate						30 150 / 20	30 250 20	1,000 200 100	2,000 200 50	
Pintail Green-winged teal		200	200 300	100 50	100 50		10		200	100
Blue-winged teal Cinnamon teal Shoveler		0000		1 000	1.000	1.000	1,000	200	<u></u>	50 2,000
Wood Redhead Ring-necked		900	900	1,000	1,000	1,000	1,000	1,000	1, 100	
Canvas back Scaup										
Goldeneye Bufflehead Ruddy				-						
Other Hooded Merganser	100	100	200	100	100	200	100	100	100	- 100
Coot:							50	100		- <u>\$</u> 0

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Cont TR-1

10 5

(Rev. March 1953) WATERFOWL (Continuation Sheet)

m) fotal Production:	y enniner.	leeks	of r	(2) . e p o	rti	ng mo	eri	od	: (3) : Estimated		(4) action
() .es(1) mpsz.:										and the second se	: Estimate
Species	11 Maximum	: 12	: 13	: 14 :	15	: 16	: 17	: 18	: days use	: seen	total
Swans:	Y GAMMET.	1 01 1221	a 16001.0	1	1						
Whistling					1.127	1					
Trumpeter	TOP-OL P	10 Lineso	US USDI	1901 3							
Geese:	sentativ	e inreati	C gress	. RLOO	r "conur	12 2300	TO DE		NO-OL PETC -	a chestitue	
Canada	3,000	5,400	5,400	5,420	6,000	6,000	9,000	12,000	105,110	ens sico	eratinc
Cackling		1							and the other the province	fe on re	10,100
Brant de Geo.	Average	deaxt. L	OUTRE TO	ue x no	LOGI DI	0.07	brezer		or a large second		
White-fronted								10 million (1990)			
Snow		10			30				20		
Blue		- Sec. 90	. ternie	bohare	70				2,100		
Other								1			
lucks:								1	And the division of the Annual A		Personal refer to the second reserves
Mallard	20,000	23,000	12,000	19,000	15,000	10,000	120,000	1,300	1,315,300		
Black	203	6.23.9	100.	19,000	200	100	200	50	12,600		
Gadwall	1,000	100	50	50-	50				33.760	as shoul	9 00
Baldpate	1600	150	200	1,000	20	500	150	10	30,870	and there is	And the second
Pintail	1,500	1,030	500	1,000		1,500	500	10	64,670		
Green-winged teal	500		50	109	50		1.1.1.1	Contraction of the	11,200		
Blue-winged teal				1					5,880		
Cinnamon teal		1									
Shoveler	30	400	2009	50					6,000		
Wood	2,000	2,000	700	100	500	500	250	50	124,600		
0											
Ring-necked	100			1		+			1,600		Realized and the second
Canvasback		-									
Scaup		+				1011 1013		ELGER.			
Goldeneye		+									
Bufflehead				+	10000	-		-			
Ruddy	1										
Other loods longates	100	50	20	20	20	NAU TR	1.9	12688	0.200		
	688 600 D								1,500	-	
(2)	101		Denodity	1100				8			
			1								
					over)						
					UVEL)						

(5) Total Days Use :	(6) (7) Peak Number : Total Production	SUMMARY
wans		Principal feeding areas Sockhouse Oppress Marsh,
eese 107,960	12,000	Honopoly Hasek, and Company Farm Noist Soil Units.
ucks 1,615,187	42,800	Principal nesting areas
oots 1,50 :	100 :	13800
Pine-utured basi Tisepool basi Juu sier Nood	<u>100 100 100 100 100</u>	Reported by Stophen S. Berlinger
The still of teal	RUCTIONS (See Secs. 7531 through	n 7534, Wildlife Refuges Field Manual)
 Species: Weeks of Reporting Period: 		55, 400, h0, athenti, cost 1, 300, 1, 305, 300
3) Estimated Waterfowl Days Use:		mber of days present for each species.
+) Production:	sentative breeding areas. Broc	aced based on observations and actual counts on repre- od counts should be made on two or more areas aggregating Estimates having no basis in fact should be omitted.
5) Total Days Use:	A summary of data recorded unde	er (3).
) Peak Number:	Maximum number of waterfowl pre	esent on refuge during any census of reporting period.
) Total Production:	A summary of data recorded unde	er (4).

Interior Duplicating Section, Washington, D. C. 1953 3-1751

Form NR-14

(Nov. 1945)

Refuge Mingo IN Refuge

MIGRATORY BIRDS

(other than waterfowl) Months of. Jan. 1 to April 30

195 69

(1) Species		2) Seen	(3 Peak Nu	3) umbers		4) Seen	Teres 0	(5) Production	n	(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number <u>Colonies</u>	Total # <u>Nests</u>	Total Young	Estimate Number
I. Water and Marsh Birds:								brade		
Pied-billed Grebe Great Blue Haron Little Elue Haron Green Heron Yellow-crossed Night Heron American Bittern Cosmon Egret Cattle Egret Double-crested Cormorant Sandhill Grane Sora	Winter 2 1 1 1 1 2 2 2 1	Resident Lesident 3/30 1/9 1/5 1/3 1/3 1/9 1/6 1/3 1/4	50 15 10 10 30 7 1 2 50	3/10 3/30 1/22 1/30 1/30 1/30 1/30 1/30 1/30 1/30 1/30	2 1 Summer Summer 1 2 7 2 2 1	1/30 Resident Resident 1/30 1/30 1/30 1/28 1/28 1/3 1/1				150 30 60 200 50 15 10 10 6 2 50
Killdoer American Hoodcock Spotted Gandpiper	1 2 1	3/8 3/14 3/25	60 80 50	1/30 3/25 1/30	Summer Summer	Resident Resident				150 150 100
Nourning dove Nourning dove Truce-munged dove Oolden eagle Oolden eagle										
				(over)				3711		

III. Doves and Pigeons: Mourning dove White-winged dove Resident: 1,000 1/30 100 IV. Predaceous Birds: Golden eagle Duck hawk , March Horned owl, Great 1 1/20 2 3/11 1 1/3 IV. Predaceous Birds: Golden eagle Duck hawk , March Horned owl, Great 1 1/20 2 3/11 1 1/3 100 Resident 1 1/1 25 3/1 1 1/3 100 10 Resident 50 1/30 1 3/30 10 <th></th> <th>(6)</th>		(6)
Golden eagle 1 1/20 2 3/11 1 1/3	200	2,000
Golden eagle 1 1/20 2 3/11 1 1/3		
Duck hawk , March 1 1/1 25 3/1 1 3/30 Horned owl, Great Resident 50 1/30 10 10 Hornet 50 1/30 10 10 10 10		2
Horned owl Great Resident 50 1/30 10		50
MICRARETER VIL INCLUDED DU NY L	30	50
Raven Screech Oul Resident 50 4/30 10	30	50
Crow Resident 550 2/3	30	50 50 50 50 800
Bald Eegle 1 1/1 11 1/1 1 3/26		15
Turkey Vulture Resident 50 3/15		100
Black Vulture Resident 25 3/15	İ	50
	10	10
	10	120
Cooper's Have Resident 20 1/30	40	120 20 20
Loggerhead Shrike Resident 10 2/15 4/19 Ospray 1 4/18 1 4/18 1 Reported by John Toll		20

(1) Species:

INSTRUCTIONS

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 Gruiiformes)

- II. Shorebirds. Gulls and Terns (Charadriiformes)
- III. Doves and Pigeons (Columbiformes)

IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous

Passeriformes)

- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Lal: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1751

Form NR-1A

MIGRATORY BIRDS

(Nov. 1945)

(other than waterfowl)

Months of Hay 1 to August 31 195 69

I. Water and Marsh Birds: Great Blue Heron Green Heron Little Blue Heron Cattle Egret Common Egret Yellow-crowned Hight Heron American Bittern Pied-billed Grebes 2 II. Shorebirds, Gulls and	Date	Number 30 250 250 4 50 30 20 20	Date 8/15 8/10 7/25 5/4 7/1 5/20 6/1 8/31	Number	Date resident	ing perie 9 Species 1208 (990)	Total # <u>Nests</u>	Total Young	Estimate Number 70 60 300 10 70 60 30 30
Great Blue Heron summer ru Green Heron " Little Elue Heron " Cattle Egret 4 Common Egret summer ru Yellow-crowned Night Heron " American Bittern 1 Pied-billed Grebes 2	s/4 resident	250 250 4 50 30 20 20	8/10 7/25 5/4 7/1 5/20 6/1	n 14 summer 1	" 5/4 resident " 7/7	ing perie 9 Species 1208 (990)			100 300 10 70 60 30
II. Shorebirds, Gulls and									
Terns: Killdeer American Woodcock Spotted Sandpiper Forster's Tern Black Tern Summer Summer <t< td=""><td>5/5 5/16</td><td>100 100 50 30 50</td><td>7/30 8/30 7/20 5/16 5/16</td><td>Bonnator N R 8 5</td><td>resident # 6/16 5/16</td><td></td><td>20</td><td>50</td><td>250 150 100 100 80</td></t<>	5/5 5/16	100 100 50 30 50	7/30 8/30 7/20 5/16 5/16	Bonnator N R 8 5	resident # 6/16 5/16		20	50	250 150 100 100 80

(2)	(3	3)	(4	<u>4)</u>	(5)	1	(6)
Rəsident	1,200	8/25	Reald	ent	200	100	2,000
	20 20 50 500 30 10 10 50 10 30	8/1			10 Stephen S. B	30 arlinger	20 30 50 1,000 30 30 60 10 30
	Resident	Resident 1,200	Remident 1,200 8/25	Resident 1,200 8/25 Resid	Resident 1,200 8/25 Resident	Resident 1,200 8/25 Resident 200 Resident 20 30 8/1 10 10 10 10 30 10 10 10	Resident 1,200 8/25 Resident 200 400

(1) Species:

INSTRUCTIONS

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. <u>Water and Marsh Birds</u> (Gaviiformes to Ciconiiformes and Gruiiformes)

II. Shorebirds, Gulls and Terns (Charadriiformes)

III. Doves and Pigeons (Columbiformes)

IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous

Passeriformes)

- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) T 1: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A

(Nov. 1945

MIGRATORY BIRDS (other than waterfowl)

(1)	(2	2)	(3	5)	(4)	Second (Date	(5)		(6)
Species	First	Seen	Peak Nu	mbers	Last	Seen		roductio	the state of the s	Total
Common Name	Number	Date	Number	Date	Number	Date	Number <u>Colonies</u>	Total # <u>Nests</u>	Total Young	Estimate Number
1. <u>Water and Marsh birds</u> . Pied-billed Grebe Great Blue Heron Belted Kingfisher Little Blue Heron Green Heron Tellow-crowned Might Heron Common Baret Gattle Saret Sora Rail	2 Recident Summer S 5 50	Sept. Sesident	6 30 10 50 200 10 10 15 100	Nov. Sept. Sept. Sept. Boy. Sept.	Winter Resident	Besiden				20 60 20 100 300 20 20 20 20 20
II. <u>Shorebirds, Gulls and</u> <u>Terns</u> :		Mark								
American Hoodcock Killdeer Sootted Sandpiper Common Snipe	Summer Summer 5	Resident Resident Sept.	250519	Sept. Sept. Sept. Oct.	Resident	Oct.				60 100 100 20
Worlds and Streets:					-					1 ¹ -22

	(1)		2)	(;	3)	(4)	(5)		(6)
Mour	<u>s and Pigeons</u> : ning dove e-winged dove	Rezi	dent	1,000	Sept.	Resident			2,000
Gold Duck Horn Magp Rave Crow Turk Made Bald Spann	aceous Birds: en eagle hawk, ed owl, I Ma de n a cy Vulture iagle row deak tailed han bouldered Base	l k Rest Rest	11/15	L 6 15 15 50 1,000 30 60 10 10 50 50	Nov. Nov. Dec. Dec. Dec. Dec. Dec. Dec. Dec. Dec	Kinter Reside	ant	Berlinger	4 10 30 30 100 2,000 60 120 10 20 100 100 20
		Use the corr	rect names		UCTIONS		st, 1931 Edition, a	nd list group	
(1)	Species: First Seen:	order. Avoi form, other priate space significance	id general species c es. Speci e. Groups	terms as occurring al atten s: I. <u>Wa</u> II. <u>Shu</u> III. <u>Dov</u> IV. <u>Pro</u>	s "seagu on refug tion show ter and M orebirds ves and M edaceous	l", "tern", etc ge during the re ald be given to <u>Marsh Birds</u> (Gav <u>Gulls and Tern</u> <u>Pigeons</u> (Columbi	c. In addition to porting period sho those species of 1 viiformes to Ciconi as (Charadriiformes formes) Cormes, Strigiforme P	the birds lis uld be added ocal and Nation iformes and G	ted on in appro- onal ruiiforme
	First Seen:	order. Avoi form, other priate space significance The first re	id general species o es. Speci e. Groups	terms as occurring al atten s: I. <u>Wa</u> II. <u>Sh</u> III. <u>Do</u> IV. <u>Pr</u> ord for th	s "seagu on refug tion show ter and l orebirds ves and l edaceous he specie	Ll", "tern", etc ge during the re- ald be given to <u>Marsh Birds</u> (Gav <u>Gulls and Tern</u> <u>Pigeons</u> (Columbi <u>Birds</u> (Falconif es for the seaso	c. In addition to porting period sho those species of 1 viiformes to Ciconi as (Charadriiformes formes) Cormes, Strigiforme P	the birds lis ould be added ocal and Natio iformes and G) s and predaced asseriformes)	ted on in appro- onal ruiiforme
(2)	First Seen:	order. Avoi form, other priate space significance The first re The greatest	id general species o es. Speci e. Groups ofuge reco t number o	terms as occurring al atten s: I. <u>Wa</u> II. <u>Shu</u> III. <u>Dor</u> IV. <u>Pro</u> ord for the	s "seagu on refug tion show ter and M orebirds ves and M edaceous he species ecies pre	Ll", "tern", etc ge during the re- ald be given to <u>Marsh Birds</u> (Gav <u>Gulls and Tern</u> <u>Pigeons</u> (Columbi <u>Birds</u> (Falconif es for the seaso	c. In addition to eporting period sho those species of 1 viiformes to Ciconi (Charadriiformes formes) Cormes, Strigiforme Pon concerned. ced interval of tim	the birds lis ould be added ocal and Natio iformes and G) s and predaced asseriformes)	ted on in appro- onal ruiiforme
(2) (3)	First Seen: Peak Numbers:	order. Avoi form, other priate space significance The first re The greatest The last ref	id general species o es. Speci e. Groups ofuge reco number o fuge recor	terms as occurring al atten s: I. <u>Wa</u> II. <u>Shi</u> III. <u>Dor</u> IV. <u>Pri</u> ord for the of the spi od for the	s "seagu on refug tion show ter and M orebirds ves and M edaceous he species ecies pre	Ll", "tern", etc ge during the re- ald be given to <u>Marsh Birds</u> (Gav <u>Gulls and Tern</u> <u>Pigeons</u> (Columbi <u>Birds</u> (Falconif es for the seaso esent in a limit s during the sea	c. In addition to eporting period sho those species of 1 viiformes to Ciconi (Charadriiformes formes) Cormes, Strigiforme Pon concerned. ced interval of tim	the birds lis buld be added ocal and Natio iformes and G o s and predaced asseriformes) e.	ted on in appro- onal ruiiforme
 (2) (3) (4) (5) (6) 	First Seen: Peak Numbers: Last Seen:	order. Avoi form, other priate space significance The first re The greatest The last ref Estimated nu	id general species o es. Speci e. Groups ofuge reco unber of y	terms as occurring al atten s: I. <u>Wa</u> II. <u>Shi</u> III. <u>Dor</u> IV. <u>Pr</u> ord for the of the spo rd for the	s "seagu on refu tion show ter and M orebirds ves and M edaceous he species ecies pre e species duced bas	Ll", "tern", etc ge during the re- ald be given to <u>Marsh Birds</u> (Gav <u>Gulls and Tern</u> <u>Pigeons</u> (Columbi <u>Birds</u> (Falconif es for the seaso esent in a limit a during the sea sed on observati	c. In addition to eporting period sho those species of 1 viiformes to Ciconi as (Charadriiformes formes) formes, Strigiforme Pon concerned. ced interval of tim ason concerned.	the birds lis ould be added ocal and Nation iformes and G of the second second casseriformes) e.	ted on in appro- onal ruiiforme

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

Mingo IW

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge

For 12-month period ending August 31, 19

Reported by Stephen S. Berlinger

Title Asst. Refuge Manager

(1) Area or Unit	(2 Habi	tat		(3)	(4) Breeding	(5)
esignation	Туре	Acreage	1	<u>Use-davs</u>	Population	Production
Timber	Crops Opland Marsh Water Total	1,127 5,760 2,133 500 9,520	Geese Svans Coots	2,134,511 524,552 0 3,991 2,663,054	140	325
Timber II	Crops Upland Marsh Water Total	528 3,676 3,000 7,554	Ducks Geese Swans Coots Total	1,423,101 371,557 0 2,661 1,797,319	300	425
Tinber	Crops Upton® Marsh	612 3,760 0	Ducks Geese Swans	1,185,918 196,708	160	202
III	Water Total	200	Coots Total	2,215 1,301,814		
	Crops Upland Marsh Water Total		Ducks Geese Swans Coots Total			
	Crops Upland Marsh Water Total		Ducks Geese Swans Coots Total			
Joonsenan II./-a e n	Crops Upland Marsh Water Total		Ducks Geese Swans Coots Total			
	Crops Upland Marsh Water Total		Ducks Geese Swans Coots Total			

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 entityapart from other areas in the refuge census pattern. The combined estimated acreages of all units should be 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 flooding facilitates use of non-aquatic type foods; 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 e

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.

Interior Duplicating Section, Washington, D. C. 27580

I an star	Refuge Mat		hulat-11	S. C.	estoso, nard	hs o	f Jame	luo Lt	to <u>l</u> t	April 30 , 19 69
(l) Species	(2) Density		(3) Young oduced		(4) Sex Ratio		(5) Remove		(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.
	5,000	10	29. C	tr 1 ≈3	-lini ed bi	0024	1.891		500	ALL CLOSE PARTY AND
Porkey	10,000	166.6	210	0.000.88	, producedy 1 T	6-1413 6-1-1-3	на 90 К	liberre Liberre	60	
radic i			2570.000		ange ees gebo	40(23	leer p ante	urro Lanva	ientos piet Nu norma	
	Second Second	Class Sec	112) ANS	1087 - Y	व्यक्तराज्य संगध		200	e Tay x	14 (\$K0)\$61	Racio, tal 1997-
	a successford and a successford and a successford and a successford and a successford and a successford and a s		NT SEL NTET N		ing the return	in di Galeria	o ta citada a citada	ote: ofe: c	n Indonési - 2 Serie serie P	
include:	and the equipment of the	real series and series			guy bulurets 1963: 1010	1 5.0 1 <i>0 8</i> 1	iser unter		vit ur an tain Christian 1980 (
				1.63	iskinan kilinin	0.91	62	19235		naliga nel a che

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 Mingo Mational Wildlife Befuge

Months of May 1 to August 31 , 1969

(l) Species	(2) Density		(3) Young oduced		(4) Sex Ratio	1	(5) Remova	ls	(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	arc	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobuhi te Narkay	5,000	10 166.6	8	60 25	id)∾ la ìta a		aricean Print Sector	in the second	500 60	11997186 4 9(10909) - ([]) - ([])
" other	g patal (according)			12.05				(51-3). W (ura bra o tati Nga kataya	
	denter a cost es	013			्रम् । सन्दर्भ ने लेख	11-1	Alba	- 14.*	a grand	(C. (H. C. MALS) (C. C.
	per la la la la la la la la la la la la la		i 1991 (1991) Rolei (1995		iter sit git 1 garting is	77 0 9800	nuabe Pieze p	la to pros	tar na ma tari da	
ebulent (ret il orrego Ala		o žpo Navin v		n de oktober de Le oppetitier de la const Le oppetitier de la const	b Co Nasr	nuar Estre	bourt dates	Critican's Co Alexandro Alexandro	ennaken (j.)
				, der	eer rol 1200 (r		17 <u>8</u> 1)	50 hrs	일 전에 2월 13	an style about the graves

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

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

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

	Refuge				Mont	hso	r <u>s ac</u>	iep t.	to to	Dec. 31 , 19_ 69
(l) Species	(2) Density		(3) Young oduced		(4) Sex Ratio		(5) Remova	als	(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.
Bobahite	5,000	10	der Kein	nu ibed	id bo fodios	uoda	8897	B (155)	500	THE REPORT OF THE PRODUCT (E)
-ergen ul	10,000	109		L beau	pressioni b	gaks e t lu	an S <mark>a</mark> Ziya	10901 10997	100	Contraction of Automatic VC (
other	orie l'adude data p	154098	abrid Ly	9.007 1	rilly of or fid	0.00		- argen E isto a	nador (dd 11 aelrega	1188 XSN (4)
	boinse in ent	9611 (Site	nch Im	-41.1	angena di s	1.0	ndata	91 J.E.S	In Licets No	· · 21.23 #201
ebulor	period This may 1 g reriain seasons		132 B.I.	çe (do) vor 1 p		aeór ar a	numbe Tani		l bostecije: Di fizicije:	(3.) TRUAL
ebgihval a	all service of board	vəs əsə vədir	a Long a	licali Leo P	nun anterari Munos apecit	billos Autor	user Lister	tions fit et	inti per jini Stan per ji	. HDL-SALMANN (
				1	an ar Lindd	he	क्षत्व	56133	દ્ય મંદ્રી અંગ સ્વ	sentra and do gine
									-	
-+								~		

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.

3-175

 BIG GAME Refuge Calendar Year 1969

(1) Species	(2) Density	(3) Young Froduced			()†)	ls		Lo	(5) sses	In	(6) troductions	(7) Estima Total Popula	ated Refuge	(g) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	D1 sease	Minter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
bito-tailed Deer	15,000		36										600	1:1
						100	506 1. 1642)	•			raes sera Lori		niti) Ani	
	od on instanta ta rotati taasa													
	20 20 5 m	i territ		1 					00000 30000		- ^ ^ C - ~ ^ A	47) a. 1922 593 (1955) - 593		
0 1740	nimterat as you a should be	Concernant Line							n kod Lan is	8448 12	1124	223 - 223) 1. 1993 - 1993	690 	

Reaarks:

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 Louisians 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 herdwoods, 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) REMCVALS: Indicate total number in each category removed during the year.
- (5) LCSSES: 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 <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIC: Indicate the percentage of males and females of each species as determined from field observations or through removals.

INT.-DUP. SEC., WASH., D.C. 59319

3-1754

Form Nh 4 (June 1945) SMALL MAMMALS

Refuge_Mingo National Wildlife Refuge

Year ending April 30, 1969

(1) Species	(2) Density		shi.		(3) ovala	ige do	80 20	D		(4) tion of	Fire		92	(5)
April 10	ender daal, in faat na <mark>f fe</mark> d eroek Siglijt and ret bet	atire) n erre Co				1994 - 1 1.505	arage a nor	Shar	e Trap	ping	uge	ted		Total Popula
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Re- search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	tion
Hink Taskrat Beaver Rececon Dossum Red Fox Striped Skunk Striped Skunk Striped Skunk Striped Skunk Striped Skunk Striped Skunk Striped Skunk Striped Skunk Striped Skunk Striped Skunk				6 12 19 54 10 0 0 3 3		beran haqi oʻnas a boʻ a boʻ a fil a	105 2		187 187 110 0 3 3	2 7 10 67 0 0 0 0	501d # #	Loca	72	200 1,500 1,000 2,000 20 50 300 50 3,000 2,000 10,000 3,000 200
• List removals by	Predator Animal Hunte:	turinati d Hasiri Geotorea Matanati Matanati			5 7 s 63 1 s 7 0 8 0 8 0	S and Second	7 Mi edau ist ist en bi ti ci	ine-tree ine-tree andT decare be abo	40 112 12:012 22:22 22:20 20:00 20:00 20:00					

Reported by

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, shorttailed 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 headingslisted.
- (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.

32715

3-1755 Form "R-5 6070

DISEASE

Mingo National Wildlife Refuge

Refuge_

Year 19. 69

Š	Botulism	Lead Poison	ning or other Disease	
Period of outbreak	None	Kind of disease	None	
Period of heaviest los:	ses	Species affected		
Losses: (a) Waterfowl (b) Shorebirds (c) Other	Actual Count Estimated	Number Affected Species	Actual Count Estimated	
Number Hospitalized	No. Recovered % Recovered	Number Recovered		
(a) Waterfowl(b) Shorebirds(c) Other				
Areas affected (location	on and approximate acreage)			
	age depth of water in sickness, reflooding of exposed flats, etc.			
	n and invertebrate life	Remarks		

Ł

3-1757 Form NR-7

Rev.June 1960)

Mingo Sational Mildlife Refuge

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Year 19 🙆

námblaitan ais sér den 2014 Bot-Applie	(0			s and Re					Plant)		
	(Seed	ls, ro	otsto	cks, tre	es, sh	rubs)		(Marsh - Aqua Amount	tic - Upland	1	1	
	Amount (Lbs., bus.,	(2) C or		Method	~	(3) Total Amount	Location of	Rate of Seeding or	Planted (Acres or Yards of	Amount and Nature of			Cause
Species	etc.)	R	Date	Source	Cost	on Hand	Area Planted	Planting	Shoreline)	Propagules	Date	Survival	of Loss
este -				a a a a									BORE
												,	
											5		
(2) C =	ort agrond Collectic "S" to de	ons ar	d R =	Receipt		R-8	Remarks:						
Marsh a: Hedgero Food st:	eage plant nd aquatic ws, cover rips, food plantings	pato pato	hes										

(l)

3-1758 Form NJ (Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Cultivated		ittee's Harvested		Government's arvested		or Return	Total	Green Manure, Cover and Water-	
Crops Grown	Acres	Bu./Tons	Acres	Bu./ Tons	Acres	Bu. /Tons	Acreage Planted	fowl Browsing Crops Type and Kind	Total Acreage
		A C A	V ¹ L		1997	ACT ACT	hor pa	To To	
Corn	18	778			9	383	27	Clover for Brouse	2 20
Soybeens	315	6,297	105	2,099		41.140 11.61 11.61 11.61 11.61 11.61 11.61	420	Pasture land for Goose Browse	80
			6		100			10 01 01 01 01 01 01 01 01 01 01 01 01 0	
	5		and a						
			18		N COL		8 g 1 g		
			-		1	1 등 1 원 중	일 관련적		2.2
			<u>8</u>			1 1 1 1 2	nel la		12 - 4
		elle Lis elle Lis rit D elle Chol	8 				troop of	Fallow Ag. Land.	
		리우 종종성	5		14 A.	지역을 성격 중			3.6

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	Grazing	Number Animals	AUM®S	Cash Revenue	ACREAGE	
	ted 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A LA	troute Erec carte	1. Cattle	Ы	216.25	\$324.50	117	
	de Li so de Li so Vall I sumuk I sumuk JoT JoT		Tooq I coast' ang Fr	2. Other	Lot. P between between		S CLA		
				1. Total Refug	ge Acreage	Under Cul	tivation	447	
Hay - Wild				2. Acreage Cultivated as Service Operation					

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.

<u>Cultivated Crops Grown</u> - 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 thenumber of acres utilized by the permittee for his own benefit should be shown under the <u>Acres</u> column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the <u>Bushels Harvested</u> column. Report all crops harvested in <u>bushels</u> 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 Unharvesed 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 <u>Cultivated Crops</u>, 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. 3-1758 Form N 7 (Rev. J.n. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Cultivated Crops Grown	Permittee's Share Harvested		Government's Sha Harvested			or Return	Total	L Cov	Green Manure, Cover and Water-	
	Acres	Bu./Tons	Acres	Bu./ Tons	Acres	Bu. /Tons	Acrea Plante		Browsing Crops and Kind	Total Acreage
Carra	218	10,503			107	5,173	325		astare land for loose Brouse	
Soybeans	273	6,903	91	2,301		1	366			
		ora ado	AN DAM				Aut Jo Aut Jub	100		NATHU The BC
		To Allo Lo Allo Lo Br	th Iwo				and a large large	uft ben		
			THE R. L		1072 1071 1071 1071			Fal	low Ag. Land.	0
No. of Permittees	•	Agricultura	l Opera	ations	9	Haying OF	Derations	0	Grazing Opera	tions
Hay - Improved (Specify Kind)	Tons Harvested		Acres	Cash Revenue	Gra	Q I	umber Lmals	AUM'S	Cash AC Revenue	REAGE
	er kei byku sen ten		en ys en ys es - conc stuc stuc	1. Cattle		136	N 5	\$815.00	255	
	13 3	546 A 2.4			등 실패했는 -	2 1 2 2 2 1		140	a (u - 50 -	

	Tota Tota Perenci	rioTra 9707121	and the cover, id boot	2. Other	be tary of the target of target	001 + 10 001 + 10 001 + 10	and the second				
				1. Total Refuge	Total Refuge Acreage Under Cultivation						
Hay - Wild			2. Acreage Cultivated as Service Operation								

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

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

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

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

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

cover, green manure, grazing or hay crops, estimate the tonnage of green through the planting of grain, Show the exact acreage column. 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. Show the acreage and food produced or utilized and report under Bushels Unharvesed - Harvested If grazing is made available to waterfowl or Return Government's Share

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

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

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

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

3-1760 Form NR つ (April 15-3)

HAYING AND GRAZING

Refuge Mingo Mational Mildlife Befuge

Befoge Year 19

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Har- vested	Perio From	od o	f Use To	Rate	Total Income	Remarks
Howard Shelton	34	GU-2h	75	19 4		M	-	10/N	\$2.00 per	\$38.50	
John E. Toll	35	00-2h	75	26 3/4		-		12	AR	\$53.50	
Andrey Walk	37	68-2h	75	170		97		88		\$35.00	
John A. Sifford	38	05-2h	75	14 3/4		8			a	\$29.50	
Herman Doublin	39	68-23	42	168		18		9	\$2.00	\$1.68.00	\$1.00 worth of
Ray Dean Hodge	10	00-13	129	2054		а		8	Par	9285.50	fortiliser per
Glaud Walk	ki.	GB-15 and 16	135	529 ¹ 2		8			46	8529.53	required.
Totals: Acrea	ge grazed	372		Animal us	se months.	1,061.	25		Total	income Gra	81,139.50 azing
Acrea	ge cut for l	hay		Fons of 1	hay cut				Total	income Ha;	ying

3-1761 Form NR-11

TIMBER REMOVAL

Refuge Year 195

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
10182								- HOME
Total acreage	cut over		Total inc	ome				
No. of units	Ties			slash disposal.				
Interior-Duplicating Secti								24316

Contraction of the second seco				and a second sec		and the second design of the s		
3-1979 (NR-12 (9/63)	Bure	au of Sport Fisheries a	and Wildli	fe	Refu			
INSTRUCTIO		PORT OF PESTICI		ICATION		osal Number	Reporting Ye	ear
Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)Hay and June	Broadleaf woods in corn	Various cropland areas on the refuge	300	2-le-D Andme	150 lbs.	is lb/ac.	Water 10 gal/ac	Broom . Sprayer
(2)Hay and June	Broadleaf woods in soybeans	Various cropland areas on the refuge	200	Trifluralin (Troflam)	300 lbs.	l'i lb/ac.	Water 10 gal/ac	Ground . Equip.
(3)May and June	Weeds in corn	Various cropland areas on the refuge	50	Atrasine	50 lbs.	1 1b/ac.	Nater 10 gal/ad	Ground . Equip.
					*			
		́л						
						1		

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

(1) Good to excellent control.

(2) Fair to good control depending on circucstances of application.

(3) Good to excellent control.

3-1750

Form NR-1 (Rev. Mar h 1953)

WATERFOWL

MONTHS OF Sept. 1 TO Dec. 31, 19 69 REFUGE Mingo reporting . Weeks of period (1)4 Species 2 3 5 6 1 10 7 8 9 Swans: Whistling Trumpeter Geese: 50 50 1,500 Canada 120 2,000 2,000 Cackling Brant White-fronted Snow 5 10 5 20 50 70 Blue Other Ducks: 1.00 100 100 100 250 250 Mallard 100 600 7,000 16,000 200 Black 200 Gadwall 20 30 1,000 2.000 500 Baldpate 150 250 200 200 300 Pintail 100 20 30 50 2,000 Green-winged teal 200 100 100 100 100 Blue-winged teal 300 50 50 200 200 40 Cinnamon teal Shoveler 200 50 50 1,000 Wood 900 900 900 1.000 1.000 1.000 1.200 1.200 2,000 Redhead Ring-necked 100 Canvas back Scaup Goldeneye Bufflehead Ruddy Other Hooded Merganser 100 100 100 100 100 100 100 100 100 100 Coot: 50 100 50

Int. Dup. Sec., Wash., D.C. 37944

3-1750a

Cont NR-1

(Rev. March 1953) WATERFOWL (Continuation Sheet)

5 1

(7) Total Production:										: Produ	and the second sec
(0) ber(1) mper: : Species :	Marcinum : 11	12 12	13	ini bud : 14	15	16	17	18			Estimated
Swans: State page 1261	A sumar)		necor.ģ		. (3)						
Whistling											
Trumpeter	10, 10,201,01	e preed		27.0 × 17	1010000	0. <u>1966 - 1</u>	100	beels in	fect should be	omitte	d.,
Geese: Canada	3,000	5.100	5,400	5,400	6.000	6.000	9.000	12,000	405,440	es alta	
Cackling	5,000	23400	29,400	29400	0,000	0,000	73000		nd getual count	a on re	Dre-
Brant									****		
White-fronted	100123-000			12 Y 113	101 01	dave	05.00000	1 202 DE	eh appeller		
Snow		10			30				420		
Blue bout the personal	29 h 7108 h 6 h	90		1	70				2,100		
Other			1.000	1001101 6							
Ducks:				1					an din dan din karden din din karden din din karden din din karden din karden din karden din karden din karden		
Mallard	20,000	23,000	12.000	10.000	35.000	10.00	020,000	1,300	1,315,300		
Black	200	250	100	100	200			50	12,600		
Gadwall	1,000	100	50	50	50			20	33,740	n shoul	d he
Baldpate	400	450	200	1,000	500	500	250	10	30,870	e durit	a the
Pintail	1.500	1,000	500	1.000	1,000	1,500	500	10	64,470		
Green-winged teal	500		50	100	50	13133131		A WE THE	11,200		
Blue-winged teal									5,880		
Cinnamon teal											
Shoveler	30	700	200	50	Tohara				6,860		
Wood	2,000	2,000	700	700	500	500	250	50	124,600		
Redhead		1									
Ring-necked	100								1,400		
Canvasback		:			LITTOT	1.17	Section 2				
Scaup		2									
Goldeneye											
Bufflehead						1	100	el Compa	ny Farm Noist I	40.041	C.B .
Ruddy	1	1			LLIUGI	DET IG	tanho? -	mege —	7	in worker	
Atter Hooded Merganser	100	50	20	20	20				8,260		
Coots:	20	er i lote	al Produc	10700					1,540		
					over)						

3-1751

Form NR-1/

(Nov. 1945)

Refuge Mingo NW Refuge

MIGRATORY BIRDS

(other than waterfowl) Months of Sept. 1 to Dec. 31, 195 69

(l) Species	(2 First		(3 Peak Nu		(4 Last		F	(5) Production	n	(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # <u>Nests</u>	Total Young	Estimated Number
I. Water and Marsh Birds:			- 53	producty	area daran		e gan B	andre No <mark>e mu</mark> e q		
Pied-billed Grebe Great Blue Heron Belted Kingfisher Little Blue Heron Green Heron Yellow-crowned Night Heron Common Egret Cattle Egret Sora Rail	2 Resident Summer " " 5 50	Sept. Resident " " 11/17 Sept.	6 30 10 50 200 10 10 15 100	Nov. Oct. Sept. Sept. " " Nov. Sept.	Winter Residen	Residen				20 60 20 100 300 20 20 20 20 100
II. <u>Shorebirds, Gulls and</u> <u>Terns</u> :										
American Woodcock Killdeer Spotted Sandpiper Common Snipe	Summer Resident Summer 5	Resident Resident Sept.	30 50 50 10	Sept. Sept. Sept. Oct.	Residen 10	oct.				60 100 100 20
										17 ³ mo
				(over)						

_	(1)	(2)	(3)	(4)		(5)		(6)
III.	Doves and Pigeons: Mourning dove White-winged dove	Resident	l,000	Sept.	Resident				2,000
IV.	Predaceous Birds: Golden eagle Duck hawk, Marsh Horned owl, Great Magpixe Screech Owl Rayor Barred Owl Crow Turkey Vulture Black Vulture Bald Eagle Sparrow Hawk Red-tailed Hawk Red-shouldered Hawk Loggerhead Shrike	1 9/10 4 Sept. Resident "" "" " 2 11/15 Resident ""	4 15 15 50 1,000 30 60 10 10 50 50 10	Nov. Nov. Dec. Dec. Dec. Dec. Dec. Dec. Dec. Dec	Winter Resident "Resident " Winter Resident Resident " "		ien S. Be		4 10 30 100 2,000 60 120 10 20 100 100 20
	FARME and March Birls Areas and the second states and the second sold find the second sold find the second states from the second states from	Use the correct names order. Avoid general form, other species priate spaces. Spect significance. Groups	s as found l terms as occurring ial attent s: I. <u>Wat</u> II. <u>Sho</u> III. <u>Dov</u> IV. <u>Pre</u>	s "seagul on refug tion shou ter and M prebirds, res and P edaceous	A.O.U. Checklist, I l", "tern", etc. I e during the report ld be given to thos <u>arsh Birds</u> (Gaviifo <u>Gulls and Terns</u> (C <u>igeons</u> (Columbiform <u>Birds</u> (Falconiforme	931 Edition in addition ing period se species ormes to C charadriifo hes) es, Strigin	on, and 1 h to the d should of local lconiifor ormes) formes an	ist group birds lis be added and Nati mes and G	ted on in appro- onal ruiiformes ous
	 (2) First Seen: (3) Peak Numbers: (4) Last Seen: 	Kunher Date	of the spe	cies pre	sent in a limited i	nterval of			
INT	LBTPL	Estimated number of g							593)

3-17500 Form NR-1B

UNITED STATES (Rev. Nov. 1957) DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Mingo NW Refuge For 12-month period ending August 31, 19 69 Reported by Stephen S. Berlinger Title Asst. Refuge Manager

(1) Area or Unit		2) itat	(3)	(4) Breeding	(5)
Designation	Туре	Acreage	Use-days	Population	Production
Timber	Crops Morband Marsh Water Total	1,127 5,760 2,133 500 9,520	Ducks 2,134,511 Geese 524,552 Swans 0 Coots 3,991 Total 2,663,054	140	325
Timber	Crops Marsh Water Total	528 3,676 350 3,000 7,554	Ducks 1,423,101 Geese 371,557 Swans 0 Coots 2,661 Total 1,797,319	300	425
Timber III	Crops Mpland Marsh Water Total	612 3,760 0 200 4,572	Ducks 1,185,918 Geese 196,708 Swans 0 Coots 2,218 Total 1,384,844	160	201
	Crops Upland Marsh Water Total		Ducks Geese Swans Coots Total		
15. 15.	Crops Upland Marsh Water Total		Ducks Geese Swans Coots Total		
	Crops Upland Marsh Water Total	· · · · · · ·	Ducks Geese Swans Coots Total		
	Crops Upland Marsh Water Total		Ducks Geese Swans Coots 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 entityapart from other areas in the refuge census pattern. The combined estimated acreages of all units should be 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 flooding facilitates use of non-aquatic type foods; 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.

Interior Duplicating Section, Washington, D. C. 27580

UPLAND GAME BIRDS

3-1752 Form NR-2 (April 1946)

Provide State CANE STREET

Refuge Mingo National Wildlife Refuge

to Dec. 31 Sept. 1 19 69 Months of

(1) Species	(2) Density		(3) Young oduced		(4) Sex Ratio	(5) (6) (7)		(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.	
Bobwhite	5,000	10	ter Store	y ited	in be tritte	poda	1000	1 5a	500	o wala wa propin do l	
urkey	10,000	100			t a construction of the second second second second second second second second second second second second se Second second s				100		
				2207 	C2v of vL3	saiti	r Cost Lotos	lqqe I, ova		ાડાયના પ્રસ્થા નિસ્તરે ક	
	Autory Appare	ead an	egel (Bri		na tra data	nE.	y eelinii		n an the star	(5) BELLOVALS	
	periol Tola may 1 (************************************			aub ag da cui	Ang sub-pat Lipitheng bi	61716 9 8 19	edmin t svi	Lefo 9 225	n bernal osi Milliobraet	(6) TOTAL	
- now loose i	all .vevye il bass	an ei liede	d an b	nsd.	port mole rede	5-0	Sees	Jeu Sa	en etestori	COMPLANNE (1)	

statly columns applicable to the period noveral binals have

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.

3-17-7

(June 1945)

BIG GAME Refuge Mingo National Wildlife Refuge

Calendar Year 1969

(1) Species	(2) Density	(3) Young Froduced		Ren	()†)	als		Lo	(5) sses	(6) Introductions		(7) Estimated Total Refuge Population		(g) Sex Ratio	
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Minter Lose	Number	Source	At period of Greatest use	As of Dec. 31		
White-tailed Deer	15,000		36										600	1:1	
							and rest	2 18	arn Ieist						
	esti a contra contra l'antes e			13,											
	to be free of end of the		3												
	ri rol ne-cios se <mark>detareir</mark>		160- 2023		10 23 -	- 18-5. - 18-5.			1 477 1 4 77	948 26			199		

Reaaries:

the second second second second second second second second second second second second second second second se

Reported by

INSTRUCTIONS

Form NR-7 - 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 herdwoods, 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) <u>REMCVAL5</u>: Indicate total number in each category removed during the year.
- (5) LCSSES: 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 RATIC: Indicate the percentage of males and females of each species as determined from field observations or through removals.

INT.-DUP. SEC., WASH., D.C. 59319

3-1754 Form NH

SMALL MAMMALS

(June 1945)

Refuge Mingo National Wildlife Refuge

Year ending April 30, 1969

(1) Species	(2) Density				(3) ovale		87 3	ם	isposi	(4) tion of	Fure			(5)
							erras or inor	Shar	e Trap	ping	uge	ted		Total Popula-
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Re-	Permit Number	Trappers Share	Refuge share	Total Refuge Fure Shipped	Furs Donated	Furs Destroyed	tion
Mink Muskrat Beaver Raccoon Opossum Red Fox Gray Fox Striped Skunk Bobcat Cottontail Rabbit Swamp Rabbit Gray Squirrel Fox Squirrel Fox Squirrel Wood Chuck				6 12 19 254 44 0 3 3			105		4 5 9 187 44 0 3 3	2 7 10 67 0 0 0 0	Sold " "		lly	200 1,500 150 1,000 2,000 20 50 3,000 2,000 10,000 3,000 200

REMARKS:

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, shorttailed 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 headingslisted.
- (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.

32715

3 -1755 Form NR-5 6070

DISEASE

Refuge Mingo National Wildlife Refuge

Year 19. 69

¥	Botulism		Lead Poiso	ning or other Dise	9850
Period of outbreak	None		Kind of disease	None	
Period of heaviest loss	36S		Species affected		
Losses: (a) Waterfowl (b) Shorebirds (c) Other Number Hospitalized (a) Waterfowl	Actual Count	Estimated	Number Affected Species Number Recovered Number lost		
(b) Shorebirds(c) OtherAreas affected (location)			Source of infection		
Water conditions (avera	age depth of water, reflooding of ex		Food conditions		
Condition of vegetation			Remarks		

3-1757 form NR-1

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Rev.June 1960)

Refuge Mingo National Wildlife Refuge

Year 19 69

and the of some stimule space of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strains of the strain strain strain strains of the strain strain strain strains of the strain strain strain strain strains of the strain st	(See			s and Re cks, tre				(Plant Marsh - Aqua)		
Species	Amount (Lbs., bus., etc.)	(2) C or	Date	Method or Source		(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of	Amount and Nature of Propagules		Survival	Cause of Loss
NONE -													NONE
(2) C =	ort agrond Collectic "S" to de	ons an	dR =	Receipt		R-8	Remarks:						
Marsh au Hedgerov Food stu	eage plant nd aquatio ws, cover rips, food plantings_	patc patc	hes		**								

(1)

3-1758 Form N° 8 (Rev. c.n. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Cultivated Crops Grown		ittee's Harvested Bu./Tons		Covernment [®] arvested Bu./ Tons	Unha	or Retur rvested Bu. /Tc	e e	Total Acreage Planted	e fow	en Manure, er and Water 1 Browsing C ₁ e and Kind		Total Acreage
Corn	18	778	na sa		9	383	the VC	27	CI	over for Bro	wse	20
Soybeans	315	6,297	105	2,099	addir - Moord	Hartver Tuaren	Three a	420		sture land f	or	80
			rost Juszfuk (a Look 2 (1971) Alta (1971)	ar the states	A. L'East		tus bergue ne			
	alter to stress to stress stress rebuilt		tetaw br		101116 1 01 16 1 6 1 01				Fal	low Ag. Land.	. Land.	
o. of Permittees	Ta	Agricultura		ations		zing	Numt	ber	O AUM [®] S	Grazing Op		ions 2 EAGE
pecify Kind)	Harve	ested	Acres	Revenue	l. Catt	3 2 2 13	Anima	2. 8. 7	246.25	Revenue \$324.50		117
	dol.	veligub Notigub Veligub		di bris ara 11 , téron , bool	2. Othe	r	be trail	Parate Parate	410 7	120 Land		
					l. Tota	1 Refuge	Acre	eage Und	ler Cul	tivation		447
		1	2. Acreage Cultivated as Service Operation							1		

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.

<u>Cultivated Crops Grown</u> - 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 thenumber 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 Unharvesed 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 <u>Cultivated Crops</u>, 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.

3-1758 Form N° 9 (Rev. ...n. 1956)

Hay - Wild

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

2. Acreage Cultivated as Service Operation

Cultivated		Permittee's Share Harvested		Government's Harvested		Share or Return Unharvested		1 0	Green Manure, Cover and Water-			
Crops Grown	Acres	Bu./Tons	Acres	Bu./ Tons	Acres	Bu. /Tor	Acrea Is Plant		owl Browsing Type and Kind	Crops	Total Acreage	
Corn	218	10,503	Place 11. A		107	5,173	325	the of bu	Pasture land Goose Browse		40	
Soybeans	273	6,903	91	2,301	Monte Lid	polo " Mut Toke Traine Lake traine	364					
		strates and and and and and and and and and and	APA DACE			arcson and or the bur	onig ye ddige - 1. or - bibo.	rut bergo			13 - 147 1 11 11 11	
		stato e seta na pi ped cuch	retav br		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ricolo ricol to recult		F	'allow Ag. Lan	d.	C	
No. of Permittee	s:	Agricultura	l Opera	ations	9	Haying	Operation	S	0 Grazing	Operat	ions 2	
lay - Improved (Specify Kind)		ons ested	Acres	Cash Revenue	Gra		Number nimals	AUM*	S Cash Revenue	ACR	EAGE	
	id fair	bet o bet o han o has o		htodito	1. Catt	le	136	815	\$ \$815.00		255	
	pereul	L L qub	10T 10LLs1	tood tott t	2. Othe	er a a a	be tura	이 비원 이 것 같	bng bng	9		
					1. Tota	1 Refuge	Acreage U	nder C	Cultivation		689	

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

<u>Government's Share or Return - Harvested</u> Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. <u>Unharvested</u> 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 Unharvesed 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 <u>Cultivated Crops</u>, 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.

3-1760 Form NR (April 15.0)

HAYING AND GRAZING

Refuge Mingo National Wildlife Refuge Year 19

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Har- vested	Peric From	od of Use - To	Rate	Total Income	Remarks	
Howard Shelton	34	GU-24	75	19 ¹ 4	3	4/1	- 10/31	\$2.00	\$38.50		
John E. Toll	35	GU-24	75	26 3/4	_	17	TT	per AUM	\$53.50		
Audrey Walk	37	GU-24	4 75 17 ¹ z " " \$35.00		\$35.00						
John A. Sifford	38	GU-24	75	14 3/4		11	" \$29.50				
Herman Doublin	39	GU-23	42	168		ŤŤ	11	\$1.00	\$168.00	\$1.00 worth of	
Ray Dean Hodge	40	GU-13	120	2852		11	11	per AUM	\$285.50	fertilizer per AUM also	
Claud Walk	42	GU -15 and 16	135	529 ¹ ź		11	11	- 11	\$529.50	required.	
Totals: Acrea	Totals: Acreage grazed 372 Animal use months 1,061.25 Total income Grazing\$1,139.50										
Acreage cut for hay Tons of hay cut								Total income Haying			

Interior--Duplicating Section, Washington, D. C.

3-1761 Form NR-1.

TIMBER REMOVAL

Refuge Mingo National Wildlife Refuge Year 195 69

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cu
NONE								- NONE
i 1 V Same								
Total acreage	cut over		Total inc	 come				
No. of units	Cords.			f slash disposal.				

Interior--Duplicating Section, Washington, D. C.

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

Bureau of Sport Fisheries and Wildlife

Refuge

Mingo National Wildlife fuge

Proposal Number Report

Reporting Year 1969

ANNUAL REPORT OF PESTICIDE APPLICATION

INSTRUCTIO	NS: Wildlife Refuges Ma	anual. secs. 3252d, 3394b and	d <u>3395.</u>					
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)
(1)May and June	Broadleaf weeds in corn	Various cropland areas on the refuge	300	2-4-D Amine	150 lbs.	12 lb/ac.	Water 10 gal/ad	Broom . Sprayer
(2)May and June	Broadleaf weeds in soybeans	Various cropland areas on the refuge	200	Trifluralin (Treflan)	300 lbs.	l'z lb/ac.	Water 10 gal/ad	Ground • Equip.
(3)May and June	Weeds in corn	Various cropland areas on the refuge	50	Atrazine	50 lbs.	l lb/ac.	Water 10 gal/ad	Ground Equip.
		· .						
		х ²						

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

- (1) Good to excellent control.
- (2) Fair to good control depending on circumstances of application.
- (3) Good to excellent control.