

Invasive species pose threat to human health, scientists warn

Bee Correspondent

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RICHMOND – For years, scientists have called the San Francisco Bay-Delta one of the most "invaded" waterways in the world.

More than 240 animal and plant species have hitchhiked here in the ballast tanks of cargo and tanker ships, thriving in waters from Sacramento to the Farallon Islands.

Now scientists are concerned that the exotic critters could pose a growing threat to human health through the transmission of disease and other pathogens.

"The presence of invasive species in the Bay-Delta is one of those areas of biological research that unfortunately has never quite sparked the public's sustained interest," said Deb Self, executive director of San Francisco Baykeeper, a local environmental organization. "Now, that may be changing."

In September, several dozen bathers at Alameda's Robert W. Crown Memorial Beach suffered an outbreak of "swimmer's itch," a rashlike condition caused when microscopic worms carried inside the small Japanese bubble snail burrow into the skin of an unknowing host.

Most people with healthy immune systems quickly reject the tiny invaders, leaving just an unpleasant and temporary skin rash. But Andrew Cohen, director of the Center for Research on Aquatic Bioinvasions in Richmond, said it's not the only time the worms may have caused human sickness at the Alameda beach.

Cohen, one of the nation's leading researchers on aquatic invasive species, recently co-authored an article on the outbreaks for the journal *Emerging Infectious Diseases*. He noted that in 2005, some 90 schoolchildren suffered similar rashes during a picnic trip to the same beach.

In Bay-Delta waters, scientists keep a sharp eye on a variety of plant and animals that do not belong there, including the ubiquitous Asian or overbite clam.

"These guys are huge filter-feeders. They devour much of the phytoplankton and young zooplankton, which in turn compromises the integrity of the food web," Cohen said of the clams. "Those species that cannot change or adapt ultimately perish."

Cohen noted that in addition to snails, anemones, fish, crabs, numerous kinds of worms, shrimp and plants, human diseases such as cholera can also survive trans-oceanic voyages in ballast tanks. He said that a strain of cholera that killed an estimated 10,000 people in Peru in the early 1990s was recently found in the ballast water of South American-flagged ships calling on Mobile Bay, Ala.

Both Cohen and Self, who say the Bay-Delta receives a new exotic species at the rate of one every 14 weeks, lament that the issue is not well known by the public and remains low on the agendas of many environmental groups and scientists.

"I hope we don't get to the point where somebody dies in order to draw attention to this problem," Cohen said. "The other thing that people need to know about is that once an exotic species gets established, it's pretty irreversible. They're here to stay."

Like many of the exotic invasive species that have found good homes in Bay and Delta waters, the snails probably arrived in the ballast water tanks of cargo ships calling from across the globe.

There are other sources of invasive species. One is the importation of live lobsters and marine bait worms flown daily to the West Coast from New England. The lobsters and worms are often packed in wet seaweed to keep them fresh. The problem is that the seaweed often carries non-native insects, mollusks and other creatures that get dumped after the lobsters or worms are removed.

But the lion's share of the problem is borne in ballast tanks of ships. Self said that an estimated 7,000 cargo container ships and some 10,000 tanker ships call on ports in the Bay-Delta region each year. Each of those vessels contains 10 million to 12 million gallons of ballast water, she added.

Researchers say the problem dates back at least to the start of the California Gold Rush, when barrels of eastern oysters were shipped west into San Francisco aboard transcontinental trains. Some of them, along with the native eastern sea plants often used as packing, found their way into bay waters.

From there, the problem only worsened as California developed. The San Francisco Bay-Delta and its deep water ports and shipping channels have become a hub of global shipping for the western United States.

Federal and state regulations forbid the discharge of ballast water inside American ports. But because the agencies in charge of enforcing such regulations have suffered budget and personnel cutbacks, too few vessels are being checked for compliance, environmental advocates say.

Self said getting the maritime industry behind the effort to help stop the invasion is key.

"Getting vessel owners and operators to follow the regulations and exchange ballast water far out to sea is important, but once they're in port they have other options as well. Some of those include treating their ballasts with chlorine, ozone or ultraviolet light," Self said. "In other words, there are solutions to this problem. It's just a matter of whether we'll act in time."

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