

# The Refuge Water Supply Program



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## 2013 Annual Work Plan

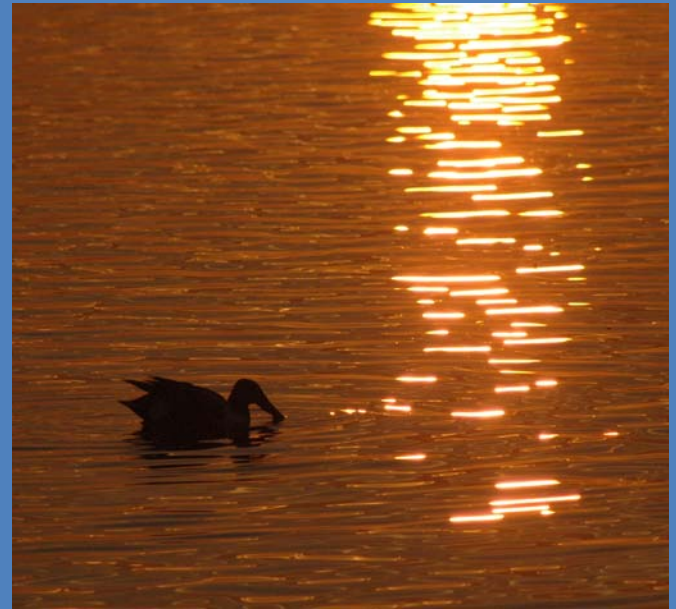
CVPIA 3406 (b)(3) & (d)(1)(2)(5)



# Refuge Water Supply Program (RWSP)

## GOAL:

Provide firm water supplies of suitable quality to maintain and improve wetland habitat areas on certain Central Valley wildlife refuges.



# Refuge Water Supply Program (RWSP)

Three main components:

- Facilities Construction
- Water Acquisition
- Water Conveyance





# CVPIA Refuges

## 19 CVPIA Units

- 12 Federal National Wildlife Refuges/Units
- 6 State Wildlife Areas/Units
- 1 Privately-managed complex within the Grassland Resource Conservation District

14 of 19 CVPIA refuge units already in place prior to passage of the Act

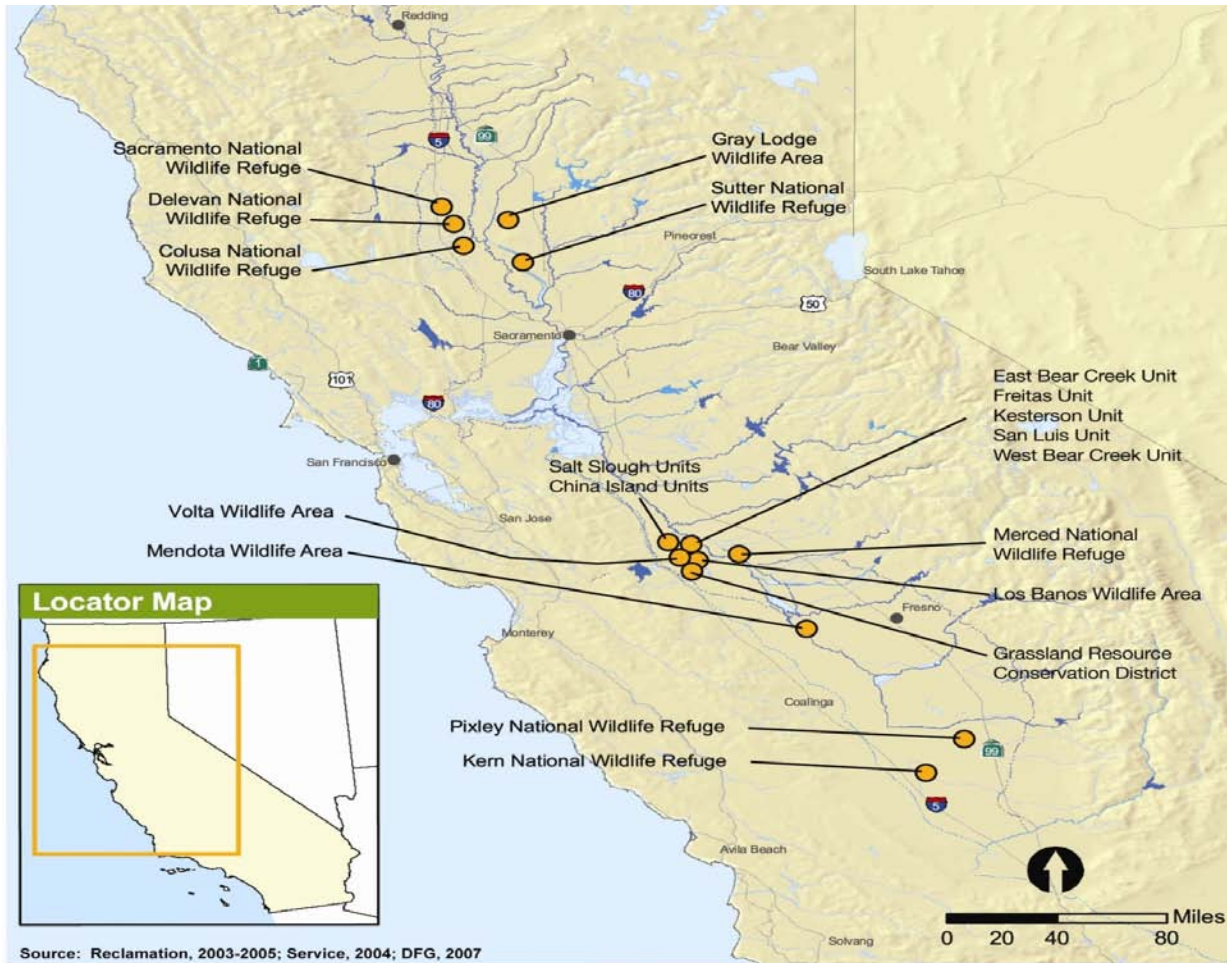
- Five properties acquired, restored and enhanced after 1992

5 CVPIA refuge units in the Sacramento Valley;

14 in the San Joaquin Valley



# CVPIA Refuges



# Central Valley Refuges

Sacramento National Wildlife Refuge

Delevan National Wildlife Refuge

Colusa National Wildlife Refuge

Gray Lodge Wildlife Area

Sutter National Wildlife Refuge

Pinecrest

South Lake Tahoe

Bear Valley

East Bear Creek Unit  
Freitas Unit  
Kesterson Unit  
San Luis Unit  
West Bear Creek Unit

Salt Slough Units  
China Island Units

Volta Wildlife Area

Mendota Wildlife Area

Merced National Wildlife Refuge

Los Banos Wildlife Area

Grassland Resource Conservation District

Pixley National Wildlife Refuge

Kern National Wildlife Refuge

Avila Beach

## Locator Map





# RWSP Partners

Bureau of Reclamation

U.S. Fish & Wildlife Service

California Department of Fish & Game

Grassland Resource Conservation District

Central Valley Joint Venture





# RWSP Interagency Management Team

## Bureau of Reclamation

Tim Rust  
Fish & Wildlife Program Manager

Sonya Nechanicky  
Refuge Water Conveyance Lead

Linda Colella  
Water Acquisition Lead

Nate Sengsamouth  
Facilities Construction Lead

Paula Strang  
RWSP Support Specialist

## U. S. Fish & Wildlife Service

Dale Garrison  
Refuge Water Supply Coordinator

## CA Department of Fish & Wildlife Service

Paul Forsberg  
Senior Environmental Scientist

Brian Cary  
CVPIA Refuge Coordinator

## Grassland Water District

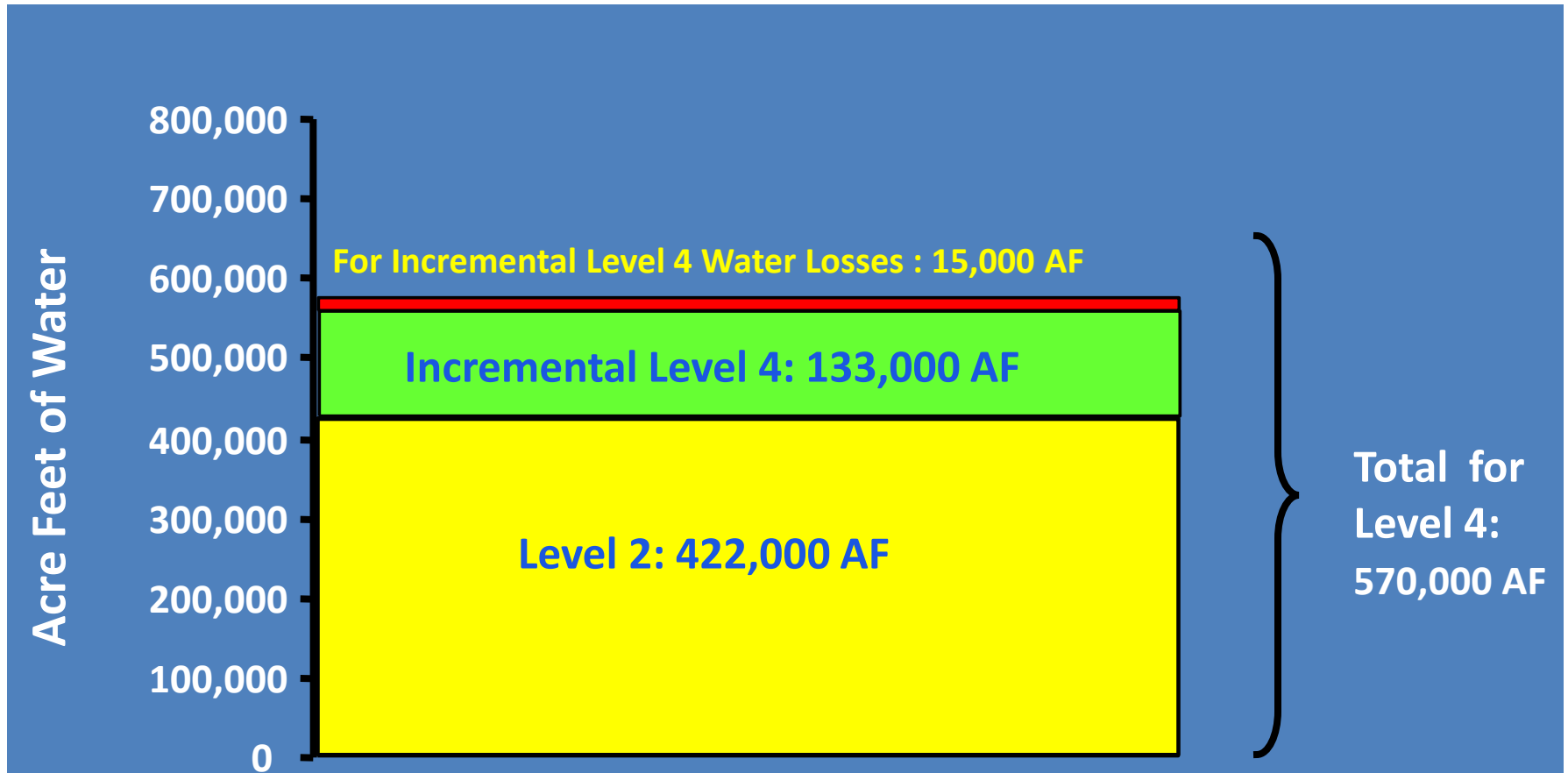
Ricardo Ortega  
General Manager

## Central Valley Joint Venture

Dan Taylor



# Defining Level 2, Incremental Level 4, and Level 4 Refuge Water Supply



# RWSP Status

- 15 of 19 refuges are able to receive full level 4/ 32 of 46 construction projects completed
- Biggs-West Gridley Water District design & construction activities
- 9 long-term conveyance agreements
- Annual Incremental Level 4 water purchases
- Development of Technical Committees
  - ✓ Development of a working long term strategy for meeting CVPIA's mandate
  - ✓ Augmentation of existing Level 4 water supplies south of Delta



# RWS Status

Refuges Not Able to Receive Full Level 4 Water:

- Gray Lodge WA
- Mendota WA
- Pixley NWR
- Sutter NWR





# RWSP FY 2012 Accomplishments

## Facilities Construction

- East Bear Creek Pumping Plant/Pipeline
  - Completed the pumping plant platforms installation
  - On-going repairs to pumping plant due to mechanical and electrical control failures
- Volta WA
  - Completed construction of 2 wells
- Gray Lodge WA and Pixley NWR
  - On-going construction for 5 ground water wells (ARRA funding)



# RWSP FY 2012 Accomplishments - Incremental Level 4 Water Acquisitions

Contractor	Source	Quantity (AF)
San Joaquin River Exchange Contractors	Surface Water	25,000
Grassland Water District	Ground Water	8,200
Merced Irrigation District	Surface Water	3,923
Santa Clara Valley Water District	Surface Water	10,000
<b>TOTALS \$9,018,455</b>		<b>47,123 Acre-feet</b>



# RWSP FY 2012 Accomplishments

## Refuge Conveyance

- Delivered 403,462 AF of Level 2 Water
  - 356,193 AF -- Central Valley Project (CVP) Yield:
  - 47,269 AF -- Diverse (Non-CVP) Sources
- Delivered 57,825 AF of Incremental Level 4 Water
- Continued water quality monitoring at Gray Lodge WA and Grasslands Ecological Area
- Continued work on the design for the North Grasslands Water Conservation & Water Quality Control Project
- Completed installation of 4 flow meters in Bear Creek to determine conveyance loss analysis
- Provided funding for temporary pumping, fuel, and labor at Sutter NWR



# RWSP FY2013 Construction Activities

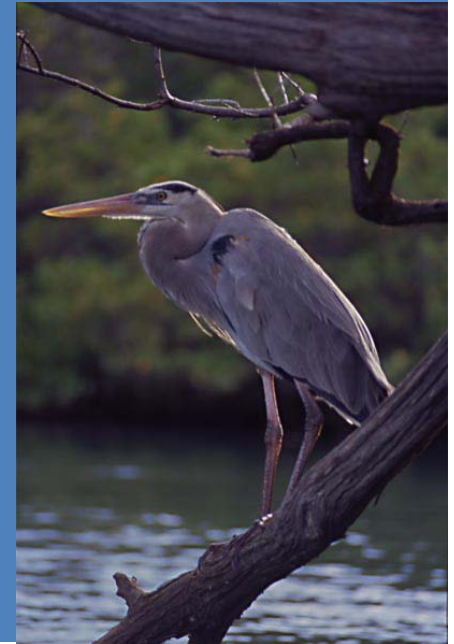
- East Bear Creek on-going improvement activities
- Gray Lodge WA Wells (ARRA funded)
- Pixley NWR Wells (ARRA funded)
- Volta WA Wells discharge outlet and flowmeter improvement plan





# RWSP FY 2013 Water Acquisition Activities- Potential Sources

- San Joaquin River Exchange Contractors
- Grassland Water District
- Panoche Water District
- Merced Irrigation District
- New & Rehabilitated ARRA Wells
- Friant (SJRRP Recaptured water)
- Other Willing Sellers





# RWSP FY2013 Conveyance Activities

- Convey new source of Incremental Level 4 from Los Banos WA for south of delta refuges
- Continue funding for temporary pumps at Sutter NWR
- Convey approximately 377,503 AF Level 2
- Convey 34,388 AF of Incremental Level 4, depending on Reclamation's revised water supply allocations for WY2013
- Evaluate flow data at East Bear Creek NWR to determine losses in Bear Creek
- Complete Phase II (design) of North Grasslands Water Conservation & Water Quality Control Project



# RWSP Monitoring Projects

- Gray Lodge Wildlife Area
  - Quality of delivered groundwater and surface water
- Grassland Ecological Area (GEA)
  - Real-time water quality
  - Measuring volume and salt load of sources entering and draining the GEA
  - Giant garter snake monitoring



# RWSP FY 2013 Budget

- Reclamation and U.S. Fish & Wildlife Service Labor = \$1,378,945
- Refuge Construction = \$453,215
- Water Acquisition = \$7,778,836
- Water Conveyance = \$7,899,004
- Water Monitoring = \$74,000

**Total \$17,584,000**







Central Valley Project Improvement Act



# Refuge Biological Benefits





# Central Valley Wetlands

- Managed Wetlands Require Water of Adequate:
  - Volume
  - Quality
  - Timing



# CVPIA Refuge Biological Benefits

- Year-around water supplies
  - Long-term management planning
  - Accurate habitat management evaluations
  - Water for on-refuge restoration projects
  - Increased hunting/birding opportunities
  - Increase in diversity of habitat and wildlife species use

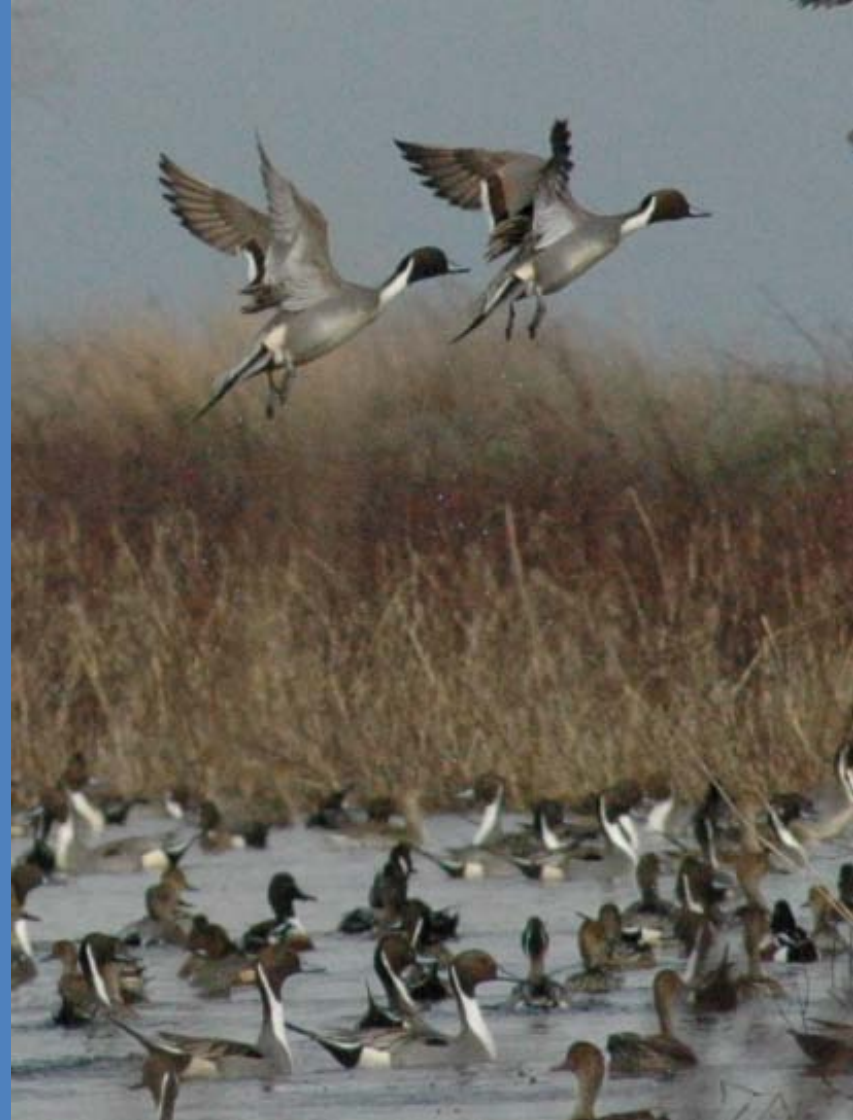




# Early Fall Habitat

Benefit to early migrants such as white-fronted geese and northern pintails

May be only quality habitat available in Valley





## Early Fall Habitat

Since CVPIA, a dramatic increase in sandhill crane use at Pixley NWR:

- 200 in 1992
- 2,000 in 1993
- 5,100 in 2001
- 6,500 in 2006
- 8,000 in 2011



# Early Fall Habitat

- Grasslands

Recognized WHSRN area of international importance to shorebirds







## Mid-Winter Maintenance Flows

Improved Water  
Quality

Reduction in Avian  
Disease

Merced NWR – Ross' Geese  
fattening up in March and April  
before the long flight north



## Late Winter Staging Habitat

Critical to birds  
preparing to migrate  
north to breeding  
grounds



# Riparian Habitat

Vital to Neo-tropical birds  
and colonial waterbirds





## Food Plant Irrigations

Critical source of  
carbohydrates for  
wintering waterfowl





## Spring and Summer Breeding Habitat

Improves waterfowl  
breeding habitat and nest  
success

Cinnamon Teal Broods, Delevan NWR



A photograph of a White-faced Ibis standing in a wet, grassy area. The bird has a long, straight, pinkish-brown bill and a distinctive white patch on its face. Its body is covered in brown and green feathers. The background shows dry grass and a body of water.

White-faced  
Ibis





## Spring and Summer Breeding Habitat

**Kern NWR** - Tri-colored blackbird habitat and nest success improved greatly by the management of spring and summer water





# Spring and Summer Breeding Habitat





# Year-round Waterfowl Habitat Needs

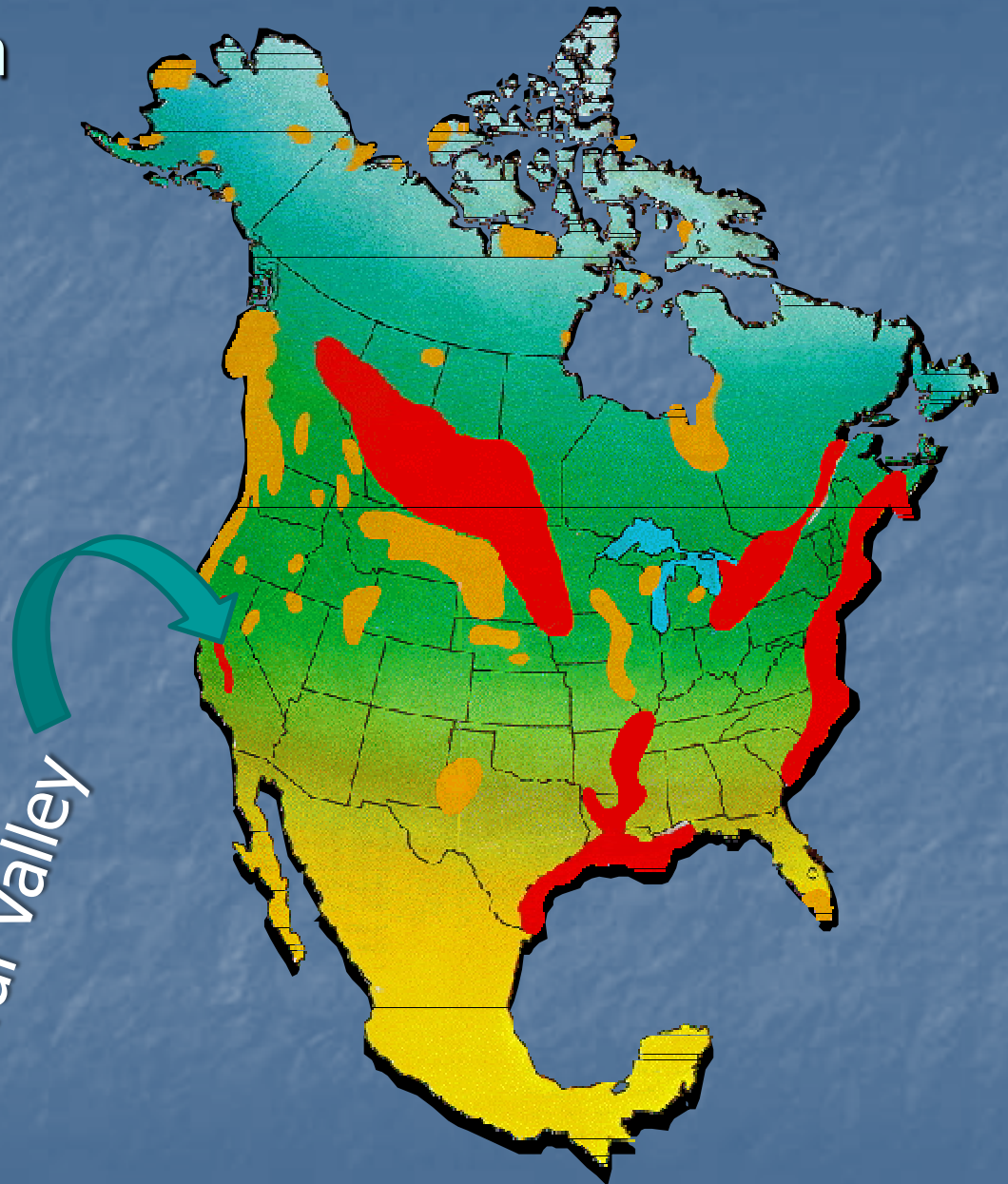


# 1986 North American Waterfowl Management Plan:

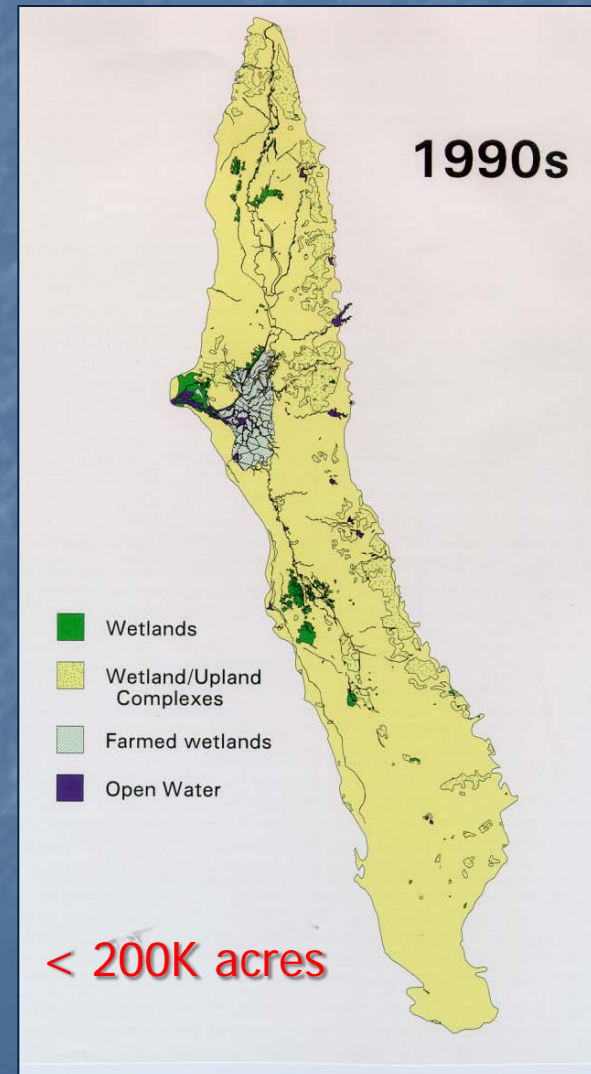
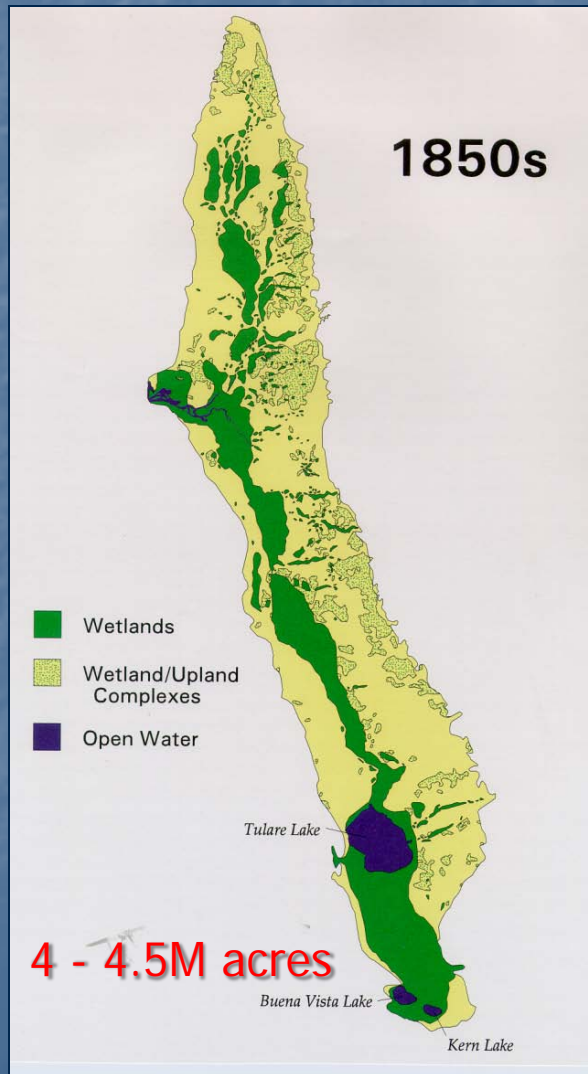
Primary and  
Secondary Areas of  
Continental  
Importance to  
Waterfowl

	Primary
	Secondary

Central Valley



# Central Valley Wetlands Decline







# Central Valley Wetland Acres

1850: 4,000,000

1920: 1,200,000

1935: 600,000

1988: 150,000

2008: 260,000

Less than 5% of the historical wetland acreage remains to support 20% of North America's waterfowl population.





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