

Exotic Invaders Crowd Out Native Plant Species

by STEVE LA RUE,
Staff Writer, *San Diego*
Union Tribune

They're drinking our water, killing our endangered birds and animals, creating urban fire hazards, turning our green meadows into thorny brambles, causing floods and erasing the rich variety of our California plants. Plant pest invaders are hardly visible on the radar screen of recognized national ecological issues. But biologists such as Jeffrey Lovichor the National Biological Service think alien plants are part of an environmental menace as grave as global warming or ozone depletion.

"Invasive species are one of the greatest challenges to ecology that we face today," he said at a recent meeting in San Diego of the California Exotic Pest Plant Council.

Invading, non-indigenous plants caused cumulative crop and other losses of about \$603 million in the United States be-

tween 1906 and 1991, according to the federal Office of Technology Assessment, and this doesn't include habitat damage.

According to one federal estimate, exotic pest plants are spreading in Western public lands at the rate of about 4,600 acres per day, blotting out native plant communities and the birds, insects and animals that rely on them to survive.

With hoes, bulldozers and herbicides, environmental groups and public agencies are fighting back.

Plant imports are hardly new. Stone reliefs from ancient Egypt depict the importation of incense-producing trees about 1,500 years before Christ, said Barbara Tellman, biologist at the University of Arizona.

By studying seeds inadvertently included in adobe bricks used to build the California missions, Tellman said, experts have proved that European weeds established themselves in the state long before European crops were

raised in the state. The earliest missions have non-native weed seeds in their bricks, not crop seeds.

The weed seeds are thought to have arrived in shipboard packing materials and clinging to the fur of the Spaniards' horses and other animals.

Most imported plants do not become major burdens on society and the environment. Some, however, can. Two plants—giant reed and salt cedar—are particularly grim illustrations of how intentionally imported plants can cause intense damage.

These two are among the Southwest's most critical invading plant pests, ranking high on the California Exotic Pest Plant Council's A-1 list of invasive species. They swill down the water, which is the West's most precious resource, while blotting out California's native streamsides, a habitat so rare that only 4 percent of the original remains.

It's All You Get

Mentioned in the Bible, the shrubby salt cedar, *Tamarix ramosissima*, is thought to have originated in the Middle East and North Africa. It was imported to the Southwest in the late 1800s as a windbreak and erosion-control plant and was also valued for bringing shade and green to the desert.

But its modest benefits have come at an exorbitant price. It has proved to be a diabolical thief of the West's water, sprawling over several million acres of western watercourses. At the same time, it has eradicated some of our most precious habitats.

"We now have many rivers in Arizona which are pretty much solid stands of salt cedar," Tellman said.

(Salt cedar is a cousin of the tamarisk tree, which is not considered an ecological hazard.)

"Salt cedar alters the natural processes of the environment in which it lives. Once it is established, all you get is salt cedar," said Cameron Barrows, biologist for the environmental group, The Nature Conservancy.

Growing to more than 20 feet high, salt cedar plants gulp large volumes of water—up to 200 gallons per day per plant, according to one estimate. This often lowers desert water tables below the roots of native plants.

"It puts down a deeper tap root than any shrub or tree," said Mike Kelly, a San Diego board member of the pest plant council.

The frequent result is the disappearance of wetland habitats for sensitive species like turtles, salamanders, the elf owl and a declining bird species called the Yuma clapper rail.

The plant's insatiable thirst also dries up desert watering holes frequented by deer and bighorn sheep. In return, the salt cedar provides habitat food for only limited species like honeybees, hummingbirds and doves, Barrows said.

Salt cedars also store salt at concentrations higher than the ocean and secrete it so that surrounding soils become saltier and saltier and less hospitable to native cottonwoods, willows and sycamores,

which are less salt-tolerant.

It has yet another weapon. Salt cedar burns readily and regenerates rapidly after fires that kill competing native vegetation.

"Once it is established, the frequency of fires increases and, after each fire, it is more common than ever," Barrows said.

Because of these competitive advantages, Barrows said, "I find it anywhere from the tip of Baja California all the way up to Central and Northern California."

Salt cedar also has invaded Anza Borrego Desert State Park and is currently draining water from a rare 100-acre wetland called Sentenac Cienaga that supports more than 200 bird species near Scissors Crossing.

"It is exceedingly widespread in the desert, and it is now moving into the coastal drainages," said Cindy Burrascano, San Diego chair of the California Native Plant Society.

One way to get rid of it, Barrows said, is a small bulldozer called a "brush rig" that pulls the plants out by the roots.

From Thatch to Pest

The second highly invasive plant is the giant reed—or as some botanists know it, “the weed from hell.”

Often confused with bamboo, *Arundo donax* shoots to heights of 40 feet, with hard, green stems and bamboo-like leaves. It was imported to California from India in 1825 to provide a thatch-type building material and to control erosion in irrigation ditches, said Gary Bell, a biologist with The Nature Conservancy.

“You don’t disagree over whether to control *Arundo*; you disagree over the best reason for hating the stuff,” Bell said. There are many.

Arundo has made a name for itself in Southern California by clogging rivers such as the Santa Ana, San Gabriel, Ventura, Santa Paula, Santa Margarita and San Diego. The weed can grow 10 feet or more each year and rapidly shades out existing habitats for species such as the endangered least Bell’s vireo.

Arundo spreads during floods because it sprouts vegetatively. Flooding shatters the

plant’s hearty stalks, but young plants grow from pieces of the plants deposited downstream. Meanwhile, other young plants grow from the root balls that remain in the soil upstream.

The root balls soon become so large that they can act as small dams that worsen flood damage by directing water out of river courses, Bell said. *Arundo* clogging the Santa Margarita River, he said, played a significant role in the bursting of a levee on Jan. 16, 1993. That flood sent a 10-foot wall of water into Camp Pendleton, resulting in \$12.5 million in damage to helicopters and structures. The highly flammable *Arundo* has also choked parts of the Santa Ana River in Orange County, providing rapidly burning fuel for three fires in the river between 1984 and 1992. In 1991, a multiagency control effort called Team *Arundo* was launched and has had some success.

But “We have a long way and lots of millions of dollars to go,” Bell said.

Physically removing the plant can require

excavating up to 12 feet deep to remove every bit of the root ball—a procedure that can do more damage than the weed.

“The only way we are going to control it is by carefully treating it with herbicides,” Bell said.

But he said attempting to control the weed along watercourses is a waste of money if there are stands of it upstream left standing. The next heavy flood or rainstorm will replant the weed in the recently cleared area. This imposes difficult organizational problems, Bell said.

“It needs to be controlled on a watershed basis, and that means you have to get everybody involved.”

Crowding Out Natives

Arundo and salt cedar are far from the only plant invaders creeping over San Diego County, or on their way. German ivy, *Senecio mikanoides*, dominates watercourses in the Santa Cruz mountains of Northern California, where it shades and kills the entire lower story of streamside

plants and forms a netting around the trees.

A native of South Africa, this rugged vine species is starting to do the same thing here. It is now found along the San Luis Rey River in Bonsall, in Tecolote Canyon, along State Route 163 in Balboa Park, in Torrey Pines State Reserve, and in the Lake Hodges area, according to the California Native Plant Society.

Another invader, with its decorative tan tassels, is pampas grass. *Cortaderia jubata* is an South American native that is believed to have been imported in the late 1800s by a Californian who dyed and sold the tassels for home decoration.

The grass, which reaches 30 feet and higher, now outcompetes many native California plants in state and national reserves such as Big Sur State Park, and increases the state's susceptibility to summer wildfires.

The plants have sharp, cutting leaves and pose other hazards for volunteer removal crews: They provide cover and a cool retreat for rats and rattlesnakes.

Pampas grass has begun to appear in San Diego County, where it could erode valuable coastal sage scrub habitats, said Burrascano.

Smelling of sweet licorice, fennel, *Foeniculum vulgare*, is a wispy green plant that grows up to 7 feet. It is so common in Ocean-side that Camp Pendleton has become Camp Fennelton, Burrascano said.

Fennel also has invaded Mission Trails Regional Park and Los Peñasquitos Canyon, growing in such abundance that it crowds out valuable coastal sage scrub and grasslands habitats.

Artichoke thistle, *Cynara cardunculus*, is an aggressive weed, native to the Mediterranean, that was brought to the United States in 1880 by European immigrants for their vegetable gardens. It now thrives on coastal rangeland in California, protecting itself with inch-long spines and making rangeland unsuitable for grazing animals. It also has footholds in Los Peñasquitos Canyon, Miramar Naval Air Station and in Rancho Bernardo.

Yellow star thistle, *Centaurea solstitialis*, isn't here yet, but botanists expect it to be showing up in local back country uplands soon. This brambly bush has blue-green stems and small yellow blossoms ringed by skin-piercing spines.

Spewing out as many as 50 million seeds per acre, it had spilled over 193 square miles of Northern California grasslands as of 1957, covered 1,351 square miles in 1985 and dominates about 15,000 square miles today, mostly in the Sacramento Valley.

Star thistle requires at least 10 inches of rain per year, which is likely to keep it out of San Diego County's coastal plains. But since it can grow at altitudes of 7,200 feet, it could thrive in the wetter high country, such as the areas of Julian, Palomar Mountain or the Cuyamacas.

"Up until recently, there really has been no thought given to the negative impacts of plant introductions," said Tellman, the University of Arizona biologist.

That may be changing, with the de-

veloping world the first to express urgent concern. Developing nations were heard at a meeting this summer in Norway of exotic pest councils from 80 countries, said John

Randall, delegate for the California council and a weed specialist for the University of California Davis.

"Their attitude was, 'We have severe environmentally and eco-

nomically disruptive organisms that have come in from other countries,'" Randall said.

Plant Pests

ARUNDO GIANT REED

Arundo donax

□ Brought to California from India in 1825 to provide building material. Currently clogging virtually every river in Southern California. Arundo can grow 10 feet annually and has rapidly destroyed habitats for threatened species. Mincing no words, botanists call it "the weed from hell."

SALT CEDAR

Tamarix ramosissima

□ Imported to Southern California in the late 1800s as a windbreak and erosion-control plant. Growing more than 20 feet high, a salt cedar plant can gulp up to 200 gallons of water per day. Stands of salt cedar lower the desert water table below the roots of native plants.

ARTICHOKE THISTLE

Cynara cardunculus

□ An aggressive weed, artichoke thistle was brought to this country by European immigrants for their vegetable gardens. It now thrives on coastal rangeland in the state, protecting itself with inch-long spines.

FENNEL

Foeniculum vulgare

□ A wispy green plant that smells of licorice, fennel can grow to 7 feet tall. It has invaded many San Diego parks and canyons, crowding out valuable coastal sage scrub and grassland habitats.

PAMPAS GRASS

Cortaderia jobata

□ Pampas grass is a native of South American that now out-competes many native California grasses in state and national reserves. It was imported by a California entrepreneur in the late 1800s to sell for home decoration. The grass can reach 30 feet high and has sharp, cutting leaves.