Population Trends of the Yuma Clapper Rail in the Colorado River Delta

PRONATURA®

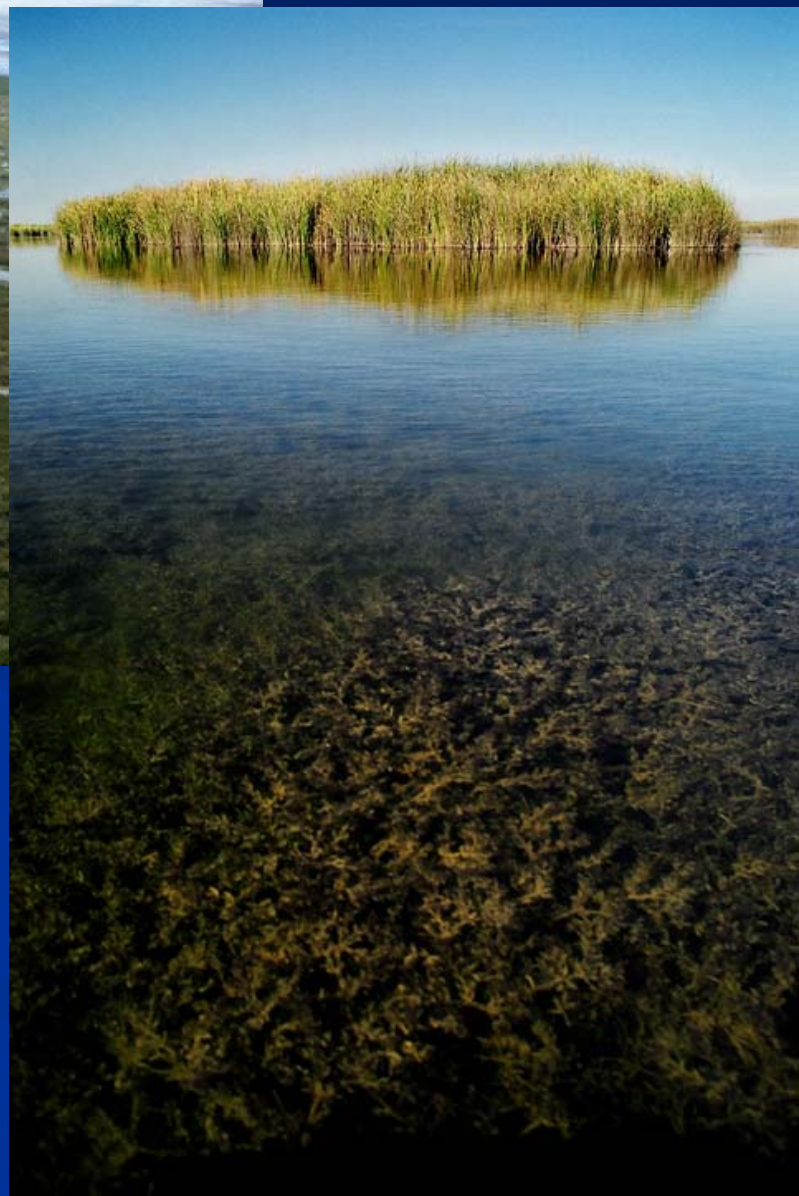
Yuma Clapper Rail (*Rallus longirostris yumanensis*)

- Subspecies endemic to brackish and freshwater marshes from the Lower Colorado River and Delta
- Degradation and habitat loss
- Population decrease
- Subspecies is Endangered in the USA and Threatened in Mexico

OBJECTIVES

- Assess changes in population abundance of Yuma Clapper Rails and provide information for their conservation

- Guide management activities of the Upper Gulf of California and Colorado River Delta Biosphere Reserve



Ciénega de Santa Clara

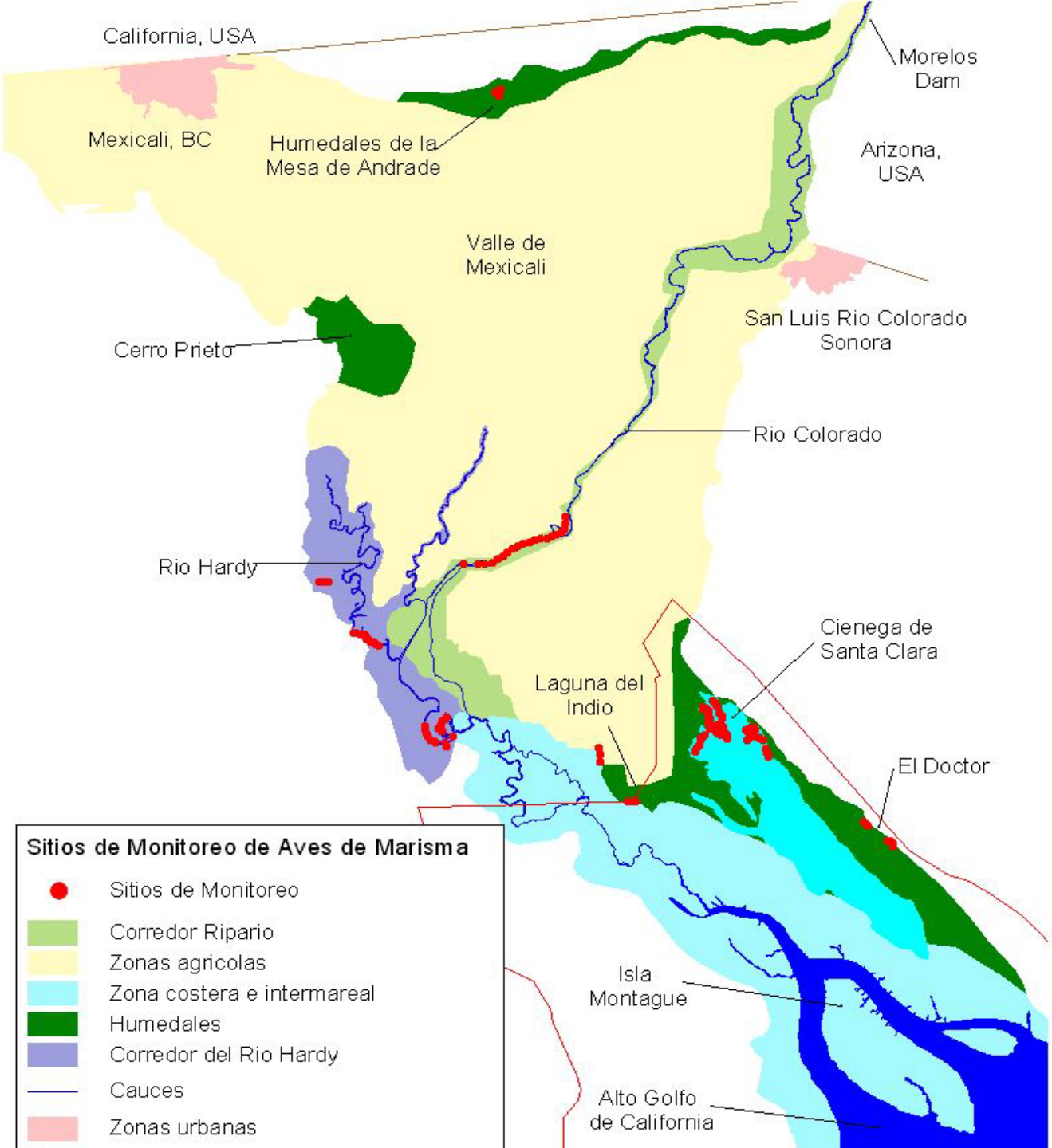
Andrade Wetlands

Laguna del Indio


Hardy River
Colorado River

Monitoring Routes and Point Counts of Marshbirds in the Colorado River Delta

Wetland	Point Counts	Routes
Ciénega de Santa Clara	75	15
Mesa de Andrade	6	1
Laguna del Indio	8	1
Río Hardy	35	3
El Doctor	9	2
Río Colorado	20	1
Total	153	23


California, USA
Morelos Dam
Mexicali, BC
Humedales de la Mesa de Andrade
Arizona, USA
Valle de Mexicali
San Luis Rio Colorado Sonora
Cerro Prieto
Rio Colorado
Rio Hardy
Cienega de Santa Clara
Laguna del Indio
El Doctor
Isla Montague
Alto Golfo de California
Sitios de Monitoreo de Aves de Marisma
Sitios de Monitoreo
Corredor Ripario
Zonas agricolas
Zona costera e intermareal
Humedales
Corredor del Rio Hardy
Cauces
Zonas urbanas

Monitoring Protocol

- USFWS Protocol (8 min) – call response surveys
- 1 min sil, 2 min voc, 2 min sil, 2 min voc, 1 min sil
- Multi-species Protocol (Conway 2002)
- Two times per year: March and May
- Seven years of data: 1999-2005

METHODS

Monitoring program designed to:

- Detect population changes >3% per year at the Cienega de Santa Clara
- $\alpha = 0.95$ (significance level)
- $\beta = 0.90$ (statistical power)

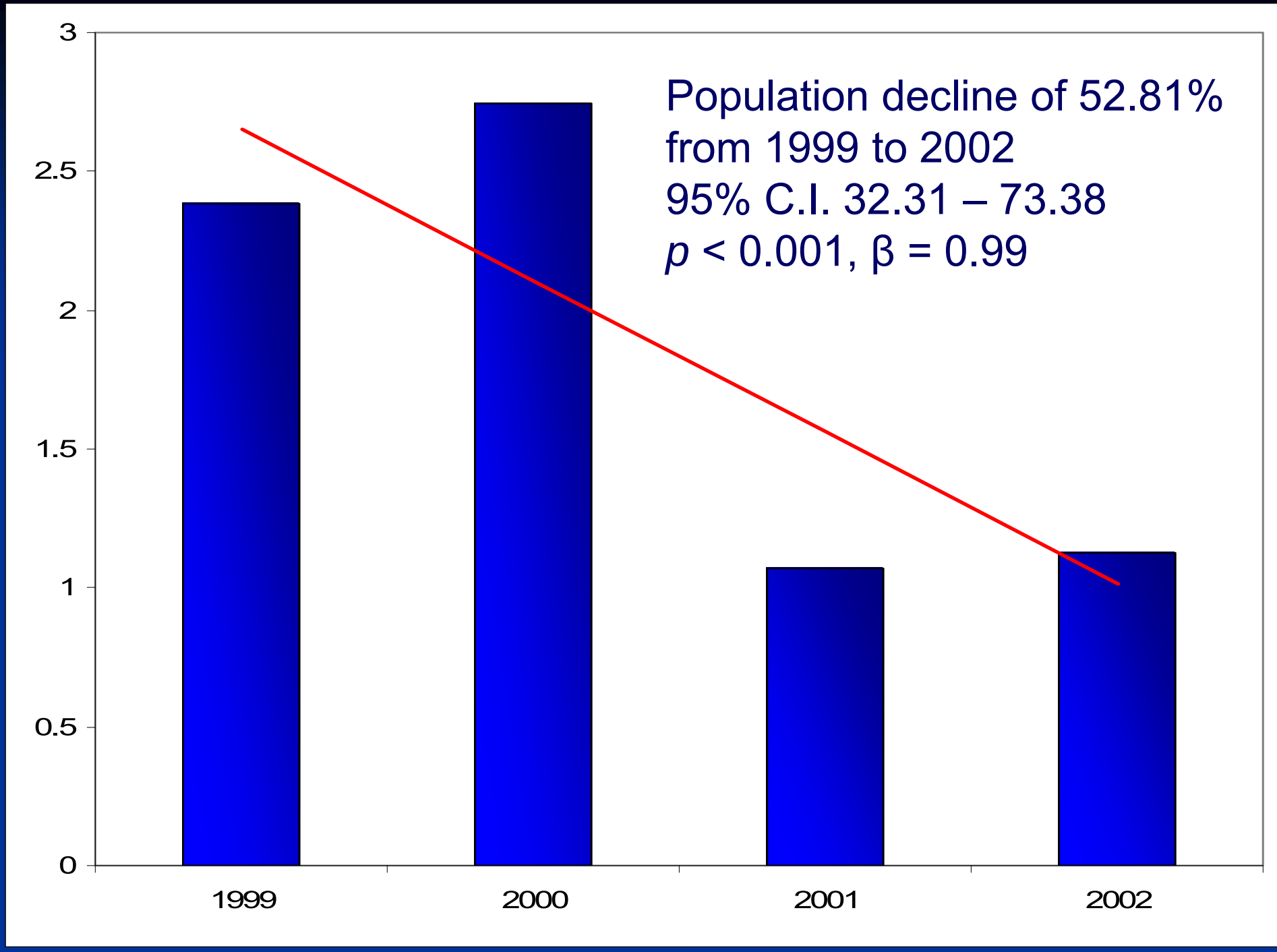
- Detect changes in distribution at other more dynamic or smaller marshes

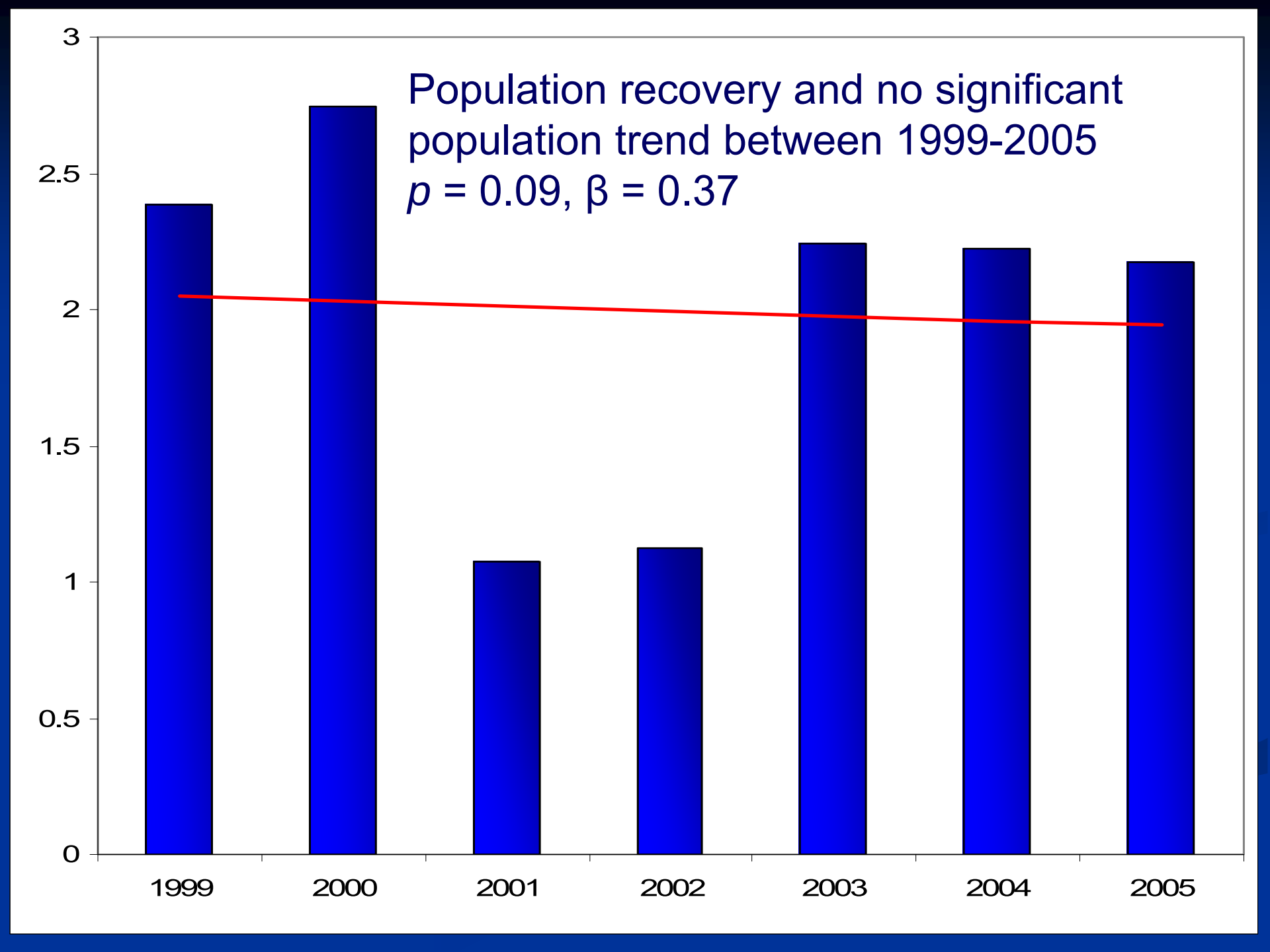
RESULTS

RESULTS

- A total of 2,325 Clapper Rails have been detected
- An average of 322 Clapper Rails per year

	1999		2000		2001		2002		2003		2004		2005	
	I	II	I	II	I	II	I	II	I	II	I	II	I	II
Ciénega	194	164	190	222	85	76	65	104	125	211	213	121	198	128
Río Hardy	4	10	3	12	4	7	NS	NS	NS	23	NS	19	NS	20
Río Colorado	0	0	0	0	0	0	3	12	NS	4	NS	0	NS	10
Laguna del Indio	3	4	3	18	4	5	6	8	NS	2	NS	0	NS	8
El Doctor	NS	NS	7	5	0	3	2	3	NS	2	NS	0	NS	0
Mesa de Andrade	NS	NS	NS	NS	NS	NS	NS	2	2	1	NS	0	10	NS
Total	201	178	203	257	93	91	76	129	127	243	213	140	208	166


Population decline of 52.81%
from 1999 to 2002
95% C.I. 32.31 – 73.38
p < 0.001, β = 0.99
3
2.5
2
1.5
1
0.5
0
1999
2000
2001
2002


Population recovery and no significant population trend between 1999-2005
p = 0.09, β = 0.37
3
2.5
2
1.5
1
0.5
0
1999
2000
2001
2002
2003
2004
2005

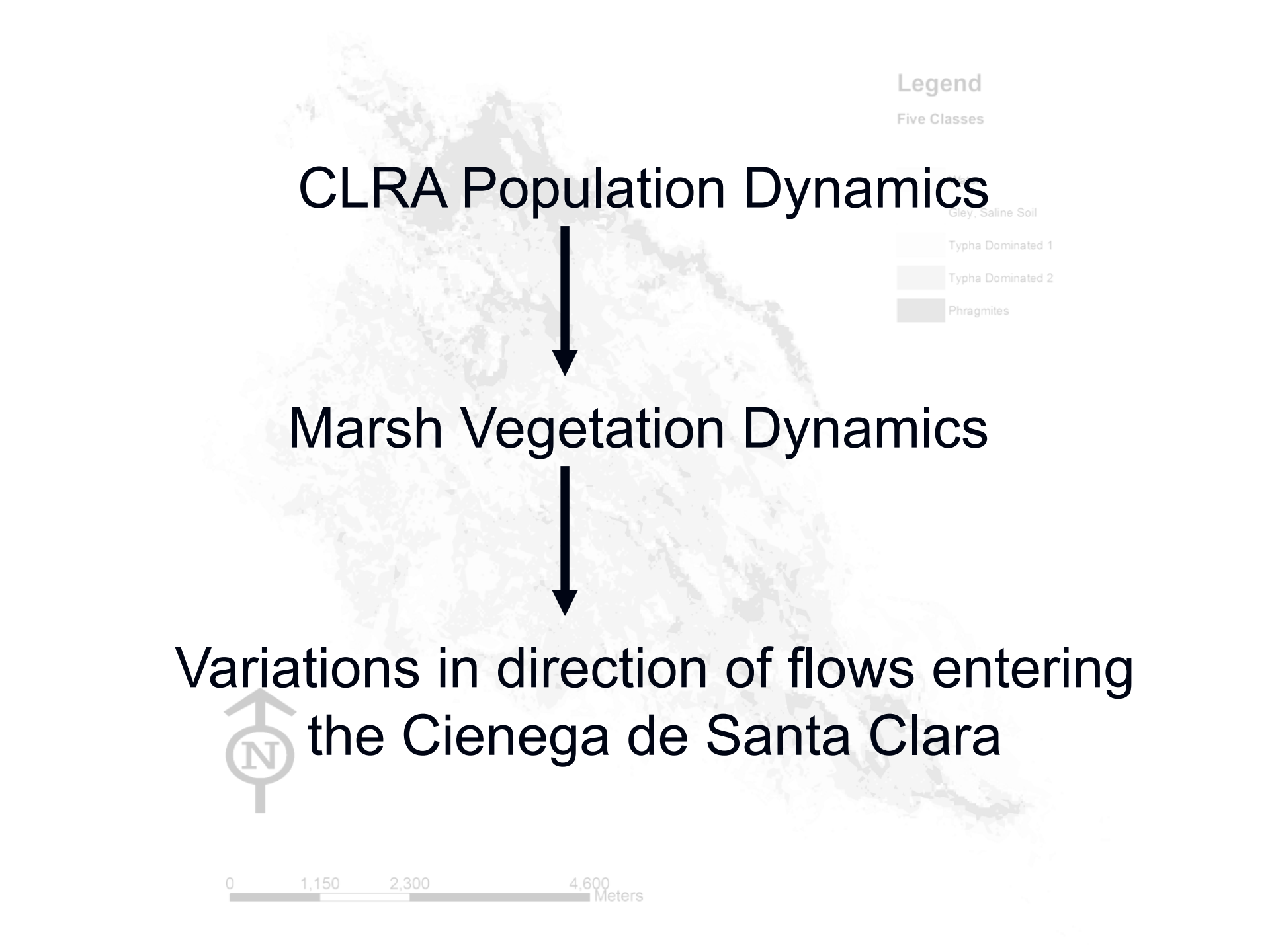
CLRA Population Dynamics

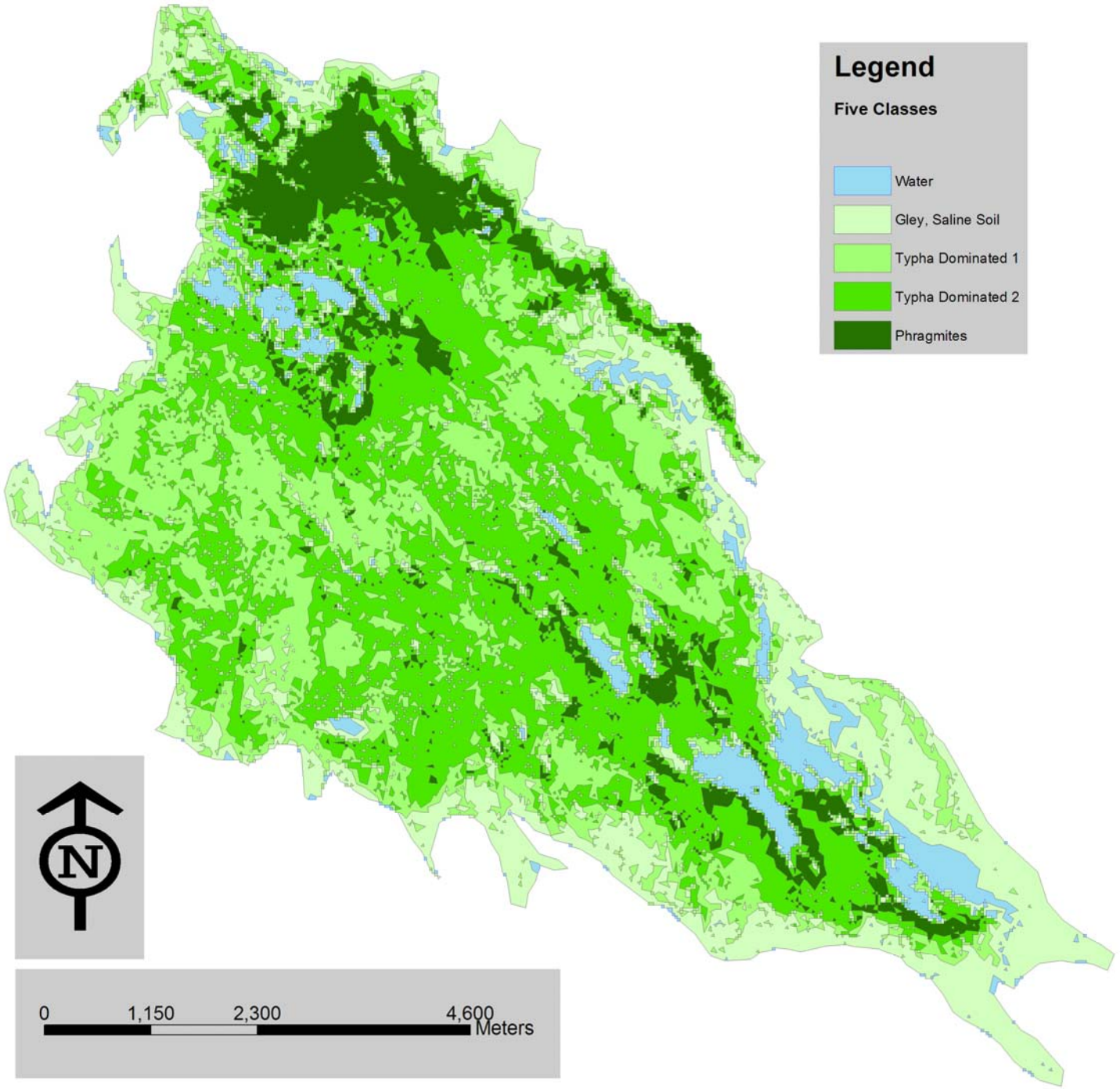
↓

Marsh Vegetation Dynamics

↓

Variations in direction of flows entering the Cienega de Santa Clara




Legend
Five Classes
Water
Gley, Saline Soil
Typha Dominated 1
Typha Dominated 2
Phragmites
N
0
1,150
2,300
4,600
Meters

Detections of Yuma Clapper Rails in the Cienega de Santa Clara during 2005

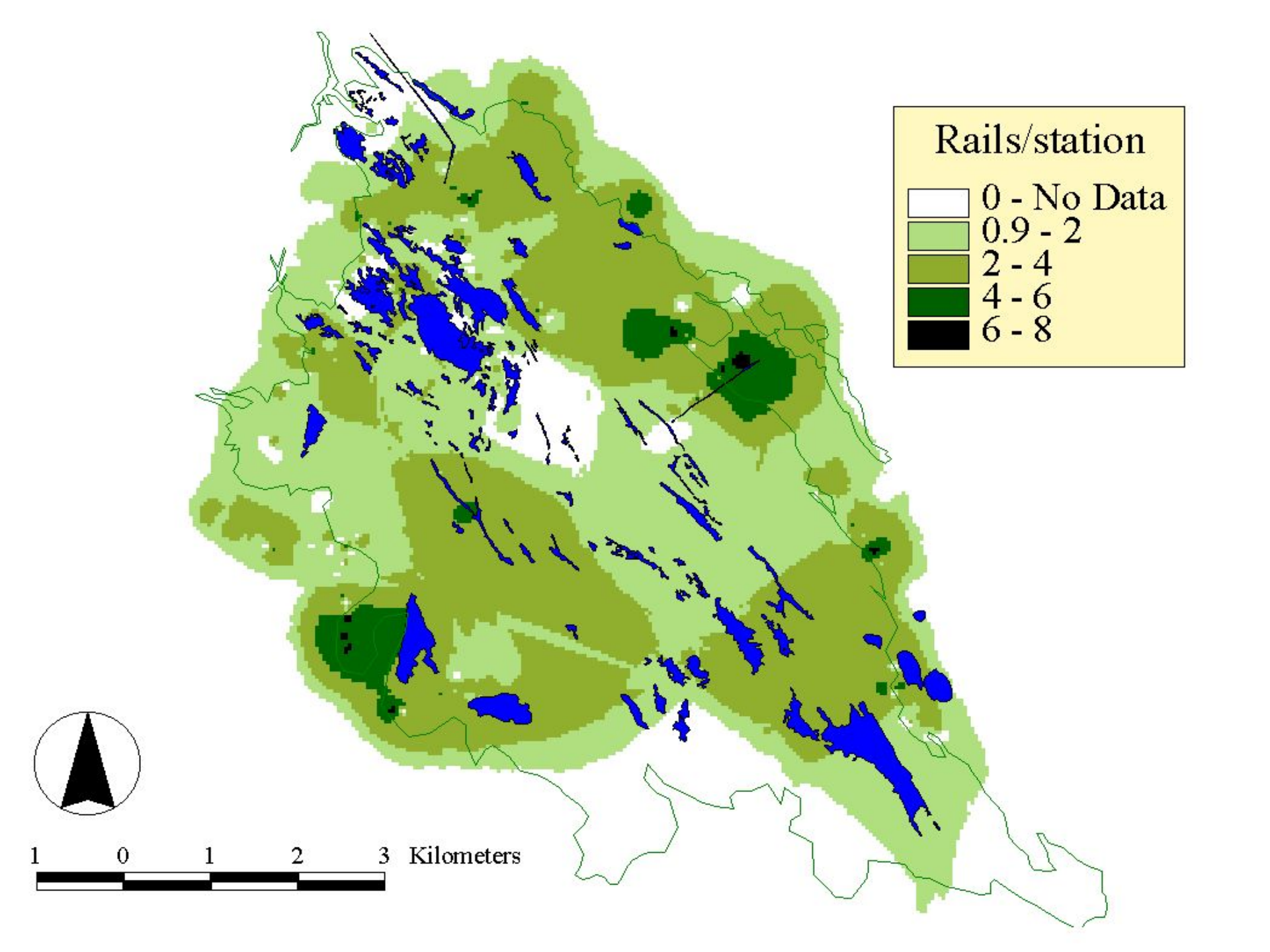
	USFWS	
	March	May
Total Count	198	128
Individuals per point	2.64	1.7
Standard Error	0.24	0.19
95% Confidence Interval	2.15 - 3.12	1.32 - 2.09

Estimates of Density (individual/ha) and abundance of Yuma Clapper Rails in the Cienega de Santa Clara during 2005

Model	D	95% CI		Pop Est	95% CI		GOF *p*
March	0.72	0.53	0.95	4,147	3,074	5,510	0.71
May	0.58	0.36	0.64	3,376	2,088	3,712	0.25
Pooled data	0.57	0.46	0.69	3,277	2,668	4,002	0.69

Estimates obtained using DISTANCE

Not corrected with estimates of response rate


Rails/station
0 - No Data
0.9 - 2
2 - 4
4 - 6
6 - 8
1 0 1 2 3 Kilometers

Detections of Yuma Clapper Rails in the Colorado River Delta, during 2005

	Multi-species		USFWS		Total
Humedal	March	May	March	May	
Ciénega	169	132	198	128	627
Laguna del Indio	-	8	-	-	8
Mesa de Andrade	10	-	7	-	17
Rio Colorado	-	10	-	-	10
Rio Hardy	-	20	-	-	20
Total	179	170	205	128	682

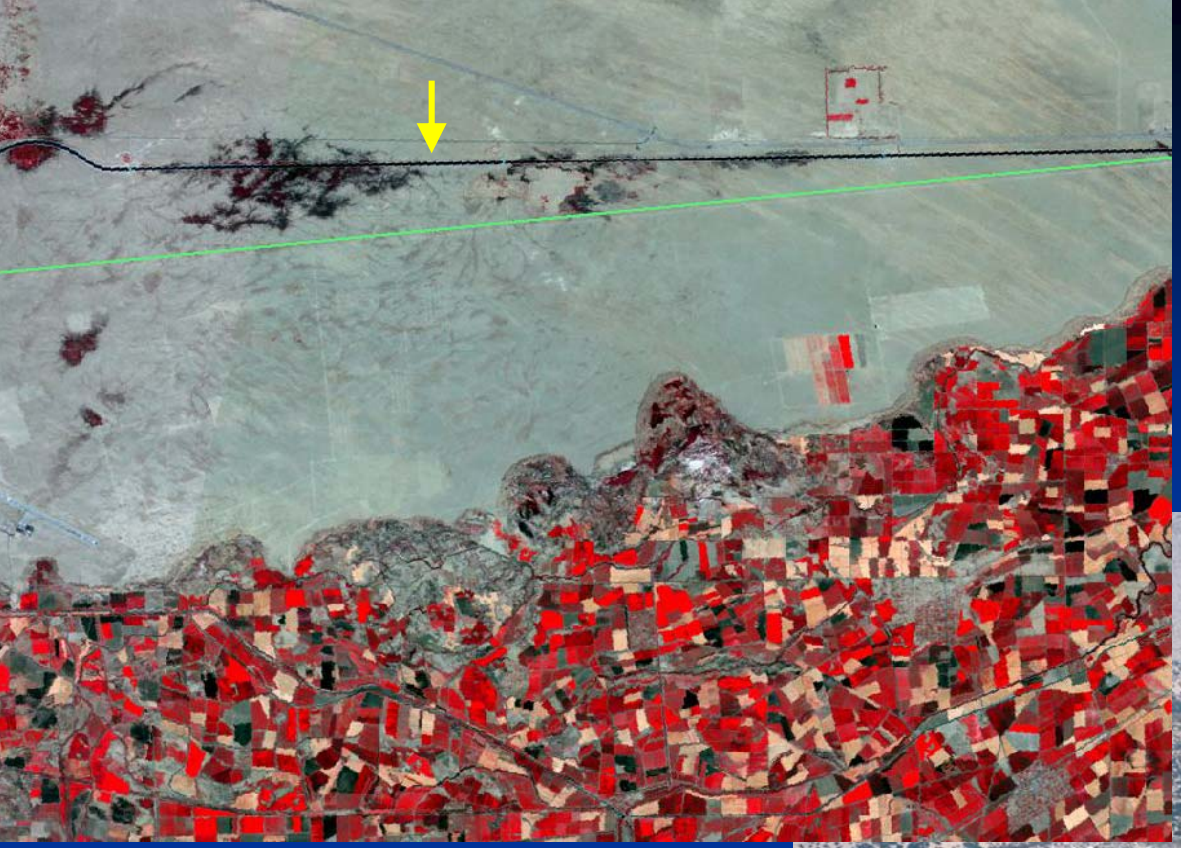
Conservation of Yuma Clapper Rails

- Maintain a dynamic system of marshlands is critical in maintaining healthy populations of Yuma Clapper Rails

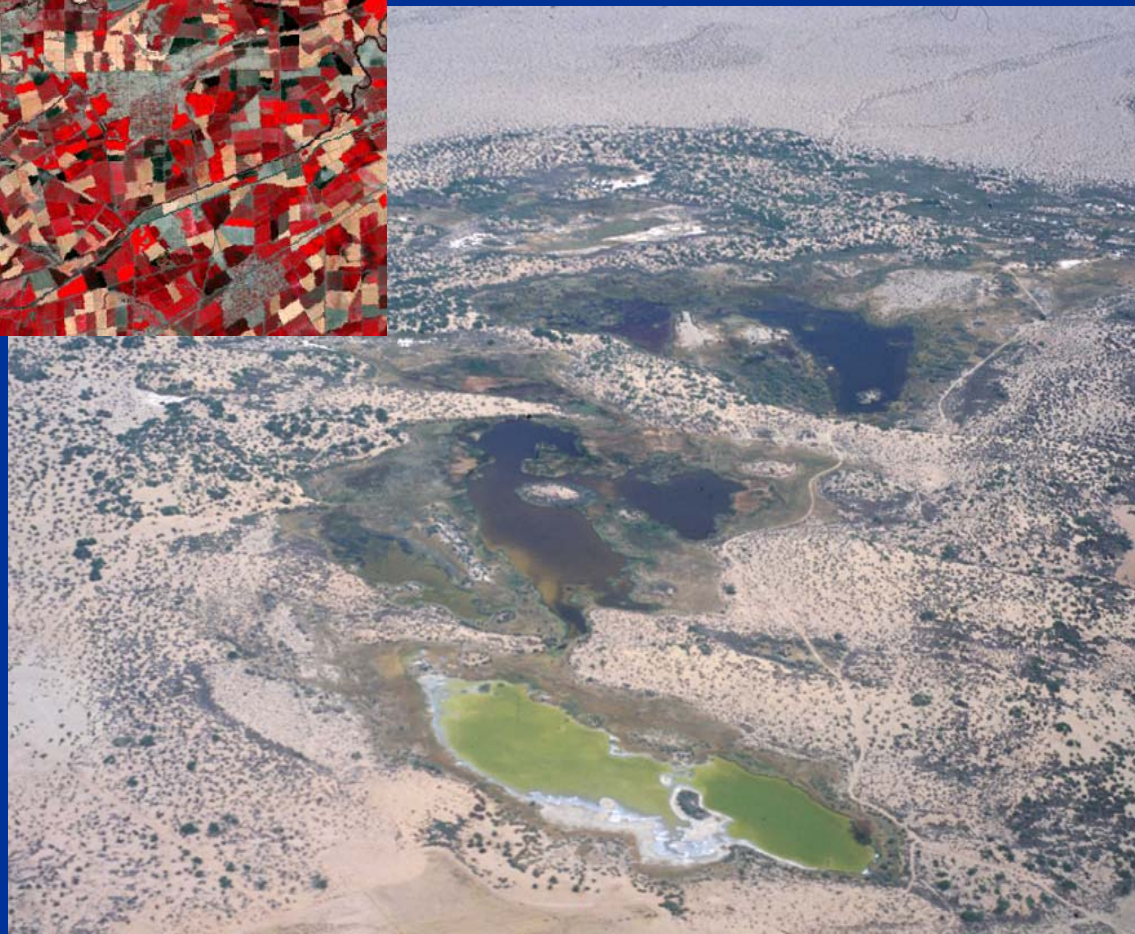
- Secure water sources for marsh wetlands

The Cienega de Santa Clara…

…and the Yuma Desalting Plant



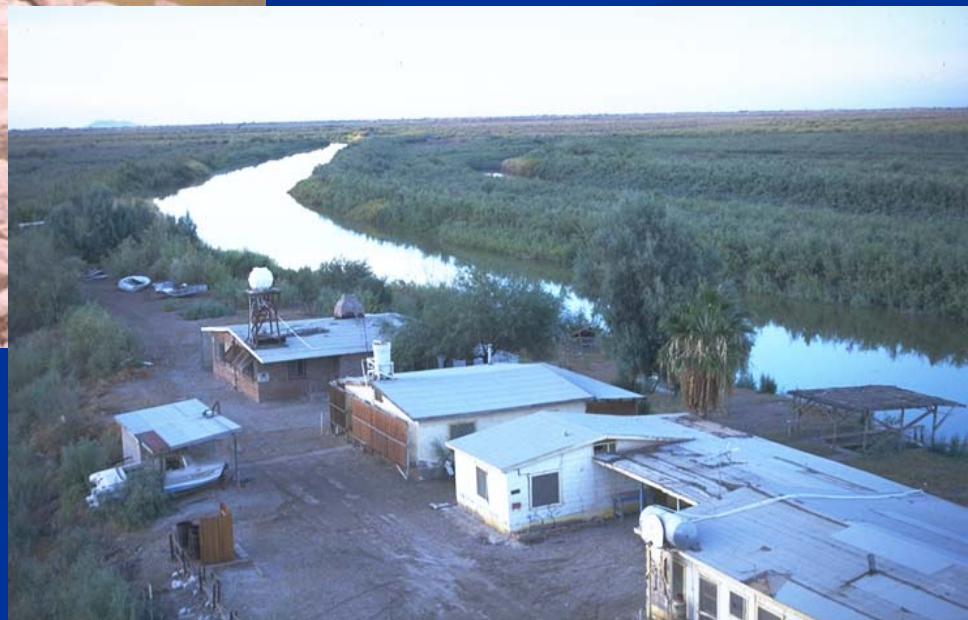
The Andrade Mesa Wetlands…



…and the Lining of the All-American Canal

Conservation of Yuma Clapper Rails

- Restoration using agricultural drainage water is a good option to expand rail habitat



Conservation Recommendations

- Long-term monitoring to guide management and restoration actions