

NWRS Region 2 Inventory & Monitoring FY2011 Annual Work Plan

1. Introduction

1.1. Vision, goals, and objectives for the regional inventory and monitoring initiative.

Vision: Wide-spread integration among Refuge programs to generate a comprehensive Natural Resource Program (Biology, Fire and Hydrology) with I&M forming an integral part. Seamless synergy in I&M across the National Office, Regional Office and Refuges. The I&M program leverages off of partner priorities, staffing and funding, to collaboratively achieve greater statistical power and landscape-scale information on priority and shared I&M topics. Refuge I&M forms a catalyst for bolstering scientific capacity in Refuge management, articulation of research agendas, and fostering communication and collaboration with multiple partners on topics spanning large spatial scales and landscapes. Refuge I&M efforts support projects contribution to the most pressing conservation and management issues within the ecosystem that a Refuge(s) resides.

Goals:

- Ensure the success of the National I&M initiative.
- Foster National-Regional-Refuge I&M integration, and synergy with NPS I&M, whereby all participants see value added.
- Assist National Office with addressing National I&M Priorities.
- Assist Refuges with "effectiveness monitoring", namely improving Refuge ability to monitor results of management actions, be them prescribed burning, wetland management, farming or predator control.
- Building scientific capacity to strengthen the caliber and credibility of our entire FWS Natural Resource program (e.g. project design, implementation, data analyses, reporting). This helps the FWS re-establish a leadership role in applied conservation and management science.

Objectives:

For FY2011 Specific I&M Objectives Include:

- Finish hiring I&M Zone Biologist senior staff to implement Phase I of the I&M Blueprint.
- Hold a group meeting of all I&M and Natural Resources Staff to outline priorities and frame an I&M strategy for FY2011 and FY2012
- Critically evaluate multiple databases for Refuge and Partner scoping.
- Implement scoping database, to complete scoping process for Refuges and partners on I&M and Biological research projects.
- Critically evaluate different databases for fire, invasive species and vegetation monitoring, to generate simple and intuitive ways to enter and analyze such I&M data.
- Begin seeking project synergy across Refuges and partner efforts within each geographical zone of R2. Staff are scoping Refuges and interagency partners to evaluate most pressing conservation and management issues, evaluate how/if they are being addressed, and building synergy and correspondence in approaches
- Identify, scan and electronically archive peer reviewed papers, gray literature, white papers, and other important Refuge I&M/Biological project reports, region wide, in the FWSReference system.

1.2. Organization and Focus Areas

Regional office I&M staff include I&M Coordinator, Data Manager, 3 Hydrologists, 1 Fire Ecologist, 1 Remote Sensing / Botanist, 1 Spatial Ecologist, 2 Landscape Ecologists, and 1 Biometrician.

Senior I&M staff are located in the following places:

- SW AZ NWR Complex - for Lower CO River Refuges;
- Co-located with NPS Tucson for Sonora and Chihuahua Desert
- Southern Rockies LCC via Bosque del Apache NWR LMRD
- Prairie Playas and Grasslands of western TX and OK - Buffalo Lake NWR
- Edwards Plateau of TX - Balcones NWR LMRD
- TX Midcoast complex for TX Gulf Coast
- Tulsa OK ES office for eastern OK.

Focal areas include inventories of abiotic resources (WRIs and HGMs), adaptive management projects, organizing legacy information, inventorying the occurrence of vertebrates, shifts in fire regimes, invasive plant inventories, and evaluating ecosystem vulnerability to climate change.

1.3. Integration with the Regional Refuge Biological Program

The regional I&M program is inextricable from the entire regional Natural Resource program, which includes biology, fire and hydrology. Not all work that biology, fire and hydrology do are I&M, but I&M work falls into these 3 divisions. This wide-spread integration among Refuge programs generates a comprehensive Natural Resource Program (Biology, Fire and Hydrology) of which I&M forms an integral part.

I&M brings much welcomed capacity, staff and structure to pursue inventory and monitoring efforts by: A) Focusing efforts on priority projects, B) Generating defensible methodology and approaches C) Providing greater accountability in how we spend funding, and reporting, which builds greater Refuge credibility.

1.4. Coordination with Partners via Landscape Conservation Cooperatives

The Refuge I&M Natural Resource Program incorporates 6 LCC's occurring in R2, and has one or more GS 12/13 Zone Biologist or LMRD attend to each. These 6 LCCs include: Desert, Southern Rockies, Great Plains, Gulf Coastal Plains and Ozarks, Eastern Tallgrass Prairie and Big Rivers, and Gulf Coast Prairie.

Which LCC's are included in the regional I&M initiative? What role does the regional I&M initiative serve within the LCC? In Region 2, our objective is for LCCs and I&M to complement and synergize, in sensible and meaningful ways, to achieve more conservation based outcomes while maintaining each programs emphasis areas and integrity. That I&M needs integration with LCC's is as important as I&M integrates with fire, hydrology, migratory birds, ES, states, DOI brethren, and NGO's. I&M can provide such integration, in as much as LCC's should not view Refuge I&M as the sole I&M shop. We need communicate, become aware of the priority efforts we all are either doing or seeking, and aiming for synergy, integration and coordination in work as much as possible. This must happen if FWS genuinely wants to make a conservation and management difference. The expertise in knowledge and staffing both programs have attracted forms a boon for the entire FWS. There now exists great potential for improved, targeted science that provides marked contributions to the most pressing conservation and management issues within ecosystems. (Under Review!!!)

2. Staffing

2.1. Provide a list of regional I&M staff and their job type or role, grouped by LCC. Also include a list of key cooperators (with their affiliation and role) who will be actively involved with the region's activities on at least a monthly basis during the coming year. Indicate vacancies and plans for refilling.

Region 2 has a suite of seven senior biologists strategically located across geographic zones spanning the region. Staffing differs in sources of funding, emphasis areas and supervision. This matters little, as each staff member have embraced the I&M initiative. Therefore, conducting I&M within Refuges, across Refuges, and intervening landscapes are important components of their positions.

Field-based staff engage with Refuges within their respective geographical areas to help prioritize pressing biological needs, implement I&M projects, and work within and across Refuge boundaries to improve how we manage species and their habitats (*e.g.* techniques, approaches, project design and implementation). Each position holds emphasis areas, such as LMRD's stress research. We do not, however, envision hard lines between Zone biologists, LMRDs, ISST's, RO scientists and Refuge staff (indeed, any Refuge can embrace and implement LMRD and ISST principles on Refuge). Instead, we work collaboratively to elevate the quality of our I&M program and build a stronger Region 2 NWRS Natural Resource Division. RO Staff help coordinate and steer the Regional I&M program, and provide technical expertise.

RO Staff:

Greg Hughes – Regional I&M Program Coordinator;

Cynthia Eichhorn - Data Manager.

Matt Butler - biometrician; Dave Lindsey - Botanist/GIS;

Steve Sesnie - Spatial Ecologist (remote sensing, arrives July 2011);

Kristine Metzger - Conservation Goals Coordinator / Landscape Ecologist (arrives June 2011);

Grant Harris Chief of Biological Services.

Hydrology:

Paul Tashjian

Peter Burke

Andrew Hautzinger

Fire:

Mark Kaib - fire Ecologist, lead point of contact.

Field staff:

Brenda Zaun - Zone Biologist, Lower Colorado River, Kofa Complex

Lacrecia Johnson - Zone Biologist, Sonora Desert, co-located with NPS Tucson

John Vradenburg - Land Management and Research Demonstration (LMRD) biologist, arid wetland ecology, Bosque del Apache NWR

Jim Mueller - LMRD, Juniper-oak woodlands, live oak motts, and tallgrass prairie ecology, Balcones NWR;

Bill Ostrand - Zone Biologist TX Gulf Coast, TX Midcoast Complex

Bill Johnson - Zone Biologist, Western TX/OK prairies and playas, Buffalo Lake NWR

Paige Schmidt - Zone Biologist, Eastern OK, co-located with Tulsa ES

No vacancies at present.

3. Planned Activities and Anticipated Products

3.1. Identify I&M Priorities for stations and the region.

3.1.1. Status of station Habitat Management Plans

3.1.2. Status of station Inventory and Monitoring Plans

3.1.3. Summary of inventory and monitoring priorities for the region

3.2. Abiotic Resources

3.2.1. Inventories

3.2.2. Monitoring

3.3. Biotic Resources

3.3.1. Inventories

- Inventory and status of subtropical grasslands for masked bobwhites in Sonora, Mexico. Analyses done by aerial survey, interviews, field visits and remote sensing.
- Inventory and status of native grasslands for Sonoran pronghorn in CA and AZ. Potential sites evaluated by their suitability for pronghorn based on the size of the area available, land status, presence of important forage plants, whether or not barriers are in place, and past pronghorn history at the site.
- Inventory and evaluation of playa wetlands in western TX and OK over past 25 years to determine which are wet, which are dry and their synchrony to better evaluate how playas work as a system to support biological life. Also a re-evaluation of the areas potential to harbor waterfowl targets based on current playa status.
- Inventory and evaluate genetics of 5 subspecies of *C. virginianus*, including the Masked bobwhite *C. v. ridgwayi*. If one or more of the Mexican subspecies (n= 16) of bobwhite are genetically similar to the masked bobwhite, then perhaps the different subspecies could help infuse genes into captive stock, or be reintroduced in the wild in lieu of captive stock.
- Designing a new population estimation technique to estimate the number of whooping cranes that arrive at Aransas NWR in the early winter and the numbers of whooping cranes that leave Aransas in the spring.
- Inventory to map the remaining habitat of the Golden-cheeked warbler across its entire range. This includes 50 counties in the Balconies canyonlands, from San Antonio to southwest of Dallas/Fort Worth TX.

3.3.2. Monitoring

- Evaluating desert bighorn sheep population responses to artificial water, predator control and climate across NV, CA, AZ, NM and Mexico. Project results help evaluate efficacy of management techniques - be they drinker installation or predator control, for managing sheep and predators.
- Timing and population trends of migrating and wintering waterfowl on National Wildlife Refuges throughout the Central Flyway (1985 – 2008). Project quantifies and evaluates trends in waterfowl numbers, timing chronology and spatial use of National Wildlife Refuges residing in the Central Flyway, on a per species and refuge basis (Dakotas - TX). Refuges in TX, OK and lower Colorado River of AZ all monitor the birds via aerial census flights.
- Use of camera traps as an I&M tool: For faunal presence, occupancy, and activity patterns. The work evaluates the number of cameras necessary and their spatial arrangement. Initial focus on ocelots in southern TX (both I&M).
- Project to design and field test methodology for quantifying density and/or abundance estimates of unmarked animals. Focus on large mammals, especially elk at Bosque del Apache NWR.
- Using novel technology and methodology to improve quantification of bats leaving caves to I&M as white-nose syndrome moves westward.
- Evaluating use of molted golden eagle feathers collected at nest sites to estimate turnover rates (and by inference, survival rates) of adult eagles. If this approach works, it could be an incredibly important I&M tool for golden eagles in the southwest.

3.4. Stressors (examples: fire, invasive species, climate change)

3.5. Adaptive Management Projects

- I&M evaluation of wildlife drinkers: Project sets camera traps at artificial drinkers (and natural springs) in the Mojave, Sonora and Chihuahua deserts to evaluate patterns of use (time of year, day and activity patterns) between desert bighorn sheep and mountain lions. Results geared to help management refine water presentation. In the simplest sense, managers can provide water only when target animals - sheep or deer - are apt to use it. This could discourage non-target species - like mountain lions - from being in the area, if water is not readily available. Based on project results the effort will continue to monitor wildlife use if/when drinkers are altered in timing of water provision.
- Evaluating farming practices at Bosque del Apache NWR. Using combinations of traditional farming techniques, heirloom crops, composite planting, and conventional farming to design methods for increasing crop yield for waterfowl with minimal pesticide, or GMC use.
- Waterfowl surveys provide a minimum count of waterfowl presence on a Refuge at a given time. We are re-evaluating these surveys to provide more robust estimates. We are also designing methods to
 - Capture ground data describing vegetation type, structure and composition at the sites where aerial waterfowl counts occur.
 - Gain information describing regional patterns of climate (especially precipitation), and forage availability (such as type of agricultural production, location and amount).
- This work enables:
 - Evaluating how the above variables - regional climatic patterns, neighboring land use, and the type, amount and timing of Refuge forage production links to presence of various species of waterfowl on Refuge.
 - Greater predictive ability and planning for how we anticipate waterfowl to use Refuges in a given year, which subsequently impacts how Refuges manage their lands (what vegetation to manage for, what cycle of waterfowl biology to emphasize, and which species).
 - Improved integration of Refuge waterfowl management within geographical areas. This would include yearly coordination among Refuges in terms of what vegetation, amount, and location of that vegetation on these Refuges, to maximize for waterfowl benefit.

3.6. Data Management (example: legacy data)

It includes 3 Steps:

- Capturing/assessment/scanning of legacy data, grey literature, peer-reviewed literature, into a FWSReference Database.
- Developing data management plans for current and future projects. This includes comparing data standards for existing NPS I&M and partner protocols to FWS needs and FWS systems such as RLGIS.
- Understanding and evaluating the current IT infrastructure in R2 to facilitate push/pull of data as well as establishing an I&M Natural Resources folder structure both in the Regional Office and in the field. This structure facilitates standardized data sharing within the region, and more importantly, the eventual ease-of-use by R2 staff as the Natural Resources file structure becomes familiar, incorporates the RLGIS data structure, and training/documentation is provided for end-users.

Recent data management activities have included:

- Introducing the Region 1 I&M Planning Database to the I&M Natural Resources staff as well as other programs in the Regional Office to demonstrate its capacity as an assessment tool to capture the type, extent and methodology of surveys occurring on Refuges. Such I&M Planning Database demonstration meetings were given to the Chief of Biological Services, the Regional Refuge Supervisors, and staff from Planning, Hydrology, Fire, WHSFR, Science Applications, Migratory Birds, Biological Services, and ES. In April, the I&M Planning Database will be demonstrated to the Zone I&M Biologists/LMRDs across Region 2.

- Meeting with the Regional GIS Coordinator to discuss computer/server infrastructure across R2 to determine realistic expectations for the Natural Resources File Structure, data set push/pull via scripting, adoption of the RLGIS data structure by the field, and Invasives GIS.
- Meeting with R2 Hydrologists regarding WRIAs and HGMs.
- Meeting/Conference calls with the I&M Data Managers concerning FWS Reference, SharePoint, and R1 I&M Planning Database/PRIMR.
- Meeting/Conference calls with the NWRS Geospatial Advisory Committee concerning RLGIS and data standards.
- Reviewing the NPS's NRDT
- Reviewing the NPS Reference
- Evaluating the NPS Protocol Data Management for Black-Tailed Prairie Dog compared to RLGIS Species Occurrence.
- Communicating with NPS Chihuahuan Desert Network I&M Data Manager concerning Invasive Species data structure for NPS in the Chihuahuan Desert Network.
- Communicating with other FWS Regions regarding Invasive Species data management.

Current and Future Data Management Activity includes:

Abiotic

- Critically evaluating databases used in Natural Resources such as Fire, Hydrology, and Invasive Species to meet I&M needs.
- Working with the R2 Hydrologists to evaluate data structure and data storage of the WRIAs and HGMs as the Hydrologists have recommended following a structure similar to RLGIS.
- Working with counterparts at the NPS I&M Networks to determine data overlaps and data management related to seeps, springs and tinajas
- Working with Fire concerning data management plan related to the Fire Atlas
- Develop a data management plan for the inventory of playa wetlands.

Biotic

- Determine Invasive Species data structure and data management plan, review other 'state-based' Invasive Species database (TX) and provide GIS/GPS training to help the Invasives Strike Team with capturing and using the data and understanding the file structure.
- Develop a data management plan/geospatial tools for the Ungulate Survey Protocol developed by R2 Biometrician Butler et al.
- Develop a data management plan for the Camera Trapping Protocol developed by R2 Chief of Biological Service Harris et al.
- Work with Refuge Staff at Laguna Atascosa NWR and R2 Biometrician Butler to develop data standards/geospatial tools and a data management plan for shrub regeneration/regrowth over time in Ocelot habitat. Geospatial tools will assist with determining which time of year and reclamation regime has the best results for restoring Ocelot habitat.
- Work with Refuge Staff at Sequoyah NWR and R2 Biometrician Butler to develop data standards/geospatial tools and a data management plan for wetland management/moist soil management related to soil types, mechanical treatments, etc. for waterfowl use and AM strategies.

- Develop a vegetation data management plan for the inventory and status of subtropical grasslands for masked bobwhites.
- Develop a vegetation data management plan for the inventory and status of native grasslands for Sonoran pronghorn.
- Develop a data management plans upcoming I&M protocols.

Other

- Assist Zone I&M Biologists with I&M Planning Database/PRIMR rollout as needed.
- Administer the Region 2 I&M SharePoint Site to provide a Region-wide communications portal to the I&M program.
- Creating geospatial products as needed by R2 I&M.

3.7. Communication (examples: symposia, program reviews, training, workshops, partnerships)

The I&M Coordinator and Data Manager will conduct in-reach to all Service Programs in the Region on the I&M PRIMR Database Assessment and I&M Planning Process and our vision for an Integrated Natural Resource Program that includes hydrology, biology, fire, and I&M. We will work closely and communicate with other key Service Programs, such as LCC's, Migratory Birds, Endangered Species, and Wildlife Sport Fisheries and Restoration (WSFR). We will conduct in-reach to our field stations through Zone/LMRD Biologists and I&M Coordinator communiqués, meetings, webinars, teleconferences, and training sessions as needed. We will conduct outreach with other federal agencies like NPS, BLM, BIA, NOAA, and FS as well as state agencies and key NGO partners at the Regional, zone and local levels. Being transparent, open and inclusive, will help lay the cornerstones for the success of the I&M and overall Integrated Natural Resource Program for the Southwest Region.

Region 2 has developed an I&M SharePoint site that is being used to house Protocols and maps. One goal is to use this site as a communications portal so Region 2 staff can receive current I&M updates. The link to this site has been shared within I&M, Natural Resources, and the other programs and divisions that have attended any of the I&M Planning Database roll-out meetings at the Regional Office. The site has also been shared with the Zone I&M Biologists and anyone else who is interested. Related to data management communication with other FWS Regions, the R2 I&M Data Manager attended the FWS GIS Conference participating in separate Data Manager training as well as a separate session for the NWRS GIS Advisory Committee. The R2 I&M Data Manager is the primary representative for R2 on the NWRS GIS Advisory Committee. The NWRS GAC will be meeting in June to evaluate RLGIS and other Refuge data standard needs. On a monthly basis the I&M Data Manager participates in the conference calls for the NWRS GAC as well as the I&M Data Managers call to facilitate communication between the Regions on these matters.

I&M Coordinator will participate in all I & M Coordinator meetings, telephone conference calls, webinars, symposia and visit all most stations within the Region and with key partners

Zone/LMRD Biologists will communicate with Refuge's, LCC's and key partners within their respective Zones to help those stations and partners understand the I & M Program and to capture their issues, concerns and most pressing needs within those geographic areas.

Table 1. Region 2 Inventory and Monitoring Activities, by Project or Theme.

Blueprint Objectives and Tasks	Project or Theme; Status	Planned Products	Staff
STATUS OF STATION HABITAT MANAGEMENT PLANS AND I&M PLANS			
3.1.1.	<i>Status of station Habitat Management Plans</i> In progress for all refuges.	A status call will be conducted for an update in April.	
3.1.2.	<i>Status of station Inventory and Monitoring Plans</i> In progress using new PRIMR Database.	Phase I to be completed for all refuges by end of FY2011. Phase II to be completed by end of FY2012 for all refuges.	
IDENTIFY I&M PRIORITIES			
General A	<i>Information needs assessment</i>		
General B	<i>Coordinate with existing NWRS</i>		
General C	<i>Collaborate and build partnerships with other Service programs, the LCCs, and other agencies</i>		
ABIOTIC RESOURCES - INVENTORIES			
1A	<i>Assemble existing abiotic datasets for NWRS</i>	Complete Sequoyah NWR Wetland Review abiotic data package begin South Texas Complex abiotic data package.	Paul Tashjian, Steve Cullinan, Andrew Hautzinger, Peter Burck
1A, 2A	<i>Assemble existing abiotic datasets for NWRS Managers</i> Hydrologic, water quality, climatologic data	Climatologic data collection at 15 R2 NWRs with over 232 individual monitoring sites. Management of data in centralized database (WISKI).	
1B	<i>Hydrogeomorphic Analysis</i> Hydrogeomorphic (HGM) evaluations at Sequoyah, Aransas and Lower Rio Grande NWR.	<u>HGMs:</u> A) Determine the historic condition and ecological processes of an area and surrounding landscape B) Identify ecological processes and biotic changes to the ecosystem in the region C) Provide options to restore and manage the area more ecologically appropriately.	Paul

Blueprint Objectives and Tasks	Project or Theme; Status	Planned Products	Staff
ABIOTIC RESOURCES - MONITORING			
2A	<i>Water Resource Inventory and Assessment (WRIA)</i> Assist with tool development. Paul/Steve continue to work with the national water quality team, led by Mike Higgins, to refine the Water Quality Inventory and Assessment (WRIA) process and advise the team on the development of a database.	2 to be completed (Aransas and Sequoyah NWRs) 6 to be started (Muleshoe, Grulla, San Bernardino, Leslie Canyon, Bosque Del Apache, South Texas NWRs).	Paul/Steve
2A	<i>Water Resource Inventory and Assessment (WRIA)</i> Seeps, springs, and tinjas at Refuges and Parks in Sonora and Chihuahua Deserts.	Comprehensive inventory and quantitative assessment of seeps, springs or tinajas within NPS Parks and FWS Refuges occurring in the Sonora and Chihuahua deserts. This assessment addresses 13 attributes.	NPS and FWS sharing 3-person crews, composed of one GS-6 crew leader and 2 SCAs.
2B	<i>Fire risks</i> Develop benchmarks for assessment of shifts in fire regimes.	Generating fire atlas for Refuges that document when and where fires occurred and their spatial extent and FireMon for monitoring Rx Fire.	Kaib Gromatsky Lindsay
BIOTIC RESOURCES: INVENTORIES			
1C	<i>Legacy Data</i>		
1E	<i>Vegetation Mapping</i>		
1D	<i>Design and implement pilot studies</i> Design and implement at least four pilot studies across the NWRS to contrast approaches for inventorying the occurrence of vertebrates, vascular plants, and a subset of invertebrates.	The elk and ocelot work falls under this task	Harris Butler Sternberg

Blueprint Objectives and Tasks	Project or Theme; Status	Planned Products	Staff
BIOTIC RESOURCES: MONITORING			
1F, 4C	<p><i>Review bird monitoring efforts and tools</i></p> <p>Waterfowl surveys provide a minimum count of waterfowl presence on a Refuge at a given time. We are re-evaluating these surveys to provide more robust estimates.</p> <p>We are also designing methods to:</p> <p>A) Capture ground data describing vegetation type, structure and composition at the sites where aerial waterfowl counts occur.</p> <p>B) Gain information describing regional patterns of climate (especially precipitation), and forage availability (such as type of agricultural production, location and amount).</p>	<p>This work enables:</p> <p>1) Evaluating how the above variables - regional climatic patterns, neighboring land use, and the type, amount and timing of Refuge forage production links to presence of various species of waterfowl on Refuge.</p> <p>2) Greater predictive ability and planning for how we anticipate waterfowl to use Refuges in a given year, which subsequently impacts how Refuges manage their lands (what vegetation to manage for, what cycle of waterfowl biology to emphasize, and which species).</p> <p>3) Improved integration of Refuge waterfowl management within geographical areas. This would include yearly coordination among Refuges in terms of what vegetation, amount, and location of that vegetation on these Refuges, to maximize for waterfowl benefit.</p>	Grant Harris
ECOSYSTEM VULNERABILITY			
4A	<p><i>Vulnerability studies</i></p> <p>Prioritize geographic areas and species based on ecosystem vulnerability</p>	Climate change work fits here nicely as well as prairie/playa work.	Harris B. Johnson
STRESSORS: CLIMATE CHANGE			
	<p><i>Climate Change</i></p> <p>Modeling which climatic variables drive 25 ecological systems across the southwest. Using data downscaling to project these climatic drivers over the next 50 years.</p> <p>Modeling how these ecological systems shift dynamically over time.</p> <p>Evaluate how well faunal species will track these changes.</p>		
4B	<i>Phenology</i>		

Blueprint Objectives and Tasks	Project or Theme; Status	Planned Products	Staff
STRESSORS: INVASIVE SPECIES			
3A	<i>Invasive plant control and monitoring</i> Develop pilot projects focused on mapping and monitoring invasive plants.	Use of remote sensing technology to predict distribution of McCartney Rose at Atwater Prairie Chicken NWR.	Lindsay
ADAPTIVE MANAGEMENT PROJECTS			
1F	<i>I&M evaluation of wildlife drinkers</i> Project sets camera traps at artificial drinkers (and natural springs) in the Mojave, Sonora and Chihuahua deserts to evaluate patterns of use (time of year, day and activity patterns) between desert bighorn sheep and mountain lions.	Results geared to help management refine water presentation. Restoring native plant diversity in native grasslands (AM Consultancy).	Grant Harris/ Lacrecia Johnson
1F	<i>Adaptive management</i> Evaluating farming practices at Bosque del Apache NWR. Using combinations of traditional farming techniques, heirloom crops, composite planting, and conventional farming.	To design methods for increasing crop yield for waterfowl with minimal pesticide, or GMC use.	John Vradenberg
1F	<i>Waterfowl surveys</i>		
DATA MANAGEMENT			
Task A, DM1	<i>Information needs assessment</i> Provide a minimum count of waterfowl presence on a refuge at a given time We are re-evaluating these surveys to provide more robust estimates.	<u>Designing methods to:</u> Capture ground data describing vegetation type, structure and composition at the sites where aerial waterfowl counts occur. Gain information describing regional patterns of climate (especially precipitation), and forage availability (such as type of agricultural production, location and amount).	
1C	<i>Legacy Data</i> Design and implement a strategic plan for compiling, organizing, interpreting, and serving legacy data for documenting historic and current occurrences of species.	gray/white literature compilation and capture	Hughes
DM7	<i>I&M Data Standards and Governance teams</i>		
DM8	<i>Landbird monitoring database</i>		

Table 2. Region 2 Inventory and Monitoring Symposia, Program Reviews, Training, and Workshops Planned for FY 2011

Blueprint Objectives and Tasks	Symposium, Program Review, Training, or Workshop	Planned Date	Staff
COMMUNICATION - TRAINING			
General Task A			
General Task B	Teach course: <i>Designing and Implementing a Biological Monitoring Program</i> , at the National Conservation Training Center (NCTC)	19-23 September 2011	Melinda Knutson
General Task C			
1F	GIS Workshop-NCTC	March 2011	Cynthia Eichhorn, Database Manager
1F	GIS Training for Invasive Vegetation	May 2011	Cynthia Eichhorn, Database Manager
1F	GIS Training for Field Stations and others for Invasive Species	June 2011	Cynthia Eichhorn, Database Manager
Data Mgmt			

4. Budget Narrative and Budget

4.1. Provide a brief description of how current and projected I&M funding is anticipated to be spent during the upcoming FY, including the major work activities presented in Section II. List the major planned expenditures of I&M funds, including staff salaries and operations, contracts and agreements. Do not include contributions from outside the I&M funded initiative in the work plan. (Matching, in-kind, and leveraged funding from outside the I&M initiative will be included in the annual I&M administrative report.)

The overall FY 2011 Budget was \$986,495 to date. Of those funds we have projected and/or obligated \$400,238 for payroll; \$190,264 for PCS moves for our new hires; \$10,000 in travel; \$12,000 in administration and fixed costs (cell phones, copier, fuel, fed x and supplies); \$33,131 for aviation operations. In addition we have obligated, \$80,000 in a contract with USGS Kansas Cooperative Research Unit for Time Series LandSat Data for the Prairie Playas of West Texas/Eastern Oklahoma; \$94,000 in a contract with Texas Tech University to fund a Masters Project on: Developing Camera Trapping to estimate Elk population densities at Bosque del Apache; with the remaining \$166,862 targeted toward NPS to capture grey/white literature and develop database, temp/term hires to help the field stations with the I&M Assessment, and supplies needed to support all activities we are currently working on in R2. The additional funds when available will allow us to develop further capacity and expertise as well as support other high priority blueprint and/or R2 I&M objectives.

5. Appendix

5.1. Map of NWRS stations in the region, by state and LCC.

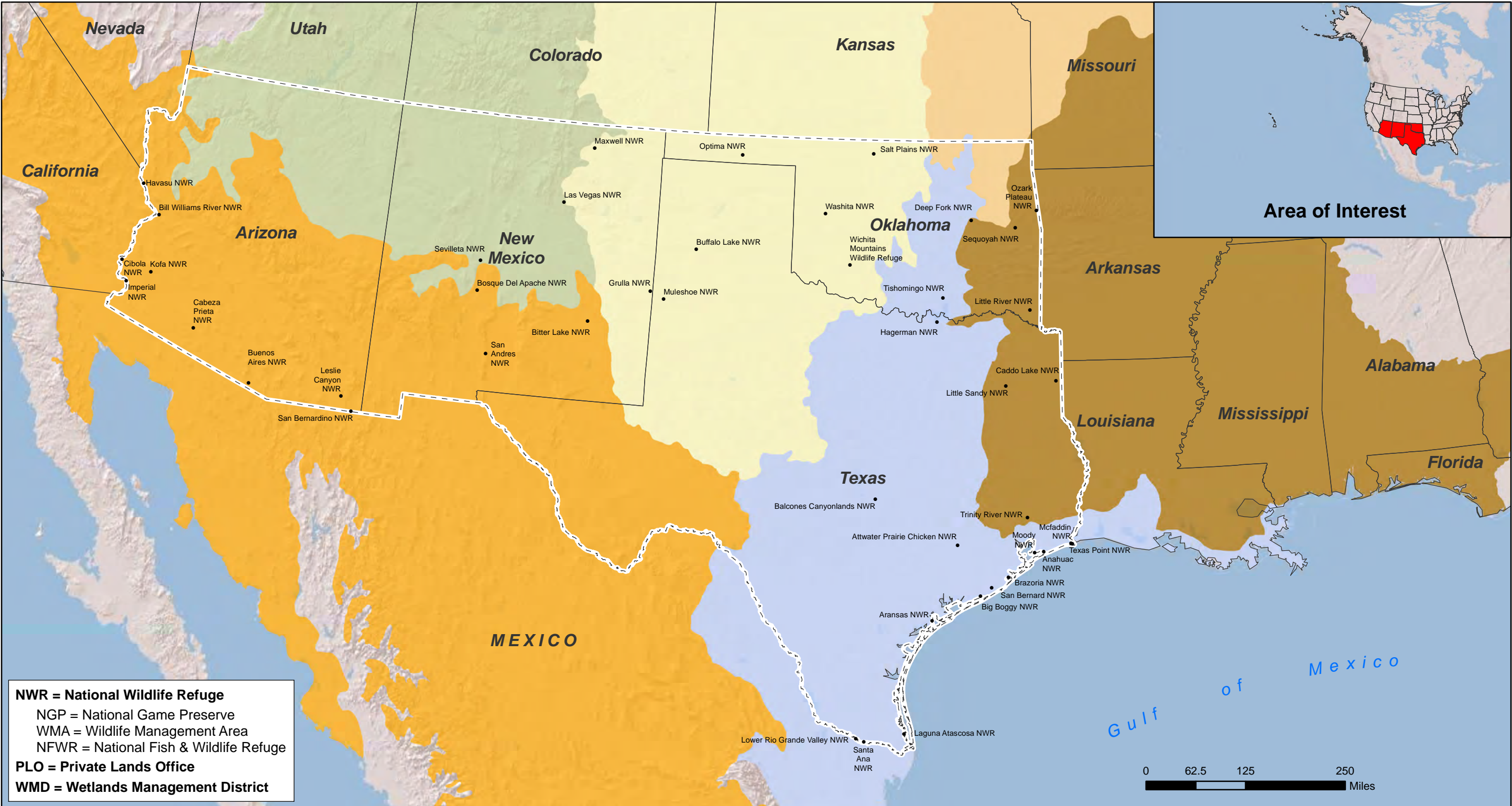


U.S. Fish & Wildlife Service

National Wildlife Refuge System by Landscape Conservation Cooperative

Arizona, New Mexico, Oklahoma and Texas

Region 2



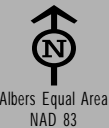
NWR = National Wildlife Refuge
NGP = National Game Preserve
WMA = Wildlife Management Area
NFWR = National Fish & Wildlife Refuge
PLO = Private Lands Office
WMD = Wetlands Management District

National Wildlife Refuge System

- 44 National Wildlife Refuges (NGP/NFWR/NWR/WMA)
- 0 Private Land Offices (PLO)
- 0 Wetland Management Districts (WMD)

Landscape Conservation Cooperatives and USFWS Lead Region

- | | | |
|---|---|----------|
| Desert (Region 2) | Gulf Coast Prairie (Region 2) | Region 2 |
| Eastern Tallgrass Prairie and Big Rivers (Region 3) | Gulf Coastal Plains and Ozarks (Region 4) | State |
| Great Plains (Region 2) | Southern Rockies (Region 6) | |



Albers Equal Area
NAD 83

1:8,000,000