

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

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# 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

### Founders:



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Conservation  
Science



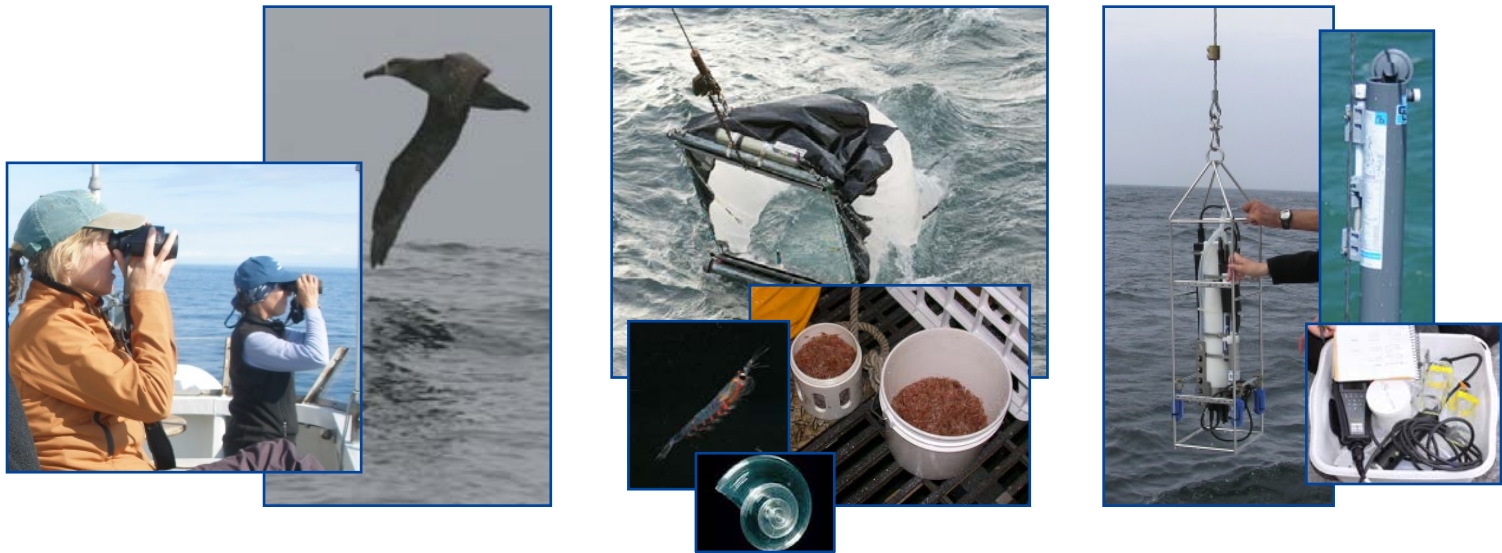
### Members:



(c) Sophie Webb / PRBO / NOAA-ONMS

# Research takes ecosystem approach

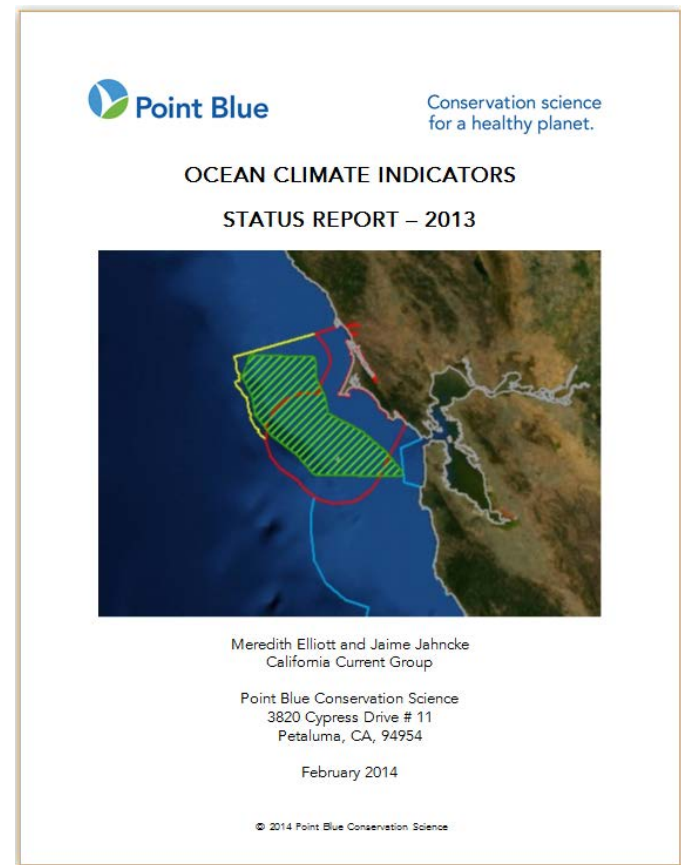
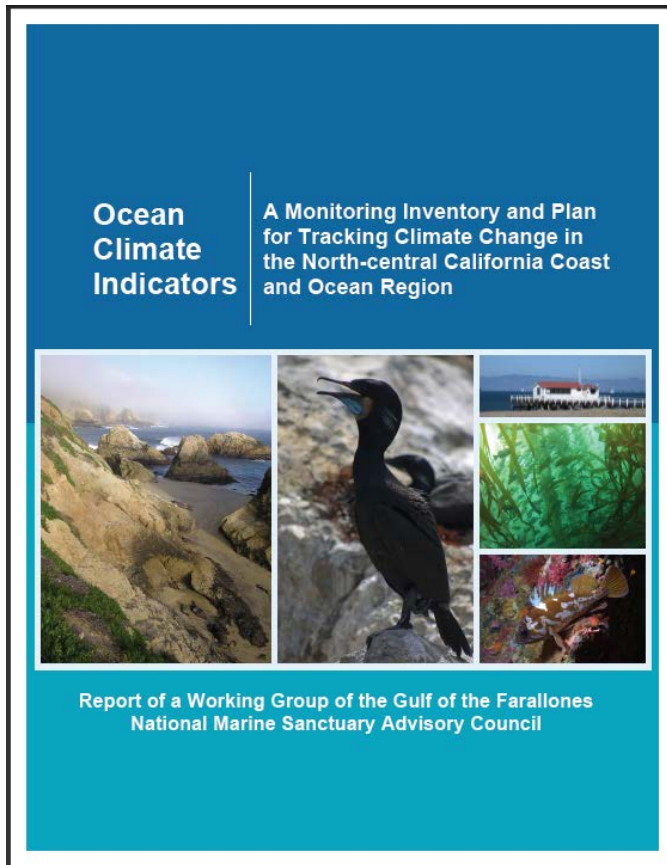
- Birds/mammals (standardized strip and line transects)
- Zooplankton/fish (hydroacoustics and nets)
- Oceanography (CTD, bottles, OA, nutrients and continuous CT)



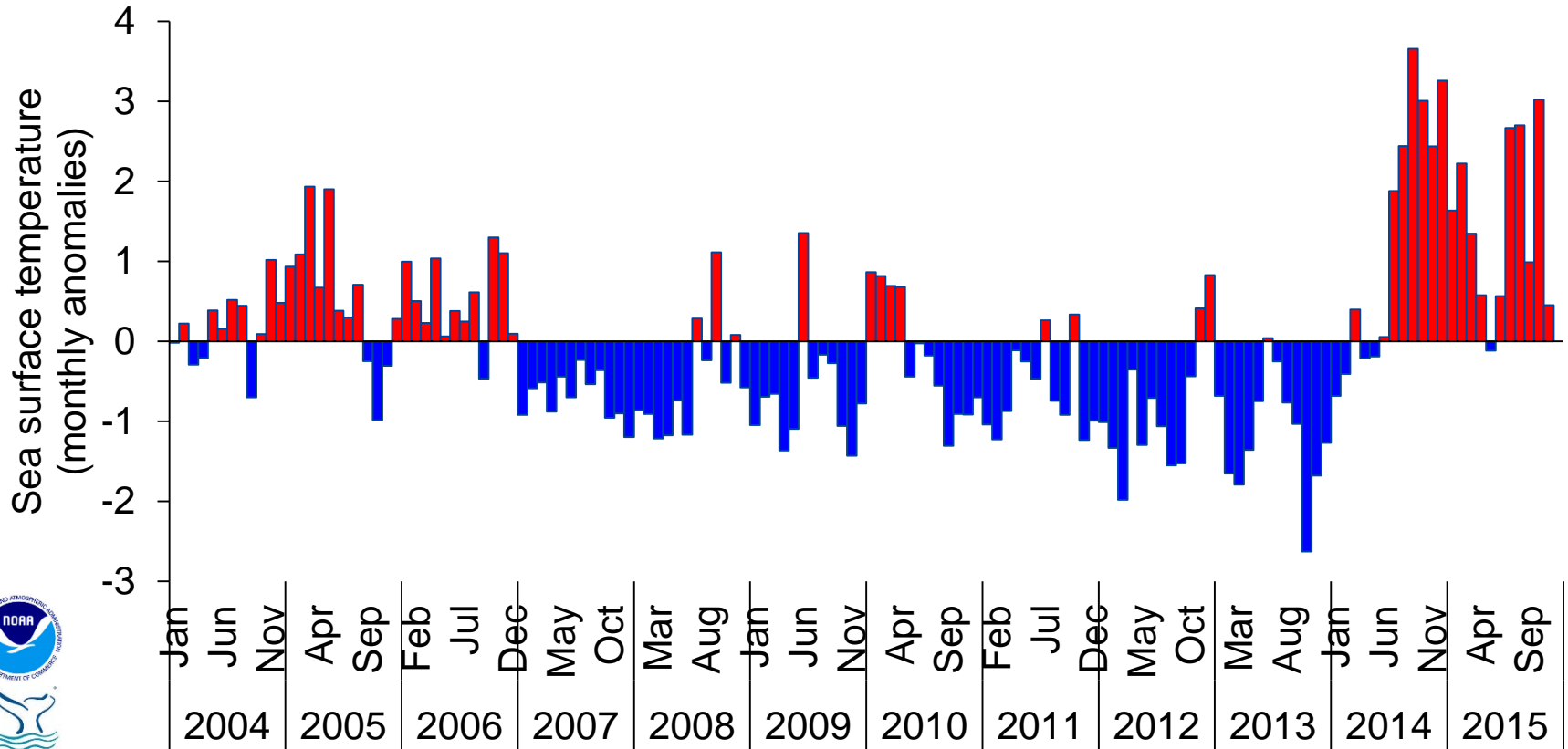
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# Ocean climate status update 2015



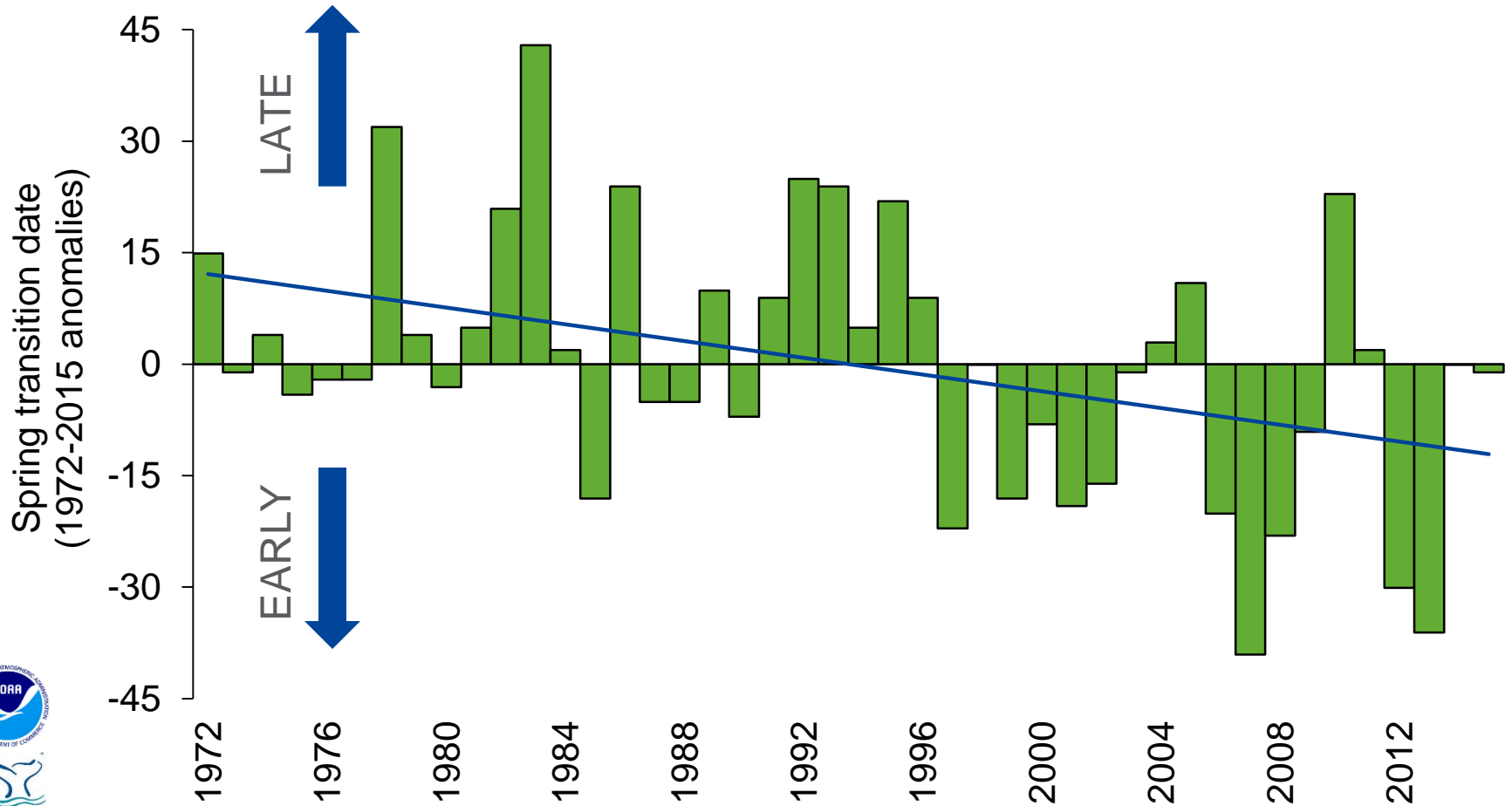
# Monitoring the warm water events of 2014-15



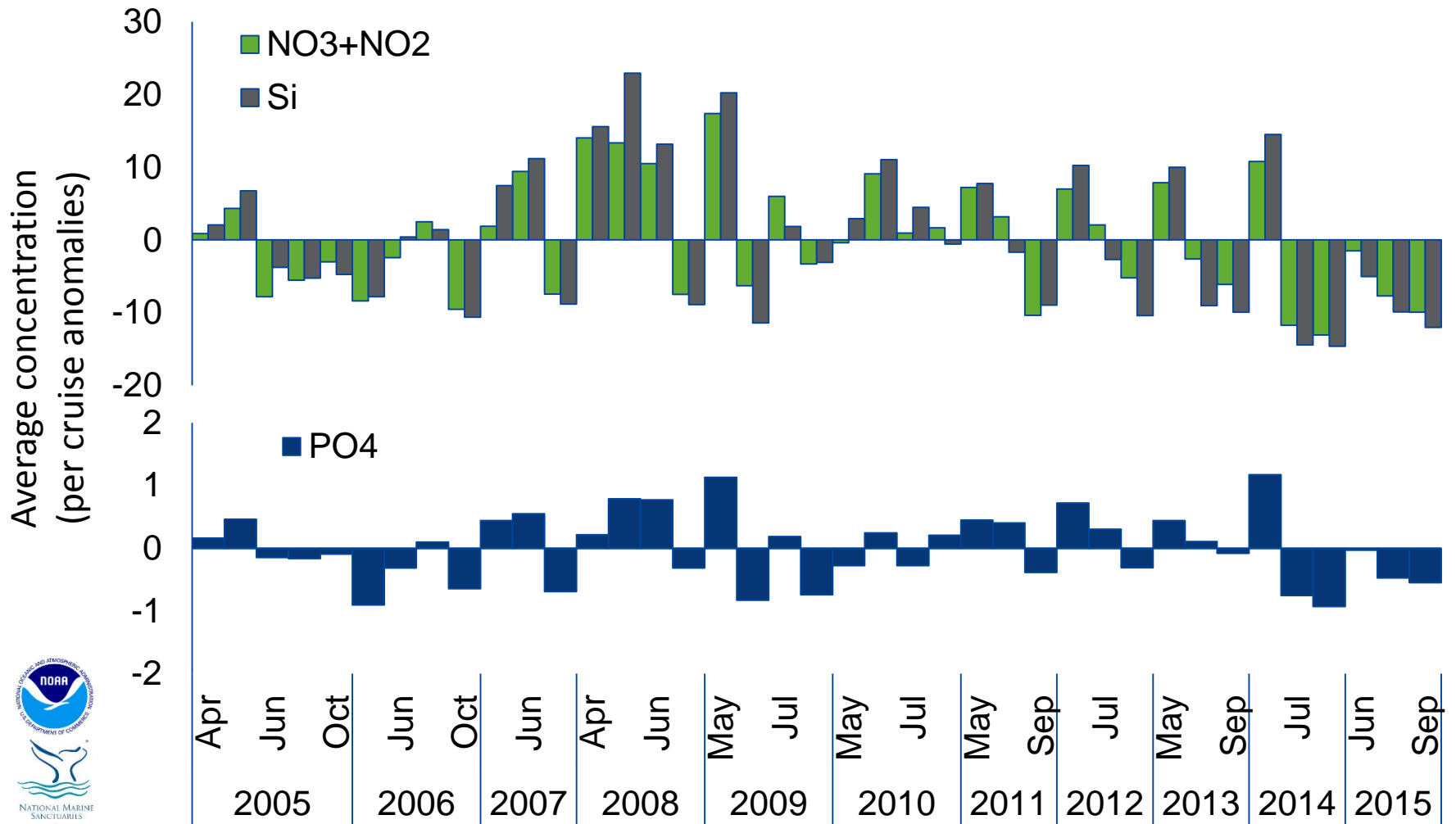
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# Average spring transition dates for 2014-15



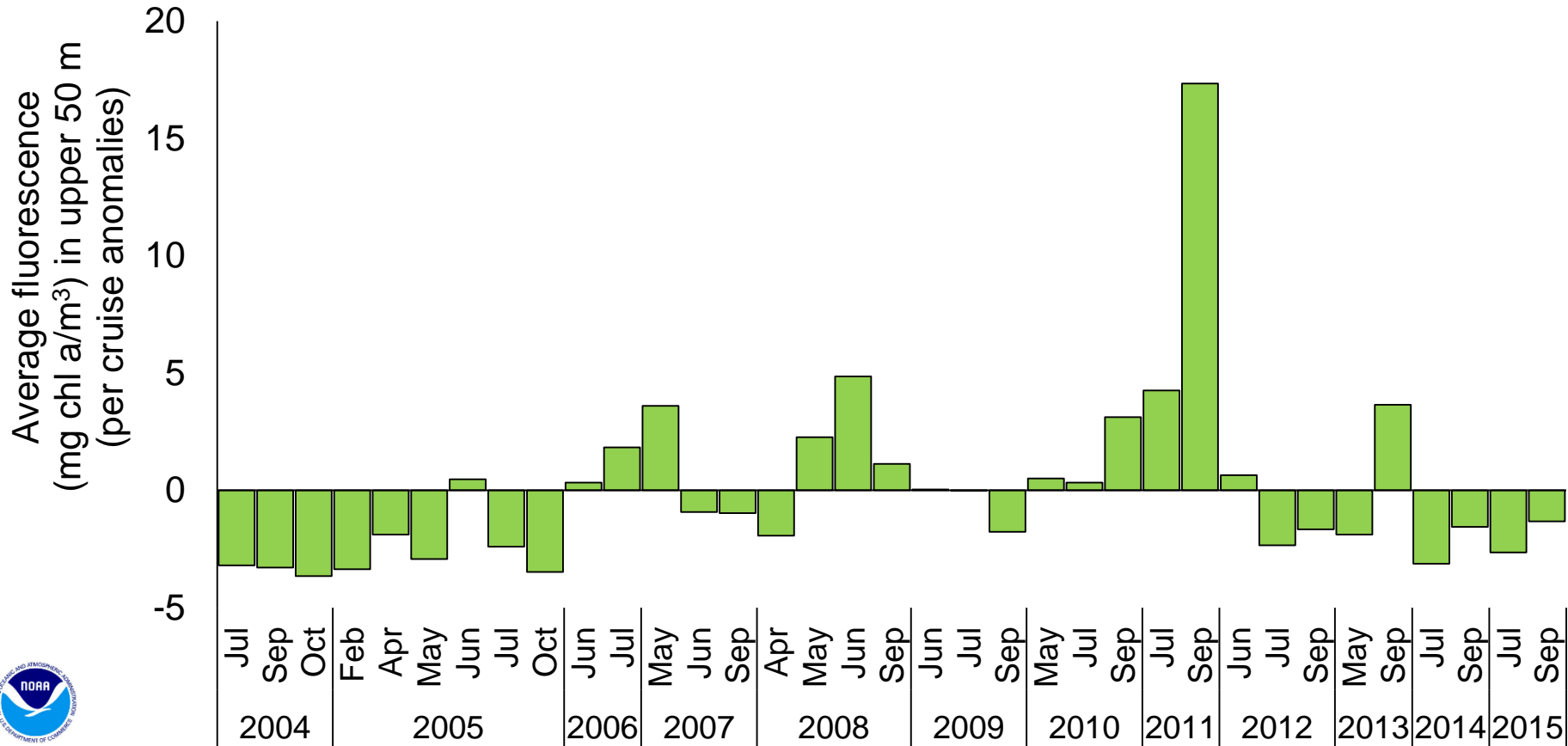
# Low surface nutrients for 2014-15



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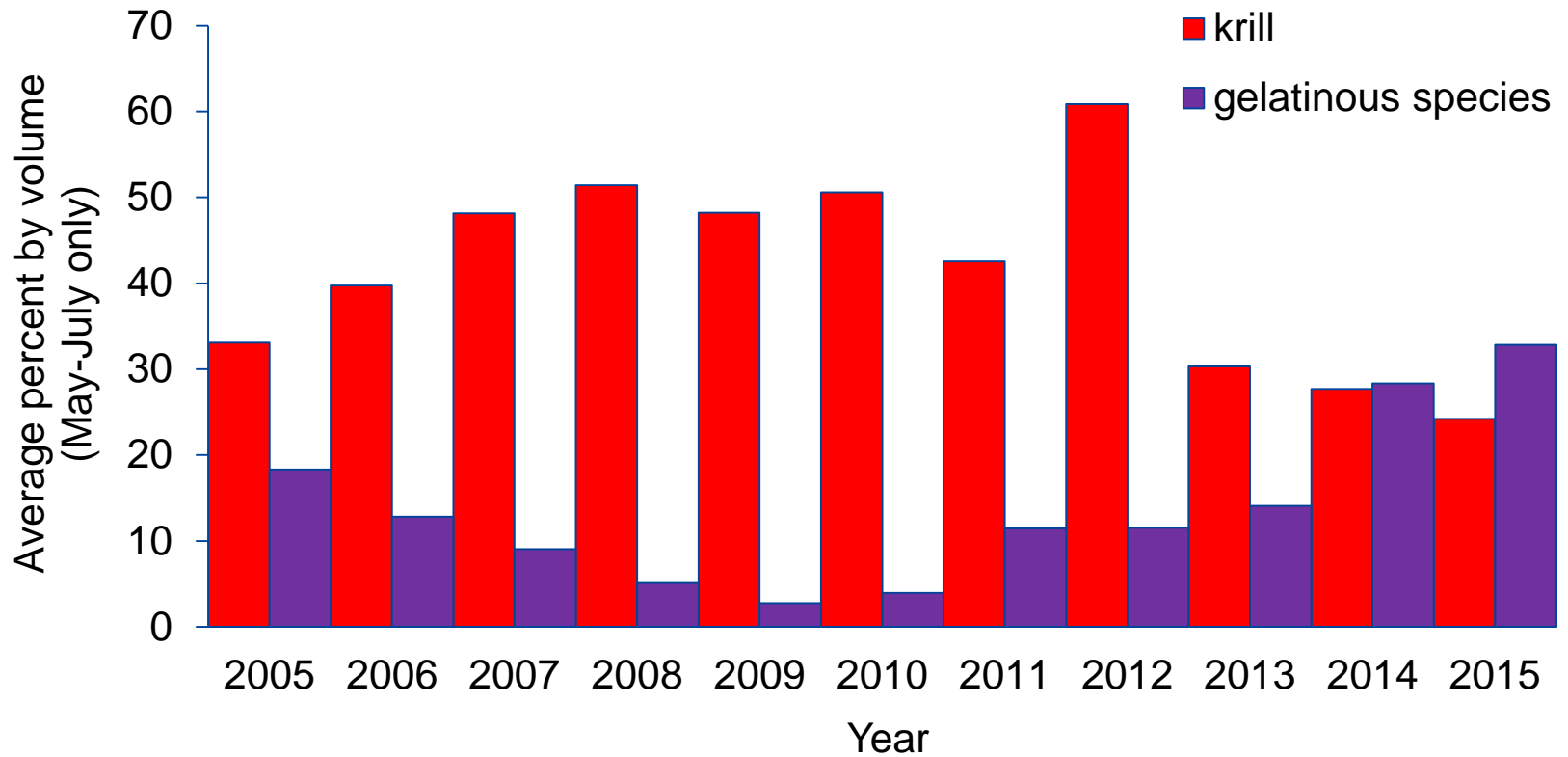
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# Low phytoplankton standing stock in 2014-15

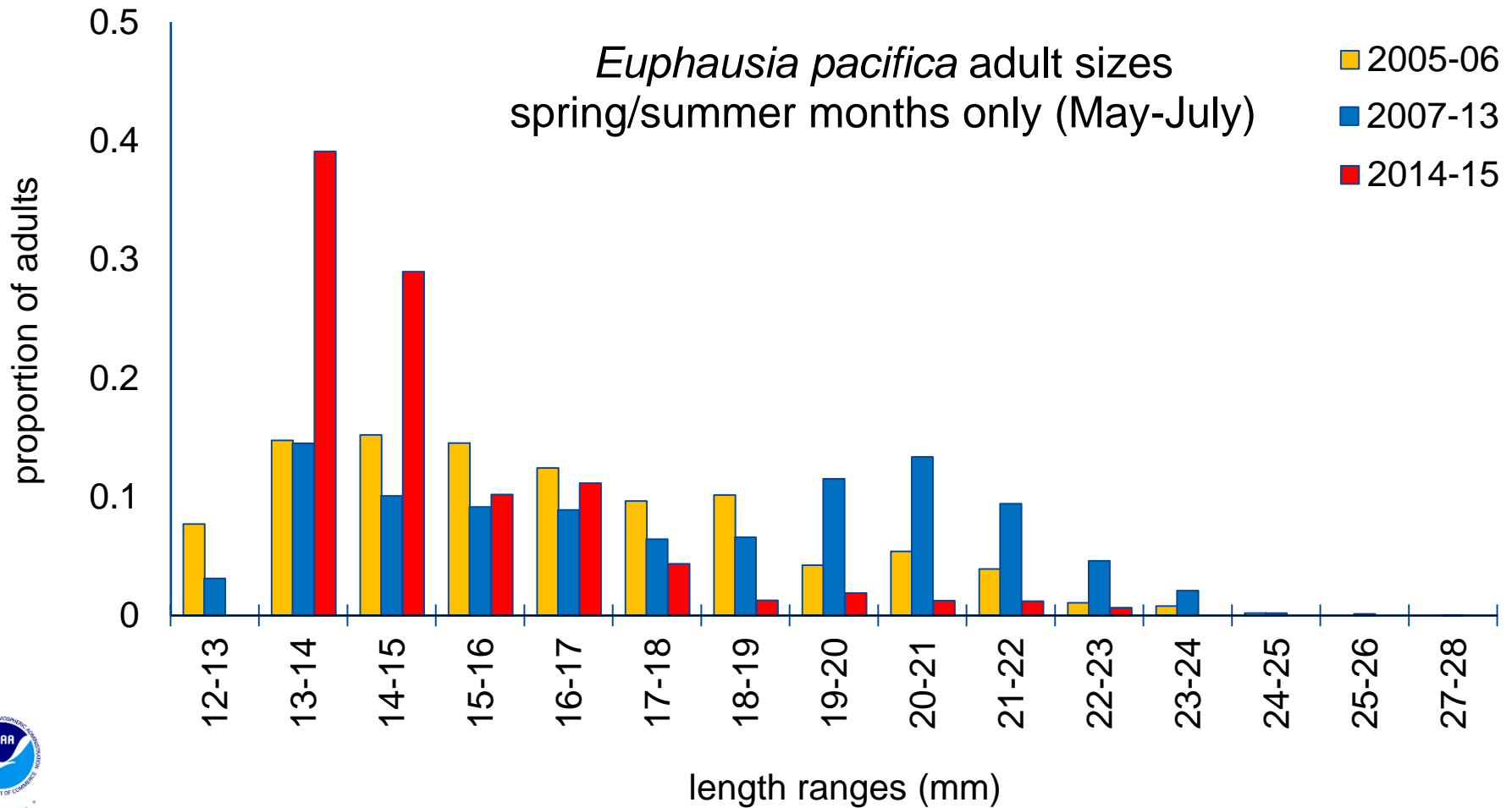




# *Increased gelatinous zooplankton and decreased krill in 2014-15*



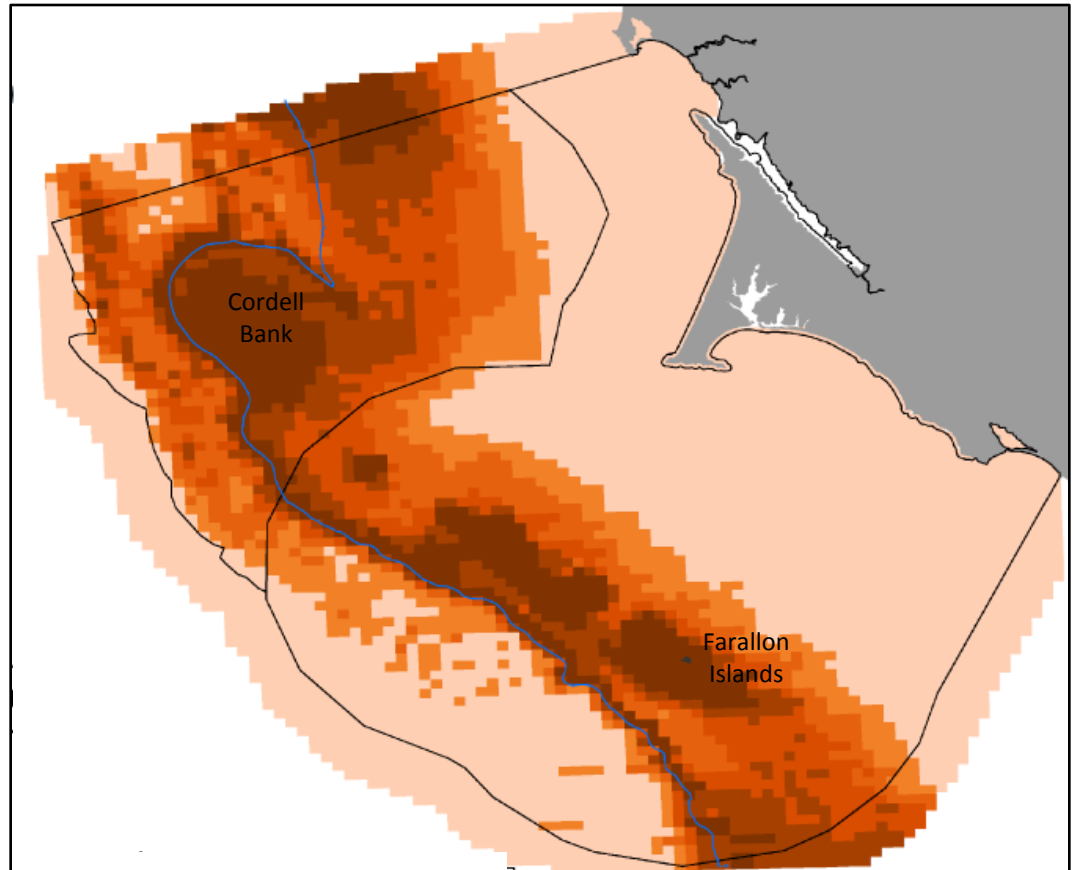
# Smaller adult krill in 2014-15



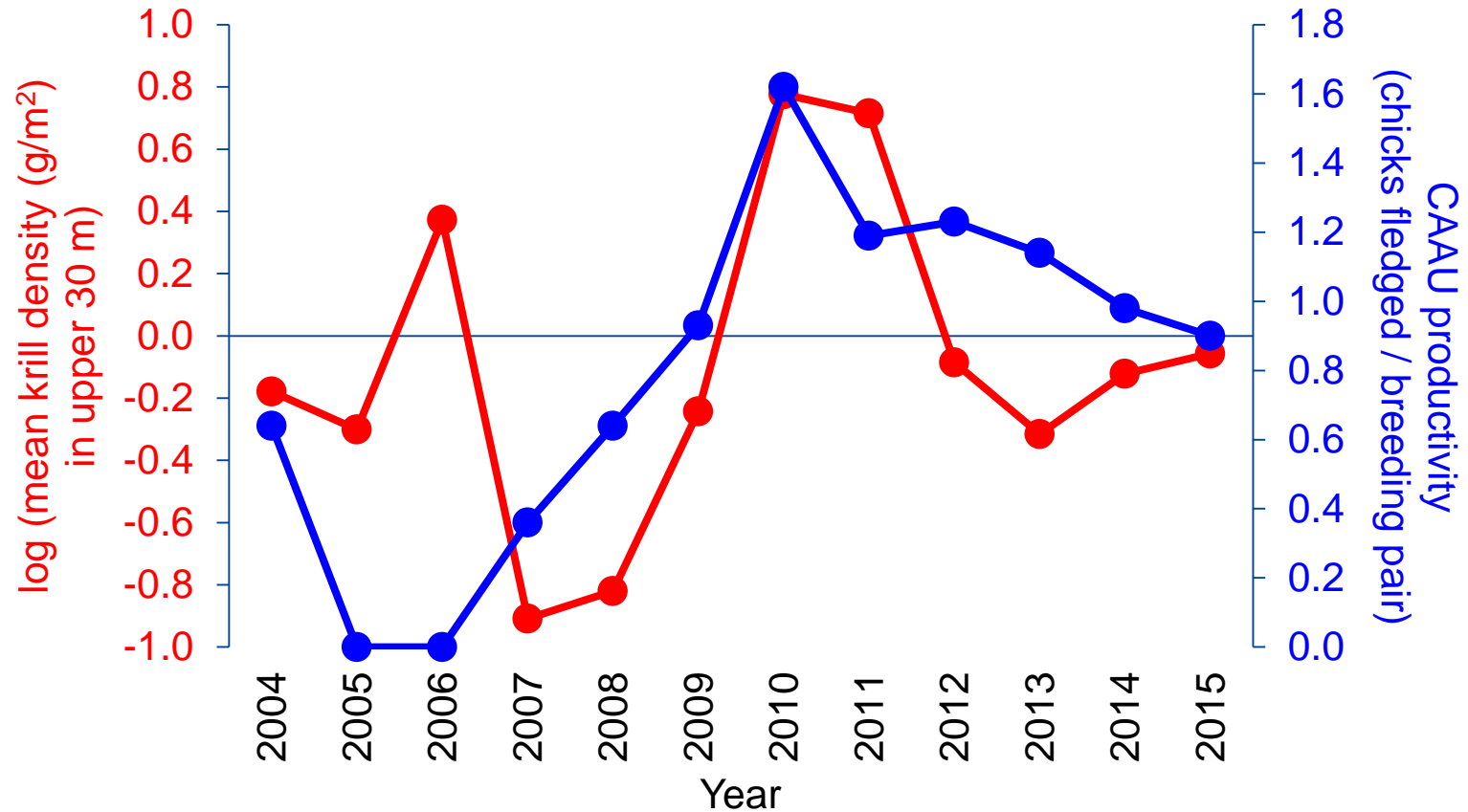
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# Foraging distribution of Cassin's Auklets



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

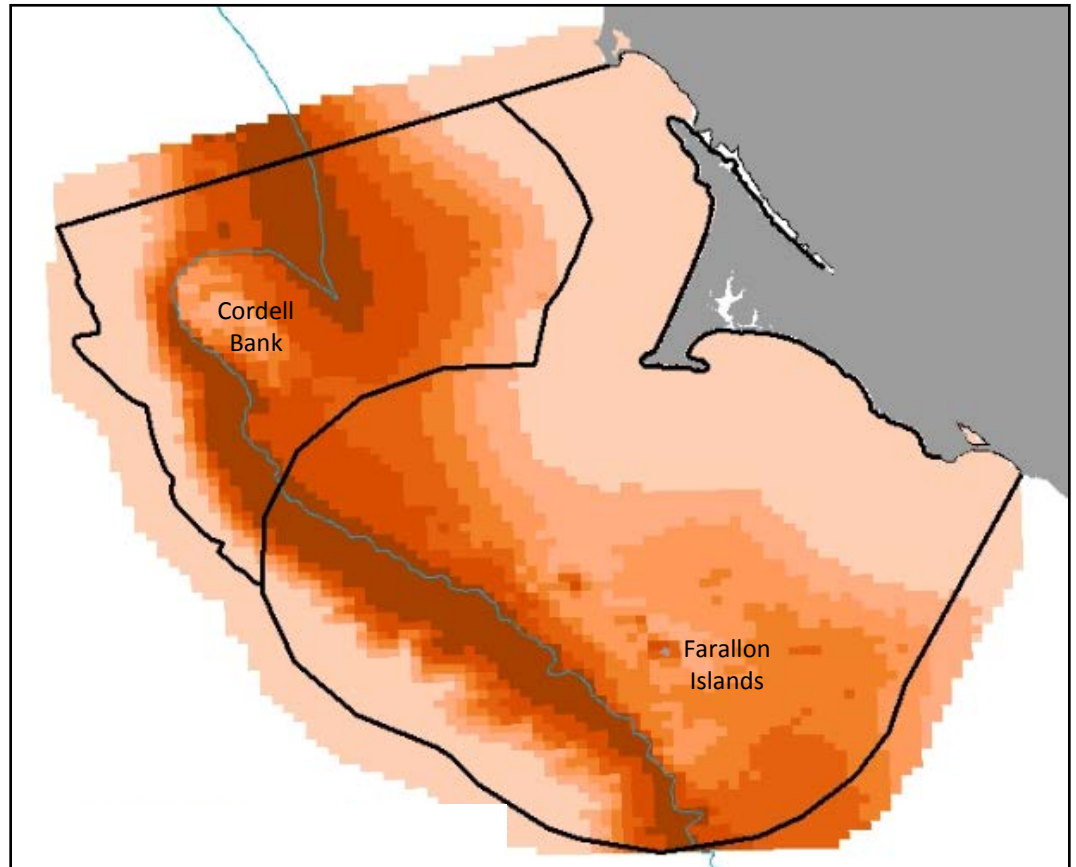
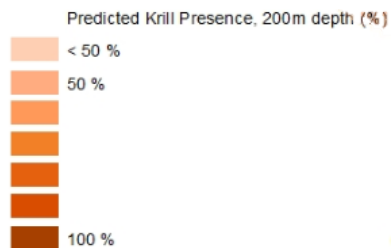


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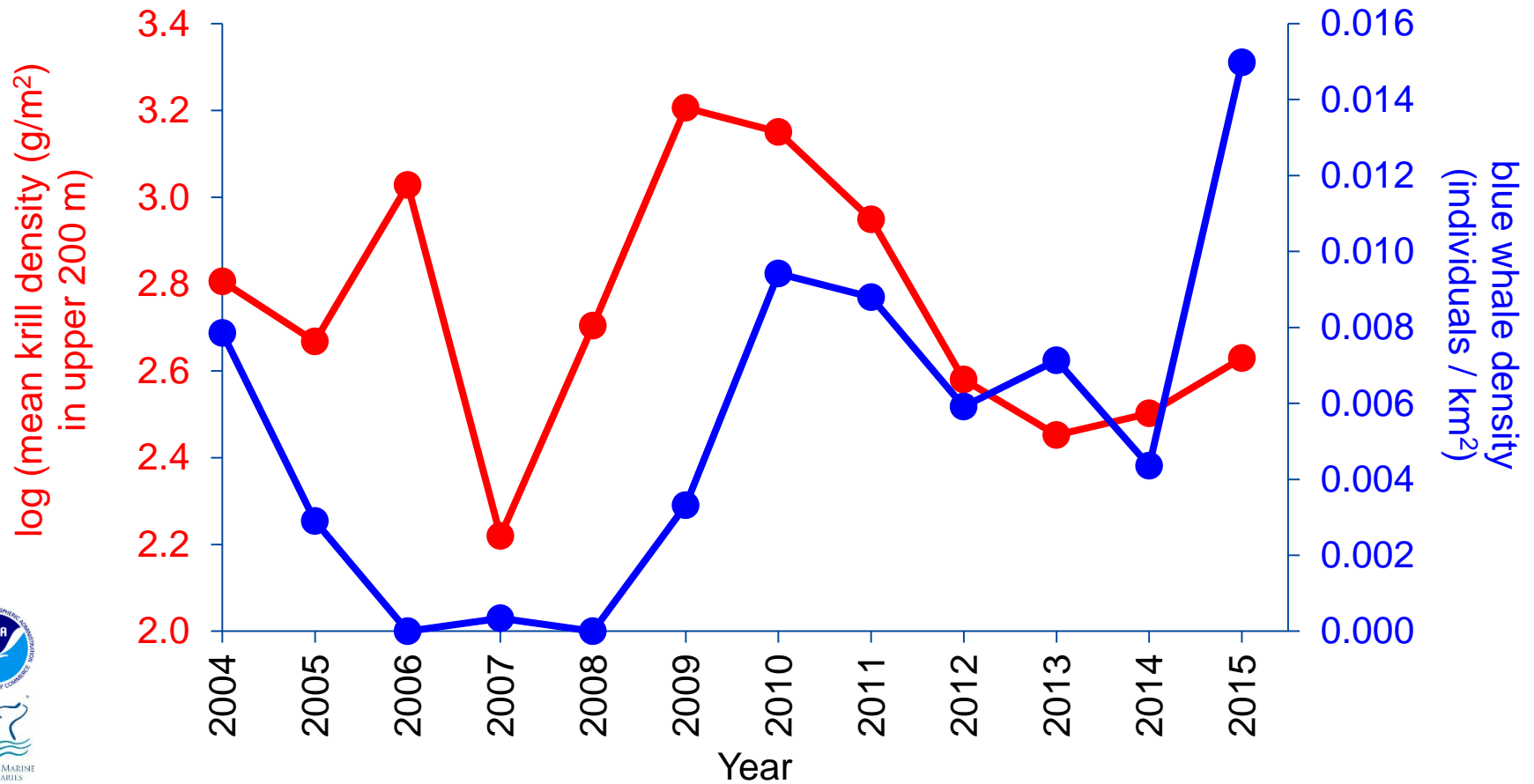
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# Aggregations of Krill

## for Blue Whales



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



# 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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