A Webinar Presented by the Desert Landscape Conservation Cooperative

February 21, 2018

Collaborators

- US Fish and Wildlife Service
- Bureau of Reclamation
- US Forest Service/Rocky Mountain Research Station
- University of New Mexico
- University of Arizona
- Desert LCC Science Working Group
- Numerous Case Study Contributors!
- With Additional Funding from:
  - USDA Southwest Climate Hub

Case Study Contributors to Date

The Desert Landscape Conservation Cooperative

The Desert LCC

- Non-regulatory, self-directed partnership
- Support, facilitate, promote and add value to landscape scale conservation
- Crosses jurisdictional, political and management boundaries
- Collectively identify priorities for resource management, science, and **collaboration**
- Established the foundation for the Case Study communication

"The Desert LCC can define itself as the interest, enthusiasm, and **connection to people** that becomes vital in answering hard questions about resource management decisions." (Desert LCC federal partner)

DESERT LANDSCAPE CONSERVATION COOPERATIVE

Structure and Activities

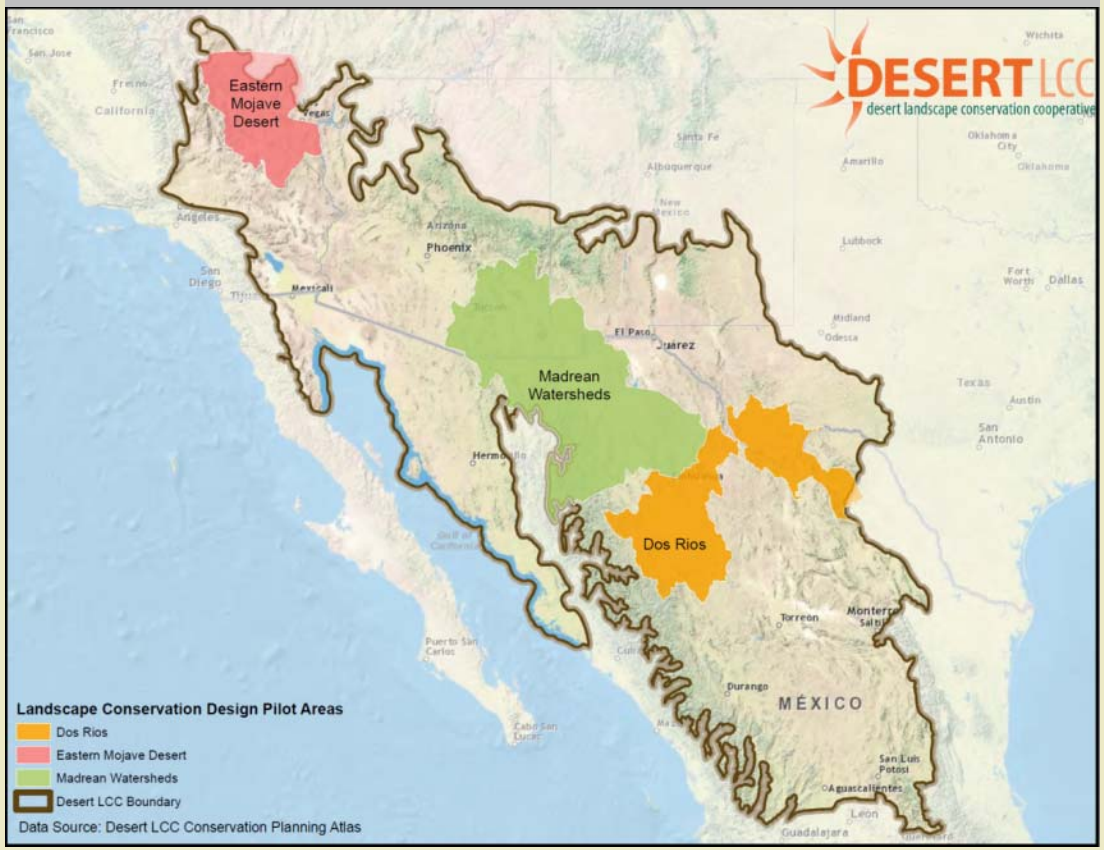
- Science Working Group
  - Expert working groups collaborating to address major natural resource challenges for the Mojave, Sonoran, and Chihuahuan Desert ecoregions.
  - Identified the need for an inventory of strategies to increase ecosystem resilience, with case studies.

DESERT LANDSCAPE CONSERVATION COOPERATIVE

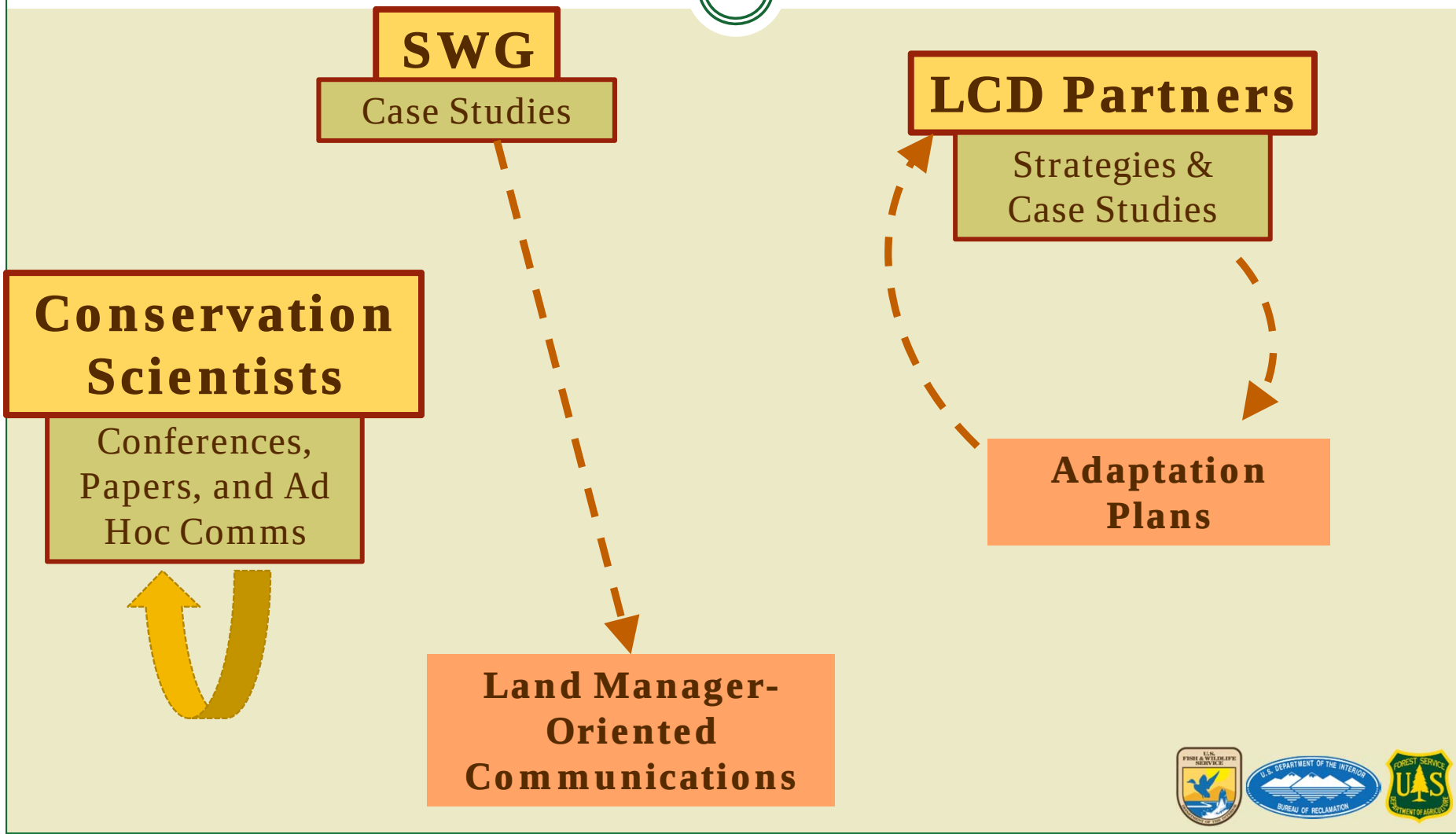
Landscape Conservation Design

- Clearly define common goals and objectives
- Map priority ecosystems & assess their current condition
- Collectively identify adaptation and conservation actions
- Integrate Scenario Planning to prioritize *where* conservation actions will be effective
- Identify partner activities to ensure integrated effort
- Measure success using common language & methods

Desert LCC Boundary with LCD Pilot Areas



How to Build Connections?



The Goal of CCAST

SWG
Case Studies

LCD Partners
Strategies & Case Studies

Conservation Scientists
Actionable Science

Adaptation Plans for LCD Partners

Land Manager-Oriented Communications

Approach and Resources

- USDA SW Climate Hub Funding for RMRS:
  - Develop a case study library relevant to forests and rangelands
- FWS Agreement with University of Arizona:
  - Help develop case studies for focal resources prioritized by the partnership (springs, streams, and grasslands)
- LCD Cooperative Agreements:
  - Create a user-friendly management toolbox
  - Integrate case studies and other partner input to develop adaptation plans
- Science Working Group
- Staff and partner contributions!

DESERT LANDSCAPE CONSERVATION COOPERATIVE

High Priority Pressures and Stressors

- High priority challenges identified by Desert LCC Landscape-Scale Monitoring working group:

Native and Non-Native Invasive Species
Stream Channelization
Erosion in Uplands
Water Resource Utilization
Anthropogenic River Management
Decreased Water Availability
Drought and Flooding
Rising Temperatures
Wildfire Regime Changes
Unsustainable Grazing
Habitat Fragmentation

Abbreviated List of High Priority Strategies

- Water Resources and Riparian Areas:
  - Enhancing Recharge in the Watershed
  - Low Water-Use Agriculture and Landscaping
  - Invasive Species Control
- Grasslands:
  - Mesquite Removal
  - Controlling Invasive Grasses
- Desert Scrub:
  - Controlling Invasive Grasses
  - Woody Species Restoration

Photo Courtesy of TNC

What is a case study?

- An example of on-the-ground conservation project shared through a standardized, easy-to-read template
  - Stories of adaptation strategy success and failure
  - Can include restoration projects, monitoring frameworks, resource valuations, and collaboration
  - To address the needs of land managers
- Improve communication across the region
  - Share stories that might not be otherwise available
  - Between groups that don't always communicate
- Used to populate CCAST, where information will be easy to access

DESERT LANDSCAPE CONSERVATION COOPERATIVE

Case Study Components

- Background
- Key Issues
- Project Goals
- Project Highlights
- Lessons Learned
- Next Steps
- Collaborators and Funding Partners
- Project Resources
- Key Contacts

Photo Courtesy of Dennis Caldwell

Case Study Development Process

1) Identify projects that align with prioritized strategies

2) Outreach to project leads

3) DLCC staff and project leads co-develop content

- This includes photos, reports, logos, and resources relevant to the project
- Text content is co-developed and level of input from project leads varies by project. All content is approved by project leads before being shared with Science Working Group.

4) Draft is sent to Science Working Group for technical review

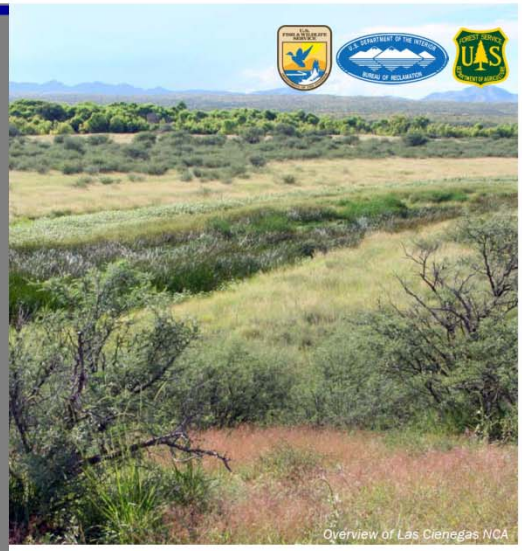
5) Final edited content is formatted into 2-page handout and online version for CCAST (Examples on following slides)

Invasive Species Control

Restoring Leopard Frog Habitat in Cienega Creek, Arizona

frog conservation project
frog & fish restoration outreach group

The Frog and Fish Restoration Outreach Group (FROG) seeks to restore habitats and reintroduce threatened and endangered aquatic species in the Cienega Creek watershed of southeastern Arizona. Cienega Creek is fed by mountain ranges that drain into expansive semidesert grasslands and the riparian corridor. The watershed harbors the most ecologically intact cienega complex (valley wetland spring system) in the southwestern United States. This area includes lands managed by the Bureau of Land Management, US Forest Service, Pima County, the Department of Defense, Arizona State Trust Lands, and numerous private landowners.


Overview of Las Cienegas NCA

KEY ISSUES ADDRESSED

In arid regions around the world, wetlands and the aquatic vertebrates they support are among the most globally threatened ecological assemblages due to water extraction, drought, habitat modification, and invasive species. The American bullfrog is an invasive species that was introduced to the Cienega Creek watershed in about 1986. It is strongly associated with local extinctions of the federally listed, threatened Chiricahua leopard frog due primarily to predation and disease transmission--bullfrogs carry but are not strongly affected by chytridiomycosis, a fungal pathogen causing global amphibian declines. Additionally, northern crayfish and several non-native fishes exist in areas adjacent to Cienega Creek. Potential invasion by these species could impede conservation and reintroduction of Chiricahua leopard frogs.

PROJECT GOALS

- Quantify the status of native and invasive frogs and other aquatic wildlife in large study landscape
- Eradicate populations of invasive aquatic species
- Enhance habitats and establish new populations of the Chiricahua leopard frog to increase distribution, abundance, and metapopulation function
- Engage the public in aquatic conservation issues through outreach and education


Habitat Created for Chiricahua Leopard Frogs and Desert Pupfish at LCNCA

HABITAT RESTORATION

In addition to creating habitat for aquatic species, the enhanced and converted livestock waters now provide permanent water for native fish and wildlife.

PROJECT HIGHLIGHTS

Landscape Scale: the project operated on a watershed level across jurisdictions--this scale allowed the project to incorporate and observe metapopulation connectivity dynamics of both native and invasive aquatic species.

Successful Eradication: bullfrog populations were successfully eradicated by 2013, followed immediately by leopard frog recovery.

"Buffer-Zones" for Invasive Species Detection and Removal: the project established a buffer-zone consisting of stock tanks in a swath of land that serves as a barrier of invasion from extant bullfrog populations in nearby residential areas.

Leopard Frog Introduction: this effort raised 4,769 Chiricahua leopard frogs that were released at 10 new sites in the project area. Most of these populations are breeding. Site selection was guided by thermal considerations to mitigate and research chytridiomycosis

Mutual Human-Ecological Benefits: researchers collaborated extensively with all major ranchers, and engaged residents of the watershed and beyond in the topic of aquatic conservation through youth programs and outreach events.

Collaborators

Arizona Game and Fish Department, Bureau of Land Management, Cienega Watershed Partnership, U.S. Fish and Wildlife Service, Area ranchers, University of Arizona, Caldwell Design, Coronado National Forest, Pima County (Sonoran Desert Conservation Program), The Arizona Nature Conservancy

Funding Partners

National Fish and Wildlife Foundation- Keystone Initiative; Bureau of Land Management

Case study support provided by US Fish and Wildlife Service, US Bureau of Reclamation, and the US Forest Service.
Photos courtesy of Dennis Caldwell/Caldwell Design.

LESSONS LEARNED

Bullfrog eradication required intensive early-season removals to prevent breeding and seasonal timely removal of juveniles approaching maturation. Fine-mesh hoop traps were effective in capturing tadpoles, while shooting with 22-caliber rifles was most effective in collecting adult frogs in complex pools.

Thermal habitat characteristics are important in selecting introduction sites for leopard frogs.The chytrid pathogen is most deadly upon rapid temperature decline. Therefore, natural springs are critical because they have the most stable thermal regimes of any regional waters.

Collaboration can engage regional ranchers in aquatic conservation to develop solutions that provide habitat for wildlife and watering opportunities for livestock.

NEXT STEPS

- Monitor success of natural and reintroduced leopard frog populations
- Evaluate and research chytridiomycosis effects and mitigation success
- Monitor for new arrivals of invasive aquatic species, with additional removals as necessary
- Complete outstanding habitat enhancement construction and establishment of native fishes in additional locations that have been made ready for them

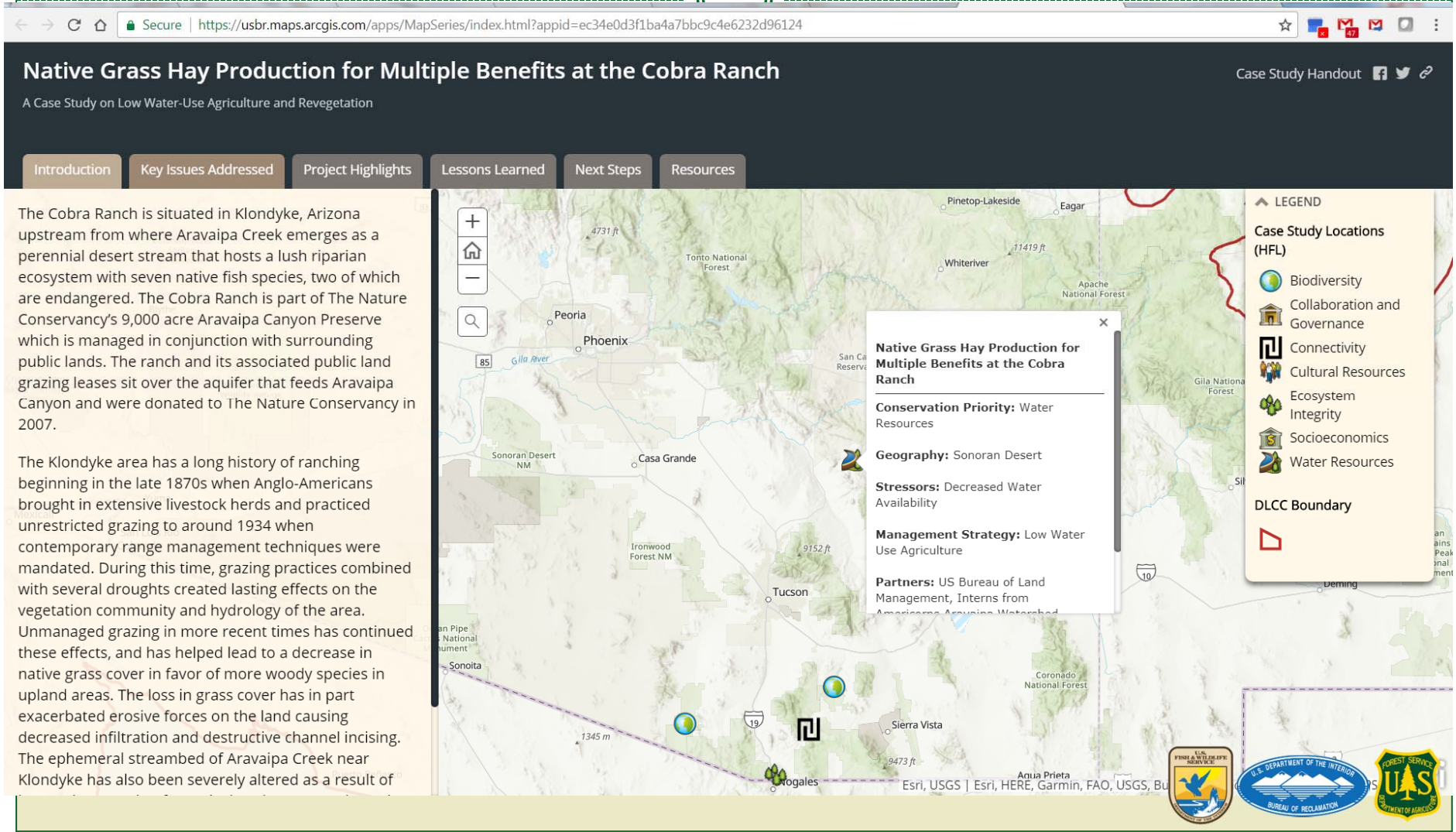
PROJECT RESOURCES

For more information on this project, contact Phil Rosen at pcrosen@email.arizona.edu

For additional project resources and case studies, visit the Collaborative Conservation and Adaptation Strategy Toolbox : WWW.DESERTLCC.ORG/RESOURCE/CCAST


Breeding Chiricahua Leopard Frogs

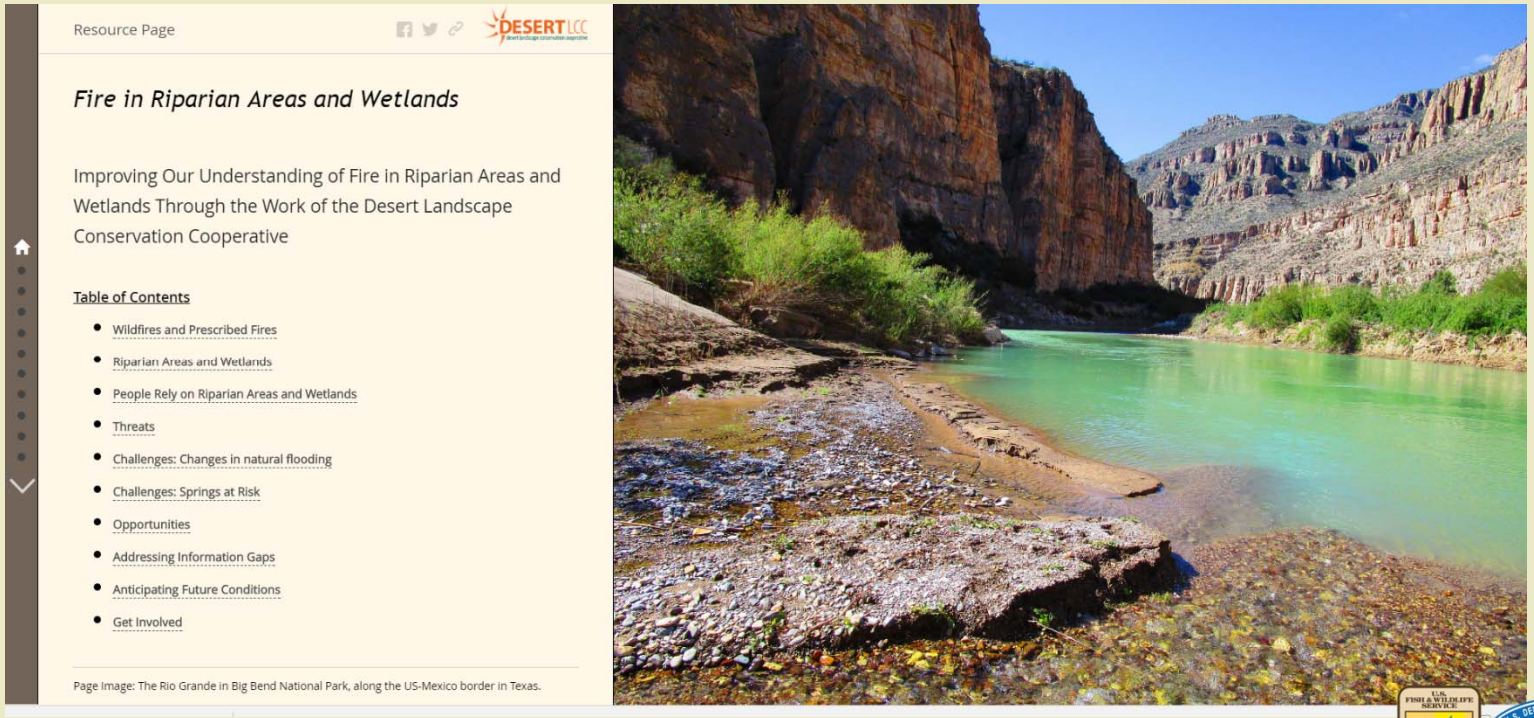
Online Version of Case Study



Web Resource Orientation

Topical Communications

- Case studies arranged by topic in storymaps
- Longer-term goal once we have many case studies



Contribute your Case Studies!

"These adaptation case studies will be a great resource for the collaborative planning that is taking place in the Lower Santa Cruz watershed." -Federal agency partner

- Share your stories
- Showcase your work and organization
- Interact with other practitioners
- Contribute to a community of practice

“I am always looking for new ideas to guide us in our restoration and resource management responsibilities. Narratives like these offer real-life examples of the challenges we all face and provide solutions.” Jeff Bennett, Big Bend National Park, National Park Service

Work to Date and Next Steps

- Over 20 case studies at various stages of development
- Ongoing Work:
  - Continue prioritizing management strategies and case studies with working groups and LCD partners
  - Continued case study development
- Late 2018:
  - Adaptation plans for Landscape Conservation Designs
  - Topical/thematic case study communications

Contact Us

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Thank you! Questions?

Find CCAST at:

desertlcc.org/resource/CCAST