Pea Island National Wildlife Refuge
Narrative Report
Period September 1- December 31, 1943

I. General

A. Weather conditions; The weather was generally mild and dry during September, October, November and the first part of December. The latter part of December was rather cold and disagreeable. The first frost and ice of the season occurred November, 11 and the first snow on December 15 when 15 inches fell. This is the heaviest snowfall noted here since 1918. Freezing temperatures were experienced for several days, freezing much of the shallow water on the sound and marshes.

Following are some tables for comparison with the corresponding period for last year:

		Precipitation	Max. temp.	Min. temp.
September 1943		.58 in.	96 degrees	40 degrees
October	"	1.50 "	76 "	40 "
November	"	1.04 "	71 "	26 "
December	"	2.36 "	71 "	20 "
	Total	5.48 "		

Corresponding period 1942:

September 1942		1.68 "	89.5 "	58 "
October	"	9.83 "	80 "	43 "
November	"	2.29 "	72 "	43 "
December	"	3.79 "	67 "	22 "
	Total	17.59 "		

B. Due to the extremely light rainfall the water levels in the fresh water impoundments dropped so low that water remained only in the borrow pits during September and October. Although the levels stayed below normal during the entire period, conditions improved considerably with the increased rainfall during December.

II. Wildlife

Waterbirds which never concentrate here in large numbers have been here in about their usual numbers.

Wading birds were fairly plentiful during September and the first part of October.

Waterfowl on the whole have probably shown a 10% increase over the corresponding period for 1942. Even tho several species, viz; green-winged teal, shoveler and bladpate have shown a decrease in numbers due

to unfavorable water conditions in the ponds, this has been offset by the increase in snow geese and scaup.

Marsh birds, excepting coot, appear to have shown little change in numbers. Coot which use the fresh water ponds entirely have shown a decrease due to the low water levels on the ponds.

Shorebirds, commonly noted through the entire period, have not been abundant since September.

Gulls and terns, common through September and November, have been here in about their usual numbers. One Pomarine jaeger, first record for the refuge, was picked up in a dying condition on the seashore on October 27 and sent to the North Carolina Museum.

2. Food. Due to the unfavorable conditions, submerged aquatic plants in the fresh water impoundments have been scarce. The rains were so late in putting water on the ponds that very little food was produced. Marsh plants, viz; Scirpus americanus, Scirpus robustus and Spartina alterniflora have been fairly abundant and have produced much food for the birds feeding in the marshes. Areas which were burned over in the refuge burning program have also produced a considerable amount of green food for Canada geese. In the open water of the sound many of the shoals have been covered with a good growth of widgeon grass, Rupia maritima, which was available on low tides and has been one of the main sources of food. In refuge waters, eelgrass, Zostera marina has almost disappeared.

3. Disease. There has been very little disease to date. Only two geese have been seen affected with parasitism.

C. Fur animals. Muskrats are seen frequently in the freshwater impoundments but do not seem to be very abundant. They have been slow in reestablishing themselves again since the drought during the summer of 1942 at which time they had become quite numerous. Otters are also found in the fresh water impoundments but do not show any increase during the last two years.

III Refuge Development

The maintenance work on the refuge has consisted mainly in replanting grass, Spartina patens on the dykes around the fresh water ponds where the grass had died creating barren spots. A considerable amount of work has been done in placing turf around the two stall garage. This is the building which formerly stood at Oregon Inlet for storing CCC trucks and has now been moved and erected at the site of the overnight cabin for use as a storehouse. The old building which was formerly used as an overnight cabin has been razed and such material as could be used salvaged and used in the construction of a shelter over the mooring for the motor boat at Manteo.

IV. Public Relations

Officials visiting the refuge were Dr. W. B. Bourne from the Central Office and Messrs. Towns and Lines from the Regional Office.

Violations have not been numerous but have occurred on several occasions from automobiles traveling along the public road. There has been no evidence of firelighting.

V. Other Items.

On November 30 a dead finback whale about 65 feet long was found in refuge waters. It had probably come into the sound through Oregon Inlet a short time before as it had not been dead long and was about 3 miles from Oregon Inlet.

January 12, 1944

Sam A. Walker
Junior Refuge Mgr.

Form NR-1

MIGRATORY BIRDS

Refuge ~~Pea Island National Wildlife Refuge~~ Months of ~~September 1~~ to ~~December 31~~, 194~~3~~

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Gull herring	1	9/20	11/9								
Gull ring-billed	1	9/17	11/30								
Gull laughing		Common	through	most of the		period					
Tern common		"	"	" " "		"					
Tern least						1	9/25				
Tern royal		Common	most of the period								
Skimmer black				5000	10/28						

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1)	SPECIES:	Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
(2)	FIRST OBSERVED:	The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
(3)	BECAME COMMON:	The date the species became common on the refuge.
(4)	PEAK CONCENTRATION:	The greatest number of the species present on any one date or limited interval of time.
(5)	LAST OBSERVED:	The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.
(6)	YOUNG PRODUCED:	Estimated number of young produced based upon 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 are to be omitted.
(7)	TOTAL:	Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

Form NR-1

MIGRATORY BIRDS

Refuge ~~Pea Island National Wildlife Refuge~~ Months of ~~September 1~~ to ~~December 31~~, 194~~3~~

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Loon common	1	10/28	12/17								
Grebe horned	2	10/30	12/17								
Grebe pied-billed			9/10	250	10/21						
Gannet	3	11/16		2500	12/19						
Cormorant			9/23								
Heron Great blue				10	10/28						
Egret American				90	9/17						
Egret snowy				100	9/17	4	10/28				
Louisiana heron						3	9/28				
Heron little blue						1	10/12				
Heron green						2	9/28				
Heron black-crowned					Resident						
Heron yellow-crowned						1	9/16				
Bittern American	1	9/20			Scarce						
Swan whistling	13	11/13									
Goose Canada	11	10/15	10/21	12000	12/7						12000
Brant American	200	11/13		700	11/15		11/15				700
Goose snow	5	11/13	11/17	800							15000
Mallard	2	10/2			Scarce						
Duck Black		11/13		2500							2500
Gadwall		11/16		100							

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1)	SPECIES:	Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
(2)	FIRST OBSERVED:	The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
(3)	BECAME COMMON:	The date the species became common on the refuge.
(4)	PEAK CONCENTRATION:	The greatest number of the species present on any one date or limited interval of time.
(5)	LAST OBSERVED:	The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.
(6)	YOUNG PRODUCED:	Estimated number of young produced based upon 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 are to be omitted.
(7)	TOTAL:	Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

Form NR-1

MIGRATORY BIRDS

Refuge ~~Pea Island National Wildlife Refuge~~ Months of ~~September 1~~ to ~~December 31~~, 194~~3~~

161:

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Widgeon European	1	9/28					9/28				
Baldpate	10	9/28		200	11/16						
Pintail			9/25	3000	11/16						
Teal green-winged	1	10/2	10/28	500	11/30						
Teal blue-winged				100	9/25	25	9/28				
Shoveler	25	9/17		150	11/16						
Duck wood						1	9/28				
Redhead	2	11/6	Only stragglers noted								
Canvasback	1	11/13	Only a few stragglers								
Scaup lesser	2	11/5		2000	12/17						
Golden-eye American	1	11/16									
Buffle-head	15	11/11	11/20	1000	11/22						
Old-squaw	1	11/16	Remained scarce								
Scoter white-winged	2	11/13		25	12/22						
Scoter surf	6	10/12	10/26	400	12/22						
Duck ruddy	4	10/21		25	12/28						
Merganser hooded	1	11/16		15	12/28						
Merganser redbreasted	8	10/2		25000	12/7						
Hawk sharp-shinned	1	9/28				1	10/26				
Eagle bald				6	10/28						
Hawk marsh	3	9/17	10/2								

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1)	SPECIES:	Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
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Form NR-1

MIGRATORY BIRDS

Refuge ~~Pea Island National Wildlife Refuge~~ Months of ~~September 1~~ to ~~December 31~~, 194~~5~~

161

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Osprey				12	9/25						
Hawk duck	1	9/25-	10/21								
Hawk pigeon	1	9/13	Scarce			1	9/23				
Gallinule Florida			Scarce			1	9/28				
Coot	1	9/21		500	11/16						
Plover piping						1	9/28				
Plover black-bellied			9/11								
Snipe Wilson's	1	10/12		Remain scarce							
Turnstone ruddy						1	10/16				
Willet						5	10/27				
Yellow-legs greater		Fairly common throughout the entire period									
Yellow-legs lesser							10/12				
Knot		Scarce vut noted occasionally through entire period									
Sandpiper least		Seen occasionally through entire period									
Sandpiper red-backed	Several	10/21	11/9								
Dowitcher		Noted occasionally during entire period									
Sandpiper semi-palmated			9/28								
Sanderling		Fairly common during entire period									
Avocet						1	10/21				
Jaeger pomaraine	1	10/27									
Gull great black-backed	1	1/20	11/9								

REMARKS: (Pertinent information not specifically requested)

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

3-1547
11-40

RECORD OF GAUGE READINGS

Refuge: Pea Island

Gauge Location: North end of No.1 impoundment

Month: September Year 1943

Observer:

Heights relative to Sea Level:

0.0 on Gauge mean low water

Bottom of Outlet

Crest of Spillway

DATE	TIME AM	TIME PM	Gauge Reading	Quantity C.P.S. Est. ( ) Calib. ( )	Precipitation inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind Direction, Velocity; Relative Humidity; Etc.
1						95	70	
2						95	72	
3						80	74	
4						80	72	
5						87	71	
6						92	70	
7						95	72	
8						81	64	
9						85	55	
10						72	66	
11						74	64	
12						79	56	
13						78	65	
14						77	65	
15						82	65	
16						78	65	
17						75	61	
18						62	57	
19						25	60	
20					[illegible]	70	59	
21					.20	68	64	
22						70	62	
23					.06	71	62	
24						69	57	
25						65	55	
26						65	50	
27						71	40	
28						75	51	
29						71	58	
30					.32	60	52	
31								
			Max. Dev.	Total Ft.	Total In.	Max.	Min.	
TOTALS:					.58	95	40	

THE POND WAS DRY AND NO GAUGE READINGS WERE TAKEN

INSTRUCTIONS

1. Daily gauge readings should be taken, if possible, during the spring run-off period and at times when the water levels are changing rapidly. At other times gauge readings should be taken once a week at all stations.

2. Always read the gauge when the gate opening is changed. If water is being run from one unit to another, the gauge should be read on all units that will be affected. Show time of observation and of all changes in operating the gates under "Remarks".

3. Show the 0.0 equivalent in feet above sea level for each gauge. Sea level elevations should be indicated for the bottom of the opening as well as the crest of the spillway. If gauges are on rivers, bays or lakes, not a part of a control structure, information on the last two items is unnecessary.

4. When more than one report is submitted from the same refuge, detailed weather observation need be furnished on only one report. If possible, snowfall should be converted into inches of precipitation.

5. The "Remarks" column should give a complete record of all pertinent conditions that affect the water level, such as the position of the gates, excessive or continuous winds, with direction and velocity, relative humidity, if known, spring breakup, etc. A page of additional remarks or supplementary reading, if made more frequently than once a day during times of rapidly rising waters, may be attached to this report.

6. Unless refuge managers have definite figures on quantitative flow of water released from a station, the column headed "Quantity C.P.S." (cubic feet per second) may be left blank.

7. In the preparation of these forms, the original should be forwarded to the Central office by the tenth of the following month, a carbon should be furnished the Regional Director, and one copy of each report should be retained for the Refuge files. All refuges in Regions 1 and 2, and those refuges in North Dakota, South Dakota, Nebraska, Minnesota, and Seney Refuge in Michigan, should forward a carbon of each report to Mr. Brice McPride, 437 Federal Building, Salt Lake City, Utah.

3-1547
11-40

RECORD OF GAUGE READINGS

Refuge: Fox Island

Gauge Location: North End of No.1 pond

Month: October Year 1948

Observer:

Heights relative to Sea Level:

0.0 on Gauge mean low water

Bottom of [illegible] pond 1.24

Crest of Spillway

DATE	TIME AM	TIME PM	Gauge Reading	Quantity C.P.S. Est. ( ) Calib. ( )	Precipitation inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind Direction, Velocity; Relative Humidity; Etc.
1						76	60	
2						74	62	
3						66	60	
4						61	49	
5						67	50	
6						65	52	
7						69	51	
8						75	50	
9						74	51	
10						64	59	
11						64	54	
12						70	59	
13						72	60	
14						76	64	
15					.42	67	65	
16						79	62	
17						66	46	
18						59	42	
19						65	50	
20						68	51	
21						70	46	
22						74	54	
23						66	50	
24						65	51	
25					.54	61	52	
26					.26	58	51	
27						54	44	
28					.28	55	46	
29						62	40	
30			3.54			60	48	
31						64	55	
			Max. Dev.	Total Ft.	Total In.	Max.	Min.	
TOTALS:					1.50	76	40	

INSTRUCTIONS

1. Daily gauge readings should be taken, if possible, during the spring run-off period and at times when the water levels are changing rapidly. At other times gauge readings should be taken once a week at all stations.

2. Always read the gauge when the gate opening is changed. If water is being run from one unit to another, the gauge should be read on all units that will be affected. Show time of observation and of all changes in operating the gates under "Remarks".

3. Show the 0.0 equivalent in feet above sea level for each gauge. Sea level elevations should be indicated for the bottom of the opening as well as the crest of the spillway. If gauges are on rivers, bays or lakes, not a part of a control structure, information on the last two items is unnecessary.

4. When more than one report is submitted from the same refuge, detailed weather observation need be furnished on only one report. If possible, snowfall should be converted into inches of precipitation.

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6. Unless refuge managers have definite figures on quantitative flow of water released from a station, the column headed "Quantity C.F.S." (cubic feet per second) may be left blank.

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3-1547
11-40

RECORD OF GAUGE READINGS

Refuge: Fox Island

Gauge Location: north end of No.1 pond

Month: November Year 1945

Observer:

Heights relative to Sea Level:

0.0 on Gauge mean low water

Bottom of [redacted] pond 3.34

Crest of Spillway

DATE	TIME AM	TIME PM	Gauge Reading	Quantity C.P.S. Est.( ) Calib.( )	Precipitation inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind Direction, Velocity; Relative Humidity; Etc.
1						61	50	
2						62	57	
3						58	52	
4			3.34			57	44	
5					.20	60	40	
6					.46	70	46	
7						71	52	
8						73	59	
9					.14	65	52	
10						51	39	
11						46	36	
12						50	26	
13			3.56			58	34	
14						49	34	
15						60	30	
16						67	41	
17						48	34	
18						60	38	
19						67	42	
20			3.60			71	46	
21						70	45	
22						60	44	
23						57	38	
24						57	46	
25						58	46	
26						57	44	
27						67	42	
28					[redacted]	48	35	
29			3.34		.24	47	36	
30						45	32	
31								
			Max. Dev.	Total Ft.	Total In.	Max.	Min.	
TOTALS:			.26		1.04	71	26	

INSTRUCTIONS

1. Daily gauge readings should be taken, if possible, during the spring run-off period and at times when the water levels are changing rapidly. At other times gauge readings should be taken once a week at all stations.

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3-1547
11-40

RECORD OF GAUGE READINGS

Refuge: Fox Island

Gauge Location: north end of No. 1. pond

Month: December Year 1945

Observer:

Heights relative to Sea Level:

0.0 on Gauge mean low water

Bottom of XXXXX pond 3.54

Crest of Spillway

DATE	TIME AM	TIME PM	Gauge Reading	Quantity C.P.S. Est. ( ) Calib. ( )	Precipitation inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind Direction, Velocity; Relative Humidity; Etc.
1						58	34	
2						66	41	
3					XXXX	67	45	
4					.34	65	52	
5						67	54	
6						65	46	
7			3.80			69	48	
8						71	50	
9						66	54	
10						64	45	
11						61	39	
12						59	32	
13						52	34	
14						49	33	
15					.14	37	24	
16			3.74		.12	34	20	
17						37	22	
18						49	22	
19						56	35	
20						49	38	
21						60	36	
22			3.84			55	41	
23						42	26	
24						34	24	
25						46	32	
26					1.42	62	39	
27						56	41	
28			3.96		XXX	49	39	
29					.54	41	32	
30						48	28	
31						50	20	
			Max. Dev.	Total Ft.	Total In.	Max.	Min.	
TOTALS:			.36		2.36	71	20	

INSTRUCTIONS

1. Daily gauge readings should be taken, if possible, during the spring run-off period and at times when the water levels are changing rapidly. At other times gauge readings should be taken once a week at all stations.

2. Always read the gauge when the gate opening is changed. If water is being run from one unit to another, the gauge should be read on all units that will be affected. Show time of observation and of all changes in operating the gates under "Remarks".

3. Show the 0.0 equivalent in feet above sea level for each gauge. Sea level elevations should be indicated for the bottom of the opening as well as the crest of the spillway. If gauges are on rivers, bays or lakes, not a part of a control structure, information on the last two items is unnecessary.

4. When more than one report is submitted from the same refuge, detailed weather observation need be furnished on only one report. If possible, snowfall should be converted into inches of precipitation.

5. The "Remarks" column should give a complete record of all pertinent conditions that affect the water level, such as the position of the gates, excessive or continuous winds, with direction and velocity, relative humidity, if known, spring breakup, etc. A page of additional remarks or supplementary reading, if made more frequently than once a day during times of rapidly rising waters, may be attached to this report.

6. Unless refuge managers have definite figures on quantitative flow of water released from a station, the column headed "Quantity C.F.S." (cubic feet per second) may be left blank.

7. In the preparation of these forms, the original should be forwarded to the Central office by the tenth of the following month, a carbon should be furnished the Regional Director, and one copy of each report should be retained for the Refuge files. All refuges in Regions 1 and 2, and those refuges in North Dakota, South Dakota, Nebraska, Minnesota, and Seney Refuge in Michigan, should forward a carbon of each report to Mr. Brice McBride, 437 Federal Building, Salt Lake City, Utah.

Copy transmitted to CO

By Region 4 LM 1 9/20
(Name) (Date)

Remarks:

Pea Island National Wildlife Refuge
Narrative Report
Period May 1-August 31, 1943

I. GENERAL

A. Weather Conditions. There being no weather station now located on the refuge we are dependent on Mrs. Rosa Drinkwater's Cooperative Observer's Meteorological record, Manteo, N. C. for weather data. There is a variation in the rainfall on the refuge and at Manteo. For this period I believe it has been much lighter on the refuge then it has been here.

Following are some tables for comparison with the corresponding period for last year.

	Precip.	Max. temp.	Min. temp.
May 1943	2.50 in.	90 degrees	48 degrees
June "	1.78 "	97 "	63 "
July "	5.13 "	97 "	62 "
Aug. "	1.04 "	92 "	60 "
Total	10.45 "		

Corresponding period 1942

May 1942	.79 "	83 "	53 "
June "	2.15 "	91 "	63.6 "
July "	4.60 "	93 "	65 "
Aug. "	3.15 "	98 "	68 "
Total	10.69 "		

B. As a result of the light rains water conditions in the fresh water impoundments have been very poor. Both ponds went dry during the early part of June, with the water levels dropping so low that the only water to be found in the ponds was in the barrow pits. In the No. 1 pond this became very stagnant and very little wildlife continued to use it. In the No. 2 pond the water was low but unlike the No. 1 pond the water did not become stagnant. I think this was due to the continuous barrow extending along the north, west and south sides of the pond which permitted the water to circulate freely as a result of currents caused by the winds. Both ponds were dry until almost the middle of August. At the end of this period each was covered with 1-3 inches of water and conditions were slightly improved.

II. WILDLIFE

A. Migratory Birds. The wildlife has been comprised largely of shore birds, gulls, terns and herons together with a small number of waterfowl.

1. Population and Behavior. Wading birds show very little change in numbers as compared with last year. At the black-crowned night heron rookery there were approximately 40 nests. This compares favorably with other years.

Waterfowl. Most of the waterfowl had migrated from the refuge during the preceeding period. There were a small number of Canada geese, black duck, gadwall and blue-winged teal which continued to use the refuge through the summer. I think most of the geese had been affected with parasitism and were too weak to make the north migration with the other geese. At the end of the period most of them appeared to have recovered. The ducks which remained here were nesters. Due to the No. 2 impoundment being flooded I think black duck nests were increased 100 % as compared with last year. Gadwall and blue-winged teal remained about the same as in other years.

Marsh Birds. These birds have not been very abundant. This is no doubt a result of the scarcity of water in the fresh water ponds during the summer months.

Shorebirds. During the spring flight several species viz; red-backed and semipalmated sandpipers and ruddy turnstones were here in numbers comparing favorably with other years. Although a good many birds have been coming through during the late summer flight, no species have shown up in great numbers. Willet and curlew appear to be scarcer than in former years.

Gulls and Terns. Gulls and terns have occupied their customary nesting areas and have been here in about their usual numbers. Nesting royal terns have greatly decreased since 1941 at which time 1000 eggs were estimated. In 1942 no eggs were seen, this year 21 eggs were seen.

2. Food. Conditions in the fresh water impoundments are the same as last year. The ponds have been dry and the submerged aquatic plants could not grow. Instead the ponds are covered with purslane, Portulaca oleraca. The marshes along the ponds have produced a good growth of Scippus robustus and some Scirpus americanus. Through the tidal marshes there is a fair amount of Spartina alterniflora and Scirpus americanus. Ground beans, Strophostyles helvola and Strophostyles umbelata are also well established on most of the area. There is an abundant crop of these beans this year. In the open waters of the sound the shoals are well covered with widgeon grass, Rupia maratima and indications point favorably to a better growth of this plant than we have had in several years and that it will be the main food for the birds during the coming season. In the area of the refuge eelgrass, Zostera marina is almost nonexistant and conditions as to this plant do not seem to have improved since last season.

III. REFUGE MAINTENANCE AND DEVELOPMENT

Maintenance of the area and equipment has been taken care of entirely by the refuge personnel. In addition to the maintenance of the two trucks and motor boat the remainder of the time has been spent principally on control of pest plants, viz; cutting cattails and sandspurs. Cattails have been cut on approximately 40 acres in the No. 1 impoundment. This work has been greatly hindered by the swarms of mosquitoes and flies with which the refuge has been infested.

IV. VISITORS

Officials visiting the refuge during this period were Messrs: A. C. Elmer, R. O. Gustafson, Richard Griffith and Arthur Miller. Other people visiting the refuge were: Rev. John Grey, Editor of the "Chat", Harry T. Davis, Director of the N. C. State Museum, Commander Ernest Davis and James Sydnor.

September 10, 1943

Sam A. Wacker
Refuge Mgr.

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island Months of May 1 to August 31, 1943

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Estimated Total	Number Using Refuge
Loon, Common	common through May and seen occasionally during June										
Grebe, Pied-billed	2	8/13/43									
Cormorant	noted occasionally through entire period										
Heron, Great Blue				resident							
Egret, American				50	8/12/43						
Egret, Snowy			5/21/43	60	8/12/43						
Heron, Louisiana			6/5/43	15/	8/12/43						
Heron, Green				10	8/12/43						
Heron, Black-crowned	resident									80	
Heron, Yellow-crowned	1	8/12/43									
Bittern, Least	1	5/21/43	6/21/43								
Geese, Canada	33 on refuge entire period										
Duck, Black								25	7	180	
Gadwall								8	11	60	
Pintail	4	8/24/43									
Teal, Blue-winged								4	8	20	
Merganser, Redbreasted	seen occasionally through entire period										
Hawk, Marsh	1	7/24/43									
Osprey	common through entire period										
Gallinule, Florida	1	5/4/43	remained scarce								
Coot						50	5/4/43				
Plover, piping	1	8/5/43	scarce								
Plover, Semipalmated	1	8/5/43			8/13/43						

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1)	SPECIES:	Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
(2)	FIRST OBSERVED:	The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
(3)	BECAME COMMON:	The date the species became common on the refuge.
(4)	PEAK CONCENTRATION:	The greatest number of the species present on any one date or limited interval of time.
(5)	LAST OBSERVED:	The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.
(6)	YOUNG PRODUCED:	Estimated number of young produced based upon 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 are to be omitted.
(7)	TOTAL:	Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island Months of May 1 to August 31, 1943

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Estimated Total	Number Using Refuge
Plover, Wilson				scarce, remained through entire period							
Plover, Black-bellied					8/13/43	entire period					
Turnstone, Ruddy	1	5/4/43	5/23/43								
Curlew, Hudsonian				scarce							
Sandpiper, Spotted				remained through entire period							
Willet				scarce							
Yellow-legs, Greater				fairly common entire period							
Yellow-legs, Lesser				scarce							
Knot				scarce							
Sandpiper, Pectoral	1	8/5/43		scarce							
Sandpiper, Least					5/21/43	fairly abundant					
Sandpiper, Red-backed				abundant through May							
Dowitcher				scarce							
Sandpiper, Semipalmated				abundant							
Sandpiper, Western			8/12/43								
Godwit, Marbled	8	8/12/43		19	8/13/43						
Sanderling					8/12/43	fairly abundant					
Avocet	1	8/18/43									
Gull, Herring				scarce through this period							
Gull, Laughing										1000	
Tern, Gull-billed	1	5/4/43								40	
Tern, Common										80	

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

Form NR-1 - MIGRATORY BIRDS (Include species in families Gaviidae through Strigidae; also doves and woodcocks)*

In case a resident form occurs, such as mottled duck on the Gulf Coast, use only the columns that apply.

(1)	SPECIES:	Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
(2)	FIRST OBSERVED:	The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
(3)	BECAME COMMON:	The date the species became common on the refuge.
(4)	PEAK CONCENTRATION:	The greatest number of the species present on any one date or limited interval of time.
(5)	LAST OBSERVED:	The last refuge record for the species during the spring or fall migration, wintering, or summering, and the numbers observed exclusive of obvious cripples or non-migrants.
(6)	YOUNG PRODUCED:	Estimated number of young produced based upon 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 are to be omitted.
(7)	TOTAL:	Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

Form NR-1

MIGRATORY BIRDS

Refuge Pea Island Months of May 1 to August 31, 1943

1612

(1) Species	(2) First Observed		(3) Became Common	(4) Peak Concentration		(5) Last Observed		(6) Young Produced			(7) Total
Common Name	Number	Date	Date	Number	Date	Number	Date	No. Broods Obsvd.	Avg. Size	Esti-mated Total	Number Using Refuge
Tern, Least										400	
Tern, Royal										15	
Tern, Black	3	6/1/43	6/20/43	abundant							
Skimmer, Black			6/25/43							200	

REMARKS: (Pertinent information not specifically requested)

INSTRUCTIONS

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(1)	SPECIES:	Use correct common names as found in the A.O.U. Check List, 1931 Edition, and list in A.O.U. order. General terms are to be avoided, such as "scaup", "teal", etc.; use "green-winged teal" or "lesser scaup".
(2)	FIRST OBSERVED:	The first refuge record for the species during spring migration, fall migration, wintering, or summering, and the number observed. In the case of resident species this column may be disregarded.
(3)	BECAME COMMON:	The date the species became common on the refuge.
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(7)	TOTAL:	Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the manner in which birds come through; i.e., in waves or all at once. On refuges representing the terminus of the flight lane, the figures would probably be the same in many cases.

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

RECORD OF GAUGE READINGS

Refuge: Pea Island

Heights Relative to Sea Level:

Gauge Location north end of the No.1 impoundment

0.0 on Gauge mean low water

Month May Year 1943

Observer Sam A. Walker

	Gauge Redding	Precipitation Inches	TEMP Max.	TEMP Min.
1	4.08		62	58
2			71	48
3	3.68		84	59
4			77	54
5			76	53
6			80	60
7			84	60
8			90	62
9			82	52
10			84	58
11	3.64	.64	81	76
12			77	65
13			74	63
14			68	56
15			64	54
16			82	58
17			85	67
18			84	65
19	3.62		71	70
20			90	68
21		1.24	85	67
22			74	61
23			65	56
24			69	59
25	3.60		81	64
26		.62	82	68
27			76	70
28			74	62
29			78	60
30			90	67
31	3.58		90	71
Totals	Max. Dev. .50	Total 2.50	Max. 90	Min. 48

RECORD OF GAUGE READINGS

Refuge: Pea Island

Gauge Location :north end of No. 1 impoundment

Month : June Year 1943

Observer Sam A. walker

Heights Relative to Sea Level:

0.0 on Gauge mean low water

	Gauge Reading	Precipitation Inches	Temp. Max.	Temp. Min.
1	3.58		95	70
2			97	73
3			95	72
4			96	75
5	3.38		95	76
6			92	72
7			91	70
8		.53	76	66
9		.46	79	65
10			76	64
11			81	63
12			84	65
13			85	67
14			83	70
15			85	66
16			88	71
17			96	73
18			92	74
19			88	75
20			92	74
21			94	72
22			93	72
23			92	74
24			94	73
25			93	73
26			92	71
27			93	72
28			92	70
29		.12	84	70
30		.62	75	68
31				
Totals	Max.Dev. .20	Total 1.78	Max. 97	Min. 63

RECORD OF GAUGE READINGS

Refuge: Pea Island

Heights Relative to Sea Level:

Gauge Location: north end of No. 1 impoundment

0.0 on Gauge mean low water

Month: July

Year 1943

Observer: Sam A. Walker

	Gauge Reading	Precipitation Inches	TEMP. Max.	TEMP. Min.
1			71	62
2			79	65
3			81	67
4			84	66
5			90	71
6		.81	84	66
7		.36	83	72
8		.42	84	68
9		.16	87	67
10		.14	86	70
11		.10	89	70
12			88	73
13		.22	91	74
14			92	75
15			90	73
16		.32	87	42
17			94	75
18		.38	92	77
19			89	75
20			87	73
21			92	78
22			93	71
23			84	70
24			85	68
25		.08	90	70
26			87	74
27		1.22	86	71
28			87	74
29		.28	92	70
30		.34	90	66
31			97	70
	Max.Dew.	Total	Max.	Min.
Totals		5.15	97	62

RECORD OF GAUGE READINGS

Refuge: Pea Island

Heights Relative to Sea Levels:

Gauge Location: north end of No.1 impoundment

0.0 on Gauge ~~mean low water~~

Month: August 1943

Observer: Sam A. Walker

		Gauge Reading		Precipitation Inches	TEMP Max.	TEMP Min.
1					90	70
2					91	72
3					89	70
4					92	71
5					88	76
6				.48	82	74
7					87	67
8					90	70
9					91	72
10		3.42			88	71
11					84	70
12					87	92
13					91	75
14					94	76
15					82	74
16					91	76
17					92	76
18					77	69
19		3.48			78	67
20					79	66
21					85	70
22					81	67
23					82	60
24					83	68
25					84	69
26					91	74
27					86	70
28		3.48		.12	75	64
29				.44	76	68
30					83	69
31					87	65
		Max. Dev.		Total	Max.	Min.
Totals		.06		1.04	92	60

Pea Island National Wildlife Refuge
Narrative Report
Period January 1-April 30, 1943

I. GENERAL

A. Weather Conditions. This refuge does not operate an official weather station and is therefore dependent on other agencies for weather data. For January and February 1943 the data contained in this report was taken from the weather report submitted by the Oregon Inlet Coast Guard weather station located on the north end of the Pea Island Refuge. This station has been discontinued making it necessary to get the data for March and April from the Cooperative Observer's Meteorological record of Mrs. Rosa L. Drinkwater of Manteo, N. C. which is the nearest observer to the refuge.

January was generally mild there being comparatively few cold days. Rainfall was normal. Although February as a whole was warm there were several pretty cold days from the 12th through the 17th. Rainfall was very light. March was generally mild. There were several days however with the temperature at freezing point. Rainfall was abundant. The weather was cool during April with killing frost on the 16th. Rainfall was light.

Following are some tables for comparison with the corresponding period for last year.

	Snowfall	Precip.	Max. Temp.	Min. Temp.
Jan. 1943	0	3.95"	61 Degrees	25 Degrees
Feb. "	0	1.81"	70 "	17 "
Mar. "	0	4.60"	82 "	26 "
Apr. "	0	2.80"	82 "	34 "
Total		13.16"		

Corresponding period 1942

Jan. 1942	2"	2.16"	64 "	21 "
Feb. "	0	5.55"	61 "	20 "
Mar. "	0	1.01"	70 "	35 "
Apr. "	0	.53"	76 "	40 "
Total	2"	9.25"		

B. Water Conditions. Normal water levels were maintained on the ponds throughout the period. Although the levels were dropping at the end of the period because of the light rains, conditions were better than they were for the corresponding period last year.

II. WILDLIFE

A. Migratory Birds.

1. Population and Behavior.

Wading Birds: Birds of this group have been rather scarce.

Waterbirds: Most species have been here in about their usual numbers.

Waterfowl: Most species were fairly plentiful during the first half of the period. as compared with last year several species have shown very favorable increases, viz; green-winged teal increased 300%; shoveller increased 500%; gadwall increased 300%. All three of these species showed a decided preference for the #2 pond which was flooded for the first time last fall. There was also a very good concentration of lesser scaup from the latter part of January until the middle of March. Due to the patrol boat not being in operation during this period in 1942 I was unable to patrol the open waters sufficiently to get comparative data for the diving species. Excepting snow geese, of which very few were here this period, other species were here in about their usual numbers. The migration was probably earlier and more complete as fewer birds were remaining on the refuge at the end of the period.

Marsh birds: Excepting coots, this group has not been very abundant.

Shore birds: The spring migration was well underway at the end of the period and indications are that there will be a good flight of several species.

2. Food and Cover. With the addition of #2 pond to the refuge increasing the area for fresh water plants by approximately 200% food conditions were greatly improved in the marshes. There has been sufficient food available for the birds at all times. Some of the food however was getting scarce at the time the birds left. At that time much of the supply of submerged aquatic plants on the ponds had been depleted and most of the *Spartina* alterniflora between the fresh water impoundments had been taken out by the heavy concentration of snow geese during the preceding period. No evidence was noticed however of any birds suffering from lack of food. The area which was burned over last fall supplied a considerable amount of green food for Canada geese during the winter and early spring. Most of the shoals on the sound produced a fair amount of widgeon grass which was available for food during low tides. There was comparatively no eel grass. Areas which produced a good growth last year had almost none on them this past season.

3. Disease. Compared with other years conditions as to disease were improved. I estimate that the number of birds affected with parasitism would not exceed 50% of former years. Probably 150 Canada geese died as compared with 300-400 in other years. I believe the contributing factor in lessening of dis- this year was the green grass which was made available from the burning last fall.

B. Fur Animals. Recently muskrats appear to be reestablishing themselves on the area again. They have been very scarce since the drought of last summer. The otters do not seem to be increasing. On several occasions 4 have been seen. That is also the number seen at any one time last year.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Maintenance of the area and equipment has been taken care of by refuge personnel much of whose time has to be devoted to patrol of the area. During this period in addition to the maintenance of the trucks and motor boat, the overnight cabin has been given two coats of paint outside; the two row boats and the barge have been painted. Turf has been placed on the mound on which the overnight cabin is built to check erosion from winds and rains. This work is approximately 90% completed. Several pickup loads of the cement stored at the CCC Camp which has become hard and useless has been hauled to the dykes and placed along the berms in several places to check erosion caused by wave action.

Forty diseased geese were impounded and cared for, 30 of which survived after being deleused and having access to all the grain and grit they could use. Twenty of these were shipped to the Santee National Wildlife Refuge to be liberated there. The other ten are being held in impoundment waiting to regain their strength sufficiently to withstand shipping to the Noxubee National Wildlife Refuge.

IV. PUBLIC RELATIONS

A. Refuge Visitors. Officials: Mr. Arthur F. Miller, Reg. Refuge Inspector, visited the refuge in January
Others; Seven others including school children and teachers visited the area.

Approved:
Arthur F. Miller 5/17

3-1547

RECORD OF GAUGE READINGS

Refuge: Pea Island

Gauge Location: North End of No. 1 Impoundment

Month: January Year 1943

Observer: Sam A. Walker

Heights Relative to Sea Level:

0.0 on Gauge Mean Low Water
Bottom of Outlet
Crest of Spillway

Date	TIME AM	TIME PM	Gauge Reading	Quantity C.F.S. Est.( ) Calib( )	Precipitation Inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind, Direction, Velocity; Relative Humidity; Etc.
1			4.50			54	43	
2						52	45	
3						54	47	
4						52	35	
5						32	32	
6						44	30	
7					.11	44	36	
8			4.48		.58	46	35	
9					.32	42	35	
10						41	32	
11						44	32	
12			4.48			51	37	
13						43	35	
14						46	35	
15			4.46			54	43	
16						57	43	
17					.40	59	50	
18					.10	62	52	
19					.12	60	36	
20			4.46			39	25	
21						43	25	
22						51	38	
23						57	44	
24						61	43	
25			4.44			57	50	
26						52	45	
27					.47	48	42	
28					1.85	58	37	
29			4.50			43	37	
30						39	37	
31								
			Max.Rev.	Total Ac. Ft.	Total In.	Max.	Min.	
TOTALS.			.06		3.95	61	25	

INSTRUCTIONS

1. Daily gauge readings should be taken, if possible, during the spring run-off period and at times when the water levels are changing rapidly. At other times gauge readings should be taken once a week at all stations.

2. Always read the gauge when the gate opening is changed. If water is being run from one unit to another, the gauge should be read on all units that will be affected. Show time of observation and of all changes in operating the gates under "Remarks".

3. Show the 0.0 equivalent in feet above sea level for each gauge. Sea level elevations should be indicated for the bottom of the opening as well as the crest of the spillway. If gauges are on rivers, bays or lakes, not a part of a control structure, information on the last two items is unnecessary.

4. When more than one report is submitted from the same refuge, detailed weather observation need be furnished on only one report. If possible, snowfall should be converted into inches of precipitation.

5. The "Remarks" column should give a complete record of all pertinent conditions that affect the water level, such as the position of the gates, excessive or continuous winds, with direction and velocity, relative humidity, if known, spring breakup, etc. A page of additional remarks or supplementary reading, if made more frequently than once a day during times of rapidly rising waters, may be attached to this report.

6. Unless Refuge Managers have definite figures on quantitative flow of water released from a station, the column headed "Quantity C.F.S." (cubic feet per second) may be left blank.

7. In the preparation of these forms, the original and one carbon of all reports from refuges in Regions 1, 2, 3, and 9 should be forwarded to Mr. Brice McBride, 437 Federal Bldg., Salt Lake City, Utah by the tenth of each month, and a carbon copy furnished the Regional Director. In all other Regions, the original for each station should be forwarded to the Washington office by the tenth of the following month and a carbon should be furnished the Regional Director. One copy of each report should be kept for the Refuge files.

3-1547

RECORD OF GAUGE READINGS

Refuge: Pea Island

Gauge Location: North End of No.1 Impoundment

Month: February Year 1943

Observer: Sam A. Walker

Heights Relative to Sea Level:

0.0 on Gauge mean low water

Bottom of Outlet

Crest of Spillway

Date	TIME AM	TIME PM	Gauge Reading	Quantity C.F.S. Est.( ) Calib( )	Precipitation Inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind, Direction, Velocity; Relative Humidity; Etc.
1						52	39	
2			4.56			48	37	
3					.02	45	38	
4					.13	57	44	
5			4.56		.28	59	44	
6					.98	59	50	
7						50	44	
8						55	42	
9						52	46	
10						61	48	
11					.25	61	49	
12						46	32	
13			4.52			51	32	
14			4.52			37	21	
15						26	17	
16						28	18	
17			4.50			44	26	
18						37	34	
19						48	34	
20						54	39	
21						53	40	
22						68	46	
23			4.40			70	46	
24						63	47	
25						60	42	
26					.10	47	38	
27					.05	39	29	
28						49	37	
29								
30								
31								
			Max.Dev.	Total Ac. Ft.	Total In.	Max.	Min.	
TOTALS.			.16		1.81	70	17	

INSTRUCTIONS

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3. Show the 0.0 equivalent in feet above sea level for each gauge. Sea level elevations should be indicated for the bottom of the opening as well as the crest of the spillway. If gauges are on rivers, bays or lakes, not a part of a control structure, information on the last two items is unnecessary.

4. When more than one report is submitted from the same refuge, detailed weather observation need be furnished on only one report. If possible, snowfall should be converted into inches of precipitation.

5. The "Remarks" column should give a complete record of all pertinent conditions that affect the water level, such as the position of the gates, excessive or continuous winds, with direction and velocity, relative humidity, if known, spring breakup, etc. A page of additional remarks or supplementary reading, if made more frequently than once a day during times of rapidly rising waters, may be attached to this report.

6. Unless Refuge Managers have definite figures on quantitative flow of water released from a station, the column headed "Quantity C.F.S." (cubic feet per second) may be left blank.

7. In the preparation of these forms, the original and one carbon of all reports from refuges in Regions 1, 2, 3, and 9 should be forwarded to Mr. Brice McBride, 437 Federal Bldg., Salt Lake City, Utah by the tenth of each month, and a carbon copy furnished the Regional Director. In all other Regions, the original for each station should be forwarded to the Washington office by the tenth of the following month and a carbon should be furnished the Regional Director. One copy of each report should be kept for the Refuge files.

3-1547

RECORD OF GAUGE READINGS

Refuge: Pea Island

Gauge Location: North end of No. 1 impoundment

Month: March Year 1943

Observer: Sam A.Walker

Heights Relative to Sea Level:

0.0 on Gauge mean low water

Bottom of Outlet

Crest of Spillway

Date	TIME AM	TIME PM	Gauge Reading	Quantity C.F.S. Est.( ) Calib( )	Precipitation Inches	TEMP. Max.	TEMP. Min.	REMARKS: Position of Gates; Wind, Direction, Velocity; Relative Humidity; Etc.
1			4.38			48	44	
2						49	44	
3					.08	44	32	
4			4.38			32	26	
5						54	28	
6					1.44	64	38	
7						58	36	
8						38	32	
9			4.42			40	30	
10						50	46	
11						52	45	
12						68	52	
13			4.40			[illegible]	40	
14						58	38	
15						78	58	
16			4.38			74	58	
17					.94	72	46	
18			4.30			70	48	
19						82	54	
20						72	59	
21					.82	62	34	
22					.13	42	30	
23					.04	47	31	
24						69	37	
25						72	44	
26			4.36			71	47	
27					1.10	64	56	
28						61	44	
29						48	32	
30						56	44	
31			4.40			82	54	
			Max.Dev.	Total Ac. Ft.	Total In.	Max.	Min.	
TOTALS.			.10		4.60	82	26	

INSTRUCTIONS

1. Daily gauge readings should be taken, if possible, during the spring run-off period and at times when the water levels are changing rapidly. At other times gauge readings should be taken once a week at all stations.

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3. Show the 0.0 equivalent in feet above sea level for each gauge. Sea level elevations should be indicated for the bottom of the opening as well as the crest of the spillway. If gauges are on rivers, bays or lakes, not a part of a control structure, information on the last two items is unnecessary.

4. When more than one report is submitted from the same refuge, detailed weather observation need be furnished on only one report. If possible, snowfall should be converted into inches of precipitation.

5. The "Remarks" column should give a complete record of all pertinent conditions that affect the water level, such as the position of the gates, excessive or continuous winds, with direction and velocity, relative humidity, if known, spring breakup, etc. A page of additional remarks or supplementary reading, if made more frequently than once a day during times of rapidly rising waters, may be attached to this report.

6. Unless Refuge Managers have definite figures on quantitative flow of water released from a station, the column headed "Quantity C.F.S." (cubic feet per second) may be left blank.

7. In the preparation of these forms, the original and one carbon of all reports from refuges in Regions 1, 2, 3, and 9 should be forwarded to Mr. Brice McBride, 437 Federal Bldg., Salt Lake City, Utah by the tenth of each month, and a carbon copy furnished the Regional Director. In all other Regions, the original for each station should be forwarded to the Washington office by the tenth of the following month and a carbon should be furnished the Regional Director. One copy of each report should be kept for the Refuge files.

RECORD OF GAUGE READINGS

Refuge Pea Island

Gauge Location north end of No. 1 impoundment

Month: April Year 1943

Observer: Sam A. Walker

Heights Relative to Sea Level

)0.0 on Gauge
Bottom of Outlet
Crest of Spillway

	TIME	Gauge Reading	Quantity C.F.S. Est.	Precipitation Inches	TEMP Max	TEMP Min	Remarks: Position of Gates; Wind, Direction, Velocity; Relative Humidity; Etc
1		4.34			82	58	
2					78	54	
3					56	36	
4					58	38	
5					72	51	
6		4.28			60	40	
7					52	38	
8					79	44	
9				.64	65	48	
10		4.28		.56	64	53	
11					57	39	
12				.96	66	42	
13					78	52	
14					58	38	
15					49	34	
16					68	35	
17		4.24			71	50	
18					63	48	
19				.64	76	48	
20		4.22			62	51	
21					58	46	
22					61	46	
23		4.12			62	53	
24					64	48	
25		4.10			78	57	
26					75	62	
27					69	58	
28					81	66	
29					64	53	
30					82	49	
31							
		Max.Dev.	Totals	Total	Max	Min	
Totals		.24		2.80	82	34	