

BRANCH OF WILDLIFE REFUGES NARRATIVE REPORTS

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MR. REGAN

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SEE PGS. 13, 14, 15

Land Management

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SEE PGS 2, 3, 8

Habitat Improvement

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Stenographers

REFUGE CRAB ORCHARD

PERIOD May - August 1958

CRAB ORCHARD NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

May thru August, 1958

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES & WILDLIFE
Fish and Wildlife Service
Route #2
Carterville, Illinois

CRAB ORCHARD NATIONAL WILDLIFE REFUGE

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7 EMPLOYEES	OPERATORS AND MECHANICS
W. T. CAMPBELL	FOREMAN, LABOR
7 EMPLOYEES	LABORERS
4 EMPLOYEES (Temporary)	LABORERS
A. BOLES	FOREMAN, WATER AND SEWER
5 EMPLOYEES	WATER AND SEWER
E. HUNTER	FOREMAN, HEAT AND STEAM
4 EMPLOYEES	HEAT AND STEAM
G. MELTON	FOREMAN, PROTECTION AND SECURITY
9 EMPLOYEES	PROTECTION AND SECURITY
L. NORTON	FOREMAN, LABOR
7 EMPLOYEES (Temporary)	RAILROAD SECTION

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1. GENERAL

Weather Conditions

We thought this period in 1957 was wet but it was even wetter this year. There were 46 days of rain during this period, totaling 6.14 inches above normal.

July was an unusual Month. We received 7.52 inches of rainfall above normal.

The weather data below was obtained from the U. S. Weather Station at the Marion Veterans Hospital.

Table No. 1 - Weather Statistics for Report Period					
Month	Snowfall	Precipitation		Temperature	
		This Month	- Normal	Maximum	Minimum
May	-	3.15	4.09	88	39
June	-	4.34	4.08	94	52
July	-	10.85	3.33	92	64
August	-	2.80	3.50	94	50
Total		21.14	15.00	Extremes 94	- 39

Habitat Conditions

Water. Manipulation of water control valves was not attempted this period.

The maximum level (406.9) on Crab Orchard Lake occurred during July. Spillway elevation is 405.00 and there were very few days when the lake was below this reading.

Little Grassy Lake water levels remained near spillway elevation (500.00) during most of the period.

Food and Cover. This period is not a critical one for resident wildlife species. The abundant rain described in the weather section caused a luxuriant growth in pastures, hayfields and wild areas.

Refuge and permittee farming was a trying experience this period. First it was too wet to plant. We were lucky to get some of the fields planted, then it became too wet to cultivate.

The food production outlook for the coming migratory waterfowl season is similar to last year. Crops will probably be below average. Prospects for green forage in pastures, hay land and winter grain are good.

II. WILDLIFE

Migratory Birds

Waterfowl. The nesting attempts of our small resident flock of Canada geese suffered from high water. The small islands they prefer were partially flooded during the period. Approximately 12 goslings were hatched on the refuge.

During the first week of May a lone Snow goose visited the refuge.

A mallard nest was found on one of the higher islands. She was apparently successful for a brood of young was later observed in that area.

A few late migrating Blue-winged Teal and one lesser scaup were on the area during May.

It is difficult to estimate our resident wood duck population. Routine observations by Refuge Aid Bush indicate a similar population to that of last year. Preparations for trapping and banding wood ducks are now underway.

Other Waterbirds. The green heron is the only bird of this group which seems to be as abundant as it was last year. Great blue herons and common egrets were not as plentiful. We usually have around 200 egrets on the area in July and August. The greatest number observed this year is 15. A few black-crowned night herons and no little blue herons were observed.

We have concluded the numerous number of surface water areas, created by the wet season, has scattered the post breeding herons. During normal or dry years Crab Orchard Lake is a concentration area.

Shorebirds. Like 1957, the absence of mud flats has limited our shore bird population to the common breeding species. Killdeers, upland plovers and spotted sandpipers make up this group. In addition to these one woodcock's nest was found.

Mourning Doves. A coo count conducted by Refuge Aid Bush reflected a slight increase in the dove population.

The banding of nestlings began in mid-April and was terminated the first week of June. Bush banded 97 nestlings compared to the 112 banded in 1957. An analysis of the data collected appears in Section V.

Upland Game Birds

Bob-white Quail. Refuge employees agree we had one of the largest breeding populations ever to exist on the refuge. The production success is not known, but there are indications of poor to fair success. Brood observations were completely absent until mid-July. Since then only a few have been observed and they are small for this time of year.

With a larger breeding population and a possible poor nesting success we still expect a good crop of quail.

Ring-necked Pheasant. Six birds were observed in early May.

Wild Turkey. Observations of the 22 "wild" turkeys, released by the Illinois Conservation Department in February, have been limited since the summer growth of vegetation became established. These adult birds only look wild. They certainly don't act that way.

The Illinois Department released an additional 100 young birds on August 7. At times it's necessary to stop your car on refuge roads to prevent an unscheduled "harvest" of these "wild" turkeys.

Big-Game Animals

White-tailed deer are common on the Crab Orchard Refuge. There have been no serious depredations on farm crops by deer, but the time is coming.

One doesn't need a crystal ball to see it won't be long before it will be necessary to remove a substantial number of deer from the Crab Orchard "involute" area. We certainly don't relish the idea of a deer hunt, but this seems to be the only practical means of controlling the herd.

Fur Animals, Predators, Rodents, and other Mammals

An occasional muskrat, mink and raccoon were observed during this period. Coon sign is plentiful throughout this area.

Skunk and opossum are also present but their number is not great. Red and gray foxes are common but summer observations are limited. Coyotes have not been observed this period.

Fox and gray squirrels are plentiful along the wooded streams and wood lots on the refuge.

This year's rabbit population looks good. During June and July the area seemed to be alive with them.

The wood chuck gives us more trouble than any other of this group. His taste for farm crops causes considerable damage in certain locations. Refuge Trainee French kept them on the run with smoke bombs, etc., when he was here. Guess we will have to appoint a new exterminator.

Hawks, Eagles, Owls, Etc.

No unusual observations of this group have occurred this period. Our usual complement of Red-tailed -- Red-shouldered, Coopers, and sparrow hawks are distributed through the area.

Other Birds

Refuge Aid Bush reported an unusual concentration of swallows on May 6. "The swallow concentration at Wolf Creek Bridge this A.M. was the largest I have ever witnessed on the refuge. It not only consisted of at least 500 birds but included every swallow known to this area. There were barn swallows, cliff swallows, purple martins, rough-winged swallows, tree swallows and bank swallows. It was impossible to count the birds as they wheeled and dived on both sides of the causeway and only an estimate could be made."

The usually rare grasshopper sparrow was fairly common this period.

Fish

The unusually heavy rainfall during the period was apparently responsible for sporadic fishing success in this area. The heavy rains kept Crab Orchard/Lake cloudy most of the period but Little Grassy Lake remained clear.

The early bass and crappie fishing on Little Grassy was good. Several bass in the 7-9 pound class were recorded. Some enormous strings of crappie come from this lake, and 2 weighing over 4 pound were caught in one day.

Fishing success on Little Grassy was slow in late July and August but picked up some on Crab Orchard.

Reptiles

There were no unusual observations of reptiles during the period.

Disease

One sick bat was collected by Refuge Trainee French. The animal was submitted to the Illinois Health Laboratory for a rabies check. The lab returned a negative report.

III. REFUGE DEVELOPMENT AND MAINTENANCE

Physical Development

General Wildlife and Biological Development

- Sprayed 25 3/4 miles of fire trail and secondary roads.
- Constructed post treatment plant.
- Made head count in all pastures.
- Replaced rotted stairs on fire tower.
- Sprayed pond dikes with herbicide.
- Renovated duck traps.

Recreational Development and Maintenance

- Group Picnic Area completed. Facilities include picnic shelter with tables, 6 outside tables, septic toilet, well with hand pump, gravel entrance road and parking area, sandy wading area, and locked gate.
- Mowed heavy use areas 2 or 3 times (122 man days).
- Mowed Crab Orchard Dam once.
- Weekly cleanup of heavy use areas (118 man days).
- Weekly cleanup of 10 septic toilets.
- Maintained 8 miles of roads - (41 man days).
- 2400 gallons of SC 3 asphalt hand spread by contract in repairing $3\frac{1}{2}$ miles of roads.
- Repaired 10 picnic tables.
- Mowed Little Grassy public area 2 times by contract.
- Renovated 2 dumps - Little Grassy and Crab Orchard.
- Razed swimming pier at Crab Orchard Beach.
- Painted 22 signs on pilings for water traffic.
- Hung 10 large informational signs.
- Set 20 trash barrel hangers.
- Set 6 traffic signs.
- Improved launching ramp at Little Grassy with 30 tons salvaged rock.
- Repaired water pump twice at Crab Orchard Beach.
- Sprayed approximately 2 acres of poison ivy and weeds in use areas.
- Distributed approximately 6000 Refuge Leaflets.
- Gassed approximately 25 wood chuck dens in Crab Orchard Dam.
- Installed styrofoam flotation and 2 - 35 H.P. outboard motors on rescue boat.

Soil and Moisture Conservation

- One "Conservation Farm Guide" comprised of 496.5 acres planned and approved.
- Fertilized and sodded $\frac{1}{2}$ acre Little Grassy dike for erosion control.
- Rip-rap of pond dike and culvert discharge.
- Plugged wash-outs along Wolf Creek.
- Accepted bids for fertilizer to be used in pasture restoration.
- Compiled acreages and assisted A.S.C. representative on corn acreage check.
- Completed Annual and Quarterly S.&M. reports.
- With aid of management, planted and cultivated 150 acres of experimental corn and sorghum.
- With aid of management and permittees, cleared 125 acres crop and pasture land.
- With aid of permittees, interseeded 20 acres of sorghum with rye.
- With aid of permittees, relocated approximately 1 mile of pasture fence to facilitate Devils Kitchen road construction.

Plantings

Aquatic and Marsh Plants. Five refuge farm ponds were hand planted last summer. The clumps of softstem bulrush (*Scirpus validus*), hardstem bulrush (*Scirpus acutis*), and three-square (*Scirpus Americanus*) were checked this period. On ungrazed ponds survival was 100% and clumps had spread up to 10 times their original area. Where pond shores were accessible to cattle no survival was detected.

Two new refuge ponds, constructed in 1957, were planted with 21 clumps of softstem bulrush on August 11, 1958. Refuge Manager Trainee French, and Refuge Aid Bush completed this project.

Cultivated Crops. Page 1 - section 1, weather conditions, practically eliminates the need for this section. Abnormally cool, wet weather plagued us through July. As happened last year with similar conditions, our corn and soybean acreage is about one-third less than planned; and of course all crops were planted late. In addition, a lot of the corn drowned or could not be cultivated because of the exceptionally wet July. Corn drowned in even slight depressions in otherwise level land.

Soybeans apparently can stand more water than corn because many fields look exceptionally good and should produce a high yield. Because of the late plantings, the geese will probably have the opportunity of feeding on "green beans" again this year. If "compaction" develops the refuge will arbitrarily set a date after which no soybeans may be planted. Late soybeans automatically reduces the amount of winter grains that will be sown, for there is little use of planting them later than October 10. Perhaps it would be more accurate to state that there is little use planting them "period", because almost no winter grain was harvested this year. All fields inside, and almost all fields outside of the refuge were destroyed by geese.

Winter grain is being sown on about 500 acres that normally would not be planted, which will help offset this year's shortage. This is mainly new land being brought into cultivation and through pasture renovations. In addition, approximately 100 acres of grain sorghum will be available to the geese. In essence; we will have approximately the same amount of food available this year as last, which is far short of our excellent 1956 year.

Collections and Receipts

Seed or other Propagules. Early in August we became concerned about the limited supply of seed wheat in this area. We were planning extensive plantings of winter wheat, but the local price (\$3.00/ bu) was too high for the money available.

A surplus seed circular revealed some surplus wheat at the Kirwin Refuge. Thanks to them, we were able to get 1030 bushels for the freight costs.

Fires

None this period.

IV. RESOURCE MANAGEMENT

Grazing

One bright spot of the dark, rainy weather is the refuge pastures. They have produced an exceedingly large amount of forage. Clipping has been completed on almost all pastures. About the only comment heard from the permittees is that they are "cutting-off" more pasture than the cattle could eat in a year. This, of course, is a little "taller than the grass", but the pastures look good.

One distracting note is that the pastures are exceedingly rough because of the cattle trampling in the soft ground. This, of course, hampers mowing. Rotary mowers are gaining in popularity and a number are using them on the pastures. This helps the appearance of the pastures because the amount of dead vegetation left laying on top of the living vegetation is greatly reduced.

All of last year's pasture renovations resulted in good to excellent catches and growth. So, approximately 250 acres of excellent pasture were established.

Weather bogged-down this year's rather ambitious pasture renovation program to the extent that some land planned for pasture probably will not be fertilized and seeded until next spring. Wet weather kept the 'dozers idle until August. We expect to fertilize and seed some 250 acres this fall, and about another 200 in the spring.

Haying

As with the pastures, hayfields yielded good crops because of the rain. The quality is down from last year because a number of good red clover fields were destroyed by the geese and weather. So, permittees were again dependant upon lespedeza. Wet weather hampered "hay-making" and a lot of good hay was spoiled by the rain.

Again this year, almost all haying operations were done on the share basis by our farm cooperators, with only 40 acres harvested under special use permits. One for approximately 250-300 bales has not been closed as yet, so the total cash revenue cannot be computed. The closed permit was for 2579 bales of red clover hay for a cash revenue of \$309.48. This particular field of about 32 acres yielded approximately 2 $\frac{1}{2}$ tons per acre, an exceptional yield.

Fur Harvest

None this period.

Timber Removal

Mr. Ottia Davis harvested 236 black locust posts for \$21.24.

The Twin Mills Lumber Company is still removing logs from the Devils Kitchen area.

Other Uses

Following is a tabulation of revenues received from Schwartz and Davis Crab Orchard concession calculated at 3% of the gross:

Table No. 11 - Schwartz & Davis Concession					
Item	May	June	July	Aug.	TOTAL
Refreshments-Boat Dock	\$ 29.38	\$ 34.70	\$ 35.68	\$ 37.52	\$ 137.28
Refreshments- Beach	1.85	18.37	19.34	7.26	46.82
Gas & Oil	48.73	61.01	81.90	88.38	280.02
Boat & Motor rental	12.46	9.19	9.05	8.21	38.91
Storage	63.26	26.18	26.27	14.76	130.47
Merchandise	170.44	182.99	104.62	84.88	542.93
Labor	.77	1.89	.56	.86	4.08
Swimming (Beach)	1.05	11.54	18.78	6.35	37.72
Boat rides	--	1.49	2.76	4.96	9.21
Totals -	\$327.94	\$347.36	\$298.96	\$253.18	\$ 1227.44

V. FIELD INVESTIGATION OR APPLIED RESEARCH

Dove Banding Analysis

The dove banding program began in mid-April and was terminated on June 6. Refuge Aid Bush banded 97 nestlings. Other work prevented continuing the project further.

An analysis of the 1957 banding data revealed certain habitat preferences. These data were used to select specific "nest hunting" areas. Last year's practice of exploring the whole refuge was discontinued. Consequently, Bush was able to locate as many nests in less than half the time spent in 1957.

Habitat preferences in 1957 followed the same pattern this year. The table on the following page gives a general breakdown of nesting habitat preferences.

<u>Habitat Type</u>	<u>Percent of Nests Found</u>
Conifer	59%
Old apple orchard	24%
Vines	2%
Multiflora Rose	4%
Wild Plum	3%
Hawthorn	2%
Willow	2%
Fallen trees	2%
Other	2%

The past two years of dove banding experience has developed some interesting theories. One of the most interesting is the nesting dove's apparent preference for habitat near human activity. We know they prefer conifers and old orchards. It seems as if they prefer this habitat near human activity such as recreation areas, residences or heavily traveled roads.

There is some evidence which indicates early nesting attempts (April) are not as successful as later ones. This may be attributed to the more adverse weather conditions which usually prevail early in the season. The table below contains limited data regarding nesting success.

<u>Month</u>	<u>Number of Nests found</u>	<u>Number Successful</u>	<u>Percent Successful</u>	<u>No. of Doves Banded</u>
April	23	5	22%	10
May	69	44	64%	81
June (6 days)	11	4	36%	6
Total	103	53	51%	97

If we are able to continue banding 100 dove nestlings each year, we feel we are making an important contribution toward the dove management and research program. Perhaps it is possible to band 300 to 500 nestlings each year. This would require one man spending at least two days each week from late April to mid-August. We do not feel we are in a position to spend this much time on dove banding.

VI. PUBLIC RELATIONS

Recreational Uses

The weather put a cool wet blanket on much of the summer visitation. Crab Orchard Beach was the most visibly affected with the books showing a net loss of about \$200.00. Campers spent many a wet day, but several weekends produced a capacity crowd of some 200 camps in the camping area. Boat campers opened numerous sites on the south shore, and "wilderness" campers who drove in sometimes found themselves stranded because of mud trails.

The recreational potential of the three lakes is manifesting itself in a real estate boom, and land prices are increasing tremendously. One enterprising group of out-of-staters purchased a 140 acre pasture adjacent to our northwest boundary and are now selling cabin lots in their "Crab Orchard Estates". One land holder nearby increased the price of his forty from \$20,000 to \$40,000. A recreational land development is in process near Devils Kitchen and lots are to be available soon.

Our new Group Picnic Area, completed about the middle of July, has scheduled two dozen groups, the largest one being about 300 persons for four days. The area has received many compliments. We have already received two requests for permits next summer.

This year, for the first time, weekend and holiday patrols were scheduled by the refuge, and a rather regular night patrol was made by a local constable who volunteered his services. Also State Police cars made numerous visits through the areas at all hours. All of these officers gave the visitors a source of information for their questions and a measure of protection from that troublesome minority. In other words, the situation is improving, but it is not yet satisfactory.

The Student Assistant was very helpful and did as good a job as any three-month employee could do; but, he could not, and should not, be expected to do the kind of job that a permanent employee would. In other words, we still need a full time, F.B.I. trained, policeman.

There has been more cooperation from the State Police this season even though they made very few apprehensions for violations. Their main contribution has been driving through the area with their marked cars. Several of these officers have accompanied the Park Ranger on boat patrols and every effort has been made to make them feel welcome on federal property.

The most helpful enforcement assistance has been given by a Williamson County constable. His patrols at night have been especially helpful in decreasing undesirable activities around Crab Orchard Lake. He has made many reprimands, and during this period issued 75 arrest tickets resulting in fines and costs of \$1196.20. These are listed under violations, Part VI. He has also saved the refuge considerable time by processing a dozen cases for us, which you will also find in Part VI, under violations. The activities of this county constable have drawn some unofficial criticism because his income is from a fee-per-case basis, and many people feel that this could become a racket between this assenting officer and the local Justices of the Peace.

The tabulation on the following page shows a trend of usage at the Crab Orchard Beach and the Public Boat Dock, which should be considered in our future planning.

Table No. III - Usage Trend

YEAR	Beach Admissions (Persons)	Boat Rentals (\$)	Gas Sales (\$)
1955	20,000	5,000.--	4,100.--
1956	16,000	3,000.--	5,800.--
1957	19,500	2,000.--	7,000.--
1958	12,500	1,500.--	9,600.--

The most pressing question is Crab Orchard Beach which operated at a loss of about \$200 this year. The cool weather, no doubt, was a big factor in the small attendance; but, the physical condition is now at a point where a major expenditure will have to be made for modernization, or the supervised swimming will have to be abandoned. The swimming pier with diving platforms had to be dismantled before the season was over because of its rotten condition.

Boat rentals have declined because fishing success has declined, and because more people own their boats.

The steady, rapid rise in gas sales indicates the trend toward bigger motors, more boats, and the increase of motorized water sports such as skiing and cruising. It also raises the question, "Do we need another public boat dock on Crab Orchard Lake?" The present one, and also the Yacht Club are crowded to capacity, and the population of the area is increasing.

In Conservation News, dated August 1, 1958, in a paragraph on State Park Usage, compiled by the National Park Service, the following statement is made: "The prorated cost per visitor in 1957 was 34 cents, including 19 cents for operation and maintenance and 15 cents for capital investment, operational revenues came within 12 cents per visitor of meeting operational costs."

At Crab Orchard Refuge for Fiscal Year 1958, the actual cost of the recreational program was \$33,901.31 including \$21,461.19 for operation and maintenance and \$12,440.12 for capital investment. The recreational revenue was \$3188.57. Using a reduced visitor day count of 1,200,000 the following prorated cost per visitor is obtained: Operation and maintenance, 1.8 cents; Capital investment, 1 cent. Total cost per visitor, 2.8 cents; Recreational revenue per visitor, 0.27 cents ($\frac{1}{4}$ cent).

Our limited maintenance personnel and funds certainly leaves much to be desired.

Refuge Visitors

Refuge visitors, other than industrial contacts during the period, are listed on the following page:

<u>Date</u>	<u>Name</u>	<u>Title</u>	<u>Purpose of Visit</u>
<u>May</u>			
21	William Rice	S.I.U. Pilot Plant	Timber check
<u>June</u>			
10	Ira Banks	U.S.G.M.A.	Courtesy
13	- Groves	Blue Wing Htg. Club	Weed poisoning
17	L.A. Mehrhoff	Bosque Refuge	Courtesy
27	Norman Schlack	S.I.U.	Census
30	Paul Lamendola	State Forester	Forest Festival
<u>July</u>			
14	L. Harvel	Upper Miss. Refuge	Courtesy
22	Clarence Beasley	Fish & Game Comm., Houston, Texas	Courtesy
27	F.C. Gillett	Atlanta, Georgia	Courtesy
29	Duane Norman	Chautauqua Refuge	Pick up equipment
<u>Aug.</u>			
6	W.D. Klimstra	S.I.U.	Courtesy
	Don Hankla	North Carolina	Courtesy
7	Don Hankla	North Carolina	Courtesy
	Ross J. Miller	Ill. Cons. Dept.	Release of Turkeys
	Jack Calhoun	Ill. Cons. Dept.	Release of Turkeys
19	John Hosner	S.I.U.	Inspect timber plantation
23	Dr. Theodore Speery	Kansas State College	Courtesy - tour
26	Robert Merz	U.S. Forest Service	Courtesy

Refuge Participation

Members of the Crab Orchard Refuge staff attended the following meetings, or participated in the following activities as representatives of the Service:

May

- 5 --Sheffield presented talk to Carbondale Sea Scouts.
- 8 --Stiles attended meeting of the Crab Orchard Sportsmens Assn.
- 13 --Sheffield attended meeting of the Williamson Co. Tourist Assn.
- 23 --Manke attended the Agronomy Day held by So. Illinois University.
- 26 --Sheffield and Stiles attended meeting of So. Illinois, Inc.

June

- 5 --Stiles attended meeting of the Crab Orchard Sportsmens Assn.
- 9 --Sheffield attended meeting of the Williamson Co. Tourist Assn.
- 12 --Stiles attended meeting of the Crab Orchard Sportsmens Assn.
- 19 --Manke attended Williamson Co. S.C.S. Board of Directors.
- 24 --Sheffield attended So. Illinois, Inc. Meeting.
- 26 --Stiles attended meeting of the Rend Lake Advisory Committee.

July

- 11 --Stiles and Carter attended meeting of Crab Orchard Sportsmens Club.
- 25 --Carter attended meeting of the Crab Orchard Sportsmens Assn.

- 26 --Stiles conducted tour for So. Illinois University students.
28 --Stiles attended meeting of So. Illinois, Incorporated.

Aug.

- 4 --Carter presented slide talk to Marion Kiwanis Club.
- 7&8 --Sheffield conducted tour for Teamster Union families.
- 11 --Carter & Sheffield attended meeting of Williamson Co. Tourist Association.
- 13 --Manke gave talk on Fire Suppression to Carterville B.S.A.
- 14 --Manke presented a talk for the Future Farmers of America.
- 18 --Sheffield conducted tour of the refuge for Cerebral Palsey group.
- 23 --Carter conducted tour for Kansas State College Wildlife Professor.
- 28 --Stiles attended So. Illinois Personnel Management Meeting.

Hunting

The Illinois squirrel season began August 1. Hunting pressure was rather high on the public hunting area the first two weekends. Most hunters bagged one or two squirrels early in the season, and success has improved as hickory nuts ripen and the number of hunters decrease.

The Illinois dove season will open September 1. There is a good population of doves in the area and the limited number of dove hunters (including refuge personnel) are eagerly awaiting the opening hour.

Violations

Charges were filed against persons in Justice of the Peace Courts for the following violations; fines and costs were paid as shown:

Disobeying stop sign	- \$	13.20
Shooting fireworks	-	23.50
Reckless driving	-	58.20
Speeding	-	18.20
Reckless driving	-	54.40
Improper parking	-	15.00
Boat in swimming area	-	18.20
Improper parking	-	15.00
No drivers license	-	10.00
Speeding	-	20.00
Speeding and no drivers license	-	36.40
Reckless boating	-	18.20
Illegal transportation of intoxicants	-	30.00
Total	- \$	330.30

Charges were filed with U. S. Commissioner McCabe against two men for damaging a large oak tree in a picnic area by building a fire at its base. They paid \$28.00 each.

Charges are pending in J. P. Court against a Kenneth Sterns for parking in a posted "No Parking" zone.

A Williamson County Constable operating voluntarily in the Crab Orchard Lake area, mostly at night, issued 75 arrest tickets and filed the following charges before local Justices of the Peace. These resulted in a total of fines and costs as shown:

50 - disobeying "Stop" sign	- \$	667.20
6 - speeding	-	106.00
7 - reckless boating	-	129.20
4 - driving too fast for conditions	-	74.60
2 - boat in swimming area	-	36.40
2 - illegal parking	-	26.40
1 - reckless driving	-	58.20
1 - wrong way on one way road	-	18.20
1 - littering beach	-	15.00
1 - public indecency & drunkenness	-	65.00
<hr/> 75 -	Total	<hr/> \$ 1196.20

It is thought that perhaps his bounty system of operation encourages the choosing of "easy" cases; nor, is it conducive to friendly public relations.

During this period there were 417 "educational reprimands" made by the Park Ranger for violations as follow:

- 198 - boating violations (mostly excessive speed in dock area, and towing skiers with no observer).
- 56 - improper parking
- 40 - speeding
- 19 - unleashed dogs
- 14 - camping in picnic areas
- 3 - picnicking in camping area
- 12 - reckless driving
- 11 - shooting fireworks
- 11 - running stop signs
- 11 - illegal transportation of intoxicants
- 9 - trespassing at beach when closed
- 6 - wrong way on one way road
- 4 - exceeding camping limit
- 4 - driving cars off roads
- 3 - immoral conduct
- 2 - throwing trash
- 2 - peddling
- 2 - disorderly conduct
- 2 - fires on beach
- 2 - damaging property
- 6 - miscellaneous violations (1 each)

Vandalism was about normal during the period and manifested itself as follows:

Fire built against concrete block column of new picnic shelter. No damage except the unsightly black residue.

Two windows broken at Crab Orchard Beachhouse -attempted
breakin- nothing stolen.
Gate post broken.
Three locks stolen from gates.
Several dozen shingles used for firewood at Hogan shelter.
Four traffic signs damaged.
Two railroad tie tire stops removed from parking areas.
Four boats reported stolen (one from the public boat dock).

Harry Stiles and Larry Sheffield had a meeting with Dean Davis of Southern Illinois University concerning misconduct of students at Crab Orchard Refuge, and full cooperation was assured.

VII. INDUSTRIAL ACTIVITIES

Water Use

Industrial Consumption. An average daily consumption of 1,078,000 gallons of treated water this period taxed the capacity of the refuge water plant facility. Some law of economics was proven, however, as this phase of our industrial operation reflected a satisfactory net return.

All divisions of the refuge industrial unit -railroad, water plant, sewage disposal plant, steam generating plant and real estate show a greatest net return when operated or occupied at, or near, rated capacity. Capacity operation of utilities 100%, and occupancy of buildings is a long sought goal at this station and it is encouraging to have this goal in sight.

Table No. IV - Quantities of Water and Sewage Treated at Refuge Operated Plants.				
Month	May - August 1957		May - August 1958	
	Gallons Treated		Gallons Treated	
	Water	Sewage	Water	Sewage
May	20,123,000	5,825,000	33,417,000	4,322,000
June	18,526,000	6,475,000	35,139,000	4,377,000
*July	21,515,000	5,950,000	29,101,000	*2,684,000
August	20,673,000	5,725,000	34,930,000	5,082,000
Total	80,837,000	23,975,000	132,587,000	16,465,000
* Reduction in sewage treated during July due to by-passing plant during high rainfall period combined with breakdown of sludge digester.				

Municipal Use. Adjacent cities of Carbondale, Carterville, Marion and Herrin all have pipelines and pumping facilities hooked to Crab Orchard Lake. An abnormally high amount of rainfall in July (10.85 inches) preceded by above normal rainfall for the past year has kept local municipal reservoirs full. Only Carbondale has pumped raw water from Crab Orchard

Lake during the period. The annual billing for this City, made in August, shows 267,327,000 gallons of raw water pumped for the "water year". At the rate of \$0.02 per thousand gallons plus the annual meter fee of \$100.00, a total of \$5446.54 was received by the Government for this use.

Facility Activity, Development and Maintenance

Inclement weather during the early months of the period limited outside development and maintenance of industrial facilities. Sunny skies during the latter half permitted us to set our teeth in long deferred maintenance development and rehabilitation projects and we were able to complete several major items.

Boiler House. Following is a table of comparison of steam production at Boiler House No. 1.

Table No. V -- Comparative Steam Production - Boiler House No. 1.				
Boiler No. & Type	May - Sept., 1957		May - August, 1958	
	Steam Prod.	Fuel Used	Steam Prod.	Fuel Used
No. 1, Coal Fired	13,499,500#	1,738,000#	15,505,000#	2,061,800#
No. 2, Oil Fired	12,813,500#	104,000gals.	8,263,000#	64,010gals.
Total Steam Produced	26,313,000 pounds.		23,768,000 pounds.	

A lessened demand for steam this period reflects decreased employment at the Sangamo Electric Company plant which is served by Boiler House No. 1.

A major overhaul of No. 1, coal fired boiler including repairs to the combustion chamber, overhaul of stokers, replacement of three tubes, turbinizing tubes, laying of new top and general cleaning, required operation of No. 2, oil fired boiler for six weeks. Complete re-piping of the feed-water system on boiler No. 2 was also accomplished this period along with routine preventative maintenance.

Buildings and Grounds. The major items of construction, maintenance and rehabilitation completed this period under this category are listed as follows:-

- Quarters maintenance including interior painting of Quarters No. 1, Staff House No. 7; formica covering of bathroom walls Staff House No. 7 and kitchen of Quarters No. 1; installed aluminum screen doors on residences; tiled upstairs floor, Quarters No. 1.
- Completed flushing of nine feet of partially digested sludge from digestion tank at sewage plant. (Whew!)
- Cleared trees from shoulders and ditch, prepared grade on 2.6 miles gravel road, spread 3,200 tons of gravel w/motor patrol.

- Constructed three bridges from the pilings up - spans of 60', 48', and 12', all 24' wide.
- Bituminous road patching - all black-top roads.
- Summer-long mowing of roadsides, building and utility areas.
- Routine repairs to water distribution lines.
- Herbicide sprayed 14 miles railroad right-of-way.
- Erected 12' x 16' refuge signs at Highway 13 entrance.
- Cleaned and painted accelerators at water plant.
- Closed door openings w/corrugated steel, Building S-4-3.
- Drained and cleaned 5,000,000-gallon concrete water reservoir.
- Installed overhead door at Central Shop.
- Placed 32 truck-loads of riprap on Wolf Creek Causeway and Little Grassy Dam.
- Installed guttering on eaves - Quarters No. 2.
- Erected 45' x 34" steel smokestack at Central Shop Boiler, painted stack.
- Installed water jet-pump, Olin-Mathieson 10" meter.
- Began termite control on 23 residences.

Equipment.

- Engine overhaul, No. 10 Chevrolet pickup.
- Major repairs to motor patrol grader blade mechanism.
- Installed CO₂ fire extinguishers in all vehicles replacing carbon tetrachloride.
- Fabricated and installed safety canopy on TD-14 and TD-9 tractors.
- Routine repairs and maintenance to heavy equipment, locomotives, farm tractors and automotive equipment.

Railroad. Rehabilitation of the refuge-owned and refuge-operated railroad began July 21. A section foreman and 8-man section gang was hired for this work. During the next three years, practically all original cross-ties and switch-ties will be replaced. Levelling, re-alignment and gauging of the track is included in this program.

Operation of the railroad has gone uninterrupted throughout the period. Heavy switching each Monday has necessitated double-heading the two locomotives to handle trains of 12 to 25 cars.

Total car switches this period was 579 compared to 580 for the corresponding period in 1957.

Water and Sewer. As mentioned previously, our water plant has operated close to capacity throughout the period. On several occasions it has been necessary to cut in the auxiliary pumps, powered by Lincoln engines, to step up capacity from raw water sump to accelerators. Cleaning of the 10 inch line between this sump and accelerators is scheduled and should eliminate this bottleneck in the system.

The sludge digestion tank at the sewage disposal plant has been by-passed throughout the period. Replacement of the 40' diameter floating

cover and gas-dome is awaiting completion of bid contracts by the Regional Office. We shall be fortunate to get the digester back in operation for under \$20,000.00.

Fire and Security Activities

We have been fortunate in having no industrial or building fires this period. Periodic inspections of industrial plants, followed up by inspection reports and recommendations for fire preventive measures, have been well received by our industrial tenants. We are certain this program has contributed to a good fire record. The fire-school program initiated in April to train security forces of industrial tenants in the use of fire fighting equipment was continued into this period. Each shift at the Olin Mathieson Dynamite Plant and Rocket Propellant Research Plant now has trained crews of fire fighters.

Guard, Johnnie Hogg, was given a disability retirement from the guard force on May 30. This position was filled on July 27, by Lewis J. Gass.

Industrial Lease Management

A census of refuge industries at the close of the period shows 15 manufacturing industries and six warehousing tenants to be employing 2049 people on the refuge. The recession has cut employment most at the Sangamo Electric Company plant, but other refuge industries have generally recovered from the January-April slump.

Industrial expansion and new lease activities this report period were as follows:-

Olin Mathieson Chemical Corporation - Completed rehabilitation of the old Receiving Station Building Y-1-1 and occupied 4185 square feet for use as administrative and engineering office.

Dura-Crates, Incorporated - Occupied 10,000 square feet in Building S-4-3 (old Garage) for additional production and storage.

McBride Truck Lines - Completed rehabilitation of Building S-4-5 (partially destroyed by fire in 1957) and occupied for use as freight line terminal.

Southern Metal Arts Company - Leased Building S-4-4 for manufacture and fabrication of wrought iron products.

Propellex Chemical Corporation - Leased one explosive storage magazine in Area VI.

Simonds Construction Company - Leased railroad siding and portion of old Material Yard for use as concrete batch-plant.

* New industrial tenants.

Lease Prospects. Limited activity in this category was as follows:-

Shilli Transportation Co. - Contingent on an Illinois Commerce Commission decision, this firm is interested in leasing Building S-4-1 in Area IV.

Blankenship and Co., Inc. - Negotiations are under way with this firm for the lease of 20,000 square feet of warehousing space in the Fuse Line Area.

Industrial Public Relations

Industrial Visitors. Listed below are industrial visitors to the refuge office:-

<u>Date</u>	<u>Name</u>	<u>Title or Organization</u>	<u>Purpose of Visit</u>
May 1	Ben Schilli Dr. Wm. Freeberg	Truck Transport, Inc. S.I.U.	Lease C.O. Development
2	Dr. JoAnn Boydston Ralph Alexander Karl Malzahn	S.I.U. Dura Crates S.I.U.	Camp " Lease expansion Property
5	Rev. Carl F. Beyer	United Church of Christ	Camp Lease
7	Crockett Meisenheimer Ralph McBride	Univ. Archetect McBride Express	Land marks Renovation
12	Ralph McBride Lloyd Teas F. E. Graper	McBride Express St. Highway Engr. F.B.I.	Bldg. Renovation Rt. 148 Stilley Bombing
13	Edward L. Drinkwin William R. Scruggs Winton Walkup	RR Retirement Bd. I.C. Railroad " "	Employment Rail traffic " "
14	Winton Walkup Joe Bartok John Canova	I.C. Railroad So. Metal Art Co. Herrin T.V.	Rail Traffic Lease Prospect " "
15	Ray Maas Clark Peck Joseph Bartok	Olin Mathieson F.C.D.A. So. Metal Arts Co.	Property Inventory Use of equipment Leased S-4-4
16	Winton Walkup A. Howell Glen Schnooke	I.C. Railroad Simon Cons. Co. " " "	Railroad repairs
20	R. J. Brunner Maurice Nix	Brunner Cons. Co. Franklin Asphalt	Road Contract

<u>Date</u>	<u>Name</u>	<u>Title or Organization</u>	<u>Purpose of Visit</u>
May			
21	Sol Van Praag, Jr. Sol Van Praag, Sr.	Van Praag Equip. Co. " " " "	Surplus Equipment " "
22	-- Lindsey	Olin Mathieson	Courtesy
23	George Dodds D.D. Wright	Marion Broadcasting Co. Marion Chamber Commerce	
26	Paul Blackmon Ralph McBride -- Duffy -- Shipp	Propellex Chem. Corp. McBride Express G.S.A. G.S.A.	Lease HE 3-12 Lease Insp. Boiler Houses " " "
27	-- Duffy Geo. Shipp Joe Bartok Gus Carter Elwood Dunn	G.S.A. G.S.A. So. Metal Arts Fed. Landscaping Co. C.I.P.S.	(Inspection-- (Boiler Houses Lease Permit f/ Water " f/Switching
June			
2	James Sands Claude Grace Joseph Bartok	I.C.R.R. F.B.I. So. Metal Arts	Rail traffic Road ROW Lease
9	Ray Richardson Oscar Atherton	Richardson Detective Sv. W.O.W.	Security Publicity
12	R. J. Brunner Dr. Wm. Tudor -- Van Ray Ralph McBride	Brunner Supply S.I.U. Constbl., Marion, Ill. McBride Express	C.O. development Law enforcement Lease premises
13	Walter Baehr	R.R. Retirement Bd.	Employment Problems
16	Link Perrine	Ill. St. Emplmt. Svs.	" "
23	Walter Baehr	R.R. Ret. Board	" "
25	Dr. C. Wachowski	Marion, Illinois	Boundary lines
26	Rev. Jack Conely Emerson Brokow Lail Smith Kenneth Dean	Carbondale, Ill. Bloomington, Ill. " " " "	Church Camp " " " "
30	Ralph McBride	McBride Express	Lease problems
July			
1	Robert P. Nagel	AAA Machinery	Switching Permit
3	Winton Walkup -- Kuntz	I.C. Railroad " "	Rail repair " "
8	Harry Rhemby Jim Moss John Griswall	McCann & Co. " " " Marion, Illinois	Road repair " " Drainage
9	Jim Moss	McCann & Co.	Road repair

<u>Date</u>	<u>Name</u>	<u>Title or Organization</u>	<u>Purpose of Visit</u>
July			
10	Ray Wright	Regional Office Engineer	Inspection
	Lonnie Priest	Cty. Highway	Road repair
	Fred Thane	" "	" "
	Arthur Robley	C.O.E.	Keys
	-- Lawler		Highway 148
	Lloyd Teas		" "
	Ralph Alexander	Dura-Crates	Lease add.bldg.
	Frank Henderson		Courtesy
11	F. E. Graper	F.B.I.	Arson
	Claude Grace	F.B.I.	Arson
	W.E. Farley	Ill. Public Aid Comm.	Courtesy
14	W. E. Becker	Olin Mathieson	Lease
	Walter Baehr	RR Retirement	Employment Census
15	Jim Sands	I.C. Railroad	Freight traffic
17	Marshall Skelcher)	Carbondale	Housing Development
	Harold McGinnis)	Sedalia, Mo.	" "
	John Beatty)	" "	" "
	W. E. Becker	Olin Mathieson	Lease
18	Miss Marjorie Shanks	S.I.U.	Tour
	Walter Baehr	RR Retirement	Emplmt. Census
	Courtney Clower	" "	" "
21	Ralph McBride	McBrides	Lease premises
22	E. B. Baker	Mt Vernon, Illinois	Courtesy
25	G. H. Hughes	S.I.I.	Industrial Contacts
28	Joe Bartok	So. Metal Art Co.	Placing signs
	Ray Hubbs	Herrin Chamber Comm.	Courtesy
	James Sands	I.C. Railroad	Freight traffic
	Al Howell	Simonds Const. Co.	Lease use of land
	W.E. Becker	Olin Mathieson	Lease codification
30	Al Howell	Simonds Const. Co.	Lease use/land
	R. J. Miller		R.O.W.
	Carl Miller)		
	Jim Robinson)	Herrin V.F.W.	Camp permit
	Troy Finney)		
31	Clyde Brewster	Herrin, Illinois	Lease inquiry
	Floyd Bracy	" "	" "
Aug.			
5	E. J. Aikman	Marion, Illinois	Lease prospect
7	Oren Drew	Gen. Telephone Co.	Refuge boundaries
18	C.K. Gibbons	C.I.P.S.	Tree trimming
25	E.C. Elliott	St. Highway Dept.	Borrow pits
27	E. J. Aikman	Marion, Illinois	Lease prospect
	Oscar Grant	Zeigler, Illinois	Devils K. Topog.

TABLE NO. VI - INDUSTRIAL LEASING, REVENUE & EMPLOYMENT

INDUSTRY	Lease Footage				Monetary Return					Total No. Employed 4-30-58	Total No. Employed 8-31-58
	May	June	July	Aug.	Rent	Wat.&Sew.	Steam	Switching	Total		
Allen Industries, Inc.	42,000	42,000	42,000	42,000	\$ 2 373.36	\$ 16.00		\$ 94.40	\$ 2 483.76	6	6
Aronson, Knute	1,550	1,550	1,550	1,550	77.52	--		--	77.52	1	1
Diagraph-Bradley Inds.	76,130	75,410	75,410	75,410	4 697.12	181.72		37.76	4 916.60	72	85
Dura Crates, Inc.	20,721	20,721	20,721	30,692	1 546.68	36.00		47.20	1 629.88	42	35
East Side Lumberyard Supply	16,195	16,195	16,195	16,195	1 079.64	16.00		113.28	1 208.92	4	4
General Services Admin.	63,103	63,103	63,103	63,103	3 538.44	16.00		18.88	3 573.32	9	10
General Telephone Co.	4,715	4,715	4,715	4,715	267.20	--		--	267.20	1	1
Great Lakes Solvents	51,471	51,471	51,471	51,471	2 846.92	16.00		320.96	3 183.88	6	6
Grinnell Sash & Door Co.	33,517	33,517	33,517	33,517	1 832.56	23.98		632.48	2 489.02	47	44
McBride, Ralph	--	--	4,685	4,685	156.18	8.00		--	164.18	-	26
Norge	76,850	76,850	76,850	76,850	4 610.88	--		169.92	4 780.80	50	50
Olin Mathieson Chem. Corp.	315,968	320,153	319,995	307,139	13 639.74	9 790.15		2 813.12	26 243.01	298	353
Permanent Homes	20,500	20,500	20,500	20,500	1 161.68	16.00		66.08	1 243.76	9	12
Propellex Corp.	--	1,069	1,069	1,069	26.73	--		18.88	45.61	-	-
R.K. Mfg. Co.	7,271	7,271	7,271	7,271	484.72	32.00		--	516.72	15	20
Sangamo	219,490	219,490	219,490	219,490	11 008.28	4 857.41	16 556.28	--	32 421.97	648	720
Southern Metal Arts	--	--	4,685	4,685	156.18	8.00		--	164.18	-	4
Supreme Transformer Co.	25,464	25,464	25,464	25,464	1 467.60	419.54		--	1 887.14	90	160
Southern Homes, Inc.	82,520	82,520	82,520	82,520	4 240.12	24.00		670.24	4 934.36	15	35
Triangle Const. Co.	20,500	20,500	20,500	20,500	1 025.00	--		--	1 025.00	-	-
Universal Match Corp.	81,915	81,915	82,984	82,984	3 333.78	1 139.42		--	4 473.20	180	237
Mary Construction Co.	--	--	--	--	--	--		358.72	358.72	80	103
Corps of Engineers	--	--	--	--	--	--		--	--	10	12
COSA Club	--	--	--	--	25.00	20.00		--	45.00	--	--
Sou. Ill. University	--	--	--	--	1.00	570.78		--	571.78	77	90
Boy Scouts	--	--	--	--	1.00	--		--	1.00	--	--
Girl Scouts	--	--	--	--	1.00	--		--	1.00	--	--
Methodist Youth	--	--	--	--	1.00	--		--	1.00	--	--
Richardson, Ray	--	--	--	--	5.00	--		--	5.00	--	--
Am. Dist. Telg. Co.	--	--	--	--	5.00	--		--	5.00	--	--
Schwartz & Davis	--	--	--	--	1 227.44	--		--	1 227.44	--	--
City of Carterville	--	--	--	--	100.00	--		--	100.00	--	--
COFT Club	--	--	--	--	--	43.56		--	43.56	--	--
City of Carbondale	--	--	--	--	--	5 446.54		--	5 446.54	--	--
Stille Const. Co.	--	--	--	--	--	--		--	--	30	30
Storey, Jack	--	--	--	--	--	--		--	--	1	--
E. T. Simonds	--	--	--	--	--	--		50.00	50.00	--	--
A.A.A. Machinery	--	--	--	--	--	--		9.44	9.44	--	--
C.I.P.S.	--	--	--	--	--	--		9.44	9.44	--	--
Totals-- May-Aug. 1958	1,159,880	1,164,414	1,174,695	1,171,810	\$ 60,936.77	\$ 22,681.10	\$ 16,556.28	\$ 5,430.80	\$ 105,604.95	xxx	2044
Totals-- Apr. 30 1958				1,164,049	\$ 58,573.54	\$ 14,801.15	\$ 34,052.95	\$ 5,418.56	\$ 112,846.20	1691	xxx

VIII. OTHER ITEMS

Items of Interest

Many of the readers of this narrative, especially the old-timers in the NR Club will note something missing in this report. And indeed this is so as Eugene E. Crawford, after twenty-one and one-half years of field service with the Bureau, moved up on June 12 as Assistant Chief, Branch of Refuges, Washington, D.C. Just short of eleven years of Gene's career have been spent at Crab Orchard Refuge. "Gene Crawford - Crab Orchard Refuge" had become a five word phrase well known in Southern Illinois and throughout the Region. It was largely through Gene's efforts that this multiple-purpose project has succeeded. The eminent success of this area as a Canada goose refuge has only confirmed the wildlife management proficiency of the men of the Fish and Wildlife Service. And, if nothing else, the expansive Recreational and Industrial programs here have proven that professional wildlifers can also cope with the problems of recreational and industrial management.

Gene Crawford's contribution to future Crab Orchard narratives will be sorely missed as well as his outstanding leadership as Project Manager. Each of us at Crab Orchard wish him every success in his new assignment.

W. D. "Pete" Carter "galloped in" from the ranges of Ft. Niobrara to fill the Refuge Manager position vacated by the writer. We were, indeed, glad to welcome Pete - a native Illini and somewhat familiar with the local scene. Pete and his wife Lynn replaced the four-girl Crawford family with a four-girl Carter family on July 18, when Lynn presented a fourth girl - Elizabeth Jane.

Assistant Refuge Manager, William L. French transferred to Seney Refuge on August 15, to become Assistant Refuge Manager there. Ed Smith gets a fine biologist in Bill. We are hoping the vacancy now existing here can be filled soon.

Other personnel actions during the period included the entrance on duty of Lewis Gass, Guard Patrolman; James C. Cox, Filter and Disposal Plant Operator and Floyd Norton, Foreman-Laborer.

A second coronary attack within a year has hospitalized Administrative Assistant, G. Hiley Hunter since September 4. Hiley's cheerful and engaging personality seems undaunted by this adversity, and he expects to be back at his desk after a few more weeks of convalescence. We all wish him a speedy and complete recovery and look forward to his rejoining the staff.

Credit for editing this report is divided as follows:

Sections I and II	Carter, Bush
Section III	Carter, Manke and Sheffield
Section IV	Carter and Manke

Section V
Section VI
Section VII and VIII

Carter
Carter, Sheffield and Staff
Stiles

Photographs

Sixteen photographs, portraying a few of the period's activities, are included.

Respectfully submitted,

W. D. Carter

W. D. Carter
Refuge Manager

Narry E. Stiles

Narry E. Stiles
Acting Project Manager

Date submitted September 24, 1958

Approved by Regional Office

J. E. [Signature] 9/24/58
Chief, Division of Wildlife



Photo No. 58-13. One of the two 12' x 16' refuge signs
erected on either side of main entrance to refuge.
September 14, 1958 G.H.H.



Photo No. 58-14. Flooded cornfield in mid-July caused by
overflow from Wolf Creek. A dike is planned to protect
this 160 acre bottom land tract.
July 18, 1958 H.E.S.



Photo No. 58-15. Closer view of same cornfield in Photo No. 58-14. The two feet of water receded overnight and caused relatively little crop damage.

July 18, 1958 H.E.S.



Photo No. 58-16. Ogden Road bridge over Wolf Creek at crest of July flood. This bridge to be raised one foot and reconstructed this fall.

July 18, 1958 H.E.S.



Photo No. 58-17. Water hubcap-deep over Ogden Road just east of Wolf Creek. Sewage lift-station on left takes a beating each time Wolf Creek overflows, which is at least once annually.

July 18, 1958 H.E.S.



Photo No. 58-18. High water on Crab Orchard Lake aggravates an already serious marine erosion problem. These 20-year old shortleaf pine, once high and dry, have lost the battle.

May 5, 1958 L.B.S.



Photo No. 58-19. The grim business of recovering victims of drowning - a teen-age boy and girl this time. These the first drownings for Little Grassy Lake. Crab Orchard Lake has claimed 30 in the 11-year history of the refuge.

June 15, 1958 L.B.S.



Photo No. 58-20. "Dynamite job" to State Highway Department Contractor's motor grader. Equipment was parked on new Highway 148 bridge over Wolf Creek. A \$5000 reward offer failed to turn up guilty party. This is not the first such incident in "Little Egypt".

May 6, 1958 H.E.S.



Photo No. 58-21 & 58-22. Above and below - New picnic shelter in Group Picnic Area, Engineer Ray Wright inspecting.

July 11, 1958 H.E.S.





Photo No. 58-23. Foreman J. Pickar and crew constructing new bridge over Pigeon Creek - Area III Road. Note 16 inch water main on right.

May 16, 1958 H.E.S.



Photo No. 58-24. Putting finishing touches on above bridge. Three bridges of this type completed this period.

May 22, 1958 H.E.S.



Photo No. 58-25. "Working on the railroad" - Section Foreman, F. Norton and 8-man crew of crack gandy dancers. Refuge railroad constructed in 1942 will require almost complete tie replacement over 14 miles of line in next three years.
August 14, 1958 G.H.H.



Photo No. 58-26. Pulling a tie. Working in coarse ballast rock, this crew has set a fast pace so far. The 6'4" colored lad, 2nd from left, tips the beam at 265 -- all men, these.

August 14, 1958 G.H.H.



Photo No. 58-27. Scrubbing interior of 5,000,000 gallon emergency reservoir. Canada geese have taken to using this reservoir in recent years and doing a good job of fertilizing the algae here being removed.

May 28, 1958 H.E.S.



Photo No. 58-28. "Farewell Coffee" for Jr. Manager, William French transferred to Seney National Wildlife Refuge.

August 14, 1958 G.H.H.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Crab Orchard

MONTHS OF May TO August, 1958

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	532	630	630	630	630	630	630	630	630	630
Cackling										
Brant										
White-fronted										
Snow	7									
Blue										
Other										
Ducks:										
Mallard	28	28	21	14	14	84	70	70	70	70
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal	140	70	14							
Cinnamon teal										
Shoveler										
Wood	280	280	350	350	700	1,400	1,400	1,400	1,400	1,400
Redhead										
Ring-necked										
Canvasback										
Scaup, Lesser	7									
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coots:	35	28	7							

3-7150a
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Crab Orchard MONTHS OF May TO August, 1958

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	630	630	630	630	630	630	630	630	11,212	4	20
Cackling											
Brant											
White-fronted											
Snow									7		
Blue											
Other											
Ducks:											
Mallard	70	70	70	70	70	70	70	70	1,029	1	10
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal									221		
Cinnamon teal											
Shoveler											
Wood	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	20,160	2	100
Redhead											
Ring-necked											
Canvasback											
Scaup Lesser									7		
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:									70		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	:	:	:
Geese	11,249	90	20
Ducks	21,420	212	410
Coots	35	5	:

SUMMARY

Principal feeding areas Crab Orchard Refuge.

Principal nesting areas Islands, and wooded areas along tributaries to Crab Orchard Lake.

Reported by Lee Bush, Refuge Aid

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).

Interior Duplicating Section, Washington, D. C. 37944

1953

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)

Refuge

Crab Orchard

Months of

May

to

August

1948

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Great Blue Heron	-----	-----	8	May 1	-----	-----	-----	-----	-----	25
Common Egret	1	June 27	15	Aug. 31	Post-breeding migrant					-----
Green Heron	-----	-----	200	Aug. 31	-----	-----	-----	12	40	400
Black-crowned Night Heron	3	May 1	3	May 1	1	May 30	-----	-----	-----	10
King Rail	-----	-----	5	July 1	1	July 10	-----	1	2	10
II. Shorebirds, Gulls and Terns:										
Woodcock	-----	-----	10	June 1	1	Aug. 20	-----	1	12	4
Killdeer	-----	-----	2000	Aug. 31	-----	-----	-----	150	300	3000
Upland Plover	-----	-----	50	June 15	2	Aug. 10	-----	10	20	70
Spotted Sandpiper	-----	-----	100	July 31	-----	-----	-----	25	100	200
Solitary Sandpiper	-----	-----	-----	-----	1	May 1	-----	-----	-----	1
Common Tern	-----	-----	30	May 15	2	July 2	-----	-----	-----	50
Black Tern	-----	-----	50	May 30	5	July 6	-----	-----	-----	100
Herring Gull	-----	-----	10	May 1	1	July 11	-----	-----	-----	20

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	-----	Permanent Resident	-----	3000	8000
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Double-crested Screech Owl		Permanent Resident			50
Horned owl		"			25
Hairy Barred Owl		"			20
Raven		"			
Crow		"			5000
Turkey Vulture		12 July 5	Summer Resident	1	25
Red-tailed Hawk		Permanent Resident		4	8
Red-shouldered Hawk		"		1	2
Broad-winged Hawk		"		1	2
Osprey		4 May 1	Summer Resident	2	4
Sparrow hawk		Permanent Resident		3	12
					200
Reported by Lee Bush, Refuge Aid					

INSTRUCTIONS

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

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

Page 1.

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Crab Orchard

For 12-month period ending August 31, 1958

Reported by Lee Bush

Title Refuge Aid

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production
# 1	Crops 202	Ducks 168,513		
	Upland 102	Geese 723,688	2	4
	Marsh 10	Swans		
	Water 326	Coots 18,522		
	Total 640	Total 910,793	2	4
# 2	Crops 212	Ducks 161,714	10	120
	Upland 150	Geese 879,599		
	Marsh 143	Swans		
	Water 105	Coots 19,635		
	Total 610	Total 1,060,948	10	120
# 3	Crops 398	Ducks 57,197		
	Upland 125	Geese 312,788		
	Marsh 56	Swans		
	Water 306	Coots 980		
	Total 885	Total 370,965		
# 4	Crops 297	Ducks 25,662		
	Upland 410	Geese 43,050		
	Marsh 9	Swans		
	Water 684	Coots 735		
	Total 1400	Total 69,447		
# 5	Crops 135	Ducks 120,995		
	Upland 330	Geese 58,870	2	4
	Marsh 19	Swans		
	Water 236	Coots 630		
	Total 720	Total 180,495		
# 6	Crops 40	Ducks 398,027		
	Upland 559	Geese 39,781		
	Marsh	Swans		
	Water 601	Coots 6,748		
	Total 1200	Total 444,556		
# 7	Crops 377	Ducks 155,169	10	120
	Upland 284	Geese 754,180		
	Marsh 146	Swans		
	Water 200	Coots 37,821		
	Total 1007	Total 947,170		

(over)

UNITED STATES
Form No. 1-1750
(December)
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 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.

INSTRUCTIONS

- (1) **Area or Unit:** A geographical unit that, 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. Estimated acreage of each unit should be indicated.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of 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 the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, 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 each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven.
- (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.

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

Page 2.

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Crab Orchard For 12-month period ending August 31, 1958

Reported by Lee Bush Title Refuge Aid

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production		
# 8	Crops	35	Ducks	25,895	10	120
	Upland	719	Geese	210,527		
	Marsh	277	Swans			
	Water	619	Coots	3,325		
	Total	1630	Total	269,745	10	120
# 9	Crops	723	Ducks	169,344		
	Upland	234	Geese	201,761		
	Marsh	2	Swans			
	Water	161	Coots	10,143		
	Total	1120	Total	381,248		
#10	Crops	565	Ducks	28,812		
	Upland	119	Geese	225,750		
	Marsh	1	Swans			
	Water	5	Coots	280		
	Total	690	Total	254,842		
#11	Crops	315	Ducks	78,540	10	120
	Upland	345	Geese	347,158		
	Marsh	23	Swans			
	Water	5	Coots			
	Total	688	Total	425,698	10	120
TOTALS FOR ALL 11 UNITS - -	Crops	5329	Ducks	1,339,871	40	480
	Upland	3377	Geese	3,827,152	4	8
	Marsh	686	Swans			
	Water	3278	Coots	93,889		
	Total	10,670	Total	5,315,912		
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

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 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.

INSTRUCTIONS

- (1) **Area or Unit:** A geographical unit that, 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. Estimated acreage of each unit should be indicated.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of 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 the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, 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 each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven.
- (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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Crab Orchard

Months of May 1 to September 1, 1958

(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	Cultivated fields, upland meadow, brushland & forest edges, Areas I & III: 15,000 acres. Area II: 19,000 "				50:50 50:50				1500 6000	Birds apparently increasing and at carrying capacity or above.
Chinese Ring- necked Pheasant	Cultivated field borders, upland meadow, brushland and forest edges. Areas I & III: 24,000 acres.								10	Remnants of birds used in 1957- 1958 field trials. Occurrence is scattered & rare.

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.