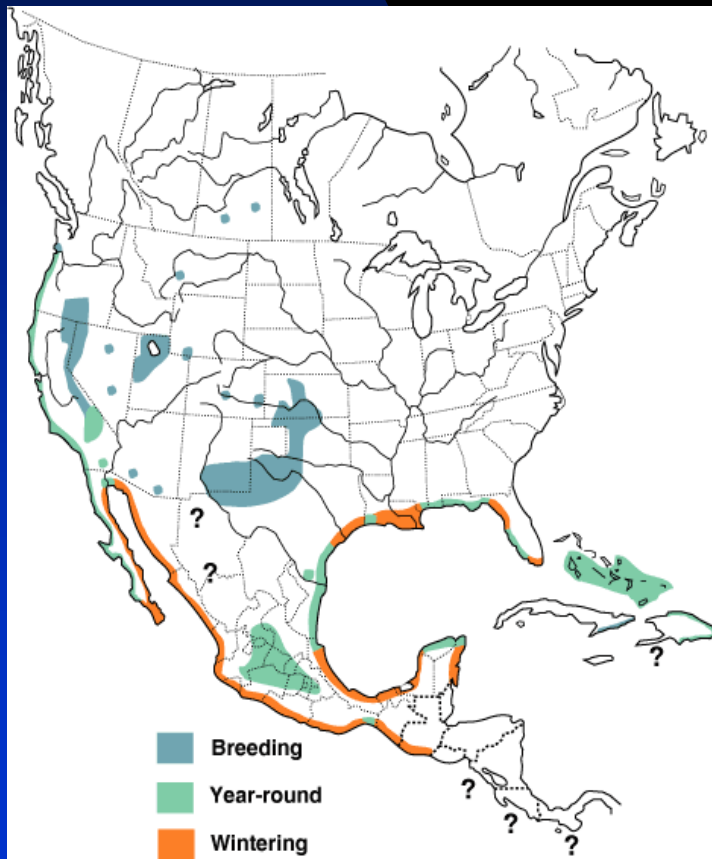


# Pacific Coast Population of Western Snowy Plover



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# Pacific Coast Population - Definition -



- Breeds within 50 miles of the Pacific Coast
- Range – Central Washington, south to Southern Baja California, Mexico

# Pacific Coast Population - Definition -

- Does not include those interior nesters (i.e. > 50 miles from Pacific Coast) that overwinter along coast
- Recognize that a very small fraction of coast nesters may breed at inland sites, and some interior nesters may breed along the coast (12 month finding for delisting petition)
- Recognize that some genetic interchange exists between Pacific Coast and interior breeding populations

# Recovery – Three Pronged Approach

- Human-related disturbance
- Habitat modification and loss
- Predation



# Human-related Disturbance

- Human population increasing along coast
- Development
- Recreation (associated economy)



# Development

- Results in habitat loss and modification
- Stabilizes an otherwise dynamic ecosystem
- Related to recreational impacts



*FWS photo of planting American Beach Grass in 1965*





# Dynamic Ecosystems

- Open sand with moving dunes
- Native dune mat vegetation
- River gravel bars



11/15/2007

# Removing Dynamic Processes

- Reduces/eliminates moving sand dunes (vegetation, seawalls, parking lots, structures)
- Affects tidal sand transport (jetties)
- Results in erosion (river mouth stabilization)
- Affects gravel distribution & aggradation (gravel mining, channelization, dams)





# San Francisco Bay

- Salt pond habitat (flooding, vegetation, stomp)



Photo by S. Kuehn 2003



# Disturbance

- Flushing incubating adults results in tracks to and from the nest -attracting predators
- Nest abandonment
- Potential to separate brooding adult from chicks



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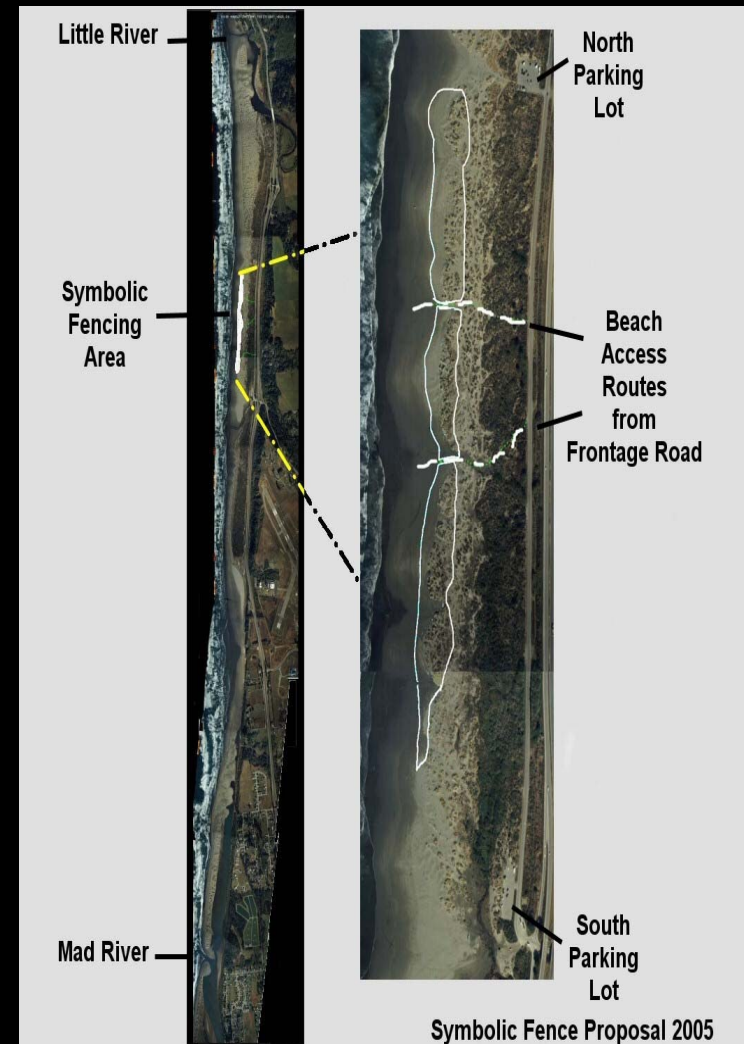
# Sources of Disturbance

- **Human related**  
(walking/jogging, dogs, vehicles, equestrians, kites/model planes, kite boards, hang gliding, campfires, wood collection, beach raking, military activities, spills)
- **Predators** (mammals, feral pets, corvids, raptors)
- **Marine mammals**



# Reducing Disturbance

- Direct use
  - ◆ Research based
- Symbolic fencing
  - ◆ Access corridors
  - ◆ Intertidal zone
- Leash restrictions
- Seasonal restrictions
  - ◆ Wood cutting
  - ◆ Vehicle use
- Education/outreach
- Enforcement





# Predators

- Nest loss
- Chick loss
- Loss of adults



# Predator Management



- Non-lethal
  - ◆ Removal of perch sites
  - ◆ Nest exclosures
  - ◆ Trash control
  - ◆ Education/outreach
  - ◆ Trap & hold/relocate
  - ◆ Contraception
  - ◆ Control agricultural waste
- Lethal
  - ◆ Shooting
  - ◆ Poison
  - ◆ Capture

# Habitat Loss and Degradation

- European beachgrass & other exotic vegetation
- Development
- Contaminants
- Beach nourishment
- Beach raking/grooming
- Beach use
  - ◆ Vehicles
  - ◆ Intensive use
  - ◆ Military activities





# Vegetation Management

- Mechanical removal
- Burning
- Spray with salt water
- Herbicide
- Flooding
- Hand pulling



# Contaminants

- Onshore/offshore extraction
- Spills
  - ◆ Clean up



# Vehicles



- Recreation
  - ◆ Administrative use
- Commercial fishing
- Military



- Seasonal restrictions
- Intertidal zone (wetted sand)
- Speed limits
- Specified routes & areas of use

# Partnerships

## ■ Research

- ◆ Universities (UCSB, HSU, OSU)
- ◆ USGS-Biological Resources Division
- ◆ NGOs (PRBO, SFBBO, Audubon, MRB, Monterey Bay Aquarium, Oregon Coast Aquarium)

## ■ Management

- ◆ Resource agencies
- ◆ Land owners/managers

## ■ Fish & Wildlife Service (Funding/Permitting)

## ■ Coordination

- ◆ Recovery unit level
- ◆ Range-wide network
- ◆ Outreach

# Banding

## ■ Utility

- ◆ Defined listed entity (12 mo. Finding)
- ◆ Demographics (PVA)
- ◆ Movements (Recovery Units)
- ◆ Reproductive success (evaluate threats)
- ◆ Life history

Band Colors Used On Snowy Plovers  
in California and Oregon  
(Underlined letter is code for that color)

	<u>A</u> qua
	<u>B</u> lue
	<u>G</u> reen
	<u>B</u> lack
	<u>L</u> ime
	<u>O</u> range
	<u>P</u> ink
	<u>R</u> ed
	<u>S</u> ilver
	<u>V</u> iolet
	<u>W</u> hite
	<u>Y</u> ellow

## ■ Pitfalls

- ◆ Injury
- ◆ Disturbance
- ◆ Increased predation (alleged)
- Regulated - ESA section 10(a)(1)(A)
  - ◆ Issuance criteria – recovery component
  - ◆ Field Office review (RU perspective), range-wide review



Questions?

