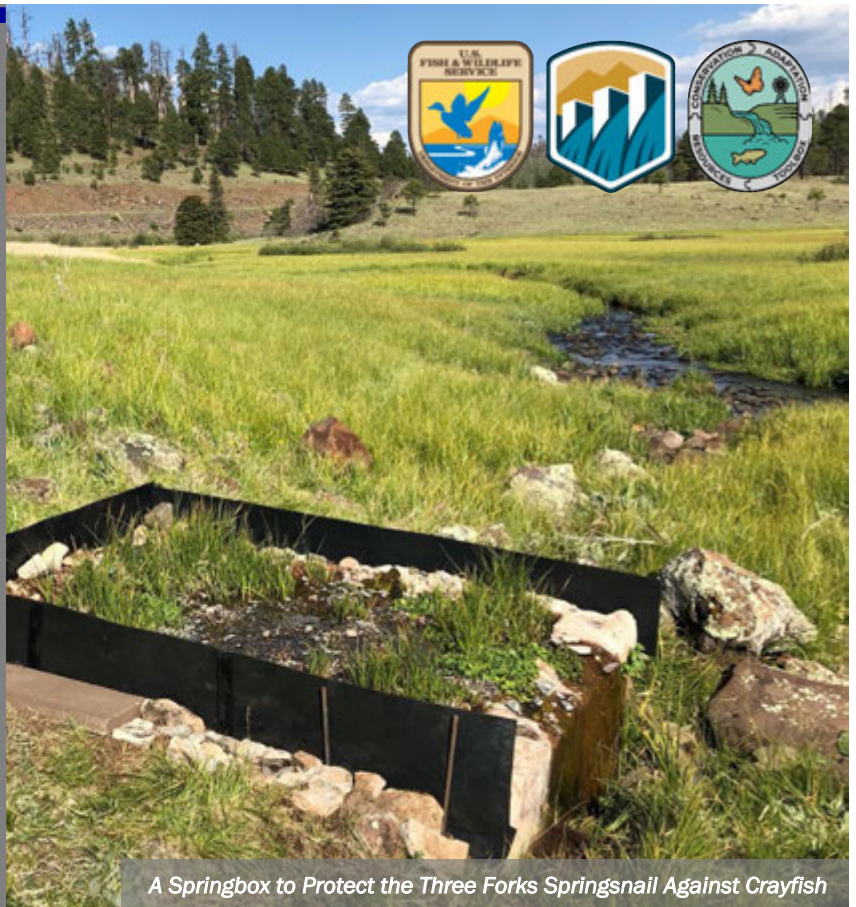
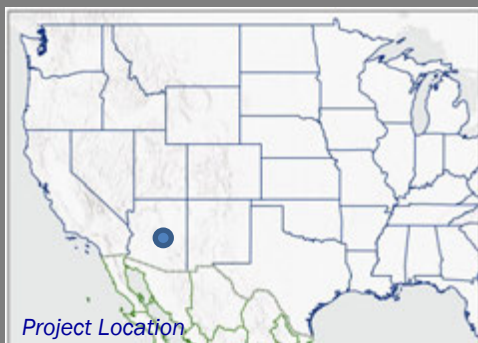


LAND CONSERVATION

Conservation in Support of Arizona Springsnails and Talussnails



Springsnails (*Pyrgulopsis* and *Tryonia*) are small freshwater snails that dwell in springs and help maintain water quality of these aquatic habitats. Talussnails (*Sonorella*) are land-dwelling snails that recycle decaying plant material, moss, and lichen into nutrients for local plants. For 30 years, the Arizona Game and Fish Department (AZGFD) has worked to protect these native snails. AZGFD has created several Candidate Conservation Agreements (CCAs) with federal partners and CCA's with Assurances (CCAAs) with non-federal partners like private landowners to gather data on Arizona springsnails and talussnails. These conservation partners develop and implement best practices for threat reduction and snail population and habitat management to ensure Arizona snail conservation long-term.



A Springbox to Protect the Three Forks Springsnail Against Crayfish

KEY ISSUES ADDRESSED

The introduction of invasive species like the New Zealand mudsnail (*Potamopyrgus antipodarum*), Globe chamomile (*Oncosiphon piluliferum*), and buffelgrass (*Cenchrus ciliaris*), and trampling by livestock degrade springsnail and talussnail habitat. Climate change increases length and severity of droughts, reduces groundwater and spring discharge, and increases wildfires and flooding events. These threats affect snail habitat and food availability. Additionally, monitoring for springsnails and talussnails in the field is challenging because they are often difficult to find due to their small size and cryptic nature.

PROJECT GOALS

- Determine and implement best practices for management of snail populations and threat reduction
- Conserve and improve the status and distribution of at-risk snails in Arizona
- Determine and implement best management practices for native snail habitats
- Increase public awareness and support of Arizona snails

LIONS AND TIGERS AND SNAILS, OH MY!

The Phoenix Zoo was the first to maintain and successfully propagate captive *Pyrgulopsis* springsnails, providing new information about the lifespan and breeding of captive springsnails.



Snail Crew Collecting Springsnails for Translocation in August 2022

PROJECT HIGHLIGHTS

Monitoring: AZGFD and volunteers conduct annual or seasonal counts of snail populations and their habitat conditions and observed stressors. AZGFD uses environmental DNA sampling to help refine searches for native and invasive snails.

Habitat Restoration: AZGFD has completed several projects to restore or improve habitat to suitable conditions for Arizona snails, such as installing fencing around habitat to prevent livestock trampling, modifying spring boxes (springhead enclosures that collect and divert water) to keep out invasive crayfish, and creating bullpen panel enclosures around snail-occupied springs to prevent elk from wallowing in the springs.

Candidate Conservation Agreements: AZGFD's CCAs identify practical conservation and restoration measures such as maintaining sufficient groundwater and habitat for snail-occupied springs, periodic aquatic invasive species detection surveys with volunteers and CCA partners, as well as annual monitoring of the springsnail populations and their habitat quality.

Public Outreach: Volunteer participation in monitoring efforts of snail populations across Arizona has provided support in collecting data, raising public awareness of the threats snails face, and has allowed AZGFD to maintain a current database of snail distribution.

Collaborators

- See online for full list of partners

CART Author: Frances Clever, Indiana University, July 2024.

Photos courtesy of AZGFD

For more information on CART, contact Genevieve Johnson (gjohnson@usbr.gov) or Karlee Jewell (karlee_jewell@fws.gov).

Visit CART:



LESSONS LEARNED

Smaller working groups on CCA-outlined conservation efforts like monitoring, research, and habitat modification leads to increased project knowledge among the partners, more collaboration with less turnover of staff over time, and reduced data management issues.

The voluntary aspect of CCAs invites partners who are already interested in conserving Arizona snail species and encourages long-term commitment to their conservation. Long-term commitment to a conservation project is imperative to the success of conservation agreements and plans because they give AZGFD and partners time to assess and redirect efforts under an adaptive management framework.

Lack of immediate results does not mean lack of success. Conservation of species takes time, especially for snails that may be rarer such as the Three Forks springsnail (*Pyrgulopsis trivialis*).

NEXT STEPS

- Create new conservation agreements for additional snail species in Arizona
- Document and spread information about snail translocation and captive rearing techniques
- Expand genetic and taxonomic research on three new species of springsnail, and continue genetic studies of native terrestrial snails for future conservation planning
- Create a comprehensive inventory of micro-snails in Arizona
- Research effects of fire-retardant exposure and its residue on Arizona snails

For more information on this project, contact Jeff Sorensen:

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San Xavier talussnail, *Sonorella eremita*