



## Lake Erie Biological Station

**The USGS Great Lakes Science Center is dedicated to providing scientific information for restoring, enhancing, managing, and protecting living resources and their habitats in the Great Lakes region. The USGS Great Lakes Science Center is headquartered in Ann Arbor, Michigan, and has biological stations and research vessels located across the Great Lakes Basin.**



### *The Station*

Lake Erie Biological Station (LEBS), located in Sandusky, Ohio, is a field station of the USGS Great Lakes Science Center (GLSC). LEBS was established by congressional action in 1957 as part of the GLSC. Initially supervised by the U.S. Fish and Wildlife Service, the GLSC and LEBS transferred to the USGS in 1996. LEBS serves the needs of resource managers as defined in a memorandum of understanding between the GLSC and the Council of Lake Committees.

LEBS is the primary federal agency for applied fisheries science excellence in Lake Erie. LEBS conducts cutting-edge research in the fields of fisheries ecology and aquatic biology to support bi-national management of the most valuable fishery resources in all of the Great Lakes. To accomplish its mission, the station has full-time research fish biologists, various science support staff, and a large research vessel (R/V *Muskie*).

### *Research*

Research at LEBS focuses on a wide array of issues important to state, federal, tribal, and Canadian

natural resource managers throughout the Great Lakes.

Lake Erie is the most productive of the Great Lakes with a fish harvest that is equal to or greater than all other Great Lakes combined. Lake Erie also has the widest range of temperature extremes, and exhibits an expansive seasonal “dead zone” where bottom waters are depleted in oxygen. Lake Erie’s unique and complex ecosystem presents major challenges to resource managers, and LEBS scientists work at the forefront of key issues in collaboration with partner agencies.

A major aspect of LEBS research is large-scale, long-term, interagency studies of population dynamics of dominant predators such as yellow perch, walleye, and lake trout and their prey species. This research supports population assessments to promote fishery sustainability, contributes to improving ecosystem health, and advances our understanding of invasive species impacts. LEBS researchers have documented the arrival of several invasive species in Lake Erie (e.g., bloody-red mysid), and have developed novel information on the risk that new invaders (e.g., Asian





carps) might establish populations in the lake. LEBS also works closely with partner agencies to improve hydroacoustic survey methods and to develop trawl and gillnet calibration methods for integrating diverse multi-agency survey datasets. In addition, LEBS addresses emerging issues of climate change impacts on Great Lakes food webs through comparative field investigations of different ecosystems within Lake Erie. This information is essential for resource managers to respond and adapt to climate and ecosystem changes that affect valuable living resources and their habitats in the Great Lakes region.

### Facilities & Vessels

LEBS is co-located with several other federal agencies at NASA Plum Brook Station. LEBS laboratory facilities are equipped to conduct a wide range of activities, including: fish necropsy, taxonomy, age estimation, fecundity analysis, stable isotope sample preparation, diet analysis, and zooplankton identification.

In 2011, a new 70 ft aluminum-hulled vessel, the R/V *Muskie*, replaced the 45 ft steel-hulled *Musky II* (built in 1960). The *Muskie* is the keystone platform to LEBS

deepwater science activities. The state-of-the-art work platform has a unique hull design that optimizes speed, safety, and scientific sampling capabilities. Improvements on the *Muskie* include: modern electronics, enhanced over-the-side handling equipment, and through-hull hydroacoustics. LEBS also operates a 26 ft powerboat to conduct nearshore research.

### Partners

LEBS collaborates with a diversity of management and research partners. The principle partners of LEBS are the Great Lakes Fishery Commission and the Council of Lake Committees, including the Lake Erie Committee and Lake Erie Technical Committee. LEBS has strong ties to regional agencies, including: Michigan Department of Natural Resources, New York State Department of Environmental Conservation, Ohio Department of Natural Resources, Ontario Ministry of Natural Resources, and Pennsylvania Fish & Boat Commission. LEBS also partners with universities and assists federal agencies, such as: U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, NOAA, Fisheries and Oceans Canada, Environment Canada, and other USGS science centers and field stations.



*The R/V Muskie, the keystone platform for Lake Erie Biological Station deepwater science.*

