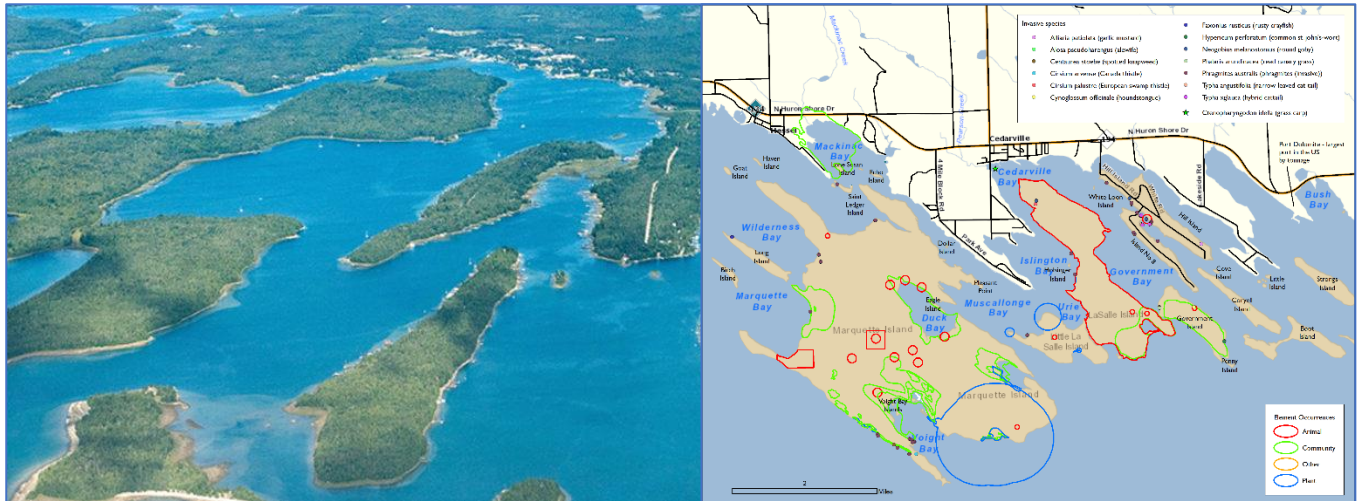


Planning for Invasive Species Action on Les Cheneaux Islands



Submitted to:

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MNFI Report Number 2019-21

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Left: Aerial photo of the Les Cheneaux Islands – Northland College

Right: Map showing invasive species locations on Les Cheneaux Islands – MNFI

Higman, P.J., H.D. Enander, D.A. Hyde, P.J Badra and K.M. Korroch. 2019. Planning for Invasive Species Action on Les Cheneaux Islands. Report to the USFWS Great Lakes Coastal Program. MNFI Report No. 2019-21.

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Introduction

The Three Shores CISMA is a partnership of city, county, state, federal, and tribal officials who have joined together with local citizens, landowners, and not-for-profit groups to manage invasive species throughout Chippewa, Luce, and Mackinac Counties. Three Shores CISMA has the highest total area of islands (169,090 ac), almost 40% of all island area in Michigan's Great Lakes containing 637 islands with 49 unique rare animal species, 49 unique rare plant species and 21 documented natural community types. Within the Three Shores CISMA, the Les Cheneaux Islands contain 8 unique rare animal species, 7 rare unique plant species and 7 unique natural community types.

The Les Cheneaux Islands are a group of 36 small islands, some of which are inhabited, along 12 miles of Lake Huron shoreline on the southeastern tip of the Upper Peninsula of Michigan in Mackinac County. The name "Les Cheneaux" is French in origin referring to the many channels between the islands in the group. The sheltered bays, channels and quiet coves provide ideal sailing, kayaking and boating as small crafts are protected from the Great Lake's winds. Port Dolomite, which is on the mainland, is the largest port in the U.S. by tonnage! The Les Cheneaux Watershed Council is a partner of the Three Shores CISMA and has been active in invasive species management in the area.

Methods

We met with Nick Cassel, the Three Shores CISMA Invasive Species Planning Coordinator on March 29, 2019 to share resources, learn about the challenges and successes that this CISMA has experienced and conduct a pilot test of the *Island Database* and a *Template for Planning Invasive Species Action*. In preparation for the meeting we prepared a web mapping application with layers for 1) MDOT ports, 2) marinas, 3) boat launches; 4) MISIN (current) and NAS, GLANSIS and EDDMapS (as of March 1, 2019) observations including: a) all invasive species records, b) only invasive plants and c) only invasive animals; and 5) MNFI Element Occurrence (EO) data for high-quality natural communities and vulnerable rare species. We also prepared six feature layers from the islands database for Les Cheneaux islands with emphases on: 1) high bio-rarity islands, 2) island geopolitical attributes, 3) island cultural attributes, 4) islands with special designations, 5) islands with colonial waterbird priorities, and 6) island ecological attributes. Some examples of ecological attributes include length of river/stream, area of lakes, area of coastal wetland, proportions of land cover classes, number of spawning species, and rare species data.

We discussed and demonstrated how these data sources could be analyzed using the Arc GIS Online web mapping application to help identify potential actions in a spatial framework by overlaying the various map layers and data described above. These data enable the identification of potential vector, species, and site-based actions for invasive species including those focused on 1) prevention, 2) early detection and response, 3) control and restoration and 4) education and outreach. Actions can then be prioritized based on risk-benefit analyses that include the identification of key partners and funding, assessment of alternative strategies for all three action categories, considering potential unintended consequences and the feasibility of successful implementation based upon socio-economic factors and available resources.

Results and Discussion

Nick was very excited to see and learn about the *Island Database* and indicated the most useful thing for him was to be able to see the spatial distribution of invasive species in relation to the high priority conservation targets quickly in a GIS platform, instead of having to dig through a bunch of data to find them. We were only able to focus on a few specific uses of the *Island Database* in the time we had before we all had to take on our fully packed field seasons, however, it is clear from our experience, that the database provided targeted and useful information that Nick was able to use immediately. As noted by nearly every key invasive species planning resource we reviewed, the biggest take-home message to managers is to start small with the most important and pressing actions that are achievable. Nick used the *Island Database* to fine-tune his focus on the globally rare and vulnerable, high quality alvar community occurrence on Drummond Island. He was able to overlay priority invasive species distributions on the alvar spatial data, to inform and refine specific control efforts there. The alvar data, includes not only a boundary of the community, but delineated polygons of vulnerable species which will influence the methods and timing of actions, specifications for bid packages and the potential need for permits.

After our meeting, we prepared a packet of key data layers that were most useful to Nick in the short term and these will likely be the most useful data for any user. We added a relatively newer data layer of TNC resiliency scores that could be useful for longer-term planning. The resiliency scores are derived from 1) an estimate of the capacity of an area to maintain species diversity and ecological function as the climate changes, relative to other sites with the same geophysical setting, and 2) an evaluation of site factors that are believed to foster resilience, such as landscape diversity and local connectedness of the site (Anderson 2014). The resiliency data layer could be overlaid with spatial data of identified priority areas and invasive species distributions to see if any patterns emerge. High resiliency scores represent strongholds for biodiversity and this analysis could point to potential core areas that may be the most important of all and could influence priority actions or focus areas for invasive species work.

Several key points emerged from our meeting with Nick:

- We, ourselves are still trying to absorb the totality of the data we collected and how best to use them; however, there are some obvious, immediate assessments that can be made to help inform action in the short term, e.g., element occurrence data overlaid with invasive distribution data, invasive species vectors, key entry points and dispersal pathways.
- The *Island Database* provides an easy-to-use platform for users to query and gather immediately useful information in a spatial GIS platform. In Nick's case, he was quite fluent with GIS and already had some clear priorities, such as the globally rare alvar occurrence on Drummond Island. Not surprisingly, he zoomed directly into that location in the database immediately and found it very helpful. However, there is much more to explore in the biologically rich and diverse setting of Les Cheneaux islands. With 36 Les Cheneaux islands and 647 total islands within the Three Shores CISMA area, Nick has his work cut out for him!
- It will take dedicated planning time to realize the full potential of the *Island Database* for island planning. Ideally managers would have a concentrated period of time to look at all the

islands within their scope and consider and evaluate 1) all island assets to identify the highest ranking conservation targets; 2) the specific threat posed by invasive species to these conservation targets by examining key entry points for invasive species and their distributions and dispersal pathways; and 3) the feasibility of taking specific actions based on land ownerships, existing plans, funding etc., and 4) the likelihood of success of various actions. This would form the basis for prioritizing action. This “Conservation Planning” is best done through a collaborative process which is time consuming. Full scale planning such as this, either alone or in a group, cannot be done effectively in the heat of field season preparation. Similar analyses could be conducted on a smaller scale, however, to enable beneficial priority actions that can be initiated in the short-term.

- Many conservation planning efforts have been conducted for the Great Lakes region that identify all threats to conservation targets, not just the threat of invasive species. The threats are usually ranked broadly in categories such as low, medium or high. A generic acknowledgement that invasive species are a threat is not particularly helpful when it gets down to planning specific actions. The *Island Database* provides the means to move beyond the generic and towards specific action because it provides multiple data sets that inform where important features are, *and* the known distribution, entry-point and vector data for invasive species. These data will only get better over time as professionals and community members continue to report invasive species through the MISIN and other spatial databases.
- With regard to resolving the lack of easy access to the other invasive species databases, GLANSIS is probably the most important for Michigan’s islands; it is likely that a mechanism for regular exchange can be determined relatively easily.
- CISMA managers are busy and have varying degrees of access to and experience with using GIS products. Because of the importance and utility of quality spatial data to inform invasive species decisions, we hope to find funding to develop a more formal training experience that we could share with CISMAs and other users to improve their access to these data. So often valuable tools are developed but don’t get fully utilized because inexperienced users need technical assistance that isn’t readily available. We would like nothing better than to work with users to expand and improve the database over time both in terms of the data it holds and in user functionality, applicability and friendliness.
- Our research for this study showed that little attention is being paid to cultural and economic values in comparison to ecological values. Improving this aspect of the database will help users transition from a purely ecological approach to an integrative approach that embrace the interaction of these values. They are not going away anytime soon! To be able to map out their relationships in a spatial platform is powerful, because instead of arguing about things in the abstract, you can get down to brass tacks and really pinpoint where conflicts on the landscape do exist and where they do not.
- Conducting work on islands is particularly challenging. Anecdotally, some partners estimate that invasive species monitoring and control activities on islands can be two to six times the cost of doing the same work on the mainland (Shaun Howard, The Nature Conservancy, pers comm). Logistical constraints of finding capable contractors that are cognizant of vulnerable island features, getting people and equipment out to the islands, and fickleness of weather patterns that dictate when islands can be reached safely, are among the many logistical

constraints that drives up costs. Islanders in the Beaver Archipelago have also noted that success is achieved more quickly and effectively if there is an on-island presence of staff dedicated to managing invasive species. Having full view of the critical conservation targets on Michigan's Great Lakes islands and invasive species that have potential for quick and serious impacts, will allow managers to make informed decisions about trade-offs between allocating resources on islands versus focusing work on the mainland.

- In terms of the other steps laid out in the accompanying Template for Planning Invasive Species Action, the Three Shores CISMA is an active leader in them all, including:
 - 1) engaging and working with partners, 2) using a strategic a plan to create an annual work plan that specifies identified tasks, roles and responsibilities, 3) considering and evaluating alternate actions and specific control methods, 4) conducting pre and post-monitoring, 5) using the MISIN treatment tracker and 6) securing additional funding and support for future work. In fact, Nick is hosting the 2019 annual Michigan Invasive Species Coalition (MISC) field event in the eastern Upper Peninsula the week following the submission of this report. He will lead CISMA coordinators across the state on a tour to learn about start-to-finish invasive species control projects implemented in the eastern Upper Peninsula through partnerships in the Three Shore CISMA area. Each project will be discussed from “*the initial point of identification of an infestation, to the wrap up of a treatment/permit report, and everything in-between*”. It is a privilege to work with Nick and we will continue our on-going discussions regarding the use of the *Island Database*.

References

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