

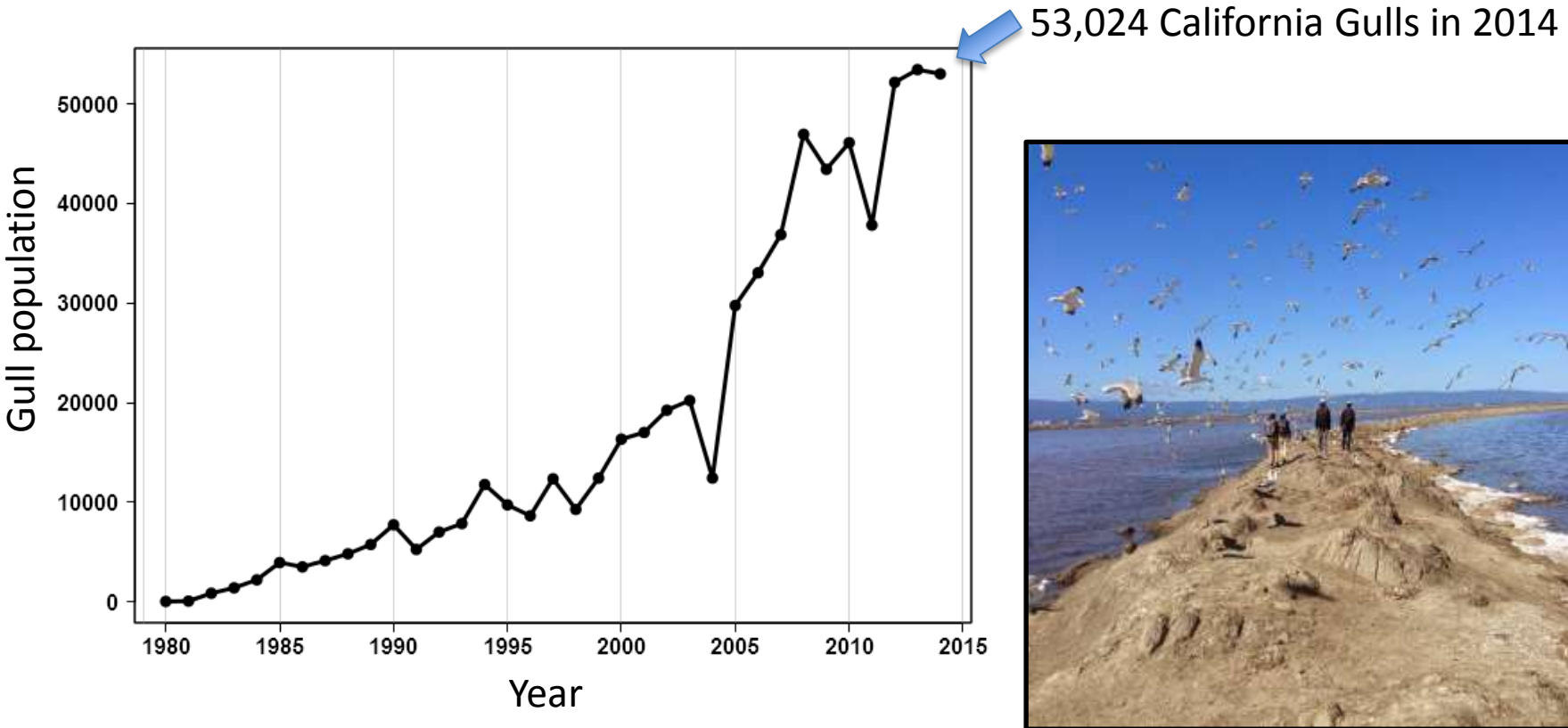
# California Gull population growth and response to tidal marsh restoration in South San Francisco Bay

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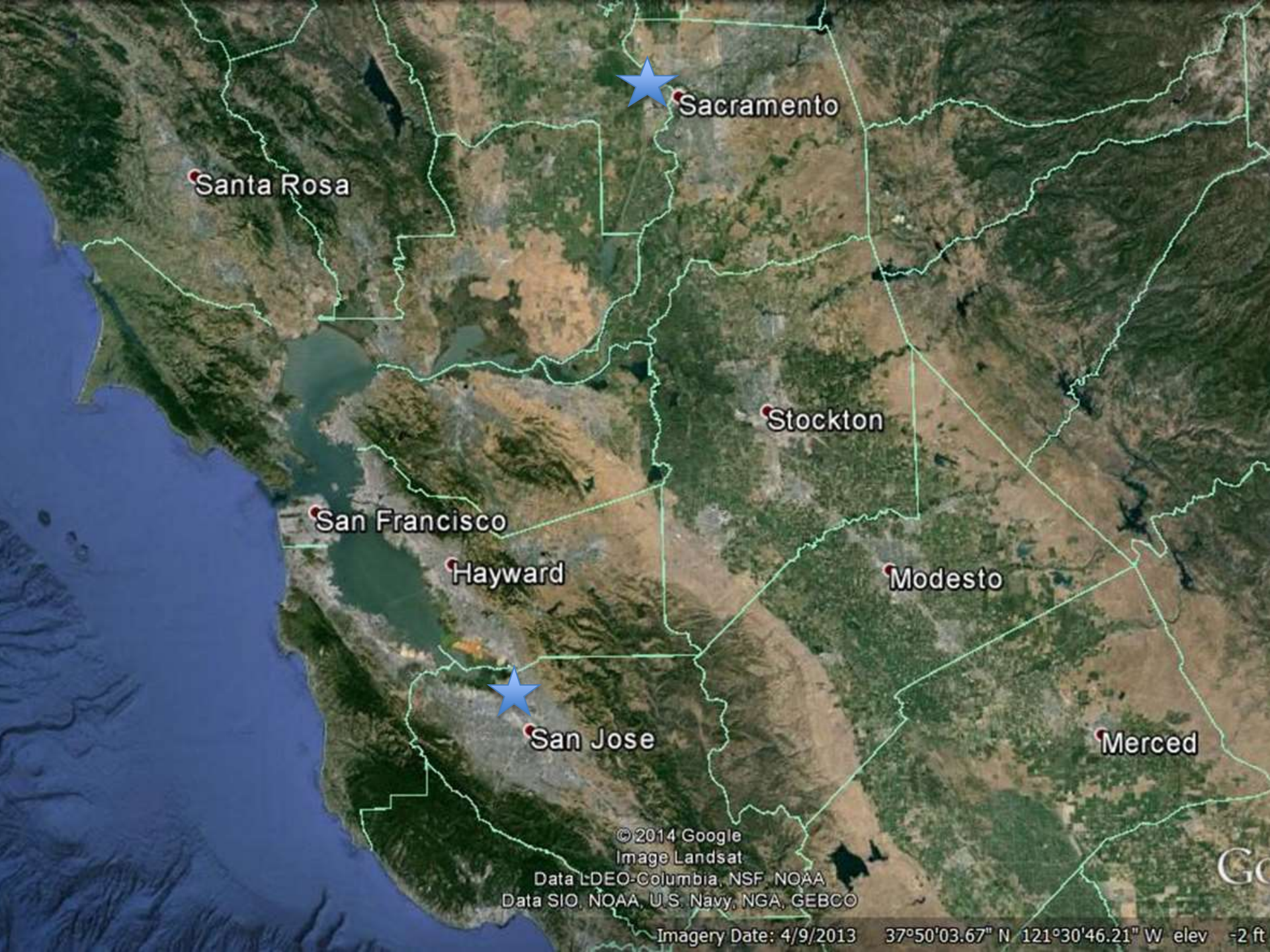
# California Gulls from 1980-2014



- Assess changes in California Gull abundance
- Review ecological impacts of gulls
- Gull response to 2010 tidal restoration







Santa Rosa

Sacramento

Stockton

San Francisco

Hayward

Modesto

Merced

San Jose

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Image Landsat  
Data LDEO-Columbia, NSF, NOAA  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Imagery Date: 4/9/2013

37°50'03.67" N 121°30'46.21" W elev -2 ft





# South Bay Salt Pond Restoration Project

- Largest tidal wetland restoration project on the West Coast
- Land purchased in 2003 from Cargill Salt
- To restore over 15,000 acres of salt pond to wetland habitats

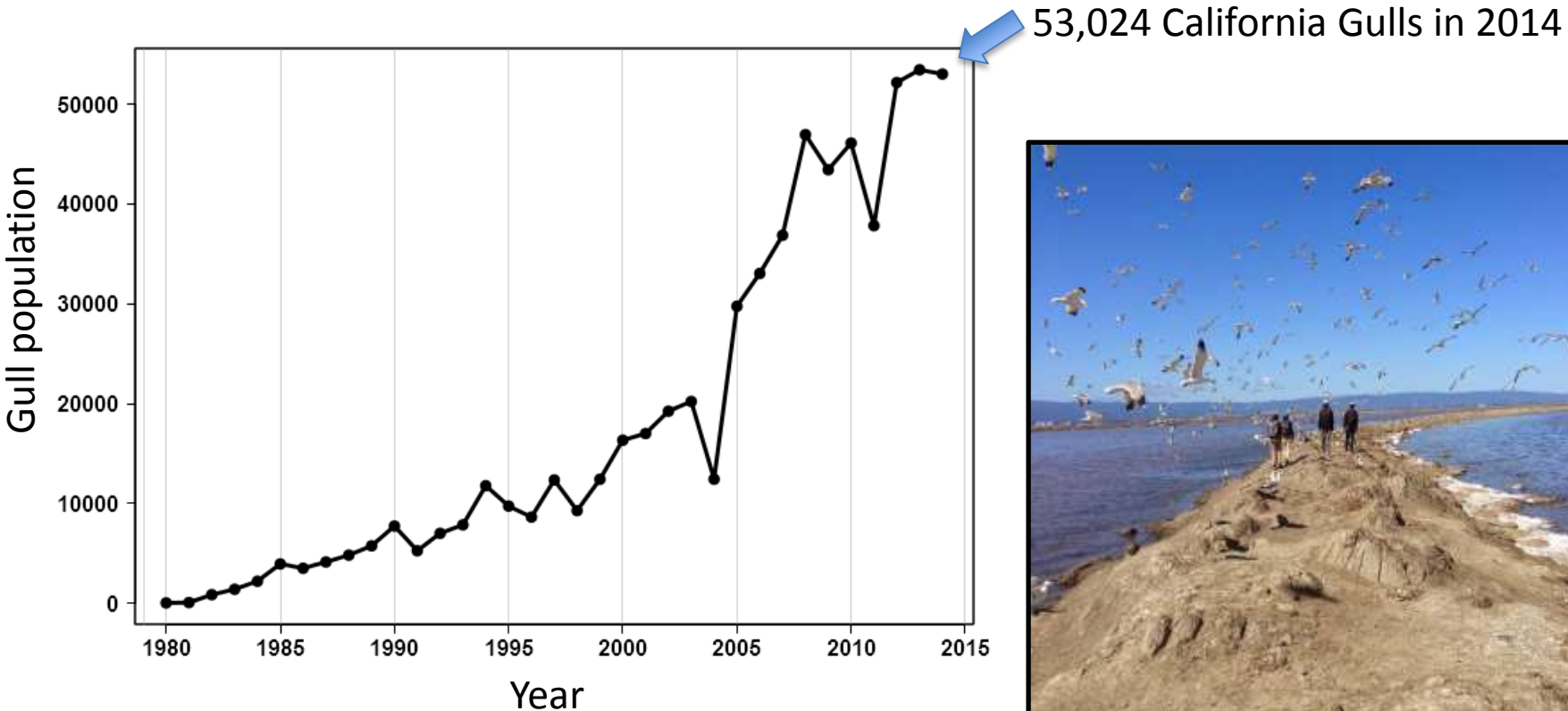


SAN FRANCISCO BAY  
BIRD OBSERVATORY

Imagery Date: 4/5/2014 37°30'13.96" N 122°03'18.37" W elev



# California Gulls from 1980-2014



- Assess changes in California Gull abundance
- Review ecological impacts of gulls
- Gull response to 2010 tidal restoration

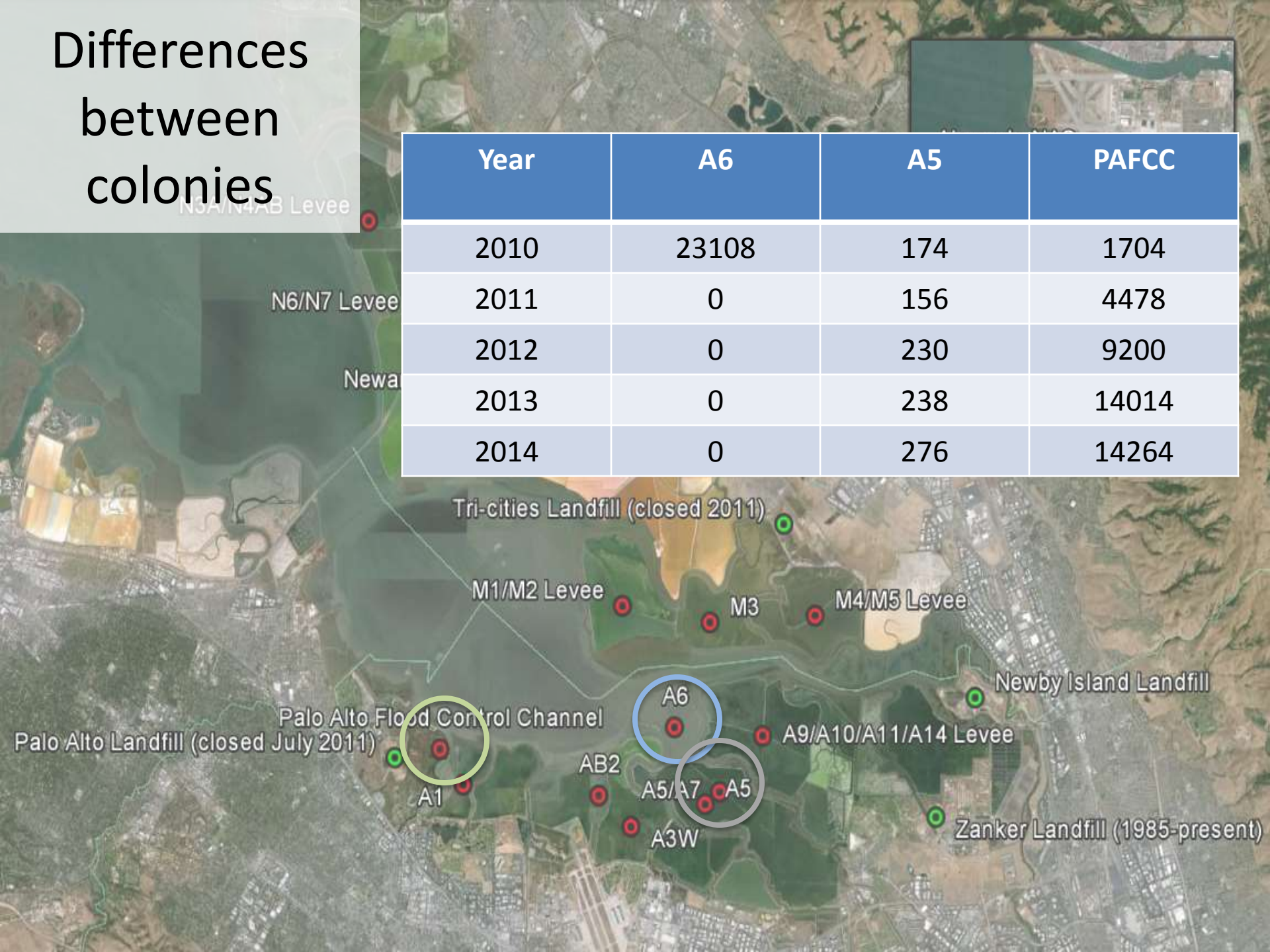


- 15 colonies in South Bay since 1980, 10 still active today
- SFBBO has been surveying these colonies since 1980
- Largest colony (through 2010) was at A6 – over 23,000





# Differences between colonies



Year	A6	A5	PAFCC
2010	23108	174	1704
2011	0	156	4478
2012	0	230	9200
2013	0	238	14014
2014	0	276	14264

# Why such a dramatic increase in gull numbers?



- Emigration? Little evidence for this
- Food availability? Increased access to food at landfills and elsewhere a likely factor
- Climate – Pacific Decadal Oscillation; ENSO; sea surface temperatures
- Further research needed, particularly on gull nest success





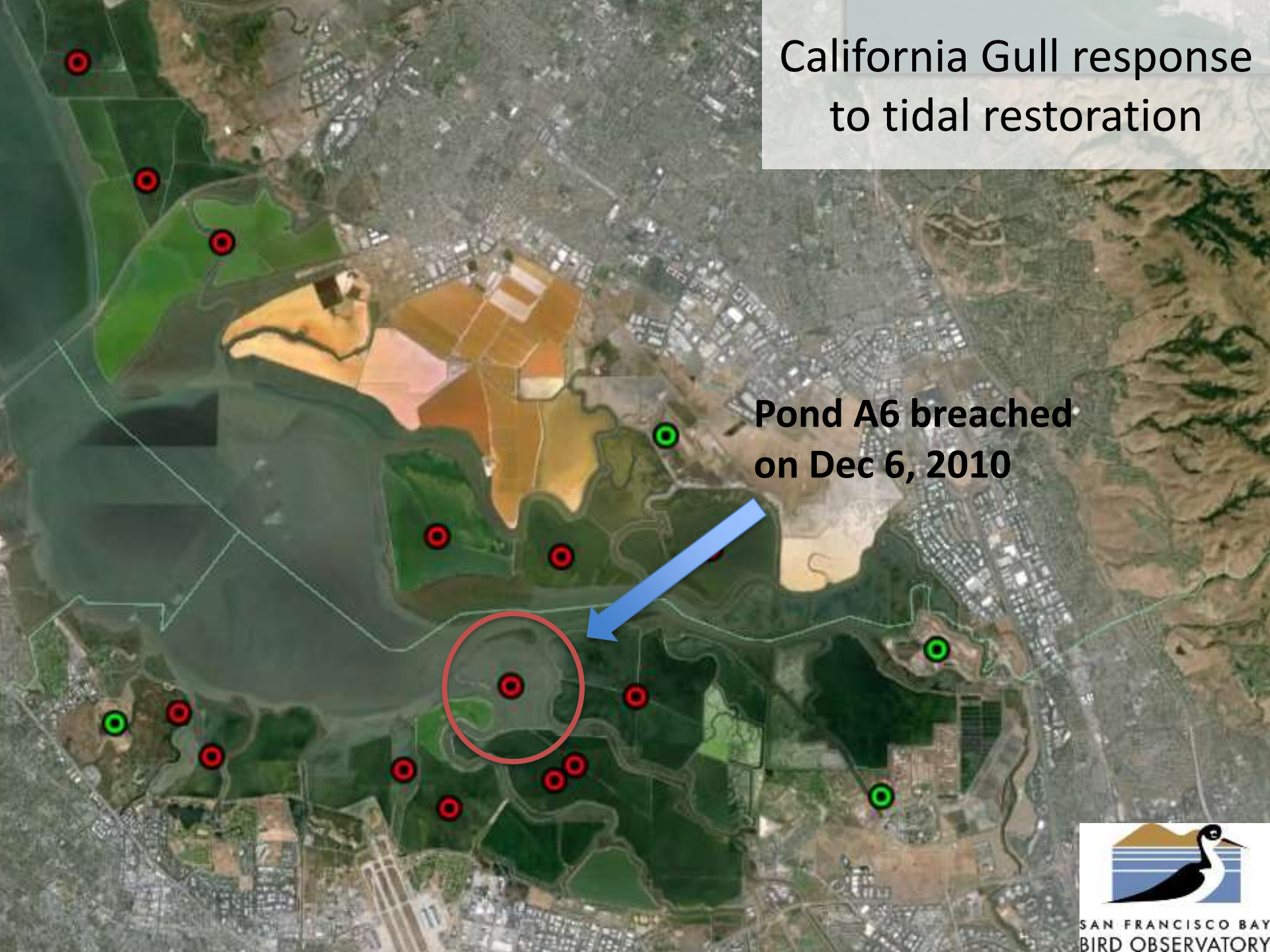
# What does this mean for other bird species?



- Studies by SFBBO and others show negative ecological impacts of gulls through nest and chick predation and colony encroachment
- Higher gull numbers likely mean lower survival and reproduction for species like the Forster's Tern, American Avocet, Western Snowy Plover

# California Gull response to tidal restoration

**Pond A6 breached  
on Dec 6, 2010**





# California Gull response to tidal restoration



- SFBBO banded gulls at pond A6 prior to the restoration
- Conducted resight surveys to determine movements following restoration
- 1307 banded gulls sighted at A6 from 2008-2010
- Assessed resight data through 2013
- 134 banded gulls seen after breach (169 sightings) at 50 locations

- 2011
- 2011-12
- 2012
- 2012-13
- 2013
- 2011-2013

Resightings of banded  
A6 gulls: West Coast



SAN FRANCISCO BAY  
BIRD OBSERVATORY

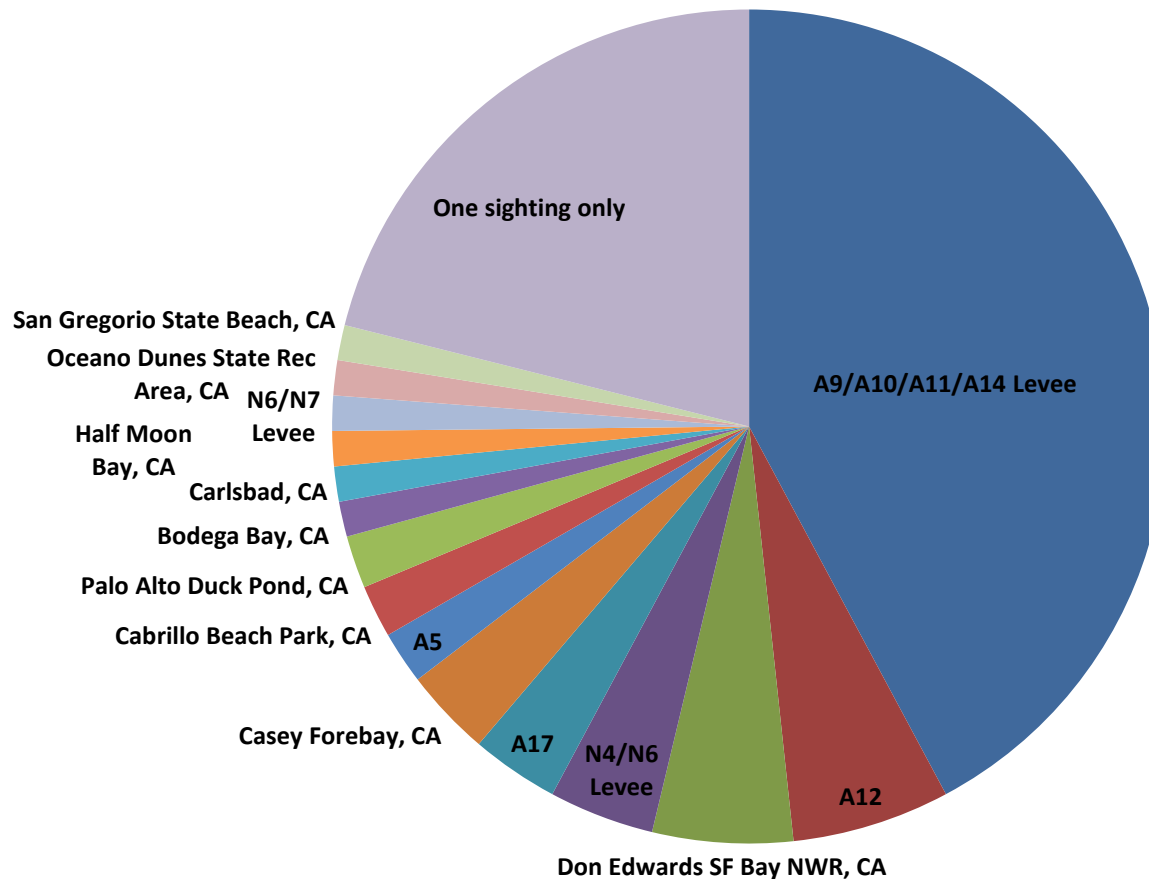


# Resightings of banded A6 gulls: South Bay

- 2011
- 2011-12
- 2012
- 2012-13
- 2013
- 2011-2013



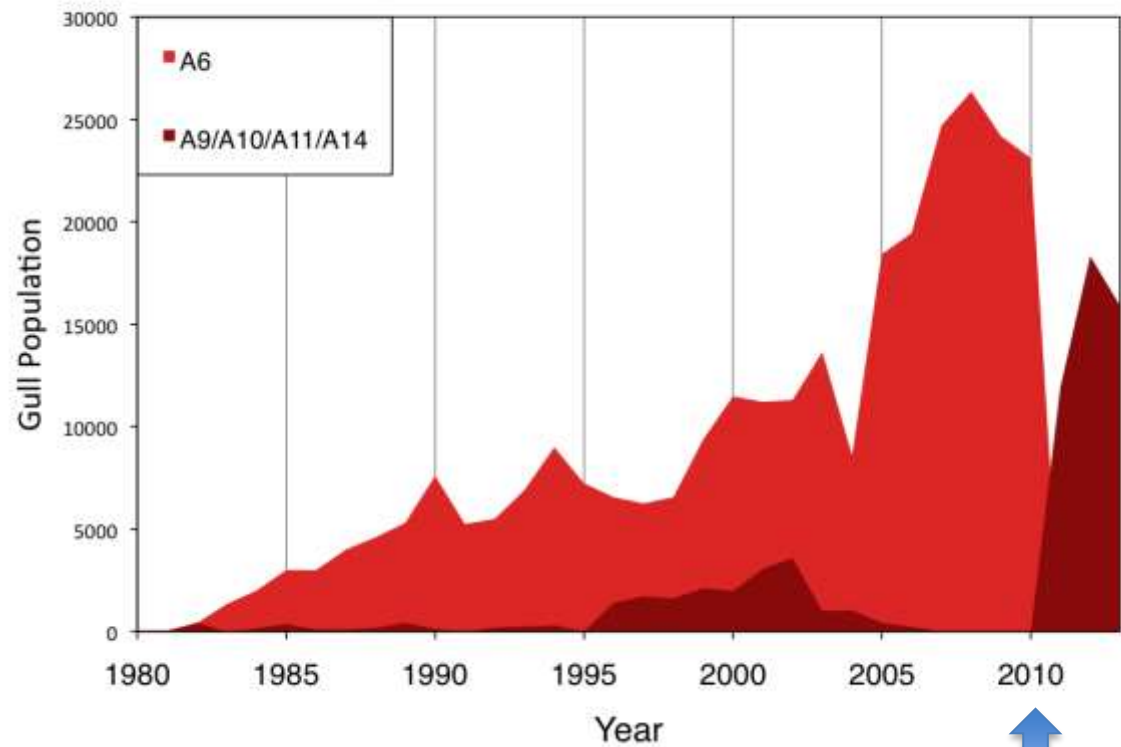
## Number of CAGU Resights by Location (2011-2013)



- Many gulls were resighted at adjacent colonies (62 sightings, 42%)
- Most other locations had 1-2 sightings



## A6 and A9/A10/A11/A14 Gull Colonies



A6 breach in  
late 2010

# Summary

- South San Francisco Bay gull population has **increased rapidly** over the past three decades
- **Colony growth varies** but most are growing quickly
- **A6 tidal restoration displaced the largest colony in 2010**, but most moved to an adjacent colony
- Further research needed to assess **gull nest success** in South SF Bay





# Acknowledgements



- SFBBO donors, who have financially supported this work since 1980; Resources Legacy Fund
- SFBBO staff members, volunteers and student interns who conducted the surveys
- Partners at SBSPPR, USFWS, USGS, CDFW and many other landowners and managers

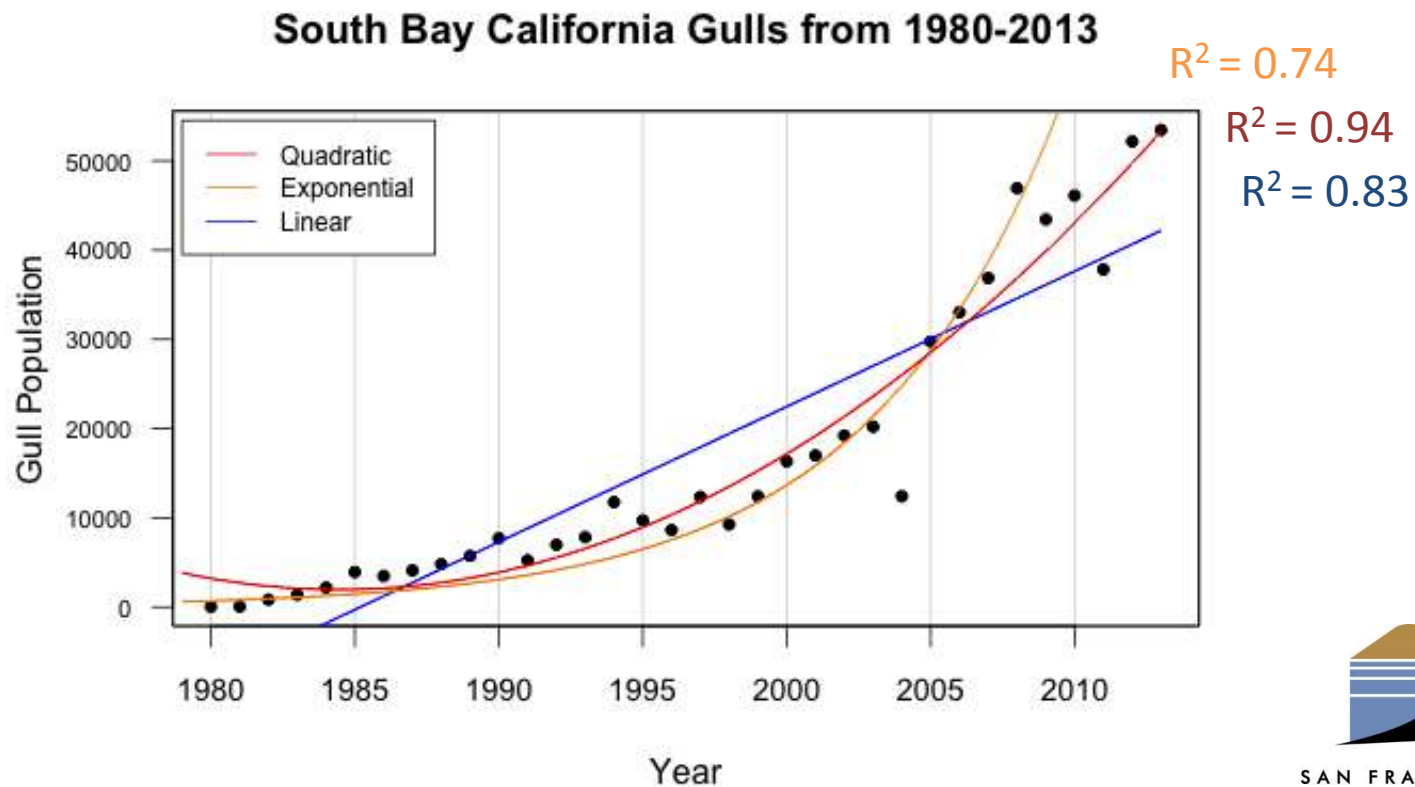




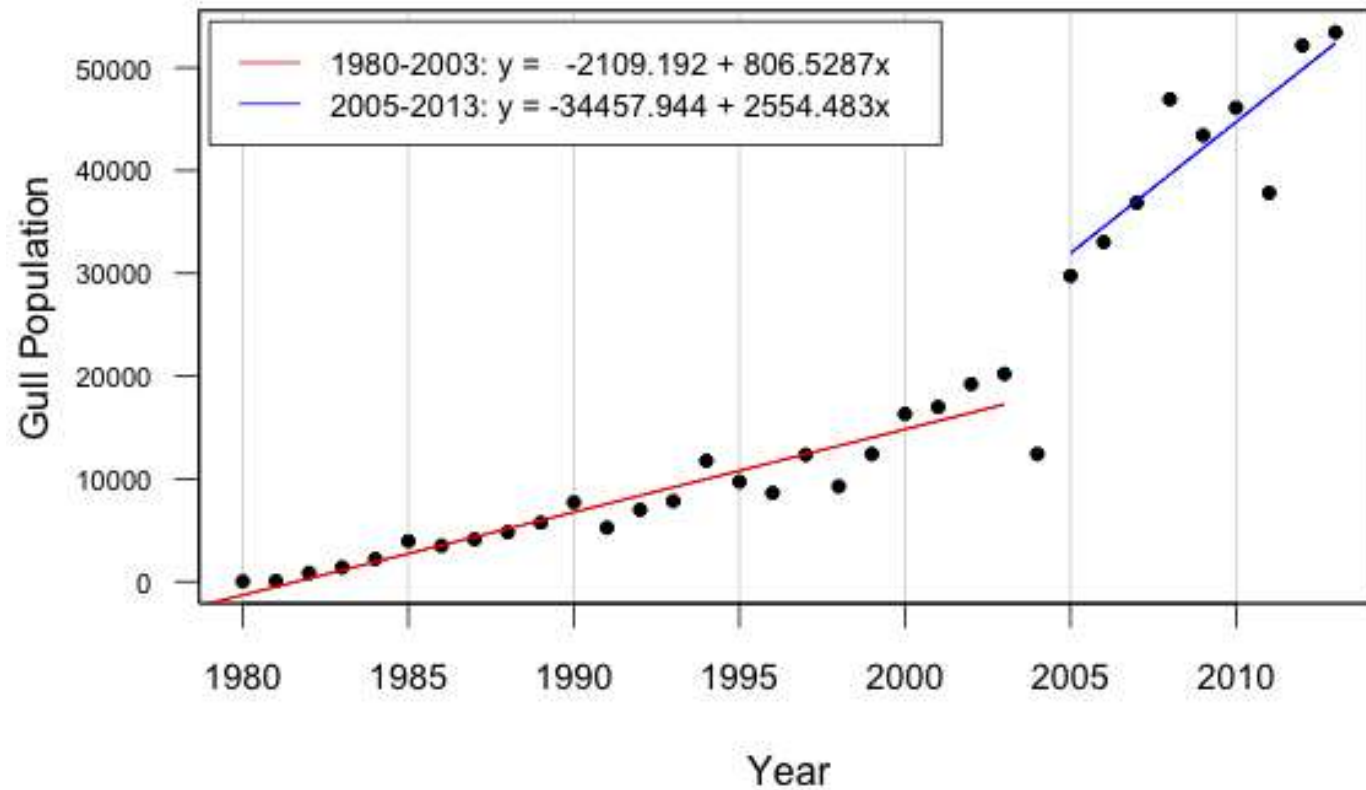




# Characterizing California Gull population growth:



## South Bay California Gulls from 1980-2013



- Moderate increase in abundance from 1980-2003 (806 gulls/yr)
- Rapid increase in abundance after 2004 (2554 gulls/yr)

