Giant Reed is Creating Sour Notes in Texas

Eighth of the "Dirty Dozen"

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Editor's Note: An introductory article discussing exotic invasive pests that could threaten forest resources in Texas was included in the June 2005 issue of *Texas Forestry*. As a follow-up to that article, a series of 12 short articles about specific exotic pests that are either present in Texas or are at our doorstep is planned. The authors (Joe Pase, Ron Billings, and Kim Camilli) are calling this series the "Dirty Dozen." Last month, Joe described kudzu, the seventh pest in the series. Giant reed is the eighth article in the series and the fifth invasive plant to be presented.

Giant reed, *Arundo donax*, is a plant that has long been valued by many and, more recently, despised by others. It is a rapidly-growing plant introduced into the United States as early as 1820 for erosion control and windbreaks that has escaped cultivation and become a nuisance in many states. In southern California, for example, federal and state officials are spending up to $17,000 per acre in a multi-million dollar effort to rid several river basins of the reed. It is considered one of the most invasive and noxious plants in riparian areas of the state. Once established in pure thickets, it chokes out native vegetation, reduces wildlife habitat, utilizes dwindling water resources, hinders flood control, and blocks access to water courses. The dense thickets dry out and remain standing in the winter, creating a fire hazard. Even when green, giant reed thickets are fire-prone.

Interestingly, giant reed is one of those invasive plants that also has its virtues and supporters. Not many landowners struggling to control giant reed realize that this plant is responsible for great symphonies. For example, the classic "*Peter and the Wolf*" would never have been possible were it not for the musical characterizations made by the bassoon (the grandfather), oboe (the duck), and clarinet (the cat). These wind instruments require wooden reeds to make sounds, as do saxophones and bagpipes. The sole source of these reeds is *Arundo donax*. In fact, musicians in various parts of the U.S. cultivate the plant, known to them as bassoon cane or oboe cane, to make their own instrument reeds.

There are enthusiasts in the U.S., mostly on the East Coast and in Florida, that see *Arundo donax* as a fast-growing replacement source for fuel, building products and paper. According to a 2002 article in the *Wall Street Journal*, one Florida bio-energy company has secured a contract to supply Jacksonville's city-owned utility with up to $250 million in reed-fueled power over the next decade and has plans to plant 8,000 acres of giant reed within the state. And others see it as a possible new crop in the South, to replace tobacco and cotton.

In the question of whether *Arundo donax* is friend or foe, the State of Texas currently sides with California. Giant reed is listed as one of the state's most noxious weeds. It is common along steams, rivers and roadsides in West and South Texas.

Along portions of the Rio Grande River, this nonnative plant is second only to salt cedar as a noxious invader of river banks and is the target of aggressive control efforts. Populations of giant reed are being increasingly reported in riparian areas of Central and East Texas.

Giant reed is indigenous to the areas surrounding the Mediterranean Sea (from which the best woodwind reeds are made) and India. It has been cultivated and naturalized in the warmer climatic regions of every major continent. Since it was first introduced into California almost two centuries ago for windbreaks and erosion control, giant reed has escaped cultivation in many areas of the U.S. It is listed as invasive in California, Hawaii, Nevada, Arizona, New Mexico, Texas, Tennessee, Georgia, Virginia, and Maryland; in fact, infestations are suspected in every state in the South.

The corn-like stems of this plant grow in thickets up to 20 feet in height, shading out other vegetation. The stem, used in ancient times for flutes and organ pipes, has joints every 1 to 8 inches; the area between the joints is hollow. The long (18 – 30 inches), corn-like leaves grow in an alternate branching pattern from the tall stem. The root is a large, tuberous rhizome. The flowers, which bloom in August and September, grow up to 36 inches long and are whitish to purplish (see photos).

It is most common in moist places such as ditches, stream and riverbanks. It can flourish in a wide variety of soil types from heavy clays to loose sands that range in pH from 5.5 to 8.3, including conditions of high salinity. The tenacity of this plant is attributed to a large rhizome that can break off in floods or in road construction and distribute the plant to new areas. Fortunately, the plants in the U. S. are believed to be sterile and do not produce viable seed.

Arundo donax, although it resembles a species of bamboo, is actually in the grass family. It is related to sugar cane and is the tallest grass in Texas. In other parts of the world, in addition to woodwind reeds, the plant has been used as a source for industrial fiber, to make flour for bread (rhizomes), baskets, fishing poles, and, in France, as camouflage mats during World War II. In fact, so much mature giant reed was harvested for mats in France during the war that musicians couldn't get mature canes to make reeds for wind instruments. Meanwhile, a war in Texas has begun to combat this invasive plant, particularly along water courses in West and South Texas. Only time will tell whether this plant will become as invasive and noxious in riparian areas of East Texas as it has along the Rio Grande River.

Areas infested with giant reed are best restored through chemical means, although research on biological control agents is underway. James Miller, in his publication entitled *Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control*, recommends a glyphosate herbicide as a 4-percent solution, Arsenal® AC as a 1-percent solution, or a combination of the two herbicides. BASF recommends use of Stalker® as an effective, long-term solution. This herbicide kills the rhizomes, with little chance of resprouting. Apply to clumps of giant reed after flowering, either as a cut

stump treatment or as a foliar spray. Be aware that non-target plants growing in the vicinity may be injured or killed by root uptake of these herbicides.

Mechanical control (e.g., digging up the roots and/or repeated mowing) may be somewhat effective, but if small fragments of root are left in the soil, they may resprout. Prescribed burning, either alone or combined with herbicide applications, may be effective if conducted after flowering. Once giant reed thickets have been reduced sufficiently, native plants may be seeded or transplanted at the treated site.

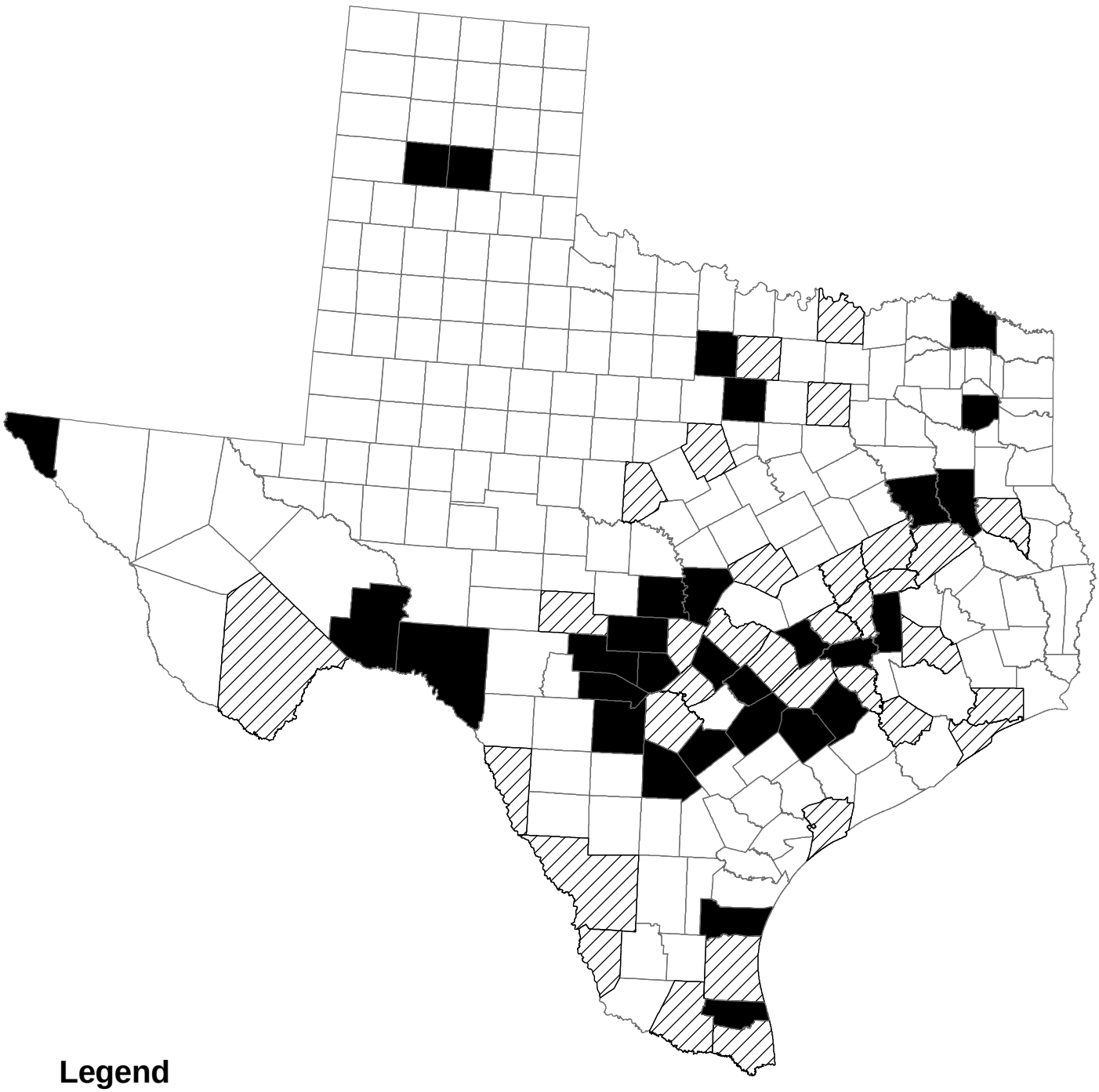
The Natural Resource Conservation Service (NRCS) has recorded giant reed in 33 counties, primarily in Central and South Texas. In response to a recent Texas Forest Service (TFS) questionnaire on invasive plants, managers of natural areas and TFS foresters have observed giant reed in an additional 30 counties, including several counties (Anderson, Cherokee, Grimes, Houston, Leon, Red River, Upshur) in East Texas (see map).

If you find giant reed growing wild in Texas within a county not shown on the map, please report its location to Kim Camilli, TFS forest pathologist in Austin (phone 512-371-7011; e-mail kcamilli@tfs.tamu.edu) or Joe Pase, TFS forest entomologist in Lufkin (phone 936-639-8170; e-mail jpase@tfs.tamu.edu), so that a more comprehensive distribution map of this invasive plant can be made. These reports, once verified, will be added to the county distribution map on the new invasive web site (http://www.texasinvasives.org) being developed by TFS and other partners.

Giant reed showing stem and alternate leaves (left) and thicket with flowers
(Photos by James H. Miller, USDA Forest Service)

Giant reed growing along Highway 79 in Leon County, Texas.
(Photo by Ron Billings, Texas Forest Service)

Distribution of Giant Reed in Texas



Legend

- NRCS identified county (33 counties)
- New county identified in 2005 TFS questionnaire (30 counties)

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