

BRANCH OF WILDLIFE REFUGES NARRATIVE REPORTS

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Stenographers

REFUGE

SHIAWASSEE

PERIOD

SEPT-DEC 1955

Shiawassee Flats Wildlife Management Area

WEL

Narrative Report

September - December 31, 1955

Personnel

Harvey K. Nelson	-	Refuge Manager
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William Goudy - Terminated 12/17/55

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TABLE OF CONTENTS

	<u>Page</u>
I GENERAL	1
A. Weather Conditions	1
B. Water Conditions	1
II WILDLIFE	2
A. Migratory Birds	2
1. Population and Behavior	2
a. Swans	2
b. Geese	2
c. Ducks	2
d. Coots	4
e. Herons	4
f. Shorebirds	4
g. Mourning doves	4
h. Woodcock	4
i. Wilson's snipe	5
B. Upland Game	5
C. Big Game Animals	6
D. Fur Animals	7
E. Predacious Birds	7
F. Fish	7
III REFUGE DEVELOPMENT AND MAINTENANCE	7
A. Physical Development	7
B. Planting	9
E. Weed Control	10
IV ECONOMIC USE	11
V FIELD INVESTIGATIONS	11
A. Waterfowl Banding	11
B. Muskrat Population Study	11
VI PUBLIC RELATIONS	12
A. Recreational Uses	12
B. Refuge Visitors	12
C. Refuge Participation	13
D. Hunting	14
F. Violations	15
VII OTHER ITEMS	16
A. General	16
B. Report of Activities - Lake St. Clair	16
C. Photographs	18
<u>Special Information Requested</u>	
Status of Goose Flock	None
Public Use	12
Use of Herbicides	10
Predacious Birds	7
Goose Browse Preference	None

Shiawassee Flats Wildlife Management Area

Narrative Report

September - December 31, 1955

I GENERAL

A. Weather Conditions

The weather data presented were obtained from official Weather Bureau reports from stations at St. Charles, Michigan and the Tri-City Airport located near Freeland, Michigan.

Table No. 1 - Weather

<u>Month</u>	<u>Snow</u>	<u>Rain</u>	<u>Temperature</u>	
			<u>Max.</u>	<u>Min.</u>
Sept.	-	1.22"	93° (17th)	35° (26th)
Oct.	T	3.25"	82 (6th)	25 (22nd)
Nov.	8.0"	8.20"	52 (10th)	4 (28th)
Dec.	4.0"	1.50"	47 (23rd)	6 (20th)
Total	12.0"	14.17"	Extremes 93°	4°

Temperatures for September averaged slightly above normal, but it was cited as being the driest September since 1908. No September frosts occurred in the Saginaw Valley. October was also warmer than average with rainfall for the Saginaw area below normal. A severe windstorm occurred the evening of October 23 causing considerable local damage to buildings, power lines and trees. Minor frosts occurred October 11 and 15, with the first heavy frost on October 22. Conditions for November were somewhat reversed with temperatures well below normal and more than 8 inches of rain fell during the first 20 days of the month. Cold, wet conditions delayed remaining harvest operations and made other field work difficult. All small water areas froze over November 16, opened up again November 17, and froze again November 25. Remaining river areas (except the Tittabawassee River) froze over November 28 and remained frozen through the period. Less snow and rain was received during December, but temperatures remained below normal the first two weeks. Thawing conditions prevailed December 23 so that the ground was bare at that time. Colder temperatures returned at the end of the period.

B. Water Conditions

The September drought was broken by October rains, although field moisture and water levels remained low. Total rainfall for November was above normal so that the ground became saturated by November 15 and runoff increased slightly. Freezing temperatures, followed by snow prevailed from mid-November to the end of the period.

The level of Lake Huron continued to drop all fall with a low of 579.8 recorded on December 1, as compared to 581.4 recorded for December 1, 1954. The December 1, 1955 level is .3 feet below the 95 year December average. As a result all river and ditch levels remained low throughout the period. River marshes were extremely low and many entirely dry at freeze-up time. There was also a distinct absence of northeast winds during the period, in fact strong southwest winds prevailed; so that water was continually being blown from the project, out the Saginaw river and into Saginaw Bay.

Dry field conditions during September and early October enabled farmers to complete early harvest on schedule. November rains, however, delayed completion of sugar beet, soybean and corn harvest. All crops within the project were finally harvested by late November.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

a. Swans. Whistling swans were first observed November 5. A second movement occurred November 16-18 at which time about 600 swans were on the project. Numerous other small flocks passed through the area, and additional numbers were present on Saginaw Bay.

b. Geese. A flock of about 20 Canada geese showed up on the Shiawassee project during late August and were seen frequently throughout September. It is believed these birds came from the Pontiac-Brighton area as they were very tame. First true migrants appeared on September 25 when a minor movement of Canada geese occurred through the State. Small numbers of Canada geese were observed throughout October, with major movements occurring October 14, October 25-28, November 1-3 and November 16-18. As no major segment of the project has been closed thus far and hunting is still permitted on marshes owned by the Service there is little chance for geese to use the area during the fall. Peak Canada goose population was 400 on November 17. Many more moved through but didn't stay.

First flights of blue and snow geese were observed October 22, followed by other movements on October 25-28 and November 1-3. Largest number present at one time was 270, of which about 20 were snow geese. Blue geese provided fair hunting at times for the better goose hunters.

c. Ducks. The fall waterfowl migration got underway during the first week of September as black ducks, mallard, blue-winged teal and wood ducks began to increase in the Shiawassee area, Crow Island Sanctuary and adjacent Saginaw river marshes. The State aerial census

on September 2 showed 3200 ducks in the general area mentioned. The first major movement occurred September 15-17 as populations built up to 16,000 for the areas cited, the largest increase being in teal and widgeon. The aerial census conducted on September 30, the day before the opening of the waterfowl hunting season revealed 26,000 ducks for the same areas. Black ducks, mallards, blue-winged teal and widgeon were the cominant species. Larger numbers of pintails were observed during the period as compared to 1953 and 1954. At that time there was considerable movement between the areas north of Saginaw and the Shiawassee project where they came to feed on grain fields. Considerable feeding on grain stubble was observed in the vicinity of Tri-City Airport, northwest of Saginaw.

Following the opening of the hunting season, hunting pressure prevented ducks from concentrating in the Shiawassee Flats. Birds fed out early in the morning and after shooting hours, but the majority returned to the Crow Island Sanctuary during the day. Private marshes along the Saginaw River that were not hunted constantly also held fair numbers of ducks.

The first killing frost on October 11 forced most blue-winged teal and wood ducks out of the Saginaw Valley. Widgeon remained in Crow Island until late October, with a major departure observed October 25-28. Large numbers of ducks moved through the Saginaw Valley during the period November 1-3 as an extensive cold front moved across the midwest. Very few diving ducks used the Shiawassee project as water levels were very low. A late movement of black ducks and mallards occurred November 16-17, at which time most waterfowl left the Saginaw Valley. Most small water areas in the project froze over at that time, opened again and then froze up for the winter on November 25. A final aerial census made on December 5 showed that nearly all of Saginaw Bay was frozen over, with about 4000 blacks and mallard remaining in an open water hole in Crow Island. Less than 1000 ducks remained on December 17 and by January 1, 1956 about 100 blacks and mallards remained in open waters of the Tittabawassee river northwest of Saginaw.

Pertinent data from fall aerial censuses for the Saginaw vicinity are shown in Table No. 2.

Table No. 2 - Aerial Waterfowl Census, September 30, 1955
(Day before opening of hunting season)

Area	Bl	M	W	Pt	BWT	Can	Sc	Total ducks	Coot
Saginaw Bay	12000	8500	18500	1100	5000	-	-	45,100	3300
Saginaw River marshes	3200	3200	3900	400	1400	-	-	12,100	500
Crow Island	3500	1700	5300	-	900	-	-	11,400	600
Shiawassee Flats	1000	700	300	-	300	-	-	2,300	400
					Total			70,900	4800

Nov. 11: (Peak population for Saginaw Bay - Saginaw Valley)

<u>Area</u>	<u>Bl</u>	<u>M</u>	<u>W</u>	<u>Pt</u>	<u>BWT</u>	<u>Rh</u>	<u>Can.</u>	<u>Sc</u>	<u>Merg.</u>	<u>Coot</u>
Saginaw Bay	22700	14700	6000	-	-	76000	46700	85000	15300	10000
Saginaw river marshes	450	300	200	-	-	-	-	-	-	400
Crow Island	8500	7200	7000	-	-	-	-	-	-	5000
Shiawassee Flats	100	100	-	-	-	100	-	-	-	300
<u>Total Ducks - 290,000</u>										<u>15,700</u>

d. Coots. Coots began to increase in numbers about October 10, with peak movement occurring during the third week of October, at which time there were about 5000 coots in the Crow Island area. Large numbers of coots remained in Crow Island and in the southern portion of Saginaw Bay until about November 14. Relatively few coots use the Shiawassee project once the hunting season opens, again perhaps because of hunting pressure.

e. Heron, Egrets, Bitterns. Great blue herons and black-crowned night herons were present throughout the summer and fall in larger numbers than during the two previous years. We assume this increase was caused by low water levels which made it easier for herons to catch fish. Little green herons were seen frequently. A late summer influx of common egrets occurred. A total of 45 individuals were observed on the Shiawassee project on August 28. During the aerial census of September 15, 118 egrets were recorded for the various Saginaw river marshes. American bitterns were seen occasionally.

f. Shorebirds, gulls and terns. Low water levels created numerous mud flats which apparently were inviting to the many shorebirds that stopped in the area. Species observed at the start of the migration were listed in the May-August Narrative Report. Additional observations of interest were a movement of several hundred killdeer through the project on October 31; a flock of 12 golden plovers identified by Dr. T. C. Black on October 14; a flock of 28 black-bellied plovers observed on October 16. Common terns, black terns, herring gulls and ring billed gulls were common throughout the period.

g. Mourning doves were very numerous throughout the summer. There appeared to be a migration through the area during mid-September. A group of 26 mourning doves were observed on the project until December 24.

h. Woodcock were observed occasionally during early September and again the middle of October. Several were checked in hunters bags during the pheasant season.

i. Wilson's snipe began to appear in numbers September 11-17, and remained plentiful until about October 8. Very few snipe are taken by hunters in this vicinity.

2. Food and Cover

A few black ducks and mallards started feeding in stubble fields during late July and August. As new migrants arrived in September field feeding increased. A small acreage of barley that was left for feeding purposes on the Trinklein Tract received relatively heavy use the last two weeks of September. Blacks and mallards in the marshes north of Saginaw fed extensively on grain stubble in that vicinity. Blue-winged teal and widgeon concentrated in Crow Island and didn't move into the Shiawassee flats as readily as previous years; probably because the more desirable shallow marsh areas were nearly dry. Following the opening of the waterfowl hunting season few birds remained on the Shiawassee project, although many returned from Crow Island early morning and evening to feed.

We again posted about 1000 acres of agricultural land on the Trinklein Tract against trespass during the hunting season. As in 1954 it appeared that feeding areas alone will not hold ducks for any period of time unless there is suitable water with some degree of protection nearby. All corn left in the field will be left standing until the spring migration starts.

Wild millet and smartweed produced excellent stands during 1955 on uncultivated tracts and marsh fringes. With water levels remaining very low there was further encroachment by cattail and willow in interior marsh areas. It was expected that northeast winds usually prevail long enough during the fall to reflood interior marshes periodically, but this did not occur on schedule this year and resulted in poorer feeding conditions as well as poor hunting.

B. Upland Game

1. Population and Behavior

a. Ring-necked pheasant. Nearly ideal conditions prevailed during the 1955 breeding season to provide for a near record pheasant population and harvest for Michigan. Low water levels in the project resulted in increased growth of annual weeds and woody plants, all excellent escape cover, so that birds were difficult to get up without a good dog. As the hunting season progressed pheasant concentrated in large cornfields and cattail marshes. Within a week after the close of the hunting season birds reappeared along roads, dikes and ditches. As cold weather moved in, pheasants on the project began to concentrate in the vicinity of corn fields. At the end of the period there were 1500+ pheasants on the Trinklein Tract. This concentration will undoubtedly continue to increase through the winter months. More detailed observations of numbers and sex ratios will be made during February.

b. Bobwhite quail. One covey of about 12 birds has been seen along the Curtis road. Calling has been heard occasionally at other points within the project, but in general there seems to be fewer quail than a year ago. It is believed that the severe snow and sleet storm of March 22, 1955 may have killed many quail in this area as numerous pheasants were lost at that time.

2. Food and Cover

Pheasants feed heavily on most farm crops in the area, especially grains, soybeans and corn. The new fill on the center dike on the Trinklein Tract was seeded to grass with a nurse crop of barley. Pheasants made heavy use of this barley as it ripened. A small acreage of buckwheat on the Watson Tract has been providing feed for a sizable number of pheasants ever since the seed ripened during late September. Wild millet, smartweeds, various annual weeds and wild grapes were also present in crops of pheasants checked during the hunting season. At the end of the period most pheasants are feeding on corn and soybeans in close proximity to cattail marshes.

C. Big Game Animals

White-tailed deer continue to increase in the vicinity of the project, as well as throughout southern Michigan. Based on 1954-55 survival, winter field observations and annual increment it was believed that at least 225 deer were present in the vicinity of the project prior to the November hunting season. State and Service personnel have records indicating that 47 legal bucks were taken in the general area. It is believed that about 25 does and fawns were killed illegally; a few taken home but most left in the woods. If the data cited are assumed to account for the annual hunting reduction we still have over 150 deer in the area.

At the end of the period a number of deer have concentrated in areas where corn or buckwheat remain. Highway kills occur frequently around the perimeter of the project.

Deer damage complaints increase each year. The past fall considerable damage to sweet corn was found in one area checked and in one case a farmer sustained considerable damage to his gladiolus garden where he was raising flowers for commercial purposes.

Frequent reports of dead deer were received during the pheasant season. It generally develops that such animals have been killed by fine shot, but in one instance we found five carcasses along one stream. Other dead deer were reported in the same area and a state biologist finally found a deer that had just died. Laboratory reports indicate the deer died from an undetermined virus infection, similar to several other die-offs investigated by Michigan pathologists during 1955. Similar reports have been made by other states.

D. Fur Animals

This section will be covered in greater detail in the January - April report as the State trapping season continues through January 15.

Muskrat house counts indicated that the population declined 55% or more as compared to 1954, which in turn was considerably lower than 1953. Four trapping permits were issued on about 1000 acres of refuge marsh. Two normally productive marshes were nearly dry this season so few muskrats remained in those areas.

E. Predacious Birds

Species observed during the period were marsh hawks, American rough-legged hawk, Cooper's hawk, red-tailed hawk, sparrow hawk, sharp-shinned hawk, horned owl, screech owl, bald eagle, crow and turkey vulture.

Only two bald eagles were observed during the past summer; one adult and the other apparently a year old bird. No young of the year were seen during 1955, but there were reports of a female with one juvenile near St. Charles. No short-eared owls or snowy owls were observed during the fall and winter of 1955.

F. Fish

Species present in rivers and marshes include carp, sucker, gizzard shad, bullhead, catfish, crappies, perch and northern pike; with rough fish predominating. Fishermen took a number of fair sized northern pikes during early fall, the largest reported weighing about 14 pounds was caught in the Bad river near St. Charles. Catches by bank fishermen (primarily negroes and Mexicans) consist largely of bullheads, catfish and carp. At the end of the period numerous dark houses were being moved onto the deeper river areas of the project in preparation for the spearing season which opened January 1.

III Refuge Development and Maintenance

A. Physical Development

1. Raised $\frac{1}{2}$ mile of entrance road to Trinklein Tract and constructed new open ditch for drainage of adjacent field.
2. Moved old storage buildings and fuel tanks from secondary headquarters site and borrow area, and started fill for site.
3. Topographic surveys were completed by S.C.S. engineers for the Trinklein Tract and plans for improvement to surface drainage were prepared in accordance with the S.&M.C. program .

4. The goose pen site was laid out, dikes and ditches constructed and a 24"x54' diameter corrugated metal pipe with concrete headwall and screw-type gate installed for water level control.

5. One-half mile of new open ditch was excavated on the Trinklein Tract, and 5 culverts totaling 210' of 24" corrugated metal pipe were installed under entrance road and field approaches to permit proper flow of surface water and tile drains.

6. Areas of center dike on Trinklein Tract which settled after dike was rebuilt during 1954-55 were refilled where possible.

7. Mr. Van Dyke, Branch of Engineering, completed surveys of exterior dike on the Trinklein Tract and prepared final plans for rebuilding of dike and related ditches. Engineering surveys were made of a portion of the exterior dike on the Watson Tract in preparation for relocation of main discharge tube.

8. Entrance roads and farm trails on all tracts were graded periodically in cooperation with permittees.

9. New poles, necessary outlets and switches were installed at the Peaphon Tract to provide temporary electrical service.

10. Temporary storage facilities were made for holding corn and grain for spring banding purposes.

11. Miscellaneous:

Major equipment repairs completed by refuge personnel included:

Installation of 20' boom extension section in dragline.
Installation of additional extender cables on dragline.
Overhaul of control valves on hydraulic system on dragline.

Complete overhaul of transmission and differential on 1951 Chevrolet sedan.

Modification of 16" shallow lift pump for use in pumping down ditches for dike construction.

Repairs to diesel engine at Trinklein pumping station.

Service of all equipment for winter operation.

New equipment received:

Rome disc-plow, 10'

Eversman land leveler, Model 289

Panama pump with 120 gallon tank

Weed sprayer with engine and 125 gallon tank

Pickup truck, $\frac{1}{2}$ ton, 1956 Chevrolet

Station wagon, 1956 Chevrolet

Administration of farming program, disposal of surplus refuge crops, assistance with engineering surveys, check of hunter activity and waterfowl censuses, assistance with land acquisition problems and refuge trapping program required much additional time by all personnel.

B. Planting

4. Cultivated Crops

During 1955 the Service had control over 1414 acres of agricultural land. Four special use permits were in effect. Special purchase agreements remained in effect on certain tilled lands through 1955 so that the Service received a share from only 1034 acres. From this acreage 72 acres or approximately 4650 bushels of corn and grain were left for feeding purposes. The remainder of the Service's share of crops was harvested and disposed of by sale as indicated on Form NR-8. Total receipts received to date are \$14,452.14.

The 1955 growing season was nearly ideal within the project as planting operations were completed on schedule, summer moisture was somewhat below normal for the area, harvest of most crops was nearly completed before heavy fall rains started and no flooding occurred. Yields were above average for many crops, although market prices dropped considerably on beans and corn to off set net gains from increased yields.

Average yields for major crops grown on Service lands (tilled and untilled) during 1955 were as follows:

Winter wheat	-	56 bu./acre
Barley	-	36 "
Soybeans	-	32 "
White beans	-	24 "
Field corn	-	82 "
Buckwheat	-	40 "
Sweet corn	-	3.5 ton/acre
Sugar beets	-	17 ton/acre

Record yields were reported by many sugar beet growers. A yield of nearly 20 ton per acre (gross) was harvested from the Peaphon Tract. The Saginaw County average was 16 ton per acre. A sugar beet weighing 22 pounds was found on the Trinklein Tract; claimed by the Sugar Company to be the largest ever reported in the country. Winter wheat on the Peaphon Tract also averaged 60 bushels per acre. Yields on the remainder of the "Little Prairie" area were considerably lower. Lowest yields occurred on the Watson Tract where lands are flooded longer during the spring and fewer drainage facilities present.

As we get very little feeding by waterfowl yet, once the hunting season opens, we find it more desirable to leave corn for spring use as it stands up well over winter and very little waste occurs. As indicated on Form NR-8a we harvested about 350 bushels of corn and

barley for use in the spring banding program. Seney refuge obtained about 390 bushels of corn, 200 bushels of barley and 40 bushels of buckwheat. About 40 bushels of buckwheat were kept for seed. We plan to do some experimental seeding with this along marsh fringes during 1956.

E. Weed Control

A weed control program was started during the spring of 1955. Refuge personnel assume the responsibility of controlling undesirable vegetation along roads, dikes, ditches and other marsh or wildland areas. Permittees must practice good weed control on all farm lands under permit.

Service spraying activities during 1955 were confined to roads, dikes and ditches. We obtained the loan of a permittee's tractor with mounted tank onto which we attached a set of twin jet heads. We have now received a portable sprayer with a 125 gallon tank that can be mounted in a pickup and either jet nozzles or boom extension attached.

The following tabulation covers 1955 spraying operations:

Table No. 3 - Weed Control Summary

	<u>Species</u>	<u>Acreage Sprayed</u>	<u>Herbicide Used</u>	<u>Rate of Application</u>	<u>Cost* Per Acre</u>	
Service:	Ragweed)	100	2,4-D	1 lb./acre	\$1.72	✓
	Sow thistle)					
	Canada thistle)					
	Cocklebur)					
	willow)					
	Willow)	20	2,4,5-T and	4 lb./acre	\$9.58	✓
	Cottonwood)		2,4-D (1:1)			
	Red o ser dogwood)		with diesel oil & water (1:10)			
Permittee:	Sow thistle)	600	2,4-D	.5 lb./acre	-	✓
	Wild mustard)					
	Cocklebur)					
	Milkweed)					
	Field bindweed) (In crops)					

Results of applications varied considerably. First spraying of ragweed and sow thistle along dikes and ditches resulted in nearly 100% kill. Canada thistle and cocklebur showed evidence of good kill after first spraying but recovered. These areas were sprayed again about three weeks later and then showed about 75% kill on cocklebur, 50% kill on Canada thistle. Some species of willow showed nearly 100% kill following second spraying with 2,4-D. Other species showed little effect from 2,4-D, but now appear to be completely dead following use of 2,4,5-T and 2,4-D. The amount of regrowth that may occur next spring remains to be seen. The small amount of cottonwood and dogwood sprayed showed nearly complete kill.

Permittees obtained good control on bindweed, mustard and sow thistle with one spraying, but had little success with cocklebur and milkweed except to retard growth and in some cases limit seed production. Some permittees plan to use newly developed pre-emergent herbicides for controlling weeds in bean crops and sugar beets during the coming year.

IV Economic Use

No grazing, haying or cutting of timber occurred during the period on lands under control of the Service.

V Field Investigations

A. Waterfowl Banding

A limited amount of banding was done again at Crow Island and on the Shiawassee Flats in cooperation with the State Game Division. Conventional wire cage traps baited with wheat and barley were used. Main emphasis was on capture of blue-winged teal, although more black ducks and mallards were actually taken.

The following direct returns have been received to date, all from the immediate area of the banding station. Additional returns will undoubtedly be received from southern areas so as to provide a larger sample for analyzing data.

Species	No. Banded	No. Direct Local Returns	%
Blue -winged teal	44	6	13.6
Mallard	39	3	7.6
Black duck	106	9	8.5
Pintail	2	-	-
Redhead	1	-	-
	<u>192</u>	<u>18</u>	<u>9.3</u>

Information obtained will be of greater value once we have accumulated a few years data. At present, however, all indications are that a sizable number of birds using the Crow Island Sanctuary are killed locally and aren't just being "saved for the southern hunters" as the local experts maintain.

One interesting return received was from a whistling swan banded at Shiawassee April 2, 1955 and reported killed by an Indian hunter at King William Island, Northwest Territories, Canada, July 19, 1955.

B. Muskrat Population Study

Mr. William Goudy, graduate student from Michigan State University who was employed during the fall to assist with other refuge work, also started a study of muskrat populations and trapping procedures.

Most of this work was conducted after regular working hours and on weekends as sufficient funds were not available for a full time study.

The primary objective was to develop sampling techniques whereby fall population in the area can be more accurately determined and also a means for evaluating the harvest under present trapping conditions and regulations. He started a live-trapping and tagging program, but had to experiment with various techniques to determine most satisfactory methods for an area such as this where water levels fluctuate continuously and considerable burrowing in dikes occurs. He also assisted with surveys of sample areas to determine actual numbers of dwelling houses and occupancy for comparison with aerial house counts in determination of existing populations. Additional work was done on comparison of sex and age of a given sample of trapped muskrats by external examination as compared to determination from stretched pelts of same animals. Although the pelt examination technique is now widely used, there remains the question of how primeness and patterns of early spring 'rats compare with adults in December and January in this part of the country. A sample of female reproductive tracts was collected for study of litter numbers and size. Sick and dead muskrats found were taken to the State Game Division laboratory for further study.

The work completed to date will be of value in guiding future studies in this area and will provide a basis for analyzing muskrat population and harvest data obtained. A complete report of Mr. Goudy's study will be provided as soon as approved by Dr. George Petrides, Division of Fisheries and Wildlife, Michigan State University. The basic data obtained to date are on file in the refuge office.

VI Public Relations

A. Recreational Uses

Boating, fishing and picnicing are the major recreational activities during summer months. Hunting and ice fishing predominate during the fall and early winter months. Waterfowl and pheasant hunting account for the greatest use thus far although much of this is partially on private lands not yet acquired. The following tabulation represents estimated recreational days use for the entire project during 1955.

Estimated Days Use - Calendar Year 1955

<u>Fishing and Boating</u>	<u>Hunting</u>	<u>Misc.</u>	<u>Total</u>
8,550	3,150	2,800	14,500

B. Refuge Visitors

<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>	<u>Date</u>
Joe E. Smoke	Br. Lands, FWS	Acquisition	8/22-9/3, 10/2-18
E. Boeker	Pilot-Biol., FWS	Aerial Photos	9/8-11
T. W. Daw	Asst. Chief, For., Div. MCD	Tour project	9/16

<u>Name</u>	<u>Affiliation</u>	<u>Purpose</u>	<u>Date</u>
R. L. Olmstead	Reg. Forester, MCD	Tour project	9/16
A. H. Boelter	Forestry Div., MCD	"	"
L. A. Davenport	Game Division, MCD	"	"
T. C. Black	" "	"	"
T. Peterlie	" "	"	"
M. Cooley	" "	"	"
M. Petosky	" "	"	"
L. Dayton	" "	"	"
J. T. Wilkenson	Reg. Supv., MCD	"	"
J. Pospichal	GMA - FWS	Courtesy call	10/4
Jack Berryman	Br. Fed. Aid, FWS	Inspect project	10/12
L. A. Davenport	Game Div., MCD	" "	"
C. Wonser	" "	" "	"
M. Petosky	" "	" "	"
T. Osmer & staff	" "	Tour project	10/14
H. Tubbs & staff	" "	"	"
M. Cooley & staff	" "	"	"
Claude Stewart	Lapeer Co. Drain Comm.	"	"
Arden Porter	Consumer Power Co.	Power line	10/31
A. Jamieson	Br. Refuges, FWS	Construction	10/2-23
H. Van Dyke	Br. Engineering, FWS	Surveys	12/5-9
C. J. Henry	Refuge Mgr., Seney Refuge	Transfer corn	12/7
A. Mortenson	Seney Refuge	Transfer corn	12/20
Dr. G. Petrides	Mich. State Univ.	Project development	Frequent
Dr. M. Pirnie	" "	" "	"
Roger Ashley	Lands Div., MCD	Acquisition	"
Marvin Johnson	Game Div., MCD	Project development	"
E. Spycher	Cons. Officer, MCD	Enforcement	"
C. McClarty	" "	"	"
K. McCord	" "	"	"
Steve Creech	GMA - FWS	"	"
Don Kilts	Saginaw News	Reporter	"
Leo Rushlow	Saginaw Field & Stream Club	Discuss project	"

Various county, city and township officials; land owners, sportsmen and staffs of local S.C.S. offices visited the area, or stopped by the office to obtain information or discuss the project.

C. Refuge Participation

The Refuge Manager attended the following meetings and activities during the period:

- September 16 - Met with administrators and staff of Game Division, Field Administration Division and Forestry Division, Michigan Department of Conservation and conducted tour of project.
- September 22 - Attended meeting of Saginaw Field & Stream Club. Discussed 1955 waterfowl hunting regulations.

- October 11 - Guest speaker at Saginaw Kiawanis Club.
Discussed Shiawassee Project.
- October 13 - Met with State and Service representatives in
Lansing, Michigan to discuss development plans
for Shiawassee Project.
- October 14 - Conducted District Game Supervisors and staffs
of Region 3 on tour of project and discussed
proposed developments.
- October 31 - Conducted 50 students from Webber Jr. High
School on tour of Crow Island Sanctuary.
- November 2 - Attended seminar at Michigan State University,
East Lansing to discuss Shiawassee project and
proposed flood control program.
- November 3-5 - Accompanied Mr. H. J. Miller, State Waterfowl
Biologist, to Horicon Refuge, Wisconsin to
observe controlled hunting program.
- November 25- - Conducted field investigations concerning
26 private lands offered for refuge purposes in
Livingston County, Michigan.
- December 12- - Attended Midwest Wildlife Conference at Purdue
14 University, Lafayette, Indiana.

In addition to the above activities the Refuge Manager attended periodic meetings of the Saginaw County Agricultural Council and bi-weekly meetings of the Saginaw Junior Chamber of Commerce; and assisted the State Waterfowl biologist with bi-weekly aerial waterfowl censuses of Saginaw Bay - Saginaw Valley.

D. Hunting

No major portion of the project has been officially closed to hunting. As several privately-owned tracts that are leased for hunting still exist within the project it appears desirable to leave Service marsh lands open to hunting until a large solid block of ownership is obtained. During the past year about 1000 acres of agricultural land on the Trinklein Tract were posted in cooperation with permittees to prevent trespass. All state-owned lands were open to public hunting.

As would be expected heaviest hunting pressure prevailed during the first three days of the duck season, opening weekend of the pheasant season and first day of the deer season. It was evident that hunting pressure declined rapidly after the first three days of the respective seasons.

The following tabulation summarizes waterfowl hunters success as compared with previous years.

Table No. 4 - Waterfowl Hunter Success

	<u>1953</u>	<u>1954</u>	<u>1955</u>
Number hunters interviewed	159	181	110
Total hours hunted	567	637	406
Average number hours hunted	3.6	3.5	3.7
Number ducks killed	176	119	109
Number geese killed	11	4	10
Number coots killed	8	5	3
Ducks per hunter day	1.1	.66	.99
Waterfowl killed per hour	.34	.20	.27

Reports from the 110 hunters interviewed indicate that for 109 ducks bagged, 68 were crippled but not recovered. This represents a loss of 38.4% of ducks knocked down. Similar losses of 39.3% in 1954 and 42.1% in 1953 were reported. The majority of this crippling loss results from hunters knocking down birds in dense stands of cat-tail where its nearly impossible to find a wounded bird without a good dog.

The limited data obtained indicate about 1500 waterfowl hunter days were expended with an estimated total kill of nearly 1500 ducks, exclusive of crippling loss. The sample of geese checked is too small to be significant, but various reports indicate that possibly a total of 40 Canada geese and 50 blue geese were killed. We know of one area where at least 20 Canada geese were taken.

Species composition of ducks checked was mallard - 45%, black duck - 16%, green-winged teal - 13%, widgeon - 11%, blue-winged teal - 9% and wood duck - 3%.

F. Violations

Local State Conservation officers were kept busy with pre-season shooting in grain stubble fields. After the season opened there was considerable late shooting in the same areas. Late shooting, carrying loaded gun in motor boats, improperly plugged gun, no duck stamp, shooting of whistling swan, illegal possession of hen pheasant and carrying loaded gun in automobile accounted for the majority of cases made by state officers.

The Refuge Manager completed or assisted on the following cases: 2 late shooting, 2 improperly plugged gun, 1 hunting waterfowl without duck stamp, 1 non-resident hunting on resident license. All cases were processed by the State Conservation Officer through local justices of the peace.

VII Other Items

A. General

1. Mr. Amos Snider entered on duty as Refuge Maintenceman on September 19. Mr. Snider transferred from the Saginaw Work Unit-Soil Conservation Service where he was employed as Conservation Aid.

2. The Preliminary Development Plan for the Shiawassee Refuge was completed during the period.

3. There appears to be considerable pressure being brought to bear by surrounding counties on Congress, Bureau of the Budget and the Corps of Engineers to obtain approval and appropriations for the proposed Saginaw Valley Flood Control Program.

B. Report of Activities - Lake St. Clair

A trip was made to Lake St. Clair September 7-8 by the refuge manager to check posting materials and arrange for State cooperation. About one-half of the buoys were repainted, stenciled and about 60 new anchor cables made. The refuge units were posted by Nelson, Snider and State Game Division personnel September 21-23. Arrangements were made with state biologists and conservation officers to check boundaries periodically during the hunting season. A trip was made to Lake St. Clair November 26-27 to check damage to buoys after a severe wind storm. Losses were negligible, but ice was beginning to form in bays so arrangements were made to remove boundary markers December 1-2 in cooperation with state personnel. Ice flows were moving in from the Canadian side on December 1 and some buoys were carried a mile or more by the ice. As nearly as we can determine we only lost about 10 buoys in spite of the ice flows. Some of these undoubtedly will be turned in.

In general the boundary posting problem can be handled very satisfactorily by Service and State personnel rather than contracting the job as done prior to 1954, as long as state personnel are assigned to the Lake St. Clair area. When the season extends into December as in 1955 we have to watch the weather rather closely so that a sudden freeze up or ice flows do not knock out all boundary markers. It appears that we should always be prepared to hire emergency help should such conditions prevail and when possible buoys should still be removed by December 1.

Aerial census data for Lake St. Clair show the following use of refuge units and other portions of the lake.

Table No. 5 - Total Ducks by Area - Lake St. Clair *

Date	Anchor Bay**	U.S. Flats "Unit B"	Lake St. Clair Proper	Total
9-1-55	0	2,700	0	2,700
9-16-55	0	2,600	0	2,600
9-28-55	0	1,700	0	1,700
10-13-55	2,000	2,800	0	4,800
10-31-55	29,000	20,500	33,600	83,100
11-14-55	112,600	20,000	176,600 ***	309,200
12-6-55	74,300	13,400	2,200	89,900
12-15-55	20,300	8,000	1,000	29,300

* Census data provided by Mr. Leo Pospichal, State Game Biologist.

** Unit "A" located in Anchor Bay. Area held from 6,000-10,000 ducks, largely black ducks, mallards, redheads and scaup from about October 20 - November 15; 2000 or more coot frequented the area.

*** Total for Lake St. Clair proper high as Air Force was using Anchor Bay and adjacent waters for amphibian landing practice on day of census and moved many divers out into lake.

Table No. 6 - Species Composition of Waterfowl Population, 10-31-55,
Lake St. Clair

Species	Anchor Bay	U.S. Flats "Unit B"	Lake St. Clair Proper
Mallard	100	500	0
Black duck	900	3,300	100
Redhead	11,100	2,600	500
Canvasback	5,200	2,500	18,000
Scaup	8,200	11,500	13,800
Goldeneye	100	50	0
Mergansers	100	-	0
Unidentified	3,000	-	1,200
Coot	300	100	0
	<u>29,000</u>	<u>20,450</u>	<u>33,600</u>

As we have mentioned previously, the value of the refuge units lies in the provision of protected feeding areas, primarily submerged beds of aquatics, for diving ducks as well as black ducks and mallards. The relatively small amount of money spent for operation of the refuge units provides considerable return as populations indicate.

Hunter bag check data were collected the first week of the season by state personnel, but do reflect the true hunting picture as few diving ducks were present at that time. Early shooting is provided

by dabblers, primarily mallards, teal, wood ducks and black ducks. The choice shooting starts when canvasbacks and redheads move in.

No serious enforcement problems were reported on the area the past season. State officers and G.M.A. Creech spent considerable time in the vicinity and kept things under control. Local guides also watch the area quite closely and report trespass violations.

C. Photographs - Photographs of refuge activities during the period are attached.

Submitted by:

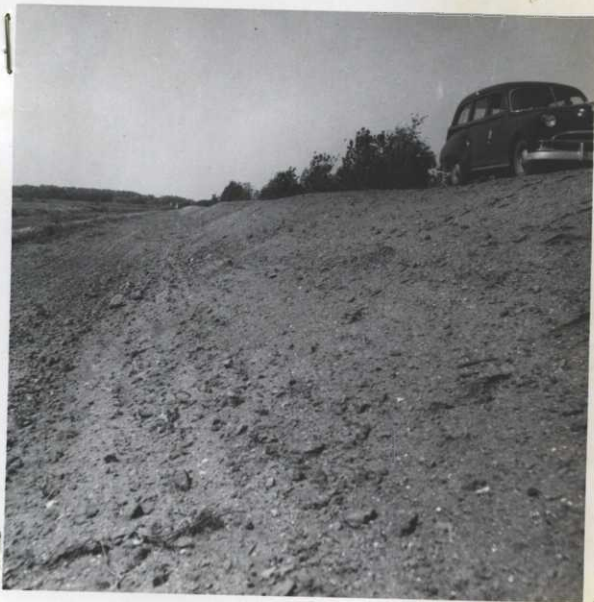
Harvey K. Nelson
Harvey K. Nelson
Refuge Manager

January 20, 1956
Date:

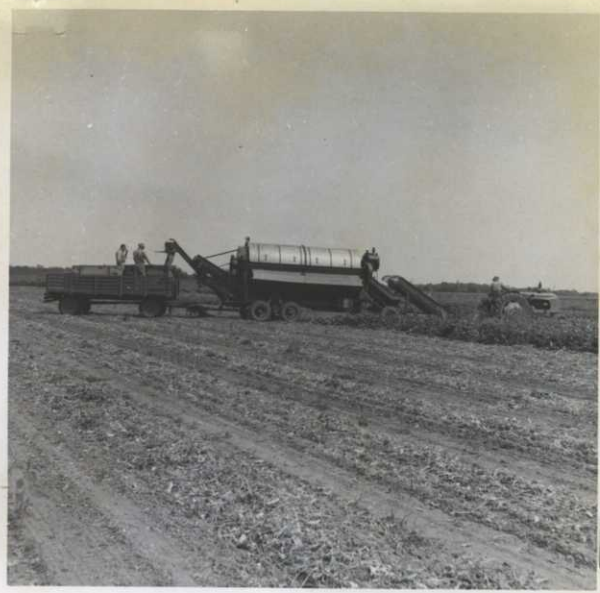
R. M. Burnice
Approved:



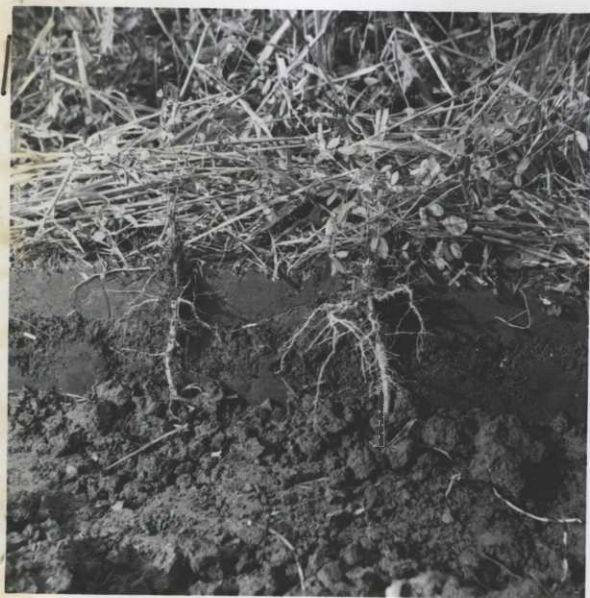
H. Van Dyke & crew, Branch of Engineering. Extensive surveys are required prior to repair of existing water control facilities or new construction. Area on right being pumped down to permit dragline operation. (Shia. - 1955)



Dikes being rebuilt are leveled to provide roadway; slopes and berm graded and planted to permanent grass. Interior ditches are being cleaned and culverts installed where necessary to permit proper flow of water from tile drains and waterways on agricultural lands. (Shia. - 1955)



The 1955 growing season was ideal in the vicinity of the project. Larger self-propelled combines (left) are becoming more popular in this area as more grains and beans are raised. Certain crops such as green lima beans (right) are harvested with special equipment provided by companies that purchase crops for canning or freezing. (Shia. - 1955)



The Refuge Land Use Plan requires recommended soil building practices such as use of green manure crops (annual sweet & red clover - left) and proper tillage practices (right). (Shia. - 1955)



Maintenance man Snider with floating buoys and anchor assembly used to mark boundaries of refuge units at Lake St. Clair.



State public hunting grounds at Lake St. Clair provide excellent duck hunting for those who are well equipped and know where to go.

WATERFOWL

REFUGE Shimoda

MONTHS OF September TO December, 19 55

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling Trumpeter										120
Geese:										
Canada	20	20	20	20	20	60	80	20	300	380
Cackling Brant										
White-fronted										
Snow	-	-	-	-	-	-	-	10	20	10
Blue	-	-	-	-	-	-	-	50	100	80
Other										
Ducks:										
Mallard	300	300	500	700	800	500	300	100	100	100
Black	100	100	500	900	1000	700	500	100	100	200
Gadwall					T					
Baldpate	-	-	100	100	200	200	100	-	-	-
Pintail	-	-	-	-	100	-	-	-	-	-
Green-winged teal	-	-	-	-	200	100	-	-	-	-
Blue-winged teal	250	250	250	300	400	100	100	-	-	-
Cinnamon teal										
Shoveler	T				T					
Wood	100	100	100	200	200	-	-	-	-	-
Redhead										100
Ring-necked										T
Canvasback										T
Scaup										T
Goldeneye										T
Bufflehead										T
Ruddy										
Other										
Total Ducks	1050	1050	1150	2200	3000	1600	1000	200	200	300
Coot:	100	100	100	100	100	200	200	100	100	200

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

WATERFOWL
 (Continuation Sheet)

REFUGE Shiawassee

MONTHS OF September TO December, 19 55

(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	400	600	-	-	-				7,800	-	-
Trumpeter											
Geese:											
Canada	350	400	200	-	-				13,200	-	-
Cackling											
Brant					"Freeze up"						
White-fronted											
Snow	20	20	-	-	-				600		
Blue	180	250	-	-	-				4,400		
Other											
Ducks:											
Mallard	100	200	300	100	-				10,800		
Black	100	300	400	200	-				10,600		
Gadwall									-		
Baldpate									4,900		
Pintail									700		
Green-winged teal									2,100		
Blue-winged teal									10,200		
Cinnamon teal											
Shoveler											
Wood											
Redhead	100								1,400		
Ring-necked	T										
Canvasback	T										
Scaup	50	100	100	-	-				1,800		
Goldeneye	T	T	T								
Bufflehead	T	T	T								
Ruddy											
Other											
Total Ducks	300	600	800	300	-				22,500		
Coot:	-	-	-	-	-				22,300		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	7,800	600	-
Geese	18,400	670	-
Ducks	92,500	3000	-
Coots	22,300	400	-

SUMMARY	
Principal feeding areas	<u>Trinklein Tract, White</u>
	<u>Kaufman and Langschwager marshes</u>
Principal nesting areas	<u>- -</u>
Reported by <u>Harvey E. Nelson</u>	

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

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

3-1751

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

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Pied-billed grebe	Summer Resident		100	10/5	2	11/12	-	-	-	
Great blue heron	"	"					} Heron colony along Saginaw River near Bay City.			
Black-crowned night heron	"	"	200	10/1	1	10/15				
Green heron	"	"	?		1	10/1				
American egret	"	"	45	8/28	1	10/1				
American bittern	"	"	-	-	-	-				
Least bittern	"	"	-	-	-	-				
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	Summer Resident		600	10/31	2	11/4				
Spotted sandpiper	"	"	-	-	-	-				
Pectoral sandpiper	Present at start of period									
Semi-palmated sandpiper	"	"								
Least sandpiper	"	"								
Lesser yellowlegs	"	"	250	7/22	-	-				
Greater yellowlegs	"	"								
Wilson's snipe	6	8/28	30+	9/17	1	10/22				
Black-bellied plover	Present at start of period			10/16	1					
Golden plover	12	10/14	12	10/14	-	-				
Ringed plover	Present at start of period				-	-				
Common tern	Summer Resident		-	-	-	11/25				
Black tern	"	"	-	-	-	11/16				
Herring gull	"	"	-	-	-	11/25				
Ring-billed gull	"	"	-	-	-	11/8				
(over)										

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	Summer Resident		26	12/24	
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl	Permanent Resident	10	-		
Magpie					
Raven					
Crow	Permanent Resident		1000+	11/2	
Bald eagle	Summer Resident		3		
Rough-legged hawk) Observed during		7		
Red-tailed hawk) period		-		
Marsh hawk)		30	10/24	
Cooper's hawk)		-		
Sparrow hawk)		-		
Reported by Harvey K. Nelson					

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.

Months of September to December, 1955

Months of September to December, 1955

(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.
Ring-necked pheasant	Cultivated fields, bottom-land hard- woods, herbaceous growth on dikes & ditches, sedge meadows & cattail marsh. (8000+ acres.)	2.6				200			3000*	Highest concentration in vicinity of Frinklein & Watson Tracts.
Bob-white quail	Cultivated fields, herbaceous growth along field margins, meadows, dikes & ditches. (5000 acres.)	?				No season			30+	Only one covey of 12 birds observed during period along Curtis road, but calling heard in other areas.
<p>* More accurate counts can be made during winter months when pheasants concentrate in areas where corn remains.</p>										

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Shiloh
(Entire project)

Calendar Year 1955

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed deer	Bottom-land hardwoods, cultivated fields, sedge meadows & cattail marsh. - 14,000 acres	?	50	-	-	-	-	-	-	-	-	225	150 ^{ee}	-

Remarks: • Estimate of 50 legal bucks killed during buck season, 25+ does & fawns killed illegally during buck season.

• Population cited for entire project as deer move between the two segments of the area when water levels are low as during the period.

Reported by Harvey L. Nelson

INSTRUCTIONS

Form NR-3 - BIG GAME

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

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Form NR-8
(Revised)

CULTIVATED CROPS

Refuge Shinnecock Year 1945

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Ave. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
					Acres	Bu. Har- vested	Harvested		Unharvested		
							Acres	Bu.	Acres	Bu.	
P. H. Bross & Sons (Share of untitled land only in 1955)	Special Purchase Agreement through 1955	Unit 121	Barley	31	67	2077	29	886	10	310	\$1106.14
			Soybeans	32.3	152	4910	72	2328	-	-	4773.36
			Corn	80	79	6320	3	240	17	1360	-
											\$5879.50
Arnold Schluckbeir (Share of untitled land only in 1955)		Unit 122	Corn	85	30	2550	-	-	15	1275	-

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

The Crops Report Form NR-8 should be prepared on a calendar-year basis for crops harvested or utilized during the calendar year and submitted by December 31 refuge report.

- List each permittee separately. If lands of the refuge are operated by refuge personnel or hired labor, this should be indicated in the Permittee column.

- List the number of the Special Use Permit issued to the individual.

Economic Use Plan - The Unit No. or name specified in the Economic Use Plan should be shown in this column.

Operator - A separate line of the form should be used for each crop harvested by each permittee or by refuge personnel. This is important, since if the operator by each operator is not specifically enumerated, the report will not be valid for statistical purposes.

Yield per Acre - It is important that the average yield per acre of each crop be shown by each operator.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops be reduced to bushels wherever possible, or, as in the case with the seed such as that of sweet clover, alfalfa, brome grass, etc., the weight in pounds may be shown. Timothy, alfalfa, or other hay should be shown on Form NR-10 and should not be shown on the permittee's Share column.

Permittee's Share or Return - Harvested - Show the number of bushels harvested by the permittee, the acreage from which this share is harvested, and the acreage raised by refuge personnel and by permittees. Unharvested - show the number of acres of crops allowed to remain unharvested as food and for wildlife. An estimate of the number of bushels of grain that is available for wildlife in such unharvested crops should be shown in the Bushels column.

Other Services, or Cash Revenue - Show other services received by the permittee in cooperative farming activities, the number of acres of food and for wildlife, the amount of wildlife crops not otherwise reported and by cooperators for the Service, or the cultivation of wildlife. If the permit is on a fee basis, the total cash revenue received should be shown.

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CULTIVATED CROPS

Refuge Shinnepo Year 1945

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Ave. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
					Acres	Bu. Har- vested	Harvested		Unharvested		
							Acres	Bu.	Acres	Bu.	
Arnold Peaphon	21384	Unit 186	W. Wheat	56 bu.	13.0	728	-	-	-	-	-
			Barley	46	46.2	2128	29.8	912	-	-	1112.40
			Soy beans	31	52.5	1627	23.5	735	-	-	1565.55
			White beans	26	32.9	865	14.1	371	-	-	1524.81
			Corn	90	3.0	270	5.0	450	10	900	-
			Sugar beets	19 ton	51.8	984	17.2	326 ton	-	-	<u>1647.71 *</u> 5854.47
			* Gross yield on sugar beets								

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DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

The Crops Report Form NR-8 should be prepared on a calendar-year basis for crops harvested or utilized during the calendar year and submitted by December 31 of each year as part of the refuge report.

- List each permittee separately. If lands of the refuge are managed by refuge personnel or hired labor, this should be indicated in the Personnel column.

- List the number of the Special Use Permit issued to the individual.

Economic Use Plan - The Unit No. or name specified in the Economic Use Plan should be shown in this column.

Operator - A separate line of the form should be used for each crop harvested by a permittee or by refuge personnel. This is important, since if the operator is not specifically enumerated, the report will not be valid for statistical purposes.

Yield per Acre - It is important that the average yield per acre of each crop be shown by each operator.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops be reported in bushels wherever possible, or, as in the case with the seed such as that of sweet clover, alfalfa, bromegrass, etc., the weight in pounds may be shown. Timothy, alfalfa, or other hay should be reported in pounds. The permittee should be shown on Form NR-10 and should not be shown on the permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested by the Government and the acreage from which this share is harvested, whether raised by refuge personnel and by permittees. Unharvested - show the number of acres of crops allowed to remain unharvested as food and for wildlife. An estimate of the number of bushels of grain that is available for wildlife in such unharvested crops should be shown in the Bushels column.

Other Services, or Cash Revenue - Show other services received by the permittee in cooperative farming activities, the number of acres of food and for wildlife, the amount of wildlife crops not otherwise reported and received by cooperators for the Service, or the cultivation of wildlife. If the permit is on a fee basis, the total cash revenue received should be shown.

This image contains all information on the document.

CULTIVATED CROPS

Refuge Shiawassee Year 1955

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Ave. Yield per Acre	Permittee's Share		Government's Share or Return				
					Acres	Bu. Har- vested	Harvested		Unharvested		Compensatory Services, or Cash Revenue
							Acres	Bu.	Acres	Bu.	
Irven Almy	2385	115	Green beans	.5 ton	18	9 ton	-	-	-	-	-
		113	White beans		11	220	-	-	-	-	-
			Lima beans	.48 ton	30	14.5 ton	15	7.1 ton	-	-	\$720.00
			Cucumbers	1,814 lb	18	32,650 lb.	-	-	-	-	-
			Sweet corn	3.5 ton	21	73.5 ton	9	30.1 ton	-	-	619.17
			Peas	-	1	-	-	-	-	-	-
			Sugar beets	15 ton	58	870 ton	25	361.6 ton	-	-	1389.00 *
			Buckwheat	40	-	-	2	80	20	800	-
										<u>\$2718.17</u>	
* Gross yield on sugar beets										* About \$360.00 due April 1, 1956 as balance of payment.	

Summary of Crops Grown:		Crop	Acreage	Permittee's Share		Government's Share				Total Revenue
				Acres	Bushels	Harvested		Unharvested		
						Acres	Bu.	Acres	Bu.	\$11,452.11
		W. wheat	56	13	723	-	-	-	-	
		Barley	172	113.2	1205	48.8	1798	10	310	
		Soybeans	300	201.5	6537	95.5	3063	-	-	
		White beans	58	13.9	1085	14.1	371	-	-	
		Sugar beets	152	109.8	1854 ton	42.2	708 ton	-	-	
		Corn	162	112.0	9140	8.0	690	42	3535	
		Sweet corn	30	21	73.5 ton	9.0	30.1 ton	-	-	
		Buckwheat	22	-	-	2.0	80	20	800	
		Green beans	18	18	9 ton	-	-	-	-	
		Lima beans	15	30	15.5 ton	15	7.1 ton	-	-	
		Cucumbers	18	18	32,650 lb.	-	-	-	-	
		Peas	1	1	-	-	-	-	-	
			1034	772.4	22495	232.6	6002	72		

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or Location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, bromegrass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

REFUGE GRAIN REPORT

Refuge ShilohMonths of September through December, 195 5

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	None	690	390*					300		300**	
Barley	None	250	200					50		50	
Buckwheat	None	80	40					40	40		
<p>* Transferred to Senny Refuge.</p> <p>** To be used for bait in waterfowl banding program.</p>											

(8) Indicate shipping or collection points _____

REFUGE GRAIN REPORT

(9) Grain is stored at Shiloh Refuge

(10) Remarks _____

*See instructions on back.

(10) Remarks

NR-8a

(8) Grain is stored at

REFUGE GRAIN REPORT

(8) Indicate shipping or collection points

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

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

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

16-61482-1 U. S. GOVERNMENT PRINTING OFFICE

VARIETY (1)	OF PERIOD RECEIVING OR HAND (2)	PERIOD DURING RECEIVING (3)	TOTAL (4)	GRAIN DISPOSED OF (5)				PERIOD END OF OR HAND (6)	PROPOSED OR SUGGESTED USE (7)		
				Unshelled	Seeded	Feed	Total		Seed	Feed	Surplus

Refuge

Months of

REFUGE GRAIN REPORT