

# **Design and Construction of a Low Cost, Modular Autonomous Underwater Vehicle**

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Over the next 5 years, MIT Sea Grant is tasked with locating and photographing *Didemnum Vexillum*, an invasive species which threatens New England fishing habitats. Didemnum research is conducted in the photosynthesis zone of the coastal shelf using photography and radiometry instruments.

In order to streamline Didemnum research, a new, low cost and modular AUV was designed and built to replace Odyssey IV as the primary Didemnum research vehicle. This new AUV is a shallow cruising vehicle with a depth rating of 100 meters. With a weight of less than 50 kg, the AUV can easily be launched and recovered by hand from Sea Grant's 25 ft vessel. Although specifically designed to support Didemnum research, the AUV incorporates a flexible and modular design which allows it to be reconfigured for existing Didemnum missions or upgraded with additional sensors and payload. Incorporating a separate, interchangeable Lithium-Polymer Battery pack allows the vehicle to achieve both a high mission duty cycle and extended bottom time. The Didemnum Cruiser also serves as a prototype for future vehicles in the AUV Lab.

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