

## SUBWAY CARS A NEW DIMENSION IN ARTIFICIAL REEF DEBATE

Reef-building could be a euphemism for ocean dumping

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NEW YORK, Nov. 16 – Many people imagine army tanks with gun barrels blazing as they cut a swath of destruction through enemy lines. Few would picture fish darting through empty windows of tanks or crabs scuttling across their rusty surfaces – a far cry from the battlefield. But that’s exactly what’s happening 60 feet below the ocean’s surface off New York’s coastline.

One hundred surplus army tanks and armored vehicles were dumped into the Long Island Sound between 1995 and 1998 as part of New York State’s artificial reef building program. The tanks, or what’s left of them, could be joined by dozens of subway cars slated for retirement by the Metropolitan Transit Authority next year. The National Oceanic and Atmospheric Administration estimates that over two-thirds of the world’s natural reefs are threatened – an area the size of California – but it’s unclear if artificial reefs can serve as replacement habitats. And while officials determine if the subway cars are usable, the offshore environment continues its evolution toward a human-made destiny.

The state has built reefs since 1962 in an effort to enhance recreational fishing, said Steve Heins, reef program coordinator for the Department of Environmental Conservation. Seven reefs south of Long Island sit in water 40 to 85 feet deep, while three other reefs in Long Island Sound lie in 16- to 40-foot depths. The average reef, consisting of several “structures” separated by open seafloor, is about one and a half miles long and several hundred yards across.

Many of the reefs are designed to mimic a rocky reef environment, although naturally occurring rocky reefs are rare in waters south of Rhode Island and Massachusetts. The reefs are built with a wide variety of materials, ranging from concrete rubble and pipes to old barges. Assembly of an artificial reef occurs somewhat haphazardly. “Concrete pipes are pushed over or lifted off a ship while barges are flooded,” Heins said. “The actual configuration is however the pieces settle on the ocean floor.”

Vertical surfaces are important to marine life because they jut upwards into nutrient-laden ocean currents. Blue mussels are among the first animals to colonize the reefs, giving rise to what is called a blue mussel community. “Barnacles, sponges, sea anemones and worms all settle onto the (reef),” Heins said. “Shrimps and crabs come and then fish.”

Reefs of all types, artificial or natural, attract and concentrate fish in vast numbers. Sea bass use reefs as shelter. Other species, such as blackfish, feed on marine life around the reef, said Frank Steimele, a fishery biologist at the National Marine Fisheries Service. “Right now, the reefs serve one function – they provide collection areas for fish and ultimately fishermen,” he said. “But are they magnets to harvest fish?”

Because New York didn’t have naturally occurring reefs, it is tough to determine if the artificial reefs have increased or decreased fish populations, Steimele said. Many species of fish depend on other areas, such as wetlands and estuaries, for nurseries. As these breeding grounds get damaged by pollution, construction and other human activities, tracking the overall population becomes more difficult.

“The states are doing studies on the fish,” he said, adding that many of these studies are not yet completed.

Dery Bennett, executive director of the American Littoral Society, said that the presence of artificial reefs can stress populations and affect animal behavior. He cited a 1976 fish die-off near New Jersey as one example. A plankton bloom drained oxygen from a 2,000-square-mile area of the ocean. Reefs had been built on what was once a sandy ocean floor. The fish stayed in the area to feed even as they ran out of oxygen to breathe. "If the fish weren't on the artificial reefs, would they have moved on?" Bennett said.

Similar fish die-offs have occurred around the world, but people can only guess what role artificial reefs played, he said. Steimele agreed, saying that they can only speculate about the impact reefs have on fish distribution.

Where does this leave the tired subway cars of New York City? Steimele said that New Jersey has been testing cars in their waters for about 10 years. The lifespan of the cars underwater is estimated at 10 to 15 years. "They are corroding fast and disappearing into the sand," he said. "The cars are just dissolving into the water."

Past experience with automobiles showed that materials resistant to seawater are needed to create a permanent reef. In the 1960's, cars were placed in the ocean and they vanished in five years, Steimele said.

"It became like a dump and we got away from it," he said.

If the subway cars last only a little bit longer, it's still dumping, Steimele said. Permanent substrates can be considered reefs but ones that disappear in a decade are not. Three centuries of human activity have permanently changed the nearshore environment from Long Island to Cape Hatteras, North Carolina and for some, that's enough.

"Does it make sense to fiddle with this environment anymore?" asked Bennett. "I don't really think so."