



What is Arundo? *Arundo donax*, also commonly called Giant Reed or Carrizo Cane, is a highly invasive, non-native grass with the potential to significantly impact the health of Hill Country streams and rivers.

How does Arundo impact me and my river or creek? Arundo consumes large quantities of water, reducing base flows vital to the health of the native invertebrates, fishes, and plants in the creek and reduces water quality. Arundo is a “game-changer” for the riparian area of these streams. It contributes to flooding by obstructing the floodplain’s ability to evenly dissipate flood energy. It displaces native riparian vegetation and its comparatively shallow roots can lead to increased bank erosion and damage to private property. Diverse, native vegetation is important for wildlife that depend on riparian areas, and when the native plant community is replaced by Arundo, the habitat may become more favorable for invasive, feral hogs and nutria. Arundo is also a fire hazard—it is highly flammable and substantially increases danger of wildfire occurrence, intensity, and frequency and decreases the riparian areas’ ability to act as a firebreak.

Why manage Arundo in the Hill Country? The purpose of managing Arundo on Hill Country rivers and creeks is to ultimately help restore native habitat and diversity as well as riparian function. However, management of Arundo with restoration of the native vegetation (naturally or by replanting) can also help to reduce erosion and risks associated with flooding and wildfires.

How can I manage Arundo on my property? Riparian landowner involvement and understanding are the most important ingredients in control. Arundo is easily spread by mechanical disturbance, such as cutting, mowing, or tilling, and floating cut stalks can spread this invader to downstream properties. Its growth and expansion is stimulated by fire. With common understanding and landowner cooperation, a control program is underway on Hill Country streams to provide herbicide application at no cost to the landowners as part of a ‘**Healthy Creeks Initiative.**’ This initiative is a partnership with landowners on the Blanco and Pedernales Rivers that are interested in taking steps to improve the health of their riparian areas.

How can I sign up to participate in the Healthy Creeks Initiative? If you have Arundo on your property, you can contact us by email at healthycreeks@tpwd.texas.gov or call Ryan McGillicuddy (Blanco River) at 512-552-3713 or Monica McGarrity (Pedernales River and tributaries) at 512-552-3465. After you fill out a landowner permission form, we will set a time to see your property and/or visit with you in person to talk about the initiative and the treatment. The landowner permission form you’ll need to fill out in order to participate in the initiative grants us or contractors access for treatment and monitoring and lets us share information about the success of the project in your area but we will never share your name or address. Strong landowner support all along your river or creek is important to the success of this initiative—so be sure to let your neighbors know you’re a proud Healthy Creeks Initiative participant!



Why Herbicides? Mechanical removal of Arundo is labor intensive, expensive, and requires removal of all root material to increase the chance of success. However, mechanical removal of very small patches or freshly rooted fragments can be very effective, especially when they're growing in the creek. Removal of large stands could be extremely damaging to the riparian area, destabilizing banks and leading to erosion and damage to private property. Fragments of Arundo could travel downstream and cause new infestations. Herbicides, when used responsibly, can minimize the impact on the riparian habitat. By leaving treated canes and roots in place while the plant dies, we can provide stability to the soil, reduce erosion, and create a nursery area to allow regrowth of native plants. When large patches of Arundo are treated, planting may also be used to restore the native vegetation.

Which Herbicides are used for Arundo? Responsible pesticide selection and application is the key to reducing the risks. Herbicides used to treat Arundo (or any Nuisance Aquatic Vegetation) must be approved by the EPA for use over water. These herbicides (not only the active ingredient but also other additives) have been rigorously tested and found to have minimal risk to aquatic life, in addition to the standard testing required for all pesticides. Herbicides we are using to manage Arundo include the active ingredients glyphosate and imazamox. These herbicides are applied only once per year and at very low concentrations—the herbicide 'mix' usually contains around 1.5 parts herbicide to 99 parts water. These herbicides have extremely low toxicity and low tendency to runoff into surface waters but high tendency to be bound in the soil where they break down rather than moving through the soil into ground water. We use licensed pesticide applicators who take measures to minimize drift and overspray onto the water or adjacent non-target plants by spraying during low-wind conditions and adjusting droplet size using different pressure and nozzle combinations. In addition to the precautions certified applicators take to keep herbicide applications on target, they also add surfactants to the herbicide mixture to help penetrate the dense Arundo canopy for effectiveness and to speed up drying which further reduces the risk of runoff into surface waters.

Aquatic Invasive Species have Significant Economic Impacts in Texas. It's estimated that the annual economic impact of aquatic invasive species in the US is more than \$140 billion, and globally, the impacts are estimated at more than \$4 trillion. Texas Parks and Wildlife Department estimates that effective management of aquatic invasive species in Texas would require \$45 million annually.

Texas Parks and Wildlife Department and Our Partners Take Action to Manage Aquatic Invasive Species. Texas Parks and Wildlife Department has an established aquatic invasive species program that works cooperatively with nongovernmental organizations such as The Nature Conservancy and the Hill Country Alliance, as well as other state agencies, river authorities, water utilities, municipalities, private landowners, and other local partners to manage aquatic invasive species. Specific actions include biological surveys and monitoring to identify new introductions of aquatic invasive species, studies that attempt to identify potential introduction pathways, public outreach and other proactive measures to help prevent their spread, and on-the-ground treatment, including use of herbicides, mechanical removal, and biological controls.

How Can I Learn More? Visit <http://www.tpwd.texas.gov/landwater/water/aquatic-invasives/hill-country-giant-reed.phtml> or email us at healthycreeks@tpwd.texas.gov



Top: Certified pesticide applicator carefully targets Arundo.



Bottom: Arundo shows signs of treatment after only a few weeks.



Hand pull new sprouts to keep them from taking root.