

FACT SHEET

Aquatic Nuisance Species

Background

Invasive plants and animals from around the world have invaded the waters of the United States and the American Southwest. Plants and animals have been introduced intentionally and by accident, and they may alter the ecosystems which they invade. Although these species are a natural part of the ecosystems from which they came, they are new to the invaded waters and sometimes have no native predators. They can harm the native species by eating them, preying on their food, out-growing or out-competing them, and transmitting diseases and parasites to which the natives are defenseless. Some non-native species do not cause serious problems, but those that do can disrupt entire ecosystems and/or threaten the existence of some species, as well as causing economic impacts. Aquatic nuisance species in the Southwest include species that are native to other parts of the U.S. (e.g., the bullfrog). As discussed, although there are a number of aquatic nuisance species that are plants, animals are the subject of this fact sheet.

Example Nuisance Species

In the American Southwest, aquatic nuisance species that are animals consist primarily of fish, although many other animals are of concern as well. Some of the nuisance species that occur in the Southwest, discussed below, are the common carp (*Cyprinus carpio*), American bullfrog (*Rana catesbeiana*), virile or Northern crayfish (*Orconectes virilis*), quagga mussel (*Dreissena bugensis*), and zebra mussel (*Dreissena polymorpha*).

Fish

As noted above, nuisance species in Southwest aquatic environments consist primarily of fish. The number of non-native fish species in the Southwest is considerable. For example, at least 16 species of non-native fish can be found in the Grand Canyon stretch of the Colorado River, which is twice the number of native species present when Glen Canyon Dam was constructed. The common carp (*Cyprinus carpio*) is one of the species found in the Grand Canyon, as well as many other parts of the U.S. The carp was intentionally introduced into the U.S. as a food source in the late 1800s. These robust fish



PHOTO: KELLY MCALLISTER

American bullfrog

consume the food resources of native fish, they eat the eggs of native fish, and they destroy spawning habitat.

American Bullfrog

The American bullfrog (*Rana catesbeiana*), native to the eastern U.S., was introduced west of the Rocky Mountains in the 1800s. Bullfrogs were raised in streams and ponds and they were supplied to restaurants for their legs. They are efficient predators of other amphibians and some reptiles. For example, the bullfrog is thought to be a primary cause of declines of leopard frogs (including the federally-threatened Chiricahua leopard frog, *Rana chiricahuensis*) and garter snakes in Cochise County, southern Arizona (Rosen and Schwalbe 1995). The young of the Mexican garter snake (*Thamnophis eques*), a highly aquatic species, are susceptible to bullfrog predation.

Virile Crayfish

An aquatic invader of river and stream communities in Arizona and New Mexico is the Northern or virile crayfish (*Orconectes virilis*). The virile crayfish, native to other parts of the U.S. (e.g., north-central), has invaded rivers and streams where no native crayfish occur. The species was intentionally introduced for bait and vegetation control. It eats plants, insects, fish, frogs, small snakes, and young turtles. Populations of the crayfish, with no natural predators, increase dramatically while the native macroinvertebrates and other prey decrease; crayfish then consume the aquatic plants present, altering the aquatic communities where they are found.



Mussels

Among several mollusk species of concern in the Southwest are the zebra mussel (*Dreissena polymorpha*) and the quagga mussel (*Dreissena bugensis*). The small zebra mussel, from the Caspian Sea, has caused significant ecological and economic damage in the Great Lakes region of the U.S. since it was discovered in 1988. Introduced accidentally, the mussel has spread quickly in parts of the U.S. and is heading west. In the eastern U.S., the zebra mussel has upset the food webs of native species of clams, mussels, and fish, and clogged water and electrical utility pipes. Native mussels are also affected when zebra mussel larvae settle and attach on the natives, covering them to the extent they can not carry out life processes. The quagga mussel is slightly smaller and arrived after the zebra mussel, but its potential for impact is very similar. Taken together, the species currently have a very limited occurrence in the Southwest. The source of their introduction in rivers and streams in the Southwest would be through contaminated boats and boat trailers.

Efforts to Fight Invasions

In Southwest states, efforts are underway to prevent and fight invasions of nuisance species at the federal, state, and local level. The 1990 Nonindigenous Aquatic Nuisance Prevention and Control Act and the subsequent 1996 National Invasive Species Act led to the creation of the Western Regional Panel of the National Aquatic Nuisance Species Task Force. These groups, which include the National Park Service as a member, are taking action to prevent the spread of zebra mussels and other species. The NPS, as part of the U.S. Interior Department, is also a member of the National Invasive Species Council. As a land manager, the NPS plays a role in the science and management of controlling these species. The states also have Aquatic Invasive Species Advisory Councils, statewide invasive species management plans, and/or regulations to prevent and minimize the spread of nuisance species.

References

Rosen, P.C., and C.R. Schwalbe. 1995. Bullfrogs: Introduced predators in southwestern wetlands. Pp. 452-454 *In* E.T. LaRoe, G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac, eds., *Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems*. U.S. Department of Interior, National Biological Service, Washington, D.C. 530pp.



Zebra mussel

COURTESY U.S. GEOLOGICAL SURVEY



Zebra mussels on clam

PHOTO: JT CARLTON