

# Rapid Ecoregional Assessment

## Madrean Archipelago Ecoregion

Update Webinar, January 15, 2013

Near Elgin and Audubon Research Ranch  
T. Robertson, SDR

# Webinar Goals and Agenda

- Introductions/Getting Started
- BLM Welcome
- Introduce Madrean Archipelago Rapid Ecoregional Assessment (REA)
  - REA Overview
  - Madrean Archipelago REA
    - Geographic extent
    - Who conducts REA
    - Timeline, schedule
    - Budget and scope limitations
- Update on Completion of Phase 1, Task 1
- Plans for Phase 1, Task 2
- Input on REA Process

# Request for Input

- Feedback on management concerns that you would like to see addressed
- Feedback on species, habitats, other natural resources you would like to see addressed
- Other studies/research/assessments covering a significant portion of the Madrean that tie in to this REA
- Other sources for conceptual models

# BLM Welcome



# REA Overview



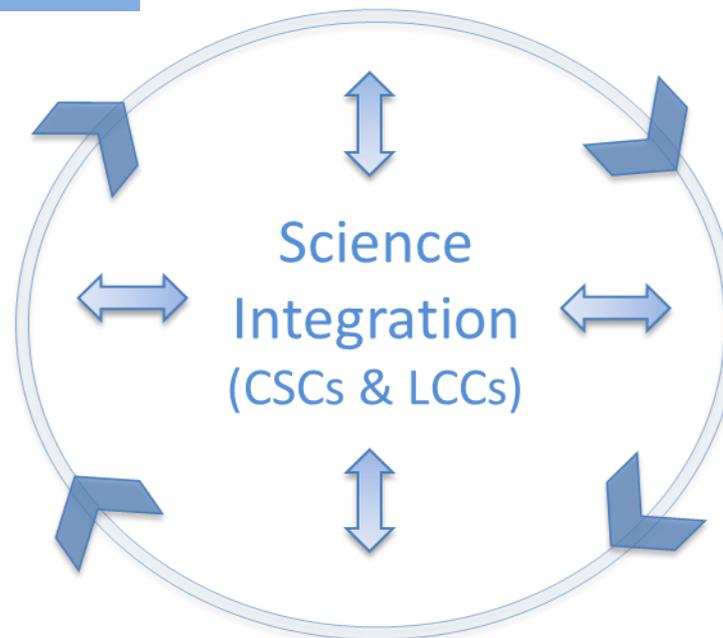
# BLM's Landscape Approach

Rapid Ecoregional Assessments are the first step in the Landscape Approach

Rapid Ecoregional Assessments

Monitoring for Adaptive Management

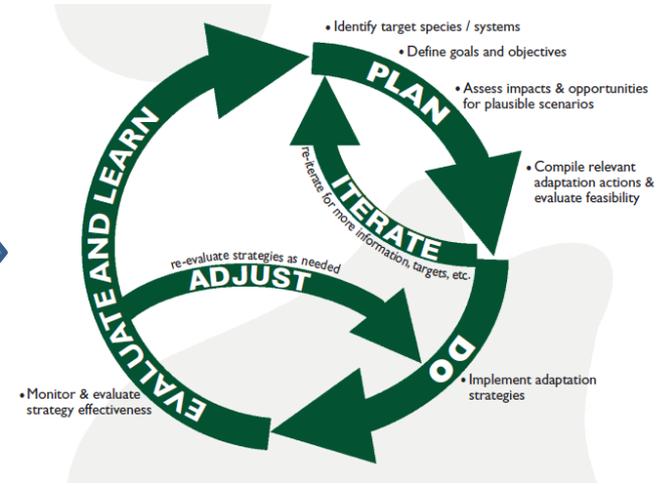
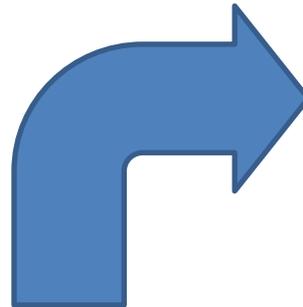
Ecoregional Direction



Field Implementation

# Adaptive Management Approaches

National Roadmap for  
Responding to  
Climate Change



# REA Overview

- REAs are rapid, ecoregion-scale assessments of natural resources designed to characterize:
  - the status of ecological resources
  - their potential to change at a landscape scale in response to increasing development, changing climate, the spread of invasives, and altered fire regimes, and
  - potential priority areas for conservation, restoration, and development

# REA Overview

- 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

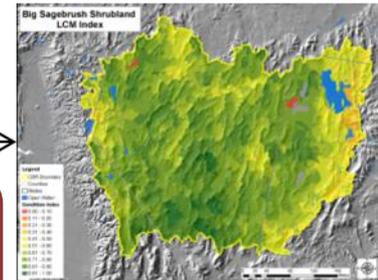
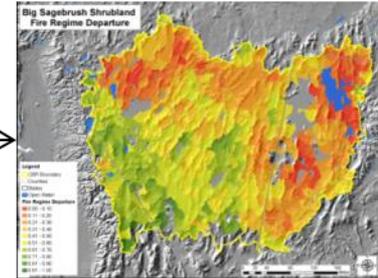
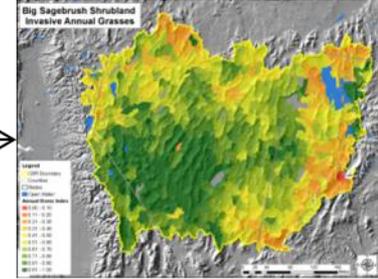
# Conservation Elements



# Change Agents



# Ecological Status Scores



Habitat  
Disturbance  
Fragmentation  
Removal

Existing data  
Models  
Tools

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

**Spatial Models**  
use geoprocessing steps to link data to results



# REA Overview: Assessment Time Horizons

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

# REA Overview: Process

## 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
- Finalize Conservation Elements (CEs), Change Agents (CAs), and Management Questions (MQs)

## PHASE II: ASSESSMENT

### TASK 1

- Develop Assessment Work Plan



### TASK 2

- Inventory, Acquire, and Evaluate Datasets
- Develop Process Models



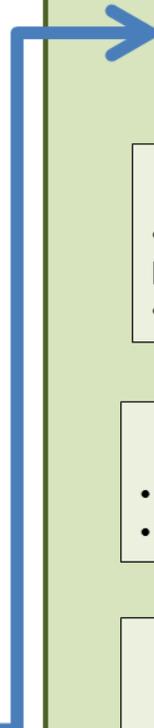
### TASK 3

- Conduct Analyses
- Generate Data Deliverables, Findings

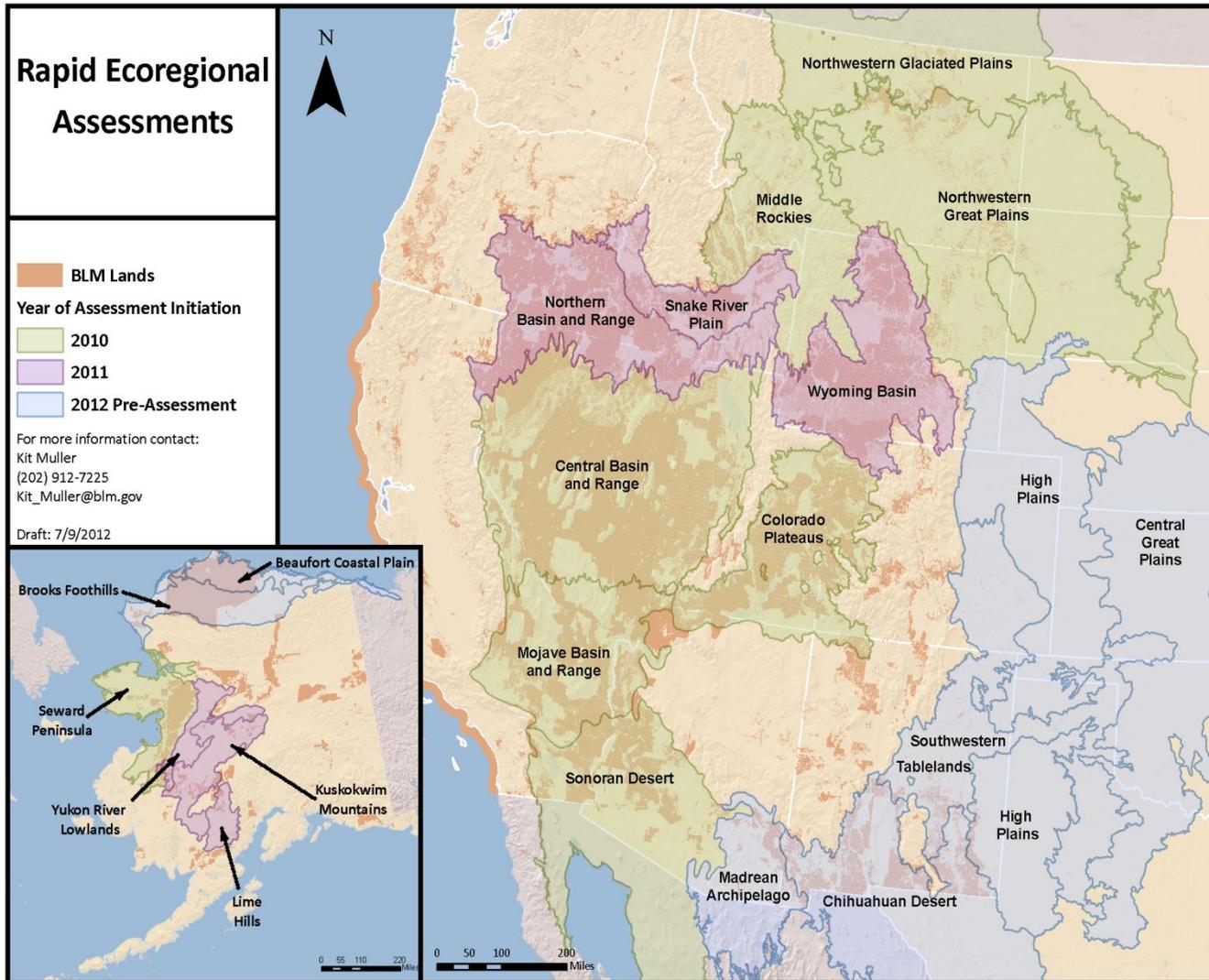


### TASK 4

- Prepare Final REA Report and Documents



# REAs Underway and Planned Release Schedule



## January:

- Colorado Plateau
- Sonoran Desert

## February:

- Central Basin and Range
- Mojave Basin and Range

## March-April:

- Seward Peninsula
- NW Plains
- Middle Rockies

# REA Jargon and Acronyms

**Rapid Ecoregional Assessment (REA)**

**Madrean Archipelago REA (MAR)**

**Statement/Scope of Work (SOW)**

**Conservation Element (CE)**

- Natural resource features assessed in the REA; typically includes habitat types (ecological systems), species, hydrologic features, and sensitive soils

**Change Agent (CA)**

- Features or processes affecting natural resources; four primary Change Agents specified for REAs are 1) Development, 2) Invasive Species, 3) Fire, 4) Climate Change

**Management Question (MQ)**

- Questions developed by the AMT and contracting team and addressed in the REA to inform natural resource management and land use decisions

# REA Jargon and Acronyms

## Assessment Management Team (AMT)

- BLM staff and partners that developed the initial statement of work (SOW) for the REA and who provide review and guidance for the contractor throughout the REA

## Technical Team

- Subject matter experts (e.g., ecologists, biologists, hydrologists, spatial analysts) within BLM and partner agencies who provide input and recommendations on data and methods for conducting various components of the assessment

## Ecological Status Assessment

- Assessment of broad metrics of 1) biotic and abiotic condition, 2) size, and 3) landscape context for Conservation Elements

## Indicators and Key Ecological Attributes (KEAs)

- Specific metrics used to assess the ecological status of CEs (these metrics nest within the three broad metrics of condition, size, and landscape context)

## Landscape condition model (LCM)

- Spatial model providing an index of the relative estimated effects of human development on ecosystems



# For more info on REAs...

- [www.blm.gov/wo/st/en/prog/more/LandscapeApproach/reas.html](http://www.blm.gov/wo/st/en/prog/more/LandscapeApproach/reas.html)

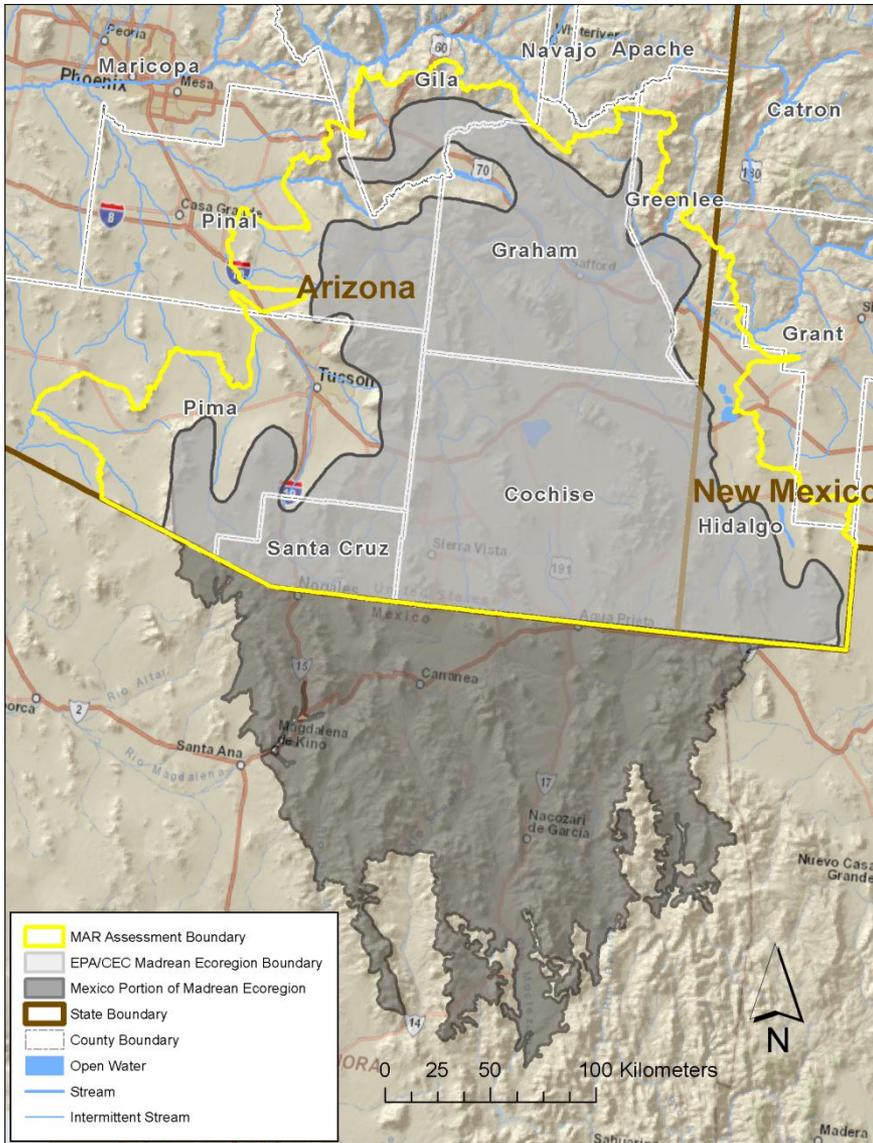
# Madrean Archipelago REA



# Madrean Archipelago REA

- Geographic extent/scope
- Who conducts REA
  - NatureServe team overview
  - BLM team overview
- Timeline, schedule
- Other sideboards
  - Budget, scope

# Project Overview: Spatial Extent



- SE Arizona, SW New Mexico
- Ecoregion + intersecting HUCs (15.7 mil acres, 24,600 mi<sup>2</sup>)
- All land, regardless of ownership
- U.S. side

# Project Overview: Ecology

- “Sky island” mountains and desert grassland “seas”



Photo by T. Robertson, Southwest Decision Resources

# Project Overview: Ecology

- Desert riparian systems
- Springs, seeps, marshes, cienegas



Photo by T. Hare, Sky Island Alliance

# Project Overview: Ecology

- >4,000 vascular plants
- 110 mammals
- >450 birds
- 23 bats



# 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

# NatureServe Contractor Team

BLM  
Rapid Ecoregional Assessment



BLM COR, AMT, Tech Team

**NatureServe**  
Pat Comer  
Co-Project Oversight  
Science Coordination

**NatureServe**  
Patrick Crist  
POC, Primary Project  
Oversight, Assessment &  
Products Coordination

**NatureServe**  
Mary Harkness  
Project Management

### Ecosystem, CE, & Climate Science

Marion Reid, Lead  
Conceptual models, Ecosystem processes, Conservation element models & science, Climate change, Invasives

#### **NatureServe**

Comer, Hak, Kittel, Shulz

#### **Sky Island Alliance**

Misztal, Van Devender, Avila, Moreno

#### **Sound Science LLC**

Braun, Unnasch, Hamilton, Auer

#### **New Mexico NHP**

Muldavin

### GIS & Data Management, Maps & Products

Lynn Kutner, Lead  
Data acquisition, evaluation, product generation & management

#### **NatureServe**

Bow, Hak

### Assessment

Jacque Bow, Lead  
Process models, Geospatial analyses, documentation

**NatureServe** Crist, Hak, Kittel, Reid  
**Sky Island Alliance** Misztal

**Sound Science LLC** Braun, Hamilton, Unnasch, Auer

### Facilitation & Communication

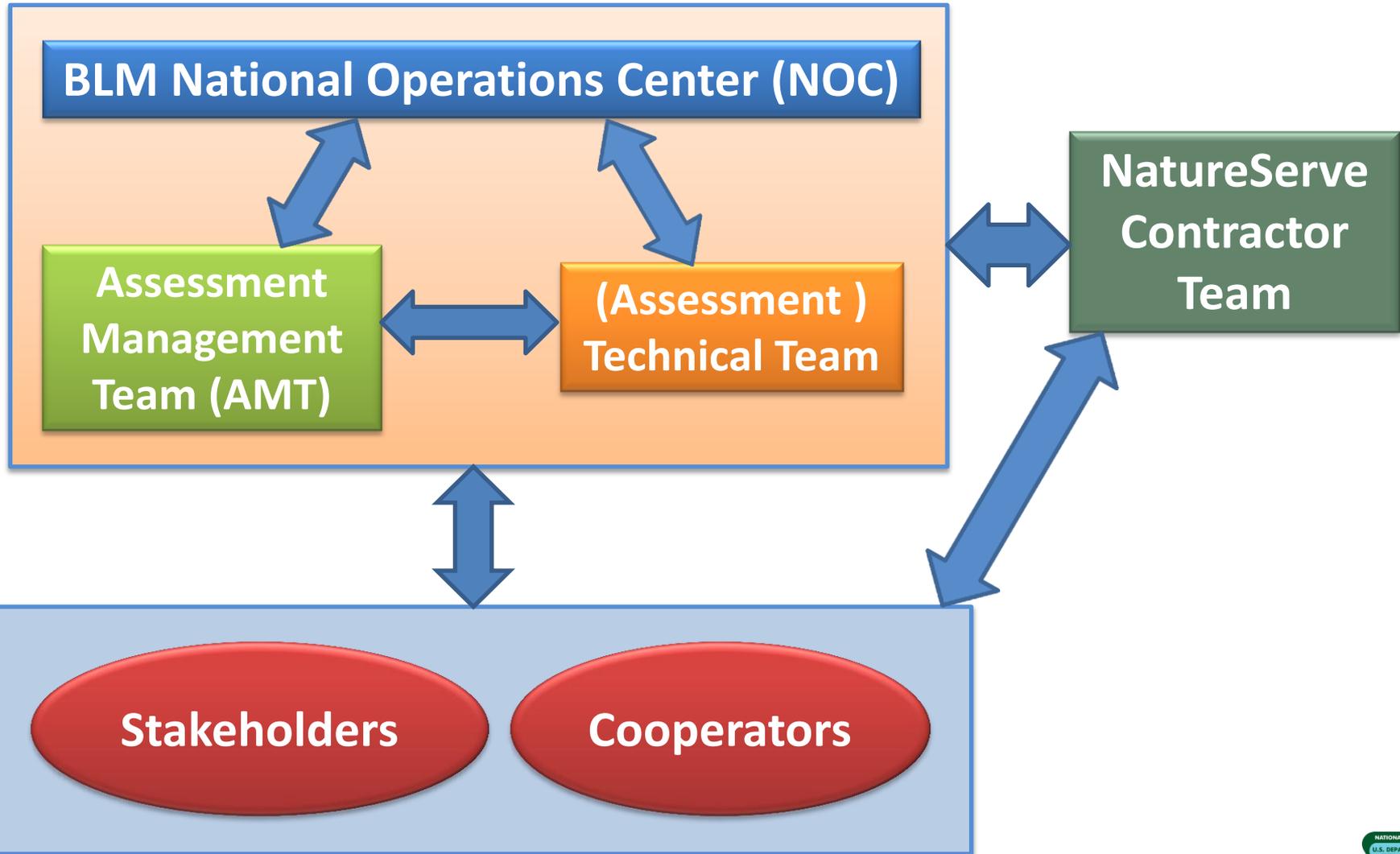
Southwest Decision Resources: Larry Fisher, Tahnee Robertson, Co-Leads  
Workshops, Communication Plan, Charters, Brochures, Summaries

**SDR Support** Whitaker

**NatureServe** Crist, Harkness

# NatureServe Team Organization

# BLM REA Organization



# BLM REA Organization

BLM National Operations Center (NOC)  
MAR Contracting Officer's Representative and  
Project Manager: David Wood



Assessment  
Management Team (AMT)  
AMT Chair: June Shoemaker, AZ BLM



Technical Team  
AZ Lead: Elroy Masters, AZ BLM  
NM Lead: Ray Lister, NM BLM

# REA Timeline, Schedule

- Two-year project, 9/30/12 – 9/30/14

Phase	Task #	Task	Timeframe (adjusted)
Phase I	Task 1	Initiate Project, Create Pre-Assessment Work Plan	3 months
	Task 2	Implement Pre-Assessment Work Plan	6 months (5.5 months)
Phase II	Task 1	Create Assessment Work Plan	2 months
	Task 2	Inventory, Acquire, and Evaluate Data Develop Process Models	6 months (5 months)
	Task 3	Develop Geoprocessing Models Conduct Analyses Generate Findings Assemble Data Packages	5 months
	Task 4	Final REA Report	3 months

# Other Sideboards

- Scope Limitations
  - Relatively rapid assessment, broad scope
  - Uses existing/available data
  - No new research or data collection

# Phase 1, Task 1 Completion, Update



# Phase 1, Task 1

## 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
- Finalize Conservation Elements (CEs), Change Agents (CAs), and Management Questions (MQs)

## PHASE II: ASSESSMENT

### TASK 1

- Develop Assessment Work Plan

### TASK 2

- Inventory, Acquire, and Evaluate Datasets
- Develop Process Models

### TASK 3

- Conduct Analyses
- Generate Data Deliverables, Findings

### TASK 4

- Prepare Final REA Report and Documents

# Phase I, Task 1: Goals, Approach

- Task 1 Goals: Initiate Project, Engage Teams, Develop Pre-Assessment Work Plan
- Task 1 Approach:
  - Contractor team coordinated with BLM to identify, engage AMT and technical team members in the REA process
  - Developed team charters to lay out roles and responsibilities of AMT and technical team
  - Drafted communications/collaboration plan to ID specific strategies and steps for engaging with partners and stakeholders

# Phase I, Task 1: Goals, Approach

- Task 1 Approach, continued:
  - Drafted work plan for the rest of the pre-assessment ID'ing approach for selecting and finalizing CEs, CAs, MQs
  - Held first AMT workshop to review the team charters, communication plan, and pre-assessment work plan
  - Compiled comments from AMT workshop and written comments and revised charters and work plans accordingly

# Phase I, Task 1: Deliverables, Outcomes

- Major Deliverables:
  - Pre-Assessment Work Plan (PAWP)
    - includes templates for CE Conceptual Models
  - Assessment Management Team Charter
  - Technical Team Charter
  - Communication and Collaboration Work Plan
- AMT Workshop 1
  - Finalized assessment area boundary
  - Agreed on 3 “no-regrets” CEs
- Communication Updates:
  - Stakeholder/Partner Update Webinar, Brochure

# Phase I, Task 1 Outcome: Three “No-Regrets” CEs

- Pronghorn
- Semi-desert grassland (Apacherian-Chihuahuan Semi-Desert Grassland and Steppe)
- Desert riparian systems such as San Pedro (North American Warm Desert Riparian Woodland and Shrubland)



# Phase 1, Task 2



# Phase 1, Task 2

## 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
- Finalize Conservation Elements (CEs), Change Agents (CAs), and Management Questions (MQs)

## PHASE II: ASSESSMENT

### TASK 1

- Develop Assessment Work Plan

### TASK 2

- Inventory, Acquire, and Evaluate Datasets
- Develop Process Models

### TASK 3

- Conduct Analyses
- Generate Data Deliverables, Findings

### TASK 4

- Prepare Final REA Report and Documents

# Phase I, Task 2: Goals, Overview

- Task 2: Implement Pre-Assessment Work Plan
- Task 2 Overall Goal: To identify and finalize the CEs, CAs, and MQs that will be the focus of the entire REA, and to characterize the ecoregion as a whole and the CEs chosen for assessment

# Examples of Potential CEs

- **Ecological Systems**

- Apacherian Grasslands
- Foothill Riparian, Stream Systems
- Springs/Seeps/Marshes
- Oak Woodlands



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- **Focal Habitats**

- Gypsum soils
- Migratory stopovers
- Tree bat habitats



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- **Landscape Species**

- Desert tortoise
- Mexican spotted owl
- Pronghorn



# CA Categories and Examples



## Sustainability of Ground-Water Use in the San Pedro River Basin, Cochise County, Arizona

James Leenhouts, Ph.D.

IAEA/GEF IV Learn/USGS Aquifer Exchange  
April 19, 2007



# Phase I, Task 2: Approach

- To identify potential MQs, CEs, CAs:
  - Hold Development Forums to obtain input on management needs, issues to guide identification of **potential** MQs, CEs, CAs
  - Review large-scale assessments, other studies
  - Present list of **potential** CEs, CAs, MQs in **AMT webinar** for AMT, technical team to review and finalize
    - Up to 20 CEs will be assessed in this REA

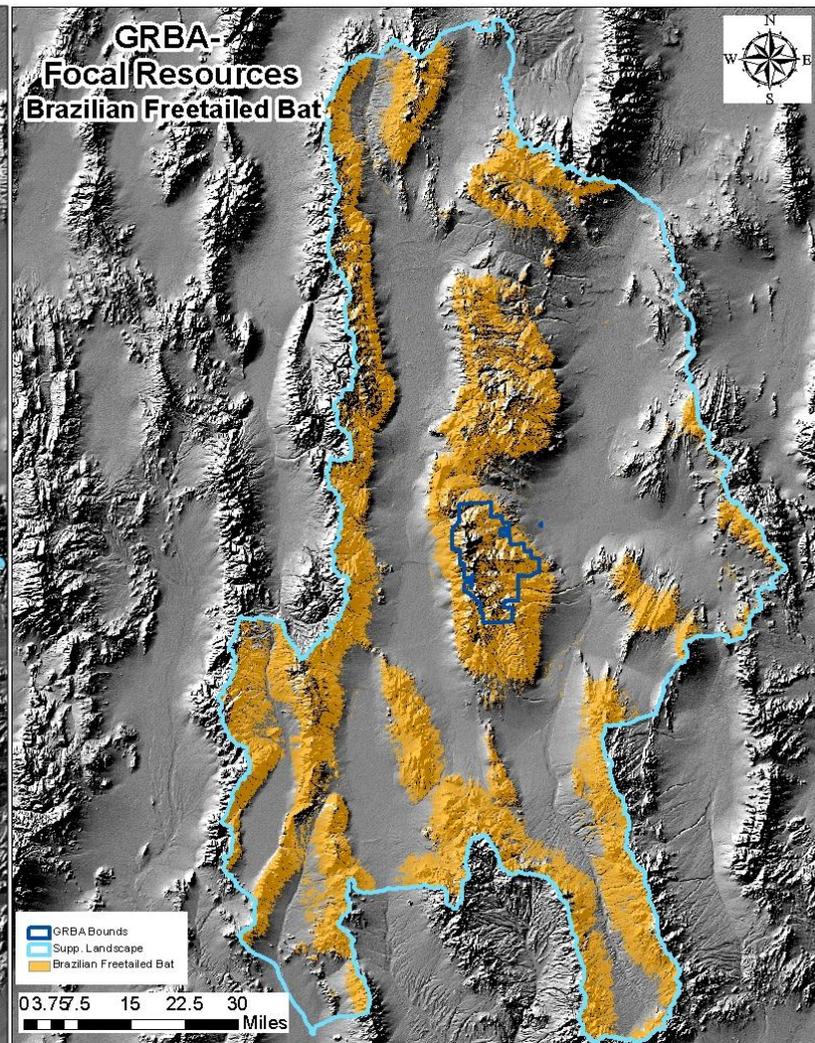
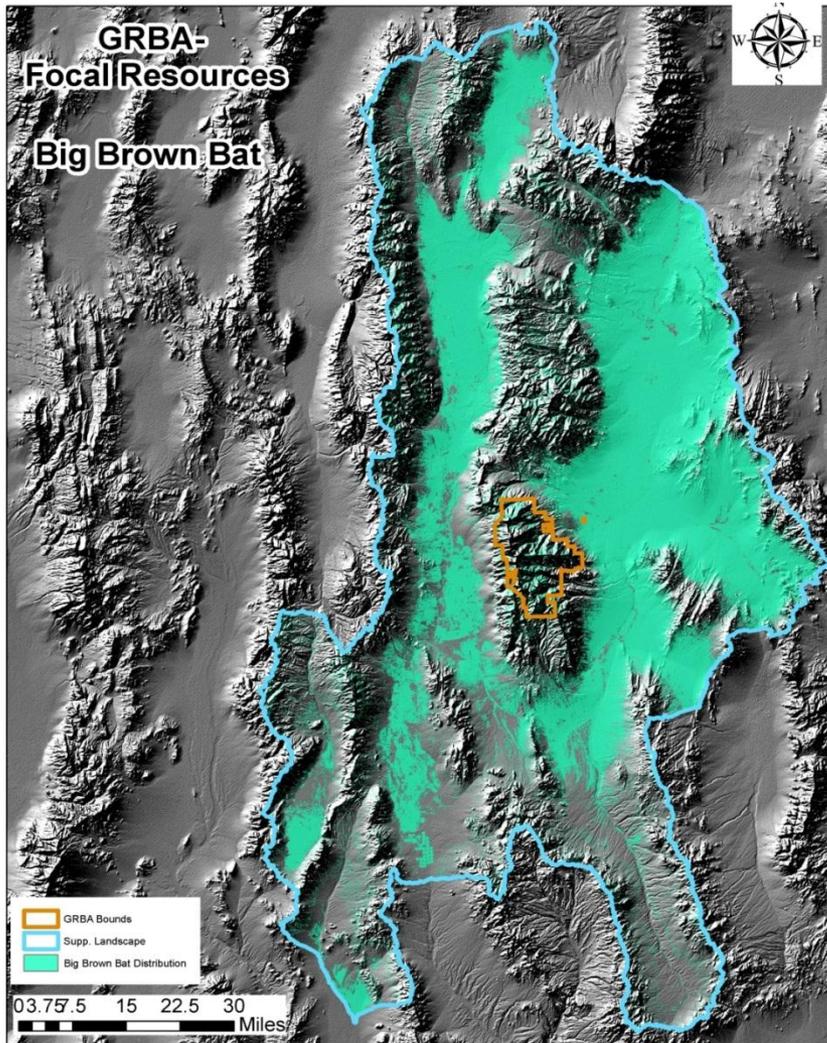
# Phase I, Task 2: Approach

- To develop conceptual models for ALL selected CEs:
  - Draft complete conceptual models for 3 no-regrets CEs
  - Obtain review and comment from AMT, technical team; revise content and conceptual model template as appropriate
  - Once complete list of CEs is finalized by AMT and technical team, draft complete conceptual models for remaining CEs prior to AMT workshop 2

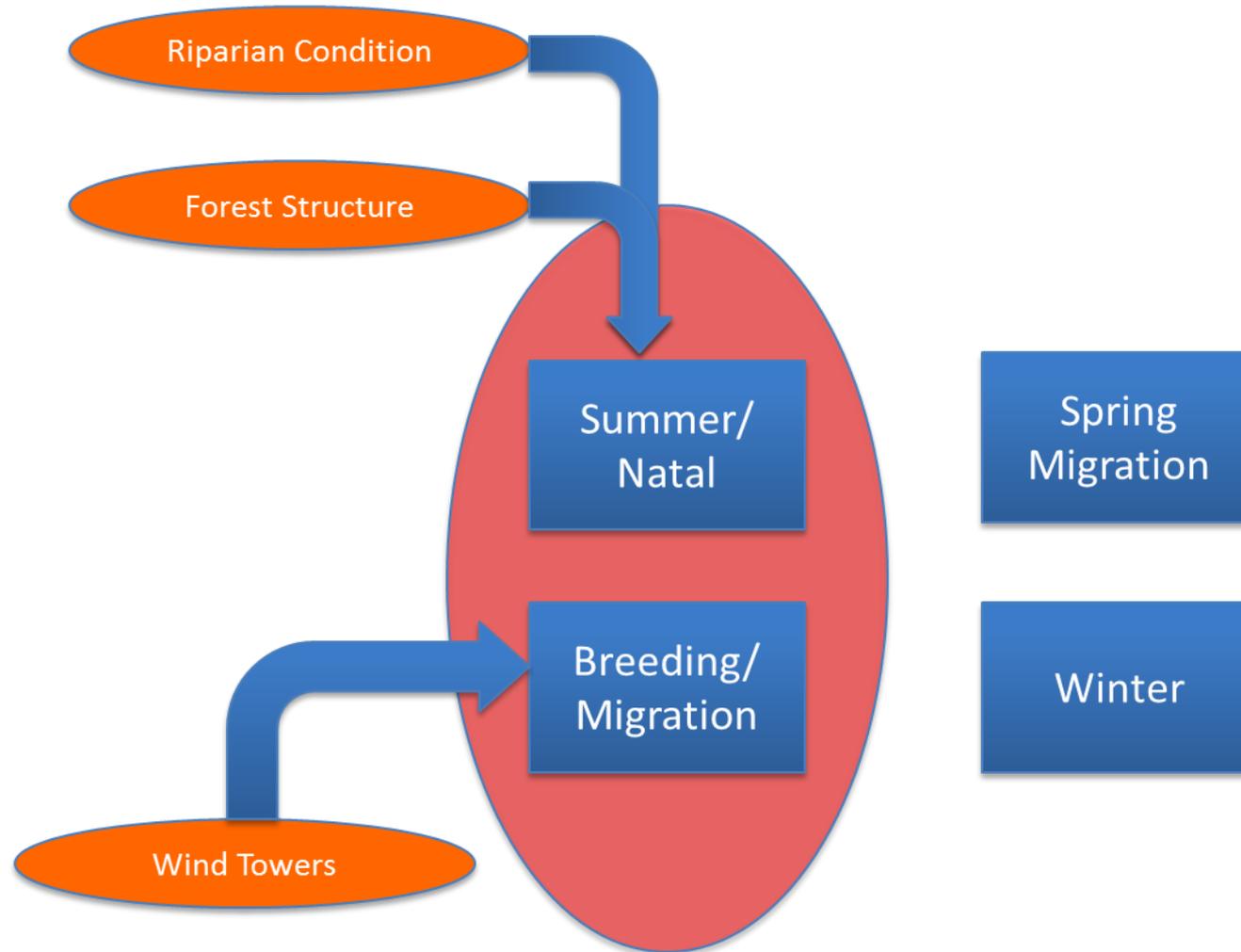
# Conceptual Model Components

- Scientific literature survey (basis & scientific support for the model)
- Text descriptions of the ecology, ecosystem dynamics, life history, habitat requirements, interactions with other species (natural dynamics)
- For aquatic ecosystems: characterization of aquatic biota/habitat components
- For ecosystems: as available, a listing of at-risk species closely associated with the system
- Text descriptions of stressors & change agents and their known impacts on the CE (altered dynamics)
- List & definitions of key ecological attributes & indicators for measuring them (tabular scorecard)
- Diagrammatic representation of the model

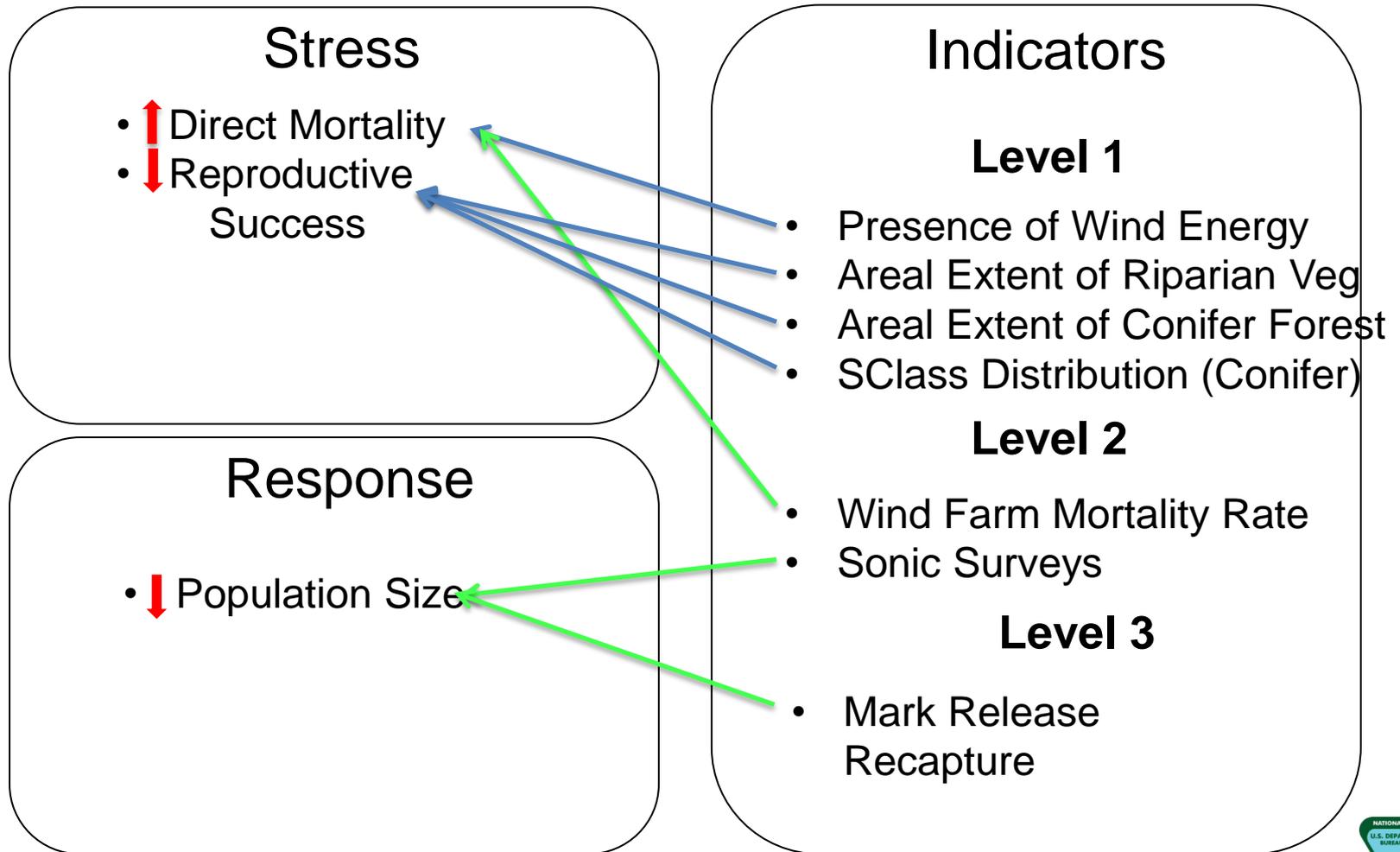
# Example CM: Migratory Bats



# Example CM: Migratory Bats



# Example CM: Migratory Bats



# Phase I, Task 2: Deliverables, Outcomes

- Primary Deliverable: Pre-Assessment Report
  - Ecoregion Characterization, Conceptual Model
  - Final MQs, CEs, CAs
  - Final Conceptual Models for all Conservation Elements
  - Conceptual Model for Ecological Integrity
  - Annotated Bibliography
- Communication Updates:
  - Partner Update Webinar, Three Brochures



# Input / Discussion



# How Will Input Be Used?

- Will inform the identification of potential MQs, CEs, and CAs that will be reviewed and finalized by AMT, technical team
  - Everything will go on the list
- Will address as much as possible consistent with REA scope
- Likely that not everything suggested can be addressed within the scope of this REA, but will at least be recorded as an information need

# Input Needed

- Feedback on management concerns that you would like to see addressed
- Feedback on species, habitats, other natural resources you would like to see addressed
- Other studies/research/assessments covering a significant portion of the Madrean that tie in to this REA
- Other sources for conceptual models, CEs or ecoregion conceptual model

# Examples of assessments

- Integrated Landscape Assessment Project (ILAP) products for AZ, NM
- WGA's Crucial Habitat Assessment Tools (CHAT) products
  - Arizona HabiMap
- BLM's Sonoran Desert REA
- Heinz Center report on AZ wildlife and climate change
- TNC-led Apache Highlands ecoregional assessment
- USFS proceedings for 1994, 2004 Madrean Archipelago/Sky Islands Conferences

# Input

- Share input here, and/or via input form:  
<http://www.surveymonkey.com/s/MARWebinar>  
[Feedback](#)

# For Additional Questions

- Contact David Wood, Elroy Masters, Ray Lister:
  - [dwood@blm.gov](mailto:dwood@blm.gov) (BLM NOC)
  - [emasters@blm.gov](mailto:emasters@blm.gov) (AZ BLM)
  - [rlister@blm.gov](mailto:rlister@blm.gov) (NM BLM)

# 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	Late June 2013
Phase II	Task 1	Create Assessment Work Plan	Early September 2013
	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

# For more info on MAR

- As project gets underway, BLM will update REA website with Madrean Archipelago information and documents:
- [www.blm.gov/wo/st/en/prog/more/Landscape\\_Approach/reas.html](http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html)