

# **Fog and Ecosystem Recovery on Santa Rosa Island**

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## **National Park Service**

Kate Faulkner

Sarah Chaney

Dirk Rodriguez

(Resource management,  
Vegetation restoration)

## **UC Santa Barbara**

Christopher Still

Parker Williams

(Fog distribution)

## **CSU Northridge**

Doug Fischer

(Fog amount)

## **USGS-BRD**

Kathryn McEachern

(Vegetation ecology)

## **USGS-GD**

Jonathan Stock

Dave Bedford

(Surface flow, Eco-hydrology)

## **USGS-WRD**

Brian Pellerin

(Stream flow)



# GOALS & OBJECTIVES

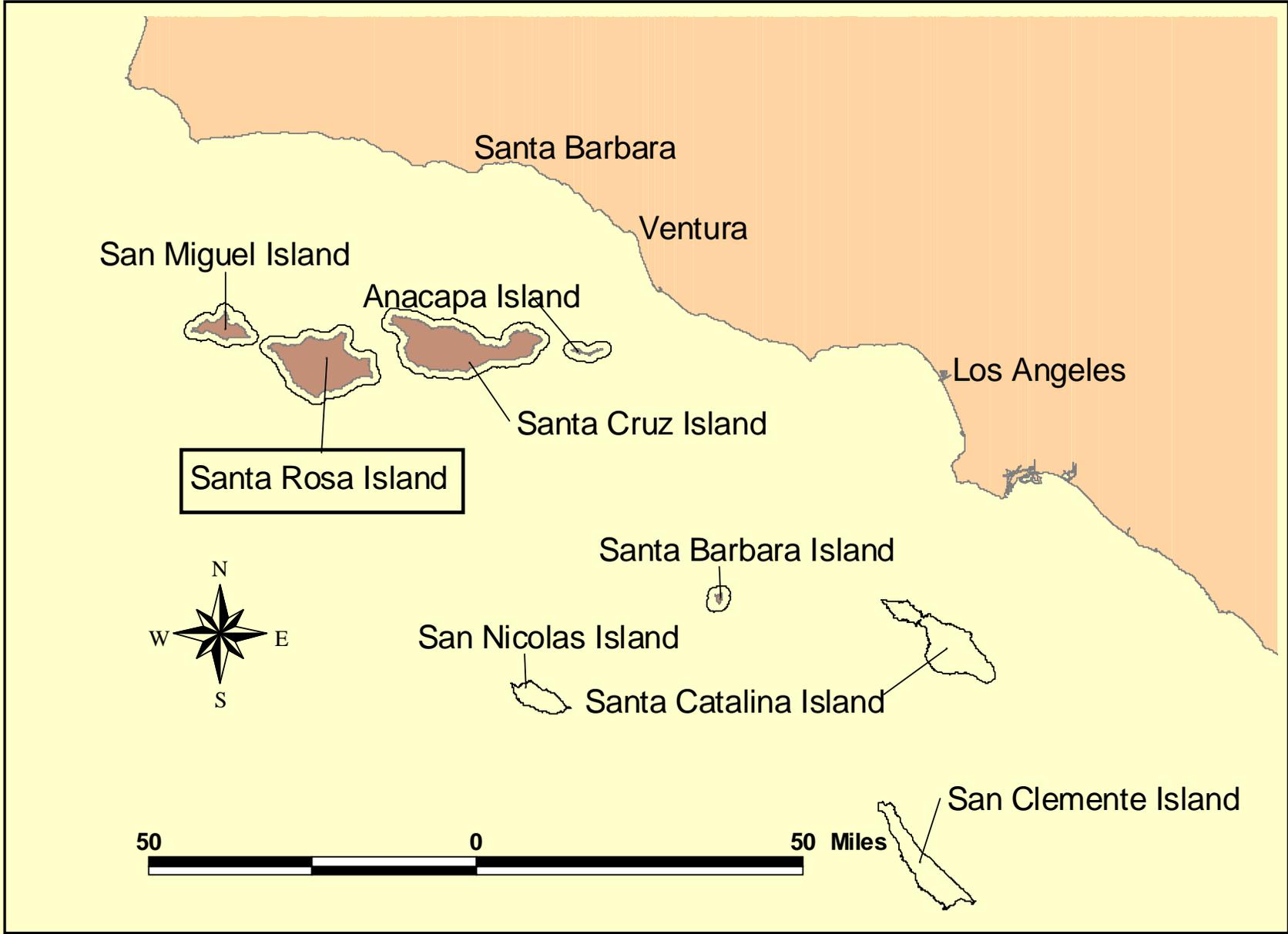
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- Conceptual model
- Small-scale sample
- Adjust model
- Techniques vegetation restoration
- Strategic restoration plan



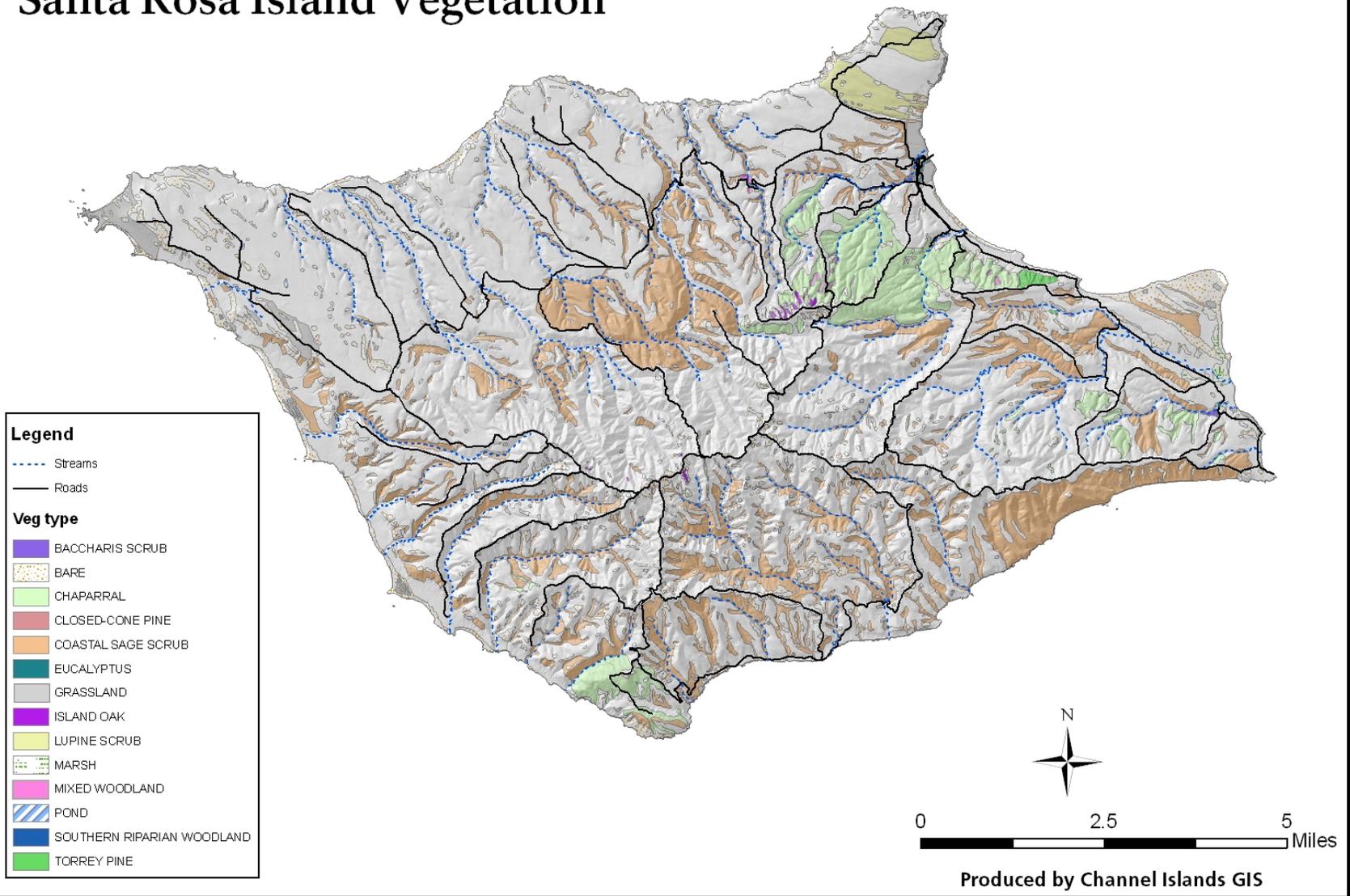
## TALK OUTLINE

- Santa Rosa Island
- Working model
- Study plan
- Restoration goals





# Santa Rosa Island Vegetation





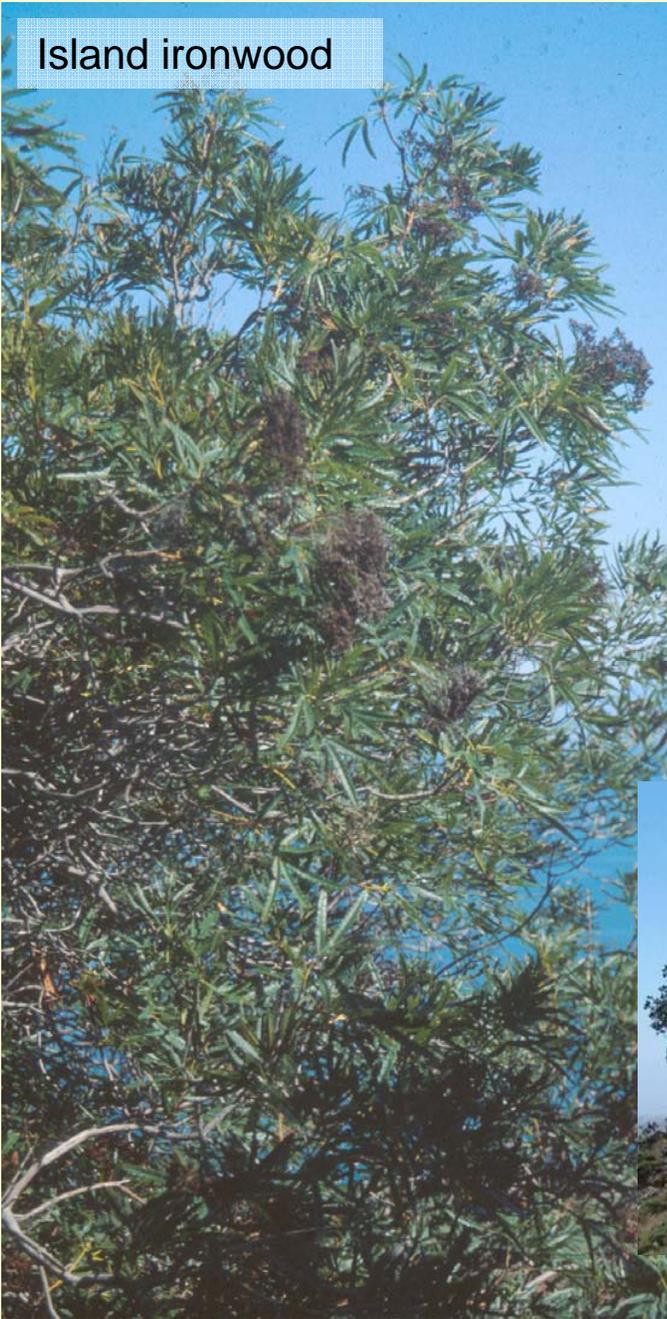
File photo, c. 1990, NPS



Bishop pine

Doug Fischer, 2007, UCSB

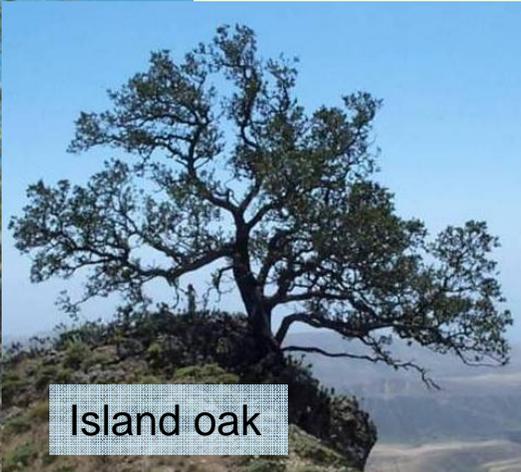
Island ironwood



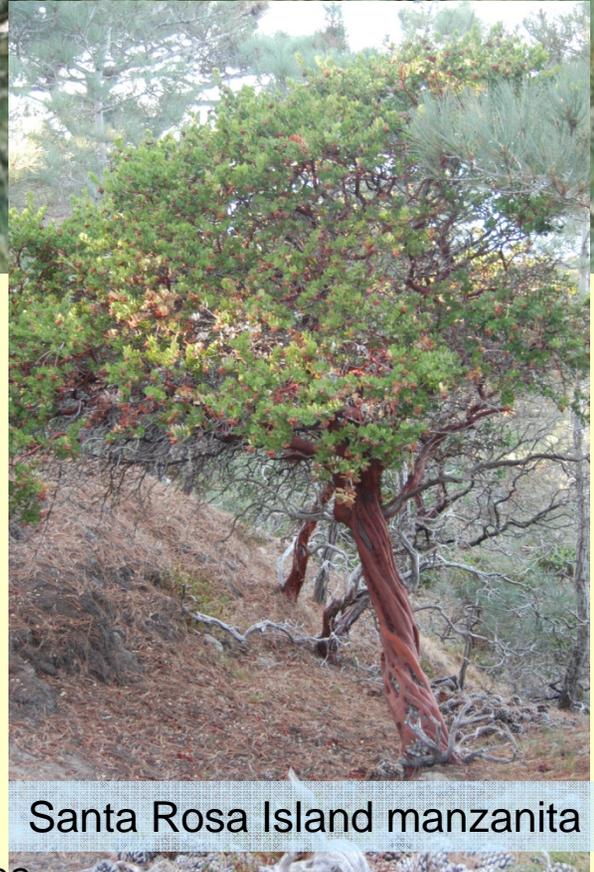
Torrey pine

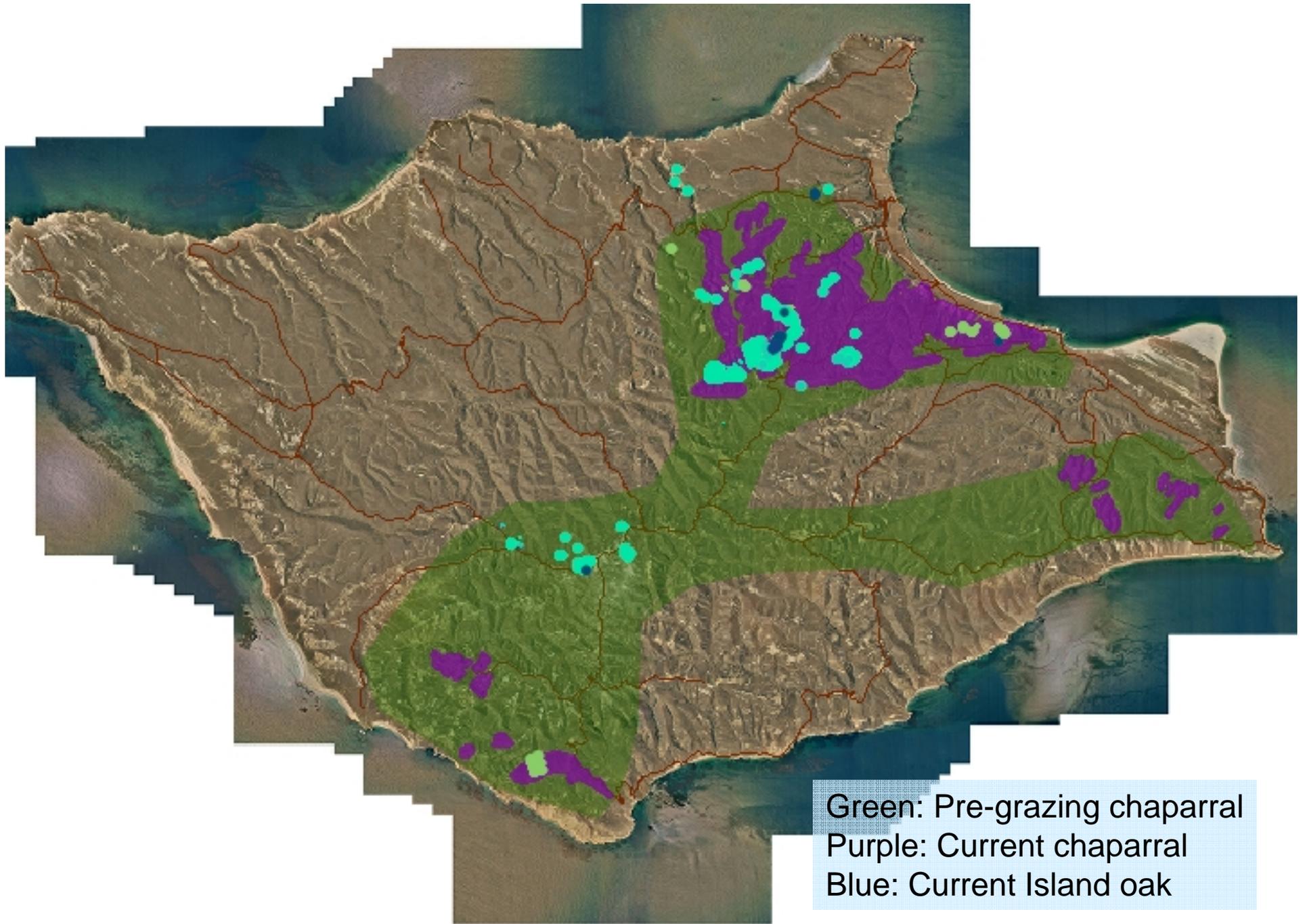


Island oak



Santa Rosa Island manzanita







Sarah Chaney, 2007, NPS



File, NPS

# WORKING MODEL





Dirk Rodriguez, NPS



Dirk Rodriguez, 2008, NPS



Sarah Chaney, 2007, NPS

# Consequences

**Hydrologic regime altered from natural state**

**Resulting desertification precludes recovery of native fog-harvesting vegetation**

**Return to naturally functioning ecosystem not possible across most of SRI**

# STUDY PLAN



vegetation cover  
fog frequency  
fog amount  
surface water flow  
sediment loading  
soil moisture  
stream characteristics  
vegetation restoration



# Vegetation cover

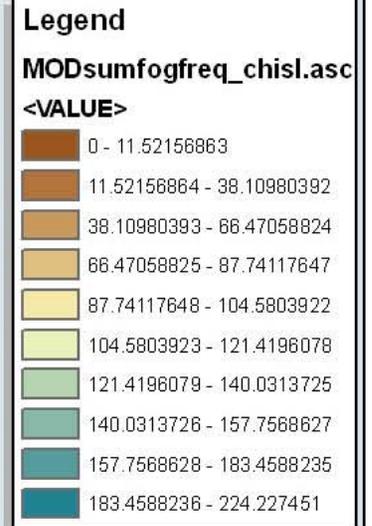


SRI Fog Frequency

# Fog frequency



Draft



"The values are integers and they represent 10 times the percent of the time a given pixel is predicted to be inundated with fog from June - September."  
-Park

0 2.5 5  
Kilometers

Parker Williams, 2008, UCSB

# Fog amount

Microfilament array:  
deposition surface  
for fog droplets.

Funnel:  
fog caught by filaments is  
drawn into funnel

20 L container:  
collects fog water  
which can then be  
quantified.



Fog research on SRI.

Dr. Christopher Still, UCSB, spearheads fog research on the channel islands. This is a fog-collector, constructed and installed by Colin Ebert, fog-research technician. In conjunction with weather station data, we get a good picture of the quantity of water input by fog events on the island.

# Surface flow and soil moisture



# Stream flow



Dirk Rodriguez, NPS

# Restoration



Sarah Chaney, 2008, NPS



# Adjust model

# RESTORATION GOALS

Santa Rosa Island

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inter 33°56'43.70" N 120°06'38.79" W elev 1277 ft

Streaming ||||| 100%

Eye alt 3733 ft

# Conclusion



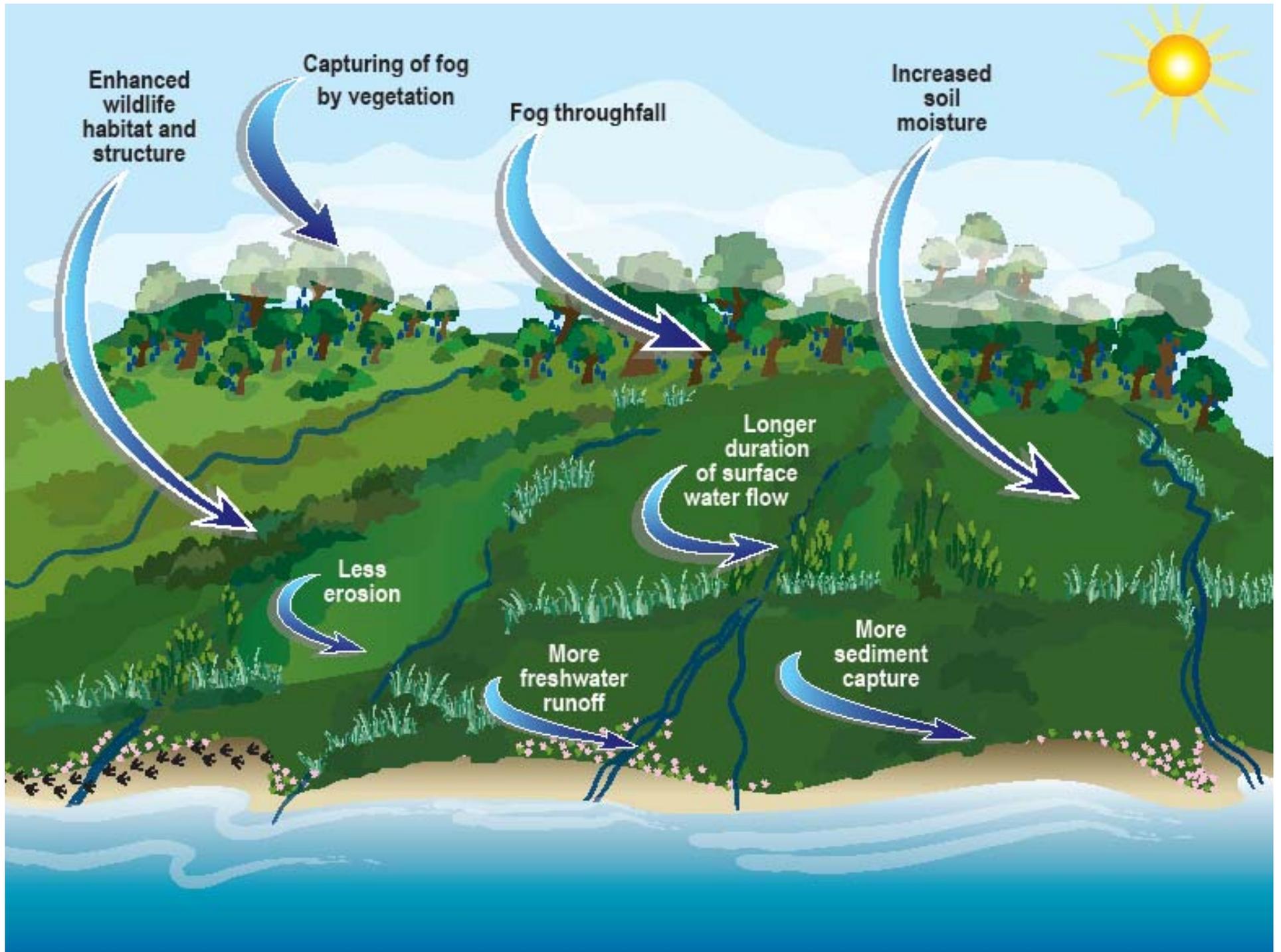
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**Plant Ecologist**

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Possible study sites –  
N-facing slopes Black Mtn –  
with w/o veg



Soledad oaks – restoration site



Santa Rosa Island

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inter 33°56'43.70" N 120°06'38.79" W elev 1277 ft

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