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Recent Observations on Substrate Preferences and Controls

Observation No. 1 – *Didemnum* growing on the air/water interface.

As part of our ongoing studies on the ecology of invasive ascidians, we have been collecting information on the timing and magnitude of recruitment of *Didemnum* sp. (provisionally identified as *D. sp.*) in southeastern Long Island Sound, Connecticut. To collect recruits, four PVC substrates (10 x 10 cm) were placed at a field site located outside of Pine Island (suspended ~1 m off the bottom), about 500 m offshore of the University of Connecticut's marine campus, located at Avery Point, Groton, Connecticut. After several weeks of exposure (roughly the last two weeks in July, 2002), the panels were collected and transported to a running seawater facility in the Rankin Building (University of Connecticut) and placed in a shallow (15 cm depth) seawater water table (~2m x ~1m). The number and size of ascidian recruits were recorded and the panels were placed in an open tray we use to transport the panels and returned to the seawater table (the wing nuts in the photograph are used to secure the panels in a vertical position for ease of transport).

Over time, *Didemnum* grew off the panels and began spreading along the bottom and sides of the seawater table. As space became more and more limiting, the ascidian began spreading along on the underside of the air-water interface! The photograph, taken about one month after the panels were introduced into the seawater table, shows a portion the seawater table with *Didemnum* growing on the bottom of the seawater table and on the underside of the air-water interface. It is unclear whether the bubbles in the photograph were somehow entrained by the organism to

facilitate its buoyancy and ability to colonize the air-water interface or whether they were the result of the water flowing into the tank (seawater pumped into the laboratory typically has super-saturated oxygen concentrations). The colony continued to spread across the air-water interface until it reached several hundred square centimeters in size. In mid-October 2002, the flow of seawater inadvertently stopped, the tank completely drained, and the colony perished.

We have never seen any other colonial ascidian species (either native or introduced) that has the ability to grow on the underside of the air-water interface. Although the conditions in the seawater tank obviously are not representative of the field, the photograph demonstrates the ability of the species to adjust its growth form in response to space limitation. Whether this may represent a dispersal strategy has yet to be tested.

Source

R. Whitlatch (UCONN) and R. Osman (SERC). Photo date and credit: Mid August, 2002; R. Osman.



Image RO_PI_CT4206210.

Image RO_PI_CT4206210. Tunicate colonies of *Didemnum* sp (provisionally identified as *D. sp.*) spreading along the bottom of the seawater table (bottom half of photo) and extending upwards through the water column to spread along the underside of the air/water interface (top half of the photo). The upper surfaces of the *Didemnum* colonies are facing downward from the air/water interface. Bubbles are visible on the lower surfaces of the colonies, which are facing upward. Original specimens collected off Pine Island, Connecticut, on PVC substrates 1 m off the seabed. Observers: Robert

Whitlatch (UCONN) and Richard Osman (SERC). Photo date and credit: Mid August 2002; R. Osman.
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URL: donnewdtxp.whsc.er.usgs.gov/drafts/PDF-project-pages/PDF-stellwagen/PDF-didemnum/htm/page34.htm

Page Contact Information: webmaster-woodshole@usgs.gov

Page Last Modified: Thursday, 28-Jun-2007 10:10:46 Eastern Daylight Time

