

An unwelcome visitor off Cape Ann Invasive sea squirt species a threat to ocean bottom, fishing

The Boston Globe

By Tim Wacker, Globe Correspondent | July 27, 2006

By most accounts, Old Garden Beach in Rockport is a scenic dive site, but on a recent descent, Michael Donovan of Amesbury saw something as ugly as it may be dangerous making its first reported appearance here.

Didemnum sp. , a member of the sea squirt family, is a tiny animal that grows in bunches, creating gelatinous sheets. In recent years, this foreign species has begun taking over whole swaths of East Coast ocean bottom, including the sensitive fishing grounds at Georges Bank. Last fall, about 88 square miles there were colonized with patches of the gooey stuff.

When Donovan saw sheets the size of welcome mats growing on rocks off Old Garden Beach, he knew he'd stumbled across a sign the invasive creature had made its way to the shores of Cape Ann.

"We had taken a course on invasive species a couple months ago, so we were pretty sure we knew what we were looking at," said Donovan, a recreational diver who has gotten involved in a sea grant program to monitor invasives. "In the matted patches where the *didemnum* was growing, everything else just seemed to stop growing. We were pretty alarmed."

They should be, according to scientists familiar with the organisms.

"I'm a scientist and I don't tend to be alarmist, but there's a serious problem here," said Judith Pederson, a coastal resources specialist with Massachusetts Institute of Technology's Sea Grant education and outreach program. "Unfortunately, we really don't have good scientific data on the impact of this organism on other species. But the way this thing seems to be growing suggests it does have an impact on surrounding species."

Sea squirts are so named because they squirt water if lifted out of the ocean. They filter microscopic particles of food out of the water, much like clams.

More familiar sea squirt species commonly grow on docks and pilings. Others cluster around boat ropes and docking lines left for long periods in the water.

They reproduce sexually and asexually, so even a tiny fragment can form an entirely new colony elsewhere, essentially creating clones of itself. That kind of adaptability, which allows it to colonize large patches of ocean bottom, could be bad news for the rich lobster grounds off Cape Ann. Scientists are concerned this species of sea squirt will smother plants and animals that sustain the underwater food chain.

“It does tend to take up a lot of surface area that a lot of other things tend to grow on,” Pederson said. “My own personal observation is this is an extremely aggressive sea squirt.”

Identifying different species of sea squirts is not like identifying different species of fish, according to Pederson and other experts. There are many sea squirt species that can be similar in shape, structure, and life cycle -- some more dangerous than others.

Some are wiping out mussel beds in Nova Scotia, while others are threatening oyster beds in Australia and New Zealand. The sea squirts that previously have been discovered in Georges Bank, Isle of Shoals in New Hampshire, and Cobscook Bay in New Hampshire are called *didemnum* sp. -- a generic scientific label in Latin that means that scientists know they are a member of the sea squirt family, but are uncertain of exactly which species, or even if they belong to the same species.

A researcher coming out with a paper this fall says the squirts found on Cape Ann shores are the same as the sea squirts carpeting Georges Bank.

“I feel quite confident in telling you it's the same species,” said Mary Carman, a research associate at Woods Hole Oceanographic Institution. “I can tell you that this *didemnum* is slowly filling in various niches, that it was not previously present in here . . . and there are no known predators.”

Only tiny snails, called periwinkles, are known to eat the sea squirt, which is very acidic. Even then, the periwinkle will only eat sea squirts that are dying or weakened, leaving the healthy squirts untouched, Carman said.

Pederson and Carman say it's too early to know what danger these sea squirts pose to the surrounding environs and the livelihoods of those who make a living off the sea. Arthur Sawyer, vice president of the Massachusetts Lobstermen's Association, said he's heard of the sea squirts, but doesn't believe they are affecting the industry right now.

“What's going to happen five years from now? Nobody knows,” Carman said. “But I can tell you that since the 1980s, there has been dramatic change.”

Another concern is where the *didemnum* sp. has been turning up, Pederson said. Most species of sea squirts are more commonly found in manmade inshore areas such as docks and marinas, or shellfish farming operations. Finding them now in natural stretches of the open ocean is unusual, she said.

“Once these things get into the marine environment, it is almost impossible to get rid of them,” Pederson said. “Trying to remove this organism from Cape Ann will be almost impossible.”

If nothing else, the sea squirts have changed the view in one dive spot of Old Garden Beach. Donovan said the gelatinous blobs are an unpleasant shade of yellow that cover a third or more of the rocks they were found on.

“It seems like it has the potential to take over some of our favorite dive spots,” he said. “Who knows what will happen to the fisheries.” ■