



The R/V *Arcticus* - Lakes Huron and Michigan

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.



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Specifications

Length: 77 ft.
Beam: 26 ft.
Draft: 8.9 ft.
Cruising speed: 9.5 kts.



The Fleet

The Great Lakes Science Center (GLSC) operates five large research vessels, ranging in length from 70 to 107 ft, with one vessel stationed on each of the Great Lakes. The vessels are equipped with wet laboratories, gear for fish, limnological, and contaminant sampling, hydroacoustical fish-detection systems, and GPS navigation systems. The GLSC also operates a fleet of small (18-25 ft) research vessels, outfitted with GPS navigation systems and equipment for fishery and limnological research, and has a side-scan sonar and remotely operated vehicle.

The Vessel

The R/V *Arcticus*, stationed in Cheboygan, MI at the GLSC's Cheboygan Vessel Base, is one of two GLSC research vessels on Lakes Huron and Michigan. The other vessel serving these lakes is the R/V *Sturgeon*.

Built in 2014, the *Arcticus* replaced the R/V *Grayling*, which had been instrumental in sampling deepwater ecosystems of Lakes Huron and Michigan since 1977. In a nod to the rich legacy of the *Grayling*, the name

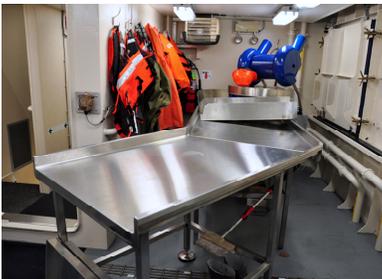
Arcticus was drawn from the Latin name for the arctic grayling, *Thymallus arcticus*, a fish species native to the Great Lakes region. The new vessel is a versatile platform with the capacity to continue historical lake-wide fishery surveys while also providing state-of-the-art scientific instrumentation to advance GLSC science.

The *Arcticus* is designed to operate with a crew of two, including a captain and engineer. The *Arcticus* can be at sea thirty days with sleeping accommodations for eight people. The *Arcticus* has a full galley and two heads with showers.

The Science

The primary mission of the *Arcticus* is to support fisheries-related science in Lakes Huron and Michigan using state-of-the-art technology and traditional sampling gear, such as bottom and midwater trawls, and gillnets. Annual prey fish assessments conducted on the vessel advance a dataset originating in the 1970s. The assessments represent an exceptionally long data series that is used to provide current information on the prey fish base to fisheries managers and to facilitate





understanding of long term population trends in the fish community. Data on prey fish populations are especially important in evaluating management strategies such as predator stocking and harvest quotas.

Research conducted aboard the *Arcticus* meets the needs of a wide spectrum of partners, including natural resource managers in all seven border states, the province of Ontario, the Great Lakes Fishery Commission, U.S. Environmental Protection Agency, and colleges and universities within the Great Lakes region. Projects range from annual, base-funded forage fish surveys supported by agreements with partner agencies to periodic intensive sampling of multiple trophic levels as part of initiatives such as the EPA's Cooperative Science and Monitoring Initiative.

On-board Equipment

The *Arcticus* is designed to function as an offshore work platform during

the ice-free season in the Great Lakes. The vessel is equipped with high-end navigational electronics, a hydroacoustical fish-detection system, a gillnet lifter, winches and reels for deployment, retrieval, and storage of bottom and midwater trawls, and winches for limnological and plankton sampling. Twin propellers, a bow thruster, and hydraulic anchor winch provide a variety of options for complex maneuvering and stationary sampling.

The work areas are designed to eliminate obstructions and facilitate sample processing. Interior laboratory spaces are divided into wet and dry areas. The wet lab is equipped with sorting tables and computer ports, and the dry lab functions as the electronics control room. Here scientists are able to observe net performance during tows via sensors attached to the net, operations on the back deck, and all electronic equipment, including pilothouse navigational data.



The R/V Arcticus (left) and R/V Sturgeon (right), with the M/V Spencer F. Baird (back left) at Cheboygan Vessel Base.

