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**Ohio Environmental Council’s Testimony on Proposed 401 Water  
Quality Certification (U.S. EPA Vessel General Permit for Discharges  
Incidental to the Normal Operation of Commercial Vessels and Large  
Recreational Vessels)**

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Thank you for this opportunity to testify today, my name is Kristy Meyer, and I am the Director of Agricultural and Clean Water Programs at the Ohio Environmental Council (OEC). The OEC is a non-profit network of more than 100 local and state environmental-conservation organizations, and thousands of members throughout the state of Ohio. Our mission is to secure healthy air, land, and water for all who call Ohio home. The OEC recently submitted written comments along with the National Wildlife Federation, and I would like to thank the OEPA for holding this public hearing today and allowing me the opportunity to supplement those comments.

OEC commends the OEPA for taking the initiative towards regulating ballast water discharges. However, this draft 401 Water Quality Certification does not go far enough to prevent the introduction of new potentially devastating species.

**Importance of Lake Erie**

Lake Erie, Ohio’s Great Lake, is a foundation of health, economic vitality, and recreation for millions of Ohioans. Lake Erie is unique among the Great Lakes—it is the shallowest, warmest and most biologically productive. Lake Erie supports one of the largest freshwater commercial fisheries in the world and the largest sport fishery in the Great Lakes, producing more fish for human consumption than the other four Great Lakes combined.

Lake Erie, along with the tributaries that feed the lake, supplies drinking water to 13 million residents regionally, including approximately 3 million Ohioans. Each year more than seven million people flock to Ohio’s portion of the Lake Erie basin, including Kelleys, South Bass (better known as Put-in-Bay), and Middle Bass islands, to reconnect with nature and families. As a result, a quarter of a million jobs are sustained. Tourism, wildlife watching, and sport fishing contribute \$9.75 billion a year in revenue to Ohio’s economy.

The 11,649 square miles that make up Ohio’s Lake Erie basin are comprised of beech-maple, oak, hemlock, and hardwood forests, as well as marshes, vernal pools and bogs, rare oak savannas, lakeshore grasslands, sand dunes, and more. These habitats sustain more than 1,500 species of plants and animals. Threatened, endangered and rare species located within these extraordinary and unparalleled ecosystems include wild lupine, Showy Lady’s Slipper orchid, the four-toed salamander, the Lake Erie water snake and the Karner blue butterfly.

It is clear that Lake Erie’s natural wonders are essential to humans and wildlife alike; providing food, drinking water, recreation and economic stability to millions of Ohioans.

## **Aquatic Invasive Species**

Aquatic invasive species (AIS) and pathogens pose an imminent and growing threat to Ohio's aquatic biodiversity. Numerous scientific studies, including those by the Great Lakes Regional Collaboration, have identified invasive species as the single greatest problem facing the Great Lakes.

Currently there are 185 known invasive species of fish, invertebrates, and plants, including algae and phragmites, that have become established within the Great Lakes, a number that continues to grow every year.

In Ohio, the number one vector for the introduction of aquatic invasive species in the Great Lakes is ballast water. Scientists estimate that 65% of the invasive species found in the Great Lakes hitchhiked their way up the St. Lawrence River in ballast water carried by ocean-going vessels since the opening of the River to ocean going vessels in 1959. The critters enter the lakes when ballast water is discharged to balance out the load as ships on-load freight.

According to scientists, on average, a new, potentially devastating invasive species is discovered in the Great Lakes every 28 weeks. Scientists warn that Lake Erie will continue to face waves of exotic species invasions for years to come without a proper management regime. While ballast water isn't the only avenue for introductions, it is the most frequent route of introduction and it is relatively easy to control through the use of ballast water treatment technology.

## **Impact from Aquatic Invasive Species, Pathogens and Diseases on Lake Erie's Fragile Ecosystem**

Once these destructive pests get a toehold, it is virtually impossible to limit their expansion. They quickly spread and can out-compete native wildlife for food and habitat. Some actually physically kill fish and other native species. These exotic species also can change the biological pathways of nutrients and toxins, become a nuisance by fouling man-made structures, or have entirely unforeseen impacts on the natural community or regional economies.

The explosive growth of the zebra and quagga mussels, for instance, has led to the demise of native mussels and fish. According to scientists, one female zebra mussel can produce a million eggs a year and will colonize every available surface, including themselves.

Zebra, and later quagga mussels, were first introduced in Lake Erie in 1988. By 1990, native mussel populations were observed to be in decline and they were considered to be nearly eradicated from the waters of the western Lake Erie by 1991.

Exotic species also can saddle the state and local government officials with expensive clean-up costs, money that could be used elsewhere. Some Lake Erie large water users

spend \$350,000 to \$400,000 each year to clear zebra mussels from intake pipes, which can result in increased burden to taxpayers as the costs are passed along. Federal agencies estimate that clean-up costs of zebra mussels will top \$5 billion over the next 10 years for utilities and manufacturers alone.

The round goby, estimated to have reached a population of 10 billion in 2002 in the Western Lake Erie Basin, is another non-native species that threatens Lake Erie's fragile ecosystem. Round gobies are aggressive, bottom-dwelling fish. A single female can produce up to 5,000 eggs during the summer months. They eat bottom-feeding organisms and then are eaten by bass. As such, the round goby is a direct link in a food chain that accelerates the movement of contaminants from the lake bottom, to bass, to humans. Furthermore, round gobies have successfully out-competed native fish species for food and habitat or directly preyed upon native fish species, which has contributed to a decline in recreationally important fish, such as smallmouth bass. In fact, the predation on smallmouth bass is so considerable that the state of Ohio has shut down this fishery during the months of May and June to help prevent predation on smallmouth eggs.<sup>1</sup>

Scientists now know that aquatic invasive species also have exacerbated the formation of harmful algal blooms (HABs), a common sight within Lake Erie's waters, especially the western basin. While not widely understood, HAB toxins can cause human and wildlife illnesses, including death.<sup>2</sup>

## **OEPA's 401 Water Quality Certification**

While it is encouraging that the OEPA is moving towards regulating ballast water discharges, the OEC does not feel that the OEPA's draft 401 Water Quality Certification (to be known as the Certification from here on out) that is being proposed as a result of the USEPA's draft Vessel General Permit for Discharges Incidental to the Normal Operation of Commercial Vessels and Large Recreational Vessels will prevent the introduction of new potentially devastating species.

I wish I could say the technology-based effluent limitations to regulate the discharge of ballast water would ensure no new introductions of aquatic pests. The reality, however, is that the two technology-based effluent limitations, ballast water exchange and saltwater flushing, does not prevent further introductions of aquatic invasive species.

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<sup>1</sup> Fuller, P., A. Benson, and E. Maynard. 2008. *Apollonia (Neogobius) melanostomus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL.

<<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=713>> Revision Date: 10/25/2007

<sup>2</sup> NOAA, Center for Sponsored Coastal Ocean Research, <http://www.cop.noaa.gov/stressors/extremeevents/hab/current/fact-ecohab.html> (visited on November 19, 2008)

Both technology-based effluent limitations require the replacement of freshwater with saline water. This practice, in theory, is meant to purge or kill the freshwater non-native species. In reality, though, many species are able to adjust to both saltwater and freshwater. In fact, one article titled *Evaluating the Effectiveness of Ballast Water Exchange Policy in the Great Lakes* published in Ecological Society of America Journal notes that live freshwater-tolerant zooplankton and other organisms have been found in ships that reportedly exchanged ballast and these include species not previously reported in the Great Lakes.

Furthermore, an EPA study of ballast water exchange found that “a 95% exchange of the original water resulted in flushing of only 25% to 90% of the organisms studied.” This was due to the inability of ballast water exchange to remove water remaining in the crevices of the ballast tank, as well as sediment layers in the ballast tank, both of which contain organisms. A number of studies have found that ships which exchanged ballast water in the ocean carried live organisms in their ballast tanks.

Another problem with ballast water exchange is that residual freshwater left in ballast tanks does not necessarily allow the ballast water to reach a high enough salinity to eliminate invasive species in the water. Species from low-salinity environments have exhibited a range of tolerance to high salinity exposure, making it difficult to generalize about their ability to survive the “salinity shock” which occurs during ballast water exchange. Species with a broad salinity tolerance are most able to survive in a ballast tank following ballast water exchange; recently introduced species have such a broad tolerance.

## **NBOBs**

Over 90% of the vessels that enter the Great Lakes do so as No Ballast On Board ships or NOBOBs. While these ships claim they have no ballast water on board, at the bottom of their tanks lies residue and sediment. This residue and sediment harbors a wide assortment of viable larval and mature plants, animals, and microorganisms, as well as plants, animals, and microorganisms in resting stages, such as cysts, resting eggs, or spores. It has been proven that ships claiming to have no ballast on board have actually been carrying viruses, bacteria, phytoplankton, and invertebrates, including non-native species.

## **Great Lake Ships**

The OEC realizes that the majority of invasive species that enter the Great Lakes through ballast water enter on ocean-going vessels. While ships operating in the Great Lakes, or better known as Lakers, do not pose the greatest risk of introductions, Ohio should retain the authority to regulate the Lakers if they pose a risk. For instance any Laker that travels from Lake Superior and ports in Ohio’s waters poses a great risk to Lake Erie. This is because Lake Superior is infested by Eurasian Ruffe. Eurasian Ruffe poses a

threat to native fish because they mature quickly, have a high reproductive rate, and easily adapt to new environments. Ruffe are more tolerant of poor water conditions, which we see in the Western Basin, and have well developed sensory organs that allow them to detect vibrations given off both predators and prey, giving them an advantage over native fishes. Native fish populations –especially yellow perch, emerald and spottail shiners, trout perch, and brown bullhead–have declined in locations where ruffe have become established. It is now one of the most abundant fish in five tributaries around the Upper Peninsula of Michigan.

## **Ohio Needs Protective Standards**

In the absence of federal legislation, the OEC urges the OEPA to follow the lead of California and New York and adopt the California standards that are 1000 times stronger than the IMO standards that the OEPA is proposing.

According to the State Lands Commission in California there are currently two technologies that meet the California standard - OptiMarin and Ocean Saver.

The OptiMarin Ballast System is based on solid separation (filter) as pre-treatment and high doses of UV radiation to destroy marine organisms, viruses, and bacteria, without affecting the normal operation of a ship. Ballast water is treated both during ballasting and de-ballasting to ensure a dual effect.

Ocean Saver pumps ballast water onboard, filters it, and exposes the water to extreme pressure pulses. The water is then disinfected by injecting a mixture of nitrogen and activated water. Filtered, cavitated, supersaturated and hypoxic water enters the ballast tanks - which are equipped with pressure/vacuum control systems preventing nitrogen leakage from the tank as well as contamination of air into the tanks – preventing potential re-growth and significantly reducing oxidation of tank surfaces.

Both OptiMarin and Ocean Saver meet 6 out of the 7 standards. Both of them don't meet the virus standard because there is no way to assess the virus standard against the technology as of yet. It is also unclear whether these technologies would meet the standards consistently within Ohio's freshwaters. Both have predominately been utilized in salt water. It is imperative, however, that the OEPA adopt California standards to ensure the highest level of protection for Ohio's waterways and to ensure that the standards within the Great Lakes region and throughout North America are consistent, something that the shipping industry has been repeatedly asking for. The lack of a viral indicator at this time should not stop Ohio from moving forward and adopting the California standards. By adopting California's standards, Ohio is ensuring that our way of life here within Ohio's Lake Erie basin, and Ohio, is protected from invasions of non-native species, anything less would be irresponsible and costly to the state, local municipalities and the tax payers.

As we have seen throughout history, ideas drive technology, not the other way around. In this case, the idea is the California standards, which will drive industry to develop technologies that can consistently meet the California standards within salt and

freshwater. In fact, the state of California expects more technologies to come online by the time installation is required, which begins in January 1, 2010 – 2 years and 6 years before the OEPA is requiring new and existing ships, respectively, to install technology. In the Great Lakes region, the Great Ships Initiative is set-up to assist in developing the new technology as standards evolve. Now is the time to slam the door on invasive species by adopting the California standards and pushing the federal government to adopt these standards as well, spurring development of new technologies.

## **Conclusion**

As I mentioned, Lake Erie is vitally important to Ohio. The daily threat of invasive species is real – with currently 185 known established invasive species calling our Great Lakes home and on average a potentially new invasive species discovered every 28 weeks.

Lake Erie does so much for us. It is a place to reconnect with family and friends, interact with wildlife, and fish and hunt. Lake Erie also is an economic driver for the state of Ohio, generating \$9.75 billion dollars in revenue and more than a quarter of a million jobs in tourism alone. Invasive species not only threatens our vibrant eco-tourism industry, but saddles municipalities, local governments and tax payers with increased costs - costs that could top more than \$5 billion over the next ten years.

The Clean Water Act is based on the use of best available technology. OptiMarin and Ocean Saver are technologies that are available for use now and that meet the California standards. We cannot rely on standards that fall short of protecting this unique ecosystem that does so much for us here in Ohio. Now is the time for Ohio to be a leader in protecting our waters by adopting the California standards. Stronger standards will create a win-win situation for the state of Ohio by protecting our vital resource, Ohio's Lake Erie basin, and also benefiting the economic users of Lake Erie by slamming the door on potentially new invasive species, which have proven to result in increased economic burden to the local and state governments and taxpayers.

Thank you again for this opportunity to comment.

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