



# Increasing Resilience and Creating Habitat Refugia at Springs in the Chiricahua Mountains



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# The Situation

The Chiricahua Mountains are an important range for a variety of wildlife

- Elevation range
- Geographic location at nexus of many ecoregions
- Hotspot of biodiversity

**HOWEVER,** Mid-elevation sources of open water are becoming scarcer on the landscape

- Siltation from large-scale fire
- Changing climate



# Response:

- Habitat Creation and Enhancement Projects
- 3 Different Tools for Success
  - Ash Spring (2014)
  - Hermitage Seep (2015)
  - Camp Rucker (2016)

# Habitat Creation & Enhancement Opportunities



# Get Partners Involved:

## Installation Workshop at SWRS (May 2014)



# Sourcing Native Plant Materials

Pollinator plants from Borderlands  
Restoration and Nighthawk Natives



Native hay from TNC's Cobra Ranch



HAY! What's in there?

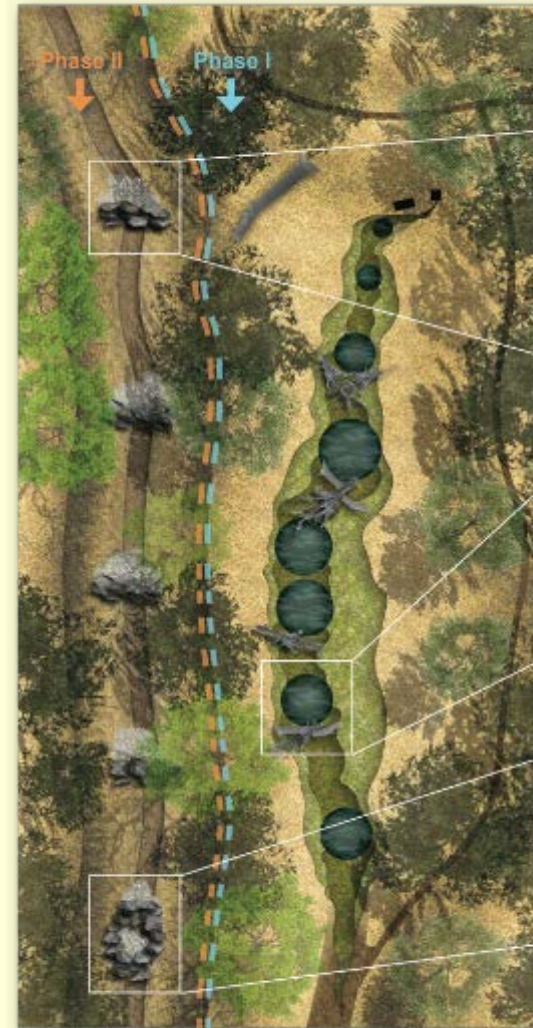
- Green sprangletop (*Leptochloa dubia*)
- Sand dropseed (*Sporobolus cryptandrus*)
- Curly mesquite (*Hilaria belangeri*)
- Arizona cottontop (*Digitaria californica*)
- Giant sacaton (*Sporobolus wrightii*)
- Plains bristlegrass (*Setaria macrostachya*)
- Silverleaf nettle (*Solanum eleagnifolium*)

# Plant Materials Salvaged Onsite



Steve Buckley has documented 63 species of plants onsite

# Pond Construction



## PROPOSED ASH SPRING RESTORATION DESIGN

Grade Control: One Rock Dam<sup>†</sup>



Wetland Restoration<sup>†</sup>



Grade Control: Zuni Bowl<sup>†</sup>



<sup>\*</sup> Note: final design may have fewer ponds

<sup>†</sup> Note: specific types and locations of grade control structures will be determined by Stream Dynamics, Inc. and USFS hydrologists



SCALE = 1:10  
SLOPE ASPECT = 169 DEG.



# TOOL #1: A BIG EXCAVATOR

## 3 Ponds Total



# Site Protection - Cattle Exclusion



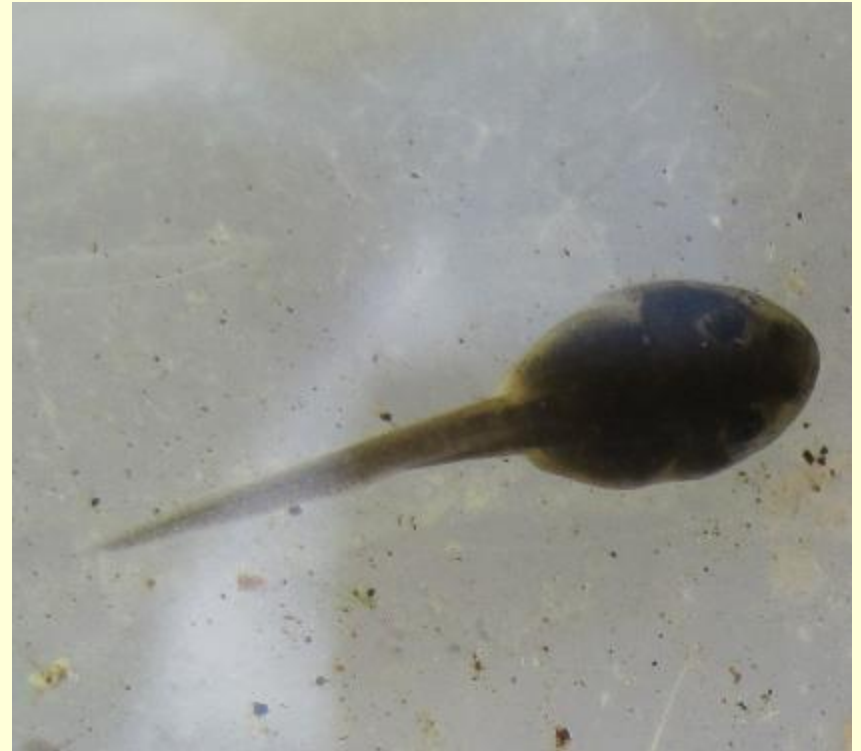
4 months (and a lot of rain) later



16 species of bats detected by Janet Tyburec at the site (acoustic survey and capture) during 7-day survey in late July 2014, and CLF tadpoles detected Sept 2014



Douglas Ranger District Biologist Reuben Gay holds a pallid bat (*Antrozous pallidus*) during the survey. Photo courtesy of Janet Tyburec.



# Hermitage Seep

- Botany Blitz 2014
- *Asclepias subverticillata*
- Is there a way to both preserve the wet meadow AND create open water?
- YES!



# Revised Scope of Project

- Excavate sedges from existing ditch that takes water to livestock trough (= range improvement)
- Build wildlife ingress and egress ramps on trough
- Install additional pollinator plants
- Increase protected area, use native sedges to repair
- Clear flyways for bats





# New pond in ditch





# TOOL #2: Volunteers and Shovels!



# Botany Blitz 2015



# Looking Ahead: Camp Rucker



Another potential site to benefit  
Chiricahua Leopard Frogs and Bats



# Partners

