

**Invasive Marine**

**NMFS Northeast Fisheries Science Center**

**Species Found**

**N E W S**

**on Georges Bank**

**Invasive Marine Species Found on Georges Bank**

**Contact:**



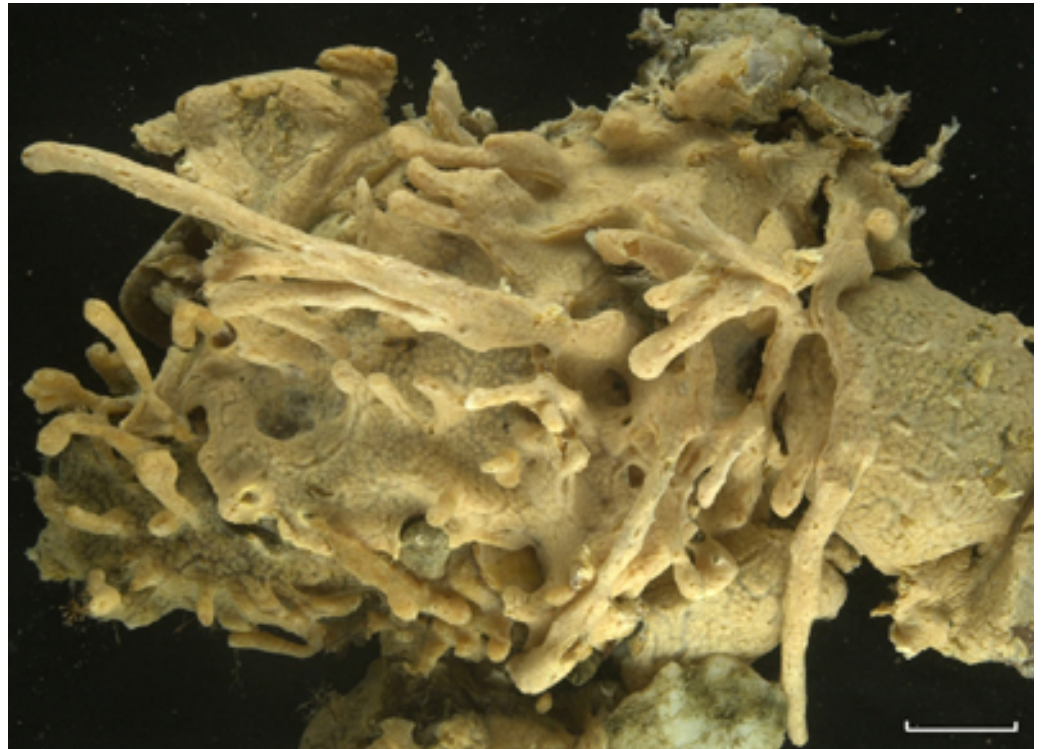
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(NOAA 03-139 update)



Tunicate colony of the genus *Didemnum* (probably the species *D. vexillum*) encrusting a mussel shell. The long rope-like extensions possibly encrust organisms such as hydroids that commonly attach to shells. White bar is 2 centimeters (0.8 inches). November 2003. Northern Georges Bank. Water depth 45 m (148 ft). 41 deg 57.439min N lat, 67 deg 31.160 min W lon. Click on image for larger view. *Photo by USGS.*

**Additional photos (click on image for larger view):**



Tunicate colonies of the genus *Didemnum* (probably the species *D. vexillum*) encrusting a naturalist dredge sample of pebble gravel. The encrusted sea scallop is approximately 5 inches in diameter. November 2003. Northern Georges Bank. Water depth 47 m (154 ft). 41 deg 57.19min N lat, 67 deg 31.080 min W lon. *Photo by USGS.*



Colonies of the tunicate genus *Didemnum* (probably the species *D. vexillum*) encrusting pebble gravel habitat and a sea scallop 5 inches in diameter. November 2003. Northern Georges Bank. Water depth 48 m. (157 ft). 41 deg 57.149min N lat, 67 deg 30.891 min W lon. *Photo by USGS.*



Tunicate colonies of the genus *Didemnum* (probably the species *D. vexillum*) advancing from left to right over pebble gravel habitat. Image height is 20 inches. November 2003. Northern Georges Bank. Water depth 41 m (135 ft). 41 deg 58.473min N lat, 67 deg 30.969 min W lon. *Photo by USGS.*

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**Woods Hole, MA** – Researchers have found what’s believed to be an invasive species of sea squirt on the northern edge of Georges Bank, colonizing a [6.5 square mile area about 160 miles off outer Cape Cod](#), at a depth of just over 150 feet. These siphon-feeding animals form dense mats, made of many thousands of individuals, encrusting and smothering hard sea bottom and organisms attached to it.

Commercial fishermen working on Georges Bank may encounter a colony. NOAA Fisheries and USGS have set up a [website](#) with more information on what to look for and how to help track distribution of the animals.

An “invasive species” is one that is not native to an ecosystem, and that may harm that ecosystem if introduced. Sea squirts are tunicates, sea life with a primitive spinal cord and a firm, flexible outer covering called a “tunic,” from which the name derives.

“Not everything in the study site was 100% covered by tunicates,” said U.S. Geological Survey researcher Dr. Page Valentine, “but in some places the mats were quite dense, covering more than 90 percent of the seabed.” The growth may be more widespread than observed in the study area alone, where the mats have grown dramatically in size and distribution in one year’s time.

“We weren’t looking for invasive species,” said Robert Reid of NOAA Fisheries, chief scientist for the cruise aboard the NOAA Ship Delaware II when the observations were made during early November. “This certainly highlights the value of regular monitoring to detect change in important marine habitats,” he said. Georges Bank is a well-known and highly productive fishing ground for both fish and sea scallops. According to NOAA scientists, this is just one example of how an invasive species can come into our waters and affect a fragile ecosystem.

Valentine, Reid, and Dr. Jeremy Collie of the University of Rhode Island have been visiting sites on Georges Bank regularly over the past nine years, taking bottom samples and using video and photographic imagery to document the sea floor, marine habitats, and their recovery following closure

of large areas of the Bank to some kinds of fishing.

“Based on our personal observations, *Didemnum* is changing the composition of benthic communities in the areas it has colonized,” said Collie, whose work in the study area has focused on recovery of bottom habitats in the absence of fishing with dragged gear. “Our time-series of data will be able to document this shift,” he said.

Researchers are concerned that the species could be carried elsewhere on Georges Bank on ships' hulls, in ballast waters, or on fishing gear, widening the infestation.

This is perhaps the first documentation of this species, believed to be *Didemnum vexillum*, in offshore waters. *Didemnum vexillum* has been reported fouling coastal structures and seabeds along the coasts of New England and the U.S. West Coast.

It was first documented in New England in 2000, by researchers tracking invasive species in coastal waters. Anecdotal observations suggest the species was present in the region by the mid-1990s. California researchers documented the species in their waters during 1998. In 2001, infestation by a similar tunicate threatened the green mussel aquaculture operations of Marlborough, New Zealand where officials took extraordinary steps to contain its spread. Its waters of origin are not known.

This species is known to reproduce both sexually and asexually. Larvae are fragile and short-lived, and are likely to settle relatively near their point of origin. However, fragmented pieces of the colony can free float indefinitely, reattach to a hard surface, and grow asexually. Such fragments can also contain incubated larvae.

According to researchers, the Georges Bank infestation may exceed documented occurrences on hard bottoms and structures in shallow coastal waters, where this animal can reach very high densities. The creatures exude a noxious substance as a byproduct of its metabolic processes, one that prevents fouling of its exterior and discourages predators.

Little is known about how *Didemnum* can affect fishery resources, or its survival in offshore waters. It needs a hard, or relatively stable, surface to which it can attach. It has proven difficult to eradicate elsewhere in the world's nearshore waters. Until now, primary threats have been in nearshore areas where the mat could grow over structures used in aquaculture.

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