

Thank you for joining us!

Webinar Topic:

*The Ecosystem Response to Restoration:
Birds in the Colorado River Delta*

Presented By:

Osvel Hinojosa-Huerta – *Director of
Pronatura Noroeste's Northwest Water
Conservation Program*





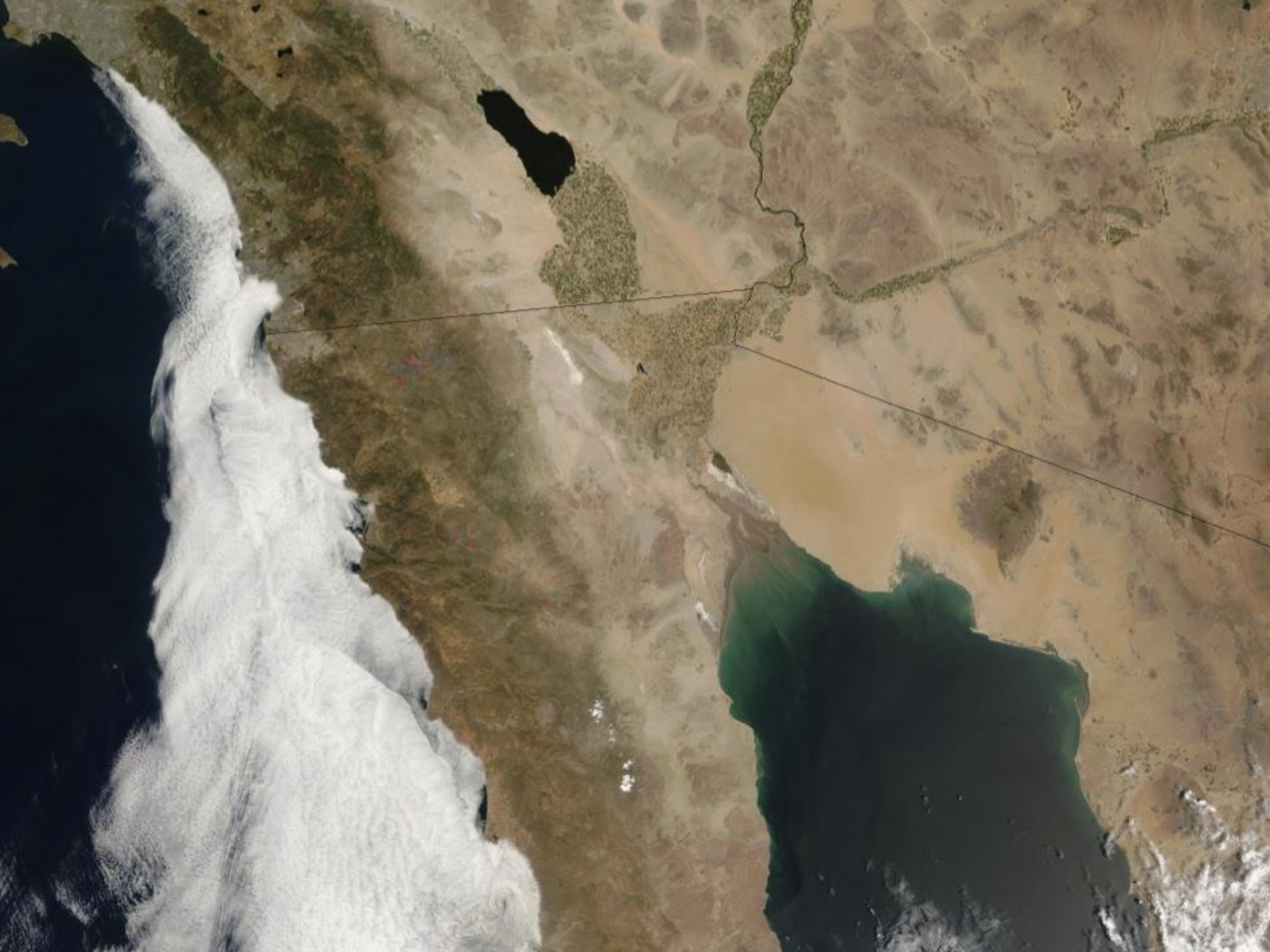
The Ecosystem Response to Restoration: Birds in the Colorado River Delta

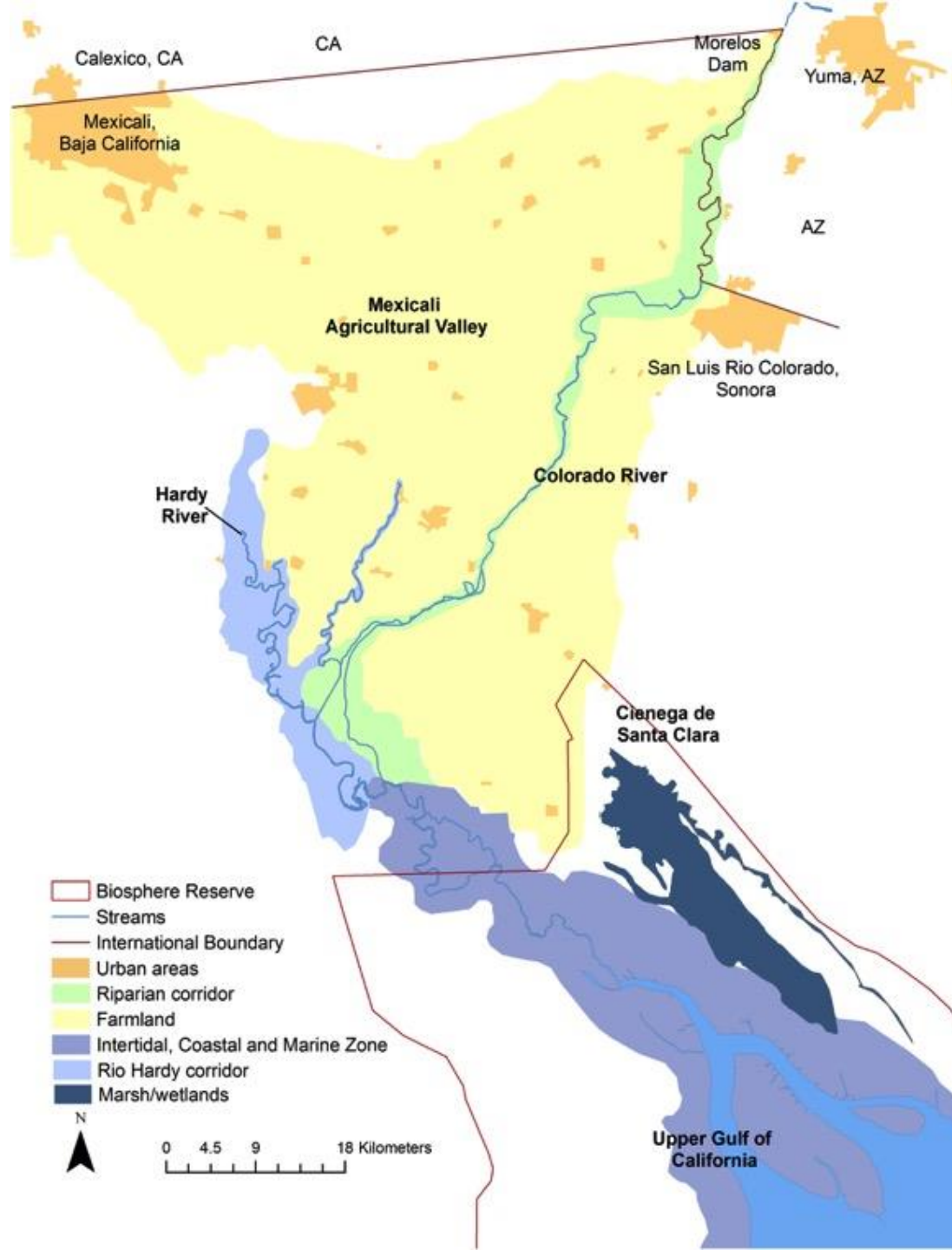
Osvel Hinojosa-Huerta
Pronatura Noroeste



Our mission:
**Conservation of the
priority ecosystems of
Northwestern Mexico,
contributing to the
development of society
in harmony with nature.**















Importance of the Colorado Delta

**Biosphere
Reserve**

Ramsar Site

**Priority Wetland in
Mexico & North
America**



Fotografía: Francisco Zamora

REDFORD
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**RAISE
THE
RIVER**
RECONNECT THE COLORADO



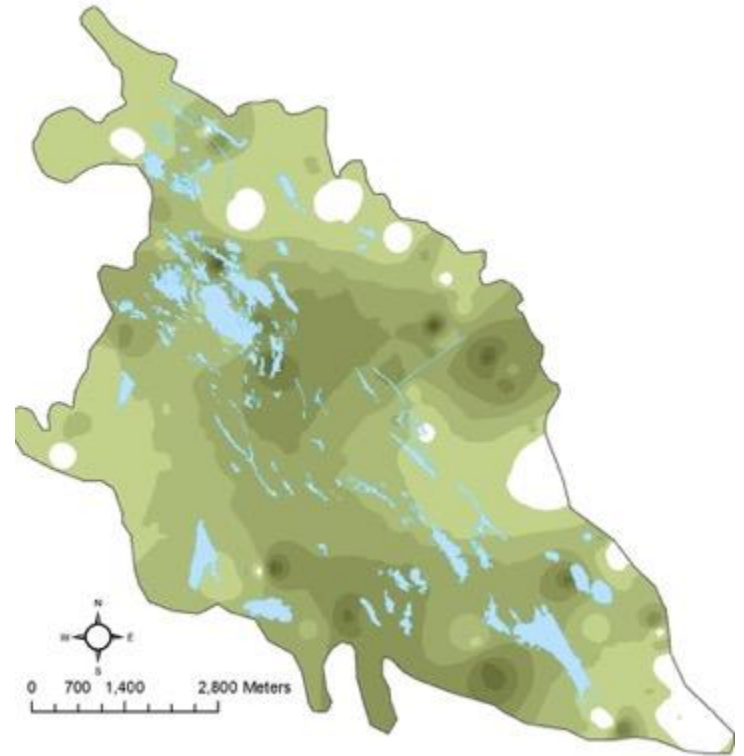
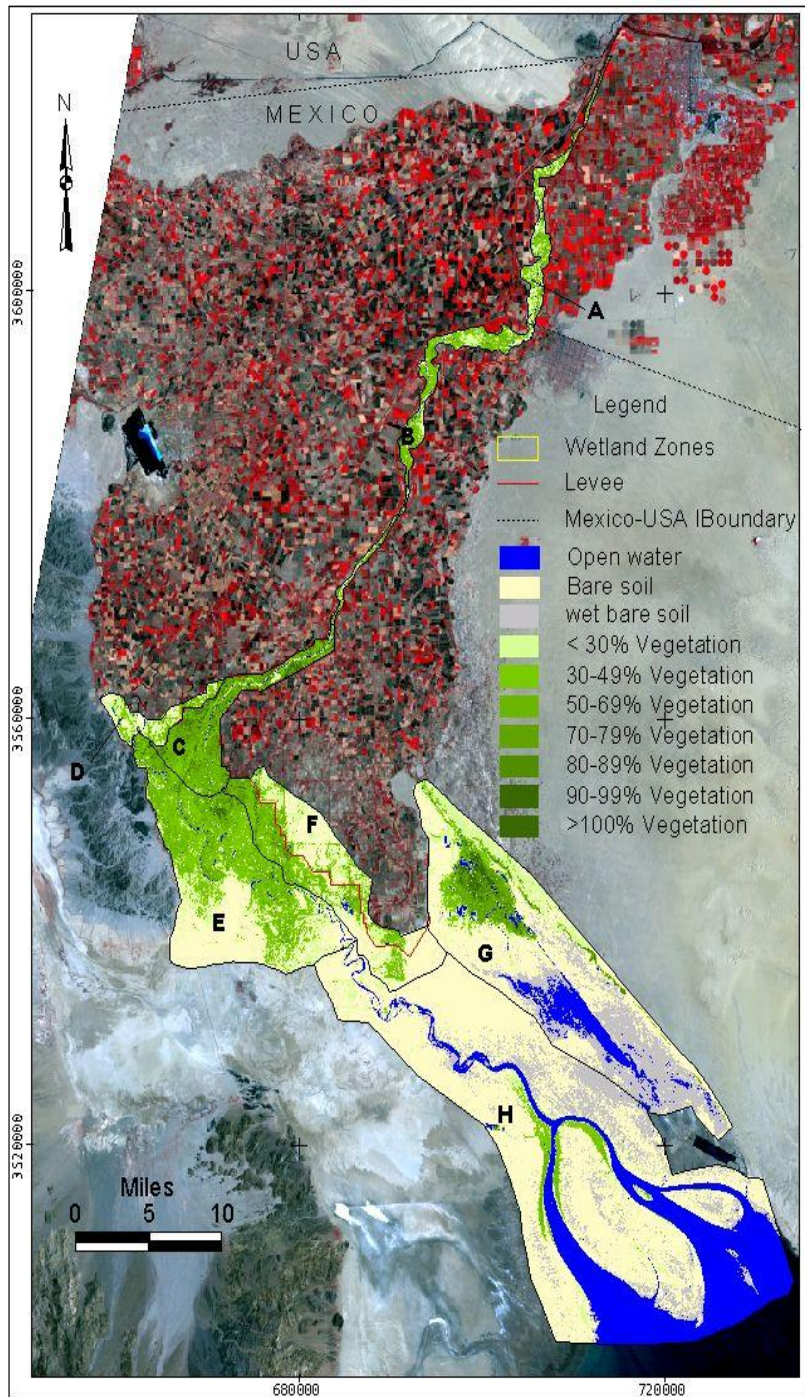
**RESTAUREMOS
EL COLORADO**
ASOCIACIÓN CIVIL





R Í O A R R O N T E
FUNDACIÓN





Avian Monitoring Program in the Colorado River Delta

- Evaluate trends in abundance and diversity:
measurement of ecosystem health
- Guide conservation and restoration initiatives

Avian Monitoring Program in the Colorado River Delta

Floodplain of the Colorado River from Morelos Dam to the estuarine area

Changes in abundance, diversity and composition of the riparian avian community and marshbirds

Relation with hydrological (surface and groundwater) and vegetation changes, as well as restoration activities

Riparian Monitoring

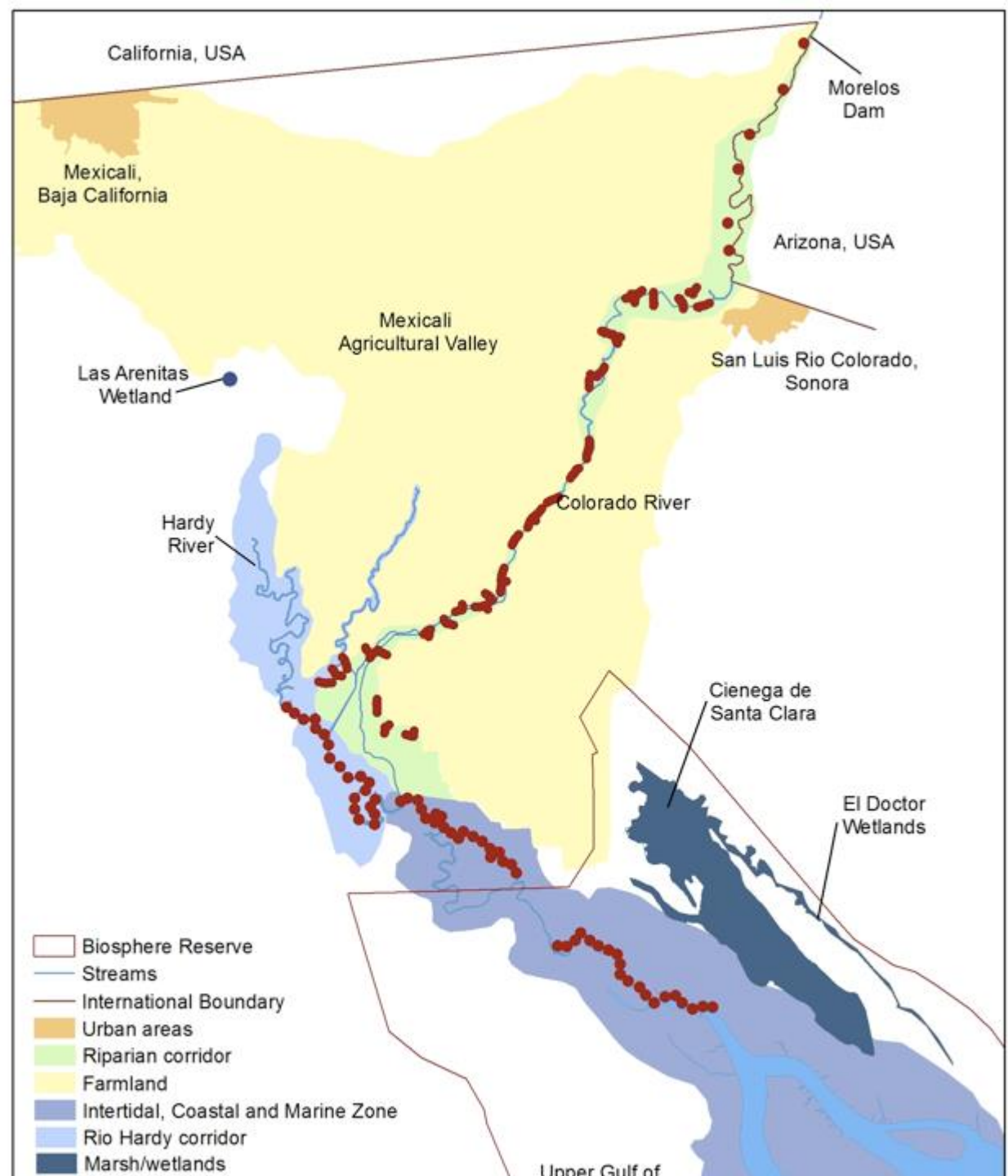
- 5 Minute, variable distance point-counts, 200 m apart.
- Monitoring: 192 survey points (24 transects), 4 times per year (once per season) since Spring 2002 (surveys continue up to date)

Riparian Surveys

192 survey points
Colorado River

Waterbird Surveys

80 survey points
Hardy River and
Estuary



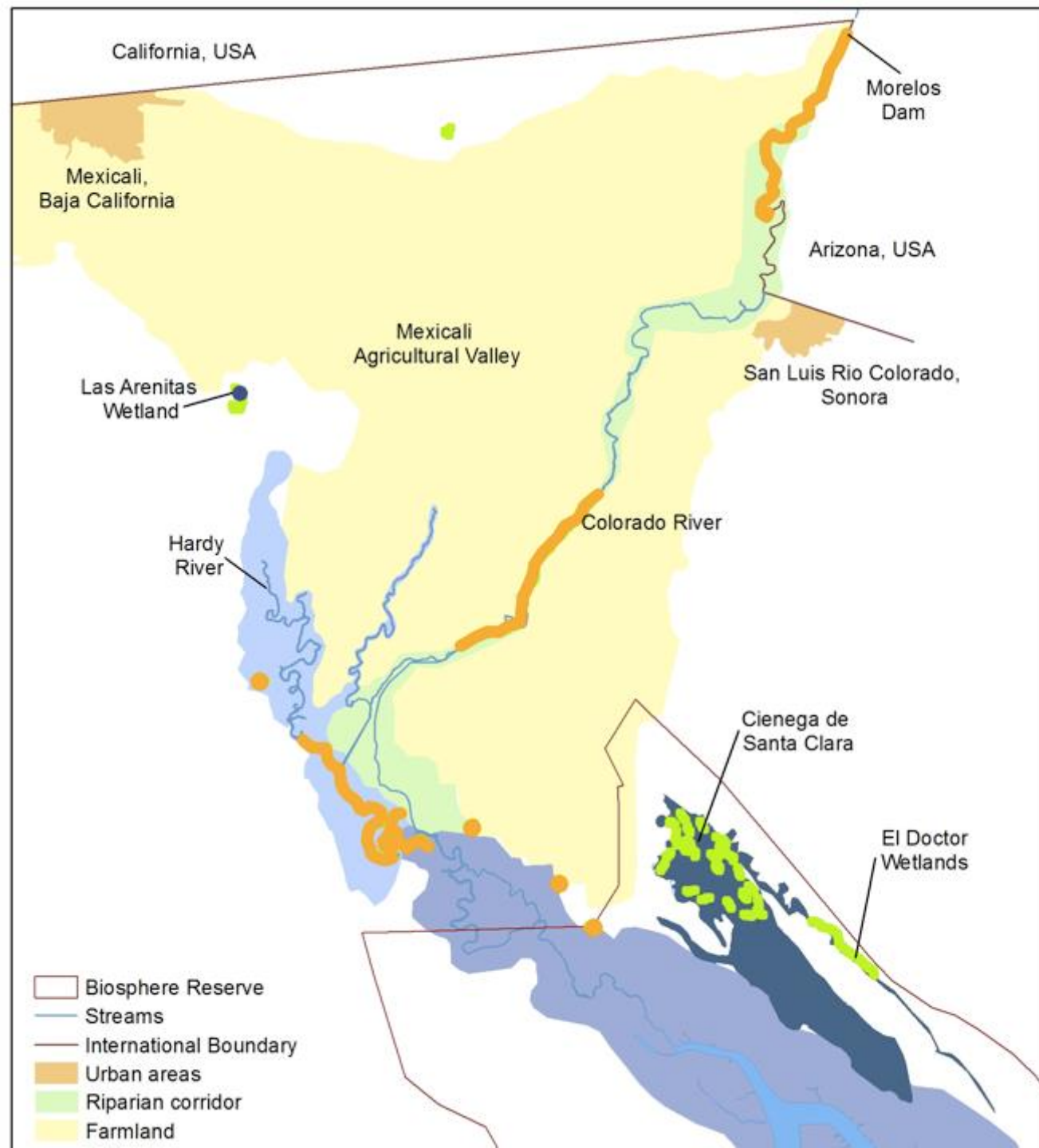


Fotografía: Francisco Zamora

Marshbird Surveys

- Standardized Protocol for Monitoring Marshbirds in North America
- BLRA, SORA, LEBI, VIRA, CLRA, AMBI
- Two times per year: March and May
- Since 2003





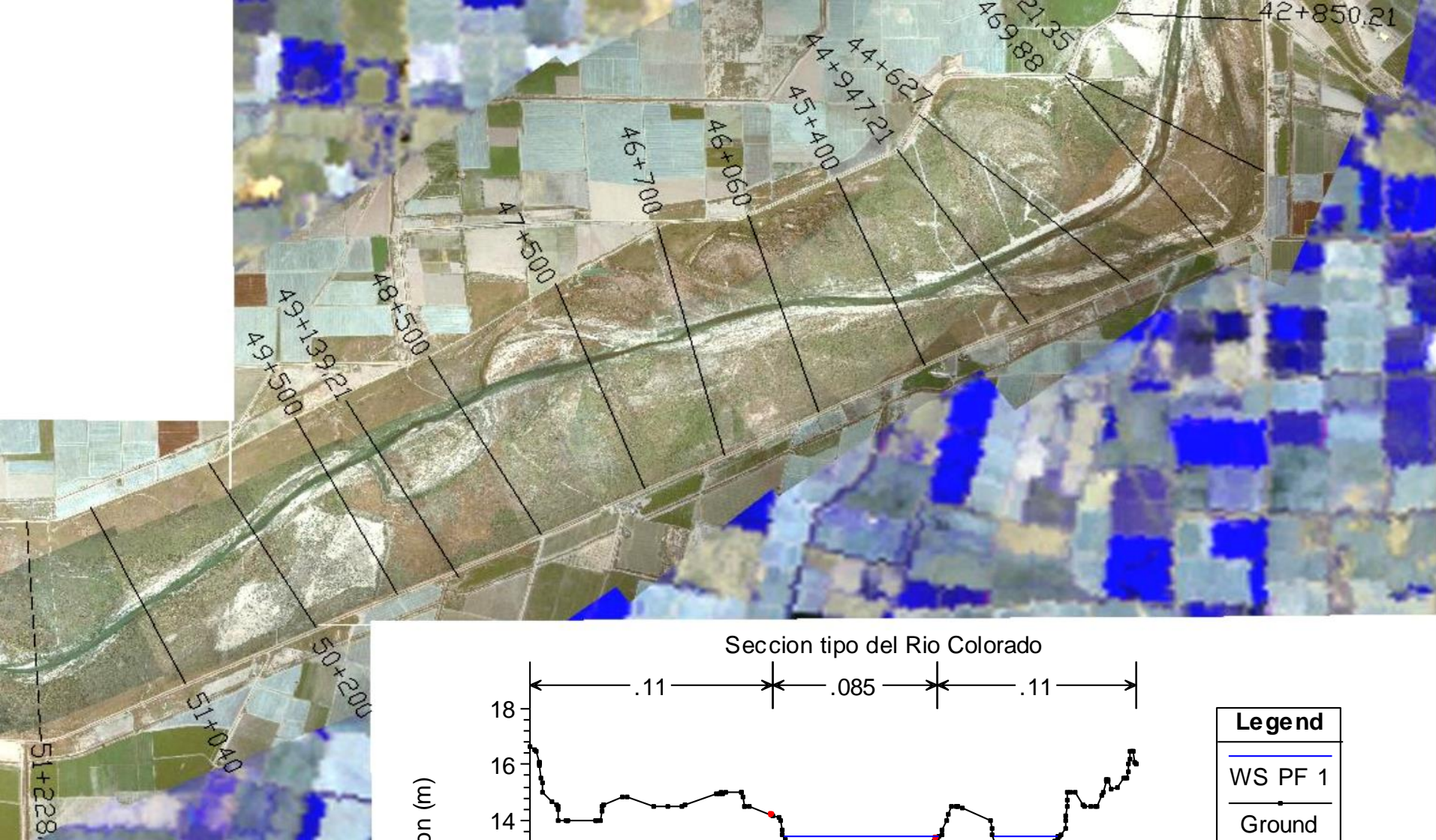
Marshbird Surveys

220 survey points
along the Colorado
River

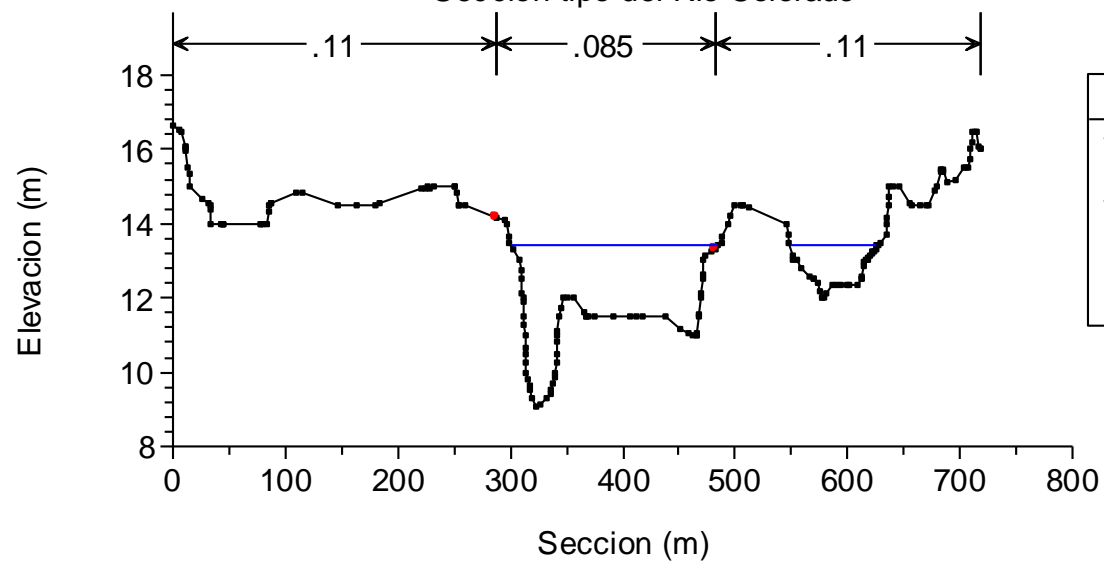
160 survey points
along the Hardy
River / Estuary

250 survey points
in the Cienega de
Santa Clara and El
Doctor





Seccion tipo del Rio Colorado



Legend	
	WS PF 1
	Ground
	Bank Sta

Native biodiversity and human communities in the Colorado River Delta will be sustained by a landscape-scale network of hydrologically functional, adaptively managed conservation sites and corridors, supported by public policies and programs in both Mexico and the U.S .

Key strategies

- Research, planning, monitoring....repeat
- Outreach and community involvement
- Binational negotiations and public policy
- Water for the environment
- Protection of key sites
- Restoration

Implementation

Water Allocation

- The river is over-allocated
- We need new strategies and tools



Fresh Water Allocation

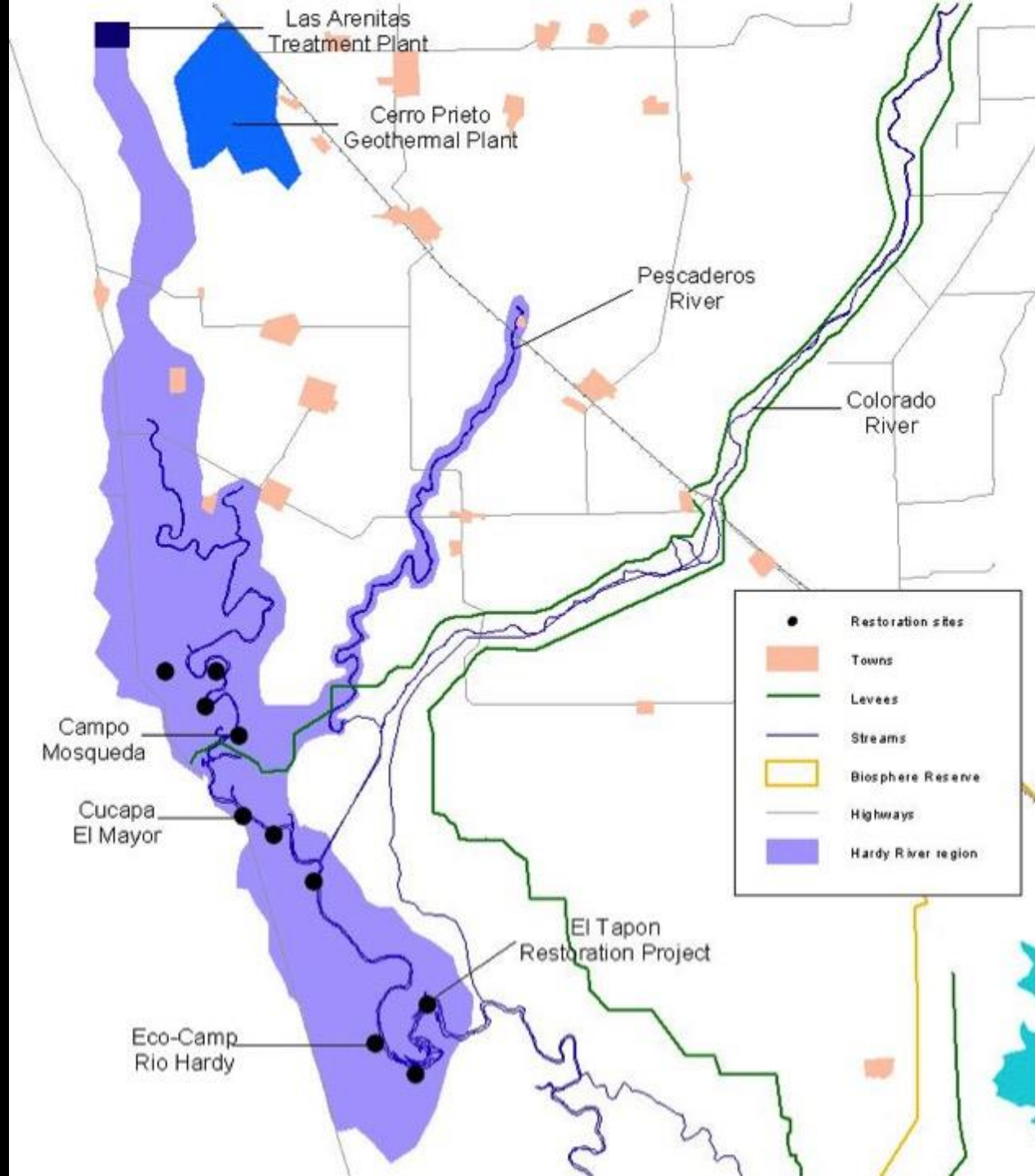
- Agricultural return flows
- Acquisition of water rights in the Mexicali Valley
- Treated effluent of wastewater plants
- Optimize tidal interactions



Las Arenitas Wastewater Treatment Plant

30% of the
effluent
guaranteed for
instream flows in
the Hardy River
(700 l/s or 22
Mm³ per year)

Duplicates the
flow in the river









Fresh Water Allocation:

- Voluntary, market-based strategies
- Acquisition of water rights in the Mexicali Valley
- Water Trust for the Restoration of the Colorado River Delta

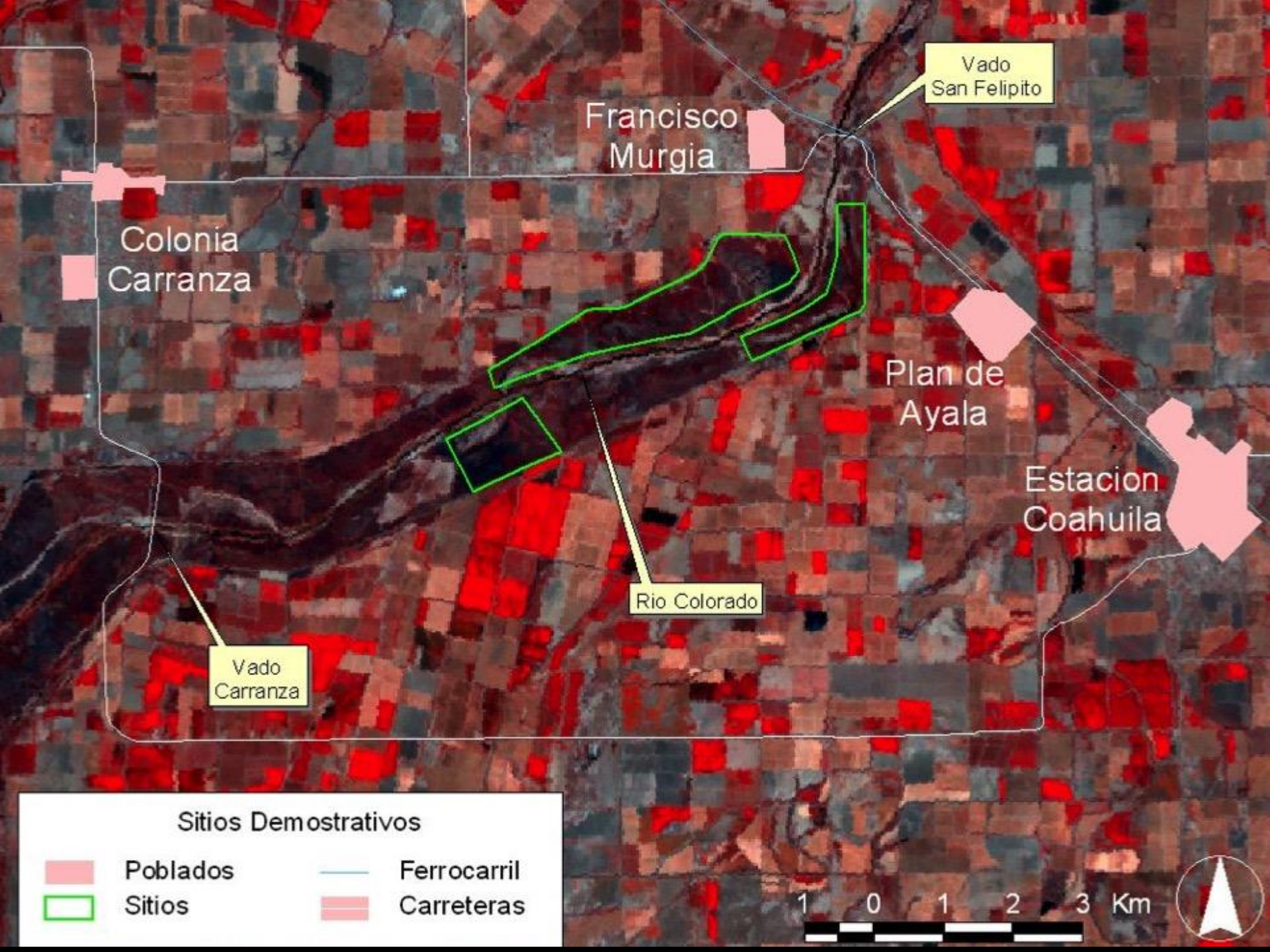




Restauraremos el Colorado

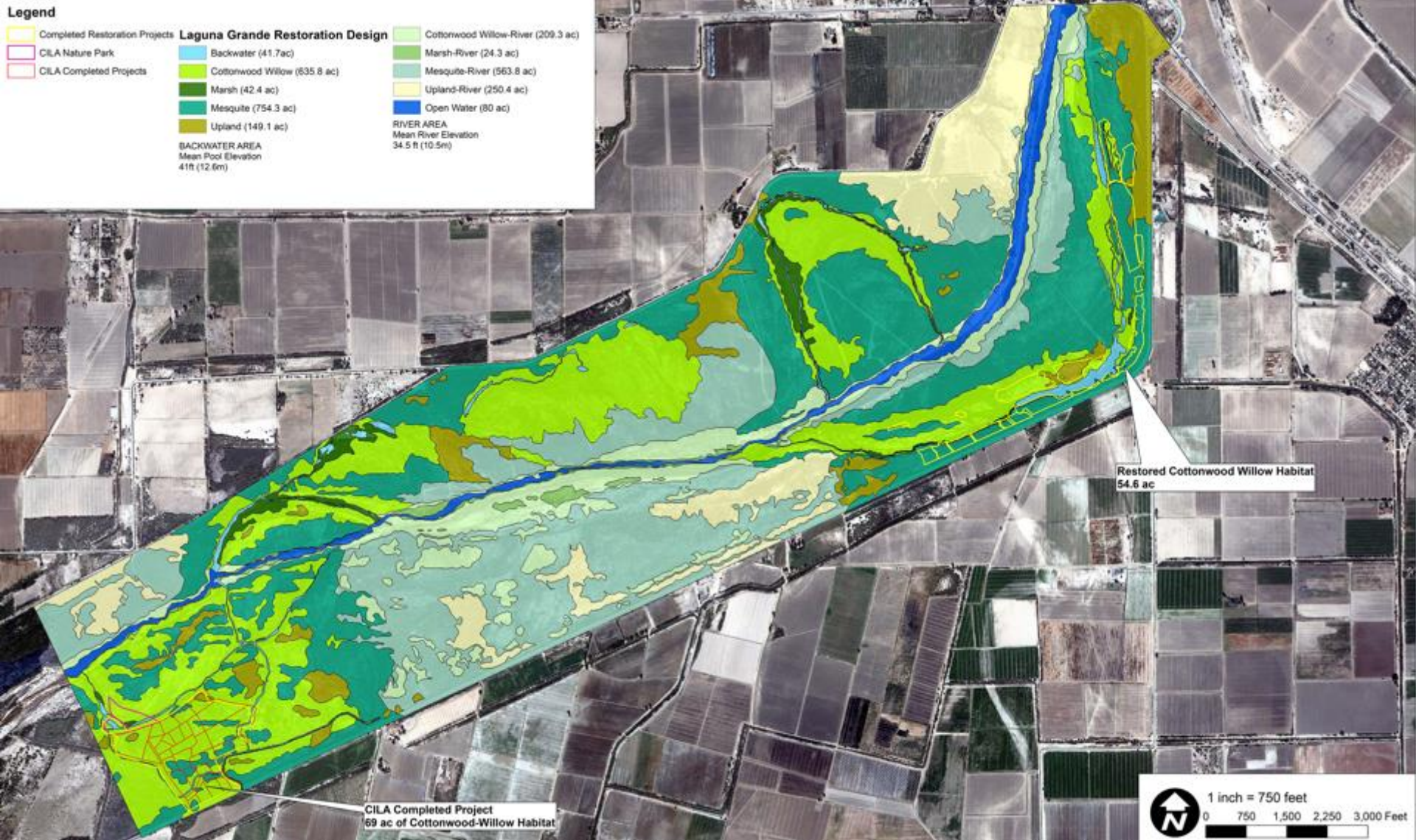
Pronatura Noroeste,
Sonoran Institute,
TNC, National
Audubon Society

8,200 Acre-feet per
year of permanent
water rights









Laguna Grande Restoration Design



Pino Salado, antes de la restauración



Bosques Nativos, después de la restauración















Binational negotiations for the Colorado River Delta



Minute 319 – Historic agreement

5-year agreement

- Water conservation
- New water sources
- Shortage and drought
- Environmental component



Environmental component

Allocation of water for the delta
158,000 acre-feet in 5 years

Contributions from US, Mexico
and NGO's

Test delivery mechanisms

Evaluate the hydrological and
ecological response

Information for the design of
environmental flows in the future



Pulse flow of Minute 319

Contribution of US and Mexico: 105,000 acre-feet – one major event

Mimic natural flow regime

8 weeks, March 23 – May 18 2014



Base Flow

53,000 acre-feet,
provided by NGO's

Smaller flows,
longer duration –
maintain restored
vegetation



















**RAISE
THE
RIVER**
RECONNECT THE COLORADO





May 13 2014



May 15 2014



Photo credit: Francisco Zamora-Sonoran Institute/Lighthawk

Mantenimiento de los sitios de restauración

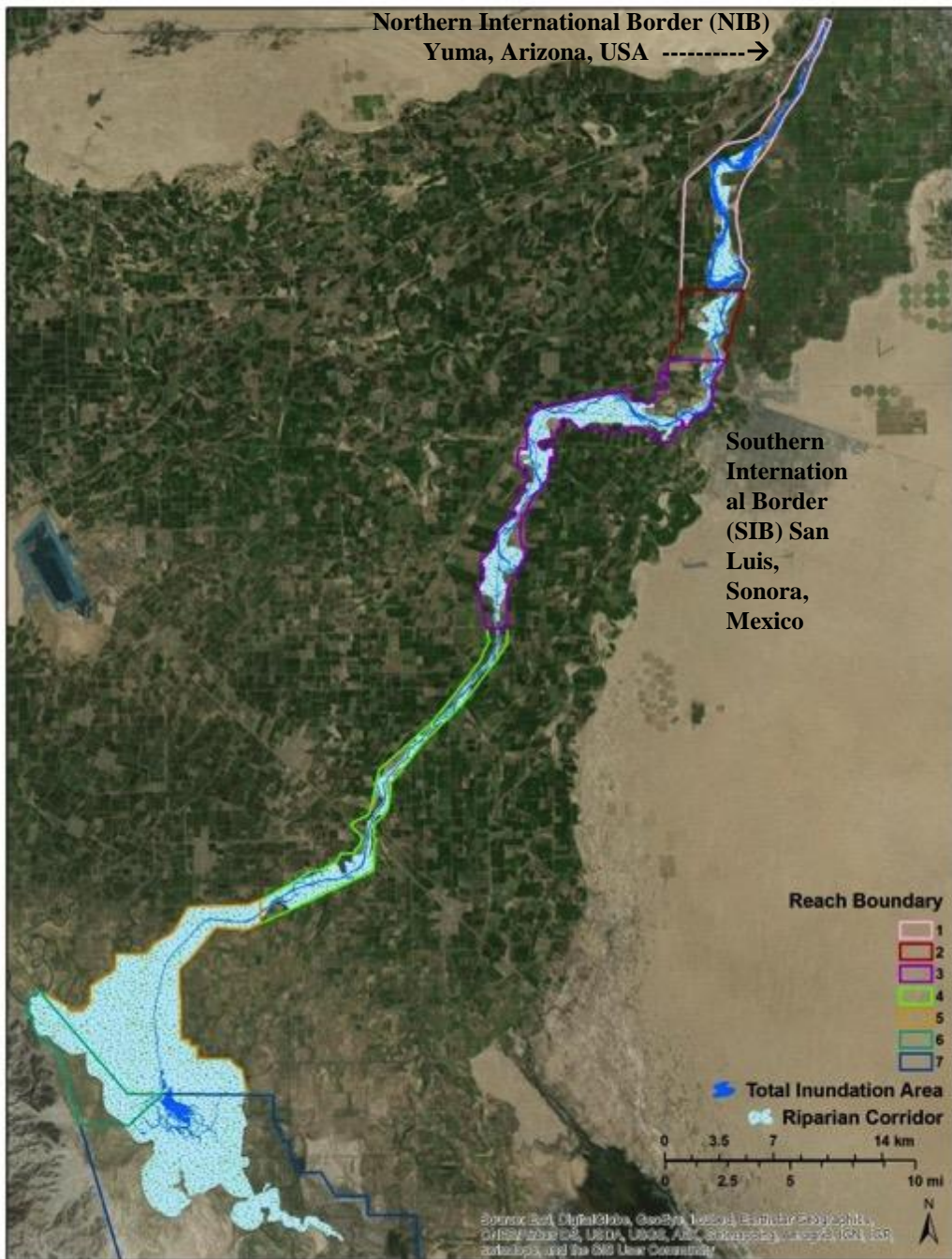


Mantenimiento y Monitoreo



Flujo Base en el Río Colorado





Habitat Enhancement

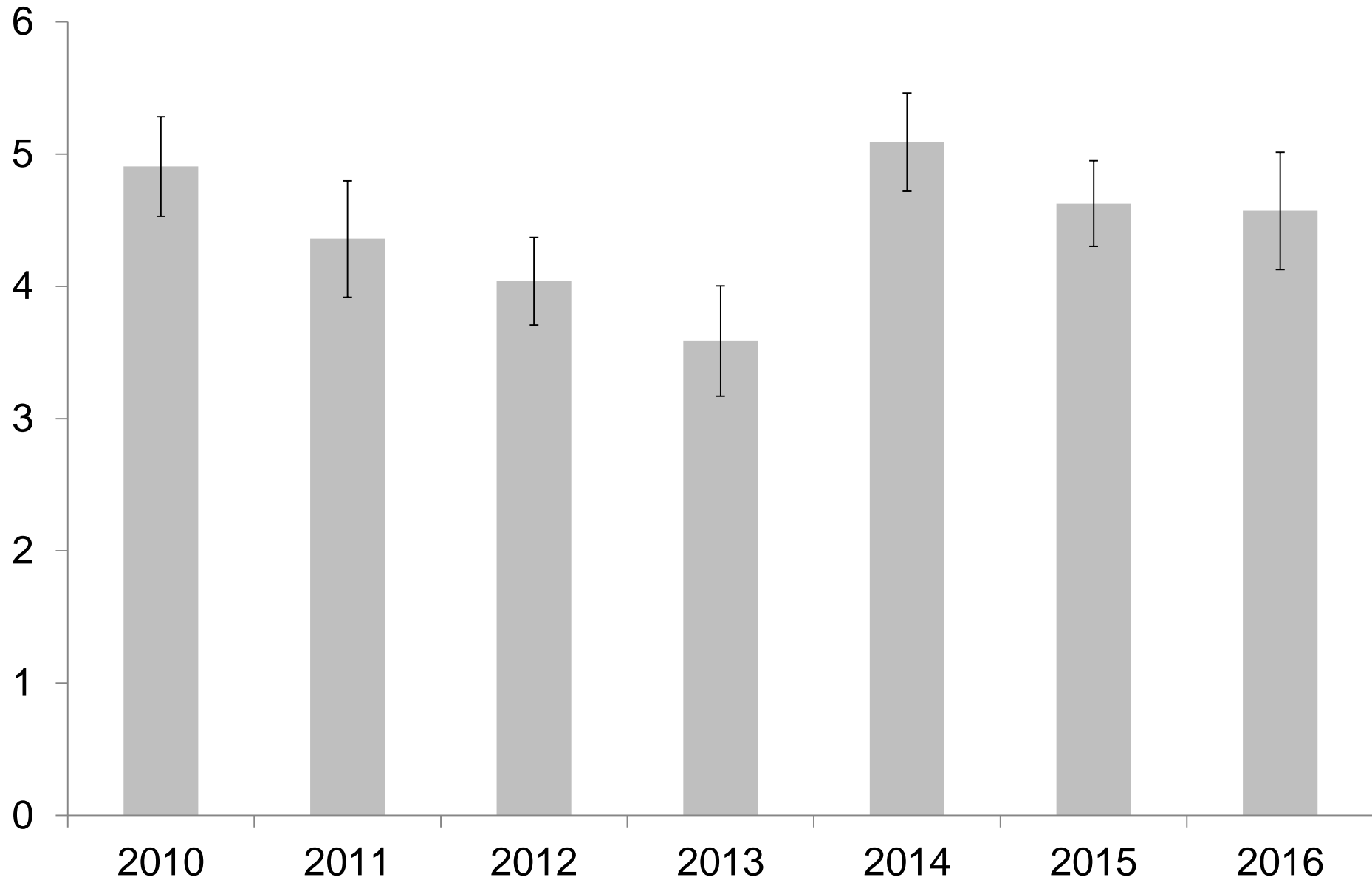
500 acres - restored and functional

Green-up of the Floodplain

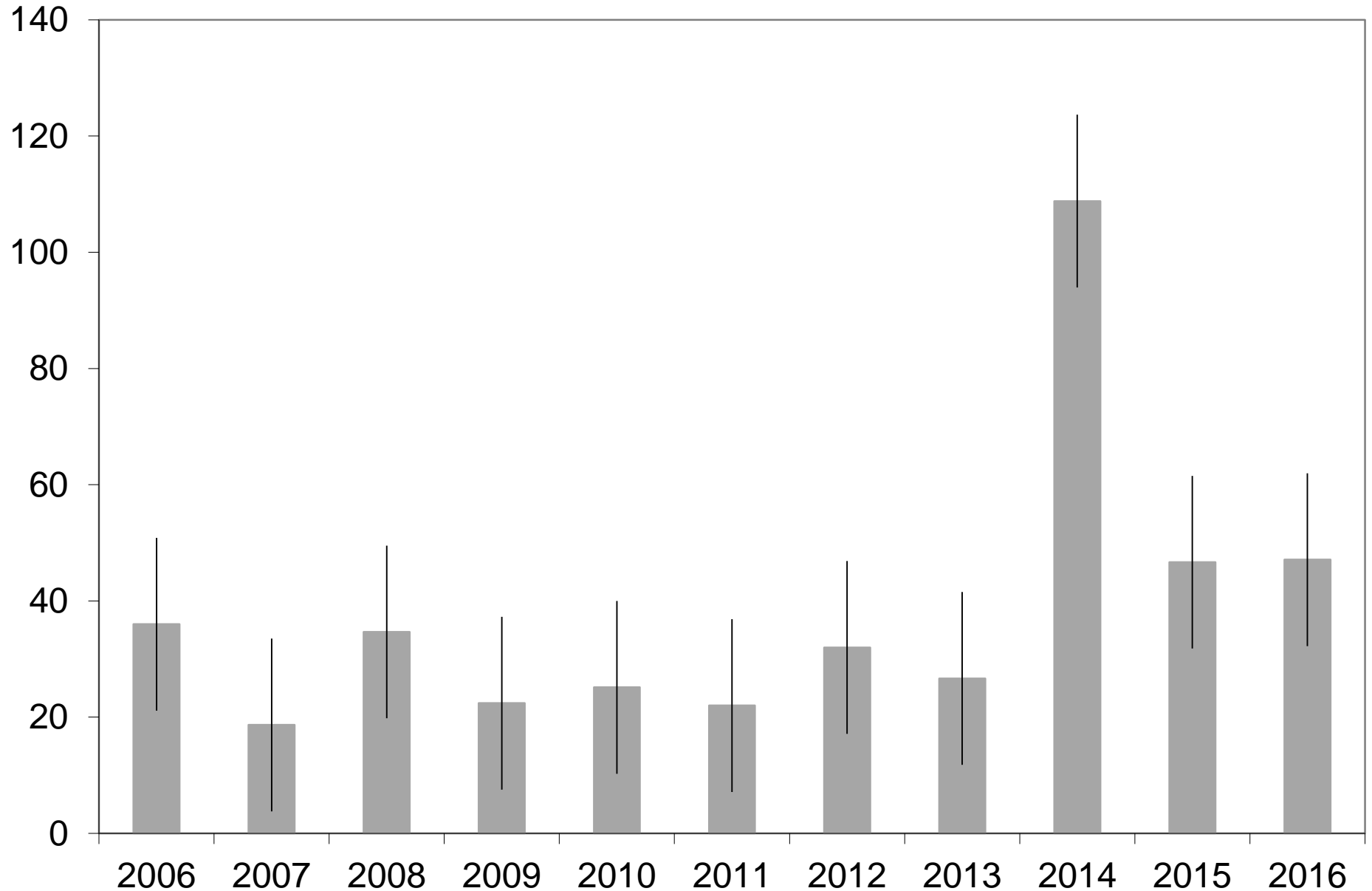
The pulse flow reverted a 13 year downward trend of vegetation biomass

Increase in Vegetation Index
43% in the flooded area
23% in the riparian zone

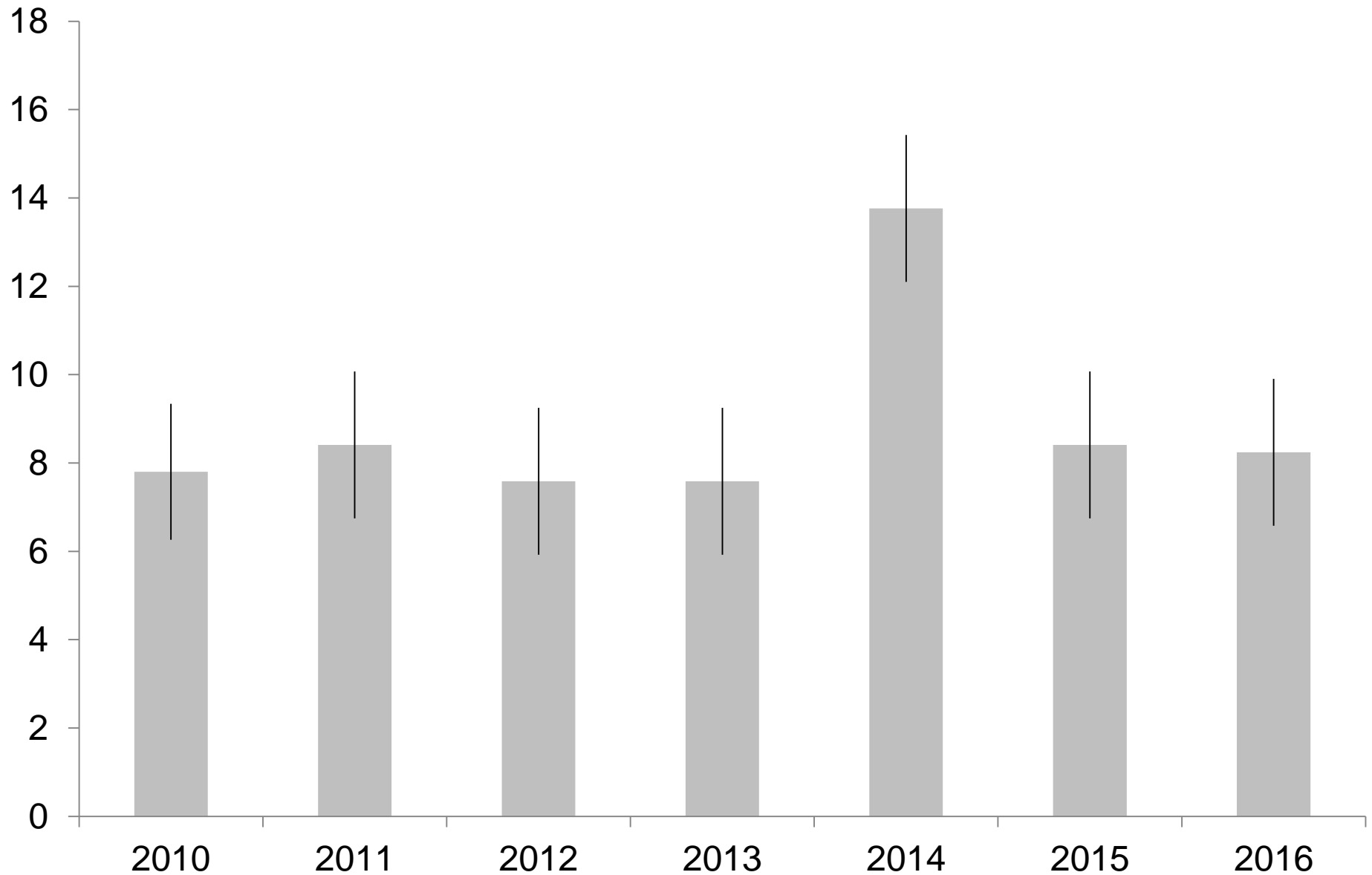
Bird diversity (Hill's) in the floodplain of the Colorado River



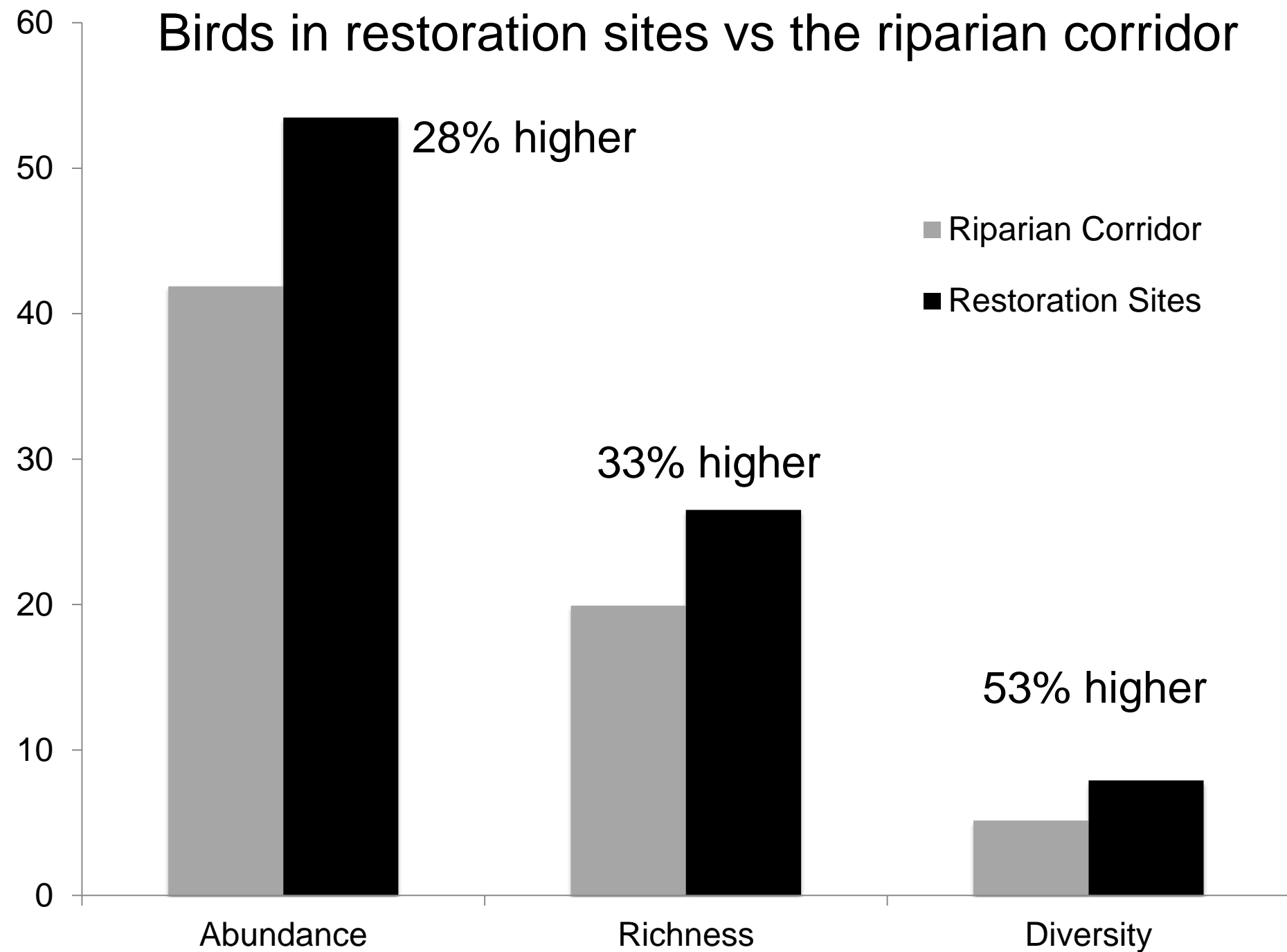
Abundance of migratory waterbirds (detections per point) in the floodplain of the Colorado River



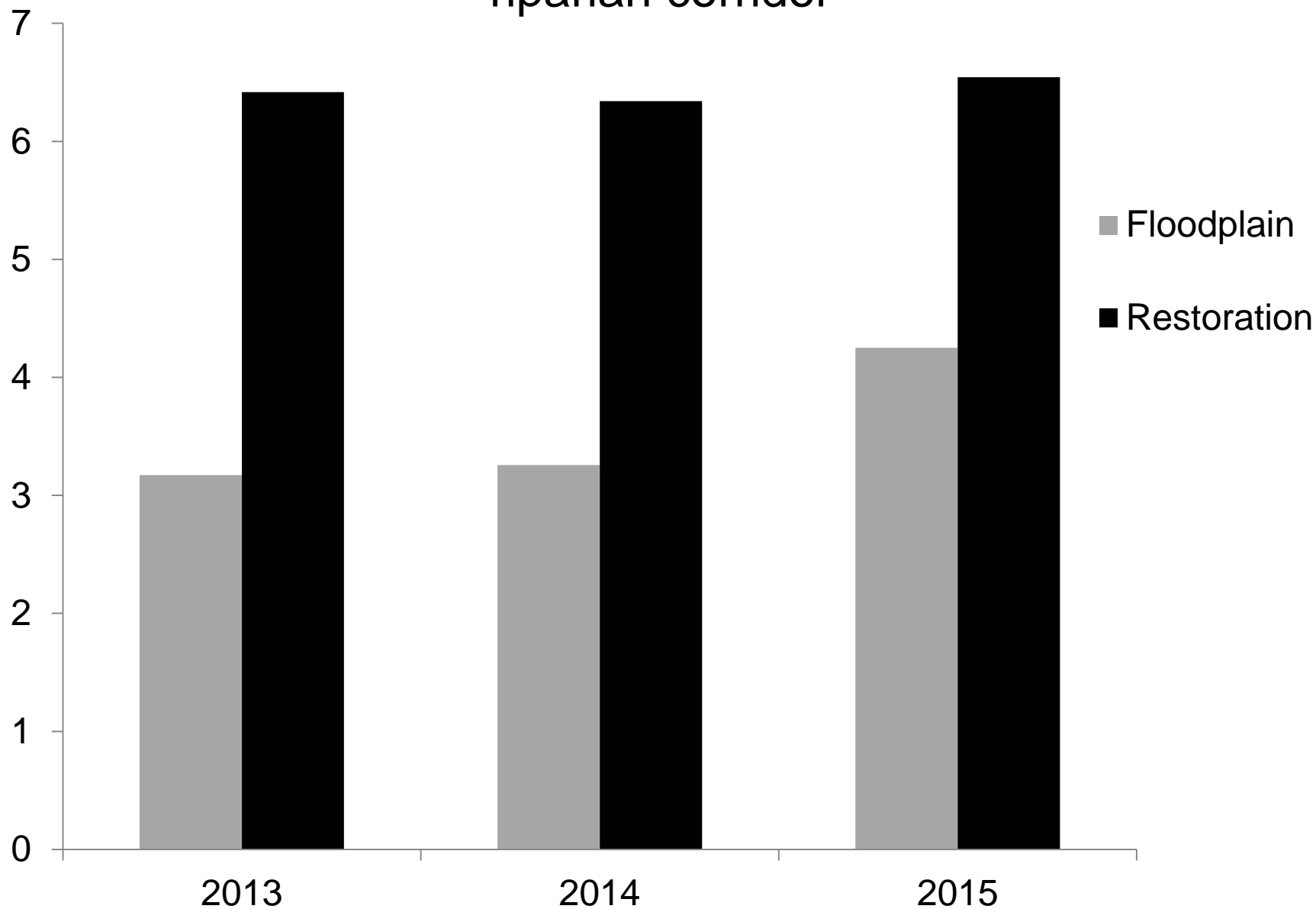
Abundance of resident waterbirds (detections per point) in the floodplain of the Colorado River



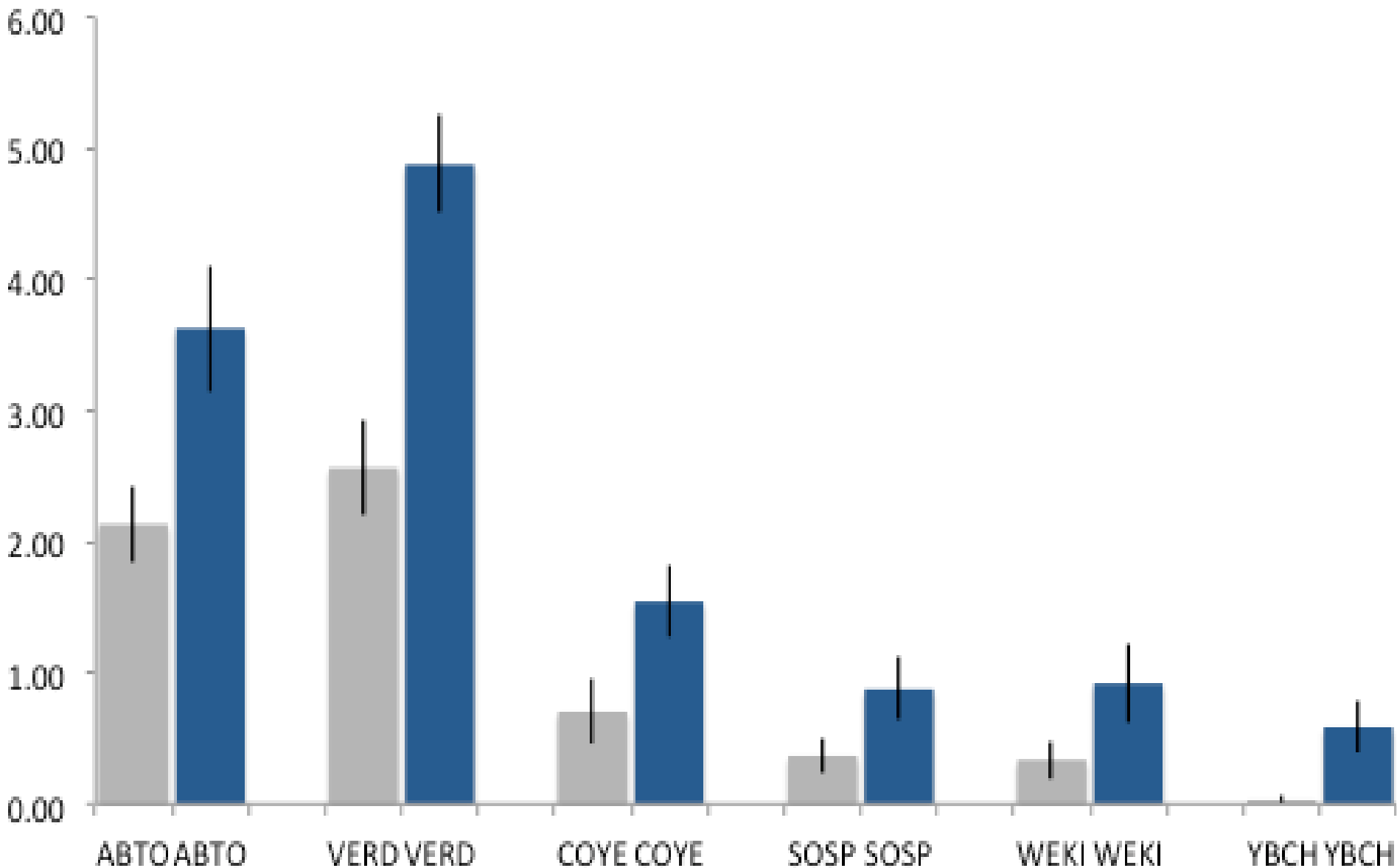
Birds in restoration sites vs the riparian corridor



Abundance of 15 target species in restoration sites vs the riparian corridor



Birds in restoration sites vs the riparian corridor



Conclusions

- Environmental flow releases triggered the green-up of of the floodplain
- Better response at prepared sites and active restoration sites
- Bird populations are responding positively to this re-vegetation and the active restoration efforts in the Colorado River in Mexico

Progress



1,180 acres of restored riparian forests

Secured water rights for 8,200 acre-feet per year

Protection of 37,000 acres of marshes

Flows enhanced along 55 river miles

Planted over 350,000 native trees

In the past 7 years, more than 10,000 volunteers have participated in the restoration efforts

Restoration in the Colorado River Delta:

- Regional approach / science-based
- We have a regulatory framework, public policies and the support from different stakeholders
- Binational cooperation
- Water allocation is feasible
- Protection is feasible
- Resilient ecosystem: restoration is possible

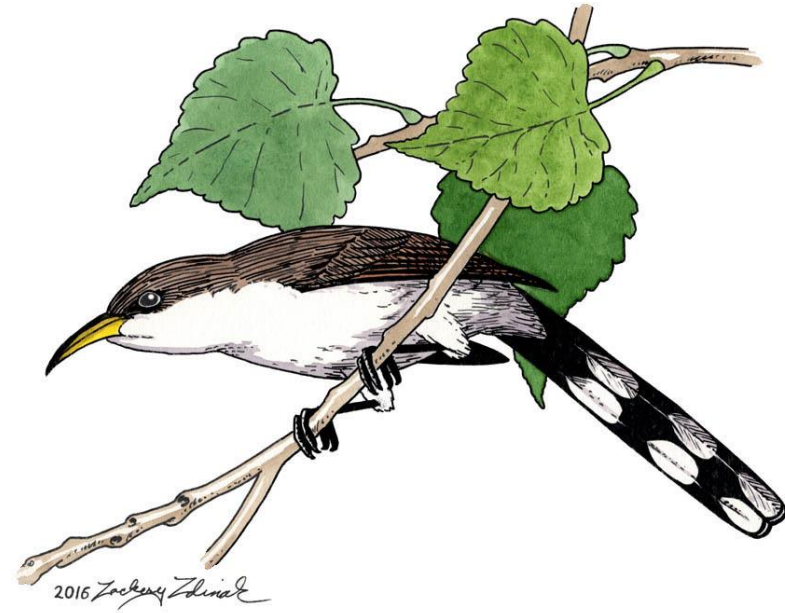


www.pronatura-noroeste.org
www.raisetheriver.org



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Reforesta San Luis
Raise the River
Save the Colorado River Delta





- Join WRAN: <http://bit.ly/JoinWRAN>
- Past Webinars: bit.ly/AudubonAZYouTube
- Action Opportunities: bit.ly/azWRANaction
- Events/Future Webinars: bit.ly/azWRANevents

Thank you for taking action for Western Rivers!