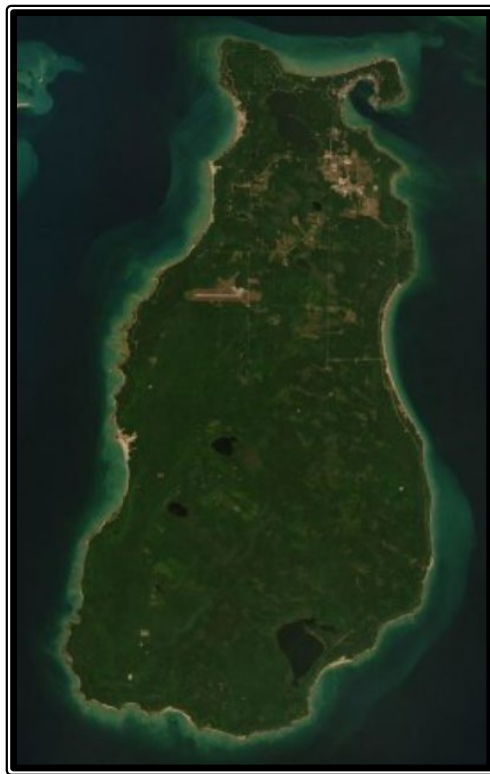


# Implementation Plan for the Management of State-owned Lands on Beaver Island

Addendum to the  
Management Plan for State-owned Lands  
on Northern Lake Michigan Islands

November 2021



Michigan Department of Natural Resources  
Wildlife Division

Jennifer Kleitch and Erin Victory  
Edited and reviewed by the  
Northern Lake Michigan Islands Collaborative

# Table of Contents

- INTRODUCTION AND PURPOSE ..... 3
  - Definitions of the zones: ..... 3
    - Special Conservation Zone..... 3
    - Selective Management Zone ..... 3
    - Habitat Maintenance and Restoration Zone ..... 4
- COVER TYPE ANALYSIS ..... 4
  - Special Conservation Zone Cover Types ..... 4
  - Selective Management Zone Cover Types ..... 5
  - Habitat Maintenance and Restoration Zone Cover Types ..... 5
- WILDLIFE RESOURCES..... 5
- CULTURAL RESOURCES ..... 5
- RESPONSIVE MANAGEMENT ..... 6
  - Climate Change..... 6
- MANAGEMENT OUTCOMES ..... 6
- PLAN REVIEW AND APPROVAL ..... 7
- IMPLEMENTATION ..... 7
  - Outcome 1: Identify, protect, and monitor important ecological resources and mitigate threats that interfere with ecological processes. .... 7
  - Outcome 2: Promote a variety of age and size classes and cover types through forest management activities that support economic opportunity and wildlife habitat. .... 8
  - Outcome 3. Develop and implement procedures to carry out state land forest management activities that incorporates transparency and public input within the NLMIC collaborative governance framework..... 9

## Table of Figures

Figure 1. Map of Zones on Beaver Island State-owned lands produced by the Landscape Level Planning Subcommittee and approved by the Northern Lake Michigan Islands Collaborative in 2019. ....	10
Figure 2. Cover type acres within State-owned lands inventoried by Michigan Natural Features Inventory on Beaver Island in 2017 and 2018. ....	11
Figure 3. Special Conservation Zone cover type acres within State-owned lands on Beaver Island, 2019. ....	12
Figure 4. Selective Management Zone cover type acres within State-owned lands on Beaver Island, 2019. ....	13
Figure 5. Selective Management Zones northern hardwood acres by basal area (square feet/acre) category within State-owned lands on Beaver Island, 2019. ....	14
Figure 6. Habitat Maintenance and Restoration Zone cover type acres within State-owned lands on Beaver Island, 2019. ....	15
Figure 7. Habitat Maintenance and Restoration Zone acres of upland and lowland mixed aspen types by age class (years) within State-owned lands on Beaver Island, 2019. ....	16

## **INTRODUCTION AND PURPOSE**

The Management Plan for State-owned Lands on Northern Lake Michigan Islands (Management Plan), finalized in February 2017, sets forth a broad vision for the management of state lands on the Beaver Island archipelago.

The Northern Lake Michigan Islands Collaborative (NLMIC) was formed (pursuant to Goal 1) to identify and carry out the various activities needed to achieve the six goals within the Management Plan. Under the NLMIC umbrella, several interests coalesced into subject-matter subcommittees and began to undertake activities, including drafting complementary step-down plans to implement the other goals of the Management Plan.

One of these subcommittees, the Landscape Level Planning Subcommittee (LLPS), was formed to ensure various natural resource, cultural, and economic values associated with state-owned land management and protections are considered. Those concerns coalesced into the following charges representing Goals 2 (ecology) and 5 (timber) from the Management Plan, with some integration of Goal 3 (cultural resources):

1. Support the vision, goals, and objectives stated in the Management Plan.
2. Create a landscape level map that provides guidance for management to meet these goals on state-owned lands.
3. Define management goals in each zone delineated on the map.
4. Review and update the map periodically.

This Implementation Plan is based on the work done by the LLPS between 2015 and 2019. That work resulted in a map (Figure 1) depicting three management zones across state-owned lands on Beaver Island and associated definitions. Zone boundaries were honed over time applying a Geographic Information Systems (GIS) model with the assistance of GIS experts from Little Traverse Bay Bands of Odawa Indians (LTBB). Using the model, the LLPS looked for areas and linkages between rare and significant resources, wildlife species and timber stands potentially suitable for harvest. These zones form the basis for management on Beaver Island state-owned lands and provide guidelines for compatible uses.

### **Definitions of the zones:**

#### **Special Conservation Zone:**

Areas of state-owned properties that encompass and connect rare or high-quality natural communities, habitat for rare species, mature forest stands, shorelines, streams, and other important natural features and that will be protected in perpetuity. Natural processes will be allowed to occur in this zone. Any management would be for the benefit of restoring ecological function or addressing a threat to ecological processes. In forested communities, this will lead to the development of old growth conditions, featuring within-stand age diversity, large diameter trees, large snags, and downed logs.

#### **Selective Management Zone:**

Areas of state-owned properties where mid- to late-successional forests are maintained and/or restored. Selective timber management techniques appropriate for the forest community type will be implemented that prioritize the generation of forest products and that approximate ecological processes such as gap formation through harvest. Timber

harvest practices will also promote large diameter trees and coarse woody debris for wildlife benefits and increase forest structure complexity.

#### Habitat Maintenance and Restoration Zone:

Areas of state-owned properties where the full suite of habitat management techniques, including early-successional forest management, is available to achieve habitat goals or to restore the full habitat potential of a site or landscape for identified species.

Important cultural resources are found within all zones defined above. Due to the sensitive nature of their locations, they are not included in the map that was developed. Rather, they are addressed in the Cultural Resources and Implementation sections within this plan, in the context of forest management.

Once the zones were delineated, it was possible to do a cover type analysis to assess the current forest condition, and to then operationalize protections and management within the zones. This Implementation Plan is complementary to any other step-down plans created by the other subcommittees, and it recognizes that other activities may occur on state land within these zones. The zone definitions listed herein are universally applicable and will determine what activities are compatible. Once finalized, this Implementation Plan will become an addendum to the Management Plan itself.

## **COVER TYPE ANALYSIS**

In 2017 and 2018, Michigan Natural Features Inventory (MNFI) completed inventory of 12,348 acres of state land on Beaver Island, including forest stand cover types, evaluation and ranking of Ecological Reference Areas (ERAs), and recording Element Occurrences (EOs) of high-quality natural communities. Rare species were noted opportunistically during the inventory. ERAs represent high quality examples of intact natural communities (as classified by Cohen et al. 2015)<sup>1</sup>. This information is important for making informed management decisions.

The majority of state-owned land on Beaver Island is forested (88%) and is concentrated in the south-central two-thirds of the island. The eastern portions are characterized by lowland cover types while the west is defined by a longitudinal ridge that hosts much of the Northern Hardwood cover type. Northern Hardwoods (33%), Lowland Coniferous (15%), Lowland Deciduous (15%), and Lowland Mixed Forest (12%) types are the most common cover types within all forested areas surveyed (Figure 2). Common non-forested lands include herbaceous open land (such as grassy areas and old fields), shrublands, wetlands (such as bogs, emergent wetlands, fens, shrub thickets, and wet meadows), water, and open dunes.

### **Special Conservation Zone Cover Types**

The Special Conservation Zone constitutes 4,310 acres of state-owned land. Delineation of this zone was based largely on the location of areas of high conservation value, with an intent to connect and protect them from intrusive activities (e.g., timber harvest). Areas of high conservation value herein include non-dedicated Natural Areas, Critical Coastal Piping Plover Habitat, Critical/Barrier Dunes, rare species habitat, natural communities, and ERAs. There are

---

<sup>1</sup> Cohen, Josh, M. Kost, B. Slaughter, D. Albert. 2015. A Field Guide to the Natural Communities of Michigan. Michigan State University Press, 362.

currently 9 ERAs: bog (1), poor fen (1), dry-mesic northern forest (1), mesic northern forest (this ERA is made up of 3 small units in close proximity), boreal forest (1), and open dunes (4). Newly identified occurrences of rare natural communities will be added to this list as they are recorded.

Cover types within the Special Conservation Zone are largely lowland conifer/lowland mixed forests (27%) and northern hardwoods (27%) with the inclusion of upland conifers (15%) (Figure 3).

### **Selective Management Zone Cover Types**

The Selective Management Zone totals 3,637 acres of state-owned land, which is dominated by northern hardwoods (60%; Figure 4). Most northern hardwood stands have up to 80% loss of the canopy beech resource due to beech bark disease and beech regeneration is evident, especially in canopy gaps, where beech thickets may persist. Generally, these stands reflect past timber management, which was largely focused on harvest of the highest quality trees. The majority of northern hardwood stands (64%) have basal area ranging between 81-110 (Figure 5). Hardwood stand sizes range from 2 to 314 acres (average 44 acres). Other cover types include lowland forests (coniferous, deciduous, and mixed) and smaller acreages of other forested and non-forested areas.

### **Habitat Maintenance and Restoration Zone Cover Types**

The Habitat Maintenance and Restoration Zone totals 4,401 acres primarily concentrated on the eastern portions of state land. The majority of forested areas are in lowland types (61%) and are comprised of Lowland Deciduous Forest (26%), Lowland Mixed Forest (22%), and Lowland Coniferous Forest (13%) (Figure 6). Lowland and upland stands containing a major aspen component ( $\geq 40\%$  of the canopy species) total 888 acres (constituting 20% of the Habitat Maintenance and Restoration Zone). This total includes stands that are inaccessible for commercial forest management due to the structure of the surrounding forest (e.g., blow-downs and wetlands preventing access) and lack of roads or trails leading to the interior stands. Non-commercial forest management could be considered in those areas. The mixed aspen types have age classes ranging from 16 to 109 years old (Figure 7). Stand size averages 30 acres with a range of 1 to 95 acres.

## **WILDLIFE RESOURCES**

A full discussion of the wildlife species, listing status, and research history for Beaver Island is covered in the Management Plan. Some of those species, such as ruffed grouse, white-tailed deer, and American woodcock, will directly benefit from the habitat management goals listed herein. Other species, including those that are state-listed endangered, threatened, or special concern are not directly addressed in this plan. Many of these rare species, however, are found in areas which will be protected within the Special Conservation Zone (e.g., piping plover).

## **CULTURAL RESOURCES**

Cultural resources may be found in any areas discussed in this plan. As defined in the Management plan, cultural resources are: "Sites or objects that have important historical and

social significance, including meeting places, documents, objects, stone structures and stone works, archaeological sites and historic places. From a tribal perspective cultural resources are places where the lifestyle and culture of the Anishinaabek, past and present, has created some type of importance to the site. These include, but are not limited to fishing and hunting sites, places where spirits inhabit or use, places where specific plants, minerals, and rocks are obtained for traditional uses, places where ceremonies were or are performed, burial locations, and places where significant events occurred.” These sites shall be evaluated when any management actions are proposed to ensure their protection.

## **RESPONSIVE MANAGEMENT**

Actions described in this plan will take a systematic approach to improve resource management by studying past management outcomes, planning future actions, evaluating results of actions, and adjusting management practices as a result. Additionally, management may also be responsive to latest research outcomes, and to new or newly identified pests, diseases, and invasive species.

### **Climate Change**

It is difficult to predict what will occur locally due to changes in climate, therefore a broad approach to mitigate negative impacts is needed. Some potential impacts at the landscape level include a range shift to the north for aspen and grouse, a higher incidence of disease impacts to deer, and expanding invasive species. Strategies within this plan that are aimed at addressing climate change include promoting biodiversity through a variety of forest types and conditions, removal of invasive species, and limiting incompatible uses (for example, ORV use) in sensitive environments. Climate change is expected to be one of the biggest drivers of ecosystem changes that will require responsive management strategies.

## **MANAGEMENT OUTCOMES**

As previously discussed, the Management Plan provided a strategic framework for collaborative governance and outlined strategic management actions for state-owned lands. The following outcomes were extrapolated from the Management Plan goals and actions, and provide the framework that links both plans together:

1. Identify, protect, and monitor important ecological resources and mitigate threats that interfere with ecological processes.
2. Promote a variety of density and size classes and cover types through forest management activities that support economic opportunity and wildlife habitat.
3. Develop and implement procedures to carry out state-owned land forest management activities that incorporates transparency and public input within the NLMIC collaborative governance framework.

These outcomes will be operationalized in the Implementation section below via corresponding objectives and actions.

## **PLAN REVIEW AND APPROVAL**

The Implementation plan including an alternatives analysis was drafted between 2019 and 2021. An alternatives analysis was reviewed by the LLPS and NLMIC and included four management alternatives: 1) status quo, 2) moderate management (DNR and LLPS preferred alternative), 3) ecological management, and 4) silvicultural management. Opportunities for review and comment by the LLPS and NLMIC were offered during the drafting period and resulted in better clarification and agreement on the plan elements. Alternative 2 was ultimately selected and this final plan was approved by the full NLMIC in November, 2021.

## **IMPLEMENTATION**

What follows are specific actions intended to realize the three management outcomes stated above via the approach described in Alternative 2, Moderate Management (the preferred alternative).

This plan is entered into in good faith by the DNR Wildlife Division (WLD), the land administrator. The intent is to move forward on the actions listed below over the next 10 years. Budget and personnel capacities may change at any time due to factors outside of the DNR's ability to control. In this instance, the DNR WLD will work with the NLMIC and LLPS on how to move forward under different circumstances. This plan will be reviewed and revised 10 years from the approval date.

### **Outcome 1: Identify, protect, and monitor important ecological resources and mitigate threats that interfere with ecological processes.**

Objective 1.1. Continue to monitor and maintain integrity, distribution, abundance, and management success across state-owned lands through partnerships.

Action 1.1.1. Seek funding opportunities to complete ERA surveys every 10 years.

Action 1.1.2. Work with partners annually to treat invasive species in any of the defined zones or consult on treatment potential and methods.

Objective 1.2. Ensure ecological processes are allowed to take place within the Special Conservation Zone, as defined by Figure 1, and prioritize management and restoration opportunities through partnerships, where appropriate, according to MNFI recommendations.

Action 1.2.1. Apply Conservation Values (3a) site conditions in the DNR inventory system to the Special Conservation Zone by the end of 2022, which will administratively code them as unavailable for management.

Action 1.2.2. Designate the Special Conservation Zone as a DNR Special Conservation Area by the end of 2022 to ensure current and future protections from timber management.

Action 1.2.3. Explore further protections such as Director's Order or Legislation for the Special Conservation Zone within the next 5 years.

Action 1.2.4. Create and implement ERA plans using information from MNFI Natural Community Surveys of Beaver Island Archipelago within the next 10 years.

Action 1.2.5. Consult MNFI models, indices and reports to prioritize management actions and seek partnerships for surveys, monitoring, restoration and treatment as time and personnel capacity allows.

**Outcome 2: Promote a variety of age and size classes and cover types through forest management activities that support economic opportunity and wildlife habitat.**

Objective 2.1. Promote mid- to late-successional northern hardwood forests within the Selective Management Zone, as defined by Figure 1, to increase economic opportunities.

Action 2.1.1. Conduct a minimum of 1 or 2 northern hardwood harvests in a decade for stands meeting silvicultural criteria and based on a forester's recommendation for treatment.

Action 2.1.2. Promote large stand sizes (250 acres or more) via timber sales to maintain forest contiguity to benefit area sensitive wildlife species.

Action 2.1.3. Stagger treated stands in space and time to promote forest diversity and sustainable harvest opportunities.

Action 2.1.4. Use timber sale specifications that retain coarse woody debris, fruit-bearing shrubs, and large diameter trees and snags for mature forest wildlife habitat.

Action 2.1.5. Integrate new northern hardwoods treatment recommendations as they become available from ongoing research.

Objective 2.2. Promote aspen forest through clearcutting harvest practices within the Habitat Maintenance and Restoration Zone, as defined by Figure 1, to enhance wildlife related recreation for ruffed grouse, American woodcock, and white-tailed deer.

Action 2.2.1. Conduct a minimum of 1 or 2 aspen harvests in a decade, and pair with hardwood treatments in the SMZ where possible.

Action 2.2.2. Focus management efforts on stands older than 40 years and maintain stand sizes of 40 acres or less within accessible aspen stands.

Action 2.2.3. Prioritize timber treatments based on stand age and vigor to maximize regeneration potential.

**Outcome 3. Develop and implement procedures to carry out state land forest management activities that incorporates transparency and public input within the NLMIC collaborative governance framework.**

Objective 3.1. Work with internal and external partners or contractors to conduct forest inventory, and to propose and oversee treatments on state-owned lands.

Action 3.1.1. Establish an internal DNR and public review process to meet forest certification requirements.

Action 3.1.2. Develop a timber sale timeline accessible to the NLMIC by the end of 2022 to ensure a full understanding of the process from forest inventory to forest stand treatment proposal to the timber sale to the harvest operation.

Action 3.1.3. Secure funding as needed to hire a forestry consultant to oversee timber sale administration and to provide resources to DNR foresters to travel to and from the island for forest inventory, timber sale set up and administration work.

Action 3.1.4. Work with Forest Resources Division to conduct forest inventory, recommend timber sale specifications, and set up timber sale operations as needed.

Action 3.1.5. Work through partners to conduct any post-treatment monitoring to determine if short- and long-term management objectives were met as appropriate.

Objective 3.2. Work with qualified State and Tribal cultural resources staff and the NLMIC Cultural Resources Committee to ensure adherence to all cultural resources protections in state laws, policies, and procedures to avoid or minimize impacts to significant cultural resources when conducting management.

Action 3.2.1. Review all draft management actions for cultural resources concerns as they are proposed and prior to public review.

Action 3.2.2. Develop a procedure to address the inadvertent discovery of cultural resources during management actions.

Action 3.2.3. Partner on the appropriate development of public education and interpretative initiatives related to cultural resources.

Action 3.2.4. Collaborate to appropriately document newly discovered cultural resources as situations dictate.

# Management Zones on State-owned Lands

Northern Lake Michigan Islands Collaborative

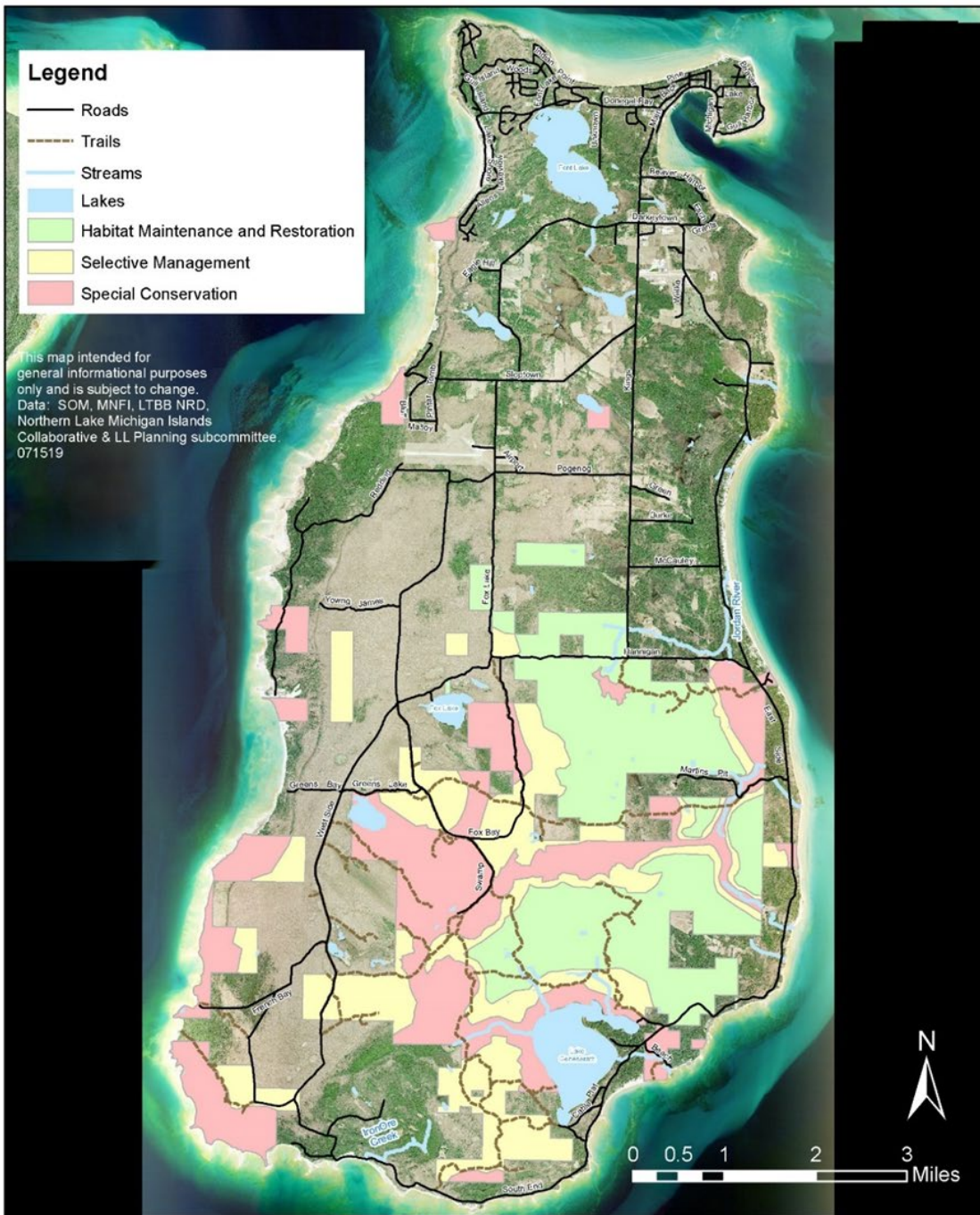
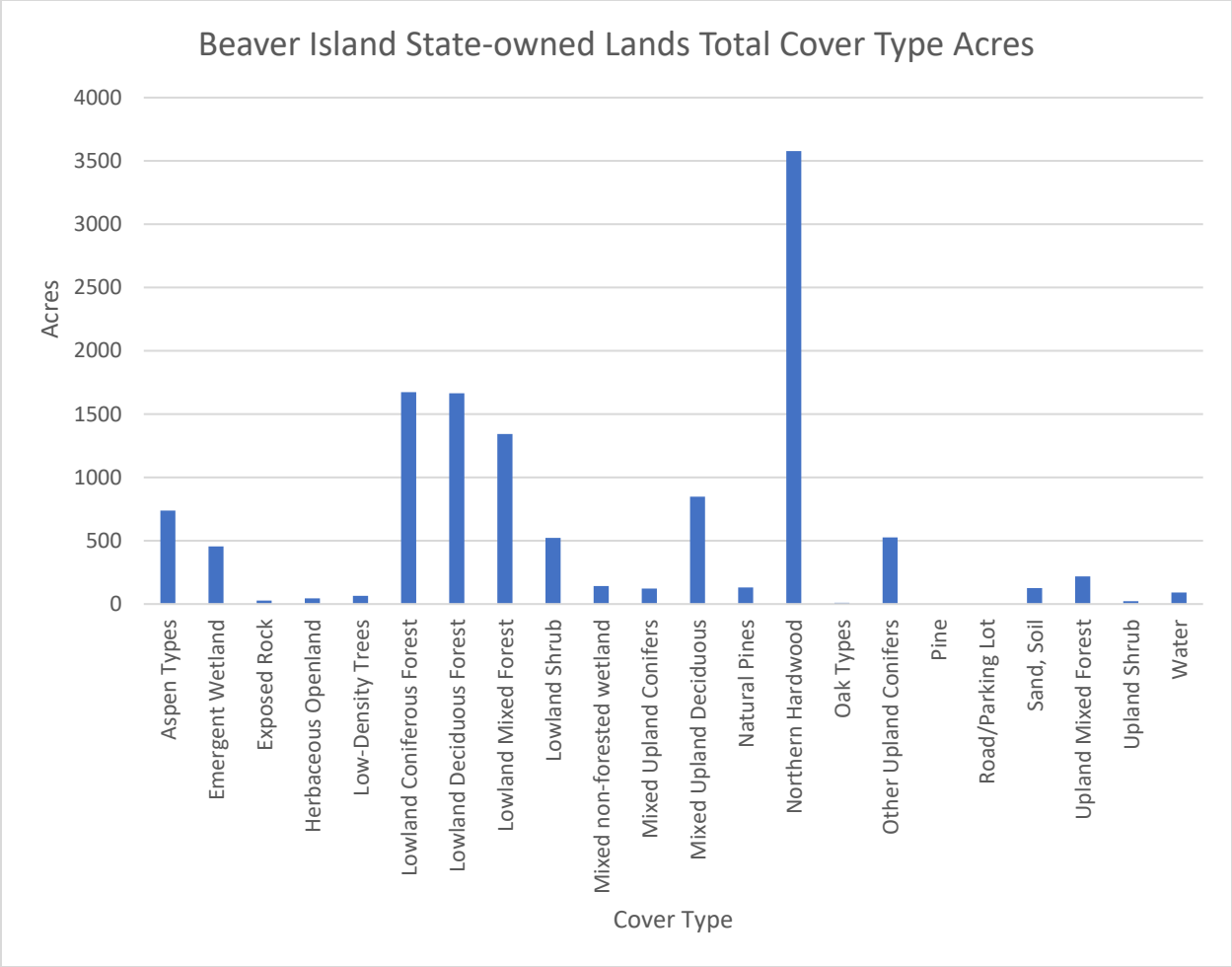
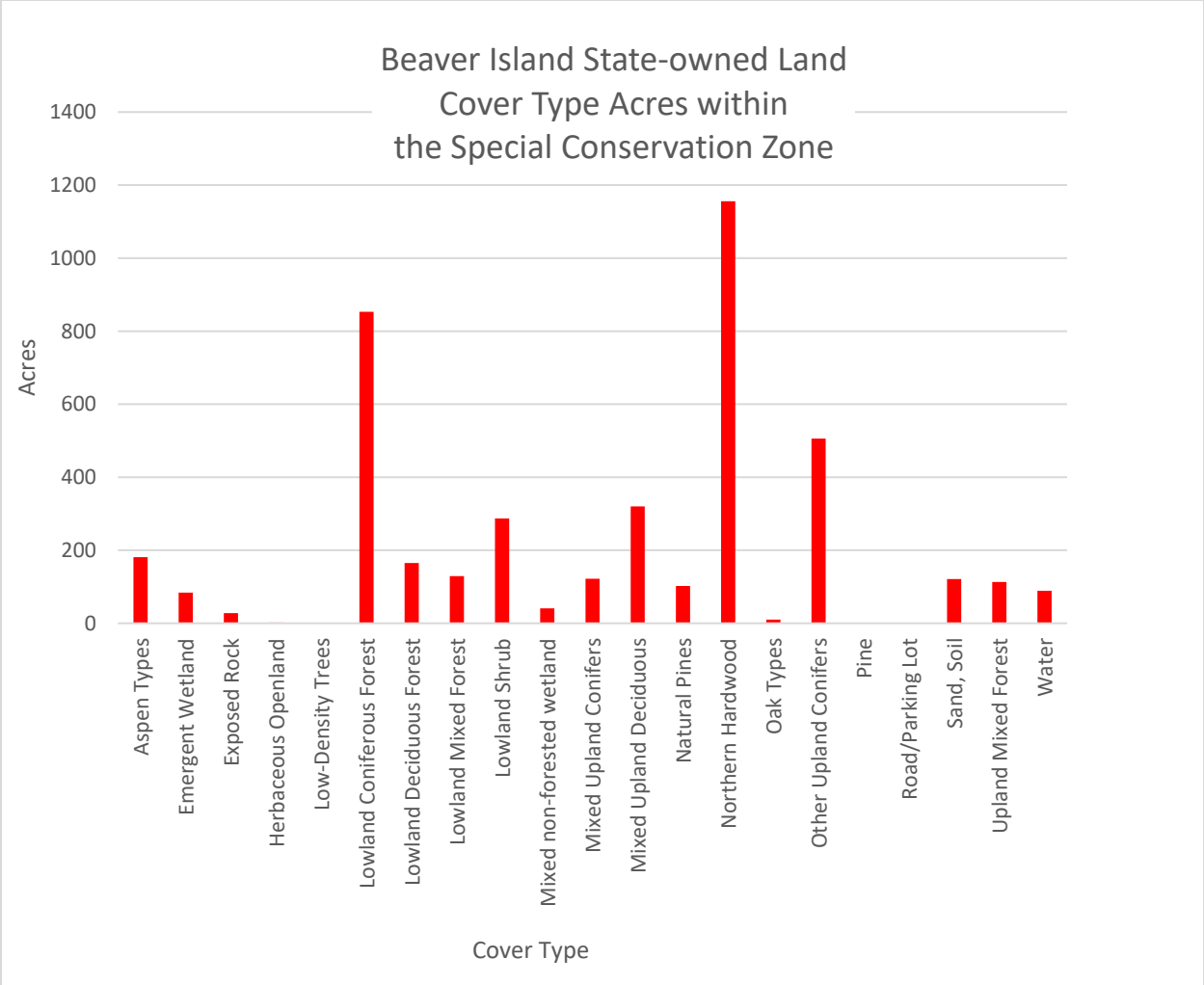


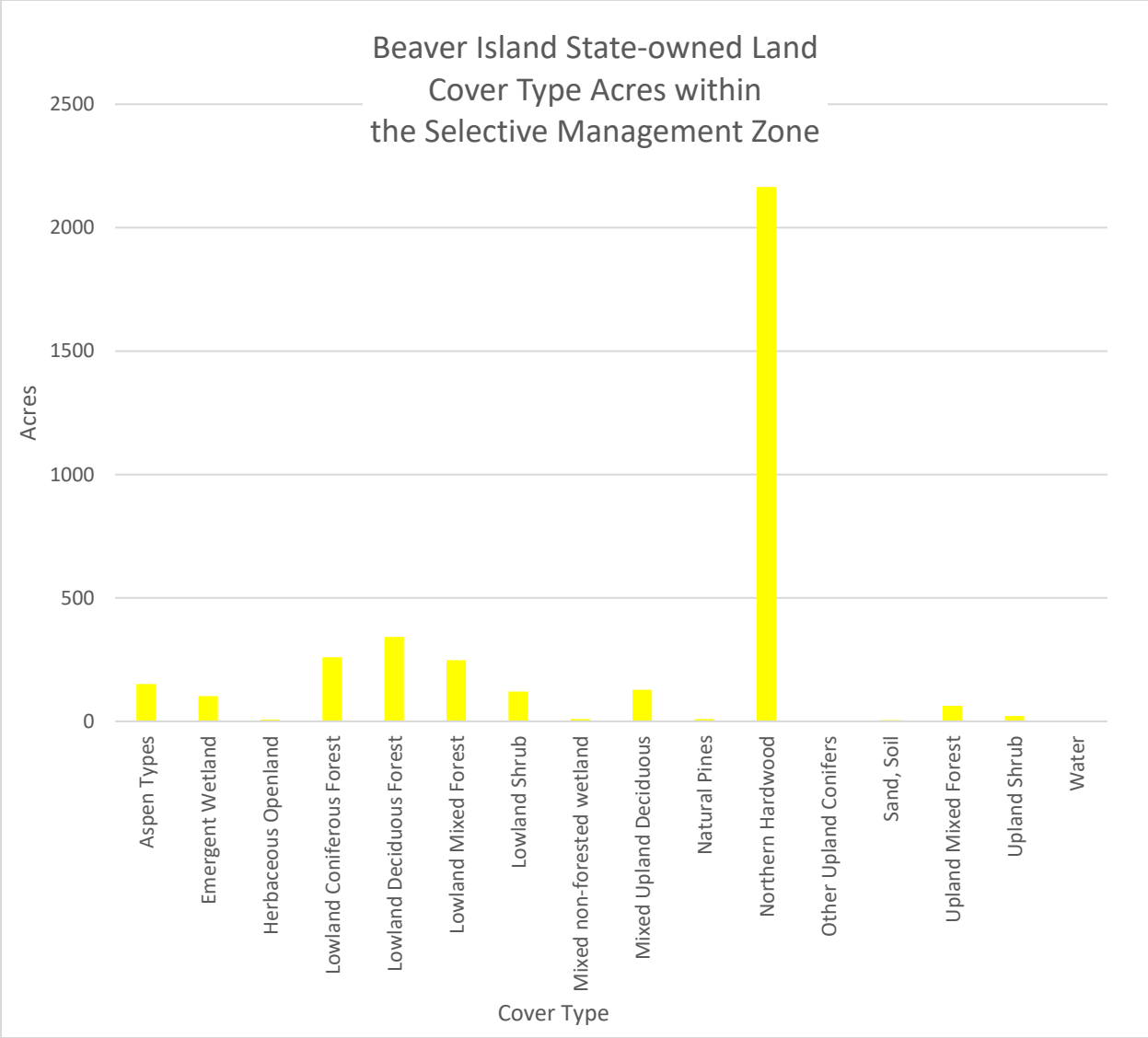
Figure 1. Map of Zones on Beaver Island State-owned lands produced by the Landscape Level Planning Subcommittee and approved by the Northern Lake Michigan Islands Collaborative in 2019.



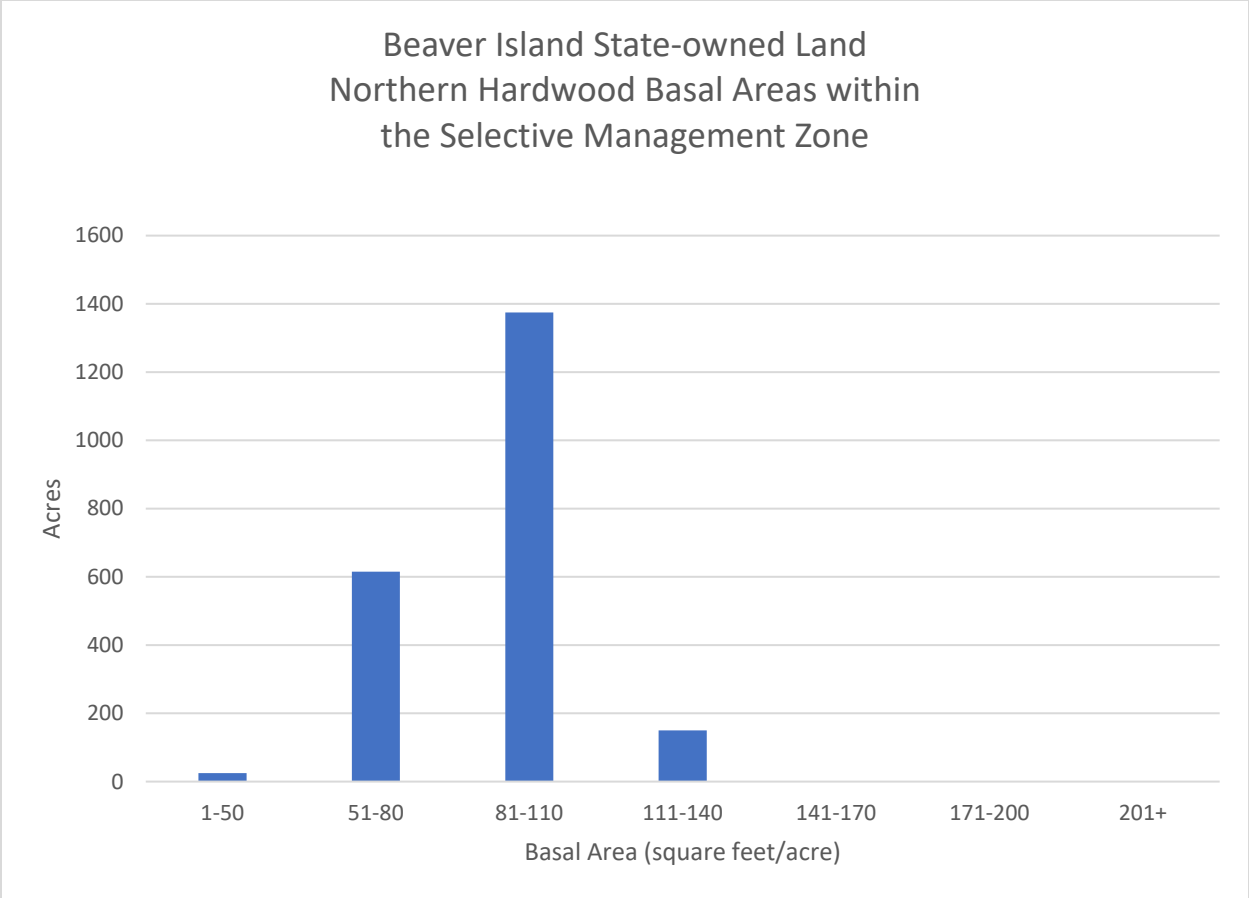
*Figure 2. Cover type acres within State-owned lands inventoried by Michigan Natural Features Inventory on Beaver Island in 2017 and 2018.*



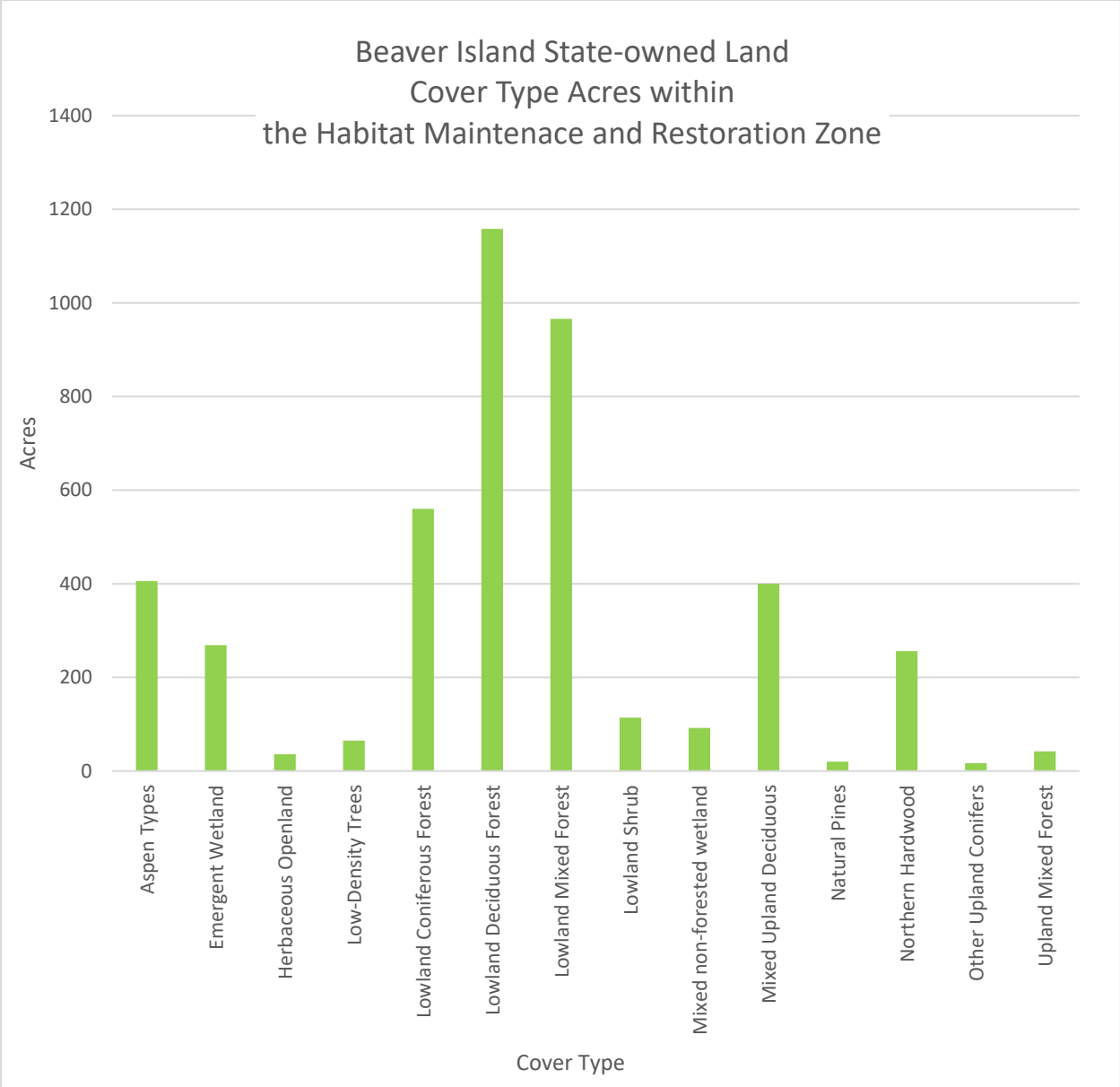
*Figure 3. Special Conservation Zone cover type acres within State-owned lands on Beaver Island, 2019.*



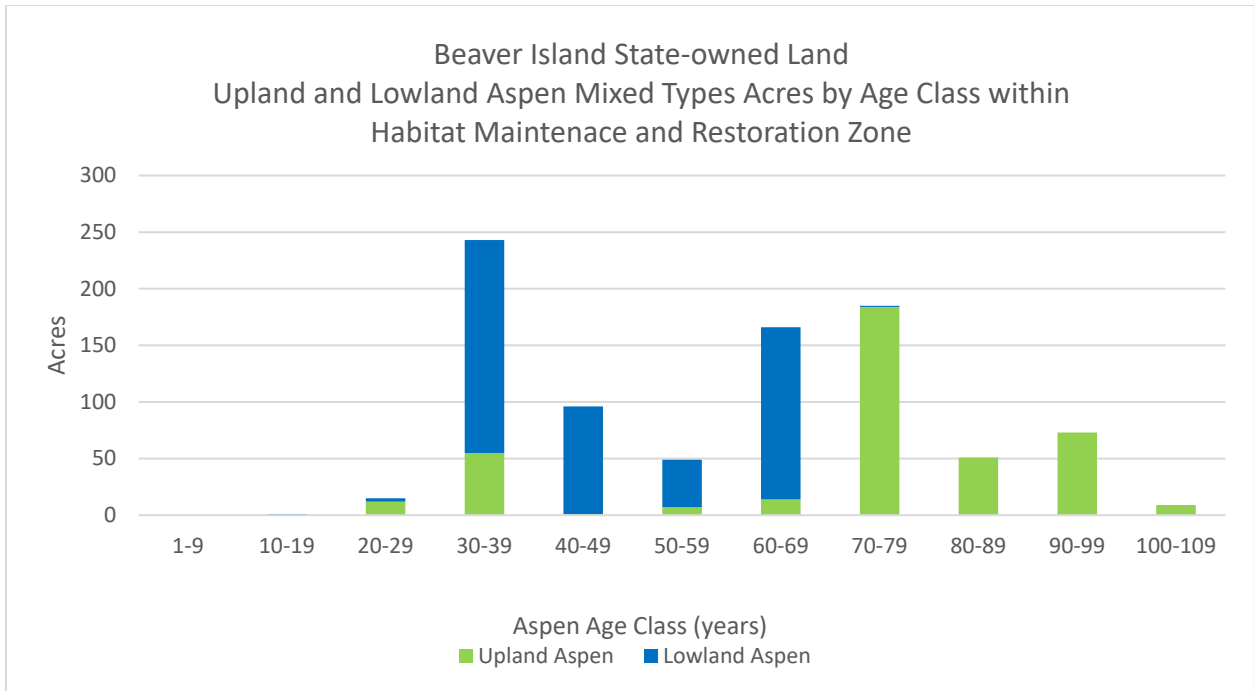
**Figure 4. Selective Management Zone cover type acres within State-owned lands on Beaver Island, 2019.**



**Figure 5. Selective Management Zones northern hardwood acres by basal area (square feet/acre) category within State-owned lands on Beaver Island, 2019.**



*Figure 6. Habitat Maintenance and Restoration Zone cover type acres within State-owned lands on Beaver Island, 2019.*



*Figure 7. Habitat Maintenance and Restoration Zone acres of upland and lowland mixed aspen types by age class (years) within State-owned lands on Beaver Island, 2019.*