

Invasive marine species found to be attracted to boat noise

July 8 2014, by Bob Yirka



Credit: Adrian Pingstone/public domain

(Phys.org) —A team of researchers from Australia and New Zealand has found that sounds emitted by boats in port attract invasive marine species. In their paper published in the journal *Biofouling*, the team describes how they conducted sound experiments along with boat inspections to learn more about the habits of fouling larvae and their

preferences and discovered that the noise generated by boats is similar to that of natural reefs.

The process by which organisms (such as algae, barnacles and [sea squirts](#)) attach themselves to the hulls of ships and then spread invasively is known as biofouling, and those that do so are known as fouling species. A buildup of such organisms creates a lot of drag for boats—owners use a variety of methods to prevent attachment but would prefer that scientists find a way to prevent them from attaching in the first place. In this new effort, the researchers working in Australia sought to better understand why fouling species are attracted to boats. To learn more they deployed microphones beneath the sea at a [port](#) used by fishing vessels in Fremantle. Recordings made were mapped by vessel. The researchers were also allowed to make visual inspections of the hulls of several of the boats in the port, to measure the levels of fouling organisms.

The researchers found that the heaviest concentrations of growth were found nearest the onboard generator of each boat—such generators are typically kept operating even while in port to keep refrigerators and other equipment running. The researchers noted that the sound emitted by the generators was similar to the sound made by natural reefs, which is the natural home of such organisms. Thus, they suggest that boat owners could reduce concentrations by turning off their generators while in port, and using port plug-ins to power their equipment.

In another experiment, the researchers exposed captive sea squirts to [boat](#) noise via their recordings and found that doing so caused them to settle on an attachment site sooner, to grow faster and also increased their survival rate.

Because fouling organisms are clearly attracted to sounds, the researchers reason that they may also be repelled by other sounds that

occur at different frequencies—their next experiments will be designed to find out.

More information: Vessel generator noise as a settlement cue for marine biofouling species, *Biofouling: The Journal of Bioadhesion and Biofilm Research*, [DOI: 10.1080/08927014.2014.919630](https://doi.org/10.1080/08927014.2014.919630)

Abstract

Underwater noise is increasing globally, largely due to increased vessel numbers and international ocean trade. Vessels are also a major vector for translocation of non-indigenous marine species which can have serious implications for biosecurity. The possibility that underwater noise from fishing vessels may promote settlement of biofouling on hulls was investigated for the ascidian *Ciona intestinalis*. Spatial differences in biofouling appear to be correlated with spatial differences in the intensity and frequency of the noise emitted by the vessel's generator. This correlation was confirmed in laboratory experiments where *C. intestinalis* larvae showed significantly faster settlement and metamorphosis when exposed to the underwater noise produced by the vessel generator. Larval survival rates were also significantly higher in treatments exposed to vessel generator noise. Enhanced settlement attributable to vessel generator noise may indicate that vessels not only provide a suitable fouling substratum, but vessels running generators may be attracting larvae and enhancing their survival and growth.

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