BRANCH OF WILDLIFE REFUGES

Narrative Report Routing Slip

Date January 9, 1953

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Stenographers

Refuge Shiawassee
Period September - December 1953
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Introduction

The Shiawassee Flats Wildlife Management Area as referred to in this report will consist of two integral units, the Shiawassee National Wildlife Refuge, operated by the Service, and the Shiawassee River State Game Area, operated by the Michigan Department of Conservation. Frequent reference is made to the Crow Island Sanctuary located two miles north of the City of Saginaw, a 1100 acre marsh which was purchased by the Michigan Department of Conservation during 1953 and closed to hunting for the first time during the past year.

The approved acquisition boundary as shown on the attached schematic map includes approximately 22,000 acres of marsh and adjacent upland. Most of the area lies within the flood basin of the Shiawassee, Titabawassee, Cass and Flint rivers which join to form the Saginaw River.

Land acquisition was initiated by both agencies during March, 1953 and continued through the year. As of December 31, 1953 the following acreage was purchased or under purchase agreement: State-3778, Service-3229; total-7007. Both agencies will begin to assume various management responsibilities during 1954, depending upon reservations retained by previous owners.

The Fish and Wildlife Service assigned a Refuge Manager to the area and established a refuge office in Saginaw, on September 17, 1953, to enable the Service to keep in closer contact with local developments, to permit a more detailed study of land use within the project, to observe present wildlife use and hunter activity and to assist with various land acquisition details. Waterfowl refuge areas maintained on Lake St. Clair were also transferred to the supervision of this station.

The basic history of the area and related data on climatic, topographical, soil, land use, wildlife use and local economy features are not included in this report since such data are referred to in the Branch of Lands Appraisal Report and will be elaborated upon in the Preliminary Development Plan. Some of the information included lacks sufficient supporting facts because of the short period of time involved and absence of comparative data, but is included for the purpose of future reference.

Because the project is still in its infancy many sections of the narrative report outline and narrative report forms are not applicable. Therefore, this report is more on the nature of a project report than a typical Refuge Narrative Report.
Shiawassee Flats Wildlife Management Area

September 1 - December 31, 1953

I. GENERAL

A. Weather Conditions

No official weather station is located in or near the project. The Civil Aeronautics Authority maintains a station at the Tri-City Airport ten miles northwest of Saginaw where data can be obtained in the future, but sufficient information was not available at this time to warrant presentation.

In general, precipitation for the period was below average with few fall rains occurring until about November 15. First snowfall occurred November 26. A heavier snowfall of about three inches occurred December 16, followed by additional flurries December 20-22. Warmer temperatures and rain during the last week of December melted remaining snow so that no snow was present at the close of the period.

Temperatures in general were above average throughout the fall. The first light frost occurred on October 8, followed by heavier frosts October 12-15. Ice appeared in water areas at intervals during the period November 25 - December 15, with thicker ice developing from December 15 and on. Frequent moderation of temperatures or changing water levels due to tidal effect of Lake Huron would cause ice in marsh and river area to break up periodically. The lowest temperature reported for the period was 50°.

B. Water Conditions

Fall precipitation was below average which reduced runoff through the Saginaw valley during the period. No fall flooding occurred. Rivers and major drains were low and many smaller drainage ditches found throughout the project were nearly dry. Such conditions permitted early completion of fall harvest and tillage operations.

Water levels in the Shiawassee Flats area are affected by the level of Lake Huron and by wind tides created by changing winds. Strong northeasterly winds would frequently back 2-3 feet of water up the Saginaw River and into the Shiawassee River. Wind tides as great as six feet have been reported. Strong southwesterly winds will likewise move similar amounts of water out of the Shiawassee area into the Saginaw River and Saginaw Bay.
Because of the large area draining into the Shiawassee Flats and poor drainage from the project into Saginaw Bay due to the narrow channel through the City of Saginaw, the area is subject to frequent and severe flooding. Normal periods for flooding occur during late winter and spring, with occasional fall floods reported during periods of heavy rainfall.

C. Fire

Much of the uncleared or uncultivated bottomlands within the project support a number of hardwood species and dense growth of brush and annual weeds. The extremely dry fall created a high fire hazard in this portion of the State. Several small brush fires occurred within the project, usually in brush type cover and along roadways, most of which were quickly suppressed by fire crews of the Michigan Conservation Department operating out of St. Charles, Michigan. Personal assistance was provided whenever the occasion demanded. No serious damage occurred to property, and timber damaged was of little commercial value.

In the future it will be necessary for the Service to develop a fire control plan in cooperation with the State and perhaps provide some assistance and equipment to supplement facilities now under the supervision of the Conservation Department Fire Officer stationed at St. Charles, Michigan.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

   a. Geese. The first flock of Canada geese (30) was observed in the Shiawassee Flats on October 12. Approximately 250 blue geese appeared on the Three Rivers Ranch on October 19. These birds started feeding on waste sweet corn and grain stubble. The flock gradually built up to about 600 blue geese and 120 Canada geese. Other small flocks of mixed snow and blue geese began to arrive during the period October 24-29, with a peak of about 800 blue and snow geese and 200 Canada geese present on October 30. The writer left for Lake St. Clair on that date and did not return until November 4, during which period experienced waterfowl hunters and State Conservation officers reported larger numbers of Canada geese on the Shiawassee Flats. At best, conservative estimates indicate that perhaps 1500 Canada geese, several hundred blue geese and smaller flocks of whistling swans moved through the Saginaw valley November 1-2. Less than 100 geese remained on November 4. A flock of approximately 350 whistling swans was observed in the area on November 24.
b. **Ducks.** There were approximately 6000 ducks present within the Shiawassee Flats area on September 27, of which approximately 5500 were observed in the river and marsh areas of Unit 3, chiefly on the Three Rivers Ranch (Trinklein Tract). Species composition was estimated as 45% mallard, 30% black duck, 10% baldpate, 10% blue-winged teal, 5% other - chiefly pintails, wood ducks and redheads. An additional 3000 ducks, approximately the same species composition, were present in the nearby Crow Island area and the adjacent Stork marsh.

Heavy hunting pressure during the first five days of the season caused the majority of the ducks to move into the Crow Island sanctuary. From about October 6 and on, only small flocks returned to the Shiawassee Flats to feed. The population would build up slightly during the week when hunting pressure was light, but weekend shooting would drive the majority of such birds back to Crow Island. Ducks using the Stork marsh and other marsh areas around Bay City at the mouth of the Saginaw River would also move into Crow Island whenever hunting pressure began to increase. The Crow Island area held from 3000 - 12,000 ducks throughout the hunting season. A large number of bald-pates used the area continuously until late November. Approximately 6000 mallards and black ducks were observed in remaining open water areas in the vicinity of Crow Island and the Stork marsh during a flight made on December 16.

There was a movement of green-winged teal, redheads, scaup and ringnecks through the Shiawassee Flats during a period of inclement weather, October 24-25. Another movement of scaup, redheads and mallards was reported to have occurred November 1 - 3. Large numbers of black ducks and mallards began feeding on waste corn in fields on the Three Rivers Ranch about November 22 and continued to do so until about December 15.

c. **Coots and Rails.** Coots were present in limited numbers throughout the summer and early fall with most birds departing during the period October 24 - November 1. Approximately 1500 coots were observed in the river and marsh area of Unit 3 on September 27. Approximately 100 coots remained on the entire project at the time of the aerial census on November 5.

A migration of sora rails was observed in Unit 3 on October 27. The birds were present in numbers for a period of 3 days.

f. **Herons, Egrets, Bitterns.** Great blue herons were common during the summer and early fall. Several small groups of American egrets were observed in the Crow Island area during late September and early October. An occasional egret was observed in the Shiawassee Flats. Black-crowned night herons, green herons and American bitterns were observed in lesser numbers.
g. Shorebirds, Gulls and Terns. Numerous shorebirds were observed on the mud flats in Unit 3 during late September and early October. Species identified were killdeer, Wilson's phalarope, jack snipe, lesser yellow legs, pectoral sandpiper, black-bellied plover, semipalamed sandpiper, spotted sandpiper.

Herring gulls and ring-billed gulls frequent the river area throughout the year.

h. Mourning doves. Mourning doves are abundant throughout this area, many remaining well into November.

i. Woodcock. Woodcock are found throughout the low bottom land areas. Many hunters seek the species in conjunction with pheasant hunting. It is apparently more of a favorite among negro hunters. Three woodcock were checked in bags of pheasant hunters.

Jack snipe were killed by a number of duck hunters, although more yellowlegs and pectoral sandpipers were found in hunters bags than were jack snipe.

2. Food and Cover

Mallards and black ducks present in Unit 3 prior to opening of the season were feeding extensively on waste grain in stubble fields on the Trinklein Tract (Three Rivers Ranch). When shooting interrupted such feeding, birds used natural aquatics to a greater extent. After corn fields had been picked, ducks again begin to feed in such fields and continued to do so until about December 15.

Blue geese and Canada geese fed chiefly on waste sweet corn and green vegetation which appeared in plowed fields following fall tillage. Geese also fed on green winter wheat fields on the Big Prairie Farm.

A survey of aquatic vegetation will be made during the coming year to permit a better analysis of natural waterfowl food and cover present.

3. Diseases

After all major water areas froze over, remaining birds were forced into a few open water holes. At that time a number of incapacitated ducks (mallards and blacks) were collected. Superficial examinations indicated that birds were suffering from lead poisoning. This factor will bear further attention in future years.
B. Upland Game

1. Population and Behavior

a. Ring-necked pheasant. The Shiawassee Flats area has supported a high pheasant population in years past. More intensive farming and elimination of brush and weed patches by use of herbicides has reportedly reduced much of the better cover types. Even so, a fair pheasant population exists.

No population estimates are available at this time, although a single flock of about 110 birds was flushed from a 320 acre field and adjacent marsh on the Three River Ranch on November 24.

The Shiawassee Flats sustained heavy hunting pressure during the first week of the state season October 24 - November 2. Kill data for the opening day are cited in Section VI-D.

b. Bobwhite quail are present in limited numbers. Only two individuals have been observed by the writer, although a few small coveys are reported to exist around St. Charles.

2. Food and Cover

Wild seeds, fruits and cultivated grains are the chief food items used by upland birds. Corn is readily sought by pheasants following harvest operations. Pheasants were observed feeding on soybeans, white beans, lima beans and seeds from rotted cucumbers. Young pheasants were frequently observed in the vicinity of sugar beet fields during the summer months. They may seek the shade of beet plants and undoubtedly find numerous insects there.

Pheasants use the cover provided by dense vegetation on the numerous ditch and dike banks found on the project. During the hunting season birds retreated to the extensive brush areas remaining and dense marsh vegetation.

C. Big Game Animals

1. Population and Behavior

White-tailed deer are found in limited numbers throughout the area. Reports from local land operators and State Conservation Department personnel indicate that there were in the neighborhood of 50 deer on the project.

A number of bucks have been killed each year during the state deer hunting season. During the 1953 season it was
determined that about 10 legal bucks were killed in the vicinity of the entire project. If this is true, perhaps there were more than 50 deer on the project prior to the hunting season.

Deer cause some damage to agricultural crops, chiefly corn fields. Because of this it may be necessary to maintain some type of deer control once the refuge is established. Local people, however, are in favor of having a fair number of deer around even if some damage results.

2. Food and Cover

Deer feed primarily on legumes and corn during the summer and early fall. Some browsing is evident in brush lands where animals seek cover. There is a wealth of available deer food the year around.

D. Fur Animals

Principal fur animals on the project are muskrat, mink, beaver, and raccoon. The common skunk is abundant and the opossum is reported to be continually increasing in numbers. Red Fox are common.

The muskrat is a valuable furbearer in this area and is found in abundance along the river and marsh areas in the project. Dense growths of cattail Typha sp., hardstem bulrush Scirpus acutus, river bulrush Scirpus fluviatilus are the major food and cover species.

Because of the possibility of muskrat damage to dikes it will be desirable to obtain seasonal population data and establish a harvest quotas as soon as the Service and the State begin operation. The majority of the muskrat habitat lies in Unit 3.

An aerial house count was made to determine the approximate muskrat population present during the fall of 1953. Because house building continued well into December, the aerial house count was delayed until December 16. Approximately 2850 houses were tallied, with the possibility existing that a number of houses were missed in areas of heavy concentration.

No detailed data are available for this area as to the percentage of occupied houses (it is assumed that most houses observed were occupied) or the average number of muskrats per house. A number of muskrats also build bank dens in the numerous dikes and ditches found throughout the project. Reports by experienced trappers indicate that they believe 30-50% of the total population occupy bank dens. The validity of such reports
have not been determined, but will require further study. It is apparent that there is considerable burrowing in dikes, with the possibility existing that such activity increases during periods of high water levels.

Using the standard conversion factor of 5 muskrats per occupied house for the 2850 houses recorded would indicate a population of 14,250 muskrats. Assuming that about 30% of the total population uses bank dens the project may support a population of approximately 20,000 muskrats. Until more accurate data can be obtained, however, a conservative estimate of 15,000 will be used as the 1953 total population.

Marshes in the Shiawassee Flats are generally trapped by land owners or leased to professional trappers who jealously guard their interests. Trespass and poaching have been greatly reduced because of such interest. A number of trappers were contacted during the 1953 trapping season and it was noted that professional trappers were rather skeptical about releasing information on catches. Based on data received from trappers and State Conservation Officers, 5 professional trappers caught approximately 6000 muskrats. Local farmers and others accounted for approximately 2,000 more, for an estimated total harvest of about 8,000 muskrats. This figure will be verified when State Conservation Officers check local fur sales.

Mr. Frank Brodock, a professional trapper, trapped river and marsh land within the area known as the Little Prairie in Unit 3. His catch of approximately 1200 muskrats were of good size and quality, but many were not prime. Immature rats or kits made up less than 5% of the total catch. Sex and age data were obtained from a sample of 328 skins, using the size, thickness and striped or spotted pattern of pelts as indicators for age and presence or absence of mammae as an indication of sex.

<table>
<thead>
<tr>
<th>Adult</th>
<th>Subadult</th>
<th>Total</th>
<th>Subadult</th>
<th>Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>Adults</td>
<td>Male</td>
<td>Female</td>
<td>Subadults</td>
</tr>
<tr>
<td>69</td>
<td>48</td>
<td>117</td>
<td>121</td>
<td>85</td>
<td>209</td>
</tr>
</tbody>
</table>

Subadults per adults - 179: 100 (63.7%)  
Adult males per females - 114: 100 (58.9%)  
Subadult males per subadult female - 115: 100 (59.3%)  
Average subadults per adult female - 4.4

The age ratios obtained from the relatively small sample indicate that areas represented were not being over-trapped, providing natural mortality of young is not excessive, and actually could perhaps be trapped more intensively. The sex ratios observed exceed the normal, showing an excess of
males, but correspond quite closely to other eastern studies of sex ratios cited by Dozier, Cashwiler, Baumgartner and Bellrose.

Very few mink are caught in spite of the relatively high fur value. Raccoons are hunted with dogs when the season permits, but few are taken for fur because of present low prices. A high raccoon population exists and could well become a problem because of present damage to crops, especially sweet corn, and the possible adverse effect upon nesting waterfowl.

E. Predacious birds

American rough-legged hawks, marsh hawks, Coopers hawks, sharp-shinned hawks, great-horned owls, screech owls and snowy owls have been observed on the project. Crows are reported to be common throughout the year, with major migrations passing through the area in October.

F. Fish

The principal species found in the river areas are carp, bullhead, suckers, perch and northern pike. Spring flood waters may bring additional species into the area.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development - Not applicable at this time.

B. Plantings

During the period all agricultural units within the project were checked and records made of location and type of crops grown, average yields, soil building practices used, tiling operation, progress of fall harvest and tillage operations.

Crops grown during 1953 and average yields were as follows:

<table>
<thead>
<tr>
<th>Crops</th>
<th>Project - 1953</th>
<th>Saginaw County Ave.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat, winter</td>
<td>30.0 bu./acre</td>
<td>29.1 bu./acre</td>
</tr>
<tr>
<td>Oats</td>
<td>52.0</td>
<td>36.0</td>
</tr>
<tr>
<td>Barley</td>
<td>40.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Rye</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Field corn</td>
<td>48.0</td>
<td>47.0</td>
</tr>
<tr>
<td>Sweet corn</td>
<td>4.5 tons/acre</td>
<td>6.0 tons/acre</td>
</tr>
<tr>
<td>White beans</td>
<td>22.0 bu./acre</td>
<td>20.0 bu./acre</td>
</tr>
<tr>
<td>Soy beans</td>
<td>26.0</td>
<td>26.0</td>
</tr>
<tr>
<td>Garden peas</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sugar beets</td>
<td>10.0 tons/acre</td>
<td>9.0 tons/acre</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(Includes crops raised on tiled and untiled ground)
Total agricultural acreage under cultivation within the project boundary and additional yield data will be reported following a review of Department of Agriculture - PMA records.

IV ECONOMIC USE - Not applicable at this time.

V FIELD INVESTIGATIONS

Investigations of land use, waterfowl use, hunting activity and the muskrat trapping program are reported under the appropriate sections.

A. Waste Crops Remaining After Harvest

Field studies were initiated to determine the amount of waste crops remaining in fields after harvest. In this area considerable waste grain, beans and corn remain after harvest operations are completed. Since such waste plays an important role as supplementary wildlife food it is important to know the relative amounts left in fields so as to regulate farm tillage practices to permit maximum use by wildlife species, especially waterfowl.

A mil-acre sample plot frame was constructed and used to obtain samples of waste crops remaining in fields. Sample plots were taken at predetermined intervals along an established line through fields.

When sampling bean fields, all beans within the plot were collected and weighed to determine the average number of bushels waste per acre. The amount of waste sweet corn was determined by collecting cobs of corn or fractions thereof and weighing to determine bushels of waste per acre.

Due to the interference of other duties only a few fields were sampled the past season. Such studies should be continued during the next two years to better determine average annual waste available. The following data were compiled during October 1953:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Crop</th>
<th>Ave Waste Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watson</td>
<td>Small Lima beans</td>
<td>5.7 bu.</td>
</tr>
<tr>
<td>Peaphon</td>
<td>Soy beans</td>
<td>6.0 bu.</td>
</tr>
<tr>
<td>Trinklein</td>
<td>Sweet corn</td>
<td>2.5 bu.</td>
</tr>
</tbody>
</table>

The amount of waste soy beans and white beans was high on many fields because of extremely dry harvest conditions. An additional 12 acres of sweet corn on the Trinklein Tract was not harvested because of frost damage. Mallards, geese and pheasants used this area after the sweet corn had been disced down.
VI PUBLIC RELATIONS

A. Recreational Uses

No detailed records were kept on activities such as fishing and boating, but many fishermen lined the river and dike banks daily during summer and early fall to catch perch, bullheads and carp. Most fishermen were negroes from the City of Saginaw who are content with any form of fish life.

A number of people travel by boat throughout the river areas to observe birds and animals present. Others use the more remote areas for training dogs and target ranges.

B. Refuge Visitors

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Purpose</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe Smoke</td>
<td>Branch of Lands, FWS</td>
<td>Land Acquisition</td>
<td>9/17-18</td>
</tr>
<tr>
<td>F. C. Gillett</td>
<td>Reg. Refuge Supv.</td>
<td>Inspection</td>
<td>9/22</td>
</tr>
<tr>
<td>Howard Rowe</td>
<td>State Cons. Officer</td>
<td>Enforcement Coop.</td>
<td>10/1-3</td>
</tr>
<tr>
<td>Bob Curtis</td>
<td>&quot;</td>
<td>&quot;</td>
<td>10/1-3</td>
</tr>
<tr>
<td>Don Bell</td>
<td>&quot;</td>
<td>&quot;</td>
<td>10/21</td>
</tr>
<tr>
<td>Joe Smoke</td>
<td>Br. Lands, FWS</td>
<td>Land Acquisition</td>
<td>11/16-24</td>
</tr>
<tr>
<td>S. J. White</td>
<td>Saginaw, Mich.</td>
<td>Land sale</td>
<td>12/3</td>
</tr>
<tr>
<td>Don Kilts</td>
<td>Saginaw News</td>
<td>News release</td>
<td>12/7</td>
</tr>
<tr>
<td>Richard Rohde</td>
<td>Saginaw, Mich.</td>
<td>Project boundary</td>
<td>12/14</td>
</tr>
<tr>
<td>Geo. Clark</td>
<td>Clark Drug Co.</td>
<td>Wildlife information</td>
<td>12/14</td>
</tr>
<tr>
<td>Robert Cornell</td>
<td>&quot;</td>
<td>&quot;</td>
<td>12/20</td>
</tr>
<tr>
<td>Gale Gibson</td>
<td>Reg. Planning Comm.</td>
<td>Flood Control Program</td>
<td>12/21</td>
</tr>
<tr>
<td>Ernie Spyker</td>
<td>State Cons. Officer</td>
<td>Enforcement Coop.</td>
<td>&quot;</td>
</tr>
<tr>
<td>Barney Meyers</td>
<td>Soil Cons. Service</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>Richard Kirch</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>Dale Pasco</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>Karl Klingelehoffer</td>
<td></td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

C. Refuge Participation

1. The Refuge Manager attended the following meetings during the period.

   September 17 - Saginaw Field and Stream Club.
   Discussed Shiawassee Project.

   September 22 - Accompanied Regional Refuge Supervisor Gillett to Frankenmuth.
Michigan to attend flood control meeting with Regional Planning Commission and Corps of Engineers.

September 24 - Accompanied Regional Refuge Supervisor Gillet to Lansing, Michigan to meet with Conservation Department personnel.

September 29 - Met with State Conservation Department personnel and Game Management agents Creech and Hanson at Lake St. Clair to discuss 1953 enforcement program.

October 8 - Chesaning Sportsmens Club, Chesaning, Michigan. Discussed Shiawassee Project.

November 3 - Met Herb Miller, State Waterfowl Biologist and Nels Johnson, Area Manager, at Lake St. Clair to discuss proposed development of Harsen's Island in State-owned public shooting area.

November 5 - Assisted Herb Miller, State Waterfowl Biologist, with aerial waterfowl census of Lake Huron, Saginaw Bay and the Saginaw Valley.

November 6 - Met with State Conservation Department personnel and Regional Refuge Supervisor Gillett at Lansing, Michigan to discuss Shiawassee Cooperative Agreement.


D. Hunting

1. Waterfowl. Because lands included within the authorized project boundary of the refuge and the State game area were still in private ownership or in the process of passing from private to Federal or State ownership as land acquisition continued, hunting restrictions were not imposed by either agency and hunting continued as in the past. As soon as sufficient acreage in one block is acquired much of the marsh area under Federal ownership will be closed to hunting, while a
greater portion of State lands will be operated as public shooting areas. The Crow Island Area was purchased by the Michigan Department of Conservation during 1953 and closed to hunting for the first time, although former owners did restrict the number of hunters using the area during previous years.

All of the river area south of Saginaw was open to public hunting while many of the better adjacent marsh areas were leased by hunting clubs or maintained for private shooting by groups of hunters or land owners as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Type Hunting</th>
<th>Hunters</th>
<th>Season Fee</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Rivers Ranch (Unit 3)</td>
<td>Commercial lease</td>
<td>34</td>
<td>$20.00 each</td>
<td></td>
</tr>
<tr>
<td>White marsh and dikes</td>
<td>&quot;</td>
<td>14</td>
<td>20.00</td>
<td>&quot;</td>
</tr>
<tr>
<td>Kaufman marsh</td>
<td>Private &amp; Comm.</td>
<td>15</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>House boats on river (2)</td>
<td>Private clubs</td>
<td>8+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Langschwager marsh</td>
<td>Owners &amp; friends</td>
<td>6+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>James Club</td>
<td>Owners &amp; friends</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big Prairie Farm</td>
<td>By permission</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson marsh</td>
<td>Private</td>
<td>8</td>
<td>15.00</td>
<td></td>
</tr>
</tbody>
</table>

Most hunter contacts were made on areas south of Saginaw, usually as hunters left the marsh. All areas were censused periodically. Population estimates were made from ground observation points where possible, by observing feeding flights and by aerial census. Because of the relatively low waterfowl population present in the vicinity, most of which was concentrated in the Crow Island area during the latter part of the season, only two aerial censuses were made.

**Hunting Pressure**

Records were kept of the number of hunters cars present in the vicinity of the major hunting sites in the Shiawassee Flats. A sample of cars leaving hunting areas showed an average of 2.1 hunters per car, which figure was used to determine the number of hunters present on the project at intervals throughout the hunting season. Care was taken to eliminate fishermen or pheasant hunters, counting only waterfowl hunters.

**Waterfowl hunters present**

<table>
<thead>
<tr>
<th>Date</th>
<th>Units 1 &amp; 2</th>
<th>Unit 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct. 1 Thur.</td>
<td>40</td>
<td>76</td>
<td>116</td>
</tr>
<tr>
<td>Oct. 2 Fri.</td>
<td>13</td>
<td>20</td>
<td>36</td>
</tr>
<tr>
<td>Oct. 3 Sat.</td>
<td>35</td>
<td>70</td>
<td>105</td>
</tr>
<tr>
<td>Oct. 4 Sun.</td>
<td>22</td>
<td>36</td>
<td>58</td>
</tr>
<tr>
<td>Oct. 7 Wed.</td>
<td>0</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Oct. 24 Sat.</td>
<td>9</td>
<td>29</td>
<td>38</td>
</tr>
</tbody>
</table>
Average 79.7 hunters per day Oct. 1-5
Average 17.0 hunters per day Oct. 6 - Nov. 2
Approximately 398 hunter days first 5 days of season.
Approximately 850 hunter days last 50 days of season.
Total - 1248 hunter days on Shiawassee Flats during 1953.

It is evident that the number of waterfowl hunters using the area declined rapidly after the first weekend when few ducks remained in the Shiawassee Flats. The sample of hunters used is relatively small, but does represent all major hunting sites within the project on dates cited. Areas were checked morning and evening so as to include the majority of hunters out on that date.

**Hunter Success**

The following tabulation summarizes hunter bag check data recorded for the Shiawassee Flats during the 1953 season.

<table>
<thead>
<tr>
<th>Hunters interviewed</th>
<th>159</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours hunted</td>
<td>567</td>
</tr>
<tr>
<td>Ducks bagged</td>
<td>176</td>
</tr>
<tr>
<td>Geese bagged</td>
<td>11</td>
</tr>
<tr>
<td>Coots bagged</td>
<td>8</td>
</tr>
<tr>
<td>Ducks per hunter day</td>
<td>1.07</td>
</tr>
<tr>
<td>All waterfowl per hunter day</td>
<td>1.22</td>
</tr>
<tr>
<td>Ave. hours hunted per day</td>
<td>3.16</td>
</tr>
<tr>
<td>Waterfowl bagged per hour hunted</td>
<td>.34</td>
</tr>
</tbody>
</table>

Crippling loss appears to be unusually high in the Shiawassee marshes because considerable hunting is done in the vicinity of dense stands of cattail where it is difficult to find crippled ducks. Interviews with 74 hunters who reported cripples lost show that for 70 ducks bagged, 51 cripples were lost. This represents a loss of 12.1% of the ducks shot down.

**Species Composition of Bag**

A percentage breakdown of ducks bagged is as follows:

<table>
<thead>
<tr>
<th>Species</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard</td>
<td>45.5</td>
</tr>
<tr>
<td>Black duck</td>
<td>17.0</td>
</tr>
</tbody>
</table>
(Table continued)

Blue-winged teal 13.6
Green-winged teal 5.6
Baldpate 5.6
Redhead 3.4
Scaup 2.8
Ringneck 2.2
Pintail 2.2
Wood duck 2.2

(Goose checked included 10 blue geese, 1 Canada goose)

Estimated Waterfowl Kill

By projecting the average kill per hunter day it is estimated that approximately 1300 ducks were killed on the project during the season. The limitations of this procedure are realized, but for the lack of more accurate data the kill figure is being cited, crippling loss excluded.

The sample of geese checked was too small to determine the approximate goose kill, but reports indicate that about 40 geese (blue and Canada) were killed within the project and on the adjacent Big Prairie Farm.

Effect of Last Hour of Shooting

There was little opportunity to obtain significant data on the effect of the last hour of shooting granted during the 1953 season. Interviews with hunters who were known to have hunted the last hour showed that seven parties consisting of 36 hunters reported success the last hour, while three parties consisting of 22 hunters reported no success the last hour. Hunters reported that there was little chance to locate cripples lost during the last hour of shooting when such birds fell into dense marsh vegetation.

It appeared that hunters who were well acquainted with the marsh areas and waterfowl flight patterns were quite successful during the last hour, while other less experienced hunters generally left the marshes during the last hour so as to get to shore before dark. It was evident that a number of Saginaw hunters were able to leave the city after completion of their days work and hunt for an hour or more because of the extended shooting time. If more ducks had remained in the Shiawassee Flats throughout the season it is quite probable that a higher kill would have resulted from shooting during the last hour, especially when ducks began feeding in fields during the late afternoon.
2. Pheasants. The Shiawassee Flats attract an army of pheasant hunters during the first days of the season. Much road hunting was evident, but the more successful hunters worked the brush lands and large fields with dogs. After the first week of hunting most pheasants retreated to the dense brush and marsh area and became progressively harder to find.

The following hunter bag check data were obtained on the first day of the season:

- Pheasant hunters interviewed: 37
- Total hours hunted: 175
- Pheasants bagged: 17
- Average birds per hunter: .46
- Average birds per hour: .09

(Other game taken included 2 woodcock, 4 fox squirrels, 1 raccoon, 2 cottontail rabbits and 1 red fox)

F. Violations

Most patrol work was done in cooperation with State Conservation Officers. All cases were handed by local Justice of the Peace Courts. The majority of violations consisted of carrying loaded guns in cars or motor boats, hunting before opening of seasons and killing of hen pheasants.

Early and late shooting during the waterfowl season were of little consequence, primarily because of the extended hour of shooting time granted. Poaching of muskrats and shining of deer before season were reported by local residents, although no such violations were encountered.

VI OTHER ITEMS

A. General

1. Preliminary negotiations have been initiated to select and purchase a headquarters site, which will be built outside of the project boundary because of annual flood hazards.

2. The Preliminary Development Plan for the project is being prepared.

3. A December bird count was made on December 20 in cooperation with Mr. Eugene Kenaga and Robert Cornell of the Michigan Audubon Society. The following observations were recorded for a four mile strip through Unit 3.
Mallard - 8  Black-capped Chickadee - 1
Black duck - 7  White-b. nuthatch - 5
American Merganser - 1  Starling - 10
Marsh hawk - 3  English Sparrow - 50
Pheasant - 37  Cardinal - 2
Herring gull - 1  Goldfinch - 9
Snowy owl - 2  Slate-colored junco - 1
Downy woodpecker - 1  Tree sparrow - 48
No. Horned lark - 5  Song sparrow - 2
Blue jay - 1  Lapland longspur - 215
Crow - 12  Snow bunting - 48

Total Species - 22

B. Report of Activities - Lake St. Clair Waterfowl Refuge

Management of the Lake St. Clair Waterfowl Refuge was transferred from Seney Refuge to this station.

The Lake St. Clair Refuge consists of two closed areas of approximately 4200 acres established by Presidential Proclamation (2593) on September 23, 1944. The refuge is operated in conjunction with the adjacent State public shooting ground. These closed areas consist largely of emergent marsh vegetation, surrounded by buffer zones of open water. Submerged beds of aquatic vegetation present within the closed areas provide excellent feeding sites for dabblers and diving ducks. The surrounding open water area provides resting sites for large rafts of diving ducks during the fall hunting season.

Because of the close proximity of refuge areas to commercial shipping lanes and heavy travel by commercial and sport fishing boats, the refuge is posted only during the fall waterfowl hunting season. Posting of the areas is conducted on a cooperative basis between the Fish and Wildlife Service and the Michigan Conservation Department. The shallow portions of the boundary are marked with metal signs fastened to wooden stakes. The deeper water areas are marked by anchored metal buoys bearing the lettering "Waterfowl Refuge". Posting therefore, is an annual proposition. The Service contracts this work with a local guide.

A number of the buoys used for marking the boundary have been lost each year due to breaking of anchor cables during storm periods. This year it was decided that rather than place weights on the buoys or fill them with water to keep them upright, the buoys were to be left floating horizontally. This method proved quite satisfactory since buoys were apparently more readily visible when left floating flat on the surface and also must have reduced strain on anchor cables during storm periods since
no cables were reported to have broken during the 1953 season.

The area was visited on September 30, at which time GMA Hanson flew the writer over the refuge areas to check boundary posting and waterfowl present. At that time approximately 3500 ducks were observed in the vicinity of the better feeding areas.

The Refuge Manager visited the Lake St. Clair area October 9-11 and October 30 - November 3 to assist State Game Area Manager Nels Johnson with hunter bag check operations and to assist State Conservation Officer McCord with patrol.

During routine patrol on Lake St. Clair sixteen violations were encountered, all handled by State Conservation Officers in local Justice courts. The majority of violations consisted of carrying loaded guns in motor boats, shooting waterfowl with rifles, shooting of muskrats and hunting in refuge areas. The latter usually by hunters not familiar with the areas. Fines levied ranged from $15.00 and $7.50 costs to $25.00 and $7.50 costs.

Lake St. Clair presents a difficult enforcement problem as the area is plagued by novice hunters and hoodlums from the City of Detroit. The number of cases made is directly proportional to the amount of time spent on patrol. Excellent cooperation is obtained from local Conservation officers.

Waterfowl Use

No large concentrations were present when the area was visited on September 30. By October 10 larger numbers of mallards and black ducks were present, with small flocks of redheads, canvasbacks and scaup beginning to move in. Very few hunters were getting ducks. Coots were present in large numbers, the majority of which were concentrated in refuge units A and B. Larger numbers of diving ducks were reported to have moved in from October 17 - October 30. During October 30 - November 3 large rafts of divers were present in Anchor Bay. Units A and B and in the lake proper. As soon as the shooting started, many flocks would move into the refuge areas or fly to the Canadian side, where the larger percentage of ducks in Lake St. Clair were reported to be.

No satisfactory estimates could be made of ducks present in large rafts out in the lake due to distance and rough water. Large rafts of mixed redheads and scaup were present just south of Unit B and two rafts of redheads and scaup consisting of approximately 12,000 birds were using the open water area of Unit B. An additional 4000 mallards and
blacks were found in the emergent vegetation of Unit B. Other flocks of blacks and mallards were present in Goose Bay. About 6,000 ducks (3,000 mixed redheads and canvasbacks, 2,000 scaup, 3,000 mallards and blacks) and 2,000 coots were present in Unit A on November 2. As the season progressed most diving ducks were reported to have concentrated in the larger rafts out on the lake, but returned periodically to feeding sites.

It appears that Units A and B do contribute food and protection to sizeable numbers of ducks and coots during the fall hunting season so as to justify present management. Unit B is subject to considerable disturbance by unrestricted boat traffic which greatly decreases the value of the unit. Actually Unit B would be more valuable if it could be moved back into Goose Bay. Should the Michigan Conservation Department undertake farm land development on Harsen’s Island, an area such as Unit B would be more beneficial if located adjacent to upland feeding sites.

Hunting

The State-owned public shooting ground provides unlimited area for public use and does provide shooting for blue-winged teal, black ducks, mallards, baldpates and coots during the early part of the season. Blinds constructed along the marsh fringe do afford good shooting on black ducks, scaup and occasionally redheads during periods of adverse weather. However, the better duck hunting is available out in the lake and requires more elaborate equipment, many decoys and large boats to safely negotiate distances and rough water conditions. Sneak shooting and layout shooting provide better success and greater choice of birds. The majority of the redheads, canvasbacks and geese killed are taken by such methods of hunting. Most of the commercial guides employ sneak shooting tactics and daily limits for all are common once the ducks are in.

The following hunter bag check information was compiled from data collected by Area Manager Johnson, and includes data collected by the writer while at Lake St. Clair.

<table>
<thead>
<tr>
<th>Number of hunters interviewed</th>
<th>1161</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours hunted</td>
<td>7036</td>
</tr>
<tr>
<td>Ducks bagged</td>
<td>437</td>
</tr>
<tr>
<td>Geese bagged</td>
<td>0</td>
</tr>
<tr>
<td>Coots bagged</td>
<td>338</td>
</tr>
<tr>
<td>Ducks per hunter day</td>
<td>.37</td>
</tr>
<tr>
<td>All waterfowl per hunter day</td>
<td>.66</td>
</tr>
<tr>
<td>Ave. hours hunted per day</td>
<td>6.0</td>
</tr>
<tr>
<td>Waterfowl bagged / hour hunting</td>
<td>.11</td>
</tr>
</tbody>
</table>

(1050 hunters questioned reported losing 173 cripples)
Species Composition of Bag

<table>
<thead>
<tr>
<th>Species</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redhead</td>
<td>15.8%</td>
</tr>
<tr>
<td>Mallard</td>
<td>14.9%</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>13.6%</td>
</tr>
<tr>
<td>Scaup</td>
<td>12.8%</td>
</tr>
<tr>
<td>Black duck</td>
<td>10.0%</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>7.4%</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>5.9%</td>
</tr>
<tr>
<td>Pintail</td>
<td>4.3%</td>
</tr>
<tr>
<td>Canvasback</td>
<td>3.9%</td>
</tr>
<tr>
<td>Ringneck</td>
<td>3.9%</td>
</tr>
<tr>
<td>Ruddy</td>
<td>2.2%</td>
</tr>
<tr>
<td>Baldpate</td>
<td>1.8%</td>
</tr>
<tr>
<td>Wood duck</td>
<td>1.3%</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>.8%</td>
</tr>
<tr>
<td>Mergansers</td>
<td>.8%</td>
</tr>
<tr>
<td>Shoveller</td>
<td>.2%</td>
</tr>
</tbody>
</table>

The above data were collected from all types of hunters, but represent largely hunters who returned to boat landings after a day of blind shooting or jump shooting. Therefore, the data do not truly reflect the hunter success and species killed by sneak shooting and layout shooting.

For comparison, a guide engaged in sneak shooting kept the following records for the period October 25- November 24:

- Number of hunters: 43
- Total hours hunted: 252
- Ducks bagged: 144
- Geese bagged: 5
- Coots bagged: 0
- Ducks per hunter day: 3.3
- All waterfowl per hunter day: 3.4
- Ave. hours hunted per day: 5.8

Species composition of the ducks bagged was 52.0% redhead, 24.3% scaup, 20.8% canvasback, 20.0% ruddy and .8% black duck.

The hunter bag check data cited for Lake St. Clair have been submitted to the Michigan Conservation Department.

Submitted by: [Signature]
Refuge Manager

January 11, 1954
Date:

[Signature]
Approved
Acting Regional Director
January 4, 1954
(Proposed project boundary and flood control plan)
MICHIGAN
DEPARTMENT OF CONSERVATION
GAME DIVISION

STATE OWNED
ST. CLAIR FLATS
PUBLIC HUNTING GROUNDS

ALL AREA SOUTH AND WEST OF HEAVY BROKEN LINE — IS OPEN TO PUBLIC HUNTING EXCEPT:
1 - AREAS MARKED UNIT "A" OR UNIT "B" CLOSED AS ST. CLAIR WATERFOWL REFUGE MARKED BY BUOYS
2 - AREAS SHOWN AS PRIVATE OWNERSHIP OR PRIVATE LOTS
NOTE: CROSS-HATCHED AREAS INDICATE THICKLY SETTLED COTTAGE AREAS.