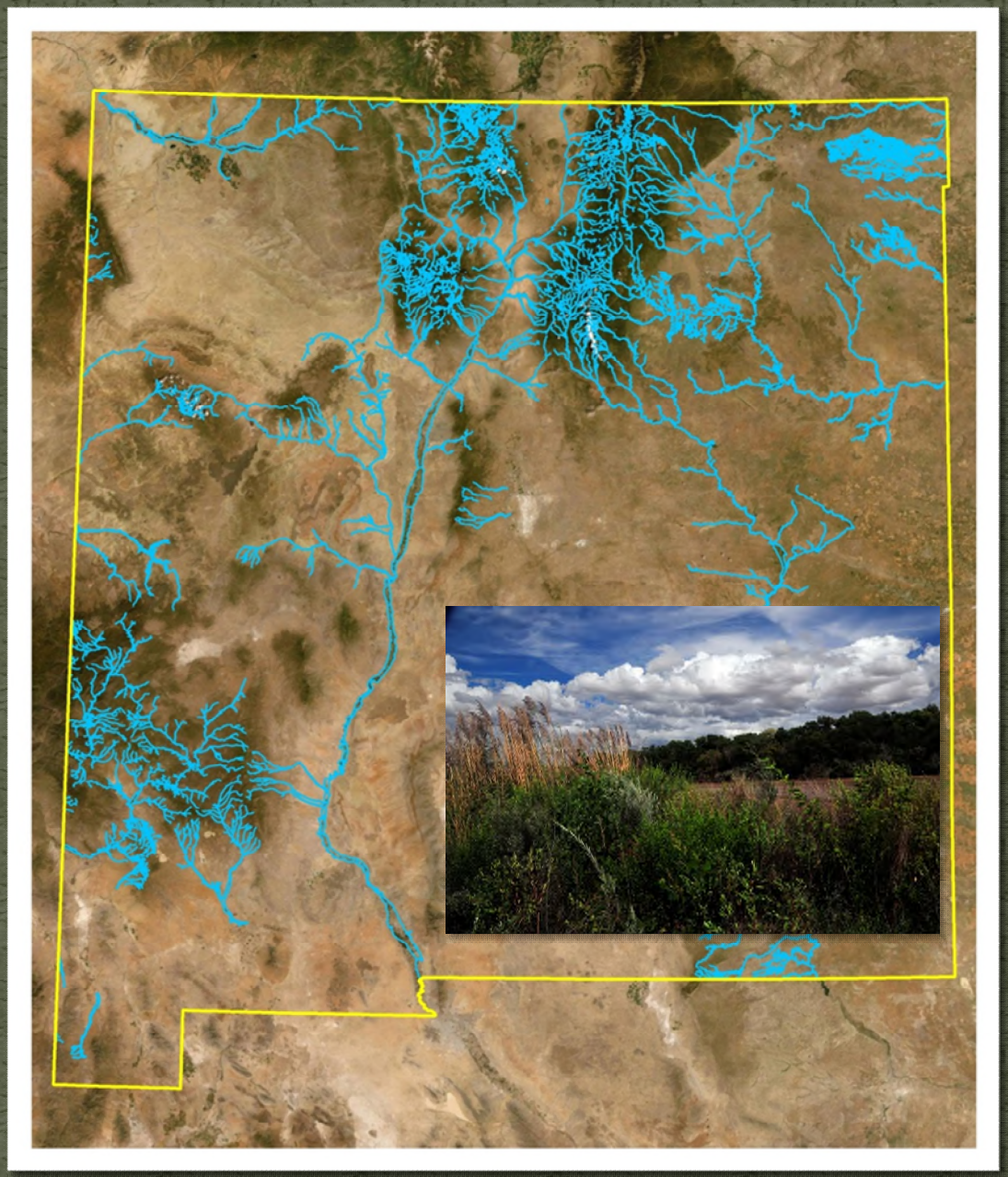


New Mexico Riparian Habitat Map

NMRipMap

A public map resource to support conservation and restoration in the Middle Rio Grande, New Mexico.

Esteban H. Muldavin, Elizabeth R. Milford, Corrie Gonzalez

Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM

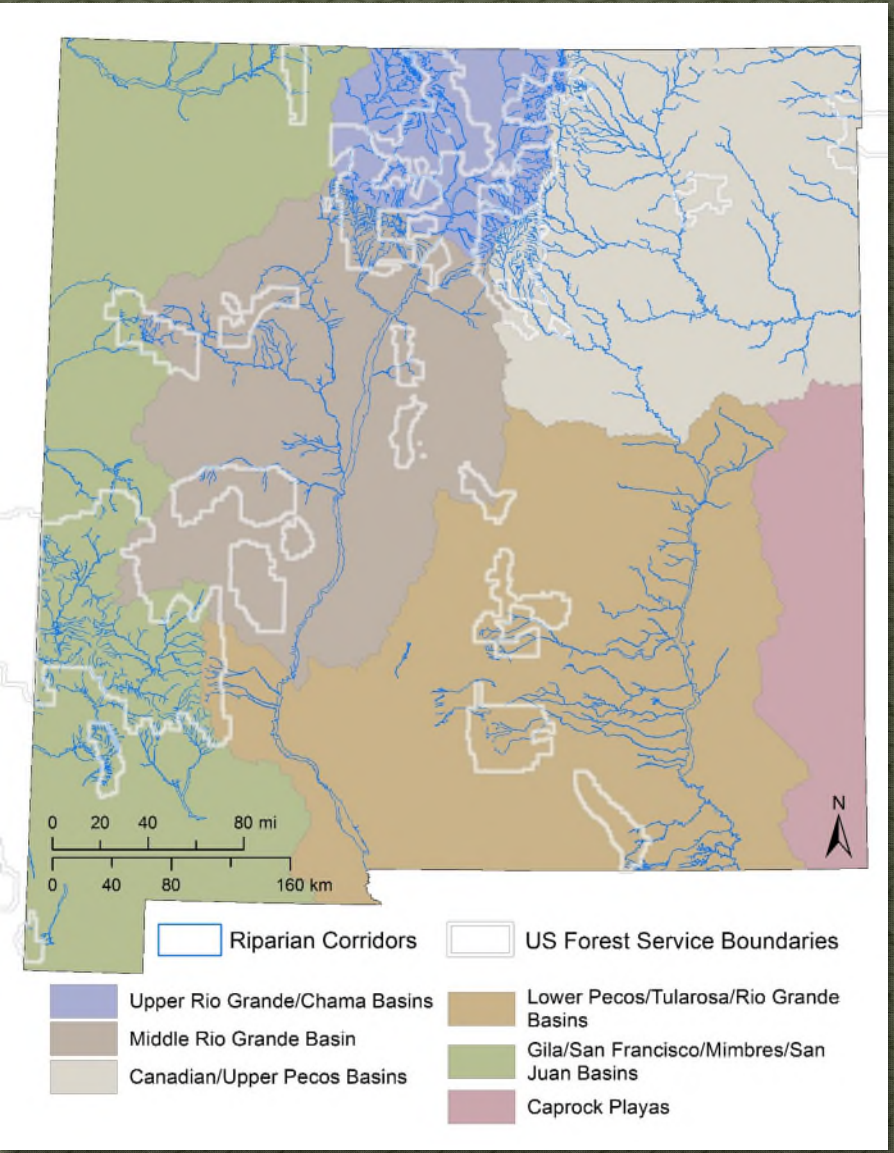
And

Matt Wunder

New Mexico Department of Game and Fish, Santa Fe, NM

New Mexico Riparian Habitat Map

NMRipMap

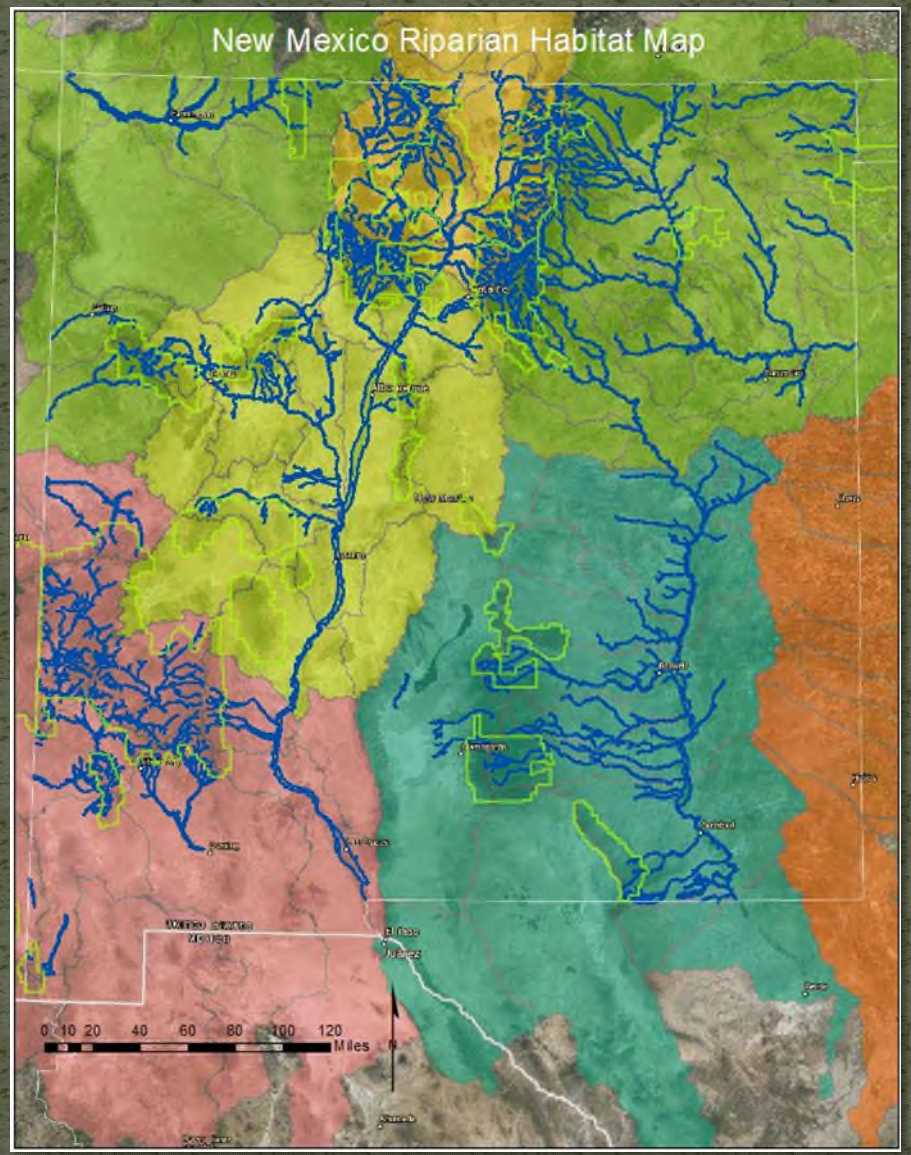


State-wide collaborative mapping project (2017-2023)

- New Mexico Game and Fish (NMDGF)
  - Virginia Seamster
- United State Forest Service (USFS)
  - Jack Triepke (Regional Ecologist, Reg. 3)
  - Adam Clark, Geospatial Technology Applications Center (GTAC)
- Natural Heritage New Mexico (NHNM)
  - Amy Urbanovsky, Amanda Kennedy, Grace MaCartha, Yvonne Chauvin, Sarah Cherne, and Kyle Gonterman
- Missouri Resource Assessment Partnership (MoRAP)
  - Dave Diamond, Lee Elliot, and Phillip A. Hanberry

https://nhnm.unm.edu/riparian/nmripmap

NMCIS NEW MEXICO CONSERVATION INFORMATION SYSTEM

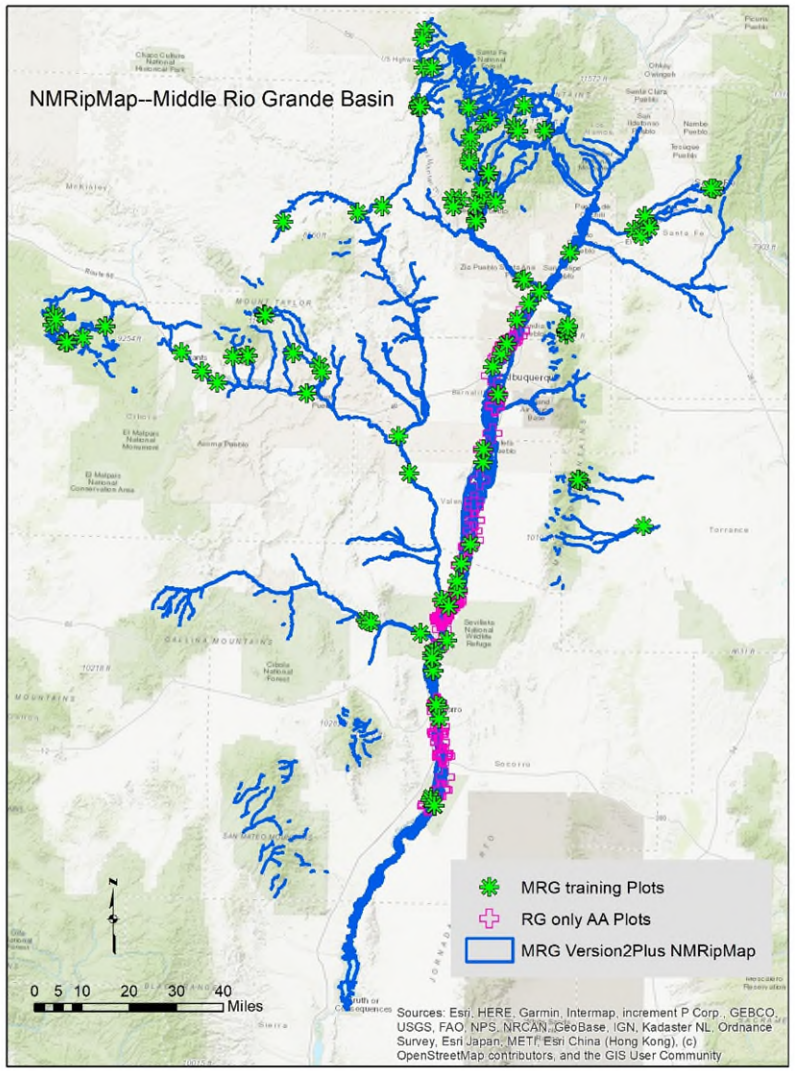


https://nhnm.unm.edu/riparian/nmripmap

New Mexico Riparian Habitat Map (NMRipMap)

- Statewide, comprehensive, wall-to-wall map inside the riparian corridor
- Vegetation composition, cover, and structure of along New Mexico's perennial streams and rivers
- Fine-scale (1:6,000) 0.1 ha (2.5 ac) to be evaluate habitat at a stand level relevant to wildlife and understanding ecosystem patterns as a whole.

NMRipMap Production Middle Rio Grande



- Developed 2016 NAIP aerial imagery and 2016 LiDAR
- Used eCognition and RandomForest classification followed by heads-up editing for quality control
- Used 132 field plots for training
- 102 validation plots along the Rio
- Three-tiered hierarchical legend linked to the US National Vegetation Classification
  - Cowardin 1979 upper levels (NWI); macrogroups groups, alliances and plant associations at lower levels (NPS)
  - 48 Level 3 units state wide, 30 in the MRG

Forests and Woodlands

I	FOREST and WOODLAND			
		IB	Lowland Riparian Forest and Woodlands	
			IB1	Lowland Native Deciduous Riparian Forest
			IB3	Lowland Native-Introduced Russian Olive Deciduous Riparian Forest
			IB4	Lowland Native-Introduced Tamarisk Deciduous Riparian Forest
			IB5	Lowland Native-Introduced Russian Olive - Tamarisk Deciduous Riparian Forest
			IB6	Lowland Native Evergreen Dry Riparian Forest
			IB7	Lowland Native Evergreen-Deciduous Riparian Forest
		IC	Lowland Introduced Riparian Woodland and Scrub	
			IC1	Russian Olive Introduced Riparian Woodland and Scrub
			IC2	Tamarisk Introduced Riparian Woodland and Scrub
			IC3	Russian Olive-Tamarisk Introduced Riparian Woodland and Scrub
			IC4	Mixed Introduced Forest and Scrub
		IE	Semi-Natural Riparian Woodland and Scrub	
			IE1	Semi-Natural Riparian Forest and Scrub

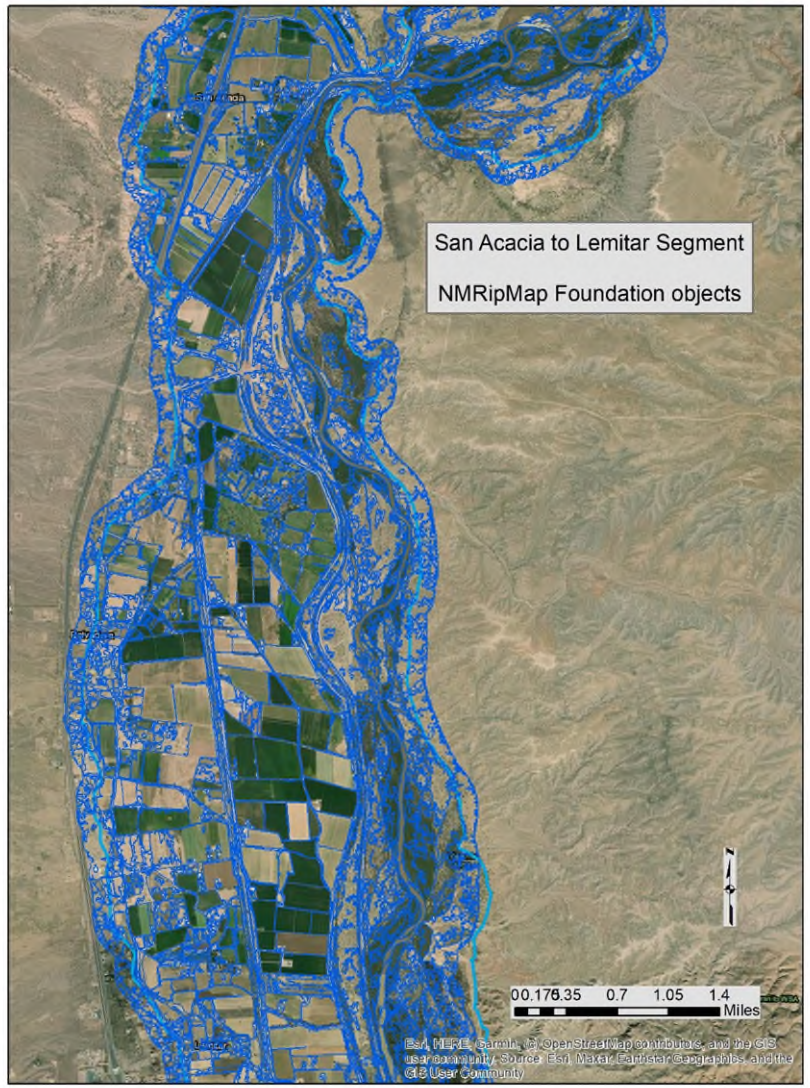
Shrublands and Herbaceous Vegetation

II	SHRUBLAND			
	IIB	Lowland Riparian Shrubland		
			IIB1	Lowland Wet Riparian Shrubland
			IIB2	Lowland Dry Riparian Shrubland
			IIB3	Desert Alkaline-Saline Wet Shrubland
			IIB4	Lowland Native-Introduced Russian Olive Riparian Scrub
			IIB5	Lowland Native-Introduced Tamarisk Riparian Scrub
			IIB6	Lowland Native-Introduced Russian Olive-Tamarisk Riparian Woodland and Scrub
III	HERBACEOUS VEGETATION			
	IIIB	Lowland Marshes and Wet Meadows		
			IIIB1	Western Lowland Marsh
			IIIB3	Arid West Lowland Wet Meadow
	IIID	Lowland Dry Meadow and Grassland		
			IIID1	Western Lowland Salt Meadow and Dry Grassland
	IIIE	Semi-natural Herbaceous Vegetation		
			IIIE1	Ruderal Forb Meadow
			IIIE2	Pasture Wetlands

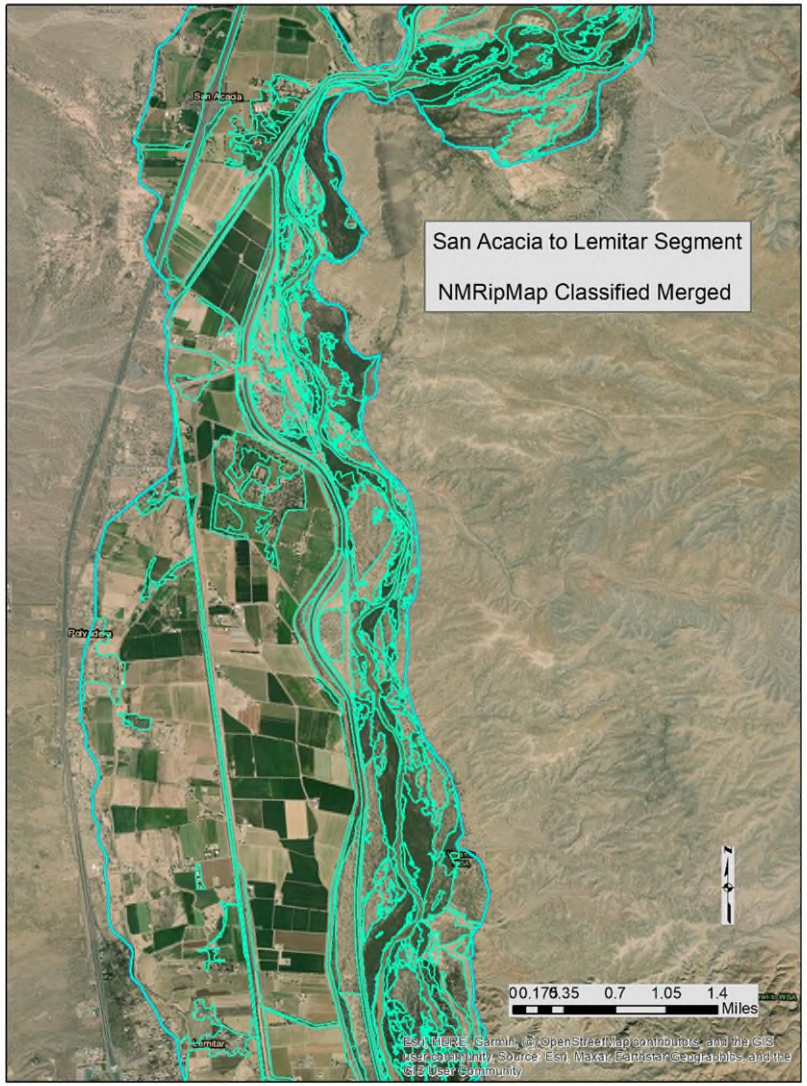
Miscellaneous Land Cover types

IV	MISCELLANEOUS LAND TYPES		
	IVA	Bare Unvegetated	
		IVA1	Riparian Bare Ground/Rockland [non-channel]
	IVB	Water/Channel	
		IVB1	Open Channel Riverwash/Water/Unvegetated bars
	IVC	Shadow	
		IVC1	Shadow
	IVD	Agriculture	
		IVD1	Agriculture - cultivated crops
		IVD2	Agriculture - Hay/Pasture
	IVE	Urban/Built-Up Areas	
		IVE1	Development/Disturbed ground
	IVF	Roads	
		IVF1	Roads
	IVG	Upland Unvegetated	
		IVG1	Upland Bare Ground/Rockland

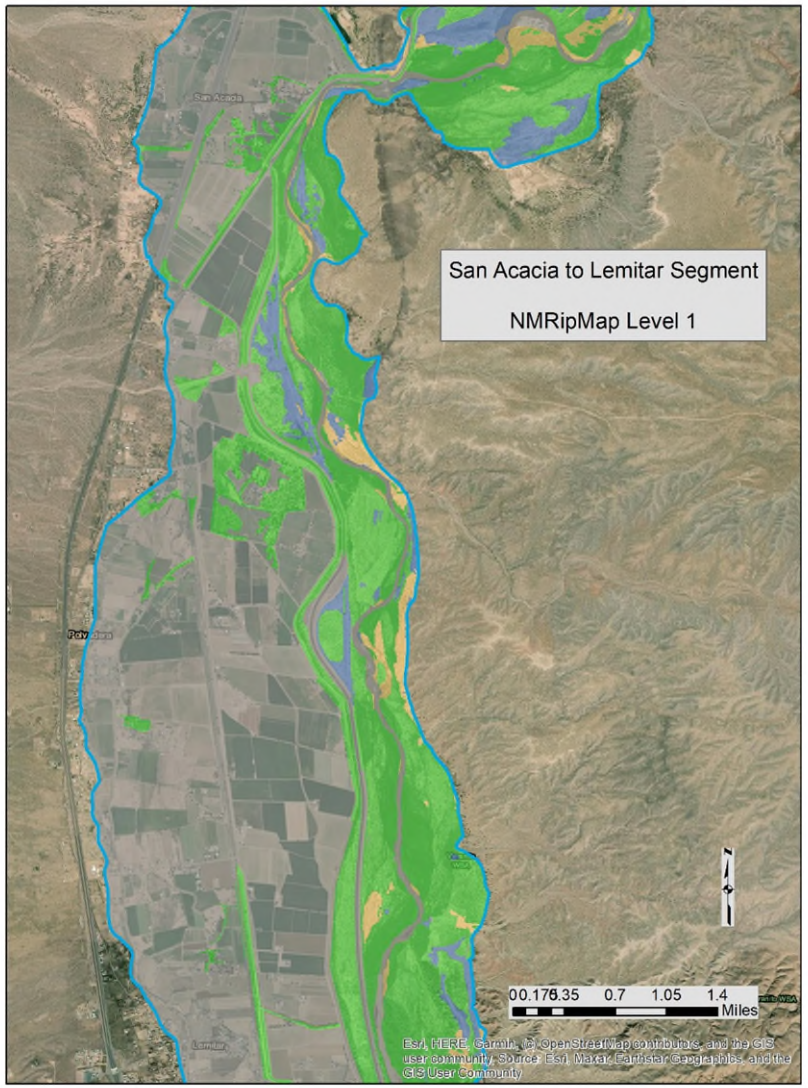
eCognition object polygons



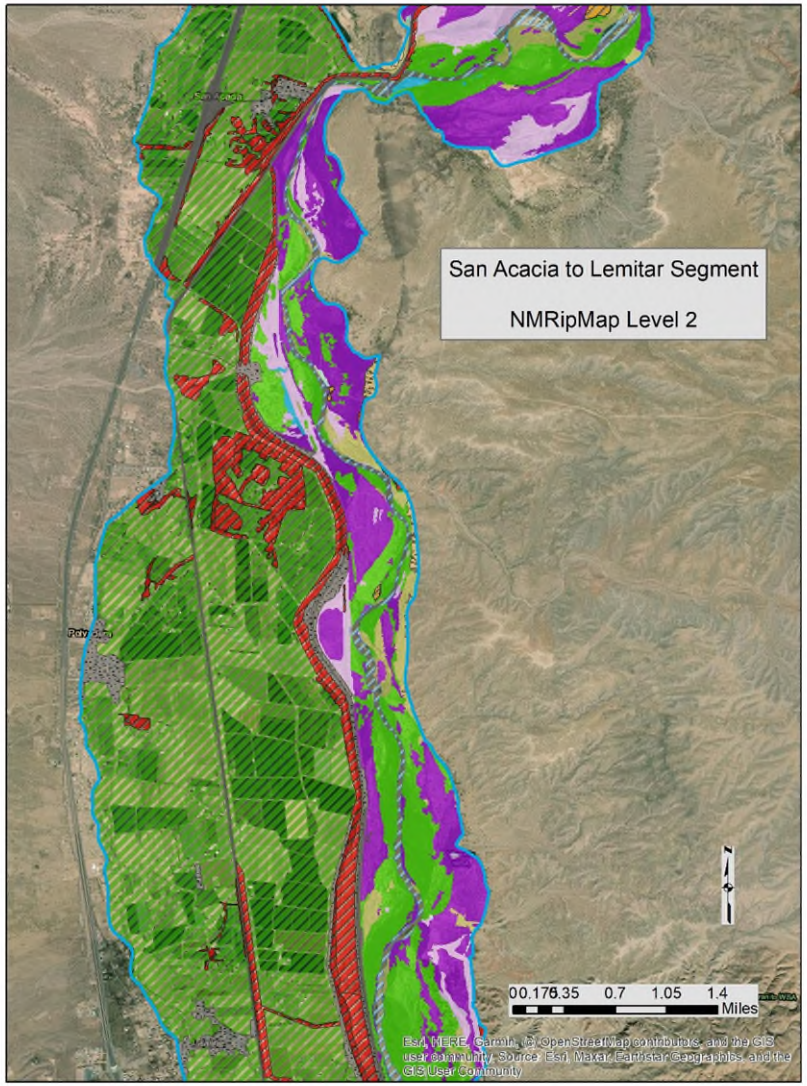
RF classified, merged, edited



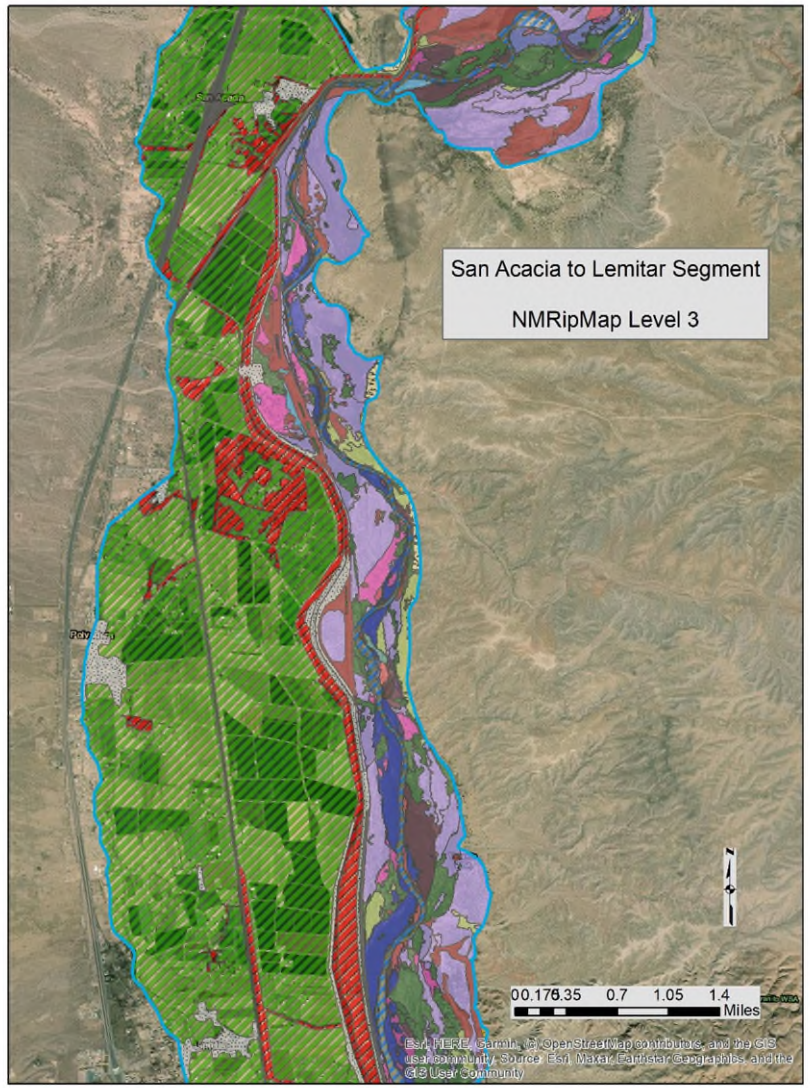
NMRipMap Level 1



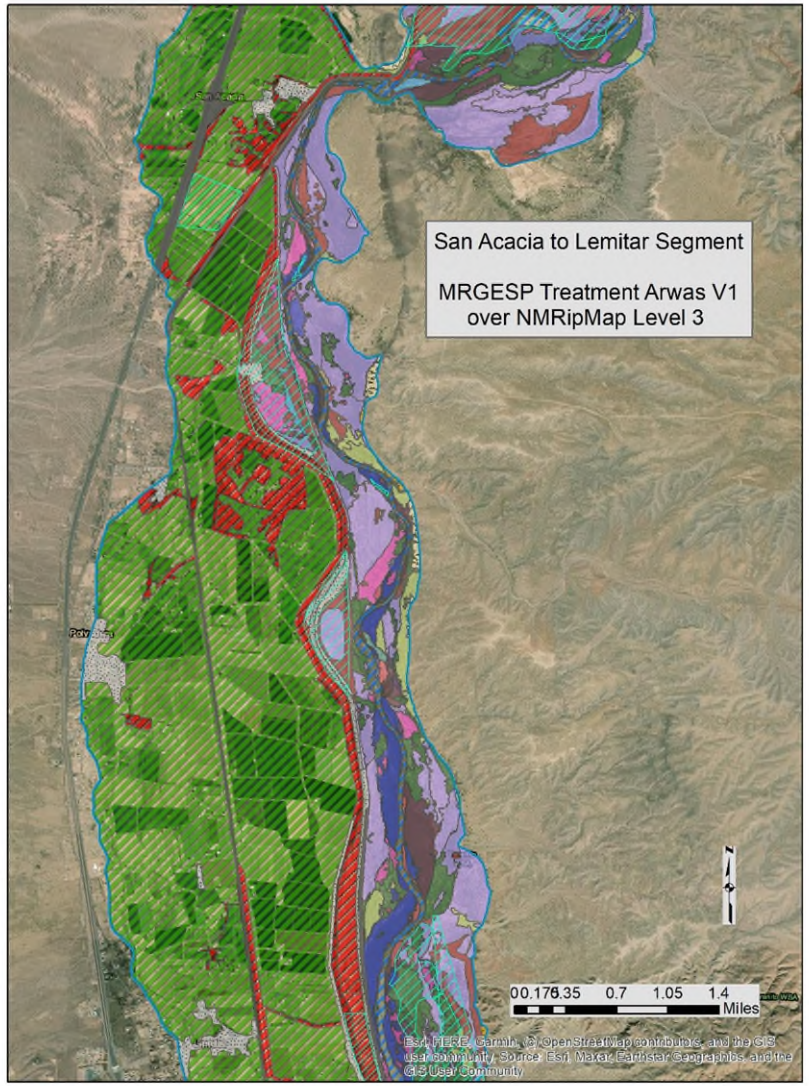
NMRipMap Level 2



NMRipMap Level 3



NMRipMap Level 3 Treatments



NMRipMap Attributes

27 Attributes

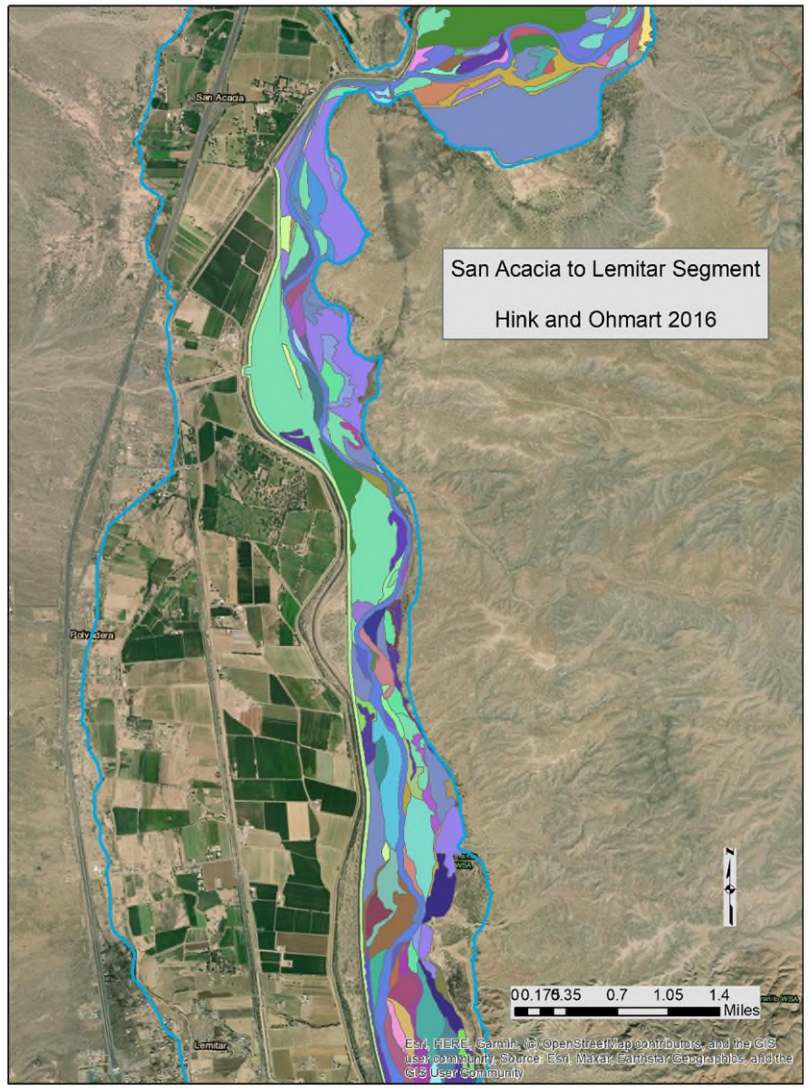
- Legend levels and names, modifiers (18)

- US National Vegetation Classification x-walk to MacroGroup, Group, and Alliance levels

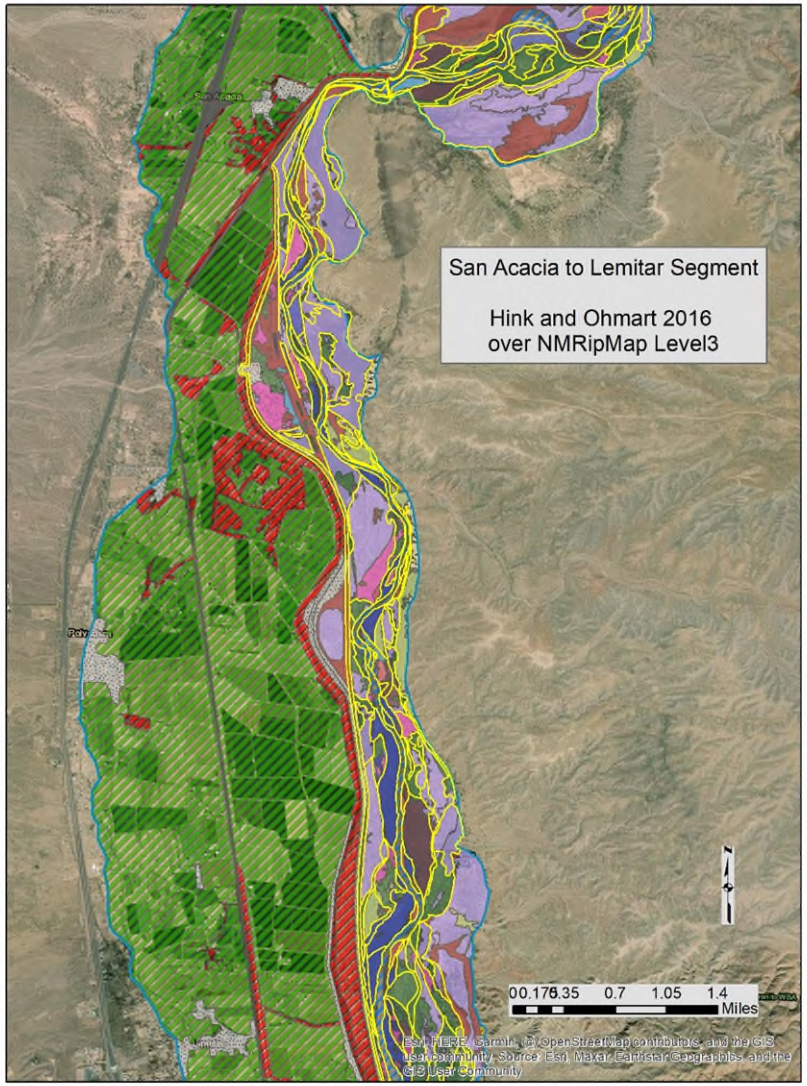
- Cover
  - Tree > 16- 40 ft (5- 12 m), >40 ft (>12 m)
    - H&O 20-40 ft and >40ft
  - Tall Shrubs 10-16 ft (3-5 m)
    - H&O 0-15 ft
  - Short Shrub 3-10 ft (1-3 m)
  - Dwarf Shrubs 1.5-3 ft (0.5-1 m)
  - Herbaceous <0.5 (<1.5 ft)
    - H&O 0-5 ft

H&O from Callahan and White. 2004. USBR

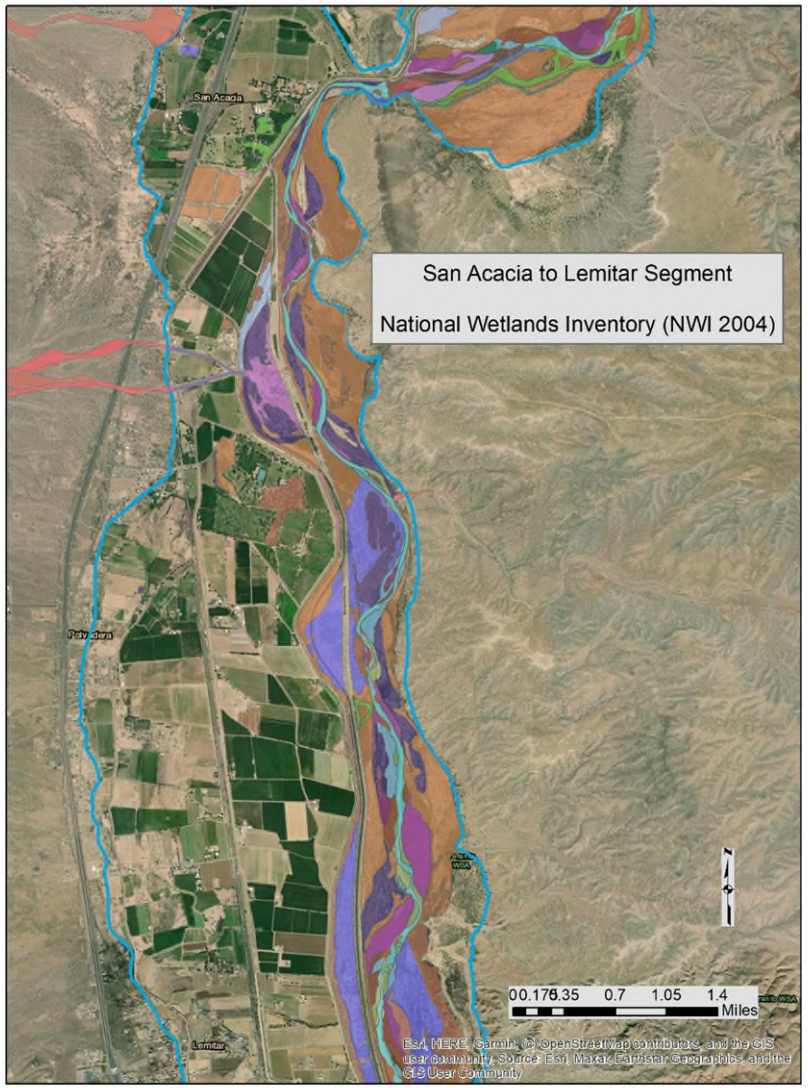
Hink and Ohmart 2016



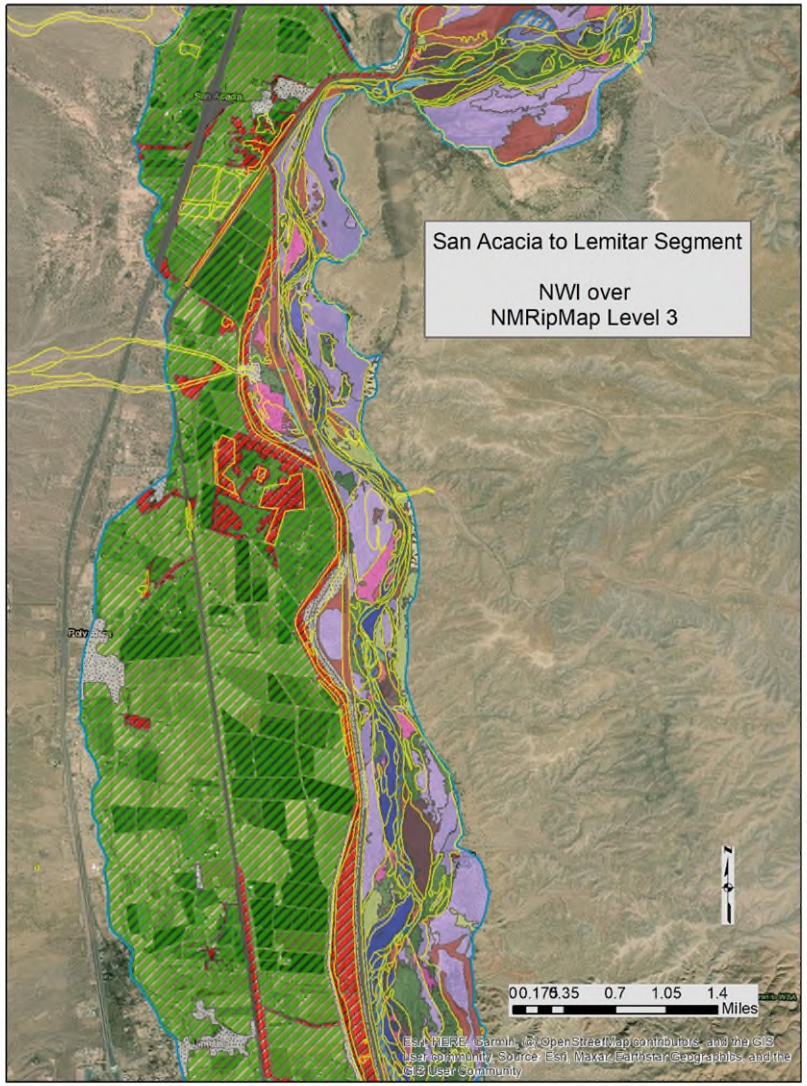
H&O over NMRipMap Level 3



National Wetlands Inventory 2004



NMRipMap Level 3 over NWI



NMRipMap Overall Accuracy

76 polygons tested

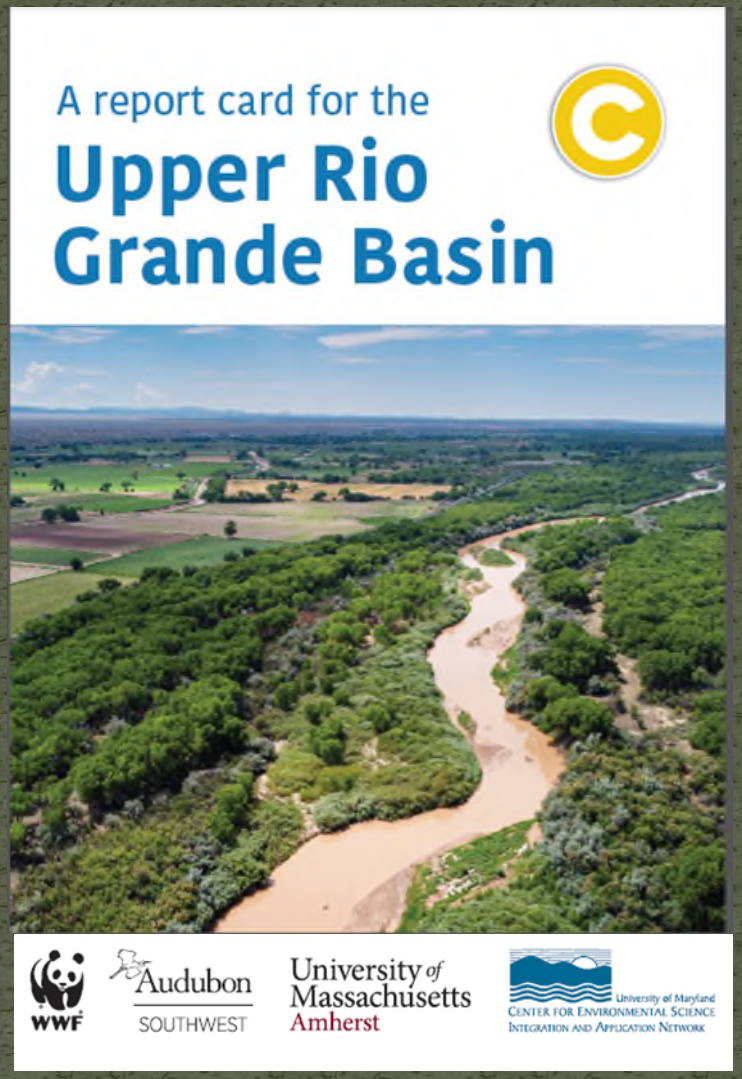
Level 3 = 82%

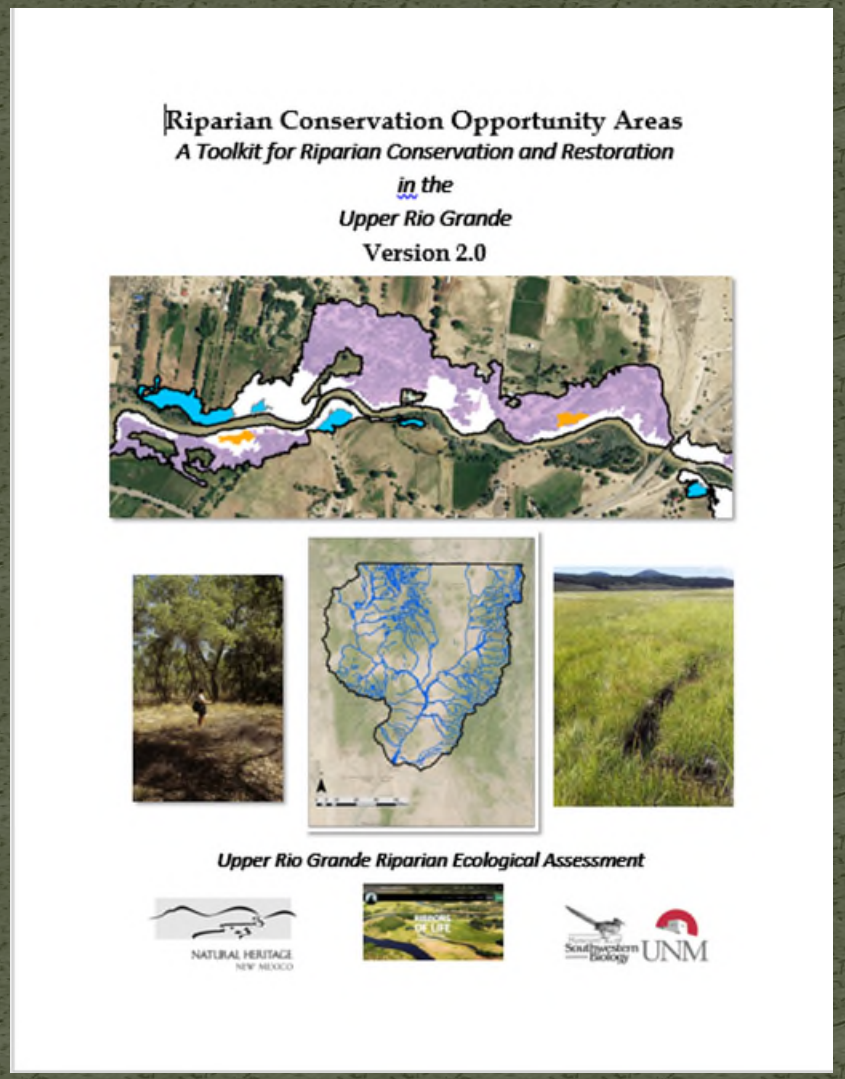
Level 2 = 85%

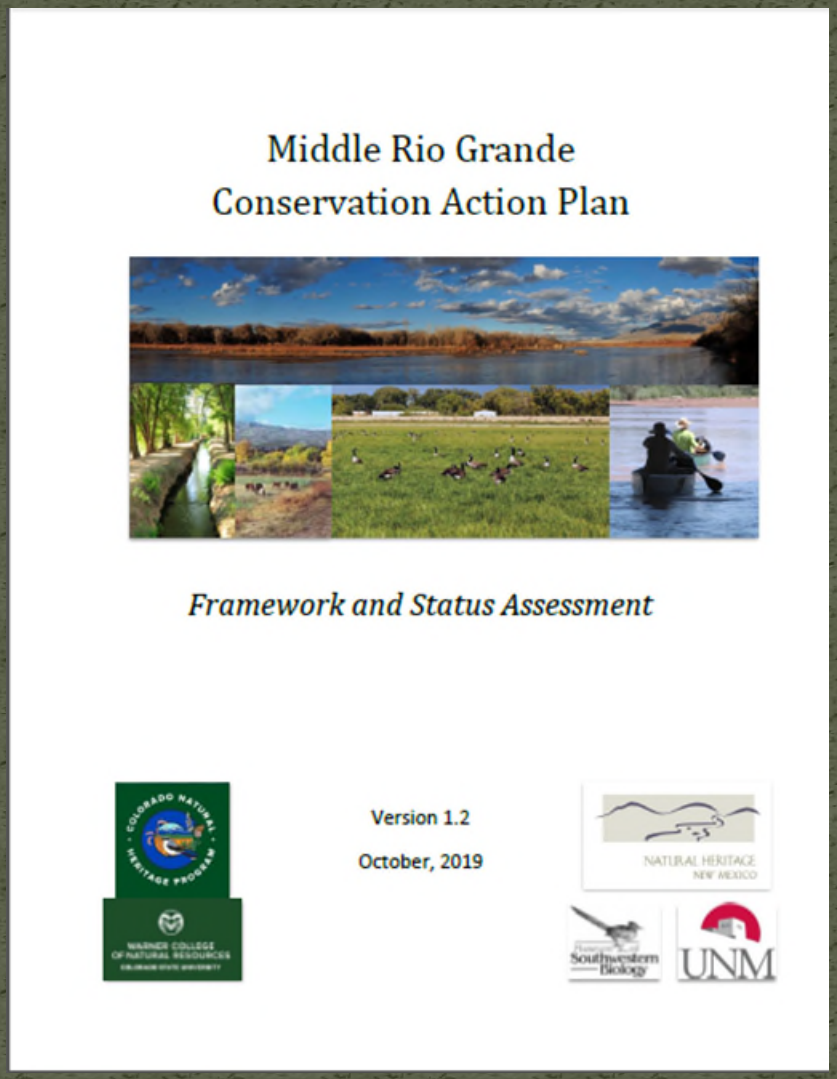
Level 1 = 92%

Level 3 Name	L1	L2	L3	IB1	IB3	IB4	IB5	IC1	IC2	IC3	IIB1	IIB4	IIB5	IIB6	IIIB1	IIIB3	IIID1	IIIE1	IVA1	IVB1
Western Lowland Native Deciduous Riparian Forest	I	IB	IB1	6			1													
Lowland Native- Introduced Russian Olive Deciduous	I	IB	IB3		8	1														
Lowland Native-Introduced Tamarisk Deciduous	I	IB	IB4			2	1													
Lowland Native-Introduced Russian Olilve - Tamarisk	I	IB	IB5				6													
Russian Olive Introduced Riparian Woodland and	I	IC	IC1					1	1											
Tamarisk Introduced Riparian Woodland and Scrub	I	IC	IC2	1					8		1									
Russian Olive-Tamarisk Introduced Riparian Woodland	I	IC	IC3							2				1						
Lowland Wet Riparian Shrubland	II	IIB	IIB1								8									
Lowland Dry Riparian Shrubland	II	IIB	IIB2						1							1				
Lowland Mixed Willow-Russian Olive Riparian Scrub	II	IIB	IIB4			1						4	1							
Lowland Mixed Willow-Tamarisk Riparian Scrub	II	IIB	IIB5										4							
Lowland Mixed Willow-Russian Olive-Tamarisk Riparian	II	IIB	IIB6											0						
Western Lowland Marsh	III	IIIB	IIIB1												2					
Arid West Lowland Wet Meadow	III	IIIB	IIIB3													3				
Western Lowland Salt Meadow and Dry Grassland	III	IIID	IIID1													1	3	1		
Ruderal Forb Meadow	III	IIIE	IIIE1															4		
Riparian Bare Ground/Rockland [non-channel]	IV	IVA	IVA1														1			
Open Channel riverwash/Water/Non-vegetated bars	IV	IVB	IVB1																	1

NMRipMap Applications

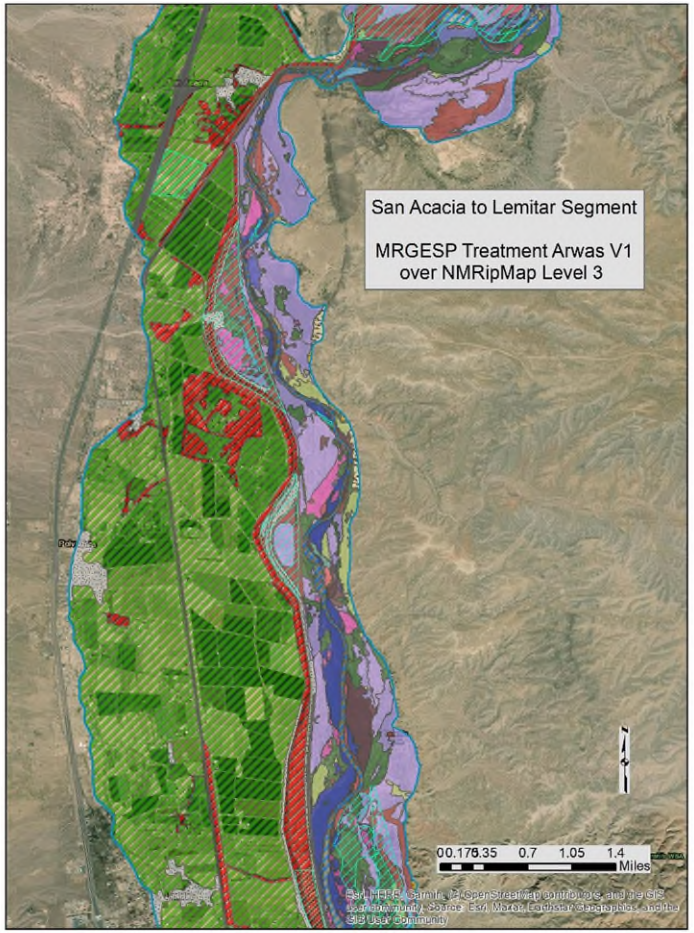






Discussion

- Wall-to-wall with a structured hierarchal legend lends to a versatility.
  - Lacks the detailed interior stand structure data of Hink and Ohmart
- Reasonably accurate
  - H&O and NWI differ in the line work details and class assignments, which could be analyzed for correlations among maps
- For updates, polygons could be reclassified with new aerial and LiDAR imagery in an automated framework plus some hands on editing.



https://nhnm.unm.edu/riparian/nmripmap

Home

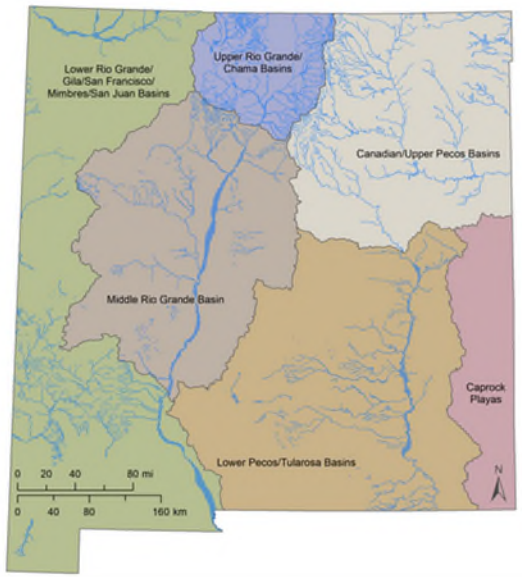
New Mexico Riparian Habitat Map

Version 2.0 Plus is available!

The New Mexico Riparian Habitat Map (NMRipMap) Version 2.0 Plus is a comprehensive, fine-scale spatial view of the composition, cover, and structure of riparian and wetland vegetation along New Mexico's perennial streams and rivers (see User's Guide for details).

NMRipMap is designed to serve wildlife habitat management, wetland and riparian conservation and restoration planning, non-native species management, riparian monitoring design, identification of refugia, and more.

Project Areas



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NMRipMap Agency Sponsors

NMRipmap Products and Data

- User Guide
- Legend
- Annotated Legend
- Attribute List
- NVC Alliance Look-up

NMRipmap Map Downloads

- Canadian Upper Pecos Version 2.0 Plus geodb WFS
- Gila Region San Juan Version 2.0 Plus North geodb WFS
- Gila Region San Juan Version 2.0 Plus South geodb WFS
- Lower Pecos Version 2.0 Plus geodb WFS
- Middle Rio Grande Version