



Trilateral Committee Meeting, Ottawa, Ontario
May 16-19, 2016
Species of Common Concern Table



Arizona Ecological Services Office México Program

Mission: Through cooperative binational partnerships, conserve and recover listed and sensitive species of mutual concern to the U.S. and México

Erin Fernandez, Mexico Program Coordinator
Scott Richardson, Supervisory Biologist
Cat Crawford, Wildlife Biologist
Jeff Servoss, Wildlife Biologist
Doug Duncan, Fish Biologist



Arizona Ecological Services
Tucson, Arizona
U.S. Fish and Wildlife Service

Conservation and Recovery of Cross-Border Species



- Conservation of bats in northwestern Mexico
- Amphibian and reptile conservation in Northwestern Mexico
- Binational partnerships to recover and conserve species of common concern
- Conservation of the imperiled species of the Rio Sonoyta
- Conservation of the native aquatic vertebrates of the Rio Yaqui basin

Bat Conservation Program in Northwestern Mexico

- Mexico has one of the world's highest diversities of bats - 139 species
- Of great ecological and economic importance
- Some bat populations declining at alarming rates (roost disturbance/destruction, foraging habitat loss/degradation, changing water, food, roost resources - climate change)



Bat Conservation Program in Northwestern Mexico

Working to build capacity for bat conservation in northwestern Mexico through:

- Conducting training workshops, surveys, monitoring, and recovery actions
- Providing equipment as we are able

Partners: Naturalia, UNAM, U. of Queretaro, UNISON, AZGFD, CONANP, U of A, AZ Sonora Desert Museum



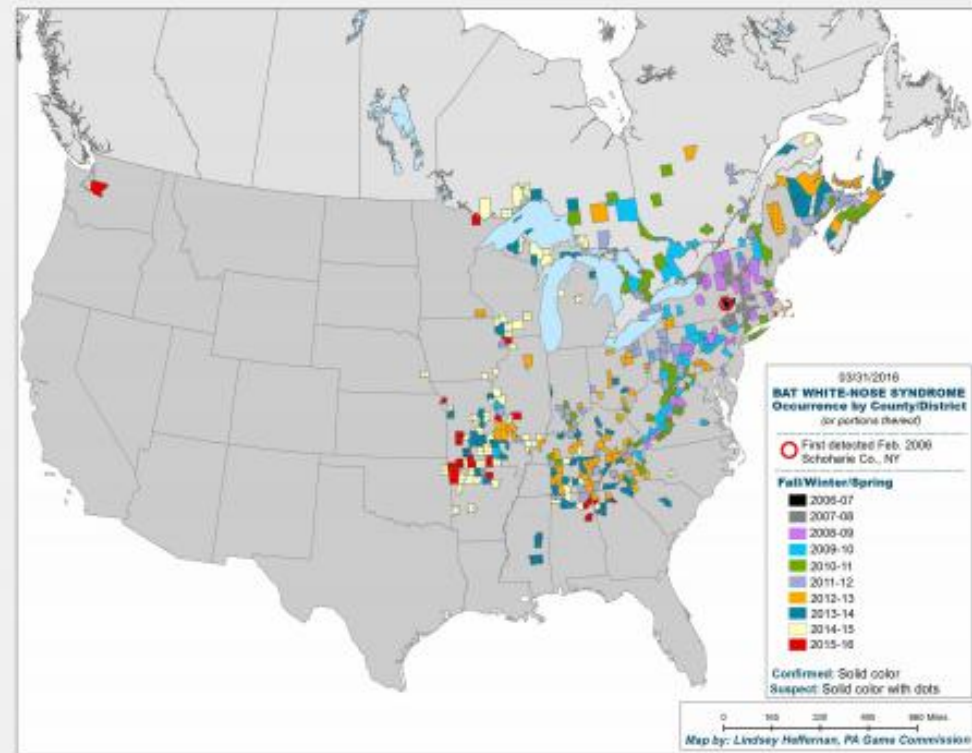
Building Capacity for Bat Conservation in Northwestern Mexico

- Developed workshop (in Spanish): Inventory, Monitoring, and Conservation of Bats in Northwestern Mexico
- From 2008 to 2011: 6 workshops given at the Northern Jaguar Reserve and Rancho Los Fresnos (workshops to be resumed when travel restrictions lifted)
- Participants: over 80 biologists and educators from Federal and State Agencies and NGOs, university students, and members of the Yaqui Tribe



White-Nose Syndrome


- The fungus, *Pseudogymnoascus destructans*, has been demonstrated to cause WNS
- Over 90% mortality at many affected sites
- Spreading rapidly, behaves like a pathogen
- Recent estimates indicate that 5.7 million to 6.7 million bats have fallen victim to WNS



White-Nose Syndrome

What does this mean for Mexico and the southwestern U.S.?

- WNS is not here yet, but we need to be aware!
- Bat species, species' behavior, and climate may reduce the likelihood it will spread here
- Need to prepare – monitoring, plans, protocols
- This is such a devastating disease that we need to be proactive
- Need long-term bat research and monitoring
- Information and resources found on FWS website: www.fws.gov/whitenosesyndrome/



US FOREST SERVICE NORTHERN RESEARCH STATION

Research Review
NO. 12 | WINTER 2011

National Interagency Team Mobilizing To Tackle White-Nose Syndrome of Bats

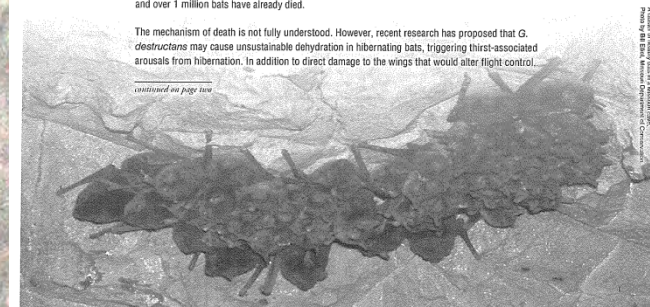
Northern Research Station (NRS) scientists are helping unravel the mysteries of white-nose syndrome (WNS), a fungal disease devastating bat populations in eastern North America. Bats are a vital component of many ecosystems, eating billions of insects, including mosquitoes and crop pests. Many bat species could be facing extinction due to the rapid spread of this cold-loving fungus, *Geomyces destructans*, previously unknown to science. Several bat species at risk from WNS are federally designated endangered species, including the Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), and Virginia big-eared bat (*Corynorhinus townsendii virginianus*).

WHITE-NOSE SYNDROME—A NEW DISEASE

This newly emerging disease is called white-nose syndrome because it was first noticed as white "fuzz" on the noses and faces of hibernating bats. The disease was first recorded during the winter of 2006-2007 in Howe Caverns near Albany, NY, a "show cave" developed for tourists. This cave contains a large underground river, making it particularly cold and extremely damp. Since its discovery, the disease has spread rapidly in caves and mines up and down the Appalachian Mountains and in 14 states and 2 Canadian provinces. The fungus has been detected on bats as far west as the Ozarks and Oklahoma. Colonies of hibernating bats have been reduced 81-97 percent and over 1 million bats have already died.

The mechanism of death is not fully understood. However, recent research has proposed that *G. destructans* may cause unsustainable dehydration in hibernating bats, triggering thirst-associated arousals from hibernation. In addition to direct damage to the wings that would alter flight control.

continued on page two



A photo of a bat colony in a cave. The bats are hanging from the ceiling of the cave, which is dimly lit. The photo is credited to the U.S. Forest Service Northern Research Station.

Lesser Long-Nosed Bat Species Status Assessment

- USFWS 5-year Review in 2007 recommended downlisting
- Petitioned to take that action in 2012
- In response to a lawsuit in 2013, USFWS is preparing a Species Status Assessment to determine if petitioned action is warranted. Soliciting information from Mexican bat biologists.
- Expect a decision in fall 2016



Amphibian & Reptile Conservation in Northwestern Mexico

- No longer conducting workshops for Inventory, Monitoring, and Conservation of Amphibians in Northwestern Mexico (last one in 2011)
- U.S.G.S. biologists conducted surveys and eDNA sampling for the Sonoran tiger salamander at Reserva Los Fresnos and surrounding areas in northern Sonora in April 2015 and May 2016
- Recovery actions for the Chiricahua leopard frog in Mexico remain unfunded. Status of the species unknown in most areas of Mexico. Surveys have been conducted at Ajos-Bavispe since 2010
- Tarahumara frogs extirpated from AZ in 1983; reestablished in the wild with frogs from Mexico in 2004 with subsequent releases through 2015
- Awaiting finalization of Mexico Management Strategy for the flat-tailed horned lizard
- Conducting species status assessment for Sonoyta mud turtle found in the Rio Sonoyta and will publish a listing decision in last quarter of 2016



Northern Mexican Gartersnake (*Thamnophis eques megalops*)

U.S. - Listed rangewide as threatened on July 8, 2014
Mexico – Listed as threatened (*Thamnophis eques*)



Habitat: Northern Mexican Gartersnake

Elevations from 40 – 2,591 m

Lentic: cienegas, stock tanks, springs, seeps, etc.

Lotic: protected backwaters, braided side channels and beaver ponds, isolated pools near the river mainstem, and edges of dense emergent vegetation



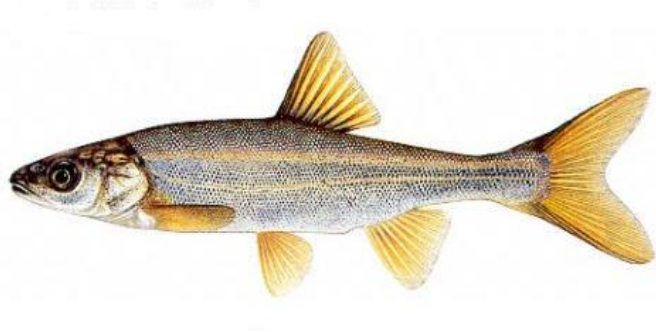
Lentic

Lotic

Known to use terrestrial habitat ≥ 1.6 km from water

Diet: Northern Mexican Gartersnake

Primary prey items are amphibians and fish such as leopard frogs, tiger salamanders, spadefoot toads, woodhouse's toads, chubs, suckers, topminnow, etc.

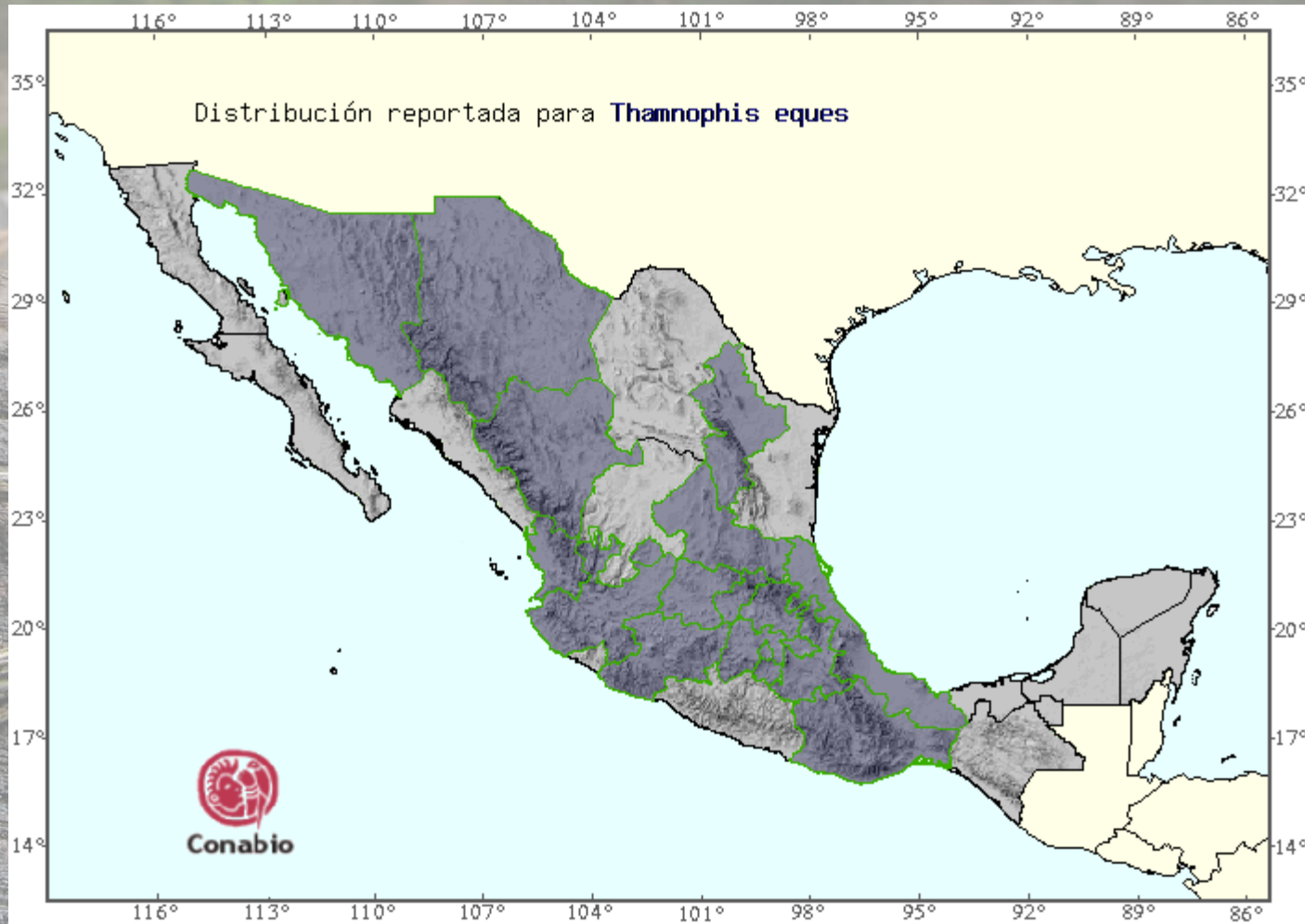


Secondary prey items may include deermice, earthworms, spiny lizards, whiptail lizards, leeches, even other gartersnakes



May also eat nonnative species such as small bullfrogs, bullfrog larvae, and small nonnative fish.

Distribution of the Mexican Gartersnake In Mexico



**Why have these snakes
been disappearing?**



Harmful Nonnative Species



Bass
(*Micropterus* sp.)



Sunfish
(*Lepomis* sp.)



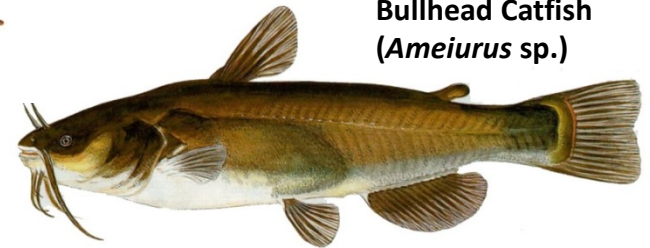
Flathead Catfish
(*Pylodictis* sp.)



Channel Catfish
(*Ictalurus* sp.)



American Bullfrog
(*Lithobates catesbeiana*)



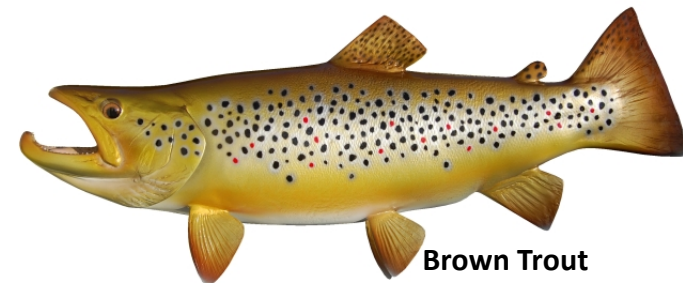
Bullhead Catfish
(*Ameiurus* sp.)



Crappie
(*Pomoxis* sp.)



Northern (Virile) and Red Swamp Crayfish
(*Orconectes virilis* and *Procambarus clarkii*)



Brown Trout
(*Salmo trutta*)

Native Fish Communities In Decline

In Mexico ...

Over one-third of native fish species are considered endangered, facing extinction, under special protection, or likely extinct.



Vanishing Surface Flow





Wildfire

Recovery Planning



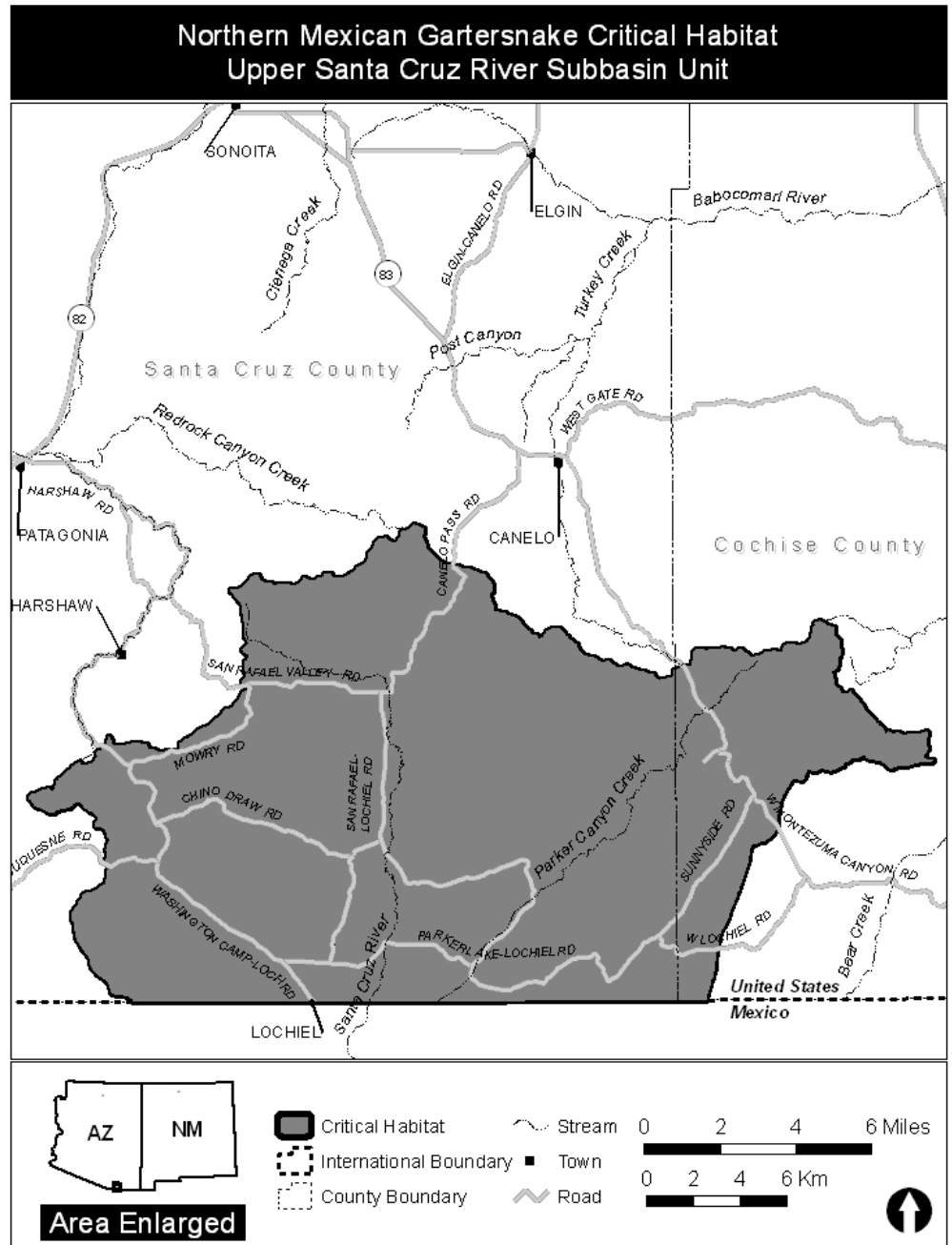
- Binational
- Ecosystem-based
- Focused on addressing nonnative problem

Example: Harmful nonnative species removal program in Upper Santa Cruz watershed.

Mexico could greatly assist by addressing nonnatives in the upper Santa Cruz River watershed.

Species which benefit:

- Mexican gartersnake
- Chiricahua leopard frog
- Gila Chub
- Gila topminnow
- Many others



Sonoran Desert Tortoise (*Gopherus morafkai*)

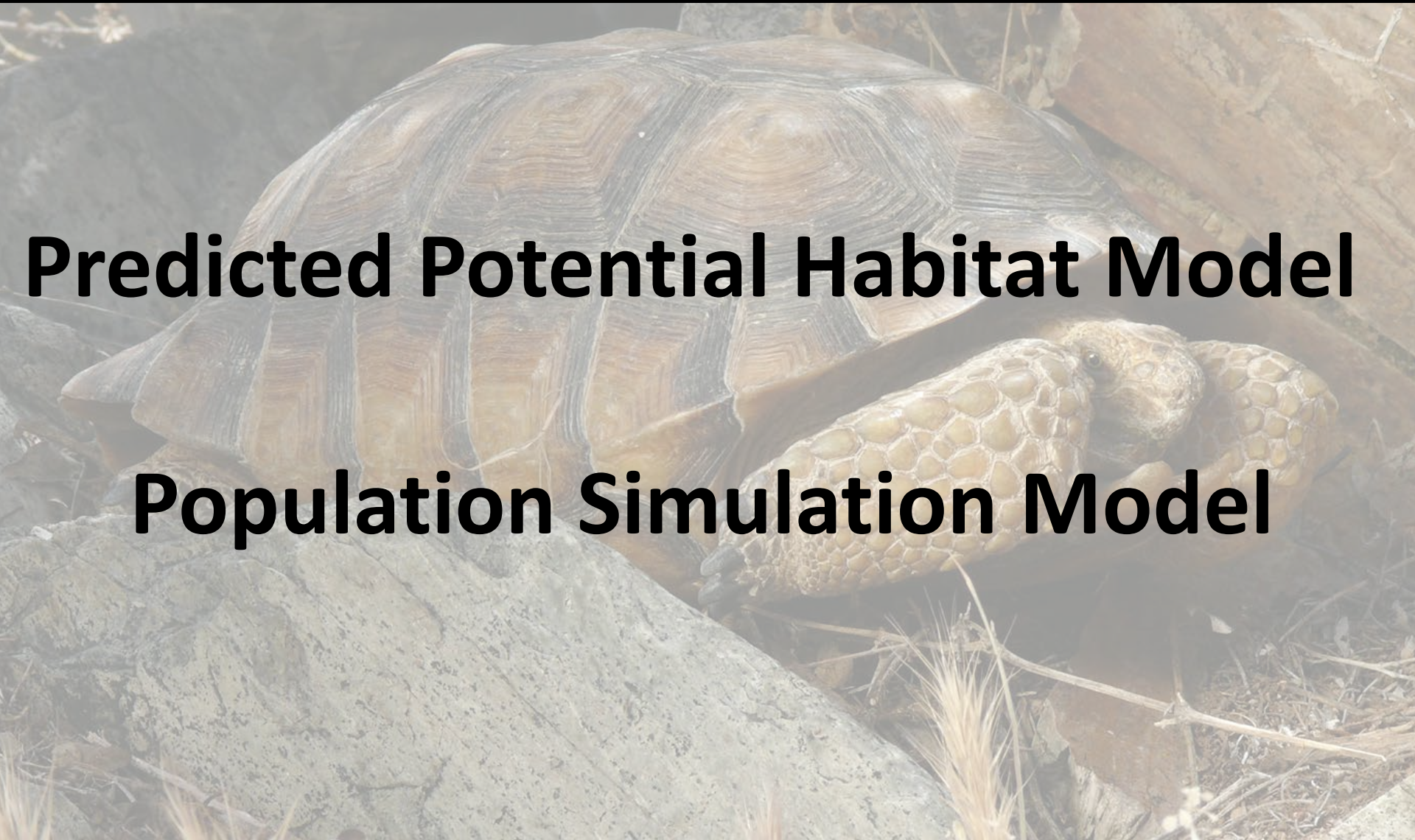


Species Status Assessment (SSA)

Sonoran Desert Tortoise SSA Produced Two Models

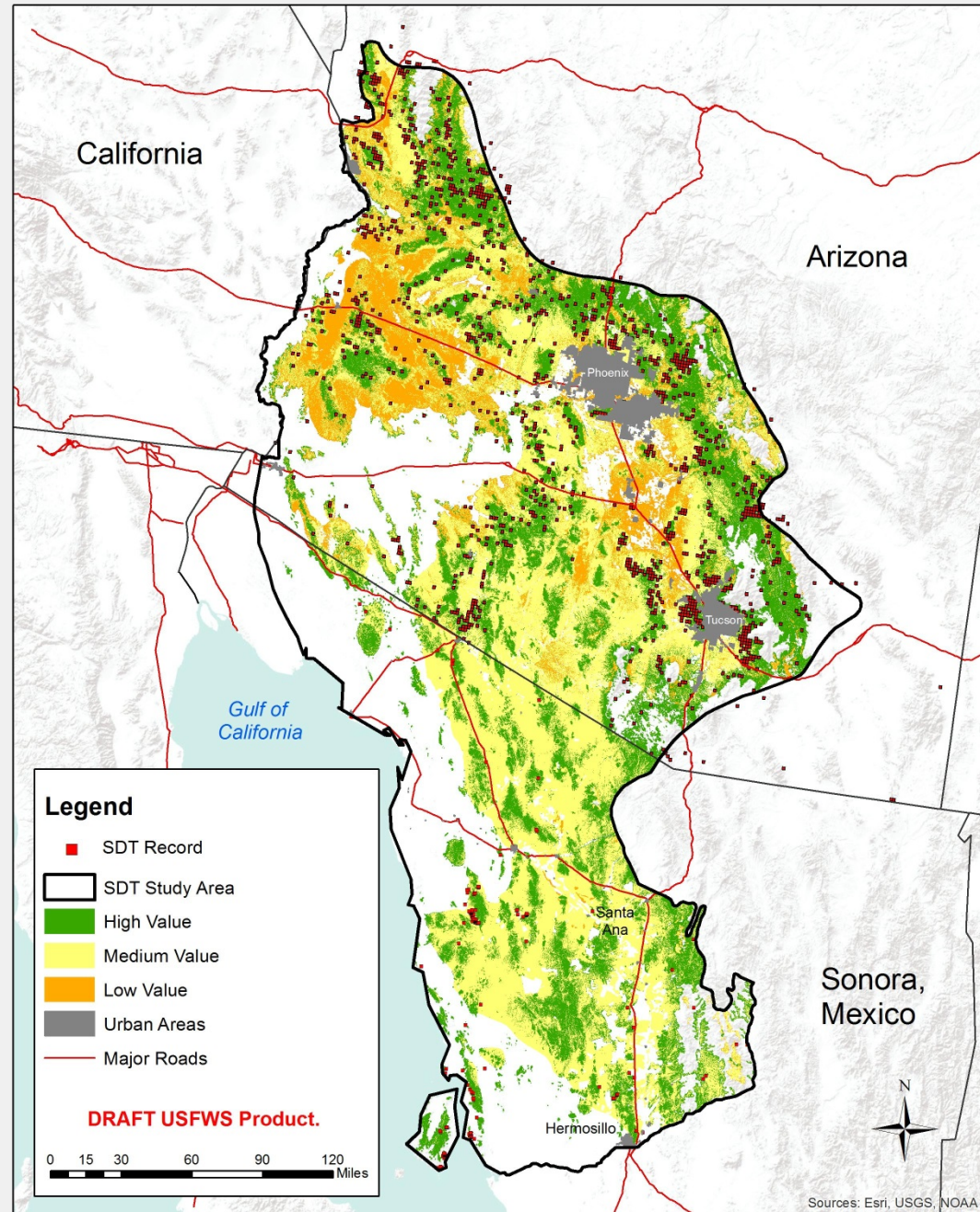
Predicted Potential Habitat Model

Population Simulation Model



Predicted Potential Habitat Model

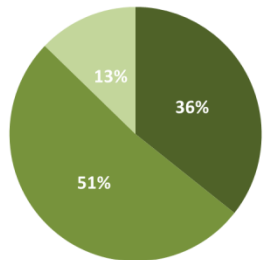
SDT USFWS Predicted Suitable Habitat: May 2015



Predicted Potential Habitat Rankings

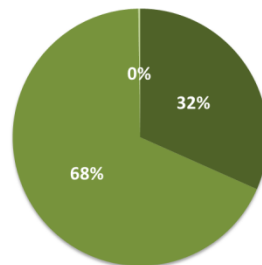
Arizona, US
24,196 sq mi Total

High
Med
Low



Sonora, MX
13,762 sq mi Total

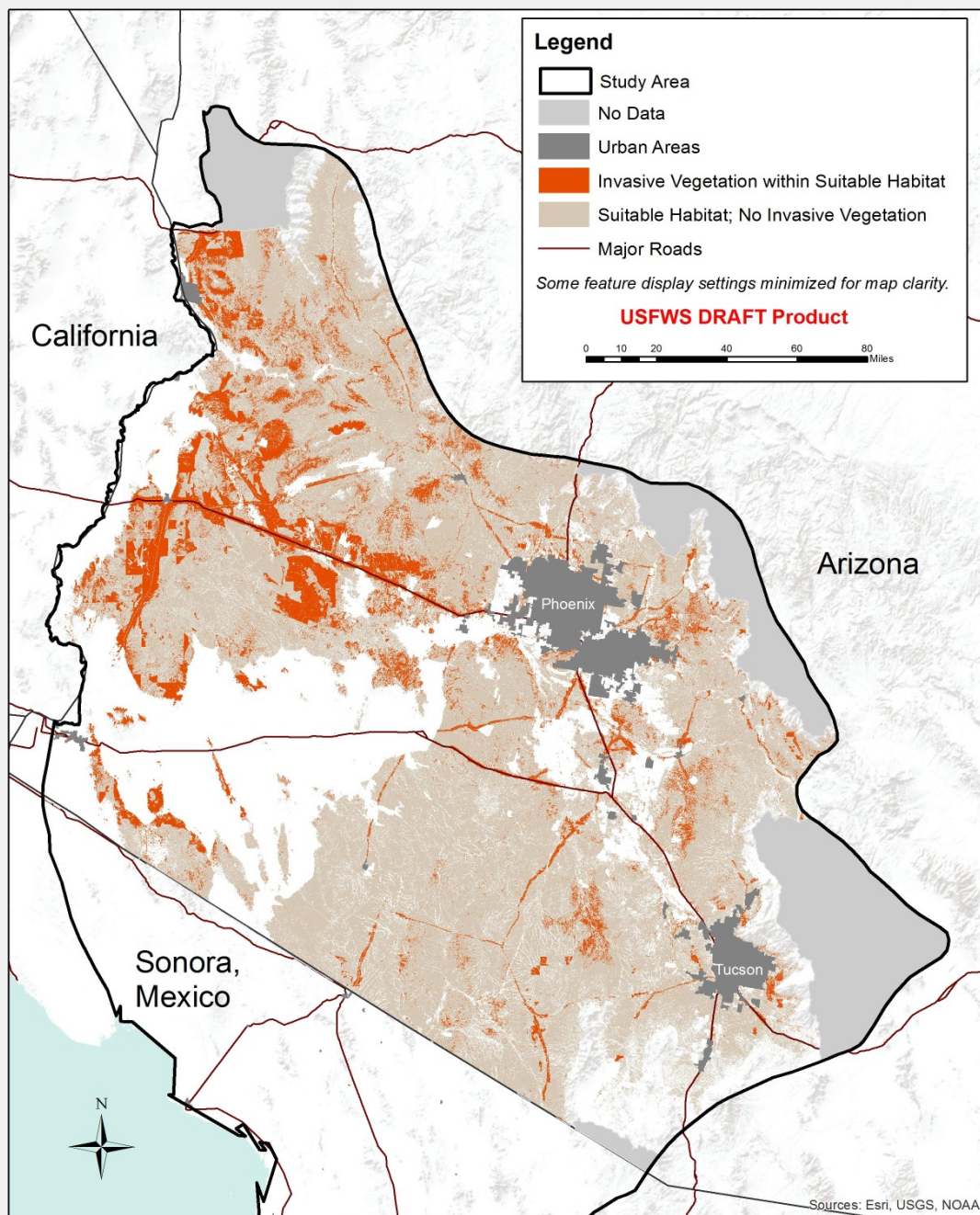
High
Med
Low



Nonnative Grasses

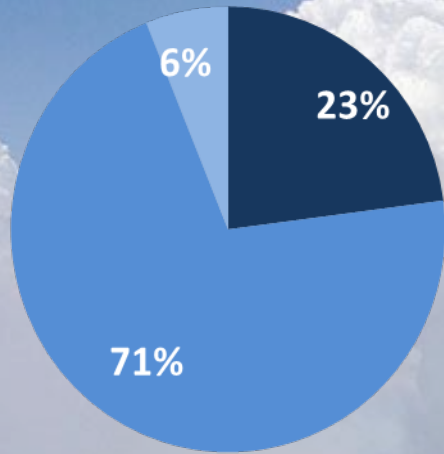


Modeled Current Invasive Vegetation within Predicted Suitable SDT Habitat: May 2015

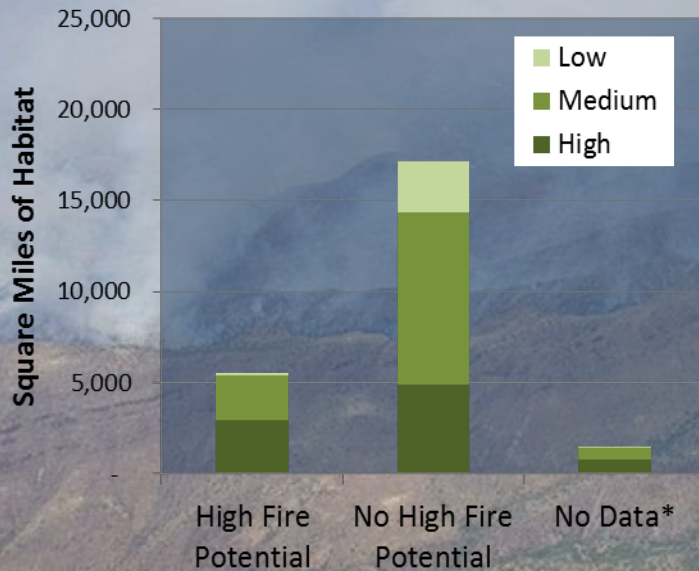


Altered Fire Regimes

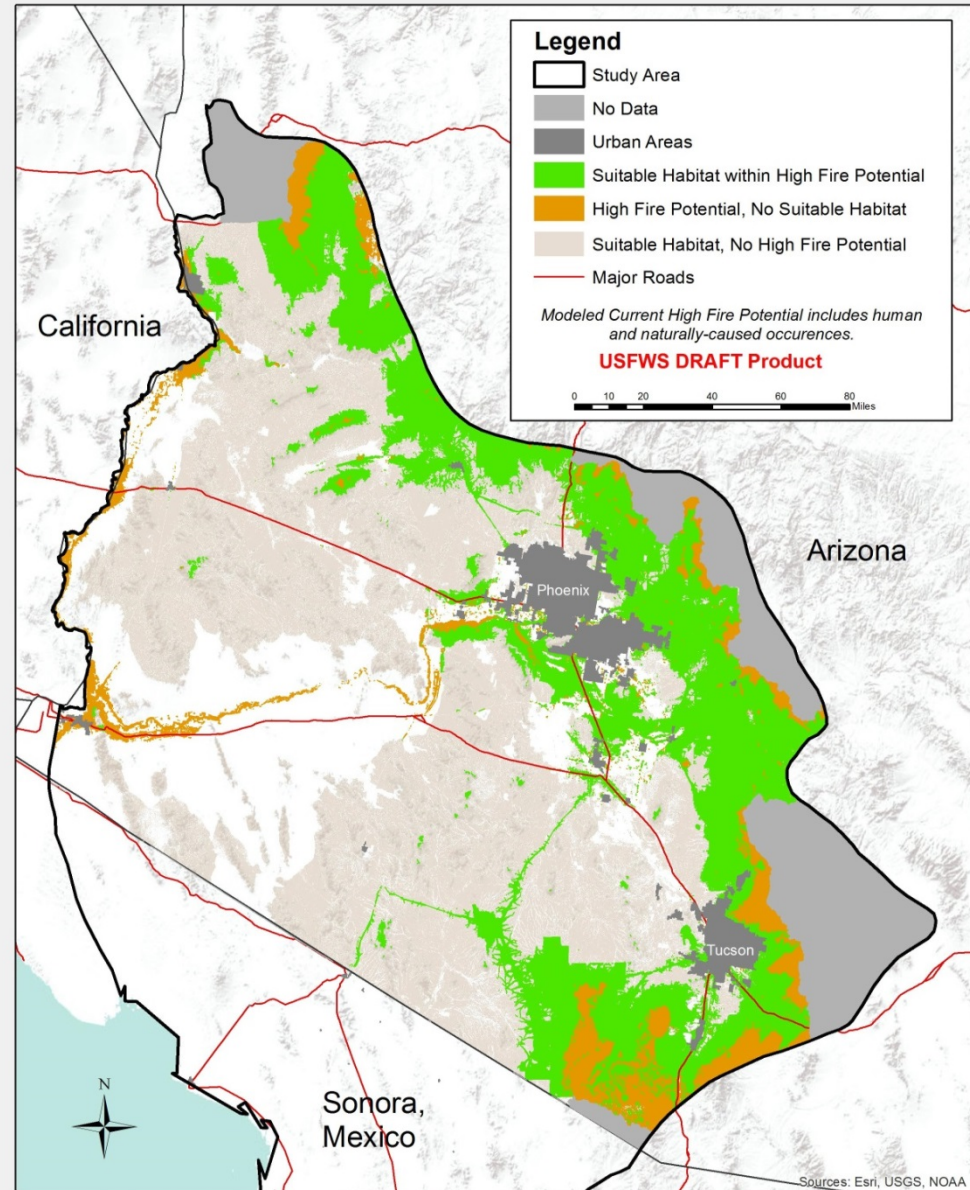
All Suitable Habitats



- High Fire Potential
- No High Fire Potential
- No Data*

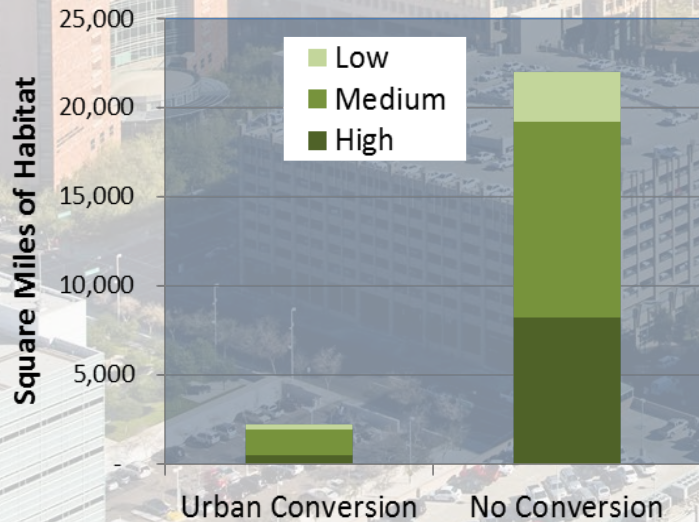
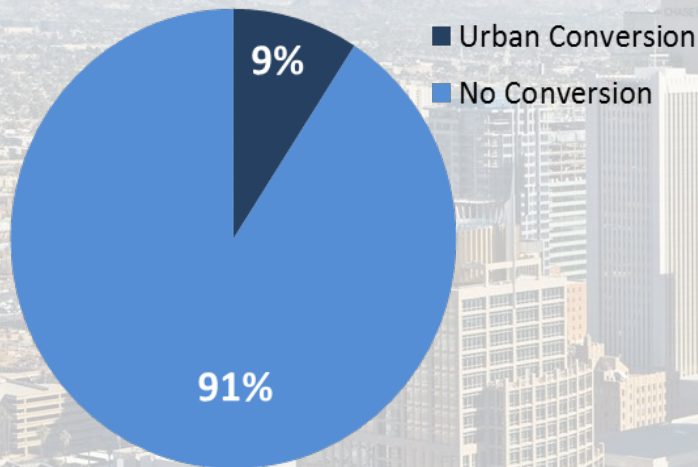


Predicted Suitable SDT Habitat within Modeled Current High Fire Potential: May 2015

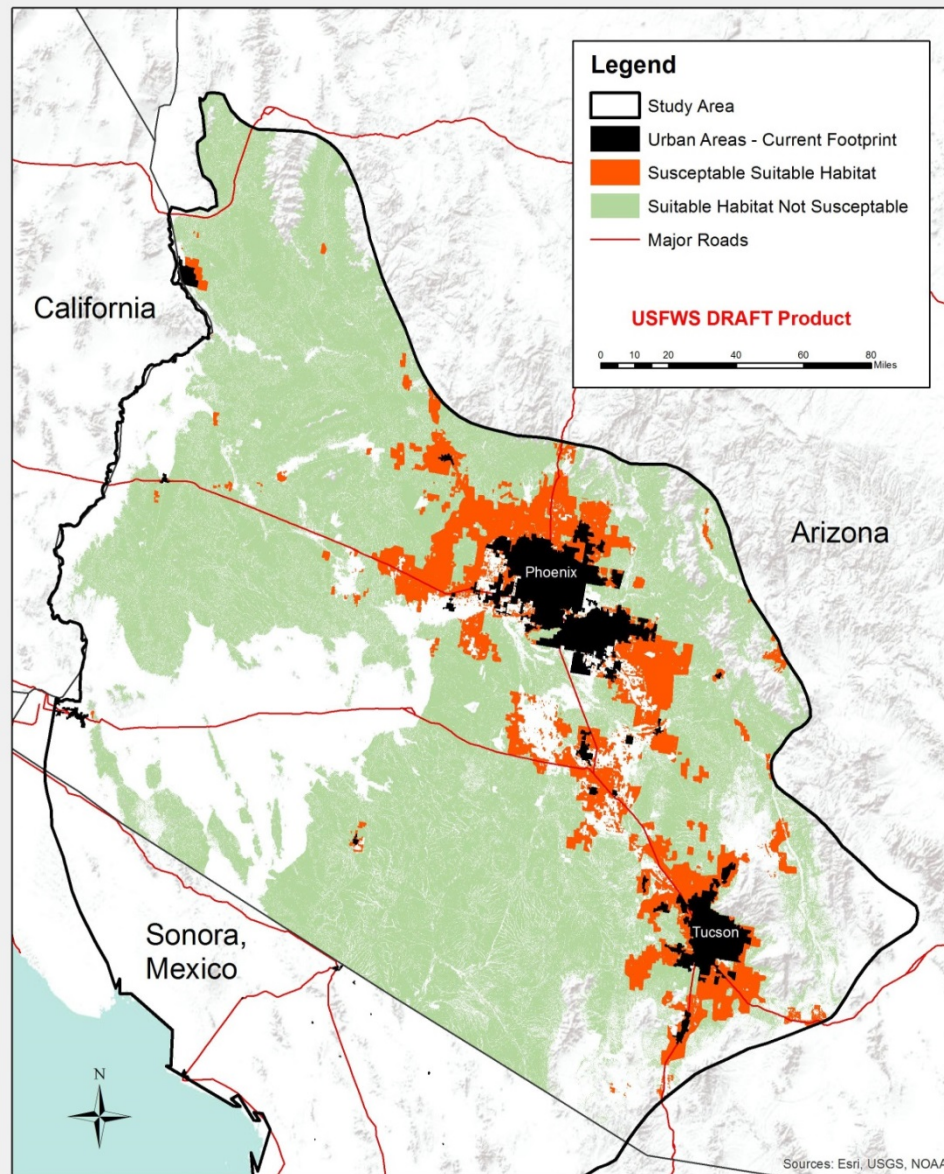


Predicted Future Urban Growth

All Suitable Habitats



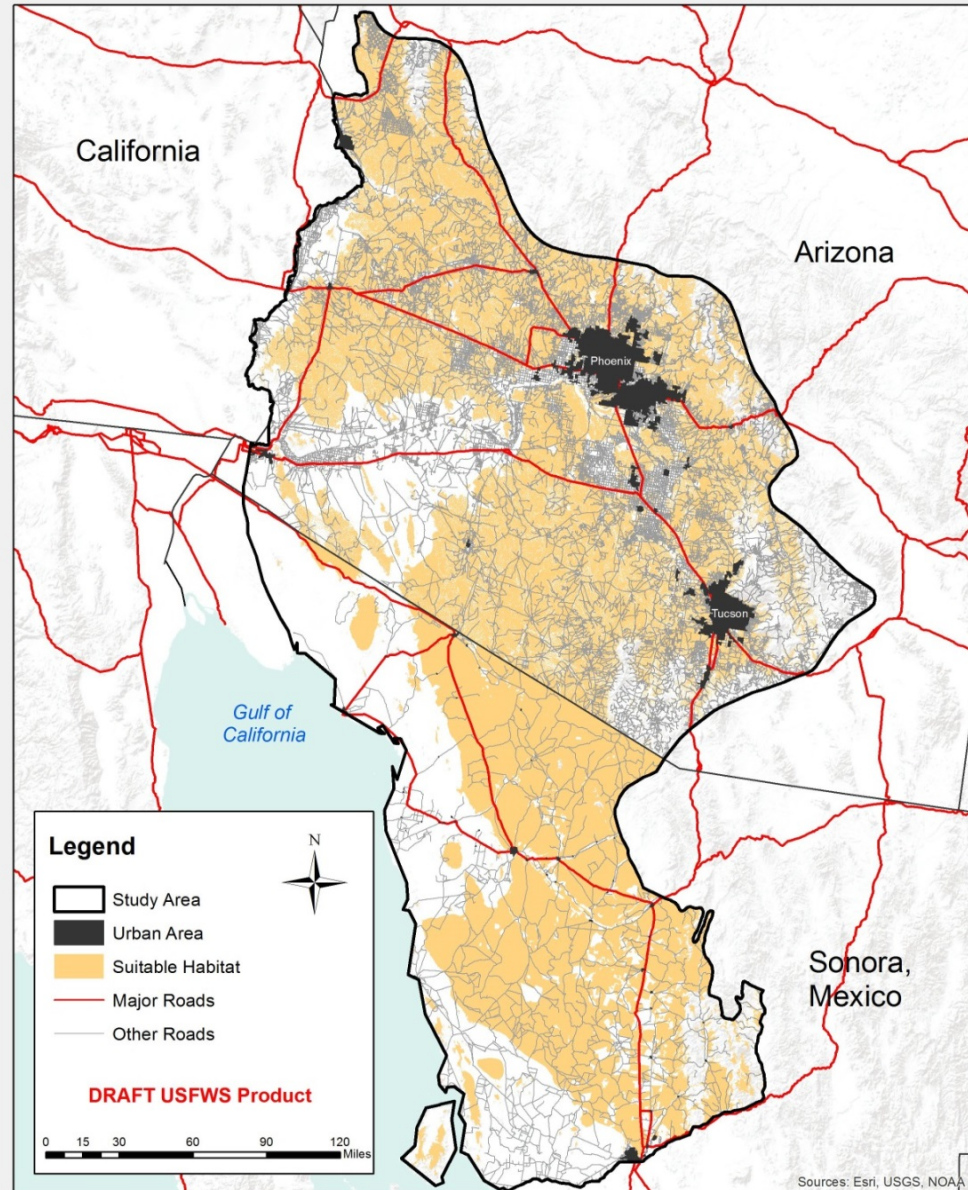
Predicted Suitable SDT Habitat Potentially Susceptible to Long-Term Urban Growth: May 2015



Habitat Fragmentation

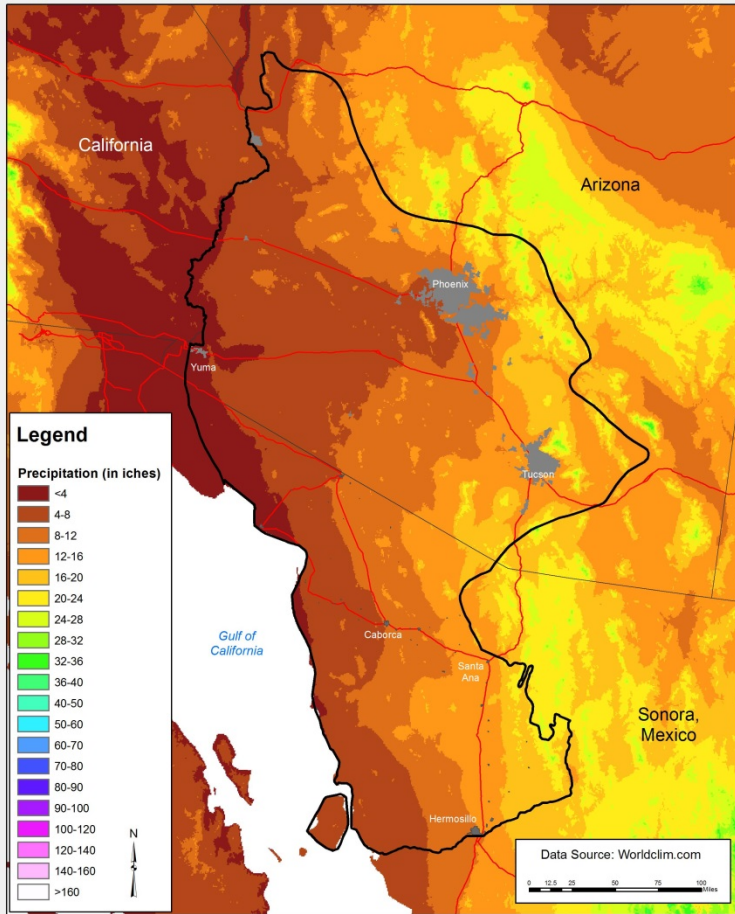


Road Network with Predicted SDT Suitable Habitat: May 2015

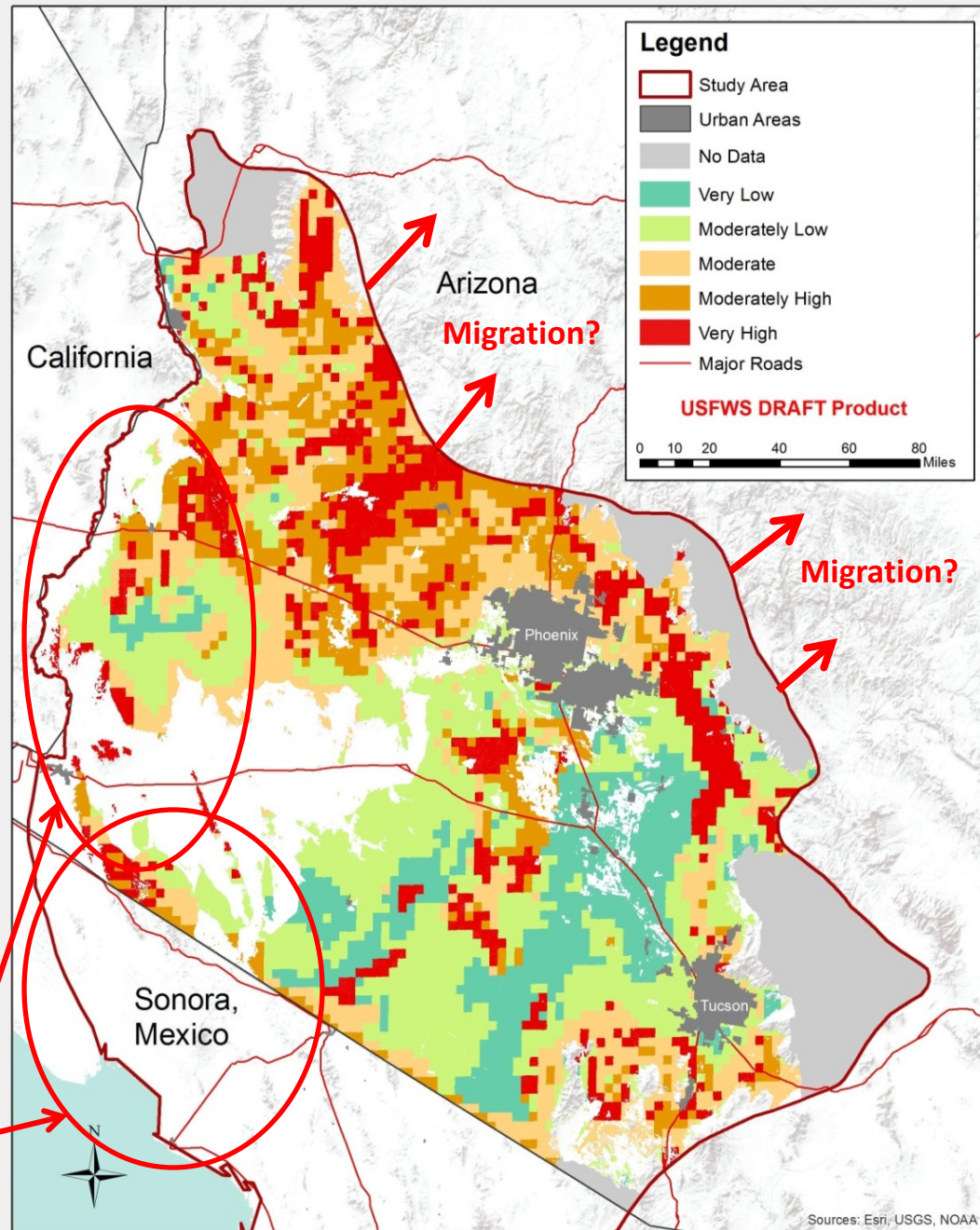


Climate Change/Drought

50 Year Normal (1950-2000), Annual Precipitation



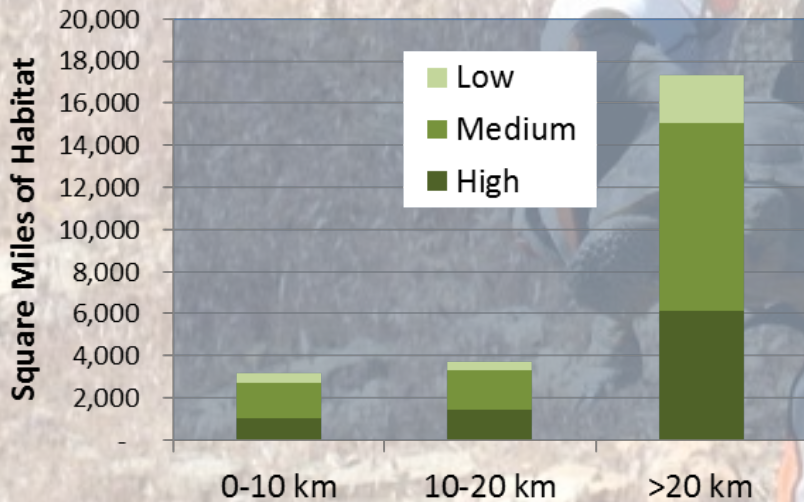
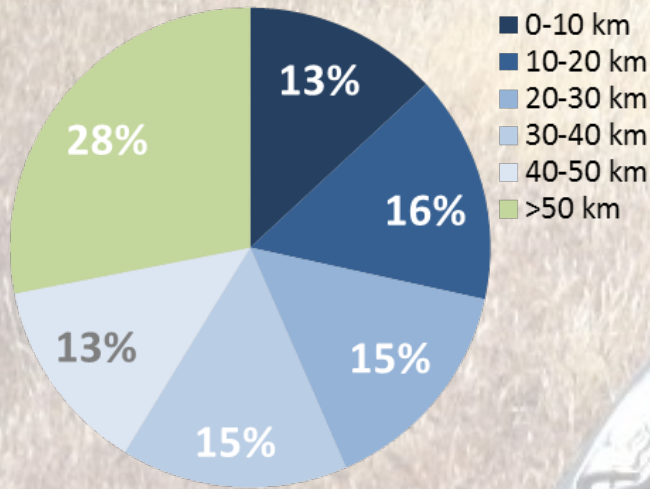
Predicted Suitable SDT Habitat with Long-Term Effects of Climate Change: May 2015



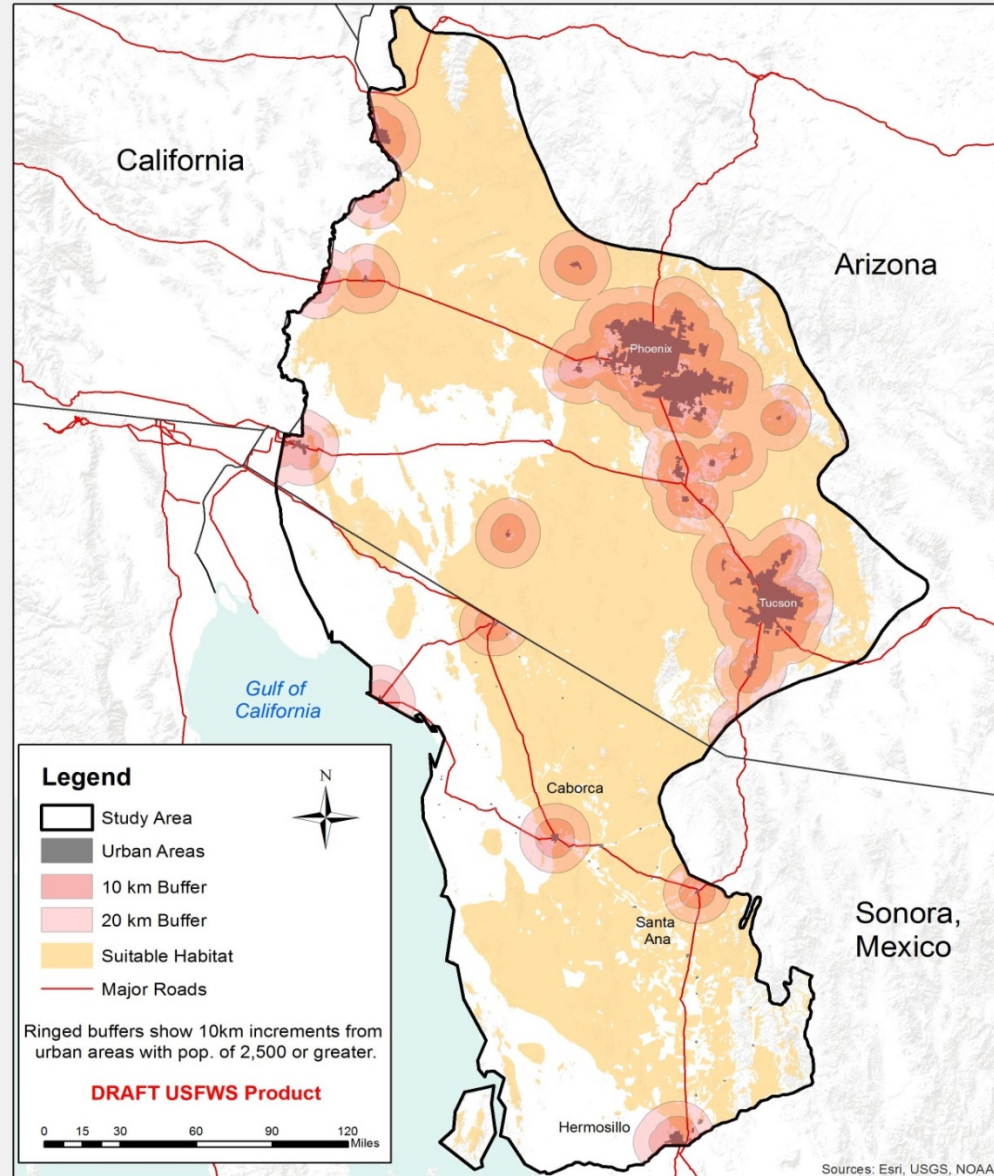
Hyper-arid Zones

The Urban-Edge Effect

All Suitable Habitats



Urban Influence; Predicted Suitable Habitat within 20 km: May 2015



Population Simulation Model Results

Time Horizon	Quasi-Extinction Risk
50 Years (within foreseeable future)	0%
75 Years (within foreseeable future)	0-3.3%
100 Years	0-8%
200 Years	7-32%

All documents available at:

http://www.fws.gov/southwest/es/arizona/Sonoran_Tort.htm

A large tortoise, likely a Galapagos tortoise, is shown resting on a large, dark rock. The tortoise's shell is dark brown with distinct concentric patterns on each scute. Its head and front legs are visible, showing a lighter brown color with scaly texture. The background consists of dry, scrubby vegetation and a rocky ground surface, suggesting a desert or semidesert habitat.

How can Mexico help?

Continue to monitor population trends.

Consider discouraging buffelgrass cultivation in desert scrub and semidesert grassland habitat and promote incentives to reverse its spread.

Binational Partnerships to Conserve Species of Common Concern

- Many species, actions, and partners under this item
- Support conservation efforts of land owners and managers through surveys and technical assistance (El Aribabi, Los Fresnos, Northern Jaguar Reserve, Alamos, Ajos-Bavispe, Pinacate, Alto Golfo, Islas del Golfo, San Lazaro, etc.)



Recovery of Sonoran Pronghorn

Endangered - México & U.S.

Support ongoing efforts to conserve the Sonoran Pronghorn in AZ and Sonora:

- Surveys and monitoring (U.S. and Mexico)
 - Captive breeding program in AZ
 - Establishment of new populations in AZ (Kofa NWR, Saucedá)
 - Genetics research (U.S. and Mexico)
 - Other conservation projects (e.g., forage enhancements, food plots, waters, livestock fence modification, conservation outreach, etc.)
 - Recovery Plan – binational Final Recovery Plan, 2nd revision available soon
-
- Partners: AGFD, FWS-CPNWR and Kofa NWR, CONANP, CEDES, DOD, NPS, many others



Ocelot Recovery

Endangered - México & U.S.

- Ocelot survey and monitoring in Arizona
 - Ongoing Citizen Science (University of AZ) and Federal Agency projects
 - 5 ocelots detected in Arizona since 2009; all males
 - 1 continues to be detected in the Huachuca Mountains
- Binational Recovery Plan nearly finalized



https://www.flickr.com/photos/usfws_southwest/sets/72157632294203147/

The screenshot shows a web browser window displaying a Flickr page. The browser's address bar contains the URL https://www.flickr.com/photos/usfws_southwest/sets/72157632294203147/. The Flickr page header includes the 'flickr' logo, navigation links for 'Sign Up', 'Explore', 'Create', and 'Upload', and a search bar. The main content area features a large background image of white flowers. The title 'Jaguar/Ocelot Survey' is prominently displayed, along with the text 'USFWS_Southwest' and a brief description: 'An adult male jaguar and three adult male ocelots have been photographed in two separate southern... See more'. To the right of the title, it shows '108 Photos' and '13,188 Views'. Below the title, there are icons for 'View all albums', 'Photos', and social sharing options. The main content is a grid of six photographs, each with a 'Covert' label and a timestamp. The central photograph in the grid is titled 'Male Jaguar' and includes the text 'USFWS_Southwest' and a star rating of 4. The bottom-most photograph has a URL: https://www.flickr.com/photos/usfws_southwest/8292419326/in/set-72157632294203147/.

Jaguar/Ocelot Survey
USFWS_Southwest
An adult male jaguar and three adult male ocelots have been photographed in two separate southern... See more
108 Photos 13,188 Views

View all albums Photos

Covert 05.11.2012 03:54:52

Covert 10.08.2012 20:02:08

Covert 11.11.2012 00:26:3

Covert 11.10.2012 22:43:58

Male Jaguar
USFWS_Southwest
4

Covert 10.25.2012 22:51:1

https://www.flickr.com/photos/usfws_southwest/8292419326/in/set-72157632294203147/

Plant Recovery

There are many rare plants of concern in the border region, including:

- *Lilaeopsis schaffneriana* ssp. *recurva* (Huachuca water umbel)
- *Coryphantha scheeri* var. *robustispina* (Pima pineapple cactus)
- *Echinomastus erectocentrus* var. *acunensis* (acuña cactus)
- *Spiranthes delitescens* (Canelo hills ladies' tresses)
- *Coryphantha robbinsorum* (Cochise pincushion cactus)
- *Graptopetalum bartramii* (Bartram stonecrop)
- *Pectis imberbis* (beardless chinchweed)
- *Pediomelum pentaphyllum* (Chihuahua scurfpea)

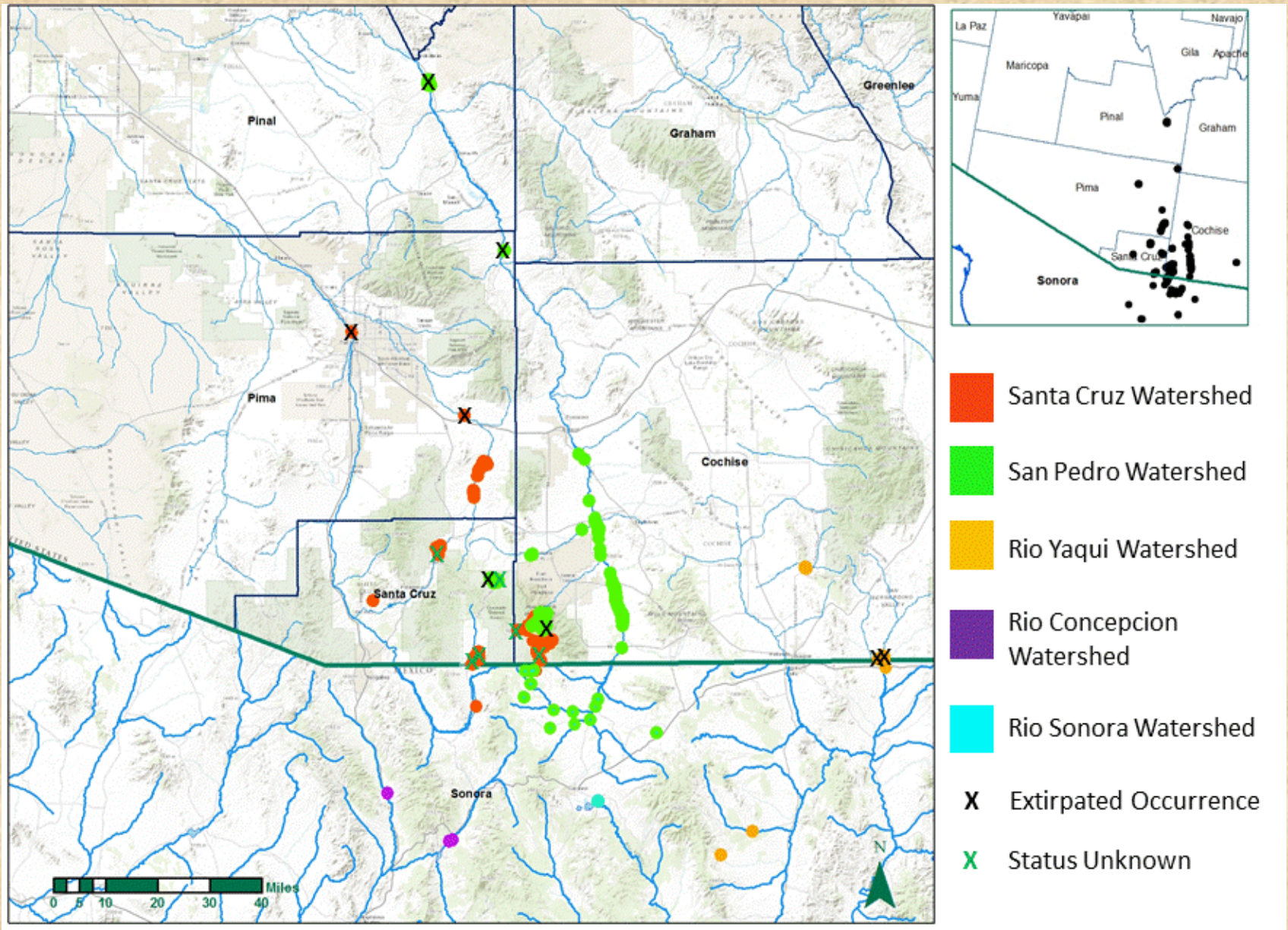


Please contact our Plant Ecologist , Julie_Crawford@fws.gov, with information about any of these or other rare plant species in Mexico.

Plant Recovery

- *Lilaeopsis schaffneriana* ssp. *recurva*
(Huachuca water umbel) – Endangered – U.S.;
Not listed – Mexico
 - ✓ A Draft Recovery Plan for the Huachuca water umbel was recently published
 - ✓ It will be peer reviewed (bi-nationally)
- Recovery actions identified include:
 - ✓ Encourage scientific study in the United States **and Mexico**.
 - ✓ Develop public outreach, collaborative partnerships, agency management plans, and agreements with private land owners in the United States **and Mexico** that encourage *L. schaffneriana* ssp. *recurva* conservation.





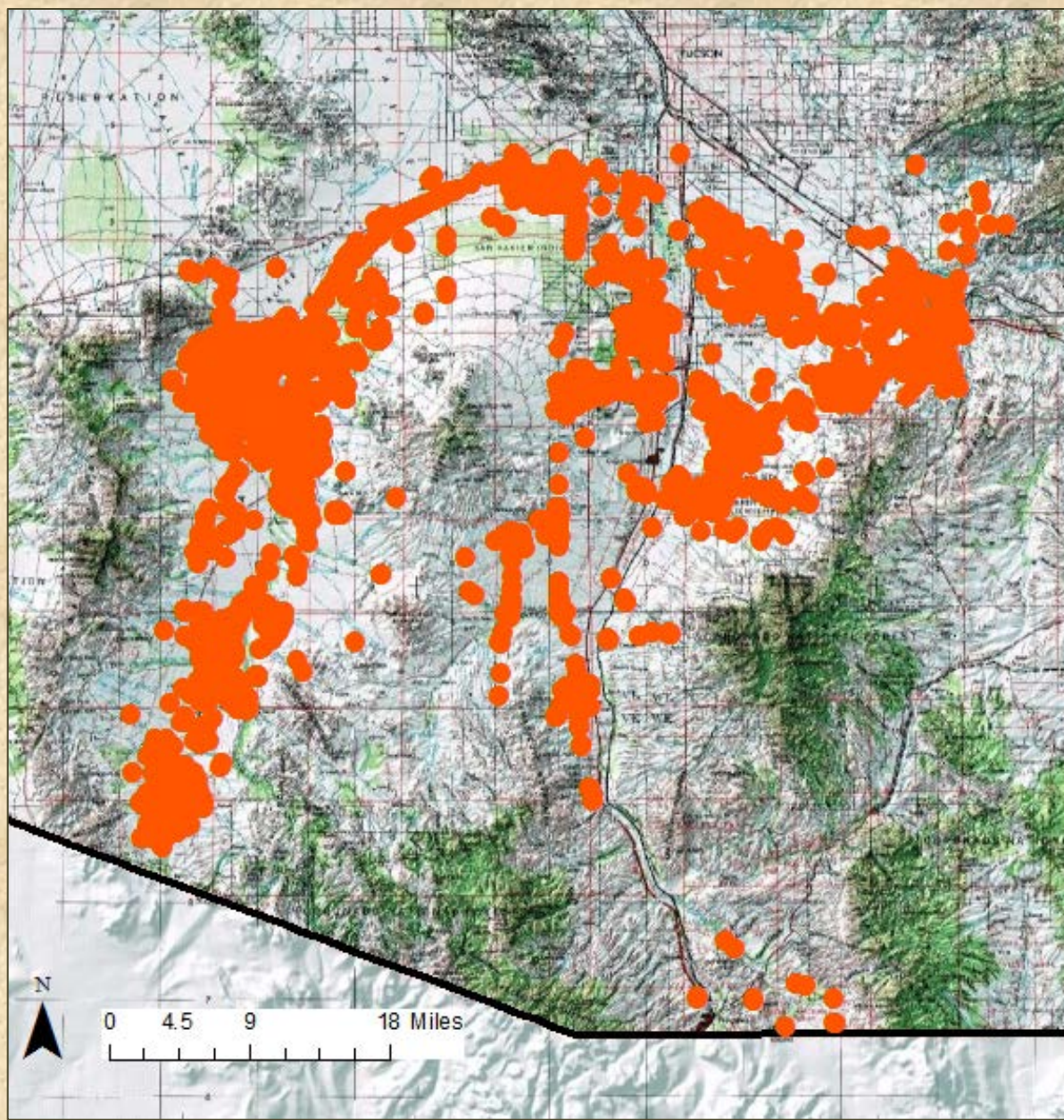
Range-wide distribution and status of *Lilaeopsis schaffneriana* ssp. *recurva* (Huahuca water umbel) by watershed in southern Arizona and northern Sonora, Mexico.

Plant Recovery

- *Coryphantha scheeri* var. *robustispina* (Pima pineapple cactus) – Endangered – U.S.; Not listed – Mexico
 - ✓ A Draft Recovery Plan for the Pima pineapple will be published later this year
 - ✓ We will solicit public and peer review (binational) on this plan



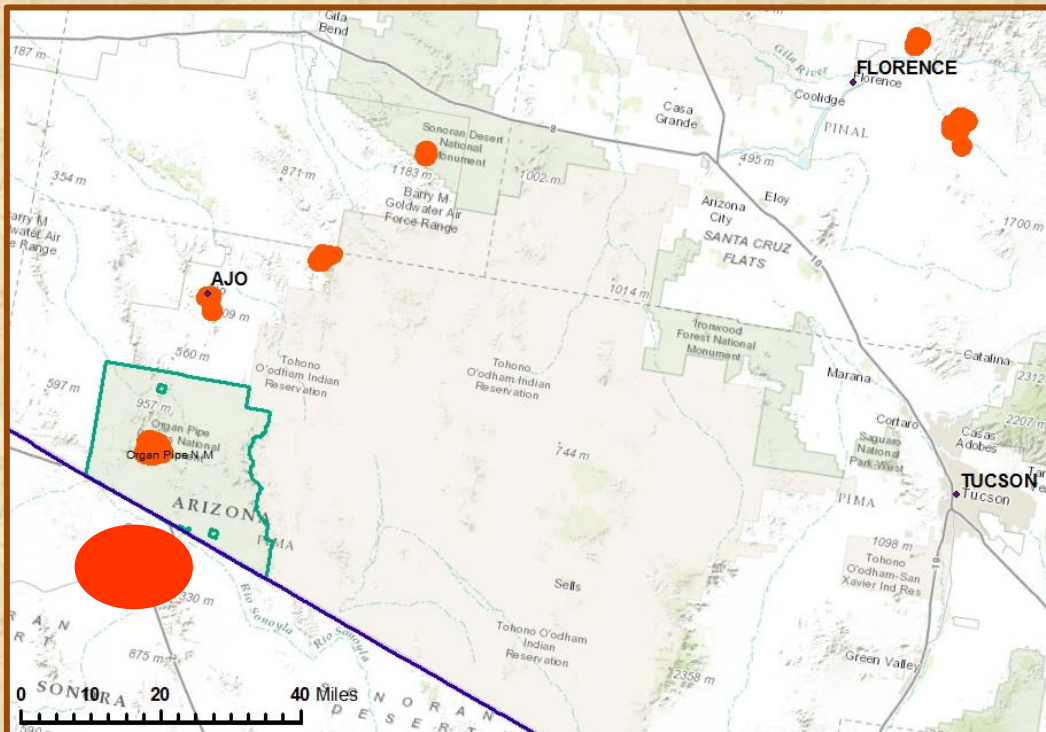
- Recovery actions identified include:
 - ✓ Restore functional habitat in the United States **and Mexico**.
 - ✓ Encourage scientific study ... in the United States **and Mexico**.
 - ✓ Develop public outreach, collaborative partnerships, and agreements with private land owners in the United States **and Mexico** that encourage *C. scheeri* var. *robustispina* conservation.



Range-wide distribution of *Coryphantha scheeri* var. *robustispina* (Pima pineapple cactus) in southern Arizona and northern Sonora, Mexico.

Plant Recovery

- *Echinomastus erectocentrus* var. *Acunensis* (acuña cactus) – Endangered – U.S. & Mexico
- ✓ A Draft Recovery Plan Outline for the acuña cactus will be started later this year.



- ✓ A critical habitat rule for this species will publish later in 2016.

Plant Recovery

- *Graptopetalum bartramii* (Bartram's stonecrop) (occurs in Sonora and Chihuahua)
 - *Pectis imberbis* (beardless chinchweed) (in Sonora)
 - *Pediomelum pentaphyllum* (Chihuahua scurfpea) (uncertain if in Mexico)
- ✓ Species status assessments will be started this year.
- ✓ Listing decisions will be started in FY 2017.
- ✓ We need information on these species.



Graptopetalum bartramii



Pectis imberbis



Pediomelum pentaphyllum

Conservation of Birds of Common Concern

Continue to support ongoing efforts to conserve:

- Ferruginous Pygmy-Owl (surveys, genetic research, captive breeding, nest boxes)
 - Ongoing litigation in U.S. related to ESA listing
 - Ongoing surveys and monitoring
- Masked Bobwhite (surveys, captive breeding, habitat conservation and restoration, etc.)

Partners: AGFD, SJV, BANWR, CEDES, Africam Safari Zoo, Monte Sonorense, Ranchos San Dario & Carrizo, CONANP, Instituto Tecnológico y de Estudios Superiores de Monterrey, Pronatura Noreste



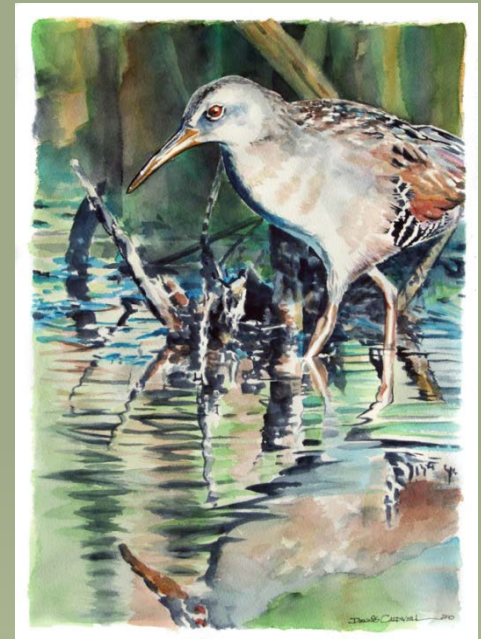
Yuma Clapper Rail *Rallus longirostris yumanensis*

- Species listed as threatened-Mexico (NOM-059)
- Subspecies listed endangered-U.S. (ESA)



Range includes:

- Colorado River, U.S.
- Colorado River Delta, Mexico
- Tres Rios Area, U.S.
- Salton Sea, U.S.
- Wildlife Refuges, U.S.

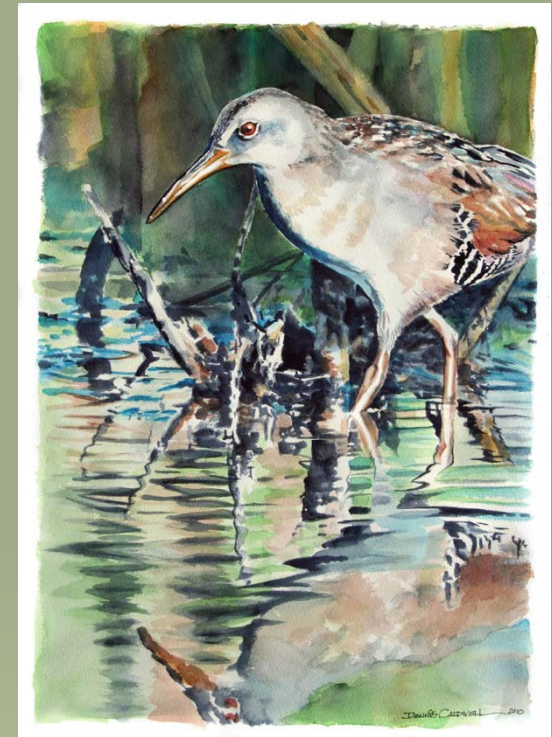


Yuma Clapper Rail, original artwork by Mr. Dennis Caldwell of Dennis Caldwell Design of Tucson, Arizona.



Yuma Clapper Rail

- Revised Recovery Plan – will address species throughout its range (U.S.-Mexico)
 - Summer 2016- Expected release of second draft for review.
- Interested in partnering with Mexico for the peer review of this document



Yuma Clapper Rail, original artwork by Mr. Dennis Caldwell of Dennis Caldwell Design of Tucson, Arizona.



Yuma Clapper Rail. USFWS Photo by Jim Rorabaugh

Golden Eagle (*Aquila chrysaetos*)

Threatened – Mexico; Not listed – U.S.

- Golden eagles (GOEA) are a globally distributed species. Within North America, this species occurs from Alaska and Canada to central Mexico, with nesting locations associated with rugged terrain.
- Golden Eagles are a SGCN species for AGFD, as well as species of conservation concern for the USFWS protected by the Bald and Golden Eagle Protection Act.
- Increased conservation actions and a better understanding of species population status in Mexico will significantly contribute to the overall management and conservation of the species.
- Southern Wings successes in 2015 included a capacity building workshop held in Leon, Guanajuato where Mexican biologists were trained in the deployment of satellite transmitters on GOEAs and other raptors.
- In 2016, AGFD will provide \$USD 8,750 for the completion of various GOEA monitoring activities.



Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*)

Conserving Thick-billed Parrots and Neotropical Migrants in Old-growth Forests of the Sierra Madre Occidental, Mexico

- The thick-billed parrot (TBPA) is listed as endangered by both Mexico and U.S.
- This project is designed to reduce threats in 5 protected areas which are priority regions for bird conservation: Tutuaca, Papigochi, Campo Verde, Madera and Mesa de Guacamayas.
- One objective is to conserve the TBPA populations occupying mixed conifer forests through:
 - active management (monitoring, increase reproductive success, disease research).
 - protecting nesting, drinking, roosting, or perching sites (through zoning, conservation easements, or other mechanisms).
- Conservation of mixed-conifer forests not only benefits TBPA, but also a suite of neotropical migrants which are a priority for various Western States including Arizona.



Partners: Pronatura Noroeste A.C., Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Ejidos (local communities), Comisión Nacional de Áreas Naturales Protegidas, Comisión Nacional Forestal, Fondo Mexicano Forestal, Arizona Game and Fish Department (AGFD), Unidad Forestal Galvan, Unidad Forestal Foresta, San Diego Zoo Global (SDZG), U.S. Fish and Wildlife Service (USFWS).

Thick-billed Parrot

Conserving Thick-billed Parrots and Neotropical Migrants in Old-growth Forests of the Sierra Madre Occidental, Mexico

- In 2015, Southern Wings accomplishments by Pronatura/ITESM:
 - conducted 80 surveillance transects on 649 ha to monitor for wildfires, diseased trees, and illegal cattle grazing; documented habitat characteristics surrounding 144 TBPA nesting-trees;
 - located 101 active TBPA nests and monitored and managed 23 nests;
 - radio-collared and tracked 2 TBPA individuals in Madera to better understand home ranges and identify foraging/drinking sites;
 - monitored 150 TBPA artificial nest boxes;
 - exchanged and provided technical information to 2 forest management outfits to incorporate best management practices to benefit migratory species and TBPAs;
 - Implemented the multi-partner “First Bird Festival of Madera City” attended by over 800 people.
- In 2016, AGFD will provide \$USD 7,500 to Pronatura/ITESM to continue monitoring and conservation activities within Protected Areas.
- USFWS and AGFD offer assistance to Mexican partners in reviewing funding proposals for work in Mexico that support recovery strategies from PACE and in implementing actions from 2014 bi-national workshop.



Status of Western Yellow-billed Cuckoos (*Coccyzus americanus*) in Sonora, Mexico



Partners: Universidad Estatal de Sonora, Arizona Game and Fish Department, Southern Sierra Research Station (SSR), Reserva Monte Mojino-REMM (Nature and Culture International, Naturaleza y Cultura Sierra Madre, A.C., and USFWS

- The western Yellow-billed Cuckoo was listed as Threatened in 2014 (under ESA; not listed under NOM-059).
- Cuckoos (YBCU) declined in the western U.S. within the last 100 years due to habitat loss, largely caused by changes in water management.
- Conservation status of YBCU must include the entire species' range, including northern Mexico.
- This project will document presence and distribution of YBCU in Sonora to better assess the species' conservation status.

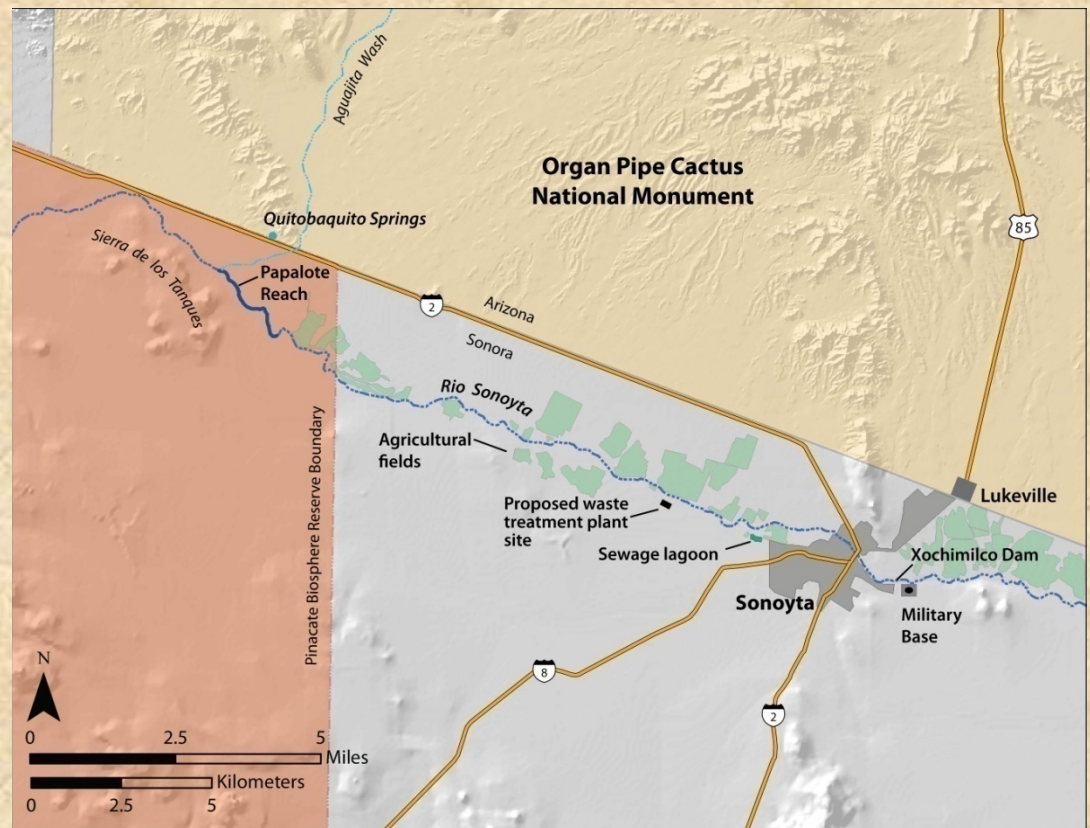
Status of Western Yellow-billed Cuckoos in Sonora, Mexico

- In 2015, Southern Wings accomplishments:
 - Surveyed 16 sites on 5 different rivers in Sonora.
 - Each site surveyed twice.
 - Survey period 1: 162 Yellow-billed Cuckoo detections
 - Survey period 2: 129 Yellow-billed Cuckoo detections.
 - Yellow-billed Cuckoos likely breeding in these riparian drainages.
- In 2016 AGFD will provide \$USD 8,750 to:
 - Identify additional sampling sites with a focus on non-riparian habitat.
 - Survey known and suspected YBCU locations using USFWS call playback protocol.
 - Resurvey 1/3 of the sites surveyed in 2015.
 - Characterize YBCU habitat through photographic documentation and rapid vegetation assessments.
 - Compare results across sites and years.



Conservation of the Imperiled Species of the Río Sonoyta

- **Sonoyta mud turtle** (Endangered – México, Candidate – U.S.)
- **Rio Sonoyta pupfish** (Endangered – México, Endangered – U.S.)
- **longfin dace** (Threatened – México, None – U.S.)



Threats to Río Sonoyta

- Groundwater withdrawal
- Invasive exotic species currently present
- Species that could be introduced
- Unmet infrastructure needs (e.g., modern sewage treatment facilities)
- Pollutants, Trash



Mosquito Fish



Sonoyta Sewage Lagoon



Río Sonoyta

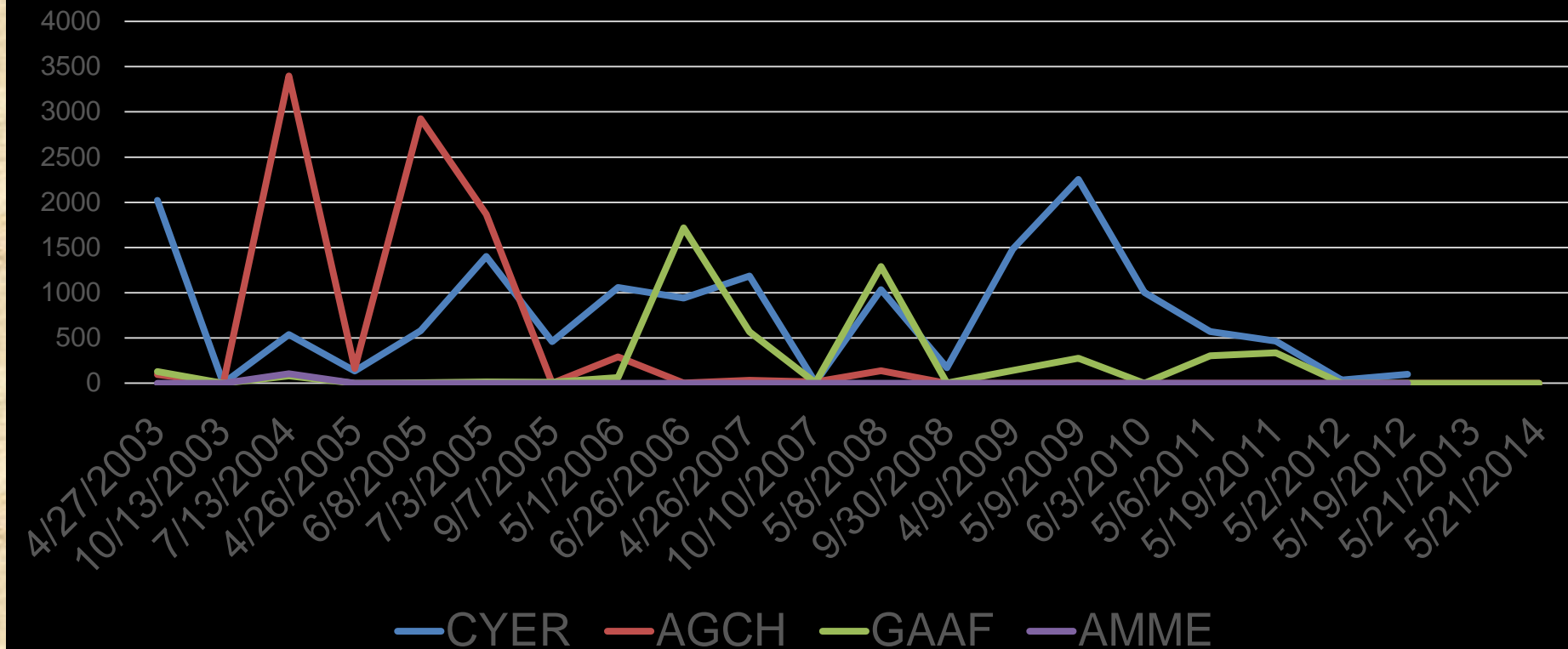


Río Sonoyta

P. Rosen

Fishes

Count per specimens/species Sonoyta River



- AGCH: *Agosia chrysogaster*; CYER: *Cyprionodon eremus*; GAAF: *Gambusia affinis*; AMME: *Ameiurus melas*

Conservation of the Imperiled Species of Río Sonoyta

On-going projects:

- Monitor populations of mud turtle, pupfish, and longfin dace in the Rio Sonoyta and Quitovac springs
 - Longfin dace not found in Rio Sonoyta since 2008, presumably due to low water
 - 2 pupfish found in 2013
 - Annual monitoring continues on the Rio Sonoyta



Conservation of the Imperiled Species of Río Sonoyta

On-going projects:

- Establish longfin dace refuge at CETMAR high school in Puerto Penasco - under construction.
- Conduct outreach about the importance of Rio Sonoyta
 - COBACH (high school in Sonoyta) currently conducting outreach in Sonoyta (website, flyers, Facebook, curriculum, presentations)



Conservation of the Imperiled Species of Río Sonoyta

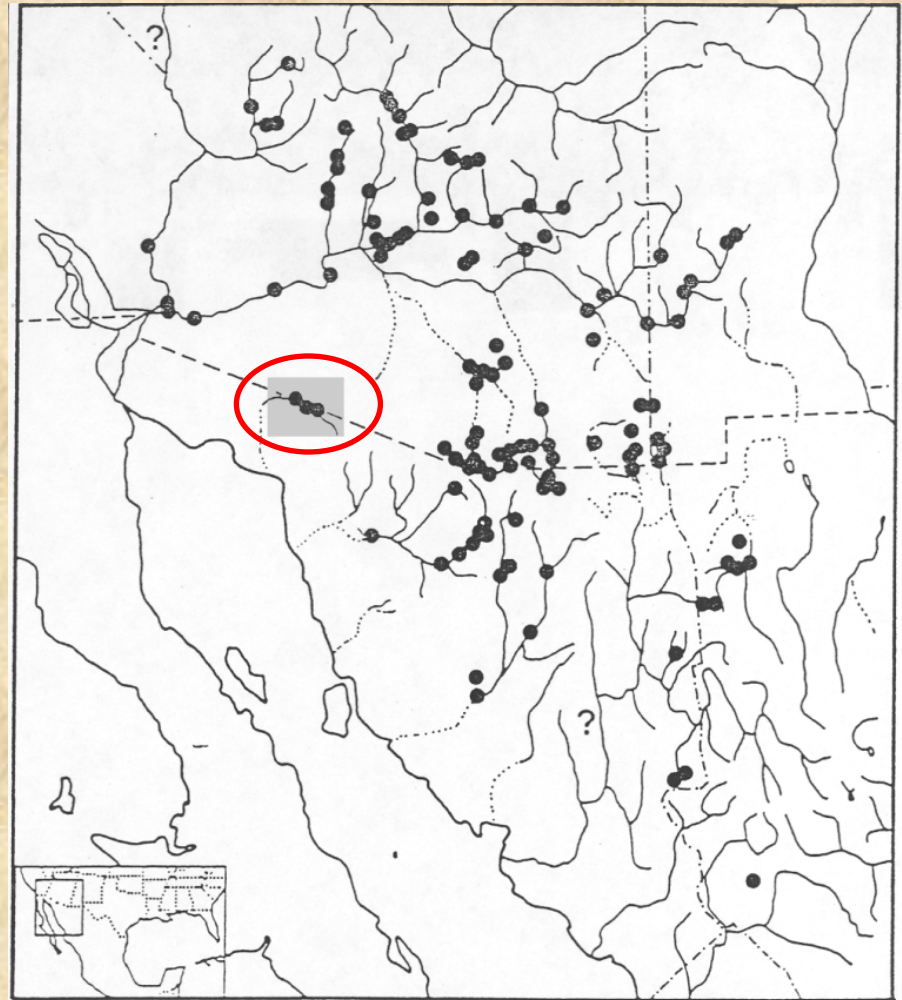
On-going projects:

- Work with the municipal government of Sonoyta, Pinacate, EPA, BECC, and others to ensure that the new wastewater treatment facility in Sonoyta is compatible with species needs
- Work with Sonoyta and Pinacate to transfer mud turtles from the decommissioned wastewater treatment facility to new facility
- The USFWS is conducting a species status assessment to determine if listing under the Endangered Species Act is warranted.
- Work with Quitobaquito/Rio Sonoyta Work Group to finalize conservation agreement.



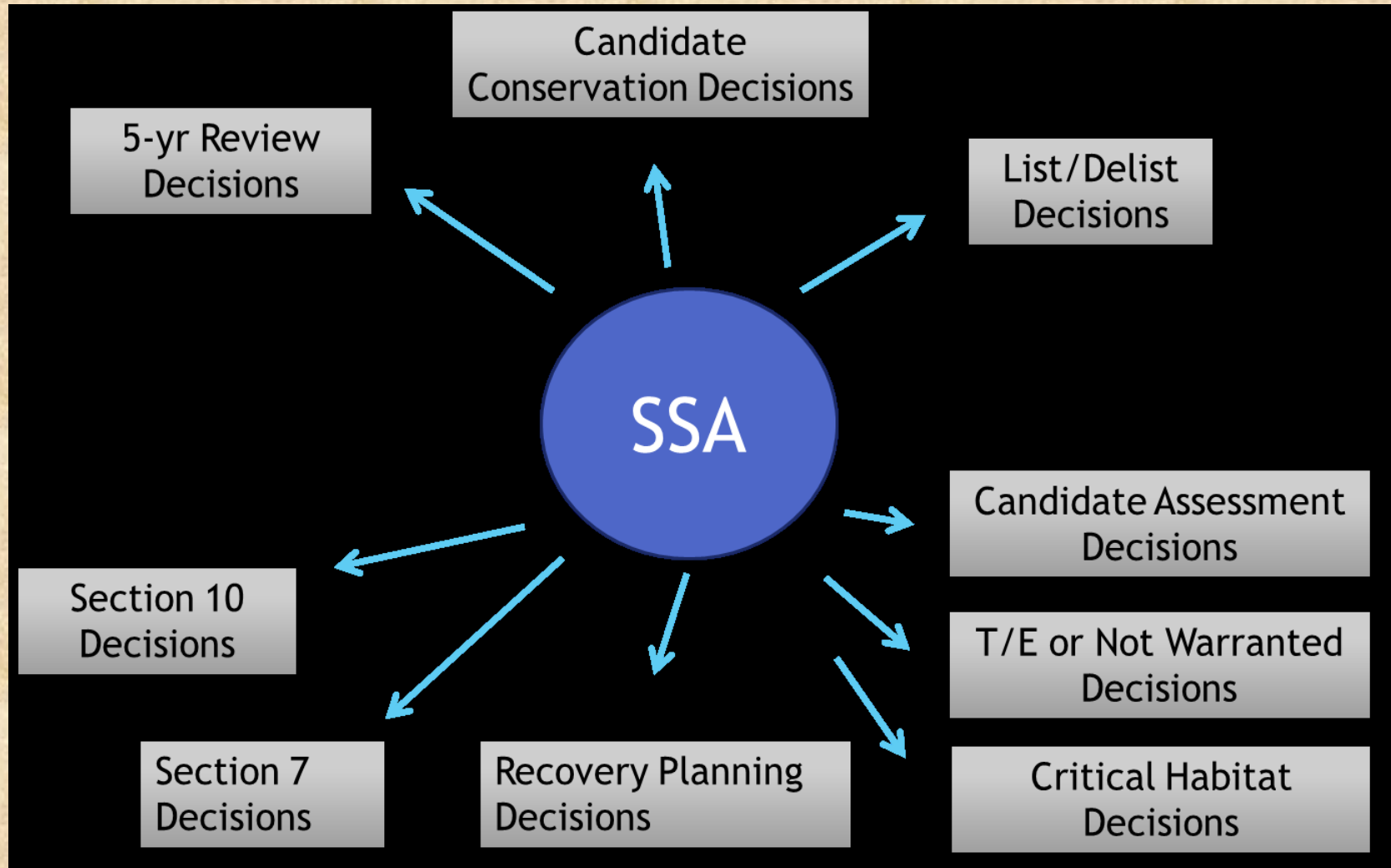
Partners: Pinacate Biosphere Reserve, CEDO, COBACH, AGFD, UofA, EPA, ISDA, CETMAR

Conservation of the Imperiled Species of Río Sonoyta – Sonoyta mud turtle



Range of *Kinosternon sonoriense*. USFWS conducting species status assessment
K.s. longifemorale subspecies in red oval.

Conservation of the Imperiled Species of Río Sonoyta – Sonoyta mud turtle



Native Aquatic Vertebrates of the Rio Yaqui Basin

- Rio Yaqui Basin – high level of endemic and/or endangered fish and other aquatic vertebrate species
- Hendrickson et al. conducted a fish survey at 90 sites in the Rio Yaqui basin in 1978
- Limited surveys and significant anthropogenic change since 1978, including expansion of non-natives



USFWS, Marty Jakle



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Native Aquatic Vertebrates of the Rio Yaqui Basin

- Seeking funding to resurvey Hendrickson's sites
- Minckley surveys Cuenca los Ojos properties
- Collect status and distribution data on native and non-native aquatic vertebrates
- Ensure integration of this project with the Rio Yaqui Conservation Plan (CONANP, BIDA, Naturalia, TNC)
- Yaqui catfish being moved to Kansas hatchery to attempt spawning

Partners: UNISON, U of A, Naturalia, AGFD, NMFWCO, AZFWCO, CEDES, SI, SBNWR, U of Texas, Cuenca de los Ojos, USGS, SEMARNAT, DGVS, CONANP, IAS



USFWS, Marty Jakle

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We request Trilateral Committee endorsement for our ongoing and future activities to conserve and recover shared species of common concern



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Questions?