DOWNTOWN DEVELOPMENT AUTHORITY LOWER BOARDMAN RIVER LEADERSHIP TEAM REGULAR MEETING

<u>Thursday</u>, January 21, 2021 5:30 p.m.

The Lower Boardman River Leadership Team Meeting will not be held at the Governmental Center. The Lower Boardman River Leadership Team will be conducted remotely via Zoom Webinar.

The Lower Boardman River Leadership Team can be viewed at: https://us02web.zoom.us/j/83175107009

Anyone wishing to listen and give public comment will need to call in and wait in a "virtual waiting room" where their microphones will be muted until they are called upon: Dial: 312 626 6799 Meeting ID: 831 7510 7009 Participant ID: # (yes just #) Posted and Published

The DDA recognizes the importance of not bringing people together unnecessarily in an effort to stop the spread of the coronavirus. The Governmental Center has been closed to walk-in traffic and will be closed for all DDA and Lower Boardman River Leadership Team meetings for the foreseeable future. Members of Lower Boardman River Leadership Team will not be present in the Governmental Center for official Lower Boardman River Leadership Team meetings.

The meeting is being conducted remotely to assist in stopping the spread of the coronavirus. Individuals with disabilities may participate in the meeting by calling-in to the number as though they were going to be giving public comment as outlined below or by calling the TDD#.

For members of the Lower Boardman River Leadership Team and key DDA staff, their name will appear on screen when they are speaking. For individuals who may wish to give public comment, the method for providing public comment during these remote-participation meetings is to call the number outlined in the header as well as enter the Meeting ID and Participant ID as outlined in the header.

Callers wishing to give public comment may call in before the meeting starts and wait in a "virtual waiting room." These instructions will be included in every official published agenda of the Lower Boardman River Leadership Team. Those calling in will be able to hear the audio of the Lower Boardman River Leadership Team meeting, yet their microphone will be muted.

When the Lower Boardman River Leadership Team accepts public comment, in the order calls were received, the meeting facilitator will identify the caller by the last four digits of their telephone number and ask them if they would like to make a comment. While not required, but so we do not have to go through an unnecessarily long list of callers, we ask, if possible, that those who do not wish to give public comment refrain from calling in and instead listen to the meeting.

The DDA CEO has been designated to coordinate compliance with the nondiscrimination requirements contained in Section 35.107 of the Department of Justice regulations. Information concerning the provisions of the Americans with Disabilities Act, and the rights provided thereunder, are available from the DDA office.

If you are planning to attend and you have a disability requiring any special assistance at the meeting and/or if you have any concerns, please immediately notify the DDA CEO

The DDA and Lower Boardman River Leadership Team is committed to a dialog that is constructive, respectful and civil. We ask that all individuals interacting verbally or in writing with the Lower Boardman River Leadership Team honor these values.

DDA: c/o Jean Derenzy, CEO (231) 922-2050 Email: jean@downtowntc.com Web: www.downtowntc.com 303 East State Street, Suite C. Traverse City, MI 49684

Meeting Agenda

- 1. Approval of December 16, 2020 Minutes
- 2. Opening Public Comment
- 3. Brief FishPass Update from Frank and Brett
- 4. Discussion of Land Use & Zoning Recommendations
- 5. Other Items?
- 6. Public Comment
- 7. Adjournment

Any interested person or group may address the Leadership Team on any agenda item when recognized by the presiding officer or upon request of any Leadership Team member. Also, any interested person or group may address the Leadership Team on any matter of concerning the Lower Boardman River not on the Agenda during the agenda item designated Public Comment. The comment of any member of the public or any special interest group may be limited in time. Such limitation shall not be less than three minutes unless otherwise explained by the presiding officer, subject to appeal by the Leadership Team.

Minutes of the Lower Boardman Leadership Team Regular Meeting Wednesday, December 16, 2020

A regular meeting of the Lower Boardman Leadership Team was called to order via ZOOM on Wednesday, December 16th.

The following members were in attendance: Jennifer Jay (Co-Chair), Elise Crafts, Christine Crissman, Jean Derenzy, Deni Scrudato, Frank Dituri, Russ Soyring, Tim Werner, Michael Vickery, Sammie Dyal, and Brett Fessell (Co-Chair).

The following Members were absent: Pete Kirkwood, Rick Korndorfer

Co-Chairpersons Fessell and Jay presided at the meeting.

(a) CALL TO ORDER, ATTENDANCE, ANNOUCEMENTS

(1) Meeting called to order at 5:31 by Chairperson, Jay

(b) **PUBLIC COMMENT**

(1) Mitch Treadwell: Would like to see the process keep moving forward Rick Buckhalter: Concerned about FrishPass Rick Brown: Glad the Leadership Team is addressing stormwater

(c) APPROVAL OF MINUTES FOR November 18, 2020

(1) Meeting Minutes Approval of November 2020 minutes.

Moved by Soyring, Seconded by Crafts

Yes: Elise Crafts, Christine Crissman, Jean Derenzy, Deni Scrudato, Frank Dituri, Russ Soyring, Tim Werner, Michael Vickery, Sammie Dyal, Jennifer Jay, and Brett Fessell.

Absent: Pete Kirkwood, Rick Korndorfer

CARRIED 11-0.

(e) **PROJECT UPDATE**

- (1) Fessell and Dituri provided a FishPass update
- (2) Bob Doyle provided project review
 - Leadership discussed what we have accomplished to date
 - Leadership discussed what the Leadership needs to accomplish in the first half of 2021.
 - Ms. Jay noted that for the next meeting, each member should submit their comments on the riparian buffer ordinance no later than January 15^{th,} DDA staff and Smith Group will update the community through media outlets on the process and update the website, Smith Group will develop and be ready to discuss interactive (remote and in-person) engagement tools, the DDA will write up a executive summary on the different between the Leadership Team and City Planning Commission in regards to the Riparian Buffer Ordinance, and that Smith Group will develop contingency plans for civic engagement in relation to possible COVID futures.
 - Ms. Scrudato noted that we need to provide a better and more visible link to the project on the city's web page
 - The next meeting will be held on Thursday (rather than Wednesday) January 21, 2020.

(h) **PUBLIC COMMENT**

- (1) General
 - Thomas White encouraged the Leadership Team to engage the public where they are (instead of having the public come to the leadership team)
 - Steve Largent mentioned a thank you for the meeting and process
 - Mitch Treadwell mentioned a thank you for the meeting
 - Rick Buckhalter

(i) ADJOURNMENT

(1) Meeting was adjourned at 7:52pm

Moved by Fessel, Seconded by Scrudato Yes: Elise Crafts, Christine Crissman, Jean Derenzy, Deni Scrudato, Frank Dituri, Russ Soyring, Tim Werner, Michael Vickery, Sammie Dyal, Jennifer Jay, and Brett Fessell.

Absent: Pete Kirkwood, Rick Korndorfer Carried 11-0



Downtown Development Authority 303 E. State Street Traverse City, MI 49684 harry@downtowntc.com 231-922-2050

MEMORANDUM

To: Lower Boardman Leadership Team

From: Harry Burkholder, DDA COO

For Meeting Date: Thursday, January 21, 2021

SUBJECT: Land Use and Zoning Recommendations & Comments

As you may recall, at our last Leadership Team meeting we discussed our strategy for moving forward with the Lower Boardman Unified Plan for the next six months (see attachment).

For our January meeting, the Leadership Team was charged with reviewing the draft land use/zoning recommendations, including the draft Riparian Buffer Ordinance. As a reminder, the City Planning Commission has been working on a separate but parallel effort to develop a Riparian Buffer Ordinance – incorporating many of the comments and recommendations of the zoning subcommittee along the way. To be clear, the Planning Commission has not taken formal action on the Riparian Zoning Ordinance yet.

As a point of reference, because the Lower Boardman Leadership Team is a subcommittee of the DDA, the final recommendations regarding the Riparian Buffer Ordinance from the Lower Boardman Leadership Team must be presented to the DDA Board for approval. If approved, the DDA would then submit the recommendations to the Planning Commission on behalf of the DDA and Lower Boardman Leadership Team. These recommendations would then be considered by the Planning Commission and may/may not be incorporated in a final Riparian Buffer Ordinance to be approved by the Planning Commission and adopted by the City Commission. I have attached a rudimentary graphic outlining how the Unified Plan and Riparian Buffer Ordinance would be adopted.

Land Use and Riparian Buffer Ordinance Comments

The following three attachments include each of the comments I received from Leadership Team members, noted with their initials in (). In addition, here are a handful of general comments that were provided:

- Generally I agree with the recommendations 1-8 listed on page 2. I think illustrations are particularly helpful (#5)
- Move "C. Riparian Buffer Ordinance" beginning on page 1 to be included in "D. Zoning Ordinance Changes" that begins on page 3.
- I think this PDF is proposed to be a chapter in our final action plan? If so, I'd suggest a thorough edit/cut of unnecessary verbiage for a shorter chapter and easier reading.
- We are still not addressing the fact that no planting of riparian vegetation is required, only maintaining existing vegetation or replacing dead/diseased/invasive vegetation
- There is conflict between the current Zoning Ordinance in terms of the water's edge setback and allowable encroachments, which is addressed by stating the RBZ Ordinance takes precedence. For the most part (specifics depend on district), no encroachments into water's edge setbacks are allowed except eaves, chimneys, sills, belt course, cornices and ornamental features not to exceed 18 inches are permitted to extend within the setbacks. The Riparian Buffer Ordinance would allow permeable dock landings, permeable decks, and one dock landing per parcel. Allowing the RBZ Ordinance to take precedence allows encroachments into the RBZ that are currently prohibited in the same area by the water's edge setback requirements.
- Brett Fessel has provided two documents that could assist in references to native vegetation (attached)

Other Project Related Items

SmithGroup is still working on aggregating the findings of the Boardman Wall Stabilization study. We will plan to review findings of the Stabilization Study and discuss implications for the future of the 100/200 block at our February meeting.

We continue to email a long list of citizens and stakeholders prior to each meeting, as well as other project updates. We have revamped the Lower Boardman page of the DDA website with more detail, graphics and an FAQ. This link will be shared with the city. The DDA also shares updates on the project on its social media/web outlets.

It is very important that you review the materials in this packet ahead of the meeting to ensure that we have an insightful and productive discussion. Thank you again for your continued commitment to the Lower Boardman Leadership Team!

Documents Included: Zoning Recommendations (with comments), 6-month Leadership Team schedule, and Unified Plan Decision Process Graphic.

Lower Boardman River UNIFIED PLAN

Excerpt from draft Chapter Three: Action Plan

December 16, 2020

Community and Development Policies

A. What needs to change and why

Recognizing an explicit commitment to the principles of public trust in the protection of the river as a community common, regulatory policies that guide building and development in the downtown area should be amended to reflect the vision and values of the Lower Boardman River UNIFIED PLAN.

Modifying public policy will impact private land development, as these are the regulations and guiding documents that shape the use of the land in our community. However, the intent in modifying these regulations and guiding documents is also to establish standards by which public improvements must abide. The Riparian Buffer Ordinance is intended to work in concert with other codes and ordinances to clarify the principles and standards that guide public policy and private development decisions about any practice that impacts the flow, ecological health, and protected uses of the river as a public trust common.

Specific language is proposed as part of this chapter to provide a guideline in modifying existing and proposed ordinances; however, each of these amendments will need additional effort and conversation with the city planner and planning commission prior to adoption.

B. Core Values

The following Core Values, established at the outset of the planning efforts, most align with the management of private and public development along the river:

- 1. Help ensure that new or rehabilitated developments along the river are compatible with the City's renewable energy goals.
- 2. Establish that development sites, destinations and structures must protect the health, aesthetics, accessibility, and health of the relationship between the river and residents/visitors.
- 3. Use the natural and cultural values of the river as a guide for decisions about the commercial, economic, or utilitarian values to be leveraged for the public good.
- 4. Prohibit further hardening of the shorelines that are inconsistent with the Unified Plan.

C. Riparian Buffer Ordinance

The Traverse City Planning Commission is currently considering a new ordinance which will regulate the edge and buffer of the Boardman Lake, Boardman River, and Kidd's Creek to

Commented [HB1]: In anticipation of and respect for the River's original namesake I think we should at least acknowledge that it was not always named the "Boardman". This would allow for the tie in to history, culture, area interpretation that will include this matter. As of now we have been using the Boardman-Ottaway River as a placeholder until the final name is decided upon and the formal name change process is concluded. (bf)

Commented [HB2]: Add "and respect for" (bf)

Commented [HB3]: Somewhere in this section a reference to the original name of the river (Ottaway) should be incorporated. (FD)

Commented [HB4]: Delete "the" (cc) Commented [HB5]: Delete "d" (cc)

create and protect riparian habitat, improve water quality, and maintain a more natural edge to the river.

The purpose of the Riparian Buffer Ordinance is to preserve areas that intercept and filter surface water runoff and improve water quality while also providing community scenic and recreational values. The ordinance is written to protect and enhance a larger part of the community than just the study area of the UNIFIED PLAN but is a suitable regulatory tool for the downtown waterfront.

The importance of the Riparian Buffer Ordinance to fulfilling the goals and value of the UNIFIED PLAN and addressing the primary concerns expressed by the public cannot be overstated. The ordinance should be aspirational in its charge and supported by the community. The proposed ordinance is an opportunity to promote a "river first" approach in the protection and enhancement of the river consistent with the Values expressed in this UNIFIED PLAN and through the public input and engagement.

The Leadership Team studied the draft ordinance in detail and support specific modifications to the draft (as recorded separately.)

In general terms the recommendations form the Leadership Team focus on the following issues:

- 1. Clarify expectations and understanding of the Riparian buffer Ordinance by editing and adding new definitions to ordinance Section 1320.07 (as recorded separately.)
- 2. Further defining and guiding the use of the Riparian Buffer for private and public uses.
- Increasing restrictions for use and maintenance of the shoreline and the immediate 10-foot wide strip of land adjacent to, and landward of, the Ordinary High-Water Mark.
- 4. Providing guidelines for public paths, boardwalks, and overlooks as to the location, width, and overall coverage of the Riparian Buffer.
- 5. Providing illustrations to clarify the intent of the ordinance.
- 6. Adding additional guidance on tree preservation, new landscaping, and bank and slope protection.
- 7. Clarifying and strengthening regulations on parking and paved areas and the use of vertical walls.
- 8. Further defining the appropriate width of the Riparian buffer in downtown zoning districts.

Commented [HB6]: My concern with the the ordinance recommendations in general are there is no real tie to efficiency in development.

While we all want to keep the river first and want to protect the river, it's banks and function, I believe there needs to be a connection to other parts of the zoning code. It's my understanding that the Lower Boardman Leadership Team is primarily focused on public lands and I believe we an opportunity to link the importance of river stewardship to effects from private development via these recommendations.

If we are to limit or provide reduction in development along this section of river corridor there should be a means for development to gain in density. For example Vertical development, allowing for urban density's by relaxing height restrictions to counter the restrictions/reductions in footprint size due to river setbacks. A direct link from the riparian buffer recommendations for

A direct link from the riparian buffer recommendations for the ability to offer affordable increased density housing. (fd)

Commented [HB7]: Should it read "from"? (bf)

Commented [HB8]: Still no triggers to require planting, only requires preserving existing vegetation (cc)

D. Zoning Ordinance Changes

The UNIFIED PLAN supports the modification of zoning ordinances to manage the scale, placement, and site improvements of new development consistent with the Core Values of the UNIFIED PLAN. These proposed changes to existing ordinances are, for the most part, intended to support and further codify the new Riparian Buffer Ordinance.

Amendments may be made to the applicable zoning district including OS Open Space, R-29 Multiple Family, C-3 Community Center District, C-4 Regional Center District, and Development Districts D-1 Ironwoods and D-2 Depot. To the greatest extent possible, all new approvals shall be administrative or departmental review unless already part of a Planning Commission review process in accordance with Redevelopment Ready Communities (RRC) Best Practices.

- 1. Create additional setback for parking from the OHW mark.
 - a) Adopt the Riparian Buffer Ordinance, which says "No development, permanent structures (including fences) or parking area(s) shall be allowed within the riparian buffer zone."
 - b) Amend ordinance 1374.03 Motor Vehicle Parking, subsection (c) Location of parking areas, as follows: "(6.) Parking is not allowed within the Riparian Buffer, pursuant to the Riparian Buffer Ordinance."
 - c) Amend Ordinance 1346.04 C-4 District, subsection Setbacks, as follows: (g) Parking is not allowed within the Riparian Buffer, pursuant to the Riparian Buffer Ordinance."
- 2. Restrict the creation of public and private parking within the river corridor.

Parking is not required in C-4 Districts, which is most of downtown. Ordinance 1364 C-4 Districts states "No parking is required in this district, however, if parking is provided, it must meet the standards contained in Chapter 1374, circulation and parking and restrictions of this chapter."

This ordinance is, coupled with the proposed changes to the ordinances noted above, is effective at discouraging and managing the design of private parking in downtown, and restricting all parking from locating directly adjacent to the river.

- 3. Establish and maintain appropriate building setbacks for development along the river in response to public input.
 - a) Amend Ordinance 1346.04 C-4 District, Setbacks, subsection (e) Water Setbacks.
 C-4a sites that are located south of the river and east of Park Street: 10
 - foot setback from OHW
 - C-4b and C-4c (and remaining C-4a sites): 25-foot setback from OHW
 - b) Amend Ordinance 1368.02 Size and Area Requirements, subsection (b) Setbacks Required with same language.

Commented [HB9]: Require? (bf)

Commented [HB10]: Be reviewed by (fd)

Commented [HB11]: Delete "is" (cc)

Commented [HB12]: Better statement: *These* ordinance changes are intended to manage parking design downtown and discourage parking directly adjacent to the river. (EC)

Commented [HB13]: Add "subsections" (cc)

- Maintain current setback from OHW of 25 feet in zoning districts OS-Open Space, R-29 Multi-family, D-1 Ironworks Development, D-2 Depot Development, and GP Government Building.
- d) Establish a 25-foot building setback and Riparian Buffer in all zoning districts where property is adjacent to Kids Creek.
- 4. The Vision Statements of the UNIFIED PLAN Leadership Team include the following: "Help ensure that new or rehabilitated developments along the River are compatible with the City's renewable energy goals." Similar themes emerged from public engagement to require or at least encourage development in the project are to be sustainable and green, through building codes and/or zoning ordinances.

Given the proprietary nature of sustainable building programs, the untested legal merit of enforcing codes more stringent than are required by states, and the ongoing shift in state codes to green building practices, communities in the state of Michigan have been reluctant to adopt their own requirements. Other communities across the country have adopted their own requirements, establishing new point systems for achieving compliance.

Some Michigan communities are encouraging the use of green building practices such as the use of sustainable building materials, energy efficiency and production, habitat creation, bird safe windows, and reuse of building water. Increasing building height and development density is often used as an incentive to induce developers to create public benefits such as green building techniques. Based on current Traverse City laws, development over 60 feet is highly discouraged due to the need for a public referendum to increase building heights.

The UNIFIED PLAN supports the development and adoption of modifications to local ordinances and building codes that would encourage, if not require, the use is green building practices. This topic requires a larger conversation with the community, as the goals and values of green building do not directly correlate with the preservation and enhancement of the river corridor, and they have community wide potential and benefits in creating a resilient city.

5. Integrate lighting guidelines into the appropriate sections of the city zoning and regulatory ordinances.

No immediate Action required, as Chapter 1375 Outdoor Lighting ordinance has clear guidelines to encourage dark sky compliance.

6. Encourage businesses that have both a street frontage and a river frontage to activate the waterfront side of their business.

Chapter 1346, R-4 Districts includes "Buildings along Boardman River should be designed to integrate with both the sidewalk and river walk systems." To strengthen this intent section 1346.09 (1) of this ordinance should be amended as follows:

"The predominant building wall and entryway shall face the public or private street. Where adjacent to the Boardman River, or to public land that is adjacent **Commented [HB14]:** As mentioned above Vertical development (fd)

Commented [HB15]: Is this a matter that could be reevaluated considering the limitations on land use surface area that will arise from the Unified Plan? It seems this may be one of the more logical alternatives to allow for more housing (as expressed by the commission adn else) while

having limited areal space to accommodate downtown. Where or What standards or guidelines was this number derived from?

Why not 80, etc? how tall is the Park Place? What other existing buildings exceed 60ft? (bf)

Commented [HB16]: #6 on page 4—I support the idea of "turning towards the river" as the team has discussed numerous times. I think this concept is attempting to regulate that outcome, but I don't see how this changes much? I'd guess most buildings developed on the river today do have a public entrance with signage facing the river, in the rear of their building because this is likely required for fire/safety purposes. Do you know if that's true? I think that focusing on protecting the buffer between the river and buildings while providing public access opportunities will create a more meaningful "turn to the river". (ec)

Commented [HB17]: Is there a reason the the predominant entryway shall face the street? This could say...shall have public entrances and architectural features in both directions. (fd)

to the river, the building shall have a public entrance and architectural features denoting a public entrance facing the river."

7. The ordinance definitions and use restrictions for setbacks for all districts in within the Riparian Buffer Ordinance need to be scrutinized and amended for consistency, and to reflect the guidelines of the proposed Riparian Buffer Ordinance and the UNIFIED PLAN.

E. <u>Regulatory Ordinance changes</u>

A great deal of the public input gathered during the planning process supported ideas that are best implemented through changes to the Codified Ordinances of Traverse City. These ordinances are considered "regulatory," since they are local laws enacted to regulate activity or set standards for the use and development of public facilities such as streets. These ordinances are adopted by the City Commission and are outside of Zoning Ordinances which are focused on regulating the use of land.

Recommended regulatory ordinance modifications for consideration include:

- Integrate lighting guidelines into the appropriate sections of the Codified Ordinances of Traverse City, under Part 10-Streets, Utilities and Public Services, and Part 14-Building and Housing Code.
- Amend the Codified Codes of Traverse City, Part 13 Zoning Code, Chapter 1372
 Landscaping to reflect use of native plants and preservation of trees. Regulate
 landscape maintenance practices in Riparian Buffer to limit manicured lawns, minimize
 use of pesticides and herbicides, and restrict dumping of refuse (organic or otherwise).
- Consult with City Attorney, Clerk, and Manager on the alternative approaches to regulating river use. Propose and conduct a fair and open process, working in cooperation with licensees. Propose and adopt changes to the Codified Codes of Traverse City, Part Ten Streets, Utilities and Public Services Code, Chapter 1064 Parks, and related codes. Code changes could include volume limitations placed on licensees, Quiet Zones along the corridor, limitation on the use of alcohol, hours of operations, and disorderly conduct.
- As the need may arise, consider establishing outdoor eating guidelines and potential permit requirements for private use of public space, like those used by many communities for managing sidewalk cafes. This may be an amendment of existing Low Impact and High Impact Park and Public Land Use Permits.

F. Adoption of Local Policies related to River Corridor

The City of Traverse City and the Traverse City DDA should adopt policies that require physical improvement projects on publicly owned property must meet the standards set by the Riparian Buffer Ordinance and other zoning and regulatory ordinances, specifically-

1. The Riparian Buffer Ordinance once adopted.

For January 21, 2021 Meeting

Commented [HB18]: who/what body will provide scrutiny/review to ensure consistency? Are there other instruments that share terms requiring consistent definitions? zoning ord?, bankline ordinance etc? (bf)

Commented [HB19]: Delete "limit" and replace with "eliminate" (cc)

Commented [HB20]: Delete "minimize" and replace with "the" (cc)

Commented [HB21]: Eliminate "restrict" (cc)

- 2. The draft Riparian Buffer Ordinance prohibits parking in the Riparian Buffer, effectively establishing a 25-foot setback for parking. The UNIFIED PLAN recommends a policy that restricts new public parking facilities to a 50-foot setback. "For the purposes of parking motor vehicles on publicly owned property the riparian buffer zone shall include all land located within fifty (50) feet of the ordinary high-water mark. Refer to Figure Five: Cross Section at Public Parking Lot"
- 3. The Downtown Stormwater Guidelines and Best Practices (as prepared by AEComm) and the existing 2019 Storm Water Ordinance.
- 4. Chapter 1375 Outdoor Lighting ordinance to encourage dark sky compliance. All new public projects should conform to ordinance when improving downtown and riverfront public spaces.
- 5. Chapter 1372 Landscaping for plant selection and landscape maintenance.

The UNIFIED PLAN recognizes the importance of managing and enforcement of the zoning and regulatory ordinances, and the limitations of city and DDA staff time to conduct this work. As such, we recommend that the needs be evaluated carefully, and adequate staffing level be considered to accomplish the goals of this plan.

G. <u>Amend the Community Master Plan to be consistent with the findings and</u> recommendations of the Lower Boardman River UNIFIED PLAN.

When adopting or modifying new ordinances, it is critical that the Community Master Plan supports the values and guidelines that are reflected in the new ordinances. This can be accomplished in by integrating key findings of the UNIFIED PLAN into the next update of the Traverse City Comprehensive Plan and incorporate the UNIFIED PLAN by reference.

H. Community Recreation Plan Changes

Funding grants through the Michigan Department of Natural Resources (DNR) are available for many of the projects outlined in the UNIFIED PLAN. To be fully eligible for these potential grants, the planned projects should be reflected in the Recreation Plan for Traverse City. Per DNR guidelines, the Recreation Plan is updated every five years, which in Traverse City's case would be in 2021.

The Recreation Plan should include the UNIFIED PLAN recommendations to improve public parks in the project area and proposed trail connections. The City and DDA will need to coordinate Recreation Plan changes with the Parks and Recreation Commission.

Commented [HB22]: Remove and replace with "TIF97 Stormwater Management Plan"

Commented [HB23]: AECOM (fd)

Commented [HB24R23]:

Commented [HB25]: Remove and replace with "Ground-Water Protection and Storm-Water Runoff Control Ordinance"

Commented [HB26]: For letter G on page 6, should we provide a high-level list of recommended areas of focus for amendment in the master plan? I'm not sure if there are particular sections that are not in line with LBR recommendations, but if so, seems we should mention them here to provide direction to the Planning Commission. (ec)

Commented [HB27]: Is there a timeline to this update? Term of plan and year of review? Should we incorporate this timeline in the Unified Plan and also make recommendations as to who and how this review and update will be conducted to ensure concordance? (bf)

Commented [HB28]: Same recommendations for who and how as referenced above for Comp Plan...?

Commented [HB29]: The amended Recreation Plan has been approved by the City Commission and becomes activated on February 1, 2021

Amendments and revisions can take place at any time during the life of the Recreation Plan. (fd)

TRAVERSE CITY CODE OF ORDINANCES

1

ORDINANCE AMENDMENT NO.

Effective date: _

TITLE: RIPARIAN BUFFER ZONE ORDINANCE

THE CITY OF TRAVERSE CITY ORDAINS:

That Section _____, ____, of the Zoning Code of the Traverse City Code of Ordinances, be added to read in its entirety as follows:

Chapter 1373 - RIPARIAN BUFFER ZONE

The intent of this chapter is to:

- Conserve, protect, and restore natural riparian resources through scientifically supported processes.
- 2. Preserve areas that intercept and filter surface water runoff and improve water quality.
- 3. Protect shoreline and floodplain areas critical for flood attenuation and soil loss.
- 4. Conserve near-shore aquatic habitat for fish and invertebrates and shoreline and
- streambank habitat crucial for birds, insects and mammals.
- 5. Provide community scenic values and recreational values of watercourses and waterbodies.
- 6. Preserve natural deep-rooted vegetation critical for stable shorelines and streambanks.
- 7. Provide for the establishment of natural vegetation buffers on all sites adjacent to water bodies to promote public health and safety and protect land values.

1373.01 - Compliance Required.

- (a) For all parcels with a Riparian buffer zone (see Section 1320.07 *General Provisions and Definitions*) located in Grand Traverse Bay, Boardman Lake, Boardman River and Kids Creek where a land use permit is required, the following compliance is required:
 - (1) For the purposes of defining the allowed uses, structures, and construction within any building setback (front, rear, or side) which overlaps with a Riparian Buffer, the regulations and requirements of Chapter 1373 RIPARIAN BUFFER ORDINANCE shall take precedence.
 - (2) No development, permanent structures, fences, impervious surfaces or parking areas shall be allowed in the Riparian buffer zone, except for the following:

Commented [HB3]: Current Zoning Ordinance is stricter than current draft Riparian Buffer Ordinance, although it isn't interpreted that way. This would actually lessen the protections provided by water's edge setbacks by allowing structures such as decks, etc. (cc)

Commented [HB1]: Add "and enhance" (bf)

(bf)

Commented [HB2]: "scenic, cultural and recreational values"

(i)	Private recreational areas such as permeable surface paths; permeable patios, playgrounds and playground safety enclosures; mown lawns; fire pits; permeable decks and dock landings, boat launches and boathouses allowed by this zoning code; temporary storage of seasonal boats, rafts and docks; temporary structures under 200 square feet are allowed in the Riparian buffer zone that meet the following requirements:			
	(a)	All private recreational areas are constructed of permeable material that shall not allow for surface water to drain directly into Grand Traverse Bay, Boardman Lake, Boardman River or Kids Creek.		
	(b)	The total private recreational area may not exceed 30% area of the total area of the total Riparian buffer zone.		
(ii)	The strip of land within the Riparian Buffer Zone that is 10 feet wide on the landward side of the OHW Mark shall be subject to			
	further restrictions and referred to as the Critical Riparian		Cor	mmented [HB4]: Insert "is" (cc)
	Prote	ction Area.	Cor	mmented [HB5]: specify in definitions section as well (bf)
	(a) (b)	Within the Critical Riparian Protection Area, only the following private recreation areas are allowed: fire pits, permeable surface paths, and permeable dock landings. The part of the private recreation area located within the Critical Riparian Protection Area and may not exceed 15% of the Critical Riparian Protection Area	Con edg are orna exte	mmented [HB6]: These are currently prohibited in water's te setback along LBR (no encroachments into required setbacks allowed except eaves, chimneys, sills, belt course, cornices and amental features not to exceed 18 inches are permitted to end within the setbacks) (cc)
		of the efficial Ripartan Protection Area.	Cor	mmented [HB7]: delate or "and" (bf)
(iii)	Private recreation areas allowed in the Riparian Buffer for all sites within frontage along the Lower Boardman River shall be further limited to allow only permeable surface paths, permeable decks, and fire pits, and one dock landing per parcel of property, which together shall not exceed 15% of the Riparian Buffer Area. The width of all paths measured together is limited to 8 feet total for the entire lot.		Con edg are orna exte	mmented [HB8]: These are currently prohibited in water's the setback along LBR (no encroachments into required setbacks allowed except eaves, chimneys, sills, belt course, cornices and amental features not to exceed 18 inches are permitted to end within the setbacks) (cc)
(iv)	Public permeable surface walkways are allowed in the Riparian buffer zone that meet the following requirements:(a) Public paths that parallel the river shall be located outside of the Critical Riparian Protection Area. If a parallel path is located closer to the OHW Mark, the path shall be an elevated boardwalk and be located to the river side of the OHW Mark, an activity regulated by the State of Michigan and the US Corp			

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of Engineers. Refer to Figure Three: Typical Cross Section with Boardwalk."

- (b) Public paths that are not parallel to the river may exist in the Critical Riparian Protection Area only if they are providing access to overlooks, boardwalks, bridges, or defined public access points.
- (c) Public paths shall be limited to a maximum width of 10 feet, and a minimum width of 6 feet.
- (d) A site plan of the Riparian buffer zone area and the public walkway must be submitted to and approved by the Planning Commission.
- (e) The combined private recreational area and public walkway shall not exceed 40% area of the total area of the Riparian buffer zone.
- (v) Paved or unpaved service drives, driveways, working/service areas, materials or refuse storage are not allowed in the Riparian Buffer.
- (vi) Installation, maintenance or otherwise deemed necessary essential public utility services, maintaining minimal impact to the Riparian buffer zone.
- (3) Existing vegetation and healthy trees shall be preserved in the Riparian buffer zone as enumerated herein and within Chapter 1372 – Landscaping, except as follows:
 - Dead and/or diseased woody vegetation, unsafe or fallen trees, noxious plants including poison ivy, poison sumac, poison oak and other plants regarded as a common nuisance in Section 2, Public Act of 359 of 1941, as amended, being MCL 247.62, may be removed from the Riparian buffer zone and shall be replaced with native vegetation within one year of removal.

Any tree listed on the State of Michigan Invasive Species list that has been identified by a Certified Arborist may be removed, provided the stump and roots are treated and left in place.

 (ii) Removal of trees less that 6 inches DBH and other vegetation within the Riparian Buffer shall be prohibited unless approved for publicly accessible recreational paths, boardwalks, overlooks, bridges, and related public amenities, and for removal and Commented [HB9]: Is there a body/staffer that would be responsible for making determinations as to the conditions allowing for removal? (bf)

Commented [HB10]: I don't recall where this specification came from. does this suggest that trees >6" dbh are never to be removed even if approved for public recreation, amenities etc? This would directly conflict with FishPass plans. This needs further clarification. (bf)

improvement of degraded habitat, subject to the tree replacement requirements noted herein.

- (iii) For each tree removed, a replacement native or native cultivar tree of similar size at maturity shall be planted in the Riparian buffer zone within one (1) year of removal.
- (iv) The removal of trees as identified on the State of Michigan Invasive Species list with a 6" diameter at breast height requires a consultation with a Certified Arborist.
- (4) If a dwelling is sited on a Waterfront lot, selective pruning (see Section 1320.07 *General Provisions and Definitions*) within the Riparian buffer zone is allowed as follows:
- No more than an area equal to one and one-half (1 ¹/₂) times the principal structure width that faces the waterfront may be selectively pruned.
- (ii) Any area cleared for Private recreational use as defined in this chapter, shall be counted towards the allowable pruned area.
- (iii) No clear cutting of woody vegetation is permitted within the Riparian buffer zone.



Commented [HB11]: Is there a recruitment timeframe? How long does the tree stay alive? (fd)

Commented [HB12]: Any tree on State of Michigan invasive Species List, not limited to DBH (cc)

(5) Landscaping within the riparian buffer shall comply with Chapter 1372 – Landscaping, as supplemented herein. New landscape materials in the riparian buffer zone shall be native. Plantings shall be arranged and selected to retard water runoff, prevent erosion, and create wildlife food sources, nesting habitat, movement corridors, and protective cover. Selection of landscape plants shall include a diversity of species within any one plant type and shall be suitable for the conditions of the proposed habitat and reflective of the plant specie's native habitat.

Proposed landscaping shall be limited to the use of plants that have cultural significance to the First Peoples (including plants such as sage, sweet grass, northern white cedar, and native tobacco), and/or plants that are indigenous to the Boardman River region.

- (6) Soil and erosion measures and procedures will be employed in accordance with Natural Resources and Environmental Protection Act (Part 91 P.A. 451 as amended) and the City of Traverse City Ground-Water Protection and Storm-Water Runoff Control Chapter 1068 of the City of Traverse City Codified Ordinances. Removal or disturbance of vegetation in a manner that is inconsistent with erosion and sedimentation control and riparian buffer protection shall be prohibited in the Riparian buffer zone.
- (7) The following may not be used or stored in the Riparian buffer zone:
 - (i) Fertilizers, manures or chemicals.
 - (ii) No unsightly, offensive or potentially polluting material, including but not limited to:
 - a. Compost, lawn clippings, leaves, garbage, trash, refuse and animal pens.
- (8) No new private seawalls, bulkheads, broken concrete, rubble, or other shoreline hardening materials along Boardman Lake, Boardman River or Kids Creek shall be located within the Riparian buffer zone. (Private Property owners must seek guidance for appropriate permits for projects which are regulated under jurisdiction of Michigan Department of Environment, Great Lakes and Energy (EGLE) and the Army Corps of Engineers.) Natural Rock Riprap is allowed in the Riparian buffer zone.

This ordinance recognizes that the urban context of downtown Traverse City may not encourage pure landscape, habitat based, or "green" solutions, but for these sites there is a need to find solutions that create real habitat benefits. Rip Rap may be required to stabilize slopes in high

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Commented [HB13]: Reference to the Parks and Recreation Division's planting list as a guideline. (fd)

Commented [HB14]: This may likely require consultation with tribe(s) on planting plans. LTBB reference may be helpful. i will send along. (bf)

current areas, or on steeply sloping banks. The use of landscape plantings and biodegradable materials is encouraged over the use of natural rock riprap. When required, rip rap shall be natural stone and used in concert with landscaping to create pocket plantings, and with other organic stabilization methods such as coir logs, brush mats, live stakes, and logs/stumps to minimize banks hardened with stone . Refer to Figures Two, Three, Four and Five.

- (9) New construction of paved surfaces, including service areas, parking, walks and patios, which are located on all property that includes or is adjacent to a Riparian Buffer along the Lower Boardman River, shall not be allowed to drain directly into the river without pretreatment as recommended in the TIF 97 Stormwater Management Plan and regulated by the City of Traverse City Ordinance Chapter 1068 - Ground-Water Protection and Storm-Water Runoff Control.
- (10) Motor or wheeled vehicle traffic shall be prohibited in any area of the Riparian buffer zone with the exception of pathways or boat launches adequately designed to accommodate the type and volume of vehicular movement, this includes public launches and parking areas.
- (11) Reduction. In the event that the application of the Riparian buffer zone applicable under this Ordinance, results in a legal parcel that cannot be reasonably developed for permitted land uses in the district within which the property is located, a waiver, variance, modification, exception or similar provision shall be determined by the Board of Zoning appeals.

The effective date of this Ordinance is the _____ day of _____, 2020.

I hereby certify the above ordinance amendment was introduced on ______, 2020, at a regular meeting of the City Commission and was enacted on ______, 2020, at a regular meeting of the City Commission by a vote of Yes: ____ No: ___ at the Commission Chambers, Governmental Center, 400 Boardman Avenue, Traverse City, Michigan.

James Carruthers, Mayor

Benjamin C. Marentette, City Clerk

I hereby certify that a notice of adoption of the above ordinance was published in the Traverse City Record Eagle,

For January 21, 2021 Meeting

Commented [HB15]: Not broken stone or concrete (fd)

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a daily newspaper published in Traverse City, Michigan, on

Benjamin C. Marentette, City Clerk

For January 21, 2021 Meeting

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TRAVERSE CITY CODE OF ORDINANCES

ORDINANCE AMENDMENT NO.

Effective date: _____

TITLE: ORDINANCE

THE CITY OF TRAVERSE CITY ORDAINS:

That Section _____, ____, of the Zoning Code of the Traverse City Code of Ordinances, be amended to read in its entirety as follows:

1320.07 - Definitions.

As used in this chapter:

Abutting means a lot or parcel which shares a common border with the subject lot or parcel. Accessory building means a building or structure customarily incidental and subordinate to the principal building and located on the same lot as and spatially separated from the principal building. Accessory dwelling unit means a smaller, secondary home on the same lot as a principal dwelling.

Accessory dwelling units are independently habitable and provide the basic requirements of shelter, heating, cooking and sanitation. There are 2 types of accessory dwelling units:

- (1) Accessory dwelling in an accessory building (examples include converted garages or new construction).
- (2) Accessory dwelling that is attached or part of the principal dwelling (examples include converted living space, attached garages, basements or attics; additions; or a combination thereof).

Accessory use means a use customarily incidental and subordinate to the principal use of the land or building and located on the same lot as the principal use.

Adult foster care family home means a private residence with the approved capacity to receive not more than 6 adults who shall be provided foster care for 5 or more days a week and for 2 or more consecutive weeks. The adult foster care family home state licensee shall be a member of the household and an occupant of the residence.

Adult foster care small group home means a state licensed adult foster care facility with the approved capacity for not more than 12 adult residents to be provided foster care.

Affordable housing means housing units for eligible low-income households where the occupant is paying no more than 30 percent of gross income for housing costs.

Aggrieved person means a person who has suffered a substantial damage from a zoning decision not in common to other property owners similarly situated, and who has actively opposed the decision in question.

Airport terminal means the main passenger location of an airport and includes all office, hotel and retail uses commonly occurring at such locations.

Alley means a way which functions primarily as a service corridor and provides access to properties abutting thereon. "Alley" does not mean "street."

Alteration means any change, addition or modification in construction or type of occupancy; any change in the structural members of a building, such as walls or partitions, columns, beams or girders.

Basement means that portion of a building which is partly or wholly below finished grade, but so located that the vertical distance from the average grade to the floor is greater than the vertical distance from the average grade to the ceiling. A basement, as defined herein, shall not be counted as a story (see Figure 1-1). A cellar is a basement.

Berm means a constructed mound of earth rising to an elevation above the adjacent ground level of the site where located which contributes to the visual screening of the area behind the berm.

For January 21, 2021 Meeting

Commented [HB1]: It might be helpful to italicize, bold or otherwise make clear in the ordinance text/body what terms, etc have formal definitions listed here. Hyperlinks would be even better when viewed electronically. (bf) *Block* means a unit of land bounded by streets or by a combination of streets and public land, railroad rights-of-way, waterways or any other barrier to the continuity of development.

Block, face. "Face block" means that portion of a block or tract of land facing the same side of a single street and lying between the closest intersecting streets.

Boat house means an enclosed or partially enclosed structure designed for the use and storage of private watercraft and marine equipment.

Boat livery means any structure, site or tract of land utilized for the storage, servicing, docking or rental of watercraft for a fee.

Boardwalk means a walkway constructed at or above the surrounding grade, and supported by posts or columns embedded into the ground.

Brew pub means a facility as defined such by the State of Michigan.

Building means any structure designed or built for the enclosure, shelter or protection of persons, animals, chattels or property of any kind.

Building, height of. See "height of building."

Building, principal. "Principal building" means a building within which is conducted the main or principal use of the lot upon which it is located. More than one principal building is allowed on a lot.

Cemetery means property, including crematories, mausoleums, and/or columbariums, used or intended to be used solely for the perpetual interment of deceased human beings or household pets.

Clinic means an establishment where human patients who are not lodged overnight are admitted for examination and treatment by a group of physicians or dentists or similar professions.

Club means an organization of persons for special purposes or for the promulgation of sports, arts, science, literature, politics, agriculture or similar activities, but not operated for profit and open only to members and not the public.

Cluster means a development design technique that concentrates building on a portion of the site to allow the remaining land to be used for recreation, common open space and preservation of environmentally sensitive features.

Communication antenna means a device, dish or array used to transmit or receive telecommunications signals mounted on a communication tower, building or structure that is greater than 1 square meter in a residential district or 2 square meters in a non-residential district. Antenna does not include federally-licensed amateur radio station, television or radio receive-only antennas or antennas used solely for personal use. Communication antennas are not "essential services," public utilities or private utilities.

Communication tower or tower means any structure that is primarily designed and constructed for the purpose of supporting 1 or more antennas for telecommunications, radio and similar communication purposes, including self-supporting lattice towers, guyed towers, or monopole towers. The term includes radio and television transmission towers, microwave towers, common-carrier towers, cellular telephone towers, alternative tower structures, and the like. Communication towers are not "essential services," public utilities or private utilities.

Community garden means a parcel gardened collectively by a group of people.

Convenience store means a retail establishment offering for sale prepackaged food products, household items and other goods commonly associated with the same and having a gross floor area of less than 5,000 square feet.

Country club. See "golf course."

Crematories means a building or structure, or room or space in a building or structure, for the cremation of deceased persons or deceased household pets.

Critical Riparian Protection Area is a subset area of the Riparian Buffer Zone, defined as follows: a 10-foot wide area measured landward from the Ordinary High Water Mark and extending parallel to the river, lake or water body shoreline.

Critical root zone means a circular area surrounding a tree, the radius of which is measured outward from the trunk of a tree 1 foot for each 1 inch of diameter at breast height. The critical root zone shall also extend to a depth of 4 feet below the natural surface ground level.

Cultural facilities means facilities for activities for the preservation and enhancement for the cultural well-being of the community.

Deck means an open, unwalled structure that supports outdoor use of property, typically built above adjacent grade and supported by posts, columns, and /or adjacent buildings.

Development means all structures and other modifications of the natural landscape above and below ground or water on a particular site.

Diameter at breast height means the diameter of a tree trunk in inches measured by diameter at 4.5 feet above the ground.

District means a section of the City for which the zoning regulations governing the use of buildings and premises, the height of buildings, setbacks and the intensity of use are uniform.

Dock Landing means a walkway structure or path that is used to provide access from land above the Ordinary High-Water Mark into a waterbody for the purposes of facilitating recreational use of the water. Drive-in means an establishment which by design, physical facilities, service, or by packaging

procedures encourages or permits customers to receive services or obtain goods while remaining in their motor vehicles.

Drive-through means an establishment which by design, physical facilities, service, or by packaging procedures encourages or permits customers to receive service or obtain goods intended to be consumed off-premises.

Dripline means an imaginary vertical line extending downward from the outermost tips of the tree branches to the ground.

Driveway means a means of access for vehicles from a street, approved alley, across a lot or parcel to a parking or loading area, garage, dwelling or other structure or area on the same lot.

Driveway, service means a point of access solely for the use of vehicles designed to load and unload trash receptacles 3 cubic yards or more in size.

Dwelling means any building or portion thereof which is designed for or used exclusively for residential purposes and containing 1 or more dwelling units.

Dwelling, multiple family. "Multiple family dwelling" means a building or portion thereof containing 3 or more dwelling units and designed for or occupied as the home of 3 or more families living independently of each other.

Dwelling, single-family. "Single-family dwelling" means a detached building containing 1 dwelling unit and designed for or occupied by only 1 family.

Dwelling, two-family. "Two-family dwelling" means a building designed for or occupied exclusively by 2 families living independently of each other.

Dwelling unit means 1 or more rooms with bathroom and principal kitchen facilities designed as a self-contained unit for occupancy by 1 family for living, cooking and sleeping purposes. The existence of a food preparation area (such as a sink and appliances to heat and refrigerate food) within a room or rooms shall be evidence of the existence of a dwelling unit.

Eligible household means a household meeting the income criteria included in Chapter 1376, with income determined in a manner consistent with determinations of lower-income households and area median income under Section 8 of the U.S. Housing Act of 1937, as amended (Section 8 Housing Program).

Eligible housing nonprofit means a 501(c)3 nonprofit housing organization with the means and capacity to guarantee and enforce long-term affordability of affordable housing units meeting the requirements of Chapter 1376.

Emergency shelter means a facility operated by a governmental or nonprofit agency where supportive services and shelter are offered to homeless persons.

Erected means built, constructed, reconstructed, moved upon, or any physical operations on the premises required for the building. Excavations, fill, drainage and the like, shall be considered a part of erection when done in conjunction with a structure.

Essential services means the installation, construction, alteration or maintenance by public utilities or governmental agencies of underground, surface or overhead telephone, electrical, gas, steam, fuel, or water distribution systems, collections, supply or disposal systems, streets, alleys, sidewalks, or trails, including pavement, traffic control devices, signs, poles, wires, mains, drains, sewers, pipes, conduits, cables, padmount transformers, fire alarm and police call boxes, traffic signals, hydrants and similar accessories in connection therewith which are necessary for the furnishing of adequate service by such utilities or governmental agencies for the general public health, safety, convenience or welfare. "Essential services" do not include communication antennas and communication towers.

Essential service-structures. The erection, construction, alteration or maintenance by public utilities or governmental agencies of structures not in the right-of-way over 800 cubic feet in area including, but

not limited to, towers, transmission and subtransmission facilities, or buildings related to essential services in all districts.

Facade means the exterior wall of a building exposed to public view.

Family means 1 or more persons occupying a dwelling unit and living as a single housekeeping unit, whether or not related to each other by birth or marriage, as distinguished from persons occupying a boarding house, lodging house or hotel.

Fence means a constructed barrier made of wood, metal, stone, brick or any manufactured materials erected for the enclosure of yard areas.

Flood plain, 100-year. "100-year flood plain" means the lowland areas adjoining inland and coastal waters which are identified on Floodway Maps produced by FEMA (Federal Emergency Management Agency) and which are estimated to have a 1 percent chance of flooding in a given year.

Floor area. See "a gross floor area."

Frontage means the total continuous width of the front lot line.

Golf course/country club means any golf course, public or private, where the game of golf is played, including accessory uses and buildings customary thereto, but excluding golf driving ranges and miniature golf courses as a principal use.

Grade means:

- (1) For buildings having walls adjoining 1 street only: the elevation of the public sidewalk, top of curb, or centerline of the street right-of-way, whichever is closest to the building, where a building wall adjoins a street.
- (2) For buildings having walls adjoining more than 1 street: the average elevation of the sidewalks, curbs or centerlines of streets, whichever is closest to the building walls adjoining the streets.
- (3) For buildings having no wall adjoining the street: the average of the lowest and highest ground surface elevations in an area within 6 feet of the foundation line of a building or structure. Any building or structure wall within 35 feet of a public or private street shall be considered as adjoining the street. (See Figure 1-2.)

Greenbelt means a strip of land of definite width and location upon which existing vegetation is preserved or an area is reserved for the planting of living plant materials to serve as an obscuring screen or buffer strip in carrying out the requirements of this Code.

Grocery store means a retail establishment primarily selling prepackaged and perishable food as well as other convenience and household goods.

Gross floor area (GFA) means the sum of the gross horizontal areas of the several floors of a building or structure from the exterior face of exterior walls, or from the centerline of a wall separating 2 buildings, but excluding any space where the floor-to-ceiling height is less than 6 feet.

Guest night means an adult who occupies a room in a tourist home overnight. (i.e. An adult guest occupying a room in a tourist home for 4 nights has stayed for 4 guest nights.)

Height of building means the vertical distance from the grade to the highest point on a mansard or flat roof or to the median height between the eaves and the ridge for gable, hip and gambrel roofs. (See Figure 1-3).

Home occupation means an accessory use of a dwelling unit for business purposes.

Hospitality house means a facility that provides lodging to patients, family members or caretakers and medical workers while away from their home communities. The facility will typically have shared kitchens, common living areas and private bedrooms.

Host, tourist home, means the owner resides in the tourist home overnight.

Invasive Species means:

(1) Non-native (or alien) to the ecosystem under consideration; and,

(2) Whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Impervious surface means any material which prevents, impedes or slows infiltration or absorption of storm water directly into the ground at the rate of absorption of vegetation bearing soils, including building, asphalt, concrete, gravel and other surfaces.

Impervious surface ratio means the area of impervious surface less those areas used exclusively for pedestrian circulation or outdoor recreational facilities divided by the gross site area.

Kennel means any lot or premises used for the sale, boarding, or breeding of dogs, cats or other household pets or the keeping of 5 or more dogs or cats in any combination over the age of 6 months. Land clearing means:

(1) The removal of over 4,000 square feet of woody vegetation from any site, or

(2) The removal of more than 10 trees more than 6 inches in diameter at breast height or 2 trees more than 24 inches in diameter at breast height from any parcel.

Mowing, trimming or pruning of vegetation to maintain it in a healthy, viable condition is not considered land clearing, nor is the removal of woody plants in connection with the installation or maintenance of any essential service not including an essential service building.

Landing area means a landing pad, area, strip, deck or building roof used to launch or receive aircraft, including, but not limited to, power-driven winged or delta-winged aircraft, gliders, balloons and helicopters.

Landscaping means some combination of planted canopy trees, vines, ground cover, flowers or turf so long as a minimum of 80 percent of the landscape area is covered by living plant material. Planted trees shall be a least 2½ inches caliper and shall comply with the species requirements set forth in the City's approved *Tree List*. In addition, the combination or design may include rock ground cover, earth mounds, and such structural features as fountains, pools, art works, screens, walls, fences and benches.

Laundromat means a business that provides home-type washing, drying and/or ironing machines for hire to be used by customers on the premises or operated for the benefit of retail customers who bring in and call for laundry.

Lodging facility means a commercial establishment with 1 or more buildings whose primary use is to provide temporary overnight accommodations within individual guest rooms or suites to the general public for compensation. Accessory uses may include eating places, meeting rooms and other similar uses.

Lot means a parcel of land occupied or intended for occupancy by a use permitted in this Zoning Code, including 1 principal building together with accessory buildings, open spaces and parking areas required by this Zoning Code, and having its principal frontage upon a street or upon an officially approved private street. The word "lot includes the words "plot," "tract" or "parcel."

Lot, corner. "Corner lot" means a lot which has at least 2 contiguous sides abutting on and at the intersection of 2 or more streets.

Lot of record means a lot whose existence, location and dimensions have been legally recorded or registered in a deed or on a plat.

Lot, through. "Through lot" means an interior lot having frontage on 2 more or less parallel streets. Lot width means the horizontal distance between side lot lines measured parallel to the front lot line at the minimum required front setback line.

Lower Boardman River is the reach of the Boardman River that extends from the north shore of Boardman Lake to the Grand Traverse Bay of Lake Michigan.

Manufacturing means the production of articles for use from raw or prepared materials by giving these materials new forms, qualities, properties or combinations, whether by hand labor or machine. Market, municipal. "Municipal market" means a publicly owned and operated building or space where

vendors offer a wide range of different products from open stalls.

Marina means a commercial mooring, berthing, or docking facility for watercraft with or without provisions for launching, haulout, servicing, fueling or sales of accessory supplies.

Medical marihuana facility means a location at which a person is licensed to operate under the Michigan Medical Marihuana Facilities Licensing Act, MCL 333.27101 et seq., and a marihuana facility license under Chapter 845 of the Codified Ordinances of the City of Traverse City and operates as a medical marihuana grower, medical marihuana processor, medical marihuana secure transporter, medical marihuana provisioning center, or a medical marihuana safety compliance facility.

Medical marihuana grower means a use where a person holding a state operating license under the Michigan Medical Marihuana Facilities Licensing Act, MCL 333.27101 et seq., and a marihuana facility license under Chapter 845 of the Codified Ordinances of the City of Traverse City cultivates, dries, trims, or cures and packages medical marihuana for sale to a processor or provisioning center.

Medical marihuana provisioning center means a use where a person holding a state license under the Michigan Medical Marihuana Facilities Licensing Act, MCL 333.27101 et seq., and a marihuana facility license under Chapter 845 of the Codified Ordinances of the City of Traverse City purchases medical marihuana from a medical marihuana grower or medical marihuana processor and commercially sells, supplies, or provides medical marihuana to registered qualifying patients as defined in the Michigan Medical Marihuana Act, MCL 333.26241 et seq., directly or through the registered qualifying patients' registered primary caregiver. Medical marihuana provisioning center includes any property where medical marihuana is sold at retail to registered qualifying patients or registered primary caregivers. A residential

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Commented [HB2]: Boardman Ottaway (fd)

Commented [HB3]: Northern most part of Boardman Lake (fd)

location used by a primary caregiver to assist a qualifying patient connected to the caregiver through the Michigan Medical Marihuana Act, MCL 333.26241 et seq., is not a medical marihuana provisioning center.

Medical marihuana processor means a use where a person holding a state license under the Michigan Medical Marihuana Facilities Licensing Act, MCL 333.27101 et seq., and a marihuana facility license under Chapter 845 of the Codified Ordinances of the City of Traverse City purchases medical marihuana from a medical marihuana grower and extracts resin from the marihuana or creates a marihuana-infused product for sale and transfer in packaged form to a medical marihuana provisioning center.

Medical marihuana safety compliance facility means a use where a person holding a state operating license under the Michigan Medical Marihuana Facilities Licensing Act, MCL 333.27101 et seq., and a marihuana facility license under Chapter 845 of the Codified Ordinances of the City of Traverse City takes medical marihuana from a marihuana facility or receives medical marihuana from a registered primary caregiver, tests the medical marihuana for contaminants and for tetrahydrocannabinol and other cannabinoids, returns the test results, and may return the medical marihuana to the marihuana facility.

Medical marihuana secure transporter means a use where a person holding a state license under the Michigan Medical Marihuana Facilities Licensing Act, MCL 333.27101 et seq., and a marihuana facility license under Chapter 845 of the Codified Ordinances of the City of Traverse City stores medical marihuana and transports medical marihuana between medical marihuana facilities for a fee.

Microbrewery means a facility as defined as such by the State of Michigan.

Non-conforming use means a lawful use of land that does not comply with the use regulations for its zoning district but which complied with applicable regulations at the time the use was established. Nursing home. See "residential care and treatment facility."

Open space, common. "Common open space" means land within or related to a development, not individually owned that is designed and intended for the common use or enjoyment of the residents and their guests of the development and may include such complementary structures and improvements as are necessary and appropriate.

Ordinary high water mark means the line between upland and bottomland which persists through successive changes in water levels, below which the presence and action of the water is so common or recurrent that the character of the land is marked distinctly from the upland and is identified along Grand Traverse Bay and Boardman Lake at an elevation defined by the US Army Corps of Engineers. The Boardman River ordinary high water mark is identified as the line between upland and bottomland that persists through successive changes in water levels, below which the presence and action of the water is so common or recurrent that the character of the land is marked distinctly from the upland and is apparent in the soil itself, the configuration of the surface of the soil, and the vegetation.

Owner means any person having an ownership interest in a premises as shown on the latest Traverse City tax records.

Parcel. See a "lot."

Parking area means any public or private area, under or outside of a building or structure, designed and used for parking motor vehicles, including parking lots, driveways and legally designated areas of public streets.

Parking area, commercial. "Commercial parking area" means a tract of land which is used for the storage of motor vehicles, which is not accessory to any other use on the same or any other lot and which contains parking space rented to the general public or reserved for individuals by the hour, day, week or month.

Parking area, off-street. "Off-street parking area" means a land surface or facility providing vehicular parking spaces off of a street together with drives and maneuvering lanes so as to provide access for entrance and exit for the parking of motor vehicles.

Parking area, private. "Private parking area" means a parking area for the exclusive use of the owners, tenants, lessees, or occupants of the lot on which the parking area is located or their customers, employees, or whomever else they permit to use the parking area.

Parking area, public. "Public parking area" means a publicly owned or controlled parking area available to the public, with or without payment of a fee.

Parking space means an area of land provided for vehicles exclusive of drives, aisles, or entrances giving access thereto, which is fully accessible for parking of permitted vehicles.

Parking structure means a building or structure consisting of more than 1 level and used to store motor vehicles.

Pavement. "Pavement" and "paved" mean permanent and completely covered with concrete, a bituminous surface, brick or other surface approved by the Planning Director.

Pedestrian scale means design and construction considerations based upon the scale of a human being which imbue occupants and users of the built environment with a sense of comfort and security. Person means a corporation, association, partnership, trust, firm or similar activity as well as an

individual. *Place of worship* means a building wherein persons regularly assemble for religious worship and

which is maintained and controlled by a religious body organized to sustain public worship, together with all accessory buildings and uses customarily associated with such primary purpose.

Planning director means the head of the City Planning and Zoning Department or the designee of that person.

Plat means a map of a subdivision of and recorded with the Register of Deeds pursuant to state statute

Primary residence means a housing unit in which an owner or lessee resides for the majority of the year and provides proof of primary residence evidence acceptable to the City Clerk.

Principal use means the main use of land or structures as distinguished from a secondary or accessory use.

Pruning means the targeted removal of diseased, damaged, dead or overgrown branches or stems to increase fruitfulness and growth. Pruning does not mean the complete removal or damaging of a tree to intentionally prevent growth.

Public utility means any person, firm or corporation, municipal department, board or commission duly authorized to furnish and furnishing under federal, state or municipal regulations to the public; gas, steam, electricity, sewage disposal, communication, telephone, telegraph, transportation or water.

R-District means a residence district, namely an RC, R-1a, R-1b, R-2, R-9, R-15, and R-29 district. *Recreational facilities* means buildings, or grounds, excluding amusement parks, where a variety of sport or exercise activities are offered.

Recreational vehicle means a vehicle primarily designed and used as a temporary living quarters for recreational, camping, or travel purposes including a vehicle having its own motor power or a vehicle mounted on or drawn by another vehicle.

Residential care and treatment facility means a facility providing:

- (1) Services, programs and temporary shelter for residents who are undergoing alcohol or substance abuse rehabilitation;
- (2) Temporary emergency shelter and services for battered individuals and their children in a residential structure.

Restaurant, family means an establishment where food and drink are prepared and served to seated customers. Customer turnover rates are typically less than 1 hour. Generally, these establishments serve breakfast, lunch, and dinner and sometimes are open 24 hours a day. It may include cafeteria-style facilities.

Restaurant, fast food means an establishment where food and drink are served to customers at a counter. Such establishments may or may not have seating facilities. Generally, food and drink is ordered and taken to be consumed outside the restaurant building.

Restaurant, fine means an establishment where food and drink are prepared and served. Customer turnover rates are typically 1 hour or longer. Such establishments serve dinner but generally do not serve breakfast and may or may not serve lunch or brunch.

Right-of-way means a public or private street, alley or easement permanently established for the passage of persons or vehicles.

Riparlan buffer zone means all land located within twenty-five (25) feet of the ordinary high water mark of Grand Traverse Bay, Boardman Lake, and Kids Creek and Boardman River.

Rooming house means a residential building where rooms or suites of rooms are rented where the renters use common facilities, such as hallways and bathrooms. A rooming house shall not include lodging facilities, apartment houses, 2 and multi-family dwellings or fraternity and sorority houses.

School means an educational institution under the sponsorship of a private or public agency providing elementary or secondary curriculum, and accredited or licensed by the State of Michigan; but excluding profit-making private trade or commercial schools.

Screen means a structure providing enclosure and a visual barrier between the area enclosed and the adjacent property. A screen may also be non-structured, consisting of shrubs or other growing materials.

Screen, opaque means a masonry wall, fence sections, earthen berm, evergreen hedge or a combination of these elements which completely interrupt visual contact and provide spatial separation. Setback means the distance required between a lot line and a building wall.

Setback, front. A front setback means the minimum required distance, extending the full lot width, between the principal building and the front lot line. If there is more than one principal building on a lot, at least one of the principal buildings must meet the front setback.

Setback, rear. A rear setback means the minimum required distance, extending the full lot width, between the principal and accessory buildings and the lot line opposite the front line.

Setback, side. A side setback means the minimum required distance, extending from the front setback to the rear setback, between the principal and accessory building and the side lot line.

Site diagram means a drawing, drawn to scale, showing the location of buildings and structures on a lot, as well as driveways, curb cuts, alleys, streets, easements and utilities. See Appendix 1, Figure 1-4.

Site plan means a plan showing all salient features of a proposed development, so that it may be evaluated in order to determine whether it meets the provisions of this Code.

Stop work order means an administrative order which directs a person not to continue, or not to allow the continuation of an activity which is in violation of this Code.

Street means any public way, such as a public street, avenue or boulevard, at least 16 feet wide. Street does not mean "alley." See also "Private street."

Street, access. "Access street" means a street or alley designed primarily to provide access to properties.

Street, arterial. "Arterial street" means a street designed to carry high traffic volumes through the community.

Street, collector. "Collector street" means a street designed to carry moderately high traffic volumes from arterial and access streets.

Street, private. "Private street" means an officially approved thoroughfare, other than a public street or alley, permanently reserved as the principal means of access to abutting property.

Structural alterations means any change in a building requiring a building permit.

Structure means anything constructed or erected, the use of which requires a more or less permanent location on the ground or an attachment to something having a permanent location on the ground, including, but not limited to, freestanding signs, billboards, back stops for tennis courts and pergolas.

Tree Canopy Cover means:

(1) The cover provided by tree crowns over the ground surface, either individually or as a group; also, a measure of the percent of a lot covered by all tree canopy, calculated by dividing the total area of tree canopy cover by the total area of the lot, and multiplying by 100.

Tourist home, high intensity means a single-family dwelling that is a primary residence which is owned and hosted in residence by the owner renting out not more than 3 rooms for compensation, limited to not more than 2 adults per room, to persons who do not stay for more than 14 consecutive days for 85 or greater guest nights per year.

Tourist home, low intensity means a single-family dwelling that is a primary residence which is owned and hosted in residence by the owner renting out not more than 2 rooms for compensation, limited to not more than 2 adults per room, to persons who do not stay for more than 14 consecutive days for no greater than 84 guest nights per year.

Townhouse means a multiple dwelling in which each dwelling unit shares a common wall with at least 1 other dwelling unit and in which each dwelling unit has living space on the ground floor and has a separate ground-floor entrance.

Trailer means any enclosure used for living, sleeping, business or storage purposes, having no foundation other than wheels, blocks, skids, jacks, horses or skirtings, and which has been or reasonably may be equipped with wheels or devices for transporting the enclosure from place to place. "Trailer" includes motor homes, travel trailers and camper vans.

Transit center means a fixed location where passengers interchange from 1 route or vehicle to another that has significant infrastructure such as a waiting room, benches, restrooms, sales outlet, ticket or pass vending machines and other services.

Transitional housing means a facility which is operated by a government or a nonprofit agency providing interim sleeping and bath accommodations; interim eating and cooking facilities; and professional services to assist individuals or families in locating permanent housing.

Tree protection area means: the soil around and under a tree. The radius of the tree protection area measures 1 foot per 1 inch of diameter at breast (DBH) from the trunk outwards and 24 inches in depth. For example, for a 10 inch DBH tree, the Tree Protection area is located at least 10 feet out from the trunk and 24 inches deep.

Treelawn means the area of public right-of-way lying between the curb line of a curbed street or developed travelway of a noncurbed street and the nearest private property line substantially parallel to said street.

Trip end means the total of all motor vehicle trips entering plus all motor vehicle trips leaving a designated land use or building over a given period of time.

Vacation home rental means a commercial use of a dwelling where the dwelling is rented or sold for any term less than 30 consecutive days.

Woody plant means:

(1) Vegetation that produces wood as its structural tissue. Woody plants include trees, bushes, shrubs, vines and woody perennial flowering plants.

Yard means an open space at grade between a building and the adjoining lot lines, unoccupied and unobstructed by any portion of a structure from the ground upward, except as otherwise provided in this Zoning Code.

Yard, front. "Front yard" means all land extending across the width of a property and lying between the building line and the front lot line.

Yard, rear. "Rear yard" means all land extending across the width of the property and lying between the building and the rear lot line.

Yard, side. "Side yard" means all land lying between a principal building and the side lot lines and extending from the front to the rear of the principal building.

Zoning Code means Part 13, Title One of the Code of Ordinances of the City of Traverse City and includes the text of this Zoning Code as well as all maps, tables, graphics, schedules as included or attached as enacted or subsequently amended.

The effective date of this Ordinance is the _____ day of _____, 2020.

I hereby certify the above ordinance amendment was introduced on ______, 2020, at a regular meeting of the City Commission and was enacted on ______, 2020, at a regular meeting of the City Commission by a vote of Yes: ____ No: ___ at the Commission Chambers, Governmental Center, 400 Boardman Avenue, Traverse City, Michigan.

James Carruthers, Mayor

Benjamin C. Marentette, City Clerk

I hereby certify that a notice of adoption of the above ordinance was published in the Traverse City Record Eagle, a daily newspaper published in Traverse City, Michigan, on

Benjamin C. Marentette, City Clerk



Downtown Development Authority 303 E. State Street Traverse City, MI 49684 harry@downtowntc.com 231-922-2050

MEMORANDUM

To: Lower Boardman Leadership Team

From: Harry Burkholder, DDA COO

For Meeting Date: January 21, 2021

SUBJECT: Lower Boardman Leadership Unified Plan Timeline for 2021

As a reminder, moving forward into 2021, here are the topics that the Leadership Team will pursue over the next half year.

January 2021	Review and take action on Riparian Buffer Ordinance recommendation; get an update on the preliminary findings of the Boardman Wall Stabilization project
February 2021	Review findings of the Boardman Wall Stabilization project and discuss implications for the future of the 100/200 block
March 202	Discuss process for establishing project and policy priorities and gaining public input
April 2021	Discuss preliminary budget estimates, potential funding sources, and physical plan refinements
May 2021	Review public engagement strategy and potential schedule
June 2021	Prepare for public engagement

If COVID recovery lags, we could use the additional time to review the draft report, and/or discuss future management structures for implementing projects and maintaining the river corridor.



303 E. State Street Traverse City, MI 49684 harry@downtowntc.com 231-922-2050

Downtown Development Authority

MEMORANDUM

To: Lower Boardman Leadership Team

From: Harry Burkholder, DDA COO

For Meeting Date: January 21, 2021

SUBJECT: Lower Boardman Unified Plan Process/Administration

Downtown Development Authority (DDA)

The DDA initiated a planning process to develop a "Unified Plan" for the Lower Boardman River. The DDA appointed the Lower Boardman Leadership Team (a sub-committee of the DDA) to lead the planning process.

Lower Boardman Leadership Team (LBLT)

The LBLT is leading the planning process for the Lower Boardman River. The Leadership Team includes 13 members, made up of local officials (including the City Commission and DDA), government staff, a member of the Grand Traverse Band of Ottawa and Chippewa Indians, representatives from stakeholder organizations, businesses owners, residents and citizens.

In leading the planning process, the LBLT - in cooperation with SmithGroup (the planning consultant) - hosts and facilitates monthly planning meetings, directs plans for civic engagement and outreach, presents updates/findings to the DDA, City Commission and other relevant boards/commissions, and is charged with developing the plan's content.

When complete, the LBLT will submit the final Unified Plan to the DDA for approval. The DDA will then present the Unified Plan to the City Commission and Planning Commission for their approval.

Lower Boardman River Unified Plan The final Lower Boardman River Unified Plan will articulate a vision for the Lower Boardman River corridor and outline a series of recommendations for (among other things) land use/zoning, public access, capital improvements and habitat management.



Unified Plan Approval and Adoption Once complete, the final Lower Boardman River Unified Plan will be approved by the DDA, City Commission and Planning Commission.

Implementation

Implementation of the Lower Boardman River Unified Plan will be headed by the DDA, but will likely involve different stakeholders, government staff, interested citizens and local officials (as still yet to be determined)

ETHNOBOTANY OF THE ANISHINAABEK NORTHERN

GREAT LAKES INDIANS

By

Scott M. Herron

B.S., Grand Valley State University, 1998

A Dissertation Submitted in Partial Fulfillment of the Requirements for the

Doctor of Philosophy Degree

Department of Plant Biology in the Graduate School Southern Illinois University at Carbondale July, 2002

CHAPTER 9

Results

Grand Traverse Band of Ottawa and Chippewa

Current Ethnobotanical Findings

The Grand Traverse Band (GTB) of Ottawa and Chippewa is located in Peshawbestown, Michigan, which is on the Leelanau peninsula northwest of Traverse City in Leelanau and Antrim Counties. I conducted research with this Anishinaabek band from 1995 through 2001 after becoming close friends to the family of Thundering Mountain. Since 1995, when I first met Thundering Mountain, I have participated in approximately 60 ceremonies with the GTB tribal members, both on and off the GTB reservation. Thundering Mountain is a traditional ceremonialist in his 30s, whose mother, brother, and cousin all have joined us in various ceremonies. Secondary informants include several male and female GTB tribal members who participated in a medicinal plants workshop I conducted in Grand Rapids, Michigan on May 16, 2001 for Native American Community Services. Other secondary informants include GTB tribal members that participated in a Native American Church peyote ceremony at the home of Thundering Mountain's cousin on the GTB Reservation in Peshawbestown. Many of the event analyses that contributed to these findings were located near Thundering Mountain's former home in Newaygo, Michigan off of the GTB Reservation (Figure 9-2, 9-3, and 9-4).

Utility and Crafting Plant Uses

Common Name	Genus	Species	Name Author
Paper Birch	Betula	papyrifera	Marsh.
Red Osier Dogwood	Cornus	sericea	L.
Black Ash	Fraxinus	nigra	Marsh.
Sweet Grass	Hierochloe	odorata	(L.) Beauv.
Quaking Aspen	Populus	tremuloides	Michx.
Willow	Salix	spp.	L.

Table 9-1. Summary of the utility and crafting plants used at Grand Traverse Band of Ottawa and Chippewa.

Paper Birch, Betula papyrifera, Betulaceae (Birch Family)

Birch bark is used as a fire starter for ceremonial fires, including the ones for heating sweat lodge rocks (voucher specimen 139, 244). Thundering Mountain always started these fires by lighting a piece of birch bark with a match, then using the flaming birch bark to light other pieces of birch bark placed throughout the platform of wood holding the rocks. Some GTB tribal members make birch bark baskets that they sell in Peshawbestown, Michigan where their reservation is located. The most intricate baskets are small birch bark containers with sweet grass bordering the rims and porcupine (*Erethizon dorsatum*) quills sewn into the bark in ornate patterns (Figure 6-2). Paper birch log sections one foot long were stood on end at the cardinal directions of a stone medicine wheel. The cut ends were painted red for the east, yellow for the south, black for the west, and white for the north. This 30-40 foot diameter medicine wheel enclosed the ceremonial grounds of Thundering Mountain's sweat lodge and fire pit.
Red Osier Dogwood, Cornus sericea, Cornaceae (Dogwood Family)

The red osier dogwood has been renamed from Cornus stolenifera Michx. to C. sericea (voucher specimen 144, 236). It is often erroneously called red willow, but it is a dogwood, not a willow (Salix sp.). The trunk of a red osier dogwood shrub, known as *meskwabimic* in Anishinaabemowin, was used to make a ceremonial dance staff by Thundering Mountain in 1996. He attached an eagle talon, eagle feathers, and hawk feathers onto the three foot staff. The staff was used when dancing men's traditional style in local pow-wows. According to female GTB ceremonialist at my medicinal plant workshop in Grand Rapids, red osier dogwood stems are debarked and carved into roach sticks, which are sticks placed in pow-wow dancing regalia headgear known as roaches. Eagle feathers are attached to the roach sticks, allowing the feathers to hang down along the dancer's face. This female GTB ceremonialist also uses red osier dogwood stems to make dream catch frames, onto which cordage is woven into a spider web pattern to produce a craft used to keep negative dreams and energies away from sleeping people. A member of the Gun Lake Band of Potawatomi at this medicinal plants workshop said that his community in southwest Michigan uses red osier dogwood bark as filler for tobacco smoking mixtures (Smith 1932).

Black Ash, Fraxinus nigra, Oleaceae (Olive Family)

The wood from the black ash tree (*aagimaak*) is pounded to separate it at growth rings and cut into narrow splints that are woven into utility baskets (Figure 9-1). The process of making black ash baskets is shown in a video I was given that featured a male Odawa elder, Cecil Fisher (voucher specimen 5). I have seen black ash baskets for sale on the GTB Reservation, and in the home of Thundering Mountain.



Figure 9-1. Antique black ash basket from Scott Herron's grandmother, made at the Winnebago Public Museum, Milwaukee, Wisconsin.

Sweet Grass, Hierochloe odorata, Poaceae (Grass Family)

Sweet grass is made into coiled baskets by female tribal members and sold at local pow-wows and in local art galleries (voucher specimen 2). This beautiful and fragrant crafting technique has been practiced by Anishinaabek women throughout most of the historic period (Lyford 1982). Sweet grass is also incorporated into black ash baskets and birch bark baskets around the rim (voucher specimen 5, 172). During ceremonies conducted by GTB tribal members, sweet grass braids are used to smudge participants and objects. Thundering Mountain occasionally used sweet grass in his tobacco mixture that we smoked in his ceremonial pipe. During sweat lodge ceremonies, sweet grass was placed on the hot rocks after they brought into the lodge by the fire keeper. The smoldering sweet grass smoke was meant to be an offering to the rocks, the spirit of the sweat lodge, and the Creator.

Quaking Aspen, Populus tremuloides, Salicaceae (Willow Family)

Quaking aspen is known as *asadi* (poplar or bitter bark) in Anishinaabemowin (voucher specimen 104, 176, 241, 374). The trunks and branches of quaking aspen are used to build temporary structures known as arbors where ceremonies are conducted (Figure 9-2). In preparation for thirsty dance ceremonies, men cut down 30 to 50 quaking aspen trees up to six inches in diameter. These trees will become the frame for a large ceremonial arbor, where dancing, drumming and singing, pipe smoking, praying, and self sacrifice all take place. A tree of life is ceremonially placed in the center of the arbor to act as the connection between the thirsty dance participants and the spirit world. The tree of life is a special quaking aspen tree individually selected by the elders presiding over the thirsty dance (Figure 9-3). The thirsty dance ceremony was shared

with the Michigan Anishinaabek by elders on the Turtle Mountain Reservation in North Dakota. The family that has carried on the annual tradition of the thirsty dance is one with Ojibway, Cree, and Dakota ancestry. In the Northern Plains, the quaking aspen is a sacred tree, perhaps the chief of the tree world. Red Bear of the Lac Courte Oreilles band of Ojibway in Wisconsin views the quaking aspen as the chief of the tree world during the growing season. Both of these ceremonialists share the same admiration for the spirit of the aspen tree, regardless of their two communities' separation.

Willow, Salix spp., Salicaceae (Willow Family)

Willow branches of various species are used to construct stalls inside the thirsty dance arbor. The stalls are dividers between the dancers who pledge to fast from food and water for four days while dancing in a stall prepared by the individual participant. Quaking aspen posts are covered with willow branches containing their leaves in a meshwork that creates a wall between the dancer and the rest of the arbor. The arbor is also divided into a women's and men's side, using aspen posts covered with willow branches. In between the separate gender-defined sides of the arbor is the pipe alter, where all the ceremonial pipes are placed while not in use. In this way the pipe alter acts as a bridge between the distinct male and female energies on opposite sides of the arbor. The large ceremonial drum is located next to the pipe alter, also between the gender-defined sides. At this drum, which has a female spirit, only men sit and beat the drum in unison while singing sacred songs passed on through the oral tradition. The drum is where I can usually be found, since I have successfully learned many of the songs needed for the thirsty dance ceremony. Sitting around the drum listening to male Anishinaabek elders is where I have learned not only the sacred songs, but many of the spiritual teachings of the



Figure 9-2. Thirsty dance arbor made out of quaking aspen trees on the property of Thundering Mountain in Newaygo, Michigan.



Figure 9-3. The tree of life made out of quaking aspen at the thirsty dance on the property of Thundering Mountain in Newaygo, Michigan.

Anishinaabek oral traditions. Among those traditions is the Ojibway name for plants, including willow, which is known as *sizigo bimic* in Anishinaabemowin (voucher specimen 49, 103, 145, 149, 186, 221, 242). Some GTB ceremonialists build the frame of their sweat lodges out of willow. Willow branches are used for any craft in which a flexible woody material is needed, including dream catchers, medicine wheels, and baskets (Lyford 1982).

Medicinal, Ceremonial, and Food Plant Uses

Common Name	Genus	Species	Name Author
Sweetflag/Bitter Root	Acorus	calamus	L.
Prairie Sage	Artemisia	ludoviciana	Nutt.
Common Milkweed	Asclepias	syriaca	L.
Wild Calla	Calla	palustris	L.
Sweetfern	Comptonia	peregrina	(L.) J.M. Coulter
Strawberry	Fragaria	virginiana	Duchesne
Wintergreen	Gaultheria	procumbens	L.
Sweet Grass	Hierochloe	odorata	(L.) Beauv.
Bear Root	Ligusticum	porteri	Coult. & Rose
Peyote	Lophophora	williamsii	Coult.
Tobacco	Nicotiana	tabacum	L.
Staghorn Sumac	Rhus	typhina	L.
California White Sage	Salvia	apiana	Jepson
Sassafras	Sassafras	albidum	(Nutt.) Nees.
Dandelion	Taraxacum	officinale	Webber ex Wiggers
White Cedar	Thuja	occidentalis	L.
Blueberry	Vaccinium	spp.	L.

Table 9-2. Summary of the medicinal, ceremonial, and food plant uses at GrandTraverse Band of Ottawa and Chippewa.

Sweetflag/Bitter Root, Acorus calamus, Araceae (Arum Family)

Sweetflag is called bitter root by the Anishinaabek and is known as *wiikenh* in Anishinaabemowin (voucher specimen 339). Males who sing and drum at pow-wows and ceremonies often rely on bitter root fragments as throat lozenges. After singing at high pitches, the men's throats often become sore. Most drummers keep a supply of the fragmented rhizomes of bitter root on hand during singing, so they can chew or suck on it as needed. Swallowing the bitter root juices will numb the throat and tongue slightly, indicating that analgesic compounds are present in bitter root. Historically, a piece of root less than 1.5 inches long was chewed on to cure a cold in the throat or a cramp in the stomach (Smith 1932). A root tea of *Acorus calamus* and sarsaparilla (*Aralia nudicaulis* L.) was used to soak gill nets at Lac du Flambeau to attract white fish, reportedly securing 121 white fish in a single night (Smith 1932).

Prairie Sage, Artemisia ludoviciana, Asteraceae (Composite Family)

Prairie sage, the plant of the western direction of the medicine wheel, is used extensively in ceremony by GTB tribal members (voucher specimen 27). During sweat lodge ceremonies at Thundering Mountain's property, everything was purified by prairie sage smoke before it was brought into the lodge. Some of the pipe ceremonies I have participated in with GTB tribal members included prairie sage in smoking mixtures used by the pipe carriers. During sweat lodge ceremonies, prairie sage was placed on the hot rocks as they were brought into the lodge. Prairie sage is known as mushkadaywushk in Anishinaabemowin, and its distribution only slightly enters the western fringe of Anishinaabek occupation in Minnesota and western Wisconsin. These uses may have been learned from the Lakota individuals that some GTB members interact with on a regular basis. It is possible that another plant, such as pearly everlasting (Anaphalis margaritacea) was used in the same manner during the early historic period. Since the pan-American Indian movements of the 1960s, Anishinaabek individuals and Lakota individuals have began participating in ceremonies together. Through this interaction, medicines like prairie sage and songs have been exchanged between the two cultures. Common Milkweed, Asclepias syriaca, Asclepidaceae (Milkweed Family)

A female GTB ceremonialist explained that common milkweed flower buds are eaten during the spring before the flowers have completely opened. A male tribal member of Gun Lake Band of Potawatomi verified this food use of milkweed during my medicinal plant workshop in Grand Rapids. The GTB female called common milkweed

inini wunj (Indian man juice plant), referring to the milky sap inside the stems and leaves of *Asclepias syriaca*. Historically, it was called *cabo sikun* (milk) and *ininiwunj* (Indian plant), during its use as a food (Smith 1932). The Lac du Flambeau and Pillager Ojibway bands ate the fresh flowers and shoot tips in soups with meat.

Wild Calla, Calla palustris, Araceae (Arum Family)

A female informant said that wild calla leaves are eaten as greens (voucher specimen 227). The plant is a water arum found growing in northern wetlands. It has not been documented as a food plant. This use of wild calla, known as *nikauno wuhnshk* in Anishinaabemowin, is quite feasible. There is a possibility the informant was mistakenly referring to marsh marigold (*Caltha palustris* L.), which has a documented history of being eaten as leafy greens by the Ojibway of Lac du Flambeau in the springtime with meat (Smith 1932). Marsh marigold leaves (voucher specimen 111, 200) were eaten as greens in Michigan and Ontario by the Ojibway bands in Sarnia, Ontario and Pinconning, Michigan (Gilmore 1933).

Sweet Fern, Comptonia peregrina, Myricaceae (Wax Myrtle Family)

At the thirsty dance ceremonies attended by GTB tribal members, sweet fern tea was used to wet down the skin of sun burnt and dehydrated pledges toward the end of the four day fast of food and water. Once the ceremony was completed, sweet fern tea was drank by several of the thirsty dancers (voucher specimen 46, 126). Historically, the Lac du Flambeau Ojibway considered the leaves too strong for a beverage tea, but used the tea medicinally to treat flux and stomach cramps (Smith 1932). Sweet fern is known as *gibaime nunagwus* (coverer) in Anishinaabemowin, referring to its use to line blueberry pails to prevent the berries from spoiling (Smith 1932). The fragrant leaves were also burned as incense in religious ceremonies in the early 1900s (Gilmore 1933).

Strawberry, Fragaria virginiana, Rosaceae (Rose Family)

Wild and domestic strawberries are eaten by GTB tribal members (voucher specimen 13, 142, 232, 263). During ceremonies I attended, including a traditional Anishinaabek wedding of a GTB tribal member and the thirsty dances, strawberries are given away as a ceremonial offering from the hosts to the guests. This custom may be derived from the oral teachings of strawberry plants, where the fruit is known as *odeimin* (heart berry) in Anishinaabemowin, and it is a gift from the heart to receive the respected fruit of the wild strawberry plants. The name also refers to the color and shape of the red berry. The Anishinaabek have been eating strawberries for as long as can be remembered or documented, including making preserves for winter use (Gilmore 1933; Smith 1932). The strawberry root (*odeimini djibik*) was also used as a tea for stomach aches in babies and adults (Smith 1932).

Wintergreen, Gaultheria procumbens, Ericaceae (Heath Family)

Wintergreen leaves are made into tea by Thundering Mountain (voucher specimen 15, 48). The leaves are boiled shortly, and then steeped for several hours. The resulting minty tea is drank for aches and pains, as a substitute for using pain relievers, such as aspirin or Tylenol. Wintergreen is known as *winisi bugud* (dirty leaf) in Anishinaabemowin, and has been used as a beverage, cooking flavor, and medicine throughout the historic period (Gilmore 1933; Smith 1932). European American doctors learned of wintergreen's use as a pain reliever from American Indians, and later isolated the chemical methyl salicylate from the plant (Smith 1932). Aspirin is a synthetic

derivative of methyl salicylate, and wintergreen was the original source of the methyl salicylate (Smith 1932). Later, yellow birch (*Betula alleghaniensis* Britton) twigs and then coal tar dye were used to extract the volatile oil methyl salicylate.

Bear Root, Ligusticum porteri, Apiaceae (Carrot Family)

Bear root is ground up and placed on hot rocks during sweat lodge ceremonies conducted by GTB tribal members. Both Thundering Mountain and his cousin use bear root in this way, calling it *mukwa jiibik* in Anishinaabemowin (voucher specimen 173). During my medicinal plant workshop in Grand Rapids, a Gun Lake Band tribal member verified this use, and added that he makes a tea out of the fragrant root to help his voice and throat when singing in ceremony or at pow-wows. I have experimented with a tea made out of bear root and white cedar, that I drank for respiratory distress and a cough. White cedar tea is usually a powerful respiratory medicine with a strong flavor, but when a one inch section of bear root is added to the decoction, bear root completely masks the flavor of white cedar. I have not experienced any ill effects from this medicinal combination after drinking two quarts of the bear root and white cedar tea in a two day period. The medicine did expedite my recovery from respiratory distress.

Peyote, Lophophora williamsii, Cactaceae (Cactus Family)

I have attended a Native American Church peyote ceremony on the GTB Reservation. Some of the families exclusively follow this religion, but most families also participate in the Midewiwin, or other religions that incorporate sweat lodges, pipe ceremonies, etc. into their lifestyle. There is a significant portion of the GTB population that exclusively follows select forms of Christianity, and these tribal members are not very accepting of the Native American Church.

The peyote ceremonies are a hybrid between Christian worship of Jesus and Anishinaabek worship of the Creator using a southwestern desert cactus as a medium to the spirit world. During the last 100 years, peyote ceremonies were converted into the Native American Church, a Christian infused pan-American Indian religion (Marriott and Rachlin 1971). The original peyote ceremonies involved a long migration from the Sierra Madre Occidental of central Mexico to the Rio Grande River valley, where *Lophophora williamsii* is endemically located. The Huichol and Tarahumara Indian cultures were the primary followers of the sacred peyote ceremonies, which were extremely different from the methods of the Native American Church (La Barre 1969). Navaho (Diné) and Lakota ceremonialists converted the Huichol and Tarahumara peyote ceremony into the Native American Church, which then spread throughout North America in a religious revitalization movement. This movement made its push into western Michigan during the mid 1900s.

The peyote cactus contains hallucinogenic compounds including mescaline, lophophorine, and others (Robinson 1968). The GTB peyote ceremonialists believe that the spirit of the peyote cactus ingested acts as a medium to the spirit world, including the Creator and Jesus. These individuals believe that the Creator or another spirit can send them a message verbally, visually, or symbolically during the peyote ceremony. Behind all the rituals that most observers seem to focus on, you have individuals praying to God with the help of a plant containing a powerful spirit and powerful chemicals. This is done in an attempt to obtain some guidance in the difficult lives of Anishinaabek individuals, who are often struggling with many of the issues many American families face. These issues include diabetes, teenage depression and suicide, substance abuse, financial debt,

divorce, custody battles, etc., which are some of the most debilitating problems that motivate individuals to adopt the Native American Church and its quest for a balanced, happy life.

Tobacco, *Nicotiana tabacum*, Solanaceae (Nightshade Family)

Tobacco is used by GTB tribal members essentially the same as it used by the rest of the Anishinaabek communities. Tobacco is smoked in ceremonial pipes, it is offered to sacred fires, it is placed on hot rocks in the sweat lodge, and it is held in the hand while praying (Figure 9-4). One unique medicinal use of tobacco is the application of cultivated tobacco to skin wounds. At the thirsty dance ceremonies, the puncture wounds made on the skin of the upper chest and outer shoulders during personal sacrifice are covered with loose leaf tobacco. This poultice is used to stop the bleeding, prevent infection, and to numb the localized pain by way of nicotine in the bloodstream.

There is also a symbolic reason, because tobacco is the offering plant of the medicine wheel's eastern direction. These thirsty dancers have just offered part of their flesh to the Creator and tree of life, so the dancers are offered the gift of tobacco medicine for their sacrifice. The reasons each dancer chooses to sacrifice for are personal and often unique, but usually it is for the sake of the tremendous suffering other people experience in this world. The teachings of the thirsty dance I have received include the fact the many people live their own thirsty dance daily throughout their lives.

For example, this could be the individual who is suffering from an illness or physical condition that prevents the person from walking or living an functionally independent life. Most American Indians have family members or friends who are suffering from a condition like diabetes, alcoholism, etc. Often these problems prevent



Figure 9-4. Tobacco ceremonially held in the left hand while praying at the thirsty dance on the property of Thundering Mountain in Newaygo, Michigan.

the less fortunate individuals from completely participating in religious events like the thirsty dance. This is an example of why someone would pledge to fast for four days, while dancing, and possibly piercing themselves and making small flesh offerings during the thirsty dance. It boils down to humble individuals putting their loved one's problems and sufferings before the pain and sacrifice of their own pledge to dance for the Creator. Thirsty dancers hope that the Creator will help the individuals the dancer is pledging for, in return for the sacrifice made during the four days of the thirsty dance ceremony. Staghorn Sumac, *Rhus typhina*, Anacardiaceae (Sumac Family)

A female GTB elder told me she makes a beverage out of the fruit cluster of staghorn sumac in the fall season. The fruit cluster is separated into individual berries and steeped in water to yield a lemonade-like beverage. Because the staghorn sumac fruit is covered with short hairs, the beverage is strained through cloth before drinking (voucher specimen 138). Historically, the dried berries were sweetened with maple sugar by the Lac du Flambeau Ojibway to make the beverage less tart (Smith 1932). The drink is used both hot and cold depending on the season. The staghorn sumac is known as *bakwa natig* (binding tree) in Anishinaabemowin.

California White Sage, Salvia apiana, Lamiaceae (Mint Family)

Californian white sage has been recently adopted into use as a smudge by the Anishinaabek, including Thundering Mountain and other GTB tribal members (voucher specimen 340). *Salvia apiana* is the only sage from the mint family that is both indigenous to North America and used ceremonially as a smudge by the Anishinaabek. European garden sages, such as *Salvia officinalis* L., may be used in stuffing during Thanksgiving dinner by the Anishinaabek, but are not used by any ethnobotanically

knowledgeable tribal members as a smudge. The pow-wow circuit has opened up trade routes throughout Indian country in North America never witnessed before, and a byproduct of this is sharing of traditional plant uses over long distances, such as from California to Michigan.

The Anishinaabek have traditionally used *Artemisia* spp., *Anaphalis margaritacea*, and *Comptonia peregrina* as smudging sage. These plants are fast burning, requiring large quantities for extending smudging during some ceremonies. California white sage presented a slow burning, aromatic alternative to the traditional sages, without compromising the Anishinaabek desire to use a plant indigenous to North America. When I have used *Salvia apiana*, one or two dried leaves is sufficient for personal smudging, and during ceremonies at Thundering Mountain's property a small handful of leaves lasted much longer than the other species mentioned.

Sassafras, Sassafras albidum, Lauraceae (Laurel Family)

The inner bark of the sassafras root is made into a tea drank by drummers and singers for improving their voices and soothing their throats, according to a GTB tribal member. The original form of root beer in America combined sassafras and sarsaparilla (*Smilax* sp. L.) root bark with wintergreen (*Gaultheria procumbens*) leaves into a tea to make "root beer" (Kaye and Billington 1997). Sassafras is known as *menagwake miins* (fragrant root tree) in Anishinaabemowin (voucher specimen 324). An infusion of sassafras root bark was historically drank as a pleasant beverage and a springtime medicine to thin the blood (Gilmore 1933).

Dandelion, *Taraxacum officinale*, Asteraceae (Composite Family)

A GTB female elder told me she eats dandelion leaves as greens (voucher specimen 97, 238). Dandelions are European invasive weeds that have established themselves throughout the Great Lakes region during the past 400 years (Gleason and Cronquist 1991). Throughout the historic period, the Anishinaabek have adapted to their abundant presence along disturbed sites, and gathered the young leaves in the spring to cook with meat, using a vinegar made from maple sap (Smith 1932). The dandelion is known both as *weca waskwunek* (yellow light) and *doodooshaboo jibik* (milk root) in Anishinaabemowin.

White Cedar, Thuja occidentalis, Cupressaceae (Cypress Family)

White cedar boughs are used as the primary smudge during thirsty dance ceremonies held in Michigan by the Anishinaabek including GTB tribal members. At the eastern doorway of the ceremonial arbor, everything and everyone that enters is smudged by the doorman with the smoke of white cedar. Some of the women dancers wore necklaces and visors made out of white cedar, in honor of white cedar as a woman's medicine.

During sweat lodge ceremonies conducted by GTB tribal members, including those of Thundering Mountain's family, white cedar branchlets are spread along the lodge floor. The women present at the sweat lodge ceremonies lay out a continuous line of white cedar boughs from the pit inside the sweat lodge out the eastern door and up to the sacred fire heating the rocks. This symbolic act is done before the participants enter the lodge and no one except the fire keeper is permitted to cross over the white cedar line that is called an umbilical cord. This umbilical cord creates a spiritual and physical

connection between the energy of the fire (representing the Creator) and the energy of the hot rocks once brought into the lodge and placed in the womb (pit) in the earth. This is another use of the grandmother sky tree (white cedar) as a medium to connect the Earth Mother to the Sky Father. The fire also represents the energy of the sun in the sky, so the fire heated rocks bring the energy of the sun and creation into the sweat lodge.

Thundering Mountain ties white cedar boughs together to make a bear's tail water whip for splashing white cedar tea into the hot rocks during sweat lodge ceremonies. Because white cedar is one of the four medicine wheel plants, leaflets are placed on the hot rocks as they are brought into the lodge by the fire keeper. White cedar is known as *nokomis gijikandug* (grandmother sky tree) in Anishinaabemowin (voucher specimen 26, 316).

Blueberry, Vaccinium spp., Ericaceae (Heath Family)

During the thirsty dance ceremonies, blueberries are occasionally offered to the sacred fire in honor of its status as first fruit of the Anishinaabek (Keewaydinoquay 1978). According to oral teachings documented by Keewaydinoquay (1978) of the crane clan from Garden Island in Lake Michigan, the blueberry was the first fruit shown to the Anishinaabek by their cultural trickster-hero Nanaboozhoo. The origin stories of the blueberry were told to Keewaydinoquay by a GTB elder called Nagowikwe (sand-woman) who lived at Cathead Village in Leelanau County, Michigan. Blueberry, known in the singular tense as *min* or in the plural tense as *minun*, was the root word for the month of July, known as *Miin-giizis* (Blueberry moon). *Miin-giizis* corresponds to the seventh month of the Anishinaabek calendar, starting at the first new moon after June 22 (Rhodes 1993).

During a sweat lodge ceremony that Thundering Mountain conducted in 1995, blueberries were brought into the lodge as an offering. It was explained to me that the Earth Mother provides nourishment to the Anishinaabek through blueberries. Each of the participants offered some berries to the hot rocks and then ate the rest of our handful for nourishment toward the end of a several hour ceremony (voucher specimen 12, 40, 43, 125, 211, 254, 344, 345). Historically, the Anishinaabek cooked them with dried sweet corn and maple sugar, or with wild rice and venison (Smith 1932).

Little Traverse Bay Bands of Odawa Indians

Native Plants Initiative



Prepared by,

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Purpose

This document is intended to aid resource managers of Little Traverse Bay Bands of Odawa Indians (LTBB) and Conservation Resource Alliance (CRA) in incorporating culturally significant plants into their management plans. In addition, LTBB Citizens and local land- and home-owners that are interested in protecting, preserving, or managing for culturally significant plants can also learn to incorporate them into their management plans, while at the same time contributing to biodiversity and promoting healthy habitats for both wildlife and people on areas within and adjacent to the LTBB Historical Reservation boundary.

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Introduction

To date, there are 2,729 plants recorded in the State of Michigan, of which approximately one third are non-native. High quality areas that provide habitat for pre-settlement communities represent an increasingly smaller fraction of the landscape and are under threat from development, poor management practices, invasive species, and more recently, climate change. As a result, much of the native biota is restricted to small remnants of pre-settlement communities. This fact does not bode well for wildlife, which rely on these habitats for food, shelter, breeding and rearing young, and as corridors for movement.

On April 13, 2006, the Conservation Resource Alliance and The Little Traverse Bay Bands of Odawa Indians entered into an agreement to complete conservation projects for a USDA Conservation Innovation Grant. As part of its responsibility as a partner in this grant, LTBB has completed a Native Plants Initiative that details habitat types, management recommendations, and protection opportunities for plants of significance to the LTBB.

About LTBB

The Little Traverse Bay Bands of Odawa Indians was federally reaffirmed with the signing of Public Law 103-324 on Sept. 21, 1994. The Tribe has over 4,300 members and is governed by a nine member Tribal Council who serves staggered terms. The historically delineated reservation area is located in the north-western part of Michigan's Lower Peninsula, encompassing approximately 336 square miles of land within the two counties.

The way of life for the LTBB relies upon environmental protection for cultural perpetuation. This is rooted in the traditional reliance on Great Lakes fishing, hunting and gathering of plants that have cultural, medicinal and spiritual significance to the Tribe. In order to preserve these important traditions for the next Seven Generations, LTBB is committed to promoting and protecting healthy wildlife corridors which provide important habitat and space for culturally significant plants and wildlife.

The following map shows the geographic extent of the LTBB Historical Reservation Boundary:



How this guide is organized:

The plant guide is divided into two main sections – uplands and wetlands. For each plant, the following information is given when available:

- 1. Common and scientific names.
- 2. Anishnaabemowin name(s):

The native language of the Odawa is Anishnaabemowin, which means 'language of the Anishnaabe,' or first people. The Anishnaabe are the three tribes of the Great Lakes, also known as the Three Fires – the Odawa, the Ojibwe, and the Pottawatami. The dialects of the different tribes are reflected in this document, as each source had contact with different Anishnaabe tribes. Names are included with information sources and translations when possible.

- 3. Historical and/or current cultural significance to the LTBB.
- 4. Habitat types and ranges of shade tolerance.
- 5. Threats.
- 6. Notes:

In this section, occasional references are made to the Michigan Floristic Quality Assessment, which is a document that was created to evaluate the relative significance of tracts of land in terms of their native floristic compositions. The FQA assigns each plant a Coefficient of Conservatism (C) which is based on the plant's fidelity to a particular habitat type. Plants with a C of 0 may be found anywhere, whereas plants with a C of 10 are considered high quality plants that are restricted to a particular pre-settlement community, or high quality community. Rare or unique plants, as well as their affinities for high quality habitats (C) are noted when possible.

Uplands

Uplands dominate the majority of the landscape. They are influenced by varying geographic locations, soil compositions, moisture, light, and nutrient regimes, as well as human activities. Uplands are under attack from invasive pests and diseases, development, and lack of the use of fire as a management tool.

Wetlands

Wetlands may be found in low areas around lakes, rivers and streams, seeps, areas with high water tables, and in depressions and other lowlands on the landscape such as bogs. They are important components of the landscape that provide many functions that include water storage, groundwater recharge, flood control, biogeochemical cycling, and habitat for plants and wildlife. They intercept water and slow it down, trapping and removing sediments before they can reach surface water bodies. The ability of a wetland to perform these functions depends on the surrounding land use, which influences the quality, the amount, and the rate of water entering a wetland. Wetlands are negatively affected by development, invasive species, hydrological alterations such as water diversions, excessive nutrient loading from local farm operations and the improper use of fertilizers, as well as from road salts and other pollutants that accumulate in soils from runoff. These kinds of disturbances negatively affect wetlands by altering water chemistry, changing the pH of the system, and allowing non-native or aggressive species to out-compete native plants. Sadly, over 70% of Michigan's original wetlands have been drained or filled, and many of the remaining wetlands are not representative of the original landscape types. Though wetlands presently cover less than 6% of the total land area in Michigan, as well as within the LTBB Historic Reservation Boundary, they are still being degraded or lost as a result of permitted and unpermitted activities.

Green tips for healthier habitats:

Tip 1: Plant local native genotypes of plants whenever possible. Don't be afraid to ask where the nursery gets their plants. Local plant genotypes are likely to be better adapted to your area or region than plants that have come hundreds of miles away. Plus, by using local native plants, the risk of spreading unwanted invasive insects and diseases may be reduced. Contact your local county conservation district for information on spring or fall native plant sales.

Tip 2: To help reduce soil erosion, plant trees as wind breaks along driveways, farm edges, and roads. These wind breaks can also help reduce blowing snow on roads in the winter.

Tip 3: Composting is easy, fun, and natural. Natural fertilizers are better than commercial fertilizers because they are released into the soil slower and do not kill beneficial microbes present in the soil. If commercial fertilizers are necessary, look for phosphorus-free fertilizers.

List of Culturally Significant Plants:

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Basswood/Linden (<i>Tilia americana</i>)	11
Beaked hazelnut (<i>Corylus cornuta</i>)	11
Bearberry (Arctostaphylos uva-ursi)	11
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Blue cohosh (<i>Caulophyllum thalictroides</i>)	12
Bracken fern (<i>Pteridium aquilinum</i>)	12
Cherry spp. (<i>Prunus spp.</i>)	13
Common lowbush-blueberry (Vaccinium angustifolium)	14
Common milkweed (Asclepias syriaca)	15
Common trillium (Trillium grandiflorum)	15
Eastern hemlock (Tsuga canadensis)	16
Eastern white pine (<i>Pinus strobus</i>)	17
Fringed polygala (<i>Polygala paucifolia</i>)	18
Hairy pucoon (<i>Lithospermum caroliniense</i>)	18
Hawthorns (<i>Crataegus spp.</i>)	18
Highbush-cranberry (Viburnum opulus var. americanum)	19
Hop-hornbeam/Ironwood (Ostrya virginiana)	19
Huckleberry/Crackleberry (Gaylussacia baccata)	20
Indian cucumber root (<i>Medeola virginiana</i>)	20
Maidenhair fern (Adiantum pedatum)	20
Northern red oak (<i>Quercus rubra</i>)	21
Partridge berry (<i>Mitchella repens</i>)	21
Pearly everlasting (Anaphalis margaritacea)	21
Pipsissewa/Prince's pine (Chimaphila umbellata)	22
Princess pine/Ground-pine (Lycopodium obscurum)	22
Red maple (<i>Acer rubrum</i>)	23
Seneca snakeroot (Polygala seneca)	23
Striped maple/Moosewood (Acer pensylvanicum)	23
Sugar maple (Acer saccharum)	24
Staghorn sumac (Rhus typhina)	25
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Trembling aspen (Populus tremuloides)	25
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White ash (Fraxinus americana)	26
White birch (Betula papyrifera)	27
Wild bergamot (Monarda fistulosa)	28
Wild leeks/Ramps (Allium tricoccum)	28
Wild strawberry (Fragaria virginiana)	28
Witchhazel (Hamamelis virginiana)	29
Wintergreen (Gaultheria procumbens)	29
Wormwood/Field sagewort (Artemisia campestris)	30

Wetland Plants

American elm (Ulmus americana)	32
Balsam fir (Abies balsamea)	32
Black ash (Fraxinus nigra)	33
Black spruce (<i>Picea mariana</i>)	34
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Boneset (Eupatorium perfoliatum)	34
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Common cat-tail (Typha latifolia)	35
Common (field) horsetail/Scouring rush (<i>Equisetum arvense</i>)	36
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Creeping snowberry (Gaultheria hispidula)	38
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Scouring rush (Equisetum hymale)	43
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Sphagnum moss (Sphagnum spp.)	44
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Sweet gale (Myrica gale)	45
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White-water lily (<i>Nymphaea odorata</i>)	47
Winterberry/Michigan holly (Ilex verticellata)	47
Yellow birch (Betula allegheniensis)	47
Yellow lady-slipper (<i>Cypripedium calceolus</i>)	47





Culturally Significant Plants Found in Uplands



American beech – Fagus grandifolia

- Anishnaabemowin name: Gawe'mic, or Sewe'mins (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Aw-shawway-nish (Otto, 1996)
- **Cultural significance:** Food nut; medicine; wood; important hard-mast food for wildlife.
- Habitat: Rich, mesic forests, often found with sugar maple. Very shade-tolerant.

Threats:

• Beech bark disease was introduced to North America in 1890 on an ornamental beech tree imported from Europe.

The disease is the result of a fungus that is transported by small, sap-feeding, nonnative scale insects (*Cryptococcus fagisuga*). In the early stages of scale infestation, the bark becomes covered in white, woolly spots, which is the white wax that covers and protects the insects. The scale damages trees, creating a pathway for fungi to enter, which usually results in mortality of the trees. The scale infestation has spread south and west from its place of introduction in Nova Scotia across the eastern part of the US, and it was first discovered in Michigan in 2000.

Treatment options for beech bark disease are limited in number and effectiveness but may include:

1. Physically remove the scale by scrubbing or power washing the tree, which may not be practical or effective in crowns or upper parts of trunks of tall trees.

2. Treating the tree with horticultural oils in to smother the insect.

3. Treating the tree with insecticides. With this option, continued applications are necessary.

Notes:

- Some beech trees may have a resistance to beech bark disease. Only remove dead or dying trees that may pose a risk to human life or property and leave the rest as habitat for wildlife. Researchers are looking into developing or finding disease-resistant varieties.
- Do not transport firewood, as you may be transporting a whole host of non-native or invasive fungi and insects.
- Healthy beech trees are very slow-growing and long-lived.
- A native, parasitic, herbaceous plant called 'beechdrops' (*Epifagus virginiana*) is found in high quality beech forests and lives off of beech tree roots. The Michigan FQA Coefficient of Conservatism ranks it as a 10, which means that it is restricted to a particular pre-settlement remnant community, or high quality natural area.





Beech trunk covered with woolly, white spots and fungi – evidence of beech bark disease.



Beechdrops

Anishnaabemowin name: Wiigub, -atig (Non-Medicinal Uses of

Thin bark and shallow roots makes beech highly susceptible to fire. Sprouts from

Plants by the Great Lakes Ojibwe, GLIFWC CD).

stumps when cut or if the stem is killed by fire.

- **Cultural significance:** Utility the inner bark is used for cordage; wood; medicine.
- **Habitat:** These large, deciduous trees are mostly found in rich, upland deciduous forests, but they are also sometimes found in swamps, along borders of streams and lakes, and other bottomlands. May be used for landscaping as an ornamental or shade tree. Moderately shade-tolerant.

Threats:

- Currently free of serious insect and disease pests. **Notes:**
 - Sprouts profusely from the bases of living trees or stumps after fire, cutting, or browsing.
 - Moderately slow-growing and long-lived.
 - The French called basswood "bois blanc," meaning "white wood."

Beaked hazelnut – Corylus cornuta

- Anishnaabemowin name: Bagaaniminzh, -iig (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** Food nut; important wildlife food; utility coppaced for drumsticks.
- **Habitat:** Shrub found in upland borders and clearings in northern hardwood forests, dune thickets, and margins of river banks; may be used for landscaping.

Bearberry – Arctostaphylos uva-ursi

- Anishnaabemowin name: Saga'komin'agunj (Densmore, 1974), Mukwamiskomin (Keewaydinoquay, 1977), Kinnickinick – 'much mixed,' or Apaakozigan (Herron 2002)
- **Cultural significance:** The leaves are an ingredient in 'kinnickinick,' a traditional smoking mixture; berries are used for food, flavoring meat dishes; medicine; utility; charm.

Habitat: Low, creeping, evergreen shrub forming large mats on open sand

• Basswood/Linden – *Tilia americana*









dunes, jack pine and oak plains, limestone pavements, sandy or rocky areas, and alkaline substrates.

Bigtooth aspen – Populus grandidentata

- Anishnaabemowin name: Asadi (Densmore, 1974; Herron, 2002), Azaadii (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Zaad (Osawamik/Trudeau, 2008)
- **Cultural significance:** Medicine; food and cover for wildlife; ceremonial use; starvation food (inner bark).
- Habitat: Bigtooth aspen are medium to tall trees found in mesic to dry forests, dry, cut-over and burned areas, and sandy soils; not tolerant wet or poorly-drained soils. Shade intolerant.

Threats:

- Natural succession. Periodic disturbances are required to maintain aspen forests. **Notes:**
 - Fast-growing and short-lived.
 - Aspen cannot be propagated from woody stem cuttings.
 - Bigtooth aspen leaves have ~10 teeth per side whereas trembling aspen have ~ 30 teeth per side.
 - Wildfire suppression is allowing other species to replace aspen in northern forests.
 - Aspen cannot be propagated from woody stem-cuttings.
 - The inner bark photosynthesizes and contains chlorophyll, often giving the bark a tinge of green color. This inner bark is the preferred food of beaver.

Blue cohosh – Caulophyllum thalictroides

 Anishnaabemowin name: Be'cigodji'biguk – 'one root' (Densmore, 1974), Oci'gimic, or Zheegimaewibug (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
Cultural significance: Medicine.
Habitat: Found in rich, moist, deciduous woods.

Bracken fern – Pteridium aquilinum

- Anishnaabemowin name: Waagaag, -ans (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Makate waanaganuck (Herron, 2002)
- **Cultural significance:** Food young fronds; hunting aid; utility.
- Habitat: Found commonly in many habitats.



Left: Young bracken fern frond Right: Bracken fern in summer





Cherry spp. – Prunus spp.

Anishnaabemowin names:

- Black cherry (*Prunus serotina*): Ikwe'mik (Densmore, 1974), Ookwemizh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Okwemin (Herron, 2002), Ookweminagaawanzh, -iig (Non-Medicinal Uses of Plants by the Great Lakes Ojibwe, GLIFWC CD)
- 2. Choke cherry (*Prunus virginiana*): Asa/isaweminagaawanzh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Sawemin (Herron, 2002)
- 3. Pin/Fire cherry (*Prunus pensylvanicum*): Bawa iminaan 'berry tree' (Herron, 2002; Non-Medicinal Uses of Plants by the Great Lakes Ojibwe, GLIFWC CD)
- 4. Sand cherry (*Prunus pumila*): Sewa'komin (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)

Cultural significance:

- 1. Black cherry: Food; medicine; utility.
- 2. Choke cherry: Food; medicine; utility.
- 3. Fire/Pin cherry: Food; medicine; utility; used for smoking foods such as fish and game; cash crop.
- 4. Sand cherry: Food eaten fresh or dried it is very desirable food; medicine.

Habitat:

- 1. Black cherries are medium-sized trees that may be found in disturbed areas such as openings and clearings in dry and mesic forests, fencerows, abandoned fields, and woodlots; common understory plant in many forest communities; stump sprouts. Shade-tolerant when young becoming intolerant over time.
- 2. Choke cherries are large shrubs to small trees that are found in a variety of habitats including rocky hills, dunes, and borders of swamps. More shade-tolerant then other cherries.
- 3. Pin/Fire cherries are small trees often growing in clumps that are found in open, often disturbed upland areas such as roadsides and recently burned or cut-over areas. Shade-intolerant.
- 4. Sand cherries are low shrubs found in wet or dry habitats, open sandy beaches and dunes, in rock crevices, and on sedge mats. Prefers sandy soils and full sunlight.

Threats:

- The eastern tent caterpillar (*Malacosoma americanum*) is a pest that forms webbed tents between branches and severely defoliates cherry trees. Various methods of control include manual removal and disposal of tents and larvae, biological controls such as Bt (a bacterium), and chemical controls such as pesticides.
- A fungal disease called "black knot" (*Dibotryon morbosum*) commonly infects branches and stems of cherry trees. Treatment options include pruning infected branches and/or spraying infected trees during the dormant season with a copper fungicide.

Notes:

- The sweet cherry (*Prunus avium*), is the species of cherry that is cultivated for commercial cherries and is originally from Eurasia.
- Seeds are often bird-dispersed.





Common low-bush blueberry – Vaccinium angustifolium

- Anishnaabemowin name: Min'aga'wunj (Densmore, 1974), Miinagaawanzh, Miin –an, – 'berry', Minan, Minun (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Minun (Herron, 2002)
- **Cultural significance:** Food; medicine; utility dye; important food for wildlife.
- Habitat: This low shrub gets loaded down with light blue to black-colored berries in July-August and is found in large colonies or patches in dry, acidic, sandy or gravelly soils, clearcuts, open woods, and in sphagnum bogs. May be



used for landscaping as an ornamental shrub. Moderately shade-tolerant.

Notes:

- Blueberries are well adapted to fire and patches were historically burned by the Odawa. Controlled burns help to reduce encroachment of surrounding shrubs and trees, reduce and control invasions of unwanted pests and diseases, reduce the accumulated debris on the forest floor, and replenish essential nutrients to the soil. If opening up a closed canopy to improve blueberry productivity, allow plants to grow for a few years after the cut before burning it. The best time to burn for blueberries is in the fall, after plants have completed storage of photosynthate in their root systems.
- Thinning can successfully increase blueberry patch sizes and productivity since the plant can spread by rhizomes. Pruning plants can help increase stem density.
- Propagates easily from cuttings of the plant or rhizomes, or by seed.
- Several other species of edible blueberries found in various habitats in our area are:
 - Vaccinium corymbosum 'High-bush blueberry' found in swamps and bogs, sometimes upland woods and old fields.

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◆ *Vaccinium membranaceum* – 'Bilberry' - found in moist woods.

- Vaccinium myrtilloides 'Velvetleaf-blueberry' found in moist or dry soils and bogs.
- ◆ *Vaccinium ovalifolium* 'Tall bilberry' found in moist woods.

Common milkweed – Asclepias syriaca

- Anishnaabemowin name: Ini'niwunj (Densmore, 1974; Plants Used by Great Lakes Ojibwa, GLIFWC, 1993, Herron 2002), Cabo sikun (Herron, 2002)
- **Cultural significance:** Food young flower buds are edible and may be eaten as greens; medicine; utility latex, fiber, crafting, pillow stuffing, and life-preservers.
- Habitat: Found in open, dry areas, often in disturbed ground such as farms.

Threats:

- The loss of overwintering habitat in Central Mexico due to illegal logging as well as bark beetle infestation of oyamel fir trees.
- Habitat destruction, development, and urban sprawl.
- Pesticides, insecticides and herbicides.

Notes:

- Monarch butterflies rely on milkweeds for food and protection. Milkweeds are the only plants that monarchs will lay their eggs on. Once hatched, the larvae eat the leaves, incorporating the plants' toxins into their bodies, making them unpalatable to predators.
- The seed floss from milkweed pods was collected during WWII to stuff into life-preservers. In 1943, over 200 tons of milkweed were harvested from Emmet County alone.

Common trillium/Wake-robin – Trillium grandiflorum

 Anishnaabemowin name: Ininiwin dibigegun (Densmore, 1974; Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
Cultural significance: Medicine.

Habitat: Found in all sorts of woods including dry, deciduous forests, rich beech-maple woods, swampy woods and thickets, mixed conifer-hardwood and conifer swamps.

Threats:





- Wildflower picking. All trillium species are protected from picking under Michigan conservation laws, and some species are very rare.
- Habitat destruction development, urban sprawl, some methods of commercial lumbering.

Notes:

• Trilliums do not reach reproductive age for several years and can live for 25 years or longer.



Eastern hemlock – Tsuga canadensis

- Anishnaabemowin name: Gaga'gimic (Densmore, 1974), Gagagiwik 'raven tree' (Herron, 2002)
- **Cultural significance:** Utility bark was used for a natural dye as well as for tanning; medicine; tea; excellent wildlife habitat.
- Habitat: This tall evergreen is characteristic of cool, moist, acidic sites, sometimes occurring in northern hardwood forests, lakeshores, streams, ravines, wooded dunes, and edges of conifer swamps; often associated with yellow birch. Hemlocks create their own microenvironments that exclude other seedlings from establishing underneath them as their needles, which decay slowly, release strong acids



onto the forest floor that cause leaching of minerals, humus, clay particles, and nutrients from the soil.

Threats:

- The hemlock woolly adelgid (*Adelgis tsugae*; HWA) is an aphid-like non-native insect from Asia that is invading forests in the eastern United States, attacking hemlocks and causing mortality of trees within 4-10 years. Presently, the HWA is not yet in Michigan. Two species of beetles from Asia have been tested as HWA biological control agents are the Lari beetle (*Laricobius nigrinus*) and a tiny lady beetle (*Sasajiscymnus tsugae*, formerly *Pseudocymnus tsugae*).
- Lack of regeneration in forests. Hemlocks naturally create conditions that suppress regeneration. As a result, some disturbance is necessary in order for hemlocks to successfully regenerate. Some methods that mimic small natural disturbances include selecting a small number of trees to cut over time to gradually release the stand, and using horse-drawn skidders to drag the logs out and expose the forest floor as opposed to heavy machinery.
- Heavy browsing by deer also severely reduces regeneration. Intensified management of deer should occur around high quality habitats and other sensitive areas to preserve plant diversity. Areas that prohibit deer hunting have been shown to have up to a 50% decrease in species diversity in less than 50 years. Deer exclosures can be effective at keeping deer out, and have been shown to increase oak, maple, aspen, and hemlock regeneration.

Notes:

- Very shade tolerant, slow growing, and very long-lived (600+ years).
- Mature trees are very sensitive to openings in the forest (roads).
- May be used as an ornamental in shaded areas.
- Do not move firewood in order to reduce the risk of spreading harmful invasive species such as the hemlock woolly adelgid.

Eastern white pine – Pinus strobus

- Anishnaabemowin name: Jingwak for red and white pine (Densmore, 1974) Zhiingwaak, or Muskay chingwa (Herron, 2002), Shin-gwawk (Otto, 1996)
- **Cultural significance:** Medicine; smudge; traditional stories; ceremonial use; traditionally regarded as a great tree of peace and prayer; wood; sap was used for pitch; utility; food young staminate catkins were reportedly gathered and boiled for food by Ojibwe from Wisconsin.



Habitat: This large pine grows well on a variety of acid or basic sites including moraines with moderately-well drained soils, well-drained, dry, sandy soils and dunes, shorelines, ridges and mounds in poorly-drained sites, floodplains, rock ridges and rock outcrops. Moderately shade-tolerant.

Threats:

- The white pine blister rust (*Cronartium ribicola*) is a fungus that causes white pine leaves to turn to yellow and die off, an abundance of sap to ooze from the bark, and eventual mortality of the tree. There are no fungicides that may be used to prevent this disease, but regular inspections and pruning of trees may help reduce the opportunities for it to spread.
- The white pine weevil (*Pissoides strobi*) also attacks white pine trees, which often starts with die-back from the terminal leader shoot, which is usually attacked first. Weevils are attracted to open-growing trees with terminal leader shoots in open sunlight.

Notes:

• White pine is the State tree of Michigan and once dominated the forests of northern Michigan. It was heavily logged between 1850-1900. After the logging, destructive slash fires raged across the landscape, that created conditions more suitable for pioneer species such as aspen and birch, which currently dominate much of the landscape. The lack of major disturbance such as fire has created conditions that have allowed white pine and red maple to thrive in the forest understory. Over



time, given the continued absence of disturbance, white pine and red maple will replace the relatively short-lived aspen and birch as the dominant trees in northern Michigan forests.

• Hartwick Pines State Forest, located just outside of Grayling, Michigan, contains an impressive old-growth white pine stand dating back to the 1600's. Interspersed
with mature eastern hemlocks and red pine, the stand is characterized by large trees, an abundance of dead and down wood, moss-covered logs, pit-and-mound topography, deep shade, and an open understory.

• Mature white pines are a preferred tree species for eagle nesting.

Fringed polygala/Gay-wings/Flowering-wintergreen – *Polygala* paucifolia

Anishnaabemowin name: Tikizidgeebikohnse – 'little root that cools' (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: This little plant is usually found somewhat shaded in all sorts of mixed and coniferous woods except the wettest and driest, old shoreline ridges, and sandy beach meadows.

Hairy/Yellow pucoon – *Lithospermum caroliniense*

Anishnaabemowin name: Odji'biknamun (Densmore, 1974) Cultural significance: Dye (blue and reddish-purple).

Habitat: Dry sandy open areas such as dunes and shores, oak and pine woodlands, sandy barrens and ridges, prairie remnants; often found with juniper.

Threats:

- Mechanical disturbance of sandy soil; soil compaction.
- Overgrowth by woody plants (succession).
- Digging by wildflower gatherers.
- The Michigan FQA Coefficient of Conservatism ranks it as a 10, which means that it is restricted to a particular pre-settlement remnant community, or high quality natural area.

Hawthorns/Thornapples – Crataegus spp.

Anishnaabemowin name: Mine'saga'wunj – 'having fruit and also spikes' (Densmore, 1974)

Cultural significance: Medicine – especially used for heart medicine; utility – the thorns were used for sewing and the berries were dried for beads; wildlife food for birds and mammals.

Habitat: Hawthorns are low shrubs to small trees usually found in







open, disturbed sites such as old fields, pastures, forest edges, open secondgrowth woods and thickets, cut-overs, roadsides, and along streams, sometimes forming dense thickets.

Threats:

• Susceptible to hawthorn leaf blight, caused by a fungus called *Diplocarpon mespili*.

Notes:

• The common name 'hawthorn' refers to many species of hawthorn which often hybridize.

Highbush-cranberry - Viburnum opulus var. americanum

- Anishnaabemowin name: Aniibimin, -an (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Aniib (Herron, 2002)
- **Cultural significance:** Medicine; food the fruit is used to make jelly.
- Habitat: This shrub is found in various open, damp places including coniferous and deciduous swamps, borders of woods and shores, wet roadsides and thickets, along rivers and streams, and fens.

Notes:

- Not actually a cranberry (which are species in the genus *Vaccinium*, *not Viburnum*), but is used as a substitute for cranberry in making jelly.
- Also known as Viburnum trilobum, or V. opulus ssp. trilobum.

Hop-hornbeam/Ironwood – Ostrya virginiana

- Anishnaabemowin name: Maananoons, -ag (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)
- **Cultural significance:** Utility the wood is very tough and hard, and had many uses; medicine.
- **Habitat:** Small to medium-sized tree often found in the understory of rich, upland woods with neutral to basic soils; not found in poorly-drained sites. Shade-tolerant.

Notes:

- Slow-growing and moderately long-lived.
- The common name 'hop-hornbeam' is due to the resemblance of the fruit sacs to the hops plant.







Huckleberry/Crackleberry – Gaylussacia baccata

- Anishnaabemowin name: Minnan (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002).
- **Cultural significance:** Food the fruit is reddish-purple to black in color, and is edible but seedy.
- Habitat: Dry, acidic, sandy or gravelly sites, present but less common in low, acid, moist to wet sites. Moderately shade-tolerant.

Notes:

• Huckleberry plants look somewhat similar and are often found in the same conditions as blueberries. Huckleberry twigs are a grayish-brown color with white streaks, unlike blueberry twigs which are green. Another difference is that unlike blueberry leaves, the leaves of huckleberry release a yellow resin when rubbed.



Huckleberries growing under a red pine in fall.

Indian cucumber root – Medeola virginiana

Anishnaabemowin name: Minopugodjeebik (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine; utility.

Habitat: Moist, rich woods and forests, beech-maple forests, especially along edges of pools or depressions, hemlock knolls, cedar bogs, and less commonly found in oak or pine woods.



Notes:

- Indian cucumber root is a relatively uncommon plant that should not be collected unless local populations are very secure. The Michigan FQA Coefficient of Conservatism ranks it as a 10, which means that it is restricted to a particular presettlement remnant community, or high quality natural area.
- This plant looks similar to *Trientalis borealis*, or starflower. However, the flowers/fruits of Indian cucumber root are stalked above two sets of leaves with parallel veins whereas the flowers on a starflower are on a shorter stalk and are located above just one set of 7 leaves with branching veins.

Maidenhair fern – Adiantum pedatum

Anishnaabemowin name: Makade cawdak – 'Black-legged fern' (Herron, 2002)
Cultural significance: Medicine; utility – hygiene.
Habitat: Moist woods and streamsides, circumneutral soils.



Northern red oak – Quercus rubra

Anishnaabemowin name: Mashkode-miizhimizh, Mitigomizh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993 Mtigmish (Osawamik/Trudeau, 2008), Mitigomik (Herron, 2002), Wi'sugi'mtigomic – 'bitter oak' (Densmore, 1974)

Cultural significance: Firewood; medicine; natural dye; utility; lumber; food – the acorns were used as starch/flour after the tannins were removed; important food for wildlife.

Habitat: Medium to large deciduous tree that is commonly found in mesic forests, on moist, cool, well-drained soils, sandy well-drained soils, along Great Lakes shores, dunes and rock outcrops. May be planted as an ornamental shade tree.

Threats:

- Gypsy moths (*Porthetria dispar*) cause defoliation and multiple-year outbreaks may cause weakening of the trees or mortality.
- Oak wilt disease (*Ceratocystis fagacarum*) is a fungal disease spread by root grafts and beetles which carry the fungus.
- Oak decline is generally referred to as a disease that is caused from various combinations of environmental stresses and pests.

Notes:

- Red oak is well adapted to periodic fires. Forest management strategies that have suppressed fire have contributed to the decline of oak forests, which are being replaced with species such as sugar maple.
- Produces fruit at about 25 years of age, but usually does not produce large crops until about 50 years of age.
- Does not regenerate well after timber harvests.

Partridge berry – Mitchella repens

Anishnaabemowin name: Binewimin – 'grouse berry' (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)

Cultural significance: Medicine; food – tea; ceremonial use. **Habitat:** Low, creeping, evergreen shrub found in dry to moist

woods; can form mats; often associated with cedar and hemlock or pine, including hummocks in cedar swamps.







Pearly everlasting – Anaphalis margaritacea

Anishnaabemowin name: Wa'bigwan – 'flowers' (also used for other plants) (Densmore, 1974), Basibaguk – 'small leaf' (Smith, 1932)

Cultural significance: Medicine; smoking mixture; smudge. **Habitat:** Found in a variety of sites including moist to dry,

sandy or rocky, open places such as shores, dunes, fields, roadsides and railroads, dry, aspen, mixed conifer, and hardwoods, borders and clearings following logging or fire, along trails, and in other somewhat disturbed areas.

Notes:

• Spreads fairly well by rhizome.

Pipsissewa/Prince's pine- Chimaphila umbellata

Anishnaabemowin name: Ga'gige'bug – 'everlasting leaf' (Densmore, 1974), Yaskopteg (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Pipsissewa is an evergreen half-shrub of the boreal forest that spreads by rhizomes and is found in dry woods, especially with sandy soils; indicator of a fairly high quality natural community.

Princess-pine/Ground-pine – Lycopodium obscurum

- Anishnaabemowin name: Cinonagan (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002), Gagige bag (Non-Medicinal Uses of Plants by the Great Lakes Ojibwe, GLIFWC CD)
- **Cultural significance:** Medicine; the flammable spores from *Lycopodium* species were collected and used historically for the flash for taking pictures.
- Habitat: Boreal forest plant found in moist woods and bog margins with acid soil.

Notes:

• The GLIFWC CD called this plant Gagigebug meaning 'everlasting life', but referenced Densmore 1974, which called pipsissewa 'Gagigebug'. Perhaps both *Chimaphila* and *Lycopodium* plants had this name since they both are evergreen, or perhaps there was an error on the GLIFWC CD. Both plants were cited by Densmore as being used for medicinal purposes. Unfortunately, no Anishnaabemowin name was listed for *Lycopodium obscurum* by Densmore.







Red maple – *Acer rubrum*

- Anishnaabemowin name: Zhiishiigimewanzh, -iig (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)
- **Cultural significance:** Food (syrup, less preferred than sugar maple, which has a higher sugar content); medicine; firewood; utility (e.g. lodge frames); artwork.
- Habitat: Restricted to swamps and other poorly-drained sites in pre-settlement times, it is now an aggressive upland colonizer that has thrived on human-caused disturbances to forests including fragmentation and exclusion of fire, which previously helped to keep it in check. It grows in a wide range of conditions and in the Northern Lower Peninsula it is often found in mesic and moderately welldrained beech-sugar maple forests, as well as lowlands such as conifer and conifer-hardwood swamps. Seedlings are shade-tolerant, becoming somewhat less tolerant with age.

Notes:

- Red maple sprouts vigorously after damage from fire, cutting, or browsing, and can sprout spontaneously if stressed by drought or shade.
- Moderately long-lived.



A red maple tree turning brilliant red early in the fall.

Seneca snakeroot – Polygala senega

- Anishnaabemowin name: Bi'jikiwuk' (Densmore, 1974; Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Wiinizikens (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** This root was used medicinally to treat a wide variety of disorders, including snakebites; charm.
- Habitat: In northern Michigan, found on calcareous rocks and gravel openings as well as along borders of coniferous woods. More common in southern but found in Cheboygan, Charlevoix and Presque Isle counties.

Striped maple/Moosewood – Acer pensylvanicum

Anishnaabemowin name: Moozomish (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Utilitarian; medicine.

Habitat: Small tree to large understory shrub found in mesic woods, mixed conifer stands, cedar swamps, and sometimes mesic to dry-mesic disturbed sites. It



requires cool, moist conditions for establishment but has fairly low nutrient requirements. May be used as an ornamental tree or shrub in cool, moist, shady places. Shade-tolerant.

Notes:

• Slow-growing and relatively short-lived, though some can live to 100 years in forest openings.

Sugar maple – Acer saccharum

Anishnaabemowin name: I'nina'tig (Densmore, 1974), Ninaatig (Herron, 2002; Ottawa/Anishnaabemowin-English, Bilingual Multimedia CDrom Dictionary, Burt Lake Bands of Ottawa and Chippewa Indians, 2007)



Cultural significance: Food (maple syrup); utility; wood;

firewood. The Anishnaabemowin name for maple syrup is 'ziinsiibaakwad' and the month of March is known as the Maple Syrup Gathering Moon, or 'Ziisiibaakade Giizis.' The leaves turn brilliant shades of yellow, orange, or red in the fall and draw many people to the forests of northern Michigan to see the colors.

Habitat: Characteristic of mesic deciduous forests with moist, well to moderatelydrained to well-drained soils. Frequently planted as an ornamental tree. Very shade-tolerant.

Threats:

- Some stands are adversely affected by a disease called 'sapstreak disease' which is caused by a fungus. Avoid damaging trunks and roots during logging, which can provide pathways for the disease to enter. Remove diseased trees to avoid spreading the disease.
- Maple decline is thought to be caused from a combination of stresses that include diseases, invasive species or other harmful pests, soil compaction, nutrient imbalances, herbicide damage, and pollution from road salts.
- Tapping trees can be done without major stress to the tree, but tapping also can provide an avenue for insects and pathogens to enter the tree. Over-tapping trees for sap can weaken a tree or cause detrimental effects to the new wood growth of the tree.
- Susceptible to insect defoliation by insects such as the forest tent caterpillar (*Malacosoma disstria*).

Notes:

• Slow-growing and long lived (200-400 years).



Staghorn sumac – Rhus typhina

Anishnaabemowin name: Baakwaanaatig, Baakwaanimizh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Food – tea; utility; dye; crafting; medicine.

Habitat: Staghorn sumac is a clonal shrub to small tree found in open, disturbed areas such as roadsides, hillsides, clearings, and forest edges.

Notes:

- The common name of this species, 'staghorn sumac,' comes from the fuzzy, antler-like branches.
- Staghorn sumac's close relative, smooth sumac (*Rhus glabra*), is also clonal and found in similar habitats, but has glabrous, or smooth branches.

Sweet fern – Comptonia peregrina

Anishnaabemowin name: Kba'agne-mins, or Gibaime'nuna'gwus, (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Smudge; ceremonies; medicine.

Habitat: Low-growing woody shrub with fragrant, crenate/wavy leaves found in dry,

often barren, sandy and gravelly soils in open areas.

Notes:

• The roots can fix atmospheric nitrogen, which is an adaptation that allows it to colonize dry, poor, waste places.

Trembling aspen – Populus tremuloides

Anishnaabemowin name: Zaad (Osawamik/Trudeau), Asadi (Densmore, 1974; Herron, 2002), Azaadii, or Azaadiins (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine; food (sap); important food and cover for wildlife.

Habitat: In pre-settlement sites it was generally found in open, lowland sites such as along the edges of streams and swamps, wet-mesic, fertile sites, and less commonly on dry, sandy soils. It is the most widely-distributed tree species in North America – found in a diversity of sites, often colonizing after wildfires and other human disturbances. Clones may be perpetuated indefinitely by fire. Very shade-intolerant. **Threats:**

• Unlike big-tooth aspen, it is susceptible to the Hypoxylon canker (*Hypoxylon*

mammatum), a major disease of trembling aspen.

- Attacked by many insects including the forest tent caterpillar (*Malacosoma disstria*).
- Natural succession. Periodic disturbances are required to maintain aspen forests.

Notes:

- Sprouts from root suckers following fire, cutting, or browsing.
- Fast-growing; fairly short-lived.
- Wildfire suppression is allowing other species to replace aspen in northern forests.
- One of the largest organisms in the world is a clonal stand of trembling aspen in Colorado that covers over 40 hectares.
- Unlike other willows and cottonwoods, it does not propagate from woody stemcuttings.
- More light-, moisture-, and nutrient-demanding than bigtooth aspen.
- The inner bark photosynthesizes and contains chlorophyll. Beaver eat this inner bark and use the leftovers to build their lodges.
- Trembling aspen gets its common name from the fact that the leaves tremble or quake in the wind due to its flattened petiole, which connects the leaf to the twig.

Trout lily/Adder's tongue – *Erythronium americanum*

- Anishnaabemowin name: Numaegbugoneen (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** No use specified; neighboring tribes used it for medicine.

Habitat: Rich, deciduous woods and moist thickets. Notes:

• Spring ephemeral that carpets the forest with mottled green leaves and yellow flowers April-May, after which the leaves wither away and are gone until the following spring.



White ash – Fraxinus americana

Anishnaabemowin name: Aagimak, or Baapaagimaak – 'snowshoe wood' (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

- **Cultural significance:** The strong wood was traditionally used to make snowshoes, toboggans, and sleds; utility; crafting; medicine. Modern uses include baseball bats.
 - **Habitat:** Mature white ashes usually have straight trunks and often reach 80 feet in height and are found in upland sites.

Threats:

• The emerald ash borer (EAB), *Agrilus planipennis*, is decimating ashes across much of the eastern half of the United States, including Michigan. Researchers are studying various methods of control including the introduction of a wasp species from Asia as well as various chemical controls. However, no solution is currently deemed effective at controlling the spread of this invasive insect.

White birch – Betula papyrifera

- Anishnaabemowin name: Wiigwaas, -an/ -ag, wiigwaasaatig, wiigwaasi-matig 'birch bark tree' (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Wig-wasi (Otto, 1996)
- **Cultural significance:** LTBB historians have identified over 21 different traditional uses for birch including birch bark canoes, baskets, porcupine quill boxes and other storage containers, coverings for lodges and shelters, crafting and artwork; wood; firewood and fire starting material; medicine; food sap for syrup; traditional stories; food and cover for wildlife.
- **Habitat:** White birch is a medium-sized tree found in a variety of soils, pH levels, and water regimes. It is a fire-dependant, pioneer species often found in pure stands in burned, cut-over, and disturbed areas; commonly associated with aspen. Shade intolerant.

Threats:

- Susceptible to attack and mortality from the bronze birch borer (*Agrilus anxius*).
- Improper harvesting.
- Fire suppression.

Notes:

- After fire, white birch will sucker profusely; also reproduces well from seed.
- Traditional harvesting of bark can be done on live trees without killing the tree as long as the bark is harvested properly and at the right time. If done correctly, harvested areas will begin to heal, turning darker in color and becoming rougher in texture than the original bark.
- The white birch is also the host of a fungus used by the Odawa called 'shkitaugin' in Anishnaabemowin, and in Latin, *Inotonus obliquus*.
- Without occasional disturbances this tree only lasts for about one generation before it is replaced by other species.



Wild bergamot – Monarda fistulosa

Anishnaabemowin name: Bibi'gwunukuk, Wabino'wuck, Sasapkwanins, Moshkos'wahnowinhs, Weca'wuswackwi'nek (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Found in dry, open, sandy, gravelly or rocky ground, oak and jack pine woodlands, prairies, fields, roadsides, edges of woods and thickets, open stream and lake banks and stabilized dunes, occasionally in sedge meadows or other damp places. Can be used for butterfly gardens.



Wild leek/Ramps – Allium tricoccum

Anishnaabemowin name: Siga'gawunj (Densmore, 1974) Cultural significance: Food – bulbs, similar to an onion or scallion); medicine.

Habitat: Rich deciduous woods, especially in moist beechmaple woods, in upland and lowland sites.

Notes:

• Leeks are one of the first signs of spring. Once the flower stalk shoots up, the ephemeral leaves die back, leaving the fruiting structure to develop seeds.



Wild strawberry – Fragaria virginiana

Anishnaabemowin name: Ode'iminidji'bik - 'heart-berry root'



(Densmore, 1974), Ode'imin, -an (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Odehmin – 'Heart berry' (Ottawa/Anishnaabemowin-English, Bilingual Multimedia CDrom Dictionary Burt Lake Bands of Ottawa and Chippewa Indians, 2007)

Cultural significance: Food; medicine. The month of June is known as the Strawberry Moon, or 'Ode'min Giizis' in Anishnaabwmowin.

Habitat: Open, disturbed areas.

Notes:

- Wild strawberries are edible and delicious.
- Avoid picking in areas that could be polluted such as along roadsides, under power lines, and other places that may be sprayed or otherwise contaminated.



Witchhazel – Hamamelis virginiana

Anishnaabemowin name: Nsakemizins (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Shrub to small tree, often with several crooked trunks in a clump, only growing to 25 ft or less in height found in dry, to dry-mesic woods, especially underneath red oak, aspen, or pine trees; less common in mesic forests. It can be planted as an ornamental shrub as it produces abundant flowers late in the fall after the leaves have dropped. Shade-tolerant.

Notes:

- Slow-growing and short-lived.
- The forked twigs of witchhazel and willows are used by "water-witchers" to seek water.

Wintergreen – Gaultheria procumbens

- Anishnaabemowin name: Winisibugons 'dirty leaf' (Densmore, 1974), Winiisiibag, Winiisiibugad, or Winiisiibugoons (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)
- **Cultural significance:** Medicine; tonic, teas/beverages, food, and flavoring for cooking. Wintergreen was the original source for aspirin, and all parts of the plant contain methyl salicylate, and which was the original active ingredient in aspirin.



Habitat: Thrives in dry, usually somewhat sandy woods with oak, pine, paper birch, bracken fern, etc.; sometimes found in mesic or low woods and conifer swamps. It is generally thought to be successful after fire.

Wormwood/Field sagewort – Artemisia campestris

Anishnaabemowin name: Moosewijiibik (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

- **Cultural significance:** Medicine; smudge (though not as aromatic as the western sage).
- Habitat: Wormwood is found in open, dry places such as on beaches and sandy lakeshore dunes.







Culturally Significant Plants Found in Wetlands



American elm – Ulmus americana

- Anishnaabemowin name: Aniib (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993; Non-Medicinal Uses of Plants by the Great Lakes Ojibwe, GLIFWC CD Herron, 2002), Aw-nib (Otto, 1996)
- **Cultural significance:** The thick bark was used for toboggans and lodge coverings; medicine.
- Habitat: In northern Michigan, it is found in mesic northern hardwood-hemlock forests, wet-mesic floodplains and swamp edges, and disturbed areas such as pastures, hillsides, old fields, roadsides, and cut-over forests. Disease-resistant clones and hybrids are available for landscape planting.

Threats:

- Susceptible to Dutch elm disease that has killed off many large American elms in the 1970's and causes trees to rarely attain commercial size.
- Also susceptible to phloem necrosis disease.

Notes:

• Not presently in danger of extinction.

Balsam fir – Abies balsamea

- Anishnaabemowin name: A'niinaandak' (Densmore, 1974) Aniinaandag, -oog, Ininaandag – 'fir tree, spruce', Bigiwaandag, Zhingob, -iig, Zhingobaandag, -oog, Zhingob bigiwaandag (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** Medicine; crafting; utility aromatic balsam pillows made from the leaves, Christmas trees.
- **Habitat:** Balsam fir is a medium-sized, slender, symmetrical tree with a pyrimidal-shaped crown that is characteristic of cold, wet, boreal forests – from cold, poorly-drained, cedar swamps and bogs to well-drained uplands, coniferous, and mixed forests. Very shade-tolerant.

Threats:

- Periodic outbreaks of the spruce budworm (*Choristoneura fumiferana*) cause mortality in mature trees.
- Susceptible to heart rot disease.

Notes:

- May be planted ornamentally or for use as a wind break.
- Slow-growing and short-lived.







Image from http://planetthoughts.org

Black ash – Fraxinus nigra

- Anishnaabemowin name: A'gimak' (Densmore, 1974), Agiimaak (Herron, 2002), Aagimaak, or Wiisagaak (Plants Used By the Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** Black ash baskets are highly utilized for a variety of purposes and are made by pounding the wood into long, thin strips that are made into splints and woven together. Also used for dye, medicine, and utility.
- Habitat: Black ashes are small to medium-sized trees that are moisture- and nutrient-dependant. They are found in fertile, wet-mesic to wet deciduous-conifer swamps, backwaters, wet depressions, and other low, poorlydrained areas. Moderately shade-tolerant, though requiring gaps in the swamp to provide full sunlight in order to establish.

Threats:

- Emerald ash borer (*Agrilus planipennis*; aka EAB) is a non-native invasive insect that kills all species of ash trees. Adults lay their eggs in the bark, which become larvae that eat the cambium (or inner bark), which girdles the trees and causes them to starve. Currently there is no method to treat ashes for EAB once infected. However, researchers are studying the use of an Asian wasp as a possible biocontrol as well as various chemical controls for use in urban settings.
- Other invasive species such as non-native buckthorns and honeysuckles.

Notes:

- Relatively slow-growing and long-lived.
- Black ashes produce mast fruits only once every 5-7 years and the majority of the fruits produced are not viable, resulting in a very low germination rate.
- Consider collecting seeds for an ash seed savers program, or donate trees before they become infested with EAB to the LTBB Natural Resources Department (NRD) for dissemination to tribal basket makers (contact LTBB NRD for more information).
- One method of EAB control in urban settings includes the use of insecticides, which may not be practical and is not recommended for use in non-urban settings. Removal of dead trees is not recommended unless they pose a hazard to humans or property, since they provide important habitat for wildlife.
- Do not to transport firewood in order to reduce the spread of harmful invasive species such as EAB.







Flooded black ash swamp

Black spruce – *Picea mariana*

- Anishnaabemowin name: Gaagaagiwanzh, Zesegaandag, Zhingob, Zhingob gaawaandag (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993), Zhingob (Herron, 2002)
- **Cultural significance:** Utility roots are used for cordage and crafting, and resin is used for pitch (binding); medicine.
- Habitat: Small to medium-sized tree found in cold, acidic bogs and poorly-drained swamps, often appearing stunted or as a tall vegetation-free pole with a narrow, conical crown.

Notes:

- Moderately shade-tolerant, very slow growing, and long-lived.
- Regenerates naturally after fire, which benefits seedling germination as it opens the cones so that seeds may be dispersed, clears the ground so that seedlings can germinate, and releases a pulse of nutrients for the new trees.
- Often regenerates by layering, where branches that are pressed into the ground under the weight of heavy snows take root, forming new trees.

Bog-/Swamp-rosemary – Andromeda glaucophylla

Anishnaabemowin name: Bine' mickci (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Small evergreen shrub with incurved, waxy, lightgreen leaves with downy white hairs on the underside that is primarily found in acidic places such as bogs and spruce-tamarack swamps.

Notes:

The Michigan FQA Coefficient of Conservatism ranks it • as a 10, which means that it is restricted to a particular



Boneset – *Eupatorium perfoliatum*

Anishnaabemowin name: Niya'wibukuk (Densmore, 1974; Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993), Siabuksing, Sasabwaksing, Piskagamisag (Plants Used By the Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine; hunting aid.

Habitat: Boneset is generally found in open, wet areas including marshes, swales, wet fields, along the shores of rivers and lakes, swamps and thickets.









Notes:

- It has villous-hairy, clasping, leaves and blooms in the late summer along with joe-pye weed, swamp milkweed, and cardinal flower a colorful mix of pink, purple and white flowers.
- May be used for landscaping if watered regularly.

Cardinal flower – Lobelia cardinalis

Anishnaabemowin name: Shkotaebugonee (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Found in swamps, floodplain forests, along river and stream banks, sedge meadows.



Common cat-tail – Typha latifolia

Anishnaabemowin name: Apuk'we (Densmore, 1974), Apakway, Apakwesh, Apakweshkway, Nabagashk (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Food – rhizome/root, new shoots; utility – leaves weaved for thatching, coverings, and floor mats.

Habitat: Found in shallow water in swamps, roadside ditches, ponds, lakeshores. **Notes:**

• A non-native, invasive cattail called narrow-leaved cat-tail, or *Typha angustifolia*, is invading wetlands in N. America, perhaps because of a higher degree of salt tolerance. The native cat-tail has a flower spike with no space in between male and female flowers, whereas the non-native cat-tail has a flower spike where the male and female flowers are separated by a one or more inch space on the spike. Hybridization between native and non-native species occurs in the wild; the hybrid is called *Typha x glauca*.



Image on Left: Native *Typha latifolia* Image on Right: Non-native *Typha angustifolia* Note: No gap in between make and female flowers on the native plant; gap present on the non-native plant.

Common or Field horsetail/Scouring rush – *Equisetum arvense*

Anishnaabemowin name: Jasibonskok, Aiankosing, Gezibnusk, Giji' binusk (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine; utility – fine sanding. **Habitat:** Found in moist to somewhat dry places, often in

disturbed areas such as roadsides.

Notes:

• Field horsetail is dimorphic, meaning is has two forms – one form has fertile, black-capped stems and the other has sterile, often branched stems.



Common reed – Phragmites australis (P. communis)

Anishnaabemowin name: Abo-djigun – 'something turned out or over' (Densmore, 1974), Aaboojigun (Plants Used By the Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Utility – many uses including weaving, woven frames were used for drying berries. Old world uses of *Phragmites* include thatching for roofs, biomass, and a substitute for bamboo.

Habitat: Wet shores, ditches, swamps, bogs edges.

Notes:

- *Phragmites australis* has been a part of the flora of North America for at least 40,000 years, where it has provided high quality food and habitat for wildlife. In the late 1800's, a non-native, invasive form of *Phragmites* was introduced in the United States from Eurasia and has been spreading across the country causing major problems in some places as it creates large monocultures. These stands are very dense and crowd out native plants, which negatively impacts wildlife, and causes increased fire hazard. The native Phragmites has been named a distinct subspecies called *Phragmites australis* subsp. *americanus*.
- The non-native, invasive *Phragmites* is becoming more common in Northern Michigan, especially along Great Lakes coasts, roadside ditches, and even in some undisturbed habitats. As a result, a coalition consisting of state, Tribal, and local agencies and resource managers have begun an inventory of locations and sizes of native and non-native *Phragmites* stands and targeting non-native populations for eradication. This project is on-going as new invasive stands are located and because stands will require multiple-year herbicide treatments.
- Much of the biomass in a *Phragmites* stand is located below-ground, therefore, treatment non-native, invasive *Phragmites* stand should be done in the fall before the first freeze so that the plants will translocate the pesticide into its rhizomes, or roots. Cutting plants will not remove plants as the root systems are still left intact. Do not try to dig out the roots as loose fragments of the roots can sprout new plants.

• Before any treatment of stands occurs, it is important to verify that it is not a native stand and is in fact a non-native, invasive stand. For information on identification and eradication efforts contact your county conservation district, Michigan Department of Natural Resources (as of Jan. 17, 2010 the MDNR and the Michigan Department of Environmental Quality, or MDEQ, will be combined and become the Michigan Department of Natural Resources and Environment, or DNRE). If treatment is necessary, contact the MDNR/MDEQ (DNRE) for information on any permits that are required.



Image on left: dense stand of non-native, invasive *Phragmites australis*. Image on right: a stand of native *Phragmites australis* showing red stems.

Cranberry – Vaccinium macrocarpon

- Anishnaabemowin name: Anibimin (Densmore, 1974), Aniibimin (Plants Used By the Great Lakes Ojibwa, GLIFWC, 1993), Mshiig-min, -minan (pl.) (Ottawa/Anishnaabemowin-English, Bilingual Multimedia CDrom Dictionary, Burt Lake Bands of Ottawa and Chippewa Indians, 2007)
- **Cultural significance:** Food this species of cranberry is farmed and harvested for commercial cranberries; medicine cranberries are well-known for their medicinal properties in treating urinary tract infections and as an internal cleanser.

Habitat: Swamps, open bogs, and on wet shores.

Threats:

• Peat mining and hydrological alterations including surface water drainage. **Notes:**

- Another cranberry, called small cranberry, or *Vaccinium oxycoccos*, may be found in bogs and wet, acidic, peaty soils, and also has an edible, sour fruit. To tell the difference, for *Vaccinium macrocarpon*, look for leaves with rounded tips and the fruit to be located around in the middle of the stem, whereas on *V. oxycoccos*, the leaves are pointed and the fruit is always terminal on the stem. The Anishnaabemowin name for the small cranberry is: Mashkiigiminagaawanzh, or Mashkiigimin, -an (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993)
- *Vaccinium macrocarpon* is the species that is harvested commercially.

Creeping snowberry – Gaultheria hispidula

Anishnaabemowin name: Wabos'obugons (Densmore, 1974), Waaboosobagoons, Waaboozobanzh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Food – berries, leaves for tea; medicine.

Habitat: This evergreen, plant forms thick mats in mossy wet forests and bogs, on moss-covered rocks, and decaying logs and stumps.

Notes:

• The leaves and fruit taste like wintergreen.

Eastern tamarack – Larix laricina

- Anishnaabemowin name: Mu'ckigwa'tig (Densmore, 1974), Mashkiigwaatig (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Aw-ke-kaw-daw (Otto, 1996)
- **Cultural significance:** Strong wood used for ricing push poles and lodges; roots for weaving; utility; medicine; traditional stories.
- **Habitat:** Under the right conditions, tamarack can grow to be a large tree up to 70 feet in height, except in poorly-drained sites, where it grows rather slowly. Shade-intolerant.

Notes:

• The tamarack is Michigan's only deciduous pine tree - losing its leaves in the fall and growing new ones each spring.



Anishnaabemowin name: Oza'widji'bik – 'yellow root' (Densmore, 1974), Ozaawaajiibik (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Utility – dye; medicine.

Habitat: This small plant of the boreal forest has three, evergreen leaves and golden-colored root runners and is found in cool woods, bogs, and cedar swamps.

Notes:

• *Ozawaa* means 'yellow' and *djibik* means 'root' in Anishnaabemowin.









Jack-in-the-pulpit – Arisaema triphyllum

Anishnaabemowin name: Zhaashaagomin (Plants Used by Great Lakes Ojibwa,

GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Often found in seepy spots and depressions in rich maple woods and moist or wet areas along small streams; often in association with Canada mayflower, wild sarsaparilla, ferns, and cedar or hemlock.

Notes:

- This plant has a tubular green and purple flower that when pollinated, turns into a bright cluster of red fruits later in the season.
- May be used ornamentally in moist, shaded areas.



Image on left: Jack-in-the-pulpit flower Image on right: Jack-in-the-pulpit with fruit

Labrador tea – *Ledum groenlandicum*

Anishnaabemowin name: Muckig'obug – 'swamp leaf' (Densmore, 1974), Maskiigobag, Mashkiikaang niibiish, Waabashkikibag, or Waboskiki'bug – ('rabbit leaf') (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Food – tea; medicine.

Habitat: Low, evergreen shrub found in bogs, swamps, wet woods and shores, and occasionally on rocky, alpine slopes.

Notes:

• The Anishnaabemowin name 'Waabashkikibag' means 'rabbit leaf,' which refers to the leaves, which are green and leathery on top with fuzzy, whitish to yellow or copper-colored woolly hairs underneath.

Lady fern – Athyrium filix-femina

Anishnaabemowin name: A'sawan (Densmore, 1974), Ana'ganuck, Nokomi'skinun

(Plants Used by Great Lakes Ojibwa, GLIFWC, 1993) **Cultural significance:** Medicine. **Habitat:** Found in moist woods, meadows, streambanks and open boggy areas.

Marsh marigold – Caltha palustris

Anishnaabemowin name: O'gite'bug (Densmore, 1974; Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine; food (requires careful preparation to remove toxins).

Habitat: Found in swamps, wet meadows, marshes, streambanks, and roadside ditches.

Notes:

• Marsh marigold has chordate (heart-shaped) leaves and produces showy, brightyellow flowers during the springtime.

Mountain-holly – *Nemopanthus mucronatus*

Anishnaabemowin name: Mickiminu' nimic (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: This shrub is found in the taller shrub zone around the outer margins of bogs.

Northern white-cedar - Thuja occidentalis

- Anishnaabemowin name: Giizhik cedar' (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002), Ke-zhek (Otto, 1996), Giizhik andug – 'Cedar tree' (Herron, 2002)
- **Cultural significance:** Medicine; spiritual and ceremonial use; utility; hygiene; firewood; wood for many uses including building dugout canoes, flat bottom ricing boats, frames for birch bark canoes, baskets and basket frames, burned as kindling, and to smoke hides. Cedar, known as



'giizhik' in Anishnaabemowin, is one of the four sacred medicines associated with the medicine wheel, where it is usually represented in the southern direction.

Habitat: Small to medium-sized tree with evergreen leaves characteristic of cold, poorlydrained swamps, especially with moving water and neutral to alkaline substrates (pH 7 and above); often in dark, rich, mucky, organic soils; dry, upland soils over limestone bedrock; shorelines; forested wetlands; hedgerows. Cultivars are often used for landscaping.

Threats:



- Destruction of habitat, including soils from • dredging and/or filling for development.
- Draining or other significant hydrological alteration.
- Deer browse: Cedar is an important food for deer, which are called 'waawaashkesh' in Anishnaabemowin. The deer population has more than doubled since pre-settlement times, which has important ramifications for cedar swamps, which are susceptible to heavy deer browse.

Extended periods of browsing may permanently stunt and prevent maturation and successful seed propagation, drastically reducing the numbers of cedar trees that regenerate or reach maturity.

Notes:

- Slow-growing.
- Shallowly-rooted and susceptible to windfall.
- Seeds are borne in cones when the plant reaches maturity, usually after about 30 years.
- Cedar is a calciphile, meaning that it tolerates high levels of calcium, and it is also often an indicator of groundwater.
- Cedar is also known as *Arborvitae*, which translates into 'tree of life' in French. A group of early French voyageurs traveled to America and became sick with scurvy after spending months at sea with little to no

citrus. Luckily for the voyageurs, local Mohawks came to their rescue by showing them how to make a Vitamin-C rich tea using cedar leaves, saving their lives.

• Building deer exclosures may help to keep deer out of sensitive or heavilybrowsed areas.

Northern wild rice – Zizania palustris

- Anishnaabemowin name: Maanomin (Densmore, 1974), Manoomin (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)
- Cultural significance: Wild rice, known as 'maahnoomin' in Anishnaabemowin, is avery important staple food for Great Lakes tribes. It is harvested in September during the 'Maahnoomin Giizis,' or 'wild rice moon.' Important food for wildlife.
- Habitat: This large, annual, aquatic, grass is found on rich, mud, muck, or silt substrates in rivers, streams, sloughs, lakes, and ponds, usually growing from 1-3 feet of water, though sometimes found in water up to 6 feet deep.





Wild rice - Floating-leaf stage



High quality cedar swamp



Heavily-browsed cedars

Threats:

- Sensitive to severe changes in water levels.
- Boat traffic motors can pull up roots and damage plants.
- Water pollution.

Notes:

• Nutrient demanding.

Pink or Stemless lady-slipper/Moccasin flower - Cypripedium acaule

Anishnaabemowin name: Makasin (Herron, 2002) Cultural significance: Traditional stories; charm.

Habitat: This lady-slipper is often found in coniferous swamps and bogs with cedar, tamarack, or spruce, on hummocks in sphagnum bogs; in sandy, acidic, and sometimes dry soils in woodlands and sand dunes.

Threats:

• Wildflower gathering.

Notes:

• Protected from picking under conservation laws.

Red-osier dogwood – Cornus sericea (C. stolonifera)

- Anishnaabemowin name: Mis'kwabi'mic (Densmore, 1974), Miskoobimizh, Miskwaabiimizh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** Crafting; utility; medicine; an ingredient in traditional kinnickinick (bark).
- Habitat: Small shrub with bright red bark found in low, wet areas such as streambanks, lakeshores, floodplains,
 - roadside ditches, sometimes forming thickets. Used for landscaping for its showy white flowers and fruits, and bright red bark.

Notes:

- Red-osier dogwood is often commonly called 'red willow' although it is actually a dogwood and not a willow.
- Reproduces from stolons, or root fragments. The berries are bird-dispersed.

River-bank grape – Vitis riparia

Anishnaabemowin name: Jo'minaga'wunj (Densmore, 1974), Zhoominagaawanzh, Zhoomin, Zha/iwimagaawanzh (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Zhomindak (Herron, 2002)





Cultural significance: Food; utility - crafting; medicine.

Habitat: High-climbing or trailing vine found along riverbanks, shorelines, edges of woods, moist woods, and thickets.

Scouring rush – *Equisetum hyemale*

Anishnaabemowin name: Gijib'inuskon' (Densmore, 1974; Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
Cultural significance: Utility – scouring pad; medicine.
Habitat: This evergreen plant is found in low, wet areas in woods, streamsides, sandy shores, disturbed soils, and other wet or moist places.

Sensitive fern – Onoclea sensibilis

Anishnaabemowin name: A'nana'ganuck (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993; Herron, 2002)
Cultural significance: Medicine
Habitat: Sensitive fern is common in a variety of wetlands including swamps, along stream banks, and other lowlands.

May be found in sunny or shady areas.

Slippery elm/Red elm – Ulmus rubra

Anishnaabemowin name: Gawa'komic (Densmore, 1974) Cultural significance: Medicine; utility.

Habitat: Small to medium-sized tree found growing in moist, rich or poorly-drained soils, streambanks and other lowlands, as well as dry, mesic uplands and mixed forests.

Threats:

- Susceptible to Dutch elm disease that has killed off many large American elms in the 1970's and causes trees to rarely attain commercial size.
- Also susceptible to phloem necrosis diseases.

Notes:

• Not presently in danger of extinction. Some sources say that red elm may have more resistance to Dutch elm disease than other elms.

Speckled alder – Alnus rugosa (A. incana)

Anishnaabemowin name: Wadub (Densmore, 1974), Wadoop, -iin, Wadop - 'alder







tree' (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Wadobin – 'root to sew a canoe' (Herron, 2002)

Cultural significance: Medicine.

Habitat: Small tree that is often shrubby in habit that is found in swamps, along riverbanks, streambanks, and lakeshores.

Notes:

• Fixes atmospheric nitrogen.

Sphagnum moss – Sphagnum spp.

Anishnaabemowin name: Asagumig (Herron, 2002)

Cultural significance: Sphagnum moss was widely used for padding for wounds, diapers, and padding for women because of its super absorbent nature and natural antiseptic qualities. It was also used for insulation for houses or shelters. Sphagnum is the plant that created the vast bogs that are still today mined for peat and sold commercially.

Habitat: Sphagnum can be found on dead logs and rises in swamps, creating hummocks in bogs and in low, wet areas of the boreal forest.



Sphagnum moss growing with creeping snowberry

Notes:

• Sphagnum moss is an interesting plant that helps to create and maintain its environment. It works to acidify the surrounding water by pumping excess hydrogen ions back into the water, helping to maintain its ideal habitat.

Spotted joe-pye weed – *Eupatorium maculatum*

Anishnaabemowin name: Me'skwana'kuk bu'giso'win (Densmore, 1974; Plants Used by Great Lakes Ojibwa, GLIFWC, 1993) Cultural significance: Medicine: utility.

Habitat: Joe-pye weed grows in open, wetlands along rivers and lakeshores, and is often found growing with boneset and swamp milkweed.





Spotted touch-me-not/Jewelweed – Impatiens capensis

Anishnaabemowin name: Ozhaawashkojiibik (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: These plants have fragile leaves and stems with beautiful spotted orange flowers and are found growing in open areas in wet woods and along stream banks.



Swamp milkweed – Asclepias incarnata

- Anishnaabemowin name: Bagizowin (Densmore, 1974; Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993), Zasab (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
 Cultural significance: Medicine; utility.
- Habitat: This plant has pink to lavender-colored flowers and is found growing in open wetlands along the edges of rivers and swamps, often growing with joe-pye weed and boneset.



Sweetflag – Acorus americanus

Anishnaabemowin name: Wiikenh (Densmore, 1974 – 'wiken'; Plants Used by Great Lakes Ojibwa,GLIFWC, 1993; Herron, 2002; Osawamik, 2008), Nabagashk, -oon (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Na'buguck' – 'something flat' or Muckosija'bosigun – 'hay purgative' (Densmore, 1974)

Cultural significance: Medicine; ceremonial use; charm.

Habitat: Sweetflag is an iris-like monocot with slightly-lemon-scented leaves that is found in open wet areas such as sedge meadows, marshes, stream banks, pond edges, and in shallow water with growing with sedges and cattails. Populations are local.

Threats:

• Over-harvesting.

Notes:

• *Acorus calamus* is a sterile, non-native species originally from Europe that has escaped in some areas.

Sweet gale/Bayberry – Myrica gale

Anishnaabemowin name: Wa'sawasni'mike (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993), Wasawasnimike – 'yellow catkins' (Herron, 2002)

Cultural significance: Food – tea, meat flavoring; medicine.



Habitat: Low, many-branched, aromatic shrub of wet places such as swamps and shores. **Notes:** Nitrogen-fixer.



Sweetgrass – *Hierochloe odorata*

- Anishnaabemowin name: Wiingashk, or Wiishkobi-mashkosi (Plants Used by the Great Lakes Ojibwa, GLIFWC, 1993), Wicko'bimucko'si (Densmore, 1974)
- **Cultural significance:** Ceremonial plant; smudge; medicine; utility; crafting. Sweetgrass is one of four medicines associated with the medicine wheel, where it is represented in the north. Harvesting is done during the summer after the seeds have dropped, and is done by cutting the stems above the base of the plant (not pulling). After it is cut, it is bundled and woven into long braids. Sweetgrass is considered a sacred plant that is said to be the hair of mother earth by Anishnaabe people.

Habitat: Wet openings such as wet meadows, swales,

shorelines, and the edges of wet woods.

Threats:

- Improper harvesting or over-harvesting.
- Encroachment from non-native or invasive plants.
- Development in wetlands, especially wet meadows and shorelines.
- Non-native and/or invasive species that out-compete and crowd out native plants such as sweetgrass.

Notes:

- Never harvest sweetgrass by pulling up the plant by its roots, since this kills the plant. Instead, a clean cut can be made several inches above the base of the plant, leaving the base and roots intact. It is also said that you should never take more than you need, and never take all the plants in an area.
- Sweetgrass can be successfully grown in a garden setting as long as it has sufficient moisture. Sweetgrass grows best by rhizome, and may be transplanted during the spring or fall.
- The sweet, vanilla-like scent that gives this plant its common name is from the chemical coumarin.
- Sweetgrass is circumpolar species, meaning it is found all over the world in cold, northern climates.





White water-lily – Nymphaea odorata

Anishnaabemowin name: Akandamoo – 'a kind of big root growing in the water' (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Food; medicine.

Habitat: This aquatic plant has a large, white, fragrant flower that floats atop the water among large, chordate-shaped, floating leaves in ponds, shallow bays and other calm waters.



Winterberry/Michigan holly – Ilex verticillata

Anishnaabemowin name: Animoshi-min, -an (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Medicine.

Habitat: Winterberry is a shrub found on lake shores and the borders of swamps and bogs.

Notes:

• This plant makes and abundance of beautiful red berries that are persistent on the twigs until early winter.

Yellow birch – Betula allegheniensis

- Anishnaabemowin name: Wiiniizik (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)
- **Cultural significance:** The close-grained wood is used for furniture and veneer; utility; medicine.
- **Habitat:** Yellow birch is found in various sites, with basic to acid soils, in mesic, northern, mixed hardwood forests, poorly-drained northern swamps and lowlands.

Notes:

- The twigs have the smell and taste of wintergreen.
- Moderately fast growing and long-lived. Intermediate shade-tolerance.



Yellow lady-slipper – Cypripedium calceolus

Anishnaabemowin name: Makazin (Plants Used by Great Lakes Ojibwa, GLIFWC, 1993)

Cultural significance: Traditional medicine for women. **Habitat:** This orchid of the boreal forest is found in a variety

of moist habitats, including damp woods, bogs, meadows, borders of woods and clearings, often under cedar. Not found in extremely dry sites.

Threats:

• Wildflower picking.

Notes:

• Protected from picking under wildflower conservation laws.



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