

Regional Director, Atlanta, Ga.

Sept. 12, 1958

Refuge Manager, Pea Island Refuge, Manteo, N.C.

Narrative Report-Pea Island,

Please find submitted herewith Narrative Report covering the period May 1, to August 31, 1958.

It is believed that it will be found complete and covering all essential activities and accomplishments during the period.

In some instances it has been kept brief where certain items are reported on an annual basis as a summary with Dec. Report, and it is hoped that it will meet your office's approval.

Dennis B. Turner
Refuge Mgr.

PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1958

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PEA ISLAND NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY 1, TO AUGUST 31, 1958

Lewis B. Turner, Refuge Manager
Houston C. Phillips, Refuge Aid

I. GENERAL

A. Weather Conditions

Following the extreme cold weather that occurred during the latter part of the winter months, Clear cool weather was the rule for the Coastal area during May and June with just below normal rainfall, July and August turned hot and temperatures remained somewhat above normal while rainfall was minus 2.26 for June and plus 2.28 for August.

on August 28 one hurricane "lazy Daisy" rambled up along the Coast line about 75 miles off shore but this was far enough that all the shore line felt was one tide app. three feet above normal with winds up to 40 MPH, Conditions cleared up rapidly and the period ended with fair weather with seasonal temperatures.

Data recorded in the table below was furnished us by the National Park Service who maintain an official Weather Station at Bodie Island Station three miles north of the Refuge area and reflect weather conditions as they actually exist on the Refuge.

Precipitation			Temperatures	
Month, Actual	Dep. from Nor.		Max	Min
May <u>3.34</u>	<u>-1.16</u>		<u>82</u>	<u>50</u>
June <u>4.29</u>	<u>- .21</u>		<u>93</u>	<u>57</u>
July <u>2.24</u>	<u>-2.26</u>		<u>95</u>	<u>66</u>
Aug. <u>6.78</u>	<u>+2.28</u>		<u>96</u>	<u>65</u>
Tot. <u>16.65</u>	<u>-1.35</u>	Extremes	<u>96</u>	<u>50</u>

B. Habitat**1. Water Conditions**

Water conditions for the period was much better than for the same period last year, More rainfall occurred which prevented the two impoundments from going completely dry as they did last summer although they dropped to a critical level before we had sufficient rain to do much good.

Waters of Pamlico sound remained clear and undisturbed for the entire period having had no wind of sufficient velocity to roil it up to and extent until Aug. 28, When the hurricane passed off shore but this did not last long enough to cause any lasting results, Salinity in the Sound remain at 58 to 65 ‰ Sea strength from New Inlet to Oregon Inlet and slightly lower south of New Inlet.

Listed below is Gauge readings for the end of each Month for the reporting period.

Month	North Pond	South Pond
May 31,	<u>4.40</u>	<u>4.28</u>
June 30,	<u>4.34</u>	<u>4.42</u>
July 31,	<u>3.60</u>	<u>3.68</u>
Aug. 31,	<u>4.12</u>	<u>4.20</u>

B. Food Conditions

An abundance of food has been available during the last four Months for what waterfowl was present on the area which consisted of some 1500-1800 Black and Gadwall ducks including the young that was produced, Natural food plants such as all the aquatics, Smartweed, three square and millet has had an ideal climatic condition through out the summer Months to thrive and a very good crop is now maturing.

Beach Pea which is one of the more important food species for Canada Geese and some species of Ducks during the winter months show promise of an excellent crop, This plant which seems to produce in cycles of about two years instead of annually is well distributed all over the Refuge area in the upper zones in which it normally grows on and is more abundant than usual.

There is never any scarcity of food available for other species of Birds that make up the summer population of Pea Island, Such as Gulls, Terns and Shore Birds as well as Herons, Egrets and Ibises, All of these birds have had a very successful summer, Feeding locally and not moving off the Refuge to and extent.

II. WILDLIFE

A. Migratory Birds1. Waterfowl

At the start of the period there was still remaining on the Refuge, 13 Canada Geese which has remained all summer and is still present.

Nesting species of Ducks consisting of Blacks, Gadwall and blue wing Teal, Maintained a population of app. 1200 until the hatch began and by the end of July there was about 1700 including the young, Black Ducks showed a decline in nesting activities from last summer but Gadwalls increased app. 40 %, Blue wing teal was about the same with three broods each season, Red Breasted Mergansers which has nested on the Refuge for the last two summers did not repeat this summer, No broods of these was counted, No reason can be given as to why they would use the area for two summers and then just not return.

2. Gulls, Terns, Shorebirds

Populations of the species listed above compared very favorably with last years numbers, Some decreased slightly while others showed some increase but no radical changes could be noted.

Laughing ~~III~~ Gulls had a very good nesting season with no high tides to cover the low lying islands they generally use for nesting sites, Our best estimates indicate that app. 1800 young was produced on two Island that had nesting colonies, Common Terns was widely scattered along the 12 miles of shore line with several nesting sites but not many nest in each location, Least terns nested in about the usual numbers but no accurate data is available on these.

Of the shore Birds, Only the Willets nest in any numbers on the Refuge, Total number of nest are unknown but we estimate app. 80 of these birds was hatched out this summer.

3. Water & Marsh Birds

No noticeable change could be noted in the population numbers of this group compared with last summer with the exceptions of Glossy Ibis which is a new comer to the Refuge for nesting, A few of these birds have been observed on the Refuge during summer Months for the last several years not to exceed a half dozen.

Of the group listed only Egrets, Herons and Ibis nest, This season we had two colonies with only Black crowned night Herons using one of the sites, Brood counts made at three intervals disclosed about 185 nest including 8 Glossy Ibis nests with a total production of over 600 young, Of which 22 were Glossy Ibis

B. Upland Game Birds

In former years there has been nothing to report under this heading, But in the last two years we have been seeing a few

Upland Game Birds Cont.

Ring Necked Pheasants, Generally only one or two, But this summer there is known to be two broods hatched off on the Refuge, One brood had 5 Young and the exact number of the other is not known but we estimate we now have at least 16 or more of these birds and it is expected they will increase rapidly in the next few years, Pheasants has been prevalent south of the Refuge for a good many years but hunting pressure has kept the number down to a bare minimum, But with air tight protection from hunting they should thrive on the Refuge.

G, Big Game Animals

Does not apply to Pea Island Refuge, No Big Game Animals are present on the area.

D. Fur Animals, Predators & Others

Animals existing on the Refuge under the above heading consist of Otter, Estimated to number about 35, Nutria, Which has become established on Pea Island within the last three years is still in evidence although we have been trapping some of these, and shooting others when the chance occurred, It is estimated there is probably at least 20 still on the Refuge

Muskrats which are abundant have in former years been estimated to number some 3000 or more with very little change so far as can be determined, We have recently submitted a Fur Management Plan to cover a Trapping and fur harvest program we expect to put into effect this coming trapping season which will be the initial operation on fur harvest on Pea Island and should furnish us with more information on population trends than we have had available in past years.

There has been no evidence to indicate there has been any outbreak of diseases among any of the Animal populations during the period.

Pea Island is very fortunate as to predatory Animals, There is No Bobcats, Raccoons, Opossums or skunks on the Island.

E. Hawks, Eagles, Owls & Other

Hawks, Owls and other predatory birds have been conspicuous by their absence, Only one Bald Eagle has been observed during the period, It remained in the North Pond section of the Refuge for a three week period during July and then moved on, A few crows nested along the south Dike in some high grown Myrtle and Locust, but the number was not to exceed about 40.

F, Other Birds

No unusual species of birds have been observed on the Refuge for the last four months.

Wildlife Cont.

G. Fish

Since there is no fish in the fresh waters of the two impoundments there is no fishing within this area, All of the Refuge west of the highway is fenced off and there is no fishing along the Sound side, But there is 12 miles of Surf line that is opened to the public the year round for surf fishing purposes and is one of the major attractions the Refuge has to offer for recreational uses

The last four Months has proven to be the best summer so far in several years, Almost ideal weather conditions has prevailed for most of the period which brought out large numbers of parties for sport fishing along the surf line, Success was somewhat erratic on some days when the Blue Fish was running most every body caught a fair number of fish, Flounder, Speckle Trout, Croakers and spots was plentiful during the first two Months and large numbers of these was caught, No commercial fishing was done under special use permit or otherwise during the period.

H. Reptiles

No Alligators occur on the Refuge and what few turtles and snakes prevalent is not considered numerous enough to report on, they pose no problems in our Management program.

I. Diseases

There has been no outbreak of Botulism or other diseases in the flocks of Birds or Animals on the Refuge during the period.

III. Refuge Development & Maint

A. Physical Developments

No new developments have been accomplished during the period

1. Maintenance

The Reroofing job on all the Station buildings was completed before the end of Aug. and the lookout Tower overhaul job has been started and about 30 % Completed, Maint. Schedules on all the Equipment has been maintained, These include Tractor, Trucks, Farming machinery, Boats, Power plants and pumping units, Two rooms of the residence was painted two coats and all fire fighting equipment was inspected, Refilled and repainted.

Development & Maint. Cont.

B. Plantings

Only one item coming under this heading has been accomplished this summer, "Cultivated Crops" during the first week of August 20 acres of Jap millet was planted out by Refuge personnel along the east side of the south Pond. This tract was harrowed down with a heavy tandem disc harrow two times, 300 Lbs of 8-8-8 fertilizers applied and the seed overcast on the surface. A very good stand was obtained and at this date looks very promising for a fall crop. But since this is the initial planting of Jap Millet on the Refuge it remains to be seen what success we will have. Soybean and Milo planted on this tract last summer proved a complete failure.

C. Collections & Receipts

None for the period, No specimens collected

D. Control of Vegetation

A summary report on these activities will be included in Dec. Narrative report.

E. Planned burning

None for the period.

F. Fires

No wildfires occurred on the Refuge area during the period.

IV. RESOURCES MANAGEMENT

No accomplishments under Headings "A" through "E", Grazing, Haying, Fur Harvest, Timber Removal, Commercial Fishing.

F. Other Uses

One concession owned by the National Park Service and located on the north end of Pea Island is under lease to a private operator and has been in operation through out the last four Months, Revenue accruing to our service is handled through Regional Offices and no data is available on amounts involved.

V. FIELD INVESTIGATION AND APPLIED RESEARCH

A. Field Investigations

Periodic brood counts was conducted on nesting Black and Gad-wall Ducks during the summer Months, Two Heron and Egrets rookries was checked several times during nesting seasons, the two islands

Field Investigations Cont.

used by laughing Gulls for nesting purposes was investigated twice during the summer to determine degree of success in hatching and numbers produced. Three surveys of pamluco sound was made during the summer by boat checking on the amount and condition of aquatics that exist on all the shoals within three miles of the shore line.

B. Applied research

No research was accomplished during the four Months being reported

VI. PUBLIC RELATIONS

A. Sport Fishing and Other Uses

Sport fishing was about on an equal with last summer or perhaps slightly above. Weather conditions was almost perfect during the entire period which accounts for the large numbers of people who daily used the 12 miles of shore line for surf casting. Success was fair to good most of the time. The time refuge personnel can expend on this activity is limited and no factual data is available as to the number of fish taken or poundage hauled out during the last four Months.

Other activities under recreational uses include Bathing, Beach combing, Photography shell collecting and just plain lazing around.

Camping at the newly established camping grounds administered by the NPS at the north end of the Island picked up this summer after completion of a comfort Station, floored platforms for campers tents and a small amount of mosquito control, since this is the first season that facilities has been available at this location useage was light compared to future use expected.

Listed below is our best estimates of the Refuge area for recreational uses for the last four Months.

Fishing,	Est. man days	7.200
Others	" " "	11.000

B. Refuge Visitors**1, Official**

Mr. Verde Watson,	NPS	5/9	Redanthe, N. C.
Mr. Carl V. Fermanich,	FWS	6/5	Atlanta, Ga.
Mr. W. G. Cahoon,	FWS	6/5	Mattamuskeet Refuge
Mr. Edwin Ball,	FWS	6/8-14	Atlanta, Ga.
Dr. Mimms	C. Fish.	7/20	Washington, D. C.
Mr. William Mimms	C "	7/20	" "
Mr. V. M. Lubrick	GSA	8/4	Wilmington, N. C.
Mr. Charles F. Noble	FWS	8/2-5	Okefenokee Refuge

2, Unofficial

No list of unofficial visitors will be included since numbers involved make this impractical.

We had 1,242 registered visitors at the field Station during the reporting period. Of this number 30 was given conducted tours over the Refuge area on seven separate trips.

3, One way Traffic through the Refuge

Figures listed in the summary below was furnished us by the National Park Service who maintain automatic counters located at Oregon Inlet and represent one way traffic through the Refuge.

Month	Vehicles	Passengers
May,	9.448	21.730
June,	8.899	29.367
July,	28.252	98.882
Aug.	20.496	67.636
Tot.	67.095	Tot. 217.776

C. Refuge Participation

No local meeting was attended or radio or TV appearances was made during the last four Months, Refuge leaflets No. 6 and bird list were distributed to all the tourist resorts along the Beach area from Kill Devel Hills south to Hatteras for visitor information in addition to those furnished at the field Station to over 1200 visitors.

D. Hunting

Does not apply to Pea Island.

E. Violations

No known serious violations have occurred, two random campers were moved to the regular camping area at the north end of the island, a few dogs was noted out of vehicles at the ferry landing and owners instructed to keep them confined, No legal cases was made during the period.

Date Submitted Sept. 12, 1958

By Hennis B. Turner

Approved

Lawrence S. Givens
Regional Refuge Supervisor

Title Refuge Manager

Sept. 16, 1958

W A T E R F O W L

REFUGE Pea Island

MONTHS OF May 1, TO Aug. 31, 19 58

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling										
Trumpeter										
<u>Geese:</u>										
Canada	88	70	32	13	13	13	13	13	13	13
Cackling										
Brant										
White-fronted										
Snow	21	21	21	2						
Blue										
Other										
<u>Ducks:</u>										
Mallard										
Black	500	500	470	475	475	500	500	500	500	500
Gadwall	450	450	450	500	550	550	550	550	550	550
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal				12	8	8	8	14	21	21
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
<u>Coot:</u>										

3 -1750a

Cont. NR-1

(Rev. March 1953)

W A T E R F O W L
(Continuation Sheet)

REFUGE Sea IslandMONTHS OF May 1, TO Aug. 31, 1958

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimate seen : total	
	11	12	13	14	15	16	17	18			
<u>Swans:</u>											
Whistling											
Trumpeter											
<u>Geese:</u>											
Canada	18	12	12	12	12	12	12	12	2.635	0	0
Cackling											
Brant											
White-fronted											
Snow									455	0	0
Blue											
Other											
<u>Ducks:</u>											
Mallard											
Black	600	600	700	700	800	800	800	800	78.196	32	264
Gadwall	600	600	600	775	850	900	900	900	78.925	73	583
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal	20	20	20	24	41	48	30	4	2.093	3	26
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
<u>Coot:</u>											

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	:	:	:	Principal feeding areas <u>North & South Ponds</u>
Geese	3.090	109	0	
Ducks	167.121	1.748	878	Principal nesting areas <u>Islands within the two impoundments</u>
Coots	:	:	:	<u>and burms of dikes</u>
				Reported by <u>Lewis B. Turner</u>

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

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

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge Pea IslandMonths of May 1 to Aug. 31, 19558

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimate Number
I. <u>Water and Marsh Birds:</u>										
Egrets, Common			412	7/11/58			1	17	65	500
" Snowy			530	7/11			1	65	200	600
Heron, Great Blue	Res.		8	7/11						
" Little Blue	Res.		65	7/11			1	22	80	200
" Louisiana	Res.		110	7/11			1	26	90	150
" Black Crowned	Res.		190	7/11			2	45	150	275
" Yellow Crowned			30	7/11						
Bittern, American					1	5/3				
Rails, Clapper	Res. No data available									
Grebes, Piedbilled	Res.		12	6/13				3	9	25
Pelicans, Brown	34	5/3	42	6/13						50
Cormorants, Double Crested			22	5/3						30
Osprey			3	5/3						5
Ibis, Glossy			30	6/13			1	8	22	35
II. <u>Shorebirds, Gulls and</u>										
<u>Terns:</u>										
Gulls, Herring	Res.		900	5/3						1000
" Ring Bill	Res.		175	5/3						200
" Laughing	Res.		3400	6/13			1	1250	1800	4500
" Great B. Backed					14	5/3				20
Terns Royal			240	6/13						400
" Caspian			45	6/13						100
" Common			800	6/13			4	150	275	1000
Least			750	6/13			3	120	225	900
" Black			950	7/11						2000
Black Skimmers			325	7/11						500
Gillets			235	7/11				7	80	400
Yellow Legs			750	7/11						1000
Turnstones			90	7/11						200
Sandpipers, All Species			8000	6/13						10,000

(over)

[illegible]

INSTRUCTIONS

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pea Island For 12-month period ending August 31, 1958

Reported by Lewis B. Turner Title Refuge Mgr.

(1) Area or Unit Designation		(2) Habitat Type Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Area No. 1, all Cropland two fields	Crops	62	Ducks	11.795		
	Upland		Geese	212.190		
	Marsh		Swans			
	Water		Coots			
	Total	62	Total	223.985		

Area No. 2, All Upland, mostly sand dunes.	Crops		Ducks			
	Upland	2.652	Geese	141.460		
	Marsh		Swans			
	Water		Coots			
	Total	2.652	Total	141.460		

Area No. 3, All low lying marsh and sand flats	Crops		Ducks	412.833	1.200	873
	Upland		Geese	565.840		
	Marsh	3.168	Swans			
	Water		Coots			
	Total	3.168	Total	978.673	1.200	873

Area No. 4, All waters including Pamlico Sound	Crops		Ducks	754.897		
	Upland		Geese	495.111		
	Marsh		Swans	4.354		
	Water	19.400	Coots	52.045		
	Total	19.400	Total	1,306.407		

Totals		25.282		2,650.525	1.200	873

		Crops	Ducks			
		Upland	Geese			
		Marsh	Swans			
		Water	Coots			
		Total	Total			

		Crops	Ducks			
		Upland	Geese			
		Marsh	Swans			
		Water	Coots			
		Total	Total			

		Crops	Ducks			
		Upland	Geese			
		Marsh	Swans			
		Water	Coots			
		Total	Total			

(over)

INSTRUCTIONS

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

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary 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 Pea Island Months of May 1, to Aug. 31, 19 58

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specificoally requested. List introductions here.
	Does not apply to during migration periods	Pea Island Refuge			except an occasional				dove passing through	

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