



The New R/V Muskie – Lake Erie

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 Center is headquartered in Ann Arbor, Michigan, and has biological stations and research vessels located throughout the Great Lakes Basin.

Background

The new R/V *Muskie* is replacing the R/V *Musky II*, which has been the primary USGS research platform on Lake Erie since 1960. Based in Sandusky, Ohio, the R/V *Musky II* has been used to provide scientific information relevant to the restoration, enhancement, management and protection of fishery resources in Lake Erie. The platform is a key part of recruitment surveys and forage fish assessments that are coordinated with state and provincial management agency partners. Several long-term monitoring and focused, intensive studies conducted aboard the ship have provided important, novel insights on the effects of invasive species and environmental changes that challenge resource management efforts. Maintenance costs, limited endurance and speed, safety goals, and partner needs to utilize newer technologies have brought the R/V *Musky II* to the end of its service life. The new R/V *Muskie* provides a safer work platform that meets the need for improved work efficiency and provides technological capabilities for cutting-edge scientific investigations of deepwater ecosystems in Lake Erie.

Specifications

There are two washrooms (one with a shower), and a full galley, including an

electric range, microwave, refrigerator, and dining area. The R/V *Muskie* has the ability to be at sea for 5 days with sleeping accommodation for 6 people.

Length: 70 ft.

Beam: 18 ft.

Draft: <6 ft.

Displacement, Lightship: 121,254 lbs (55 LT)

Displacement, Full Load: 143,300 lbs (65 LT)

Propulsion: Two 965 bhp engines

Maximum speed: 15 knots

Range: 600 nm @ 12 knots

Fuel Capacity: 3000 gallons

On-board Equipment

The new R/V *Muskie* is designed with state-of-the-art industrial systems to support the widest possible range of scientific sampling activities. The main winch system allows deployment of multiple towed gears (trawls, sonar devices, gliders, plankton nets, etc.) using centerline or double-warp configurations. It allows for precision fishing at specified depths via an integrated net mensuration system, line counters, and tensiometer. An A-frame provides options for stern gear deployment and lifting, and a knuckle crane facilitates the transfer of large loads and specialized sampling needs. The ship also has a hydraulic gillnet lifter, which is a primary tool used in cooperative surveys across Lake Erie. To survey forage fish and zooplankton biomass, the vessel is equipped with two hydroacoustic transducers (120kHz and 38kHz) that can operate simultaneously and are deployed in dual through-hull transducer tubes designed to minimize



The R/V *Musky II*; 45 ft. length.

bubble sweep and background noise. Ship propulsion and power plant systems are designed for quiet operation. Twin propellers, a bow thruster, and hydraulic anchor winch provide a variety of options for stationary sampling. In addition, the scientific instrument winch has slip-ring capability that facilitates safe deployment of sensor arrays when real-time observation is necessary. Onboard sample processing and storage is supported via a stainless steel work bench in the wet laboratory, motion-compensating balance, chemical storage locker, cold and hot water supply, clean AC power supply, and large freezer capacity. Navigation, weather, and winch operation data are supplied to the dry lab area and can be integrated electronically with data from scientific sensors to support a wide range of project needs. To facilitate business communications while underway, the ship is also equipped with a 3G/4G cellular modem and WiFi network that are operational throughout most of US waters on Lake Erie.