

# Invasion of tropical fish could threaten native species

By Anna Pfeiffer-Herbert

Last summer, Narragansett Bay could have been a scene from Disney's animated film, "Finding Nemo." An unusual number of tropical species were found in the bay, including butterflyfish, bluespotted cornetfish, Portuguese man-of-wars and the first lionfish documented in the bay. There also were abnormally high numbers of subtropical fish, such as inshore lizardfish, that are occasional visitors from the south.

Local fisheries managers are keeping an eye on these southern species because they have the potential to negatively impact native fish populations of the bay. The watch will be on again this year.

Where do our aquatic summer visitors come from? Eggs, larvae and juveniles are carried up the coast on the nearest ocean highway: the Gulf Stream. The Gulf Stream is a major ocean current that begins south of Florida and follows the U.S. East Coast up to about the level of Delaware, where the current veers off toward Europe. As the current twists and

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turns, rings of water — and the living things carried in that water — separate from the warm current and move toward the edge of the continent.

These rings are called "warm-core rings," because the water in the rings is warmer than the surrounding ocean. Some of the fish carried in these rings are delivered to coastal bays and estuaries, including Narragansett Bay. At least one warm-core ring lingered near the southern New England shelf in May and June 2006, and scientists suspect this could be the source of many of the fish from the south.

Southern fish that arrive in early summer can thrive in warm-water temperatures, but when autumn

arrives and the bay cools down, the fish that lack the instinct to migrate south succumb to the cold water temperatures. While the pretty tropicals like lionfish will not be able to survive the winter in Narragansett Bay, less exotic species that are common to the Atlantic Coast between Florida and Virginia are at the borderline of being able to tolerate cool winters.

Long-term temperature data show that the bay is warming up, especially in winter. Average winter water temperatures are about 5 degrees warmer today than 45 years ago. Even a seemingly small rise in temperature is enough to affect the fish community. As winters become less harsh, southern fish will increase the length of time that they persist in the bay, and have a bigger potential impact on year-round resident species.

The inshore lizardfish is a striking example of just how unusual last summer's fish catches were, and why such visitors could impact the bay. As one scientist from the state Department of Environmental Management put it, "They were everywhere," in numbers five to 10 times the amount caught in any DEM surveys in the past. The inshore lizardfish typically lives from the Gulf of Mexico to South Carolina, and preys on small bottom fish. Although there is no direct evidence yet, these predators could feed upon large quantities of juveniles of native bottom fish in Narragansett Bay. While it is not certain whether it will happen, if inshore lizardfish are able to survive the winter and multiply in the bay, the results could be disastrous for winter flounder and other bottom fisheries.

Another southern visitor that is becoming more prevalent as the bay temperature increases is the comb jelly. Summertime beach-goers may swim past these 1- to 3-inch-long oblong jellyfish-like creatures without even noticing them. Comb jellies feed on fish larvae and plankton that are food for fish such as silversides and menhaden, which means that they both limit the number of young fish that survive and compete with other fish for food.

Records show that 50 years ago, comb jellies first appeared in the bay in August each year. Researchers at the University of Rhode Island's Graduate School of Oceanography discovered that they now first appear in June. Comb jellies and native fish are in a longer period of competition for the same planktonic food each year. This could lead to lower survival rates in native species. Bay researchers and DEM scientists are studying this phenomenon.

While a small number of tropical fish are probably harmless, the inshore lizardfish, comb jelly and other southern species may not be. Fisheries managers and fishermen know that conditions in Narragansett Bay are changing.

The implications of these changes are not clear. But one thing is for certain — it is not your grandfather's Narragansett Bay. Meanwhile, it will be very interesting to see if our finned visitors from the south make Narragansett Bay a destination again in 2007.

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