



Healthy Creeks Initiative to Combat Invasive Arundo

The 'Healthy Creeks Initiative' is a partnership with landowners to protect and improve habitat health along rivers and creeks in the headwaters of the Pedernales, Blanco, Medina, and Guadalupe watersheds. Strong landowner support is important to the success of this initiative—so be sure to spread the word!

HOW CAN I PARTICIPATE? As part of the Healthy Creeks Initiative, we are offering no-cost Arundo control for landowner partners in our project areas. To participate, you'll need to sign a landowner permission form to grant access for treatment and monitoring. You can terminate the agreement any time by email or letter, and you'll always receive advance notice before our staff, partners, or contractors access your property. To learn more, email healthycreeks@tpwd.texas.gov or reach out to your local contact:

- **Upper Pedernales:** Angela England (TPWD), angela.england@tpwd.texas.gov, 512-289-2740
- **Blanco River:** Ryan McGillicuddy (TPWD), ryan.mcgillicuddy@tpwd.texas.gov, 512-552-3713
- **Upper Guadalupe (Kerr County):** Tara Bushnoe (UGRA), tbushnoe@ugra.org, 830-896-5456
- **Upper Medina (Bandera County):** Levi Sparks (BCRAGD), lsparks@bcragd.org, 830-796-7260

WHAT IS ARUNDO? Arundo (*Arundo donax*) is a large, invasive grass that has become increasingly a growing problem in Texas in recent decades. It is sometimes also commonly called Giant Reed or Carrizo Cane. This non-native invader has the potential to significantly impact the health of our creeks and rivers.

HOW DOES ARUNDO IMPACT ME? Arundo consumes large quantities of water, reducing river flow, and also worsens flooding by lessening the floodplain's ability to dissipate flood energy. Arundo displaces native plants with strong roots that stabilize banks and its comparatively shallow, weak roots can increase bank erosion, reducing water quality and causing damage to private property. Arundo stands may harbor pests such as cattle ticks, feral hogs, and nutria. Arundo is a fire hazard—it is highly flammable and increases wildfire danger, intensity, and frequency and prevents creekside areas from acting as a natural firebreak.

HOW DOES ARUNDO IMPACT CREEK HEALTH? Arundo is a "game-changer" for sensitive riparian areas (extremely important habitats alongside our creeks and rivers). It reduces water quantity and quality and degrades the quality of instream habitats for native aquatic life. It also reduces riparian habitat quality by crowding out the diverse, native plant life that is important for wildlife.

WHY MANAGE ARUNDO? Invasive plants threaten our natural heritage by harming the healthy function of creeks and riparian areas that are vital to creek health. Arundo control can reduce the risk of flooding and wildfire and improve habitat for wildlife. Encouragement of healthy, native vegetation stabilizes banks (reducing erosion and property damage), helps the riparian area absorb water like a sponge, dissipates flood energy, reduces runoff of pollutants and bacteria into the water, and helps prevent Arundo reinvasion.



The Guadalupe Bass, our state fish, needs healthy Hill Country creeks



Bandera County
River Authority & Groundwater District
Protecting & Preserving our Natural Resources



hill country alliance

The Nature Conservancy
Protecting nature. Preserving life.®



HOW IS ARUNDO CONTROLLED? Chemical treatment is the most effective method of controlling Arundo and can minimize the impact of control efforts on the riparian habitat. Treated canes and roots are left in place (for at least two years after it appears completely dead), providing some stability to the soil and helping to reduce erosion while native plants regrow—the dead canes create a nursery area to protect young, native plants. Planting or seeding of large, dead patches of Arundo can also help to restore the habitat. Mechanical treatment, such as cutting, mowing, or tilling can make the Arundo problem worse and floating stalk fragments can take root on downstream properties. Although hand-pulling rooted fragments or small Arundo plants can be effective when all root material can be removed, physical removal of larger stands of Arundo is not typically recommended and is both expensive and labor-intensive. Mechanical removal can damage and destabilize banks, leading to erosion and damage to private property, and can compact soils, hindering native plant regrowth. Burning in riparian areas is also not recommended, because fire may stimulate Arundo growth and can kill the seeds of native plants in the soil, slowing native plant regrowth.

WHICH HERBICIDES ARE USED FOR ARUNDO? We use only aquatic-labeled (EPA approved) herbicides and adjuvants that have been rigorously tested to ensure minimal risk of harm to aquatic life, in addition to the standard testing required for all pesticides to ensure they won't be harmful to humans or other wildlife, including honeybees, birds, and mammals. The active ingredients in the herbicides we are using to manage Arundo include imazamox and glyphosate. Although many people have concerns about the use of glyphosate, a recent EPA risk assessment found that it is not likely to cause cancer in humans when used according to label requirements. Additionally, we apply these herbicides to the Arundo only once per year (i.e., no potential for chronic exposure) and we use very low concentrations of herbicide to further reduce risks. These herbicides have low toxicity (except for plants) and low tendency to runoff into surface waters. These herbicides also have a high affinity for binding with soil, so that they break down in the soil and do not move into ground water. Our contractors are licensed pesticide applicators who specifically target the Arundo and take precautions to minimize drift and overspray onto the water or nearby plants. They often wade into the creek to spray to reduce overspray onto the water, only spray during low-wind conditions, and may adjust droplet size to prevent drift by using different pressure and nozzle combinations. They also use adjuvants that help the herbicide spray to penetrate the dense Arundo canopy and speed up drying, further reducing the risk of runoff.

HOW CAN I LEARN MORE ABOUT THE HEALTHY CREEKS INITIATIVE? Arundo management is a high priority for improving creek health. This partnership provides coordination, outreach, funding, and implementation of efforts to manage invasive Arundo and other invasive species in priority areas and monitor the effects of Arundo management at Hill Country research sites. We're also working to increase awareness of best management practices for creek health—with your help! Visit <http://tpwd.texas.gov/healthycreeks>.

AQUATIC INVASIVE SPECIES HAVE SIGNIFICANT ECONOMIC IMPACTS IN TEXAS. The annual economic impact of aquatic invasive species in the US is estimated at more than \$140 billion. Texas Parks and Wildlife Department estimates that effective management of aquatic invasive species in Texas would require \$45 million annually. Learn more about invasive species in Texas at www.TexasInvasives.org—and consider signing up for the [Texas Invasives iWire newsletter](#). Please also check out the Arundo Control Man prevention program at <http://tpwd.texas.gov/ArundoControlMan> and help spread the word!



Certified pesticide applicator carefully targets Arundo



Arundo shows signs of treatment after only a few weeks



Hand pull new sprouts to keep them from taking root.



Healthy Creeks Initiative: Participation & Next Steps

Please review this fact sheet for more information about what to expect as a participant in the Healthy Creeks Initiative. Please remember—even after treatment, you should NOT mow or till Arundo! Mowing after treatment can stimulate Arundo regrowth. It's best to wait to cut treated canes until the plant has shown no signs of life for two years. This aggressive invader is easily spread by fragments and floating cut stalks (even tiny segments) can spread Arundo to your downstream neighbors. Spread the word, not the problem!

CONTACT US

See the previous pages for contact information for your area or email healthycreeks@tpwd.texas.gov

ATTEND AN INFORMATION SESSION

We'd love to visit with you in person! Find out about upcoming workshops or get-togethers in your area at <http://tpwd.texas.gov/healthycreeks> (or email us).

PERSONAL SITE VISIT

After you contact us, schedule a site visit to see and map the Arundo on your property, talk about riparian health and management options for your site, learn about your specific needs, and answer your questions about treatment.

PROVIDE PERMISSION TO ACCESS PROPERTY

At the time of the site visit (or before if you don't want to be present), you'll need to sign a permission form to allow us and our contractors access to your property to provide pre and post-treatment surveys and herbicide application. Please select the privacy option you prefer, and let us know if you have questions. You can rescind the permission at any time by writing to the email or mailing address on the form.

TARGETED HERBICIDE APPLICATION (NO COST)

Licensed, professional herbicide applicators will carefully apply aquatic-labeled herbicides to the Arundo on your property during the summer. You will be notified in advance of the application date(s), although the exact date/time may change with weather and contractor schedule.



Involved landowners attend a 'Healthy Creeks' information session.



Landowner overshadowed by Arundo along the creek on his property during a site visit.





Left: Licensed applicator carefully applies aquatic herbicide. Center and Right: A few weeks later, canes show signs of damage.

WHAT TO EXPECT AFTER TREATMENT

- **Post-treatment site visit:** We'll visit several sites in your area, usually 3-4 weeks after treatment, to document how well the treatment is working. We'll also visit each property the following year to check for re-sprouting. You'll be notified in advance of each visit to your property.
- **Browning/dying canes:** After treatment, the canes will begin to turn brown quickly—in a matter of weeks. They need to remain in place, and will look very much like they do during the winter months. **DO NOT MOW!**
- **Non-target damage to other plants:** We will take care to reduce non-target damage, but some damage to desirable plants may be unavoidable. Grasses are especially susceptible but will usually regrow quickly. Trees with brown leaves on a few branches will also usually recover quickly. Take photos of damage and email them to us if you have questions.
- **Leave it alone!** After herbicide treatment, it can be tempting to cut or mow the canes. Leaving them in place creates a nursery area for native plants to grow and helps keep it from re-sprouting or spreading. It's best to wait to cut treated canes until the plant has shown no signs of life for two years—otherwise it may be reinvigorated and resprout!
- **Possible regrowth:** The initial herbicide treatment may not completely kill the plant—retreatment will likely be needed. You can help watch for green growth, new shoots, or "pups" (side shoot growth).
- **Native/invasive plant emergence:** Soon, native plant seedlings will sprout among the canes. Unfortunately, we'll also need to watch for other invasive plants such as privets, Chinaberry, and Chinese tallowtree.



Dying canes after treatment.



Re-sprouting and side shoot "pups" may appear — watch closely!

RETREATMENT AND REVEGETATION

Retreatment may be needed—especially for large patches of *Arundo*. Achieving effective control often requires more than one herbicide application. We will monitor for regrowth each spring/summer as needed.

Revegetation, whether natural or through seeding/planting, is an important part of riparian restoration. In most cases, native plants will naturally recolonize the area. We may offer to re-seed large patches with Riparian Recovery Seed mix from Native American Seed—a blend of grasses and wildflowers selected for their ability to stabilize stream banks. For extreme infestations, planting native trees among the canes after treatment may be advised, with plants or planting provided as funding allows.



LANDOWNER PERMISSION FOR INVASIVE PLANT MANAGEMENT & RESEARCH

(Pursuant to Section 12.103 of the Texas Parks and Wildlife Code)

By my signature below, I hereby authorize Texas Parks and Wildlife Department (Department) employees, or persons working on behalf of the Department, to enter private property I own or manage for the purpose of managing invasive species (i.e., herbicide application, biological control agent introduction, or mechanical treatment/removal) or conducting scientific research and investigation regarding invasive species and natural resources, to record and use site specific information from the property for scientific research and investigation, and to allow public access to the information to the degree authorized below.

Authorized scientific research, investigation, management practice, or other associated activity:
Management of Giant Reed (*Arundo donax*) and other invasive plants (e.g., privet, Chinaberry, Chinese tallow)
using herbicide or other treatments; site visits for monitoring of treatment effectiveness.

Landowner(s) or Authorized Agents will be notified in advance of each herbicide application and/or monitoring visit if we need to enter the property. Exact dates/times may change with weather and contractor schedule.

OPTION 1 - Release of Information (Location Specific): I hereby further authorize the Department and project partners to use the information collected in reports, maps, publications, or presentations or otherwise make the information available to the public in a manner that could identify the specific location of the private property I own or manage but does not reveal my name or exact address.

Signature (Landowner or authorized agent)	(Date)
---	--------

OR

OPTION 2 - Release of Information (Non-Location Specific): I hereby further authorize the Department and project partners to use the information collected in reports, maps, publications, or presentations or otherwise make the information available to the public only in a manner that is generalized to a level that does not identify the specific location of private property I own or manage and does not reveal my name or exact address.

Signature (Landowner or authorized agent)	(Date)
---	--------

Name and Address: (Please print legibly)

(Name of Landowner or Authorized Agent)		
(Property, Ranch, or Tract name, if applicable)		
(Address)		
(City)	(State)	(Zip)
(Home Phone)	(Mobile Phone)	
(Email Address)		

You can return the completed form one of the following ways:

Email: healthy_creeks@tpwd.texas.gov

Mail: AIS Team, Inland Fisheries Division
Texas Parks & Wildlife Dept.
4200 Smith School Rd
Austin, TX 78744

Fax: 512-389-4405

Texas Parks and Wildlife Department maintains the information collected through this form. With few exceptions, you are entitled to be informed about the information we collect. Under Sections 552.021 and 553.023 of the Texas Government Code, you are also entitled to receive and review the information. Under Section 559.004, you are also entitled to have this information corrected. For assistance call 512-389-4444.