

Rapid Ecoregional Assessment

Madrean Archipelago Ecoregion

Update Webinars, September 19 & 26, 2013

Near Elgin and Audubon Research Ranch
T. Robertson, SDR

Welcome (BLM)



Webinar Agenda

- Introductions/Getting Started
- Welcome (BLM)
- REA Context and Overview (BLM)
- Refresher: Madrean Archipelago Rapid Ecoregional Assessment (REA)
- Pre-Assessment Phase: Update, Results, Products
- Assessment Phase: Status, Plans
- Input on Data for Assessment

Webinar Goals

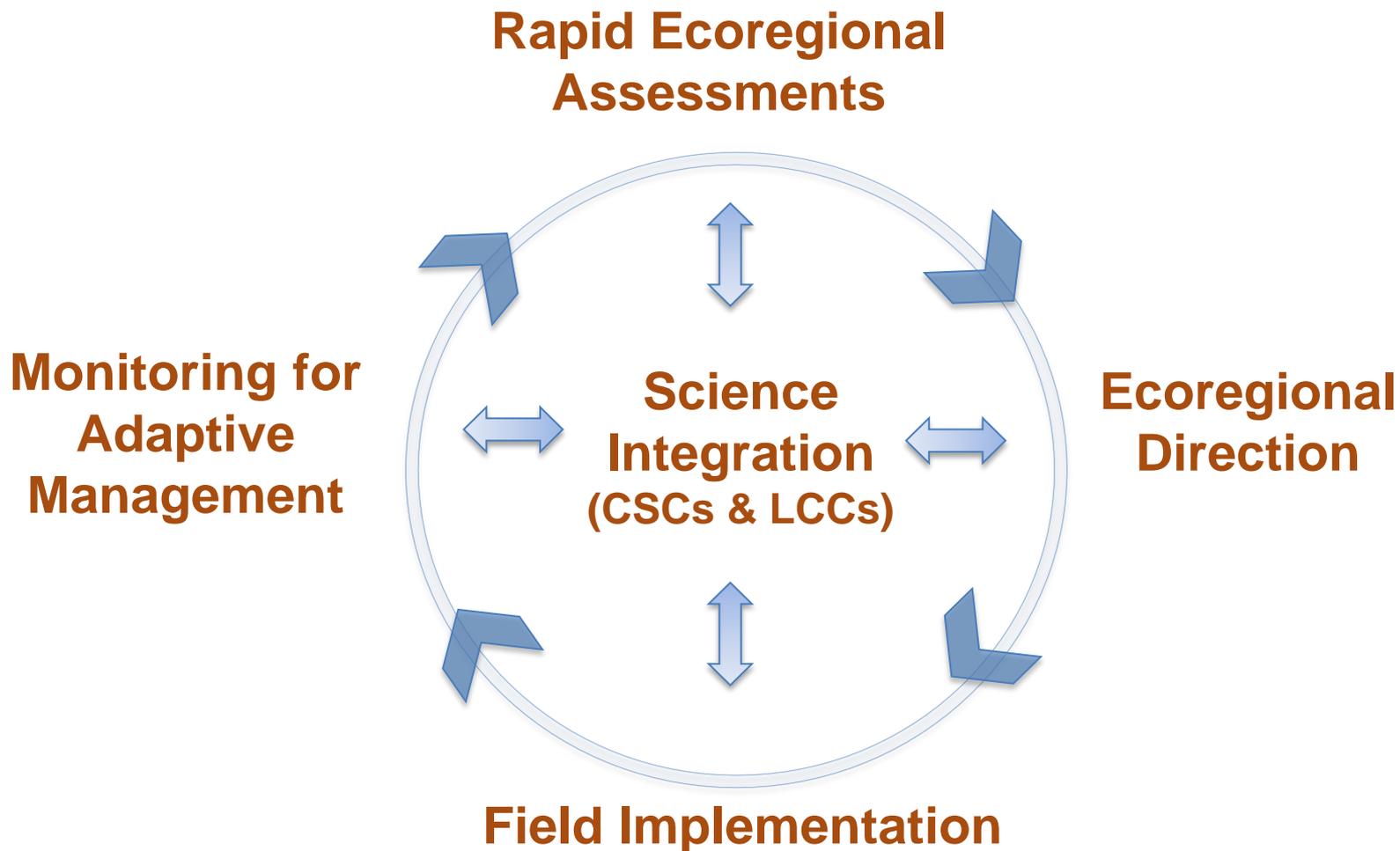
- Update: Where we're at, where we're headed in the assessment phase
- Highlight decisions in pre-assessment that will shape the assessment (i.e., CE selection, CA and MQ identification)
- Highlight key content of pre-assessment products
- Briefly highlight assessment approach, work plan
- Obtain input on data for use in assessment

REA Context and Overview



BLM's Landscape Approach

The Landscape Approach is an adaptive management cycle, coordinated at high levels



Why a Landscape Approach?

- Landscape approach informs and enhances local management
- REAs provide information to strengthen our decisions and help us meet our mission
- Way of doing business, not a one-off approach

Landscape Approach and Other Initiatives

The landscape approach we are developing complements and is integral to several major Departmental and Bureau initiatives:

- DOI's Climate Change Adaptation Plan, including the Science Climate Centers and the Landscape Conservation Cooperatives
- BLM's *Winning the Challenges of the Future: A Road Map for Success in 2016*
- The Solar Programmatic EIS
- The Greater Sage Grouse Planning Strategy

What is an REA?

- R = Rapid: Use existing information, no new data collection (18-24m)
- E = Ecoregional: Based on large areas where ecosystems are similar (one to several level 3 ecoregions)
- A = Assessment: Understand existing condition and how conditions may be altered by ongoing changes and demands

What is an REA?

Assessment Time Horizons

- Current conditions
- Near-term projections (~2025)
 - 5-15 year time horizons
- Mid-century projections (~2050)
 - 30-60 year time horizons



What is an REA?

- Provides findings, “toolkit” that can be used by any land or resource management entity to inform RMPs or equivalents, prioritize conservation, restoration, or development areas, BMPs, etc.
- *Not* a decision document

REA Process Overview

PHASE I: PRE-ASSESSMENT

TASK 1: INITIATE PROJECT

- Engage Team Members and Participants
- Develop Work Plan for Pre-Assessment

TASK 2: CONDUCT PRE-ASSESSMENT

- Characterize the Ecoregion
- Identify and Finalize Conservation Elements (CEs), Change Agents (CAs), and Management Questions (MQs)

PHASE II: ASSESSMENT

TASK 1: ASSESSMENT WORK PLAN

- Develop Assessment Work Plan: Characterize Assessments to Be Conducted, Assessment Approach

TASK 2: DATA AND PROCESSES FOR ASSESSMENTS

- Inventory, Acquire, Evaluate Datasets
- Develop Process Models

TASK 3: CONDUCT ASSESSMENTS

- Develop Geoprocessing Models
- Conduct Assessment Analyses
- Generate Data Deliverables, Findings

TASK 4: FINAL REPORT, PRODUCTS

- Prepare Final REA Report, Documents

Phase 1 Objectives and Process: Ecoregional Situation

- Derivation of MQs, CEs, and CAs to be assessed
 - What are management issues
 - Literature review
 - Completed/ongoing assessments
- Work products include:
 - Current Environment
 - Conservation Element Packages
 - Change Agent Descriptions
- Compiled in:
 - Pre-Assessment Report
 - Accompanying Conservation Element (CE) Conceptual Models (first part of CE packages)

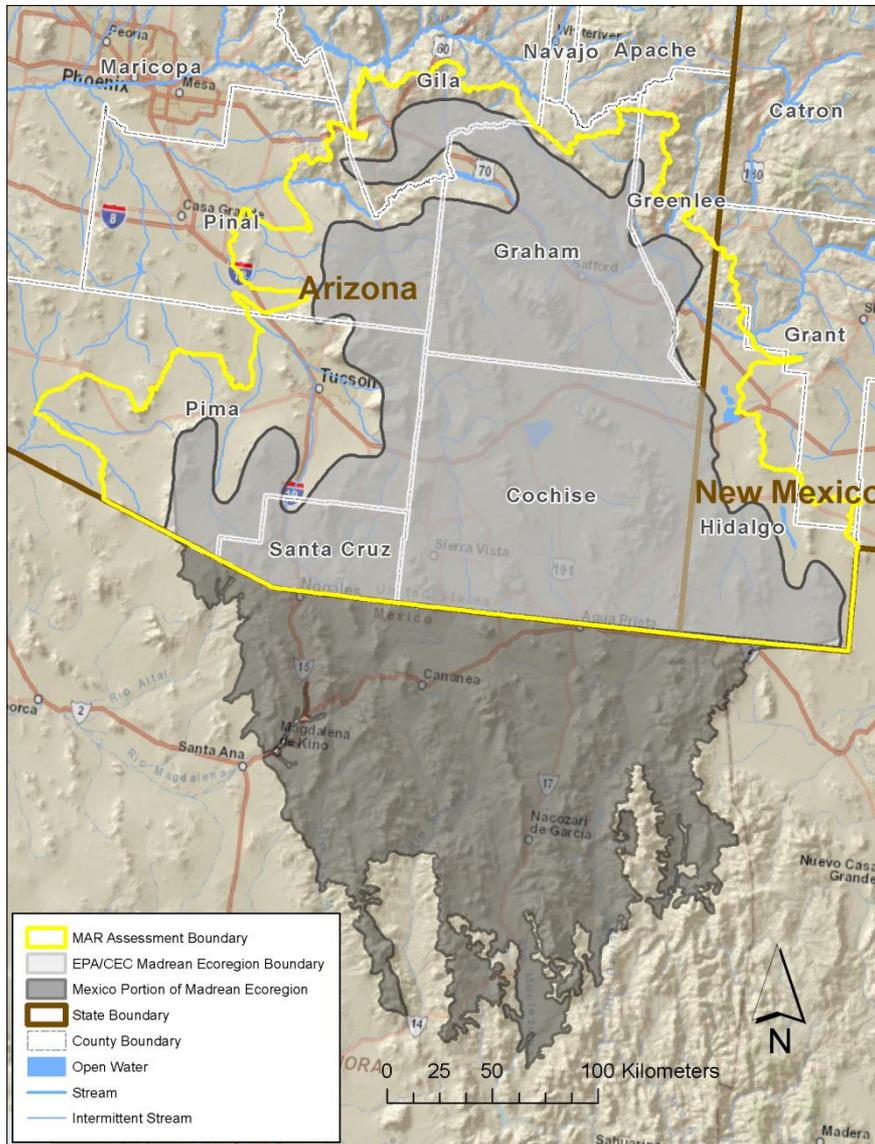
Uses of Phase 1: Pre-Assessment Report

- Geospatial assessment
- Issue scoping
- Partner development
- Monitoring
- Science needs

Madrean Archipelago REA

- REFRESHER:
 - Geographic extent/scope
 - Who conducts REA
 - Timeline, schedule
- Summary of current status

Project Overview: Spatial Extent



- SE Arizona, SW New Mexico
- Ecoregion + intersecting HUCs (15.7 mil acres, 24,600 mi²)
- All land, regardless of ownership
- U.S. side

Madrean Archipelago REA

- Who conducts the REA
 - NatureServe contractor team
 - Guided by BLM's Contracting Officer's Representative (COR), the AMT, and the Technical Team
 - With additional input from partners and stakeholders via these update webinars

REA Timeline, Schedule

Phase	Task #	Task	Timeframe (approx)
Phase I: Pre- Assessment	Task 1	Initiate REA Project: Engage Teams Develop Pre-Assessment Work Plan	Oct-Dec '12 3 months
	Task 2	Implement Pre-Assessment Work Plan: Characterize the Ecoregion Identify CEs, CAs, and MQs	Jan-June '13 6 months
Phase II: Assessment	Task 1	Create Assessment Work Plan	July-Aug '13 2 months
	Task 2	Data and Processes For Assessments: Inventory, Acquire, and Evaluate Data Develop Process Models	Sept '13-Jan '14 5 months
	Task 3	Conduct Assessments: Develop Geoprocessing Models Conduct Analyses Generate Findings Assemble Data Packages	Jan-June '14 5 months
	Task 4	Final REA Report	July-Sept '14 3 months



Current Status of REA

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Complete

Nearing completion

Initiated / underway

PHASE II: ASSESSMENT

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- Develop Assessment Work Plan: Characterize Assessments to Be Conducted, Assessment Approach

TASK 2: DATA AND PROCESSES FOR ASSESSMENTS

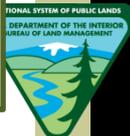
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TASK 4: FINAL REPORT, PRODUCTS

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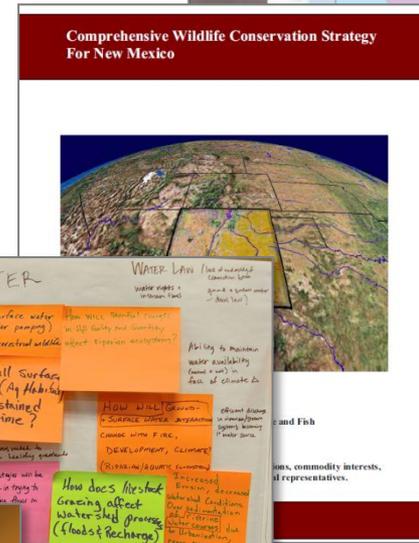


Pre-Assessment Update

- Process overview
- Identification of management issues, management questions (MQs), change agents
- Ecoregion conceptual model
- Conservation elements (CEs)
- CE conceptual models (CMs)
- Synthesis: MQs → Assessments for REA
 - Standard
 - “Special”

Pre-Assessment / Scoping

- Review of assessments, literature
- Scoping workshops
 - Development Forums
 - AMT workshops
 - Other calls and webinars
- Contractor team expertise

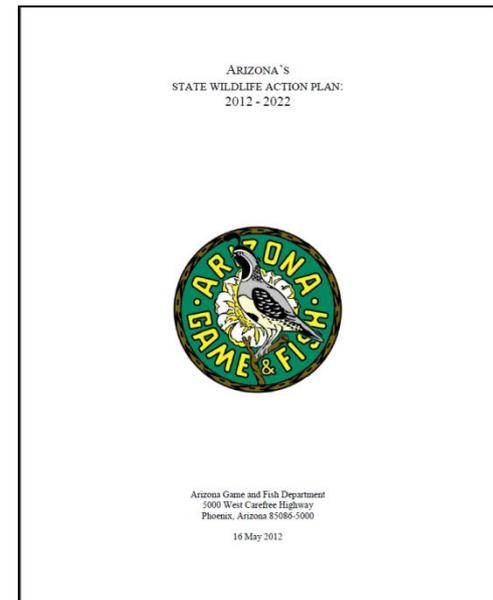


ID of Management Issues, CAs

■ Development Forums

- Which riparian habitats are most at risk due to climate variability?
- What are the potential changes in the community dominance of grassland and desert scrub as a result of climate change?

■ Regional assessments



Management Issues/Change Agents

- Water availability
 - Human uses and needs
 - Irrigation, municipal supplies, industrial uses
 - Aquatic ecosystem and fauna health
 - Wildlife

- Climate change
 - Direct effects on CEs
 - Effects on water availability, fire regimes, invasives



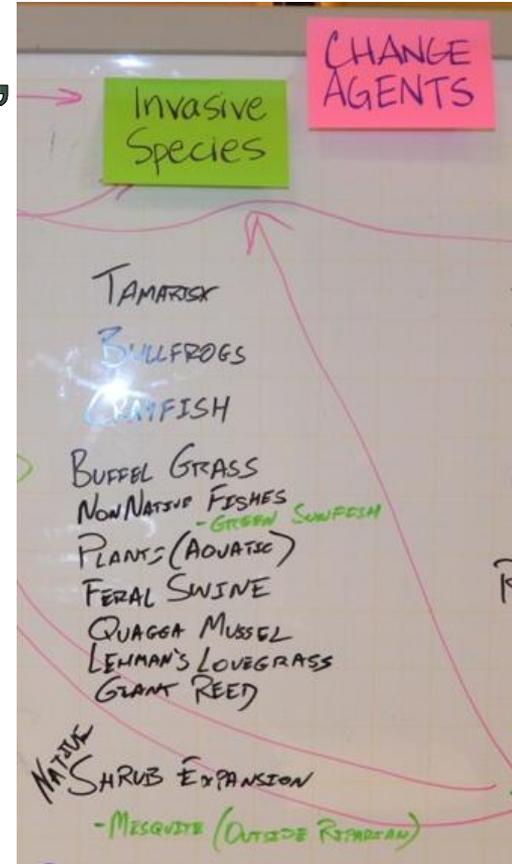
Management Issues/Change Agents

- Livestock grazing
 - Effects on grasslands, riparian systems, soils
 - Interactions with climate change
- Altered fire
 - Effects on terrestrial and aquatic systems
 - Interactions with climate change, invasive species



Management Issues/Change Agents

- Invasive non-native species, such as:
 - Buffelgrass
 - Lehmann's lovegrass
 - Tamarisk
 - American bullfrog
- Native woody species expanding distribution
 - Mesquites
 - Creosotebush

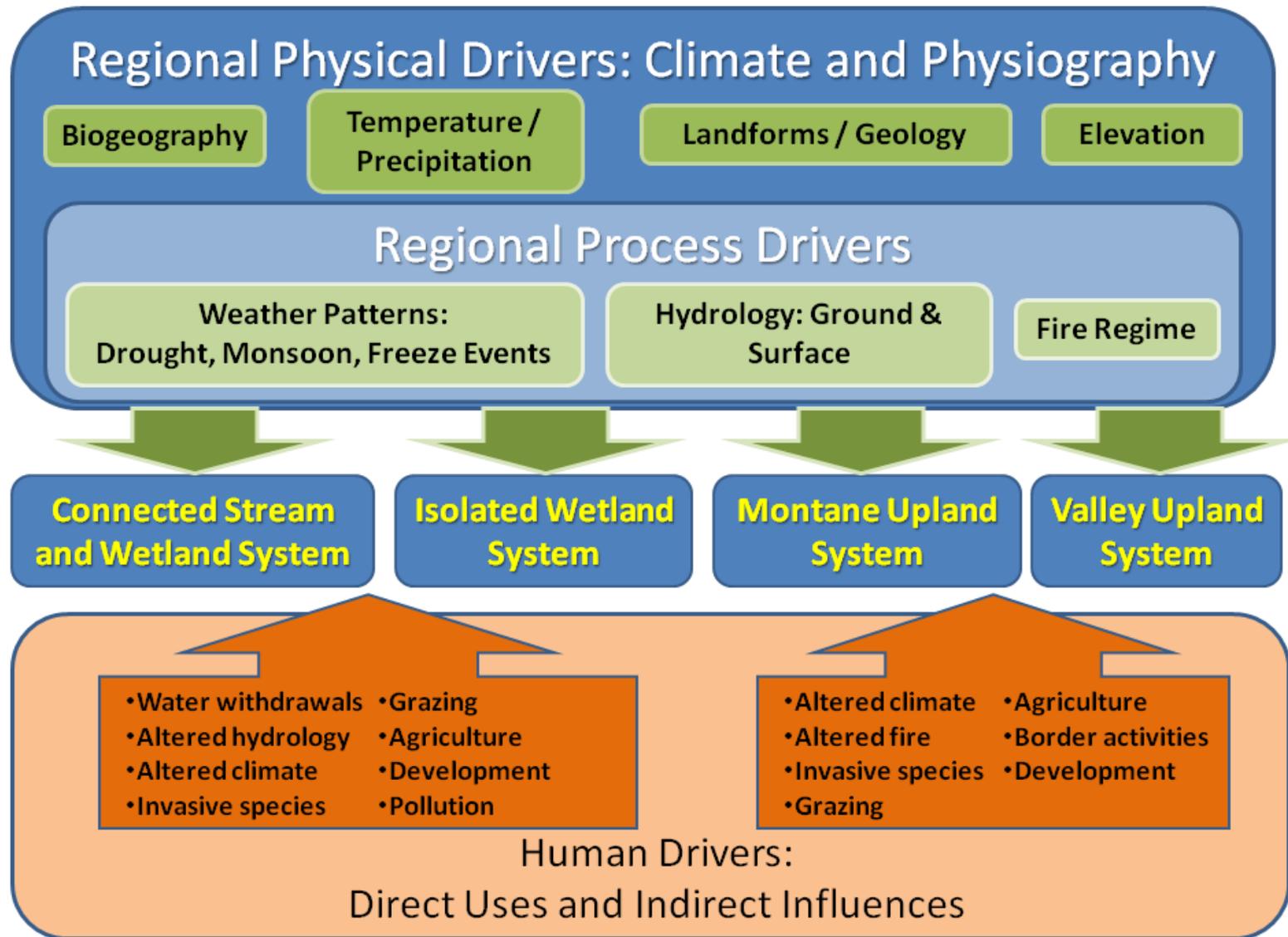


Management Issues/Change Agents

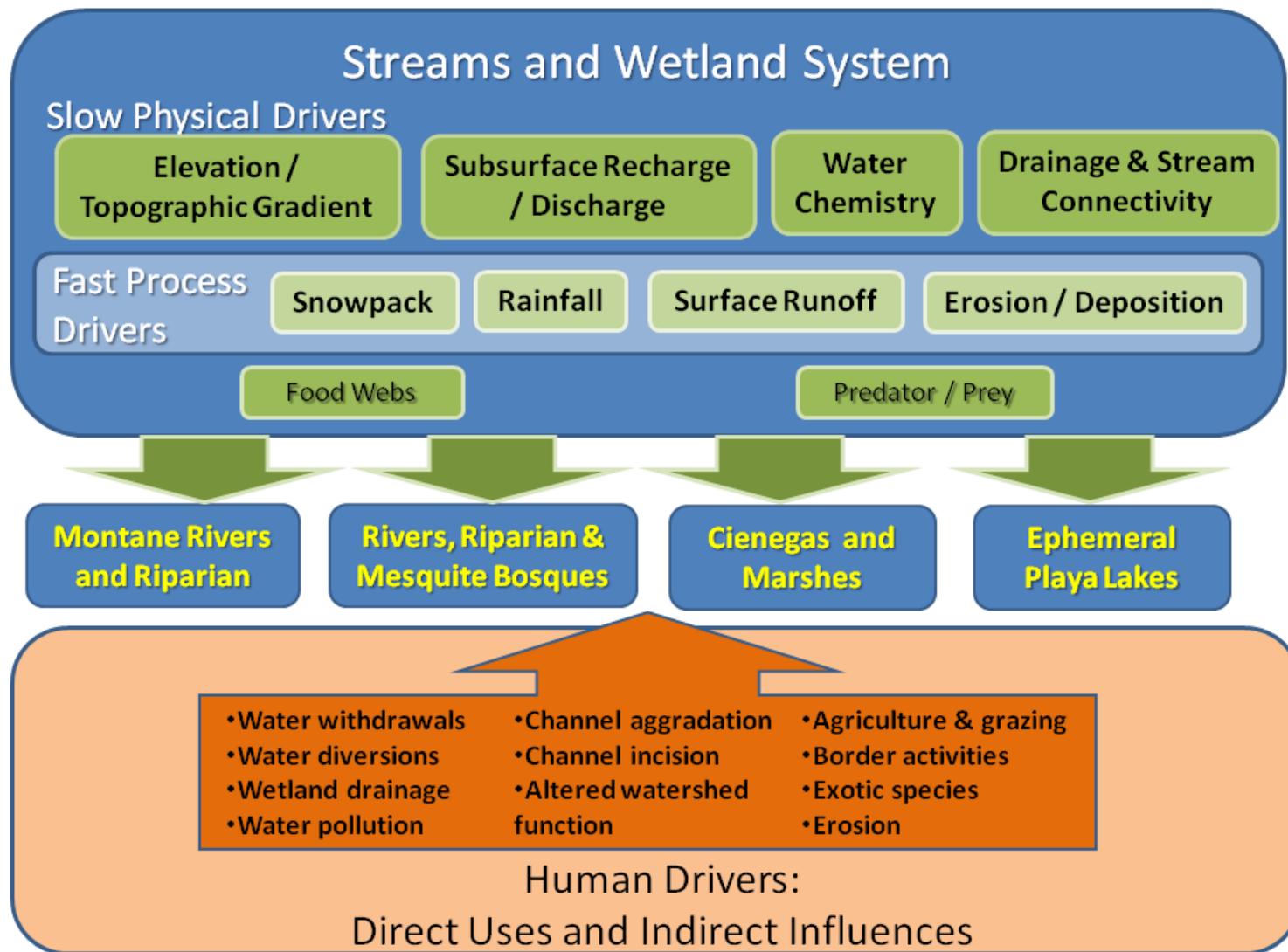
- Development
 - Transmission projects
 - Fragmentation associated with transmission, roads, other utility corridors
 - Also includes urban and industrial development, agriculture, other direct land uses + infrastructure
- Border infrastructure and activities



Ecoregion Conceptual Model

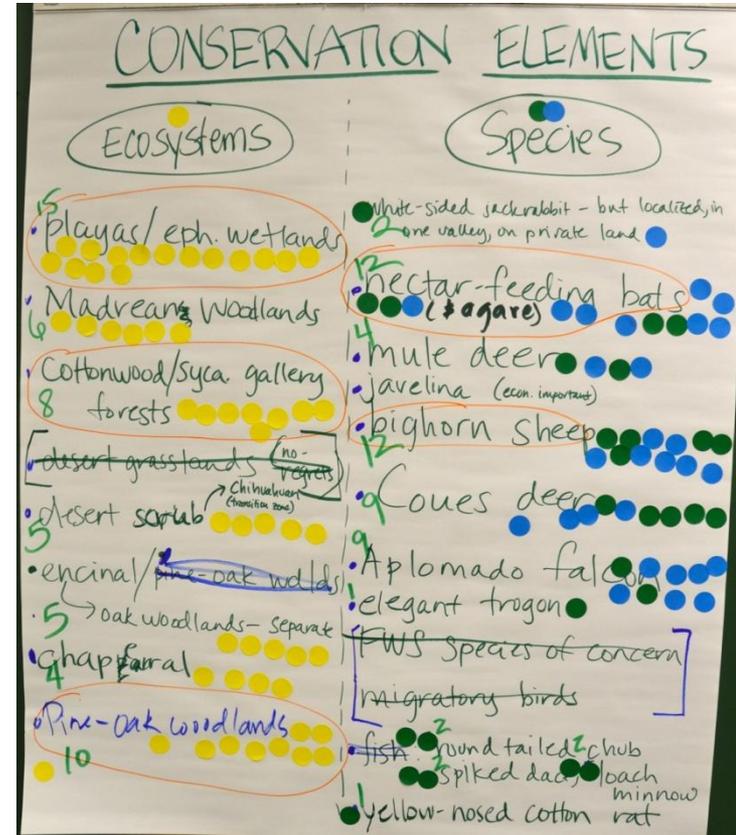


Ecoregion Conceptual Model



Identification of Conservation Elements (CEs)

- Development Forums
- Contractor expertise
- REA criteria
- AMT/TT decisions
- Process detailed in appendix of the PAR



Conservation Elements (CEs)

Ecological Systems	% of MAR
Valley Upland Ecosystems	56.0%
Chihuahuan Creosotebush Desert Scrub	13.2%
Apacherian-Chihuahuan Mesquite Upland Scrub	19.5%
Apacherian-Chihuahuan Semi-Desert Grassland & Steppe	18.2%
Madrean Encinal	5.1%
Valley Wet Ecosystems	4.3%
North American Warm Desert Riparian Woodland & Shrubland, Mesquite Bosque & Stream	3.3%
North American Arid West Emergent Marsh/Cienega & Pond	1.0%
North American Warm Desert Playa & Ephemeral Lake	<1%
Montane Upland Ecosystems	13.4%
Madrean Pinyon-Juniper Woodland	5.8%
Montane Conifer-Oak Forest & Woodland	2.8%
Mogollon Chaparral	4.8%
Montane Wet Ecosystems	<1%
North American Warm Desert Lower Montane Riparian Woodland & Shrubland & Stream	<1%



Conservation Elements (CEs)

Category	Species Name
Mammal	Desert bighorn sheep
Mammal	Pronghorn
Mammal	Coues deer
Mammal	Black-tailed prairie dog
Mammal	Nectar-feeding bat assemblage
Bird	Grassland bird assemblage
Reptile	Ornate box turtle
Amphibian	Chiricahua leopard frog



CE Conceptual Model Components

- Characterization of CE
 - Biotic and abiotic characterization/description
 - Ecosystem or species dynamics
 - Life history
 - Habitat requirements
 - Close associations or interactions with other species
 - Characterization of altered dynamics
 - Text descriptions of stressors & change agents and their known impacts on the CE
 - Key ecological attributes & indicators
 - Diagrammatic representation of the model
 - References
- Leads to assessment of ecological status

Example: N.A. Warm Desert Riparian Woodland, Mesquite Bosque and Stream



- Low-elevation (< 1200 m)
- Perennial, seasonal & intermittent streams
- Canyons & valleys of SW US and MX
- Vegetation mix of woodlands & shrublands– mostly broadleaf deciduous species, or honey or velvet mesquite
- Deeply rooted species rely on annual rise in the water table

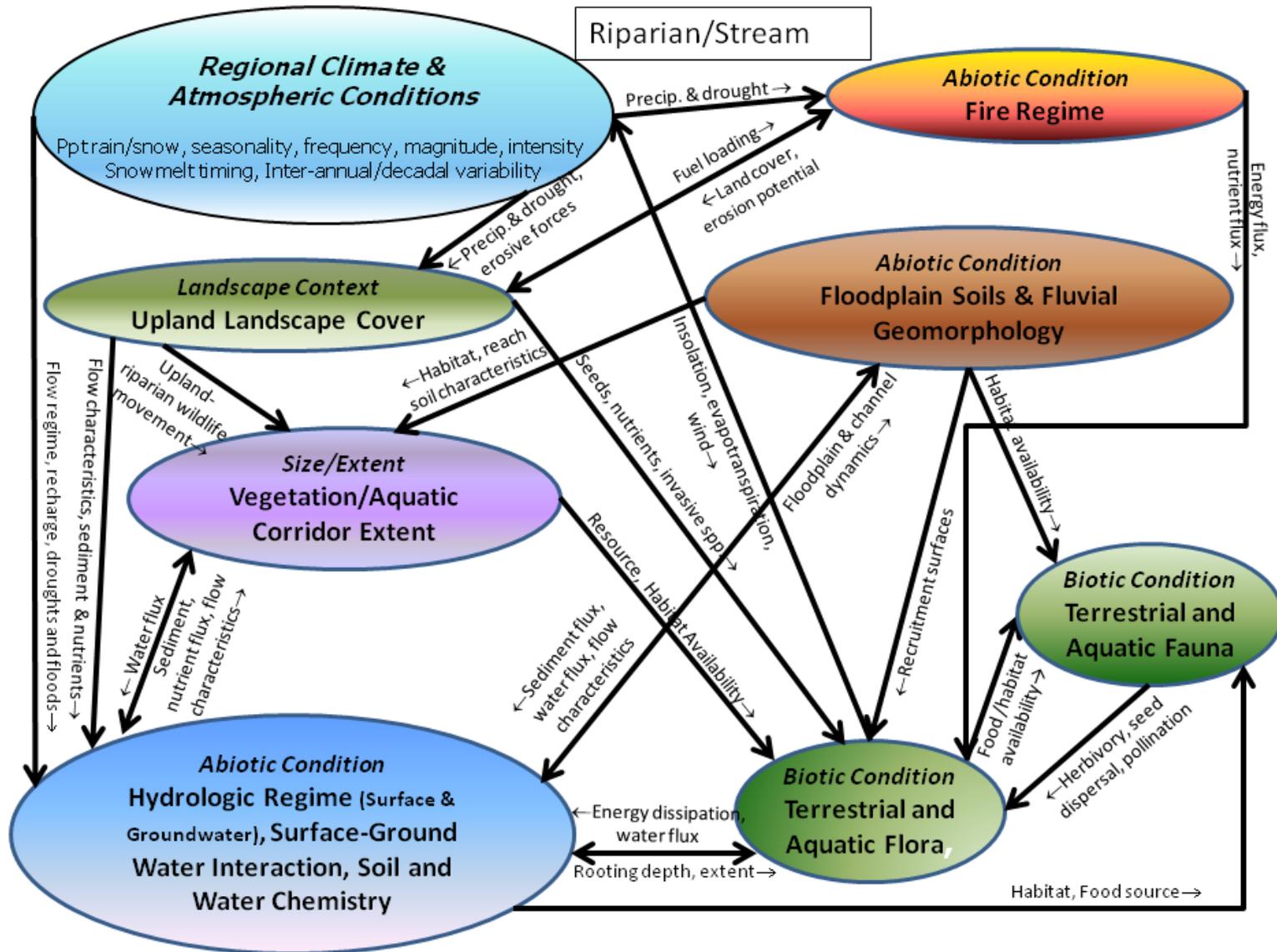
- Shaped by flooding, sediment scour/deposition, groundwater availability
- Aquatic communities vary by flow regime
- Hyporheic zone size determined by frequency, intensity, seasonal timing, duration of rainfall and flow pulses



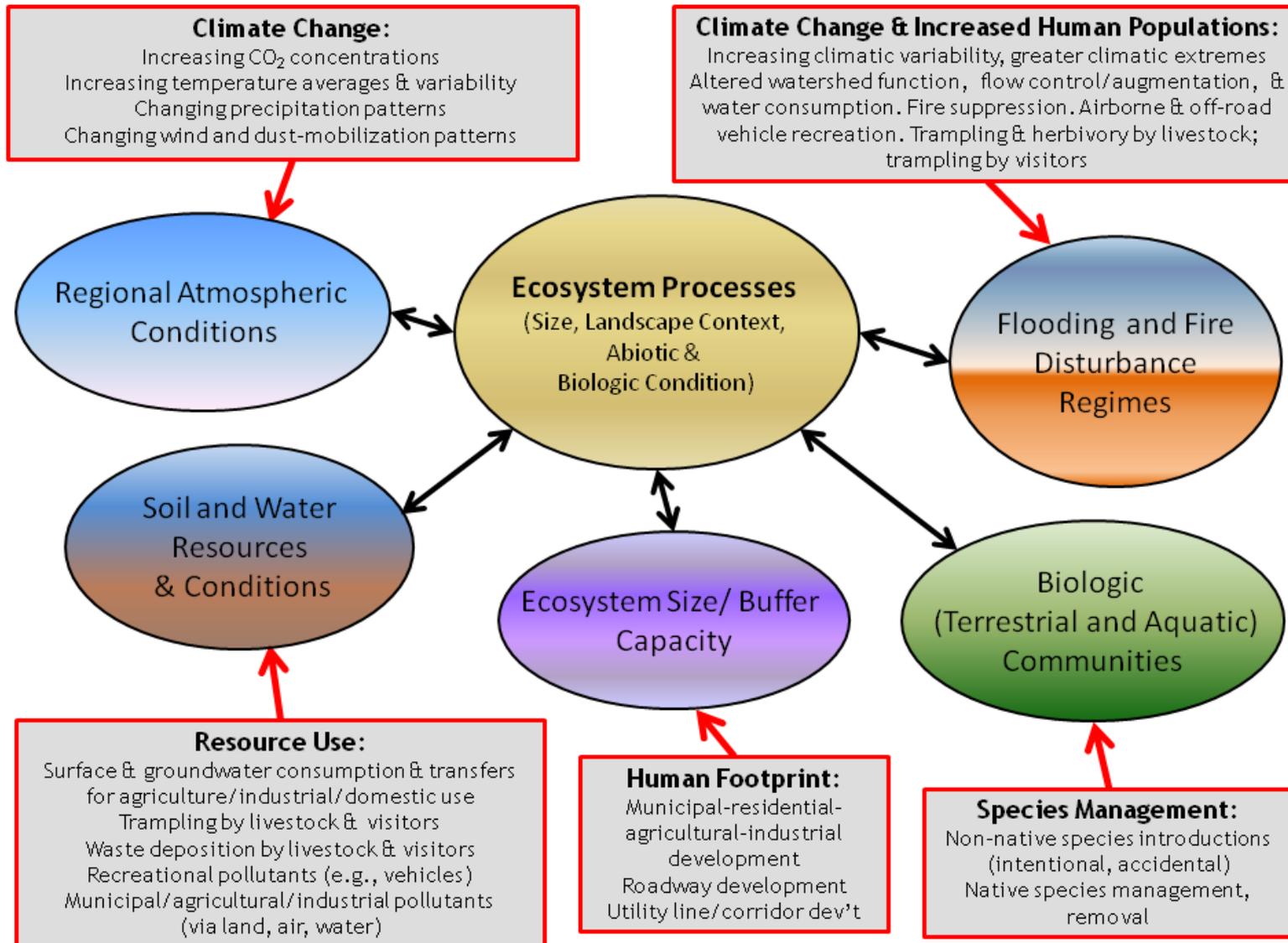
Ecological Status Methodology: Key Ecological Attributes and Indicators

Overall Rating	Rating Category	Key Ecological Attribute	Indicator
Sustainable, Transitioning Degraded <i>...or an index score of 0.0 - 1.0</i>	Condition	Stand Development // Maturity	e.g. Woody Vegetative Cover
		Biotic Composition	e.g. Invasive Grasses; Native Aquatic Fauna
		Ecological Processes	e.g. Hydrologic or Fire Regime
		Abiotic Physical/Chemical Attributes and variability	e.g. Surface Water Use; Aquifer Recharge Zones
	Size	Area supporting patch dynamics	e.g. Riparian Corridor Extent or Continuity
	Landscape Context	Landscape Structure	e.g. Mosaic Structure; Watershed Impervious Surfaces
		Landscape Dynamics	e.g. Disturbance size and return interval

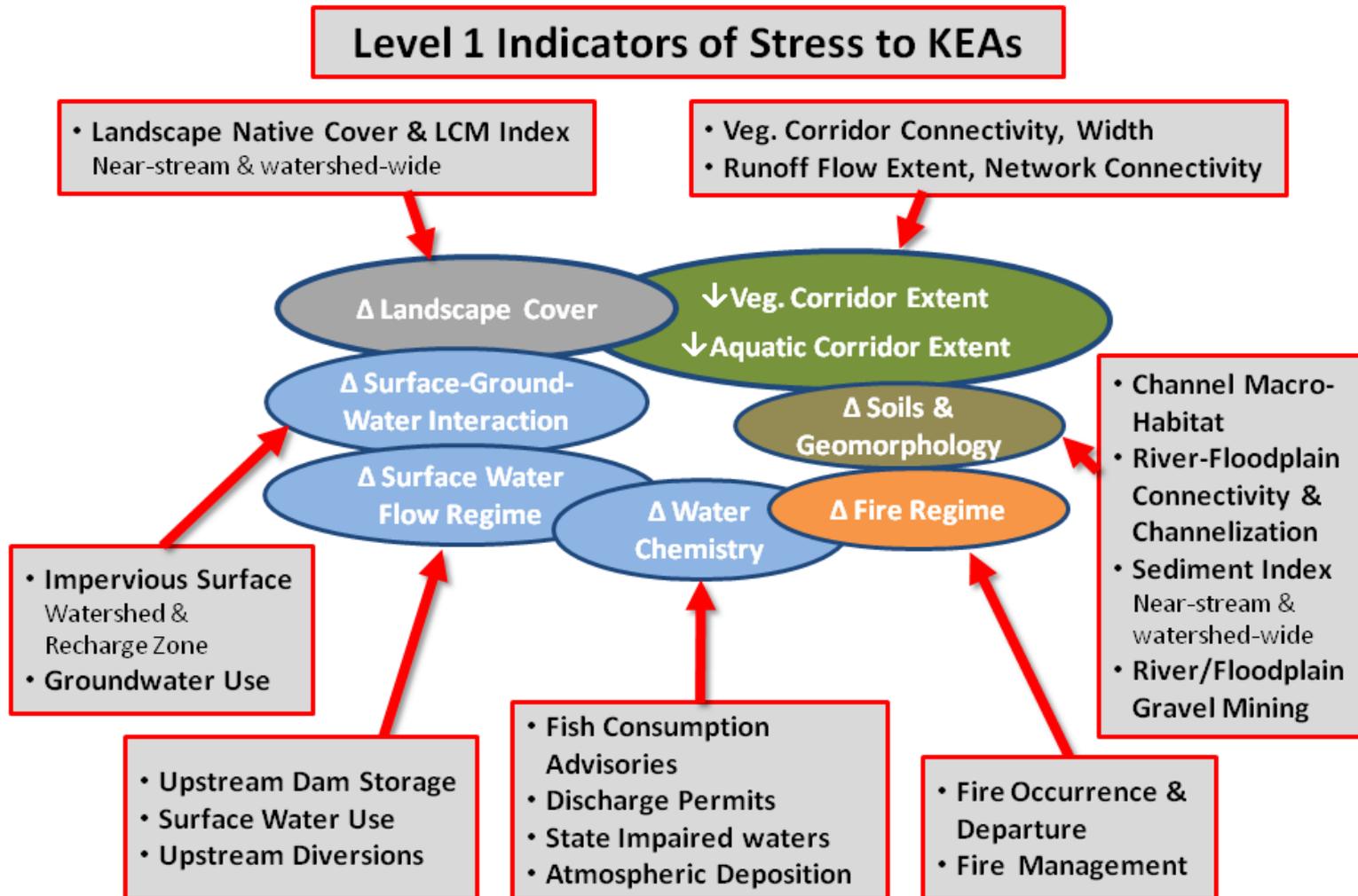
N.A. Warm Desert Riparian Woodland, Mesquite Bosque and Stream: Key Ecological Attributes



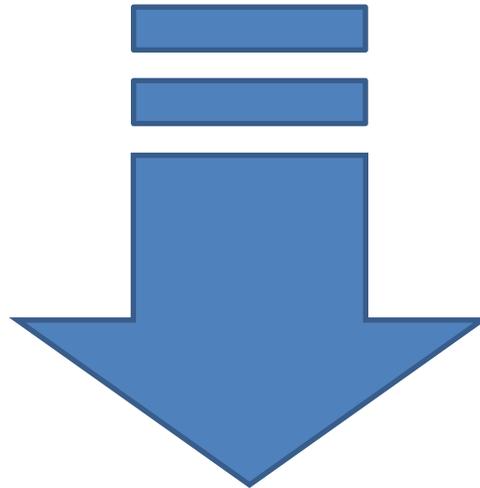
N.A. Warm Desert Riparian Woodland, Mesquite Bosque and Stream: Stressors on Key Ecological Attributes



N.A. Warm Desert Riparian Woodland, Mesquite Bosque and Stream: Indicators for Key Ecological Attributes



Synthesis of Management Questions: From MQs to Assessments of CEs and CAs



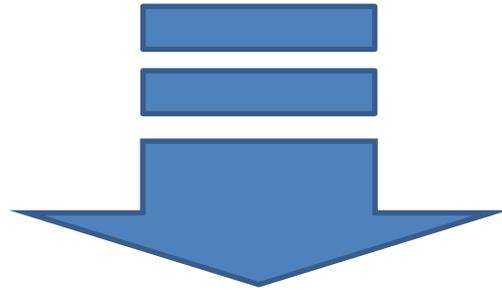
Synthesis of Management Questions: From MQs to Assessments of CEs and CAs

MQ #	CA Group	CE Group	Group	Proposed Management Question	MQ Type
3	Development	Ecosystems - Aquatic	Aquatic Ecosystems	Availability of riparian wetland ephemeral habitat is an issue for migratory bird and wildlife, especially in ephemeral playas? What is the impact of increased water pumping/expanded agriculture, especially in NM?	CE x CA intersection CA effects
14	Climate Change	Ecosystems	Climate Change/Grazing/Ecosystems	What is our establishment of proper grazing pressure on this landscape in respect to future climate? We are often trying to go back to a historical community. How do we look to future conditions?	
22	Fire	Ecosystems - Terrestrial	Fire/CEs	What is the role of fire across the landscape? How can we restore fire across multiple jurisdictions and ownerships?	CE Status
29	Grazing, Development	Ecosystems - Terrestrial and Species - Small mammals and reptiles	Soils/Development/Grazing	Is there a threshold for soil disturbance, that results from grazing or grazing infrastructure or linear rights-of-way, that we should be aware of in order to protect small mammal and reptile populations?	
86	Development	Ecosystems - Aquatic and Species - Terrestrial	Water/Hydrology/CEs	What are the impacts of loss of surface water from groundwater pumping, and effects to terrestrial wildlife?	CE status
177	Invasives	Ecosystems	Invasives	How will the potential for establishment of invasive species change over time in response to changes in climate and fire regimes?	



Synthesis of Management Questions: From MQs to Assessments of CEs and CAs

- Reviewed other REAs, major assessments to ensure major issues captured



- Standard REA Assessments
 - Where are CEs and CAs?
 - Where do CAs overlap with CEs?
 - How do CAs affect CEs?
 - What is the ecological status of CEs?
- “Special” Assessments

Ecological Status

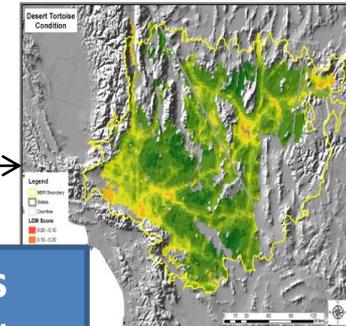
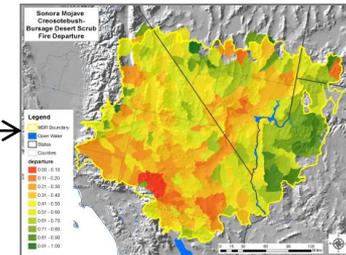
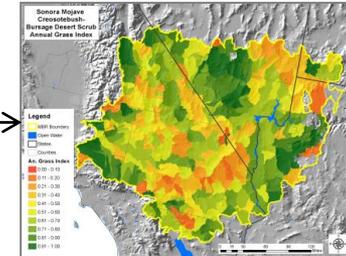
Change Agents (CAs)



Conservation Elements (CEs)



Ecological Status and Integrity

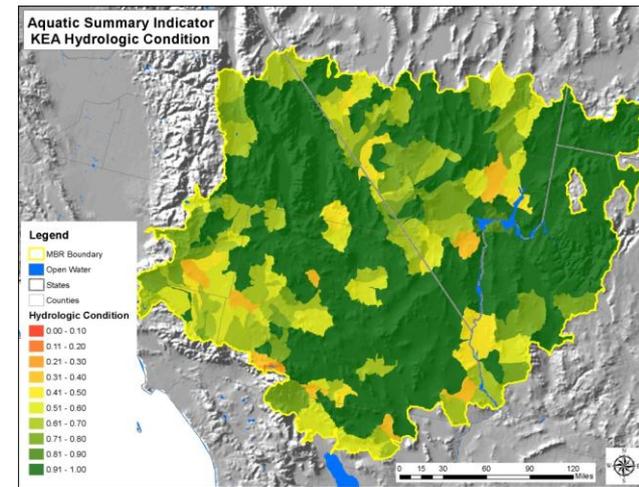
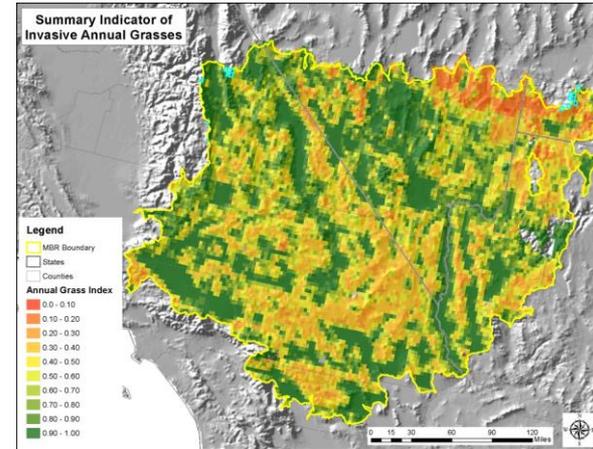


Conceptual Models link CAs, ecological stressors, and their effects on a CE

Spatial Models show geoprocessing steps to use data to assess status of CEs

Ecological Integrity

- Desire to summarize conditions in the ecoregion as a whole
- General outline of approach in work plan
- Recommend distinct but complementary ecoregion-scale measures for uplands and aquatic/wetlands
- Alternative is roll-up of CE-based indicators
- In development; TT discussion to follow data discovery task



Special Assessments

- Assessments that go beyond standard assessments or don't fit neatly in those categories, but are within purview of an REA
- Addressing further understanding of CAs and their interactive effects on CEs
- Synthesized by contractor team from the MQs + assessment review
- Special assessments identified relate to these processes or CAs and their relationship to CEs:
 - Hydrology
 - Fire
 - Climate
 - Grazing
 - Development (infrastructure, agriculture)
 - Invasive non-natives and native woody increasers

Special Assessments

- Water Resources Availability
- Historical Distribution of Aquatic Systems
- Climate Change and Watershed Hydrology
- Ecological Status: Fire Regime Departure With Other CAs and Effect on CEs
- Fire and Invasive Grasses Impacts on CE Distribution
- Climate Space Trends: Recent, 800-meter
- Climate Space Trends: Future, Added Variables, 4-km
- Bioclimate Envelope Modeling
- Future Distribution of Grazing [in currently ungrazed areas]
- Ecological Status: Climate Change Impacts on Grasslands and Grazing
- Connectivity: U.S. Only
- Future Distribution of Invasive Non-native Species
- Future Distribution of Invasive Non-natives: Effects of Climate Change and Other CAs
- Future Distribution of Native Woody Increasers: Effects of Climate Change
- Impending Non-Native Invasions

Pre-Assessment: Deliverables, Outcomes

- Pre-Assessment Report + CE packages → inform assessments in Assessment Phase
- PAR under-going final edits
- CE CMs in review or under-going edits
- To be posted at:
http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/madreaan.html

Pre-Assessment

Questions?

Assessment Phase, Task 1

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Complete

Nearing completion

Initiated / underway

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- Prepare Final REA Report, Documents



Assessment Phase, Task 1: Work Plan

- Approach for contractor team to do the work for the assessment tasks and engage with the AMT and TT for review and guidance

Phase	Task #	Task	Timeframe (approx)
Phase II: Assessment	Task 1	Create Assessment Work Plan	July-Aug '13 2 months
	Task 2	Data and Processes For Assessments: Inventory, Acquire, and Evaluate Data Develop Process Models	Aug/Sept '13-Jan '14 5-6 months
	Task 3	Conduct Assessments: Develop Geoprocessing Models Conduct Analyses Generate Findings Assemble Data Packages	Jan-June '14 5-6 months
	Task 4	Final REA Report	July-Sept '14 3 months



Assessment Phase, Task 1: Work Plan

- Overview of the assessments and approach
 - Standard
 - “Special”
- Final draft of work plan has been reviewed and approved

Assessment Phase, Task 2

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Assessment Phase, Task 2: Approach

- Identifying and reviewing data for standard assessments, special assessments
- Engaging Technical Team to review potential data sets and suggest others
- Drafting process models illustrating conceptual approach for analyses
- Engaging Tech Team to review process models
- AMT workshop to review data and process models, prioritize special assessments

Input / Discussion

- Suggestions for geospatial data sets for potential use in REA analyses
 - Ecoregion-wide
 - Digital/spatial
 - Already compiled into one or a few geospatial data sets
- Other comments on REA process

Data for Analyses

- Data needs
 - CE distributions
 - CA distributions, including data that may be used to assess indicator of ecological status (e.g., dams for riparian/stream systems)
- Data sets identified so far
 - Master Data List (MDL)
- Particular gaps:
 - Actual location or modeled distribution of invasives species
 - Border tactical infrastructure
 - Playa distribution data

Input on Data for Assessment

- Share input here, and/or via input form:
<http://www.surveymonkey.com/s/MAREASept2013UpdateWebinars>

Webinar Follow-Up

- SurveyMonkey data feedback link
- Update brochures to be posted shortly (this week)
- Pre-Assessment Report, when posted on BLM site
- CE packages, when posted on BLM website

Update Webinars for MAR

Phase	Task #	Task	Approximate Timing
Phase I	Task 1	Initiate Project, Create Pre-Assessment Work Plan	1/15/13
	Task 2	Implement Pre-Assessment Work Plan	Combined: September 19th and 24th 2013
Phase II	Task 1	Create Assessment Work Plan	
	Task 2	Inventory, Acquire, and Evaluate Data Develop Process Models	Early February 2014
	Task 3	Develop Geoprocessing Models Conduct Analyses Generate Findings Assemble Data Packages	Early July 2014
	Task 4	Final REA Report	Early October 2014

Other Questions, More Info

- Contact David Wood, Elroy Masters, Ray Lister:
 - dwood@blm.gov (BLM NOC)
 - emasters@blm.gov (AZ BLM)
 - rlister@blm.gov (NM BLM)
- BLM maintains REA website with Madrean Archipelago information and documents:
 - www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/madrean.html