

SHIAWASSEE NATIONAL WILDLIFE REFUGE

Saginaw, Michigan

ANNUAL NARRATIVE
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INTRODUCTION

Shiawassee National Wildlife Refuge (NWR) is located in the central portion of Michigan's Lower Peninsula, near the south end of Saginaw Bay. The north boundary of the Refuge adjoins the south boundary of the City of Saginaw. The Refuge is in the fourth and fifth U.S. Congressional Districts of Michigan. The Michigan Islands NWR and the Wyandotte NWR are also administered by Shiawassee NWR.

The establishment of Shiawassee NWR was authorized in March, 1953, by the Migratory Bird Conservation Commission under the Migratory Bird Conservation Act (16 U.S.C. 715-715s) "...as an inviolate sanctuary, or for any other management purpose, for migratory birds." As a result of local and regional conservationists' initiatives, the state of Michigan established the Shiawassee River State Game Area adjacent to the Refuge. Together, these two areas encompass and practice complimentary management on approximately 20,000 acres of some of the most valuable waterfowl habitat in the State. The Refuge is 9,706 acres in size, which includes 413 acres of Refuge-managed land leased from the City of Saginaw and Bridgeport Township under long-term agreements.

Shiawassee NWR, a portion of an area known locally as the *Shiawassee Flats*, has a contributing drainage area of approximately 6,060 square miles (10.6 percent of the state of Michigan). Four rivers converge in the Shiawassee NWR and account for the majority of the contributing drainage area. These rivers, along with their drainage area at the nearest U.S. Geological Survey gauge, are as follows: the Tittabawassee, with a 2,400 square-mile drainage at gauge on river mile 23; the Flint, with a 1,200 square mile drainage at gauge on river mile 12; the Cass with an 850 square-mile drainage at gauge on river mile 17; and the Shiawassee, with a 640 square mile drainage at gauge on river mile 14. In addition to the four main tributaries, several smaller streams enter the Shiawassee River within or just upstream of the Refuge. The largest of these are the Bad River, draining 248 square miles; Misteguay Creek, draining 137 square miles; and Swan Creek, draining 176 square miles. At the northeastern edge of the Shiawassee NWR, at the confluence of the Tittabawassee and Shiawassee Rivers, the Saginaw River proper begins. The Saginaw River, 22 miles long, flows northerly from this point through the cities of Saginaw and Bay City to discharge into Saginaw Bay, an arm of Lake Huron.



Walleye anglers at the confluence of the Tittabawassee and Shiawassee Rivers. (EPD 3/2000)

Topography on the Shiawassee NWR is flat and generally ranges from 580 to 590 feet Mean Sea Level (M.S.L.). Flooding of the Refuge area occurs often, due to the Saginaw River's inability to carry the full load of runoff from the various tributary rivers. Flooding may be compounded by ice blockage of the various river channels during late-winter breakup. Water level elevations in the Saginaw Bay also have a heavy influence on flooding events in the Refuge area. Saginaw Bay water levels are influenced by winds, which may change water level elevations by four feet or more. The average water level in Saginaw Bay is 579.5 feet M.S.L.; however, deviations above and below that level are the rule rather than the exception. Although water level fluctuations from these "wind tides" are not as high in magnitude on the Refuge as on the Bay, daily changes of one or two feet are quite common. The combination of high Bay water levels and high river discharges occurring concurrently poses the greatest threat to flooding.

As recognized during its initial establishment, Shiawassee NWR provides a valuable stopover for waterfowl migrating through the Saginaw Valley. In the fall, peaks of 35,000 ducks utilize the Refuge, including up to 4,000 black ducks. The significance of this last figure is such that the Refuge is included within one of six focus areas designated by the lower Great Lakes/St. Lawrence Basin Joint Venture of the North American Waterfowl Management Plan. The area also remains an important migration site for the Southern James Bay Population of Canada geese, with current spring/fall peaks of 25,000/23,000, respectively.

Due to its habitat diversity, the entire Refuge serves as endangered and threatened species habitat for a number of federal and state-listed wildlife species.

The Shiawassee NWR Wetland Management District, established in 1988, covers 47 counties in central and southern Michigan. It includes 113 easements totaling 4,637 acres, located in 34 different counties. The District also manages a 22-county area for wetland restorations.

In September 1993, Shiawassee NWR entered into a partnership with the City of Saginaw to manage Green Point Nature Center, a city-owned, environmental education facility. Renamed by

the Service as Green Point Environmental Learning Center (ELC), the Center is located on the Tittabawassee River, which flows adjacent to the Refuge.

Currently, nine permanent employees and one term employee staff the Shiawassee NWR. The positions include a refuge manager, two refuge operations specialists, a wildlife biologist, an administrative technician, one tractor operator, one engineering equipment operator, a biological sciences technician, and two park rangers.

HIGHLIGHTS

- **Record number of common snipe (174) visit Refuge and a number of new wildlife species visits recorded (Section 1a).**
- **A total of 350.5 acres of wetland habitat restored through the Shiawassee Private Lands program (Section 2a).**
- **Third year of low water affects Refuge habitat management (Section 3).**
- **Last year of rearing *Galerucella* species beetles for purple loosestrife control (Section 3g).**
- **Three separate bird banding programs conducted on Refuge, including MAPS program (Section 4a).**
- **Natural Resources Damage Assessment has several benefits for the Service (Section 6d)**
- **Additional archaeological sites are documented on the Refuge (Section 6f).**
- **New land acquisitions for Shiawassee NWR total over 413 acres (Section 6g).**
- **Charity Islands added to the Michigan Islands NWR (Wilderness & Special Areas).**

CLIMATE DATA

More normal weather conditions returned in 2000 with just slightly above average precipitation levels. Most of this moisture occurred in the first five months of the year. Though the area is recovering from the drought experienced in 1998 and 1999, the lakes and rivers are still well below their average depths. Ground water levels and lake levels have not recovered enough to provide typical water management patterns for the area. Rivers remained too low to permit even mechanical water manipulations in some areas. In addition, temperatures were generally cooler than the previous year but closer to the long-term average. This allowed the Refuge to hold more water in its wetlands than the last few years. However, the moist soil units (MSU's) had little if any water in them during the fall flights. Rains occurred frequently enough to permit good development of croplands, grasslands, and berry and mast producing tracts. The forest tracts were generally dry again and for the third straight year showed little sign of river silt deposition.

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MONITORING AND STUDIES

1a. Surveys and Censuses

The Refuge has several routine, ongoing wildlife surveys and censuses. Supplemental data is also gathered and recorded through daily, non-standardized observation. The following are some of the notable results from these survey initiatives during FY 2000.

Bluebirds appeared on the Refuge February 10, common grackles appeared on February 24, chorus frogs were heard on February 29, first of the year goslings were seen on April 21, toads were singing on May 2, and the first fawn of the year was seen on May 22. A river otter was observed on the east dike of Pool 1A on April 25.

The lowering of water levels to their minimum in Pool 1A over the past few years helped encourage extensive stands of pondweed to flourish. This vegetation and its associated invertebrate community attracted larger than average, late summer concentrations of pied-billed grebe, American coot, and American wigeon. A peak of 11 black terns was observed in May in Pool 2 and MSU-1.

Plowing and disking of MSU-1 and MSU-2 West in late summer 1999, and subsequent water management, created a very good feeding site for northward migrating shorebirds, including the largest number of common snipe (174) ever recorded at a single location in the Saginaw Bay Watershed. As in 1999, shoreline and mudflats exposed by lower than average river water levels provided the Refuge's primary summer and fall shorebird foraging sites.

The cover board survey of refuge snakes begun in 1999 was expanded to additional locations in 2000. This increased effort resulted in the knowledge that the expansive meadow of Trinklein Unit 1-S, converted from agriculture in 1994, is used consistently during the summer and early fall by eastern fox snakes, a state threatened species.

Unusual bird sightings included several Ross' geese, an osprey, golden eagle, king rail, three cattle egrets, a Franklin's gull, lesser black-backed gull, Lapland longspur, eared grebe, yellow-crowned night heron, buff-breasted sandpiper, red-necked phalarope, and a Hudsonian godwit. Species observed at the refuge in FY 2000 that had not been officially recorded previously included butterflies: common buckeye and giant swallowtail; moths: lettered sphinx and polyphemus; dragonflies: midland clubtail and common baskettail; salamanders: blue-spotted and red-backed; and birds: orchard oriole and Harris' sparrow.

1b. Studies and Investigations

Monitoring Avian Production and Survivorship (MAPS)

Long-time refuge volunteer and bird bander Bob Grefe oversees the Refuge's MAPS mist-netting and banding program, which was established in grassland habitat at the southeast corner of Trinklein Unit 1-S in 1999. This spring, prior to the start of the survey period, Mr. Grefe, his volunteer assistants, and refuge biological staff underwent the MAPS training program, conducted by the Institute for Bird Populations, Point Reyes Station, CA.

Preliminary Investigation of Northern Pike Production in Waters of the Shiawassee NWR

The Alpena Fishery Resources Office (FRO) worked with Shiawassee NWR staff and other conservation partners (Friends of Shiawassee NWR and Saginaw Field & Stream Club) to document and gather preliminary baseline information on northern pike production in three wetland types present on the Refuge. Northern pike, once plentiful in the Saginaw River, have declined due to diking of wetland spawning and nursery habitat. Wetland spawning and nursery habitats exist on Shiawassee NWR; however, fish access is limited to some wetland areas during critical spawning and nursery periods by necessary refuge management practices. This project gathered data, which will provide preliminary information to aid refuge evaluation of timing of management practices, in order to increase pike access to wetland habitat during critical periods.

Three wetland types (North Marsh – breached dike, managed wetland, Pool 1A – closed, managed wetland, and Pool 4 – open, natural-managed wetland) on the Shiawassee NWR were sampled in the spring (February- June) with trap netting and beach seining gear to gather information on spawning and juvenile northern pike use. Low water levels impaired sampling in 2000. Pool 4 was without water and river access to Pool 1A was impossible due to low water levels. Access to North Marsh was limited for a majority of the spring due to low water levels. Baseline biological information was recorded on a total of 52 northern pike. Ripe adult northern pike (700-312 mm total length) were captured at the entrance to all wetland types and were captured in the greatest abundance at the entrance to Pool 4 (65%). The majority of ripe pike were captured during March (77%). Six juvenile pike (110-134 mm total length) were captured within North Marsh in June.

2

HABITAT RESTORATION

2a. Wetland Restoration

On-Refuge

In FY-2000, water level management capabilities on 287 acres of existing shallow wetland habitat were restored and enhanced. Restoration activities included the rehabilitation of 900 feet of dike along the North Marsh and MSU-3 cross dike, construction of two spillways, installation of two 36" diameter screw gates/tubes to manage water levels in MSU-3, and the installation of 30" and 48" diameter steel pipes in North Marsh to allow natural water fluctuation and fish passage in North Marsh/MSU-4. As part of this project, the levee break at the MSU-3 pump station was repaired and riprap was placed along the breach.

A dike break and flapgate at the end of Houlihan Road was repaired and the existing pipe was extended. The MSU-1 pump was also reconditioned.

Table 2-1. On-refuge wetland restorations.

UNIT	ACRES	ACTIVITY
North Marsh	195	Reconstructed northeast corner of the dike, constructed a spillway and installed 2 overflow pipes.
MSU-3	92	Re-shaped and sloped 900 feet of the west side of the dike and installed a spillway.
TOTAL	287	

Off-Refuge

The Shiawassee NWR Private Lands Office administers a 22-county Private Lands Management District (PLMD) located in central Michigan. A total of 350.5 acres of wetland habitat was restored in the Shiawassee PLMD. Under the Service's Partners for Fish and Wildlife Program in partnership with the Timberlands Resource Conservation and Development Council, and the Mason-Lake and St. Claire Conservation Districts, a total of 34 wetland basins were restored for 119.5 acres in 13 counties within the PLMD.

Shiawassee NWR-Private Lands Office in partnership with the East Lansing State Private Lands

Office was heavily involved in the Saginaw Bay Watershed, North American Wetland Conservation Act (NAWCA) grant. This grant utilized the Partners for Fish and Wildlife program to restore wetlands on private lands located in the 22 counties of the Saginaw Bay Watershed. The private lands component of this grant originally provided \$260,000.00 to Shiawassee NWR to restore wetlands and native grassland habitats. The remaining \$52,000.00 was spent in FY-2000 by this office. This grant is administered by Great Lakes Regional Office of Ducks Unlimited, Inc and is in partnership with the Michigan Department of Natural Resources (DNR), Michigan Duck Hunters Association, Michigan Natural Resources Trust Fund, county drain commissioners, Bay Area Community Foundation, county soil conservation Districts, and private land owners. The primary delivery of these grant funds was through the Service's Partners for Fish and Wildlife Program. In FY-2000, the Saginaw Bay Watershed Phase I grant resulted in 56 wetland basins restored in 16 counties located in the Shiawassee PLMD, for a total of 231.0 acres.



PFW Project Wetland Restoration in Gratiot County.
(JTH 5/2000)

2b. Upland Restoration

Off-Refuge

The Partners for Fish and Wildlife Program (PFW) restored 182 acres of native prairie grassland habitat on 14 properties adjacent to restored PFW wetlands in 8 counties, thereby providing nesting cover for waterfowl and other songbirds. The areas were seeded with a native grass drill provided by the Michigan DNR and Pheasants Forever of Michigan. Seed and site prep costs were provided by Ducks Unlimited, the Saginaw Bay Watershed NAWCA Grant, or the Service PFW Program.



Native grassland restoration at Dome Petroleum site in St. Claire, Michigan. (JTH 5/2000)

2c. Deepwater/Riverine Restoration

On-Refuge

Nothing to Report.

Off-Refuge

The Shiawassee NWR PFW Program was able to complete several instream fish habitat restoration projects in the Shiawassee PLMD. In partnership with the Timberland Resource, Conservation and Development Council, the Gerber Foundation, Michigan Wildlife Habitat Foundation, and the U.S. Forest Service, 140 linear feet of stream habitat along a 0.5 miles reach of the Muskegon River Watershed was restored. An additional 3000 linear feet of stream habitat along an 8.0 mile reach of trout stream habitat on the Rifle River Watershed was completed in partnership with the Saginaw Bay Resource Conservation and Development Council. The Rifle River is a sub-watershed of the Saginaw Bay watershed.

3

Habitat Management

3a. Water Level Management

The ability to manage Refuge wetlands is tied directly to the level of the Saginaw River System and Saginaw Bay, part of Lake Huron. In 2000, lake levels remained at depths well below average; with resultant implications for management of Refuge wetlands. Water levels have fallen enough to develop extensive mudflats over a large portion of the Shiawassee River. Wetland plants extensively invaded slightly higher portions of the flats. These combined factors altered the types of wildlife species using this habitat area.

The results of management on the various pools, marshes and moist soil units are summarized in the following two sections.

Pool 1A

This 315-acre open water unit operates chiefly as a loafing area for waterfowl. The unit also supports year round habitat for a variety of marsh birds and occasional seasonal habitat for shorebirds. With the Trinklein Tract, this Pool acts as one portion of a complex used by the birds. The unit was operated as an emergent marsh/open water area during the spring flights. Heavier precipitation levels and improved ground water conditions enabled the Refuge to hold standing water over most of the Pool. For the first time in a couple of years, due to water levels, use figures for the fall flights were on the rise. The unit again provided large amounts of moist soil seed production for use by wildlife.

Grefe Pool

This 190-acre unit operates in a similar fashion to Pool 1A. The objective for this Pool is also the same. Encroachment of woody species along scattered islands and dikes has developed a unique habitat for some of the wading birds such as herons and bitterns. The trees have reached a height that offers nesting potential for night herons. This Pool is the second portion of the complex used by a wide variety of birds. This unit also followed the same pattern as reported above, with the unit holding water on a little over half of the area throughout the year. Waterfowl and wading birds took advantage of these wet sections.

Pool 2

This 115-acre Pool has just recently come back on line as a manageable wetland. For years structural failure of the north dike allowed the unit to revert to a homogeneous stand of cattails. Repairs carried out from 1994 through 1997 permitted the refuge to keep water on the Pool year round, thus encouraging muskrats to help move the unit back toward a hemi-marsh condition. However, in 1998 and 1999 the Pool took a step back with the drought and drawdowns leaving

95 % of the Pool dry for most of the year. This allowed the unit to slip back towards a homogeneous stand of cattails with few if any muskrats present. In 2000 the Pool carried standing water over its entire area from spring runoff through the end of the year. This allowed muskrats to re-colonize the area with approximately 100 lodges.

Pools 3 and 5

These two units are 820 acres in size and are managed as a greentree reservoir. The continuing drought and low river levels simply did not permit the units to be used as greentrees at any time during the year. Precipitation was barely able to recharge the slough for the entire year, and low river levels prevented the Refuge from gravity feeding water into the Pools for the fall flights.

Pool 4

Land exchange negotiations with the State of Michigan for this isolated 440-acre tract now appear to be in the final stages. The project has met both the Service and the State of Michigan standards and is in Washington for approval. A local sportsman's group again provided the only management in the unit by pumping water onto the field for the fall flights.

North Marsh

North Marsh is a 113-acre wetland providing a stable emergent marsh habitat used by waterfowl, marsh, and shorebirds, plus a variety of other wildlife. Continuing drought plus low river and lake levels gradually moved this wetland unit from a mosaic of wet and dry areas to an area entirely dry except for the extreme north-central portion of marsh. This resulted, for the second straight year, in aerobic soil conditions and a lush growth of moist soil plants. However, the continuing dry conditions resulted in low bird use throughout the year and little use was made of these plants. Ever since the eastern exterior dike was breached in 1991, the unit has been operating successfully in a natural state.

Trinklein 1-N, 1-C, and 1-S

These three wetlands complete the complex mentioned in the first two paragraphs. A total of 241 acres were converted in 1995 from crop production to a mosaic pattern of semi-permanent marsh, moist soil units and grassy nesting cover. This area is used extensively by wildlife as a feeding, loafing and brooding area. The year started wet, offering excellent waterfowl use during the spring flight. In late spring, boards were removed from the water control structures to provide more of an interchange between the wet and dry areas for shorebirds. Gradually, through the summer, the units dried out leaving little opportunity for birds during the fall flights. Some bird use was noted in the ditches and borrow pits. The heavy moist soil plant development that occurred will offer excellent habitat for birds moving through the area on their spring flights.

3b. Moist Soil Management

The Refuge currently has five units designated as moist soil in various states of operation. By the end of the year the Refuge had made improvements on MSU-3 and 4 to bring them closer to independent use. The following summarizes activities and results for the year.

MSU-1

This 137-acre wetland is operated for optimum feeding potential for waterfowl during the spring and fall flights. The unit also provides mudflats for shorebirds after the waterfowl migration. In 2000, water was retained for the spring flights through the first part of April, offering good use by waterfowl and shorebirds. The unit was drained shortly thereafter to dry the ground sufficiently to invigorate moist soil plant development. In July, the southeast 1/3 of the unit was mowed to cut down the dying bulrush and stimulate late season moist soil plants. This was one of the few units where the Refuge was able to add water during the fall, with just about ½ of the unit covered by standing water. This provided conditions that were used to advantage by shorebirds and waterfowl. This tract went into the winter with about 40% of the area covered by standing water.

MSU-2

This unit is operated and managed with the same intent as MSU-1. The area also experienced the same water regime through the year. Migrating birds were able to make good use of the unit during the spring. This field has now been sub-divided into two separate water-controlled moist soil units (MSU-2E and 2W). This allowed us to time the drawdowns separately; with 2W timed for early spring and 2E for late spring or early summer. This optimized use by puddle ducks and shorebirds, and allowed the refuge to stimulate desired moist soil plants in 2W. MSU-2E was targeted for renovation this past year but was delayed when vast numbers of *Galerucella* beetles were observed in the unit. As the past couple of years, the low river levels offered little opportunity for water manipulations to alter vegetative response. However, the Refuge took advantage of the only occasions to add water to the units in the fall and was able to fill the ditch and lowest point in 2W. Unit 2E was left dry after having no chance to place water into the field prior to the beetles going in hibernation. The Refuge decided to delay renovation of 2E and keep the field dry through the winter to benefit the beetles. Low river levels and pumping station failure left the remaining subunit dry going into the winter.

MSU-3

A planned water regime is not possible on this 92-acre unit due to dike and water control weaknesses, even though a number of repairs were completed before the end of the year. As a result, the management objective of providing feeding and loafing habitat for migratory birds is dependent on unpredictable weather patterns. This year, river levels and weather patterns left the unit dry for most of the year. An interesting historic cordgrass community has reestablished itself over most of the unit. Any future dike repairs or renovation work should take into consideration this developing grassland community and the height needed to maintain and manage this habitat independent from the rest of the area.

MSU-4

This 82-acre unit also operates under the same weaknesses as mentioned above. This unit, as all of the moist soil units, suffered from low river and lake levels, which left the field dry for most of the year. Some spring use was reported in the northern part of the unit where puddles and mudflats offered some habitat use. The unit has separated into three minor habitat types; with an emergent marsh in the northern section, woody shrubs and brush dominating the central section, and the southern portion comprised of grasses and wetland vegetation.

Kaufman Tract

This newly operating 51-acre wetland will be managed as a moist soil unit. The drought this past year offered limited spring use by wetland bird species, with no summer or fall use of any kind. About the only use this unit experienced this year was by raptors and some grassland species. This tract has water management problems associated with adjacent landowners. Historically, the landowners near this wetland drained their fields through the Kaufman Tract, with the previous owner's consent. Now that the refuge is operating the area as a moist soil unit, the adjacent landowners are having difficulty draining their areas and must find alternate means for moving water from their fields. To accommodate the landowners this year the unit was allowed to drain in late spring and finished the year with standing water available only in the ditch.

3c. Graze/Mow/Hay

The Refuge has about 580 acres of grasslands in several scattered parcels. Most of the tracts are naturally maintaining themselves in meadow-like conditions while the remainder is slowly converting to brushlands. None of the grasslands are being managed as a grazing or haying operation. The objectives for management of the Refuge grassland units are to provide habitat for migrating grassland bird species, limited nesting opportunity for resident species, and a ready food source for raptor populations during the year. Two small grassland tracts (near the Curtis Rd. parking lot and observation platform) seeded in 1998 showed little sign of development of the big bluestem community. Growth of forbs seeded with the grass also displayed limited progress. The Refuge has mowed the fields several times early in the growing season to set back cool season plants. However, it will take a few more years before we can tell how well these tracts will do. Management of some of this grassland acreage calls for prescribed burning and with new tracts such as the Trinklein Conversion and the cordgrass community, more burning activity will be planned.

3d. Farming

The Refuge manages 1,180 acres as cropland under a soybean/corn/small grain rotation. The primary objective for the program is to provide food for waterfowl during the spring and fall flights, and support the managed goose hunt. The 2000 growing season was good for the cooperators. The unusual warm and dry conditions allowed the farmers to seed the fields early and the scattered summer rains came frequently enough to provide strong yields. Wet weather and early movement of resident geese into the Refuge delayed harvest and allowed heavy crop depredation in soybean units.

3e. Forest Management

The 4,225 acres of forested habitat at Shiawassee NWR includes two tracts that operate as a greentree reservoir. The acreage is almost exclusively bottomland hardwoods made up of second growth, even age stand. Regeneration of the selective and clear cuts, carried out in the late 1980's have shown steady improvement, after the deer numbers were dropped below threshold levels. The deer population has stabilized at around 30 deer/square mile, and seedlings such as green ash and cottonwood have shown significant growth. Other tree species such as oak and hickory appear to be just above the break-even point, where the plant is surviving but most of the annual growth is being browsed. The mast-producing seedlings planted in 1997 suffered additional mortality, now totaling 30%, as a result of drought and rodents. Tree planting in these lowland areas appears to be a marginal proposition. Buckthorn is invading the edges of several wooded tracts. Efforts to set back this invader were delayed in 2000 due to an interest by Michigan State University in using these plots as a control for a research project. If this study is not funded by the spring of 2001, the sites will undergo control. The forest management goal is to develop a two-tier canopy forest, favoring mast and cavity-producing trees without jeopardizing populations of forest interior birds.

3f. Fire Management

In 2000, the early warm up and low water levels through the spring offered ideal circumstances to complete a number of prescribed burns. Successful burns were completed on portions of the Trinklein dikes, Pool 2, and the switchgrass unit. Post burn assessments have found that prescribed burning of dry, grassy vegetation along the dikes killed the woody vegetation, which were primarily willows. In the summer months following the fire the willow root system produce new sprouts. Also, young cottonwood sapling stands appear to grow in spots with low density of grasses, where there are insufficient grassy fuels to carry fire through the cottonwood saplings. In this condition, fire intensity cannot build enough to effectively kill the cottonwoods. Spraying the cottonwoods with non-specific herbicides prior to the fire should be done with discretion as this practice also diminishes available fuel individual cottonwoods. No wildfires were experienced this year.



Prescription burn in Switchgrass Unit. (EPD 3/2000)



Prescription burn in Pool 2. (EPD 3/2000)

3g. Pest Plant Control

Since 1996, approximately 400,000 *Galerucella* beetles have been reared at the Refuge for control of purple loosestrife. FY-2000 was the fifth and final year for beetle rearing at Shiawassee NWR. This past year, overwintered beetles were kept in the nursery on potted plants under an insulating cover of straw. Warm weather came very early this year, and some overwintered beetles, which emerged from pots before trap plants were in place, were probably not captured. A total of 69 purple loosestrife plants were dug and potted in late April and early May, with 59 of those netted. The overwintered beetles were collected from the trap plants in early May and added to the netted plants. A total of 800 beetles were gathered from the overwintered pots. The beetles had a noticeable impact on purple loosestrife plants this year. A number of beetles were noticed munching on loosestrife plants in Pool 2 on May 16. This site is approximately $\frac{1}{2}$ mile from the nearest release site. Another area of beetle population expansion was in MSU-2, with literally tens of thousands of beetles noticed there during the summer, feeding and breeding within the large stand of loosestrife found in the east unit.

Unlike the previous 4 years, during which each beetle was individually counted, beetles produced this year weren't counted. When each netted plant had large numbers of adult beetles and few remaining beetle larvae, the pots were placed in purple loosestrife stands and the beetles were released. Permanent plots at three established release sites were surveyed to monitor beetles and purple loosestrife response over time. Purple loosestrife plants have diminished significantly in density and size at the hiking trail release site.

Purple loosestrife plants, cottonwood, and willow seedlings were hand-pulled over areas of the Trinklein 1-C field. In Trinklein 1-N, several stands of young willows and cottonwoods were mowed in the fall. Several thickets of young willows were hand-cut by the YCC crew in MSU-3, and the freshly cut stumps were treated with glyphosate. Several acres of reed canary grass in

Trinklein 1-C were also killed with herbicide. One patch of *Phragmites spp.* in North Marsh was treated with herbicide. Approximately 30 acres of purple loosestrife was mowed after the flowering period in MSU-2.

4

FISH AND WILDLIFE MANAGMENT

4a. Bird Banding

The Refuge banding programs this year included the usual waterfowl banding program, the development of a new MAPS banding site, and assisting the Michigan DNR with resident goose population banding. During the fall waterfowl banding operation the Refuge captured and banded seven American black ducks. The Refuge also assisted DNR personnel by banding over 200 mallards for their quota. The MAPS banding location is a grassland site in Gosen Conversion 1S land tract. Volunteers operating the banding site were able to capture and band 75 birds comprised of red-wing blackbirds, sedge wrens, common yellowthroats, American goldfinch, tree swallows, bank swallows, savannah sparrows, swamp sparrows, song sparrows, robin, common grackle, and starling. Finally the Refuge assisted the Michigan DNR with banding over 100 local Canada geese.

The two eaglets hatched on the Refuge this year were banded and had their blood drawn by ELFO staff on 5/15/00.

4b. Disease Monitoring and Treatment

Since the establishment of the Refuge in 1953 the area has been secure from diseases or outbreaks, with conditions rarely offering opportunities for such situations. However, in 1998 and again in the last two years, wetland habitats, particularly through the summer and early fall, seemed to offer ideal conditions for the potential outbreak of botulism. Shallow water, high ambient temperatures, low oxygen content, and the rotting carcasses of hundreds of fish characterized the wetlands. The staff watched diligently for problems to occur, but the Refuge moved through the seasons without an incident; though outbreaks were reported in Saginaw Bay.

4c. Reintroductions

Nothing to Report

4d. Nest Structures

The refuge operates two nest box programs for wood ducks and bluebirds. A total of 22 nest structures have been placed on the refuge for the bluebird program and 36 for the wood duck.

The 2000 bluebird box results showed 87 songbirds fledged, including eastern bluebird, house wren and tree swallows. The wood duck program results showed wood ducks and hooded mergansers using the boxes with 238 and 26 ducklings fledged respectively.

4e. Predator and Exotic Control

At the request of Michigan State Senator Ken Sikkema (R-Grandville), Chairman of the Senate Natural Resources and Environmental Affairs Committee, ROS De Vries testified at a public hearing regarding the impacts of Great Lakes exotics on Shiawassee NWR management. The hearing was held to gather statements relating to the introduction of Senate Bill 955, which is legislation to prevent the entry of non-native aquatics into the Great Lakes via ship ballast. ROS De Vries appeared before a panel, which included State Senators Joel Geugon (D-Bay City) and Mike Goschka (R-Saginaw), as well as Senator Sikkema and their legislative aides. The bill hadn't been passed by year's end.

5

COORDINATION ACTIVITIES

5a. Interagency Coordination

Throughout the year, Refuge staff participated in the Saginaw Bay Watershed Initiative Network (WIN). This group is made up of federal, state, and local governments and organizations that are located in or associated with the Saginaw Bay Watershed and which are interested in the environmental improvement of the system. Refuge staff participate in the Agricultural, Land Use, Wildlife Stewardship, and Water Resources Task Groups. The Dow Foundation and The Conservation Fund are the lead funding organizations involved in WIN.

Each year Shiawassee NWR coordinates both the goose and deer hunting programs with the Shiawassee River State Game Area and the Shiawassee Flats Advisory Council. The Michigan DNR has designated both state and federal areas as Deer Management Unit 222 and the Saginaw County Goose Management Unit, with goose and deer populations viewed as one management unit within the area. To regulate the harvest and the hunting pressure, both state and federal staffs meet year round to work out any differences.

This station participates in the Midwest Natural Resources Group (MNRG) for the Saginaw Valley Watershed and the Lake St. Clair/Detroit River focus areas. The MNRG consists of the 14 federal agencies that deal with natural resources within the Midwest. This group has identified these two focus areas as areas of concern. Refuge staff have provided habitat and wildlife management guidance within both focus areas.

The Refuge staff participated throughout the year in technical committee meetings for the American Heritage River program for the Detroit River. The meetings identified projects that federal, state and local agencies, as well as private organizations could collaborate on through combined funding or in-kind services.

ROS De Vries met with the US Coast Guard in August in Trenton, MI to review plans for a spill response scenario to be conducted on the lower Detroit River in September. The scenario was a two-day event, which tested response to a diesel spill in the lower Detroit River, followed shortly after by a refueling spill scenario in Toledo, Ohio. The test was carried off successfully September 20-21. It involved multiple federal, state, and local agencies in the Downriver Detroit area and northern Ohio, as well as coordination of news media and all the logistics required for conducting a scenario of this magnitude.

5b. Tribal Coordination

Nothing to Report.

5c. Private Lands Activities

The Shiawassee Wetland Management District (WMD) is responsible for a 47-county area located in southern Michigan. Currently, the WMD administers 113 conservation easements in 34 counties, totaling 4,637 acres. In addition, there are two conservation easements, which were transferred in fee title to county soil and water conservation districts to be managed as outdoor education areas. Enforcement problems continue to occur on many of the conservation easements. Annual inspection visits continue to identify posting needs and minor easement violations. Resale of easements and property (easements) division continues to occur and many easements have not been inspected in several years. One Special Use Permit was issued to a conservation easement landowner to excavate a 1.0-acre pond for recreational use. Shiawassee NWR has one person to implement the PFW Program and manage the 113 conservation easements on the WMD. Additional staffing through the establishment of a waterfowl production area in southern Michigan would allow for the hiring of staff to effectively manage the conservation easement program and the 22-county Partners for Fish and Wildlife Program.

Technical Assistance Programs

A total of 135 private land sites in 24 counties received technical assistance from the Private Lands biologist concerning potential wetland development, fishpond development, game species management, and other wildlife habitat program and management information. SwampBuster actions are nonexistent with NRCS. Debt write-down request for farmers appear to be increasing with four requests made for technical assistance late in 2000.

Wetland Reserve Program (WRP)

The Shiawassee National Wildlife Refuge-PLMD assisted the Natural Resource Conservation Service (NRCS), Saginaw Bay and Lake Huron Wetland Reserve Program Teams in determining wetland eligibility and ranking requirements for 15 sites signed up for the 2000 Wetland Reserve Program across southern Michigan. The WRP team consists of a NRCS Soil Scientist, Engineer, and District Conservationist, and a Service or State Biologist. Four tracts were accepted into the WRP program and two sites from the 1999 sign-up are having Wetland Reserve Plans Of Operation developed by NRCS with the assistance of the Shiawassee NWR Private Lands Office.

6

RESOURCE PROTECTION

6a. Law Enforcement

There are presently three commissioned refuge officers on the staff. Five violation notices and two formal warnings were issued during the year, mostly for hunting regulation and Refuge trespass violations. A total of 20 incidents were recorded during the year, which included vandalism of Refuge signs and gates, and Refuge trespass into closed areas.

The individual cited for refuge trespass and for unauthorized taking of archaeological resources from the refuge in 1999 had a hearing in federal court in early June. He was found guilty of both charges and was placed on bond for a pre-sentence investigation. The U.S. Magistrate handed down the sentence in late August. The defendant was placed on 1 year probation, required to perform 200 hours of community service, has to submit to random drug testing during probation, and was assessed \$30.00 in court costs.

On May 30, well over 500 double crested cormorants along with 12 ring-billed gulls, a few herring gulls, and a few great blue herons were discovered dead on Little Charity Island. The U.S. Fish and Wildlife Service acquired this island on December 16, 1999 as part of the Michigan Islands National Wildlife Refuge. The island is proposed to be managed as a Wilderness Area and all public use without special use permits is prohibited. Colonial waterbirds such as cormorants, herons, and gulls nest throughout the island. In response to the dead bird discovery, Special Agent Jim Gale, Refuge Officer De Vries, and Michigan DNR officer Tony Soave visited the island on May 31 and made an assessment that most if not all of the birds had been shot over a several week period in May. Many of the cormorants were shot dead on their nests while incubating eggs or brooding young. An investigation continues and rewards for information have been posted.

Law enforcement refresher training was completed by all three officers in Des Moines, Iowa in March. Semi-annual weapons requalification was completed in September.

6b. Permits and Economic Use Management

A total of seven Special Use Permits were issued this year for activities which included permits to allow wood cutting, archaeological research, beekeeping, mosquito control (Saginaw County), refuge photography within closed areas, and camping on Thunder Bay Island (MI Islands NWR).

6c. Contaminant Investigation

Two Level I Contaminant surveys for land acquisition were completed in FY-2000, including the Bridgeport Township Tract (300 acres), and the Kemerer Tract (170 acres). No hazardous substances or other environmental problems were noted on the Bridgeport Tract, however the Kemerer Tract required a Level II survey due to the presence of a large, abandoned insecticide sprayer at a former maintenance site on the property. This property was once the site of a golf course, and the sprayer was used to control Dutch elm disease during late 1960's. There is also a landfill in close proximity to the site, with a past record of containing PCB's and lead. The Level II survey found the presence of DDT in the soil near the sprayer, so a Level III survey will be conducted to determine the horizontal and vertical extent of contamination in the soil.

6d. Contaminant Cleanup

Since the 1940's, polychlorinated biphenyls (PCBs) have been released into the Saginaw River through the operation of manufacturing facilities and wastewater treatment plants. These releases have been proved to cause environmental damage to Saginaw Bay, impacting fish, wildlife, habitat, and recreation associated with the Bay.

On November 24, 1998, a Consent Judgement based on a Natural Resource Damage Assessment (NRDA) was lodged in U.S. District Court, regarding a complaint filed by the FWS, the State of Michigan, and the Saginaw Chippewa Tribe against the General Motors Corporation, the cities of Saginaw and Bay City, and the Michigan Dept. of Transportation for release of PCBs into the Saginaw River and Bay.

Besides provisions for substantial contamination cleanup, recreational improvements, and resource restoration in the Saginaw River and Bay, a negotiated settlement with the defendants included several elements with direct benefits for the Service. The City of Saginaw granted the FWS two rent-free 99-year leases of the Green Point Environmental Learning Center and the 80 acres of land associated with the Center. In addition, in 2003 the Service will receive \$ 520,000 for use at the Center for restoration, replacement, or acquisition of injured natural resources. The settlement monies also provided funding for the purchase this year of Little Charity Island and most of Big Charity Island for inclusion in the Michigan Islands NWR.

Creosote drippage from the Houlihan Bridge into the Birch Run Drain occurred during a very warm period in 1999, but wasn't noted this year. Absorbent booms had been placed in the river and absorbent sheets were suspended under the bridge in 1999. The booms and sheets were removed and absorbent wood timbers were installed this year, hanging just below the deck of the bridge as a preventive measure

6e. Water Rights Management

Nothing to Report

6f. Cultural Resource Management

The lower Saginaw Valley has been a central place for human habitation of the Saginaw Bay area for the past 6,000 years. As such, significant cultural resources are present on the Refuge and recent research continues to document the richness of this area from the standpoint of historic resources.

In 1999, a contracted Overview Study of Archeological and Cultural Values on Shiawassee NWR was completed as part of the Refuge Comprehensive Conservation Plan (CCP). The Michigan Islands and Wyandotte NWR's were also researched for cultural resources under the same study. A final report was completed in March. The Commonwealth Cultural Resources Group, Inc., Jackson, MI, conducted this study. The study included not only the core refuge area, but also the proposed expansion area of 7,500 acres. A total of 244 sites were analyzed and are discussed in the report. The report conclusion states that this area "is among the highest, if not the most highly sensitive area for National Register of Historic Places-significant archaeological sites in the entire state", with much potential for the location of additional sites. The report addressed the need for formal archaeological field surveys due to the lack of knowledge about the abundance, distribution, and predictability of archaeological sites within the Shiawassee NWR.

Due to low river levels and the potential for loss of archeological information as sites are exposed through erosion with the resultant vulnerability for removal, an Archaeological Resources Protection Act permit (# 99-MI/3-1) was issued to the Historical Society of Saginaw County to monitor and collect surface artifacts from exposed sites. The permit was issued in July 1999 by the Region 3 Regional Director so that known sites could be monitored and additional sites documented.

A preliminary report from Jeffrey D. Sommer of the Saginaw Archeological Commission was submitted to the Refuge in January. The report detailed the documentation of nine additional sites within the Refuge boundaries. Artifacts salvaged from the Refuge (dated from 1000 BC through the mid-late 19th century) were photographed and are included in the report. The report gives evidence of the need for additional research and documentation of the rich archeological resources found in this area. All artifacts collected, as well as information and field notes are being curated at the Saginaw Archeological Commission repository. The survey continued through the end of FY-2000.

6g. Land Acquisition Support

The 113-acre Warner tract in Bridgeport Township was purchased at a cost of \$835,000 and transferred to the Service in April. This tract consists of apple orchards, bottomland hardwoods and sloughs along the Cass River, adjacent to I-75. A portion of the tract is zoned commercial and has very good access to and from I-75. Over 3 million travelers utilize this interchange annually to visit the Village of Frankenmuth, which is a few miles from the site. Bridgeport Township officials also agreed to lease to the Service 337 acres of land the Township owns adjacent to the Warner Tract. This tract is comprised primarily of bottomland hardwoods and sloughs, and will be used for recreational purposes. A special ceremony was held on April 24, 2000 to dedicate the two tracts to the Service. Besides area business owners, friends, and staff, U.S. Congressman Dave Camp also attended the ceremony and addressed the audience.

Throughout the year both the Michigan DNR and the Service continued the process of transferring the Service's Pool 4 area to the State, with the DNR purchasing approved lands based on the Shiawassee NWR expansion plan. Pending agency agreement on property descriptions, quit claim deeds, and approval of deed transfers, the exchange will take place.

The Charity Islands in Saginaw Bay, Lake Huron, were deeded to the Service on December 16, 1999, thus becoming part of the Michigan Islands NWR. The portions of these two islands (Big Charity and Little Charity) purchased include 222-acres of the 250-acres on Big Charity Island, and all 5.4 acres of Little Charity Island. These properties were acquired from private individuals through funding provided by the Saginaw River and Bay Natural Resource Damage Assessment (NRDA). Part of the NRDA settlement of 1998 provided for the acquisition of the Charity Islands for habitat protection.

7

PUBLIC EDUCATION AND RECREATION

7a. Provide Visitor Services

In fiscal year 2000, 64,705 visitors came to the Refuge to participate in a variety of public use activities. Several special programs were held throughout the year including the monthly First Wednesday Discovery Series Program, International Migratory Bird Day Celebration in May, Free Fishing Fun Day in June, Summer Discovery Camp for Kids in June, and the Refuge Open House Weekend in September.

During the year, 2,935 people visited the Refuge for environmental education programs. Refuge staff provided educational programs for 2,831 people of all ages both on-site and off-site. This is up from 2,644 students last year; about a 7 percent increase. Green Point Environmental Learning Center (ELC) hosted a FWS career workshop for 14 teachers from the Bridgeport-Spaulling school district on February 22, 2000.

Green Point ELC had 4,901 visits. The Practical Education for Citizenship and Employment (PECE) group worked at Green Point ELC for three days in July 2000. They trimmed brush, applied woodchips to the trails, and picked up litter. The PECE program is a federally funded program that gives students from low-income Saginaw County families both classroom instruction and hands-on work experience.

The Refuge offered permit goose hunting, deer hunting and trapping. Special deer hunts were held for youth and non-ambulatory hunters, in addition to the regular archery, muzzle loader, and shotgun hunts. Two people were awarded permits to trap specific areas of the Refuge for various fur bearing mammals. See Table 1 for a summary on the hunting and trapping programs.

Table 7-1. Data for FY 2000 hunting and trapping program on the Refuge.

FY 2000 Hunting and Trapping Program			
	Total Visits	Harvest	Hunter Success
Goose Hunt	821	364	46%
Deer Hunt	2,098	225	33%
Trapping	90	1327	4.23 fur bearers/hour

7b. Outreach

The Refuge reached 15,232 people of all ages through various outreach activities during the year. Staff participated in career days at Binder Park Zoo in Battle Creek, Genesee County Schools in Flint, University of Michigan's School of Natural Resources and Environment in Ann Arbor, and several local schools. Fish and Wildlife offices from Michigan and Ohio participated in Michigan United Conservation Club's Outdoorama February 26-March 5, 2000.

The "Kids Free Fishing Fun Day" held on June 10, 2000, was held at a new location – Ojibway Island in Saginaw. Six hundred and twenty-two children registered for the contest and received a small, Refuge memento. An estimated 1,100 people attended the event. Forty-one volunteers donated 129 hours. This year's sponsors were the City of Saginaw, the Saginaw News, Meijer Stores, Saginaw Field and Stream Club, the Sons of Italy, and the Refuge.



A Fishing Day participant proudly shows off his catch. (EPD 6/2000)

Several meetings were held throughout the year to discuss and plan the potential Great Lakes Discovery Center in Bridgeport. In July, the Friends of the Shiawassee NWR contracted with a firm out of Grand Rapids to do a feasibility study for the facility.

8

PLANNING AND ADMINISTRATION

8a. Comprehensive Management Planning

Shiawassee, Wyandotte, and Michigan Islands National Wildlife Refuges began the process of developing Comprehensive Conservation Plans (CCPs) at the beginning of FY-98. Scoping meetings for the Shiawassee NWR CCP were held in FY-99, followed by Plan writing for each of the three refuges this year. Following completion of the drafts, comments were received from the Regional Office and other FWS-Michigan field offices. Most of the comments received dealt with public use, private lands, and fisheries issues. The final CCP drafts for the three refuges were being prepared at year's end.

8b. General Administration

Personnel

Effective November 21, Refuge Operations Specialist Edward P. De Vries was promoted to ROS GS-12, and ROS Rebecca S. Goche was promoted to Park Ranger GS-11.

On May 14, Danielle R. King joined the Refuge staff as a Student Trainee under the Student Career Experience Program. Danielle is a student at Lake Superior State University in Sault Ste. Marie, Michigan. While at the Refuge she was involved in biological support and private lands work. She also had the opportunity to work a one-week detail at the E. Lansing Ecological Services Field Office. Following her SCEP term of employment, Danielle returned to Lake Superior State for her final year.

Park Ranger Mark Beaudin resigned from the FWS effective July 5 to pursue other interests such as writing and travel.

ROS De Vries was detailed to the Pendills Creek National Fish Hatchery in October to assist with lake trout spawning work at the hatchery. RM Douglas G. Spencer was detailed to the Region 3 Office to serve as Acting Refuge Supervisor for Geographic Area I during ten days in August. Spencer, Biologist Jim Dastyck, ROS Jim Hazelman, and BioTech Rick McAvinthey were also detailed at various times for fire fighting support during the Western fires in August.

The Refuge hosted a Youth Conservation Corp (YCC) summer program, which consisted of five enrollees plus a group leader. The enrollees were from Buena Vista, Saginaw, Bridgeport, and Heritage High Schools, while the crew leader was a Delta College student.



YCC enrollees Cathy Keinath (group leader), Jon Powlanta, Tamira Taylor, Leonard Doxie, and Nick Chaltraw. (EPD 8/2000)

The enrollees maintained the Landscaping for Wildlife area, assisted with the *Galerucela* beetle project, did some trail, equipment, and facility maintenance, did some boundary posting, assisted with bird banding, and provided administrative support. The crew also received training in CPR, and in compass use, pacing, and map reading. Field trips taken by the enrollees included a visit to the Bay City State Recreation Area; the Kirtland's Warbler NWR, and the NRCS office in Saginaw.

The following is a list of employees who were members of the staff at Shiawassee NWR in Fiscal Year 2000:

1. Adams, Shirley L. - Administrative Technician, GS-07, EOD 08/17/97, PFT
2. Beaudin, Mark D. - Park Ranger, GS-05, EOD 08/17/97, Resignation 07/05/00, TFT
3. Dastyck, James J. - Wildlife Biologist, GS-11, EOD 11/04/90, PFT
4. De Vries, Edward P. - Refuge Operations Specialist, GS-12, EOD 02/09/92, PFT
5. Goche, Rebecca S. - Park Ranger, GS-11, EOD 08/22/93, PFT
6. Hazelman, James T. - Refuge Operations Specialist, GS-11, EOD 10/02/94, PFT
7. King, Danielle R. - Student Trainee (SCEP), GS-04, EOD 05/14/00, LWOP 08/27/00
8. McAvinchey, Richard J. - Biological Sciences Technician, GS-05, EOD 04/26/98, PPT
9. Nowosatko, Marion L. - Engineering Equipment Operator, WG-09, EOD 06/29/78, PFT
10. Peters, David J. - Tractor Operator, WG-07, EOD 02/01/98, PFT
11. Spencer, Douglas G. - Refuge Manager, GS-13, EOD 09/01/91, PFT



Doug Spencer, Shirely Adams and Ed DeVries



Jim Dastyck, Jim Hazelman and Rick McAvinchey



Marc Beaudin and Becky Goche



David Peters and "Butch" Nowosatko

Funding - 2000

Project

Refuge Operations
 Maintenance Management System
 Refuge Operating Needs System
 Private Lands
 Fire Preparedness

Subactivity

1261
 1262
 1261
 1121
 9251

Funding

\$ 506,369.00
 127,000.00
 10,000.00
 136,500.00
 2,200.00

Total

\$ 782,069.00

Challenge Grant Cost-Share Summary (1261)

<u>Project</u>	<u>Funding</u>
Houghton Lake Fishing Platform	\$7000.00
Grassland Restoration Demonstration Area	350.00
Recreational Fishing Education Program	250.00
Kids Free Fishing Day	<u>1701.00</u>
Total	\$9,301.00

Clean Water Action Plan Funding (1121)

<u>Project</u>	<u>Funding</u>
Cedar River Restoration	\$ 4,000.00
Muskegon River Restoration	<u>11,400.00</u>
Total	\$15,400.00

Volunteer Program

A total of 115 volunteers donated 2,179 hours to the Refuge. Approximately 65 volunteers, Friends of Shiawassee NWR members, refuge supporters, refuge staff, and their families attended the "Volunteers and Friends Appreciation Potluck Picnic" on June 15. Special guests were State Representative Jim Howell and State Senator Mike Goschka. Janie Peters was selected as the 1999 Refuge Volunteer of the Year. All volunteers received appreciation certificates and gifts. Following the picnic, several vehicle loads of people went on a guided tour of the Refuge.

Equipment and Facilities

The third year of unusually dry conditions allowed for the completion of dike work in the North Marsh and MSU 3/4 area. The North Marsh west dike was elevated along a 200-yard long portion, which previously was a foot lower. The lowest spot on this dike (where there was cutting during high water events) was converted into a spillway.



North Marsh dike and spillway following renovation.
(EPD 10/2000)

This will maintain higher water depths in the cattail marsh to the west. The spillway was armored with approximately 150 tons of 6" x 10" riprap. The east dike spillway was repaired and a culvert was installed at the edge of the spillway to accommodate fish passage from Eagle Marsh to North Marsh.



East dike spillway between North and Eagle Marsh.
(EPD 7/2000)



New culvert between North Marsh and Eagle Marsh will improve fish passage during spawning season. (EPD 7/2000)

The low spot in Evon Road (200 feet) along the south boundaries of the MSU's was elevated to the height of the remainder of the road, and the dike break at the end of Evon Road was repaired. The rest of the dike in that section was raised a few feet to prevent flooding into the ditch during high water events. The water control structure at the old pump site along the Shiawassee River was removed and the tube is now open to allow fish/water passage.

The MSU-1 pump was removed, had a bearing replaced, seals replaced, it was painted, the grease line to the lower bearing was replaced, and the pump was reinstalled.

A 2000 Ford F-150 4x4 SuperCab pickup was added to the Refuge vehicle fleet in June.

Two Micron Transport ZX 15" Lite laptop computers were purchased this year for use by the Refuge Manager and the Park Ranger.

The City of Saginaw replaced the roof at GPELC and installed new carpet throughout the Center.

WILDERNESS AND SPECIAL AREAS ADMINISTERED BY SHIAWASSEE NWR

Michigan Islands NWR

The Michigan Islands National Wildlife Refuge was established by Executive Order in 1943 as a refuge and breeding ground for migratory birds and other wildlife. Shoe (2 acres) and Pismire (3 acres) Islands in Lake Michigan, and Scarecrow Island (9 acres) in Lake Huron, were the first acquired. Thunder Bay Island in Lake Huron was added in 1965, by a U.S. Coast Guard/FWS agreement under a revocable permit with five-year renewal periods, for secondary FWS jurisdiction on 121 of the island's 168 acres. The U.S. Coast Guard ceded Lake Michigan's Gull Island (230 acres) to the FWS in 1969. Gull Island is the westernmost island of the Michigan Islands NWR. In 1970, PL 91-504, Stat. 1104, designated Shoe, Pismire, and Scarecrow Islands as Wilderness Areas. A sixth island was added to the Refuge in 1995, when the Nature Conservancy transferred Hat Island to the Service. Ten acres in size, it is located in Lake Michigan, to the north of Shoe Island.

Due to the geographic location of the islands, the management of Michigan Islands NWR is split between Seney NWR and Shiawassee NWR. Thunder Bay and Scarecrow islands, located in northern Lake Huron, are administered by Shiawassee NWR. Gull, Shoe, Pismire, and Hat islands in the Beaver Island group in northern Lake Michigan, are administered by Seney NWR.

Both Scarecrow and Thunder Bay Islands lie within the waters of the newly designated Thunder Bay National Marine Sanctuary and Underwater Preserve. The National Oceanic and Atmospheric Administration gave this designation to the area in 2000. The designation gives federal protection to over 100 well-preserved shipwrecks that litter the bottom of Thunder Bay, located in northern Lake Huron, near Alpena, MI. Once part of a major shipping channel, this 448 square-mile Sanctuary is the first national marine sanctuary in fresh water, and is located in an area which was known as "Shipwreck Alley" in the 1800's.

Scarecrow Island is a limestone bedrock island covered with boulders and gravel, with a minimal soil layer supporting shrubs, scattered forbs, and a few snags, which are utilized by double-crested cormorants for nesting. A total of 300 pairs of cormorants were found nesting on Scarecrow Island in June, along with 3,000 pairs of nesting ring-billed gulls, 30 nesting pairs of Caspian terns, and 1 great blue heron nest. A pair of greater black-backed gulls was found nesting on the island for the second year in a row. Herring gulls, shorebirds, and several duck species also nest on Scarecrow Island.

The U.S. Fish and Wildlife Service manages Thunder Bay Island under a Cooperative Agreement with the Bureau of Land Management. Region 3 Realty is currently working with BLM to acquire the island in fee title. The Thunder Bay Island Preservation Society (TBIPS) is interested in the historic preservation of the Thunder Bay Island Lighthouse (1857), and has been in negotiations with the Service to gain ownership or management of the southern portion of the island. Their intent is to protect, document, and uncover historic artifacts, but also to restore the

lighthouse for visitation within the next five years. Boundaries have been agreed upon and the agreement states that the TBIPS will have ownership of all the buildings except for the boathouse, while the FWS maintains management rights over the wildlife and habitat.

Thunder Bay Island is made up of limestone bedrock, with a substantial layer of soil. This soil supports a dense interior forest of American yew, white cedar, spruce, fir, and birch. The island shoreline includes cobble beach, a limestone pavement alvar, and freshwater, coastal wetlands. Dwarf lake iris *Iris lacustris* (federal-threatened) is found on the island as well as 180 other plant species. Typically, this island provides nesting for 10,000-12,000 ring-billed gulls as well as over 100 herring gulls. Terns, shorebirds, black ducks, and mallards also typically nest here. However, since 1998, ground-nesting success has been reduced to nearly zero by the presence of an unidentified predator. It's suspected that the predator is either a coyote or raccoon. A visit by Refuge staff in June found no ground nesting for the second year in a row. It appears the ring-billed gulls have abandoned Thunder Bay Island for other locations, such as Scarecrow Island.

Through a legal settlement with General Motors Corporation under a Natural Resources Damage Assessment, Big and Little Charity Islands were transferred to the Service on December 16, 1999. These islands are both located near the mouth of Saginaw Bay, approximately seven miles from the mainland. Big Charity is 250 acres in size and is heavily wooded, with an 11-acre lake in the center. Bald eagles nest on the island, and Pitcher's thistle, *Cirsium pitcheri* (federal & state threatened) are found there. There is an old, dilapidated U.S. Coast Guard lighthouse from the 1880's located on the southwest portion of the island. A ripped harbor of refuge was constructed by the former landowner in 1992, followed by the installation of boat slips and a picnic shelter. Hiking paths crisscross the island and picnic tables, barbecue grills, and benches are located in several locations. Little Charity Island is an undeveloped 5.4-acre island approximately two miles from Big Charity. The island is wooded and colonial waterbirds such as cormorants, herons, and gulls nest throughout the island.

Refuge boundary signs were posted on both islands during the summer. The Service goal for the Michigan Islands NWR is to restore and protect endangered and threatened wildlife and plant species, as well as species of concern which use these islands. Other goals for the islands include protection of island cultural resources, public education, and acquisition of additional Lake Huron islands for further habitat and resource protection.

Wyandotte NWR

The Detroit River was designated as an American Heritage River in 1998, and forms an International boundary between the U.S. and Canada. As such, the natural resources in this area generate an international interest. The area from Mud Island south along the American shoreline to Grosse Ile, and wrapping back to the north along the Canadian shoreline is known as the Conservation Crescent. The Crescent includes Wyandotte NWR as well as other islands, wetlands, and marshes within the lower Detroit River ecosystem. Wyandotte NWR was established by an act of Congress--Public Law 87-119, 75 Stat. 243, 87th Congress, H.R. 1182, dated August 3, 1961 "...to be maintained as a refuge and breeding place for migratory birds and other wildlife..." Prior to this, from 1948 to 1961 the islands were administered by the U.S. Coast

Guard. The Refuge consists of Grassy Island, Mamajuda Island Shoal, and adjacent shallow water areas. It totals 304 acres and is located off shore from Wyandotte, Michigan, from which it takes its name. Wyandotte, in turn is named for the Maguagua Reservation of the Wyandot tribe which once dwelled in the area. Public access is not permitted on either island, although Mamajuda Island no longer has significant land above the waterline, and in fact is actually just a small portion of land with a navigational light. Mamajuda Island historically was 29 acres in size, and is named for a Native American woman who camped and fished on the island prior to 1807.

The Wyandotte NWR is situated in what was once one of the most significant migratory staging areas in the United States for diving ducks. Extensive beds of aquatic vegetation, particularly wild celery, attracted large concentrations of divers, primarily canvasback and scaup. However, in the past 100 years, discharges from the steel and chemical industry, and municipal sewage effluent, along with the effects of large, deep-draft vessels have degraded the lower Detroit River ecosystem. This has contributed to a substantial decline of preferred foods and habitat. Presently, only remnant numbers of what were once vast rafts of migratory waterfowl are seen at Wyandotte NWR.

Historically, Grassy Island was a 4-acre shoal. Today it is a diked 72 acre island, which is, covered to a depth of 12 feet (within the dike) with a total of 1.9 million cubic yards of material containing contaminated sediments from the nearby Rouge River, Trenton Channel, and Lake Erie. All these sediments were placed on the island between 1961 and 1983 when it was utilized by the US Army Corps of Engineers as a confined disposal facility for dredged material. The dike which surrounds the island is built up to an elevation of approximately 30-40 feet above the river, and was constructed from material dredged from the nearby shoal. Riprap was added later.

In 1995, the Department of the Interior designated Grassy Island as a Hazardous Materials Management (HAZMAT) demonstration site. Refuge staff, US Geological Survey (USGS) Biological Resources Division, USGS Water Resources Division, and US FWS Engineering and Ecological Services personnel gathered soil and water samples from the island and shoals during 1997 and 1998. Reports of these surveys were completed in 1999, and confirmed the presence of polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), copper, mercury, lead and zinc in the island soils. These soils showed the highest levels of contaminants of any of the nine CDFs in the Great Lakes. The Alpena Fishery Resources Office (FRO) worked with other federal and university partners to document and gather baseline information on the seasonal fish community present in the near shore waters of Grassy Island. The fishery resources of the Refuge have not been documented since 1980 and the Shiawassee NWR CCP addresses the need to document the fishery resources of the Refuge prior to any potential loss of species due to invasion by exotic species or other factors. State threatened lake sturgeon are present in the Detroit River and may be using the area for spawning, nursery, or feeding areas. The round goby, an exotic aquatic nuisance species currently found in the Detroit River, and other exotic species may also be using the area, as the river is a route of passage for the shipping industry.

Four shoreline locations surrounding Grassy Island were sampled seasonally (May, July, and September) with trap nets (1 night set per location), nighttime electro-fishing (15 minutes per location), and beach seining gear to gather information on the fish community. Baseline biological

information was recorded on a total of 1,628 fish from 30 species and 14 families. State threatened lake sturgeon were not captured; nor were other state or federally threatened/endangered species. Round goby was the only exotic species captured and was found in low numbers. Emerald shiner and rock bass were the most abundant species captured overall. Sportfish species included northern pike, walleye, yellow perch, smallmouth and largemouth bass, white bass, white perch, bluegill, and pumpkinseed sunfish. The greatest number of fish and species were captured during the spring sampling in May.

The Service goal for the Wyandotte NWR is to remediate the contaminants on Grassy Island, restore the historically extensive wild celery beds, restore off-shore sturgeon spawning habitat, and acquire and/or protect other existing islands and marshes in the Lower Detroit River.

CREDITS

Personnel responsible for narrative sections are as follows:

James D. Dastyck - *Climate Data, Section 3, and Section 4*

Edward P. De Vries - *Cover page, Table of Contents, Introduction, Highlights, Sections 1, 4e, 5a, 6, 8, Wilderness and Special Areas, Credits, Appendix, Information Packet, editing, layout, and narrative coordination*

Rebecca S. Goche - *Section 7, editing, and layout*

James Hazelman - *Section 2, Section 5c*

Rick McAvinchey - *Section 1a, Section 3g*

David J. Peters - *Section 1*

Public Use is restricted to the nature trails.

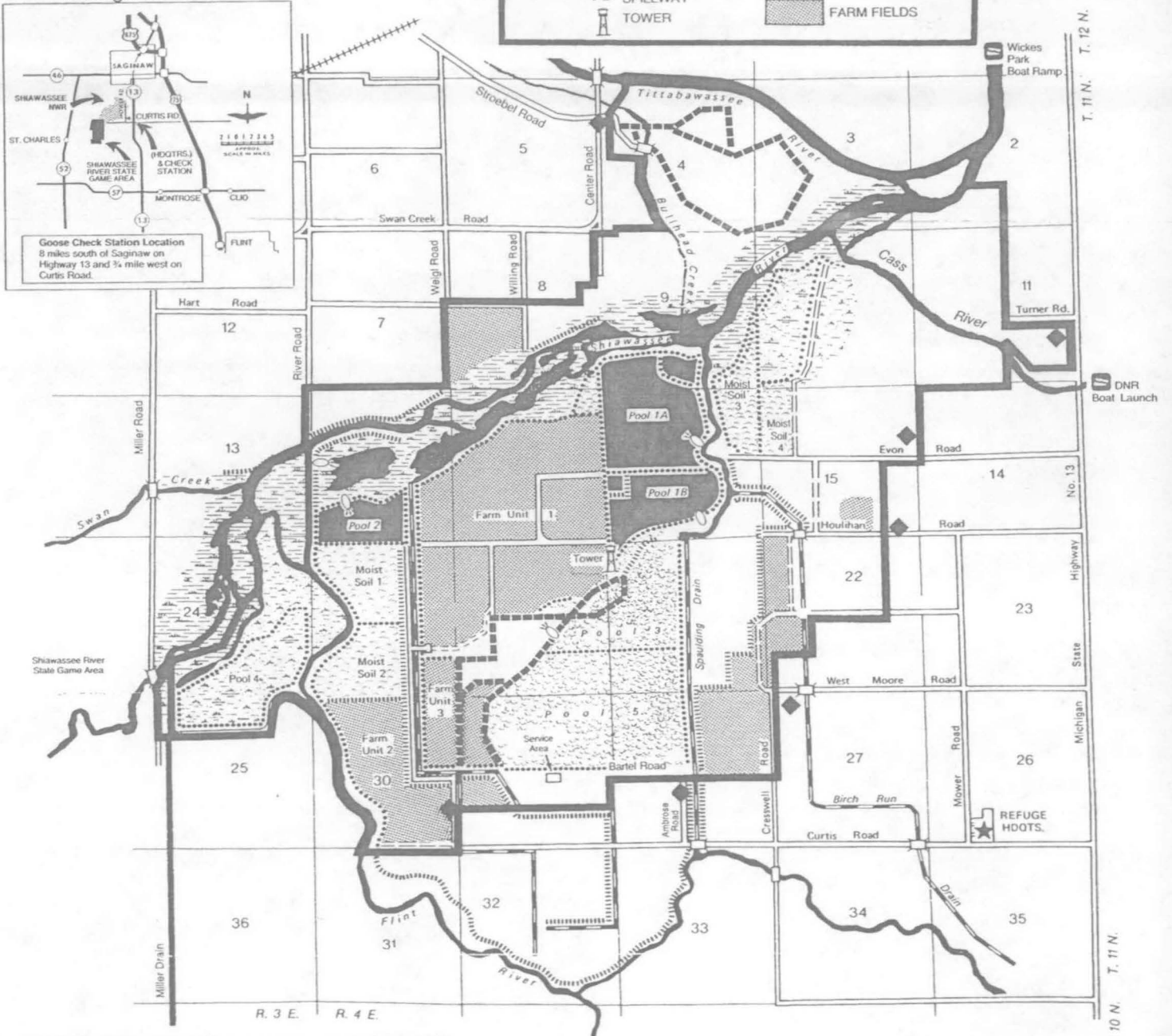
SHIAWASSEE NATIONAL WILDLIFE REFUGE

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

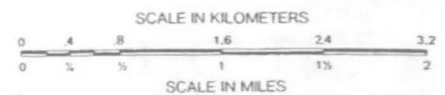
LEGEND

	REFUGE BOUNDARY		HUNTER ACCESS SITE
	DIKE WITH ROAD		MARSH
	DIKE		WATER
	DITCH		MOIST SOIL
	PATROL ROAD		GREEN TREE AND FLOOD RESERVOIR
	TRAIL		FARM FIELDS
	ROAD		
	SPILLWAY		
	TOWER		

Refuge Location



SHIAWASSEE NATIONAL WILDLIFE REFUGE
6975 MOWER ROAD, RR #1
SAGINAW, MICHIGAN 48601
PHONE: (517-777-5930)





MAP 0813
DFV - Rev. 6/93

Hunter Monies Made This Area Possible **DNR**

Refuge Reporter

Happenings at Shiawassee NWR & Green Point ELC

Just Add Water!

by Ed DeVries, *Assistant Refuge Manager*

The improvements to the Pool 2 dikes have been completed, which means that the dikes have been re-sloped and rip rap fortification has been placed on the slopes. This protection is important as it keeps the dikes from eroding or breaching during high water events which has happened nearly annually ever since the flood of 1986. Up until 1986, Pool 2 was a waterfowl magnet during the spring and fall migrations. It was an especially noisy place in the fall as thousands of well-concealed but easily-heard mallards announced their presence with an unbroken chorus of raucous quacks, mingled with the low chuckles of feeding calls. Pool 2 in those days had a good interspersed of cattails and open water, which is attractive habitat for marsh and wading birds as well as ducks, coots, and other water birds. The high water in 1986 and in years thereafter, along with ice damage, eroded this dike and damaged the water control structures. In the years since, there have been constantly changing water levels in Pool 2, with no way to

control or stabilize those levels. With fluctuating water levels and no water control; most of the muskrat population left this marsh for more stable wetland habitat.

The muskrats are an important part of this mix from a management perspective because they eat cattail and thereby create openings in the marsh. Typically, with a higher muskrat population, there will be more of a hemi-marsh condition, which is desirable, as ideally we would like a 50:50 mix of emergent vegetation and open water. The trade-off for encouraging the presence of muskrats is that they also like to burrow into dikes, creating a Swiss cheese effect, so their numbers need to be controlled when their populations get too high. Until 1986, Pool 2 had a large population of muskrats which contributed to the habitat maintenance of this marsh, but also required control through trapping. During the early 1980's, it was not unusual for refuge trappers to take over 2,000 muskrats each season from Pool 2, with 2,200 taken one year during this period. It was also a profitable time for trappers as muskrat pelts were selling for anywhere from \$6.00 to over \$11.00 a piece, depending on the size of the animal and where it was sold.

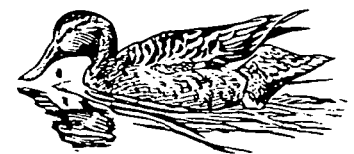
The Pool 2 dike work was completed in September, and now we just need

water to encourage an influx of muskrats to migrate into the unit, begin their eat-out activity; and overwinter in the pool. The added water will come through a combination of precipitation and the gravity-fed inflow of water from the Shiawassee River through the water control structure or spillway.

The completion of this Pool 2 dike project was accomplished through several partnerships with the U.S. Fish & Wildlife Service. With funding from the Shiawassee Flats Citizens & Hunters Association, Ducks Unlimited, Inc., and mitigation work performed through a legal settlement, materials were purchased and labor and equipment were supplied to repair the Pool 2 dike. Now that it's finished, it won't be long before Pool 2 will once again be the jewel of a wetland it once was. With proper water management, the habitat will soon improve to be a natural attractant for wetland-loving birds and other wildlife, and we will be able to hear as well as see their response to the great work that was accomplished in this unit.

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Long-Tailed Weasel: Purest of the Carnivores

by Janie Dinsmore, *Refuge Volunteer*

The most widespread carnivore in the Western hemisphere resides at Shiawassee NWR. Long-tailed weasels are perfectly suited in every feature of their body and manner to live entirely as hunters. They have no apparent shoulders or hips, with long necks, long slender bodies and long tails often equal to their head and body length, and short legs.

They appear as a furry tube ending in a bottlebrush tail. Their heads are flat-like and pointed, exactly fitting for poking into every possible small hole.

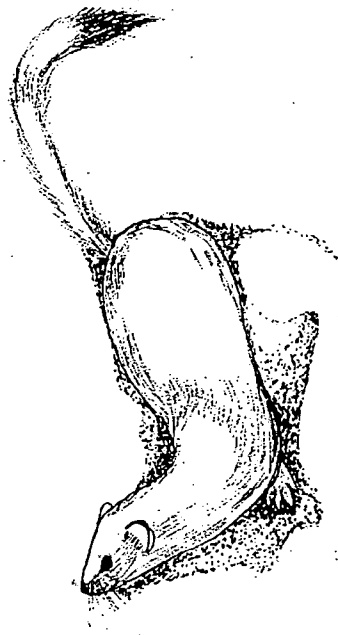
This small mammal measures 11-22 inches in total length, and weighs 3-12 ounces. The male is double the weight of the female. The fur is brown on top and white or yellow below. The tail is brown with a black tip. The feet are brownish. During the winter the fur turns entirely white, except for the black tip of their tail. The molt is determined by daylight length. The color change is gradual, with splotches of white visible during transition.

The long-tailed weasel is the largest of three weasels found in Michigan, and is widely distributed throughout the state, except along the north shores of Lake Superior. Its varied habitat includes forests, brush, and open areas including farmland. It prefers to be near water. Dens are usually abandoned underground burrows of other mammals, including chipmunks and moles, which are also a source of food. Nests are made primarily from the hair from the weasel's prey.

Weasels were once thought to be nocturnal. However, they are usually diurnal since their main sources of

food, mice and voles, are active during the day. They will take food their size or larger, usually only when smaller prey is scarce. They hunt by sight, sound or odor – in zig zag patterns – moving from burrow to burrow. Winter tracks of weasels indicate their activities as they enter an existing rodent hole in pursuit of prey, drag captured prey, tunnel in

usually the villains in natural folklore. They have been condemned for the occasional raid on poultry. In actuality, their rodent control benefits farmers more than the damage done to poultry. In their natural surroundings, such as Shiawassee NWR, these "hair-trigger mousetraps with teeth" are among the most admirable of hunters.



the snow, climb up a tree, and even take to water. Prey is stalked and caught by a quick rush. These solitary hunters are quick, agile, alert, and persistent in defending their stockpile of food (usually found under a log), or guarding their young. Predators of the weasel include hawks, owls, cats, foxes, and snakes.

Throughout literature weasels have been referred to as thieves, and are

December Trail Closures

The managed deer hunt continues on the Refuge through the end of December. These hunts are necessary to keep the deer population at a level that is compatible with the Refuge's purpose of protecting habitat for migratory birds. Hiking trails are closed the following dates. We appreciate your observance of these closures and we apologize for any inconvenience this may cause you.

Stroebel Rd./Woodland Trail
December 10-15

Curtis Rd./Ferguson Bayou Trail
December 3-7
December 10-15
December 22-31



Winter Bird Feeding

by Becky Goche, Green Point Director

Winter is a difficult time for birds. Days are often windy and cold and the nights are long and even colder. The berry-laden plants of summer and fall have withered and been eaten, and most insects are dead or dormant. Birds may have a hard time finding enough food during the short winter days to fuel their internal furnaces. Setting up a backyard bird feeder makes their lives a little easier and ours more enjoyable!

During the fall and winter, nonmigratory songbirds must shift their diets from insects and spiders to fruits and seeds to survive. This is the time of year when bird-feeding enthusiasts should put out the welcome mat and set the table for our feathered friends. You may find the task of selecting the best foods a bit confusing. One key to attracting different bird species is to provide a variety of foods, but that doesn't mean you need to buy one of everything in the bird feeding section of your favorite store.

Different birds prefer different types of seeds, but the seeds that attract the greatest number of species are black-oil sunflower. These seeds are nutritious and high in fat, and their small size and thin shells make them easy for small birds to handle and crack. You can also attract insect-eating birds such as chickadees, woodpeckers, and nuthatches to your yard by offering peanut butter or suet

(beef fat). Birds that live in our cold climate especially appreciate these high-energy foods.

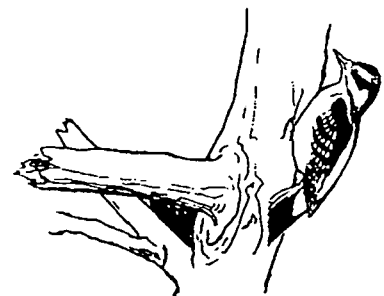
Birds such as robins, thrushes, bluebirds, and waxwings don't usually show up at feeders because seeds are not a major part of their diet. You can still tempt them by offering fruit. Try dried fruits such as raisins or currants which have been softened by soaking them in warm water or sliced fresh fruit, like an apple.

Unfrozen water can be as hard to find as food in the winter. Birds need water to drink and to keep their feathers clean and fluffy to provide insulation to keep warm. A dependable supply of fresh water will even attract birds to your yard that ordinarily wouldn't come to your feeders. Be sure to keep the water clean!

Place your feeder in an area free of disturbances where it is easy to see and convenient to fill. Your feeder should be close (about 10 feet) to natural shelters such as trees or shrubs. Clean your feeders often by scrubbing them with soap and water and then dipping them in 1:9 bleach solution. Rinse well and let them dry before you refill them. Periodically rake up the birdseed hulls beneath your feeders. Decomposing hulls may house bacteria that could spread disease to the birds and may kill your lawn or flowers.

If you have just set up a new feeder, it may take a while for birds to find it. If you are not seeing any birds within a few days, try scattering some seeds on the ground around the feeder to make your site more visible. You may also want to check the location. Your feeder may be too exposed or there may not be enough trees and shrubs nearby.

As a hobby, birding currently stands second only to gardening as America's favorite pastime. A 1997 report estimates that 43 percent of U.S. households or about 65 million people provide food for wild birds. In the U.S. we spend at least 2.5 billion dollars annually on bird-related products, including birdseed and bird feeders. If you want to learn more about feeding birds, contact an area bird specialty store, consult one of the many books on the subject, or visit us at Green Point. Happy bird feeding!



**Shiawassee
National Wildlife Refuge**
Headquarters: (517) 777-5930
6975 Mower Road
Saginaw, MI 48601

**Green Point Environmental
Learning Center**
(517) 759-1669
3010 Maple Street
Saginaw, MI 48602

Both are open Monday-Friday
7:30 a.m. - 4:00 p.m.

Fish & Wildlife Service web site:
<http://www.fws.gov/>

Refuge Manager:
Doug Spencer
Volunteer Coordinator:
Becky Goche
Green Point Director:
Becky Goche

Refuge Reporter
Published quarterly by the
Friends of Shiawassee National
Wildlife Refuge

Editing and Layout:
Becky Goche & Marc Beaudin

Calendar of Events

First Wednesday Series
Saginaw's Hidden Refuge
December 1, 7 - 8:30 pm
Green Point ELC
Come and discover the wonders
of Shiawassee NWR. See insert
for details.

Christmas Holiday
December 24
Offices are closed.

New Year's Day Holiday
December 31
Offices are closed.

First Wednesday Series
Polar Bear Patrol (tentative)
January 5, 7 - 8:30 pm
Green Point ELC
Myles Willard will share his
adventure. See insert for details.

M. L. King, Jr. Holiday
January 17
Offices are closed.

First Wednesday Series
**Diminutive Beasts: Shiawassee's
Small Mammals**
February 2, 7 - 8:30 pm
Green Point ELC
Come learn about some of the
smaller mammals that live in the
refuge. See insert for details.

President's Day Holiday
February 21
Offices are closed.

U.S. Fish and Wildlife Service
Green Point ELC
3010 Maple Street
Saginaw, MI 48602

Refuge Reporter

Happenings at Shiawassee National Wildlife Refuge & Green Point Environmental Learning Center

Canada Geese of Shiawassee NWR

by Ed DeVries, Assistant Refuge Manager

This is a multi-part article which discusses Canada Goose natural history, as well as the history of the establishment of the resident Canada goose flock at Shiawassee National Wildlife Refuge.

Since the establishment of the Shiawassee NWR in 1953, Canada goose numbers on the Refuge have risen dramatically. What once were flocks of a few thousand migrants which remained on the Refuge for only a short time in the 1950's, have since grown to flocks of up to 25,000 birds which are enjoyed seasonally by many wildlife observers. Included in this number are the 10,000 or so resident geese which spend much of their winter in the Saginaw Bay area including "The Flats."

Michigan has three major populations of Canada geese which migrate through or reside in this state. The Mississippi Valley Population nests in the coastal areas of Hudson Bay in Ontario, Canada, and migrates to southern Illinois and Kentucky. Most of these birds stop to rest and feed at Horicon NWR in east-central Wisconsin, but portions of the flock use the western portion of Michigan's lower peninsula for their flight path. These birds use areas such as the Allegan State Game Area as they fly along the coastal area of eastern Lake Michigan.

The second Canada goose population in Michigan is the Southern James Bay (SJB) Population. This is the group

that migrates through Shiawassee NWR, and nests along Ontario's James Bay, including Akimiski Island. This population was formerly known as the Tennessee Valley Population. The SJB population winters not only in Tennessee, but also in northern Alabama, western Pennsylvania, the Carolinas, Ohio, and southern Michigan. These birds can be identified on the Refuge in the spring and fall by the bright orange neck collars that some of them wear. Biologists use different colored neck collars with letters and numbers on them to identify where an individual goose was banded and what population it belongs to, without having to recapture it.

The third Canada goose population in Michigan is the most well-known group, the Giant Canada goose. This is the resident species of geese which is seen here year round. These are the largest geese in Michigan and they can be found in every county. They weigh 10-14 pounds with some records weighing in at 16-25 pounds. That's a lot of gander! This species was absent from Michigan beginning in the mid-1800's, until the 1920's, when W. K. Kellogg introduced a flock into a Calhoun County lake. H.M. Wallace started a flock in Livingston County about the same time, and from these geese Seney NWR started their resident flock in 1936. For some reason, during the early 1950's, biologists thought the Giant Canada goose was extinct. In January, 1962, an Illinois wildlife biologist "rediscovered" them in a city park in Rochester, MN. From that point they were "rediscovered" in various places, living in small flocks on farm ponds, in city parks, and at state game farms all over the country. In fact, biologists determined there were 54,600 present in North America. Some state game agencies had been raising the Giant Canada geese since the 1950's. The Shiawassee NWR resident population got its start from the Michigan Conservation Department's Mason State Game Farm in Ingham County. In the next newsletter, I will discuss the establishment of Shiawassee NWR's flock, including all the challenges, problems, and successes that went with it.

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Nature Notes: Introducing the World of Wild Edibles

by Marc Beaudin, *Park Ranger*

Editor's Note: Though there may still be snow on the ground, it's a good time to start thinking about spring and all the wonderful plants that come with it!

There are over 80,000 kinds of edible plants in the world, but we rely on a mere 20 for 90% of our food. It's not that these 20 have been chosen because they are the most nutritious, tasty, or have the best environmental impact upon their ecosystems. Rather, they have been chosen, in most cases, because they are compatible with modern processes of industrial agriculture. They respond well to chemical fertilizers and biocides; can be planted and harvested mechanically; and can be shipped great distances, stored in unnatural conditions, and are easily marketed.

Food production that's responsive to the needs of industry rather than people results in an unfortunate situation for both people and plants. That's too bad because there's a world of good eating right outside our doors. Rather than enjoy this healthy, diverse and free feast of edibles, we've been taught to call them "weeds" and spend dollars and hours poisoning, pulling, condemning and cursing them.

A walk around a typical backyard (at least one that isn't regularly dosed with chemicals in an attempt to grow a weed-free, "perfect" lawn) usually yields a variety of edibles including dandelion, plantain, catnip, black medick, clover, purslane, wood sorrel, sheep sorrel, and thistle. Cross the road to that field or vacant lot and you're likely to find bergamot, dock, spearmint, chicory, raspberry, grape, milkweed, lamb's quarter, wild carrot (Queen Anne's lace), and dozens more. If the trees in your yard are pine, oak, maple, walnut, hickory, birch, aspen, cottonwood, beech, or willow, you can add them to your grocery list as well.

Most of these wild foods are richer in nutrition than their cultivated kin. For example, curled dock has more vitamin C than an orange and more vitamin A than a carrot. With a little creativity, they can become part of tasty dishes that will rival any gourmet. And with a few exceptions (dandelion and plantain, for example), they are native species better suited to fitting in with the ecosystem in which they grow - maintaining healthy soil, feeding wildlife, growing in balance with neighboring plants, and withstanding local health risks.

To enjoy wild edible plants, one should exercise a degree of

caution. There are a number of good books on the subject, but no book is infallible. Always find the plant in two or three books to make certain it's not mistakenly listed in the one you happen to be using. Read carefully, paying attention to which part of the plant is to be used, when it should be gathered and how it should be prepared. Finally, be absolutely positive in your identification: Several edibles have poisonous look-a-likes.

The best way to begin is to select a few common and distinctive plants, get to know them well, and sample them in a variety of dishes. Then as your study progresses, add another plant here and there - always checking with reliable guidebooks or plant experts, always sampling a small amount before sitting down to a full meal.

With these few precautions in mind, a spirit of adventure, and a hearty appetite; a whole new world of savory health and communion with nature will open wide. Bon appétit!

Bicycles and Binoculars

by Becky Goche, *Green Point Director*

The Shiawassee NWR will be hosting two events in celebration of International Migratory Bird Day (IMBD). On May 3, Park Ranger Marc Beaudin will be presenting "Migration Marvels" at 7:00 p.m. at the Green Point ELC as a part of the First Wednesday Discovery Series. He will discuss the amazing feats that birds accomplish while migrating.

Bring your bicycles and grab your binoculars for a guided bicycle tour of the interior portion of the Refuge on Saturday, May 13, from 1:00 p.m. to 4:00 p.m. Meet at the parking lot at the west end of Curtis Road. Refuge staff will guide you along a seven-mile route where you will see a variety of birds and other wildlife. Local bird experts will be at different stops along the route to help you identify birds and to explain some of the bird studies that are taking place on the Refuge.

Both of these programs are free. Come celebrate IMBD with us as you enjoy the sights and sounds of the Refuge!

International Migratory Bird Day

Bicycles



&



Binoculars

- Bring your bikes and binoculars for a guided bicycle tour into the heart of the Shiawassee National Wildlife Refuge. Meet at the parking lot at the west end of Curtis Road (off M-13, south of Saginaw). Refuge staff will guide you along a 7-mile route to see birds and other wildlife. Local bird experts will be stationed along the way to help with identification and explain some of the bird studies currently being done on the refuge. Tour leaves the parking lot at 1:00 pm and returns by 4:00.

Saturday, May 13, 2000



Shiawassee National Wildlife Refuge

Call 517-759-1669 for more information.

(TTY users call, 800-649-3777)

First Wednesday Series



March 1, 2000

Animal Tracks

Learn how to find and identify wild animal tracks by gait, paw characteristics, and track measurements. Hone your skills indoors so you'll be ready for your next excursion outdoors.

April 5, 2000

Owls and Others Night Hike

Explore the sounds and sights of the world of nocturnal animals as evening turns to night and some animals scurry to find a safe place to sleep, while most are waking up, hungry and ready to hunt ... or be hunted! Owl calling will be included. Dress warm.

May 3, 2000

Migration Marvels

Kick off your International Migratory Bird Day celebration a bit early by learning about the amazing feats of migratory birds, from the pole-to-pole journey of the arctic tern to the non-stop flight, across the Gulf of Mexico, of the tiny hummingbird.

All programs are free and begin at 7 pm

Green Point Environmental Learning Center

3010 Maple Street - Saginaw, MI 48602
(517) 759-1669 (TTY users call, 800-649-3777)

Great Lakes Discovery Center Moves Forward

by Becky Goche, *Green Point Director*

The Great Lakes Discovery Center is moving forward. Congress approved and budgeted the money to purchase the 116-acre "Warner Tract" in Bridgeport Township. The land deal should be closed by Spring 2000. The Refuge has signed a 99-year lease agreement with Bridgeport Township for another 300-acres adjacent to the Warner Tract. This land is located along the Cass River near the Cracker Barrel Restaurant in Bridgeport. The area was an orchard and you can still see several apple trees along the west side of I-75 as you drive by.

A committee of about 12 people, representing a variety of agencies and community organizations, has been discussing the program development plan and conceptual plan for the facility. This group came up with the new name for the center – "The Great Lakes Discovery Center." They have also developed the theme – "The Great Lakes Basin Ecosystem and the Human Relationship to It." All

future programs, exhibits, and displays will be based upon this theme.

The Mattison Company of Bay City, MI, is donating its engineering and architectural services to provide guidance in the planning stages of the building and surrounding area. Mark and Emily Mattison have experience with designing other visitor centers and they recently toured other Refuges around the country to get ideas specifically for the Great Lakes Discovery Center. They have developed a conceptual drawing of the building.

The Friends of Shiawassee NWR will be instrumental in raising the funds to construct this Center. You can find out more about how you can get involved in his project by contacting the Refuge or the Friends group.

Friends Corner: Membership Drive Underway

Editor's Note: The Friends of the Shiawassee NWR, since their beginning in December, 1998, have been helping the Refuge out with several projects. Their biggest project they are now involved in is to help raise funds to construct the "Great Lakes Discovery Center" building. The Friends recently agreed to cover the publishing costs of this quarterly newsletter. We appreciate their help.

The Friends of Shiawassee NWR need your help. From now until April 20, 2000, the Friends will be conducting a membership drive. They want to increase their numbers to get a wider variety of backgrounds and interests, new-found energy, and fresh ideas.

All new members (aged 18 years and older) will have their names placed in a drawing for a chance at a free trip. This family trip will be for three days and two nights at select locations throughout the United States. The drawing for this trip will take place at the April 20th meeting held at Green Point ELC at 7:00 p.m. You are encouraged to fill out the adjacent form and send in or visit the Refuge for an application. For additional information, contact Ed Becker, Membership Chairperson at (517) 790-3178.

Yes! I want to be a Friend!

Name _____

Address _____

City _____

State _____ Zip _____

Telephone _____

_____ Regular Membership (\$10)

_____ Supporting Membership (\$50)**

Please make your checks out to "Friends of Shiawassee NWR". Return with this form to:

Friends of Shiawassee NWR
PO Box 20129
Saginaw, MI 48602

**Your choice of a T-shirt/Sweatshirt included.

**Shiawassee
National Wildlife Refuge**
Headquarters: (517) 777-5930
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Saginaw, MI 48601

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Green Point Director:
Becky Goche

Refuge Reporter
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Wildlife Refuge

Editing and Layout:
Becky Goche & Marc Beaudin

Calendar of Events

First Wednesday Series

Animal Tracks
March 1, 7 - 8:30 pm
Green Point ELC
Hone your skills at identifying
animal tracks. See insert for details.

Friends of Shiawassee Meeting
March 16, 7 pm
Green Point ELC
Doug Spencer, Refuge Manager will
speak on Michigan Islands NWR.

First Wednesday Series

Owls and Others Night Hike
April 5, 7 - 8:30 pm
Green Point ELC
Explore the world of animals at
night. See insert for details.

Friends of Shiawassee Meeting
April 20, 7 pm
Green Point ELC

First Wednesday Series

Migration Marvels
May 3, 7 - 8:30 pm
Green Point ELC
Learn about the amazing feat of
bird migration. See insert for
details.

IMBD Celebration - Bicycles and Binoculars Tour

May 13, 1 - 4 pm
Curtis Road Parking Lot
Take a guided bicycle tour of the
Refuge to learn more about the
birds that live here. See insert for
details.

Friends of Shiawassee Meeting
May 18, 7 pm
Green Point ELC

Memorial Day Holiday
May 29
Offices are closed.

U.S. Fish and Wildlife Service
Green Point ELC
3010 Maple Street
Saginaw, MI 48602

Refuge Reporter

Happenings at Shiawassee National Wildlife Refuge & Green Point Environmental Learning Center

Canada Geese of Shiawassee NWR

by Ed DeVries, Assistant Refuge Manager

This is the second in a series of articles which discuss a bit of Canada goose natural history, as well as the history of the establishment of the resident Canada goose flock at Shiawassee National Wildlife Refuge.

Ever since the establishment of the Shiawassee NWR in 1953, one of the main objectives of early refuge managers was to develop a large concentration of feeding and resting Canada geese in "the Flats." During those early years Canada goose numbers peaked at several thousand geese in the spring and several hundred in the fall. Much of the Refuge at that time was open to fall waterfowl hunting. Land which was being purchased for the refuge was acquired in bits and pieces, and there weren't any closed areas which contained permanent water. These factors hindered the refuge objective of concentrating geese in the Flats area. In fact, because of the open fall hunting, geese didn't stay long anywhere in the vicinity of the Refuge, usually leaving shortly after opening day of the waterfowl season.

Although the Refuge was not planned to be a nesting refuge, the Michigan Department of Conservation (now the DNR) offered to provide free Canada geese to the Refuge if attempts would be made to establish a resident nesting flock. In October 1958, M. Pollack and H. Miller of the Michigan Department of Conservation Game Division met with refuge personnel to discuss the captive goose plans. The experiment was to begin in spring, 1959 and continue

for five years until 500 geese had been released.

On March 19, 1959 the historic venture began. A flock of 160 two-year-old, wing-clipped Canada geese from the Mason State Game Farm in Ingham County were released into a 20 acre fenced pen in the Trinklein Unit (Farm Unit 1) of the Refuge. These geese were actually descendants of the original Seney National Wildlife Refuge flock. The plan was to hold these wing-clipped geese in the Trinklein pen until March, 1960, and then release them into Pools 1A, 1B, and surrounding marshes in hopes they would nest. Six days later, an additional group of 40, three-year-old birds were released into Pools 1A and 1B. These unconfined geese spread throughout the Refuge.

For the next five years the resident goose experiment was faced with an annual challenge which many "Flats" residents, both human and nonhuman are familiar with - flooding. One month after the first geese were introduced, a severe flood washed out the Trinklein goose pen and all the geese escaped. Refuge personnel recaptured 131 geese which were found scattered over a 15 mile area surrounding the Refuge. Very little nesting occurred as a result of the flood; however, two goose broods were seen on the west side of the Refuge. Although this was a rough start for the resident goose program, these geese were foundational forbears of the resident and migrant flocks which came in succeeding years. I'll discuss how their numbers grew in the next newsletter.

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Nature Notes: Getting to Know the Grey Catbird

by Marc Beaudin, *Park Ranger*

From my window at Green Point, I can look out to our cattail marsh surrounded by willow trees, dogwood bushes and wild grape vines. It's a rainy afternoon and things are pretty quiet around here – with one exception. Sitting very conspicuously on a tree branch is a little bird who's singing his heart out.

Without looking, I wouldn't think it was just one bird I was hearing, because in his song I hear a blue jay, a robin, and other songbirds. However, one glance at his grey body, darker head, and the way he flips his tail so vehemently, tells me who it is: The Catbird.

This is my first catbird sighting for the year. He's just arrived from his winter home, somewhere from the southern U.S. down to Panama and the West Indies. Even though the males and females look identical, I can assume this one is male for two reasons: the males arrive about a week earlier than the females, and, while the males sing frequently while staking out their territory, the females are relatively silent.

When she does arrive, he will become much more quiet himself and begin to chase her around the territory. If she decides to stay, they may both work on preliminary partial nests, but the final nest is built entirely by her. The eggs are then laid, one a day, as soon as the nest is complete. During incubation, the male will either bring food to the female and announce his arrival by flicking his wings, or will guard the nest while the female leaves to feed. After the eggs hatch, both birds will bring food for the babies. Once the young birds have fledged, the male assumes a greater role in feeding them while the female will begin work on a new nest to use for a second brood.

Catbirds are in the *Mimidae* family, named for their ability to mimic other birds. This makes it difficult to describe exactly their song. But the easiest way to tell that there's a catbird in your area is by its call, which is also how this bird got its name: If you hear a cat meowing in some shrubs, but you can't find a cat, chances are it's a catbird. This wheezy meow is given between competing birds or in the presence of a supposed predator; in this case, probably you!

Just Another "Normal" Day at the Refuge Office

by Shirley Adams, *Administrative Technician*

Editor's Note: Shirley Adams came to the Refuge in 1997. She has worked for the U.S. Geological Survey, Minerals Management Service, Corps of Engineers, and the National Park Service in Nebraska, Louisiana, and Michigan.

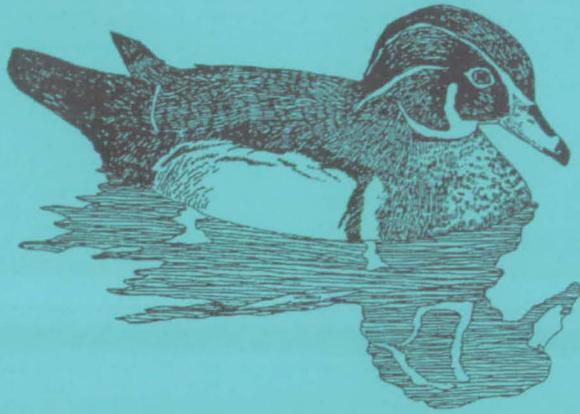
When I came to work at the Refuge three years ago, little did I know the things I would see. Each day is a new adventure and I never know what's going to happen or what a visitor will bring in. I have seen all sorts of animals and their parts! Most people bring these in for our biologist to identify, age, or whatever. I can laugh about most of these experiences now, but one in particular causes a tingle in my spine.

It was just another normal day at work until a visitor brought in a snake he had found. He had placed the snake in a clear, lidded container and brought it in to be identified. The biologist and the rest of the staff were out of the office so he left the snake on the counter for someone to look at later. Now I tried to carry on business as usual, but you must realize that I am afraid of snakes (thanks to my brothers' pranks when I was a child). As I was eating lunch I noticed that the snake had crawled up towards the lid and began to push it off. I just knew the snake was going to get out! I didn't know who else to call, so I called my husband, Dale, and told him to come out to the refuge quick. From the urgency in my voice he assumed that I was in real danger. When Dale arrived, he rushed into my office, not knowing what he would find. As soon as he entered I yelled, "It's the snake! Please get it out of here!" I gave him several rubber bands so that he could securely attach the lid to the container and place it in another room.

Dale enjoys sharing this story with our friends, much to my embarrassment. I know that snakes are beneficial to have around for many reasons, but I still get a chill when I'm too close to one.



First Wednesday Series



June 7, 2000

Water Gardening: Wet, Wild and Wonderful

Peggy Shaver, an Advanced Master Gardener, will share her experiences and love of small garden "pondering." A slide program demonstrates the development of two ponds and assorted styles of water features. She will include information on site location, design aspects, types of water plants and how to develop an ecologically balanced pond.

Please Note:

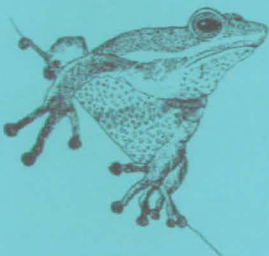
There will be no First Wednesday programs in the months of July or August.
Join us again in September!



The program is free and begins at 7 pm

Green Point Environmental Learning Center

3010 Maple Street - Saginaw, MI 48602
(517) 759-1669 (TTY users call, 800-649-3777)



Summer Discovery Camp for Kids



Saturday, June 17, 2000

10:00 a.m. to 3:00 p.m.

For 5 to 12 year olds

FREE

Green Point Environmental Learning Center
3010 Maple Street, Saginaw

Join us this year as we explore habitats (animals' homes) around Green Point. Build a bird nesting box to take with you. Learn about endangered species and the habitats they need. Play fun games and make new friends!

Children must be registered by June 15. Hurry, space is limited. Call (517)759-1669 to register or for more information.



This program sponsored by:
Shiawassee National Wildlife Refuge
Saginaw Valley Audubon Society



Volunteers and Friends Appreciation Picnic Set for June 15

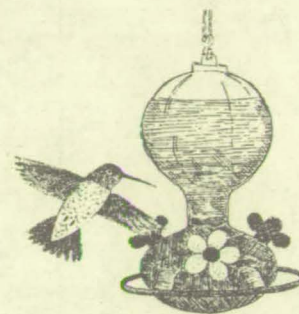
by **Becky Goche**, *Green Point Director*

The Shiawassee NWR will be hosting a "Volunteers and Friends Appreciation Potluck Picnic" on Thursday, June 15, 2000, from 5:00 p.m. to 9:00 p.m. The picnic will be held at the Refuge Headquarters on the corner of Curtis and Mower Roads off of M-13. All you need to bring is a dish to share with others and a lawn chair. The Refuge will furnish the meat, beverages, and table service.

The picnic-style, potluck dinner will be served beginning at 5:00 p.m. An awards and recognition ceremony will be held at 6:30 p.m. Afterwards you can take a tour of the Refuge, take part in a project, or just visit with others. The Friends group is planning on doing some landscaping and clean-up in the "Backyard Habitat" area at the Refuge headquarters following the picnic.

This picnic is our way of saying thank you to all of our volunteers and Friends group members who have helped

us out with various projects on or for the Refuge this past year. You will be receiving an invitation in the mail. So that we can get an accurate count of how many will be attending, please RSVP to Becky Goche by calling (517) 759-1669 or e-mail at Becky_Goche@fws.gov. We look forward to seeing you on June 15!



Friends Corner: Great Lakes Discovery Center Land Dedication

The Friends have been staying busy with the Great Lakes Discovery Center. The property purchase for the future site of the Center was closed on April 19. On April 24, the Friends group helped host the Land Dedication ceremony. Over 50 people attended this event featuring speakers and tours of the area. U.S. Congressman Dave Camp, Ed Becker of our Friends group, Paul Wendler of the Anderson Foundation, Barry Dickston of the Saginaw County Convention and Visitors Bureau, Bernie Spencer of Bridgeport Township, and Refuge Manager Doug Spencer addressed those in attendance. To see drawings of the proposed Center or to get more information, visit www.mattison.com and click on the Shiawassee icon.

Upcoming Friends Events

June 15 - Friends and Volunteers Potluck Picnic from 5:00 p.m. to 9:00p p.m. at the Shiawassee NWR headquarters.

July 20 - Work at the Refuge.

August 17 - Work at the Refuge.

September 10 - Refuge Bike-A-Thon.

Come out and join us for all of these events! If you want to become a member, fill out and mail in the application.

Yes! I want to be a Friend!

Name _____

Address _____

City _____

State _____ Zip _____

Telephone _____

_____ Regular Membership (\$10)

_____ Supporting Membership (\$50)**

Please make your checks out to "Friends of Shiawassee NWR". Return with this form to:

Friends of Shiawassee NWR
PO Box 20129
Saginaw, MI 48602

**Your choice of a T-shirt/Sweatshirt included.

**Shiawassee
National Wildlife Refuge**
Headquarters: (517) 777-5930
6975 Mower Road
Saginaw, MI 48601

**Green Point Environmental
Learning Center**
(517) 759-1669
3010 Maple Street
Saginaw, MI 48602

Both are open Monday-Friday
7:30 a.m. - 4:00 p.m.

Fish & Wildlife Service web site:
<http://www.fws.gov>

Refuge Manager:
Doug Spencer
Volunteer Coordinator:
Becky Goche
Green Point Director:
Becky Goche

Refuge Reporter
Published quarterly by the
Friends of Shiawassee National
Wildlife Refuge

Editing and Layout:
Becky Goche & Marc Beaudin

Calendar of Events

First Wednesday Series

Water Gardening
June 7, 7 - 8:30 pm
Green Point ELC
Peggy Shaver, Advanced Master
Gardener, shares her experiences
with ponds. See insert for details.

Friends and Volunteers Picnic
June 15, 5-9 pm
Shiawassee NWR Headquarters
Bring a dish to pass and a hearty
appetite. See article inside for more
information.

Free Fishing Fun Day
June 10, 9am - 12 pm
Ojibway Island in Saginaw
For ages 3 to 15. Fishing, food and
fun! See insert for details.

**Summer Discovery Camp for
Kids**
June 17, 10 am - 3 pm
Green Point ELC
Pre-registration required. See insert
for more details.

Independence Day Holiday
July 4
Offices are closed.

Friends of Shiawassee Meeting
July 13, 7 pm
Green Point ELC

Friends of Shiawassee Meeting
August 20, 7 pm
Green Point ELC

***Note: There will be no First
Wednesday Series in July or
August. See you again in
September!**



U.S. Fish and Wildlife Service
Green Point ELC
3010 Maple Street
Saginaw, MI 48602

Refuge Reporter

Happenings at Shiawassee National Wildlife Refuge & Green Point Environmental Learning Center

Canada Geese of Shiawassee NWR

by Ed DeVries, Assistant Refuge Manager

This is the last in a series of articles which have discussed the history of the establishment of the resident Canada goose flock at Shiawassee National Wildlife Refuge.

During the five year experiment (1959-1963) to establish resident Canada geese on the Refuge, staff provided nesting habitat and features to help the population grow. Nesting islands were constructed, nesting tubs were installed in the pools, and strips were mowed through thick cattail to clear travel ways. Free-flying geese used the Trinklein goose pen as a feeding station. Buffer strips of oats were planted around agricultural fields to reduce crop damage. Pool 1B was drained and seeded with millet, barley, and buckwheat. Cattail and willows were plowed and disced which encouraged the growth of smartweed. In 1963, a 66,000-acre area was closed to hunting for three years. This closed area included the Refuge, the Shiawassee State Game Area, and a strip of surrounding private lands. These management techniques and measures all contributed to the establishment and expansion of the resident goose flock.

From 1959 to 1963, the Refuge received 703 geese from the Mason State Game Farm. By 1969, the resident flock totaled 1,000 birds, and about 300 goslings were produced each year. Resident birds were making migratory spring/fall flights, and the Refuge was also attracting more

nonresident migrant geese. From peak numbers of just a few thousand in the spring and several hundred geese in the fall of 1959, goose numbers grew over the next ten years to peaks of 30,000 birds in the spring and 24,500 in the fall. Since 1969, the numbers have averaged 25,000 geese annually during the peak spring and fall migration periods.

The normal return date for spring migrants was around the last week of February to the first week in March. However, in 1983 a flock of 3,000 Canada geese overwintered on the Refuge for the first time. It was thought the unusually warm winter held the geese. The following year geese did not leave the Refuge until mid-January. Beginning in 1985, geese overwintered regularly on the Refuge in numbers ranging from a couple thousand to as many as 13,000. Presently, the geese utilize the Refuge throughout the winter. Sometimes when there is a cold snap they disappear for a week or so and then reappear during weather breaks. Some of these birds migrate to the Dow ponds in Midland while others fly downstate to open water.

The Giant Canada goose flock establishment has been a success story, not only for the Shiawassee NWR, but for wildlife agencies throughout the Midwest. This population is now known as the Mississippi Flyway Giant Population, and is growing at a rate of 6 to 14 percent annually. This goose species, which at one time was so low in number it was thought to be extinct (numbering only 54,000 in the early 1950's), has a present population estimate of 1.39 million birds. The Giant Canada's can be seen almost year round at Refuge, but if you want to see these birds in large numbers, the best times to visit are in early to mid-March and in late October to mid-November. To experience 25,000 Canada geese on the Refuge at one time is a sight and sound that is thrilling, unforgettable, and awe-inspiring. For many of us, it's what the Shiawassee National Wildlife Refuge is all about.

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Meet Green Point's Newest Residents

by Cindy Sebold, *Refuge Volunteer*

Green Point has two new residents for visitors to see. Two Mediterranean spur-thighed tortoises arrived at Green Point on July 19. They are so named because of the spurs on either side of their tail. Children who visit Green Point know them as "Morty" and "Myra." The law enforcement office in Ann Arbor had to find a home for these two. The tortoises were seized from an individual trying to smuggle them into the U.S. from Lebanon through the Detroit Metro Airport. U.S. Customs officers found the tortoises wrapped up in socks inside his suitcase.

These tortoises are protected according to Appendix II of the Convention of International Trade in Endangered Species (CITES). They are not endangered, but the trade of these tortoises is controlled because they are in such high demand as pets and other uses.

Carmen Urfer-Parkes, FWS Wildlife Inspector at Detroit Metro Airport, said that these tortoises are probably about five years old. She said that this species of tortoise does not get large like some do and that they are probably about full-grown now. Carmen also stated that these tortoises can live for 80 to 100 years.

Spur-thighed tortoises are herbivores and eat leafy, green vegetables and some fruits. Morty's and Myra's diets are also supplemented with vitamins and minerals bought at a pet store. They are most active on warm, sunny days; hence the placement of their aquarium near windows. On warm days they are taken outside for supervised exercise. Tortoise can move a lot faster than people think!

The tortoises are by no means maintenance free. They require daily feeding and cleaning, but it is worth it. Children and adults alike enjoy watching them. They are a wonderful teaching tool and thousands will learn about their story and the illegal wildlife trade. Next time you are at Green Point, be sure to stop in and meet Morty and Myra.

Refuge Deer Hunting Information

by Becky Goche, *Park Ranger*

Pre-registered Hunts



The Shiawassee NWR is offering 14 pre-registered hunts in the 2000 deer season. There will be four archery hunt periods, six muzzleloader hunt periods and four shotgun hunt periods. The shotgun hunts include two non-ambulatory hunts for participants confined to a wheelchair and two hunts for the general public. Applications for these hunts must be postmarked by September 10, 2000. An information sheet about the hunts and how to apply is available at the Refuge headquarters, Green Point

ELC, Michigan DNR District Offices and licensed dealers. Only those hunters drawn will be notified by letter of their selection.

Open Archery Draw on October 21

On October 21, 2000, the Refuge will be holding an open draw to issue permits for one antlerless only archery deer hunt for the 2000 season. The drawing will be held at the Refuge Headquarters. Registration begins at 12:30 p.m. and the lottery draw starts at 1:30 p.m. Ninety slots for Hunt 201 from October 31, 2000, to November 4, 2000, will be available. This hunt will be in hunt area 4 which covers the entire refuge except a portion surrounding the Woodland Trail off of Stroebel and Center Roads. The closed area includes land west of Bullhead Creek and south of the north boundary of the Refuge to the Shiawassee River and Green Point Island.

Hunters who were successful in obtaining a pre-registered deer hunt for the 2000 season are not eligible for the open draw. Anyone wishing to register for the drawing needs to bring a photo identification, hunting license, and \$10.00 for the refuge user fee.

Nature Notes: Web Masters

by Janie Peters, *Refuge Volunteer*

Near the beginning of August, *Argiope aurantia*, often referred to as the black and yellow garden spider, begins to mature in the northern states. This spider is so named because it often times is found in gardens. It is a member of the Araneidae family, a group of spiders commonly known as the orb weavers. There are around 3,500 species of orb weavers found in all parts of the globe with an estimated 180 of these species found north of Mexico. *Argiope* spiders are found throughout the U.S. In both tropic and temperate regions, but are not common in the Rockies or the Great Basin. *Argiope aurantia* lives on the Refuge among the grass and low bushes in open fields and meadows, often along the borders of ponds and drains.

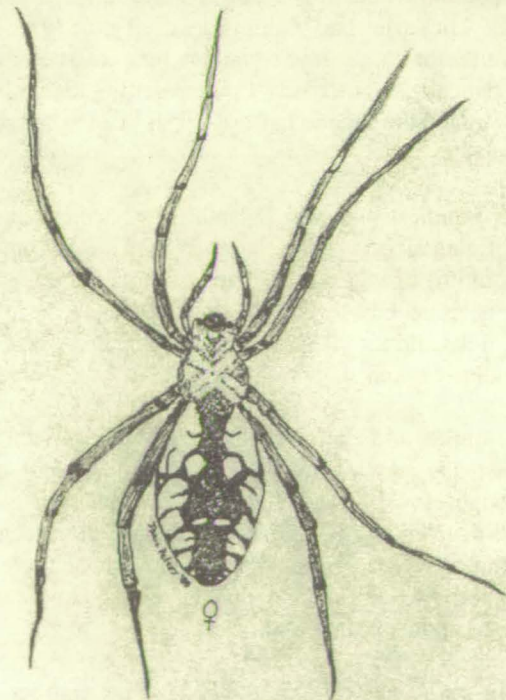
The female has a black and yellow abdomen up to one inch in length. She is often viewed in the center of her web. The male is one quarter the size of the female and has similar, but less distinct markings. He can often be seen in the corner of her web. The female is larger because her abdomen holds her eggs. In the fall, the female produces egg sacs containing several hundred eggs. She is not around when the young are born, because soon after producing the egg sacs the female dies. The gray colored spiderlings have adult markings, but lack any black and yellow coloring.

Orb weavers, such as the argiopes, have poor vision. They locate their prey by feeling the vibrations and tension of the threads in their web. Once they feel their prey, they quickly turn it with six legs, while their hind legs pull silk from their spinneret to wrap it. This process is called "offensive wrapping". The prey is then bitten to immobilize it before the spider carries it to the center of its web or its retreat in the corner. Once bitten and injected with venom, the prey may breathe, but not move. The prey is then eaten at the spider's convenience.

The argiope spider's web can measure up to two feet in diameter. The web usually has noticeable crossed zig-zag bands, which are called stabilimenta. The purpose of this zig-zag pattern is usually for stabilization, but there are other theories, too. The zig-zags may be devices to adjust tension among the silk lines, or they may be warnings for birds to avoid flying into the webs. This is an advantage for both the spider and the bird! These zig-zags may even reflect ultraviolet light, like a flower does, in order to attract insects.

Almost all orb weaving spiders spin a circle-shaped web. The webs are variable and each spider has its own "signature" web. Young spiderlings make perfect orb webs, however as they mature their webs become more specialized and characteristic of the species. Webs need to be capable of preventing the insect from escaping for at least five to ten seconds until the spider arrives. Spider webs are built distinctly for different types of prey. This means location and height above ground, ability to absorb momentum, quality of adhesion, and the density of the silk need to target the key species of prey. *Argiope aurantia* builds a web to target grasshoppers. Spiders may eat old or damaged webs to regain some of the protein lost to web making.

Regardless of human perceptions or phobias about spiders, they are an important factor in our environment. The world would be overrun with insects without them. They are also a striking and unique member of the Refuge's wildlife community.



Late Summer and Fall Wild Garden

by Rick McAvinchey, *Wildlife Technician*

As I move about the Refuge for my work, I am continually reminded of the abundance of plant foods that grow wild in our area. One of my greatest influences has been Euell Gibbons, who introduced many of us to wild edibles through his books *Stalking the Wild Asparagus*, *Stalking the Healthful Herbs*, and *Stalking the Blue-eyed Scallop*. Another inspiring source of plant information is Ellsworth Jaeger's book *Wildwood Wisdom*, which describes in great detail many of the living skills of native American peoples. Much of my youth and adulthood has been spent out in forest and field learning from these two great teachers.

Late summer through fall is a season of abundance in Michigan, if your interest is foraging some of your foods. Many of the berry-producing canes and shrubs are in full production, such as red and black raspberries, blackberry, viburnum, and wild grape. There is no finer dessert than wild grape pie!

The nut trees are becoming loaded with acorns, hickory nuts, hazelnuts and black walnuts. The best tasting acorns are from bur oak trees. They need little preparation before eating them whole or cooking and mashing them into a nut paste. Hickories and walnuts are used exactly as English walnuts, for eating raw or baking into cakes and muffins and pancakes. The hardest part is getting them out of the shell intact, the second hardest part is beating the squirrels to them.

Pine needles make a palatable tea which has some beneficial effects on a summer cold. The inner bark (cambium) of white pine is used to make a cough syrup, and is quite edible just as it is. Pine seeds are quite nutritious and tasty. Many other plants make tasty teas to supplement your meals.

The apples and crabapples that grow wild in most old farmsteads provide excellent fruits in the fall months. Crabapples vary greatly in size and palatability, so try fruits from many different trees before you decide how much you like them. Euell's recipe for wild apple pie has helped me win many apple pie bake-offs. Apple butter is also a good use of the wild fruits.

There are some leafy vegetables in late summer that are still good for salads or cooked greens. Thistles, stinging nettle and jewelweed are among them. I always like cooking nettles, partly as revenge for all the pain they

cause, and also because they are a good substitute for spinach. Some plant roots, such as burdock, cattail, daylily and chicory are good if you dig and wash them off.

With some good books such as those I've mentioned, a plant field guide, and curiosity, you can spend many days learning to become less reliant on the supermarket. Foraging is great fun and a good excuse to get out into nature. Just remember that everything is protected on the Refuge, so you'll want to find another area to forage in. Good luck and happy foraging!

Refuge Open House Weekend

September 9-10, 2000

Enjoy hiking and bicycling on any and all Refuge trails during daylight hours. Good chance to see all kinds of wildlife including eagles, herons, geese, ducks, hawks, songbirds, deer, and more!

Auto Tour

September 9, 9 am - 4 pm

Experience wildlife up-close as you drive your vehicle through the heart of the Refuge (weather permitting). Self-guided tour route starts at the Curtis Road parking lot, one mile west of M-13.

Bike-a-thon

September 10, 2 - 6 pm

The whole family can bicycle through the Refuge. Choose from one, four, and eight mile routes beginning at the Curtis Road parking lot. Prizes awarded for top money raisers. Refreshments will be available. This event is sponsored by the Friends of the Shiawassee NWR and the proceeds will be used to help the Refuge with special projects. Pledge sheets are available at the Refuge headquarters or can be obtained by calling (517) 752-3492.

Note: If you are willing to help out with the Auto Tour by greeting visitors, handing out flyers, or pointing out wildlife, please contact Becky Goche at (517) 759-1669.

The Youth Conservation Corps Connection

by Cathy Keinath, *YCC Crew Leader*

The purpose of the Youth Conservation Corps (YCC) is to create a connection between today's high school students and their natural environment while providing employment. The Refuge hires students aged 15-19 years. The YCC crew does work designed to help the Refuge and provide environmental education to the crew members.

This year's YCC crew consisted of five members: Jonathon Pawlanta, Leonard Doxie, Jr., Wendell Taylor, Jr., Tamria Taylor, and Nickolas Chaltrow. They were from Buena Vista, Saginaw, Bridgeport, and Heritage High Schools. They worked eight weeks under the supervision of Cathy Keinath, crew leader, and Rick McAvinchey, Biological Technician.

The students aided Refuge staff with numerous projects. They helped biologists manage and study Canada goose populations by assisting with banding. They conducted a bird survey to catalog the different species found on the Refuge.

The crew put together deer hunt packets, and helped maintain healthy grasslands by removing encroaching willow seedlings.

The YCC crew improved the Refuge for visitors, too. They cleared trails, painted the Grefe Observation Tower, maintained the Backyard Habitat, painted parking lot structures, posted signs, removed an unstable bridge from a trail, worked with youth groups at Green Point, installed steps to a photo blind, and put gravel down on soggy trails.

The students received training in CPR, safe tool use, and orienteering. They learned about different job opportunities in environmental fields through talks with Refuge staff and field trips.

The YCC crew had a great summer and accomplished many tasks as they learned about the environment. They were a valuable resource to the Refuge and will be missed.

Friends Corner: Bike-a-thon Planned for September 10

The plans for the Great Lakes Discovery Center continue to go forward. A feasibility study is being done to test the waters to determine what fund raising opportunities are available for a project of this magnitude.

We are again sponsoring a Bike-a-thon on September 10, during the Refuge open house weekend. We need help promoting the event, recruiting bicyclists to get pledges, and we need volunteers to work the day of the event. There will be prizes awarded to those who get the most pledges. Proceeds help the Refuge with special projects. For more information or pledge sheets call (517) 752-3492.

We are also selling raffle tickets through September. Prizes include a 14-foot boat, a GPS unit, a canoe, and cash. Whoever sells the most tickets will receive a one-year membership to the Friends of Shiawassee NWR. You can get raffle tickets from any Friends member.

Remember to mark your calendar for our monthly meetings. They are held on the third Thursday of each month at Green Point ELC at 6:30 p.m.

Yes! I want to be a Friend!

Name _____

Address _____

City _____

State _____ Zip _____

Telephone _____

_____ Regular Membership (\$10)

_____ Supporting Membership (\$50)

Please make your checks out to "Friends of Shiawassee NWR". Return with this form to:

Friends of Shiawassee NWR
PO Box 20129
Saginaw, MI 48602

**Shiawassee
National Wildlife Refuge**
Headquarters: (517) 777-5930
6975 Mower Road
Saginaw, MI 48601

**Green Point Environmental
Learning Center**
(517) 759-1669
3010 Maple Street
Saginaw, MI 48602

Both are open Monday-Friday
7:30 a.m. - 4:00 p.m.

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Calendar of Events

Refuge Open House/Auto Tour
September 9, 9 am - 4 pm
Curtis Road Parking Lot
Tour the heart of the Refuge from
your vehicle. See inside for more
information.

Friends Bike-a-Thon
September 10, 2 - 6 pm
Curtis Road Parking Lot
See the Refuge from your bicycle.
See article inside for details.

Friends of Shiawassee Meeting
September 21, 6:30 pm
Green Point ELC

Columbus Day Holiday
October 9
Offices are closed.

Friends of Shiawassee Meeting
October 19, 6:30 pm
Green Point ELC

Veterans Day Holiday Observed
November 10
Offices are closed.

Friends of Shiawassee Meeting
November 16, 6:30 pm
Green Point ELC

Thanksgiving Day Holiday
November 23
Offices are closed.

Note: The First Wednesday
Discovery Series is on hold pending
the hiring of a new Park Ranger.



U.S. Fish and Wildlife Service
Green Point ELC
3010 Maple Street
Saginaw, MI 48602



2000 SHIAWASSEE DEER HUNT INFORMATION

STATE HUNTS - SHIAWASSEE RIVER STATE GAME AREA - (517) 865-6211
FEDERAL HUNTS - SHIAWASSEE NATIONAL WILDLIFE REFUGE - (517) 777-5930

PRE-REGISTERED DRAWINGS

Applicants will apply by submitting cards to the St. Charles DNR Field Office. There is no fee to apply. Cards must be postmarked by September 10, 2000. Cards postmarked after the deadline or filled out incorrectly will not be entered in the drawing.

Instructions for Pre-registered Hunt Applications

- Applicants may apply **once** and may choose only **ONE** (1) hunt. Applicants may choose **either** a State hunt **or** a Federal hunt. Hunt choice code #'s for State hunts are listed below and hunt choice code #'s for Federal hunts are listed on back of this sheet.
- Hunters must mail a card (at least 3"x5", but not larger than 4"x6", not a piece of paper) to **DNR FIELD OFFICE, 225 E. SPRUCE ST., ST. CHARLES, MI 48655** with following information on one side of the card:
 - Name
 - Address
 - Driver License #, Sportcard # or Hunter Safety #
 - Hunt Choice Code #

If applying as partners you must mail them together in an envelope.
- Hunters may apply with a "partner" in which case they will both receive a permit or neither will receive a permit. "Partners" must apply for the same hunt choice code #. For hunters who wish to apply as partners each hunter must fill out a card and the cards must be mailed together in one envelope. Youth applying for Federal hunts must have a supervising adult listed as their partner.
- Hunters who are successful for antlerless permits will be notified with instructions on how to purchase a Deer Management Unit 222 Public Land Antlerless Deer license using the Retail Licensing system.**
- Only successful applicants will be notified. They will be notified by October 14, 2000.

STATE PRE-REGISTERED HUNTS SHIAWASSEE RIVER STATE GAME AREA

HUNT CHOICE CODE #	DATES	TYPE	HUNT AREA	NUMBER HUNTERS	1999 APPLICANTS	HARVEST PERMITS*
101	Oct. 27 - Nov. 01	Archery	A	150	117	State Regulations
102	Nov. 02 - Nov. 07	Archery	A	150	106	State Regulations
103	Nov. 08 - Nov. 14	Archery	A	150	079	State Regulations
104	Nov. 15 - Nov. 19	Shotgun	B	100	215	State Regulations
105	Nov. 20 - Nov. 24	Shotgun	B	100	086	State Regs. & 30% Bonus
106	Nov. 25 - Nov. 30	Shotgun	B	100	177	State Regs. & 30% Bonus
107	Dec. 08 - Dec. 12	Muzzleloader	A	100	303	State Regs. & All Bonus
108	Dec. 13 - Dec. 17	Muzzleloader	A	100	106	State Regs. & All Bonus

State Hunt Areas: Area A - Entire area, except wildlife refuge. Area B - A1 through A11 & 45-46. **Scouting:** January 2 - September 30, 2000. **Fees:** \$13.00 seasonal or \$4.00 daily. **Permit Return:** Permits must be returned within 48 hours after the last day of the hunt period. Failure to return permits on time will result in ineligibility for future permits. Deer hunters having any outstanding permits for any of the 2000 hunts will not be issued any deer permits in 2001. Other: The possession and use of buckshot is prohibited. The use of bait is prohibited.

*Bonus allotments are subject to change.

FEDERAL PRE-REGISTERED HUNTS SHIAWASSEE NATIONAL WILDLIFE REFUGE

HUNT CHOICE CODE #	DATES	TYPE	HUNT AREA	NUMBER HUNTERS	1999 APPLICANTS	HARVEST PERMITS
202	Nov. 05 - Nov. 09	Archery	1	050	394	Either Sex
203	Nov. 10 - Nov. 14	Archery	1	050	079	Either Sex
204	Dec. 20 - Dec. 24	Archery	4	150	126	Either Sex
205	Dec. 27 - Dec. 31	Archery	4	150	132	Either Sex
206	Nov. 15 - Nov. 16	Shotgun (N-A)	3	015	026	(All shotgun hunts are 60% antlerless and 40% either sex permits)
207	Nov. 17 - Nov. 18	Shotgun (N-A)	3	015	016	
208	Nov. 15 - Nov. 16	Shotgun (General)	2	025	108	sex permits)
209	Nov. 19 - Nov. 20	Shotgun (General)	3	060	202	
211	Dec. 09-Dec. 10	Muzzleloader	3	075	080	Antlerless Only
212	Dec. 09-Dec. 10	Muzzleloader	2	030	040	Antlerless Only
213	Dec. 11-Dec. 12	Muzzleloader	3	075	273	Antlerless Only
214	Dec. 11-Dec. 12	Muzzleloader	2	030	063	Antlerless Only
215	Dec. 13-Dec. 14	Muzzleloader	3	075	772	Either Sex
216	Dec. 13-Dec. 14	Muzzleloader	2	030	132	Either Sex

Hunters harvesting a deer must use a valid license to tag the deer. **N-A shotgun hunts** are Non-Ambulatory hunts (Must be confined to a wheelchair). **Federal Hunt Areas are:** Area 1 - Area bordered by the north boundary of the refuge, south to the Shiawassee and Cass Rivers, plus the area east of Spaulding drain to the south border of the refuge; Area 2 - Area bordered by the northern boundary of the refuge, south to the Shiawassee and Cass Rivers, plus Green Point Island; Area 3 - Entire area except for the area north of the Shiawassee and Cass Rivers, and Green Point Island; Area 4 - Entire refuge except area called Strobel Rd. Trail bounded by Bullhead Creek, Shiawassee & Tittabawassee River, plus Green Point Island is open to hunt. **Scouting:** September 9 and 10, 2000. **Hunter Orange Clothing:** Must wear at least 400 square inches of solid hunter orange. **Firearms:** Rules are the same as statewide regulations, except buckshot is prohibited. **Other:** Permits must be claimed by November 1, 2000. Only long guns may be used during muzzleloading hunt periods, muzzleloading handguns are prohibited. Boat access is permitted into the area in river system only, not within diked units. Successful applicants may obtain a hunt packet by mail. Payment of a \$10 fee is required before permit is mailed (Make checks payable to "U.S. Fish & Wildlife Service.") Helper permits are prohibited.

LOCAL ARCHERY HUNTS

FEDERAL — A local drawing will be held at the Shiawassee National Wildlife Headquarters on Curtis Rd. on October 21, 2000, for hunt period October 31-November 4, 2000. Ninety hunters per period. Antlerless only.

STATE — There will not be any local Archery drawings for the Shiawassee River State Game Area this year. Unlimited permits will be used for three (3) hunt periods: October 1-26, December 1-7, and December 18-January 1. Hunters may obtain their permits from the St. Charles Field Office in person or by mail (include name, driver license or sportcard #, date of birth, address and hunt period selection from periods listed below). **Telephone permit requests will not be accepted this year.**

Archers may hunt the entire game area, except wildlife refuge. Permits will be issued as follows:

HUNT PERIOD

For hunt period October 1-26:
For hunt period December 1-7:
For hunt period December 18 - January 1:

PERMIT ISSUING PERIOD

September 20 - October 26
November 20 - December 7
December 11 - January 1, 2001

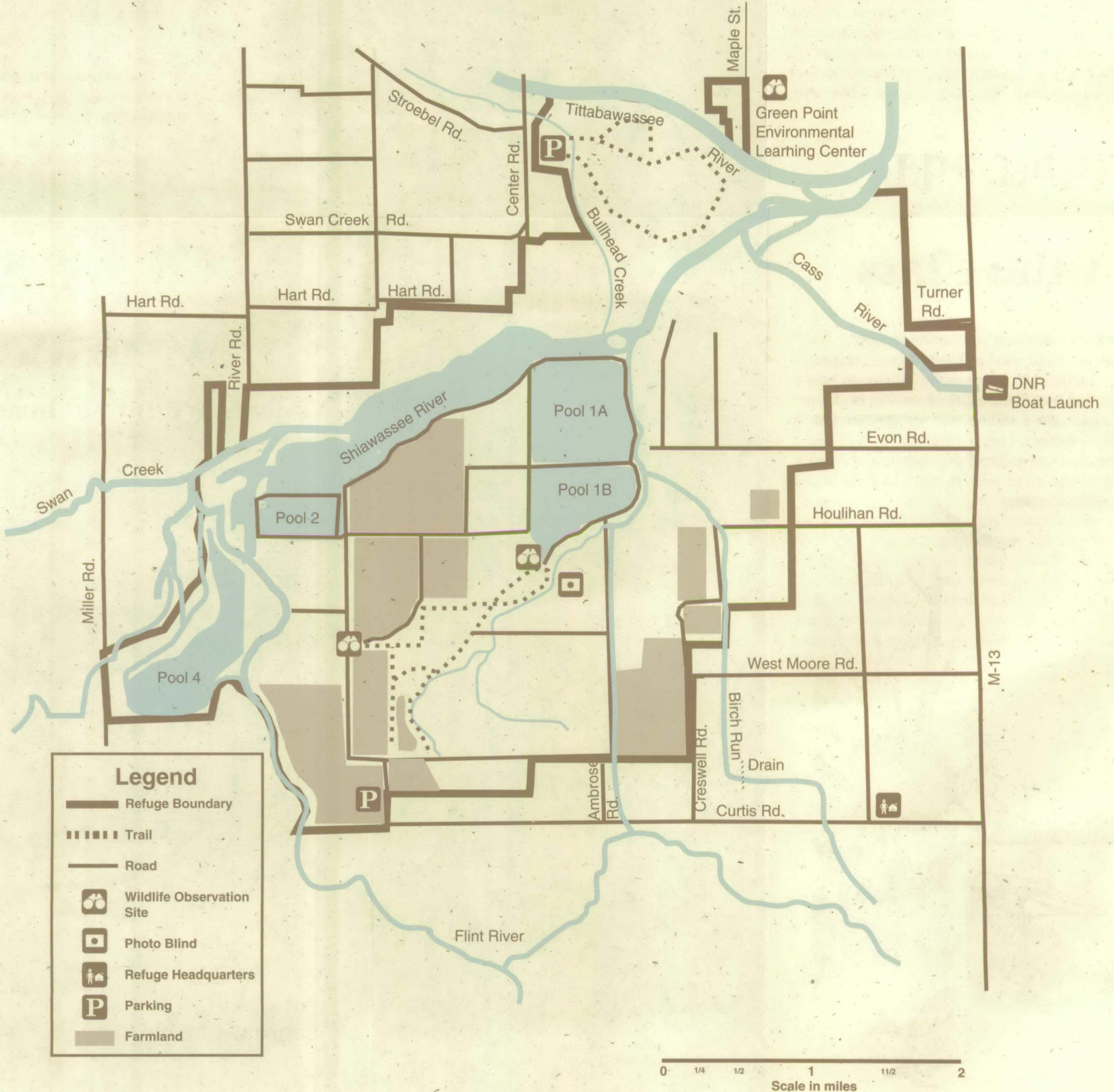
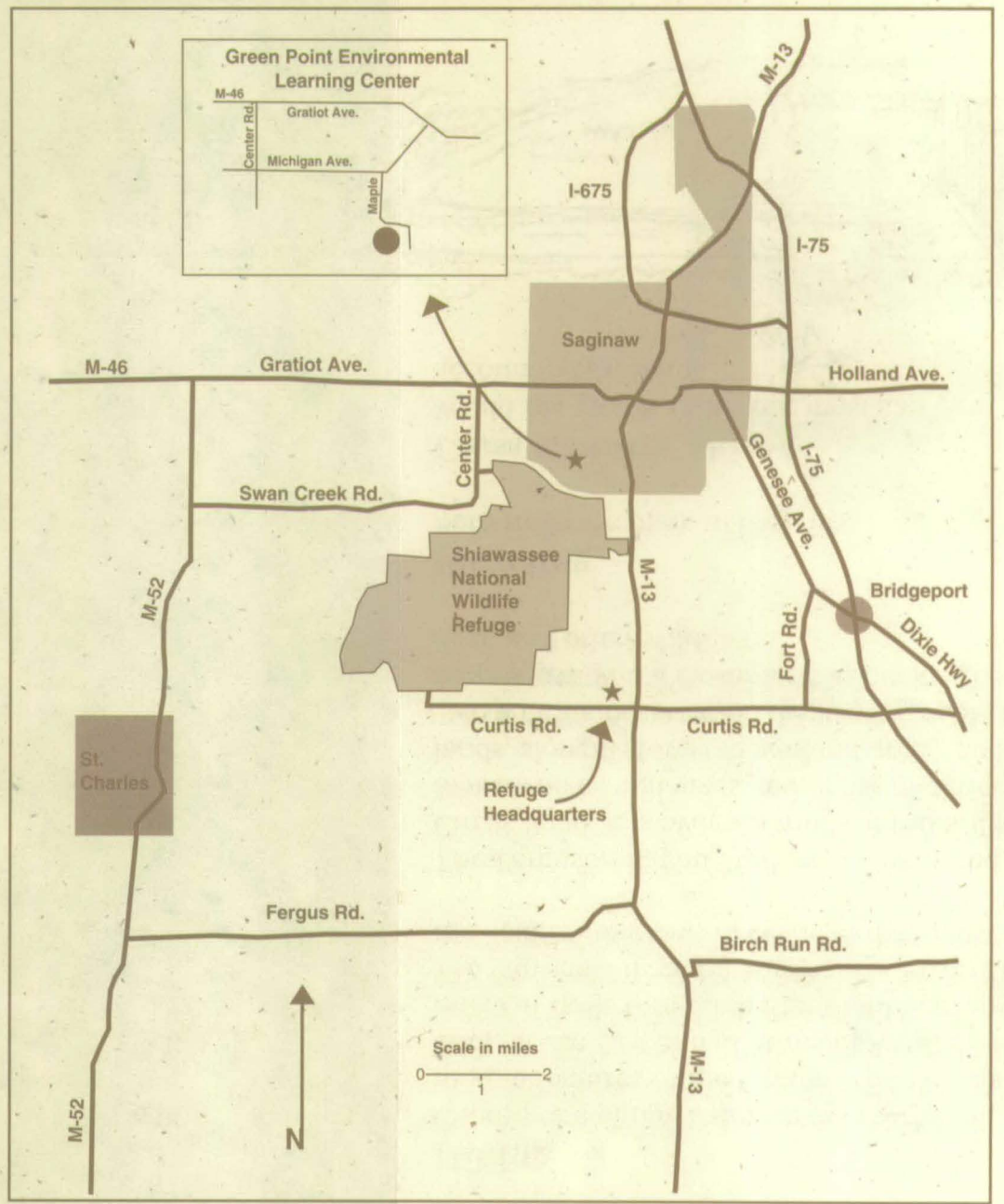
Equal Rights for Natural Resource Users

The Michigan Department of Natural Resources (MDNR) provides equal opportunities for employment and access to Michigan's natural resources. Both State and Federal laws prohibit discrimination on the basis of race, color, national origin, religion, disability, age, sex, height, weight or marital status under the Civil Rights Acts of 1964, as amended, (1976 MI P. A. 453 and 1976 MI P. A. 220, Title V of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act). If you believe that you have been discriminated against in any program, activity or facility, or if you desire additional information, please write the MDNR, OFFICE OF LEGAL SERVICES, PO BOX 30028, LANSING MI 48909-7528, or the MICHIGAN DEPARTMENT OF CIVIL RIGHTS, STATE OF MICHIGAN PLAZA BUILDING, 1200 6TH AVENUE, DETROIT MI 48226, or the OFFICE OF HUMAN RESOURCES, US FISH AND WILDLIFE SERVICE, WASHINGTON, DC 20240.

For information or assistance on this publication, contact the MICHIGAN DEPARTMENT OF NATURAL RESOURCES, WILDLIFE BUREAU, PO BOX 30444, LANSING, MI 48909-7944.
This publication is available in alternative formats upon request.

DATE IN	DATE OUT	REFUGE	REFUGE MANAGER	COMMENTS

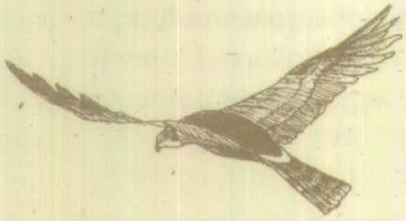
Shiawassee National Wildlife Refuge



Rules and Regulations

Protect your Refuge's natural resources and make your visit safe and enjoyable by following these rules and regulations.

- Stay on established roads or trails.
- Observe "Closed Area" signs.
- Snowmobiles, ATV's, and other motorized vehicles destroy fragile habitat and therefore are not allowed on the Refuge.
- Spotighting wildlife, bank fishing, camping, fires, horses, and dogs are not permitted.
- Hunting and trapping are allowed only with the possession of a Refuge permit.
- Please take your litter with you.



Hours

The Refuge headquarters, located on Curtis Road, is open 7:30 a.m. to 4:00 p.m., Monday through Friday throughout the year. Refuge visitors are welcome to stop by if they have questions or need assistance. Visitors to Green Point Environmental Learning Center should call ahead for hours.

For More Information Contact:

Shiawassee National Wildlife Refuge
6975 Mower Road
Saginaw, MI 48601
Phone: (517) 777-5930
Internet Url:
<http://www.fws.gov/~r3paO/r3home.html>

Equal opportunity to participate in, and benefit from, programs of the U. S. Fish and Wildlife Service is available to all individuals regardless of age, race, color, national origin, religion, sex, or disability. Persons who believe they have been discriminated against in any program, activity, or facility operated by the U.S. Fish and Wildlife Service should contact:

U.S. Department of the Interior
Office of Equal Opportunity
1849 C Street, N.W.
Washington, D.C. 20240



December 1996



Shiawassee National Wildlife Refuge

Shiawassee National Wildlife Refuge
6975 Mower Road
Saginaw, MI 48601



Saginaw, Michigan

Farming for Wildlife

Farming is an important wildlife management tool on the Refuge. Refuge staff use dikes, pumps, and gravity-flow structures to flood and drain marshes and forested areas. This "wet farming" promotes the growth of invertebrates and seeds which waterfowl and other animals use for food.

The Refuge's diverse habitats provide resting and feeding areas for over 250 species of migratory birds, including bald eagles, shore and wading birds, more than 100 songbird species, and waterfowl. During peak populations, the Refuge hosts 25,000 Canada geese, 30,000 ducks, 1,000 swans, and many wading and waterbirds. Other animals that live here include deer, beaver, muskrat, Blandings' turtles, green frogs, and green darners.

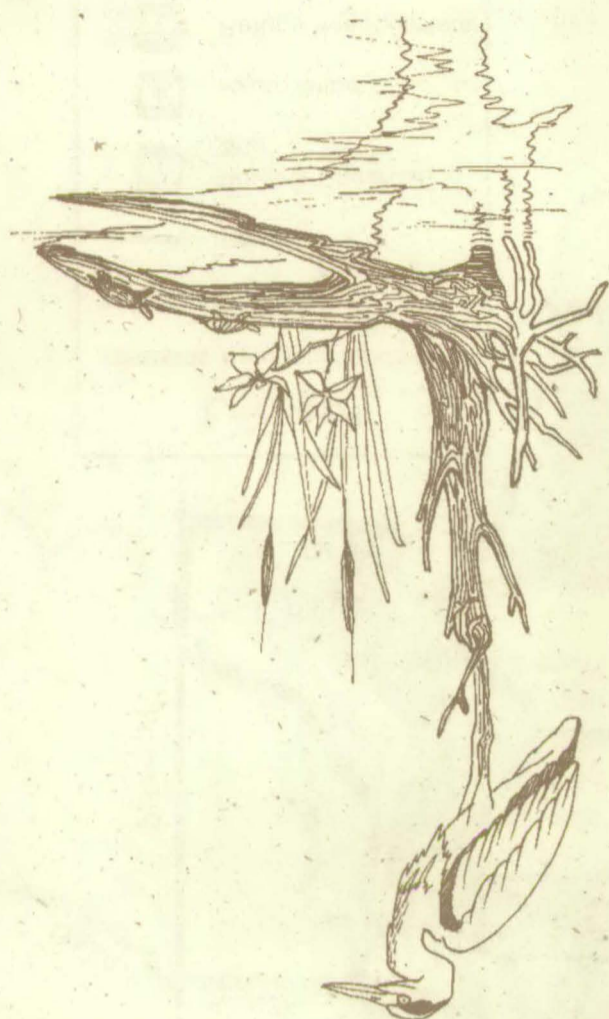
Top Birding Area

Shiawassee National Wildlife Refuge (NWR) was established in 1953 to restore and enhance this historically significant wetland area for migratory waterfowl. The Refuge contains over 9,000 acres of bottomland-hardwood forests, marshes, pools, grasslands, and croplands. Four rivers meet on the Refuge - the Tittabawassee, Flint, Cass, and Shiawassee Rivers.

Where Waters Meet

Local farmers also sharecrop some of the Refuge land. They take certain percentages of the crop, leaving the rest in the field for wildlife. These leftover crops provide wildlife with a winter food source.





Shiawassee National Wildlife Refuge

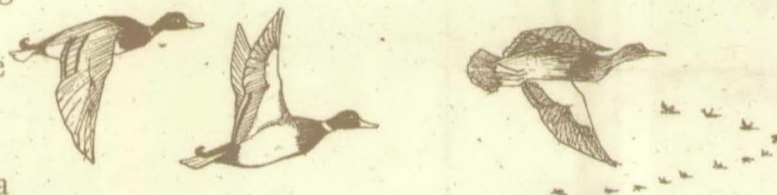
Shiawassee National Wildlife Refuge
6975 Mower Road
Saginaw, MI 48601

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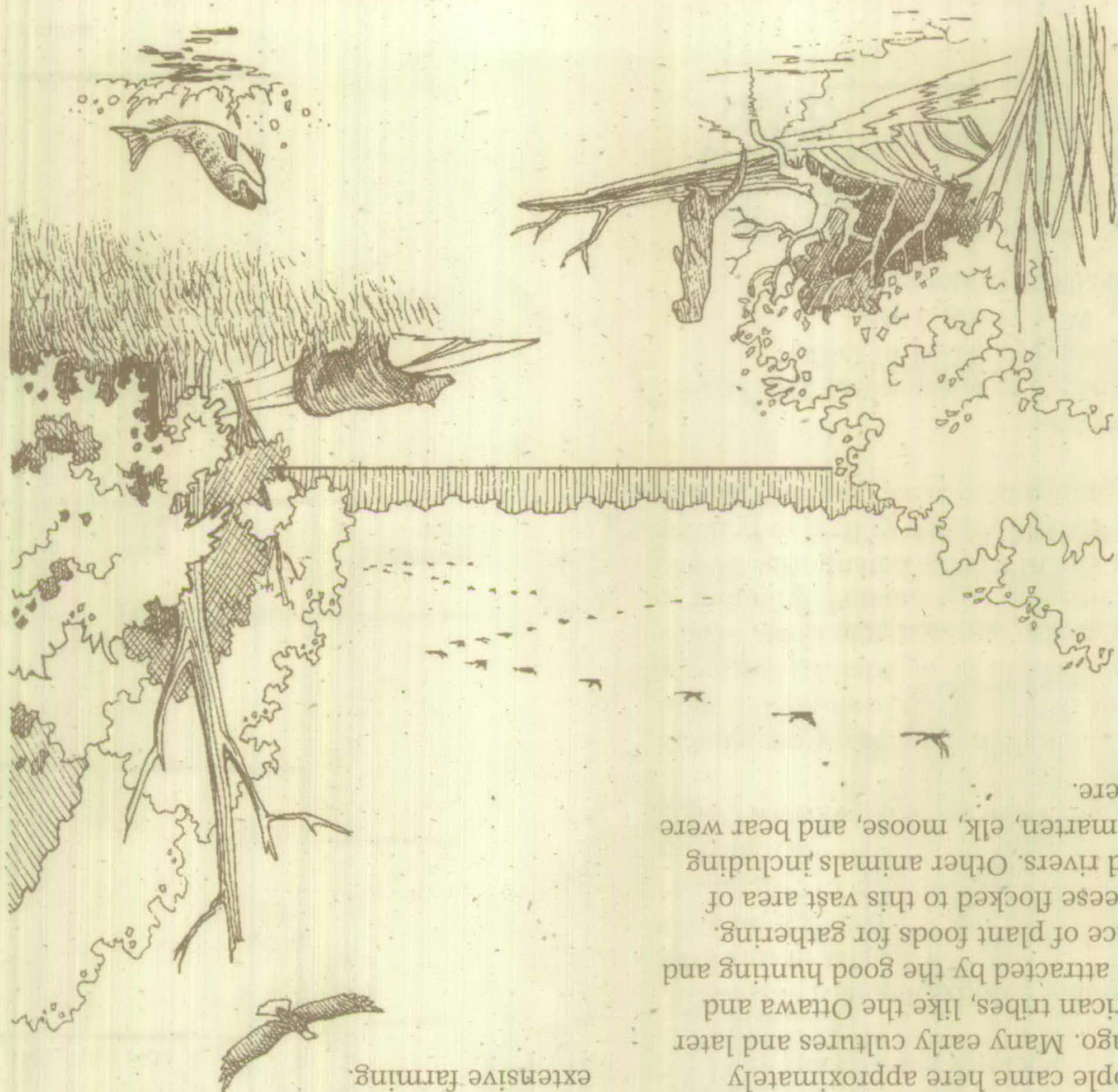


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The Flats was thought of as a swampy wilderness and received little human impact until the late 1800's when the lumber industry expanded into the area. Coal mining began in the early 1900's and lasted until the late 1930's. In 1903, farmers began draining the land for crops. By 1950, pumps, drainage tile, elaborate ditches, and dikes were in place to make way for extensive farming.

Over 10,000 years ago, much of east-central Michigan, including the present day Shiawassee NWR, was covered by a large glacial lake. You can still see the evidence of this ancient lakebed as you look across the landscape. The terrain is very flat, hence the reason many people call this area "The Flats". The first people came here approximately 5,000 years ago. Many early cultures and later Native American tribes, like the Ottawa and Ojibwa were attracted by the good hunting and the abundance of plant foods for gathering. Ducks and geese flocked to this vast area of wetlands and rivers. Other animals including otter, fisher, marten, elk, moose, and bear were also found here.

A Look Back at the Flats

The Public Is Welcome!

Shiawassee NWR is open year-round, seven days a week, during daylight hours only. (During hunt periods, hours and access may be limited.) There are a number of activities you can do throughout the year at the Refuge.

Hiking

Choose one of our nature trails that highlight unique features of the Refuge. The Woodland Trail, at the east end of Stroebel Road, offers 4.5 miles of trails through bottomland hardwoods. You can see a huge pile of shale left over from the coal mining period of the early 1900's.

The Ferguson Bayou Trail, at the west end of Curtis Road, has over 4.5 miles of trails. This trail follows dikes and gives you views of agricultural lands, sloughs, forested wetland areas, and pools. Two wildlife observation decks with spotting scopes give you a closer look at ducks, geese, deer, and other wildlife.

Bicycling

Both trails are open to bicycles.

Cross Country Skiing

We do not groom trails, but most can accommodate skiers.

Hunting

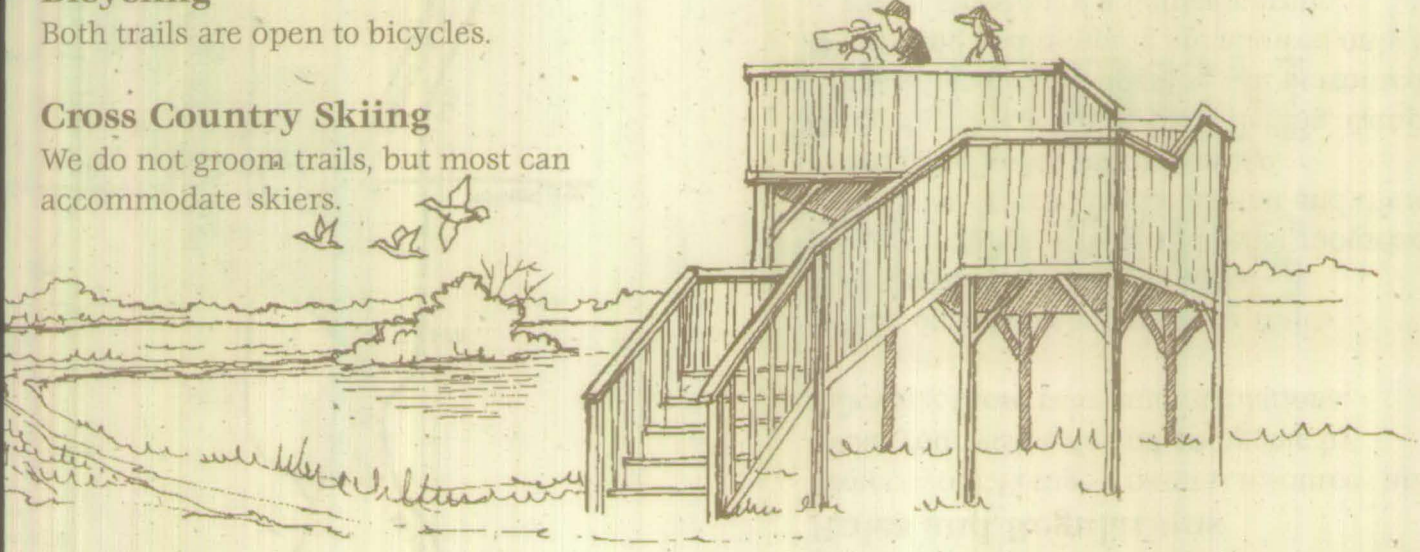
Portions of the Refuge may be open to goose and deer hunting by special permit. Maps showing open areas and details on Refuge hunting programs are available at the headquarters.

Environmental Education

Our Green Point Environmental Learning Center, located at 3010 Maple Street in Saginaw, provides programs for children and adults. You can hike the trails or view a variety of displays inside the interpretive building. Hours vary seasonally, so call ahead.

Volunteer

Share your special talents and skills. You could collect biological data, perform light maintenance, or help out with special events. If you are interested, contact the Refuge.



Rivers of Time

To the French it was Les Fourchettes, "The Forks" -- so named for the rare merging of the Tittabawassee, the Shiawassee, and the Cass Rivers. To earlier inhabitants it was Shows-kokon and O-zhaw-wash-quah, "Green Point." The rivers provided abundant game for hunting, as well as a transportation route for traders. Many years later, these same rivers attracted lumbermen, miners, and farmers to the area.

Green Point's History

In 1977, the Goetz Grove Nature Center began providing environmental education for the Saginaw area. A year later, the city of Saginaw built the interpretive building and renamed it the *Green Point Nature Center*. For ten years, thousands of people learned about nature before the center closed in 1988. In 1993, the U.S. Fish and Wildlife Service and the City formed a partnership to reopen Green Point. Today, staff from the Shiawassee National Wildlife Refuge operates the center.

Water, Wildlife and You!

Our mission is to provide environmental education opportunities for the children and adults of the Saginaw Valley. Green Point's programs revolve around our theme "Water, Wildlife, and You!" In addition, we are dedicated to the protection and management of our various habitats and committed to extending access to the largest possible user population for educational and recreational purposes.

Diversity is the Key

Habitat diversity is essential to a successful environmental education facility. Located just north of the Shiawassee NWR, Green Point has 76 acres of diverse habitats that range from bottomland hardwoods to wetlands, to ponds and fields, even rivers and grassy lawns. Each of these habitats supports hundreds of life forms. It is a great place to learn about nature!



Park Ranger with kids,
Becky Goche, USFWS



Black-capped chickadee,
Myles Willard

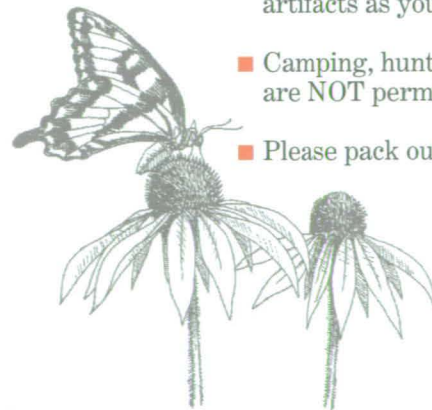


Green frog,
Myles Willard

Rules and Regulations

Protect Green Point's fragile plants and wildlife, and make your visit safe and enjoyable by following these rules and regulations.

- Stay on marked trails.
- Bicycles are not allowed on the trails.
- Dogs and other pets are not allowed.
- Leave all plants, animals, and artifacts as you found them.
- Camping, hunting and building fires are NOT permitted.
- Please pack out your litter.



Programs

Hiking

Visit the Interpretive Building

Volunteer

Cross-Country Skiing

Fishing

Things to Do at Green Point

We provide a variety of environmental programs throughout the year for school groups, scout groups, educators, families, and others.

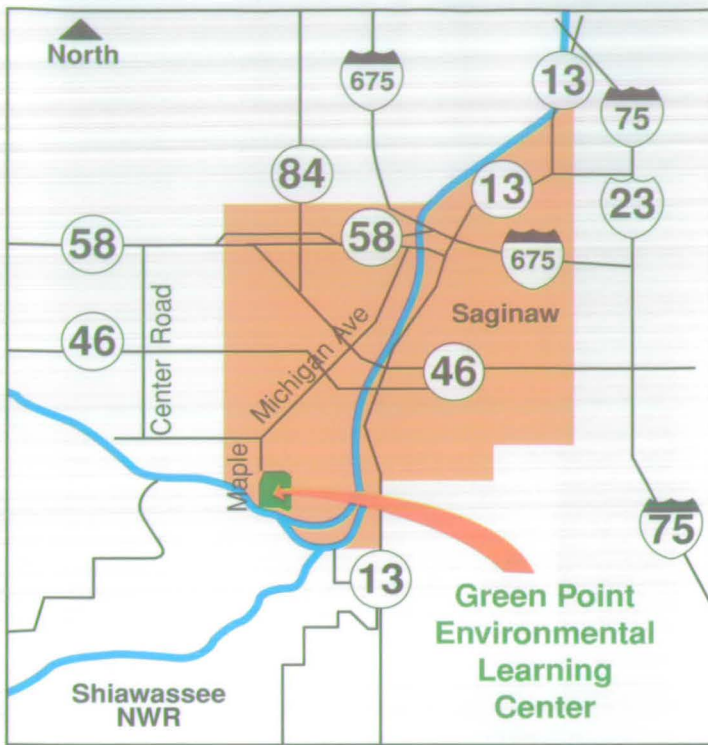
Trails are open daily during daylight hours only. Trail maps are available in the building. Explore diverse habitats on our 2.5 miles of nature trails.

See displays and aquariums with native fish species. Visit our Wildlife Discovery Room. Both the building and restrooms are accessible. Hours are Monday through Friday, 7:30 am to 4:00 pm. Closed on federal holidays.

Do trail work, help out with school groups and more.

We do not groom trails, but most can accommodate skiers.

Allowed only on the bank of the Tittabawassee River. No fishing in the ponds.



Address

Green Point ELC, 3010 Maple Street
Saginaw, Michigan 48602

Directions to Green Point

From I-75
Take the I-675 exit. Follow I-675 and take the Michigan/Davenport exit. Head south on Michigan Avenue for about 3-1/2 miles. Turn south (left) onto Maple Street and go 1/2 mile. The Center is located on the right side of the road.

From M-46/Gratiot
Take M-46/Gratiot to Center Road. Head south on Center for 1 mile. Turn east (left) onto Michigan Avenue and go 1-1/2 miles. Turn south (right) onto Maple Street and go 1/2 mile. The Center is located on the right side of the road.

For more information or to schedule a program contact the Green Point Environmental Learning Center at (517) 759-1669. TTY users may reach us through the Michigan State Relay Center at 1-800-649-3777.

Shiawassee National Wildlife Refuge
Green Point Environmental Learning Center
3010 Maple Street
Saginaw, Michigan 48602

U.S. Fish & Wildlife Service
1 800/344 WILD



U.S. Fish & Wildlife Service

Green Point

Environmental Learning Center



Cecropia moth caterpillar,
Myles Willard

Have You Ever...

- Fished, hunted, boated or bird-watched along the rivers?
- Enjoyed a hike or bike ride on a trail through the Shiawassee National Wildlife Refuge?
- Stopped to admire the wildflowers blooming?
- Watched a Bald Eagle soar or a Blue Huron fish?

These are just a few activities and opportunities available at the Shiawassee National Wildlife Refuge. If you enjoy these activities and would like to show your support for them, become a

“Friend of Shiawassee”

With your help, innovative programs and facilities will continue to be made available.



Who We Are

Membership of the Friends of Shiawassee National Wildlife Refuge is a collection of mostly local people. We enjoy nature and wildlife. We are dedicated to the continuing protection of special places to renew the spirit and soul of mankind. We are dedicated to teaching our children and the children of our communities the importance of our own very special wild places.

Our Goals

- Support the Multi-use concept
- Inform the public through interpretive tours and workshops.
- Provide opportunities for volunteers
- Locate funding for projects and activities to enhance the refuge and its facilities.
- Inform elected officials about refuge issues.

What You Can Do

Join us, be an active participant—exciting things are happening. Even if you do not have special skills or equipment we need help to:

- Stuff envelopes
- Make telephone calls
- Run errands
- Open mail
- Write articles and letters
- Attend special events

Please check the box if you can help us with any of these items:

- Writing articles
- Public Relations
- Public Speaking
- Grant writing
- Fund raising
- Newsletters
- Brochures
- Photography

Computer Skills

- Scanner
- Digital Camera
- Web page Design
- Adobe Acrobat
- CD writer

Major software used: _____

Specialized software: _____

I have access to:

- Copy machine
- Printing facility
- _____
- _____
- _____
- _____

I have connections with other organizations who would support the Friends: _____

I have another way in which I would like to help:

We Need a Few Good People

Do you enjoy the outdoors?

Do you want to help protect the natural resources in the Saginaw Bay Watershed?

Are you willing to make a difference?

If you answered yes to any of these questions, you may be the person for us.

The "Friends of Shiawassee NWR" is a local, non-profit organization devoted to protecting and preserving the natural and cultural resources of the National Wildlife Refuge. The Friends act as the collective citizen voice for the Refuge in a variety of arenas to raise awareness of the Refuge through outreach and environmental education efforts.

Yes! I want to be a Friend!

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

TELEPHONE (____) _____

EMAIL _____

_____ Regular membership (\$10) or 3 yrs (\$25)

_____ Family membership (\$25) or 3 yrs (\$60)

_____ Supporting membership (\$50)**

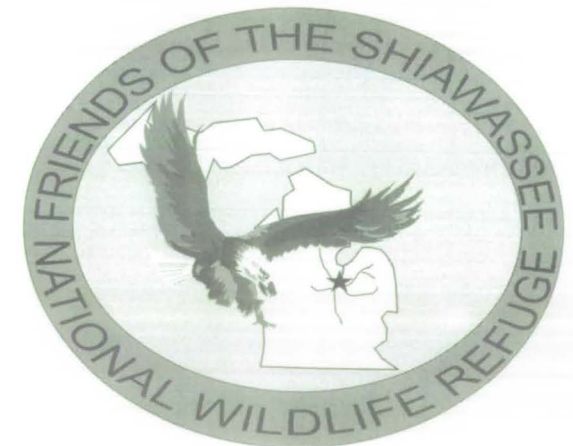
Please make your check out to "Friends of Shiawassee" and send it with this form to:

Friends of Shiawassee National Wildlife Refuge
PO Box 20129
Saginaw, MI 48602

** Your choice of T-Shirt, Sweatshirt, or cap included. (Please indicate choice)

Friends of Shiawassee

National Wildlife Refuge



Meeting at Garber Buick
5925 State Street
Saginaw, MI

Quarterly Meetings
3rd Thursday of the month
7:00 pm