Advancing 100% Great Lakes Fish Utilization

Recommendations for Government & Industry

PREPARED BY

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Executive Summary

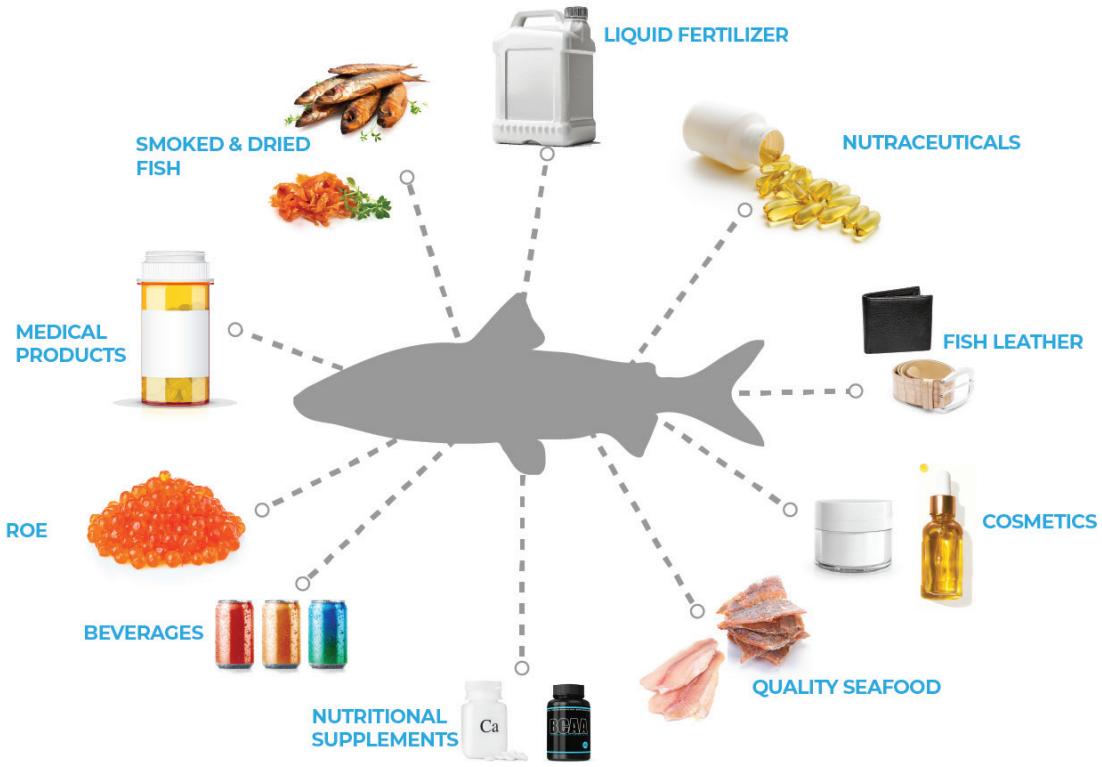
Key Recommendations by Stakeholder Group:

Stakeholder Group	Recommendation	Context (Short Summary)
Government and Industry	**Formalize a Great Lakes 100% Fish Cluster**	Establish a long-term regional network to coordinate full fish utilization efforts—convening stakeholders, driving R&D and innovation, sharing data, and promoting new 100% fish products.
State & Provincial	**Support the Launch of a Regional Fish Meal & Oil Facility**	Support and incentivize a large-scale fish meal and oil processing plant as a cornerstone for using fish byproducts. This facility would turn "waste" into valuable feed and fertilizer or other products, generate jobs and revenue, and enable full utilization across the Great Lakes region.
State & Provincial	**Modernize Regulations & Lead by Example**	As needed, update regulations to remove barriers to reusing fish byproducts (e.g. allow application of fish-based soil amendment) and use government purchasing power (e.g. buying fish-based fertilizer where appropriate) to build markets for 100% fish products.
Federal (U.S. & Canada)	**Target Funding to 100% Fish Projects**	Prioritize using existing grant and loan programs for initiatives that convert fish waste into value. By dedicating resources (e.g. USDA, NOAA, DFO programs) to fish byproduct utilization, federal governments can help jump-start new processing facilities and product lines in this emerging sector.
Industry (Fish Processors and Value Chain Partners)	**Use the 100% Fish Toolkit & Partner**	100% Fish Pledge signatories should assess their fish byproducts using the 100% Fish Toolkit and collaborate with partners (e.g. other firms, Sea Grant, researchers) to find uses and markets for these materials.
Industry (Fishing & Processing)	**Collaborate on Byproduct Logistics**	Work together (through partnerships, co-ops, or associations) to pool fish byproducts for efficient collection and processing—sharing storage/freezing, coordinating transport, and co-investing in equipment—so even small producers' byproducts can be aggregated and utilized.
Industry (Fish Processors and Value Chain Partners)	**Pilot New Value-Added Products**	Experiment with small batches of new products made from fish byproducts (e.g. pet treats from fish skin, fish-based compost, or leather goods). These pilots help test markets and technologies, building momentum for larger-scale ventures.

Introduction

The 100% Great Lakes Fish Initiative seeks to fully utilize all parts of commercially caught, aquaculture-raised, and processed fish in or from the Great Lakes region. This initiative aims to reduce waste, generate economic value, and promote sustainability across the fisheries value chains. Today, approximately 60% of each fish—including heads, bones, skins, and viscera—is not consumed by people as food and often becomes waste. More than 40 companies have now signed onto the 100% Fish Pledge, committing to achieve full utilization.

This document outlines recommendations to support full utilization in the Great Lakes region. The core recommendation of the report is to establish a Great Lakes Fish Cluster organization to provide ongoing coordination and innovation. The report also outlines a series of near-term recommendations for State and Provincial Governments, Federal Governments (U.S. and Canada), and Industry. While each group plays a unique role, collective action across all levels—government, industry, and individual business—is essential to achieving 100% utilization.



A Great Lakes Fish Cluster: Long-Term Coordination and Innovation

To sustain and amplify the progress made through the 100% Great Lakes Fish initiative, we recommend establishing a **Great Lakes Fish Cluster** – a formal network dedicated to advancing full fish utilization across the region. This Cluster will take on longer-term roles that individual stakeholders cannot easily undertake alone, ensuring momentum continues toward 100% utilization. The Great Lakes Fish Cluster would bring together State and Provincial resource managers, economic development officials, Tribal representatives, and industry leaders to prioritize actions, share knowledge, track progress, and align investments across the region. The Cluster's roles would include:

i. **Convening 100% Fish stakeholders**: Serve as the central forum for all participants in the region's 100% Fish effort. Already, 44 companies and organizations have signed the 100% Fish Pledge and are actively engaged. The Cluster will regularly bring these pledge signatories together (along with Tribes, State and Provincial agencies, and others) to share updates, collaborate on solutions, and maintain momentum toward full utilization.

ii. **R&D and Technology Acceleration**: Support collaborative research and development so that promising ideas become commercial realities. The Cluster would partner with research institutions, industry, and others to help secure funding to pursue next-generation product development. The Cluster would lead feasibility studies and prototyping. Ensuring connectivity to global innovation networks (for instance, engaging with the Iceland Ocean Cluster and other international partners) will help bring in new ideas and speed up commercialization of research.

iii. **Regional Data and Information Sharing**: Serve as a regional knowledge exchange platform. The Cluster would maintain data on regional fish byproduct availability (volumes, locations, trends), processing/utilization capacity, and byproduct utilization in the region. The Cluster would also track metrics on waste reduction, economic impact, and utilization rates to inform policy and measure progress toward the 100% goal.

iv. **Education and Outreach**: Promote success stories, facilitate tasting events and demonstration projects (for example, showcasing fish-based ingredients in pet foods or fertilizers). A concerted education and outreach effort is critical to promote engagement among supply chain partners, demonstrate opportunities for new entrants, and to help build public awareness. The Cluster can ensure greater visibility for this new sector.

v. **Training and Workforce Development:** Coordinate with universities, Sea Grant programs, and industry to encourage training in fish byproduct processing techniques (e.g. fish leather tanning, hydrolysate production, composting). The Cluster can host workshops, publish best-practice manuals, and support curriculum development to build the skills needed for a 100% fish economy.

vi. **Long-Term Strategy and Financing**: The Great Lakes Fish Cluster would continuously refine the region's roadmap to full utilization. It can identify policy needs as markets evolve (e.g. if new regulations or standards are required for novel products) and identify new investment opportunities that may require cross-sector partnership or public sector support. The Cluster should develop a sustainable structure to ensure its viability and utility over time.

Recommendations for State and Provincial Governments

State and Provincial governments are key to creating the enabling environment and infrastructure for full fish utilization. Their leadership can catalyze investment in processing capacity, adjust policies, and promote market demand. Priority actions for States and Provinces include:

Catalyze a Regional Fish Meal & Oil Facility

Support the development of a dedicated fish meal and oil processing plant to handle the region's fish byproducts. Given current catch and processing volumes, the Great Lakes region will likely only sustain one such large-scale facility, so it must be strategically located for maximum impact. Focus on a location with ample supply within roughly a 300-mile radius and an existing base of fish processing activity to ensure economical transportation. Potential sites identified include northwest Lower Michigan (e.g. the Mackinaw City or Traverse City area), southwestern Ontario (Wheatley or Leamington area), the Metro Detroit region, or Door County, Wisconsin.

A State or Province, or a multi-jurisdictional partnership, should offer targeted incentives – for example, grants, low-interest loans, or tax credits – to help attract private investors and incentivize the startup of such a facility (equipment and construction costs could be in the low millions of dollars). Getting a fish meal and oil plant up and running in the near term would create a cornerstone for 100% utilization, turning tons of fish heads, entrails, and other byproducts into valuable commodities like protein-rich meal and omega-3 fish oil for animal feed, pet food, fertilizers, and other products. This plant would serve as an aggregation point for material from across the region, with the capability to separate and divert any inputs that become more valuable for other specialized uses down the road.

Why is this facility so critical?

In late 2024, feed-grade fish oil was trading around $3,600 (US) per ton and fish meal for about $1,800–$2,000 (US) per ton – clear evidence of strong market demand for these outputs. With a steady supply of raw material, analysts project that a Great Lakes fish meal/oil operation could achieve a full return on investment in roughly three years. However, such plants typically require very high throughput (on the order of 100,000 pounds of raw fish offcuts per day) to operate profitably. This reality underscores the need for a single regional facility that can pool inputs from many sources. By "crowding in" supply and offering a guaranteed outlet for fish processors' byproducts, a regional fish meal and oil plant would turn what is currently a disposal problem into an economic opportunity. State and Provincial support is essential to de-risk the project and ensure this critical piece of infrastructure is established soon.

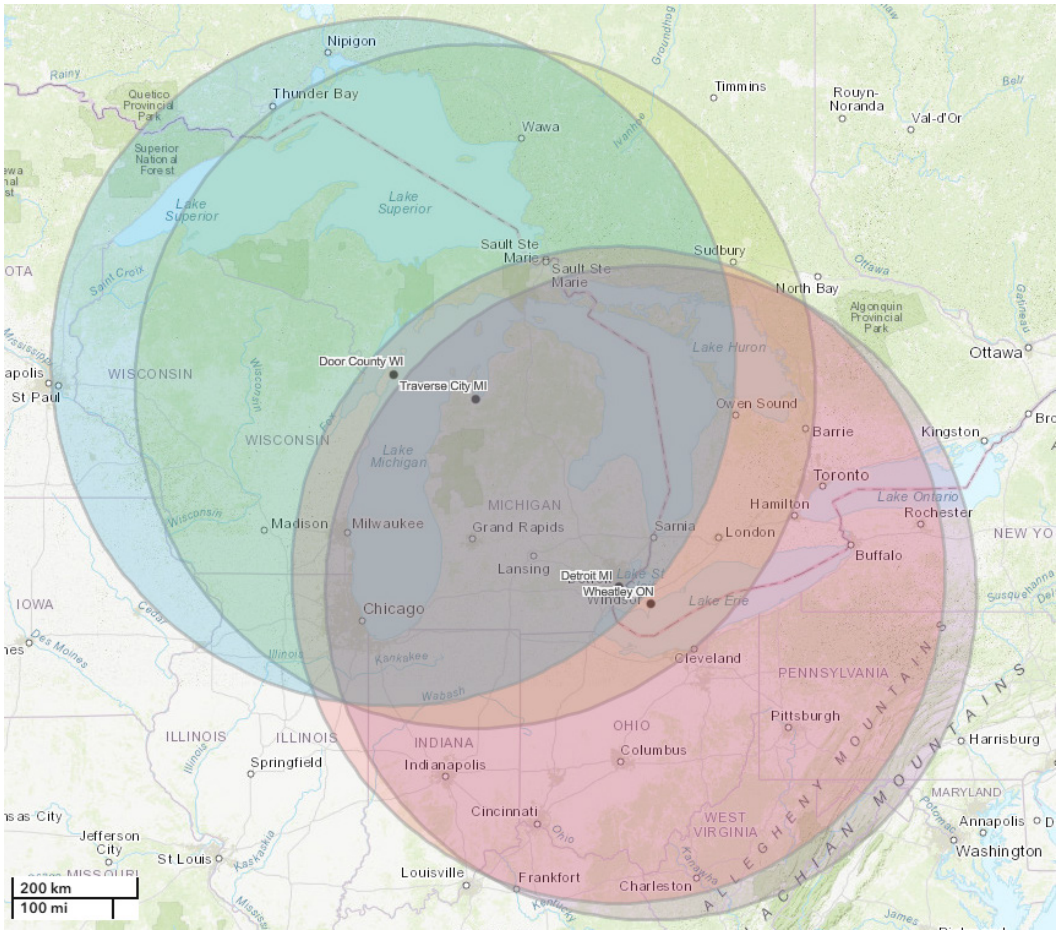


Figure 1: Circles with 300-mile radius drawn around potential site locations

Modernize Waste Regulations and Lead by Example

Work with environmental, agricultural, and public health agencies to update regulations that may inadvertently hinder the reuse of fish processing byproducts. In some jurisdictions, rules classify fish byproducts similarly to material generated by wastewater treatment plants and therefore prohibit their use as a soil amendment. States and Provinces should review such policies and develop science-based guidelines to enable the use of fish byproducts for soil amendment where it can be done safely.

Separately, State and Provincial governments can lead by example through "sustainable procurement" that can help stimulate demand and help create early markets for 100% fish products. For example, a State or Provincial parks department could modify its procurement guidelines to prefer locally produced fish-based fertilizers for landscaping public parks and highway roadsides, when price and quality are comparable to traditional products. By actively choosing products made from Great Lakes fish byproducts, public agencies not only create demand but also send a strong signal of confidence in the safety and quality of these goods. This helps overcome any stigma associated with "waste" materials and accelerates acceptance in the broader market.

Recommendations for Federal Governments (U.S. and Canada)

Federal support in the U.S. and Canada can help provide the necessary funding, policy alignment, and national visibility to scale up 100% fish utilization in the Great Lakes region. Key federal actions include:

Expand and Target Funding Programs

Mobilize existing federal funding streams in both countries to directly support innovation in fish byproduct utilization by ensuring grants are made for full fish utilization projects. For example, in the U.S., the US Department of Agriculture (USDA) Value-Added Producer Grants or Rural Development loans could help a processor buy a fishmeal dryer or freezer units for byproducts. The National Oceanic and Atmospheric Administration (NOAA) can use the Saltonstall-Kennedy (S-K) Grant Program – which already funds fisheries innovation – to call for 100% fish proposals related to waste reduction and byproduct commercialization in the Great Lakes region. Similarly, NOAA's Sea Grant could dedicate research or extension grants toward byproduct utilization technologies (such as new fish-based bioplastics or bait alternatives made from scraps). In Canada, Fisheries and Oceans Canada and other federal entities should use the Fisheries and Aquaculture Clean Technology Adoption Program or the joint federal-Provincial Canadian Fish and Seafood Opportunities Fund to support companies and projects finding new uses for Great Lakes fish byproducts.

If current funding levels are insufficient or not flexible, federal officials might consider increasing the funding pool or creating a special initiative focused on sustainable fish waste management. The key is to make sure that entrepreneurs and researchers working on 100% fish utilization have access to federal funding support which is often critical to early-stage innovation. A targeted federal funding push in the next couple of years could jump-start the development of new product lines or novel processing techniques that will then lead to larger, private sector investment in the future.

Engagement with Tribes and Tribal-Affiliated Organizations

Relevant federal-recognized Tribes have a cultural and historical relationship to Great Lakes fisheries and, today, relevant federally-recognized Tribes and inter-Tribal organizations have management authority over and economic interests in them. These groups have participated in the 100% Great Lakes fish project team and related programming. Continued engagement in future work benefits all parties and can play an important role in long-term success.

Recommendations for Industry

Within the commercial fish processing and aquaculture industries, companies stand to significantly gain from full utilization of their harvest. Embracing innovation and partnership will be key to turn waste into profit. We recommend that companies engaged in the region's fisheries take the following actions:

Utilize the 100% Fish Toolkit and Build Partnerships

Companies that have joined the 100% Great Lakes Fish Pledge (44 signatories to date), in particular, are encouraged to use the 100% Fish Toolkit to systematically audit operations and map out all outputs (for example, heads, frames, skin, scales, viscera), along with potential value-added uses for each of those byproducts.

After pinpointing byproduct streams, companies should seek out partnerships to help put those materials to use where they are unable to do so independently. This can include collaborating with other Pledge signatory companies, Sea Grant extension agents and university researchers, or economic development organizations that might offer technical expertise, funding opportunities, or connections to buyers. For example, a processor with a surplus of fish skins might partner with a startup or researcher exploring collagen extraction or fish leather tanning. A company with excess fish trimmings could connect with a pet food manufacturer interested in fish meal or a composting facility that can turn byproducts into organic fertilizer.

Collaborate on Material Handling and Logistics

Companies should work together through their associations or informal networks to improve how fish byproducts are collected, stored, and transported. Many firms individually don't generate enough waste to efficiently valorize it, but by pooling resources they can overcome that hurdle. In the short term, this could mean arranging shared cold storage space for accumulating byproducts from multiple processors before pickup, coordinating pooled transportation (e.g. hiring a single refrigerated truck to serve several small processors on a schedule, instead of each discarding or sporadically hauling waste themselves), or jointly investing in preprocessing equipment at a cooperative site.

Additionally, industry players should begin discussions about joint ventures on larger projects like the fish meal/oil plant. For example, a consortium of fish processing companies could unite to supply it or even co-own it. This cooperation lowers costs per company and maximizes the amount of fish byproduct that is preserved for conversion into something useful.

Pilot New Value-Added Products in Small Batches

Over the next several years, companies should experiment with small-batch products and prototype development. Low-risk pilots can support innovation and marketing. For instance, processors might test small runs of fish jerky or dog treats made from fish skin or develop fish-based compost or fertilizers made from viscera or bones. Other opportunities include working with a local chef to feature fish head dishes, or with an artisan to craft fish scale jewelry. The key is to explore feasibility, costs, consumer interest, and regulatory questions on a manageable scale. These pilots will provide valuable insights into what is practical and promising for future investment.

Conclusion

The recommendations above provide a practical and specific roadmap for increasing value, reducing waste, and building new market opportunities from the Great Lakes region's fish. By taking coordinated action, governments, industry, and other partners can further position the region as a global leader in sustainable fish utilization. The opportunity is clear and compelling: to turn what was once underused or discarded into economic, environmental, and even cultural value. If these recommendations are fully implemented, we will strengthen the regional economy, reduce environmental burdens, and honor the fish we harvest by ensuring every part is put to use. In doing so, we also secure a more resilient and innovative future for the region's fishing communities and the broader ecosystem that supports them.

Photo Credit: Presteve Foods