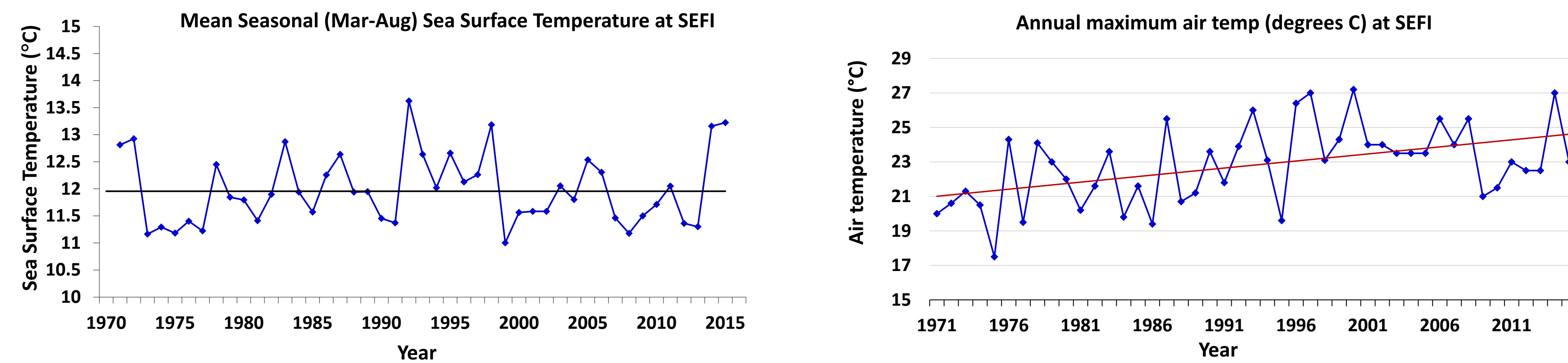


Pete Warzybok, Ryan Berger, Russell Bradley and Jaime Jahncke*

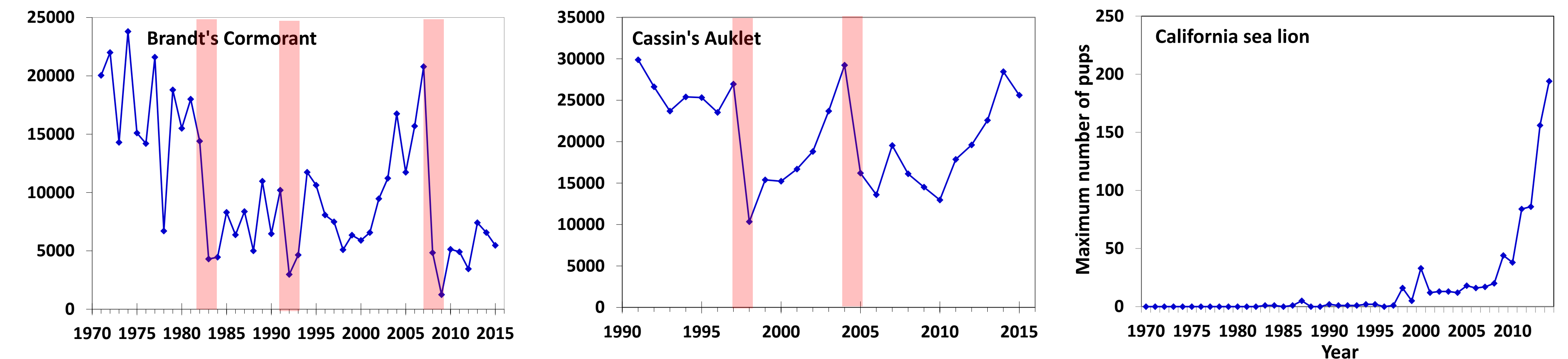
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Introduction and Environment



- 2014/2015 seabird breeding season SSTs among the warmest on record for the Farallones (along with 1992 & 1998 El Niños) and maximum annual air temperature has been increasing over time
- Past warm SST events led to low breeding success or failure and high chick/pup mortality
- Biological responses to current warming event have been varied and appear less dramatic than those observed during previous warm water events (El Niños or the 2005/2006 anomaly)

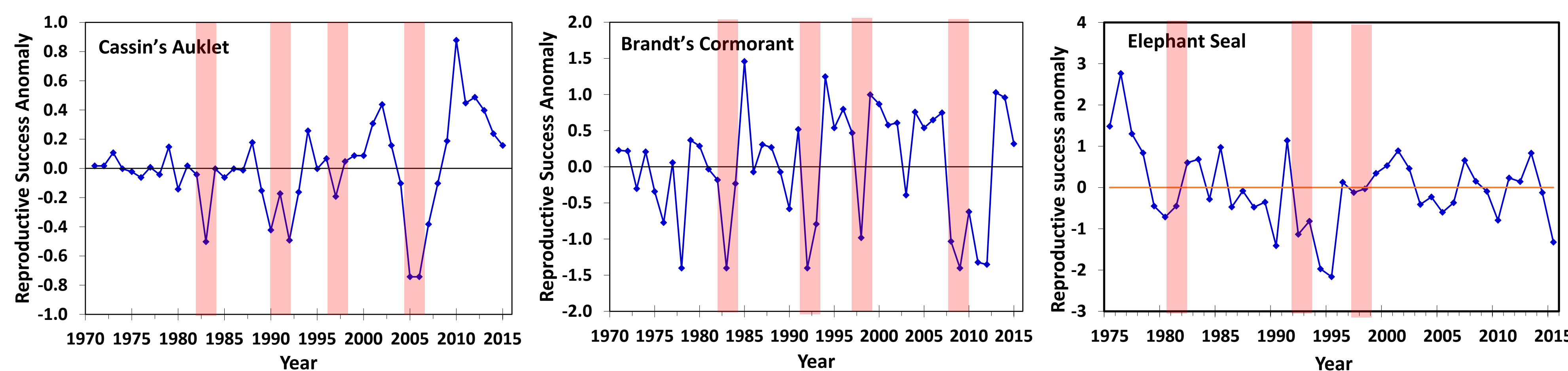
Populations



- Typically fewer birds breeding during or following warm water events and fewer pups produced
- Sharp declines for seabirds (left two panels) evident during 2005/2006 event and previous El Niños
- Smaller magnitude seabird breeding population declines in 2015
- Warm water shows no effect on trend California sea lions with a record high number of breeding individuals

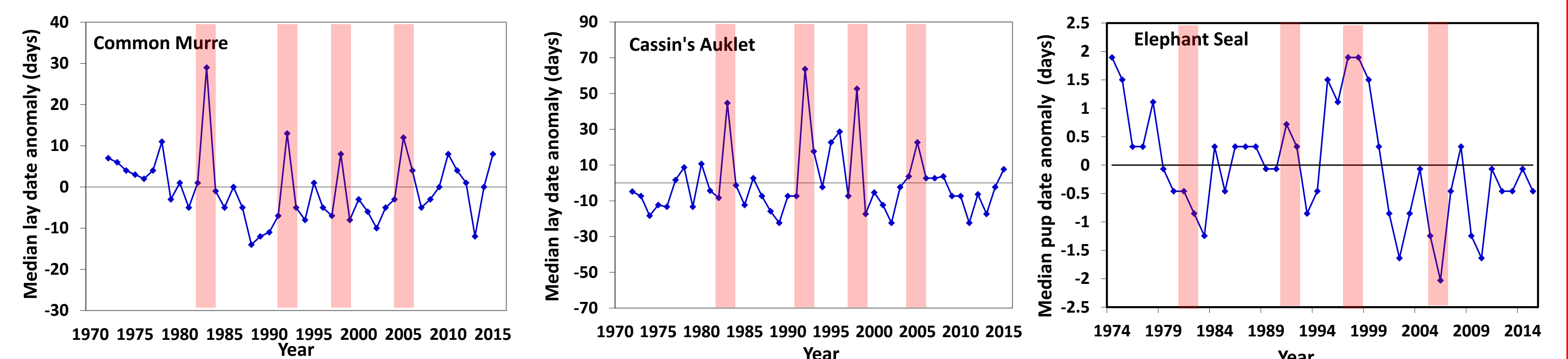
Red bars indicate warm water events

Reproductive Success



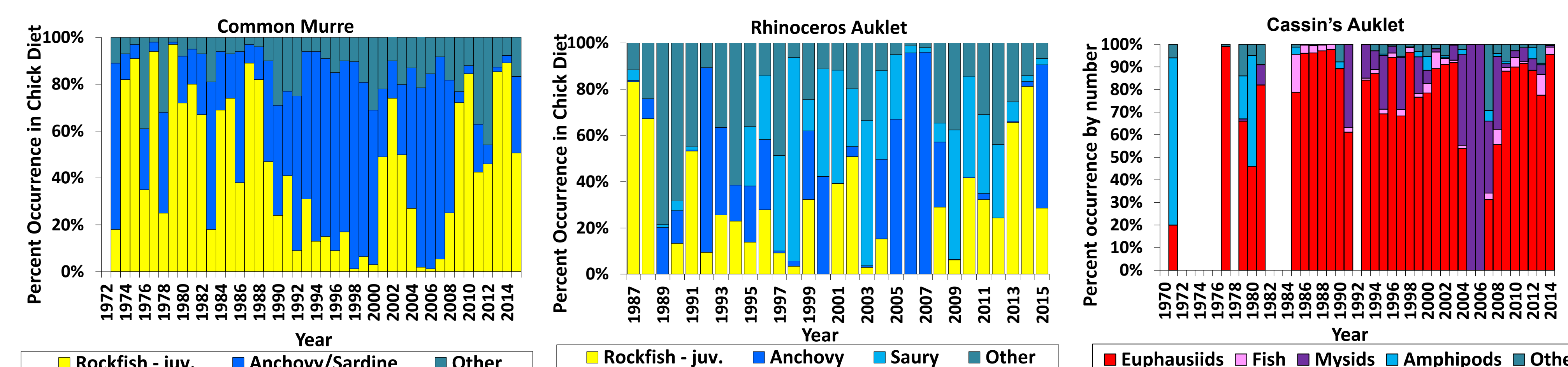
- Reproductive success declined for most species during 2015
- Unlike other warm water events, seabird breeding success remained above the long-term mean
- Cassin's auklets failed to produce chicks from second broods during both 2014 and 2015
- Warm air temperature led to higher elephant seal pup mortality and lower success when pups fell into the water while following mothers as they were seeking relief from the heat

Phenology



- Seabird egg laying typically delayed (positive anomaly) during warm water years
- Magnitude of delay during 2014/2015 was much less than during other warm water years
- No clear pattern for pinnipeds. Elephant seal pupping shows less variation and may be earlier or later during warm water events

Seabird Chick Diet



- Krill still the major contributor to Cassin's auklet diet in 2014/2015
- Juvenile rockfish reduced during 2015 but remained a high proportion of chick diet
- Anchovy returned to the diet of murrets and rhinoceros auklets for the first time since 2008 but are typically the dominant prey item during warm water events

Summary

- Seabird productivity declined for most species but remained around or above the long-term mean
- Seabird breeding populations reduced during 2015 but to lesser degree than previous anomalies
- Pinnipeds showed mixed response with higher numbers and production for California sea lions but reduced reproductive success for Northern elephant seals
- Overall impact of 2015 El Niño (thus far) has been much smaller than previous similar warm water events (2005/2006 anomaly and strong El Niños during 1983, 1992 and 1998)
- Unusual occurrence of warm water wildlife species in the region around the Farallones

