



Conservation Assessment and Mapping Products for Río Grande Fishes



Acknowledgements

Southern Rockies Landscape Conservation Cooperative

Stephanie L. Vail-Muse (Desert Fish Habitat Partnership)

Therese Thompson (Western Native Trout Initiative)

Dan Dauwalter (Trout Unlimited)

Kirk Patton (New Mexico Department of Game and Fish)

Great Plains Landscape Conservation Cooperative

Great Plains Fish Habitat Partnership

Josh Perkin (Texas A&M University)

Gary Garrett (University of Texas at Austin)



Foundational Works

Systematic Conservation Planning

Knight et al. (2008), Margules & Pressey, (2000)

Native Fish Conservation Area (NFCA) Approach:

Williams et al. (2011), Dauwalter et al. (2011)

Landscape – Fish interaction:

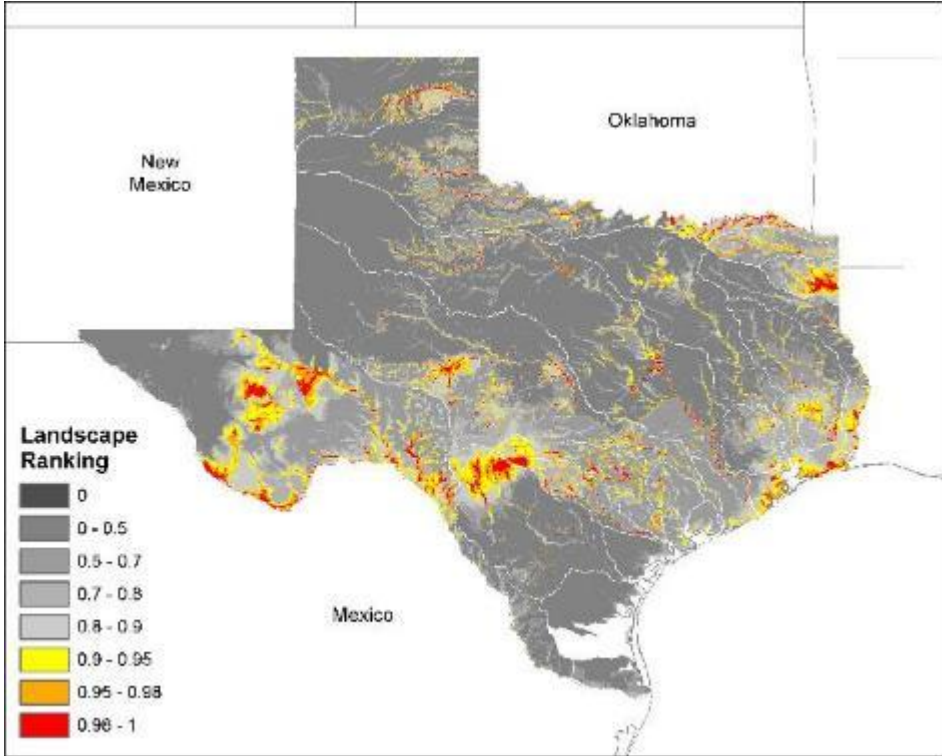
Perkin et al. (2014, 2015), Angermeier & Hitt (2005, 2012), Wilde et al. (TTU), Garrett (UT)

Texas Conservation Action Plan

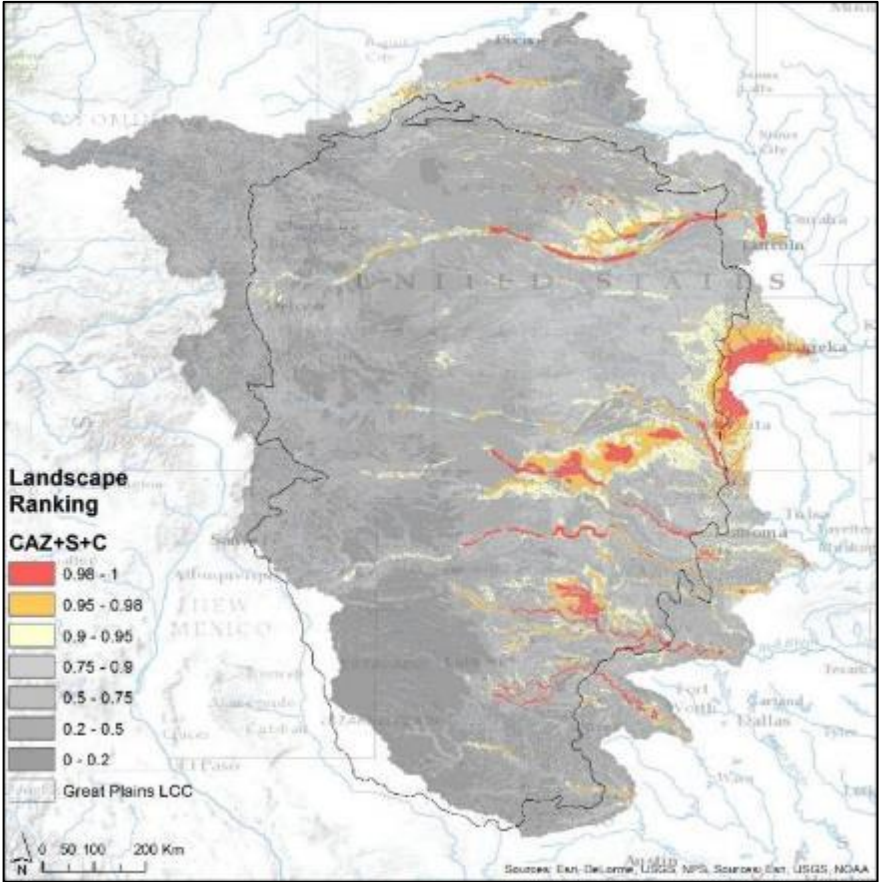
Texas Parks and Wildlife Department (2012)

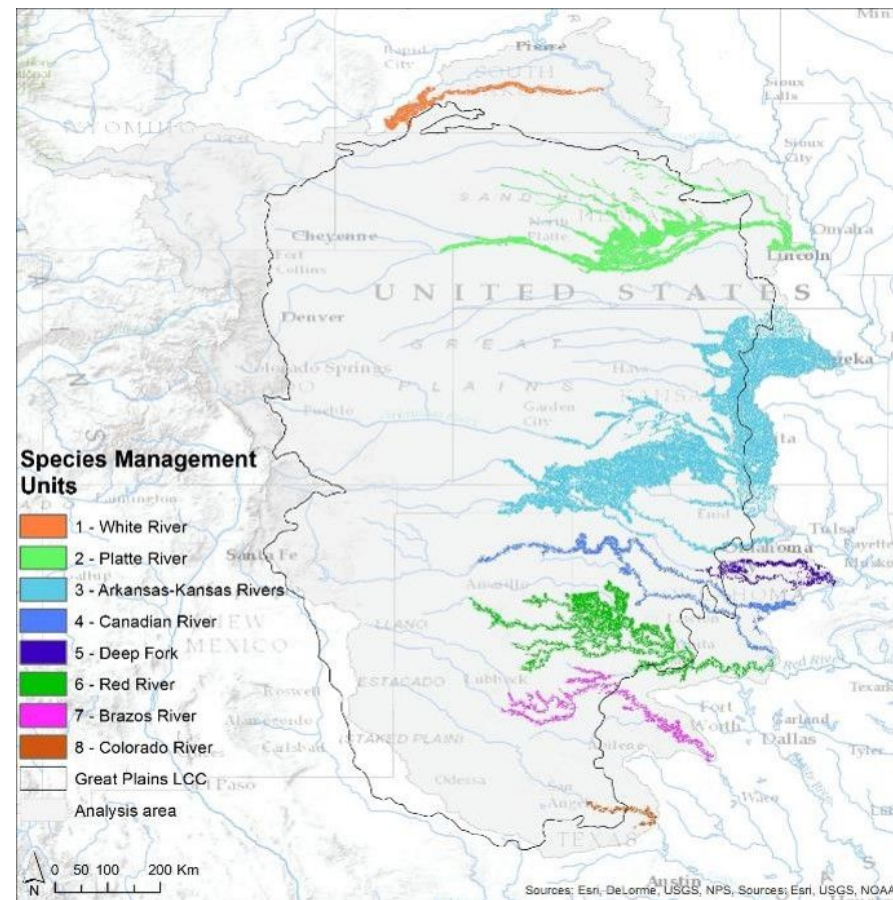
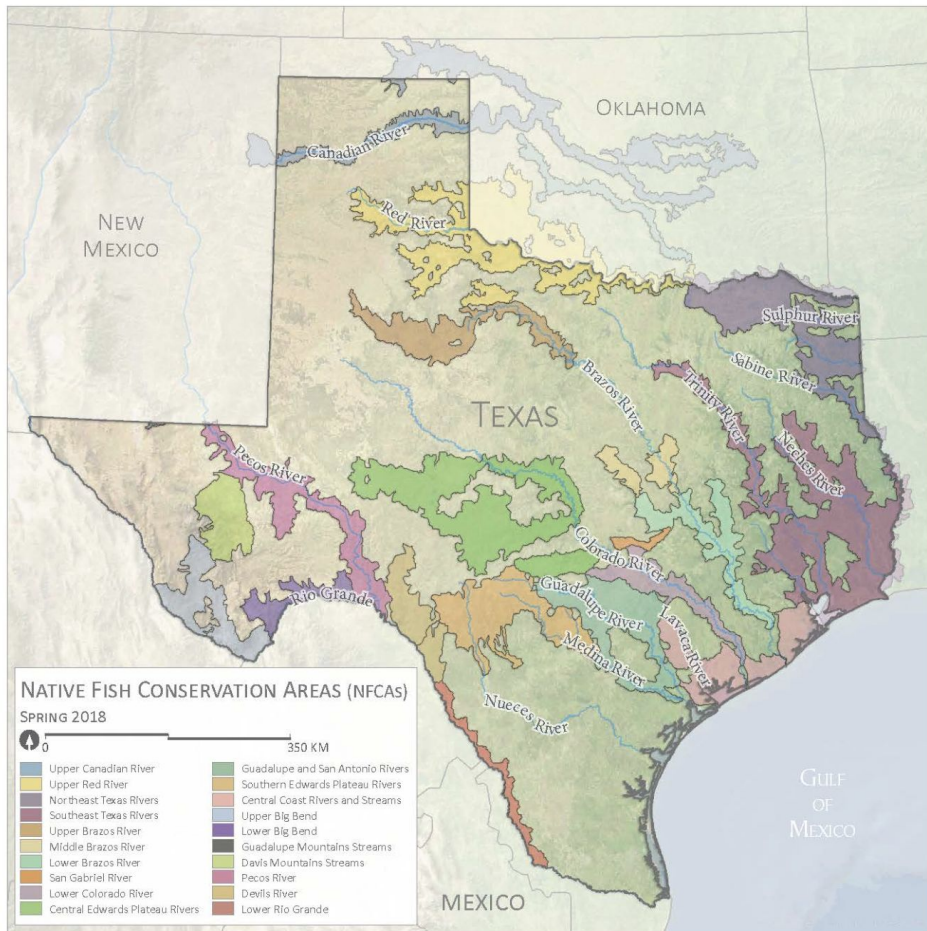
New Mexico Department of Game and Fish Management Plan

Texas



Great Plains





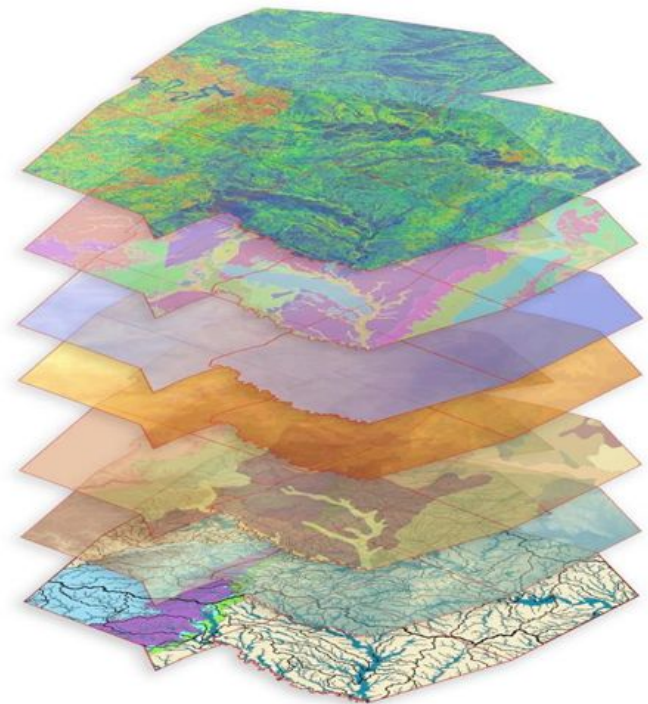
Hendrickson, Dean A., Gary P. Garrett, Ben J. Labay, Adam E. Cohen, and Melissa Casarez. 2016. "Year 1 Report for 'Conserving Texas Biodiversity: Status, Trends, and Conservation Planning for Fishes of Greatest Conservation Need.'" grant TX T-106-1 (CFDA# 15.634), Contract No. 459125 UTA14-001402). State Wildlife Grant Program. Austin, Texas, U.S.A.: Texas Parks and Wildlife Department. <http://hdl.handle.net/2152/32905>. doi:10.15781/T24W9P.
<https://repositories.lib.utexas.edu/handle/2152/32905>.

Labay, Ben J., and Dean A. Hendrickson. 2014. Final Report: Conservation assessment and mapping products for GPLCC priority fish taxa. Submitted to the United States Department of Interior, Fish & Wildlife Service, Great Plains Landscape Conservation Cooperative; The University of Texas at Austin, December 31st, 2014. (<http://hdl.handle.net/2152/27744>).

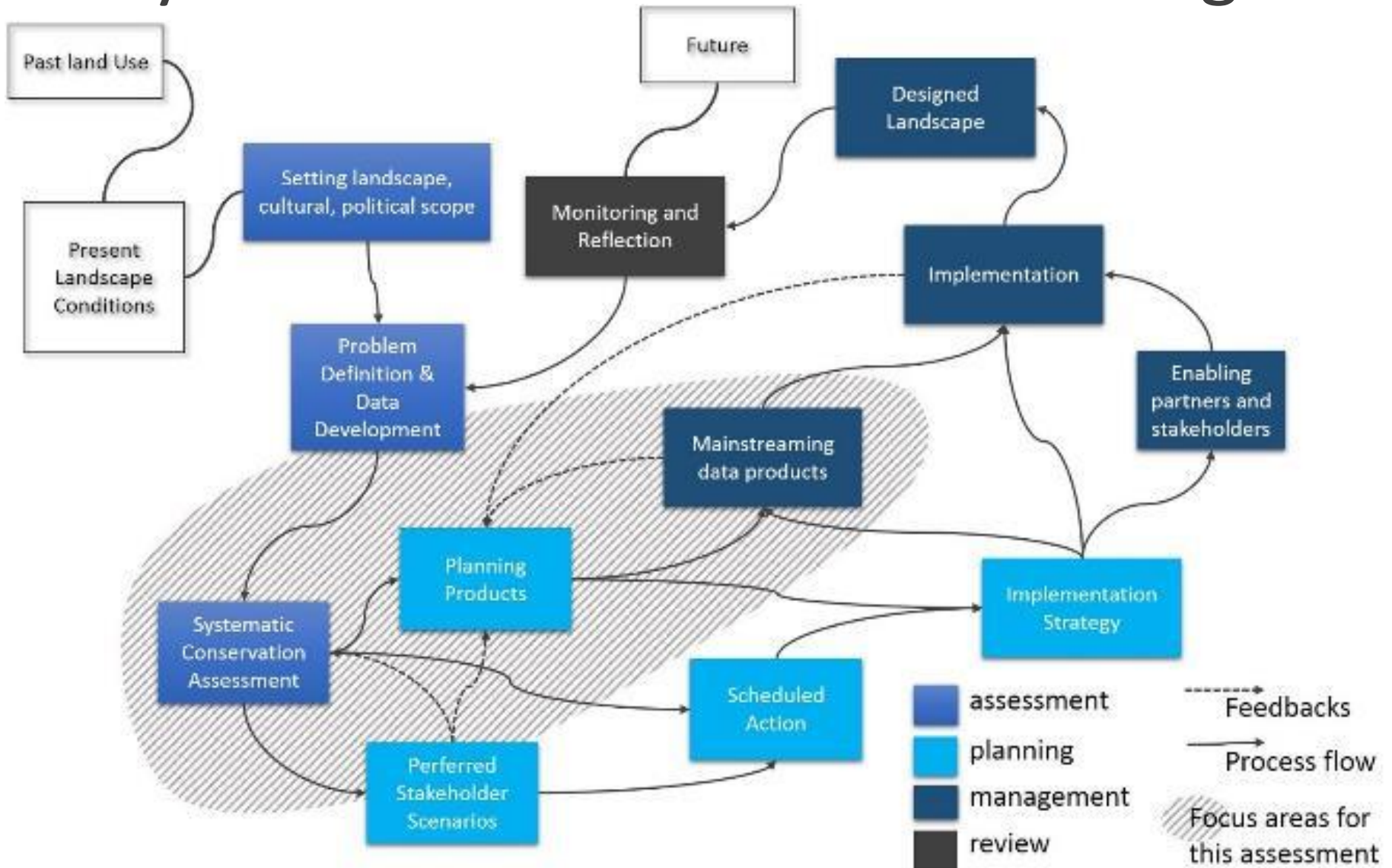
Statement of the problem

Steep declines in aquatic biodiversity

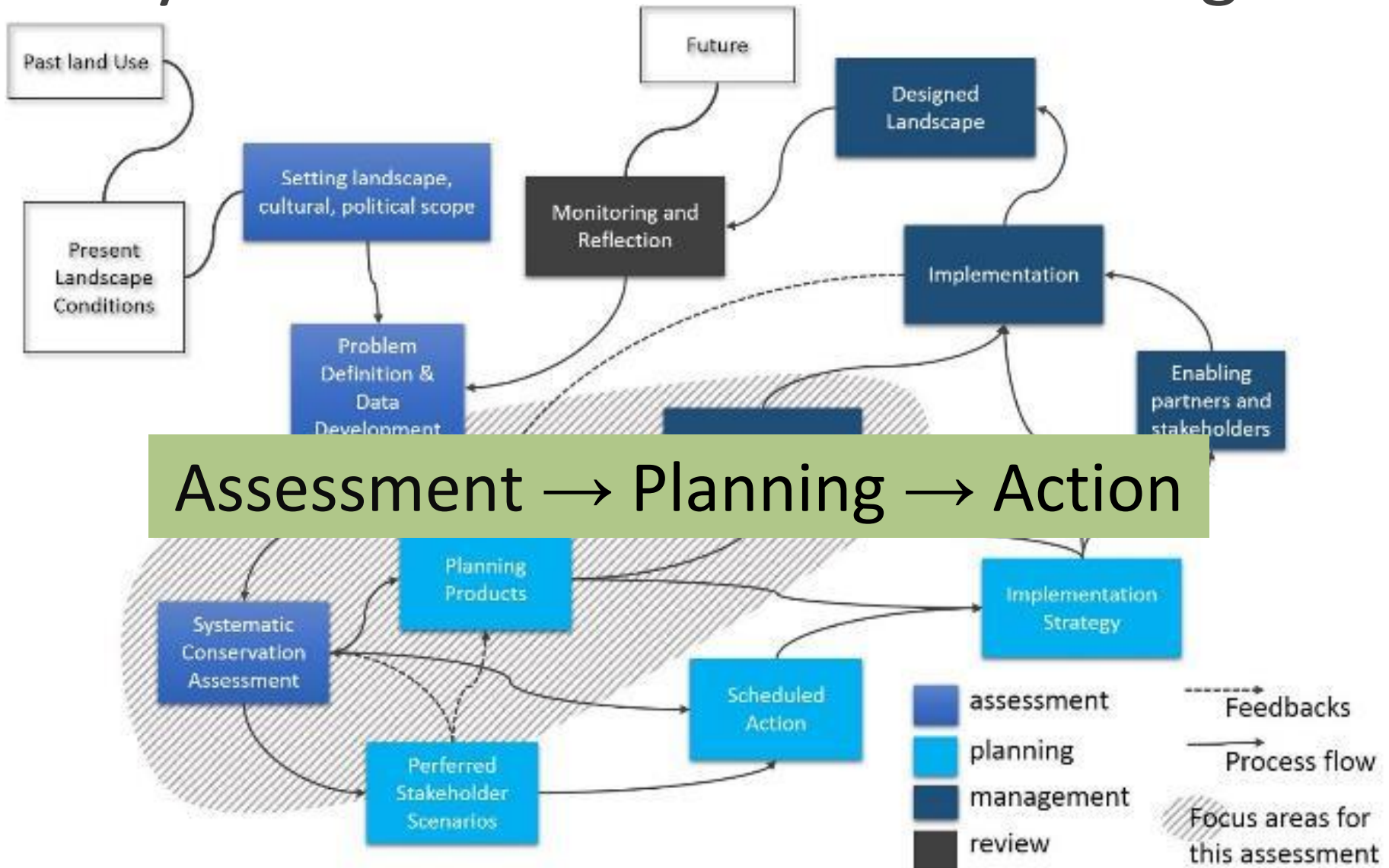
- Need for Conservation Science at broad scales while accounting for species and human needs
- Systematic Conservation Planning



Systematic Conservation Planning



Systematic Conservation Planning



Gaps in conservation*

PLANNING GAP

Where to effectively/efficiently implement action considering:

- Multi-species landscape
- Inter/intra-jurisdictional decision making
- Fragmentation/connectivity & habitat condition

IMPLEMENTATION GAP

Knowing-Doing Gap: With ISSUES, how do we ACT?

- Mechanisms?
- Partners?
- How to facilitate?

Primary Datasets

Fish data & models:

- Cohen, Adam E., Ben J. Labay, Dean A. Hendrickson, Melissa Casarez, and Sahotra Sarkar. 2013. Final Report: Data provision and projected impact of climate change on fish biodiversity within the Desert LCC. Submitted to United States Department of the Interior, Bureau of Reclamation, Desert Landscape Conservation Cooperative; Agreement Number: R11AP81527. Austin, Texas: University of Texas at Austin, November 30, 2013. <http://hdl.handle.net/2152/22475>
- Hendrickson, Dean A., and Adam E. Cohen. 2015. "Fishes of Texas Project Database (Version 2.0)" doi:10.17603/C3WC70. <http://www.fishesoftexas.org>

Landscape data:

- Arthur R. Cooper and Dana M. Infante. 2017 Dam metrics representing stream fragmentation and flow alteration for the conterminous United States linked to the NHDPLUSV1. USGS Data Release <https://doi.org/10.5066/F7FN14C5>
- McKay, L., Bondelid, T., Dewald, T., Johnston, J., Moore, R., and Rea, A., "NHDPlus Version 2", 2012 <http://www.horizon-systems.com/nhdplus/>
- National Fish Habitat Assessment (ADD CITATION)
- State Wildlife Action Plans (ADD REFERENCES TO TX, NM, CO PLANS)



METHOD OUTLINE / PRODUCTS

1. Spatial prioritizations considering species-specific responses to fragmentation and habitat condition (40 fishes)
2. Proposed tiered management landscape (NFCAs)

Project Tasks:

1. Identify and facilitate partners and area experts to coordinate and approve species lists, species priority weighting, and assessment parameterization.
2. Species and environmental data collection and normalization. Using products from Cohen et al. 2013, this will expand to cover gaps in species data, and necessary environmental coverages.
3. Assessment tool build, parameterization, and testing. Multiple iterations will be performed to ensure initial parameterization choices and data inclusion produce intuitive results. These preliminary model runs will be passed among project personnel and collaborators for comment and approval.
4. Final model build.
5. Report on and Mainstream product deliverables. A final report will be provided to project partners, and necessary presentations and webinars will be provided to disseminate and discuss results. Partner and stakeholder feedback will be documented to provide a roadmap for assessment augmentation.

Table 1. Gantt chart of major project tasks for a 12 month period.

Major project task:	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Dec	Jan	Feb	Mar
1												
2												
3												
4												
5												

** A network of watersheds where management emphasizes conservation and restoration for long-term persistence of native fishes and other aquatic species and allows compatible uses.*

** A national NFCA system would include a network of watersheds where resource management would emphasize conservation and restoration for long-term viability of native fish communities, while identifying and allowing compatible uses.*



“Native Fish Conservation Area*”

- Williams et al. 2011, Dauwalter et al. 2011
- 1. HABITAT:** The protection and, if necessary, restoration of watershed-scale processes that create and maintain freshwater habitat complexity, diversity and connectivity.
 - 2. SPECIES:** The area should nurture all life stages of the fishes and other aquatic organisms being protected
 - 3. POPULATIONS:** The area should include a large enough watershed to provide for long-term persistence of native fish populations.
 - 4. MANAGEMENT:** Groups supporting the NFCA should have the capabilities to provide land and water management within the basin that is sustainable over time.

RIO GRANDE STUDY AREA US FOCUS

FALL 2017



-  WATERSHED BOUNDARY
-  ADMINISTRATIVE BOUNDARY
-  INTERNATIONAL BOUNDARY

PROJECTION: NORTH AMERICA LAMBERT CONFORMAL CONIC





Zonation (Moilanen et al. 2005)

1. Well supported & implemented
2. Produces landscape ranking
3. Accounts for various 'features'
 - I. fragmentation & connectivity
 - II. habitat condition
 - III. varying species conservation status
 - IV. 'core area' for all species VS 'bang-for-buck' perspective (representation VS richness)



Zonation (Moilanen et al. 2005)

Default = equal weighting of all species

Our system = expert opinion + iterations

Resulted in three ranking systems:

1. Natureserve lowest state status (based on highest level of threat)
 2. Natureserve global status (Faber-Langendoen et al. 2009)
 3. The Desert Fish Habitat Partnership 2015 rank (DFHAP 2015)
- Rankings had to be converted to Zonation Compatible Ranks (1-6)

Species Conservation Status



Species Scientific Name	NS Global	NS Lowest State	TX	NM	CO
<i>Astyanax mexicanus</i>	G5	NM-S2	-	S1	-
<i>Catostomus plebeius</i>	G3G4	CO-S1	-	S2	-
<i>Ctenogobius claytonii</i>	GNR	TX-S1	S1	-	-
<i>Cycleptus elongatus</i>	G3G4	NM-S1	S3	S1	-
<i>Cyprinella proserpina</i>	G3	TX-S2	S2	-	-
<i>Cyprinodon bovinus</i>	G1	TX-S1	S1	-	-
<i>Cyprinodon elegans</i>	G1	TX-S1	S2	-	-
<i>Cyprinodon eximius</i>	G3G4	TX-S1	S1	-	-
<i>Cyprinodon pecosensis</i>	G1	TX,NM-S1	S1	S1	-
<i>Dionda argentosa</i>	G2	TX-S2	S2	-	-
<i>Dionda diaboli</i>	G1	TX-S1	S1	-	-
<i>Dionda episcopa</i>	G5	NM-S3	S1	-	-
<i>Etheostoma grahami</i>	G2G3	TX-S2	S2	-	SE
<i>Etheostoma lepidum</i>	G3G4	NM-S2	-	S1	-
<i>Gambusia gaigei</i>	G1	TX-S1	S1	-	-
<i>Gambusia krumholzi</i>	G1	TX-S1	S1	-	-
<i>Gambusia nobilis</i>	G2	NM-S1	S2	S1	-
<i>Gambusia senilis</i>	G3G4	TX-SX	SX	-	-
<i>Gambusia speciosa</i>	G3Q	TX-S3	-	-	-
<i>Gila pandora</i>	G3	TX-S1	S1	S2	SC
<i>Hybognathus amarus</i>	G1	TX-SX	SX	S1	-
<i>Hybognathus placitus</i>	G4	CO-SH	-	-	SE
<i>Ictalurus furcatus</i>	G5	NM-S2S3	-	-	-
<i>Ictalurus lupus</i>	G3	NM-S1	S2	S1	-
<i>Ictalurus sp</i>	G1G2	TX-S1S2	-	-	-
<i>Ictiobus bubalus</i>	G5	NM-S3	-	-	-
<i>Macrhybopsis aestivalis</i>	G3G4	NM-S2	-	-	-
<i>Moxostoma albidum</i>	G4	NMS1, TxS3	-	-	-
<i>Moxostoma austrinum</i>	G3	TX-S1	-	-	-
<i>Moxostoma congestum</i>	G4	NM-S1	-	S2	-
<i>Notropis amabilis</i>	G4	NM-SX	-	-	-
<i>Notropis braytoni</i>	G4	TX-S4	-	-	-
<i>Notropis chihuahua</i>	G3	TX-S2	S2	-	-
<i>Notropis jemezianus</i>	G3	NM-S2	-	S2	-
<i>Notropis simus pecosensis</i>	G2T2	NM-S2	SX	S1	-
<i>Oncorhynchus clarki virginalis</i>	G4T3	NM-S2	-	S3	SC
<i>Percina macrolepida</i>	G5	NM-S2	-	S1	-
<i>Platygobio gracilis</i>	G5	NM-S4	-	-	-
<i>Rhinichthys cataractae</i>	G5	TX-S2	-	-	-

Species Weights

Species Scientific Name	Species Common Name	DFHP Species Weight	NatureServe Global Species Weight	NatureServe State Species Weight	BQP Curve Type	BQP Radius (Cells)
<i>Astyanax mexicanus</i>	Mexican tetra	2	1	5	3	10
<i>Catostomus plebeius</i>	Río Grande sucker	4	2.5	6	4	50
<i>Ctenogobius claytonii</i>	Mexican goby	3*	1	6	1	10
<i>Cycleptus elongatus</i>	Río Grande Blue sucker	6	2.5	6	4	50
<i>Cyprinella proserpina</i>	Proserpine shiner	5	3	5	3	10
<i>Cyprinodon bovinus</i>	Leon Springs pupfish	3	5	6	3	10
<i>Cyprinodon elegans</i>	Comanche Springs pupfish	3	5	6	3	10
<i>Cyprinodon eximius</i>	Conchos pupfish	6	2.5	6	3	10
<i>Cyprinodon pecosensis</i>	Pecos pupfish	6	5	6	3	10
<i>Dionda argentosa</i>	Manantial roundnose minnow	5	4	5	3	10
<i>Dionda diaboli</i>	Devils river minnow	2	5	6	3	10
<i>Dionda episcopa</i>	Roundnose minnow	2	1	4	3	10
<i>Etheostoma grahmi</i>	Río Grande darter	5	3.5	5	3	10
<i>Etheostoma lepidum</i>	Greenthroat darter	4	2.5	5	3	10
<i>Gambusia gaigei</i> (clarkhubbsi)	San Felipe gambusia	6	5	6	1	1
<i>Gambusia krumholzi</i> (gaigei)	Big Bend gambusia	3	5	6	1	1
<i>Gambusia nobilis</i>	Pecos gambusia	3	4	6	1	1
<i>Gambusia senilis</i>	Blotched gambusia	6	2.5	3	1	1
<i>Gambusia speciosa</i>	Tex-Mex gambusia	4*	3	4	1	1
<i>Gila pandora</i>	Río Grande chub	6	3	6	3	10
<i>Hybognathus amarus</i>	Río Grande silvery minnow	4	5	5	7	100
<i>Hybognathus placitus</i>	Plains minnow	6*	2	2	7	100
<i>Ictalurus furcatus</i>	Blue catfish	1	1	5	4	50
<i>Ictalurus lupus</i>	Headwater catfish	5	3	6	3	10
<i>Ictalurus sp</i>	Chihuahua catfish	6	4.5	1	3	10
<i>Ictiobus bubalus</i>	Smallmouth buffalo	4	1	4	4	50
<i>Macrhybopsis aestivalis</i>	Speckled chub	2	2.5	5	4	50
<i>Moxostoma albidum</i>	Longlip jumprock	6*	2	1	4	50
<i>Moxostoma austrinum</i>	Mexican redhorse	6*	3	6	4	50
<i>Moxostoma congestum</i>	Gray redhorse	4	2	6	4	50
<i>Notropis amabilis</i>	Texas shiner	6*	2	2	3	10
<i>Notropis braytoni</i>	Tamaulipas shiner	5	2	3	3	10
<i>Notropis chihuahua</i>	Chihuahua shiner	6	3	5	3	10
<i>Notropis jemezianus</i>	Río Grande shiner	4	3	5	4	50
<i>Notropis simus pecosensis</i>	Pecos bluntnose shiner	2	4	5	3	10
<i>Oncorhynchus clarki virginalis</i>	Río Grande cutthroat trout	4*	2	5	3	10
<i>Percina macrolepada</i>	Bigscale logperch	1	1	5	3	1
<i>Platygobio gracilis</i>	Flathead chub	5*	1	3	4	50
<i>Rhinichthys cataractae</i>	Longnose dace	1	1	5	4	50



Conservation Status to Modal Weight

Using NatureServe rankings

- Global ranking
- Sub-national ranking

Natureserve state and global status

Weight	Status code	Status
0	SX	presumed extirpated
0	SH	possibly extirpated
6	S1	critically imperiled
5	S2	imperiled
4	S3	vulnerable
3	S4	Apparently secure
2	S5	secure
1	SNR	species not recorded (but present)
0	OR	out of range
5	G1	critically imperiled
4	G2	imperiled
3	G3	vulnerable
2	G4	Apparently secure
1	G5	secure

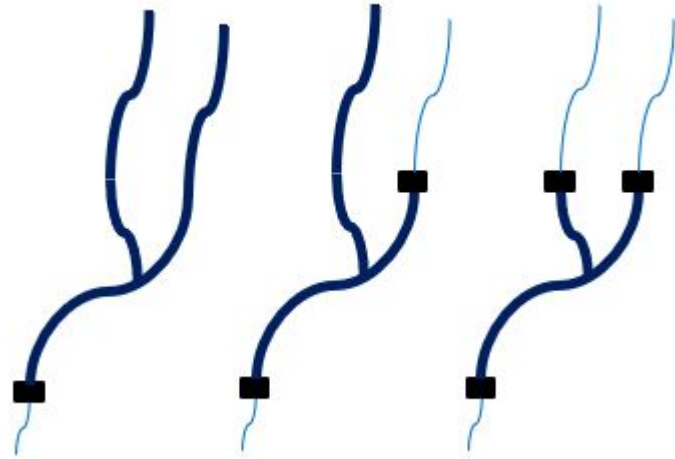
Desert Fish Habitat Partnership 2015 status

Weight	DFHP Rank
1	1.22 to 1.48
2	1.48 to 1.74
3	1.74 to 2.00
4	2 to 2.26
5	2.26 to 2.52
6	2.52 to 2.78

Species-specific responses to fragmentation

effect radius:
estimate of how much fragmentation triggers a response from a species

WHEN is a species affected

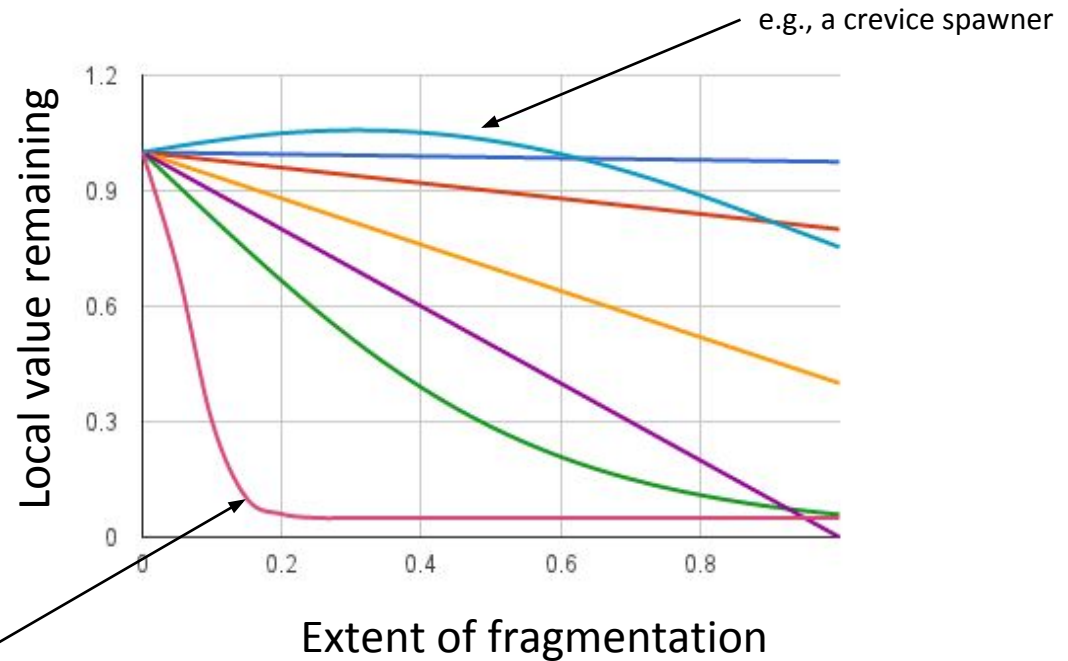


— Increasing fragmentation →

Species-specific responses to fragmentation

effect curve:
estimate of how a species response to increasing fragmentation

HOW is a species affected

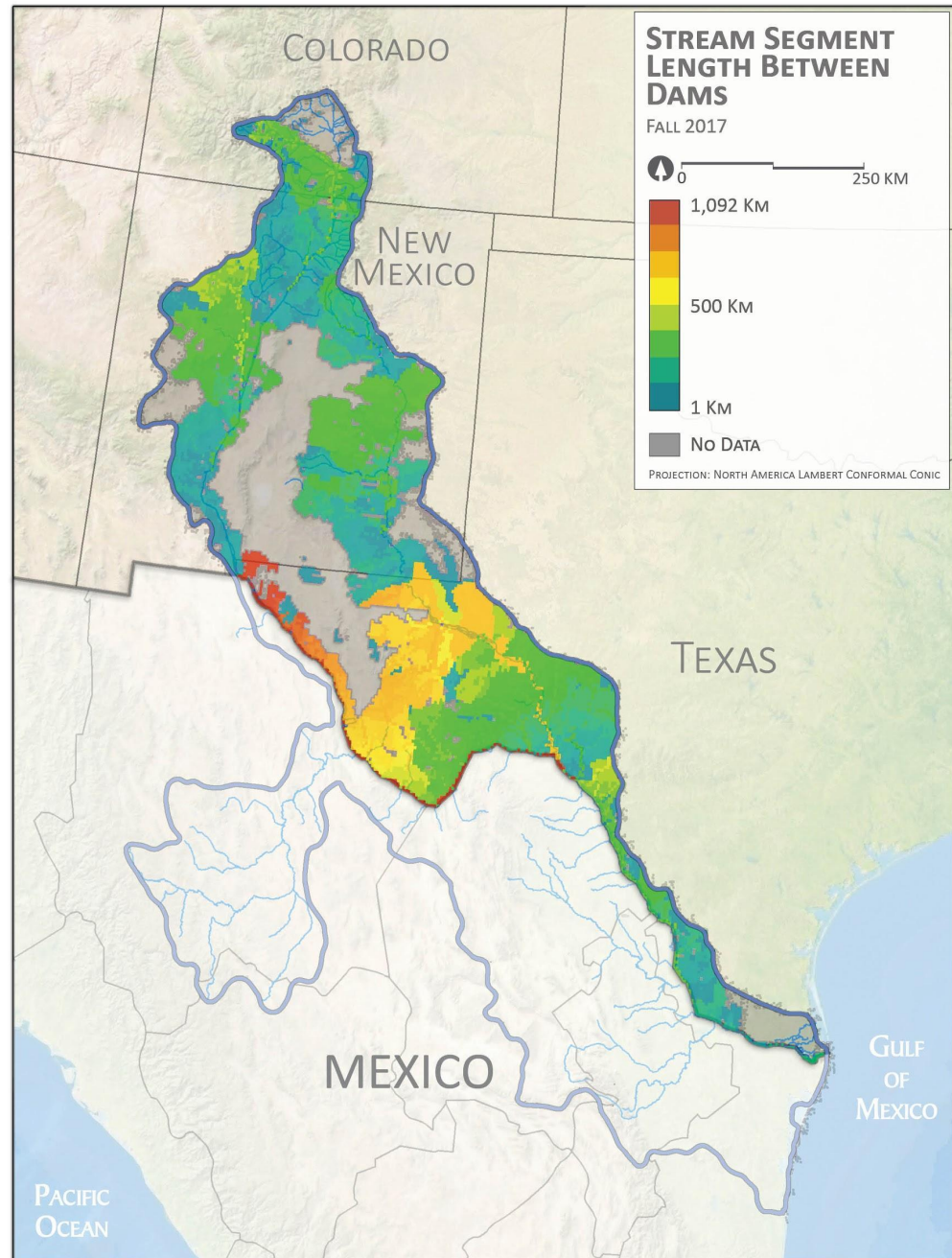


e.g., a pelagic broadcast spawner

Condition Variable

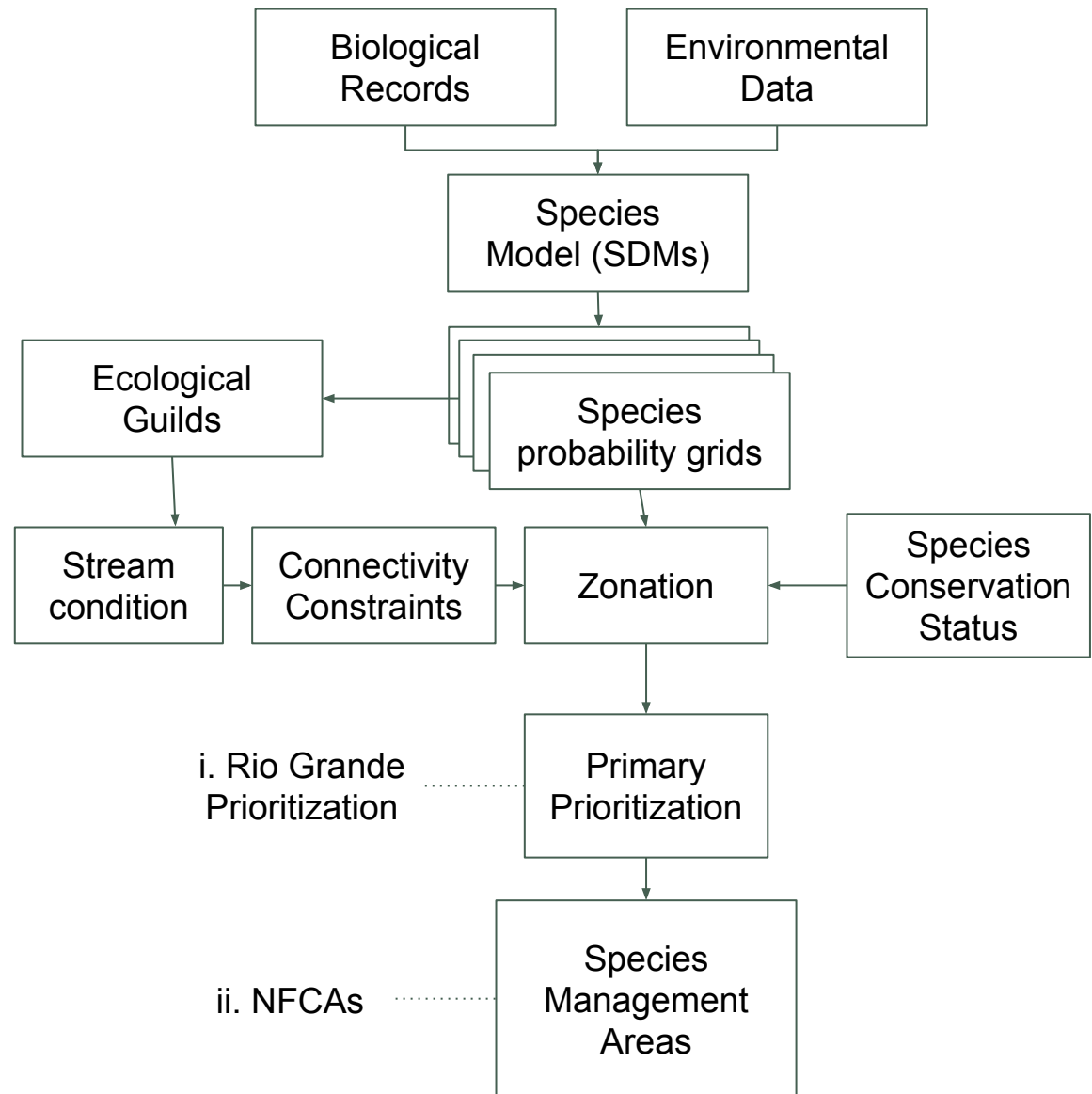
Stream Length between impoundment

- Anthropogenic Barrier Dataset (NHDplus)



PRODUCTS

- i. Spatial prioritizations considering species-specific responses to fragmentation and habitat condition
- ii. Proposed tiered management landscape





RESULTS

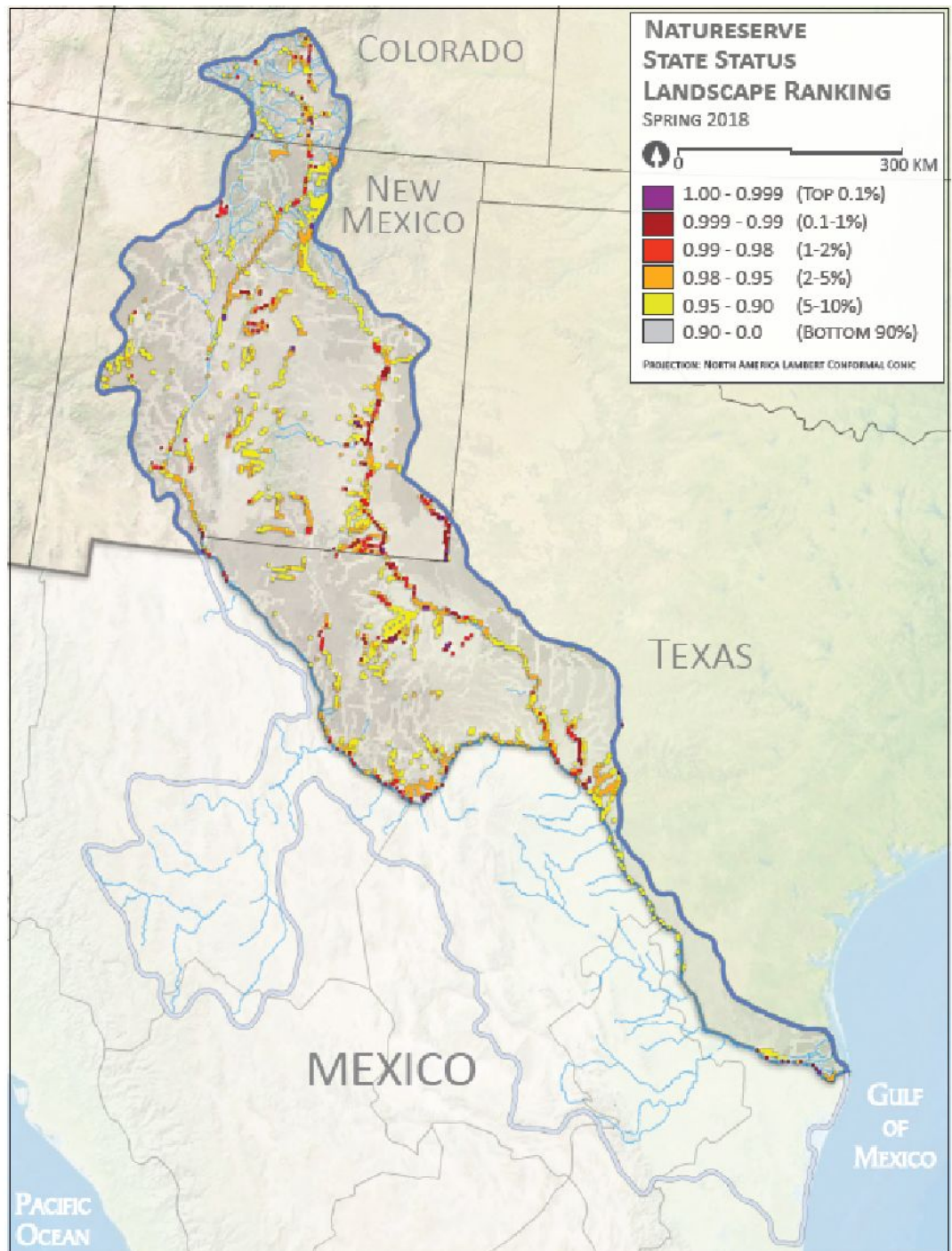
Total Prioritization Areas:

State NFCA: 64,335 sq. Km
634 HUC 12s

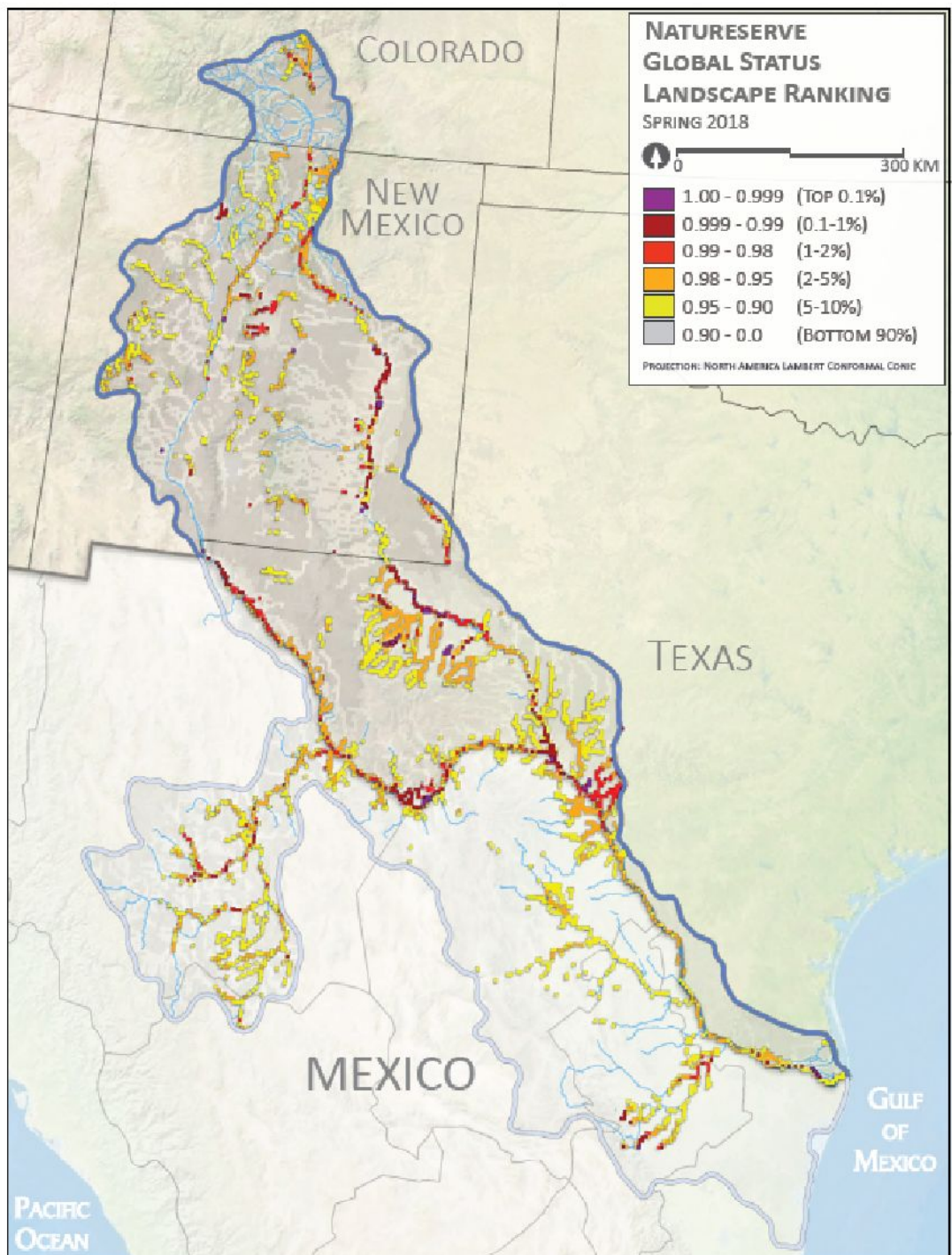
Global NFCAs: 72,929 sq. K
739 HUC 12s

DFHP NFCAs: 59,690 sq. Km,
606 HUC 12s

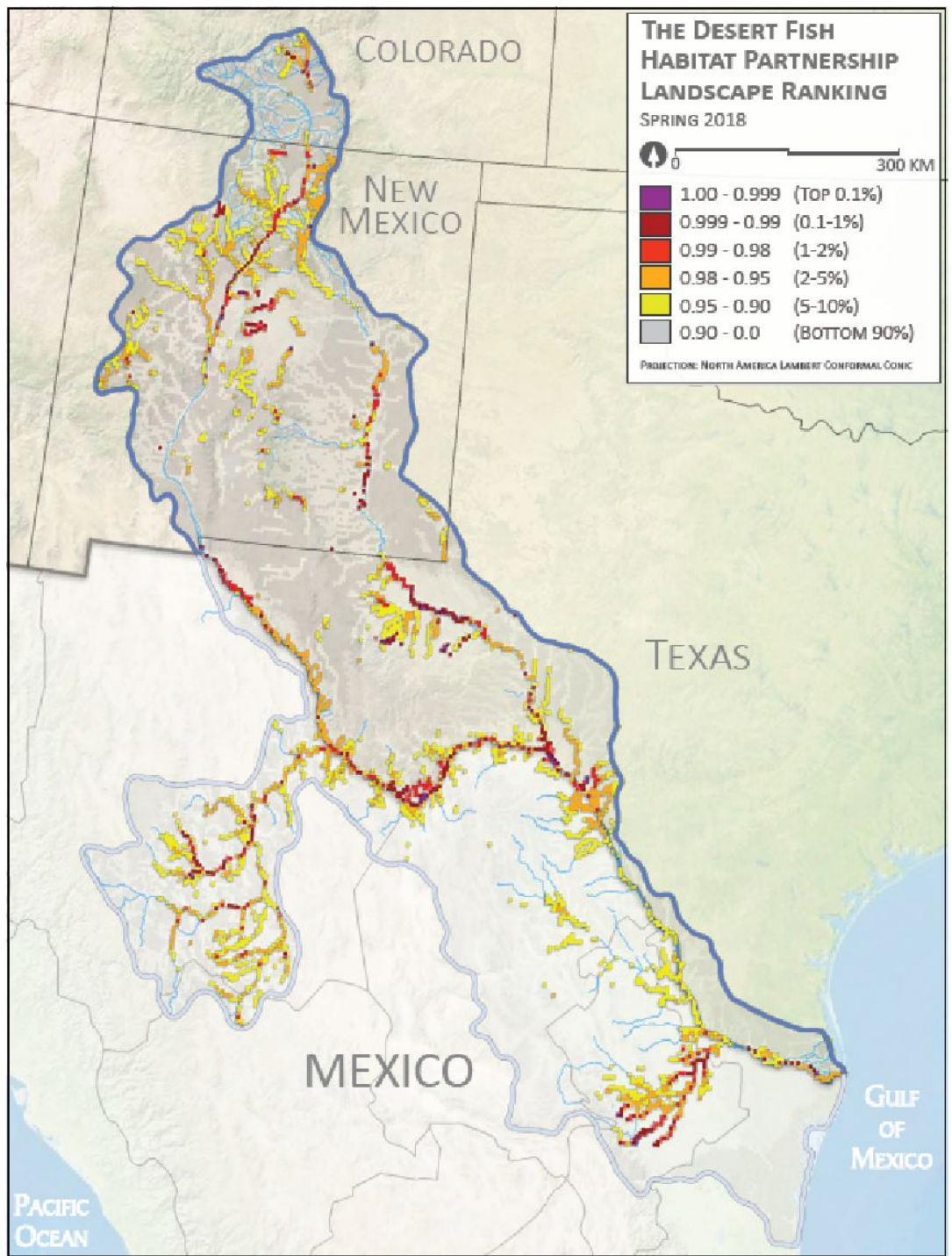
Landscape Prioritization: Natureserve State



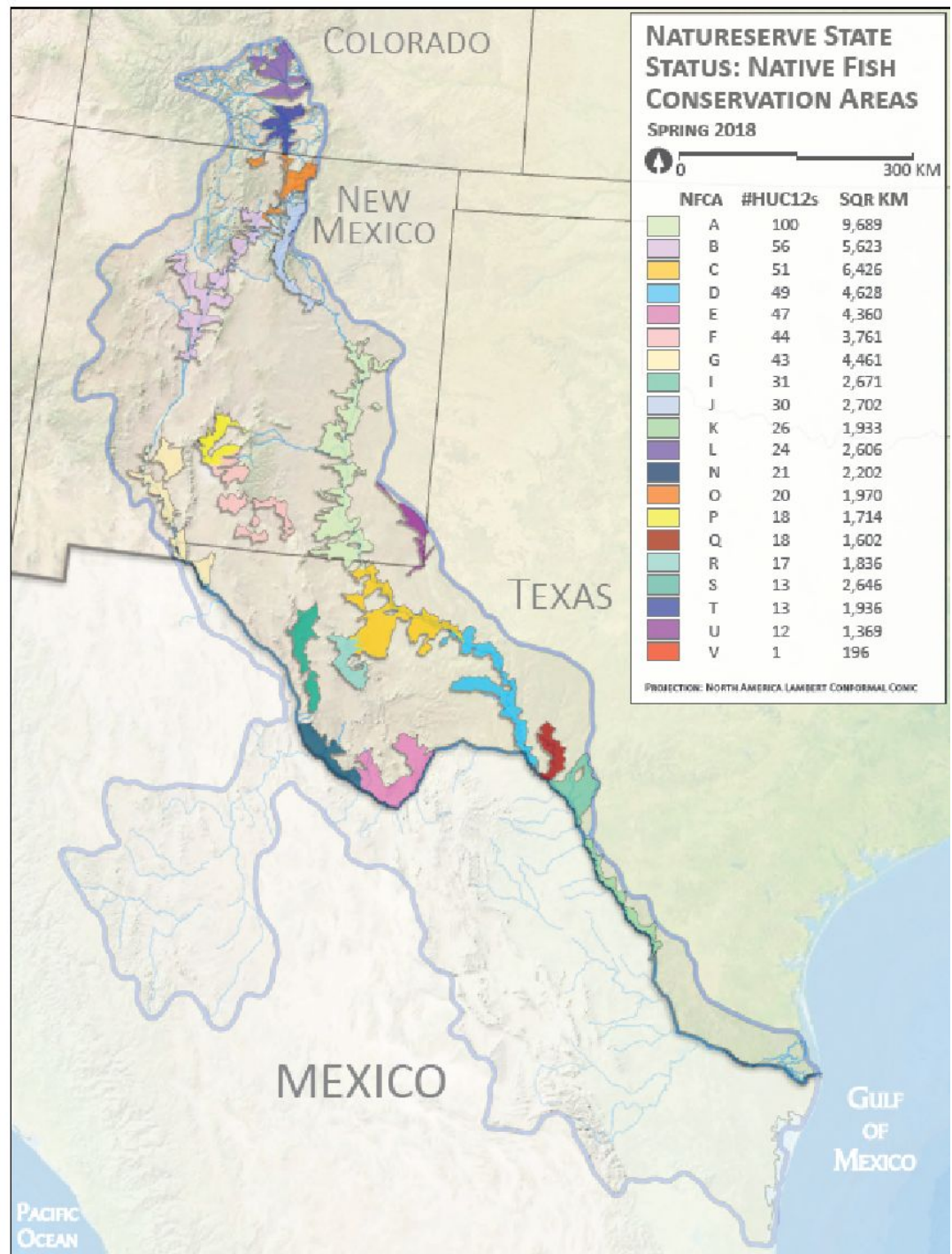
Landscape Prioritization: Natureserve Global



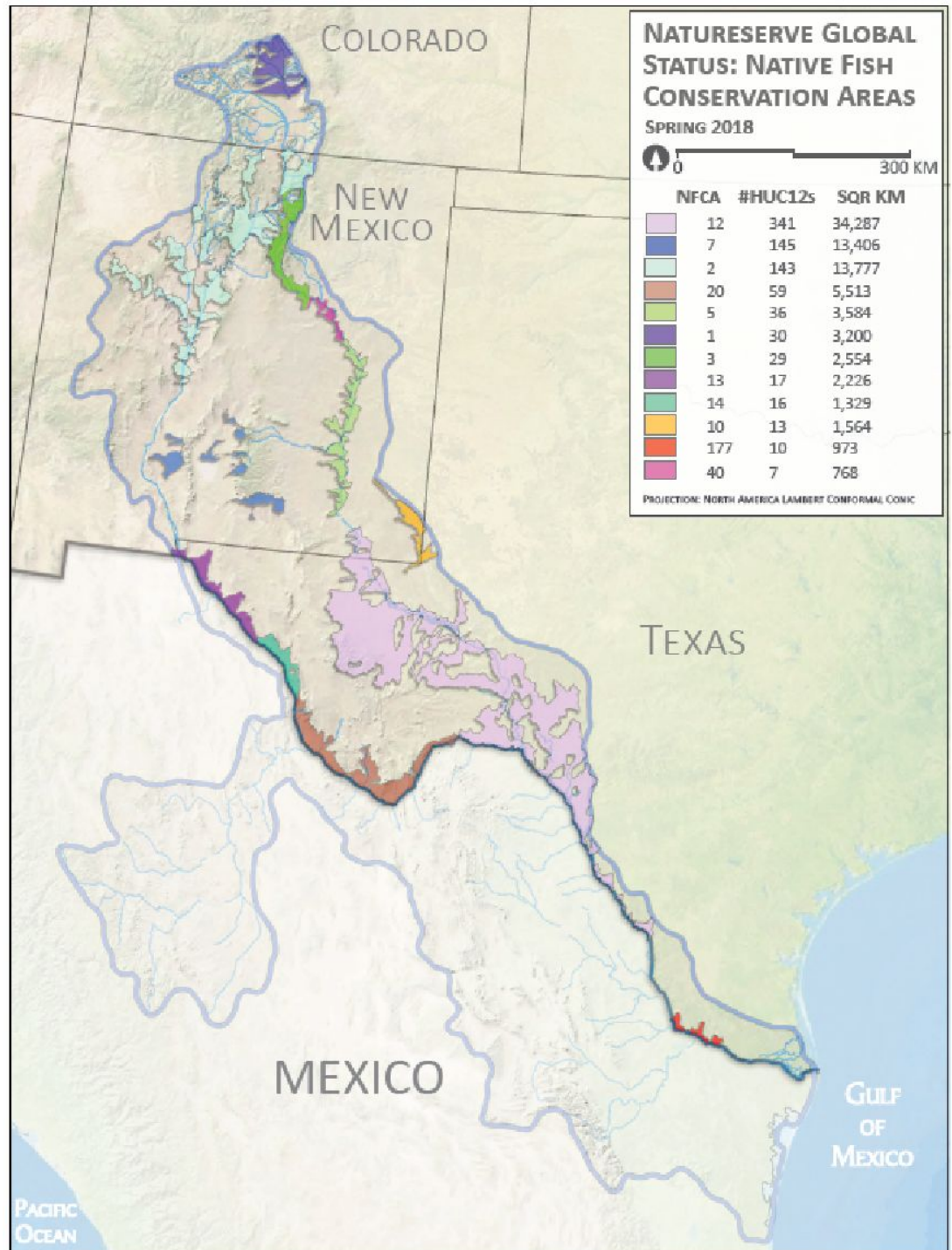
Landscape Prioritization: Desert Fish Habitat Partnership



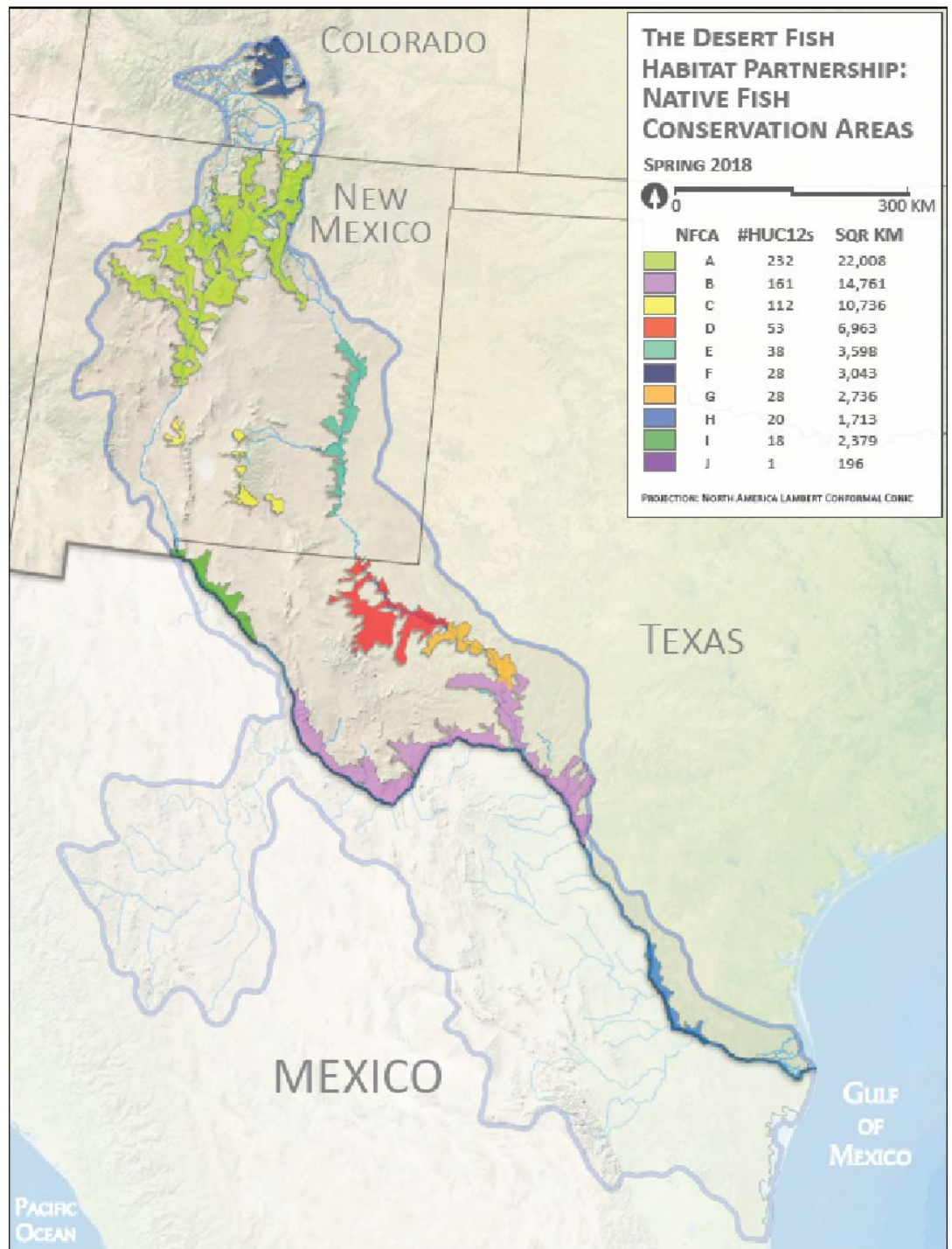
Species Management Areas (NFCAs): Natureserve State



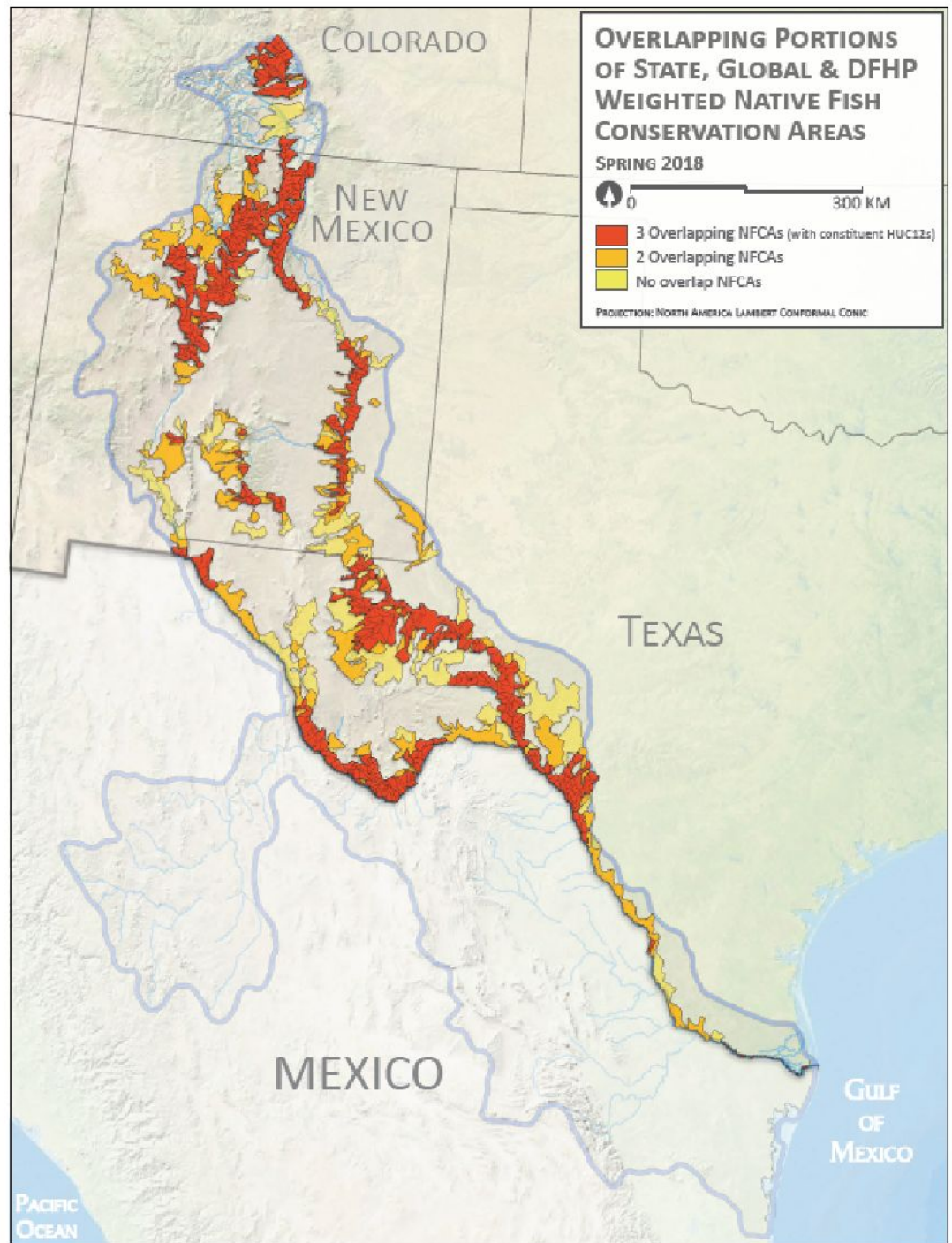
Species Management Areas (NFCAs): Natureserve Global



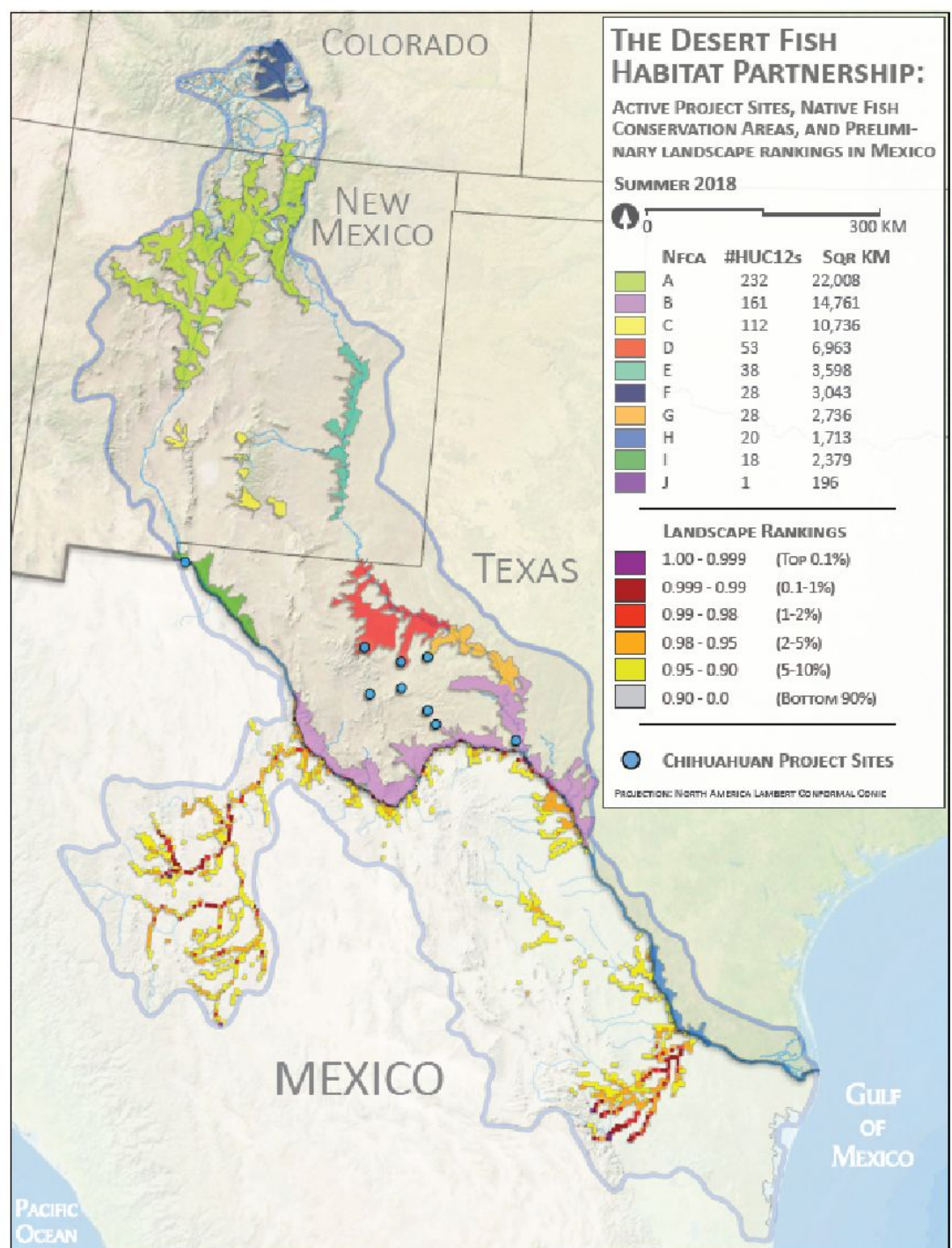
Species Management Areas (NFCAs): Desert Fish Habitat Partnership



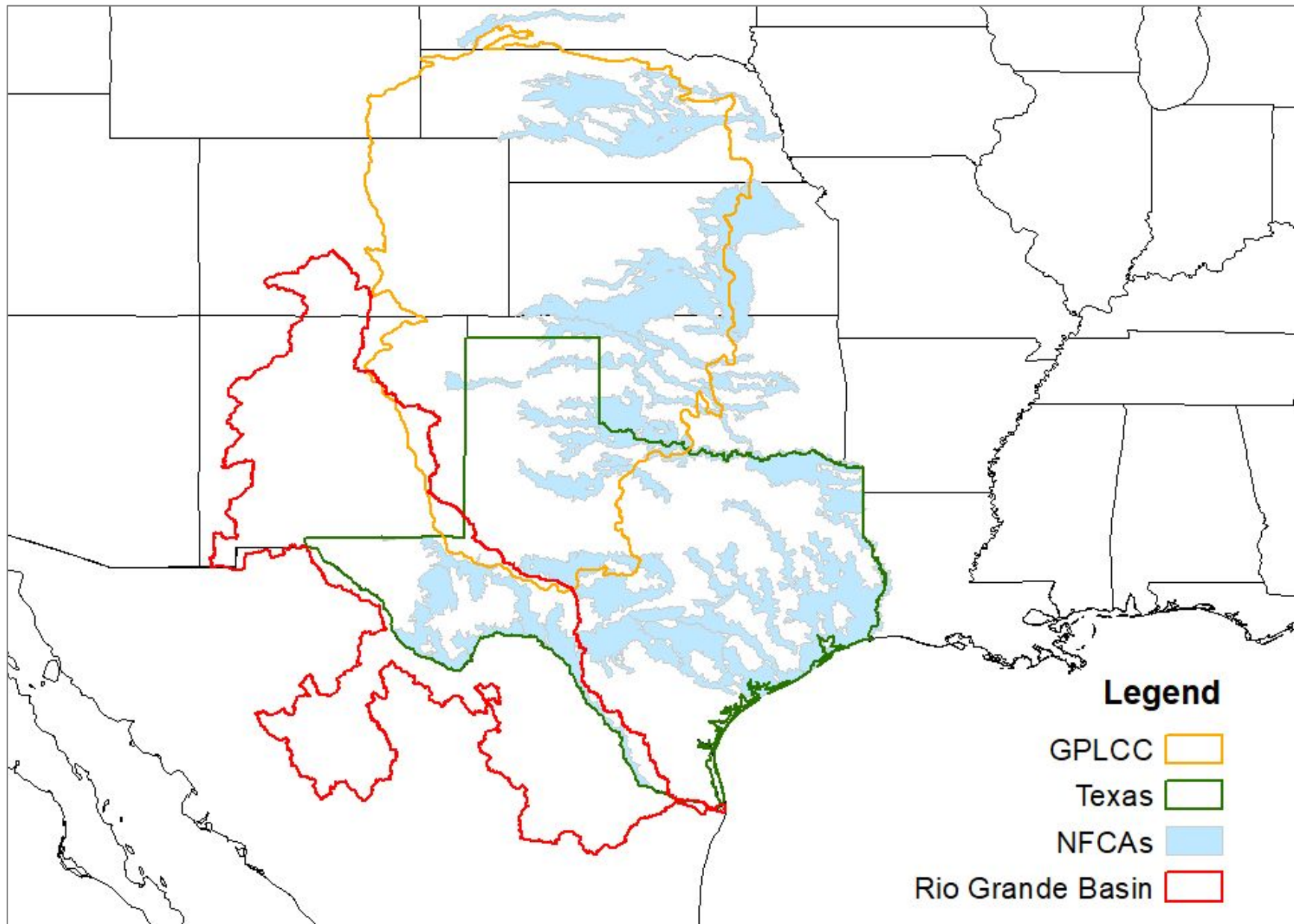
Overlapping Portions of State, Global and DFHP NFCAs



The Desert Fish Habitat Partnership: Active project sites, Native Fish Conservation Areas, and preliminary landscape rankings in Mexico







Gaps in conservation*

PLANNING GAP

Where to effectively/efficiently implement action considering:

- Multi-species landscape
- Inter/intra-jurisdictional decision making
- Fragmentation/Connectivity & Habitat condition

IMPLEMENTATION GAP

Knowing-Doing Gap: With ISSUES, how do we ACT?

- Mechanisms?
- Partners?
- How to facilitate?

Network-Based Conservation Planning to Inform Implementation of NFCAs

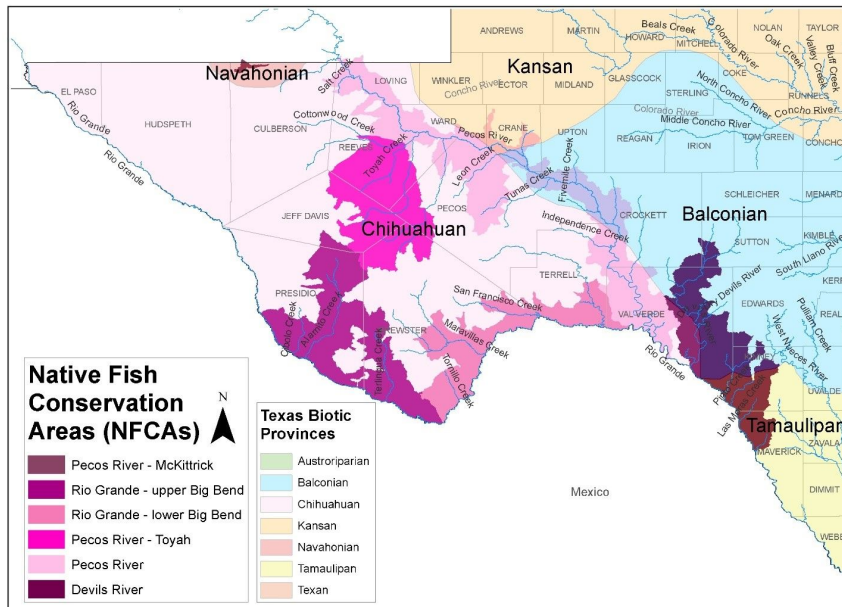
Obtain expert and partner input on the framework

- Thematic objectives
- Geographic priorities



Framework for implementation of funding and research and action

SPATIAL FRAMEWORK (WHERE)



THEMATIC FRAMEWORK (WHAT)

Protect & Maintain HABITAT

Develop Conservation DEMONSTRATION Areas

Restore Impacted HABITAT

Conduct RESEARCH to Fill Gaps

Restore CONNECTIVITY

Conduct MONITORING to evaluate, adapt, & refine actions

Mitigate effects of INVASIVE SPECIES

Adaptive management & reporting

Organize networks of LANDOWNERS

Workshops Process

Advisory Council
Planning Framework
Implementation Guidelines



Project
ideas



Action Plan &
Science Agenda

Workshops Process

Project idea form

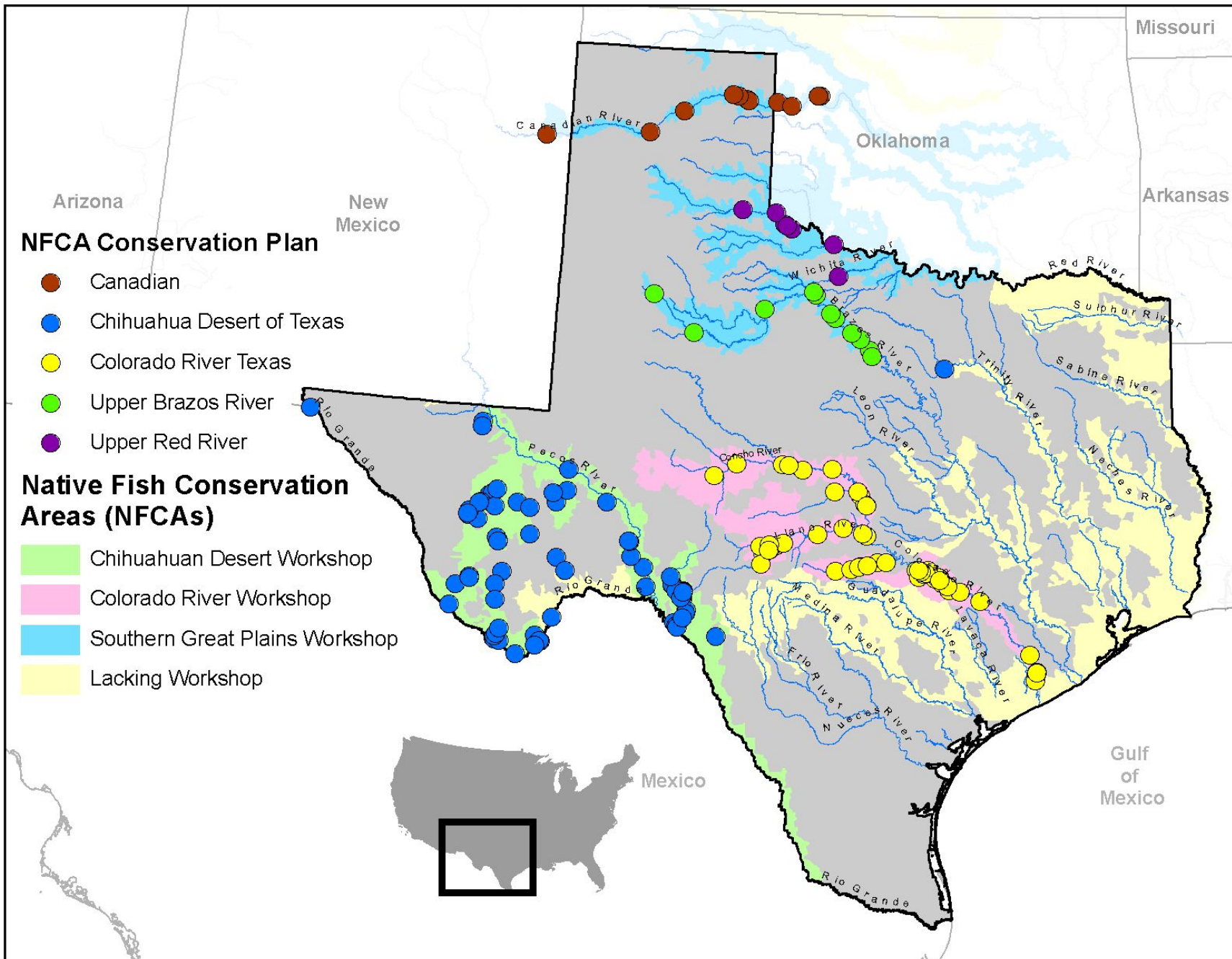
Reviewable spreadsheet

NFCA Project Planning Form (Responses)

Timestamp	Project Description	NFCA	Project Location	NFCA objective
	Examine flow-ecology relationships of Guadalupe Basin, Blue Sucker, and other focal fishes, and explore opportunities to adopt/inline current flow prescriptions in the Lower Colorado River Authority's Water Management Plan to support natural flow patterns that meet the needs of native aquatic communities	Colorado	Longhorn Dam to City of	Habitat Restoration
	Complete an analysis of existing water rights and patterns of water use to identify available water and explore opportunities for water leases, water rights acquisition, and voluntary incentive-based programs to achieve flow restoration targets	Colorado	Lower Colorado River NFI	Habitat Restoration
	Determine use by focal species	Colorado	Altair to Bay City	Research
	Assess dynamics of fish populations at the fresh and estuarine interface	Colorado	Altair to Bay City	Research
	Assess Alligator Gar populations	Colorado	Altair to Bay City	Research
	Determine influence of Dam on fish passage, accessibility? (considering the Altair dam and the one in Bay City)	Colorado	Altair to Bay City	Research
	Assess Macrobrachium populations	Colorado	Altair to Bay City	Research
	Identify habitat use patterns by Blue Sucker	Colorado	Longhorn Dam to City of	Research
	Assess Guadalupe Basin populations and flow-ecology relationships	Colorado	Longhorn Dam to City of	Research
	Assessment American Eel populations and barrier impacts	Colorado	Longhorn Dam to City of	Research
	Examine use of tributary streams by Species of Greatest Conservation Need (this can apply throughout Lower Colorado)	Colorado	Longhorn Dam to City of	Research
	Complete a study of the annual economic impact of paddling, angling, and other water-based recreation in the lower Colorado River and specifically the Guadalupe Bass Fishery and the Texas-Paddling Trails network	Colorado	Lower Colorado River NFI	Research
	Collaborative with the Rines and Prairies Land Trust to enhance management of the river access area at the Colorado River Sanctuary (immediately upstream of Tahitian Village) for use as a riparian conservation demonstration area	Colorado	City of Bastrop to Plum Pl	Conservation Demonstration
	Promote trophy Guadalupe Bass fishery to garner public support for conservation of the lower Colorado River, with a particular emphasis on the value of prescriptive releases of flows into the lower Colorado River from the Highland Lakes (consistent with the Lower Colorado River Authority's Water Management Plan)	Colorado	Longhorn Dam to City of	Conservation Networks

Explore map & Website



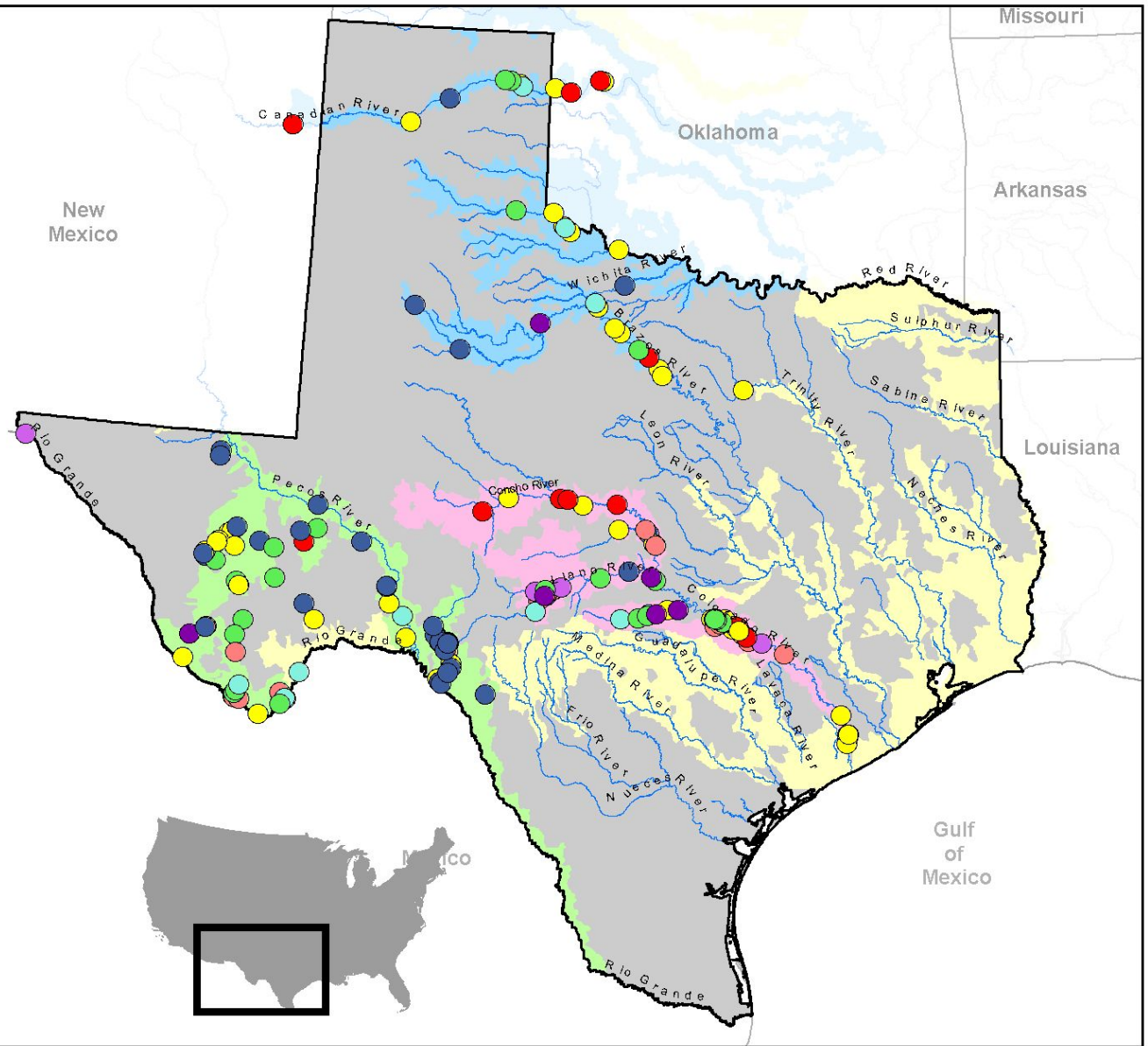


NFCA Objectives

- Adaptive management and reporting
- Conduct research to fill critical information gaps
- Develop conservation demonstration areas
- Mitigate effects of invasive species
- Organize networks of public and private landowners
- Protect and maintain intact, healthy habitats
- Restore impacted habitats
- Restore stream and habitat connectivity

Native Fish Conservation Areas (NFCAs)

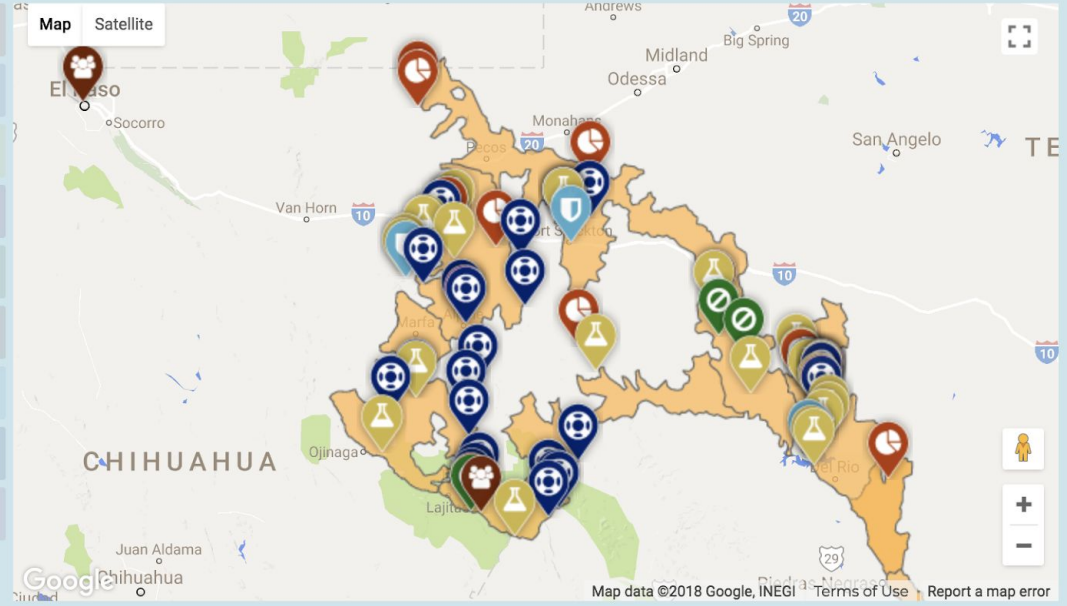
- Chihuahuan Desert Workshop
- Colorado River Workshop
- Southern Great Plains Workshop
- Lacking Workshop



SCIENCE AGENDA

Sort plan projects by conservation objective

- Adaptive management and reporting
- Conduct monitoring to evaluate conservation action
- Conduct research to fill critical information gaps
- Develop conservation demonstration areas
- Mitigate effects of invasive species
- Organize networks of public and private landowners
- Protect and maintain intact, healthy habitats
- Restore impacted habitats
- Restore stream and habitat connectivity



SHOW 25 ENTRIES

SEARCH

TITLE

CATEGORY

Monitoring subsurface water levels/flows in Alamito Creek watershed.

Conduct research to fill critical information gaps



Assessment → Planning → Action

Bridging the 'Knowing-Doing' Gap in Native Fish Conservation

FIND OUT MORE



GREAT PLAINS <

TEXAS <

RIO GRANDE <

Assessment → Planning → Action

Bridging the 'Knowing-Doing' Gap in Native Fish Conservation

FIND OUT MORE

Freshwater Fish Conservation

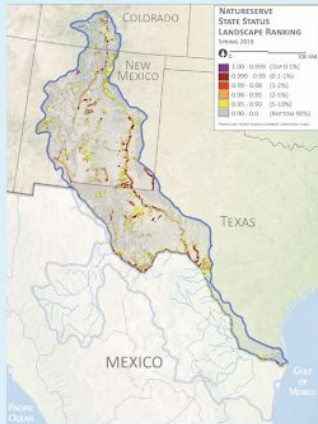
With nearly 1,800 species of native freshwater and diadromous fishes, North America is considered to have the greatest temperate freshwater fish diversity on earth. However, the current status and conservation outlook for North American fishes appears grim.

Wetlands, creeks, rivers, natural lakes, and other freshwater resources of North America have been dramatically altered by human activities at rates and scales that threaten the long-term resiliency of aquatic habitats, species, and ecosystems. A myriad of interrelated conservation issues have resulted in the loss or imperilment of approximately 39% of North American fishes.

Innovative, strategic, and science-based conservation strategies are needed to restore and sustain North America's freshwater resources



Rio Grande



Through support from Southern Rockies Landscape Conservation Cooperative (SRLCC), Desert Fish Habitat Partnership (DFHP), Western Native Trout Initiative (WNTI), and Siglo Group, a NFCA prioritization was completed that identifies focal watersheds for preservation of freshwater fish diversity within Rio Grande watershed.

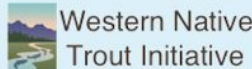
This multispecies, watershed-based conservation prioritization is now being used to facilitate cooperative conservation of aquatic resources within the basin, supporting local implementation of the National Fish Habitat Action Plan through stakeholder planning and facilitation workshops.

PROJECT TITLE

Rio Grande Fishes Conservation Assessment and Mapping

PROJECT PARTNERS

Southern Rockies Landscape Conservation Cooperative (SRLCC), Desert Fish Habitat Partnership (DFHP), Western Native Trout Initiative (WNTI), and Siglo Group



PROJECT GOAL

Partners in the region are using this multi-species, watershed-based framework to facilitate cooperative planning and collaborative conservation of aquatic resources within the watershed.

CONSERVATION PLANS

- Chihuahuan Desert, TX

INTERACTIVE NFC PROJECT MAP



SUBMIT YOUR CONSERVATION PROJECT HERE

This form will feed a project planning spreadsheet that will facilitate sorting, prioritization, and further discussions of projects.

[Open Submission Form](#)



Filter Conservation Plans

Texas

SEARCH

CONSERVATION PLANS



CHIHUAHUAN DESERT, TEXAS

Explore Chihuahuan Desert, Texas conservation plans within the Great Plains Native Fish Conservation Network →



CANADIAN RIVER

Explore Canadian River conservation plans within the Great Plains Native Fish Conservation Network →



UPPER BRAZOS RIVER

Explore Upper Brazos River conservation plans within the Great Plains Native Fish Conservation Network →



COLORADO RIVER, TX

Explore Colorado River, TX conservation plans within the Great Plains Native Fish Conservation Network →



UPPER RED RIVER

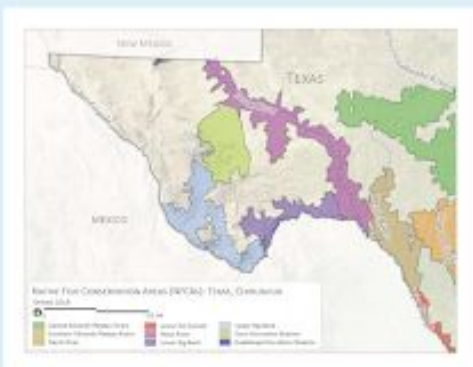
Explore Upper Red River conservation plans within the Great Plains Native Fish Conservation Network →



Home > Networks > Conservation Plans > Chihuahuan Desert, TX

CHIHUAHUAN DESERT, TEXAS Conservation Plan

Conservation action plan and science agenda from stakeholder-led workshops



An interdisciplinary team of approximately 55 individuals, representing TPWD Inland Fisheries Division, TPWD Wildlife Division, USFWS - Partners for Fish and Wildlife Program, USFWS Texas Fish and Wildlife Conservation Office, National Park Service, University of Texas, Texas Tech University, Fort Worth Zoo, The Nature Conservancy of Texas, World Wildlife Fund, Desert Fish Habitat Partnership, Big Bend Conservation Alliance and Devils River Conservancy, met by webinar and workshop in fall 2016 and spring 2017. Members were tasked with 1) Identifying priority research, monitoring, and restoration actions for preservation of native fishes, their habitats and

other aquatic resources in the Chihuahuan Desert ecoregion of Texas; 2) Catalyzing cooperation, collaboration, and leveraging of technical and financial resources among local, state and federal natural resources management agencies, universities, non-governmental organizations, and other local partners that contribute to the conservation of native fishes and other aquatic resources in the watersheds of the Chihuahuan Desert; 3) Facilitating local implementation of the National Fish Habitat Action Plan in the Chihuahuan Desert watersheds.

CHIHUAHUAN DESERT, TEXAS ACTION PLAN SUMMARY

Through this workshop process described above there was a delineation of research priorities, monitoring needs and potential restoration actions for preservation of native fishes, their habitats and other aquatic resources within the Chihuahuan Desert Native Fish Conservation Network. These discussions resulted in the identification of almost 80 priority conservation actions and funding needs.

SUB BASIN PROFILES

- [Chihuahuan Desert](#)
- [Big Bend](#)
- [Pecos River](#)
- [Devils River](#)

RELATED FILES

- [Workshop Summary - Chihuahuan Desert Native Fish Conservation Network](#)

INTERACTIVE NFC PROJECT MAP



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[Open Submission Form](#)

SCIENCE AGENDA

Sort plan projects by conservation objective

- Adaptive management and reporting
- Conduct monitoring to evaluate conservation action





Interactive NFC Project Map

Outcomes of the Watershed-Based Conservation Planning Workshops – As of April 2016, watershed-based conservation planning workshops have been conducted for the Native Fish Conservation Areas in the Brazos, Canadian, Colorado and Red rivers.

Over 60 subject-matter experts participated in the workshops. Workshop participants recommended more than 150 project-level actions to conserve freshwater biodiversity in these priority watersheds. Top tier projects are presented.

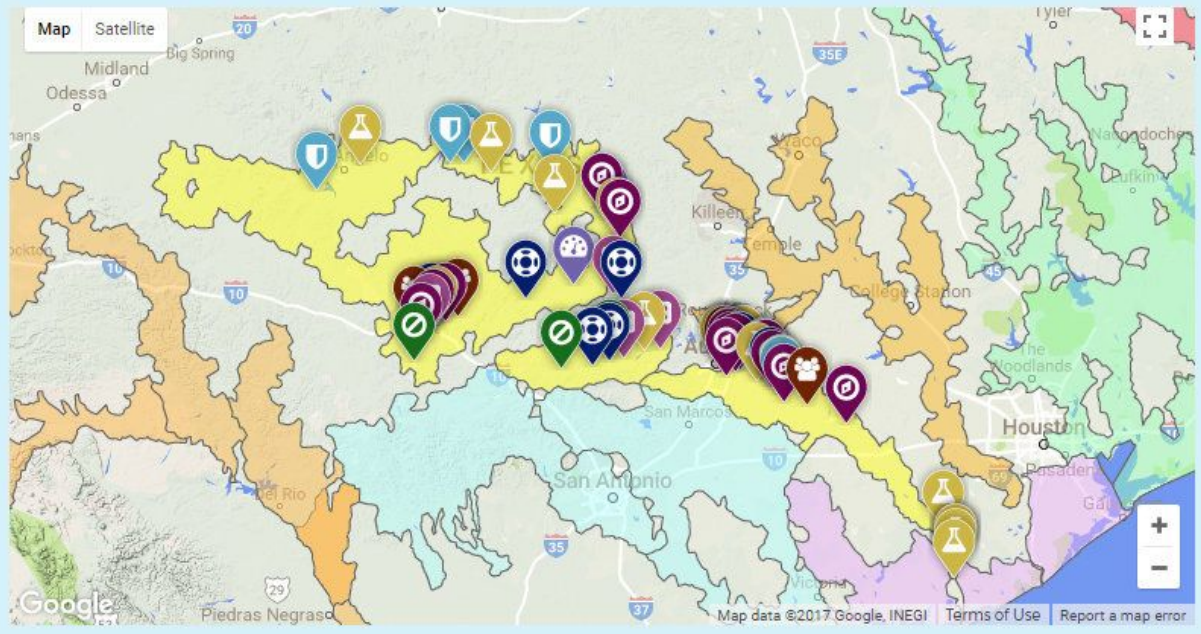
- Adaptive management and reporting
- Conduct monitoring to evaluate conservation action
- Conduct research to fill critical information gaps
- Develop conservation demonstration areas
- Mitigate effects of invasive species
- Organize networks of public and private landowners
- Protect and maintain intact, healthy habitats
- Restore impacted habitats
- Restore stream and habitat connectivity



Interactive NFC Project Map

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Map Satellite

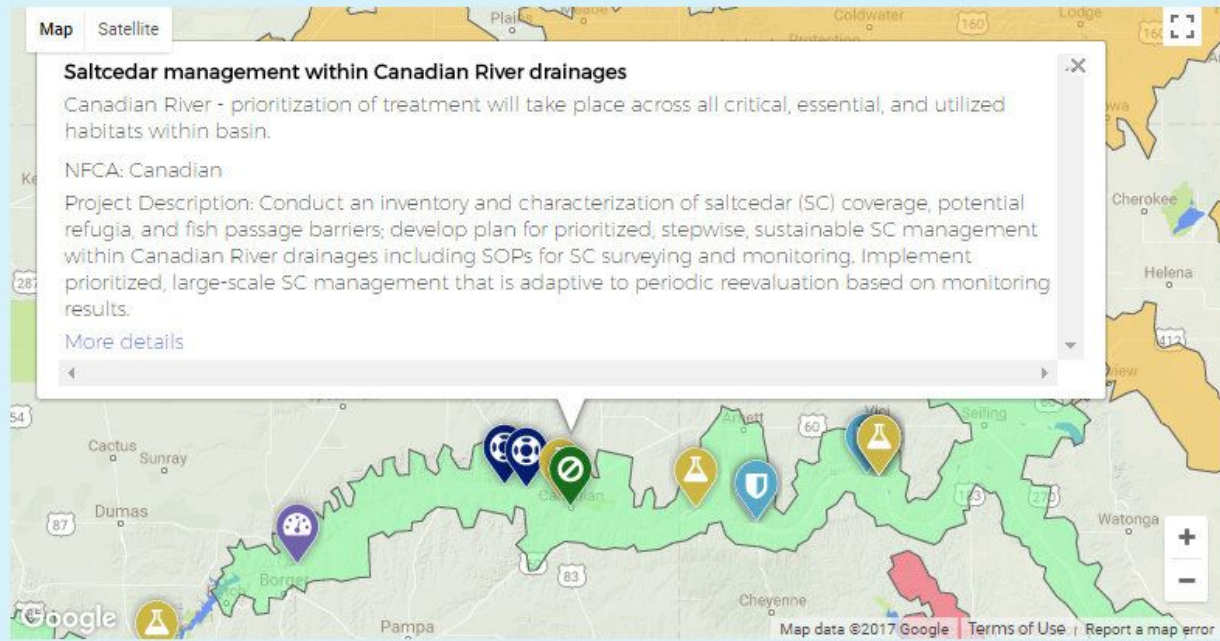
Saltcedar management within Canadian River drainages

Canadian River - prioritization of treatment will take place across all critical, essential, and utilized habitats within basin.

NFCA: Canadian

Project Description: Conduct an inventory and characterization of saltcedar (SC) coverage, potential refugia, and fish passage barriers; develop plan for prioritized, stepwise, sustainable SC management within Canadian River drainages including SOPs for SC surveying and monitoring. Implement prioritized, large-scale SC management that is adaptive to periodic reevaluation based on monitoring results.

[More details](#)



- Adaptive management and reporting
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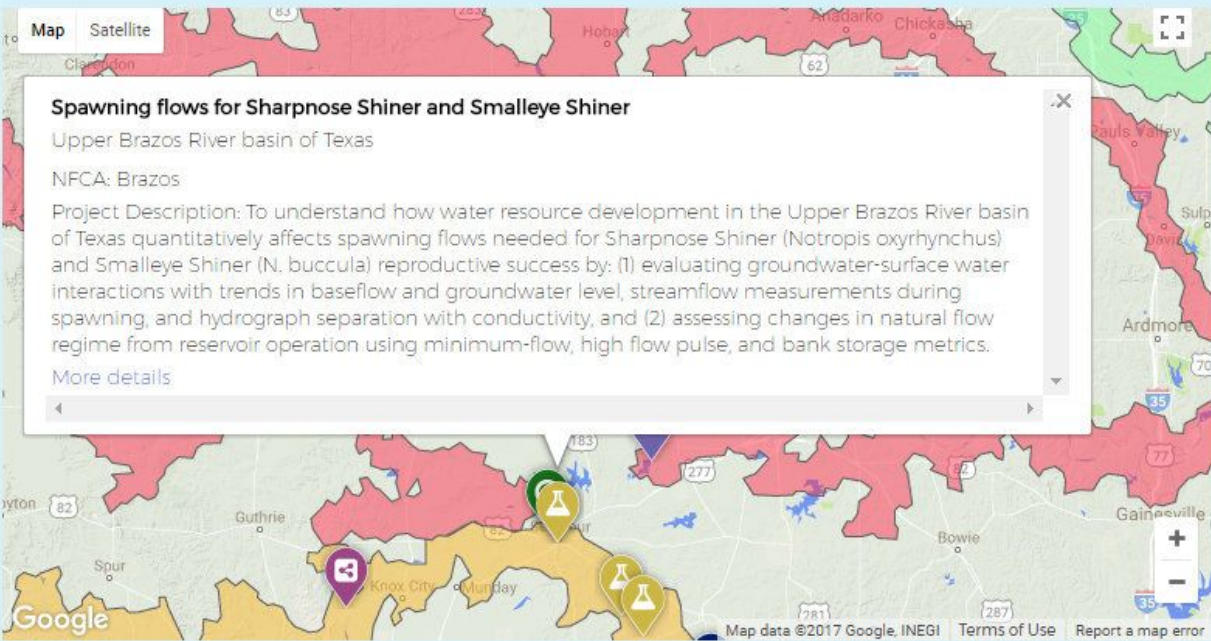
Spawning flows for Sharpnose Shiner and Smalleye Shiner

Upper Brazos River basin of Texas

NFCA: Brazos

Project Description: To understand how water resource development in the Upper Brazos River basin of Texas quantitatively affects spawning flows needed for Sharpnose Shiner (*Notropis oxyrhynchus*) and Smalleye Shiner (*N. buccula*) reproductive success by: (1) evaluating groundwater-surface water interactions with trends in baseflow and groundwater level, streamflow measurements during spawning, and hydrograph separation with conductivity, and (2) assessing changes in natural flow regime from reservoir operation using minimum-flow, high flow pulse, and bank storage metrics.

[More details](#)



Map data ©2017 Google, INEGI Terms of Use Report a map error

- Adaptive management and reporting
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SPAWNING FLOWS FOR SHARPNOSE SHINER AND SMALLEYE SHINER

Home > Initiatives > Plans > Spawning flows for Sharpnose Shiner and Smalleye Shiner

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CONSERVATION AREA

Brazos

NFCA OBJECTIVES

Conduct research to fill critical information gaps

Additional Info	Benefits and Results	Suggested Partners	Potential Funding
Project Hierarchy: 1 Estimated Cost Range: ~\$200,000 - \$300,000 Project Submitted By: Brad Wolaver Suggested Contact: Brad Wolaver, Kevin Mayes, Omar Bocanegra			

PROJECT STATUS

- Suggested
- Ongoing
- Completed

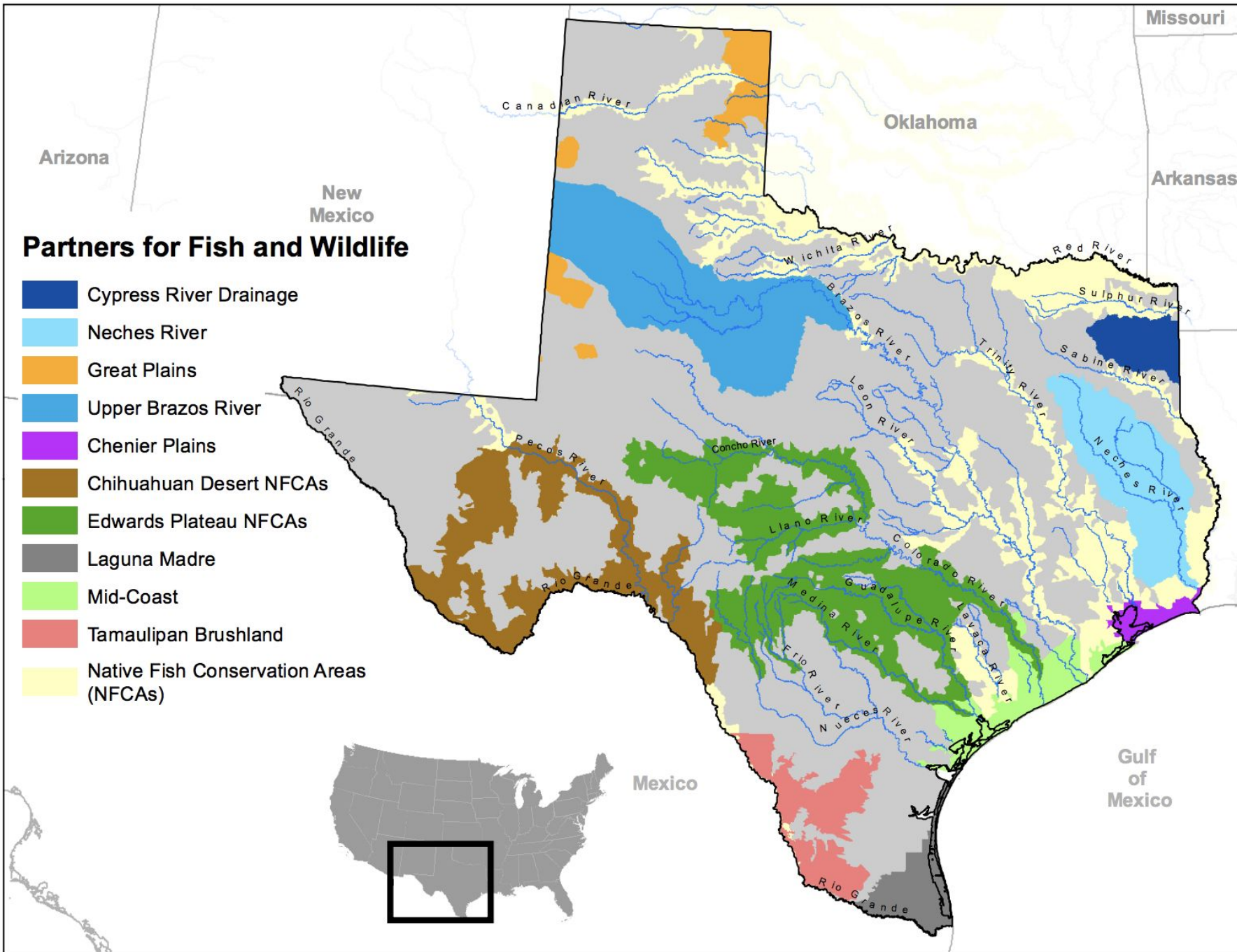
PROJECT LOCATION

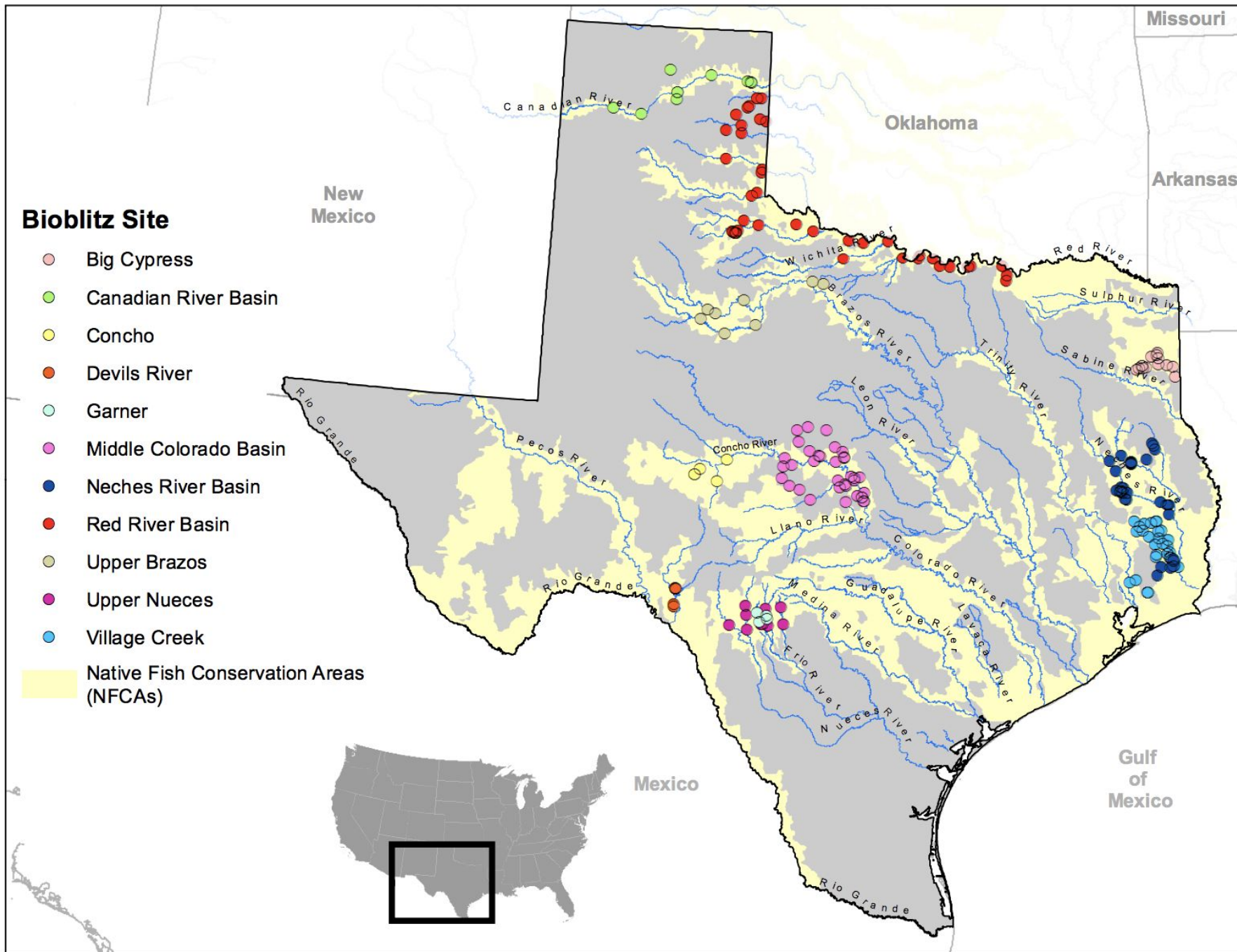
Upper Brazos River basin of Texas

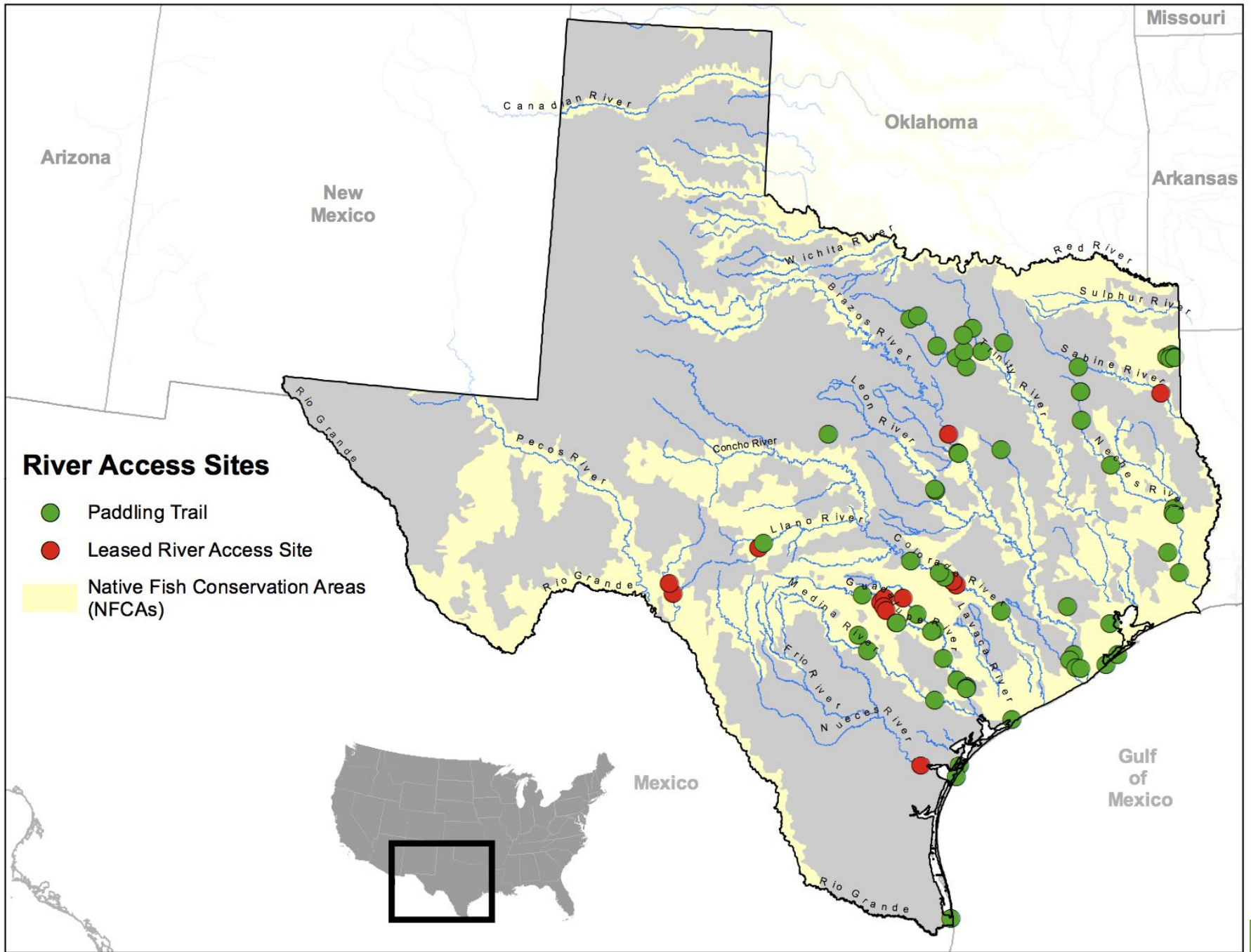


IMPLEMENTATION: Native Fish Conservation Areas in Texas

- Texas Parks and Wildlife Department **regulatory & permitting decisions**
- **Network of protected areas** in Texas
- **>\$3.36M** in selection of focal watersheds for delivery of voluntary conservation initiatives
- USDA uses framework for selection of Farm Bill land conservation programs
- USFWS Austin Ecological Services Field Office uses to **inform selection of priority areas for delivery of landowner incentives** through the Partners for Fish and Wildlife Program
- **~ \$750,000** of TPWD's State Wildlife Grant Funding apportionment for 2016 has been allocated to support implementation of priority research, monitoring and conservation projects within NFCAs
- **~ \$500,000** of TPWD's Aquatic Invasive Species project-based funding allocation for FY16-17 dedicated to riparian invasive plant management projects identified as priorities within NFCAs







Next Steps

1

Identify primary sponsors and stakeholders of a New Mexico focused Workshop

2

Webinar with stakeholders - augment NFCA map, and project submission

3

Hold workshop to prioritize projects and construct conservation plan & science agenda

Questions?

