



U.S. Environmental Protection Agency

RESEARCH VESSEL

LAKE GUARDIAN

Exploring and Protecting the World's Greatest Lakes



Our Promise

The United States and Canada are committed to working together to restore and maintain the health and integrity of the Great Lakes ecosystem. The U.S. Environmental Protection Agency (EPA) is dedicated to keeping Great Lakes water drinkable, fishable and swimmable. The *Lake Guardian* is a state-of-the-art ship used by scientists to gather data to help identify and find solutions to environmental challenges facing the Great Lakes.

Our Ship

The *Lake Guardian* was a supply vessel until 1988, when EPA acquired it and converted it into what is now **the largest research and monitoring ship** sailing the largest surface freshwater system on Earth—the Great Lakes!

From late March to early October, it is home to 14 crewmembers and houses up to 28 additional people—primarily scientists from state and federal agencies and universities. Passengers have use of over 1500 square feet of laboratory space, as well as access to the galley, lounge, and cabins.



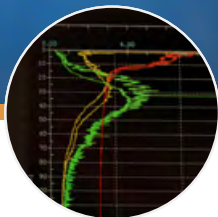
Our Research

The *Lake Guardian* sails across all five Great Lakes to support a wide range of science and monitoring activities. This floating laboratory is used to collect samples of water, sediment, plankton and other aquatic life. From these samples, scientists gather information about the health of the Great Lakes ecosystem, including physical, chemical and biological conditions. Natural resource managers and policymakers use this information to make decisions that help protect and restore the Great Lakes.

The Water Quality Monitoring Program (est. 1983) is one of EPA's **longest-running surveys**. The monitoring takes place on all five Great Lakes twice a year—in the spring, when the waters are cold and well-mixed, and in the summer, when the waters are warm, layered and more biologically active. This program tracks long-term trends and changes in offshore water quality, such as shifts in nutrients and oxygen levels, which can affect the growth and survival of aquatic life.



The benthic sled (top photo) is used to collect organisms from the lake bottom, such as invasive zebra and quagga mussels (bottom photo).



Our Equipment

The rosette sampler is a workhorse on the ship for surveys like the Water Quality Monitoring Program. Its twelve bottles are used to collect water samples at selected depths. Attached directly below the rosette is an instrument with water quality sensors that instantaneously measure temperature, depth, dissolved oxygen and more.

The rosette and sensors are part of a larger collection of scientific equipment on board the *Lake Guardian* that is used to collect water, sediment, plankton and bottom-dwelling organisms.

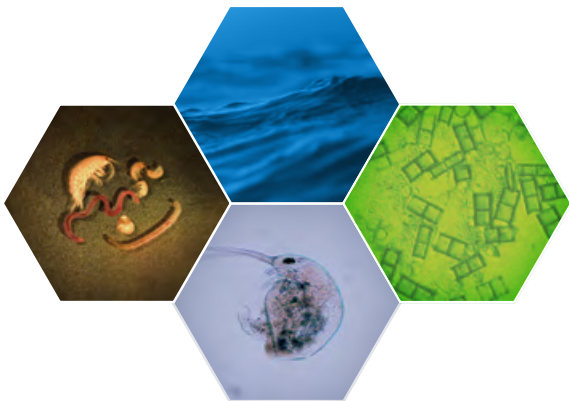


The PONAR grab is used to capture organisms and sediment from the lake bottom.

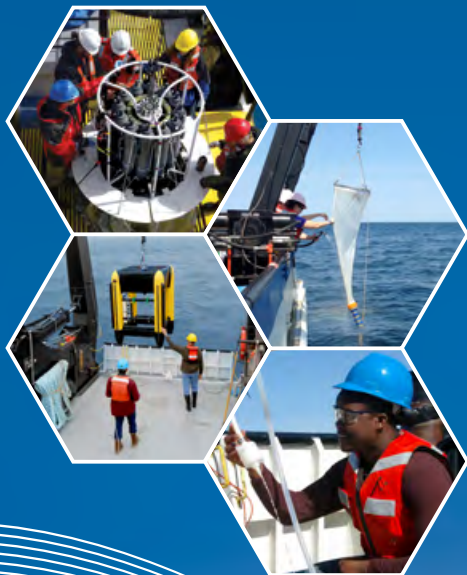


Specifications

Length	180 feet
Width	40 feet
Draft Depth	11 feet
Cruise Speed	11 knots (12.7 mph)
Berthing Capacity	42 people
Year Built	1981 (oil rig supply vessel)
First EPA Expedition	1991 (research vessel)



Samples of water, algae, zooplankton, and bottom-dwelling organisms (clockwise) are analyzed by scientists monitoring Great Lakes health.



Contact

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Brochure developed by Illinois-Indiana Sea Grant and EPA. Photos courtesy of Lyuba Burlakova, Glenn Carter, Meg Corcoran, Michael Milligan, Allison Neubauer, Euan Reavie, Beth Whitmore, Courtney Winter, and EPA.



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