Autonomous Underwater Vehicle Measures *Didemnum* Infestation

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Summary

- *Didemnum vexillum*, a species of tunicate not native to New England waters, threatens groundfish and scallop fisheries in the region.
- MIT Sea Grant is developing technology to meet the need for instrumentation to rapidly and thoroughly document the spread of *Didemnum* on Georges Bank.
- The Odyssey IV AUV has been deployed to survey offshore waters from 2008 through 2010 as part of ongoing studies.
- Visual identification of benthic organisms is eased through image enhancement and seamless photo-mosaics.

**Odyssey IV Specification**

- Autonomous Underwater Vehicle
- Depth rating: 6000 m
- Weight in air: 400 kg
- Dimensions: 2.0 m x 0.6 m x 1.0 m
- Number of thrusters: 4
- Speed: 2-3 knots
- Battery: 5 kWh lithium-ion
- Typical run time: 4 h

**Sensors**

- Pressure sensor for depth
- Doppler sonar for altitude and velocity
- Magnetic compass for heading
- GPS for absolute position at surface
- Inertial measurement unit for attitude
- CTD for temperature and salinity
- Downward-facing camera for identification of benthic organisms

**Benthic Community**

Species identified in this mosaic include:

- *Placopecten magellanicus* (sea scallop)
- *Didemnum vexillum* (sea squirt)
- *Spisula solidissima* (Atlantic surf clam)
- *Suberites ficus* (fig sponge)
- *Asterias vulgaris* (northern seastar)
- *Merluccius bilinearis* (silver hake)
- *Ensis directus* (Atlantic jackknife) shell
- Cancer sp. (rock crab)

**Dive Data**

This set of images was made on Georges Bank during Odyssey IV Dive #319.

- Date: July 19, 2008
- Location: 41° 59’ 19” N, 67° 19’ 41” W
- Water depth: 52 m
- Altitude above sea bed: 2.5 m
- Water temperature: 9 °C
- Salinity: 32.6 psu

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**Odyssey IV Dive Sites**

**Sea Scallop**

**Didemnum**

**500 mm**