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.
Colorado River Delta

1 million acres

Flow into the Gulf of California

River influence extended 50 miles into the sea

Extensive estuarine area
Importance of the Colorado Delta

Biosphere Reserve

Ramsar Site

Priority Wetland in Mexico & North America
RESTAUREMOS EL COLORADO
ASOCIACIÓN CIVIL
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
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 Mm$^3$ 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
Restauremos el Colorado

Pronatura Noroeste, Sonoran Institute, TNC, National Audubon Society

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

2010
2011
2012
2013
2014
2015
2016
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**: 28% higher
- **Richness**: 33% higher
- **Diversity**: 53% higher
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 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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Pronatura Noroeste
Reforesta San Luis
Raise the River
Save the Colorado River Delta


Thank you for taking action for Western Rivers!