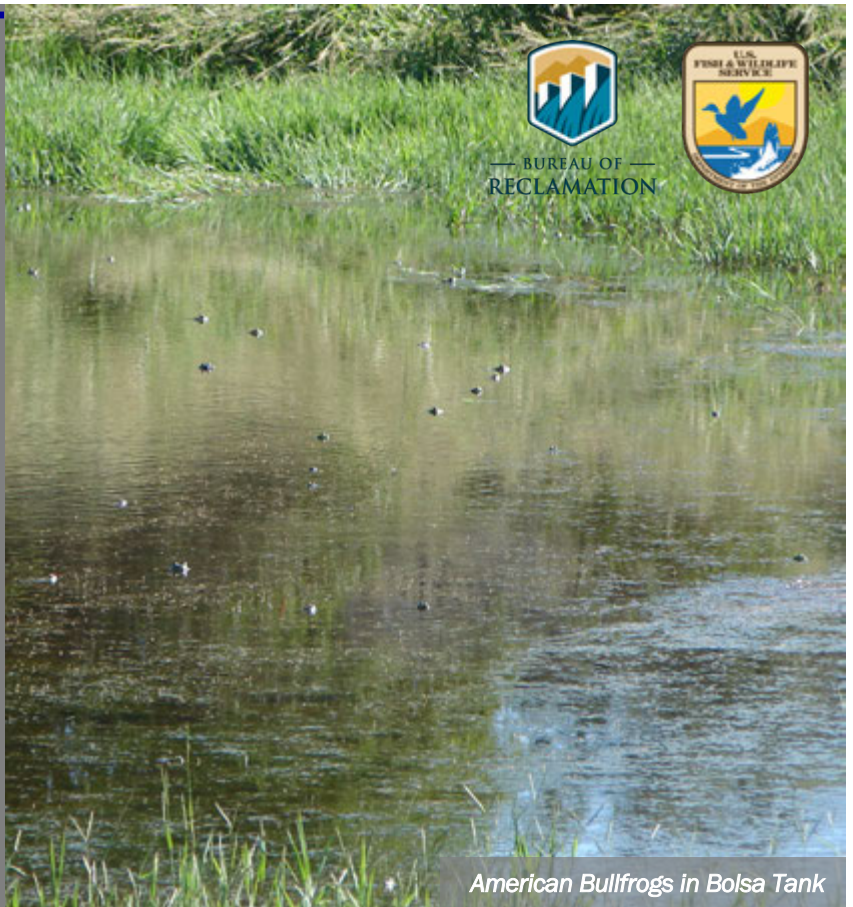
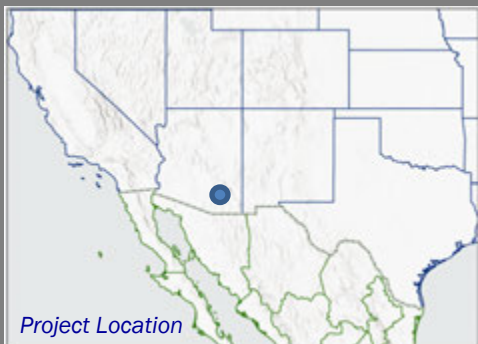


RESTORATION

Private Partnerships to Remove Bullfrogs from Cattle Ponds in Southern Arizona



American bullfrogs (*Rana catesbeiana*), native to eastern North America, are highly invasive and displace native species in the western United States. In southern Arizona, bullfrogs have successfully established self-sustained populations at the expense of native amphibians such as the Chiricahua leopard frog (CLF; *Lithobates* (= *Rana*) *chiricahuensis*). A team of researchers and managers (Frog Team) are eradicating bullfrogs from several sites throughout southern Arizona that range from wildlife refuges to private lands. The success of this widespread eradication effort closely depends on partnerships with private landowners and with a wide array of local organizations and state and federal agencies.



American Bullfrogs in Bolsa Tank

KEY ISSUES ADDRESSED

American bullfrogs are widely distributed across the landscape in southern Arizona, occupying various types of land regardless of land ownership boundaries or management. Eradication requires methodological and systematic eradication of bullfrog populations with all partners, including private landowners. The Frog Team prioritizes areas for bullfrog removal by determining which sites have the best chance for recovering native Chiricahua leopard frog and where they have access to public and private lands. Challenges in access, particularly on private lands, can delay bullfrog control, or worse, prevent control efforts for future source populations that jeopardize the larger effort.

PROJECT GOALS

- Identify bullfrog populations in southern Arizona and work with local landowners to eradicate bullfrogs located on their land
- Use a suite of public engagement and permitting tools to improve access to privately controlled water bodies
- Improve the success of landscape-scale bullfrog removal through increased public engagement

WORKING TOGETHER

Through draining and mechanical removal, non-native crayfish, bullfrogs, and fishes were removed from Clyne Pond, which now supports native populations of Chiricahua leopard frogs and Gila Topminnow.



Juvenile Chiricahua Leopard Frog

PROJECT HIGHLIGHTS

Safe Harbor Agreements for Conservation: AGFD and USFWS use a Safe Harbor Agreement (SHA), a voluntary agreement with private landowners who want to support CLF conservation. Participation in the SHA provides landowners assurances that they can continue land and water practices on their lands even though CLF, a species protected by the Endangered Species Act, is found on their property.

Multiple Benefits: Water management projects, such as draining ponds to eradicate bullfrogs and building habitat for CLF recovery, provide multiple benefits to landowners. State and federal funding is often available for landowners with water, or who want to create or improve water on their property, if it directly benefits federally-listed aquatic species. Funding can be used for infrastructure such as solar panels, electric wells, or additional ponds.

Collaborators

- University of Arizona, School of Natural Resources and the Environment
- Numerous federal and state agencies
- Several non-governmental organizations
- American Museum of Natural History
- Appleton-Whittell Research Ranch
- Doc Clyne, landowner and rancher (Clyne Ranch)

Funding Partners

- See online Case Study for list of funding partners

Lead Author: Alex Koeberle, University of Arizona, July 2020.
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Photos courtesy of Audrey Owens and Maddy Marsh/Arizona Game and Fish Dept.



LESSONS LEARNED

Addressing human dimensions of conservation is crucial for successful bullfrog control. Continuous outreach to private landowners from the Frog Team has resulted in changing attitudes and increased support. Working with local ranchers like Doc Clyne and enhancing communication between researchers and the public increased the bullfrog control success.

A combination of multiple drainings and intensive mechanical removal was necessary to eradicate bullfrogs in Clyne Pond. Restoration for native species recovery can also benefit livestock. Restored cattle ponds now provide water to sustain both the Clyne's ranching operation and multiple native species of fish, amphibians, and birds.

Clyne has seen changing public perception, noting that today's new generation of ranchers is much different than the previous generation like his father. Witnessing environmental change first-hand over his 50 years of ranching, Clyne said today's ranchers like himself work to preserve the landscape.

NEXT STEPS

- Work with social scientists to research human dimensions of bullfrog control
- Build partnerships with local landowners to target new regions for bullfrog control
- Increase public awareness through outreach on how bullfrog control supports native aquatic species conservation

PROJECT RESOURCES

For more information on this project, contact Cat Crawford: Cat_Crawford@fws.gov or David Hall: davidhall31@gmail.com
For additional project resources and Case Studies, scan the QR code below or visit the CCAST website: WWW.DESERTLCC.ORG/RESOURCE/CCAST



Bullfrog Tadpoles from a Cattle Tank