

# Applied California Current Ecosystem Studies (ACCESS): Long-term monitoring to inform ocean climate indicators

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May 17, 2016



# Informing Ocean Management

## 12 years working with NOAA-ONMS

Research that supports marine wildlife conservation and healthy marine ecosystems to inform management, policy and conservation in central CA

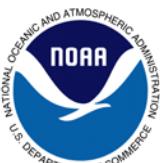
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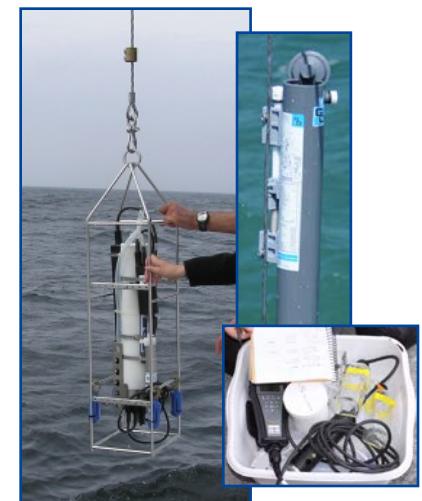
### Members:



(c) Sophie Webb / PRBO / NOAA-ONMS

# Research takes ecosystem approach

- Birds/mammals (standardized strip and line transects)
- Zooplankton/fish (hydroacoustics and nets)
- Oceanography (CTD, bottles, OA, nutrients and continuous CT)



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# Ocean climate status update 2015

The cover of the "Ocean Climate Indicators" report. It features a blue header with the title and a white main body. The white area contains four small photographs: a coastal landscape, a cormorant, a pier, and an underwater scene. Below the photos is the subtitle: "Report of a Working Group of the Gulf of the Farallones National Marine Sanctuary Advisory Council". The NOAA/NMFS logo and the "NATIONAL MARINE SANCTUARIES" logo are at the bottom.

**Ocean Climate Indicators**

A Monitoring Inventory and Plan for Tracking Climate Change in the North-central California Coast and Ocean Region

Report of a Working Group of the Gulf of the Farallones National Marine Sanctuary Advisory Council

NATIONAL MARINE SANCTUARIES

The cover of the "OCEAN CLIMATE INDICATORS STATUS REPORT – 2013" by Point Blue Conservation Science. It features a map of the California coast with various colored and patterned regions indicating different climate zones or study areas. The Point Blue logo and tagline "Conservation science for a healthy planet" are at the top. The subtitle and author information are below the map.

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OCEAN CLIMATE INDICATORS  
STATUS REPORT – 2013

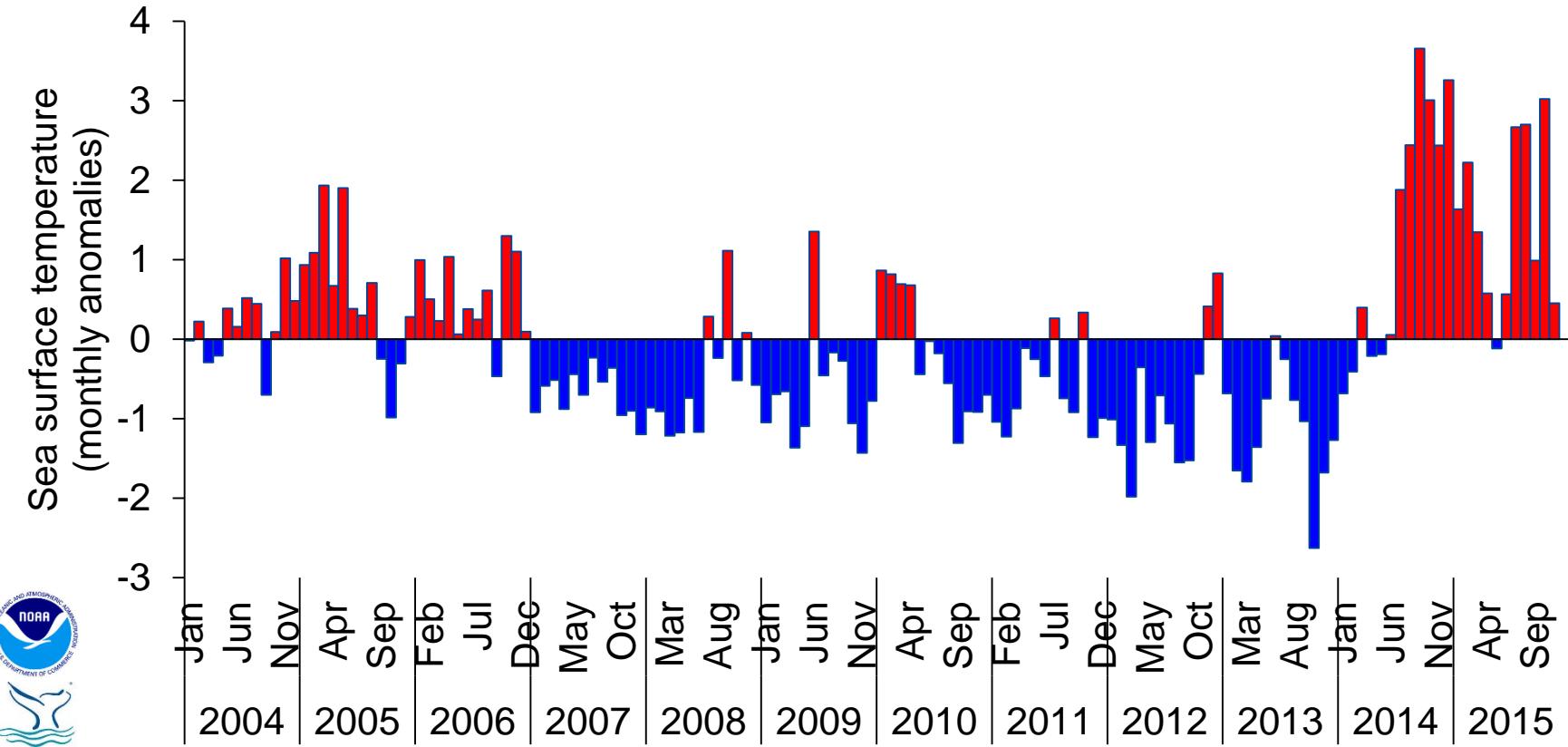
Meredith Elliott and Jaime Jahncke  
California Current Group

Point Blue Conservation Science  
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Petaluma, CA, 94954

February 2014

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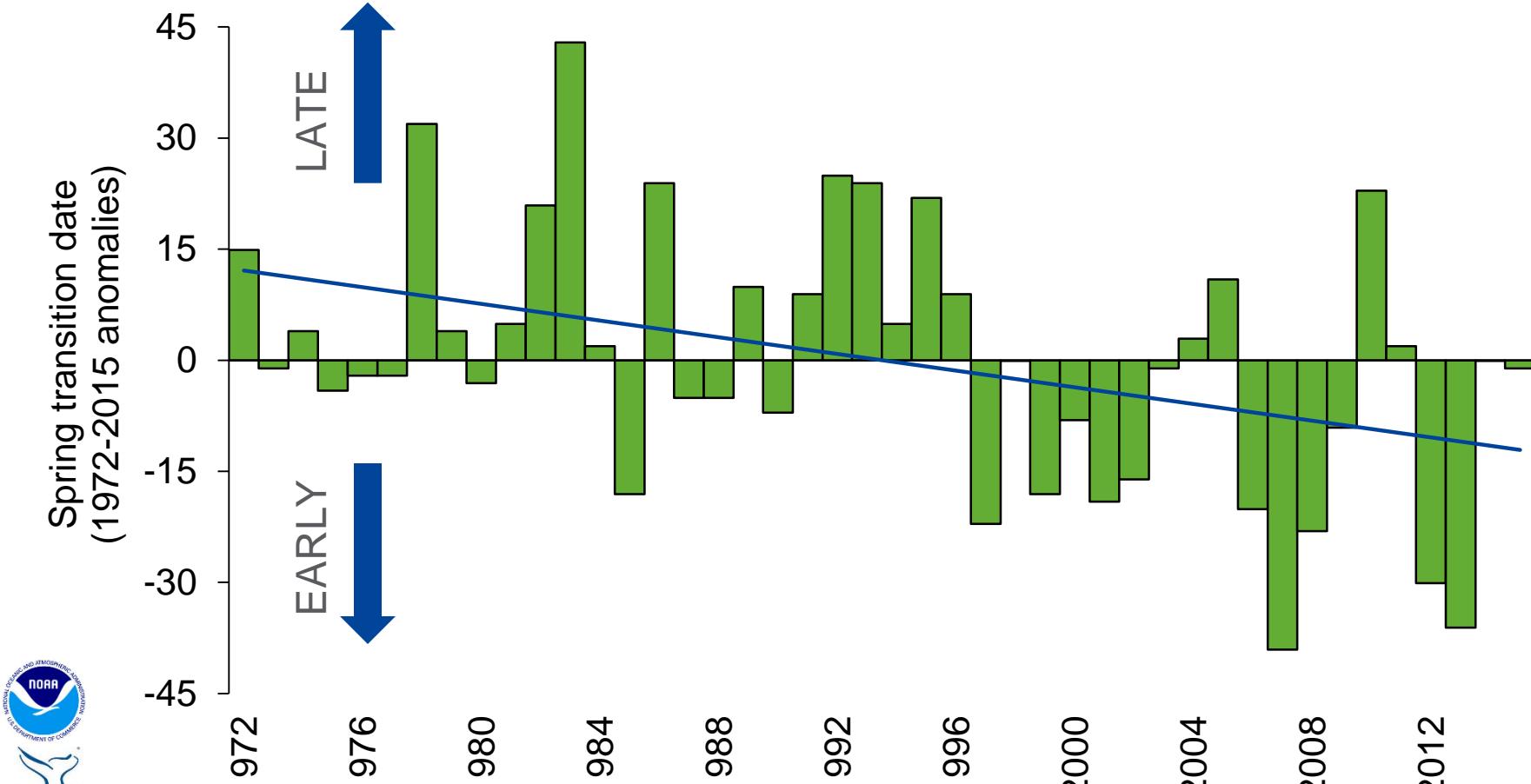
# Monitoring the warm water events of 2014-15



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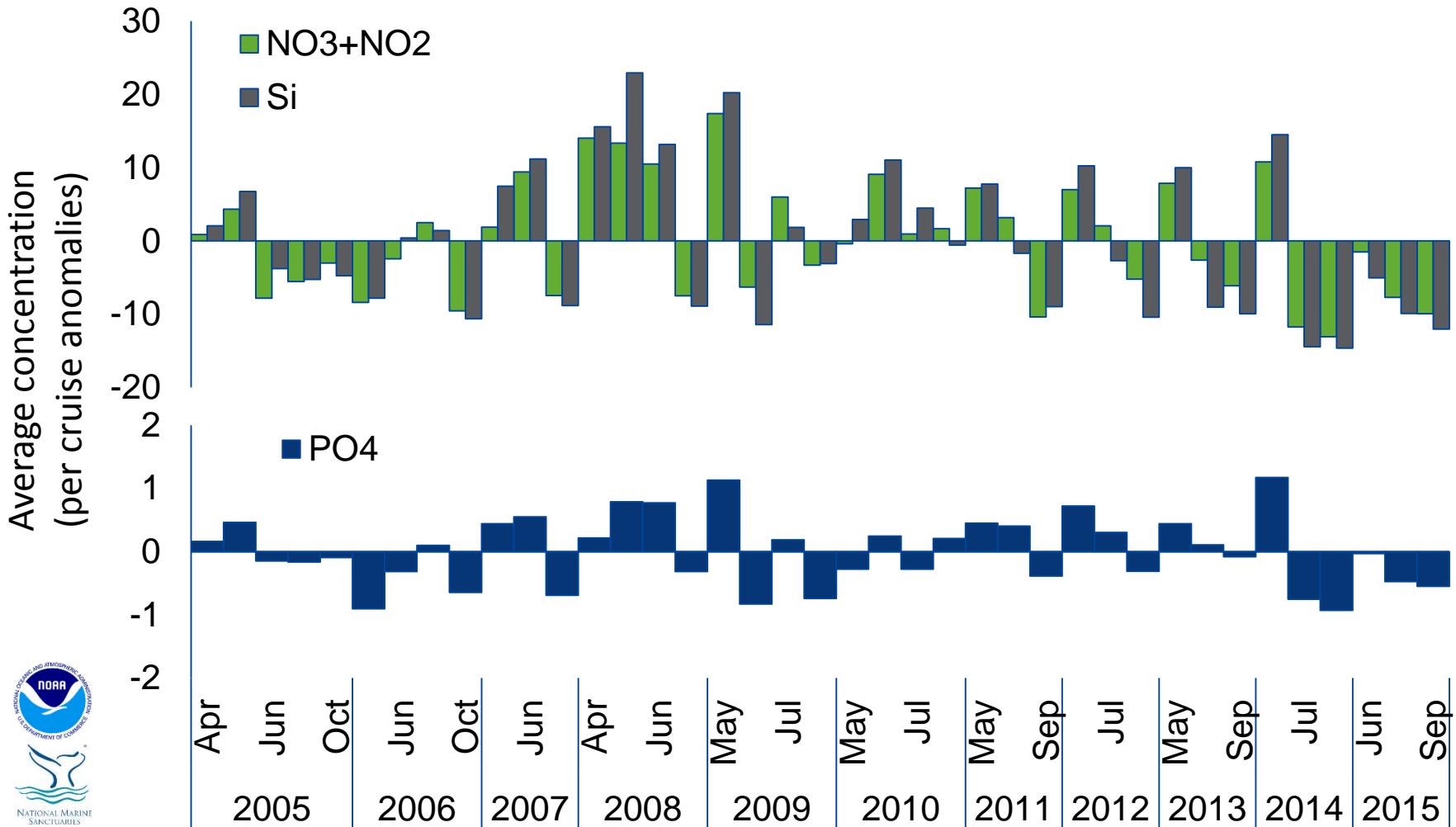
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# Average spring transition dates for 2014-15



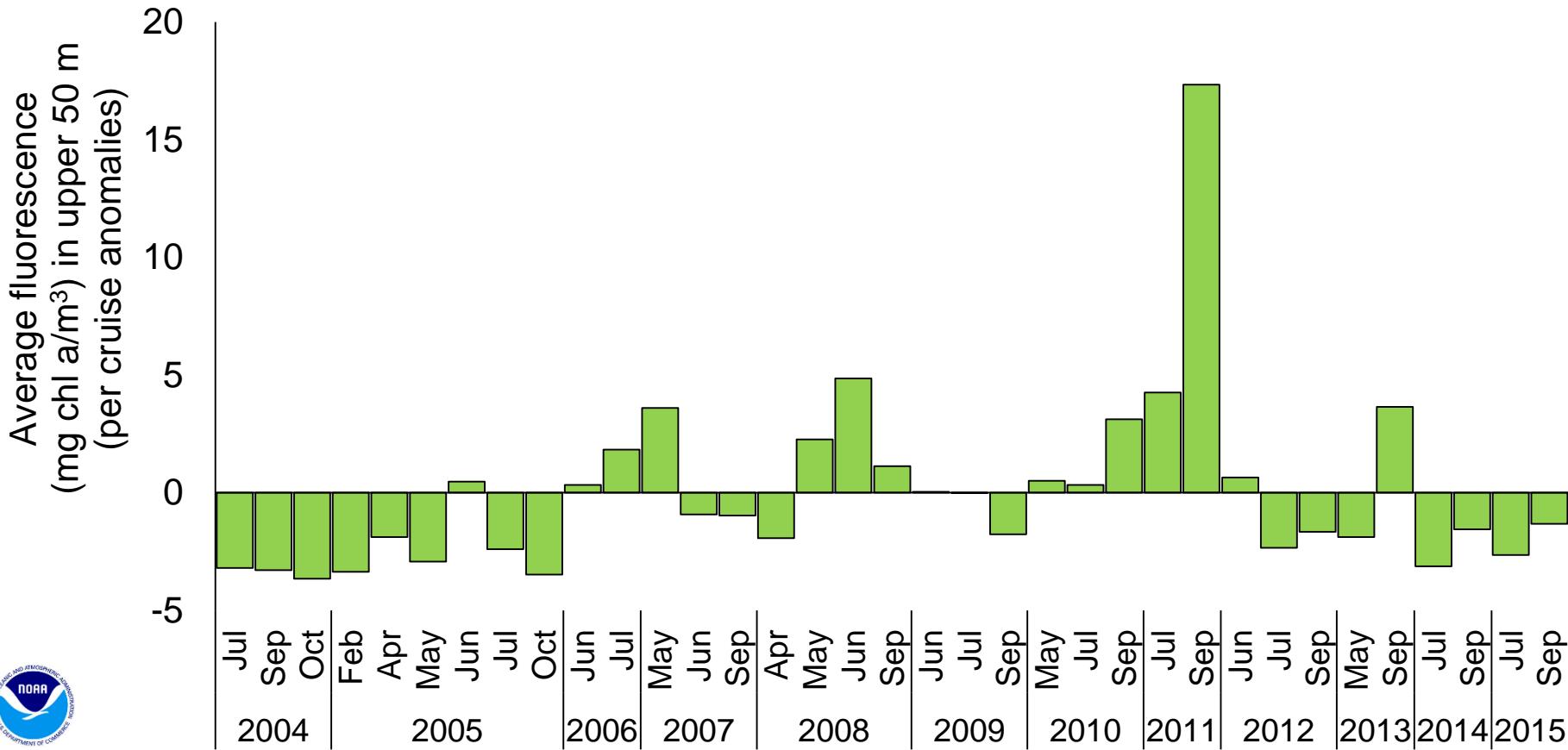
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# *Low surface nutrients for 2014-15*

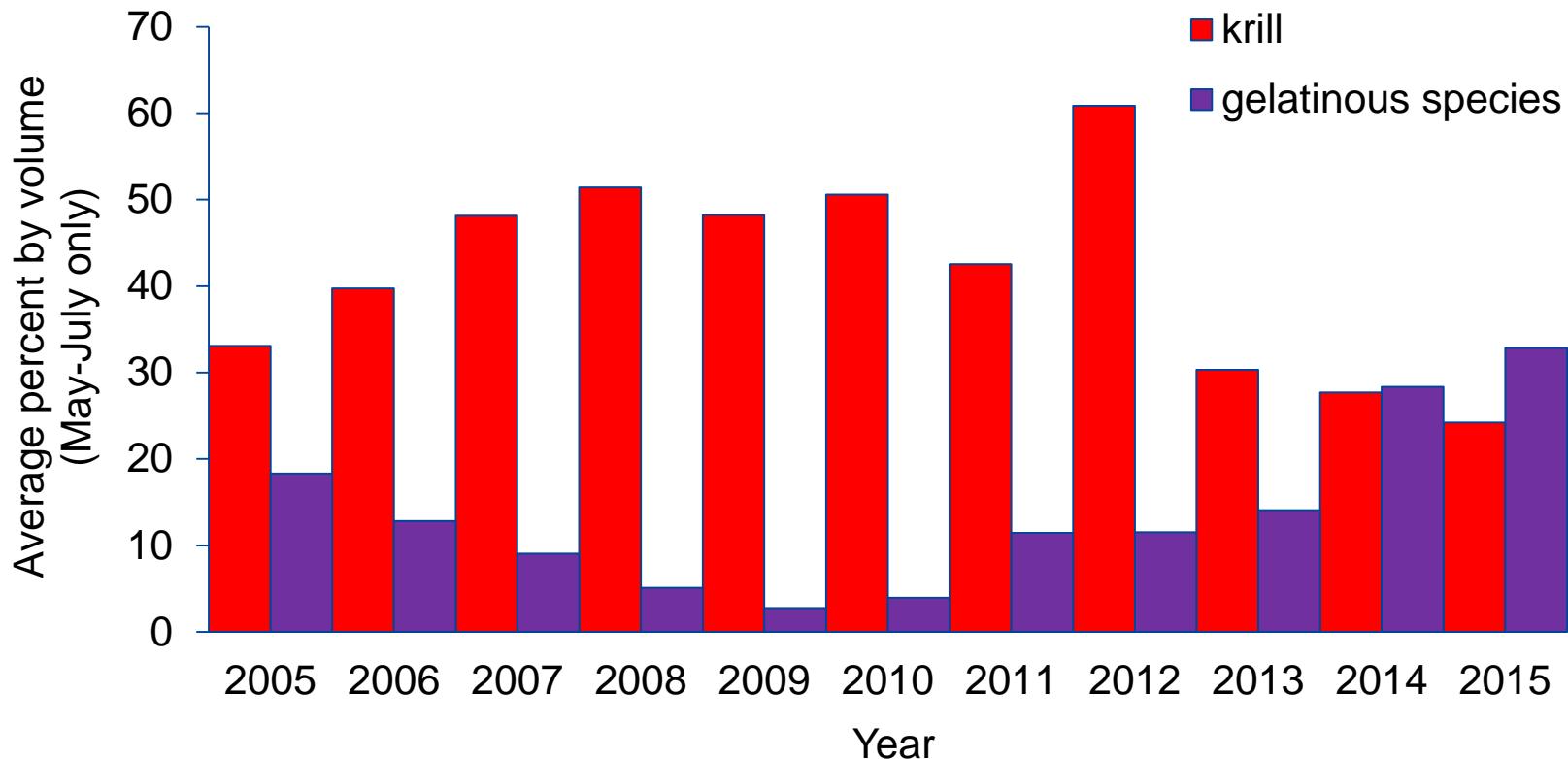


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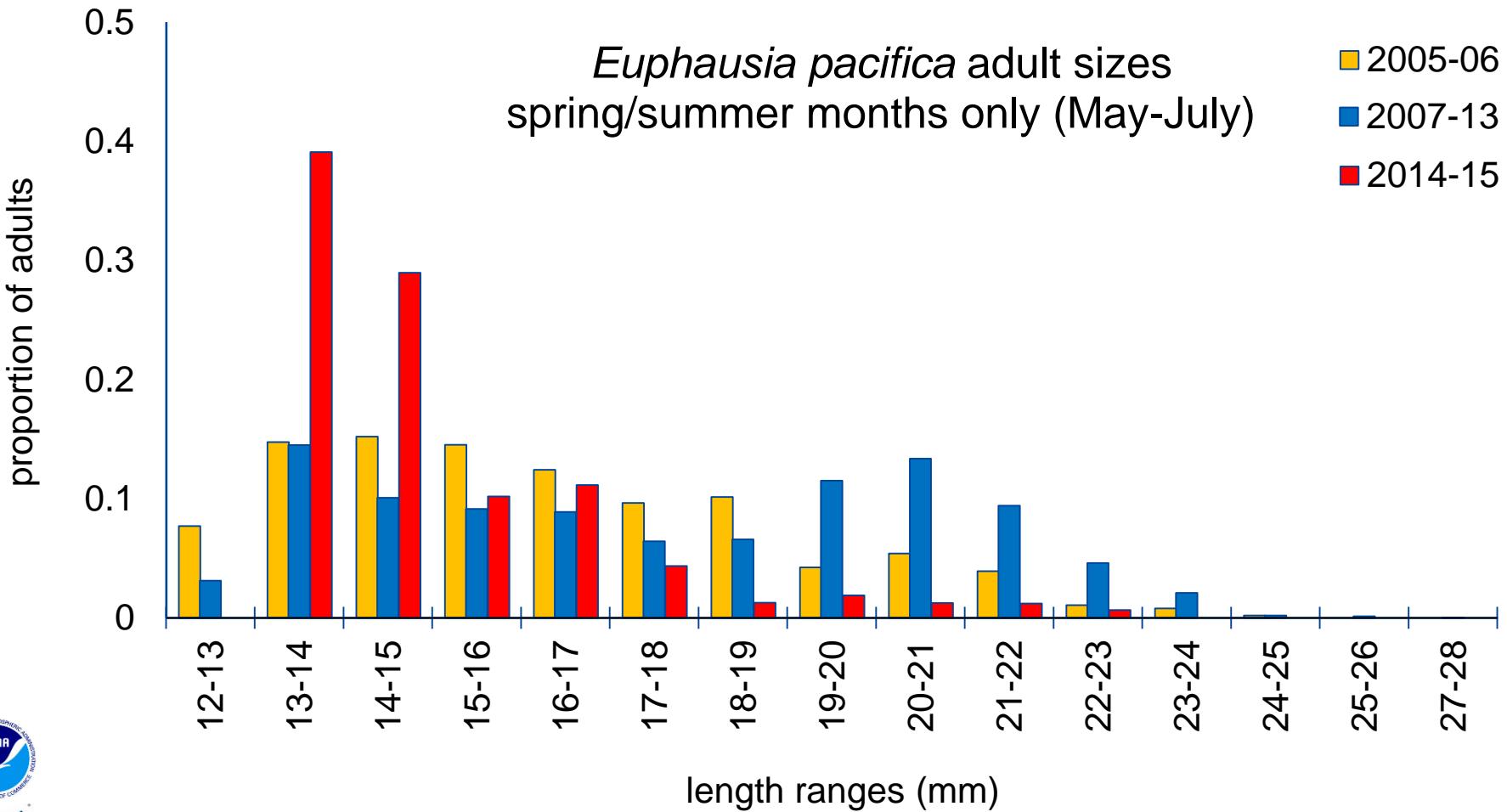
# *Low phytoplankton standing stock in 2014-15*



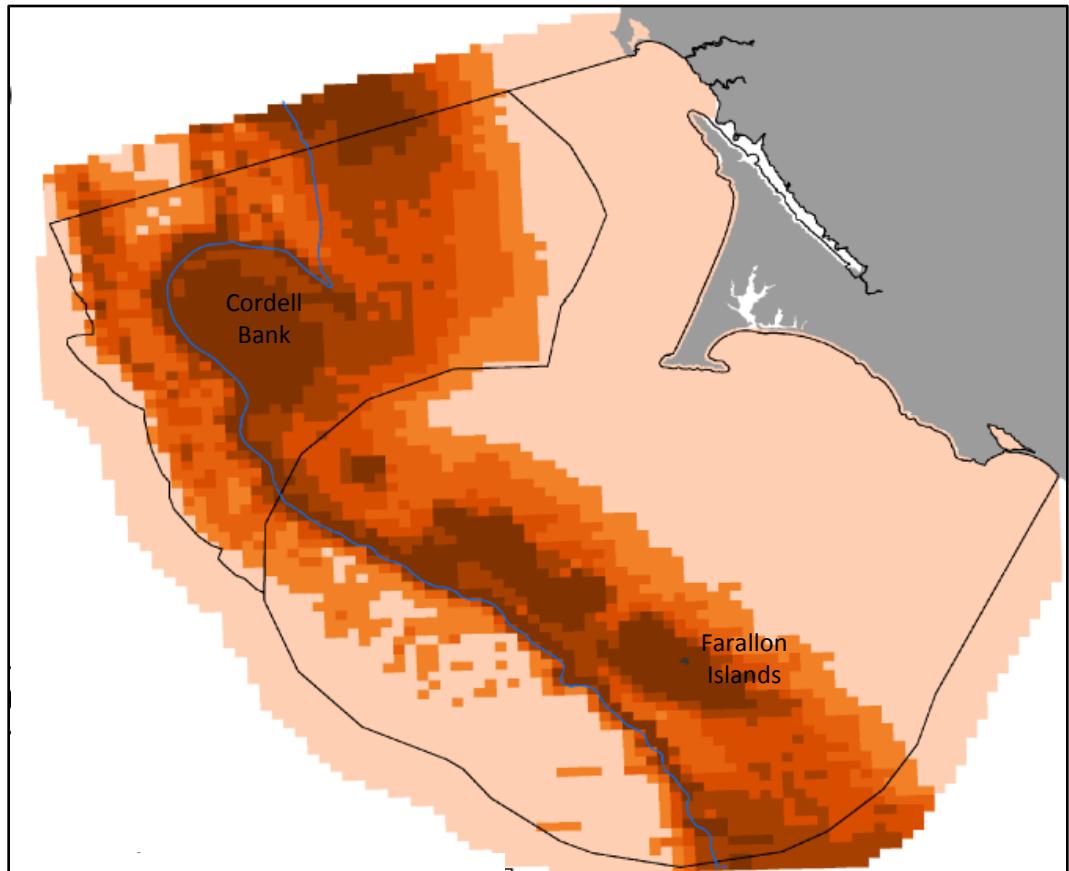
# *Increased gelatinous zooplankton and decreased krill in 2014-15*



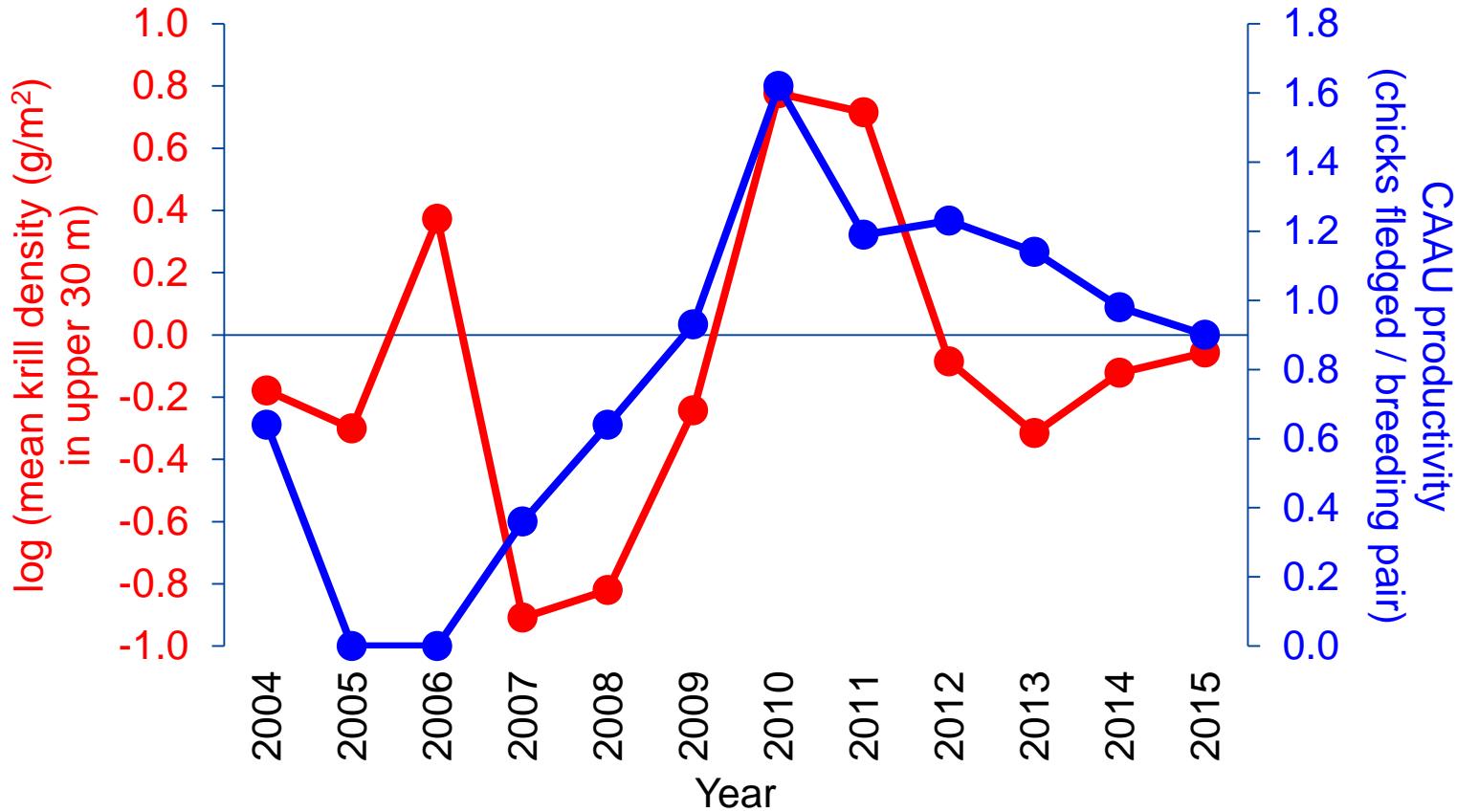
# *Smaller adult krill* in 2014-15



# Foraging distribution of Cassin's Auklets

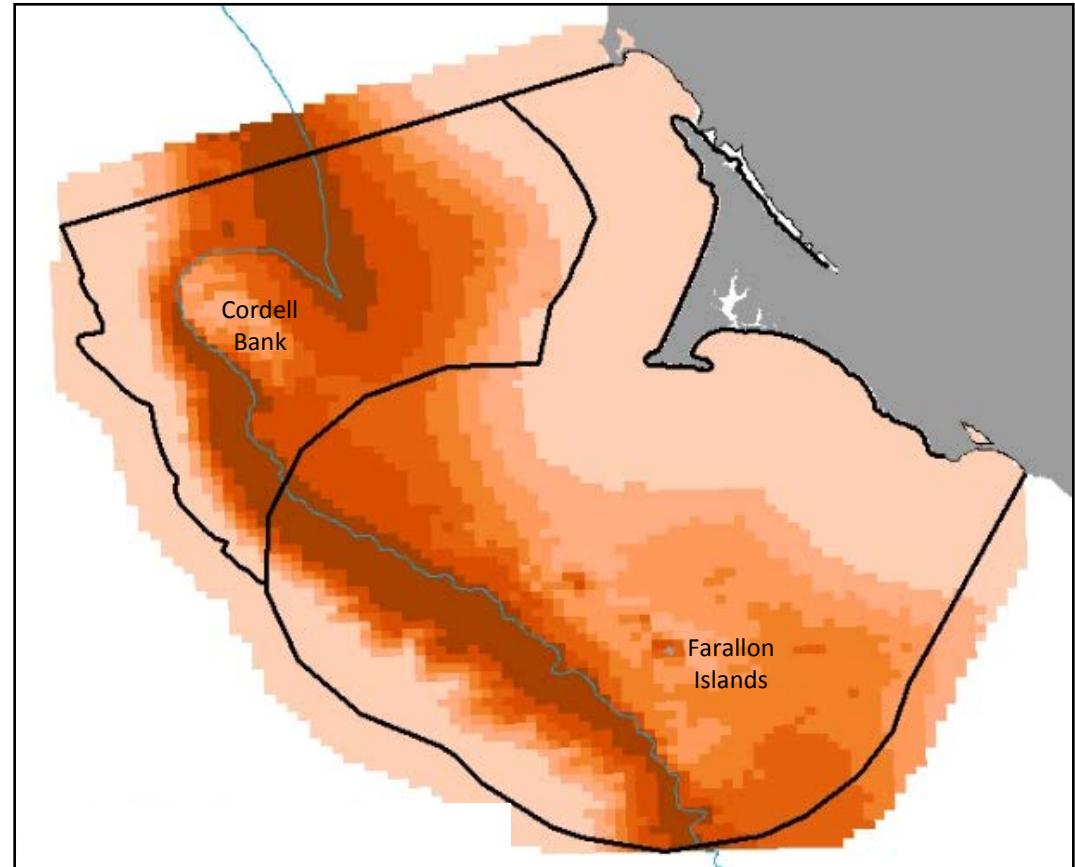
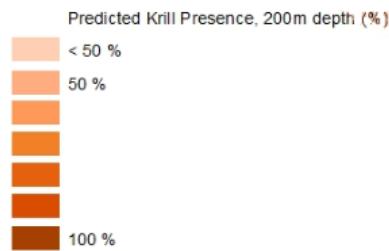


# *Low krill biomass yet high CAAU productivity in 2014-15*

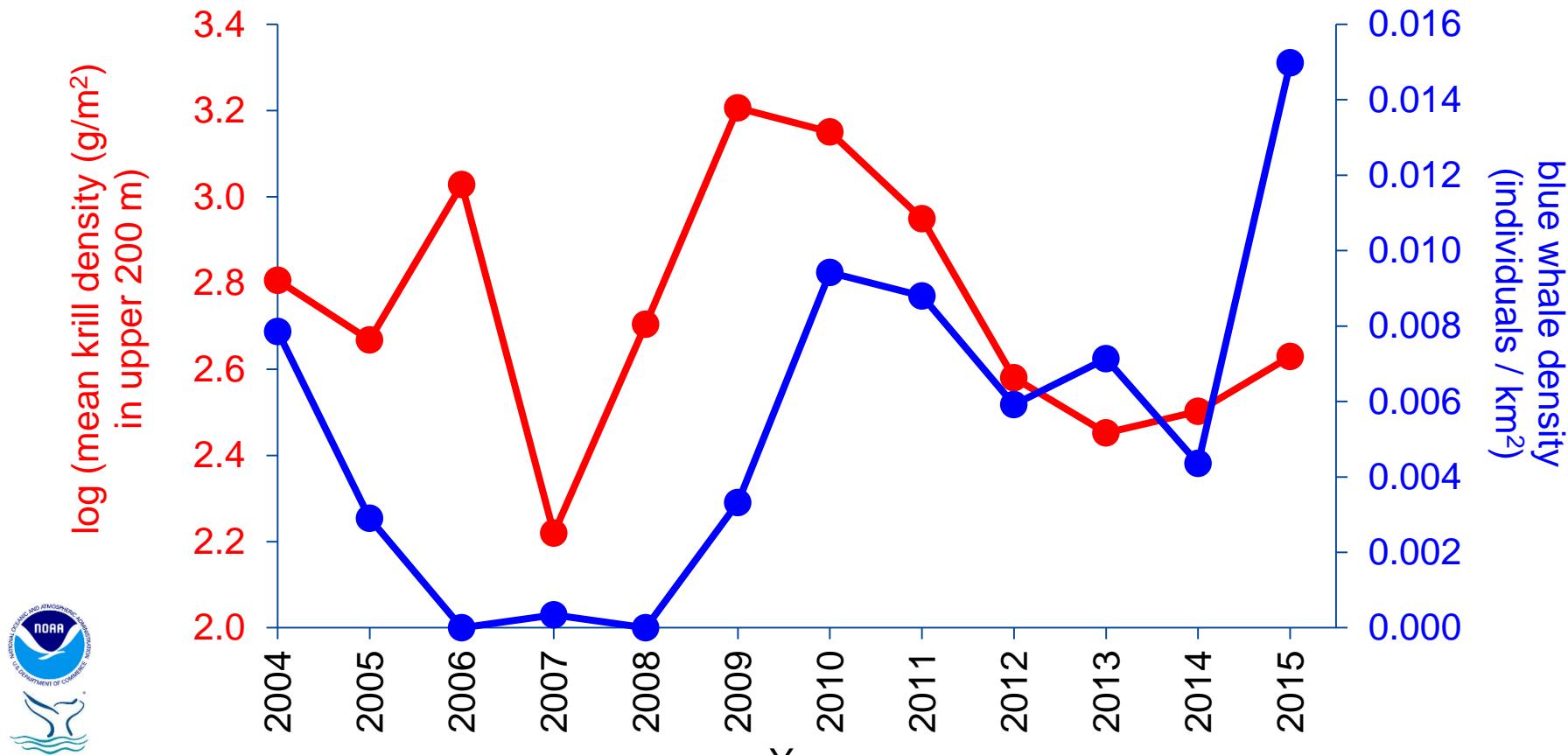


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# Aggregations of Krill for Blue Whales



# *Low krill biomass yet high BLWH abundance* in 2014-15



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# Summary

- Expected results: physical indicators, lower trophic levels
  - Later spring transition date (although average)
  - Low nutrients
  - Low phytoplankton standing stock
  - Increased gelatinous zooplankton
  - Decreased krill
  - Smaller adult krill
- Upper trophic level responses are not so clear
  - Importance of particular areas to these species



# Thank you!

Elinor Patterson Baker Trust Fund

Bently Foundation

Boring Family Foundation

California Sea Grant

California Dept. of Fish and Wildlife

Cordell Marine Sanctuary Foundation

Cordell Bank NMS (NOAA)

DJ&T Foundation

Greater Farallones Association

Farallones National Wildlife Refuge

Faucett Catalyst Foundation

Firedoll Foundation

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