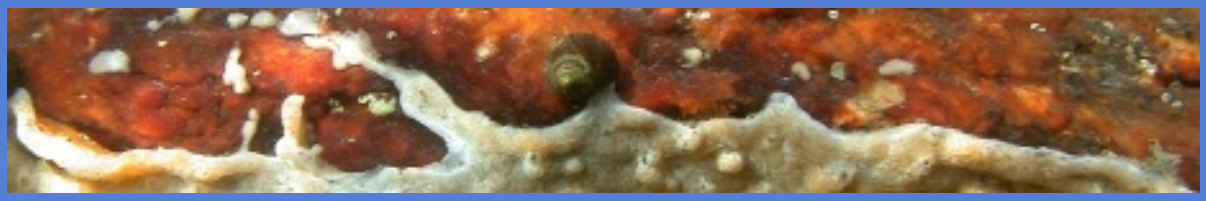
USGS National Geologic Studies of Benthic Habitats, Northeastern United States

Marine Nuisance Species



Species *Didemnum vexillum*
colonial tunicate; ascidian; sea squirt

Printable version in PDF format.

Modified Friday, 24-Apr-2009 10:51:59 EDT

***Didemnum vexillum* in the News** | ***Didemnum vexillum* Video Clips**

New York NEW | Wales NEW

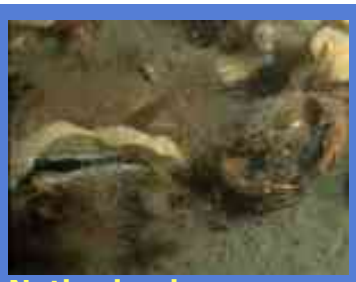
Click on figures for larger image to download.

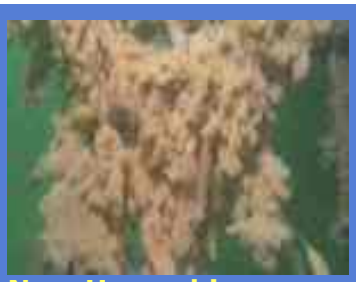

New Zealand


California

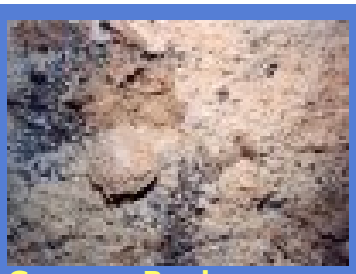

Washington


British Columbia


Netherlands


New Hampshire


Massachusetts


Georges Bank

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- Wales Coast
- Washington Coast
- Worldwide Occurrences

Report new occurrences to Page Valentine at pvalentine@usgs.gov

Recent research papers on *Didemnum*

Recent Observations

- *Biochemistry*
- Colonization NEW
- *Didemnum* Management Studies NEW
- *Environmental Impacts*
- Environmental Preferences and Controls

Taxonomic Classification

Phylum *Chordata*, Subphylum *Tunicata*, Class *Ascidiacea*, Order *Aplousobranchia*, Family *Didemnidae*, Genus *Didemnum*, Species *vexillum*

Summary of Origin and Occurrence

Within the past few years, the colonial ascidian species *Didemnum vexillum* has been reported from many parts of the world and has drawn attention as a nuisance species because it reproduces rapidly and fouls marine habitats (including shellfish aquacultures and fishing grounds), ship's hulls, and maritime structures. It has been reported from northern Europe (Ireland, Netherlands, France), the U.S. east coast (New Jersey, New York, Connecticut, Rhode Island, Massachusetts, New Hampshire, Maine), offshore of New England on Georges Bank, the U.S. and Canadian west coasts (California, Washington, British Columbia), Japan, and New Zealand.

Until recently, the taxonomy of *Didemnum vexillum* and forms referred to in the scientific literature and media as "*Didemnum* sp." and "*Didemnum* sp. A" has been in dispute. However, new morphologic and genetic studies of species of *Didemnum* collected worldwide (Lambert, 2009; Stefaniak et al., 2009) have shown: 1) that the valid taxonomic name for "*Didemnum* sp." and "*Didemnum* sp. A" is *Didemnum vexillum* Kott (2002), originally described from New Zealand; 2) that *Didemnum vestum* Kott (2004), originally described from New Hampshire, is a junior synonym of *D. vexillum*; and 3) the region of origin of *Didemnum vexillum* is most likely Japan. We follow this taxonomy here.

For reports that address the taxonomy of *Didemnum vexillum* see:

Kott, P., 2002, A complex didemnid ascidian from Whangamata, New Zealand: Journal of Marine Biology Association of the United Kingdom, v. 82, no. 4, p. 625-628. [first description of *Didemnum vexillum*] (PDF format)

Kott, P., 2004, A new species of *Didemnum* (Ascidiacea, Tunicata) from the Atlantic coast of North America: Zootaxa, v. 732, p. 1-10. [description of *Didemnum vestum* and comparison with *D. vexillum* and *D. lahillei*] (PDF format)

Lambert, G., 2009, Adventures of a sea squirt sleuth: unraveling the identity of *Didemnum vexillum*, a global ascidian invader: Aquatic Invasions, v. 4, no. 1, p. 5-28. (PDF format)

Stefaniak, L., Lambert, G., Gittenberger, A., Zhang, H., Lin, S., and Whiltlatch, R.B., 2009, Genetic conspecificity of the worldwide populations of *Didemnum vexillum* Kott 2002: Aquatic Invasions, v. 4, no. 1, p. 29-44. (PDF format)

Didemnum vexillum colonies alter marine habitats and threaten to interfere with fishing, aquaculture, and other coastal and offshore activities. The colonies shown here are found on hard substrates that include dock structures and floats, wood and metal pilings, moorings and ropes, steel chain, automobile tires, polythene plastic, rock outcrops, gravel seabed (pebbles, cobbles, boulders), and ship hulls. They overgrow organisms such as tunicates, sponges,

- *Genetics*
- *Growth Rates and Patterns*
- *Overgrowth on Other Species*
- Predation
- Reproduction-Larvae
- Substrate Preferences and Controls
- Taxonomy
- *Toxicity*
- Preparation of Ascidians for Taxonomy

Links to Related Topics

- International Invasive Sea Squirt Conference, PEI, Canada, Oct. 1-4, 2007 - Program with Abstracts (PDF)
- International Invasive Sea Squirt Conference, Woods Hole, MA, Apr. 21-22, 2005
- Imagery of the Family *Didemnidae*
- Environmental Impact of Tunicates
- Tunicate News/Information
- Invasive Species Web sites

Contributors & Other Sources

- Contact Information
- Other didemnid imagery
- USGS News Releases

Text in gray (italic) indicates the topic has not been addressed to date.

macroalgae, hydroids, anemones, bryozoans, scallops, mussels, and oysters. Where these colonies occur on the seabed, they likely cover the siphons of infaunal bivalves and also serve as a barrier between demersal fish and benthic prey. The colonies have been found at water depths ranging from intertidal to continental shelf depths of 65m (213 ft).

Gross Morphology and Growth Habits

Colonies of *Didemnum vexillum* exhibit a wide variety of morphological variants. Where current velocity is low, they form long, ropey or beard-like colonies that commonly hang from hard substrates such as docks, lines, and ship hulls. Where current velocity is high, they form low, undulating mats with short surficial appendages that encrust and drape rocky seabeds (pebbles, cobbles, boulders, and rock outcrops).

Purpose and attribution

The goal of this website is to assemble and communicate information on the distribution, ecology, and marine habitat impacts of the invasive colonial ascidian invader *Didemnum vexillum*. Researchers and others are encouraged to share their observations on these topics.

All contributions are acknowledged. The information displayed on this website is in the public domain. Users are expected to give proper credit for images, data, and ideas they incorporate into their work.

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