

# Bay Invaders Destroy Native Species' Food

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 **Articles** : **Ecology & Environment**

## Bay Invaders Destroy Native Species' Food

By Jane Kay, *San Francisco Examiner*  
March 20, 1996

### **212 non-natives found in estuary, more than twice that anywhere else**

Clams, crabs, shrimp, worms and other tiny marine animals hitchhiking on oceangoing ships have turned San Francisco Bay and the Delta into North America's most invaded estuary, a new study says.

The study will be released by the U.S. Fish and Wildlife Service in Washington, D.C., Friday, the same day that Sen. John Glenn, D-Ohio, intends to introduce legislation that would prohibit ships from discharging organism-laced ballast water in estuaries.

The ballast water is the main way that these species, called biological invaders, arrive — and the number of species popping up has increased dramatically in the last 10 to 15 years, according to authors James Carlton, director of maritime studies at Williams College at Mystic Seaport, Conn., and Andrew Cohen, a marine biologist at UC-Berkeley.

Researchers found 212 non-native plant and animal species established in the Bay and Delta, more than twice the number in the Great Lakes or any other aquatic ecosystem.

### **Astonishing numbers**

In the last decade, arrivals of such intruders as the New Zealand sea slug, Chinese mitten crab,

Atlantic Ocean green crab and Asian clam are escalating at a rate of one new species every three months.

"The number of invasions coming in are astonishing," Cohen said. "We've had a whole portion of the Bay fauna subjected to invasions in the last decade or two as a result of ballast water."

The legislation that Glenn will propose would require vessels to discharge into the open ocean the tons of water they carry to provide balance and buoyancy. In the ocean, the escaped organisms would be less likely to disrupt the native flora and fauna.

Current regulations ban the dumping of ballast water only in the Great Lakes and the Hudson River. In those two water bodies, the European zebra mussel, for one, has multiplied, clogging pipes at municipal water and power plants and fouling ships. So far, it has caused \$5 billion in damage in the United States.

Dating from the Gold Rush, when the Atlantic barnacle stowed away as the Bay's first observed biological interloper, the creatures came on ship hulls or in fresh seafood sold at markets. Some, like the striped bass, were planted to start a commercial fishery.

Unchecked by natural predators and conditions, they reproduce by the millions, chasing out native species. While the zebra mussel and the kudzu vine in the Deep South are dramatic examples, the effects in the Bay are more subtle, the authors say - though no less profound.

### **Voracious invaders**

The newcomers can pose a threat to biodiversity by altering ecosystems. They munch native marine life, mow down food supplies and occupy territory, Carlton said.

The Asian clam, first seen in 1986, is now the most common clam in the Bay. Too small to replace native clams as a delicacy, the little mollusks are voraciously grazing on the Bay's food supply.

In Suisun Bay for much of the year, the Asian clam consumes most of the phytoplankton and some zooplankton, tiny plants and animals at the base of the food web, Carlton said.

The New Zealand sea slug, discovered in the Bay in 1992, already has spread to the coasts of Bodega Bay, Monterey and San Diego, including Mission Bay, said Terry Gosliner, senior curator of invertebrates at the California Academy of Sciences in San Francisco.

### **"Playing Russian roulette"**

"There are literally millions," he said. "Most of the species stay in bays. This one made it to the outer coast, and it's a cause for real concern."

At first, the sea slug was feeding on the Asian clam. "By the time it got to Bodega Harbor, it started feeding on native clam, the primary food source of our native wading birds," Gosliner said.

Gosliner supports legislation to keep ballast water out of the nation's ports.

In San Francisco Bay, the remaining native species, already depleted by overfishing, pollution and other environmental factors, are much more susceptible to competition from more aggressive species uncurbed in the Bay, he said.

"We've been playing Russian roulette with ballast water for years," he said. "Maybe 90 percent of

the species are relatively harmless. But we know from experience that some of these species have serious detrimental effects."

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