

**Senate Committee on Commerce, Science, and Transportation
Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard**

**“Coast Guard Readiness: How Far Can We Stretch Our Nation’s Only Multi-Mission,
Military Force?”**

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**Testimony of
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Mr. Chairman and Members of the Subcommittee – I am Dr. Guy Meadows and I am the Director of the Great Lakes Research Center at Michigan Technology University in Houghton, Michigan.

Our nation’s northern coastlines present unique and demanding challenges in marine operations and therefore to the U.S. Coast Guard. Much of the navigable waters of the Alaskan, Northeast Atlantic States and the Great Lakes can be classified as “Ice Bound Coasts,” for some part of the year. For the Upper Great Lakes, access through the Federal Locks at Sault Ste. Marie closes annually from January through March when ice shuts down commercial shipping on the Great Lakes. During the remainder of the ice bound season it is the responsibility of the “U.S. Coast Guard to assist in keeping open to navigation by means of ice breaking operations channels and harbors in accordance with the reasonable demands of commerce.” (Executive Order 7521, 1936). The *Guardians of the Great Lakes*, the 6,000 men and women of the Ninth District of the Coast Guard are responsible for the five Great Lakes, the Saint Lawrence Seaway and parts of the surrounding states including 6,700 miles of shoreline and 1,500 miles of the international border with Canada.

The Inland Seas of the Great Lakes are a massive natural resource for the United States and Canada. Consider the Great Lakes as inland seas. Strung end-to-end, the Great Lakes would cover most of the U.S. East Coast and Continental Shelf from Maine to mid-Florida.

- The Great Lakes form the largest group of **freshwater lakes** on Earth by total area, and second largest by total volume containing 21% of the world's **surface fresh water** by volume;
- The Great Lakes are 84% of the surface water supply in North America;
- More than 35 million people rely on the Great Lakes for their drinking water, jobs, and their way of life. That number includes 8% of the U.S. population and 32% of the Canadian population; and
- Much of the world's freshwater is threatened by contamination and desertification. The Great Lakes also face toxic and nutrient pollution, invasive species introductions, and habitat and fisheries degradation.

Last month, October 24 – 26, during the Lake Superior storm, the waves along the southern shore reached a height of 28.8 feet – the largest waves ever recorded in the Great Lakes. The federally operated wave and meteorological measuring buoys along the center of the Great Lakes and Michigan Tech's coast monitoring buoys near shore, are registering increases in both the number of major storms and their severity. This wave phenomenon is not unique to the Great Lakes, but present along most of our nation's coastlines. And throughout these storms, it is the U.S. Coast Guard that responds.

Oil has spilled in the seas of all four of our coastlines; the Atlantic, Pacific, Gulf of Mexico and to a much lesser extent, in the Great Lakes. Perhaps fortunately, due to lack of exposure and incident, the science of oil and oil cleanup in freshwater lags far behind that of our ocean counterparts. This fact, coupled with the complexities of ice bound coasts provide challenges in disaster preparedness along our Alaskan and Great Lakes shorelines. As the ice begins to appear along our ice bound coasts, research, supply ships, tugs and barges all become frozen at shore in harbors and channels. This is true also for our environmental monitoring buoys, that, at the present level of technology, cannot survive a major ice season at sea.

When these disasters occur, natural or manmade, it is the Coast Guard that is first to be called and first on the scene, while being “scientifically blind” to actual environmental conditions of winds, waves and currents.

The US Coast Guard, in partnership with the nation’s research universities and other federal partners, is capable of deploying advanced technologies to reduce their risk and to decrease response times. Surface environmental monitoring buoys can be replaced by underwater sensor platforms that are capable of remaining and providing valuable information through ice bound seasons. Unmanned surface and sub-surface vehicles can provide valuable, “on site” information. Full unmanned and autonomous surface vessels are currently being used in conjunction with geophysical survey ships in the Gulf of Mexico and offshore of the Alaska coastline. These new technologies hold great promise for advancing the Coast Guard mission and providing safety for its personnel.

If we expect that when needed the Coast Guard will save lives, enforce the law, and operate ports and waterways, we should first invest in the science and technology necessary for the Coast Guard to successfully execute their missions.

Thank you.