

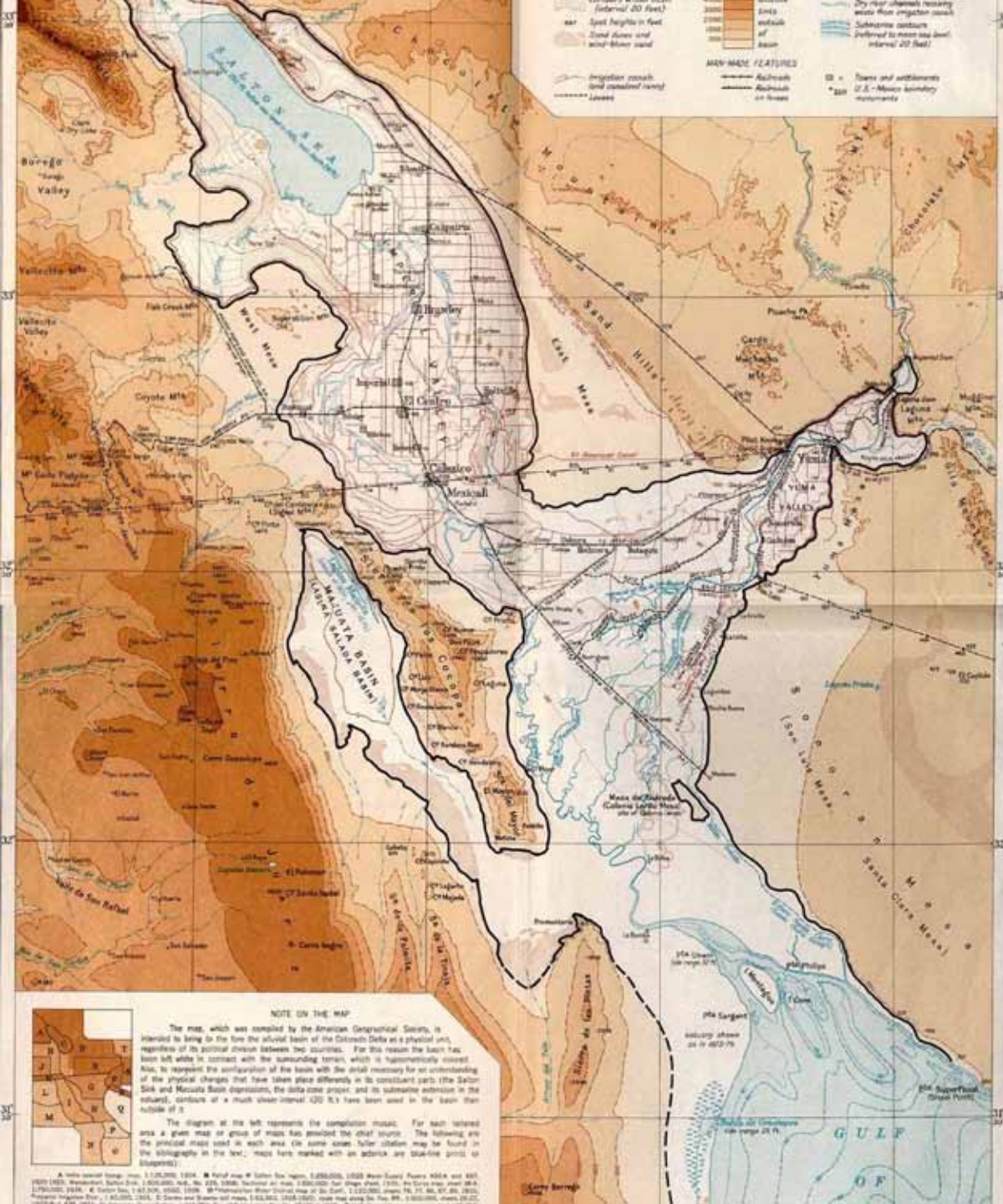
# Remote Sensing for the Study and Conservation of the Colorado River Delta

Karl Flessa, Edward Glenn – University of Arizona

Osvel Hinojosa-Huerta – Pronatura Noroeste







# Colorado River Delta

1 million acres

15 Million acre-foot of water per year to the Gulf of California

River influence extended 40 miles into the sea

Extensive estuarine area (1.2 million acres)

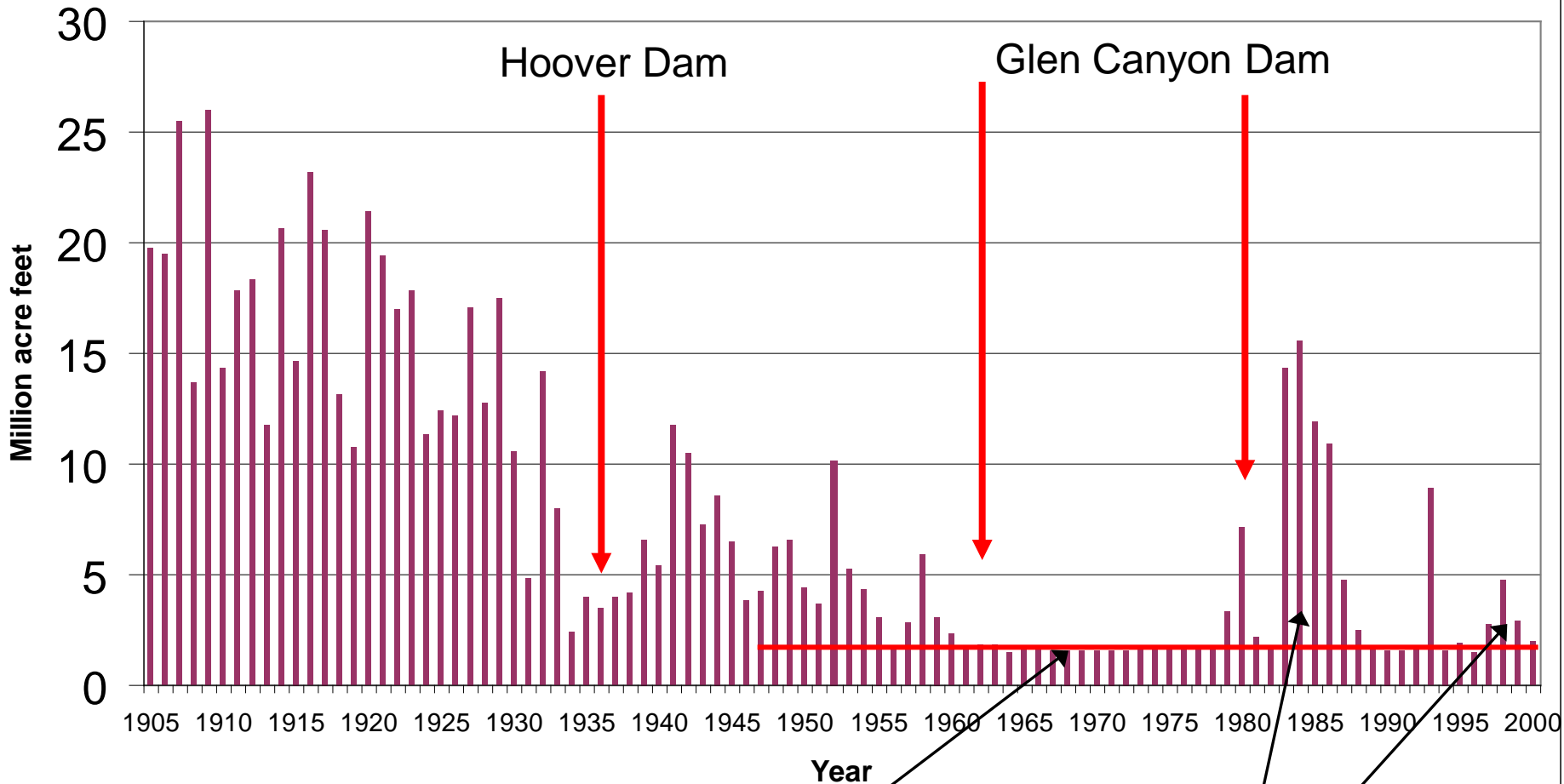
# Changes in the Colorado River Delta

An aerial photograph of the Colorado River Delta. The river flows from the top left towards the bottom right. A large dam structure is visible in the center, with a long concrete spillway extending to the right. The river is surrounded by a mix of green vegetation and sandy, light-colored areas. In the bottom right corner, a large concrete dam structure is partially visible, likely the Colorado River Delta Dam. The overall scene illustrates the impact of human infrastructure on the natural river environment.

- **Dams and Water Diversions: Reduction of river flows**
- **Agricultural expansion**
- **Loss of 80% of wetland area**

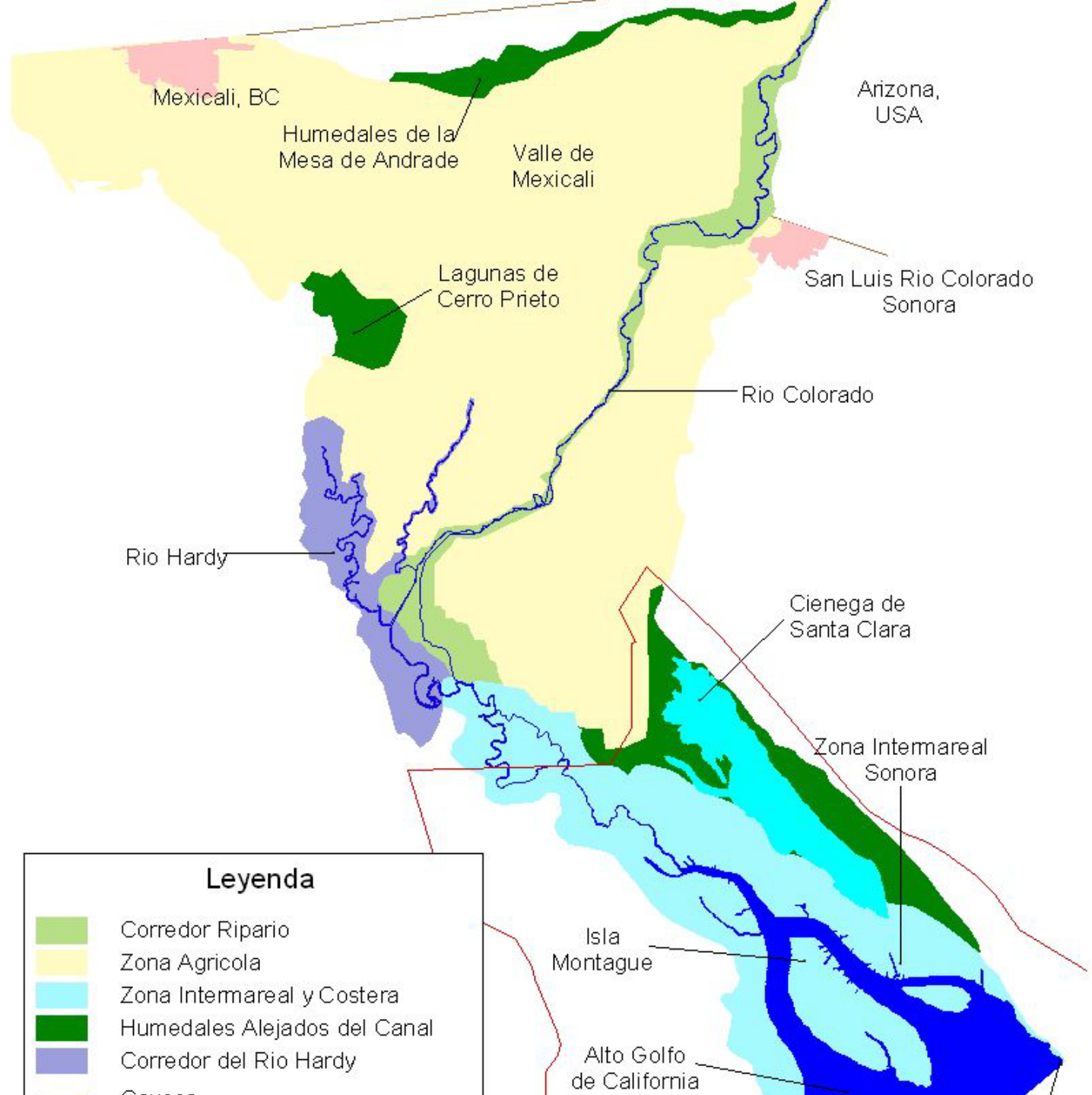






Flow reductions and saltcedar

Flow releases and native trees











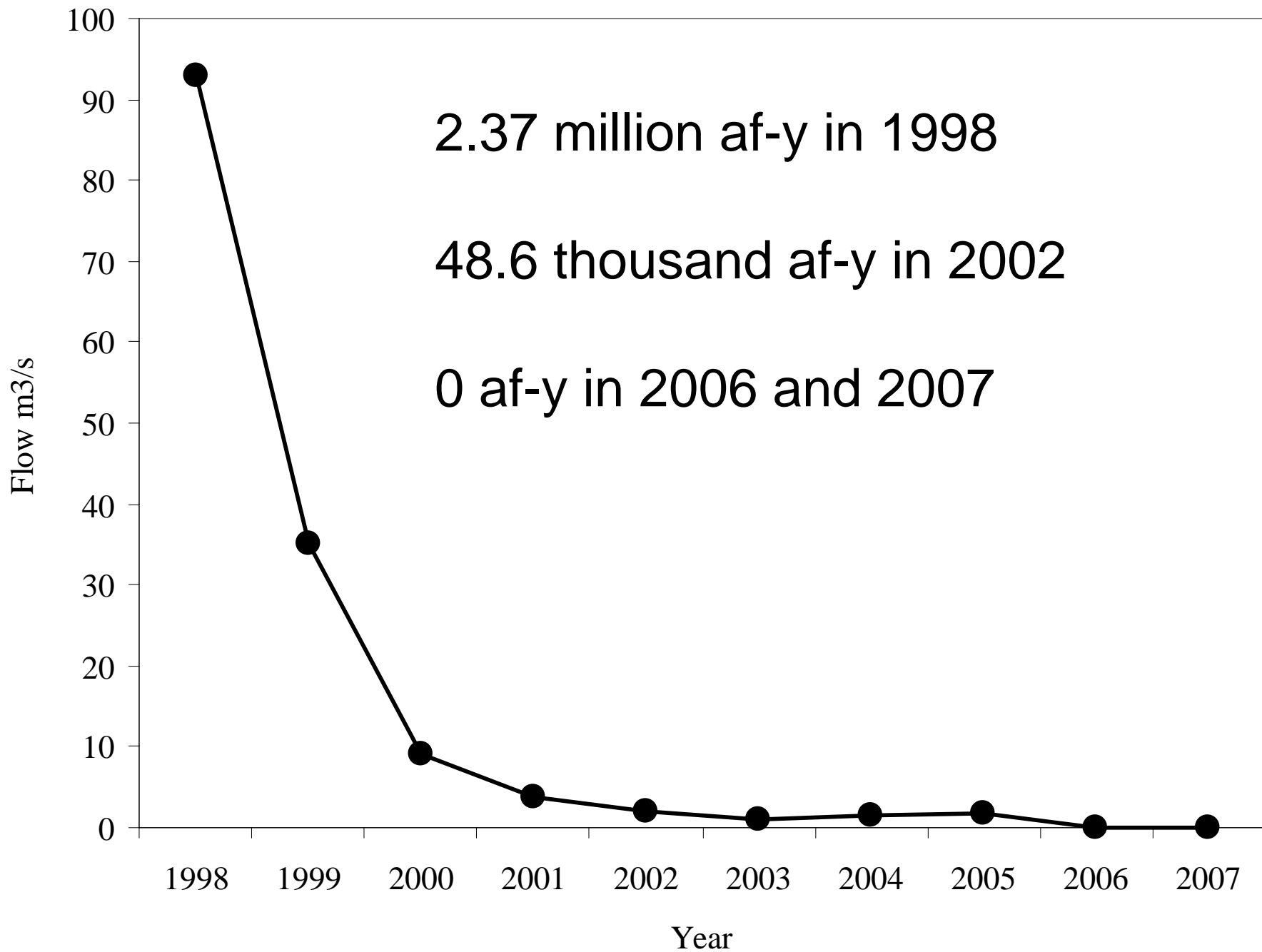


## Drought in the Basin Since 2002

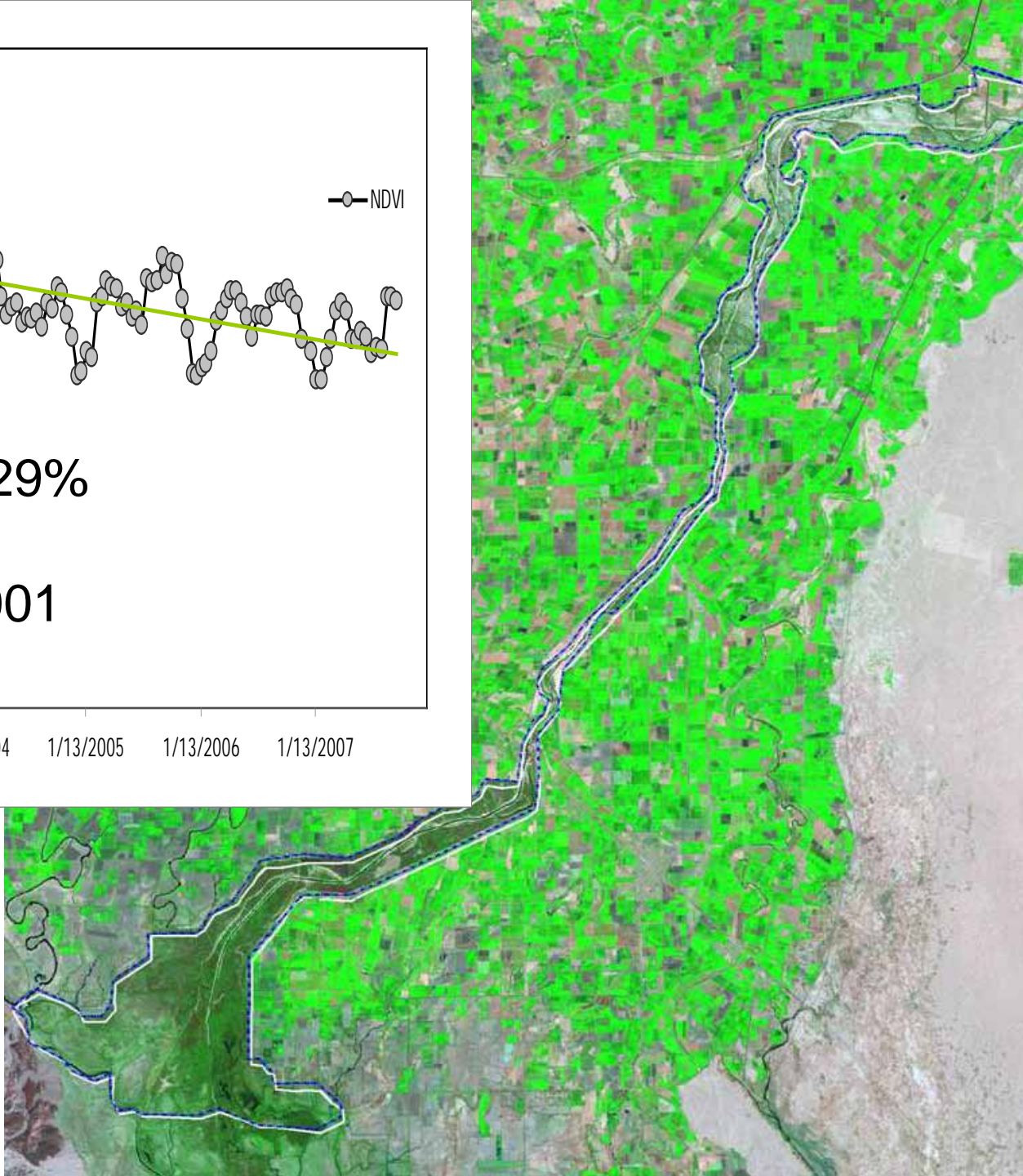
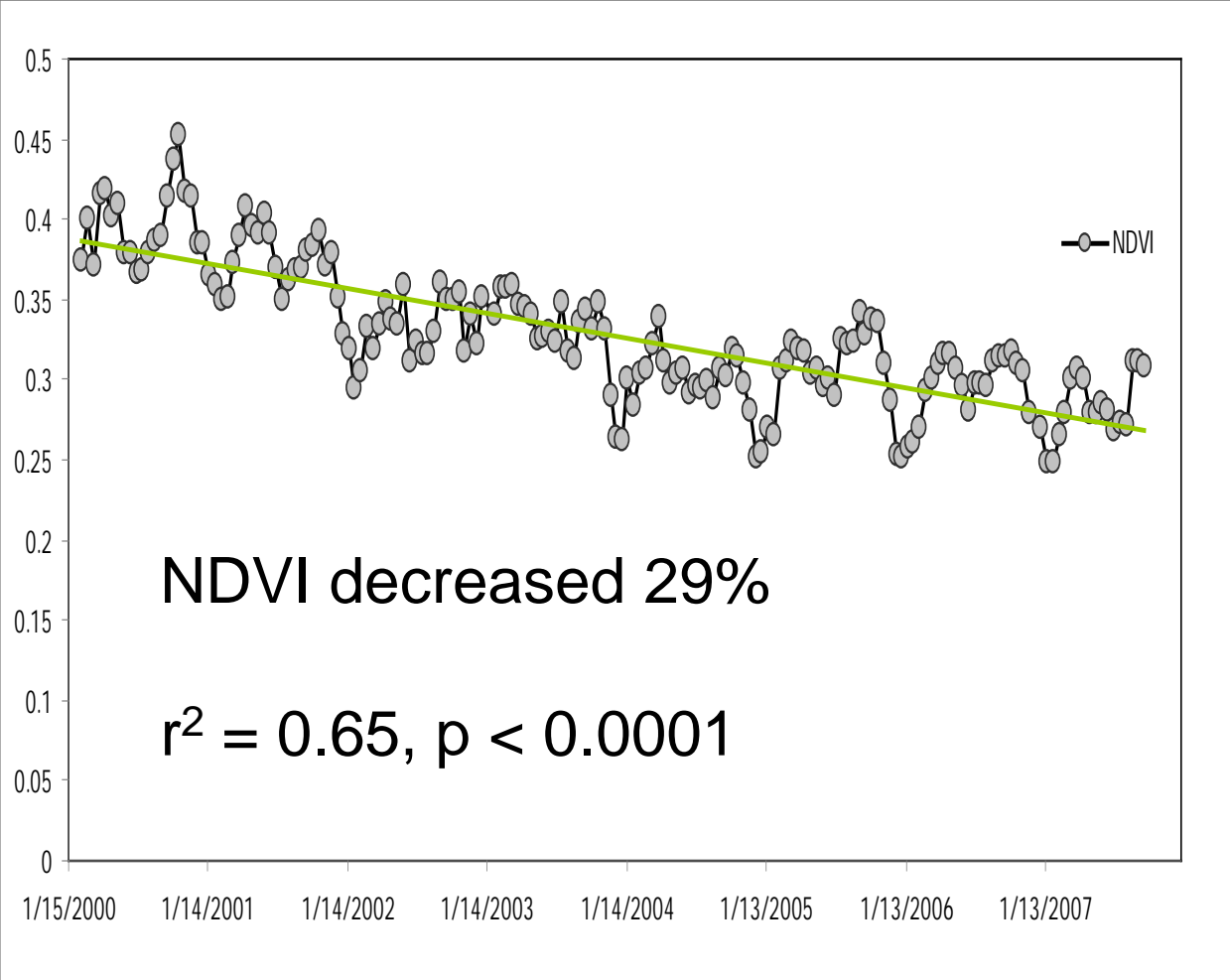
← April 3, 1999

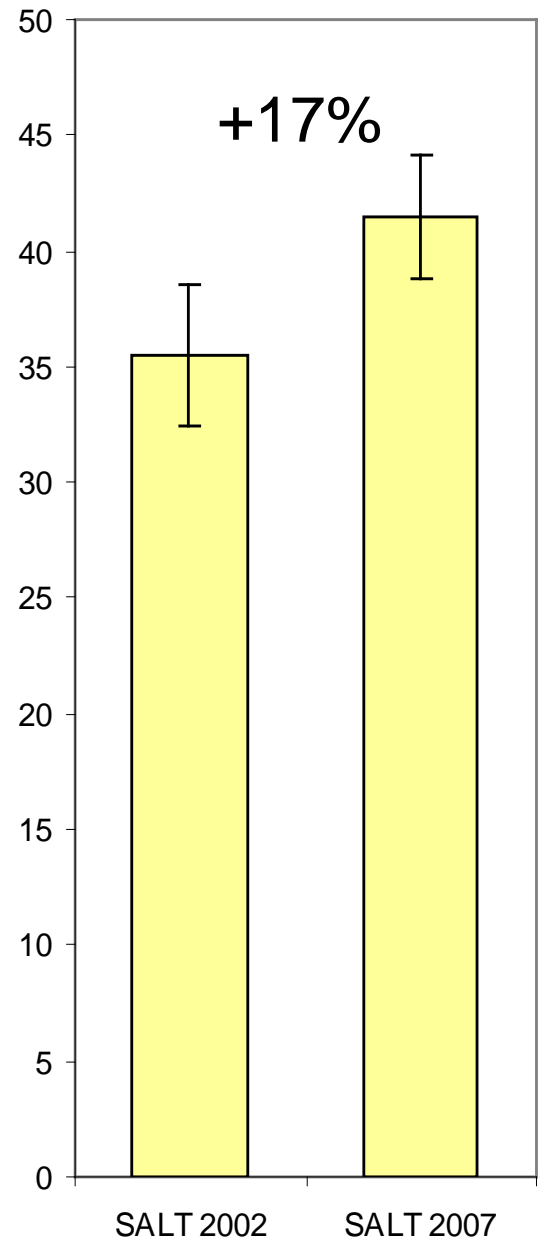
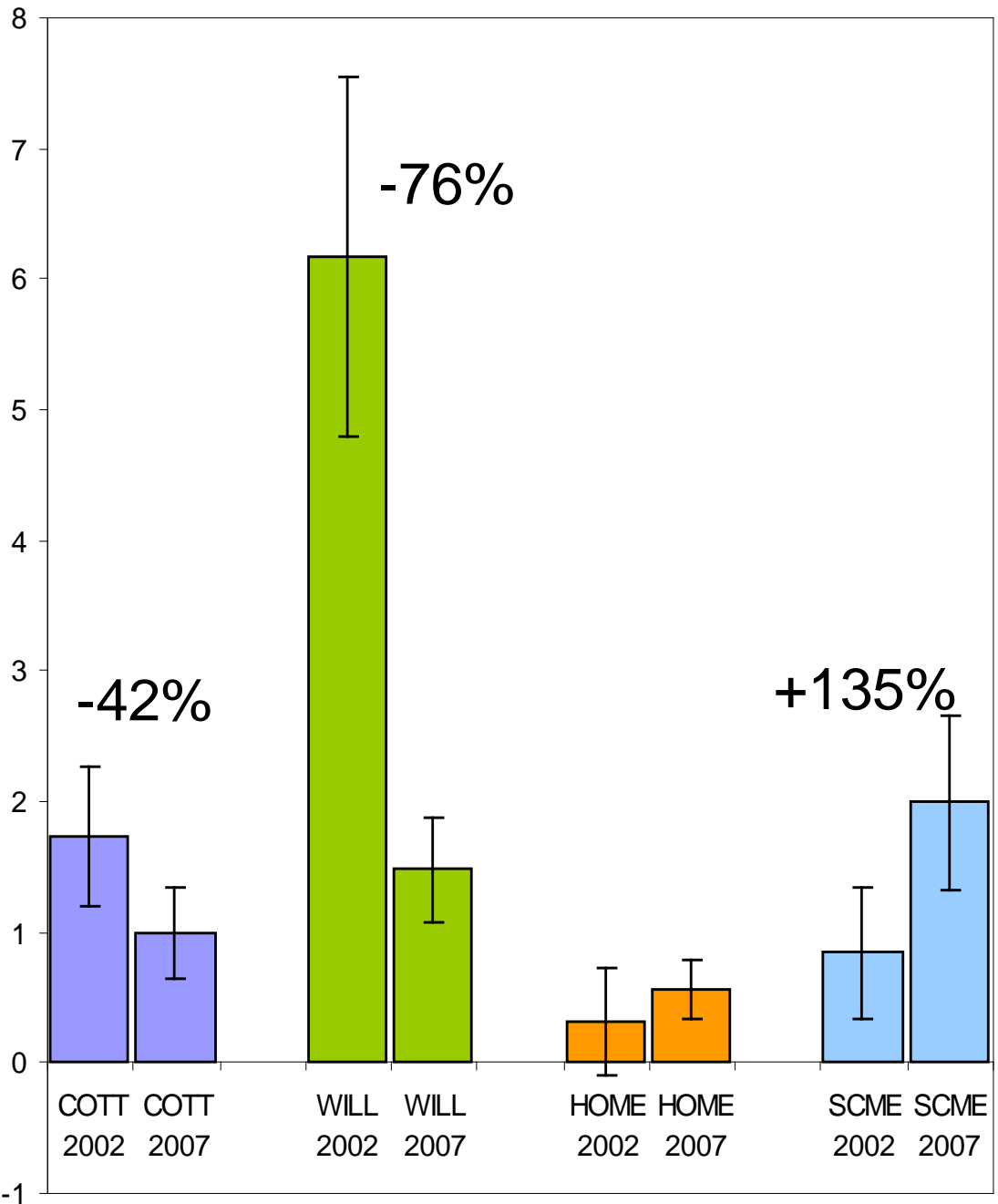


← August 30, 2004

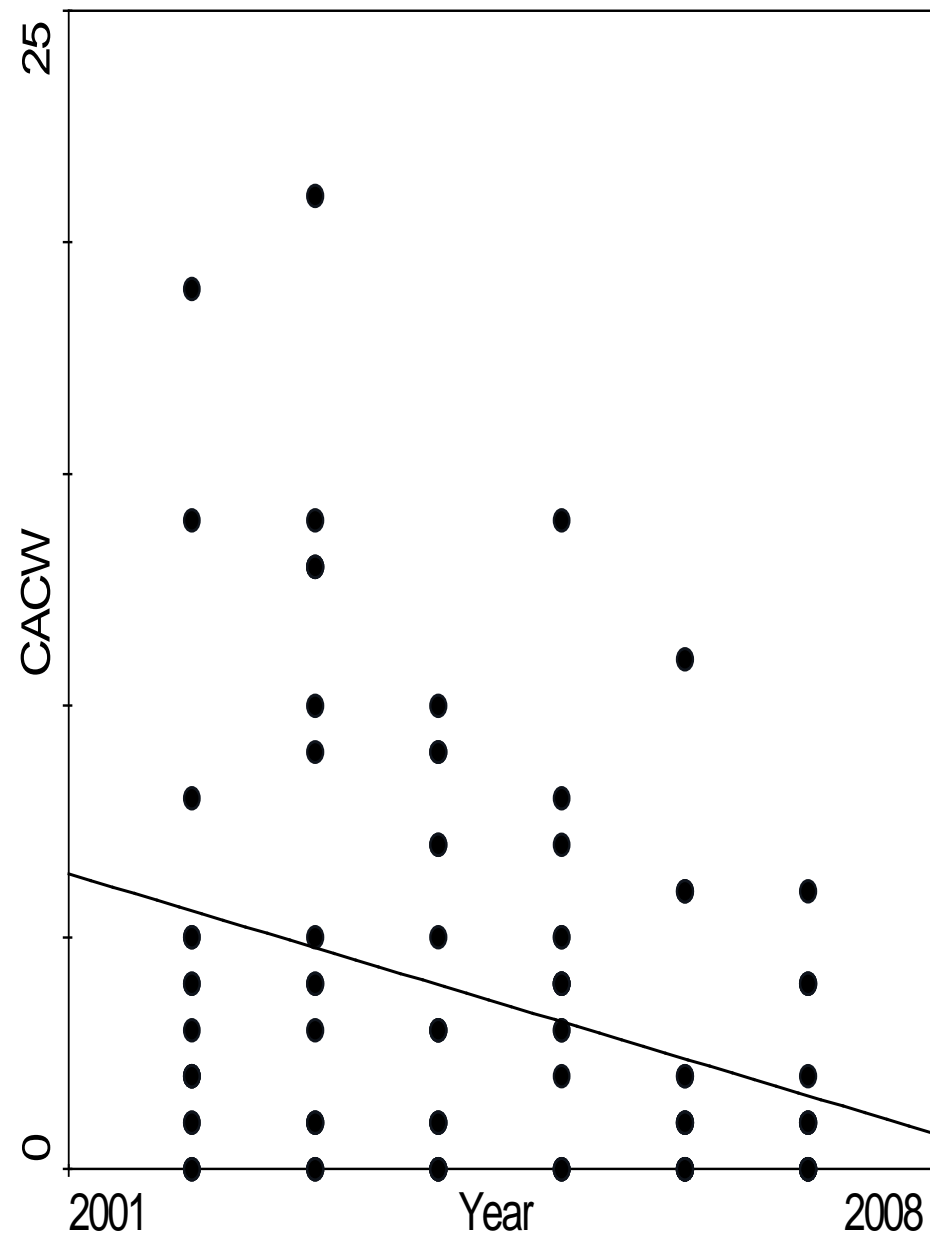
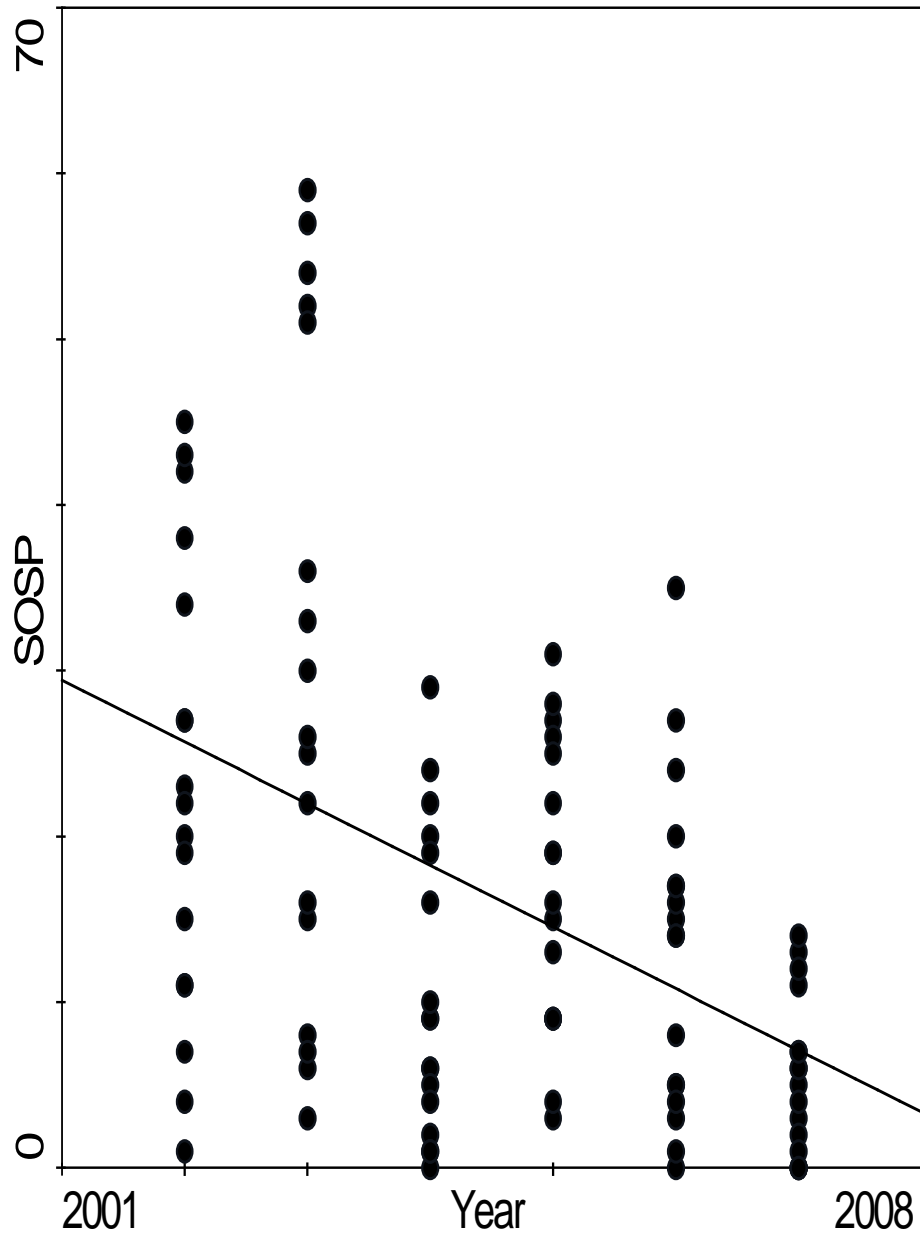










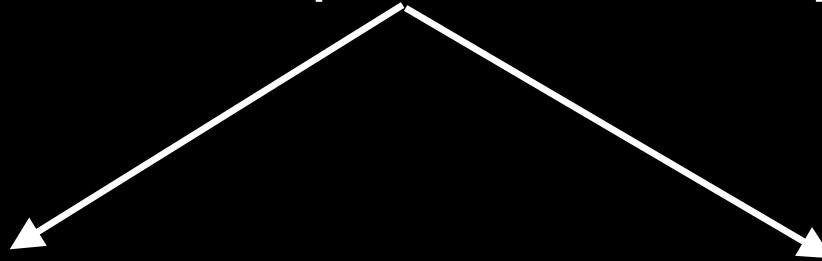


# Changes in Colorado River Mexico, 2002-2007 In Summary

Drought: drastic reduction of flows



Reduction in riparian habitat quality



Population  
decline of  
riparian-related  
birds

Population  
increase of  
agricultural-related  
birds



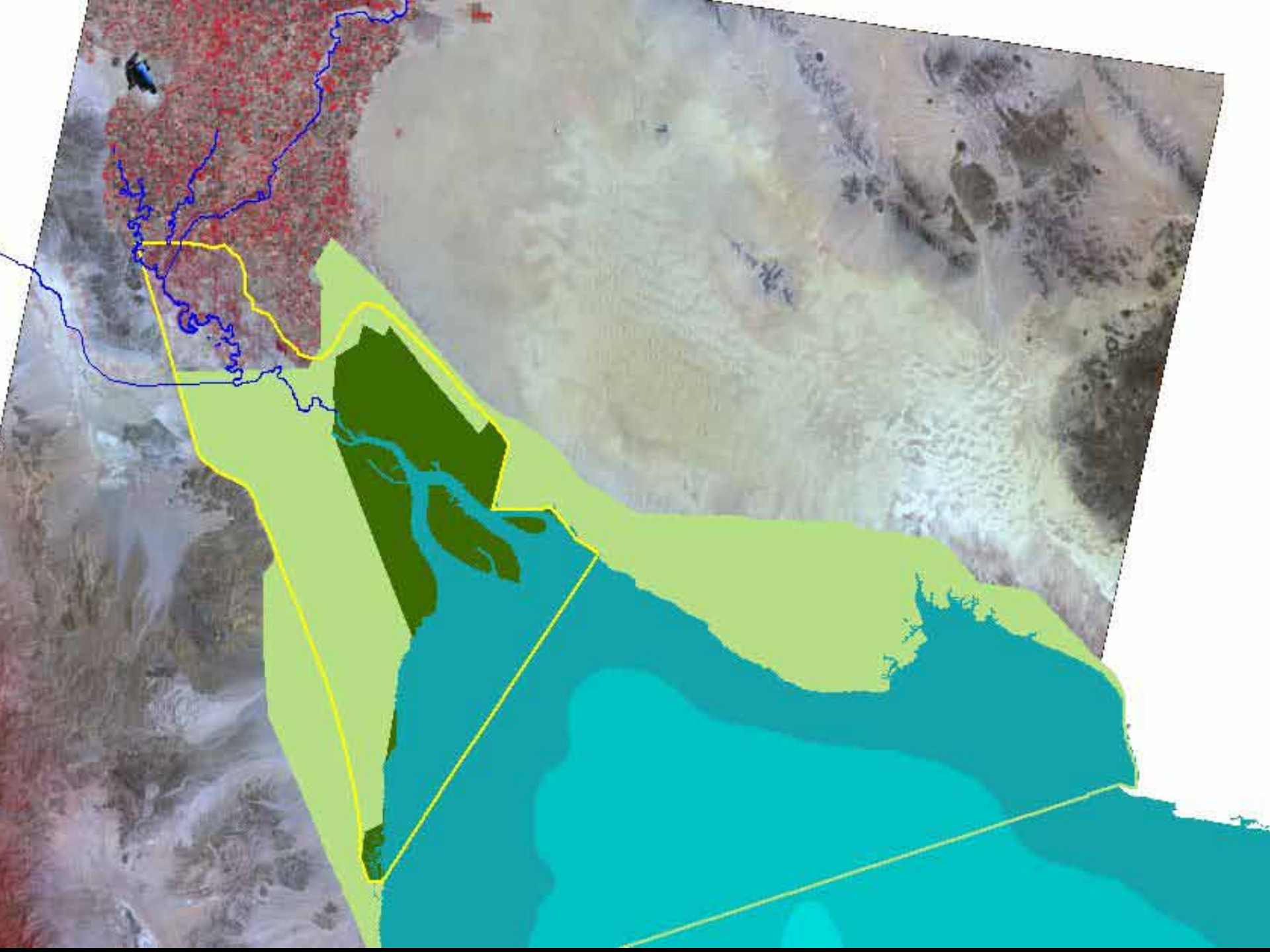


2010-3-29

5.17m (on 3-29)

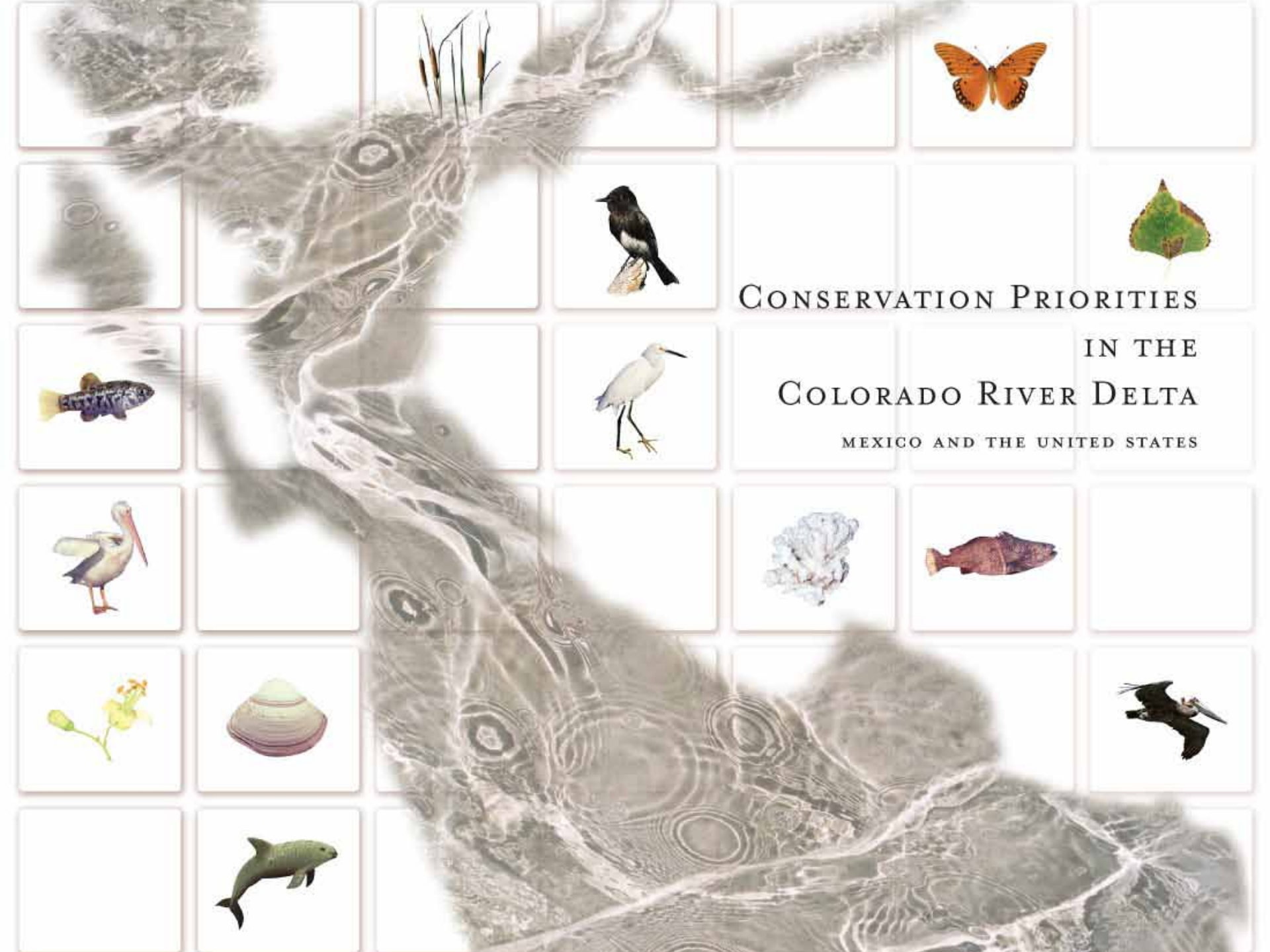
The final pre-earthquake tidal  
overflow events occurred on  
March 29-30.







CONSERVATION PRIORITIES  
IN THE  
COLORADO RIVER DELTA  
MEXICO AND THE UNITED STATES



# Restoration and Conservation Potential

Network of priority sites  
Blueprint for restoration





# Ciénega de Santa Clara and Yuma Desalting Plant

Trial run of the YDP (May 2010-March 2011), with participation of Arizona, Nevada, California and USBOR, 30% capacity

Historic agreement between Mexico, the U.S. and environmental groups to protect the Ciénega

First time in which both countries dedicate water for the environment in the delta, and the first time that environmental groups are part of the Treaty

Comprehensive binational monitoring program

# Remote Sensing & Colorado River Delta

- **Wetland values / priorities**
- **Ecosystem responses to river flows, water management, fire, earthquake**
- **Understanding of dynamics of endangered species**
- **Information for decision making and adaptive management**