



## ECOSYSTEM HEALTH AND SUSTAINABLE FISH POPULATIONS: HABITAT PROTECTION AND RESTORATION - FINAL NARRATIVE REPORT -



### BACKGROUND/OVERVIEW

1. Briefly summarize the project description as outlined in the original proposal.

The purpose of this project was to comprehensively inventory all road/stream crossings in fourteen small coastal watersheds draining to Lake Huron (shown on the attached map). A total of 253 sites were inventoried in these coastal watersheds, which builds on inventories completed recently for many other watersheds across northern Michigan. All inventory data and photographs are publicly available at [northernmichiganstreams.org](http://northernmichiganstreams.org), which is an objective tool that enables conservation partners to use limited restoration funding more efficiently in order to maximize ecological and socioeconomic benefits in future on-the-ground projects. All data was collected using the Great Lakes Road/Stream Crossing Inventory Protocol and Datasheet.

2. Was the project completed as originally intended? If not, indicate how the final outcome(s) differed from what was anticipated. Does your experience suggest that original expectations were realistic? What factors hindered or helped progress?

All aspects of this project have been successfully completed. 253 total road/stream crossings were inventoried and the data and photographs have been uploaded to [northernmichiganstreams.org](http://northernmichiganstreams.org). Huron Pines has significant experience leading road/stream crossing inventories and the project was completed within the project timeline and budget. The final outcomes matched what was anticipated, and the original expectations were realistic. We had great Huron Pines AmeriCorps members this year that did an excellent job completing the inventory, and individual volunteers were able to give time to help out on a few occasions.

### OUTCOMES

3. Whether they were intended or unintended, what do you consider the most important benefits or outcomes of this habitat restoration project?

A comprehensive inventory of road/stream crossings throughout northern Michigan provides regional conservation partners with an objective tool for prioritizing future restoration work, allowing limited funding to be more effectively applied to achieve maximum ecological and socioeconomic benefits. This project was a cumulative step toward our collective goal to inventory all watersheds in northern Michigan using the standardized protocol and making that data publicly available on the website.

4. What activities were pursued in relationship to intended outcomes, and to what extent did you achieve the following intended outcomes listed in your proposal?

The outcome of the project was a comprehensive inventory of road/stream crossings in coastal Lake Huron watersheds, made publicly available online at [northernmichiganstreams.org](http://northernmichiganstreams.org). The outcome was met to its full extent and Huron Pines and conservation partners plan to use this data to prioritize future restoration work. Activities undertaken to achieve the intended outcome included:

- Identify all road/stream crossings using GIS, plat books and online mapping tools
- Plan out routes ahead of inventory field days to minimize travel time and increase efficiency
- The Huron Pines project manager provided training to our field crew and Huron Pines AmeriCorps members, and reviewed data forms periodically to ensure quality control
- Inventory data was entered into a Microsoft Access Database
- Land Information Acquisition Association (LIAA) was contracted to upload inventory data and associated photographs to the website
- The Huron Pines project manager evaluated the inventory results to compile a list of potential priority sites for future restoration
- Grant administration and reporting requirements were completed per the grant agreement

5. What audience(s) were you particularly hopeful of reaching? To what extent did you reach them? Did you receive any feedback?

Huron Pines and other conservation organizations will use the inventory data to prioritize future restoration work and to leverage funding for restoration of priority sites. Huron Pines has already secured funding from the National Fish and Wildlife Foundation-Sustain Our Great Lakes program to restore two of the priority crossings (**GCBM-008**: Elliot Creek/Seffren Rd; **GCBM-006**: Elliot Creek/Alpena State Rd) in 2017 or 2018. Primary partners expected to benefit from the data include county road commissions, state and federal resource agencies, and other nonprofit conservation organizations. Huron Pines has shared or will be sharing the inventory data with all of these partner organizations. The inventory data is also publicly available to any interested individuals.

6. What relationships or opportunities were developed or strengthened through this work?

The inventory data is being shared with resource agencies, county road commissions and any other interested stakeholders. In our experience, these road/stream crossing inventories lead to increased collaboration and capacity to raise funding for and to complete on-the-ground restoration projects.

7. Was an evaluation included as part of this project? If so, what were the key findings?

The inventory itself was an evaluation of road/stream crossings in several coastal Lake Huron watersheds. Huron Pines analyzed the inventory results and identified eight potential priority sites that would likely benefit brook trout and other native species without adversely affecting invasive sea lamprey control program efforts. Several other potential sites could be restored to reconnect significant habitat for native species but that might interfere with sea lamprey control program goals. A map and summary pages for each of the following eight potential priority sites are attached:

- **GCBM-008**: Elliot Creek/Seffren Rd; **GCBM-006**: Elliot Creek/Alpena State Rd
  - Huron Pines has received NFWF-SOGL funding to replace these two crossings in coordination with the Cheboygan County Road Commission
- **GCBM-012**: Mulligan Creek/Sandpiper Lane; **GCBM-011**: Mulligan Creek/Pine Tree Trail
- **GCBM-003**: Grace Creek/Grace Harbor Road

- **GCBM-014:** Lone Pine Creek/Mulligan Creek Trail
- **BC-009:** Chub Creek/Main Street Road; **BC-012:** Chub Creek/Janish Road

Additional “second tier” severe sites are listed below. These are sites that are might be of restoration interest for native species but are either currently important for invasive sea lamprey control efforts or that would have to be completed in tandem with adjacent crossings to achieve meaningful connectivity results:

- These two sites are specifically identified as invasive sea lamprey control barriers:
  - **LBR-019:** South Branch Little Black River/Levering St (State Road)
  - **GCBM-015:** Greene Creek/US Highway 23
- These three sites would all need to be completed to achieve maximum resource benefit:
  - **LBR-006:** Little Black River/Slade Road
  - **LBR-003:** West Branch Little Black River/Rose Road
  - **LBR-022:** West Branch Little Black River/Inverness Trail Road
- These two sites would both need to be completed to achieve maximum resource benefit:
  - **MC-007:** Unnamed Lake Huron tributary/N Old Mackinaw Road
  - **MC-033:** Unnamed Lake Huron tributary/North Central State Trail
- These two sites would both need to be completed to achieve maximum resource benefit:
  - **MC-018:** Mill Creek/North Central State Trail
  - **MC-017:** Mill Creek/US Highway 23

Visit [northernmichiganstreams.org](http://northernmichiganstreams.org) for more information and full-size photographs. Inventory sheets for the sites identified above are attached.

## RELATED EFFORTS

8. Was this project a stand-alone effort or was there a broader effort beyond the part funded by GLFT? Have other funders been involved either during the time of your GLFT grant or subsequently?

Huron Pines, Conservation Resource Alliance and other partners have completed road/stream crossing inventories for many watersheds throughout northern Michigan following the Great Lakes Road/Stream Crossing Inventory Protocol, with a collective goal of achieving complete inventory coverage across the region. The coastal Lake Huron watersheds inventory built on existing inventory data previously completed for the Au Gres River, Au Sable River, Bear Creek, Betsie River, Big Manistee River, Big Sable River, Boardman River, Carp River, Crooked River, Lake Charlevoix, Little Manistee River, Little Traverse Bay, Maple River, Muskegon River, Pere Marquette River, Pigeon River, Pine River, Platte River, Rifle River, Six Mile Lake, Sturgeon River, Tawas River and Upper Black River watersheds (see [northernmichiganstreams.org](http://northernmichiganstreams.org) for a map of all inventoried areas).

The current coastal Lake Huron inventory included the following watersheds (from north to south): Mill Creek, Little Black River, Greene Creek/Black Mallard River, Ocqueoc River, Schmidt Creek, Trout/Swan/Little Trout, Grand Lake, Monaghan Creek/Long Lake, Grass Creek/Norwegian Creek, Devil’s River and Big Creek (see attached map) The remaining road/stream crossing inventory gap in Huron Pines’ service area in Northeast Michigan is the Thunder Bay River Watershed, for which GLFT has provided funding that will allow us to complete a comprehensive inventory in 2017/2018.

9. Has there been any spin-off work or follow-up work related to this project? Did this work inspire subsequent, related restoration projects involving you or others?

This project is part of a larger effort to inventory watersheds throughout northern Michigan, which collectively has led to and is expected to continue to lead to on-the-ground restoration of high priority road/stream crossings. Huron Pines has already secured funding to restore the two priority crossings on Elliot Creek. Additionally, our past inventories using the Great Lakes Road/Stream Crossing Inventory Protocol have led to dozens of successful road/stream crossing improvements over the past decade – restoring connectivity to more than 100 upstream miles and reducing pollutant inputs.

## COMMUNICATION/DISSEMINATION

10. List publications, presentations, websites, and other forms of formal dissemination of the project deliverables, tools or results, including those that are *planned* or *in process*.

The inventory data is currently accessible online at [northernmichiganstreams.org](http://northernmichiganstreams.org), along with other resource inventory data collected by Huron Pines, Conservation Resource Alliance and other conservation partners in northern Michigan. Huron Pines regularly promoted this project through our social media outlets. Road/stream crossing prioritization and the [northernmichiganstreams.org](http://northernmichiganstreams.org) website were promoted by Huron Pines through the Interagency Ecological Restoration Quality Committee monthly webinar series (archived here: [www.youtube.com/watch?v=wDzU6JzJQPA](http://www.youtube.com/watch?v=wDzU6JzJQPA)).

11. Please characterize your efforts to distribute and encourage use of products, processes, programs, etc. developed through this grant.

Huron Pines has shared or will be sharing this information with conservation partners throughout Northeast Michigan, including county road commissions, the US Fish and Wildlife Service, Michigan DNR, potential funding sources for restoration work, and other nonprofit conservation organizations.

## REFLECTIONS

12. Please describe any unanticipated benefits, challenges or surprises, and/or important lessons learned over the course of the project.

There were no unanticipated challenges with the inventory process itself. However, evaluating the inventory results to prioritize potential aquatic connectivity projects will require a bit of additional thought compared with inland watersheds, as many of the severe fish passage barriers on these coastal river systems are also first barriers to Lake Huron, so invasive sea lamprey concerns will need to be weighed into future decision making efforts.

An observation worth noting is that throughout floodplains in Northeast Michigan, including coastal Lake Huron watersheds, die off of ash trees (due to emerald ash borer) is leading to increases in large wood in streams as the dead trees fall. This can be a good thing for instream habitat in some areas, but excessive woody debris also creates jams at road/stream crossings and can impede river navigation for recreationists and create potential fish passage issues in severe cases. When dead ash trees fall in the riparian zone, we also notice the root wads often contribute large amounts of sediment to stream channels. Huron Pines has received calls from landowners and conservation groups throughout our service area related to this issue, and it will be something that needs considering in the future.

13. What recommendations (if any) would you make to other project directors working on similar efforts or to the GLFT?

We strongly encourage other organizations to follow the Great Lakes Road/Stream Crossing Inventory Protocol so that collected data can be more easily and objectively compared across

watersheds and among organizations. When possible, we recommend that all resource inventory data collected in the region be uploaded to [northernmichiganstreams.org](http://northernmichiganstreams.org) to facilitate sharing of data.

## PICTURES

14. Provide at least three photos of the completed project (if applicable).

A set of photos for each crossing site, including inlet, outlet, upstream and downstream conditions, and left and right road approaches is included on each site's page at [northernmichiganstreams.org](http://northernmichiganstreams.org). Attached with this report are three photos of Huron Pines AmeriCorps members collecting coastal Lake Huron watershed inventory data in the field.

15. The Great Lakes Fishery Trust requires each project it funds to have suitable permanent public acknowledgement of GLFT assistance. If applicable, the GLFT will provide a sign to you (via mail) and required photo verification of the posting of the sign before it will process your final reimbursement request.

This project did not feature an on-the-ground restoration component for installing interpretive signage, but Great Lakes Fishery Trust support for this inventory is acknowledged on the coastal Lake Huron watersheds page at [www.northernmichiganstreams.org/coastallhws.asp](http://www.northernmichiganstreams.org/coastallhws.asp).

## ATTACHMENTS

16. Please attach any reports or materials developed through the grant.

The following are attached:

- Project Profile
- Final Financial Report and supporting documentation
- Project map showing coastal watershed boundaries and eight potential priority site locations
- Photographs, as described in question 12 above
- Road/stream crossing site summary sheets for each of the eight potential priority sites identified – see the website for full size photographs and additional site location information