



# Beach Watch MPA Summary





# Beach Watch Overview



## Beach Watch: The Eyes and Ears of the SF Bay Area Outer Coast

The Beach Watch ecosystem monitoring program of the Gulf of the Farallones National Marine Sanctuary and Farallones Marine Sanctuary Association was created to study and protect the shoreline of the Gulf of the Farallones and Monterey Bay National Marine Sanctuaries.

### Beach Watch Data includes:

- live wildlife counts
- dead wildlife documentation
- oil/tarballs
- beach wrack
- human use

42 Beaches are surveyed bi-monthly by 100 highly trained volunteers on California Central Coast Beaches From Año Nuevo to Bodega Bay





# Baseline Data Request: 1994-2012



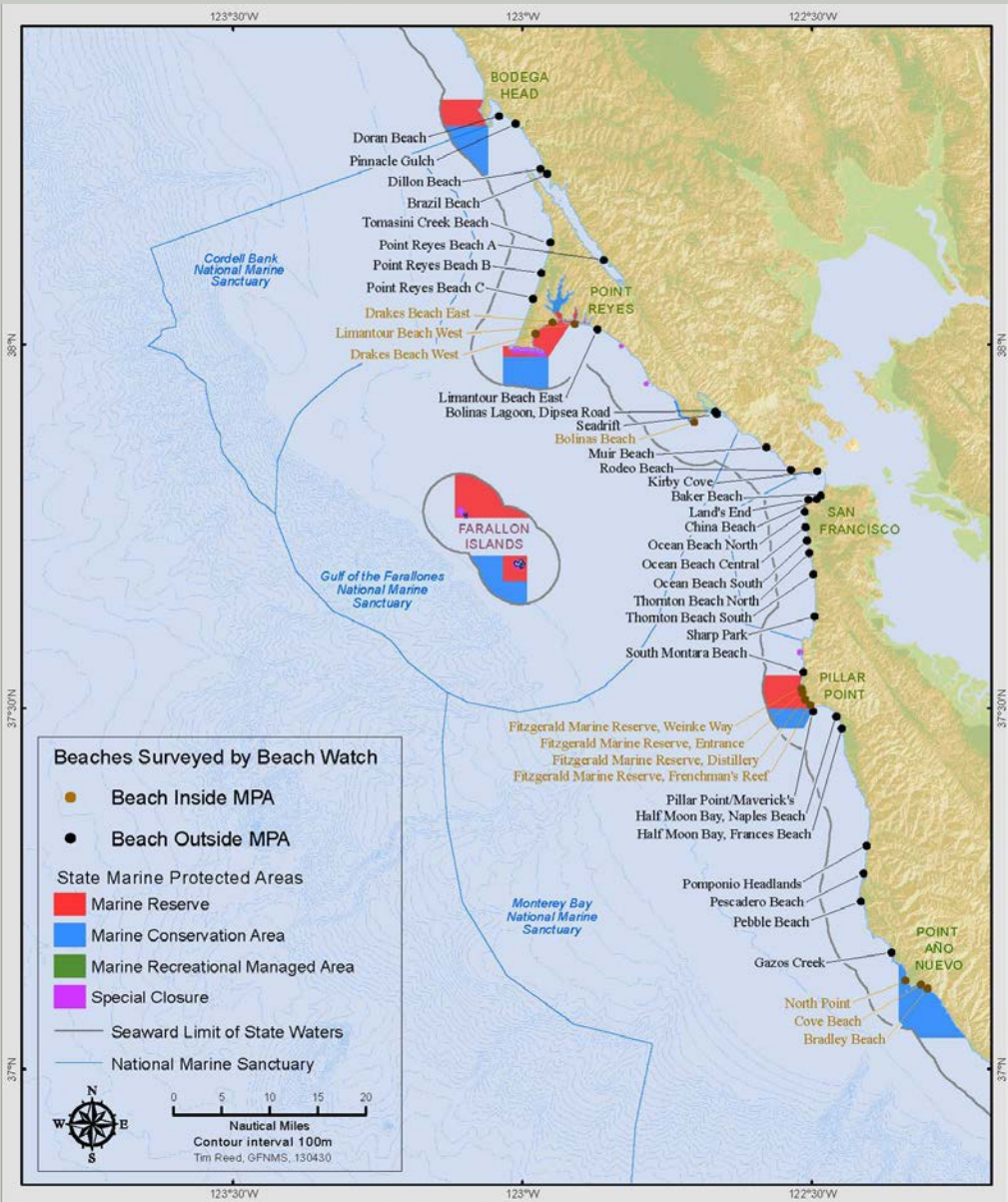
## Baseline and Trend Data:

- Beach Watch data from 1994-2012
- Birds, live and dead
- Mammals, live and dead
- Human uses
- Regional spatial patterns
- Provide data and summary report to Ocean Spaces
- Summarize benefits from citizen-science





# CA MPA & Beach Watch Beaches



## Beach Summary:

- 42 Beach Watch beaches from Bodega Head to Año Nuevo
- 3 Marine Reserves
- 5 Marine Conservation Areas
- 3 Special Closure Areas
- 2 Marine Recreational Managed Areas
- 11 BW beaches inside MPAs
- 5 BW are near a MPA



# Species of Interest within MPAs



## North Central Coast MPA Monitoring Specific Species of Interest

Specific Species of Interest	
Western/Clark's Grebe	<i>Aechmophorus occidentalis, clarkia</i>
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>
Brant	<i>Branta bernicla</i>
Surf Scoter	<i>Melanitta perspicillata</i>
Snowy Plover	<i>Charadrius alexandrines</i>
Black Oystercatcher	<i>Haematopus bachmani</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Surfbird	<i>Aphriza virgate</i>
Western Sandpiper	<i>Calidrius mauri</i>
Western Gull*	<i>Larus occidentalis</i>
Common Murre	<i>Uria aalge</i>
Pigeon Guillemot	<i>Cepphus Columba</i>
Marbled Murrelet	<i>Brachyramphus marmoratus</i>
Harbor Porpoise	<i>Phocoena phocena</i>
Southern Sea Otter	<i>Enhydra lutris</i>
Steller Sea Lion	<i>Eumetopias jubatus</i>
California Sea Lion*	<i>Zalophus californianus</i>
Harbor Seal	<i>Phoca vitulina</i>



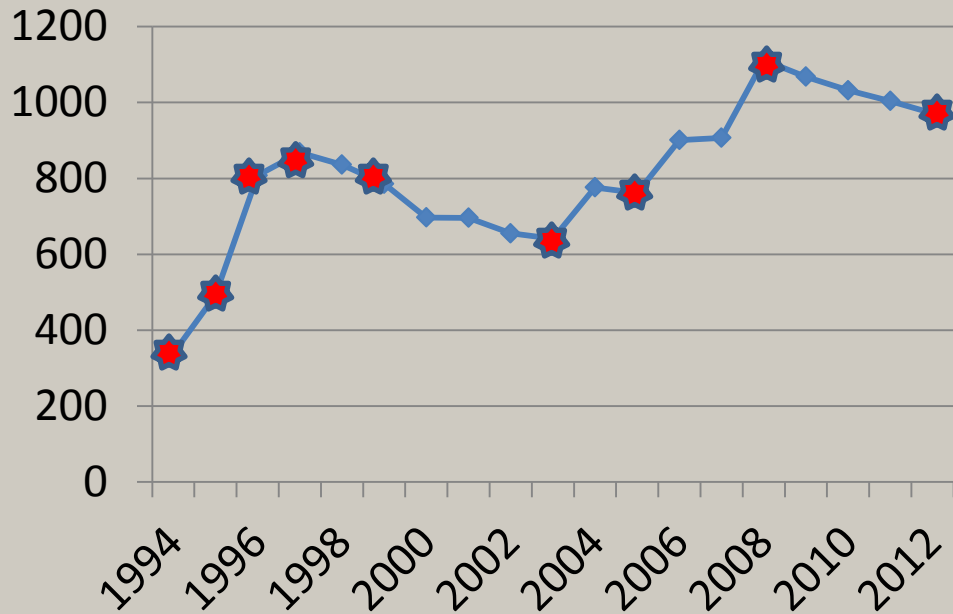
# Survey Effort



## Total Surveys per Year by Beach Watch

★ = new recruit training held this year

In 2011-2012 n = 972





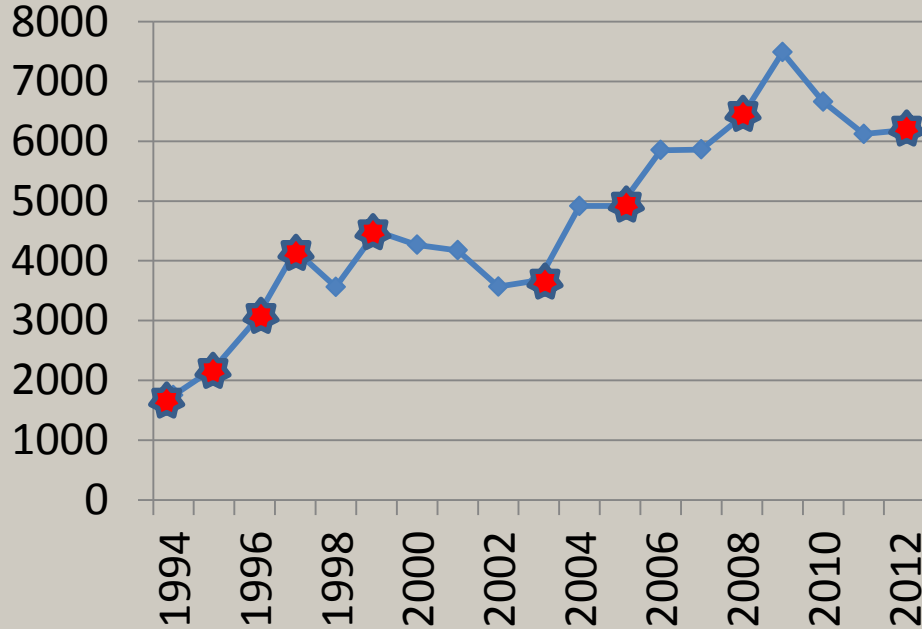
# Survey Effort



## Total Kilometers Surveyed per Year by Beach Watch

★ = new recruit training held this year

In 2011-2012 n = 6189 km

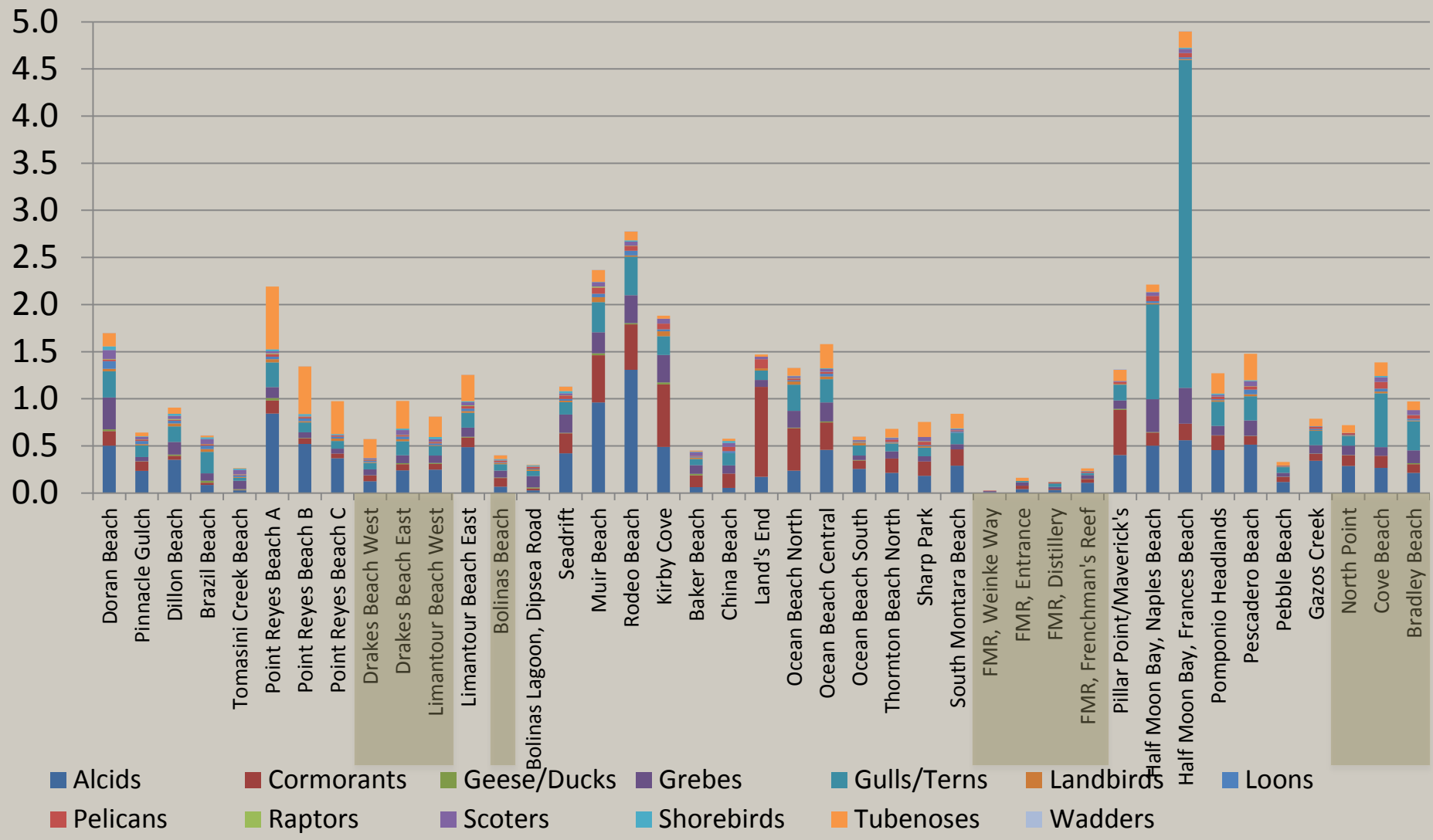




# Multiple Data Analyses



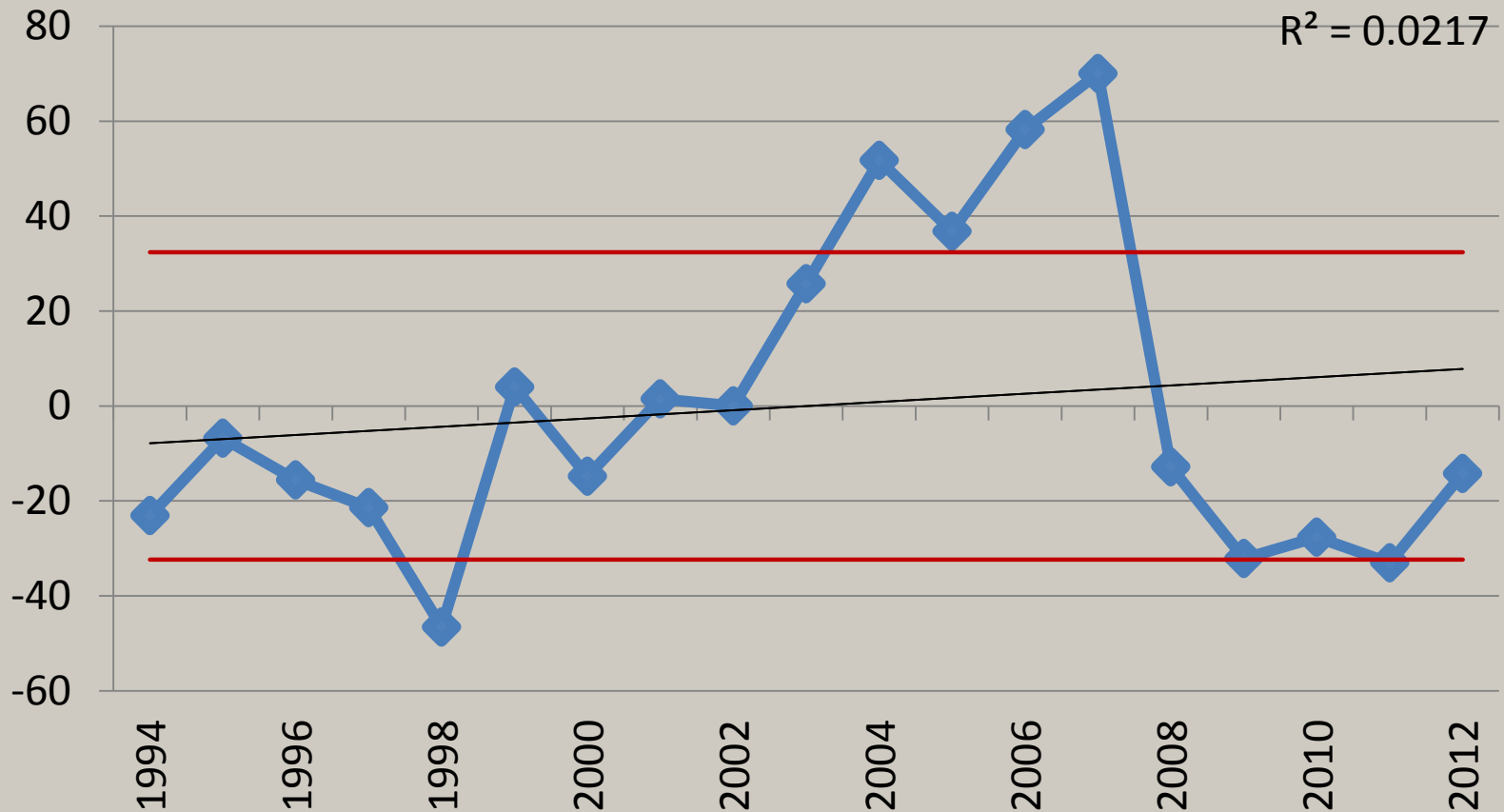
## Example: Dead Bird Cumulative Encounter Rate (#/km), 1994-2012







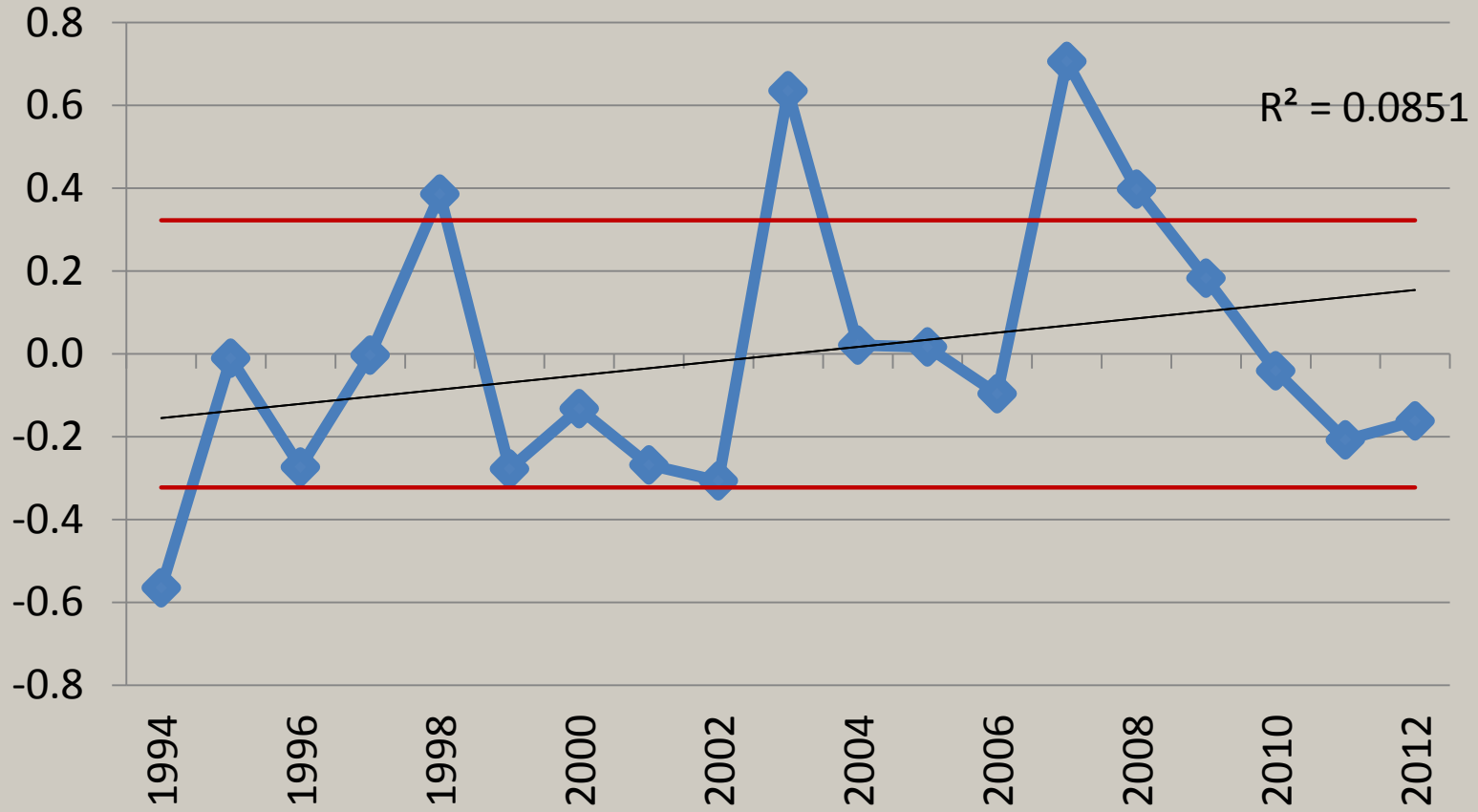
# Trend Summary – Live Birds



Slow increase of live bird rates but with great variability. There has been below average observations of birds for the past 5 years.



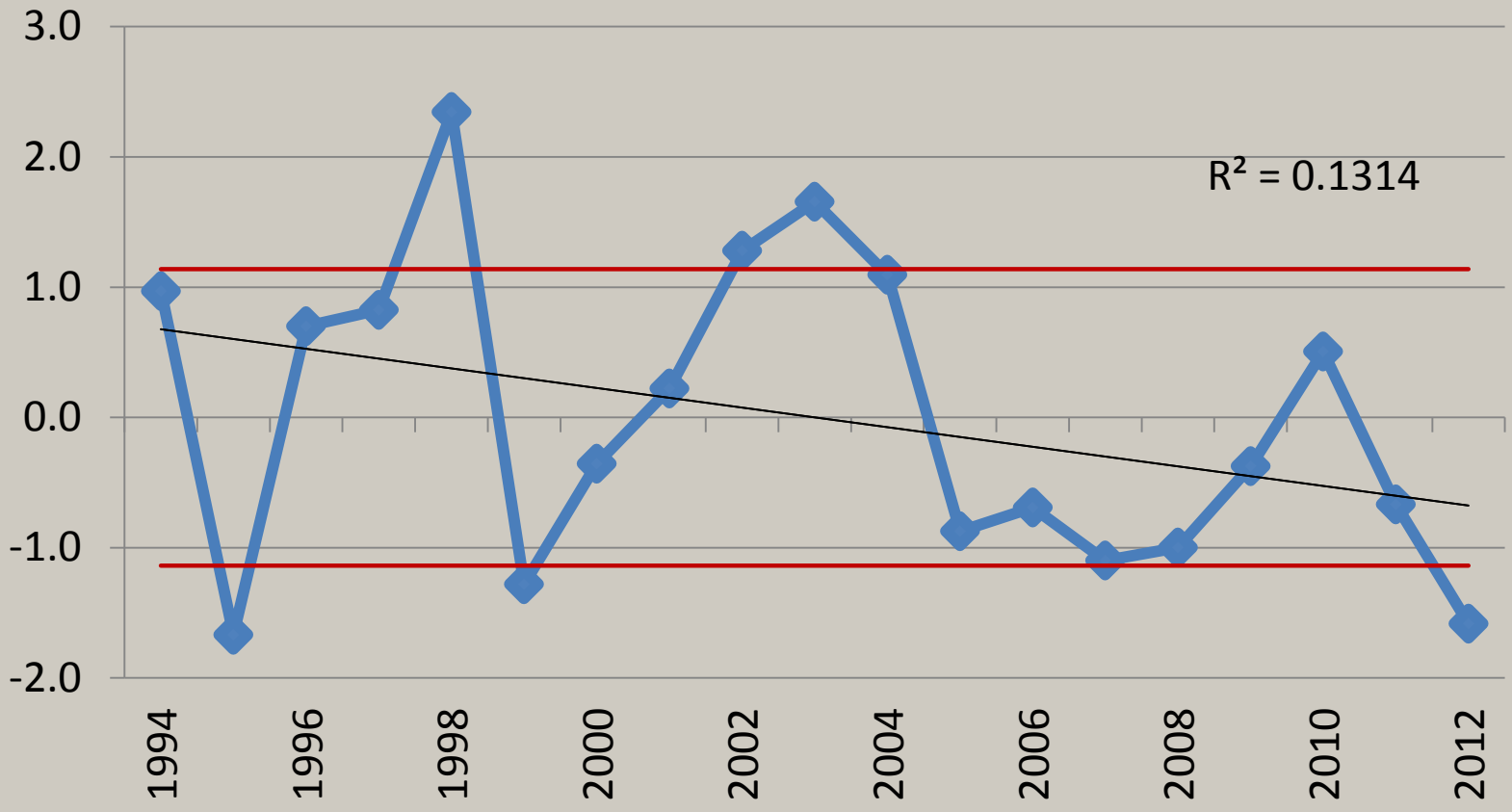
# Trend Summary – Dead Birds



Slow increase of dead bird rates but with great variability. There has been below average observations of dead birds for the past 3 years.



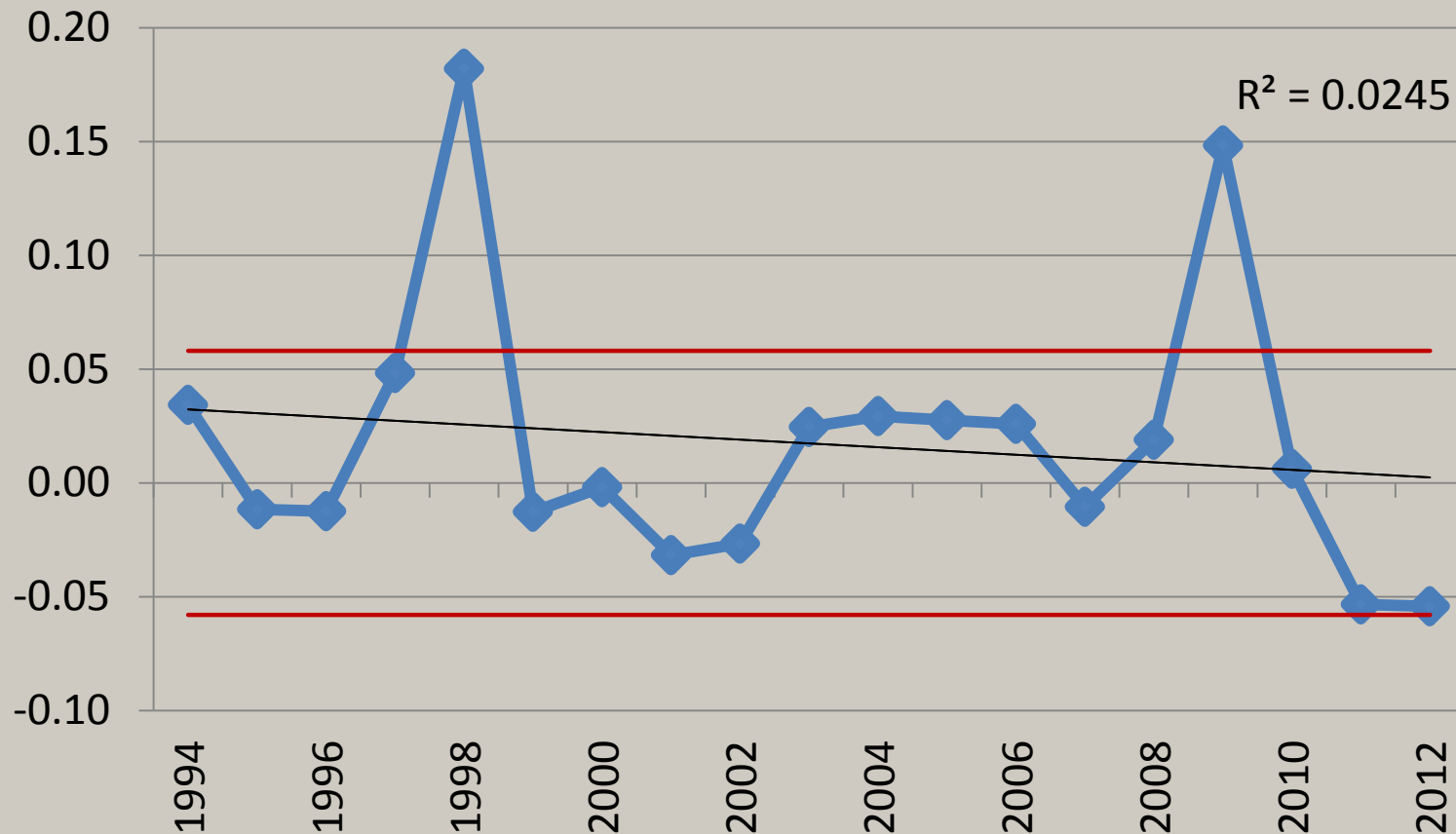
# Trend Summary – Live Pinnipeds



Slow decline of live pinniped observations but with great variability. There has been below average encounter rate for the past two years.



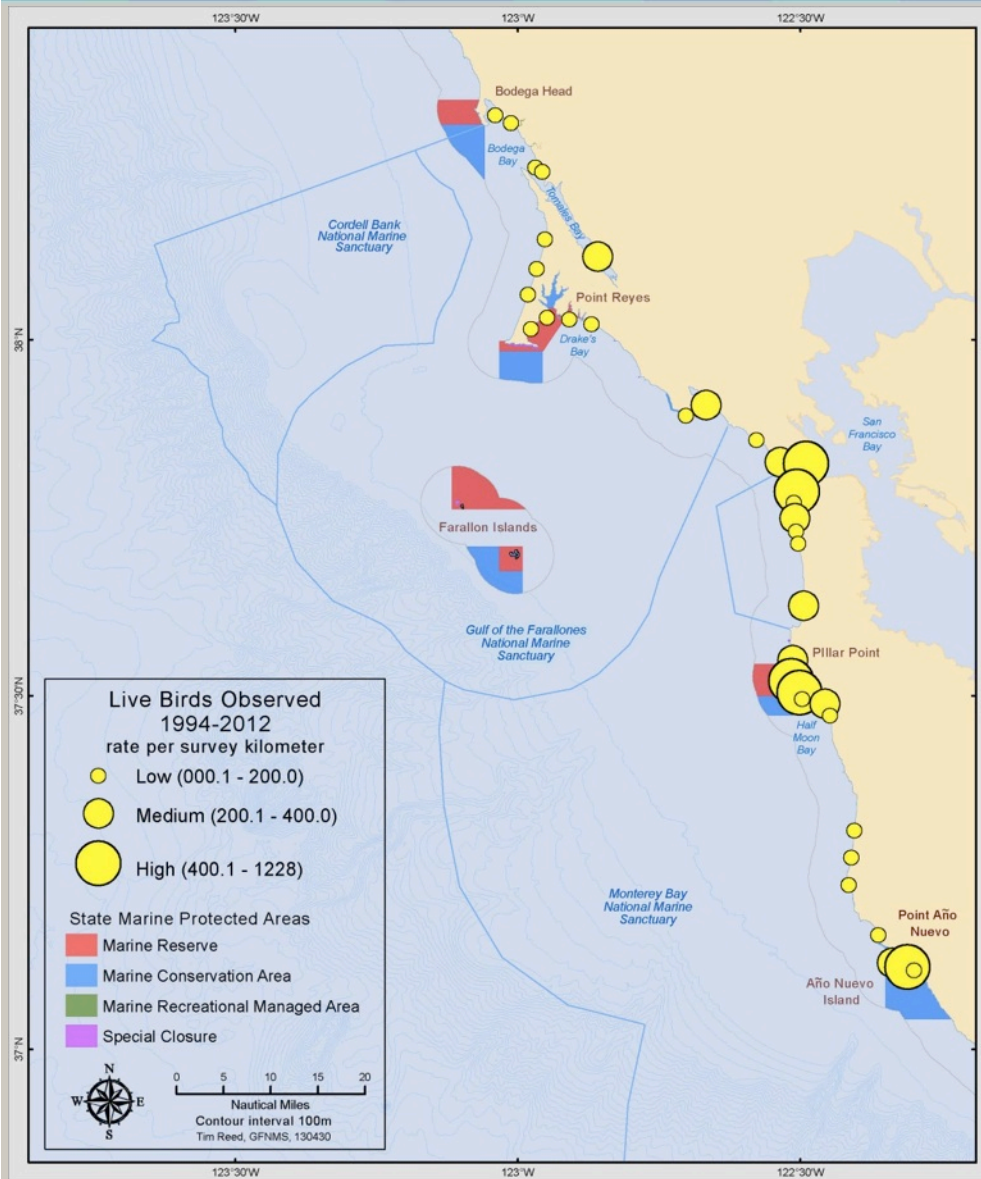
# Trend Summary – Dead Pinnipeds



Slow decline of dead pinniped encounter rates but with great variability. There has been below average encounter rate for the past two years.



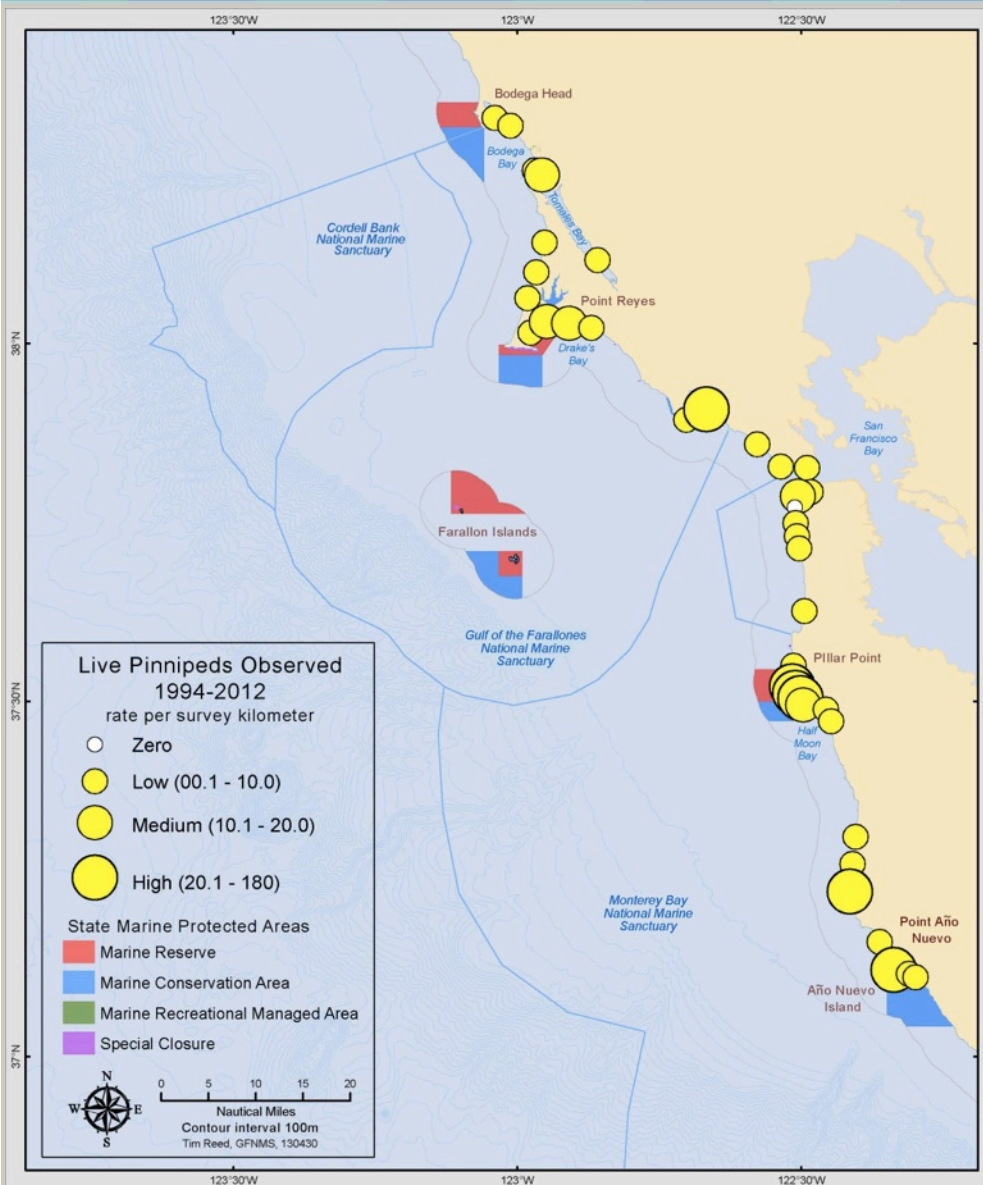
# Spatial Analysis – Live Birds



- Higher encounter rates along bays and sheltered coastline
- Greatest effective protection detectable by BW at:
  - Pt. Reyes Marine Reserve
  - Montara Reserve
  - Montara Marine Conservation Area
  - Año Nuevo Marine Conservation
- Higher concentrations outside of NCC MPAs
  - Rodeo
  - Baker
  - China



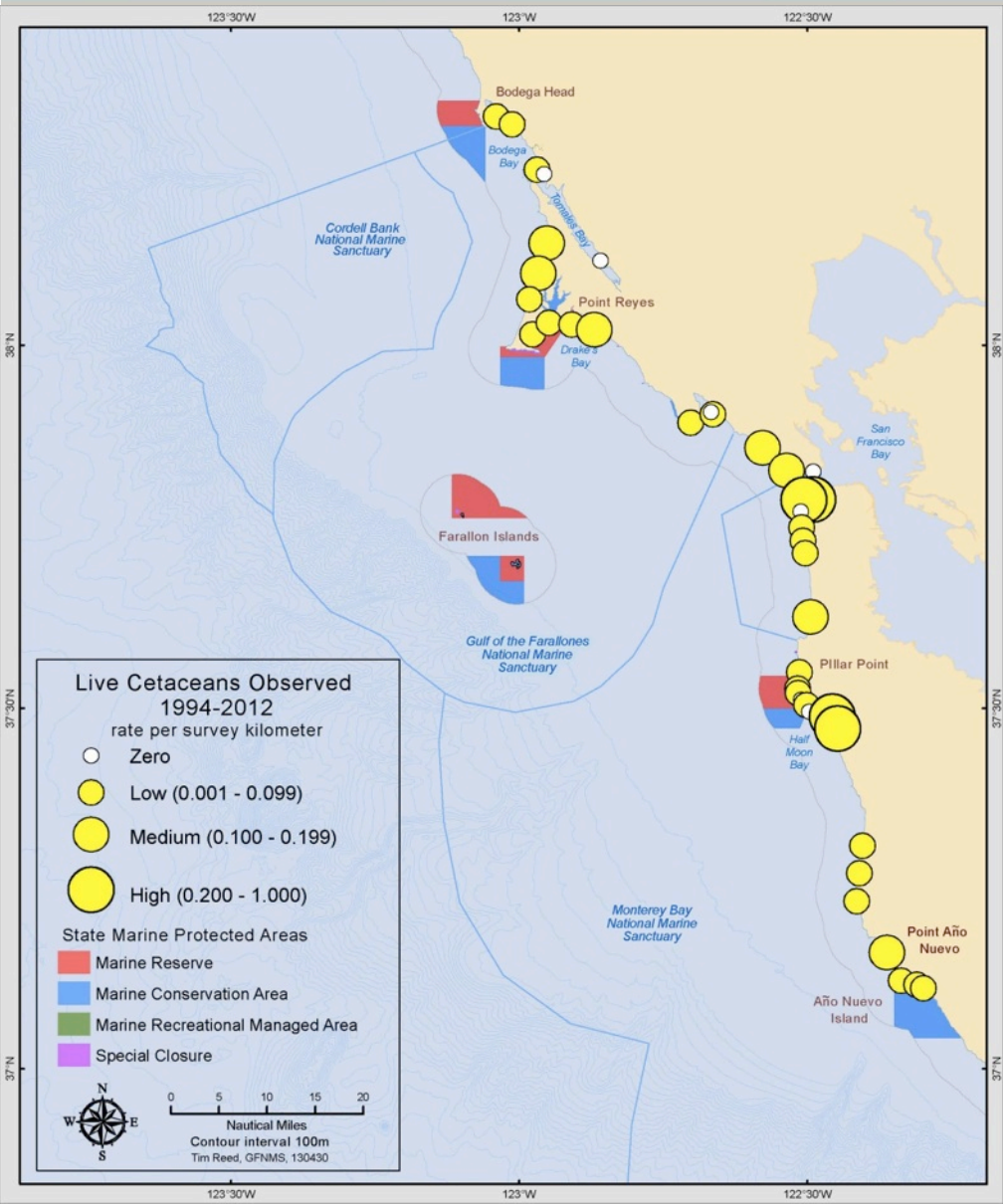
# Spatial Analysis – Live Pinnipeds



- Higher encounter rates in and near bays, promontories, and rookeries
- Greatest effective protection detectable by BW at:
  - Pt. Reyes Marine Reserve
  - Montara Reserve
  - Montara Marine Conservation Area
  - Año Nuevo Marine Conservation
- High #s outside of MPAs
  - Bolinas Lagoon
  - Pebble & Pescadero Beaches



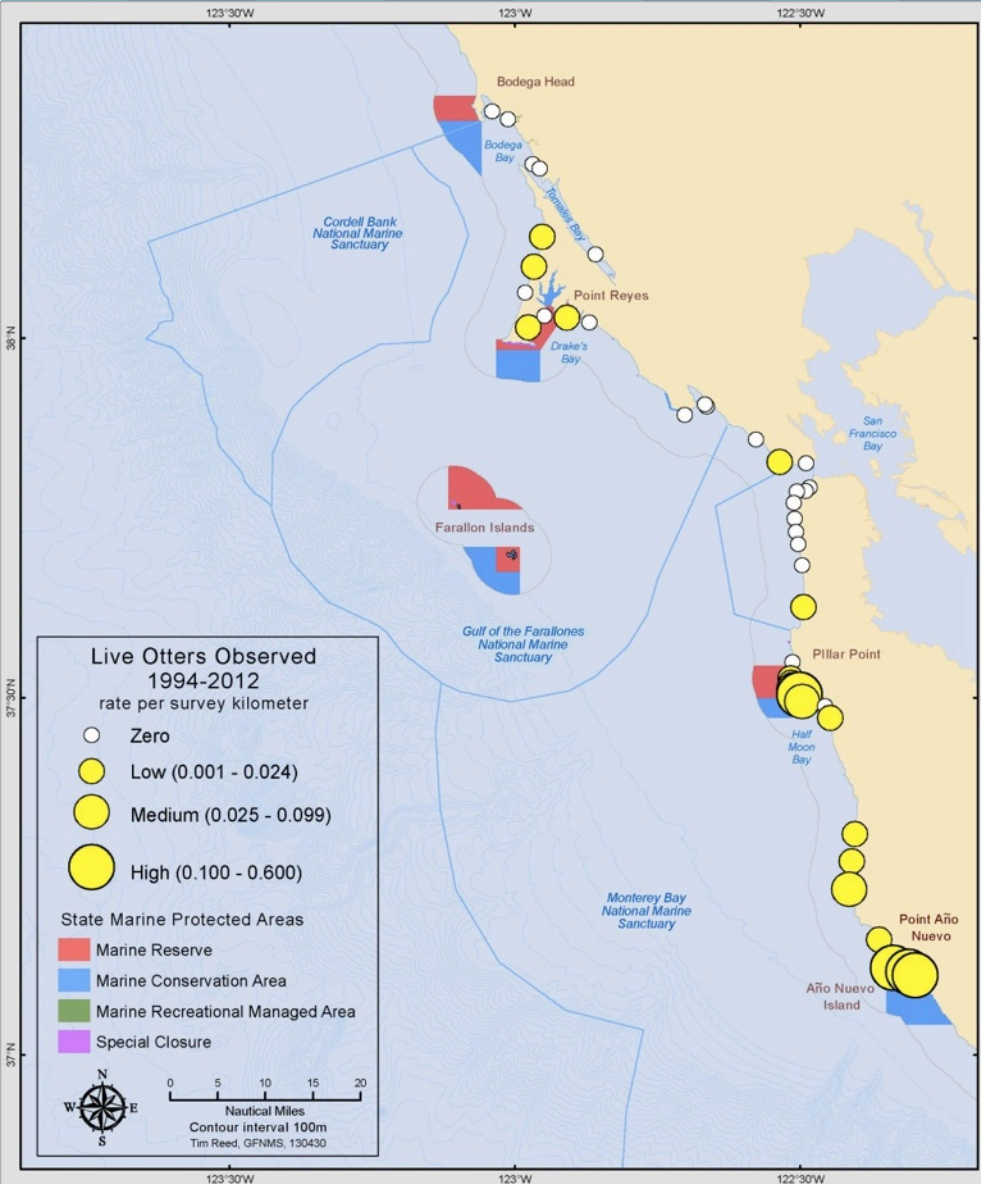
# Spatial Analysis – Live Cetaceans



- Higher rates of encounter in and near bays and promontories.
- No specific areas of great protection or missed opportunity for increased protection



# Spatial Analysis – Live Sea Otters



- Higher rates of encounter in and near bays in the southern survey region
- Note River Otters not included
- Greatest effective protection detectable by BW at:
  - Montara Reserve
  - Montara Marine Conservation Area
  - Año Nuevo Marine Conservation
- No specific areas of missed opportunity for increased protection





# Species of Interest Analyses



## Example: Brandt's Cormorant

### Live Encounter Rate

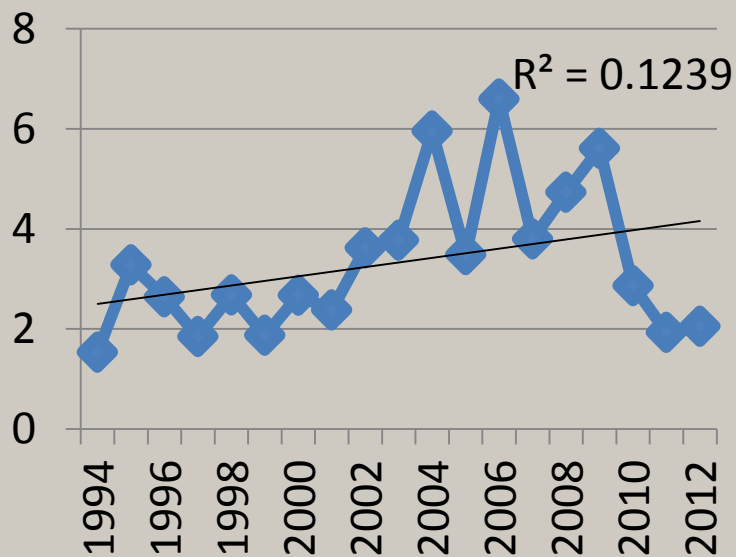
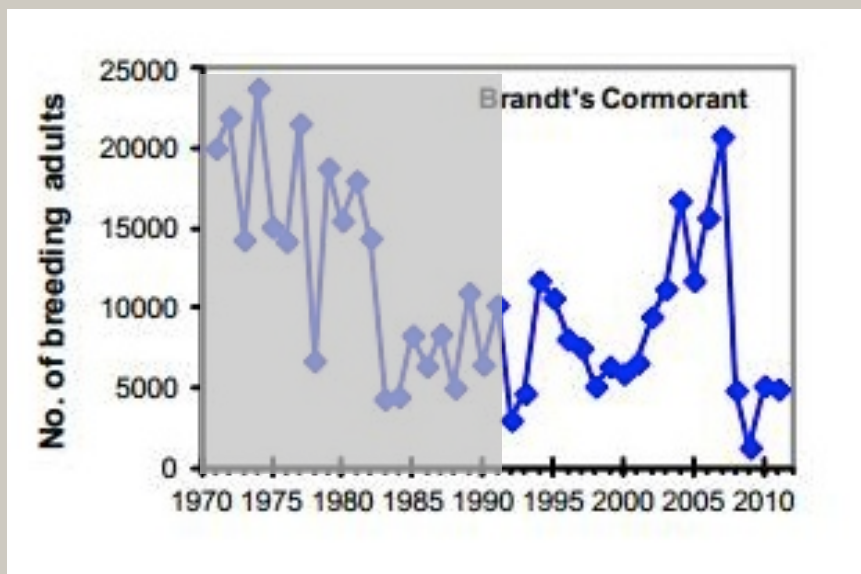


Photo by: Mojoscoast

### SE Farallon Island Breeding Pop





# Species of Interest Analyses



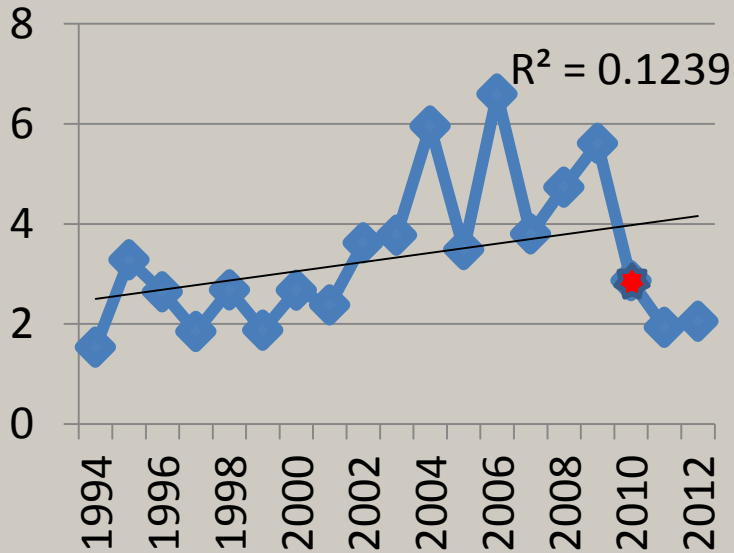
## Brandt's Cormorant

★ = bait fish crash 2009-10

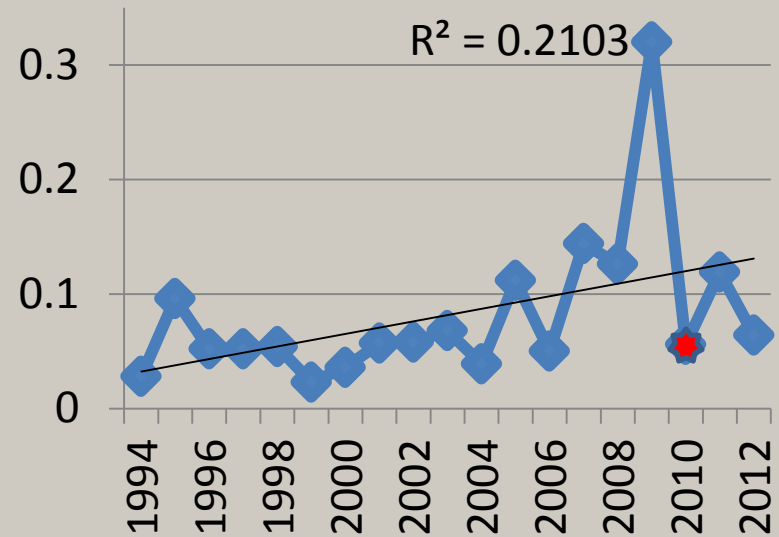


Photo by: Mojoscoast

### Live Encounter Rate



### Dead Encounter Rate

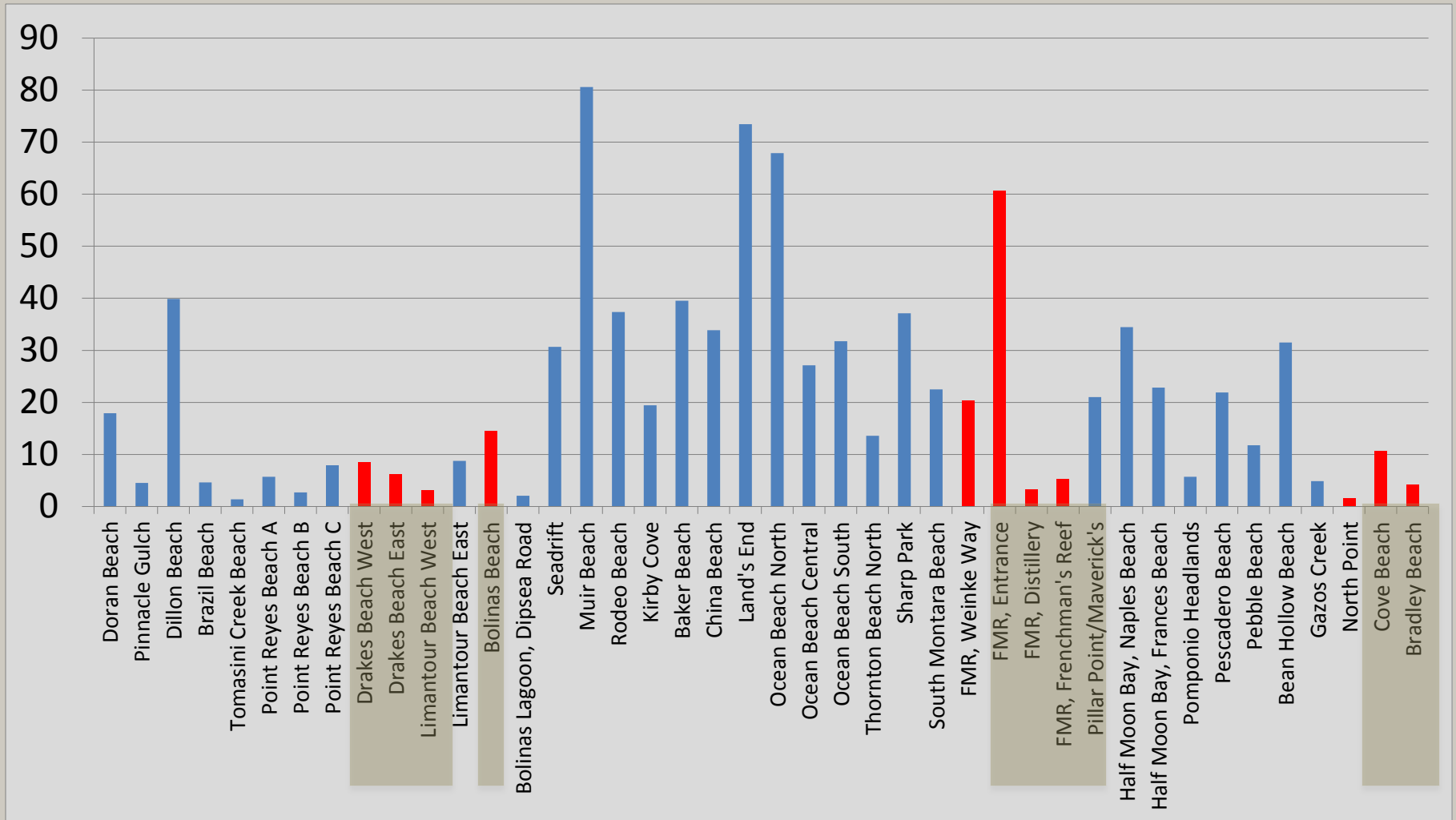




# Spatial Analysis – Human Uses



## Person On Beach Cumulative Encounter Rate, 1994-2012





# Baseline Trend Data



- ↓ Slight decrease in live pinnipeds
- ↑ Significant increase in live cetacean sightings
- ↓ For the past few years there has been below average encounter rate in:
  - live birds and pinnipeds
  - dead birds, pinnipeds
  - and cetaceans





# Baseline Spatial Patterns



- ↑ Higher rates of live birds and mammals were observed in bays, near promontories, and rookeries, than in other areas
- ↑ Higher rates of live birds and mammals were seen within MPAs than in other areas
- ↑ Higher rates of human-use activities were seen close to urban centers



Photo by: Jamie Hall



# Recommendations



- Continue use of citizen-scientists to increase stewardship and understanding of MPAs, decrease monitoring costs, and have additional trained personnel in the event of emergency response
- Add BW style surveys in Sonoma and Mendocino Co. to cover all of the NCC MPAs in conjunction with sanctuary expansion
- Develop consistent human-use categories
- Develop consistent beach wrack quantification
- Target surveys in breeding areas





# Recommendations



- Include demographics of dead birds and mammals, i.e. age and sex
- Perform analyses to identify comparable beaches, i.e. length, substrate, facing direction, habitat on the inshore side of beach, human use rates and activities.
- Analyze rates of live birds and mammals before and compare to at least five years post-designation
- Compare rate of live shorebirds to human uses: presence, dogs, etc.
- Identify surrogate beaches
- Include analyses of oil pollution rates





# 20-Years of Stewardship



**Beach Watch Turns 20!**  
**1 October 1993 – 1 October 2013**







# Thanks to All Our Peeps!



**BW would not be possible without the dedication of all our volunteers, interns, and staff.**

**This year we are grateful for the financial support from Norcross Wildlife Foundation, Firedoll Foundation, Tanklage Foundation, Patagonia, CA Sea Grant.**

