Microwave zapping kills invasive species before the invasion

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Scientists have developed a microwave heating system for ballast water treatment that could help rid waterways of invasive species, such as the zebra mussel (above), that annually cause billions of dollars of infrastructure damage. Courtesy of the U.S. Fish & Wildlife Service

Scientists in Louisiana are reporting development and successful testing of a new cost-effective system to kill unwanted plants and animals that hitch a ride to the United States in the ballast water of merchant ships.

These so-called “invasive species,” such as the notorious zebra mussel, devastate native organisms and infrastructure and cost taxpayers billions of dollars annually. The study is scheduled for the June 1 issue of ACS’ *Environmental Science & Technology*.

In the study, Dorin Boldor and colleagues point out that invasive species often travel in ballast tanks of international cargo ships. Ships pump sea water into these tanks for stability when a vessel leaves port with little or no cargo. They dump the water at their destination — along with zebra mussels, Asian clams and other organisms that may pose environmental risks.

The new study describes development and laboratory-scale tests of a continuous microwave system which, much like a kitchen microwave oven, used heat to inactivate zooplankton, algae, and oyster larvae in salt water.

Researchers found that a 30-second zap, followed by a 200-second holding period, removed all marine life. Boldor noted that the high heating rates, low operating costs, and effectiveness in hazy water distinguish it from conventional heating methods.

Source: ACS

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