THE GREAT LAKES FISHERY RESEARCH AUTHORIZATION ACT [H.R. 1023]

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and
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THE VALUABLE GREAT LAKES FISHERY

Chairman Huffman and Mr. McClintock, thank you for inviting me to appear before this committee to discuss Great Lakes Fishery Research Authorization Act (H.R. 1023), introduced by Representatives Mike Quigley and Fred Upton. My name is Seth Moore. I am director of biology and environment for the Grand Portage Band of Lake Superior Chippewa. I also serve as a member of the Council of Lake Committees, a group of senior tribal, state, and provincial fishery managers from the Great Lakes region who depend on science as the foundation for fishery management decisions. The Council of Lake Committees is a strong supporter of the U.S. Geological Survey's work, has a formal memorandum of agreement with the USGS for Great Lakes science, and has endorsed the Great Lakes Fishery Research Authorization Act.

The Great Lakes fishery has been important for as long as humans have inhabited the region. Fish provided a "daily manna" (in the words of Jesuit missionaries) for native indigenous populations and the fishery was a major reason why the region was attractive to European settlers starting more than two centuries ago.

Today, the Great Lakes fishery is an economic powerhouse. The lakes comprise more than three-quarters of North American's surface freshwater and is a source of drinking water for tens of millions of Americans and Canadians. Consider some statistics:

- The lakes contain nearly 5,000 miles of US coastline.
- The fishery generates $3 billion in retail sales from the Great Lakes recreational, commercial, and tribal US fisheries, which results in an at least $7 billion regional economic impact.
- Nearly 1.8 million anglers fish on the Great Lakes.
- More than 50,000 jobs are directly supported by the U.S. Great Lakes fishery.
- The Great Lakes support approximately 1,900 charter boat operations.
- Of the top 10 states ranked by angler expenditures, 5 are Great Lakes states. Of the top 10 states ranked by number of non-resident, visiting anglers, 4 are Great Lakes states.

Economics, of course, cannot fully account for the value of natural beauty, culture, quality of life, and many other attributes that the lakes offer. This value is in jeopardy because science and technology are not keeping up with management needs. The Great Lakes Fishery Research Authorization Act addresses that threat and I urge its passage.

FEDERAL SCIENCE ON NATURAL RESOURCES AND THE ENVIRONMENT IS A TRUST RESPONSIBILITY OF THE FEDERAL GOVERNMENT TO THE TRIBES THAT SIGNED TREATIES RESERVING RIGHTS TO HUNT, FISH, AND GATHER.

- Treaty-reserved rights require that sustainable populations of subsistence species are present and in quantities that allow for exercise of those rights.
- Tribal management of Great Lakes and its watershed occurs over more than 60% of the Great Lakes basin.
- Commercial and subsistence fisheries require effective research and management to enable sustainable fish stocks into perpetuity.
- Department of Interior has a science arm, U.S. Geological Survey, that conducts research on Great Lakes Fisheries.

GOAL: DEVELOP USGS POLICY AND FUNDING FOR AUTHORIZATION OF FISHERY RESEARCH IN THE GREAT LAKES AND TO SUPPORT COLLABORATION AND CONSULTATION WITH FEDERALLY RECOGNIZED TRIBES TO DELIVER ON ITS TRUST RESPONSIBILITY TO TRIBES.

THE GRAND PORTAGE BAND OF LAKE SUPERIOR CHIPPEWA

This subcommittee is likely quite familiar with state and federal management authority to govern fisheries in the United States. Perhaps less familiar is tribal management in the Great Lakes region. Tribes, being sovereign, hold authority to manage the fisheries of their waters and on reservation. In the Great Lakes, the federal government entered into treaties with Native American Indians in 1836, 1837, 1842, and 1854. In these treaties, tribes maintained their fishing and hunting rights; the treaties serve as the foundation for tribal management authority in ceded regions.

Importance of Great Lakes fisheries to tribes and trust responsibility

Tribal fishery management authority overlaps in many respects with state authority, as both states and tribes regulate harvest, conduct assessment activities, enforce regulations, and undertake many similar day-to-day activities in the same waters. Great Lakes tribes signed treaties of 1836, 1837, 1842, and 1854 reserving rights to hunt fish and gather in those ceded lands and the waters of the Great Lakes. The Great Lakes ceded territories comprise about 60% of the Great Lakes basin (Figure 1) and in those areas there is a right to harvestable and sustainable fisheries. Thus, tribes in the Great Lakes region sit at the management table with the states, and all jurisdictions collaborate to co-manage in shared waters.

Figure 1. Treaty Ceded territories within the Great Lakes Region comprise about 60% of the Great Lakes basin. Federally recognized tribes have expressly reserved rights to hunt, fish, and gather within those Ceded areas and the Great Lakes.

FISHERY MANAGEMENT IS UNIQUE IN THE GREAT LAKES REGION

Although I work for the Grand Portage Band to manage fisheries in 1854 treaty waters, I also participate in multi-jurisdictional governance of Great Lakes fisheries. Great Lakes fishery management occurs under a governance milieu that is distinct from fishery management on the East, West, and Gulf coasts of the United States. In the Great Lakes region, fishery management falls under the authority of the states, the Province of Ontario, and the U.S. tribes. Jurisdictional boundaries meet each other in the middle of each lake. "Federal waters" do not exist in the Great Lakes (unlike in the marine environment where federal authority exists from 12 to 200 nautical miles), and, thus, federal agencies do not have fishery management authority in the Great Lakes.

On July 9, 1070, when President Nixon created the National Oceanic and Atmospheric Administration (NOAA) by executive order, he transferred federal fishery management authorities from the Department of Interior to the Department of Commerce. Importantly, Mr. Nixon also explicitly kept the status quo in the Great Lakes with respect to the work of the Department of Interior, given it would have been inappropriate for NOAA to exert management authority in the Great Lakes region. Thus, by virtue of the major governance differences between the Great Lakes and the saltwater regions of the United States, the Great Lakes evolved on a different management track than in the regions where the federal government has management authority.

Even so, both the Great Lakes and saltwater coasts have a need for cross-jurisdictional collaboration. In the saltwater environments, the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801) supports science and governance arrangements called "regional

councils" that involve federal and state fishery managers. In the Great Lakes, the 1954 Convention on Great Lakes Fisheries directed the bi-national Great Lakes Fishery Commission to "establish and maintain working arrangements" among the jurisdictions. The commission maintains those arrangements through "lake committees" for each lake, which operate under a 1981 agreement called A Joint Strategic Plan for Management of Great Lakes Fisheries.

Through the lake committee structure, officials from the Province of Ontario, each of the eight Great Lakes states, and three U.S. intertribal authorities meet to make management decisions. Under the Joint Strategic Plan, signatory agencies pledge to identify and share data and information, to use those data to identify share objectives, to develop plans to reach their shared objectives, to reach consensus on any major fishery initiative that one or more jurisdiction wishes to initiative, and to implement what they agree to undertake.

Federal agencies, although lacking direct fishery management authority, are also signatory to the Joint Strategic Plan, as they implement programs that are essential to Great Lakes sustainability and restoration. For instance, the U.S. Fish and Wildlife Service stocks native fish for restoration purposes; the service collaborates with tribal and state agencies in that function through the Joint Strategic Plan. The National Oceanic and Atmospheric Administration conducts large-scale limnologic research. Most relevant to this testimony, the U.S. Geological Survey provides scientific information that is at the very foundation of most fishery management decisions.

In summary, although fishery management authority in the Great Lakes is diffused among many non-federal authorities, cooperation across borders and jurisdictions has existed since the 1950s consistent with the Convention on Great Lakes Fisheries and occurs formally through the Joint Strategic Plan for Management of Great Lakes Fisheries of 1981. Every federal, state, tribal, and provincial participant in the governance process has a key role to play; science underpins management actions.

THE U.S. GEOLOGICAL SURVEY'S WORK IS ESSENTIAL

The U.S. Geological Survey's presence in the region traces its roots the 1920s when the federal government, through the Department of Interior, established a fishery laboratory to help in the management of severely depleted Great Lakes fisheries. The Department of Interior has maintained its presence in the region throughout the decades, even after the creation of NOAA in the 1970s. In the early 1990s, the science and research functions for the Department of Interior—including those in the Great Lakes region—were shifted to a newly created National Biological Service, which eventually found a home in the U.S. Geological Survey.

The U.S. Geological Survey is the lead agency in terms federally generated fishery science. The USGS Great Lakes Science Center (GLSC), and its satellite offices throughout the basin, provide lake-wide, multi-jurisdictional science for the sustainable management of the commercial, tribal, and sport fisheries. The USGS has one large oceanographic-size science vessel for each of the five Great Lakes. The vessels conduct fishery science in all eight Great Lakes states, foundational to most management decisions on these vast inland freshwater seas

The USGS's work is essential to Great Lakes fishery management. Without the USGS, fishery management decisions would be made in the dark. Managers would have little understanding about such matters as the status of the forage base in the lakes. Managers would have limited knowledge about the impact of invasive species that infest our waters. Managers would know little about the spawning behavior of native fish. Managers would be ignorant of key measures that need to occur to sustain our fish stocks.

And yet, amazingly, the U.S. Geological Survey's work in the Great Lakes region, as essential as it is to the $7 billion fishery and the maintenance of a cohesive governance structure, has never been formally authorized by Congress. The Great Lakes Fishery Research Authorization Act (H.R. 1023) addresses that oversight and brings Great Lakes science into the 21st century.

Put another way, The Magnuson-Stevens Fishery Management and Conservation Act provided the authorizing legislation for NOAA science and management of fisheries in saltwater. No analogous legislation or funding has been developed to support the USGS's work in the Great Lakes.

THE GREAT LAKES FISHERY RESEARCH AUTHORIZATION ACT WOULD ENHANCE SCIENCE, TECHNOLOGY, AND MANAGEMENT

The Great Lakes Fishery Research Authorization Act recognizes the fact that Great Lakes fishery science is essential to managing and improving the $7 billion fishery. The fishery is at risk without more attention and dedication to science. This essential legislation would:

- **Accelerate development of tools, technologies and science to control invasive species and restore native species** The GLSC's has three world-class aquatic laboratories in the Great Lakes region: Cortland, New York (Lake Ontario and Lake Erie), and Ann Arbor and Millersburg, Michigan (Lake Huron, Lake Michigan, and Lake Superior). Currently, because of a lack of funding, the laboratories are not operating at their full potential. The unused capacity would be leveraged to advance science on control techniques for invasive species and restoration strategies for native species. Target invasive species include sea lamprey, dreissenid mussels, Asian carps, and *Phragmites* (common reed). Target native species include lake whitefish, coregonine prey fish species (e.g., cisco, bloater), Atlantic salmon, and lake sturgeon.

- **Programmatically implement advanced autonomous and remote-sensing technologies currently used in salt waters but only opportunistically deployed in the Great Lakes.** The GLSC's modernized, five-vessel fleet conducts surveys that are limited spatially (a few dozen short transects on lakes the size of New England states), temporally (only during ice-free months), and operationally (staffing and maintenance are costly). With the authorization provided by the Great Lakes Fishery Research Authorization Act, efficient autonomous and remote-sensing instrumentation would be deployed in the field and on the vessels to exponentially increase the amount of information gathered. Importantly, the act would expand the use of **Hydroacoustic Technology** (underwater sound) for prey fish assessments and understanding of food web interactions; expand the use of **Acoustic Telemetry** (fish tracking) networks; and implement technologically advanced **Stock Assessment Strategies**. The act also would allow for the use of **Autonomous Underwater Vehicles** (AUVs) to

gather information at much larger spatial scales and under challenging environmental conditions, create **Biological Observation Networks** (BON) of sensors linked by cables to gather information over much longer temporal scales, establish fixed-location **Environmental Sample Processors** (ESPs), maintain **satellite linkages** to deliver remotely sensed information in real time, and authorize technical support to manage **Big Data** to couple robotic engineering with science needs.

- **Restore loss of basic fishery science capabilities.** Budget reductions and reprogramming at the national level have resulted in the loss of 14 Full-Time Equivalent positions. The act would restore a full science network, ensuring the quality delivery of science.

The USGS GLSC fisheries science program is funded annually at the discretion of the USGS as a mix of three nation-wide programs: (1) Fisheries, (2) Status & Trends, and (3) Invasive Species. These programs appear as budget line items within the USGS Ecosystem Mission Area's overall budget. There is no guarantee the Great Lakes will receive adequate funding without a dedicated authorization. Due to the lack of authorization, the mix of funding streams is subject to shifting national priorities. For example, in 2018, $1 million nation-wide was redirected from the USGS Fisheries program budget to the USGS research on unconventional oil and gas, costing the Great Lakes region more than $200,000 in important science on Great Lakes fisheries.

Budget competition and piecemeal funding prevents USGS GLSC from deploying an Advanced Technologies Program to answer increasingly difficult questions in a timely and cost-effective manner. The use of advanced technologies, such as autonomous underwater vehicles, in the Great Lakes is currently funded opportunistically by soft money, in stark contrast to their increasing use on the saltwater coasts under the Magnuson-Stevens Fishery Management and Conservation Act. The Great Lakes are simply left behind.

Costly, manned research vessels and traditional sampling methods, while essential, are limited in their spatial and temporal coverage. With lakes the size of New England states, month-long vessel surveys only begin to describe the status and trends of the fishery. Better technology is needed to cover the enormous geography of the Great Lakes. Often for five months out of the year, ice cover prevents the use of research vessels, leaving state, provincial, and tribal managers in the dark about critical life stages of native species.

Advanced technologies enable scientists to deliver near-real-time data on quickly emerging crises, such as potential fisheries crashes or new and unwelcome invasive species. The technology would allow managers to act intelligently within small windows of opportunity. Erosion of science budgets and key science positions has led to increased use of temporary, contract technicians. Science staff turnover, without 21st century replacement skill sets, has impacted continuity in operations and has increased the risk of compromised data quality. It has also led to increased training costs and exposure to elevated safety risks.

The USGS GLSC's long-term datasets stretch back to the mid-20th century. These datasets have been essential for understanding long-term trends in the Great Lakes fisheries. However, the Center is in serious danger of losing the capability to continue these datasets uninterrupted with high-quality information, analyze them accurately, and respond to quickly-emerging fisheries management questions. The USGS GLSC needs authorizing legislation and approximately $17.5

million annually to conduct fishery research throughout the five Great Lakes to support wise fishery management decisions. The authorized amount in the bill, $17.5 million, is approximately a $9 million increase over recent appropriated budget allocations provided to USGS. The Great Lakes states, partners, and bi-partisan congressional offices have long recognized the budget shortfall for this important science program.

This legislation enjoys widespread support because it is vital to current management and to the very future of our resource. My colleagues from state and tribal management agencies, throughout the basin, have endorsed the bill because it makes fishery management decisions better, more defensible, and sustainable. Stakeholders, including sport and commercial fishers and environmentalists, support this bill because it means the fishery will be well managed. Local leaders want this legislation to pass because when the Great Lakes are healthy, their communities thrive.

CONCLUSION

The federal government has made tremendous investments in the Great Lakes, starting in full-force in 1972 under the Great Lakes Water Quality Agreement and continuing today under that agreement, the Great Lakes Restoration Initiative, and other federal laws like the Clean Water Act and Superfund. The tribes, the states, and the Province of Ontario, also, collectively invest tens of millions of dollars in fishery management, research, and assessment. The governance structure that has existed since the 1950s ensures these investments are well-made and benefit the people of the region.

These investments, however, would be much better supported with modern, more vigorous effort from the USGS GLSC. The USGS is a valued partner in the region and the science it generates is the basis for much of what we enjoy in terms of cooperation and economic value of the fishery.

The jurisdictions are deeply concerned about the gap between what is needed for the USGS to do its job versus what is allocated. The Great Lakes Fishery Research Authorization Act does much to assuage those concerns. The act places the Great Lakes on a par with this nation's saltwater regions. It complements federal, state, and tribal investments in the ecosystem. It brings the basin into the 21st century in the application of the newest technologies for fishery restoration.

Through the lens of supporting treaty rights to the sovereign Indian nations that agreed to cede land to the United States government, it is paramount that authorization is passed to enable necessary research on the fisheries on which tribal nations reserved rights. Passing of the legislation will allow the federal government to begin to deliver on the federal trust responsibility to those sovereign tribes. The key messages are summarized below.

- A Federal Trust responsibility exists to conduct science on natural resources for which harvest rights are reserved under treaties with the U.S. Government and sovereign Indian tribes.
- Department of Interior's U.S. Geological Survey is the science arm of the department and owns the scientific role in delivering the trust responsibility for science to support sustainable Great Lakes fisheries.

I thank the committee for holding this important hearing and urge the passage of the Great Lakes Fishery Research Authorization Act.