Monroe Reservoir Interpretive Master Plan 2011

Contents

Introduction

In response to the need to review, evaluate and offer recommendations, the Indiana Department of Natural Resources, Division of State Parks and Reservoirs has developed this Interpretive Master Plan for the Lake Monroe Reservoir.

There are many opportunities for interpretation at Lake Monroe.
1. Lake size. Lake Monroe is the largest lake in Indiana.
2. Attendance. Approximately 1.5 million visitors come to Lake Monroe annually.
3. Location. The lake is in close proximity to large populations, providing potential audiences.
4. Other resource agencies. Close proximity to several land holding agencies provides opportunities for partnerships and cooperative ventures.

Constraints also exist for interpretation.
1. Limited staff. At present, there is only one 180-day interpreter position at the lake. This position experiences high turnover, prohibiting program expansion.
2. Limited audiences. Interpretation addresses primarily beach and boater audiences at the Paynetown State Recreation Area. These groups are engaged in other activities while visiting the lake, leading to low attendance numbers.
3. Facility problems. The facility used as the interpretive center was not designed for this purpose and lacks many features necessary to function well. In addition, rising lake levels during flood events frequently leaves the facility completely surrounded by water and inaccessible.
4. Budget. The current economic crisis puts facility and staff expansion on temporary hold.

The interpretive potential for Lake Monroe is enormous. It is hoped that through the plan's recommendations, the lake's interpretive service can move up to the next level of serving the resource, visitors and DNR.

Resource Overview

I. Natural History

A. Geology

1. Topography
Lake Monroe lies within the Norman Upland physiographic region. This region is typified by steep slopes forming V-shaped valleys. The slopes range up to 50% in slope and are topped by narrow ridgetops. Most flat land is found along stream bottoms.

Formation of siltstone bedrock

2. Bedrock
The bedrock of the Norman Upland is largely siltstone, sandstone and shale with some limestone. The bedrock layers were deposited as delta and marine sediments. Bedrock is close to the surface and is exposed in streambeds and on some ridgetops. The fine-grained siltstones, shales and sandstones are cemented with clay and are highly impermeable.

Limestone is visible at Allen's Creek on the south shore of Lake Monroe. Fossil beds containing crinoids, brachiopods and bryozoans line the shore. These fossils represent marine life deposited when a shallow, warm-water ocean covered the region. About 50 fossil species have been identified at the Allen's Creek carbonate bank.
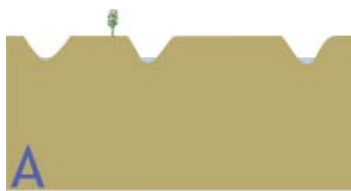
3. Mount Carmel Fault
The Mount Carmel Fault runs north-south parallel to and east of Highway 446. It lies below North Fork and passes near the Pine Grove Boat Launch. The fault is about 60 miles long. Rocks on the west side of the fault have a vertical drop of about 200 feet. Limestone outcrops are visible along the fault on the south of the lake at John Grubb Ridge and Patton Cave in the Hoosier National Forest.

Map of the Mt. Carmel Fault

4. Ice Age
The southern advance of the glaciers stopped to the north of the Norman Upland leaving the Lake Monroe region unglaciated. Torrents of meltwater carved out the valleys and streams, depositing up to 65 feet of alluvium in the major valleys.

5. Water
The impermeability of the shale and siltstone bedrock results in little groundwater. One significant seep spring existed at Lake Monroe, but was inundated when the reservoir was created.

Surface water is limited to creeks and intermittent streams. Salt Creek received its name from its mineral content. Salt was attractive to wildlife and in the 1820s a salt manufacturing enterprise existed along the creek. Today, Salt Creek and its tributaries feed the Lake Monroe Reservoir.

Ravine formation by glacial meltwater

6. Soil

Soils are thin, stony and poor. Due to the steep slopes and impermeable bedrock of the Norman Upland, the soils are highly erodible.

7. Lake Monroe

The Monroe Reservoir was constructed by the U. S. Army Corps of Engineers in 1965. It is fed by Salt Creek and its tributaries. The lake lies in the Norman Upland, primarily over impervious siltstone and shale.

The lake is 10,750 acres in size, the largest body of water in Indiana. Its watershed covers 441 square miles, extending into six counties. The lake itself is in Monroe County, with portions extending into Brown and Jackson counties. Maximum lake depth is 54 feet with an average depth of 17.3 feet.
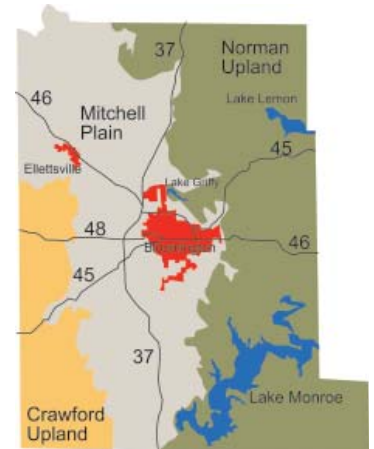
Bedrock map of Monroe County

B. Flora

1. Pre-settlement Vegetation

Prior to settlement, the region that was to become Lake Monroe was forested. Oak-hickory forest predominated, with beech-maple forest in the stream valleys. A continuous canopy of old growth trees stretched for miles.

1930s erosion in Brown County

Within decades of settlement, the forests had been cleared. Trees were converted to lumber that was used for building homes, barns and outbuildings. Excess wood was burned.

Flat land on ridgetops and stream valleys was converted into cornfields. As the highly erodible soil washed away and became less productive, steeper slopes were plowed. By the 1930s, much of the topsoil was gone and many farms went bankrupt. Little forest remained when the state and federal government began to acquire the land.

2. Today

Today much of the region is again forested, but is second- and third-growth forest. Massive tree planting and erosion control work helped to reclaim the land.

North-facing and south-facing slopes are divided by ridgetops and differ from each other. Sunnier, drier south-facing slopes are predominantly white, black and chestnut oak, and shagbark hickory. The shrub layer includes greenbriar and huckleberry. North-facing slopes are cooler, moister and more shaded. A mesic forest of beech and maple is interspersed with pawpaw patches. Ferns and wildflowers make up the herb layer.

Streambeds and low, wet areas have willow, pin oak, river birch, silver maple, sycamore, cottonwood, walnut and box elder. Many areas around Lake Monroe are kept open and maintained as wildlife habitat. Old fields and fence rows are in various stages of succession and include plants such as ragweed, goldenrod, clover, smartweed and cockle bur. Sumac, dogwood, hackberry, sassafras, multiflora rose and hawthorn are prevalent in these areas.

The forest that surrounds Lake Monroe is part of the largest contiguous forest in Indiana and is made up of state, federal and private land. It is representative of the original landscape that first greeted settlers as they made their way north across the Ohio River.

C. Fauna

1. Historic Wildlife
Settlers arriving to the region in the early 1800s supplemented their subsistence farming with hunting and fishing. Deer, bear, raccoon, squirrel and turkey formed a part of their diet. In addition to meat, mammals provided furs and hides for clothing. Flocks of passenger pigeons numbering in the millions provided another a seemingly endless supply of food.

By the mid-1800s, much of the wildlife was gone due to uncontrolled hunting. Bears were gone by 1850. Deer and turkeys were gone by the 1890s. The last passenger pigeon died in 1914. Non-game animals such as the bald eagle also disappeared from the region.

2. Today
Lake Monroe manages 21,817 acres for wildlife and fisheries. Forests, fields and marshes are maintained for waterfowl, deer, quail, mourning doves, rabbits and other wildlife. Management projects include planting food crops, flooding areas, creating forest openings and building platforms and boxes for nesting.

Deer and turkey were both reintroduced into Indiana and now have hunting seasons at Lake Monroe. Largemouth bass and panfish are abundant in the lake and marshes.

White-tailed deer at Stillwater Marsh

Non-game wildlife is also managed at Lake Monroe. Nest boxes for swallows, bluebirds and prothonotary warblers are maintained. In 1985, Lake Monroe became the release site for a state bald eagle reintroduction program. The program was extremely successful and today, bald eagles are a common sight at the lake. In 2010, five eagle nests were identified at the lake and several chicks fledged.

Bird and listed species may be found in Appendix A and B.

Bald Eagle

II. Cultural History

A. Native Americans

When French and British explorers and traders arrived in the Midwest, large-scale population shifts were occurring among Native American tribes. Uprooted tribes from the East Coast had moved into the region. Tribes arrived, settled and moved on. Accounts mention Miami, Piankeshaw, Shawnee, Delaware, Muskogean, Wyandotte, Kickapoo and Potawatomi in southern Indiana prior to European settlement. Monroe County accounts specifically mention Piankeshaw, Miami, Delaware and Potawatomi.

The lifestyle of the Miami and Delaware included movements between summer and winter settlements. The Miami had summer villages and winter hunting camps. Villages tended to be located along waterways. Delaware had semi-permanent winter settlements and moved during the summer. Their villages were located on hilltops. Both had dwellings made of pole frames covered with bark. Upon contact with Europeans, many tribes adopted

European construction and clothing and began living in log cabins.

The Treaty of Fort Wayne, also known as the 10 O'Clock Treaty, designated the area that included Lake Monroe for settlement. When settlers arrived in the 1820s, Native Americans still lived in the region.

When we first moved here Delaware and Potawatomi were plentiful. They had a trading house within a half mile of where I now live. They were quite friendly and often would come with their squaws and papooses to stay all night with us.

10 O'Clock Treaty Line

B. European Settlement

The Lake Monroe region was settled in large part by people from a similar rugged, hilly landscape called the Upland South. The Upland South includes portions of Kentucky, N. Carolina, Virginia and Tennessee. These southerners were primarily Scots-Irish and English in origin, having come from Europe in the 1700s. Generations of living in remote, isolated areas maintained a distinct dialect and culture. A close-knit extended family provided the social structure. Siblings and cousins followed the original settlers to Indiana. Self-reliance, persistence and a conservative ethic were cultural values.

Subsistance farmer in southern Indiana

The first settlers were subsistence farmers, growing corn and raising hogs. Milk cows, chickens and a family garden were supplemented by hunting and fishing. An ox or mule pulled plows and wagons. A dog provided protection and hunting assistance.

Broad ridgetops were preferred for planting and homesteading. Malaria and "milk sickness" were associated with lowland areas. Grain was cleared with a sickle, and plows remained mule-drawn long after flatlanders had shifted to tractors. Mules could handle the steep slopes that would flip a tractor. Hogs roamed the hillsides, so their owners identified them by cutting notches in their ears. If the mast crop was good, providing more food for the hogs, farmers planted less corn rather than have a surplus.

When surplus grain was harvested, the rugged terrain prevented railroads from accessing the region to transport crops to larger markets. Farmers had to get goods to waterways on poor roads. Salt Creek was one stream that was used to move surplus from the region to the White, Wabash, and Ohio Rivers, and from there to the Mississippi River and New Orleans.

Horsedrawn farm equipment was still usef into the 1950s.

Goods and tools were either made, purchased or traded for. Peddlers or hucksters traveled the region carrying dried goods, shoes and yard goods.

Inside the covered wagon were shelves on each side containing sugar, coffee, tea, spices, rice, crackers, canned oysters, and to the delight of the children—rows of glass jars of candy and long sticks of chewing gum called "Long Tom." These were the staples the people could not produce.

In lieu of pennies we children ran out with an egg in our hands . . . and we bought our sweets, several, for an egg . . .

The huckster ate dinner for fifty cents at whatever home he happened to be in at mealtime—most often our house on his trip down Crooked Creek. –Fred Dillard

Paynetown General Store

Businesses emerged to provide services to the farmers and their families. Grain and lumber mills were either water- or horse-powered. Mills continued to be an important business up through the 1900s. Blacksmiths, tanneries, general stores, inns and distilleries grew around mills, forming early communities. Towns such as Smithville, Elkinsville, Chapel Hill and Paynetown formed. Religious meetings were held in private homes and later in churches, which also served as meeting halls and schools. A salt-making business operated on the banks of Salt Creek in the 1820s, producing 800 bushels of salt annually.

C. Public Land

The soil type and slope of the Norman Upland could not sustain the farming practices of the time. Erosion re-

moved the shallow topsoil and farms became unproductive. The land was referred to as: *'ten-year' land . . . During ten years of tillage by the customary methods so much of the soil washes away that further tillage is unprofitable.* – Stephen S. Visher, Proceedings of the Indiana Academy of Sciences, 1937

Once the land became unproductive, farmers could no longer afford their taxes. To make matters worse, the Great Depression added further economic hardship. Many farmers abandoned their land.

Erosion scar

During the 1930s, depleted farm land was acquired by federal and state agencies. The Hoosier National Forest, several state forests and Brown County State Park resulted from these acquisitions.

D. Lake Monroe

In 1965, the U.S. Army Corps of Engineers (COE) constructed the Monroe Reservoir for flood protection and low-flow augmentation of the White River. In addition to this purpose, the reservoir is the source of drinking water for the City of Bloomington and provides a recreational lake.

Lake Monroe Dam

The lake is accessed from eight state recreation areas, two state wildlife refuges, the Hoosier National Forest and ten public boat ramps. All of the shoreline is publically owned.

Under an agreement with the COE, the Indiana Department of Natural Resources leases approximately 24,000 acres of land. Through the Division of State Parks and Reservoirs, this acreage is managed for recreation and wildlife.

Acreage managed for wildlife.

References

Allen's Creek Carbonate Bank, Indiana University Geology Dept., hand-out

Lake Monroe Diagnostic and Feasibility Study, William Jones (SPEA), Indiana University, 1997

Looking at History: Indiana's Hoosier National Forest Region, 1600 to 1950; Ellen Sieber and Cheryl Ann Munson, published by the USDA Forest Service, 1992

Monroe Lake, Brochure produced by the US Army Corps of Engineers, July 2007

Monroe Lake 5-Year Wildlife Management Plan 2011-2015, Rex Watters

Monroe Lake Annual Management Plan for Calendar Year 2009, Rex Watters

The Mount Carmel Fault, brochure, Hoosier National Forest, Lise Schools, 1994

Sinks, Slopes, and a Stony Disposition: The Highland Rim Natural Region, Michael A. Homoya and Hank Huffman

Existing Conditions

I. Audiences at the Lake

Lake Monroe has the highest attendance of any state property. Visitors are coming primarily for water recreation. The interpretive service is located at Paynetown which includes campgrounds and a beach.

A. Boaters

Boaters represent the largest percentage of visitors. Eighty percent of the boaters are repeat visitors, some coming every weekend throughout the summer. Most boaters are on the lake all day and in the campgrounds at night. They are not available for programs during the day. This creates a challenge for interpretation, as traditional daytime programs (hikes and talks) do not work. (See Programs for successful programs for this audience.)

B. Day Users

Day users come to Paynetown SRA for the beach and picnicking. Large family get-togethers gather in groups of up to 150 for a day of picnicking. Hispanic groups from Columbus, Indiana have increased in recent years. The interpretive center is located at the beach. Visitors wonder in and sometimes participate in ongoing activities such as crafts. They do not attend scheduled programs.

C. Resource Users

Thousands of acres of land around the lake are managed by the DNR for hunting, fishing and trapping. Wildlife viewing and hiking also draws visitors to the reservoir. The reservoir specialist in charge of wildlife management conducts training and safety education programs, and participates in roving interpretation with this audience. At this time, the interpretive service does not work with this audience.

D. Indiana University

Classes of students conduct research or projects at Lake Monroe. Others are day users who are exploring the region around the university. IU students are a transient group, here for the duration of their degree program.

One study of Lake Monroe noted that visitors to the property came from 28 different countries. Indiana University contributes greatly to this multi-cultural visitation. Due to limited staff, this audience is not currently targeted by the interpretive service.

E. Scouts

Scout groups are coming to Lake Monroe, but are only occasionally tapping into interpretive programming. This is in part due to the limited availability of the interpreter during the school year when troops are most active.

F. Summer and Fall Campers

This group is more interested in nature-oriented "traditional" programming and is not on the lake as much as the summer boaters are. Campfire programs and hikes are successful with this group.

II. Facilities

The interpretive service is located at the Paynetown State Recreation Area.

Nature Center

The nature center is a converted beach house, located at the Paynetown Beach. It is open during weekends in the spring and fall (Saturday 1-8 p.m. and Sunday 10 – 2) , and five days a week (Thursday - Monday) during the summer.

The facility has an exhibit area, small program area, office and storage space. An outside seating area includes benches and a screen. There are plans to build an open-sided shelter next to the nature center. The shelter will offer an outdoor, roofed program space visible from the beach.

The purpose of Lake Monroe is flood control, under the control of the Corps of Engineers. As a result, lake levels fluctuate as the dam is opened and closed. When the lake level is up, the Interpretive Center becomes inaccessible. During some years, the building has remained closed for large portions of the summer season.

Interpretive Center

Program Area at Interpretive Center

III. Staff

A. Seasonal Staff

Lake Monroe has one 180-day interpreter position. This position goes from spring through fall. Throughout the year, the wildlife specialist conducts formal education programs (hunter education) and informal teaching as he encounters users.

A full-time interpreter position has been allocated, but is currently frozen.

IV. Programs

Three past interpreters were interviewed along with other reservoir staff. Opinions differ about which programs are successful. Program success varies with each seasonal, their expertise, experience and creativity.

Programs are conducted almost exclusively at Paynetown with the campground and beach audience. The highest attendance numbers occur with craft programs and other participatory programs.

A. Programs that Work
Based on interviews with past interpretive staff, the following interpretive programs were successful.

1. *Recreation-based programs* with a message. Examples include face painting with emphasis on animals, game shows, scavenger hunts or painting pictures of deer.
2. *Craft activities* set out on the porch visible to visitors. Generally, participants are not responding to program schedules, but are seeing something in progress and are wandering over. "Programs usually start with a kid on a bike."
3. *Night hikes* entitled "Owl Prowl" were successful. If it was called "Night Hike", attendance was low.
4. *Roving at piers and the beach.*
5. *Live animals programs.* Restrictions on keeping live animals longer than 30 days has made this type of program difficult.
6. *Traditional programs in fall and spring season.* During these seasons, campers differ from the summer boat crowd.
7. *Beach parties with interpretive messages.*
8. *Pet programs* such as a hike. One interpreter expressed a concern about "too many dogs already" and the message this type of program conveys.
9. *Fishing derbies and programs.* Early morning was the best time for this program. It reaches people before they go out on the lake. Some topics included filleting and fish cleaning demonstration.
10. *Campfire programs* in the fall (see #6).
11. *Programs where participants can take something with them, make something, etc.*
12. *Pre-school programs with the community.* Painting programs became a weekly event for a group of mothers and their children.
13. *Events such as eagle weekends, heritage weekend and the Pirates of Paynetown.* One interpreter commented that the pirate event lacked an interpretive tie to the site.

B. Programs that didn't work
1. *Roving at Campgrounds.* At the end of the day, campers wanted to relax and have their privacy respected. Other staff felt campground roving worked well.
2. *Traditional programs during the summer.*
3. *Programs posted on schedules.*

C. Reservoir Specialist Programs
The wildlife specialist conducts employee training, and hunter and boater education. Waterfowl and trapper education programs were well attended. The wildlife specialist also assists with regional special events such as the annual Wildflower Foray.

V. Media

A. Signs

1. Flood control. All of the boat ramps have a sign explaining the role of the lake in flood control.
2. Stillwater Marsh. This sign interprets the management of the marsh for wildlife, and the marsh's flooding cycle.
3. Reservoir Management. This sign explains the mission of the reservoirs. Several are placed at campground restrooms.
4. Campground Wildlife. This sign explains problems with nuisance wildlife at the campgrounds. These signs are at the campground restrooms.

Interpretive panel at Lake Monroe

Bulletin Board

B. Brochures

A trail brochure is available for the Paynetown, Fairfax and Allen's Creek trails. The brochure includes trail maps and rules. A trailhead at Paynetown includes an artistic map.

C. Bulletin Boards

Changeable bulletin boards are located at high use areas. Information on the bulletin boards is changeable and currently includes a lake map, interpretive schedule, map of the State Recreation Area and emerald ash borer information.

D. Exhibits

The Interpretive Center originally served as a bathhouse at the Paynetown Beach. The exhibits have developed during the tenure of several seasonal interpreters. Exhibits include cases with taxidermy lining exterior walls. A central area contains live animal exhibits. Activity tables are along the windows.

Interpretive Center Exhibits

VI. Partnerships

A. Lake Monroe Sailing Association
The sailing association is located at Moores Creek. It is a private organization that manages the boat rental. They are under contract with the DNR in cooperation with the USACOE. The DNR manages the group docks and sublets the marina to the association. The marina includes shelter houses, a shower house, boat storage and a playground. The marina has a full-time manager.

B. Fourwinds Resort and Marina
The Fourwinds Resort and Marina is the largest state concession. It includes a full-service hotel, restaurant, and boat rental. The Fourwinds is located at the Fairfax SRA and is closed during the winter.

*Fourwinds Resort*

C. Corps of Engineers
The US Army Corps of Engineers constructed Lake Monroe and leases the land surrounding the lake to the DNR. They provide visitor counters in the recreation areas and lake patrols. Their office at the dam has some displays and brochures. The Corps conducts water safety instruction and works with the DNR on boundary issues.

Corps of Engineers exhibit
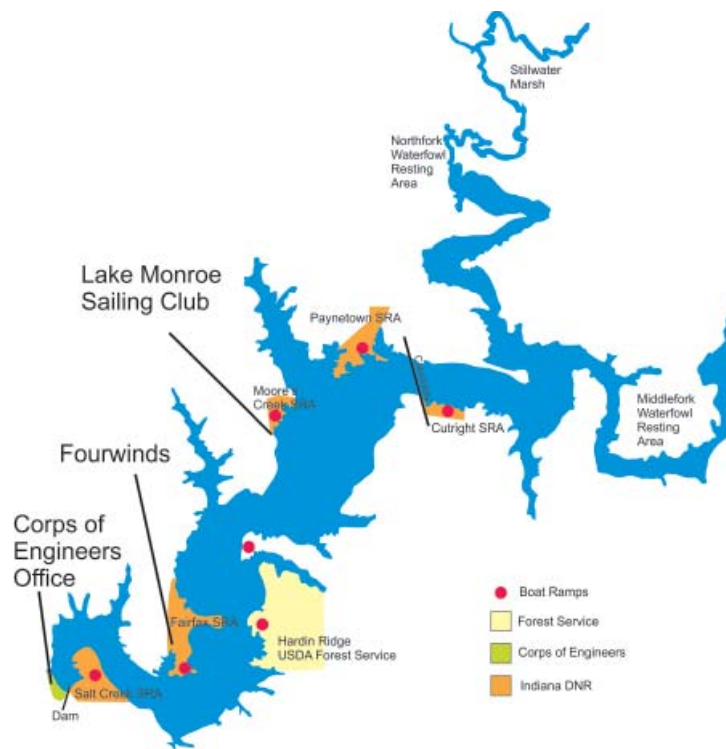
VII. Regional Opportunities

All are within 20 Miles of Paynetown

A. Hoosier National Forest
Portions of Lake Monroe lie within the purchase area of the Hoosier National Forest. The forest is managed by the USDA Forest Service which is headquartered in Bedford, Indiana. The total forest area is 201,047 acres with 266 miles of maintained trails. Parcels of the forest are found as far north as Lake Monroe and to the south on the Ohio River.

The northernmost portion of the Hoosier National Forest includes the Charles C. Deam Wilderness Area, the only wilderness area in Indiana.

The Forest Service concessions out Hardin Ridge, a camping area and boat launch on Lake Monroe. Forest Service employees occasionally conduct programs at Hardin Ridge for the campground audience.

B. Brown County State Park
At nearly 16,000 acres, Brown County State Park is the largest state park in Indiana. The park includes extensive hiking, mountain biking and horse trails, campgrounds, cabins and a full-service inn.

The Ogle Hollow and 10 O'Clock Treaty Nature Preserves are contained within the park boundaries.

C. Yellowwood State Forest
Over 23,000 acres in size, the state forest offers camping, hunting, hiking and horse trails. A 133-acre lake has fishing and rowboat rentals.

D. Morgan-Monroe State Forest
This forest is 24,000 acres with three small fishing lakes, hiking, hunting and camping. Two trails, Three Lakes and Low Gap, are 10-miles long. Many other shorter trails are available.

E. T.C. Steele State Historic Site
The 211-acre historic site includes the home, landscaping and studio of artist T.C. Steele (1847-1926). Steele settled in Brown County, attracting other artists and eventually forming the Brown County Art Colony. His canvases capture the southern Indiana landscape.

F. Bloomington, Indiana
Bloomington is a mid-sized campus community that hosts many events, festivals and concerts.
  a. Indiana University. The 1,933-acre campus serves a student body of 43,500. Points of interest include:
    • Lilly Library which houses one of the largest rare book and manuscript collections in the United States.
    • IU Art Museum which has a collection of over 30,000 objects including works by Claude Monet and Jackson Pollock.
    • Mathers Museum of World Cultures which has 20,000 objects and 10,000 photos from the region and around the world.
    • Indiana University's music school is the largest music school in the country. Concerts and recitals from jazz to ancient music are scheduled daily.
    • Athletic events are held throughout the school year.
  b. Bloomington Parks and Recreation.
    The city parks department offers a large number of recreation, sports and leisure activities and events.

From April through October, the department sponsors a large farmer's market in downtown. Several parks and interconnected trails are managed by Bloomington Parks.

- Griffy Reservoir. This property includes a man-made lake which served as Bloomington's water supply before Lake Monroe was built. The park also has 1,179 wooded acres with trails and a state dedicated nature preserve. Canoe and rowboats may be rented.
- Leonard Springs. An impoundment at this site also served as the city water supply in the early 1900s. The dam was breached and the impoundment is now a wetland fed by several large springs. Springs and caves are common on the steep slopes surrounding the impoundment. Old mill sites are located at the springs.
- Wapahani Mountain Bike Park. The 50-acre park includes five miles of dirt trails.
- B-Line Trail. The B-Line trail stretches three miles from just north of downtown to Country Club Drive. The pedestrian and bike trail passes through the heart of downtown and its historic buildings, past the farmer's market and the Wonderlab Children's Science Museum.
- Jackson Creek Trail. Phase I (3/5-mile) of this trail has been completed with future phases in planning.
- Clear Creek Trail. The 2.4-mile trail connects with the other existing trails. The entire length of the trail is wheelchair accessible.
- Bloomington Rail Trail. This trail connects the Clear Creek Trail and the B-Line trail and is three miles in length.

G. Lake Lemon

Lake Lemon is 1,650 acres and managed by the Lake Lemon Conservancy District. The lake's Riddle Point Park has a boat ramp, shelter house and nature trail. A marina and yacht club are on the lake.

H. Nashville, Indiana

This small Brown County town is a tourist attraction that grew from the original artist colony. The town has numerous shops featuring crafts and antiques. Music venues cater to local and bluegrass music.

Regional Opportunities

VIII. Theme

Theme: *Lake Monroe's story is one of past landscapes, present diversity and future generations.*

Subthemes:

A. Past Landscapes

1. Geology

The formation of the Lake Monroe's landscape includes oceans, deltas, glaciers and earthquakes.

2. Settlement and farm practices.

a. Settling the rugged terrain required hard work, persistence and self-reliance.

b. Farm methods caused damage to the landscape.

3. Conservation and flood control.

a. Restoring the land is a slow process involving many people and practices.

b. Lake Monroe resulted from the need for flood control.

B. Present Landscapes

1. Habitat diversity

Lake Monroe and its habitats are managed in a variety of ways to increase diversity.

2. Species diversity

Game and non-game species are assisted by management practices.

3. Multiple Use

Lake Monroe is attractive to many different user groups.

C. Future Landscapes

Stewardship and management. Planning, implementation and monitoring guarantees that future generations will have a high quality experience at Lake Monroe.

IX. Recommendations

Recommendations assuming a 180 Seasonal Position

A. Programs

1. Spontaneous Programming

Former seasonals and staff mentioned that scheduled programs received low attendance. Informal discussions, roving and ongoing activities were more successful. To accommodate this user pattern, it is recommended that an activity, craft or other walk-in program set out each day. This could be promoted on the schedule with a "From 10-2 p.m., come by the Nature Center for _____", and be primarily a short activity for walk-ins.

2. Programming for Repeat Visitors

Many of the campers at Paynetown are repeat visitors who come several weekends during the summer. There are some program options for returning visitors:

a. Hoosier Quest Patch Program

This program requires certain goals be met (such as program attendance). It works well for repeat visitors who can work on a patch over the course of the summer.

b. Themed Weekends

Give each weekend a different theme with related programs. For example the amphibian theme would have examples of live amphibians on display, a game related to amphibians and a craft related to amphibians.

3. Exercise Walks

Several longer hike options originate from the Paynetown Office. DuringSaturday mornings in the spring and fall, a fast-paced walk with an interpretive introduction can be offered. This program would be promoted to the local community and through hiking and outdoor organizations.

4. Pirates of Paynetown

The Pirates of Paynetown special event provides an opportunity to inform people about the site. A program called "Skulls and Crossbones" would feature skulls and bones from different regional animals. It could incorporate a "name that skull" quiz or owl pellet dissection. This program could be set out during the special event and catch people passing by.

5. Raptor Programs

A special event on raptors would include live raptors from Hardy Lake. The program could be scheduled for several hours along with related Project Wild activities, face painting and crafts. A small fee could be charged for face painting.

6. Spanish Language Roving

A bilingual volunteer can accompany the interpreter in picnic areas frequented by Hispanic populations. A volunteer can be located through IU or the City of Bloomington.

B. Media

1. Signs

a. History Kiosk

A three-panel display would feature the lives of the early settlers, Salt Creek, Paynetown, flood history

and building the reservoir. The kiosk would be placed near the Paynetown Beach.

b. Paynetown
Many visitors are unaware that Paynetown was a town with a general store and other amenities. A sign about the town would feature photos and information about Paynetown.

c. Trailhead Kiosk
The current trail map, while artistic, is difficult to use. This map should be replaced by an aerial or topographic image with a trail overlay.

Example of 3-sided kiosk

2. Brochures

Trail Brochures. The trail brochure for Paynetown, Fairfax and Allen's Creek should be made into three separate trail brochures. Each brochure would include a map, and natural, geological and cultural information about each trail.

3. Exhibits

a. Lake Exhibit
The Interpretive Center has a row of windows offering a great view of the lake. In front of the windows are activity tables for children. These tables could be moved elsewhere, allowing space for an exhibit that orients viewers to the lake. The exhibit would include a map oriented to the view with distances and features identified. It would also include information on Lake Monroe, its construction, etc. Anchored binoculars or a spotting scope can allow people to scan the lake.

b. Fewer Cases, More Active Areas
At present, rows of cases containing taxidermy mounts and other passive exhibits line the walls. Since the primary audience at the Interpretive Center is children looking for things to do, removing some of the cases will create new activity areas. Touch tables containing rocks, fossils, bones, and other easily replaced objects can be set out. A changeable touch box would allow kids to guess by feel. Activities can be available on additional tables.

c. Friendly Entry
The first view encountered upon entering is a plywood wall – one side of the live animal exhibit. To make the first impression more inviting, consider creating more space and an interior view. This includes reducing the size of the live animal area to give more interior space and a less crowded feel to the display room.

d. Spanish Labels
Since a large Hispanic population uses Paynetown, the addition of Spanish labels to some of the exhibits will make the exhibits more inclusive. A local high school Spanish Club could create the labels.

C. Facility
The beach restrooms attached to the Interpretive Center must be open when the Interpretive Center is open.

Recommendations Assume a Full-time Position

A. Staff
Full-time Interpreter
Over 1.5 million people visit Lake Monroe annually. In addition, the Paynetown State Recreation Area is close to the city of Bloomington, Indiana (pop. 80,405), which includes Indiana University. In spite of this high attendance and close proximity to a large population, Lake Monroe has only one 180-day seasonal interpreter position.

There are several arguments for instituting a full-time position.
1. Serving new audiences. Having only one seasonal position limits that position to the Paynetown camper and beach audience. This audience is largely made up of boaters who are on the lake and have to be coaxed to attend programs. Having a full-time position while still maintaining the 180-day position will create opportunities to go where audiences are. While one interpreter keeps the Center open and conducts informal programming, the other interpreter can be conducting a birding workshop at Stillwater Marsh, leading a kayak trip on the lake, or leading a hike for a group of foreign students from IU.

2. Continuity. The short-term nature of the 180-day position results in high turnover. Few seasonals work more than two consecutive seasons. Each new interpreter must learn the site, audience, agency and procedures. Each must learn which programs work and which don't.

   Continual turn-over means that interpretation at Lake Monroe never advances beyond this first phase of training and experimentation. The interpretive service can never build a comprehensive, long-term program.

3. Connection with Community. A familiar face gives Lake Monroe a presence in the local community. A full-time interpreter is likely to be a permanent resident and long-term member of the community. They are a strong public relations and information representative for the property. This is of great benefit to the property and the DNR.

4. Resource Building. One role of an interpretive service is to build and maintain an archive and library for the property. Photos, books, artifacts, articles, inventories and other records are continually gathered, filed, documented and updated. This role is difficult to accomplish at properties with only seasonal interpreters. A lot of Lake Monroe's valuable history is being lost.

B. Programs
Having a full-time position in addition to the 180-day position allows interpreters the flexibility to go to other locations and serve audiences other than the Paynetown beach/campground audience.

Examples of programs with other audiences:
1. Kayak and canoe trips. These could be offered in the early morning or evening and during spring or fall. This could be conducted in collaboration with J.L. Waters of Bloomington and their Monday Night Paddles.

2. Hikes to the Allen's Creek Carbonate Bank. These walks could be promoted through the Sassafras Audubon newsletter, Newcomers, and other local organizations. The IU Geology Dept. or Indana Geo logical Survey can provide expertise with identification and other information. The program could also be developed to meet scout badge requirements.

3. Drinking Water History Program. Lake Monroe is the most recent reservoir in a series of reservoirs, many of which are now Bloomington Parks (Wapahani, Twin Lakes, Leonard Springs, Griffy and Lake Lemon). The story includes government corruption and a threat by IU to leave Bloomington. This program would partner with Bloomington Parks, the Bloomington City Water and the DNR. The program would be an all-day tour of several former reservoirs, going in chronological order and ending at the utility on Lake Monroe. The program could promoted to Bloomington citizens, history organizations or be part of a Tourist in Your Own Town series.

4. Pioneer Life Programs
   These programs not only tie to the local history, but also to the wildlife management mission of the reservoir. The event would be promoted locally and involve skilled volunteers to demonstrate. The following programs could be part of a large event, or broken into a series.

   Program possibilities include:
   a. Pioneer wildlife skills: tanning hides, making buckskin clothing.

   b. Wildlife recipes: cooking demonstrations, recipes, and samples of venison, rabbit, dove, etc.

   c. Pioneer animals: This would be a "petting zoo for a day" featuring animals that every farmer needed including a mule, ox, hogs, chickens, cows, and hounds. Partnering with the local Extension Service would provide some leads for display animals.

   d. Early trades: blacksmith, tannery, distillery, salt making, etc.

   e. The Peddler. A first-person interpreter in costume would barter and trade items with children.

   f. Old-time Church Service. A first-person interpreter/preacher could present an authentic service from the 1800s with music, prayers and a sermon from the era.

5. Hunting Dog Demonstrations. This event would be of interest not only to hunters, but to the general public who enjoy watching the highly trained dogs. The lake location makes water and land demonstrations possible.

6. Wildlife Targeted Programming. Working with the Wildlife Specialist, programs can be developed to educate and encourage the next generation of hunters and fishermen.

7. Scout Programs. Developing and marketing to scouts has been successful at other properties. Matching programs to specific badge requirements and promoting these through a brochure will encourage both girl and boy scout troops to come to the lake.

8. Participation in Existing Events. A full-time interpreter will have greater participation in region-wide events. They could serve on planning committees and conduct programs at the reservoir and elsewhere. Examples of events for interpreter involvement are the Eagle Watch, Christmas Bird Count and Wildflower Foray.

9. Employee Training. Seasonal employees are the most likely to be approached by a visitor as they are frequently more visible than managers are. It is important that all employees have the information and training to best represent the property. A full-time interpreter can assist with annual employee training. Interpreters will have experience in customer service as well as being able to give an overview of the property, its cultural and natural history.

10. Pre-school Programming. In a past season, a casual visit developed into a regularly scheduled painting program for pre-schoolers from Bloomington. This is a group that is looking for activities throughout the year. A short program would include an activity and hike on a theme and meet weekly for several weeks. A small fee could be charged to cover materials.

11. Oral History Project. A full-time interpreter can make connections with families that have lived in the lake area for generations. Collecting their stories and photos is important before this information is lost.

12. Roving at Stillwater. During active birding times, the interpreter could be set up with a spotting scope at the Stillwater observation area, assisting with bird identification.

Birding at Stillwater

C. Media

1. Office Lobby History Exhibit. The history of the region and the reservoir should be presented in the main office, a high-use area. The exhibit could include maps and enlarged photos of the town of Paynetown, pre-dam photos, the reservoir construction and people recreating at the lake.

Reservoir office lobby

2. Nature Center Exhibit Plan. When a new Interpretive Center is constructed on higher ground (see Facilities), new exhibits would be planned in conjunction with the new facility. In the meantime, a full-time interpreter can develop an exhibit plan. The plan would include a floorplan and exhibit concepts for the facility. Individual exhibits can be constructed as funding becomes available.

D. Facilities

1. New Interpretive Center. The current building was formerly a beachhouse. Spaces are not designed to function as an Interpretive Center. Additionally, the lake level frequently results in the Interpretive Center being an inaccessible island, serving nobody. A new building, designed with display area, office space, a multi-purpose

Possible location for interpretive center

room, storage, archive space and restrooms will much better serve property visitors. One location would be near the Deer Run Shelter which has high visibility and close proximity to campgrounds and the trailhead.

2. Floating Interpretive Center. A pontoon boat, equipped with program materials could be used for several purposes.
   a. Aquatic programs for IU, schools and scout programs.
   b. Taking programs to other locations on the lake (Fairfax, for example).
   c. Roving with boaters on the lake.
   d. Star programs on the lake.
   e. Bird Counts.

f. Taking groups to the fossil beds at Allen's Creek.

3. Log Cabin. A reconstructed or replica cabin, using construction techniques from the region can be built by the new Interpretive Center. The cabin would serve as a program area for history events, workshops and demonstrations.

4. Program Facility at Fairfax. A storage and program area at Fairfax would allow the interpreter to conduct roving interpretation and programming for beach users and groups who want an alternate site. This location would work for groups from the south and west of the lake. A locked storage area would have supplies and materials for commonly conducted programs. The program area could be a roofed gathering area with benches or picnic tables.

D. Partners

1. Friends Group. A successful Friends group can greatly extend an interpreter's staff and budget. Volunteers can conduct fundraising programs, help with special events, build exhibits, staff the Interpretive Center, and do numerous other projects and services.

2. Hiking Groups. The Hoosier Hiking Club has partnered with other land holding agencies in the region. The club not only conducts hikes, but assists with trail building and maintenance.

3. Indiana University. The Glen Black Laboratory of Archaeology has a large collection of photos and information from the local region. Their resources and expertise would help with program and media development.

4. Monroe County History Center. This organization also has a wealth of photos and other resources from the region that includes Lake Monroe. Their information can help with program and media development.

5. Natural Resources "Hub". Lake Monroe is located in the center of several land holding agencies. The national forest, state forests, state parks and Corps of Engineers surround Lake Monroe. Lake Monroe could serve as the host location for joint planning and collaborative activities.

Phase I with time estimate and reference identifiers
Phase I assumes one 180-day position with annual turnover

Years to Complete	1	2	3	4	5
Project					
Programs (started by next seasonal and continued each following season)					
Increase spontaneous, walk-in and roving programming	■				
Increase use of Hoosier Quest program for repeat visitors	■				
Develop themed weekends for each weekend	■				
Exercise Walks originating at Main Office	■				
Develop skulls and crossbones program for Pirates of Paynetown	■				
Raptor programs	■				
Spanish language roving	■				
Media					
Signs					
History kiosk	■	■			
Paynetown	■	■			
Trailhead kiosk	■	■			
Brochures					
Create separate trail brochures for Paynetown, Fairfax and Allen's Creek	■	■	■		
Exhibits					
Lake exhibit		■	■		
Remove some cases to create more activity areas	■				
Open up entry to give view of exhibit area	■				
Add Spanish labels	■	■	■		
Facility					
Keep restrooms open during Nature Center hours	■				
Staff					
Create full-time staff position	■	■	■		

Phase II with time estimate and reference identifiers
Phase II assumes full-time interpreter position

Years to Complete	1	2	3	4	5
Project					
Programs					
Kayak and canoe trips	■	■			
Hikes to the Allen's Creek carbonate bank	■				
Drinking water history program		■	■		
Pioneer life programs/event	■	■	■	■	
Hunting dog demonstrations	■				
Wildlife programming	■				
Badge programs for scouts	■	■			
Participation in existing regional events	■	■	■		
Employee training	■				
Pre-school programming	■				
Oral history project		■	■	■	■
Roving at Stillwater	■				
Facilities					
New interpretive center		■	■	■	■
Floating interpretive center pontoon		■	■		
Log cabin at new interpretive center			■	■	
Program facility at Fairfax			■		
Media					
Exhibits					
Office lobby history exhibit		■	■		
New interpretive center exhibit plan, design and fabrication			■	■	
Partners					
Establish Friends group	■	■			
Hiking groups	■				
Indiana University	■				
Monroe County History Center	■				
Establish natural resources "hub" at Lake Monroe		■	■	■	

Appendix A: Bird Species in the Lake Monroe Watershed

Species	Winter	Spring	Summer	Fall
LOONS &CORMORANTS				
Red-throated Loon	R	R		U
Common Loon	U	C		A
Pied Billed Grebe	U	C	U	C
Horned Grebe	U	C		C
Red-necked Grebe	R			
Northern Gannet			R	
American White Pelican				R
Double-crested Cormorant	U	C	R	C
BITTERNS & HERONS				
American Bittern		U	R	U
Least Bittern		U	R	U
Great Blue Heron	U	C	C	A
Great Egret		U	U	U
Snowy Egret		R	R	R
Little Blue Heron		U	R	U
Cattle Egret		U	R	R
Green-backed Heron		C	C	C
Black-crowned Night-Heron		U	R	U
Yellow-crowned Night-Heron		U	R	U
SWANS				
Tundra Swan		R		U
Mute Swan	R			
GEESE				
Great White-fronted Goose				R
Snow Goose	R			U
Canada Goose	C	A	C	A
DABBLING DUCKS				
Wood Duck	U	A	A	A
Green-winged Teal	R	C		C
American Black Duck	C	A	U	A
Mallard	C	A	A	A
Northern Pintail	U	C		C
Blue-winged Teal	U	A	U	A
Northern Shoveler		C		C
Gadwall	U	C		C
American Wigeon	U	C		C
DIVING DUCKS				
Canvasback	U	U		U
Redhead	R	C		C
Ring-necked Duck	U	A		A
Greater Scaup	R			
Lesser Scaup	U	A		A
Oldsquaw	R	R		R
Black Scoter	R	R		R
Surf Scoter	R	R		R
White-winged Scoter	R	R		R
Common Goldeneye	C	A		A
Bufflehead	C	C		C
Hooded Merganser	C	C		C
Common Merganser	C	C		C
Red-breasted Merganser	C	C		A
Ruddy Duck	R	U		U
VULTURES to FALCONS				
Turkey Vultures	U	A	A	A
Osprey		C	R	C
Black-shouldered Kite		R		
Mississippi Kite		R		
Bald Eagle	C	C	U	C
Northern Harrier	U	U	R	U
Sharp-shinned Hawk	U	U	U	C
Cooper's Hawk	U	U	U	C
Northern Goshawk	R			
Red-shouldered Hawk	U	U	U	U
Broad-winged Hawk		C	C	C
Red-tailed Hawk	C	C	C	C
Rough-legged Hawk	U			
Golden Eagle	R			
American Kestral	C	C	C	C
Merlin	R	R		R
Pergrine Falcon	R	R		U
GROUSE, TURKEY, QUAIL				
Ruffed Grouse	C	C	C	C
Wild Turkey	U	U	U	U
Northern Bobwhite	U	U	U	U
RAIL to COOT				
King Rail		R		R
Virginia Rail		U	R	U
Sora		C	R	C
Common Moorhen		R	R	R
American Coot	U	A	U	A
SHOREBIRDS				
Sandhill Crane	R	U		U
Blackbellied Plover		U		U
Lesser Golden Plover		U		U
Semipalmated Sandpiper		C		C
Piping Plover		R		R
Killdeer	U	C	C	C
American Avocet				R
Greater Yellowlegs		A		A
Lesser Yellowlegs		A		A
Solitary Sandpiper		A		A
Willet		R		R
Spotted Sandpiper		C	C	C
Upland Sandpiper				R
Whimbrel				R
Hudsonian Godwit				R
Ruddy Turnstone		U		U
Red Knot		R		R
Sanderling		U		U
Western Sandpiper		U		U
Least Sandpiper		A		A

Species	Winter	Spring	Summer	Fall
White-rumped Sandpiper		U		U
Baird's Sandpiper		U		U
Pectoral Sandpiper		A		A
Dunlin	R	C		C
Stilt Sandpiper		U		U
Buff-breasted Sandpiper		R		R
Shortbilled Dowitcher		C		C
Long-billed Dowitcher		R		R
Common Snipe	U	C	R	A
American Woodcock		C	C	C
Wilson's Phalarope		R		R
Red-necked Phalarope		R		R
Red Phalarope				R
Parasitic Jaeger				R
GULLS & TERNS				
Laughing Gull		R	R	R
Franklin's Gull	R	U		U
Little Gull				R
Bonaparte's Gull	U	C		C
Ring Billed Gull	C	A	U	A
Herring Gull	C	C	U	C
Caspian Tern		C		C
Forster's Tern		C		C
Least Tern		R		R
Black Tern		C		C
DOVE & CUCKOO				
Rock Dove	C	C	C	C
Mourning Dove	C	C	C	C
Black-billed Cuckoo		U	U	U
Yellow-billed Cuckoo		C	C	C
OWLS				
Eastern Screech Owl	C	C	C	C
Great Horned Owl	C	C	C	C
Barred Owl	C	C	C	C
Short Eared Owl	R			
GOATSUCKERS				
Common Nighthawk		C	U	A
Chuck-will's Widow			R	
Whip-poor-will			A	
SWIFT, HUMMINGBIRD, KINGFISHER				
Chimney Swift		C	C	C
Ruby-throated Hummingbird		C	C	C
Belted Kingfisher	U	C	C	C
WOODPECKERS				
Redheaded Woodpecker	U	U	U	U
Red-bellied Woodpecker	A	A	A	A
Yellow-bellied Sapsucker	U	U		U
Downey Woodpecker	A	A	A	A
Hairy Woodpecker	C	C	C	C
Northern Flicker	C	C	C	C
Pileated Woodpecker	C	C	C	C

Species	Winter	Spring	Summer	Fall
FLYCATCHERS				
Olive-sided Flycatcher		U		R
Eastern Wood-Pewee		C	C	C
Acadian Flycatcher			C	
Alder Flycatcher		?	R	?
Willow Flycatcher		?	U	?
Least Flycatcher		U		?
Eastern Phoebe	U	C	C	C
Great Crested Flycatcher		C	C	C
Eastern Kingbird		C	C	C
LARKS to SWALLOWS				
Honed Larks	U	U	U	C
Purple Martin		U	U	U
Tree Swallow		A	C	A
North. Rough-winged Swallow		C	C	C
Bank Swallow		C	U	C
Cliff Swallow		C	C	C
Barn Swallow		A	A	A
JAYS, CROWS				
Blue Jay	A	A	A	A
American Crow	A	A	A	A
CHICKADEE to GNATCATCHER				
Blackcapped Chickadee	R			
Carolina Chickadee	A	A	A	A
Tufted Titmouse	A	A	A	A
Red-breasted Nuthatch	U	U		U
White-breasted Nuthatch	A	A	A	A
Brown Creeper	U	U		U
Carolina Wren	C	C	C	C
House Wren	R	C	C	C
Winter Wren	R	U		U
Marsh Wren	R	U		U
Golden-crowned Kinglet	C	C		C
Ruby-crowned Kinglet	U	C		C
Blue-gray Gnatcatcher		C	C	C
BLUEBIRD to THRASHER				
Eastern Bluebird	C	C	C	C
Veery		U		U
Gray-cheeked Thrush		U		U
Swanson's Thrush		C		C
Hermit Thrush	U	U		U
Wood Thrush		C	C	C
American Robin	C	A	A	A
Grey Catbird	U	C	C	C
Northern Mockingbird	C	C	C	C
Brown Thrasher	U	C	C	C
PIPITS to STARLING				
Water Pipit	R	U		C
Cedar Redwing	C	C	C	C
Loggerhead Shrike			R	
European Starling	A	A	A	A

Species	Winter	Spring	Summer	Fall
VIREOS				
White-eyed Vireo		A	A	A
Solitary Vireo		U		U
Yellow-throated Vireo		U	U	U
Warbling Vireo		C	C	C
Philadelphia Vireo		U		U
Red-eyed Vireo		A	A	A
WARBLERS				
Blue-winged Warbler		C	A	C
Golden-winged Warbler		U		U
Tennessee Warbler		A		A
Orange-crowned Warbler		U		U
Nashville Warbler		C		C
Northern Parula		C	C	C
Yellow Warbler		C	C	C
Chestnut-sided Warbler		C	U	C
Magnolia Warbler		C		C
Cape May Warbler		U		U
Black-throated Blue Warbler		R		R
Yellow-rumped Warbler	U	A		A
Black-throated Green Warbler		C	U	C
Blackburnian Warbler		C		C
Yellow-throated Warbler		C	A	C
Pine Warbler		U	U	U
Prairie Warbler		C	A	C
Palm Warbler		C		C
Bay-breasted Warbler		U		U
Blackpoll Warbler		C		C
Cerulean Warbler		U	U	U
Black-and white Warbler		C	U	C
American Redstart		C	U	C
Prothonotary Warbler		U	C	U
Worm-eating Warbler		U	U	U
Ovenbird		C	C	C
Northern Waterthrush		C		C
Louisiana Waterthrush		U	C	U
Kentucky Warbler		C	C	C
Connecticut Warbler		R		R
Mourning Warbler		U		U
Common Yellowthroat	R	A	A	A
Hooded Warbler		U	U	U
Wilson's Warbler		U		U
Canada Warbler		U		U
Yellow-breasted Chat		C	C	C
TANAGERS				
Summer Tanager		U	U	C
Scarlet Tanager		C	C	C
CARDINAL & GROSBEAK				
Northern Cardinal	A	A	A	A
Rose-breasted Grosbeak		C		C
Indigo Bunting		A	A	A

Species	Winter	Spring	Summer	Fall
Dickcissel	R	R	R	R
Rufous-sided Towhee	C	A	A	A
NEW WORLD SPARROWS				
American Tree Sparrow	A			
Chipping Sparrow	R	A	A	A
Field Sparrow	C	A	A	A
Vesper Sparrow		U	R	U
Lark Sparrow		R		
Savannah Sparrow	R	C	U	C
Grasshopper Sparrow		R	R	R
Henslow's Sparrow		R	R	R
Le Conte's Sparrow				R
Sharp-tailed Sparrow				R
Fox Sparrow	U	C		C
Song Sparrow	A	A	A	A
Lincoln's Sparrow		U		U
Swamp Sparrow	C	C	R	C
White-throated Sparrow	C	C		C
White-crowned Sparrow	C	C		C
Dark-eyed Junco	A	A		A
Lapland Longspur	R			
Snow Bunting	R			
BLACKBIRDS				
Bobolink				U
Red-winged Blackbird	U	A	A	A
Eastern Meadowlark	U	C	C	C
Yellow-headed Blackbird				R
Rusty Blackbird	R	C		C
Brewer's Blackbird	R	R		R
Common Grackle	U	A	A	A
Brown-headed Cowbird	U	A	A	A
Orchard Oriole		C	C	C
Northern Oriole		C	C	C
FINCHES				
Purple Finch	C	C		C
House Finch	C	C	C	C
Red Crossbill	R			
White-winged Crossbill	R			
Common Redpoll	R			
Pine Siskin	C	C		C
American Goldfinch	A	A	A	A
Evening Grosbeak	U			
WEAVER FINCH				
House Sparrow	A	A	A	A

Codes

A = Abundant (Can be seen every day with little effort)

C = Common (Likely to be seen with some effort)

U = Uncommon (Occassionally seen, but unpredictable)

R = Rare (Fewer than five occurrences per year or season)

Appendix B: Rare and Endangered Species in the Lake Monroe Watershed

Scientific Name	Common Name	Status
Lynx rufus	bobcat	state endangered
Haliaeetus leucocephalus	bald eagle	state endangered/ federally endangered
Lanius ludovicianus	logger head shrike	state endangered
Pandion haliaetus	osprey	state endangered
Rallus elegans	king rail	state endangered
Accipiter cooperi	Cooper's hawk	special concern
Accipiter striatus	sharp-shinned hawk	special concern
Buteo lineatus	red-shouldered hawk	special concern
Buteo platypterus	broad-winged hawk	special concern
Helmitheros vermivorous	worm-eating warbler	special concern
Ixobrychus exilis	least bittern	special concern
Miniotilta varia	black and white warbler	special concern
Wilsonia citrina	hooded warbler	special concern
Dendroica cerulea	cerulean warbler	not listed
Dendroica pinus	pine warbler	not listed
Icturus spurius	orchard oriole	not listed
Clonophis kirtlandi	Kirtland's snake	state threatened/ federal candidate
Opheodrys vernalis blanchardi	western smooth green snake	state threatened
Crotalus horridus	timber rattlesnake	special concern
Hemidactylium scutatum	four-toed salamander	state threatened
Autochton cellus	gold-banded skipper	not listed
Euphydryas phaeton	Baltimore oriole	not listed
Panicum mattamuskeetense	panic grass	extirpated (?)
Stachys clingmanii	Clingman hedge-nettle	extirpated (?)
Gerardia fasciculata	false foxglove	new to state
Platanthera ciliaris	yellow fringed orchis	state endangered
Solidago hispida	hairy goldenrod	state endangered
Spiranthes orchroleuca	yellow nodding ladies' tresses	state endangered
Arenaria stricta	Michaux's stitchwort	state threatened
Cladrastis lutea	yellowwood	Istate threatened
Hypericum pyramidatum	great St. John's-wort	state threatened
Lilium superbum	turk's cap lily	state threatened
Rubus odoratus	purple flowering raspberry	state threatened
Antennaria solitaria	single-headed pussytoes	state rare
Cypripedium calceolus parviflorum	small yellow lady's-slipper	state rare
Epigea repens	trailing arbutus	state rare
Lespedeza nuttallii	Nuttail bushclover	state rare
Platanthera clavellata	small green woodland orchis	state rare
Synandra hispidula	Gyandotte beauty	state rare
Carex abscondita	thicket sedge	watch list
Cypripedium calceolus pubescens	large yellow lady's-slipper	watch list
Hydrastis canadensis	golden seal	watch list
Isotria verticillata	large whorled pogonia	watch list
Juglans cinerea	butternut	watch list
Lycopodium lucidulum	shining clubmoss	watch list
Monotropa hypopithys	American pinesap	watch list
Panax quinquefolius	American ginseng	watch list
Platanthera lacera	green-finged orchis	watch list
Platanthera peramoena	purple fingless orchis	watch list
Pychanthemum torrei	Torrey mountain mint	watch list
Tsuga canadensis	eastern hemlock	watch list