9-2001

The Invasion of Western Waters by Non-Native Species: Threats to the West

Western Regional Panel on Aquatic Nuisance Species

Follow this and additional works at: https://digitalcommons.usu.edu/govdocs

Part of the Aquaculture and Fisheries Commons

Recommended Citation

https://digitalcommons.usu.edu/govdocs/416

This Report is brought to you for free and open access by the U.S. Government Documents (Utah Regional Depository) at DigitalCommons@USU. It has been accepted for inclusion in All U.S. Government Documents (Utah Regional Depository) by an authorized administrator of DigitalCommons@USU. For more information, please contact rebecca.nelson@usu.edu.
THE INVASION OF WESTERN WATERS BY NON-NATIVE SPECIES

THREATS TO THE WEST

A PUBLICATION OF THE WESTERN REGIONAL PANEL ON AQUATIC NUISANCE SPECIES
zebra mussels have been found in the Missouri River in Kansas, and both dead and live mussels have also been found in the Mississippi River and on boats hauled into California and Washington. The waters of western North America are being transformed by invasive aquatic plants, fish, and other animals from around the world. These plants and animals, which have been introduced both intentionally and accidentally by humans, can irrevocably alter our native ecosystems. While they may be harmless in their own waters, once they arrive in a new ecosystem where their native predators do not exist, they can harm native species by eating their food, preying on them, transmitting diseases to which the natives have no defenses, or (like many invasive aquatic plants) simply outgrowing them. Not all non-native species cause serious problems, but some do, disrupting entire ecosystems by destroying habitat and altering food webs. Many aquatic nuisance animals are small, but their size belies their danger. One of the best-known aquatic nuisances in the United States is the European zebra mussel (Dreissena polymorpha), a human thumbnail. The zebra mussel is an alien of the Great Lakes, spreading the food webs of native clams, mussels, and fish, and clogging water and electrical utility pipes, bringing operations to a standstill. In 1990, largely in response to the zebra mussel invasion of the Great Lakes, Congress passed the Nonindigenous Aquatic Nuisance Prevention and Control Act. Among other measures, the Act established a national Aquatic Nuisance Species Task Force (ANSTF) and authorized the creation of regional panels to address aquatic nuisance species problems. In 1996, when the law was reauthorized as the National Invasive Species Act (NISA), the Western Regional Panel (WRP) was created. The WRP is comprised of representatives from U.S. federal, tribal, state, and local agencies, Canadian federal and western provincial agencies, and private environmental and commercial interests from the states west of the 100th Meridian, including Guam, Hawaii, and Alaska. The WRP is charged with taking action to prevent the spread of zebra mussels and other aquatic nuisance species, and to provide information and recommendations to the ANSTF.

WHAT IS BEING DONE TO PREVENT FURTHER INVASIONS?

Aquatic nuisance species arrive by various pathways. They are often introduced into open water, such as bays and estuaries, when ships empty the ballast water they carry in their hulls for stability. Some aquatic nuisance species may appear to be too large to be transported in ballast water, but many have smaller larval forms that can be sucked into ballast tanks at one port and carried to the next destination. With faster vessels enabling shorter shipping times, more species are surviving their voyages. On average, close to two million gallons of ballast water containing potential invaders are released into U.S. waters every hour. San Francisco Bay, one of the West Coast’s busiest international ports, now hosts over 200 introduced species, many of which are suspected of having arrived in ballast water. Many of these plants and animals are causing serious problems for the Bay’s native flora and fauna. Some aquatic nuisance species—like giant reed and tamarisk—get their start when people plant them to help stabilize creeks and riverbanks or to provide wind screens. Pieces of giant reed break off and spread downstream while the seeds of tamarisk disperse by wind. Other aquatic nuisance species get their start when they are dumped into waterways by people who no longer want to keep an aquarium. This releases exotic fish, other animals, and plants into new, vulnerable ecosystems.

WHAT CAN YOU DO TO HELP?

When you get home, wash your boat, tackle, downriggers, and trailer with hot water. Other parts of the boat that normally get wet. If possible, let everything dry for five days in the hot sun before using your boat in another water body.

As home water gardens become increasingly popular, nurseries, too, are contributing to the problem. Many sell non-native aquatic plants and fail to warn customers of their potential for becoming pests. Not all problem plants have been listed as noxious weeds. Giant reed, water hyacinth, and purple loosestrife are among the problem species still sold by nurseries in parts of the West. Aquatic nuisance species are also spread, unwittingly, by recreational boaters. Many boaters fail to notice and remove invasive plants and animals from their boats and boating accessories after an outing. When the boater visits a new lake or river, surviving aquatic nuisance species are introduced into a new ecosystem.

One of the WRPs main goals is to educate the public and decision-makers about the need to prevent further invasions in the West. This brochure describes some of the aquatic nuisance species that have already arrived and suggests ways you can help prevent their further spread.
SPARTINA

Commonly called cordgrasses, several species of Spartina are spreading and establishing themselves in the West. Spartina alterniflora, native to the eastern United States, was introduced intentionally to southern San Francisco Bay around 25 years ago. The plant hybridizes with native cordgrasses, causing the native cordgrass, Spartina foliosa, to become locally extinct. Spartina alterniflora is also a problem in Washington, where it transforms mudflats into vast expanses of cordgrass, destroying foraging habitat for shorebirds. It also reduces habitat for fish and shellfish.

Giant reed clogs streams and rivers, sometimes threatening structures like this bridge. Photo courtesy of Tom Dudley.

Giant reed clogs streams and rivers, sometimes threatening structures like this bridge. Photo courtesy of Tom Dudley.

Brazilian egria

This common aquarium plant native to Brazil roots at the bottom of waterways. Probably introduced into North America from Europe in the early 1900s, egria spreads by root proliferation. It thrives in waterways and ponds, choking out native vegetation, reducing water flow, and creating problems for boaters, swimmers, and anglers. Egria, like other aquatic plants, is best controlled by mowing or cutting the plant at the base. It can also be controlled by chemical treatments.

Giant salvinia

A free-floating aquatic fern from southeastern Brazil, this plant is an aggressive invader. Parts of Texas and Hawaii, giant salvinia has formed mats so extensive that migratory birds can no longer rest or forage in their usual areas. Texas anglers find it difficult to cut into water covered with thick mats of giant salvinia. Although the plant is prohibited in many states, it is still being cultivated and sold.

Maiden horsetail

A strong stemmed horsetail, maiden horsetail is an excellent waterway plant that is able to grow in both freshwater and saltwater environments. It is a common plant in the United States and Canada, and it is often found in waterways and ponds. Maiden horsetail is an invasive species, and it is best controlled by mechanical means like cutting or mowing.
With many native western amphibians in decline, concerns about the American bullfrog are on the rise. Native to the eastern United States, the bullfrog was introduced to California in the mid-1800s. By 1980, the species had spread throughout the West, where it has fewer native predators—pike, snapping turtle, and water snake—than in the East. The American bullfrog is now widespread across the West, where it is thriving.

Asian clams (Corbicula fluminea [freshwater] and Potamocorbula amurensis [estuarine])

C. fluminea, which lives in fresh water, was introduced in the 1800s by Chinese immigrants as a food item and was later discovered along the Columbia River in Washington. It has spread into 38 states. P. amurensis, which is native to Asia but inhabits estuaries, is a big problem in San Francisco Bay. The clam arrived in California in the mid-1980s and now numbers, on average, 2,000 clams per square meter in the north Bay.

Common carp (Cyprinus carpio)

Many non-native fish were released into western waters years ago by federal and state resource managers before there was good scientific understanding of the potential problems associated with such introductions. The common carp was brought here from Europe, probably in the mid-1860s (it had been introduced to Europe from Asia) because it was popular as a food source and easy to raise in ponds and other waterways. Carp have become a widespread problem in North America, consuming the food resources needed by other fish; they also eat the eggs of native fish and destroy spawning habitat.

New Zealand mudsnail (Polmopyrgus antipodarum)

This tiny creature was probably accidentally introduced to North America in shipments of trout eggs from New Zealand. The snail was discovered in Idaho’s Snake River in 1987, where it now exceeds 100,000 snails per square meter along some reaches. These snails have an extraordinary survival mechanism: They close a “top door” in their shells when they are eaten by fish and birds, which allows them to pass through undigested, depriving the birds and fish of any nutrition. In the Madison River in Yellowstone National Park, the New Zealand mudsnail now outnumbers all native crustaceans. It is also now established in the lower Columbia River.

New Zealand sea slug (Philine sp.)

Two species of marine mollusk were introduced to San Francisco Bay from New Zealand some time in the past few decades, probably in discharged ballast water. In 1993, the sea slugs were plentiful in the south Bay, but since then have spread throughout the Bay and along the California coast north to Bodega Harbor and south to San Diego. The slugs compete with native sea slugs and other mollusks. Since the slugs prey on bivalves and other mollusks that are food for shorebirds, they may be having an impact on both aquatic and terrestrial food webs.
RESOURCES

Center for Aquatic and Invasive Plants
University of Florida
http://plants.ifas.ufl.edu/invasive.html

Invasive Species Information System
http://www.invasivespecies.gov

National Aquatic Nuisance Species Task Force
http://www.anstaskforce.gov
(703) 358-2148

National Ballast Water Clearing House
(Smithsonian Environmental Research Center)
http://invasions.si.edu

Pacific Northwest Marine Invasive Species Team
http://seagrant.oregonstate.edu/news.html

University of California, Davis
http://www.cdms.ucdavis.edu
(530) 752-3419

U.S. Coast Guard Ballast Water Management Program
http://www.uscg.mil/bwg/mw/mw04/
(202) 267-0500

U.S. Fish and Wildlife Service
http://www.fws.gov/
(303) 236-7862 (Denver)
(505) 249-6471 (Albuquerque)
(503) 872-2763 (Portland)

U.S. Geological Survey
(with distribution maps)
http://invasions.usgs.gov

West Coast Ballast Outreach Project
California Sea Grant Extension Program
http://ballast-outreach-seagrant.ucdavis.edu
(650) 871-7559

Western Regional Panel
Aquatic Nuisance Species Coordinator, U.S. Fish &
Wildlife Service, Region 6
http://nwiswest.fws.gov. See also www.clr.pdx.edu/nis/.
(303) 236-7862

Produced by the Western Regional Panel on Aquatic Nuisance Species, with project
coordination by the San Francisco Estuary Project. Endorsed by the Western Governors
Association, the U.S. Fish and Wildlife Service, and the U.S. Environmental Protection
Agency. The U.S. Government is authorized to reproduce and distribute this brochure for
governmental purposes.

Writer-Editor: Lisa Owens-Viani
Design: Bobbi Sloan
Illustration: Lisa Krieshok

FRONT COVER, TOP: A resource manager tries to control a tamarisk infestation
by hand-cutting it. Photo courtesy of Tom Dudley.
FRONT COVER, BOTTOM: Carp threaten to enter and destroy marsh vegetation
BACK COVER: Giant reed towers over a worker. Photo courtesy of Tom Dudley.