



**SCIENTIFIC & EDUCATIONAL PROJECT SUPPORT
FOR THE GREAT LAKES**

Capabilities

The Noble Odyssey Foundation
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Organization and Mission

The Noble Odyssey Foundation (NOF) is a Michigan 501c3 non-profit organization that advances public knowledge of the Great Lakes through seagoing education and research projects. Our professional staff, headed by Capt. Luke Clyburn, brings together scientists, educators, volunteers and youth, including Sea Cadets, to conduct or support underwater projects on board the Foundation's research vessels. Project results are conveyed to the public through documentary films, publications, exhibits and lectures presented throughout the Great Lakes region. Through nationwide training of students as research and archaeological divers, the foundation also develops an appreciation for Great Lakes resources and promotes their wise stewardship among America's future leaders.

Professional Services

The Foundation provides a unique combination of services in support of scientific and educational projects throughout the Great Lakes.

- Nearshore and offshore vessel facilities for academic and applied research;
- AAUS-certified master diver support for underwater projects;
- High-definition underwater photography and videography services;
- Underwater survey technologies, including echo sounding and sidescan sonar;
- Over 15 years of experience in SCUBA diver training: PADI, SDI and AAUS certifications;
- Collaborative relationships with numerous scientists and educators in the Great Lakes Region;
- Interpretation of scientific information for the public.

Personnel

Key professional staff are currently three individuals:

Captain Luke Clyburn, President of NOF
Kathy Trax, Educational Coordinator
Elliott Smith, Ph.D., Science Advisor

Resumes of key staff are available on request.

Research projects involving NOF are often led by collaborating scientists from universities, corporations, museums, and government agencies. Some of these projects have been supported by grants from university, state, and federal sources.

The Foundation's mission has also been supported for over 40 years by numerous volunteer professionals who supervise field activities, operate and maintain vessels, manage logistics, and perform administrative tasks.

Young Naval Sea Cadets in training assist in nearly all field operations as ship's crew and divers under professional supervision.

Allied Organizations

The Noble Odyssey Foundation works closely with two partner organizations:

- Great Lakes Division, Sea Cadet Corps, a Michigan 501c3
www.greatlakesdivision.org
- Inter-Seas Exploration, Ltd., a Michigan for-profit company
www.interseasexploration.org

Past Affiliations with other organizations include:

- Michigan Great Lakes Protection Fund, Department of Environmental Quality (grant support)
- Michigan Sea Grant College Program (grant support)
- Oakland University, Research Committee and Department of Biological Sciences, Rochester, MI (grant support and logistical support)
- Lake St. Clair Fisheries Research Station, Fisheries Division, Michigan Department of Natural Resources (collaboration and logistical support)
- U.S. Geological Survey, Great Lakes Science Center, Ann Arbor, MI (collaboration and logistical support)
- Cranbrook Institute of Science (collaboration and exhibit support)
- Annis Water Resources Institute, Grand Valley State University (collaboration)

Current affiliations with other organizations include:

- American Academy of Underwater Sciences (AAUS)
- Scuba Diving International (SDI)
- Divers Alert Network (DAN)
- Professional Association of Diving Instructors (PADI)
- Thunder Bay National Marine Sanctuary and Underwater Preserve, NOAA (logistical support)
- Michigan Coastal Management Program (grant support)
- HYPACK, Inc. (echosounding technical support)
- Seaview Systems, Inc. (ROV technical support)
- Laboratory of Tree Ring Research, University of Arizona, Tucson (dendrochronology and ¹⁴C dating)
- The University of Michigan, project collaboration
- Alpena Community College, project collaboration

Facilities and Equipment

Vessels and other field gear owned and/or operated by NOF include:

- 80-ft. motor vessel, *Pride of Michigan* – former Navy YP
- 28-ft. motor vessel, *Souder* - Marinette Marine (aluminum hull)
- 28-ft. motor vessel, *Inter-Seas Explorer* – Pursuit Boats (fiberglass hull)
- 10-ft. rigid hull inflatable w/ 50 hp outboard – Avon Marine
- 18-ft. rigid hull inflatables (2) w/ 50 hp outboards – Zodiac & Wing
- Sidescan sonar – Sportscan Model, Shark Marine Technologies
- Echosounder system – Innerspace 455 with Trimble DSM 232 DGPS
- Underwater video camera system – Sony HVR-Z1U High-Definition
- Underwater 35 mm camera systems – Nikon D-200 & D-70
- Autel Robotics X-Star Quadcopter with 4K camera
- Air compressors (3) for dive tanks – Bauer, 5,000 psi
- Underwater communication systems (2-way)

Other specialized equipment may be obtained as required for projects.

Project Experience

Selected research projects conducted by NOF staff, with or without institutional collaborators, include:

- Island floristic and ecological studies, Lakes Huron/Michigan, 1979-1989
- Isle Royale *Emperor* wreck exploration and filming, Lake Superior, 1982
- Zebra mussel biological studies, Lake St. Clair, 1990-2004
- Freshwater Invaders investigation, Lakes Huron/Superior/Michigan, 1998
- Sanilac drowned forest investigation, Lake Huron, 1999-2001
- Zooplankton community structure studies, Lake St. Clair, 2000-2001
- Traverse Bay drowned channel exploration, Lake Michigan, 2004-2005
- Lake St. Clair aquatic vascular plant community studies, 2006-2007
- Middle Island Sinkhole exploration and mapping, Lake Huron, 2006-2009
- Huron Ridge geological and mapping studies, Lake Huron, 2007-2008
- Mackinac Channel bathymetric mapping, Straits of Mackinac, 2007-2009
- St. Ignace clamshell barge rediscovery, Straits of Mackinac, 2009
- Thunder Bay drowned forest investigation, Lake Huron, 2009
- Mackinac Island underwater cave reconnaissance, Lake Huron, 2010
- Underwater Investigations of Community-Sponsored Light Stations, 2015
- Survey of nearshore historic shipwrecks in Lake Huron, Michigan, 2017

Documentary Films

The following documentary films have been produced by NOF in collaboration with Bob Kreipke, Director, Janine McFadden, Producer, and RingSide Creative. Teacher guides are also available for the more recent films. The films are now available online (vimeo.com/album/5044491) and on DVD

(www.nobleodyssey.org). *If necessary, please paste these links into your browser.*

- **Angels of the Sea**, 1982 (DVD, 25 min.) An exploration of the shipwreck *Emperor* near Isle Royale, Lake Superior.
- **Freshwater Invaders**, 1998 (DVD, 55 min.) Foreign species of animals and plants introduced to the Great Lakes.
- **The Norwood Project**, 2005 (DVD, 18 min.) Exploration of a submerged river channel off a prehistoric quarry site in Traverse Bay, Lake Michigan.
- **Drowned Forests of Lake Huron**, 2006 (DVD, 12 min.) A study of submerged 7000-year-old drowned forest remains in western Lake Huron.
- **Great Lakes, Ancient Shores: Sinkholes**, 2006 (DVD, 17 min.) Investigation of submerged sinkholes and springs in Lake Huron.
- **Great Lakes, Ancient Shores: Reefs and Lake Levels**, 2007 (DVD, 25 min.) Examining evidence of ancient lake levels in Lake Huron.
- **Great Lakes, Ancient Shores: River Channels**, 2008 (DVD, 20 min.) Investigating the Mackinac Channel, an ancient drowned river canyon.
- **Great Lakes, Ancient Shores: Voyage Into History**, 2010 (DVD, 25 min.) Exploring shipwrecks, a canyon and a cave under the Straits of Mackinac.
- **America's Ancient Industry**, 2012 (DVD 56:46 min.) Aired on PBS. Long before Stonehenge and the Pyramids were built, an industry was flourishing in North America near the Lake Superior shores – Copper. This documentary takes the viewer back in time to explore this fascinating story.
- **The Treacherous Coast: Michigan's Thumb Area**, 2016 (DVD 28:46 min.) The history of lighthouses and shipwrecks are explored.
- **Discovering Shallow Water Shipwrecks**, 2017 (13 min.) Historic coastal shipwrecks in southern Lake Huron are explored and documented to encourage public visits by small craft. See also coastalshipwrecks.com)

Selected Publications and Reports

- David, K.A., B.M. Davis, and R.D. Hunter. 2009. Lake St. Clair zooplankton: status in 2000 and evidence for post-*Dreissena* changes. *Journal of Freshwater Ecology*. 24:199-209.
- Hunter, R.D. and J.F. Bailey. 1992. *Dreissena polymorpha* (zebra mussel): colonization of soft substrata and some effects on unionid bivalves. *The Nautilus*. 106:60-67.
- Hunter, R.D. and K.A. Simons. 2004. Dreissenids in Lake St. Clair in 2001: evidence for population regulation. *Journal of Great Lakes Research*. 30(4):528-537.
- Hunter, R. D, Panyushkina, I. P., Leavitt, S. W., Wiedenhoeft, A. C. and J. Zawiskie. 2006. A multiproxy environmental investigation of Holocene wood from a submerged conifer forest in Lake Huron, USA. *Quaternary Research*. 66: 67-77.
- Leavitt, S.W., I.P. Panyushkina, T. Lange, A. Wiedenhoeft, L. Cheng, R.D. Hunter, J. Hughes, F. Pranschke, A.F. Schneider, J. Moran, and R. Steiglitz. 2006. Climate in the Great Lakes Region between 14,000 and 4000 years ago from isotopic composition of conifer wood. *Radiocarbon*. 48:205-217.

- Ruberg, S. A., Kendall, S. T., Black, T., Nold, S. C., Lusardi, W. R., Green, R., Casserley, T., Smith, V. E., Sanders, T. G., Lang, G. A. and S. A. Constant. 2008. Observations of the Middle Island Sinkhole in Lake Huron – a unique hydrogeologic and glacial creation of 400 million years. *Marine Technology Society*. 42(4): 12-21.
- Hunter, R.D. and K.S. Simons. 2001. Abundance and Biomass of Zebra Mussels in Lake St. Clair: a Status Report for 2001. Report to the Michigan Great Lakes Protection Fund, Department of Environmental Quality. 19 pp; 4 figs. and 3 tables.
- Hunter, R.D., K.S. Simons, B.M. Davis, and R.C. Haas. 2002. Survey of Zooplankton in Lake St. Clair in 2000. Final Report to the Michigan Great Lakes Protection Fund, Department of Environmental Quality. 43 pp; 5 figs. and 14 tables.
- Hunter, R.D. 2004. A Study of Prehistoric Underwater Forests in Lake Huron, Michigan. Final report to the Michigan DEQ, Land & Water Management Division, Coastal Management Program. 27 pp.
- Smith, V. E. 2006. Underwater Surveys in the Thunder Bay National Marine Sanctuary, Lake Huron, near Alpena, Michigan. Final Report to the Michigan Department of Environmental Quality, Coastal Management Program, Project No. 06D-9.01. 24 pp.
- Smith, V. E. 2007. Underwater Surveys in the Thunder Bay and Mackinac Island Areas of Lake Huron. Final Report to the Michigan Department of Environmental Quality, Coastal Management Program, Project No. 07D-9.02. 8 pp.
- Smith, V. E. 2008. Underwater Surveys in Lake Huron: Thunder Bay and Straits of Mackinac. Final Report to the Michigan Department of Environmental Quality, Coastal Management Program, Project No. 08D-9.02. 12 pp.
- Smith, V. E. 2009. Underwater Historical Surveys in Thunder Bay and the Straits of Mackinac. Final Report to the Michigan Department of Environmental Quality, Coastal Management Program, Project No. 09/8d-10.02. 13 pp.