

W A T E R F O W L

REFUGE Wheeler

MONTHS OF May TO August, 1968

[illegible]

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

WATERFOWL
 (Continuation Sheet)

REFUGE **Wheeler**

MONTHS OF May TO August, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimat seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	35	35	35	35	35	35	35	35	4,305		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	500	500	500	500	500	500	500	500	58,200	12	300
Black	200	200	200	200	200	200	200	200	23,850	4	100
Cadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal							50	150	4,600		
Cinnamon teal											
Shoveler											
Wood	600	600	600	600	600	600	600	600	70,500	10	300
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:									765		
					(Over)						

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	0	0	0
Geese	4,305	35	0
Ducks	157,150	1,450	700
Coots	765	25	0

SUMMARY

Principal feeding areas Garth Slough and scattered locations.

Principal nesting areas Scattered.

Reported by

Th. Z. Atkeson
THOMAS Z. ATKESON
Refuge Manager

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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Wheeler Months of May to August 19 68

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. <u>Water and Marsh Birds:</u>										
Pied Billed Grebe	Perm.	Resident	8	Aug. 31						600
Great Blue Heron	"	"	10	Aug. 31						800
Little Blue Heron	2	May 20	10	Aug. 20	1	Aug. 31				700
Green Heron	1	May 25	8	Aug. 25	1	Aug. 31				600
American Egret	3	June 1	12	Aug. 15	2	Aug. 31				600
King Rail	Throughout Pe.		75	Aug. 31						7,000
II. <u>Shorebirds, Gulls, and Terns:</u>										
Greater Yellowlegs	7	Aug. 1	100	Aug. 31	Still	present				1,000
Lesser Yellowlegs	5	July 28	150	Aug. 31	Still	present				2,500
Killdeer	Perm. Resident		800	Aug. 31						5,000
Spotted Sandpiper	Throughout Pe.		25					100	150	1,800

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	Perm. Resident	2,500	Aug. 31	700	1,000
White-winged dove					170,000
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow	Perm. Resident	400	Aug. 31	60	150
Barred Owl	" "	12	" "		25,000
Red Shouldered Hawk	" "	25	" "	5	800
Cooper's Hawk	" "	20	" "	5	15
Sparrow Hawk	" "	15	" "	3	2,000
Screech Owl	" "	50	" "	12	12
					1,200
					1,000
					3,600

Reported by **Thomas Z. Atkeson, Ref. Mgr.**

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

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Wheeler For 12-month period ending August 31, 19 68

Reported by Thomas Z. Atkeson Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production
I	Crops 2,020	Ducks 1,065,654	100	100
	Upland 469	Geese 2,018,046	0	0
	Marsh 0	Swans 0	0	0
	Water 5,799	Coots 40,090	0	0
	Total 8,288	Total 3,123,790	100	110

II	Crops 204	Ducks 400,000	60	70
	Upland 726	Geese 400,700	0	0
	Marsh 0	Swans 0	0	0
	Water 610	Coots 4,000	0	0
	Total 1,540	Total 804,700	60	70

III	Crops 298	Ducks 200,000	50	60
	Upland 1,903	Geese 200,000	0	0
	Marsh 0	Swans 0	0	0
	Water 1,173	Coots 2,000	0	0
	Total 3,374	Total 402,000	50	60

IV	Crops 1,120	Ducks 1,000,000	110	130
	Upland 1,338	Geese 800,000	0	0
	Marsh 0	Swans 0	0	0
	Water 2,630	Coots 98,000	0	0
	Total 5,088	Total 1,898,000	110	130

V	Crops 1,916	Ducks 1,000,000	160	160
	Upland 2,406	Geese 800,000	0	0
	Marsh 0	Swans 0	0	0
	Water 4,733	Coots 60,000	0	0
	Total 9,055	Total 1,898,000	160	160

VI	Crops 450	Ducks 400,000	120	170
	Upland 4,955	Geese 200,000	0	0
	Marsh 0	Swans 0	0	0
	Water 2,168	Coots 40,000	0	0
	Total 7,573	Total 640,000	120	170

	Crops 6,008	Ducks 4,065,654	600	700
	Upland 11,797	Geese 4,418,746	0	0
	Marsh 0	Swans 0	0	0
	Water 17,183	Coots 244,090	0	0
	Total 34,988	Total 8,728,490	600	700

(over)

INSTRUCTIONS

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

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary 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.

UPLAND GAME BIRDS

Refuge WheelerMonths of May to August, 1968

(1) Species Common Name	(2) Density Cover types, total acreage of habitat	Acres per Bird	(3) Young Produced		(4) Sex Ratio Percentage	(5) Removals			(6) Total Estimated number using Refuge	(7) Remarks
			Number broods observed	Estimated Total		Hunting	For Re- stocking	For Research		
Bobwhite Quail	Woods & heavy brush - 10,500 ac.	50	110	2,000	55% M. 45% F.	0	0	0	210	Pertinent information not specifically requested. List introductions here. Quail appear to have had excellent nesting season
	Cultivation & hay land - 5,000 ac.	2							2,500	
	Pasture - 1,226 ac.	4							306	
	Weed & light brush land - 2,274 ac.	2							1,137	
						Total.....			4,153	
Iranian Pheasants	Farmland & wood edges, 1,500 ac.	25	4	25	55% M. 45% F.	0	0	0	60	Still present, though numbers seem shrinking.
Wild Turkeys	Forest hardwood, pines, open land - 4,000 ac.	700	0	Unk.	55% M. 45% F.	0	0	0	6	A few still using on and off refuge portions of Redstone Arsenal, refuge portion.

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

REFUGE Wheeler NWR

MONTHS OF January TO April , 19 68

[illegible]

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

WATERFOWL
 (Continuation Sheet)

REFUGE **Wheeler NWR**

MONTHS OF January TO April, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl: days use	(4) Production Broods:Estimat seen : total
	11	12	13	14	15	16	17	18		
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	800	250	50	50	40	35	35	35	1,599	1,435
Cackling										
Bronx										
White-fronted										
Snow									2,791	
Blue									29,100	
Other										
Ducks:										
Mallard	1,000	800	500	300	200	200	200	200	686,040	
Black	500	500	200	100	100	100	100	100	277,000	
Cadwall	50	25	20	20	20	0	0	0	50,545	
Baldpate	100	50	25	20	0	0	0	0	158,265	
Pintail	300	500	300	100	50	25	0	0	60,725	
Green-winged teal	50	0	0	0	0	0	0	0	51,000	
Blue-winged teal			500	700	600	500	400	100	19,200	
Cinnamon teal										
Shoveler	100	300	200	100	50	25	20	0	60,615	
Wood	300	300	300	300	300	300	300	300	15,600	
Redhead	20	0	0	0	0	0	0	0	6,455	
Ring-necked	75	50	25	20	0	0	0	0	34,340	
Canvasback	20	20	0	0	0	0	0	0	19,345	
Scaup	50	25	20	0	0	0	0	0	31,915	
Goldeneye	0	0	0	0	0	0	0	0	6,430	
Bufflehead	25	20	20	0	0	0	0	0	19,930	
Ruddy	0	0	0	0	0	0	0	0	2,155	
Other H. Merganser	50	25	20	0	0	0	0	0	32,615	
R. B. Merganser	20	20	20	0	0	0	0	0	1,540	
Geese:	500	300	300	300	200	100	50	25	99,725	
White Wing Scoter										
Old Squaw					(Over)				1,155	

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	0	0	0
Geese	1,631,326	47,400	0
Ducks	1,564,919	48,000	0
Coots	99,725	1,500	

SUMMARY

Principal feeding areas White Springs Dewatered Unit,
Rockhouse-Buckeye Dewatered Unit, Garth Slough, Flint
Creek embayment.
Principal nesting areas 0

Reported by

Th. Z. Atkeson
Thomas Z. Atkeson, Refuge Manager

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. Band 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
(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Wheeler NWR

Months of January to April 19 68

(1) Species		(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name		Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:											
<u>Pied Billed Grebe</u>		PR	PR	15	Mar. 1	-	-	-	-	-	1,100
<u>Great Blue Heron</u>		"	"	25	Jan. 1	-	-	-	-	-	1,250
<u>Little Blue Heron</u>		1	Apr. 15	10	Apr. 30	Still	Present	-	-	-	80
<u>Green Heron</u>		1	Apr. 12	15	Apr. 30	"	"	-	-	-	100
<u>American Egret</u>		2	Apr. 10	6	Apr. 30	"	"	-	-	-	60
<u>Cattle Egret</u>		1	Apr. 12	12	Apr. 30	"	"	-	-	-	100
<u>Yellow Crowned Heron</u>		1	Apr. 15	5	Apr. 30	"	"	-	-	-	60
II. Shorebirds, Gulls, and Terns:											
<u>Ring Billed Gull</u>		"	-	800	Jan. 1	3	Apr. 15	-	-	-	50,000
<u>Herring Gull</u>		-	-	250	Jan. 1	1	Mar. 20	-	-	-	12,000
<u>Wilson Snipe</u>		Throughout period		500	Mar. 25	Still	Present	-	-	-	25,000
<u>Greater Yellowlegs</u>		7	Mar. 10	800	Apr. 5	"	"	-	-	-	10,000
<u>Lesser Yellowlegs</u>		5	Mar. 12	1000	Apr. 10	"	"	-	-	-	4,000
<u>Killdeer</u>		Perm. Res.		700	Apr. 15	-	-	-	75	130	60,000
<u>Woodcock</u>		1	Mar. 4	3	Apr. 15	3	Apr. 11	-	-	-	50

(over)

(1)	(2)		(3)	(4)		(5)			(6)
II. <u>Doves and Pigeons:</u>									
Mourning dove	Perm.	Res.	1,800	Mar. 1	Perm.	Res.	0	90	120,000
White-winged dove	-	-	-	-	-	-	-	-	-
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow	Perm.	Res.	100,000	Jan. 1	Perm.	Res.	0	25	4,500,000
Bald Eagle	-	-	1	-	1	Feb. 16	0	-	76
Barred Owl	-	-	20	Apr. 30	Perm.	Res.	0	-	2,000
Cooper's Hawk	-	-	25	Apr. 30	"	"	0	-	2,500
Sharp Shinned Hawk	Throughout Period		20	Mar. 20	Throughout Period		0	-	1,800
Red Shouldered Hawk	Perm.	Res.	30	Jan. 1	Perm.	Res.	0	-	2,400
Red Tailed Hawk	"	"	20	Jan. 1	"	"	0	-	1,800

Reported by

Thomas Z. Atkinson

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

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate space. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

3-1752

(Form NR-2)
(April 1946)

UPLAND GAME BIRDS

Refuge WheelerMonths of January to April, 1968

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Woods and Brush 10,500 Ac.	50			55 - M 45 - F	1200			210	
	Cultivation, Hay 4,582 Ac.	3							1,527	
	Pasture 1,700 Ac.	20							85	
	Weed & light Brushland 2,218 Ac.	3							739	
								TOTAL:	2,561	
Wild Turkey	Forest, Hardwoods, Pines & Open land 5,000 Ac.	715			55 - M 45 - F				7	Turkey numbers limited to Redstone reservation and continue low, though few still present.
Iranian Pheasant	Farmland and wood- edges 2,000 Ac.	25			55 - M 45 - F				80	Pheasants still present, though numbers seem slowly declining.

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.

3-1754

Form NR-4

(June 1945)

SMALL MAMMALS

Refuge Wheeler

Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals						(4) Disposition of Furs						(5)
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popul- tion	
								Permit Number	Trappers Share	Refuge share					
Gray Squirrel	Hardwood & Pine-10,000	1 - 5	4M	0	0	0	0	0	0	0	0	0	0	7,500	
Fox Squirrel	Upland Hardwoods & Pine - 500 Ac.	50	0	0	0	0	0	0	0	0	0	0	0	10	
Beaver	Streams & Sloughs-20mi.	-	0	0	0	0	0	0	0	0	0	0	0	60	
Muskrat	Margin shoreline 1,500 Ac.	-	0	0	0	0	0	0	0	0	0	0	0	650	
Woodchuck	All types - 2,500 Ac.	25	0	0	0	0	0	0	0	0	0	0	0	100	
Cotton-tail Rabbit	All types - 1,300 Ac.	2.5	1050	0	0	0	0	0	0	0	0	0	0	5,200	
Swamp Rabbit	All types - 6,000 Ac.	3	350	0	0	0	0	0	0	0	0	0	0	2,000	
Mink	Streams, shoreline & sloughs - 275 Mt.	0	0	0	0	0	0	0	0	0	0	0	0	150	
Striped Skunk	All types - 19,000 Ac.	30	0	0	0	0	0	0	0	0	0	0	0	633	
Raccoon	All types - 19,000 Ac.	20	300	0	0	0	0	0	0	0	0	0	0	950	
Opossum	All types - 19,000 Ac.	13	25	0	0	0	0	0	0	0	0	0	0	1,160	
Gray Fox	All types - 19,000 Ac.	55	20	0	0	0	0	0	0	0	0	0	0	345	
Red Fox	All types - 19,000 Ac.	100	19	0	0	0	0	0	0	0	0	0	0	190	
Flying Squirrels	Hardwood & Pine-10,000	12	0	0	0	0	0	0	0	0	0	0	0	833	
Chipmunk	Rocky slopes - 1,000Ac.	5	0	0	0	0	0	0	0	0	0	0	0	200	
Otter	Status Questionable 6 to 10 animals														

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Thomas L. Jackson
 Thomas L. Jackson

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

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WHEELER NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT

January - December 1967

1. GENERAL

A. Weather Conditions:

<u>Month</u>	<u>Precipitation</u>	<u>Max. Temp.</u>	<u>Min. Temp.</u>
January	1.83	74	20
February	4.61	72	10
March	1.22	86	24
April	3.81	89	41
May	5.95	89	45
June	2.14	97	60
July	7.94	93	53
August	10.20	88	54
September	3.01	88	39
October	4.71	87	34
November	4.06	74	24
December	7.98	74	21

1967 weather represented a wide variety of conditions. January and February were without extreme cold, though temperatures did drop into the mid-teens. The only snow of the late winter of any consequence came on February 6, when from two to three inches of snow and sleet covered the ground for about a twenty four hour period. On December 28 there was a snowfall of approximately four inches, so much of this was melted by a rain that followed closely. Rainfall was regular until March 10, when it stopped abruptly and a dry, unseasonably hot period began. Temperatures ranged up to 90 and no rain fell until April 22. From that date on, rainfall was heavy, broken only by a few periods when showers became more widely spaced.

Rains finally culminated in a mild flood that began on July 9 and continued through July 15, the first summer flood in the thirty one year history of Wheeler Reservoir. This did minor damage to roads and fills, but considerable damage to crops on low-lying fields. Rains continued through late summer, early fall and into December, became heavy in mid-December and the reservoir again reached flood stage on December 17 and this has continued through the end of the year. The December flood, though no record, was higher than the July flood and there is certain to be considerable damage to roads, fills, etc.

There were other extremes. On May 7, a tornado ripped across refuge headquarters, did minor damage to five building roofs, damaged power lines and trees heavily and cut a northeasterly tract through refuge woodland. There was hail in July that did some crop damage and high winds during much of the year. Summer temperatures were generally mild, held down by the regular rainfall. A second tornado on December 17 skirted the southern edge of the refuge, then cut across the Madden Branch and Tally Bottoms damaging some timber. In all, the weather of the year broke many records. Light frost fell during the second and third weeks of September, the earliest within memory. August, according to weather records, was the wettest in thirty one years and the coolest on record. Agricultural officials consider the crop year of this locality the worst in a century. However, though high winds and floods did some physical damage and crops certainly suffered, refuge crop production actually showed a slight improvement above that of 1966. Much employee time was spent repairing wind and flood damage and the overwet conditions reduced field accomplishments.

Comparing 1967 weather with that of 1966, temperatures were milder with less extreme cold and extreme heat. Rainfall was much heavier and there were two floods, the first in four years. Tornadoes, high winds and hail brought their problems.

B. Habitat Conditions:

1. Water.

a. General Reservoir Levels:

At the beginning of the year, the general reservoir level was normal and stood between the 550 and 551 foot marks. Though scheduled to refill to the bankfull stage by April 15, the drought in effect at that time slowed filling and the 556 full mark was not reached until May 2. Following this, levels remained normal until the flood of July 9 began and did not return to normal until July 19. Due probably to the regular and heavy rainfall, the drawdown of late summer and early fall was slower than usual. However, the reservoir had dropped to just under the 552 foot mark when torrential rains on December 17 pushed it back to flood stage and this was still in effect, though receding, at the end of the year.

b. Dewatered Units:

1. Rockhouse-Buckeye-Blackwell Unit:

As usual, pumping began on May 1 and the water of the unit was within ditch lines by the first few days of June. However, the heavy rainfall of the summer retarded farming efforts. Cooperators planted the higher land of the unit to corn, soybeans and grain sorghum, though some drowned under heavy rains. One cooperator was never able

to plant more than a portion of his rental to row crops and finally sowed a number of acres to broadcast millet. Refuge personnel and machinery moved in, planted what they could but were so retarded by wet weather that about fifty acres were never planted, though this did grow to good stands of natural food plants.

Heavy rains damaged the crops in the unit, drowned some and reduced production of others. Considerable emergency pumping was required to prevent premature flooding. In early September, both refuge and TVA personnel moved in and rebuilt the rusted out control structure that had given trouble in 1966. In an effort to improve drainage, the refuge purchased dynamite and blew a mile and a quarter of deep drainage ditch through the unit. Crop harvest was completed in early November. With much trapped water stored in Blackwell Swamp, there was no difficulty in releasing this and bringing sloughs to a good feeding level. The unit received heavy waterfowl usage until overflowed by the December flood, a situation still in effect at this writing.

2. White Springs Unit:

At the beginning of the year, this unit was slightly above the 553 footmark, but completed filling in January and early February. TVA made an effort to flow out as much as possible before pumping began on May 1. Water of the unit was within ditch lines by early June, but wet weather made planting slow and difficult. Farmers eventually planted the majority of the land to grain sorghum and soybeans, though a considerable acreage was lost to heavy summer rains. Refuge employees planted the remainder to millet and buckwheat with good results.

The regular rains of early fall made back filling unnecessary and farmers were hard put to complete harvest ahead of rising water. Water was at near ideal feeding levels during November and early December, but the unit was overflowed by the flood that began December 17 and remains so at this writing.

3. Crabtree Slough Sub-impoundment:

This unit was allowed to fluctuate with the general reservoir after water left in March and continued to do so until stop logs were replaced in October. It quickly filled to the desired level, but was overflowed by the December flood and still remains so.

2. Food and Cover.

The food supply was adequate to carry waterfowl from the beginning of the year until concentrations broke and scattered in late January and during February. Heavy crops of blackberries and wild plums were produced during the summer. The fall mast crop was one of the best in recent years. As always, it was somewhat spotty, though all

oaks, hickories, blackgums, walnuts, dogwoods, beeches, persimmons, and muscadines bore well. Pines set new cones heavily and there was at least a moderate crop of hackberries. The above-average rainfall of the growing period resulted in above average production wild millet, the smartweeds and other herbaceous plants.

Although agricultural officials consider the 1967 crop year to be one of the worst on record for this locality, the waterfowl food situation for the refuge is not as bad as was anticipated. Again, the refuge corn acreage declined, this time by about 10%, but, despite the acreage reduction, overall refuge corn production increased by approximately 15%. Both soybean acreage and production remained approximately the same. The grain sorghum acreage showed about a 10% increase and production approximately a 7% increase. There were slight increases in millet and buckwheat acreage and production. Overall, 34,030 bushels of grain and seed were intentionally left in the field for wildlife use, and almost identical figure to that made available last year. The wet fall caused abnormally high harvest wastes and it is estimated that the 2,321 acres of harvested corn, soybeans and grain sorghum resulted in an additional 9,284 bushels of gleanings available for wildlife use.

Again, an all-out effort was made to establish a maximum green forage acreage, though this was hampered by the overwet fall. In all, 2,174 acres of good fescue, clover, rye, ryegrass, wheat, oats, Austrian peas and grain and vetch mixtures are available for goose usage, a slight decline from the 1966 acreage.

11. WILDLIFE

A. Migratory Birds:

1. Waterfowl.

a. Geese:

1. Blue and Snow Geese, etc.:

There were no swans sighted during the year. On January 1, Biological Technician H. H. Grammer saw and heard a single white fronted goose in company with a small flock of canadas. This is the only white front record for 1967.

At the beginning of the year, 250 snow and 1,500 blue geese were present, though numbers dwindled rapidly through February and none were seen in March. The first blue geese reappeared on October 3 and the first snow geese on October 9. By mid-November, numbers had increased to 100 snows and 1,000 blues and have remained at these figures to the end of the year. Comparing these with 1966 numbers shows a drop of 33% in blue geese and of 60% in snow geese. No blue or snow geese were banded here during the year. No snow geese

and only a few blues were bagged during the refuge waterfowl hunt. On private land, a single snow goose and several blue geese are known to have been shot.

2. Canada Geese:

The first air count of the year, January 4, showed that canada goose numbers had dropped to 44,000 from the earlier peak of 52,000. Numbers continued to drop sharply through January and February. Summer numbers were limited to about thirty crippled birds. Again, there were reports of young and again refuge personnel tried to verify these reports, but could not.

The first canadas of the fall did not reappear until the third week of September but new arrivals piled up rapidly behind these and, throughout October and most of November, numbers exceeded those of 1966. However, a peak of 47,000 was reached in early December and numbers did not rise above this throughout the remainder of the year.

b. Ducks:

The first air count of the year, January 4, showed 56,000 ducks still present, but numbers began dropping sharply shortly after this. Spring and summer numbers seemed normal. The fall blue wing teal flight was average and the September teal season, Alabama's first, aroused more hunter interest and more teal were bagged than was anticipated. Despite refuge efforts, little success has been had with woodduck nest boxes here.

Other migrants began arriving in September and the early fall flight seemed both earlier and heavier than normal. For weeks, counts ran above those of 1966 but, in mid-November, began leveling off and ducks never reached a peak above 48,000. Approximately this number were still present at the end of the year. Comparing this with the peak of 68,000 in the fall of 1966 shows a drop of approximately 30%.

Where species are concerned, black ducks showed a dramatic increase and was second only to mallards numerically during late fall and winter. Shovelers and hooded mergansers were especially common. Gadwall, green winged teal and widgeon numbers were certainly average and well above those of some recent years. Diving ducks as a group, though never numerous here, showed some increase. On the other hand, mallard numbers seemed barely average. Pintails were definitely below normal and woodducks below last year's high figure. Not a single common or redbreasted merganser was sighted during the fall and winter.

c. Coots:

There were at least 1,500 coots present at the beginning of the year and the count rose to 1,700 during mid-January, then began to drop

slightly. However, 1,000 were present through most of March and a few remained well into April. None were noted through summer, but they reappeared in mid-October and, by mid-November, the count had risen to 4,000. Numbers dropped as winter approached, but 1,500 remained at the end of the year.

The above indicates approximately a 167% increase above the peak of 1,500 coots for 1966. This is borne out by general observation. Coots have shown a definite increase during recent years. In part, this may be explained by the invasion of Eurasian milfoil into the TVA reservoirs.

d. Waterfowl Trapping and Banding:

The beginning of the year saw one swim-in and several cannon net traps in operation. The following waterfowl were caught, banded and released.

<u>Species</u>	<u>Male</u>	<u>Female</u>	<u>Unk</u>	<u>Adults</u>	<u>Immature</u>	<u>Total</u>
Canada Goose	111	106	2	112	75	219
Mallards	19	12		27	4	31
Widgeons	8	16		24		24
Pintails	3	2		5		5
Blacks	12	11		23		23
Green Winged T.						
Gadwall						
Shoveler						
Coots	---	---	---	---	---	---
Grand						
Totals	153	147	2	221	79	302

The above represents all waterfowl banding done in 1967 and totals 219 canadageese, and 83 ducks, a grand total of 302 waterfowl. All banding was done in January and the first weeks of February with two employees spending full time on this and helped by others part time. There were no live transfers of waterfowl during the year. With instructions to with hold all fall banding until January 1, no waterfowl banding was done after mid-February.

In addition to the above waterfowl, some time was spent during spring and summer months trapping and banding mourning doves and a total of 116 were banded and released.

2. Other Migratory Birds:

a. Doves.

Morning dove numbers were substantial and about on a par with those

of 1966. No cases of Trichomoniasis or pox were noted among doves this year.

b. Shorebirds:

Although no nest were found, there were a series of woodcock sitings throughout the summer, unusual here. Snipe numbers seem only average or below. No changes were noted among other shorebird species.

c. Other Migrants:

Again, all herons and egrets were uncommon throughout the spring and summer, though winter great blue heron numbers seem more normal. Not a single common loon or horned grebe has been sited during the fall or early winter and piedbilled grebe numbers seem declining. No commorants or anhinga have been sited here in several years. Belted kingfishers have become rare.

B. Upland Game Birds:

Despite a super-wet late spring and summer, quail numbers are surprisingly high and seem about equal to those of 1966. Four broods of Iranian pheasants were reported on or immediate adjacent to the refuge during the year. There are still fairly frequent sitings of these birds, though overall numbers do not seem increasing. All wild turkey reports were restricted to the Redstone Arsenal portion of the refuge and reports there were few. Turkey numbers are definitely declining.

C. Big Game Animals:

Deer sitings and sign continued regularly throughout the entire southern side of the refuge. On the northern side, these were limited to the White Springs Island and locality and to Redstone Arsenal portions of the refuge. Morgan County was opened to Deer hunting in the fall of 1967 for the first time within human memory, and the open deer season was continued in Madison and Limestone Counties.

For the first time since its establishment, the Redstone Arsenal Reservation was opened to deer hunting, though the refuge portion of the reservation was excluded.

D. Other Mammals:

Beavers continued to expand in both range and numbers. This year, for the first time, beaverdams appeared on Village Creek, south of the mountain, on the bluehole branch in the Dancey Bottoms, inside the White Springs dewatered unit and on Barren Fork Creek. There are now nine large beaver dams between the Highway 20 bridge across Beaverdam Creek and the bridge of the Mooresville-Swanscott Road,

and the entire Beaverdam Creek bottom is flooded. TVA Officials are complaining about the mosquito hazards caused by beaver ponds and one adjoining landowner is protesting the flooding of some timberland. This refuge may eventually be forced to take beaver control measures.

No additional otters were released during the year. One of those previously released was cited several times during the summer in the White Springs dewatered unit and its den was found in an old bulldozer mound.

During spring and early summer, there was a rabies outbreak in Limestone County that involved foxes, skunks and bobcats. However, no rabid animals are known to have occurred on this refuge.

Both gray squirrel and rabbit numbers seem only average, although numbers of foxes, mink and skunks seem increasing. For reasons not understood, chipmunk and woodchuck numbers seem unusually high.

E. Predaceous Birds:

Two immature bald eagles were sited simultaneously during February. A single mature bird was noted in August. Beginning in November, there have been several sightings of immature birds, though these may represent only a single individual.

As usual, migrant crows appeared in late October and the roost in the Edmondson Slough locality was reoccupied. This has been harassed continuously by refuge personnel with pyrotechniques and guns and by a series of public roost shoots. The number of crows involved is definitely well below those of four or five years ago.

In early fall, a huge blackbird roost was reestablished at the edge of the refuge near Edmondson Slough. However, this was abandoned in late November. It is understood that a large roost, possibly the same birds, has become established near the outskirts of Athens.

Barred owls, extremely scarce here during recent years, have been seen or heard calling several times during the fall. No other changes in numbers or behavior of other predaceous species have been noted.

F. Other Birds:

No new bird species were added to the refuge list during the year, though there were some changes in early and late arrival dates, etc. The Wheeler annotated bird list, which has not been reedited in over 12 years, was revised and is presently being duplicated in quantity by the Regional Office.

G. Fish:

Beginning in early March, crappie fishing was good until heavy rains began in late-April. After that, rains were continuous throughout the remainder of spring, summer and into fall and fishing success was generally below par. Alabama has again legalized the netting of rough fish and commercial netting is again taking place in many parts of the refuge.

H. Reptiles:

No changes in reptile numbers or behavior were noted during the year.

I. Disease:

Though a close watch has been kept, no evidence of a repetition of the 1966 goose die-off was found this year. Neither have cases of Trichomoniasis, pox or other diseases been noted among doves or other refuge wildlife.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development:

1. Roads, Trails, Bridges, Etc.:

Again, with no winter flood, the road system came through in good condition. Two stretches of new road were constructed during the year. One, a road connecting the existing roads into the Upper and Lower Limestone Peninsulas, 0.6 miles in length, will permit access to the Upper Limestone Peninsula without the necessity of crossing private land, aid in farming and patrol and permit timber harvest in the northern end of Penny Bottoms. The other extended the Bluff City Road, built in 1966, 1.1 miles across Madden Branch to junction with a County Road. In addition, the farm road that extends from the cathole eastward to the Moon Bottoms was shifted to the river-bank for better footing and to allow combination of two fields previously split by this road.

The two new roads bring the primary road system to a total of 84 miles. The entire road system was graded at least once, some of it four times, culverts cleaned, and overhanging limbs cut back and the edges of the entire system mowed at least once, some twice. Weak spots throughout the entire system were re-enforced with additional gravel or crushed stone. The older portion of the Bluff City Road was thoroughly graveled for the first time as was the newly-constructed road between the Upper and Lower Limestone Peninsulas.

Using heavy steel angles procured from military excess, two additional permanent cattle guards were constructed. One was used to replace a damaged wooden guard on the Flint Creek Island road system, the other

to replace a similar guard on the road between Highway 67 and the Dancy Bottoms. This finally eliminates all temporary wooden guards on the primary road system.

In addition to numerous culverts used in new road construction, an additional line was laid across a low section of the Bluff City Road and another across the Buckeye Road system.

Bridges received considerable attention. Using heavy steel I-beams procured from military excess, the McClosky branch bridge was completely rebuilt and a new bridge constructed across the Joly ditch. The bridge across the Murphy place ditch was eliminated and a large culvert and fill substituted. All other bridges received minor repairs and were treated with wood preservative.

2. Boundary Posting:

Utilizing wet periods, a large supply of post was sawed from steel and aluminum angle procured from military excess, bored for sign bolts and stockpiled for future use. Boundaries were in good condition and did not require a complete overhaul in 1967. However, sensitive stretches of boundary were completely repainted and many additional post and signs added. These included the stretch from Highway 67 northward to the Tennessee River and southward and eastward to Cains Landing and the stretch from U. S. Highway 31 eastward to Blackwell Swamp, omitting the Beaver Dam Creek arm. In addition, many damaged signs and post were replaced along other portions of the boundary.

3. Dewatered Planting:

Again, those portions of the dewatered units that were not planted by cooperators were prepared, fertilized and sown to broadcast crops by refuge personnel and machinery. In all, 122 acres of millet and 50 acres of buckwheat were planted. Yields were at least average.

4. Soil and Moisture Work:

One hundred thousand tree seedlings were purchased from State nurseries and, beginning in mid-January, planted in small fields and open areas along both sides of the river. All planting was completed by late February. Species included 86,000 Loblolly Pines, 5,000 Slash Pines, 1,000 Cotton Woods, 1,000 Black Walnuts, 1,000 Bald Cypress's, 1,000 White Oaks and 5,000 Lespedeza Bicolors. Eighty thousand seedlings are on order for 1968 planting.

The land rehabilitation program was continued. In late winter, a series of soil samples was again taken to determine fertilizer needs. In addition the Hamilton rental, under treatment for the 2nd year, the Susie Hole Island, two fields of the Nebrig rental and one field

of the Sharp rental, east of Flint Creek, were withdrawn from agriculture, heavily fertilized and limed. Since a super-wet situation prevented rotation disking, heavy temporary grazing was substituted as a means of Johnson grass suppression. In all, 165 acres were treated and this entire area was sown to a heavy grain and vetch cover-crop in early fall.

The 30 acre Lauderdale pasture, the 25 acre shelves on Beaver Dam Peninsula, 7 acre Page shelf and 35 acres of the Hamilton pasture were fallowed and broken in preparation for fescue and clover sodding. However, the fall proved over-wet and only some 35 acres were actually sodded before it became too late and grain and vetch mixture was substituted on the remainder. This is again scheduled for sodding in 1968. Old fescue sods totaling 100 acres were mowed.

In addition to the above, heavy grain and legume cover crops were sown on a number of fields on which crops had been ruined by the summer flood. These covered approximately 171 acres. Adding this to the fescue and clover and grain and vetch mixtures, mentioned above gives a total of 433 acres fall planted by refuge personnel and machinery.

A large pasture, 87 acres, on the western side of Limestone Bay strategically located for waterfowl use, was reclassified and converted to row-crops. A bulldozer was used to remove brush clumps and scattered trees and to improve drainage. A waterway system was laid out and sodded to fescue.

There were considerable drainage improvements and clearings. A bulldozer was used to clean old ditches, construct new ones and generally improve the drainage situation in the Hamilton pasture, located along the eastern side of the Flint Creek embayment. Work was shifted a short distance to the north and the brush screen separating a large field on the Sharp rental from the backwater was cleared and the fields drainage improved. This completed, the dozer was moved to the Suzie Hole Island and some screen removal done there. Later, machinery was moved to the sunnyside locality and a number of screens and hedgerows cleared away as part of the effort to shift goose usage further eastward. On the Indian Creek land, replaced in agriculture this year, there were drainage improvements and some culverts were installed in ditches to provide machinery crossings. Finally, a low basin on Flint Creek Island was cleared of brush and an effort made to blend this into surrounding fields.

Increased attention was given general drainage improvements. Forty five hundred pounds of dynamite was purchased and used to blast out one and a quarter miles of ditch in the Buckeye Locality. Eight hundred feet of drainage tile were bought and installed in a soggy field near Rockhouse Landing as an experiment to determine the practicality of tile use under local conditions.

In addition to the above, many smaller related jobs were completed. A sinkhole that developed in a Flint Creek Island field was filled. Bulldozer piles were burned and the old earth mounds leveled. Terrace systems were improved and all waterways mowed. Acidity tests were taken to determine lime needs. Seed to be used for cover-cropping were cleaned. Five miles of road edges were sprayed with Dalapon to reduce Johnson grass intrusion.

In connection with the above program, 150 lbs. Regal clover, 150 lbs. Ladino clover, 200 lbs. White Dutch clover, 100 lbs. Arrowleaf clover, 400 lbs. Caley peas, 1,500 lbs. Austrian peas, 5,600 lbs. Vetch, 1,100 lbs. Ryegrass, 17 bu. Rye, and 14,000 lbs. Oats were purchased in addition to seed supplied as a result of the farming program. Three hundred ninety one tons of lime were bought and spread on approximately two hundred and fifty acres. The majority of this went on the easternmost fields of the refuge, never previously treated. Fertilizer purchases for the land rehabilitation program including 58 tons 0-20-10, one and one-fourth tons 30-10-0, 31 tons super phosphate, 19 tons marlate of potash, and three-fourth tons ammonium nitrate.

5. Headquarters Development and Maintenance:

The headquarters water system, now past the quarter century mark in age, gave considerable trouble and received much attention. Water had become fouled by rust and sludge. To correct this, both the rusted five hundred gallon pressure tank and 546 feet of 1½" pipe leading from the pump house to the headquarters buildings were replaced. A series of monthly bacteriological tests were made and, after tank and pipe replacements, gave readings of "0" zero. A chemical analysis was also made and did not reveal any harmful elements in the water supply.

The entire blacktopped portion of the headquarters driveway was given a final smooth seal coat and additional crushed stone was added to the unpaved portions of the headquarters road system.

All exterior woodwork of the office building was repainted. Its inadequate lighting system was replaced by fluorescent lights and additional mounted specimens added to its display collection. New office equipment included a modern duplicating machine and a new typewriter.

The entire interior of residence one was repainted and its exterior woodwork was covered with white aluminum siding. Its electrical system was completely reworked, and its rotted screen door replaced with a modern glass storm door.

All exterior woodwork of residence two was covered with white aluminum siding, its rotted shutters replaced and these repainted

and its windows equipped with venetian blinds. The entire electrical system to this building was also reworked and a kitchen range added.

The exterior woodwork of the pumphouse and gasoline canopy was repainted and their wiring systems reworked. The rotted door facings of the pumphouse were replaced and repainted.

The exterior woodwork of the oilhouse was covered with white aluminum siding and its electrical system reworked. A swinging boom and hoist were installed there to facilitate handling heavy drums of oil.

All exterior woodwork of the upper service building-shop combination was covered with white aluminum siding and the entire electrical system reworked.

The covering of the lower service building with aluminum siding was completed and its electrical system completely revised and reworked.

All woodwork of the equipment canopy was repainted and its northern roof extended to provide 1,120 additional square feet of much-needed storage space.

The barn was repaired and all external woodwork, plus its interior hallway, repainted. The small structures housing the steam cleaner and greasegun were repainted. A drum rack was constructed for storing assorted drums of herbicide, etc.

The electrical revisions mentioned above complete the modernization of the entire above ground electrical system of the headquarters area. However, the underground system remains undersized and overloaded. This needs replacement, but will be a major job and will involve more expense than this station's operating cost budget can afford.

The May tornado ripped across the headquarters area, damaged roofs and made a shambles of powerlines and shrubbery. Roofs were repaired, broken windows replaced, grounds cleaned up and damaged trees and shrubbery pruned and reshaped. After the intervening months, storm damage is no longer evident to the casual observer.

In addition to the above, a half dozen pecan trees were planted on the headquarters grounds. Advantage was taken of wet weather to erect a second set of Martin Gords. A dozen attractive bird houses and a half dozen squirrel den boxes were constructed and placed about in headquarters trees. The nature trail received considerable attention. Storm damage was cleared away. Competition cleared back from specimen trees, now specimens added, labeling improved, etc.

6. Willow Control:

Willow growth intrudes rapidly in the dewatered units and reduces their effectiveness for waterfowl. With much of the summer over-wet for normal fieldwork and with several YOC students on the payroll, much time was spent on willow control. Willows were cut and the stubs sprayed with herbicide to reduce regrowth. While it is difficult to estimate the actual acreage covered, due to the scattered nature of this growth, treatment included virtually all the White Springs and Buckeye portions of the dewatered area.

7. Vehicle and Equipment Maintenance and Repairs:

New equipment procured during the year included two 1967 half ton Chevrolet pickups, a side-mounted bushhog rotary mower and a new duplicating machine and typewriter for the office. Disposals included the sale of the MRS tractor, one of the D-7 bulldozers and the old duplicating machine and typewriter.

Where major vehicular repairs are concerned, the Plymouth sedan had its brakes relined, wheel cylinders reworked and muffler and tail-pipe replaced. Later, this unit was heavily damaged in a collision, but, after replacement of radiator and fuel tank, body work and other repairs, was placed back in operation.

The two 1962 Ford pickups required considerable maintenance. The motor of one was removed and completely disassembled, its parts and oil lines thoroughly cleaned before replacement. On both, valves were reset, brakes relined and cylinders reworked, etc.

As for the two 1964 Dodge pickups, their valves were reset and motors steam cleaned. A new flywheel was required for the 1966 Chevrolet pickup.

The wooden bed of the lowboy trailer was completely rebuilt. Farm tractors also required considerable attention. A generator and battery were installed in the Oliver 88. The motor of the Oliver 99 was completely reworked with new sleeves, valves, pistons, inserts and bearings and its oil lines were replaced. The seat of the 806 International tractor was repaired and the brakes of the 350 International tractor were relined, its radiator repaired, etc. A new axle was required for the Case tractor. The John Deere tractor, a cultipacker, two light discs and one of the heavy Rome harrows were repainted. Rotary mowers, subject to heavy usage, required frequent repairs, including replacement belts, bearings, blades and much welding of frames.

The power grader, an indispensable tool here required an entire reworking of its steering mechanism plus new blades, a tube, etc. In addition to the above, there were constant minor repairs, replacements and adjustments to the long list of Wheeler vehicles, tractors, farm implements and other equipment.

8. Miscellaneous Jobs:

Three official trips were made during the year. On January 4 & 5, J. H. Blackwood and G. C. Bishop procured an excess tractor from Dobbins Air Force Base, Georgia. On January 29 through February 3, Atkeson and Prestriedge attended the Regional Conference, in Atlanta, and on September 27 to September 29, Richard Bays attended a Forestry Conference in Greenville, Mississippi, via Natchez Refuge.

In addition to work already listed, the farming program was closely supervised, resulting grain and seed assembled and stored at Refuge Headquarters and some excess transferred. With Wheeler designated a central distribution point for signs, much time was spent assembling, storing, inventoring and shipping these. The food evaluation study was continued. Four public hunts and numerous crow roost shoots were held. Timber harvest was completed. Numerous groups and individual visitors were guided about, regular patrol carried on, etc.

B. Plantings:

1. Aquatic and Marsh Plants:

There was no plantings of this type during the year.

2. Trees and Shrubs:

As discussed under soil and moisture work above, 100,000 tree seedlings were planted during the year.

3. Upland Herbaceous Plants:

Except for millet and buckwheat, as noted under dewatered planting above and wheat, oats, rye, ryegrass, clovers and Caley and Austrian peas as noted under soil and moisture work above, no other herbaceous plantings were made other than those done by cooperators as part of the farming program.

4. Cultivated Crops:

Although the 1967 farming year is considered one of the worst on record for this locality, the total refuge production of 108,329 bushels of grain and seed is actually slightly above the 1966 production of 102,677 bushels. This is due to improved corn and soybean yields.

The unusually dry March and first half of April caused farmers to withhold corn planting. When rains did start in late-April, these were so continuous that little planting could be done. The result

was a restricted corn acreage. Again "Stunt" affected some refuge fields, but the overall corn yields showed an improvement. Soybean yields were spotty, with some poorly drained fields suffering from water damage and showing poor production, while others that were better drained produced excellently. Grain sorghum yields were disappointing. The local experiment sub-station blames this partly on midge damage, partly on excessive rain during pollination. Wheat and oat yields were evidently affected by the March and April drought and were below last year's averages. Heavy rains during the period when ryegrass and fescue seed were mature shattered and wasted these and only minor amounts could be combined. Rains also prevented the combining of any millet seed.

C. Collections and Receipts:

1. Seed and Other Propagules:

As mentioned above, 100,000 tree seedlings were purchased from the Alabama Forestry Division and planted. Eighty thousand are on order for 1968 planting. As mentioned above under soil and moisture work, quantities of legume and grain seed were purchased for cover-cropping and permanent sodding. In addition, 500 lbs. of Japanese millet and 500 lbs. of brown top millet seed were purchased for seed patch planting. One hundred pounds of Savannah bird resistant grain sorghum was donated the refuge by producers and one hundred pounds of Dekalb -60 bird resistant grain sorghum were purchased. Both were used for experimental purposes. All collections were the result of the cooperative farming program and are listed on accompanying NR-8 forms.

2. Specimens:

No specimens were actually collected during the year. However, several specimens were donated the refuge by hunters and have been mounted and added to the office display.

D. Control of Vegetation:

The only herbicides actually used by the refuge included a small amount of Dalapon bought and sprayed on Flint Creek Island road edges to control Johnson grass, a small amount of 2,4,5-T used to treat scattered kudzu patches, totaling less than two acres, monthly throughout late spring, summer and early fall, and a small amount of 2,4,5-T and 2,4-D used to treat willow stubs in the dewatered units. The extremely wet weather made rotation disking for Johnson grass control impractical and heavy grazing was substituted, though there was some disking prior to planting these fields in early fall. Other mechanical controls included the mowing of fescue sods, waterways and road edges and the use of bulldozers to remove brush clumps, brushy streams and hedgerows.

Again, farmers were encouraged to use certain approved herbicides. The unusually wet weather of the growing period made cultivation difficult and only those fields that had been herbicide treated produced proper yields. However, there is some evidence that heavy treatment for certain tests, dalapon treatment for Johnson grass for example, may reduce the target pests, but another, pigweed, Amaranthus sp for example, may take over and prove almost as competitive. 1967 herbicide use is reported on accompanying NR-12 forms.

E. Planned Burning:

The wet weather and high winds of late winter limited burning opportunities. However, four upland pine tracts totaling approximately forty acres were treated.

F. Fires:

The only period of high fire danger came during the excessively dry and excessively warm weather that began in mid-March and continued to late-April. There were four fires suppressed by refuge employees and these burned a total of 65 acres, though actual damage was light.

IV RESOURCE MANAGEMENT

A. Grazing:

1967 pasture included a 58 acre donation to a local tuberculosis sanatorium, 18 acres that were cash rented and 1,249 acres included within cooperative farming agreements, a total of 1,325 acres. The wet weather of the year kept pastures in exceptionally good condition.

B. Haying:

There were no cash hay permits. All 1967 hay, 228 acres, was included in cooperative farming agreements. Regular rainfall resulted in unusually high hay production, though much was lost to wet weather. Records show that a total of 281 tons were saved by farmers.

C. Fur Harvest:

There was no fur harvest during 1967.

D. Timber Removal:

During 1967, pine plantations from Flint Creek eastward to near the Talley Bottoms were marked for pulpwood thinning and the marked stumpage sold. This completes a refuge thinning of all pine stands, with the exception of a few pockets bypassed due to inaccessibility.

The May tornado cut a northeasterly swath across the refuge and

leveled considerable hardwood and pine. Starting immediately after the tornado, all merchantable trees were sold. The December tornado has also cut a track across the Madden Branch and Talley Bottoms, though the extent of the damage is not fully known, at this writing. Salvage will begin as soon as the present flood situation subsides. All merchantable timber was also removed from the proposed Interstate 65 right-of-way.

Black locust post sales were limited to a few pockets bypassed in previous cuttings and to those felled by the tornado.

The large hardwood stand of the Talley Bottoms was selectively marked and sold. Marking was then shifted to the Hardwood bottom lying between Cotaco Creek and Bluff City. A considerable portion of this had been marked before wet weather of the fall brought an end to marking. This will be completed in this tract selectively cut in 1968. Total timber product sales for 1967 grossed \$28,323.33.

E. Commercial Fishing:

With the reinstatement of legalized netting here, there has been an increase in the amount of commercial fishing on the refuge. This has brought a marked increase and rough fish catches.

F. Other Uses:

Both Limestone and Madison Counties continued intermittent use of refuge gravel deposits. The Marshall Space Flight Center requested and received permission to park a trailer, filled with complicated recording equipment, on the refuge to measure radiation emission from the sun and the Planet Jupiter. Although Interstate 65 construction is nearing the refuge boundary, no work connected with this Highway, other than core drilling and surveying, took place during the year. A recent request was received from the Alabama Highway Department for enough additional easement to permit the four-laning of State Highway 67, the road that passes closely by Wheeler's headquarters.

V. FIELD INVESTIGATION AND APPLIED RESEARCH

Canada geese shot on the public waterfowl hunt and trapped in the course of banding operations have been sexed, aged and weighed. Wheeler is cooperating in a study, jointly sponsored by the Bureau and the Tennessee Game and Fish Commission, to determine the subspecies of geese comprising the Tennessee Valley flock. In addition to age, weight and sex, a complicated series of measurements are being taken from birds shot on the public hunt.

During the February rabbit hunt, the refuge continued to cooperate with the Alabama Department of Conservation in its Statewide rabbit study. This completes this study and no further cooperation should

be required. Cooperation with the U. S. Forest Service in its study correlating pine tree growth with soil types and with the U. S. Geological Survey in its ground water study were continued. The refuge also cooperated with Birmingham Southern College in procurement of a number of waterfowl study specimens donated by participants on the waterfowl hunt.

Refuge personnel cooperated with a Bureau study concerning the September teal season, the first held in Alabama.

A study of the more than 100 acres of corn left standing in 1966 showed that about 90% had been consumed. The remainder was leveled in late winter. An additional 100 acres were left standing in 1967. Consumption should be higher due to the December flood, though it will not likely be total.

The waterfowl availability and utilization study, begun in the fall of 1966, has been continued through 1967. A 1966 progress report has been submitted. A final report will be submitted following the completion of this study in March, 1968.

Comparitive plantings of Dekalb-60, Savanna and Lindsey bird resistant grain sorghums were made. No differences could be noted between the Dekalb and Savanna strain, either in growing season, thrift, production or bird resistance. However, the Lindsey strain proved definitely inferior to both in production. This could be due to a slight variation in its length of growing season that could have resulted in increased midge damage or pollination sensitivity to rainfall.

The study in connection with waterfowl behavior immediately south of the new Huntsville-Decatur Jet Airport continued through February. While no attempt was made to draw a conclusion from the refuge study, a concurrent study by FAA concluded that waterfowl would not constitute a major hazard to aircraft. The formal study was not resumed in the fall of 1967, though general observations continued. The airport was placed in use on November 1. Observations since have indicated that incoming and departing aircraft do not cause disturbance among waterfowl using the Buckeye-Blackwell Swamp locality and there have been no aircraft-waterfowl strikes. A close watch will be kept on the situation throughout the remainder of this winter.

One hundred pounds of arrowleaf clover seed, a new crop in this locality, were purchased and planted on eight acres in a vicinity well used by geese to test waterfowl use of this species. The planting was completed in mid-September, 1967 and observations to date indicate that it is heavily used by canada geese comparable to crimson clover. A complete report will be included in the 1968 narrative report.

To test the feasibility of this type improvement here, 800' of drain-

age tile were purchased and laid in a soggy agricultural area near Rockhouse landing in July. While this works well, more time is necessary to determine whether the resulting improvement justifies the cost.

VI. PUBLIC RELATIONS

A. Recreational Uses:

Even though the majority of the year proved unusually rainy and there were two river floods, public use, as usual, continued to mount. Good spring crappie fishing and dry weather through part of this period brought a multitude of anglers. The coming of the geese in the early fall brought the usual hordes of weekend sightseers. Though there is much talk of outdoor oriented recreation and though Wheeler certainly has room to improve recreational facilities and to channelize its recreation into certain locations, we cannot escape the feeling that this refuge already supports almost as high recreational use as it can hold.

B. Refuge Visitors:

In addition to the crowds of fishermen, picknickers, sightseers, etc., and, the long list of individual visitors, 98 groups visited the refuge through prearrangements. These included school classes ranging from kindergarten to College Biology, Zoology and Game Management classes, Brownie, cub, girl, boy and explorer Scout, Church groups, Sportsmens groups, etc. While groups of this type trickle along throughout the year, the majority come in late spring and during early fall. Unusual groups included a visit from the local Daughters of the American Revolution Chapter, a group visit by Soil Conservation Service Officials from a dozen northern Alabama counties, a large headstart group, etc.

During summer, the refuge was host to a week-long daycamp sponsored by a local church and to another week-long day camp for girl scouts sponsored by the local scout district. Seven field trials were held on the refuge during the year. These included retriever trials sponsored by the North Alabama Retriever Dog Association and coondog trials sponsored by the Brindalee Mountain, North Alabama and Tennessee River Coon Hunters Associations. The refuge was also used for bivouacs and field problems by two national guard units. The caring for this large number of visiting groups and other public relations work absorbs high percentage of Wheeler's employee time.

C. Refuge Participation:

During the year, employees attended and participated in twenty nine various meetings. The majority were within a 25 mile radius of the refuge headquarters, though a few involved trips up to two hundred

miles. Activities included talks, slide showings, etc.

Comparing the eighty five visiting groups of 1966 with the 98 of 1967 and the 20 participations of 1966 with the 29 of 1967 indicates the trend toward increasing interest in the refuge, in waterfowl and in outdoor recreation and the increased attention that must be devoted to public relations.

D. Refuge Publicity:

The waterfowl hunt, resident game hunts, and various controversies concerning deletions have caused considerable public interest and resulted in numerous news items and articles concerning the refuge. Most of these have been favorable. Feature articles concerning Wheeler have appeared in the Birmingham News, Birmingham Post Herald, Huntsville Times and Limestone Courier Democrat. A short but highly favorable television program on Wheeler was carried by Channel 13, Birmingham, in mid-November.

Refuge personnel have continued to write a weekly outdoor column and this appears in week-end additions of the Decatur Daily, Huntsville Times and Limestone Courier Democrat and is read in a weekly outdoor program over Radio Station WHOS, Decatur. The announcement of the refuge waterfowl hunt appeared in thirty five newspapers, including several in adjoining states. Outdoor Columnists for the Birmingham News, Birmingham Post Herald, Huntsville Times and Decatur Daily have made frequent and favorable mention of the refuge in their columns throughout the year.

The refuge has continued to cooperate with both J. O. Evans, of Huntsville, and Charles Bains, of Athens, in the preparation of commercial motion picture shorts concerning the refuge. It is understood that Evans' production is now nearing completion.

It is understood that the Decatur Chamber of Commerce is preparing a brochure that will include a detailed and favorable description of the refuge and its activities. During the year, a commercial post-card company prepared two cards depicting refuge scenes and including a short description of Wheeler and these have been sold widely in local stores throughout this area.

E. Hunting:

Wheeler's tight schedule of one waterfowl and four resident game hunts annually was continued. The 1966-67 waterfowl hunt closed January 14 with a total bag of 1,129 Canada and 7 blue geese, 1,290 ducks and 42 coots, the most successful waterfowl hunt held here to date. A total of 4,256 permits were issued.

The night hunt for raccoons and opossums began February 1 and con-

tinued through February 18 with 275 party permits issued. A bag of 400 raccoons and 50 opossums is estimated.

A quail hunt was held on February 18 and February 20 only with 320 permits issued. February 20 proved so stormy that there was little hunting and the bag is estimated at only eight hundred bobwhites.

A rabbit hunt was held February 22 through February 28 with 648 permits issued. The bag is estimated at 1,000 swamp and cotton-tail rabbits. Interest lagged in this hunt and the full permit quota was not issued.

The squirrel hunt began October 16 and continued through October 21 with 1,000 permits issued. The bag is estimated at 4,000 gray squirrels.

The 1967-68 waterfowl hunt began November 15 and continued through January 13. The same hunt area and an almost identical plan to that used for the 1966-67 hunt were followed. However, rising water in late November flooded many of the blinds and the entire hunt area was overflowed by the flood that began December 17 and continued to the end of the year. The waterfowl kill is shown on the accompanying NR-10 form.

In addition, eleven public crow roost shoots were held during the year involving 727 permittees. An estimated 6,000 crows were killed. No single hunting accident occurred during any 1967 hunt.

F. Violations:

The usual pattern of patrol was followed throughout the year. This included heavy patrol until waterfowl concentrations began to scatter in late January, a resumption of heavy patrol during the February resident game hunts, then patrol only in connection with other work throughout spring and summer. Patrol began again with the October squirrel hunt, continued lightly after that hunt, then began full force in early November and continued through the end of the year. As usual, Game Management Agent H. D. Pierson and all locally assigned Alabama Conservation Officers gave full cooperation. As usual, too, Wheeler was plagued with frequent violations. Most of these involved the usual hunting attempts on the refuge. Again, there was the moonlight goose shooting so difficult to combat. Livestock trespass was limited to a few breakouts and no impoundments were made. The buzzing of waterfowl concentrations by aircraft has become a problem. Much of this proved to be by military aircraft and excellent cooperation was given by the Air Force and this stopped. One case is still pending against a civilian pilot. Rubbish dumping is another problem and has been given as much attention as possible. Several have been taken to court. At least one resulted in a light fine and all in clean up orders.

In all, 36 arrests were made during the year, the majority involving firearm possession and hunting on the refuge. These resulted in 25 convictions, with 11 cases still pending. In addition, refuge employees made 6 cases on adjoining private land involving violations of the migratory bird regulation.

G. Safety:

1. Meetings:

Safety meetings were held monthly throughout the year. In an effort to vary these as much as possible, some featured guest speakers, others films, and some were limited to discussions between employees.

2. Accidents:

There were no lost time accidents during 1967.

3. Correction of Hazards:

A deep sinkhole that developed in a Flint Creek Island field was filled. All road edges were mowed to reduce collision danger. All fire extinguishers were tested and/or recharged. Flues to the heating systems of both residences were inspected, cleaned and new filters installed. During the year, the remainder of the above ground headquarters electrical system was completely reworked and modernized. The battery charger in the permit office bus was shifted to a compartment beneath the bus to prevent a possible accumulation of hydrogen fumes. Safety leaflets were passed out to permittees on all refuge hunts. Again, fill edges were marked with metal strips and reflector paint. All boats were given thorough safety tests. All Wheeler personnel completed and passed the Bell Telephone Company's defensive driving course.

4. Records:

There have been 996 calendar days and 49,244 manhours since the last lost time accident and this accident involved a temporary employee.

5. Future Safety Plans:

With the entire above-ground headquarters electrical system now modernized and brought up to safety code standards, emphasis will be placed on replacing the overloaded underground wiring system whenever funds permit. A careful check on the headquarters water supply will be continued. All worthwhile safety equipment will be procured. Vehicles and equipment will be kept in the safest possible condition. All correctible hazards noted will be reduced or eliminated. To insure interest, safety meetings will be given as much variety as possible. Safety will be stressed to all temporary employees.

6. Acquisition of Safety Equipment:

A swinging boom and hoist were installed in the refuge oil storage house to facilitate the handling of heavy drums. Two additional life preservers were purchased for use by waterfowl hunt permittees when hunting from floating blinds. Fluorescent lights were installed in the refuge office and the old inadequate lighting system eliminated. A safety aluminum ladder was purchased to replace old unsafe wooden stepladders. A stretcher was prepared and placed at the waterfowl hunt permit office to be used in event of a hunting accident and the refuge jeep stationed there throughout the hunt to permit removal of a casualty from a location not accessible by regular vehicle. In cooperation with the Alabama Highway Department, special signs were constructed and placed and removed daily at the fourlane crossover leading to the hunt permit office. A new pressure tank and main pipeline were installed in the refuge water system.

VII. OTHER ITEMS OF INTEREST

Where Wheeler Refuge is concerned, civilization continues to pound at the Postern Gate. The new jetport began operating November 1. Interstate 65 construction is now nearing the boundary. During the year, in addition to the usual minor requests for telephone and powerline, sewage and drainage easements and the continuous pressure by the City of Decatur for recreational use or release of the land west of Flint Creek and by the Huntsville Industrial Expansion Committee for the release of land between Blackwell Swamp and Triana, there was an easement request involving the four-laning of State Highway 67 and a request concerning use of a tract of the refuge by a proposed new mental hospital. In addition, new housing continues to spring up adjoining the western boundary.

During the year, Wheeler was presented a number of tokens from local groups. These included a plaque from the North Alabama Coon Hunters Association in appreciation for refuge cooperation with coon dog field trials, a statuette from North Alabama Retriever Dog Association in appreciation for refuge cooperation with retriever trials, a plaque from the local scout district in appreciation for refuge cooperation with scout activities and a scroll from the Mountain Lakes Association commending the refuge for its courtesy in caring for its numerous visitors.

Approved:

Thos. Z. Atkeson

Thomas Z. Atkeson
Refuge Manager

(sgd) Robert M. Knutson

Asst. Regional Refuge Supervisor

IAN 18 1968

W A T E R F O W L

REFUGE Wheeler

MONTHS OF September TO December, 1967

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	30	30	30	300	1,500	4,000	11,025	12,050	30,100	35,200
Cackling										
Brant										
White-fronted										
Snow							10	10	60	100
Blue						50	100	100	600	600
Other										
Ducks:										
Mallard	250	250	300	300	400	500	2,100	2,250	11,730	11,210
Black	125	125	150	150	200	200	300	300	500	1,500
Gadwall									50	500
Baldpate						20	500	600	3,000	4,000
Pintail				400	400	400	400	400	2,000	2,500
Green-winged teal						20	100	200	500	700
Blue-winged teal	20	100	300	400	500	500	500	500	400	300
Cinnamon teal										
Shoveler				50	50	50	100	150	200	500
Wood	500	400	300	300	400	400	500	500	500	600
Redhead										50
Ring-necked								100	100	100
Canvasback										
Scaup									20	20
Goldeneye										
Bufflehead										20
Ruddy										
Other Coots								300	500	500

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Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE **Wheeler**

MONTHS OF September TO December, 1967

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods seen	Estimat total
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	35,200	38,300	38,300	39,800	46,300	46,300	46,300	46,300	2,739,505	0	0
Cackling											
Brant											
White-fronted											
Snow	100	100	100	100	100	100	100	100	6,260	0	0
Blue	600	1,000	1,000	1,000	1,000	1,000	1,000	1,000	37,350	0	0
Other											
Ducks:											
Mallard	15,035	20,585	20,975	23,555	21,955	22,765	23,155	23,505	1,305,160	0	0
Black	1,500	2,000	5,000	6,000	7,000	8,000	8,000	7,500	294,225	0	0
Cadwall	600	1,000	1,200	1,200	1,200	1,200	1,200	1,200	58,250	0	0
Baldpate	1,000	5,000	5,000	5,000	6,000	6,000	6,000	5,500	321,340	0	0
Pintail	2,500	3,000	4,000	4,000	4,000	4,000	3,500	3,500	224,000	0	0
Green-winged teal	700	1,000	1,200	1,200	1,200	1,200	1,200	1,500	66,040	0	0
Blue-winged teal	200	100	50	25	20	0	0	0	27,305	0	0
Cinnamon teal											
Shoveler	600	1,000	1,200	1,500	1,500	1,800	2,000	2,000	76,900	0	0
Wood	600	600	600	600	700	800	800	800	62,000	0	0
Redhead	50	60	60	60	100	100	100	125	4,185	0	0
Ring-necked	150	500	500	500	500	600	700	700	26,950	0	0
Canvasback		20	25	25	100	100	120	120	2,850	0	0
Scaup	25	50	50	100	300	300	400	500	9,355	0	0
Goldeneye		20	25	30	50	75	100	125	2,225	0	0
Bufflehead	20	20	20	20	100	150	200	300	4,150	0	0
Ruddy		20	25	25	50	70	75	75	1,930	0	0
Other Old Squaw			20	25	25	40	50	50	1,100	0	0
H. Merg.	20	25	50	100	200	300	400	500	8,165	0	0
Coot:	2,500	3,000	4,000	3,000	3,000	2,000	1,500	1,500	143,600	0	0
					(Over)						

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	0	0	0	Principal feeding areas <u>White Springs Unit, Rockhouse &</u>
Geese	2,803,115	47,400	0	<u>Buckeye Sloughs, Flint Creek Embayment, Garth Slough,</u> <u>Cain's Landing.</u>
Ducks	2,496,430	48,000	0	Principal nesting areas <u>0</u>
Coots	113,600	4,000	0	
	5443145			Reported by <u>T. Z. Atkeson</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).

W A T E R F O W L

REFUGE WHEELER NWR

MONTHS OF May TO August, 1967

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	30	30	30	30	30	30	30	30	30	30
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	100	100	150	200	250	250	250	250	250	250
Black	50	50	75	100	125	125	125	125	125	125
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal	50	25	0	0	0	0	0	0	0	0
Cinnamon teal										
Shoveler										
Wood	250	250	300	400	500	500	500	500	500	500
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot	50	25	20	0	0	0	0	0	0	0

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

WATERFOWL
 (Continuation Sheet)

REFUGE Wheeler

MONTHS OF May TO August, 1967

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl: days use	(4) Production Broods: Estim seen : total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	30	30	30	30	30	30	30	30	3,690	0	0
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	250	250	250	250	250	250	250	250	27,750	18	150
Black	125	125	125	125	125	125	125	125	13,875	18	75
Cadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal	0	0	0	0	0	0	0	20	575	0	0
Cinnamon teal											
Shoveler											
Wood	500	500	500	500	500	500	500	500	56,150	30	250
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:	0	0	0	0	0	0	0	0	615	0	0
					(Over)						

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	<u>0</u>	<u>0</u>	<u>0</u>	Principal feeding areas <u>Scattered</u>
Geese	<u>3,690</u>	<u>30</u>	<u>0</u>	
Ducks	<u>98,350</u>	<u>875</u>	<u>475</u>	Principal nesting areas <u>Scattered</u>
Coots	<u>615</u>	<u>50</u>	<u>0</u>	
	132,655			Reported by <u>J. H. 3. Atkinson</u> <u>Thomas J. Atkinson, Refuge Manager</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).

WATERFOWL

REFUGE Wheeler

MONTH Jan. TO April, 196

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Geese:										
Whistling										
Trumpeter										
Gees:										
Canada	44,350	36,250	28,200	27,150	17,075	12,000	6,000	5,000	2,000	400
Cackling										
Barn										
White-fronted										
Snow	250	250	250	250	250	200	200	100	25	20
Blue	1,500	1,500	1,500	1,500	1,500	1,300	1,300	1,000	300	200
Other										
Ducks:										
Mallard	35,130	27,275	25,000	22,615	15,316	12,000	6,000	4,000	3,000	1,500
Black	2,800	2,500	2,000	2,000	1,500	1,500	1,000	1,000	1,000	500
Gadwall	4,000	2,000	1,500	1,500	1,000	500	400	300	200	100
Baldpate	5,000	4,000	3,000	2,500	1,500	1,500	1,000	1,000	1,000	500
Pintail	2,000	4,000	3,000	2,500	1,500	500	500	500	500	300
Green-winged teal	1,500	1,500	1,200	1,000	500	300	200	100	50	25
Blue-winged teal	20	20								25
Cinnamon teal										
Shoveler	1,800	1,500	1,200	1,000	1,000	500	400	400	500	1,000
Wood	1,500	1,500	1,200	1,000	1,000	400	500	500	400	300
Redhead	30	25	25	25	25	25	25	20	20	20
Ring-necked	800	800	700	600	600	500	400	300	300	200
Canvasback	20	20	20	20	20	20	20	20	20	20
Scaup	500	400	450	300	300	200	100	50	25	20
Goldeneye	25	25	25	25	25	25	20	20		
Bufflehead	500	400	400	400	300	200	100	50	25	20
Ruddy	50	25	25	20	20	20	20	20	20	
Other	500	400	400	400	300	200	100	50	25	25
H. Merg.										
C. Merg.	75	75	75	50	50	25	20			
R.B. Merg.	25	25	25	25	25	25	25	20	20	20
Old Squaw		20	20	20	20	20				
Coot:	1,500	1,700	1,700	1,500	1,000	1,000	800	800	1,000	1,000

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

WATERFOWL
(Continuation Sheet)

REFUGE **Wheeler**

MONTHS OF **Jan.** TO **April**, 19**67**

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimat seen : total
	11	12	13	14	15	16	17	18		
Swans:	200	100	50	50	50	50	50	50	1,252,875	
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow	10								12,635	
Blue	100								81,900	
Other										
Ducks:										
Mallard	1,000	1,000	500	400	300	250	250	250	1,096,002	
Black	400	400	300	200	100	100	100	100	121,900	
Cadwall	100	100	20	20	20	-	-	-	12,320	
Baldpate	300	150	50	25	-	-	-	-	150,675	
Pintail	200	100	50	25	-	-	-	-	109,725	
Green-winged teal	50	150	150	50					17,125	
Blue-winged teal	200	400	400	500	400	400	300	100	16,755	
Cinnamon teal										
Shoveler	500	500	200	200	100	50	-	-	75,950	
Wood	300	300	300	300	300	300	300	300	75,900	
Redhead	20	20	-	-	-	-	-	-	1,960	
Ring-necked	200	100	20	20	20	20	-	-	39,060	
Canvasback	20	20	10	20	20	20	-	-	2,170	
Stump	20	20	-	-	-	-	-	-	16,315	
Goldeneye	-	-	-	-	-	-	-	-	1,330	
Bufflehead	20	20	-	-	-	-	-	-	17,015	
Ruddy	-	-	-	-	-	-	-	-	1,540	
Other	25	25	-	-	-	-	-	-	17,150	
H. Merg.	-	-	-	-	-	-	-	-	3,115	
C. Merg.	-	-	-	-	-	-	-	-	1,260	
R.B. Merg.	20	10	-	-	-	-	-	-	108,550	
Coot:	1,000	1,000	500	400	300	200	100	50	700	
Old Squaw	-	-	-	-	(Over)	-	-	-		

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	<u>0</u>	<u>0</u>	<u>0</u>	Principal feeding areas <u>Flint Creek Island, White Spgs. De-watered Unit, Rockhouse-Buckeye dewatered unit, Beaverdam Peninsula, Upper and Lower Limestone Peninsulas, Garth Slough Locality.</u>
Geese	<u>1,347,410</u>	<u>16,100</u>	<u>0</u>	Principal nesting areas <u>None</u>
Ducks	<u>1,880,327</u>	<u>57,000</u>	<u>0</u>	
Coots	<u>108,550</u>	<u>1,700</u>	<u>0</u>	
	336 297			Reported by <u>T. Z. A.</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

(Aug. 1952)

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Wheeler

Months of

January

to

April19 67

(1) Species		(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name		Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:											
Common Loon	-	-	-	8	Jan. 1	1	Mar. 20	0	0	0	400
Pied Billed Grebe	-	-	-	20	Feb. 20	1	Apr. 2	0	0	0	1,200
Great Blue Heron	PR	PR	PR	35	Jan. 1	PR	PR	0	0	0	2,500
Little Blue Heron	3	Apr. 1	30	Apr. 30	5	Apr. 30	0	0	0	0	500
Green Heron	1	Mar. 28	25	Apr. 30	Still Present	0	0	0	0	0	300
American Egret	5	Jan. 2	20	Apr. 30	"	"	0	0	0	0	1,250
Cattle Egret	7	Apr. 8	30	Apr. 30	"	"	0	0	0	0	240
Black Crowned Nth. Her.	1	Mar. 8	15	Apr. 30	"	"	0	0	0	0	400
Yellow Crowned Heron	1	Mar 25	20	Apr. 30	"	"	0	0	0	0	420
King Rail	1	Apr. 3	50	Apr. 30	"	"	0	0	0	0	600
Sora Rail	1	Apr 10	20	Apr. 30	"	"	0	0	0	0	240
II. Shorebirds, Gulls, and Terns:											
Ring Billed Gull	-	-	800	Jan. 1	3	Apr. 3	0	0	0	0	28,000
Herring Gull	-	-	250	Jan. 1	5	Mar. 25	0	0	0	0	12,800
Wilson Snipe	-	-	500	Mar. 28	2	Apr. 25	0	0	0	0	12,000
Greater Yellowlegs	-	-	700	Mar. 28	5	Apr. 29	0	0	0	0	18,000
Lesser Yellowlegs	5	Mar. 12	700	Apr. 25	Still Present	0	0	0	0	0	16,000
Killdeer	PR	PR	700	Apr. 15	PR	PR	-	60	100	0	60,000
Spottied Sandpiper	1	Apr. 5	30	Apr. 30	Still Present	0	0	0	0	0	500

(over)

	(1)		(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>											
Mourning dove	Perm.	Res.	2,000	Apr. 30	Perm.	Res.	0	80	140	180,000	
White-winged dove	-	-	-	-	-	-	-	-	-	-	
IV. <u>Predaceous Birds:</u>											
Golden eagle	-	-	-	-	-	-	-	-	-	-	
Duck hawk	-	-	-	-	-	-	-	-	-	-	
Horned owl	Perm.	Res.	4	Jan. 1	Perm.	Res.	-	-	-	350	
Magpie	-	-	-	-	-	-	-	-	-	-	
Raven	-	-	-	-	-	-	-	-	-	-	
Crow	Perm.	Res.	120,000	Jan. 1	Perm.	Res.	-	-	-	3,500,000	
Bald Eagle	-	-	1	Feb. 3	1	Feb. 3	-	-	-	34	
Osprey	1	-	1	Apr. 19	1	Apr. 19	-	-	-	1	
Barred Owl	Perm.	Res.	15	Apr. 30	Perm.	Res.	-	-	-	1,500	
Cooper's Hawk	Perm.	Res.	25	Apr. 30	"	"	-	-	-	2,500	
Sharp Shinned Hawk	Throughout Period		20	Mar. 20	Throughout Period		-	-	-	1,800	
Red Shouldered Hawk	"	"	30	Jan. 21	"	"	-	-	-	2,400	
Red Tailed Hawk	"	"	20	Jan. 1	"	"	-	-	-	1,800	

Reported by **Thomas Z. Atkeson**

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

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

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

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Months of May to August 19 67

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
I. Water and Marsh Birds:										
Pied Billed Grebe		PR	12	Aug. 31						1,000
Great Blue Heron		PR	10	" "	Permanent Res.					1,000
Little Blue Heron		Throughout Prid.	20	" "	Throughout Period					1,500
Green Heron	"	"	25	" "	"	"				1,600
American Egret	"	"	8	" "	"	"				300
Cattle Egret	"	"	70	" "	"	"				6,000
Yellow Crowned Night Heron	"	"	30	" "	"	"				2,600
King Rail	"	"	100	" "	"	"	-	30	70	10,000
II. Shorebirds, Gulls, and Terns:										
Woodcock	2	June 8	10	-	1	Aug 8	-	-	-	400
Greater Yellowlegs	5	Aug 20	50	AUG. 31	Still Present		-	-	-	500
Lesser Yellowlegs	6	Aug 12	70	" "	3	May 8	-	-	-	1,000
Killdeer	Perm. Resident		1000	" "	PR	-	-	120	200	100,000
Semi-palmated Plover	1	Aug 15	25	" "	Still Present		-	-	-	250
Spotted Sandpiper		Throughout Prid.	50	" "	Throughout Prid.		-	-	-	3,800
Pectorial Sandpiper	1	Aug 26	25	" "	Still Present		-	-	-	50

(over)

(1)	(2)		(3)	(4)		(5)		(6)	
II. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Permanent Res.		2,000	Aug 31	Permanent Res.		610	900	150,000
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	Permanent Res.		400	Aug 31	Permanent Res.		60	150	25,000
Barred Owl	"	"	10	"	"	"	-	-	500
Red Shouldered Hawk	"	"	30	"	"	"	6	18	1,800
Cooper's Hawk	"	"	20	"	"	"	5	12	1,200
Sparrow Hawk	"	"	20	"	"	"	5	10	1,100
Screech Owl	"	"	50	"	"	"	15	30	3,800
Jhon. Z. <u>Alvarez</u>									

Reported by Thomas Z. Atkinson, Ref. Mgr.

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

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
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 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

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

MIGRATORY BIRDS
(Other than Waterfowl)

Refuge Wheeler

Months of September

to December 19 67

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Use
<u>I. Water and Marsh Birds:</u>										
Pied Billed Grebe	Permanent	Res.	30	Oct. 15	Perm.	Res.	0	0	0	2,500
Great Blue Heron	"	"	50	Dec. 1	"	"	0	0	0	4,800
Little Blue Heron	V	V	12	Sept. 1	2	Sept. 28	0	0	0	120
Green Heron	V	V	30	Sept. 1	1	Oct. 2	0	0	0	350
American Egret	V	V	8	Sept. 1	2	Sept. 10	0	0	0	35
Cattle Egret	V	V	30	Sept. 1	5	Sept. 21	0	0	0	200
Yellow Crowned Night Heron	V	V	10	Sept. 1	1	Sept. 8	0	0	0	18
Black Crowned Night Heron	5	Sept. 2	50	Sept. 20	1	Nov. 2	0	0	0	2,000
King Rail	V	V	200	Sept. 15	5	Oct. 19	0	0	0	5,000
Sora Rail	5	Sept. 3	200	Oct. 1	3	Oct. 20	0	0	0	6,000
Virginia Rail	1	Sept. 10	50	Oct. 2	1	Oct. 19	0	0	0	1,200
<u>I. Shorebirds, Gulls, and Terns:</u>										
Greater Yellowlegs	V	V	75	Sept. 1	5	Nov. 18	0	0	0	2,800
Lesser Yellowlegs	V	V	100	" "	1	Oct. 20	0	0	0	3,500
Killdeer	Permanent	Res.	500	Oct. 20	Perm.	Res.	0	0	0	30,000
Semi-Palmated Plover	V	V	50	Sept. 5	2	Sept. 28	0	0	0	1,500
Spotted Sandpiper	V	V	30	Sept. 3	2	Sept. 20	0	0	0	250
Pectorial Sandpiper	V	V	20	Sept. 2	1	Sept. 20	0	0	0	250
Snipe	3	Sept. 30	150	Oct. 20	Still Present		0	0	0	8,000
Dunelin	5	Sept. 7	30	Sept. 25	6	Nov. 13	0	0	0	750
Ring Bill Gull	3	Sept. 28	400	Dec. 31	Still Present		0	0	0	18,000
Herring Gull	2	Nov. 3	200	Dec. 31	Still Present		0	0	0	9,000

(over)

(1)	(2)		(3)	(4)		(5)			(6)
II. <u>Doves and Pigeons:</u>									
Mourning dove	Permanent Res.		2,500	Oct. 1	Permanent Res.	0	0	0	200,000
White-winged dove	-	-	-	-	-	-	-	-	-
Ground Dove	2	Sept.19	2	Sept.19	2	Sept.19	0	0	2
IV. <u>Predaceous Birds:</u>									
Golden eagle	-	-	-	-	-	-	-	-	-
Duck hawk	1	Sept.20	V	V	Still Present	0	0	0	100
Horned owl	1	Oct. 1	10	Dec. 31	" "	0	0	0	750
Magpie	-	-	-	-	-	-	-	-	-
Raven	-	-	-	-	-	-	-	-	-
Crow	Permanent Res.		150,000	Dec. 31	Permanent Res.	0	0	0	10,000,000
Bald Eagle	1	Nov. 23	1	V	1	Dec.26	0	0	34
Marsh Hawk	1	Sept.18	25	Oct. 31	Still Present	0	0	0	2,000
Red Shoulder Hawk	Permanent Res.		60	Nov. 1	Permanent Res.	0	0	0	6,000
Cooper's Hawk	Permanent Res.		30	Dec. 1	Permanent Res.	0	0	0	2,500
Barred Owl	Permanent Res.		15	Oct. 1	Permanent Res.	0	0	0	1,200

Reported by

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

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- (2) First Seen: The first migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated species days use (average population X no. days present) of refuge during the reporting period.

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

Refuge Wheeler For 12-month period ending August 31, 1967

Reported by T. J. Atkeson Title Refuge Manager

(1)		(2)	(3)	(4)	(5)
Area or Unit		Habitat		Breeding	
Designation	Type	Acreage	Use-days	Population	Production
I	Crops	2,020	Ducks	1,900,000	80
	Upland	169	Geese	2,100,000	0
	Marsh	0	Swans	0	0
	Water	5,799	Coots	15,000	0
	Total	8,288	Total	4,015,000	80
II	Crops	204	Ducks	700,000	20
	Upland	726	Geese	790,000	0
	Marsh	0	Swans	0	0
	Water	680	Coots	22,000	0
	Total	1,610	Total	1,510,000	20
III	Crops	298	Ducks	1,100,000	20
	Upland	1,903	Geese	200,000	0
	Marsh	0	Swans	0	0
	Water	1,173	Coots	12,000	0
	Total	3,374	Total	622,000	20
IV	Crops	1,120	Ducks	1,010,000	100
	Upland	1,338	Geese	900,000	0
	Marsh	0	Swans	0	0
	Water	2,630	Coots	28,000	0
	Total	5,088	Total	1,938,000	100
V	Crops	1,216	Ducks	1,100,000	100
	Upland	2,106	Geese	1,100,000	0
	Marsh	0	Swans	0	0
	Water	4,733	Coots	65,255	0
	Total		Total	2,565,255	100
VI	Crops	450	Ducks	109,252	70
	Upland	4,955	Geese	71,100	0
	Marsh	0	Swans	0	0
	Water	2,168	Coots	15,000	0
	Total	7,573	Total	195,352	70
	Crops	6,008	Ducks	5,529,252	100
	Upland	11,797	Geese	5,161,100	0
	Marsh	0	Swans	0	0
	Water	17,183	Coots	185,255	0
	Total	34,988	Total	10,875,607	100

(over)

INSTRUCTIONS

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

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

WATERFOWL HUNTER KILL SURVEY

Refuge WheelerYear 196 7

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
Nov. 15- 18	444	1776	112 Canada Geese, 1 Mallard, 1 Black	114	34	148	444	148
Nov. 22- 25	460	1840	189 Canada Geese, 6 Blue Geese	195	58	253	460	253
Nov. 29- Dec. 2	430	1720	1 Blue Goose, 112 Canada Geese, 40 Mallard, 248 15 Black, 12 Widgeons, 3 Gadwalls, 7 Pin- tails, 2 Canvas Back, 4 G/W Teal, 8 Merg., 13 Woodduck, 22 Shoveller, 8 Coot, 1 Ruddy Dick	248	74	322	430	322
Dec. 6- 9	419	1676	51 Canada Geese, 1 Blue Goose, 41 Mallards, 181 10 Blacks, 16 Widgeons, 5 Gadwalls, 4 Pin- tails, 1 Ringneck, 5 G/W Teal, 13 Merg., 19 Woodduck, 12 Shoveller, 2 Coots, 1 Red- head	181	54	234	419	234
Dec. 13- 16	425	1700	51 Canada Geese, 51 Mallards, 8 Blacks, 26 Widgeons, 6 Gadwalls, 12 Pintails, 2 G/W Teal, 3 Mergansers, 6 Woodduck, 5 Shovellers, 1 Goldeneye, 1 Bufflehead	172	52	224	425	224
Dec. 20- 23	386	1544	1 Blue Goose, 35 Canada Geese, 29 Mallard, 133 9 Blacks, 13 Widgeons, 3 Gadwalls, 2 Pin- tails, 12 G/W Teal, 2 Merganser, 14 Shovellers, 6 Coots, 3 Scaup, 2 Bufflehead, 2 Goldeneye	133	40	173	386	173
Dec. 27- 30	400	1600	50 Canada Geese, 1 Coot, 54 Mallards, 21 Widgeons, 4 Gadwalls, 4 Pintails, 1 G/W Teal, 1 Merganser, 5 Woodduck, 6 Shovellers, 1 Bufflehead, 1 Scaup, 1 Redhead	150	45	195	400	195

(over)

INSTRUCTIONS

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

WATERFOWL HUNTER KILL SURVEYRefuge WheelerYear 196 **7**

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
Jan. 3- 6	380	1520	67 Canada Geese, 57 Mallards, 7 Blacks, 25 Widgeons, 1 Gadwall, 3 Pintails, 8 G/W Teal, 4 Hergansers, 2 Woodchicks, 5 Shovel- lers, 5 Scaup, 2 Ringneck, 6 Coots, 1 Goldeneye, 2 Redheads	195	58	253	380	253
Jan. 10- 13	324	1296	103 Canada Geese, 1 Redhead	104	31	135	324	134

(over)

INSTRUCTIONS

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

3-1752

Form NR-2

(April 1946)

UPLAND GAME BIRDS

Refuge WheelerMonths of January to April, 19 67

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Woods & Heavy Brush 10,500 Ac.	40	0	0	55% M 45% F	800	0	0	263	
	Cultivation & Hay Land 5,028		0	0					1,676	
	Pasture 1,600A	10	0	0					160	
	Weed & Light Brushland 1,872	3	0	0					624	
								TOTAL:	2,723	
Wild Turkey	Forest, Hard- woods, Pines & Open Land 5,000 Ac.	550	0	0	55% M 45% F	0	0	0	9	Turkeys limited mainly to Redstone Arsenal portion of refuge, and numbers seem to be declining.
Iranian Pheasant	Farmland & Wood edges 1,000 Ac.	12	0	0	55% M 45% F	0	0	0	133	Pheasants limited to western portion of refuge. While reproducing, no increase has been noted.

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 Months of to , 19 67

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Woods & Heavy bush, 10,500 Ac.	60	30	1200	55% M 45% F	0	0	0	175	Overcast conditions believed to have reduced nesting success
	Cultivation & hay 4,850 Ac.	3							1,116	
	Pasture, 1,600 Ac.	4							420	
	Weed fields & light brush 1,990 Ac.								985	
Iranian pheasants	Farmland & wood edges 1,800 Ac.	20	2	10	55% M 45% F	0	0	0	30	Pheasant reproducing, though overall numbers seen declining
Wild Turkeys	Forest hardwood, Pines, open land 5,000 Ac.	700	none	?	55% M 45% F	0	0	0	7	Turkey numbers seen declining

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 WheelerMonths of Sept. to December, 19 67

(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'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Woods & Brush	50	0	0	55 M.	0	0	0	210	Wet, late spring & summer
	10,500 A.				45 F.					
	Cultivation, Hay	3							1,618	Reduced nesting success
	4,856 A.								125	
	Pasture, 1,249 A.	10							1,198	
	Weed & Light brush	2							3,151	
	land, 2,395 A.						Total			
Iranian Pheasant	Farming & Wood edges 1,500 A.	15	0	0	55% M. 45% F.	0	0	0	100	Still reproducing and spreading slightly, though overall numbers do not seem to be increasing.
Wild Turkey	Forest, hardwood pines and open land, 5,000 A.	625	0	0	55% M. 45% F.	0	0	0	8	A few turkeys are still reported on the Redstone Arsenal portion of the refuge, though numbers seem declining.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1753

Form NR-3

(June 1945)

Wheel

BIG GAME

1967

Refuge

Calendar Year

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White Tailed Deer	Mixed Forest, Field and Pasture, 19,000 A.	20	•	•	•	•	•	•	•	•	•	70	60	50% M. 50% F.
Heaviest population on Redstone Arsenal parts of refuge, though some now range over entire refuge area.														

Remarks:

Thomas Z. Atkeson
Refuge Manager

Reported by

INSTRUCTIONS

Form NR-3 - BIG GAME

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Wheeler

Year ending April 30, 1967

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total	
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion
								Permit Number	Trappers Share	Refuge share				
Gray Squirrel	Hardwood & Pine 10,000	1.25	4,500											8,000
Fox Squirrel	Upland hardwoods & pine 500 ac.	100	0											5
Weasel	All types, 19,000 A.	1,100	0											17
Beaver	Streams & sloughs 15 mi.	-	0											50
Muskrat	Margin shoreline 1,500 A.													600
Woodchuck	All types, 2000 Ac.	30												4,330
Cotton-Tail Rabbit	All types, 13,000 Ac.	3	600											2,000
Swamp Rabbit	All types, 6,000 Ac	3	400											140
Mink	Streams, shoreline & sloughs, 275 mi.													
Striped Skunk	All types, 19,000 Ac.	33												575
Raccoon	" " " "	14	45											1,357
Opossum	" " " "	13	55											1,460
Gray Fox	" " " "	55	50											345
Red Fox	" " " "	105	17											180
Flying Squirrels	Hardwood & Pine 10,000	12												833
Chipmunk	Rocky Slopes, 500 Ac.	6												85
Otter	Status questionable, 6 to 10 animals													

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

Reported by John Z. Atkinson
Thomas Z. Atkinson, Refuge Manager

INSTRUCTIONS

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

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

DISEASE

Refuge Wheeler

Year 1967

Botulism None Noted

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	<u>0</u>	<u>0</u>
(b) Shorebirds	<u>0</u>	<u>0</u>
(c) Other	<u>0</u>	<u>0</u>

	No. Recovered	% Recovered
(a) Waterfowl	<u>0</u>	<u>0</u>
(b) Shorebirds	<u>0</u>	<u>0</u>
(c) Other	<u>0</u>	<u>0</u>

Areas affected (location and approximate acreage) _____

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

0

Condition of vegetation and invertebrate life 0

Remarks 0

Kind of disease 0

Species affected 0

Number Affected Species	Actual Count	Estimated
<u>0</u>	<u>0</u>	<u>0</u>
<u>0</u>	<u>0</u>	<u>0</u>
<u>0</u>	<u>0</u>	<u>0</u>

Number Recovered 0

Number lost 0

Source of infection 0

Water conditions 0

Food conditions 0

Remarks 0

No botulism, lead poisoning or crop empaction were noted among waterfowl, no trichomoniasis among morning doves nor any other diseases found among local wildlife.

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge WheelerCalendar Year 1967

1. Visits

a. Hunting 11,058 b. Fishing 198,000 c. Miscellaneous 14,717 d. TOTAL VISITS 223,775

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	3,984	6,000	Bureau
Upland Game	6,424	19,000	"
Big Game	0	0	0
Other	650	250	Bureau

Number of permanent blinds 50Man-days of bow hunting included above 0Estimated man-days of hunting on lands adjacent to
refuge 14,820

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	16,000	
Streams and swamps		15

1c. Miscellaneous Visits

Recreation 12,757 Official 35Economic Use 1,925 Industrial 0

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs	8	769	7	2,906
Bird and Garden Clubs	2	27	3	68
Schools	15	435	1	70
Service Clubs	0	0	5	299
Youth Groups	51	2,235	4	185
Professional-Scientific	4	680	2	479
Religious Groups	13	346	0	0
State or Federal Govt.	1	28	5	242
Other	4	59	2	410

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	53	Radio Presentations	52
Newspapers (P.R.'s sent to)	33	Exhibits	0
TV Presentations	1	Est. Exhibit Viewers	0

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

Refuge Wheeler

Year 19 67

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Pecan	6	R	1/22/67	Local Nursery	\$6. Ea.	0	HDQ			6 Seedlings	1/22/67	100%	None
Loblolly Pine	86,000 Seedlings	R	1/12/67	State Nursery	4.50 per M	0	Scattered	1,000 per A.	86 A.	1 Yr. Seed- lings	1/15 2/20	82%	Drought
Slash Pine	5,000 Seedlings	R	1/12/67	State Nursery	4.50 per M	0	"	"	5 Ac.	"	1/18 1/19	80%	"
Cotton wood	1,000 Cuttings	R	1/12/67	State Nursery	8.00 per M	0	Blackwell Swamp	800 per A.	1.25 A.	Rooted Cuttings	1/29	70%	"
Black Wal- nut	1,000 Seedlings	R	1/12/67	"	"	0	Eaglenest Is.	"	"	1 Yr. Seed- lings	1/19	60%	"
Bald Cypress	1,000	R	1/12/67	"	"	0	Flint Creek	600 per A.	1.4 A.	"	2/16	90%	"
White Oak	1,000	R	1/12/67	"	"	0	Madden Branch	800 per A.	1.25 A.	"	1/28	60%	"
Lesp. Bi- color	5,000	R	"	"	600 per M	0	Scattered	1,000 per A.	5 A.	"	2/2/67 2/8/67	86%	Rabbit

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

Remarks: Above covers receipts and plantings of all woody species.
Purchase and use of herbaceous seeds and collections resulting from
farming program covered on NR-8 and 8-A forms.

Total acreage planted:

Marsh and aquatic 0
Hedgerows, cover patches 5 A.
Food strips, food patches 0
Forest plantings 96.2 A.

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Wheeler NWR

County Limestone

State Alabama

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Corn	228	9,260	6	105	116	4,090	350	Grain & Vetch Mix.	253
Pasture	225	-	-	-	-	-	225	Fescue & Fes. Cl. Mix.	110
Hay	16	16	-	-	-	-	16	Ryegrass	25
Wheat & Wheat Vetch-	82	1,770	28	590	-	-	110	Austrian Winter Peas	25
Grain Sorghum Mix	158	5,190	-	-	229	6,390	387		413
Soybeans	1,016	25,517	-	-	559	9,075	1,575		
Oats-Vetch	6	150	2	50	-	-	8		
Buckwheat	-	-	-	-	50	800	50		
Millet	-	-	-	-	232	2,500	232		

No. of Permittees: Agricultural Operations 25 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE	
0	0	0	0	1. Cattle	*	-	-	-	
				2. Other	*	-	-	-	
				1. Total Refuge Acreage Under Cultivation					3,258
Hay - Wild	0	0	0	2. Acreage Cultivated as Service Operations					122
								122	
								50	

All Pasture & Hay included in cooperative agreements - No cash rentals

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

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

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

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

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

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

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

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

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

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

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Wheeler NWR

County Morgan

State Alabama

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Corn	239	8,595	25	390	224	7,010	488	Grain & Vetch Mix.	762
Pasture	827	-	0	0	0	0	827	Fescue or Fescue,	
Hay	184	240	0	0	0	0	184	Clover Mixtures	777
Wheat & Wheat-Vetch	86	1,493	43	791	0	0	129	Ryegrass	30
Grain Sorghum	36	1,090	0	0	16	523	52	Rye	9
Soybeans	311	7,070	0	0	21	372	332	Austrian winter peas	30
Ryegrass	0	0	12	41	0	0	12	Arrowleaf clover	8
									<u>1,616</u>

No. of Permittees: Agricultural Operations 26 Haying Operations 0 Grazing Operations 2

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
0	0	0	0	1. Cattle	3	32	32.00	18
				2. Other	58 Additional acres donated to T. B. Sanatorium All other Pasture included in cooperative agreements			
				1. Total Refuge Acreage Under Cultivation				2,794
Hay - Wild	0	0	0	2. Acreage Cultivated as Service Operation Greenstuff				284

105

SHIRAZ

INT.-DUP. SEC.. WASH., D.C. 91767

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Wheeler

County Madison

State Alabama

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Corn	181	8,760	16	570	43	2,500	240	Wheat	30
Pasture	197	-	0	0	0	0	197	Oats	60
Hay	28	25 Tons	0	0	0	0	28	Fescue & Clover	45
Fescue	0	0	18	72	0	0	18	Ryegrass	10
Wheat	23	425	19	350	0	0	42		
Grain Sorghum	0	0	0	0	26	650	26		
Soybeans	103	2,005	2	15	6	120	111		
									145

No. of Permittees: Agricultural Operations 8 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Soybeans	0	0	0	1. Cattle	*	-	-	-
				2. Other	*	-	-	-
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild	0	0	0	2. Acreage Cultivated as Service Operation				0

* All grazing part of cooperative agreements. No cash grazing permits.

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

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

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

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

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

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

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

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

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

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

eeler National Wildlife Refuge
1967 Grand Total for Entire Refuge Farming Program

<u>Crop</u>	<u>Permittees' Share</u>		<u>Government's Share</u>				<u>Total Acres</u>	<u>Total Production</u>
	<u>Acres</u>	<u>Bu. or Tons</u>	<u>Harvested</u>		<u>Unharvested</u>			
			<u>Acres</u>	<u>Bu.</u>	<u>Acres</u>	<u>Bu.</u>		
Corn	648	26,615	47	1,065	383	13,600	1,078	41,280
Soybeans	1,430	34,592	2	15	586	9,567	2,018	44,174
Grain Sorghum	194	6,280	0	0	271	7,563	465	13,843
Millet	0	0	0	0	232	2,500	232	2,500
Buckwheat	0	0	0	0	50	800	50	800
Hay	228	281	0	0	0	0	228	281
Pasture	1,249	---	0	0	0	0	1,249	-
Wheat & Wheat-Vetch Mix.	191	3,688	90	1,731	0	0	281	5,419
Oat-Vetch Mix.	6	150	2	50	0	0	8	200
*Fescue	0	0	18	72	0	0	18	72
Ryegrass	0	0	12	41	0	0	12	41
	<u>3,946</u>	<u>71,325 Bu. & 281 Tons Hay</u>	<u>171</u>	<u>2,974</u>	<u>1,522</u>	<u>34,030</u>	<u>5,639</u>	<u>108,329 Bu & 281 To Hay.</u>

* Fescue above relates only to that planted for harvest and does not include fescue cattle pastures nor shelves sodded for goose grazing.

Refuge Farming Program-Continued

<u>Permittees'</u>		<u>Government's Share</u>						<u>Summer fal.</u> <u>Acres</u>	<u>Forage &</u> <u>Green Man.A.</u>	<u>Cash</u> <u>Ret.</u>
<u>Number of Per-</u> <u>mittees</u>	<u>Acres</u>	<u>Bushels</u>	<u>Acres</u>	<u>Bushels</u>	<u>Harvested</u> <u>Acres</u>	<u>Unharvested</u> <u>Bushels</u>				
Cooperative- (55)	3,946	71,325 Bu. seed & grain & 281 tons hay	171	2,974	1,522	34,030	256		2,174	\$ 0. see be- low
Cash Agreements: Pasture - (2)	18	0	0	0	0	0	0		0	\$32.00
Free-Use-Pasture Permits - (1)	58	0	0	0	0	0	0		0	0
Hay-(0)	0	0	0	0	0	0	0		0	0

Land Farmed By Service Personnel During the Calendar Year 1967

<u>Unharvested Crops</u>		
	<u>Acres</u>	<u>Bushels</u>
Millet	122	1,300
Buckwheat	50	800

No crops planted by Bureau Personnel were harvested: Forage or green manure acres planted by Service Personnel 406 acres. Land fallowed and disced or grazed for Johnsongrass control, 165 acres.

Pasture: Pasture in cooperative agreements(cluding fescue and clover mixt s, orchard grass, etc.....	1,249	Acres
Estimated AUM's.....4,500. Number of cattle involved.....650.		
Cash pasture rentals, two rentals in Morgan County.....	18	Acres
Revenue received from cash pasture rentals.....	\$ 32.00	
AUM's.....32. Number of cattle involved.....3.		
One 58 acre pasture tract donated to Morgan Co. Tuberculosis Sanatorium. Estimated AUM's.....	120	
Number of cattle involved.....	20	
Total pasture acreage, cooperative, cash rented and donated.....	1,325	
Total AUM's.....	4,652	
Cattle involved.....	673	

Green Forage Plantings: Total 1967 green forage plantings of high goose use value, including oats and wheat, rye, ryegrass, fescue and clover mixture and other good perennial pasture, etc..... 2,174

Supplemental green forage, including old pasture, sod, vetch cover crops, etc., approximately..... 120

Hay: Hay in cooperative agreement including lespedeza, oats, soybeans, millet, etc..... 228

Production..... 281

All hay incorporated in cooperative agreements. None cash rented.

Miscellaneous Totals: Total land in use including cooperative farming, pasture and hay, cash and donated pasture, land planted to summer crops by refuge personnel, that sown to green goose forage in fall, fescue and clover sods, on shelves, etc., but excluding double cropping.....6,202 Acres.

Total 1967 fallowed land including some acreage deliberately fallowed for Johnsongrass control and sown to greenstuff in fall.....256 Acres.

Total number of 1967 permits includes 55 cooperative agreements, 2 cash pasture permits and 1 pasture donation. There were no cash hay or row-crop rentals in 1967. (This figure does not conform with total number of permittees on the 3-county NR-8 forms, due to duplication).

Plantings made by refuge personnel and machinery (acreage and production included in totals above) include 122 acres of millet, 50 acres of buckwheat and 406 acres of covercrop and green forage.

The value of total 1967 refuge crop production of 108,329 bu. of grain and seed and 281 tons hay, based on current local prices is set at \$184,280.00. This figure does not include 1,249 acres of pasture.

Summary of food made available for waterfowl: 13,600 bu. of corn, 9,567 bu. soybeans, 7,563 bu. grain sorghum, 2,500 bu. millet, & 800 bu. buckwheat. A total of 34,030 bu. of grain and seed plus grazing from 2,174 acres of high value goose forage.

To the above can be added gleanings from 695 acres of harvested corn, 1,432 acres harvested soybeans and 194 acres of harvested grain sorghum estimated to average 4 bushels per acre for an additional 9,284 bushels.

TIMBER REMOVAL

Refuge Wheeler

Year 19 67

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
S. C. Owens	Wheeler 36	Comp. 7	4	Post 443	10¢ & 20¢	66.80	Marked	Black Locust Sassafras
R. B. Parker	Wheeler 40	Comp. 8	13	Post 1279	20¢ each	255.80	Marked	Black Locust
Denbo Forest Products	Wheeler 41	Comp. 7	8	75.56 Cords	5.00/cord	377.80	Marked	Pine
Ervin Walker	Wheeler 42	Comp. 3	5	46 Cords	5.00/cord	230.00	Marked	Pine
Audie Wise	Wheeler 43	Comps. 2 & 7	10	19,715 Bd. Ft.	17.50/M	345.01	Marked	Mixed Hwd.
Audie Wise	R.O. 195	Comp. 10	190	393,892 Bd. Ft.	Lump sum	8,750.00	Marked	Mixed Hwd.
Denbo Forest Products	R.O. 201	Comp. 7, 8, 9, & 10	79	342 Cords	Lump sum	1,727.10	Marked	Pine
R. B. Parker	Wheeler 45	Comp. 7	5	260 Post	20¢ each	52.00	Marked	Black Locust

Total acreage cut over 314

Total income 11,804.51

No. of units removed B. F. 413,607

Method of slash disposal None

Cords 463.56

Ties

Posts 1,982

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number
1-67, 2-67, 3-67

Reporting Year

1967

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
April-July (1-67)	Johnsongrass, Sorghum Halapense	Beaver Dam Peninsula & Flint Creek Island	413	Dalapon (2,2-dichloro- proplonic acid)	2,850 lbs.	7 lbs. a.i./ ac.	Water 40 gal./ac.	Gr. Spray Farm Tractor
March-June (2-67)	Cocklebur, Xanthium Americanum Morning Glory, Ipomoea lacunosa Pigweed, Amaranthus sp.	Refuge wide	451	Atrazine (2-Chloro-4- ethelamino-6- isoprpylamino s-Triazine) 80% Wettable	585 lbs.	1.3 lbs. a.i./ ac.	Tale & Water 8 gal./ ac.	Farm Tractor Band Spray
(3-67)	Cocklebur, Xanthium Americanum Morning Glory, Ipomoea lacunosa Pigweed Amarathus sp.		0	Simazine 2-Chloro-4,6- bis(ethylamine) s-triazine) 80% wetttable powder	0	2/3-1lb.a.i./ ac.	Water 10 gal./ ac.	Tractor Band Spray

10. Summary of results (continue on reverse side, if necessary)
1-67 Most of the treatment occurred during drought conditions in April, then followed 4 months of monsoon rains. Even under these conditions, the results were fairly good. It is estimated that 75-90% control resulted for Johnsongrass, but in some fields pigweed almost took over. These fields will be switched from soybeans to corn in 1968 and Atrazine used to control the pigweeds.
2-67 All target pests were effectively controlled with Atrazine. It is estimated that control was 95-100% effective in all fields.

ANNUAL REPORT OF PESTICIDE APPLICATION

Wheeler NWR

Proposal Number

Reporting Year

4-67, 5-67, 6-67

1967

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May & June (4-67)	Coffeeweed, <u>Cassia Tora</u>	Buckeye dewatered unit & river fields near by	162	Vernam 6 E (s-propyl dipropylthio carbon- ate)	60 gals.	3 pints/ac.	Water 20-100 gal. per ac.	Broadcast spray & disced in to soil.
(5-67) May & June	Crabgrass <u>Digitaria sp.</u> Seed Johnsongrass <u>Sorghum halepense</u>	Soybean fields	245	2,6-dinitro-N,N- di-N-propyl-2,2, 2-trifluoro-p- toluidine triethyl- am (Trifluralin)	305 gals.	1 1/4 pints/ac.	Water 10 gal/ac.	Disced into soil.
(6-67) June	Cocklebur, <u>Xanthium</u> <u>Americanum</u> Morning glory, <u>Ipomoea lacunosa</u>	Flint Crk. Island	40	Alanap	240 lbs.	4 lbs./ac. a.i.	Water 10 gal./ ac.	Tractor Spray

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

4-67 -98%-100% control of coffeeweeds, but very little effect on other weeds.
 5-67 Both target pests were controlled effectively at 95-100%. 6-67 Good control of target pests, but pig weed flourished.

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

7-67, 8-67, 9-67

1967

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(7-67)	Coffeeweed <u>Cassia Tora</u>	Buckeye dewatered Unit & River Bank fields nearby.	227	Amiben (3-amino-2,5-dichlorobenzoic acid)	225 lbs.	1-16.2 c.a.i.	Water 8-10 gal. per ac.	Tractor Spray
(8-67)	Soybean worm, <u>Heliothis obsoleta</u>		0	Sevin, Naphyl-methyl- cabate (80% wetttable powder or liquid)	0	$\frac{1}{2}$ -1 lb./ac. a.i.	Water 10 gal. ac.	Tractor & Airplane Spray
(9-67)	Cocklebur, <u>Xanthium America-</u> <u>num</u> , Morning glory, <u>Ipomoea lacunosa</u> Pigweed <u>Amaranthus sp.</u>		0	2,4-D, dichlorophenoxy- acetic acid amine	0	1 lb. a.i./ac.	Water 20 gal./ ac.	Tractor Spray

10. Summary of results (continue on reverse side, if necessary) 7-67 Good control of coffeeweed but little or none over Cocklebur or pigweed.

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

Bureau of Sport Fisheries and Wildlife

Refuge
Wheeler NWR

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number
10-67, 12-67

Reporting Year
1967

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
April⁽¹⁾-Sept.	Imported Fire Ant, <u>Solenopsis saevissima rich-teri</u>	1 mi. east & west of Madison-Limestone county line, North & South of Tenn. River	11,000⁽⁴⁾	Mirex⁽⁵⁾	6,600⁽⁶⁾ lbs.	0.6 oz./ac⁽⁷⁾	oil & corn cob grit 1 1/4 lbs./ac⁽⁸⁾	Airplane⁽⁹⁾ Dusting
July-Aug.	<u>Willow Salix nigra</u>	White Springs & Buckeye dewatered units	30	2,4-D dichlorophenoxy-acetic acid, amine	60 lbs. a.e.	2 lbs./ac. a.e.	50 gal. water & 2 gal. Diesel Fuel per ac.	Hand Spray on stumps

10-67 Indications are that the results were good.

12-67 Results looked good in early fall, but next spring and summer should give conclusive evidence whether or not the stumps are dead.

REFUGE GRAIN REPORT

Refuge Wheeler

Months of January through December, 1967

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	200 Bu.	1065	1265	200 Bu.	0	200	400	865	0	865	0
Soybeans	65 Bu.	15	80	0	0	65	65	15	0	15	0
Grain Sorghum	0	3	3	0	3	0	3	0	0	0	0
Wheat & Vetch Mix	0	1731	1731	0	1731	0	1731	0	0	0	0
Oats & Oat Vetch Mix	0	487 Bu.	487	0	487	0	487	0	0	0	0
Fescue	314 Bu.	72 Bu.	386 Bu.	0	76	0	76	310	310	0	0
Rye	0	17 Bu.	17	0	17	0	17	0	0	0	0
Rye Grass	0	84 Bu.	84	0	84	0	84	0	0	0	0
Millet	513 Bu.	30 Bu.	543 Bu.	0	400 Bu.	0	400	143	143	0	0
Buckwheat	60	0	60	0	60	0	60	0	0	0	0
Vetch	190	93 Bu.	283 Bu.	0	283	0	283	0	0	0	0
White Dutch Clover	0	3 1/3 Bu.	3 1/3 Bu.	0	1 1/3 Bu.	0	1 1/3 Bu.	2 Bu.	2 Bu.	0	0
Ladino Clover	0	2 1/2 Bu.	2 1/2 Bu.	0	1/2 Bu.	0	1/2 Bu.	2 Bu.	2 Bu.	0	0
Regal Clover	0	2 1/2 Bu.	2 1/2 Bu.	0	1 1/2 Bu.	0	1 1/2 Bu.	1 Bu.	1 Bu.	0	0
Arrowleaf Clover	0	1 2/3 Bu.	1 2/3 Bu.	0	1 2/3 Bu.	0	1 2/3 Bu.	0	0	0	0
Cayley Peas	0	7 Bu.	7 Bu.	0	7 Bu.	0	7 Bu.	0	0	0	0
Austrian Peas	0	37 Bu.	37 Bu.	0	37 Bu.	0	37 Bu.	0	0	0	0

(8) Indicate shipping or collection points _____

(9) Grain is stored at _____

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

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

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

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

Below are two postcards made by a commercial company and depicting
refuge scenes. These are offered for sale at a number of local stores
and have been widely used.



A. WILDLIFE

VIII. PHOTOGRAPHIC SECTION



GARTH S. BAYS: Why refuge fought to keep
 Interstate 65 from cutting through the
 of Canada, blue and snowing this area. Garth says
 20,000 geese. The situation will show mixture



BEAVER BREAKFAST: There was a dramatic increase in beavers and beaver
 activity during 1967.
 R. M. Bays



BAITING UP: Maintenance Man Gordon Bishop readies a cannon trap for another catch. 302 waterfowl were banded in 1967. R. M. Bays



DOVE BANDING: During warm weather, 116 mourning doves were banded and released. R. M. Bays



SALT LICK, MANMADE: This is one of several salt blocks buried during the year to provide licks for Wheeler's growing deer numbers.
R. M. Bays

B. OUTDOOR RECREATION:

NIGHTTIME-NIMRODS: The 1967 hunt schedule began with a February night hunt for raccoons and opossums. Coon hunting is a popular sport locally.
R. M. Bays





GANDER AMBUSH: The always-popular waterfowl hunt was plagued by floods, but stayed in operation. R. M. Bays



NUMROD JUNIOR: Insofar as possible, waterfowl hunt participation by youngsters is encouraged. 12 year old in photo actually bagged his limit of honkers, as did his older partner. R. M. Bays



RETRIEVER TRIAL: There were seven retriever and coon dog field trials held on the refuge during the year. Photo shows a retriever trial getting underway along the White Springs Dike. Trials are sponsored by local retriever coon dog associations. J. L. Derden



YOUNG VISITORS: Wheeler played host to 98 visiting groups during 1967. Photo shows Headstart class along headquarters nature trail. J. L. Derden

C. TIMBERLAND MANAGEMENT:



PLANNED BURNING: Maintenance Man Tom Sandlin uses burning torch to start a controlled burn in an upland pine plantation. R. M. Bays

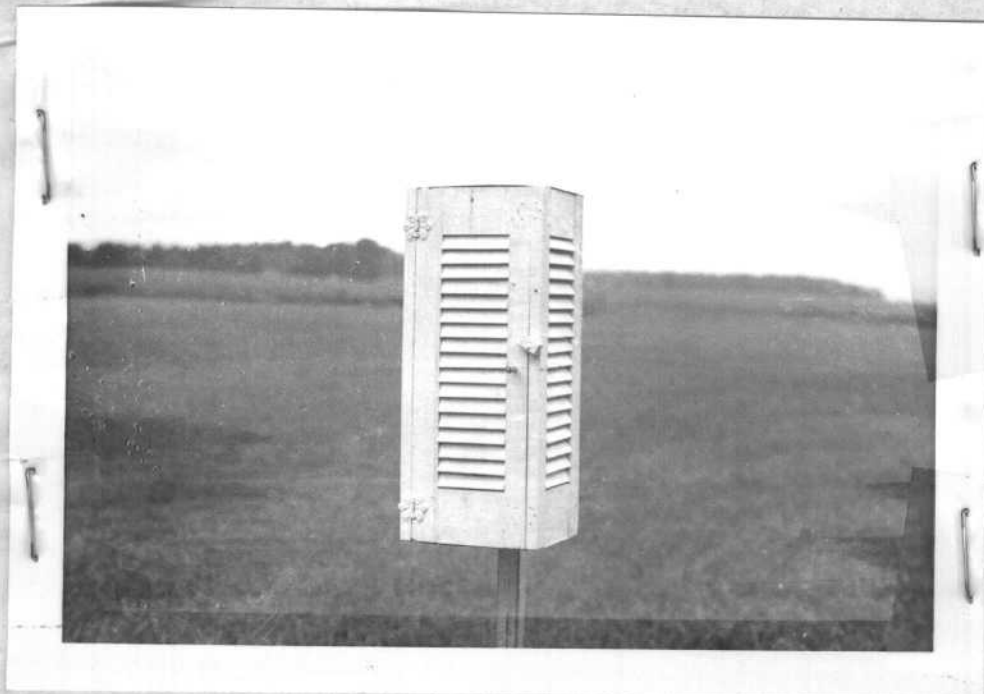


SNAKING: Pine pulpwood thinnings and hardwood selective cuttings were continued through the year. Photo shows loggers removing hardwood logs from Tally Bottoms. R. M. Bays

D. HEADQUARTERS MAINTENANCE:



PIPELINE REPLACEMENT: To clear up the headquarters water situation, both the five hundred gallon pressure tank and the main pipeline were replaced.
J. L. Darden



WEATHER STATION: This little structure was built to house the refuge's recording thermometer. A rain gauge is also maintained here.

R. M. Bays



TWISTER DAMAGE: Two tornadoes ripped across the refuge during the year. ~~one of the~~ ~~tornado struck~~ ~~the~~ ~~headquarters site.~~ ~~Photograph~~



TRINKETS: Photo shows various trophies, plaques and scroll given refuge by various groups.
R. M. Bays