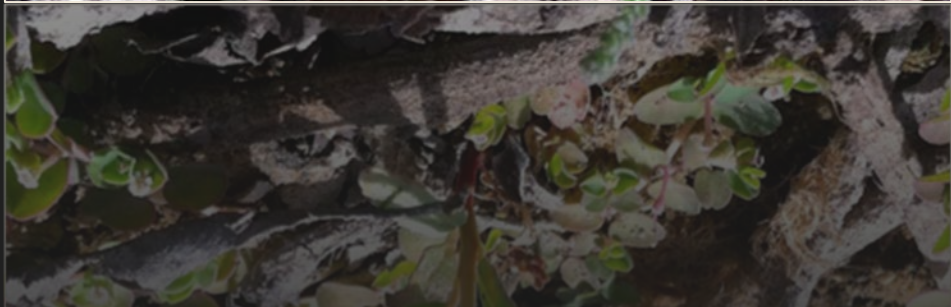
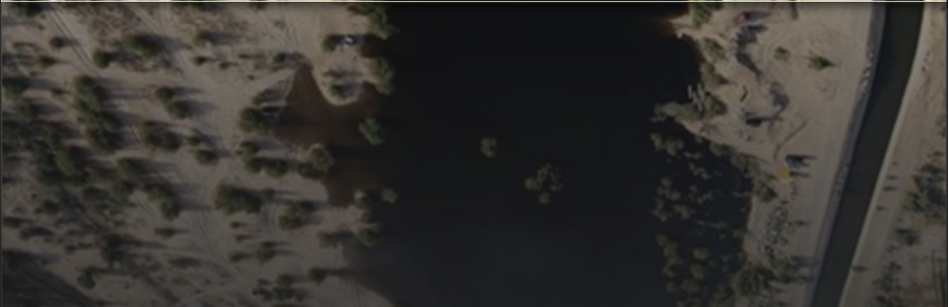


# Progress and Trends in Restoration Planning and Implementation In the Colorado River Delta



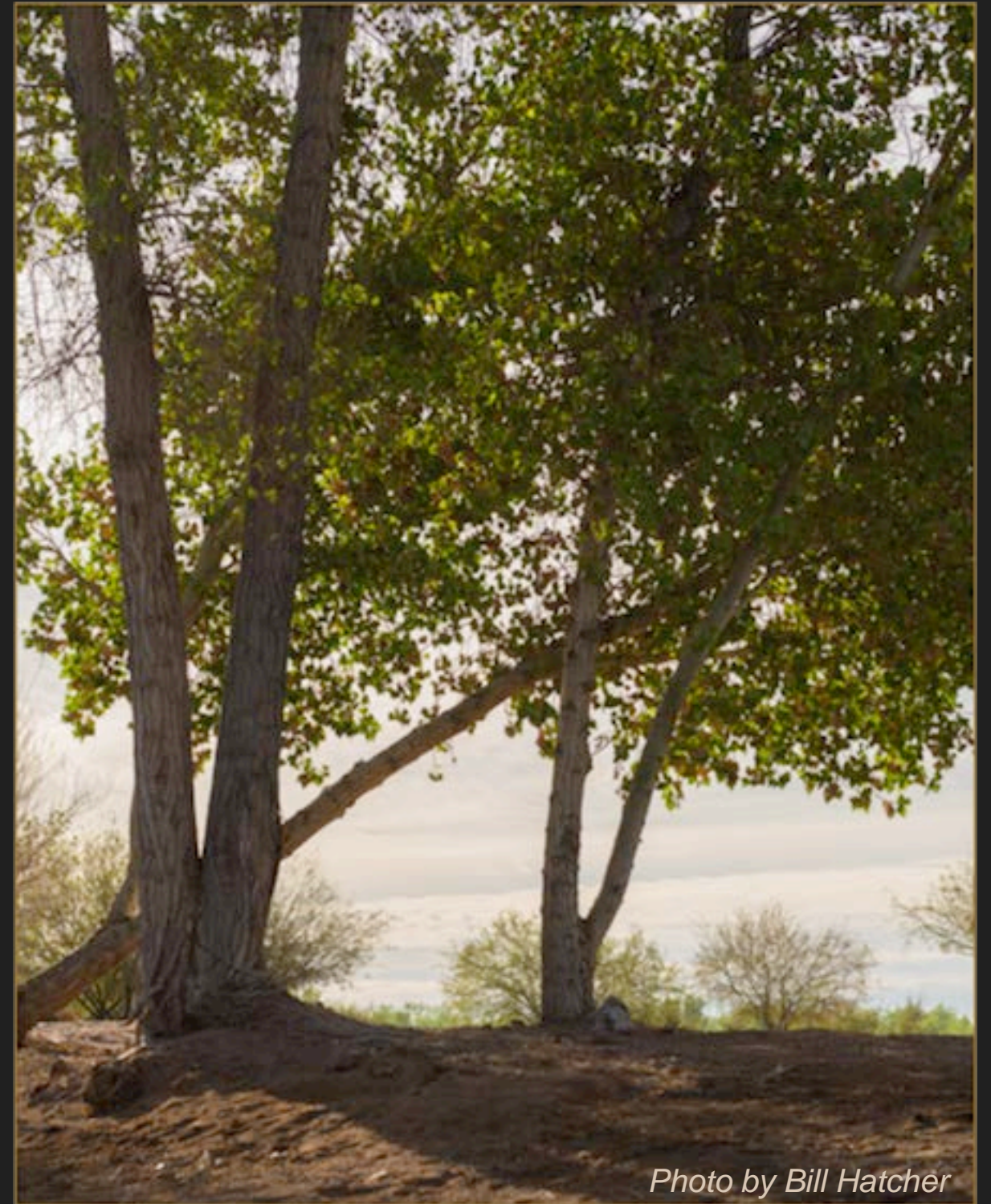
*Karen J. Schlatter  
Sonoran Institute*

*August 29, 2018  
NCER, New Orleans*

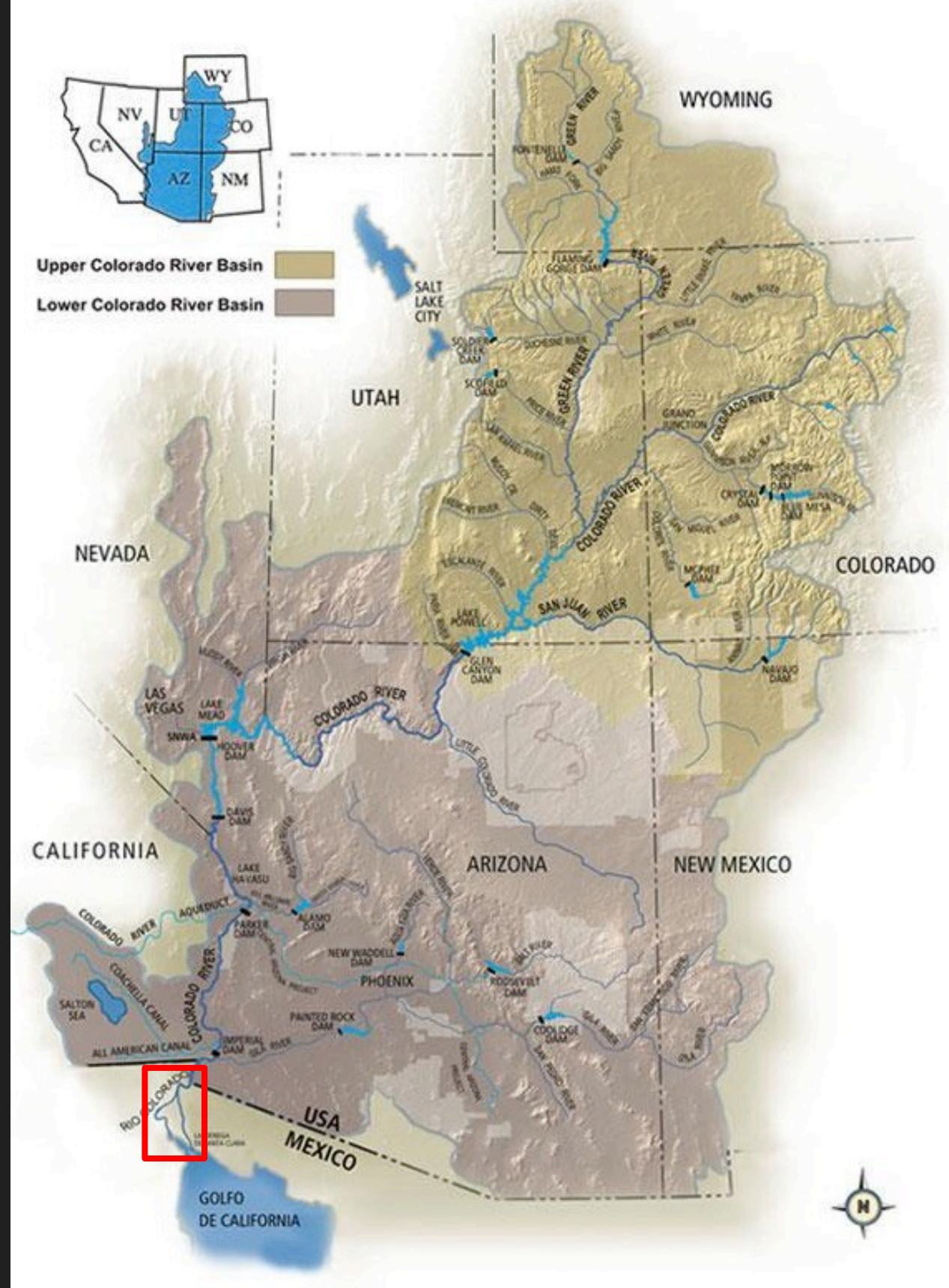


# Overview

- Restoration in the context of the Colorado River Delta
- Landscape-scale and site-scale restoration planning and design
- Restoration goals, methods, and progress



*Photo by Bill Hatcher*



# Reach 1



# Reach 3



# Reach 4: Laguna Grande Restoration Area

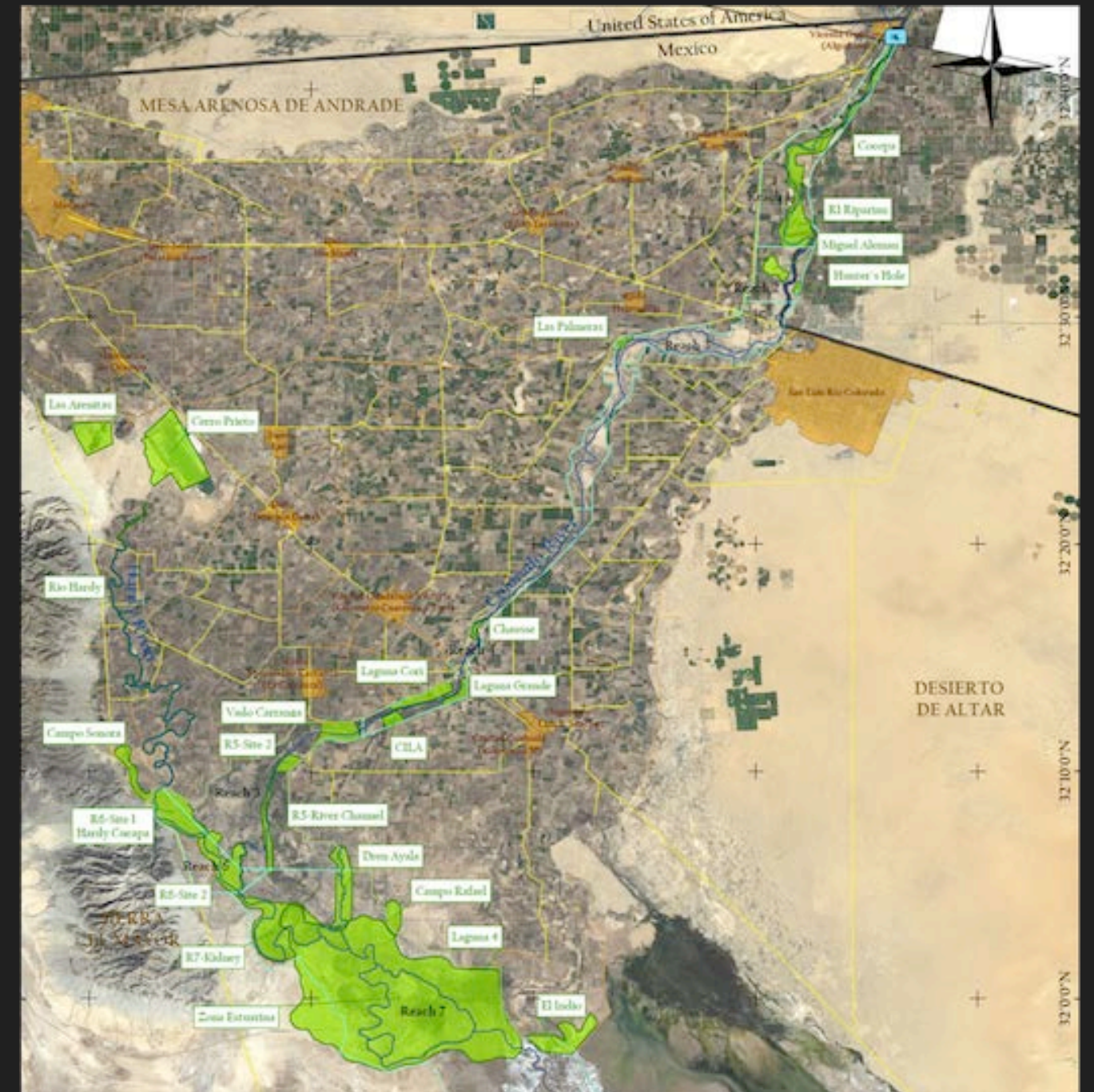


# Reach 7: The Estuary

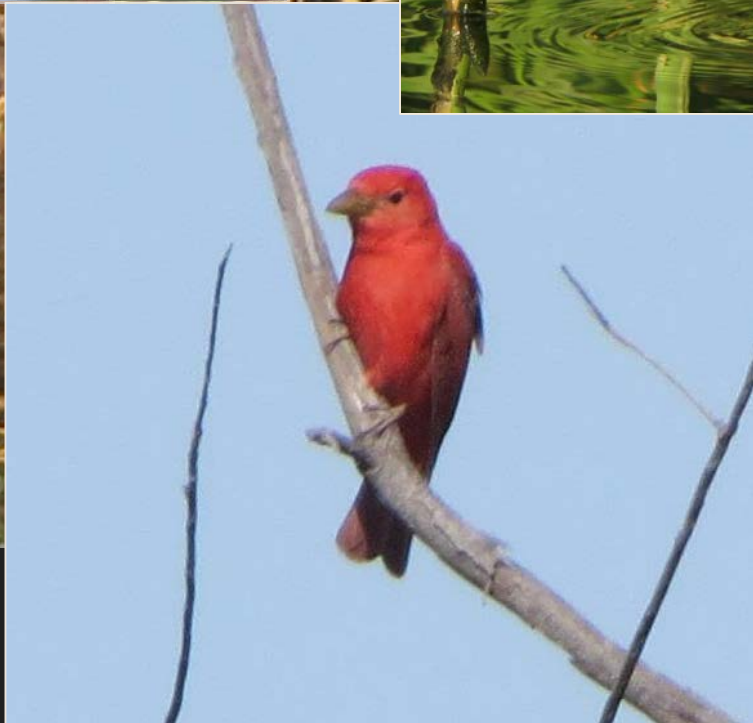
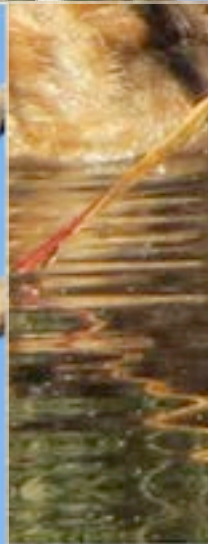
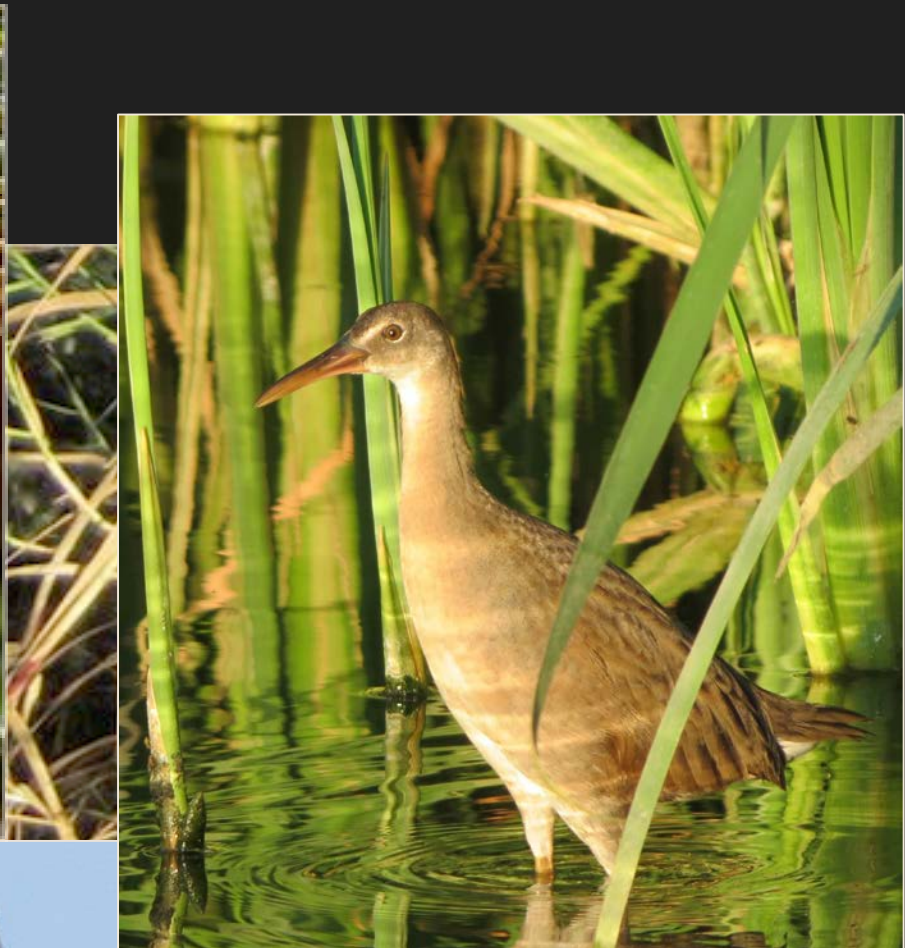


# Restoration Priorities: Landscape Scale

- Areas of existing native habitat
- Areas of shallow groundwater; presence of surface water
- Soil and water salinity considerations
- Habitat connectivity via “islands”
- Potential benefit to target conservation species







# Binational Restoration Objectives



- Preserve and protect existing habitat
- Create and enhance additional habitat
- Effectively utilize water resources
- Develop an integrated restoration approach
- Incorporate research and monitoring into adaptive management



# Restoration Opportunity

Spectrum of restoration goals, opportunities and constraints

Conservation

Restoration

Creation

Maintain natural process, minimize constraints/threats

Improve degraded processes and conditions, reduce constraints, manage stressors

Create habitat where processes constrained

Manage invasives, runoff, grazing

Remove dams, diversions, constraints

Plant floodplains and wetlands

Manage flows and sediment

Levee or channel reconfiguration

Create channels, wetlands, or reefs

# Restoration Types

- Type I: Water deliveries (passive)
- Type II: Removal of non-native vegetation
- Type III: Grading, planting, irrigation
- Type IV: Dredging and water control structures

# Target Habitat Types

Upland and Mesquite Bosque

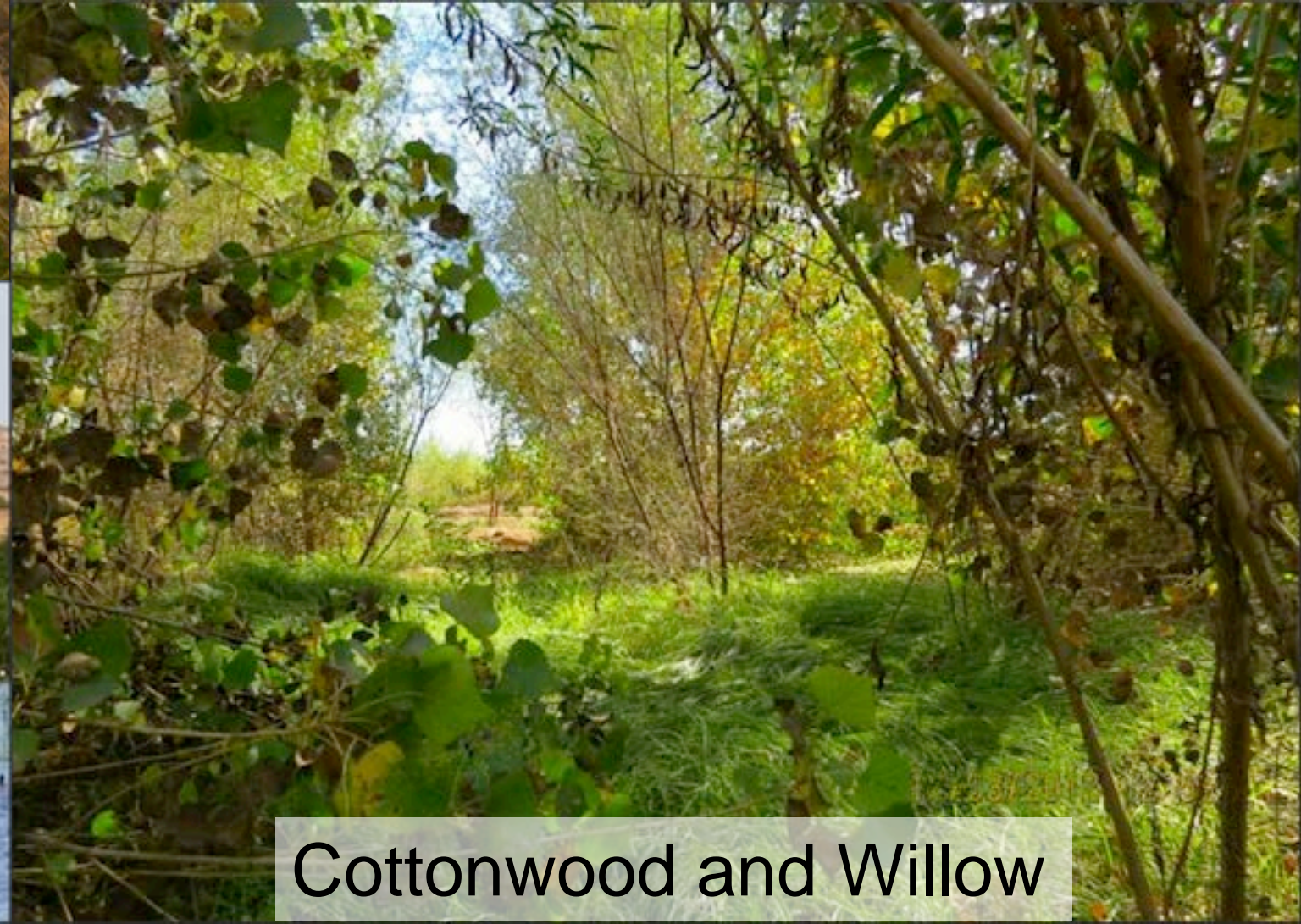


*Photo by Bill Hatcher*

Mudflats and Lagoons



Marsh and Open Water



Cottonwood and Willow

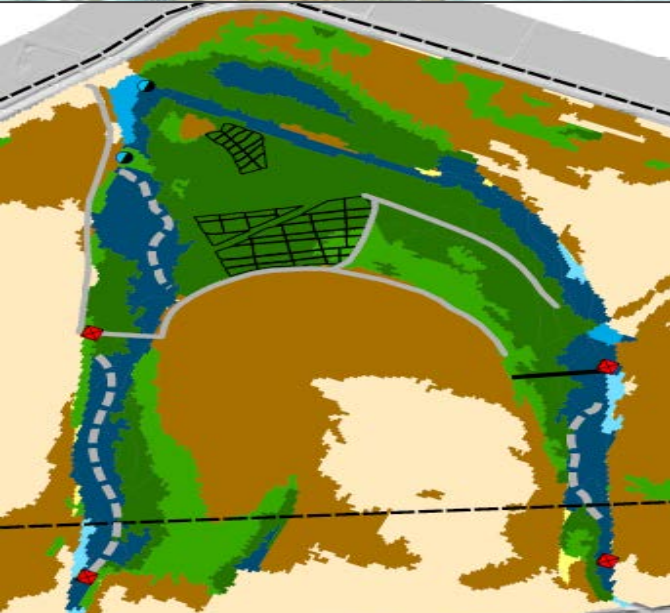
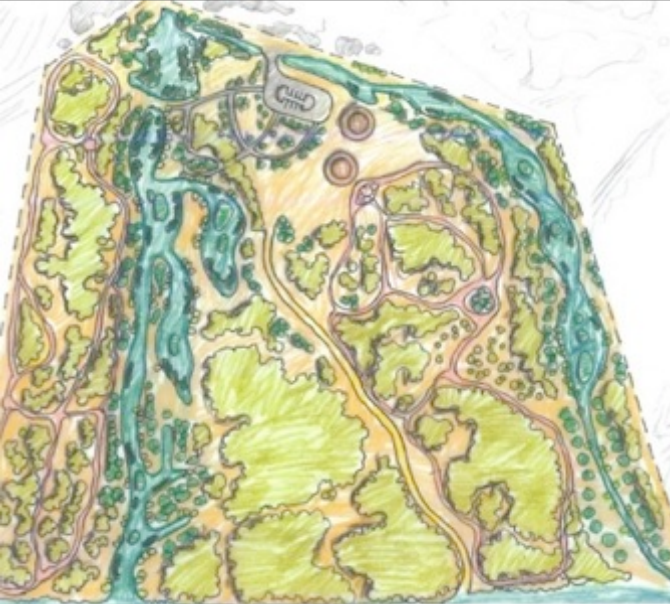
# Riparian Restoration

## Hydrology and Ecology:

- Utilize existing habitat features: historic channel meanders, lagoons, remnant vegetation
- Screening criteria: depth to groundwater, soil salinity and texture, irrigation feasibility

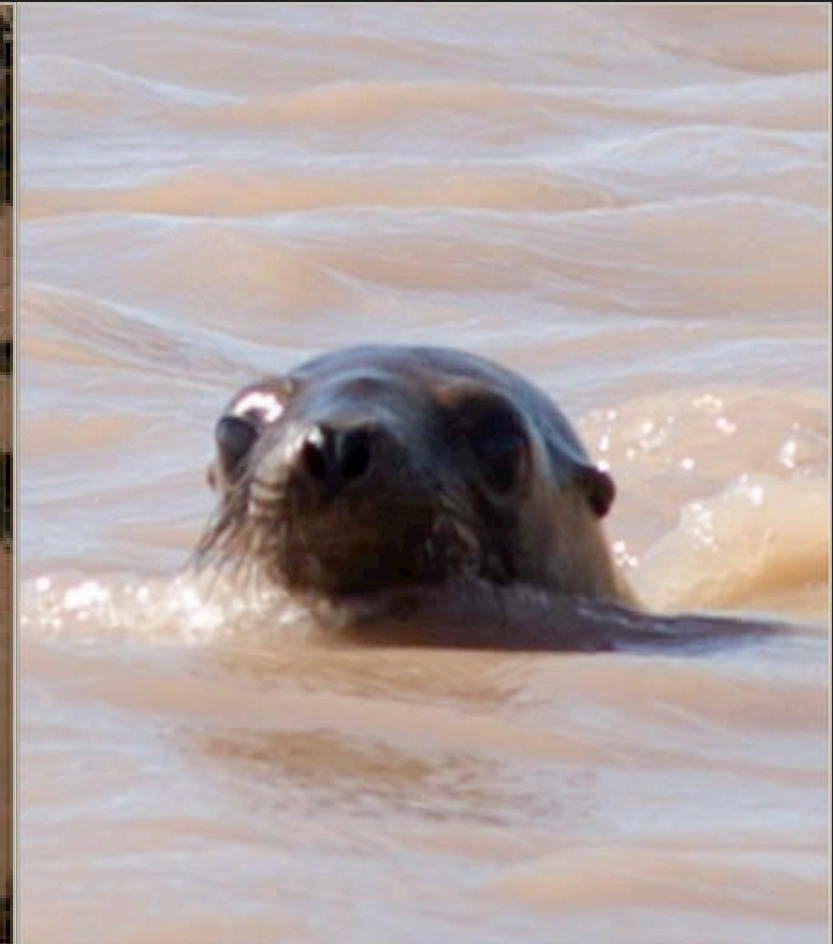
## Non-Ecological Factors:

- Site access, public accessibility, water availability and delivery points



# Estuarine Restoration

- Enhance connectivity of freshwater and tidal flows
  - Augment freshwater flows
  - Sediment removal in river-tidal channels





# Restoration Goals and Advances

Habitat Type	Restored (by end of 2018)		Minute 323 (projected)		Total	
	Ha	Acres	Ha	Acres	Ha	Acres
Open Water and Marsh	58	142	53	130	110	272
Cottonwood-Willow	204	504	267	660	471	1,164
Mesquite Bosque	162	402	607	1,500	770	1,902
Upland	22	54	368	910	390	964
<b>TOTAL RIPARIAN</b>	<b>446</b>	<b>1,102</b>	<b>1,295</b>	<b>3,200</b>	<b>1,741</b>	<b>4,302</b>
Mudflats and Lagoons			65	160	65	160
<b>TOTAL ALL</b>	<b>446</b>	<b>1,102</b>	<b>1,360</b>	<b>3,360</b>	<b>1,806</b>	<b>4,462</b>

# Thank You!

*Email:*  
***[kschlatter@sonoraninstitute.org](mailto:kschlatter@sonoraninstitute.org)***



*Photo by Bill Hatcher*