Collaborative Conservation and Adaptation Strategy Toolbox (CCAST)

An Online Library of Conservation Case Studies

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What is CCAST?

- Online library of case studies that **highlight lessons learned from research, management, and conservation activities**
- Easy to use communication tool for **practitioners**

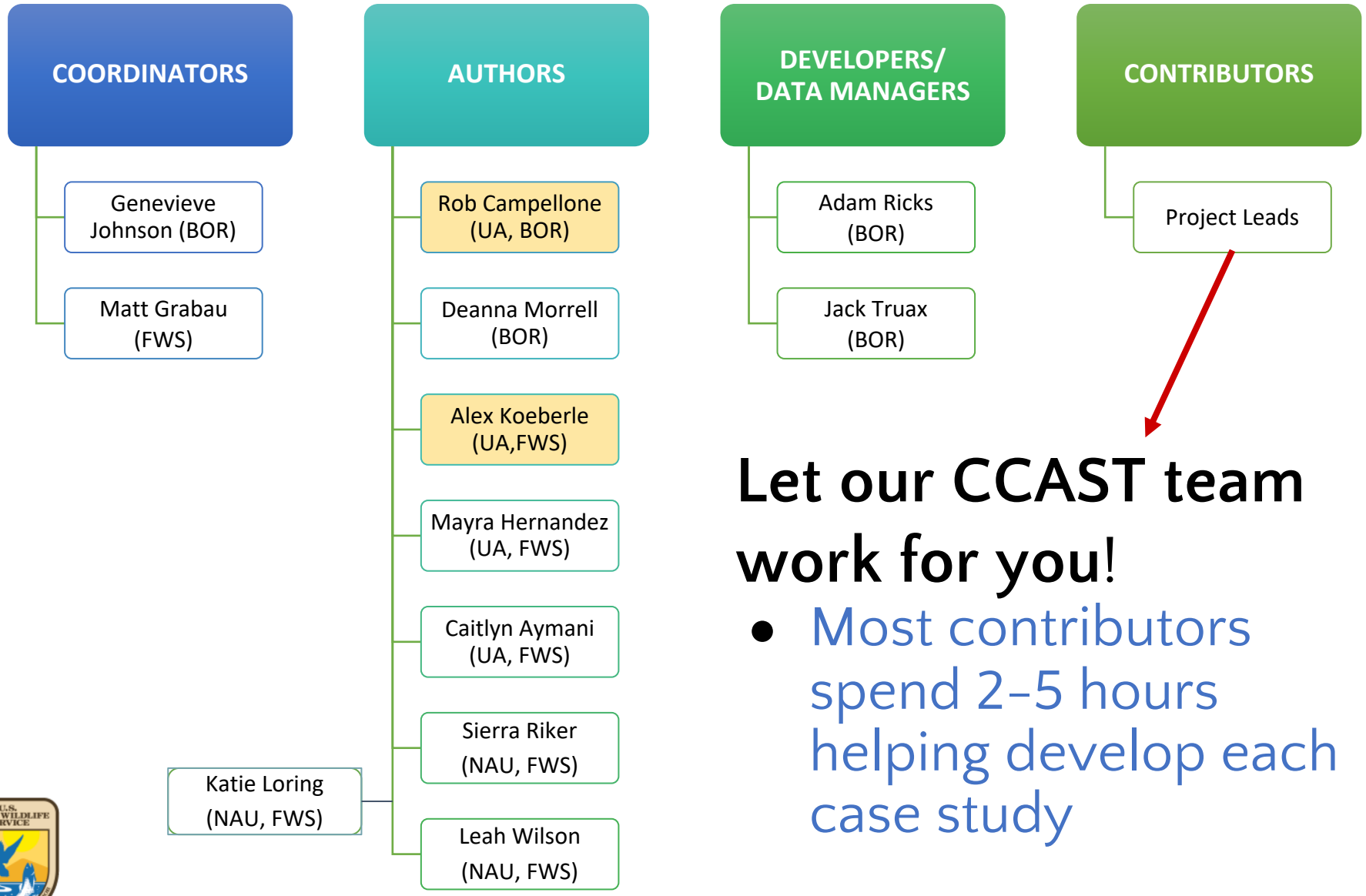
- **Management Toolbox** – synthesis of critical topics based on manager knowledge
  - Sharing project outcomes not readily available
  - Also includes a 2pg handout and other downloadable materials

Purpose of CCAST

Resource managers wanted to communicate outcomes from actionable science and resource management actions more efficiently and effectively

- Share knowledge about on-the-ground actions and science outcomes to understand what works and what doesn't
- Reduce redundancies and improve management outcomes by learning from practitioners working on similar issues across large geographies

CCAST Team: A multi-organization partnership



Let our CCAST team work for you!

- Most contributors spend 2-5 hours helping develop each case study

CCAST Working Group

- Over 100 participants who contribute and review case studies
  - Federal agencies
  - State agencies
  - NGOs
  - Local governments
  - Academics

Primary Clients

- BOR and FWS
- State agencies
- Other federal agencies

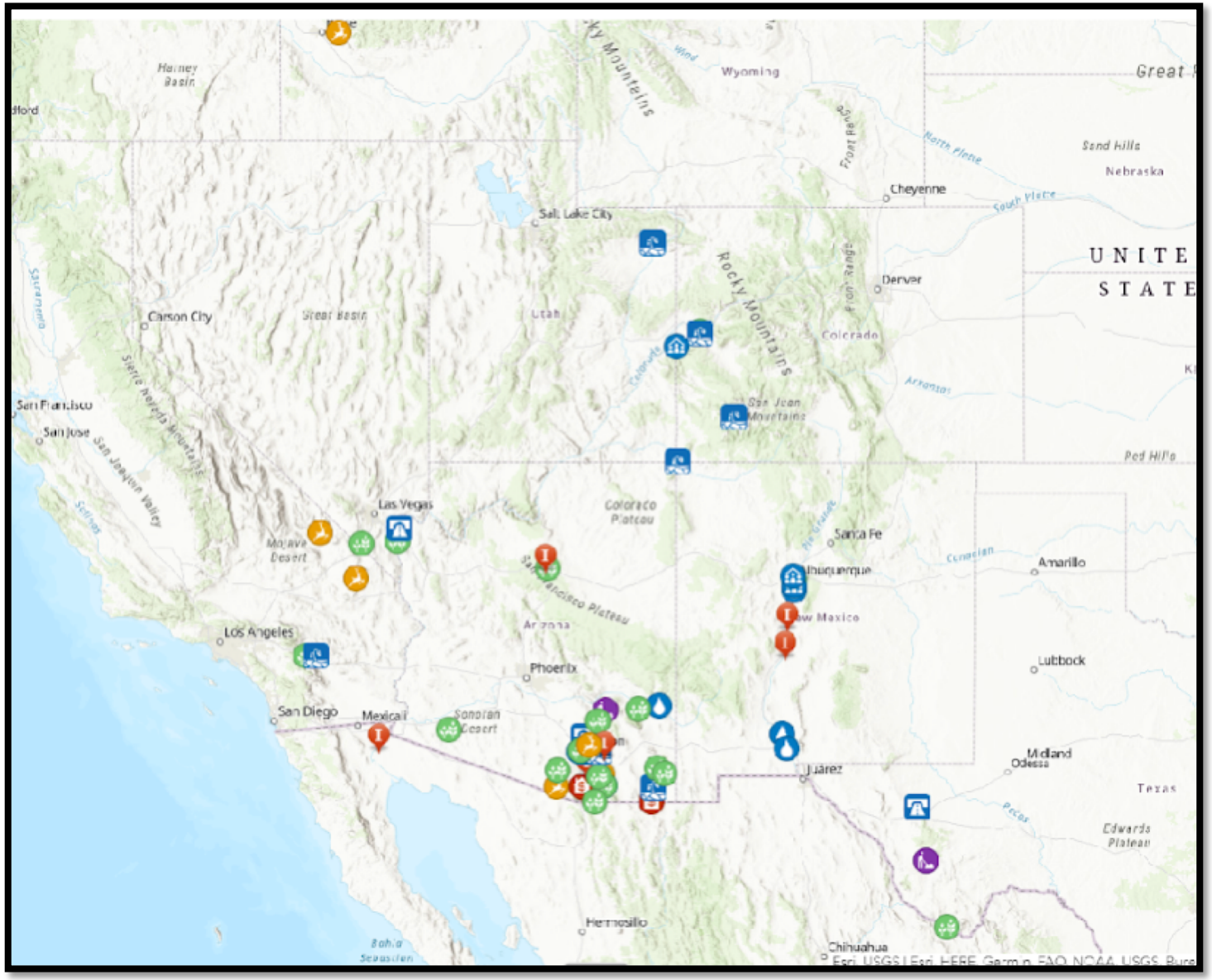
View CCAST Case Studies

Browse **Case Studies** organized by topic.

Explore **Interactive Map**, which shows case study project locations and search case studies per topic, stressors, management strategies, ecosystems or river basins.

Or simply **view all Case Studies** and search by tags.

CCAST Map



- Case studies from across United States, with emphasis on western projects
- Connect and learn from people working on similar topics, regardless of geographic locations

Go Live

- Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

Photo by Bureau of Reclamation, Pacific Northwest Region

Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

Case Study Handout

A Case Study on Actionable Science

Introduction | Key Issues and Goals | Project Highlights | Lessons Learned | Next Steps | Resources

Bull trout (*Salvelinus confluentus*), a cold-water fish native to the Pacific Northwest, were once widely distributed across their range but are now classified as threatened under the Endangered Species Act (ESA). This species requires clean water with water temperatures below 15°C (59°F). When suitable habitat is available, bull trout will exhibit two general behaviors: (1) reside within a small isolated area through the year (resident form) or (2) migrate large distances between seasons in order to find optimal spawning, forage or winter habitat (migratory form). Arrowrock Dam and Reservoir, located on the Boise River in Idaho, supports winter habitat for migratory bull trout. The reservoir, managed by the Bureau of Reclamation (Reclamation) for water storage, flood

Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

A Case Study on Actionable Science

Key Issues Addressed

Movement and habitat use of bull trout in the Boise River system were evaluated to address ESA requirements and identify operational flexibilities that could benefit this migratory fish that seasonally relies on reservoir habitat. Migratory fish in any system may encounter challenges to migration that include habitat degradation, blocked migratory corridors, competition from non-native species, and poor water quality. Additionally, climate variability may exacerbate these issues by increasing water temperatures and changing streamflow regimes. Reservoirs are often managed to minimize downstream damage from flooding and to maximize the efficient use of existing water supplies for irrigation,

Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

A Case Study on Actionable Science

ALL ABOUT TIMING Understanding spatial and temporal habits of fish allows Reclamation to work with stakeholders to adjust releases during key migratory periods while still meeting contractual and flood control responsibilities.

- **Combining Technology:** Fish tags used in this study included tags that transmit data (telemetry) and tags that store data (archival). Both types of tags included sensors to measure water temperature and water depth at the fish's location and determine if the fish was alive, however, the way data was retrieved from each tag differed. Data from telemetry tags were only collected when a receiver (person tracking or fixed site receiver) was close enough to a tag to detect the signal. The

Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

A Case Study on Actionable Science

Identifying seasonal habitat needs of ESA-protected fish is critical to determine specific water management actions that benefit the species while balancing multiple water needs. Water management decisions often rely on a variety of environmental analysis tools that, in turn, rely on the accuracy and completeness of field data.

The investment in telemetry tags with temperature, depth, and mortality sensors can offset project costs and eliminate safety concerns associated with collecting those data manually. Use of telemetry tag technology can reduce overall staffing needs, however, project partner involvement is extremely beneficial.

Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

A Case Study on Actionable Science

- Describe potential effects of increased reservoir storage on protected species and critical habitat
- Create a matrix of seasonal habitat requirements and operational flexibilities that could be used to expedite future environmental consultations
- Discuss basin scale bull trout population monitoring and habitat improvement recommendations with project partners

Tracking Tagged Bull Trout to Measure Reservoir Operation Impacts

A Case Study on Actionable Science

Collaborators

- U.S. Geological Survey
- U.S. Forest Service
- Idaho Department of Fish and Game
- University of Idaho
- Trout Unlimited
- Boise Project Board of Control (irrigation district)

Funding Partners

- Bureau of Reclamation's Science and Technology grant program
- Cost sharing with project collaborators

2020 Focus: Non-Native Aquatic Species

- USFWS Science Applications, AZGFD, and AZ Coop Research Unit began meeting in late 2018 to identify research needs
- Introduced aquatic species, ranging from mussels to crayfish to sportfish, were a high priority (& important to Reclamation too)
- Partners determined compiling a “state of knowledge” on non-native aquatic control techniques could help prioritize research needs

Non-Native Aquatic Case Studies Currently in Development

Bullfrogs

- Landscape-scale Eradication of Bullfrogs for Native Aquatic Species Recovery in Southern AZ
- Private Partnerships to Remove Bullfrogs in Cattle Ponds
- (UPDATE) Restoring Leopard Frog Habitat in Sky Island Grasslands of Southeast AZ

Fish

- Paiute Cutthroat Trout Restoration in Silver King Creek, CA
- Fish Barriers and Sunfish Removal in McGee Wash
- Nonnative Fish Removal and Translocations for Humpback Chub in Grand Canyon

Mussels

- Detecting and Monitoring Invasive Mussels at Reservoirs Managed by BOR
- Hypervirulent Parasites to Control Dreissenid Populations

Synthesis and Toolbox: What's in it for Managers?

- 2020: Synthesis product to address existing knowledge and future priorities of non-native aquatic species across the Southwest

- 'Integrative modules' that are species-specific
  - Integrate case studies and research to support management decisions
  - Identify knowledge gaps to prioritize future research

- Shared across local, state, and federal partners

CCAST Success!

- **60+** completed case studies online
- Over **20** case studies currently in development
- **5,130** views since CCAST launched

Case Study Contributors to Date

Be a CCAST Contributor!

- Help build case studies on non-native aquatic species
- Work with CCAST staff to share knowledge and inform management decisions
- Give young professionals an opportunity to learn from on-the-ground experience

Thank You!

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https://desertlcc.org/resource/CCAST