Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
August 8-9, 2013

Agenda Item
Desert Landscape Conservation Cooperative (LCC)

Action Requested
Information item only

Presenters
Aimee Roberson, Desert LCC Science Coordinator, U.S. Fish and Wildlife Service
Genevieve Johnson, Desert LCC Coordinator, Bureau of Reclamation

Previous Action Taken
N/A

Relevant Science
N/A

Background Information

Land managers are faced with increasing management challenges such as land use conversion, sensitive species protection and recovery, invasive species, water scarcity, and a range of other complex issues—all of which are amplified by climate change. The Bureau of Reclamation and the U.S. Fish and Wildlife Service have partnered to develop and lead the Desert LCC. The Desert LCC is a bi-national, self-directed, non-regulatory regional partnership formed and directed by resource management entities as well as interested public and private entities in the Mojave, Sonoran, and Chihuahuan Desert regions of the southwestern United States and northern Mexico. Through collaborative partnerships, the Desert LCC seeks to provide scientific and technical support, coordination, and communication to resource managers and the broader Desert LCC community to address climate change and other landscape-scale ecosystem stressors.

The Desert LCC is developing interdisciplinary, multi-organizational teams to engage managers and experts from various sectors of the conservation community in assessing and addressing critical management questions. Developing these "applied science think tanks" increases the capacity needed for integrated problem-solving. These focused efforts will produce information and decision support tools that resources managers need to address large scale stressors, such as climate change. Team members are developing the relationships, processes, systems, and capacity to successfully fulfill the Desert LCC's niche within the conservation community. These teams are working together to:

- assess and understand needs related to the Critical Management Questions;
- develop and support opportunities to collaborate on new applied science research;

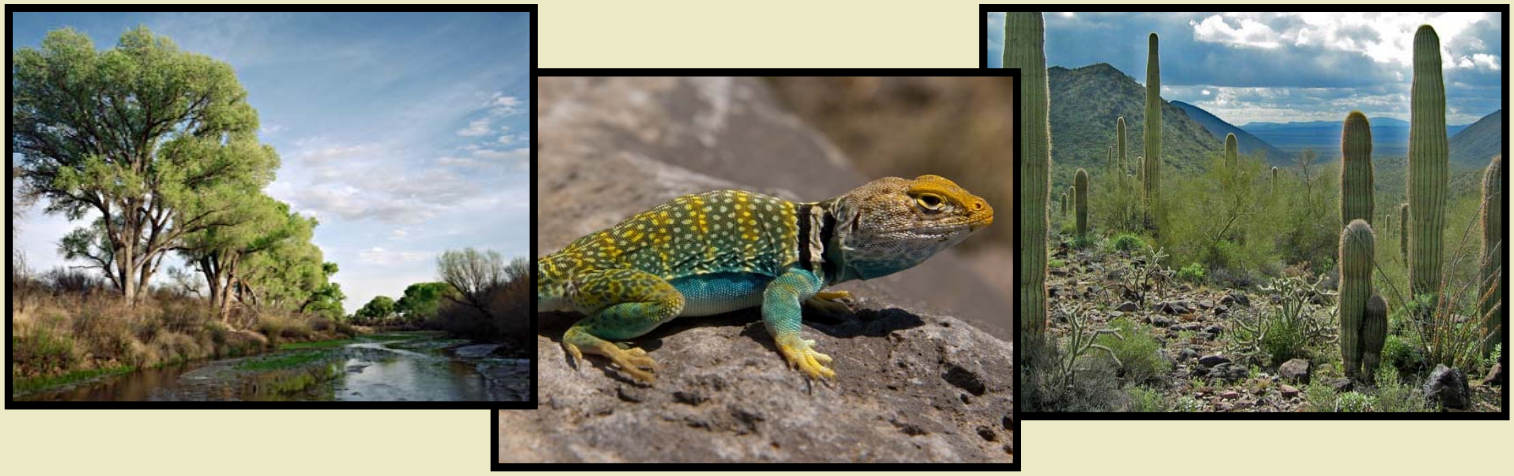
- develop and advance new science products and decision support tools; and
- inform and communicate with a broad group of managers and experts throughout this process.

One of the sets of critical management questions the Desert LCC is currently focused on is:

How are climate change, water management, and their interaction affecting the physical processes that support springs, aquatic and riparian habitats, species, and human cultures? What are viable management options to mitigate these effects and support ecosystem functions? How can climate change, hydrological, ecological, and/or biological models be used to better understand the potential future effects of climate change, inform adaptive management and development of beneficial management practices, and create related decision support tools?

The presentation is meant to provide an opportunity to discuss and explore opportunities to share lessons learned, and transfer information and technology from the Glen Canyon Dam Adaptive Management Program to other river basins in the southwest, and collaborate on science development related to adaptive management of riverine ecosystems.

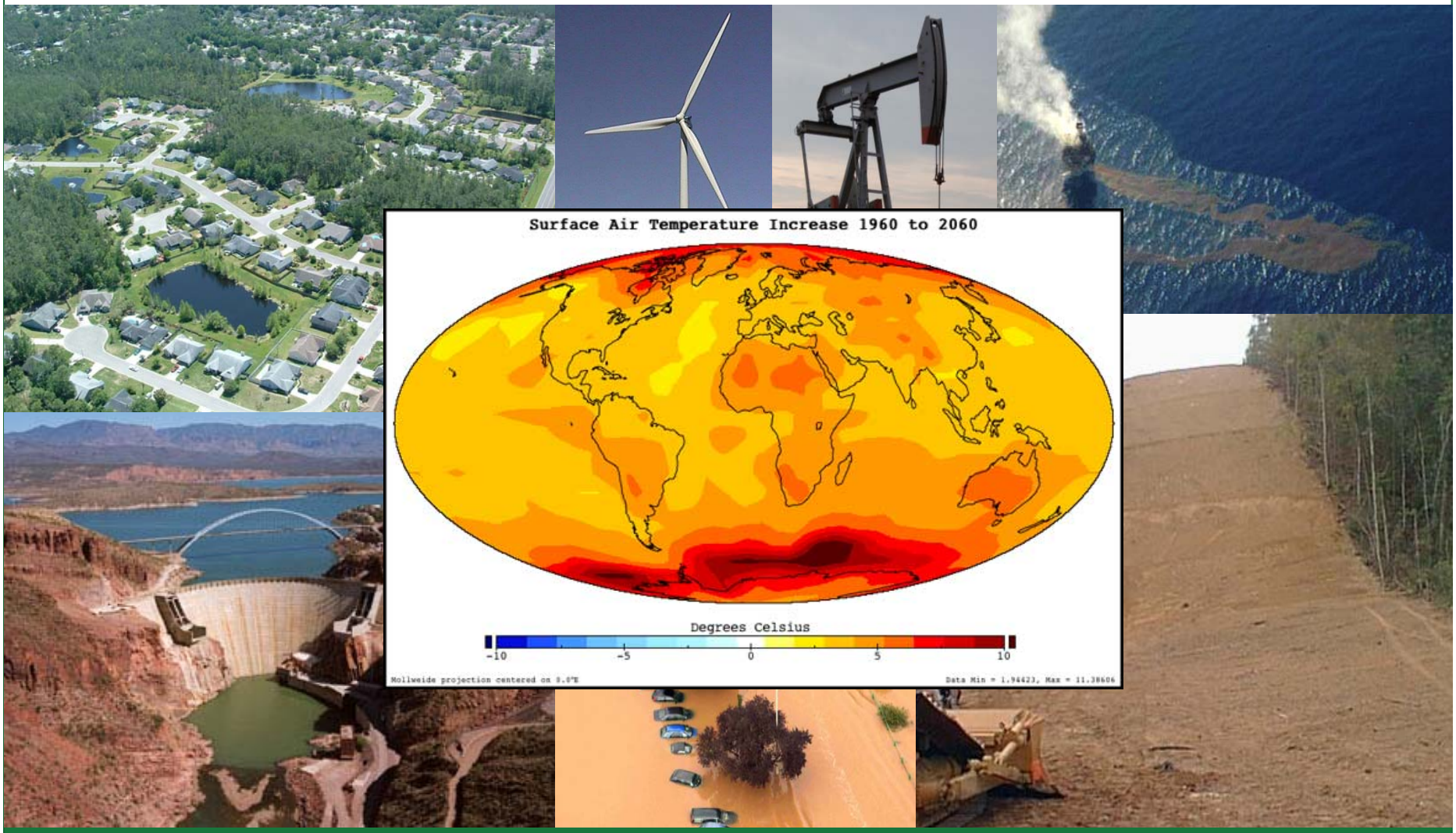
DESERT LANDSCAPE CONSERVATION COOPERATIVE



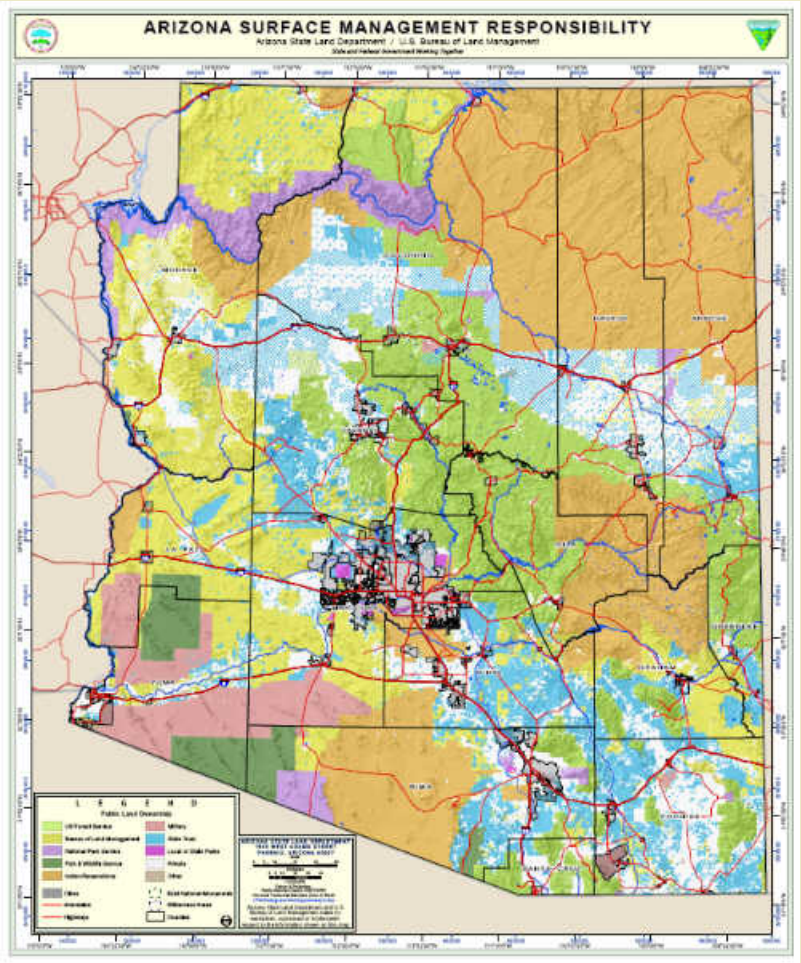
Glen Canyon Dam Adaptive Management
Working Group Meeting
Flagstaff, Arizona
August 9, 2013

LANDSCAPE CONSERVATION COOPERATIVES

Land use changes and other ecological stressors, along with a changing climate, threaten people, native species and habitats



How have we managed in the past?



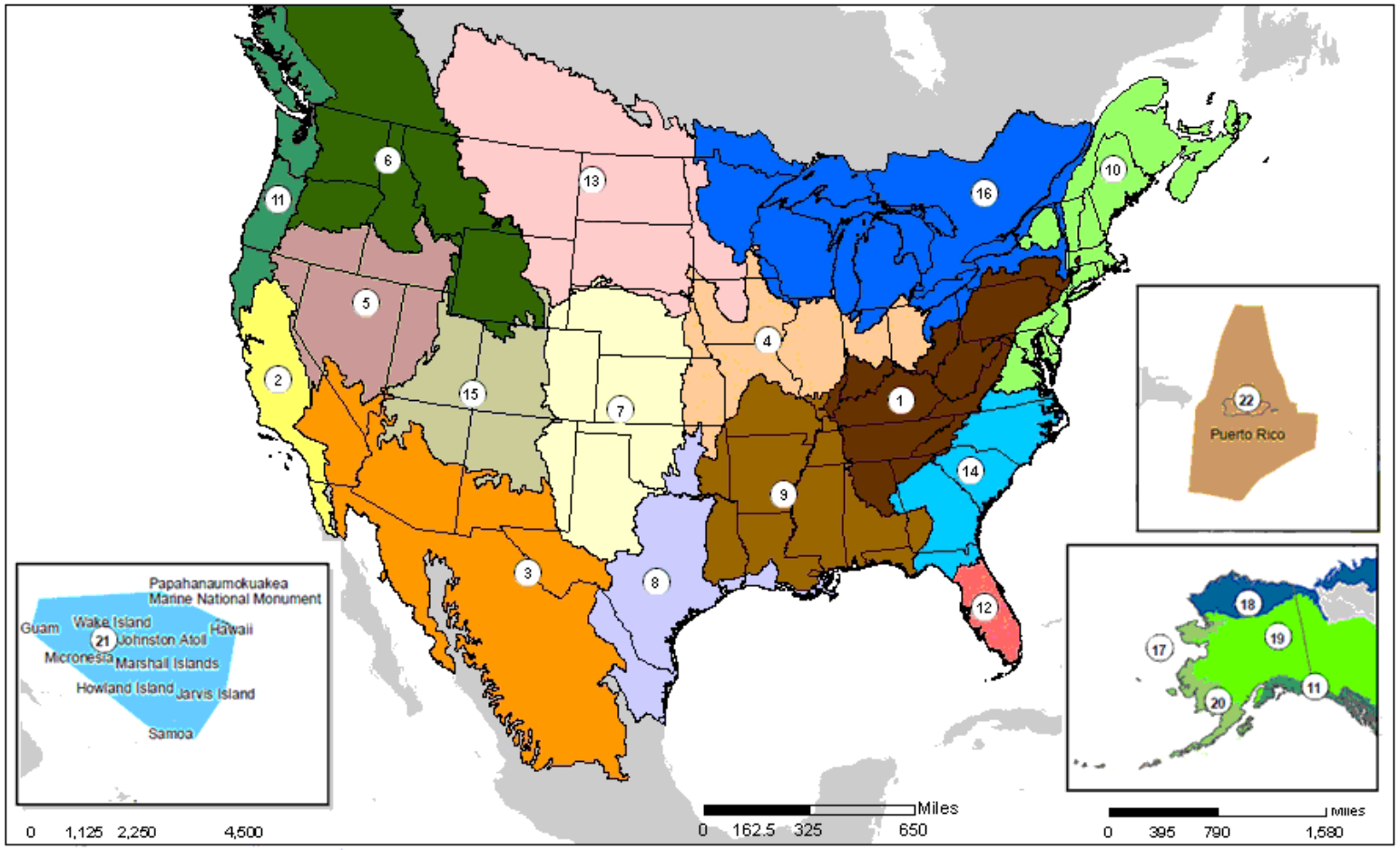
Many, many jurisdictions

- Specific missions, purposes, and methods
- Specific data and protocols
- Different regulations and goals
- Difficult to have one agency represent another
- Hard to convince colleagues to work across internal unit boundaries
- Language/communication barriers
- Cultural differences between organizations

What could we do instead?

- "Umbrella" program working across jurisdictional boundaries on a large geographic scale with focus on landscape-scale stressors (climate change) to ensure the sustainability of America's land, water, wildlife and cultural resources
  - Through collaborative partnerships, provide scientific and technical support, coordination, and communication to resource managers
- High-level commitment
  - Secretarial Order No. 3289, Steering Committee leadership & Working Group involvement from multiple agencies/organizations
- Leverage existing efforts of partners (staff, funding, etc.)
  - Connect efforts and avoid duplication through improved conservation planning and design

LANDSCAPE
CONSERVATION
COOPERATIVES



[Secretarial Order No. 3289] establishes Landscape Conservation Cooperatives (LCCs), a network of public-private partnerships that provide shared science to ensure the sustainability of America's land, water, wildlife and cultural resources.

DESERT LANDSCAPE CONSERVATION COOPERATIVE

- Non-regulatory, self-directed partnership developing shared capacity for landscape conservation
- Supports the science needs of partners
- Crosses jurisdictional, political and management boundaries
- Includes 27 tribes, 10 Mexican states, and 5 US states

Steering Committee Representation

Applied Science for Conservation

- **Science Working Group and Critical Management Question teams** – interdisciplinary, multi-organizational, multi-sector teams (different expertise, backgrounds, agencies, organizations, interests)
- **Full taxonomic & resource scope** – landscapes that support all species/resources
- **Forward looking** – incorporate and plan for anticipated changes
- **Inform adaptive management** - link conservation design, science, monitoring, and conservation delivery to develop best management practices
- **Shared outcomes & shared resources** – build relationships for shared priorities and strategies to implement conservation practices
- **Funding Opportunities for Science Projects** – Bureau of Reclamation and U.S. Fish and Wildlife Service

How do we accomplish our goals?

Partnership Community

Entities with resource management interests in the Desert LCC

- Communicate interests and needs to the LCC
- Contribute resources (staff) for LCC
- Use LCC products in decision-making
- Share information & resources

Management Questions

Information & Products

Steering Committee

Provides direction

Staff

Coordinator (BOR)
Science Coordinator (FWS)
Provide support & coordination

Working Groups

- Science
- Local Governments
- Data & GIS
- Administrative
- Tribal
- Mexico

Issue-specific (as needed)

Critical Management Questions

- **WHY?**
  - Resource managers need forums and systems to leverage resources and expertise amongst partners to solve problems too big to solve alone.
- **WHAT?**
  - The Desert Landscape Conservation Cooperative is developing the relationships, processes, and capacity to develop and deliver science and decision support tools that directly inform conservation planning, design, and delivery.
- **HOW?**
  - Form multi-organizational, interdisciplinary "applied science think tanks" of managers and researchers to address management questions with broad relevance across the Desert Landscape Conservation Cooperative geography.

Selecting Critical Management Questions

- In 2012, the Desert Landscape Conservation Cooperative Science Working Group developed a Comprehensive Science Needs Assessment with Priority Science Needs
- In late 2012, partners submitted 60 management questions related to Priority Science Needs
- In early 2013, Desert Landscape Conservation Cooperative selected 6 Critical Management Questions to focus on for 2-3 years

Critical Management Questions

CMQ 1: Water management and climate change

CMQ 2: Monitoring species/processes relative to climate change and related threats/stressors

CMQ 3: Grassland & shrubland management

CMQ 4: Physiological stress of climate change

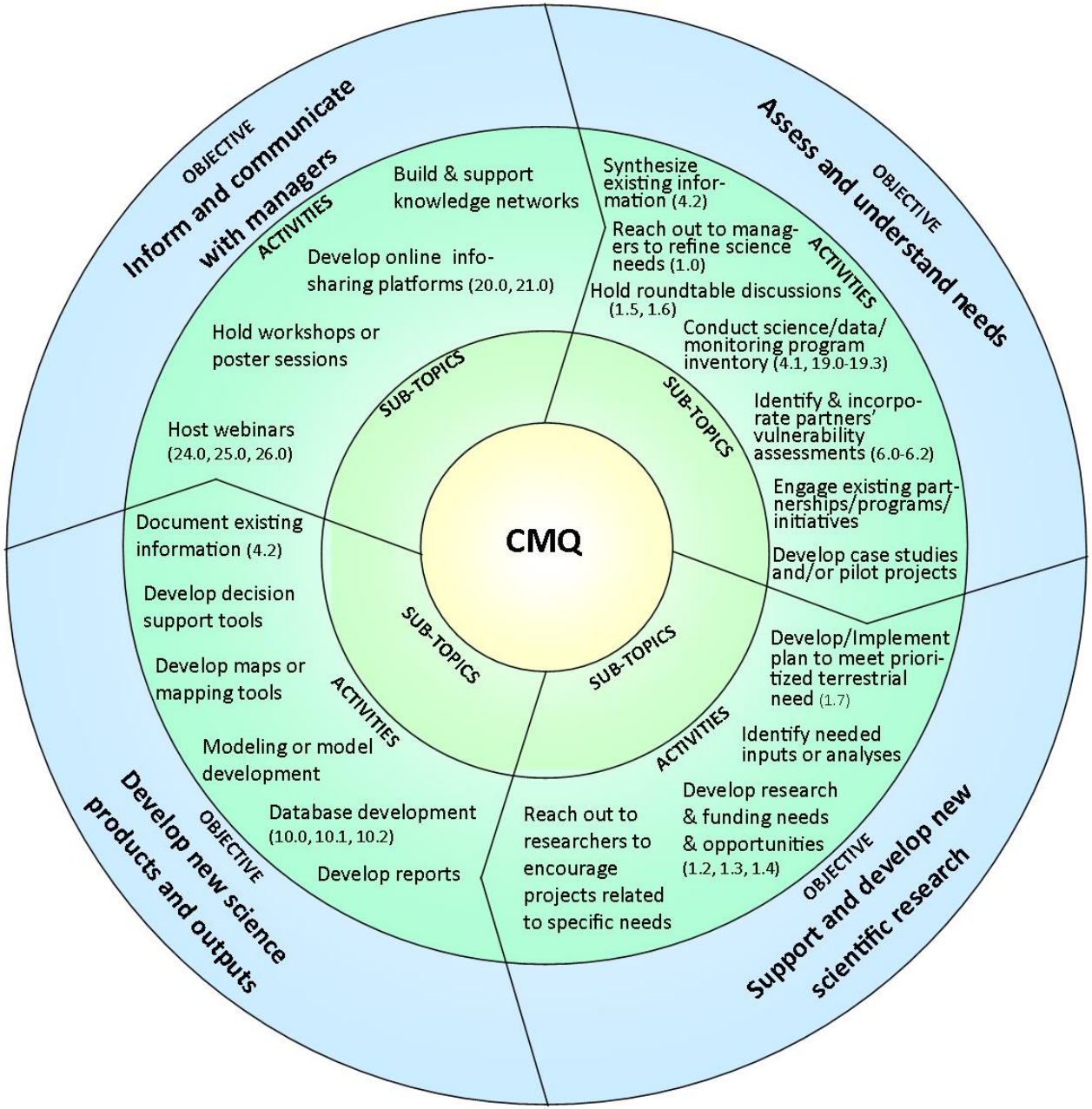
CMQ 5: Changing wildfire regimes and riparian ecosystem management

CMQ 6: Amphibians, reptiles and climate change

DESERT LANDSCAPE CONSERVATION COOPERATIVE

This map depicts the general path each CMQ team will develop. Activities are listed as examples.

Each team will customize the map to include some of these and other activities needed to assess and address the CMQ.



Critical Management Question 1

- *How are climate change, water management, and their interaction affecting the physical processes that support springs, aquatic and riparian habitats, species, and human cultures? What are viable management options to mitigate these effects and support ecosystem functions? How can climate change, hydrological, ecological, and/or biological models be used to better understand the potential future effects of climate change, inform adaptive management and development of beneficial management practices, and create related decision support tools?*
- Team Leaders: Aimee Roberson, FWS; Ken Nowak, BOR
- Steering Committee Sponsors: David Palumbo, BOR; Bob Davis, USFS

CMQ 1: Water Management and Climate Change

The team is focusing on the following aspects of CMQ 1:

What are successful strategies and methodologies for evaluating and implementing recommendations for ***environmental flows and associated water levels****? How can managers* ***effectively integrate information*** *about hydrologic responses to climate change and the influence of this on ecosystems and species? What are* ***viable management options*** *to increase resiliency of ecosystems and species and help them adapt to climate change?*

CMQ 1: Water Management and Climate Change

- **Approach:**
  - Conduct a literature review to assess current state of knowledge.
  - Review related efforts and develop case studies. Evaluate needs and challenges, and offer recommendations to address them.
  - Pair case studies with pilot projects to **facilitate transfer of science, knowledge, technology and lessons learned through collaborative processes that inform adaptive management strategies**.

Adaptive Management

"Adaptive Management...**emphasizes learning while doing**. Adaptive management... represents...a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders."

- National Research Council *in* U.S. Department of the Interior Technical Guide, Adaptive Management Working Group 2007

Lessons Learned from Adaptive Management

- Can lessons learned from collaborative adaptive management be transferred to other programs, partnerships, and geographic areas?

- While specific scientific information may not apply to other systems, perhaps technology, methodology, and collaborative structures and processes can be shared to maximize learning, efficiency, and effectiveness.

Management Question Submitted by Jeff Bennett, Big Bend National Park

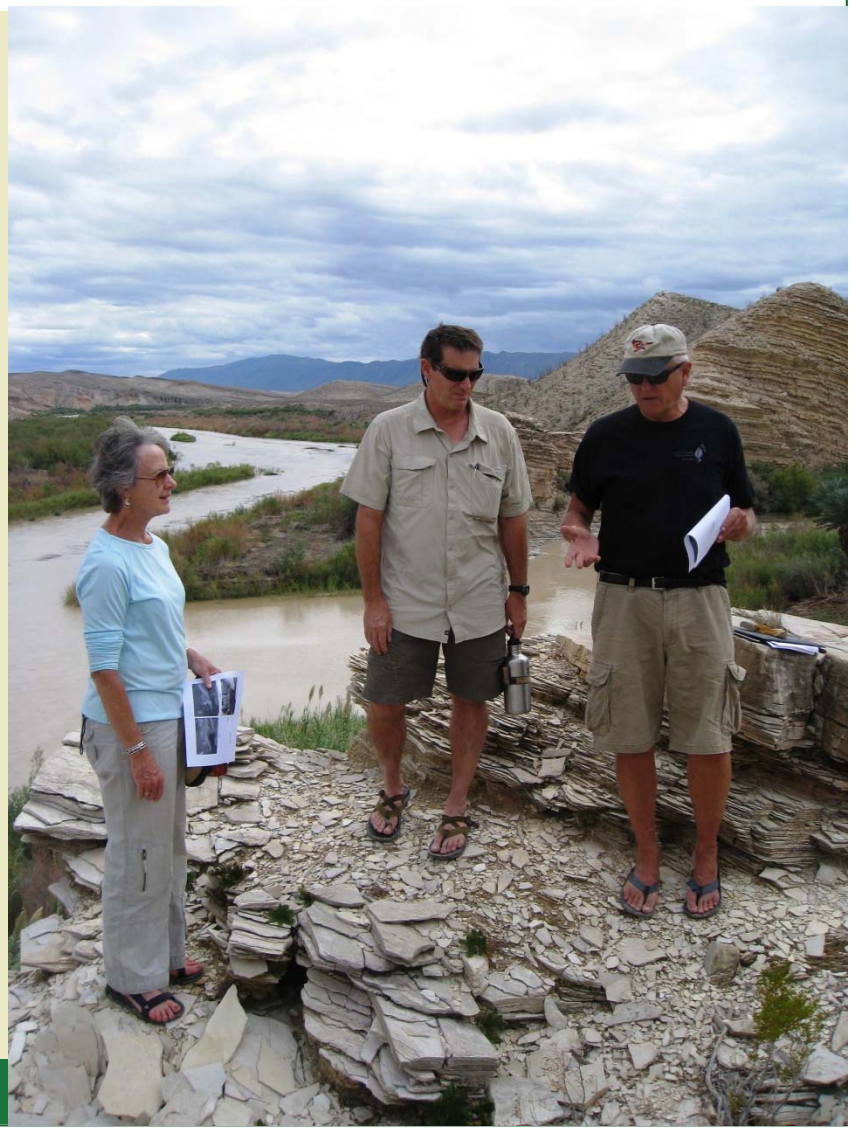
How do the physical processes of flow regime (as altered by water management and climate change), fine sediment and gravel transport, and solute transport interact to affect conveyance capacity, water quality, invasion of non-native, riparian vegetation, and the distribution and quality of aquatic and riparian habitats needed to support native species?

Given the opportunity to do so, what is the best way to manage flows, sediment, and non-native vegetation to support a healthy ecosystem?

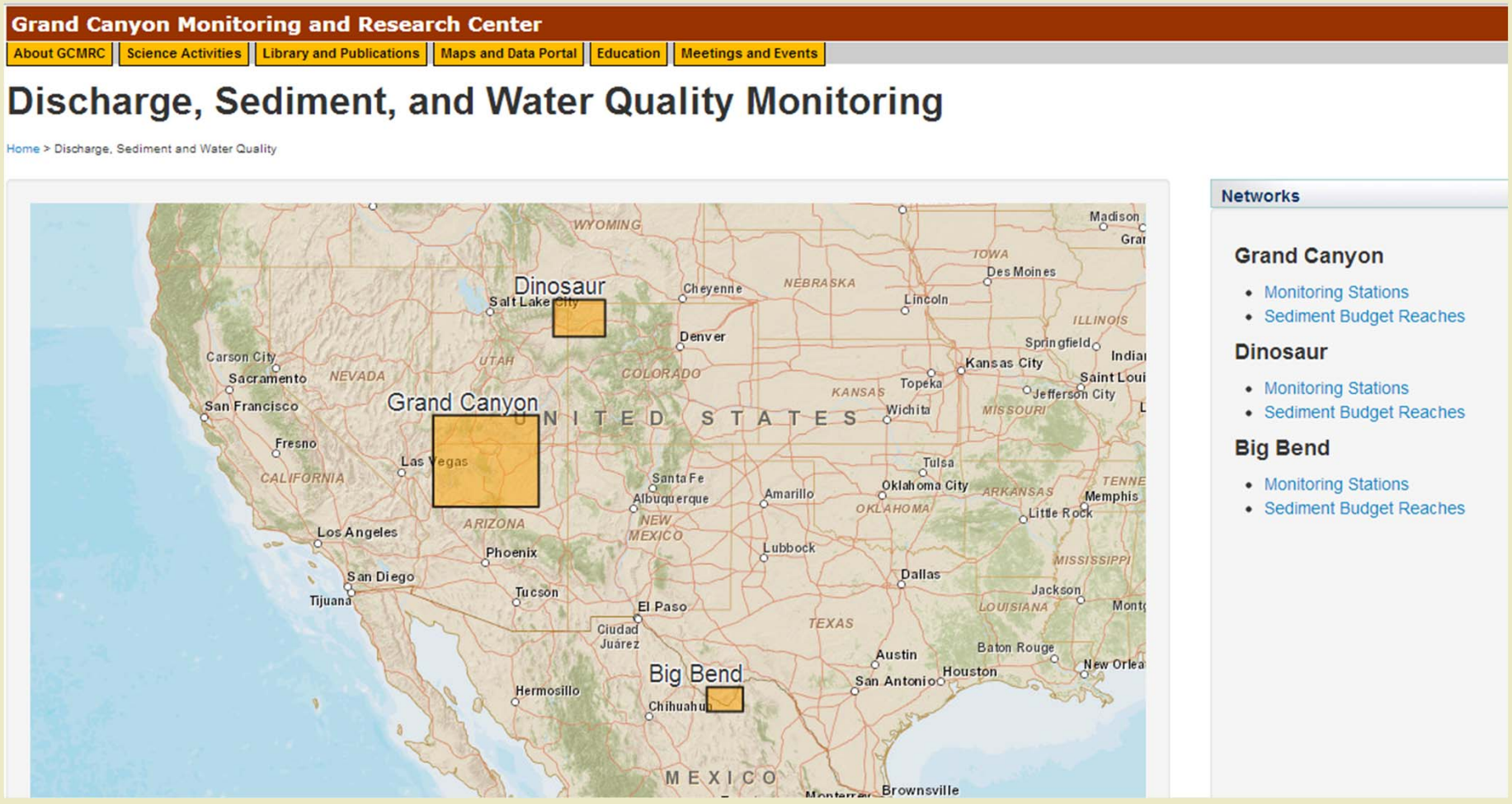
Management Question Submitted by Jack Schmidt, Grand Canyon Research and Monitoring Center, USGS

How can science, technology, and decision support tools being developed by the GCMRC for implementation and effectiveness monitoring of the High Flow Experimental Release Protocol be generalized and be of use in other rivers with greatly altered flow regimes and sediment supplies and where adaptive management programs are being developed, such as the Big Bend reach of the Rio Grande?

What are the most effective and useful elements of the GCMRC technologies and scientific insights that are most essential to use on other rivers not as well funded as the one in Grand Canyon?



Grand Canyon Monitoring and Research Center



CMQ 1: Project Example

- Development of an Interdisciplinary Approach to the Long-Term Monitoring of Ecological Conditions in the Big Bend Reach of the Rio Grande
  - **WHY?**
    - To understand how to manage flows and vegetation to maintain ecosystem integrity and resiliency and to manage fluvial habitat to support native biodiversity – *defining management actions.*
    - To answer the effectiveness of management (flow, species reintroduction, vegetation) actions – *measuring management actions.*
    - To inform mitigation of adverse impacts of flooding related to reduced conveyance capacity in channel.
    - To clearly demonstrate the link between geomorphic change and habitat.
  - Multi-organizational team coordinated by Bruce Morning, USGS Texas Water Science Center, includes scientists from the Colorado River
  - Building on science and technology developed by GCMRC and others working on the Colorado River

What do you think?

Are there lessons you have learned from participating in the Glen Canyon Dam Adaptive Management Working Group about science, technology, and collaborative processes and structures that could be shared with programs facing similar issues?

What can you do?

Inform Strategic Planning Efforts

- ✓ What are your management-related science and information needs?
- ✓ What can the Desert Landscape Conservation Cooperative do to help your program?
- ✓ What can your program do to help Desert Landscape Conservation Cooperative efforts?

Assess and Address Science Needs

- ✓ Participate in future meetings
- ✓ Participate in working groups or Critical Management Question teams

Share Knowledge and Expertise

- ✓ e.g., Participate in webinars, meetings, and round table discussions

Why be involved?

- Forum for open discussion and problem-solving about complex issues
- Build relationships and capacity across jurisdictions and specialties to help solve problems too big for any of us to solve alone
- Help guide applied science to meet management needs
- Opportunity to tap into resources and expertise of multiple partners

Thank You!

http://www.usbr.gov/dlcc

Sign up for list serve on website

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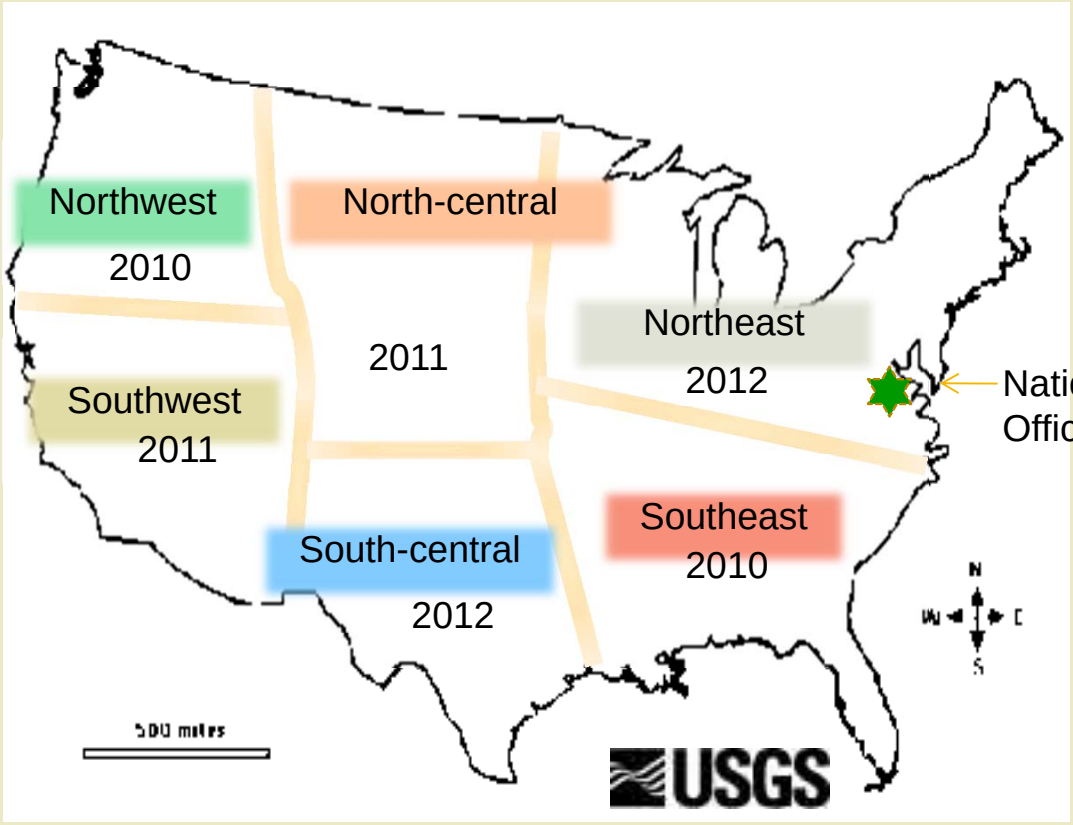
LANDSCAPE CONSERVATION COOPERATIVES

Climate Science Centers

Brings together expertise from university and federal scientists to support climate change research and collaborations in a specific geographic area



Agua Caliente Band of Cahuilla Indians
Ak-Chin Indian Community
Augustine Band of Cahuilla Indians
Cabazon Band of Mission Indians
Chemehuevi Indian Tribe
Cocopah Indian Tribe
Colorado River Indian Tribes
Fort McDowel Yavapai Nation
Fort Mojave Indian Tribe
Gila River Indian Community
Hualapai Tribe
Las Vegas Paiute Tribe
Mescalero Apache Tribe
Morongo Band of Mission Indians
Navajo Nation
Pascua Yaqui Tribe
Quechan Indian Tribe
Salt River Pima Maricopa Indian Community
San Carlos apache Tribe
Santa Rosa Band of Cahuilla Indians
Tohono O'odham Nation
Tonto Apache Tribe
Torres Martinez Desert Cahuilla Indians
White Mountain Apache Tribe
Yavapai-Apache Tribe
Yavapai-Prescott Indian Tribe
Ysleta del Sur