

BRANCH OF WILDLIFE REFUGES NARRATIVE REPORTS

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Operations

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~~MR. DeMONT~~ PAD

Land Management

~~MR. ACKERHECHT~~ COA

~~DR. MORLEY~~ Rem

Habitat Improvement

MR. BANKO WAB

MR. STILES S

MR. KUBICHEK \_\_\_\_\_

See Pgs. 2, 3, 4, 5, 6, 9, 10, 11

Stenographers

REFUGE MINGO

PERIOD May - August 1958

A NARRATIVE REPORT  
MINGO NATIONAL WILDLIFE REFUGE  
MAY THROUGH AUGUST, 1958

PERSONNEL

))  
\* Lyle J. Schoonover ----- Refuge Manager \*  
\* \*  
\* James W. Pulliam, Jr. ----- Asst. Refuge Manager \*  
\* \*  
\* Lytle J. P. Jennings ----- Operator General \*  
\* \*  
\* John A. Sifford ----- Clerk-Typist \*  
\* \*  
\* Audrey Walk ----- Mechanic \*  
\* \*  
\* Herman E. Wilfong ----- Operator General \*  
))

U. S. DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
PUEBLO, MISSOURI

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# MINGO NATIONAL WILDLIFE REFUGE

MAY THROUGH AUGUST, 1958

## I GENERAL

### A. Weather Conditions

Moisture conditions varied considerably within the refuge this year. On the south end, the rain came just about right for the crops. At the north end, several rains created standing water in the fields which drowned out large areas. The difference in extremes in rainfall on the refuge this period probably exceeded four inches.

The humidity has been high throughout the summer. Morning fogs were common, accompanied by heavy dews.

Our weather data is obtained from the Army Engineer's Station at the Wappapello Dam, located 3/4 mile from the southwest corner of the refuge.

### PRECIPITATION

<u>Month</u>	<u>This Month</u>	<u>Normal</u>	<u>Maximum Tempt.</u>	<u>Minimum Tempt.</u>
May	6.14	5.52	88	40
June	3.12	3.57	97	53
July	6.95	4.03	96	63
August	<u>2.40</u>	<u>2.28</u>	<u>94</u>	<u>54</u>
Total	18.61	Extremes	97	40

The total rainfall for both the year and the period are near normal as shown in the following tabulation.

### COMPARATIVE TABULATION OF PRECIPITATION

<u>Year</u>	<u>January thru April Precip.</u>	<u>May thru August Precip.</u>	<u>Total</u>
1949	20.64	15.67	36.41
1950	25.28	19.06	44.34
1951	16.55	14.52	31.07
1952	16.75	9.68	26.43
1953	13.99	8.32	22.51
1954	12.78	11.25	24.03
1955	10.93	15.97	26.90
1956	13.42	14.45	27.87
1957	22.11	26.76	48.87
1958	15.21	18.61	33.82

## B. Habitat Conditions

### 1. Water

The pool level was near 337.0 during most of May. A gradual lowering was made until the latter part of July, when our approved pool level of 335.0 was reached. Evaporation exceeded the run-off during the month of August and the pool lowered to 334.2 by the close of the period. Normally this is about the end of the hot part of the summer, so we can expect a gradual raising of the pool for the next two or three months.

### 2. Food and Cover

The waterfowl food supply, in general, looks very promising this year. Except for several periods of excessive rainfall, growing conditions have been almost perfect. More corn than usual will be available on areas most extensively used by waterfowl. This is largely a result of the expanded refuge farming program. Approximately 200 acres of browntop and Japanese millet will provide many bushels of feed on the pool margin and low fields. Due to the wet spring, many of the lower fields were too wet for permittees to tend. After it was evident that these fields would grow up to pest plants, refuge personnel sowed a number of them to millet. Normally all of these units flood during the winter and all of the seed produced will then be available for waterfowl.

Fifty-two acres of rice grown by a permittee will be left. About half of this acreage has an excellent stand of rice. The other field has a thinner stand of rice, but contains chufa, wild millet and other waterfowl food plants.

Seven acres of field peas were grown on an experimental basis to determine their value as goose food. Soybeans are commonly used in our crop rotation, but unfortunately they are not a preferred food in this area and there is still some question as to whether they are responsible for crop impaction. It was hoped that a variety of field peas could be found which could be grown by permittees for waterfowl feed in place of soybeans. Three different varieties were planted, all of which are producing well. The question we must now answer is, are peas a preferred goose food? How resistant are they to weather damage, fall sprouting, etc?

Two acres of upland rice was also planted on an experimental basis. This crop is discussed in greater detail under Section V, Field Investigations.

With frequent rains during the summer, the pool margins remained wet and soggy. A number of marsh plants thrive under these conditions and grew in great profusion. Scattered beds of chufa are found over a large area containing five or six hundred acres. Wild millet and smartweed also appear as scattered plants with no pure stands as we sometimes have at Mingo. Large areas are predominated by red rooted sedge Cyperus erythrorhizos. The achenes of the sedge are small, but are extensively used by green winged teal and when the beds are dense and the achenes are plentiful, mallards will sometimes feed heavily on them. Three years ago it was noted that little else was found in the gizzard or droppings of birds feeding in the bottom near the goose pen.

It is still too early to make a good evaluation of the mast crop, but at least a number of individual trees are bearing heavily. More non-producers seem to be present this year than last, but on the whole, it appears that the mast crop will again be one of our major sources of waterfowl food.

One of our big problems has been a shortage of green goose browse. Our supply will be greater this year than at anytime in the past with approximately 100 acres of ladino clover and 300 acres of winter wheat. Here again, our expanded refuge farming program has paid off.

## II WILDLIFE

### A. Migratory Birds

#### 1. Waterfowl

A substantial increase was noted this spring in the number of breeding wood ducks; but due to the dense shoreline vegetation, production has been difficult to evaluate. The response to baited areas prepared for trapping, however, has been greater than before, so we believe that the number of woodies on the refuge is slightly higher than a year ago.

Two hundred blue-winged teal moved in at the close of the period. Bare mudflats have shown up around the pool in recent weeks, making ideal feeding and loafing sites for blue wings. Mingo is apparently off the main migration route for this species as only small numbers of teal ever appear on the refuge.

For the first time, about 25 mallards remained on the refuge as summer residents. One nest was found and several others were



thought to be present. Some of these birds have impaired flight so it is possible that they are cripples, which came from the public shooting area at Duck Creek.

A sprinkling of pintails also began arriving the later part of August.

Twenty-three canada geese, which were held captive in the goose pen, until a year ago last spring are still seen from time to time on various parts of the refuge. So far we haven't found any broods, but it is possible that they could be present on some of the remoter portions of the refuge.

One lone blue goose also decided to stay for the summer. He is a solitary soul and it is always found by himself.

## 2. Doves

An unusually large concentration of doves appeared in late August. These are either local non-refuge birds or early migrants. Very few doves nested on the refuge, but the surrounding countryside does produce a fair number of birds. They are feeding chiefly in harvested millet fields and newly planted wheat fields. This is the largest concentration we have ever noted on the refuge at this time of the year.

## B. Upland Game Birds

### 1. Quail

No change has been noted in the quail population this year. A few early coveys are about two-thirds grown whereas some of the renesters are still incubating. One nest still had sggs in it the first of September. These birds won't be much larger than a sparrow by the time the season opens.

### 2. Wild Turkey

One broods of eight young turkeys were sighted on the refuge in August. Since turkeys are seldom seen during the summer, we cannot hazard a guess as to the population trend at this time.

## C. Big Game Animals

The deer herd is steadily increasing. A number of fawns are seen each week and numerous tracks have been observed on the pool margin and in the agricultural fields. So far, crop damage has not been extensive and other forms of conflict with waterfowl management are not apparent. A high deer population is desirable for it is bound to furnish better boundary hunting and provide enjoyment for fishermen and sightweers. Control measures may be necessary to keep the herd

healthy in the future, but for the time being, there isn't much to worry about.

D. Fur Animals, Predators, Rodents and Other Mammals

The heavy mast crop last year provided an abundant food supply for many of the small mammals. In most cases there is evidence of increases.

1. Squirrels

Many young squirrels have been seen along the roads this summer. Damage to a number of cornfields has been quite heavy. Perhaps the best solution to this problem will come through crop planning. In the small fields surrounded by timber, soybeans and milo may be a better bet than corn.

2. Foxes

No change observed in the population.

3. Raccoon

Raccoon continue to be a problem at Mingo. Despite a large removal (976) last year, there are more 'coon now than before. Many of the permittees have registered complaints as well as three farmers outside of the refuge. There are trails everywhere, some of them so heavily used that the soil has been beaten down to a solid path.

Highway mortality on state route 51 north of headquarters has been high this summer. We believe that a number of early cornfields east of the refuge drew many 'coon out of the bottomland, at a time when preferred foods were scarce. An estimated 25 'coon per mile have been killed during the course of the summer on this stretch of highway.

Considerable agitation has flared up this summer for a dog hunting season on the refuge. There are a number of problems with any type removal program and night hunting is no exception. We have been doing some thinking on these problems and would like to discuss this subject with some of the refuge branch personnel during their next visit.

4. Mink

Last year mink were down, but we have no way of telling what has happened this summer. We have heard rumors that the state is proposing a closed season this year, but there isn't anything official out yet.



## 5. Muskrats

Some road damage, especially on the ditch # 6 road has continued to show up. The trappers took relatively few rats last year, partially because of adverse water conditions and partially because the population was low. There isn't much evidence of muskrat activity around the pool this year, so we suspect that little if any change in numbers has occurred.

## 6. Rabbits

Swamp rabbits prefer wet brushy areas with heavy undergrowth. Ideal conditions followed the fire of 1952. The brushy areas are now being replaced by pole sized saplings and the vines and weeds are gradually being shaded out. In the future, we believe that the swampers will have less high quality habitat.

Cottontails should have a good year. With the frequent showers, cover has been more constant than normal. This has been a big help to all the upland game. A normal number of cottontails are seen along the roadsides at night.

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

Several large flocks of blackbirds hit the browntop millet fields the second week of August and damaged about 15 percent of our seed crop. This concentration seems to have moved on and only a few blackbirds are now present.

Depredation losses from crows has been unusually high this year. A large loss was inflicted on newly planted corn, some of which had to be replanted. Concentrations of about 100 birds are now feeding heavily on corn in these different areas on the refuge. Some corn fields now have about 30 percent damage from crows, squirrels and raccoon. This loss soon adds up to a lot of grain which waterfowl will never see.

## F. Fish

The fish habitat is now quite well established. The water levels have followed the same pattern for several years and not much change can be expected in fish numbers.

Spawning conditions were good this spring. The water extended well into the brushy zone where young fish had ample escape cover. As the summer progressed the water level lowered and all of the fish were forced to the ditches and open water. Under these conditions,

over stocking is not likely to occur.

We have noted that each year the number of large fish in the creel are increasing. This would indicate that the fishing pressure is not too heavy.

#### G. Reptiles

Considerable interest in snakes has continued among professional snake hunters and students. One group of students collected 200 pounds one trip. Snakes lead a hazardous life near the parking areas where fishermen concentrate. Some fishermen report that they are getting the best of the snakes.

### III REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

Two essentials for development are good weather and funds. Not having either this year, we are just trying to keep even.

##### 1. Wayne County Road

We were unable to get the contractor started hauling gravel last fall during the brief period of suitable weather that prevailed. Due to frequent rains, the work had to be delayed until the first part of August. This road is now complete and has become a valuable link in our road system.

##### 2. Burris Road

Work was started last fall on a road from Ditch # 2 to headquarters. Wet weather halted this work before this job was completed. Work was resumed in August in completing the fill and in getting the road ready for gravel. Since no funds were allotted for this project, we had to depend largely on staff help.

##### 3. Field Renovation

Twenty acres of persimmon sprouts were bush and bog disked to enlarge a goose feeding unit in Wayne County. We have found that the first bogging kills most of the sprouts. A second bogging the following summer breaks up the debris, making possible a seedbed for grass seeding with a minimum of hand labor.

##### 4. Equipment Building Painting

The metal equipment building had started to peel, leaving a shabby appearance. The old paint was removed by scrapping and an application of strong soap. A primer coat developed for use on galvanized surfaces was then put on, followed by a finish coat. This took considerable time, but was the only way to keep the building looking presentable.

#### 5. Parking Area Improvements

A new parking area was made near the goose pen bridge. Two wells, two toilets and several fireplaces have been added. A good deal of brush clearing, grading and gravelling was also accomplished at the Flatbanks area.

#### 6. Road Maintenance

It has been impossible for us to keep abreast of our road maintenance this summer. All of the roads have been mowed once and graded twice, but the vegetation has grown so rapidly that the roads need attention again. The pit gravel we receive apparently contains lime and other soil nutrients needed in the refuge soils. Weeds and grass grow more rapidly on the roads than anywhere else on the refuge.

### B. Plantings

#### 1. Cultivated Crops

##### (a) Soybeans

The soybean crop is considerably better than average. Some fields will yield better than 35 bushels per acre dropping down to about 10 bushels per acre on some of the wet fields. We will not take any of the soybeans as wildlife feed, but will exchange our portion of the crop for corn or milo.

##### (b) Corn

Seventy acres of refuge grown corn will yield about 35 bushels per acre. The permittee corn is extremely varied in quality, running from very good with expected yields of 70 bushels per acre to corn that will scarcely pay for the harvesting.

##### (Milo)

Nearly all of the milo has been hit by a fall army worm, which destroys the grain in the milk stage. The later crops are

especially heavily infested. Yields varying from 20 to 40 bushels per acre are expected.

(d) Rice

Rice has been the most consistent crop grown on the refuge. Due to lack of crop rotation some fields are beginning to drop in yield. The average yield is still expected to be about 70 bushels per acre. Aerial fertilization is becoming a common practice in the rice belt. Next year, we should endeavor to reduce our share of the soybeans used in rotation with rice to get our share of the rice fertilized.

(e) Millet

Japanese millet was tried on both the upland and bottomland. A very good stand was produced on the mudflats with expected yields of 40 or 50 bushels per acre. This variety cannot withstand dry weather and should only be grown on dry sites for a seed supply. In this climate, Japanese millet readily volunteers. Considerable millet is still present on one site which was seeded four years ago. It is quite possible that after extensive Japanese millet plantings are made on the refuge bottomland, good volunteer stands will be produced in succeeding years.

We are highly pleased with the performance of browntop millet on the drier sites. It will not withstand flooding, but does tolerate considerable drought. This crop is easily harvested and is a valuable crop on idle fields where the first crop failed. It does seem to be subject to insect damage and little shattering occurs. An SCS official reports that in laboratory tests, browntop millet was the most resistant to weather damage of all the millets tested. Yields on the refuge are expected to vary from 15 to 40 bushels per acre.

C. Fires

No fires during the period.

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Forestry Studies

The Central States Experimental Forestry Station and the University of Missouri have continued their studies on the refuge. They report that their pruning experiments look very promising and that

at a nominal cost it may be possible to make first grade lumber from pin oaks. They are also studying growth rates at various tree densities and mast production. If time is available this winter, Dr. Minckler has offered to help us make a demonstration plot, by removing all the cull trees and thinning to good forestry specifications. This will enable us to observe wildlife response to this type of management and will serve as a guide in future management.

#### B. Wood Duck Banding

Faced with an exceedingly high raccoon population this fall, a new approach was tried in wood duck trapping. Early in August a number of sites were baited. Traps were later set out with the tops removed. This aided in concentrating the birds so that a large catch could be made before raccoon learned to rob the traps.

The early results have been encouraging. Thirty-two wood ducks have been banded in the first four days of operation. All but one of these ducks were taken in a single trap.

So far, the adult-juvenile ratio has been running about 50-50. This is a much higher adult rate than we encountered in other species. This could reflect a high mortality of nests or broods.

#### C. Wood Duck Nesting Box Studies

Last spring 103 nesting boxes were erected in Monopoly Lake and on the Mingo River. These boxes were checked in July. Only two boxes which represent about 2 percent were used by wood ducks. With similar boxes erected two years ago, Duck Creek personnel report 41 percent usage. Probably the new boxes are not readily accepted. Low usage also occurred at Duck Creek the first season.

#### D. Upland Rice

Each year we have attempted to devote a small portion of our time to experimental crops which could improve our food supply. This program has resulted in the use of domestic rice and browntop millet on the refuge. This year, upland rice was tried on an experimental basis.

Upland rice is no newcomer to mankind. It has been grown for centuries in equatorial Africa in small jungle clearings. It was also an early crop of the colonist in Georgia.

Our experimental field consists of two acres planted the 21st of



May. The crop has headed and will produce a fair yield of rice. Weed competition has been serious and will reduce the potential of this planting. It is a long growing season crop, requiring about 125 days to reach maturity.

This variety of rice can be grown on the upland, similar to spring wheat. It requires no water and produces seed very similar to other varieties of domestic rice. We intend to plant an increased acreage next year to test it on the wet bottomland sites where other crops are difficult to raise.

## VI PUBLIC RELATIONS

### A. Recreational Uses

Fishing has continued to be popular on the refuge. Each year the trails made by fishermen are extending farther and farther into the brush. Now scarcely any of the area is exempt from the pole and line.

Crappie fishing has held up well throughout the summer. One outstanding catch of 243 crappie was made by four fishermen. Bass started hitting late in July and a few good catches have been reported every week.

The public is making use of most of the fireplaces and picnic tables on the recreational areas. Many of the toilets, however, are seldom used. It is rather discouraging to spend \$150 on a toilet then see fishermen 200 feet away hiding behind a tree.

If the present fishing trend continues, we will have in the neighborhood of 50,000 fishermen days use on the refuge this year.

### B. Refuge Visitors

<u>Date</u>	<u>Name</u>	<u>Purpose</u>
May 22	Dr. Baskett	Collecting Rabbits
June 26	John R. Cooley	Forest survey
June 26	Eldon L. Heflin	Forest survey

### C. Refuge Participation

One talk was given to a church group interested in wildlife. Cub Pack 123 was conducted on a wildlife tour and arrowhead hunt. The

boys gathered up a good portion of the loose rocks on the refuge, most of them of questionable origin.

D. Violations

One colored man was apprehended for shooting frogs on the refuge. He was fined \$1 with \$11 costs.

Another fisherman parked on one of the closed refuge roads. He paid a \$5 towing charge to a private tow truck operator and was charged with fishing on a resident license while a resident of another state. He happened to be a friend of the prosecutor who refused to file charges against him so he went free. The local state conservation officer, with whom we filed this case asked us to go out and get another colored boy - it would be a lot easier to get a fine he told us.

VII OTHER ITEMS

Mr. James Pulliam entered on duty as assistant refuge manager July 1. A North Carolina man is a rarity in Region 3, but if all the young men below the Mason Dixie Line have the enthusiasm Jim has, we need more of them.

*Lyle J. Schoonover*  
Lyle J. Schoonover  
Refuge Manager

Completed September 23, 1958

Approved *A. E. Jorgensen*  
(Regional Office)  
*Chief, Division of Wildlife*

*9/28/58*



Aerial seeding browntop millet from the refuge airstrip. Even seeding was made with sprouted seed containing some sticks and leaves. The cost was \$1.25 per acre.



A large snapper taken by one of the employees. It later ended up in the soup kettle.



Completing the fill on the Burris Road with the dragline and Bulldozer.



Browntop millet near Pearman Lane. Expected to yield about 40 bushels per acre.

W A T E R F O W L

REFUGE Mingo

MONTHS OF May TO August, 19 58

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

----- Estimated 100 adults and 200 young -----



WATERFOWL  
 (Continuation Sheet)

REFUGE Mingo MONTHS OF May TO September, 19 58

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods:Estimated seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard							25	25	350		
Black											
Gadwall											
Baldpate											
Pintail							25	25	350		
Green-winged teal											
Blue-winged teal							200	300	3500		
Cinnamon teal											
Shoveler											
Wood	----- Estimated 100 adults and 200 young -----								37800	3	200
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											

(over)

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans	:	:	:
Geese	:	:	:
Ducks	42,000	650	200
Coots	:	:	:

<u>SUMMARY</u>	
Principal feeding areas	_____
Principal nesting areas	_____
Reported by	<u>Lyle J. Schoonover</u>

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

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

3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge Mingo Months of May to September 1958

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
American Egret			500	August						700
Little Blue Heron			900	August						1100
Great Blue Heron			200	August						200
Green Heron			300	August						300

(over)



(1)	(2)	(3)		(4)	(5)		(6)
III. <u>Doves and Pigeons</u> :							
Mourning dove		1,200	8/15				2,000
White-winged dove							
IV. <u>Predaceous Birds</u> :							
Golden eagle							
Duck hawk		40	All summer				40
Horned owl							
Magpie							
Raven							
Crow		500	All summer				500
				Reported by <u>Lyle J. Schoonover</u>			

#### INSTRUCTIONS

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

3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Mingo Months of May to Sept., 19458

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Quail									1,500	
Turkey									20	8 young birds seen this period



## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

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

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

# WATERFOWL UTILIZATION OF REFUGE HABITAT

Mingo Refuge

For 12-month period ending August 31, 1958

Reported by Lyle J. Schoonover, Refuge Manager

(1)	(2)	(3)	(4)	(5)
Area or Unit Designation	Habitat Type      Acreage		Use-days	Breeding Population      Production
Unit No. 1	Crops	1,000	• Ducks	2,200,000
	Timber	1,500	• Geese	300,000
	Marsh	500	• Swans	
	Water	300	• Coots	
	Total	3,300	• Total	2,500,000
.....				
Unit No. 2	Crops	1,500	• Ducks	2,344,483
	Timber	8,000	• Geese	139,774
	Marsh		• Swans	
	Water	3,500	• Coots	
	Total	13,000	• Total	2,484,257
.....				
Unit No. 3	Crops	500	• Ducks	800,000
	Timber	4,900	• Geese	
	Marsh		• Swan	
	Water		• Coots	
	Total	5,400	• Total	800,000