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Sea Squirt Colonies Persist on Georges Bank—Found Over More Area, Less Abundant at Some Sites

By [Page Valentine](#)

November 2005

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Researchers recently completed a field survey on Georges Bank off New England of invasive sea squirt colonies that were first discovered in 2003. This year, researchers looked more widely for the sea squirt and mapped it over about twice the area observed in 2004 (see

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Sea Squirt Colonies Persist on Georges Bank

Sound Waves article, "[Invasive Sea Squirt Alive and Well on Georges Bank](#)"). Results show that the species is present in two adjacent areas totaling 88 mi² in U.S. waters near the United States-Canadian border. Though observed over a larger area, the sea squirt was less abundant in some places this year. The very large mat-like colonies observed at some sites in 2004 have been replaced by fewer, smaller ones, possibly owing to disturbance by fishing trawls and scallop dredges. The Georges Bank occurrence is the largest known infestation of colonial sea squirts in a major offshore fishing ground.

Page Valentine of the U.S. Geological Survey (USGS), **Bob Reid** of the National Oceanic and Atmospheric Administration (NOAA), and **Jeremy Collie** of the University of Rhode Island (URI) conducted the survey aboard the NOAA ship *Delaware II* during the last 2 weeks of August 2005. In the 2004 survey, sea squirt colonies were mapped over a 40-mi² area before weather truncated the cruise. This year's wider survey showed sea squirts to be present within an area of at least 67 mi² in the same general locality. Scientists also discovered an additional infestation, possibly in an early stage, of a 21-mi² zone that lies 10 mi east of the original observations, in an area now closed to fishing.

The research team also surveyed three sites in Canadian waters where seabed conditions are similar to those on the U.S. part of the bank; they found no evidence of the sea squirt at the Canadian sites.



Above: Tunicate colony of ***Didemnum*** sp., with a typical lumpy surface, encrusting and cementing pebbles and a razor-clam shell that form the seabed. Northern Georges Bank (lat 41°51.658' N., long 67°25.672' W.); water depth, 58 m; August 2005. Specimen is 5.3 in. (13.5 cm) wide; small pebble in lower center of image is 0.5 in. (1.2 cm) long. Collectors: **Page Valentine** (USGS), **Jeremy Collie** (URI), and **Robert Reid** (NOAA). Photograph by **Dann Blackwood** (USGS). [[larger version](#)]



Above: Closeup of the surface of ***Didemnum*** sp. showing small, yellow individual sea squirts arranged along common canal systems. Northern Georges Bank (lat 41°51.658' N., long 67°25.672' W.); water depth 58 m; August 2005. Small pebble in upper left is 0.5 in. (1.2 cm) long. Collectors: **Page Valentine** (USGS), **Jeremy Collie** (URI), and **Robert Reid** (NOAA). Photograph by **Dann Blackwood** (USGS). [[larger version](#)]

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Sea squirts are tunicates, a type of sea life with a primitive spinal cord in the larval stage and a firm, flexible outer covering in the adult stage called a "tunic," from which the name derives. The Georges Bank colonies are of the genus ***Didemnum***. The animal is known to thrive in marine environments that lie within its preferred temperature range (28-75°F) and have firm substrates and plentiful food. The colonies form dense mats, made up of thousands of minute individuals that attach to firm substrates such as gravel, sea scallops, mussels, docks and other structures, and even seaweed. Tunicates can overgrow sea scallops and mussels, and they may affect other species of clams and worms that live in the seabed below the tunicate colony. The tunicates could change the composition of benthic communities on gravel habitats that lie along the north edge of Georges Bank and the immobile-sand habitats characteristic of southern Georges Bank. ***Didemnum*** sp. cannot survive on habitats of moving sand, and so much of the shallow crest of Georges Bank is not threatened. The species is not yet known to occur on mud habitats that are typical of the deep basins of the Gulf of Maine.

During the 2005 survey, mats were observed on the north edge of Georges Bank on gravel substrate that has traditionally been highly productive for fish and sea scallops. Video and photo transects made by using the USGS seabed observation and sampling system (SeaBOSS) documented the distribution of the colonies in water depths of 45 to 65 m (145-213 ft).

Scientists will analyze data collected on the cruise to determine whether the sea squirt invasion has the potential to alter seabed communities that sustain commercial fish species. There is concern that the sea squirt mats could form a barrier between fish and their prey living in the seabed. Moreover, because no organisms have been observed to grow on the mats, the sea squirt mats may be an unfavorable surface for settlement of the larvae of scallops and other species. Samples of the sea squirt will be evaluated to determine its nutritional value to predators, and to confirm identification of the species through DNA analysis.

For more information on ***Didemnum*** sp. on Georges Bank and the worldwide occurrence of this and related ***Didemnum*** species, visit the Web site "[Marine Nuisance Species](#)."

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