

Overwintering in the East China Sea or
Japan is associated with concerning low
survival in adult *arcticola* Dunlin

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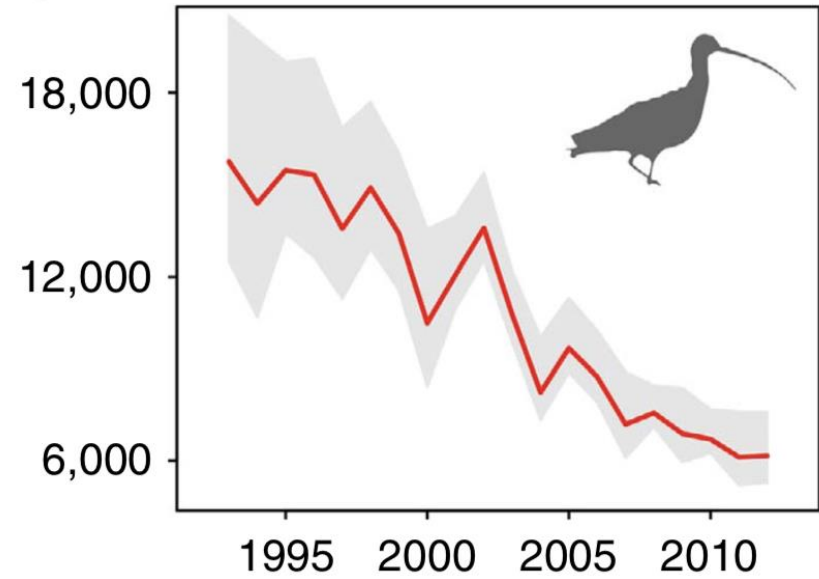
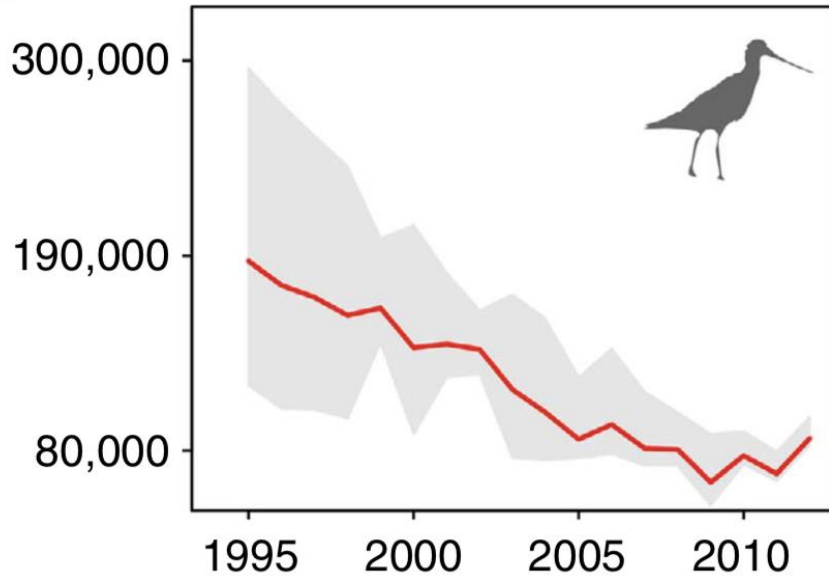
Wildlife Conservation Society

Greg Breed

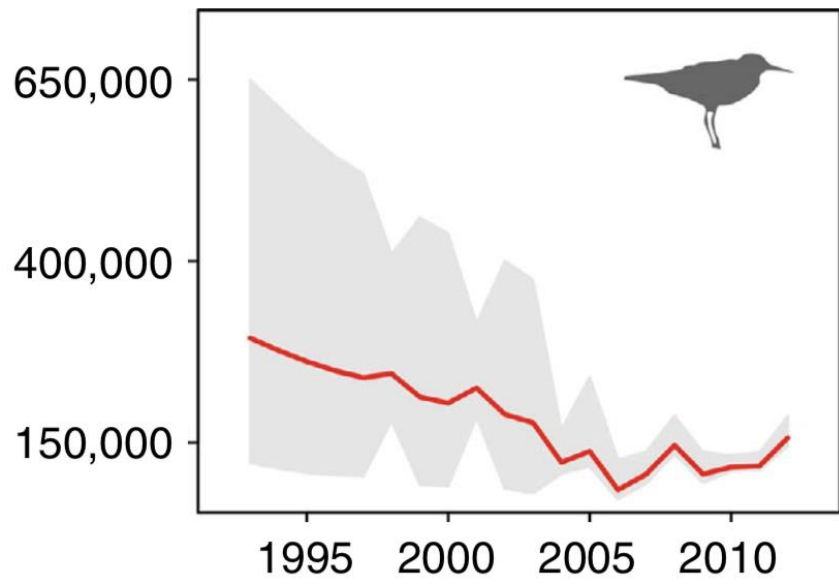
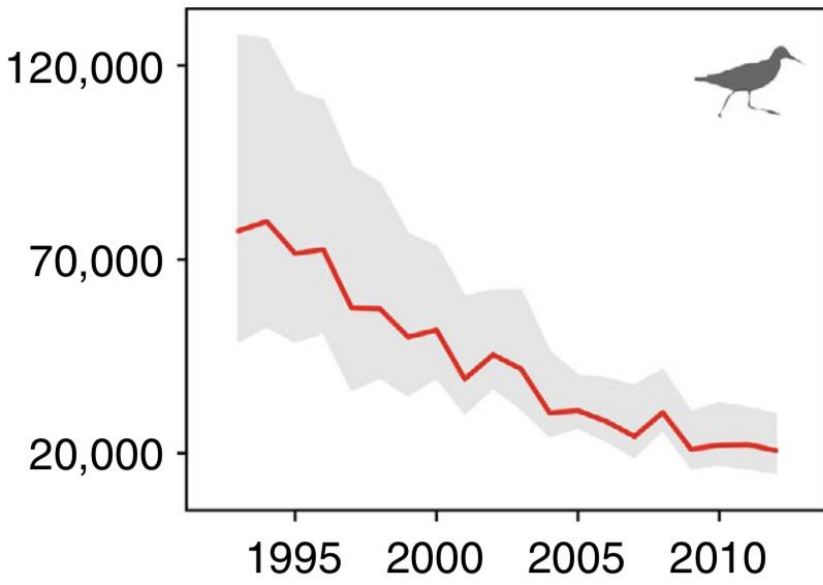
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Rapid population declines along the EAAF



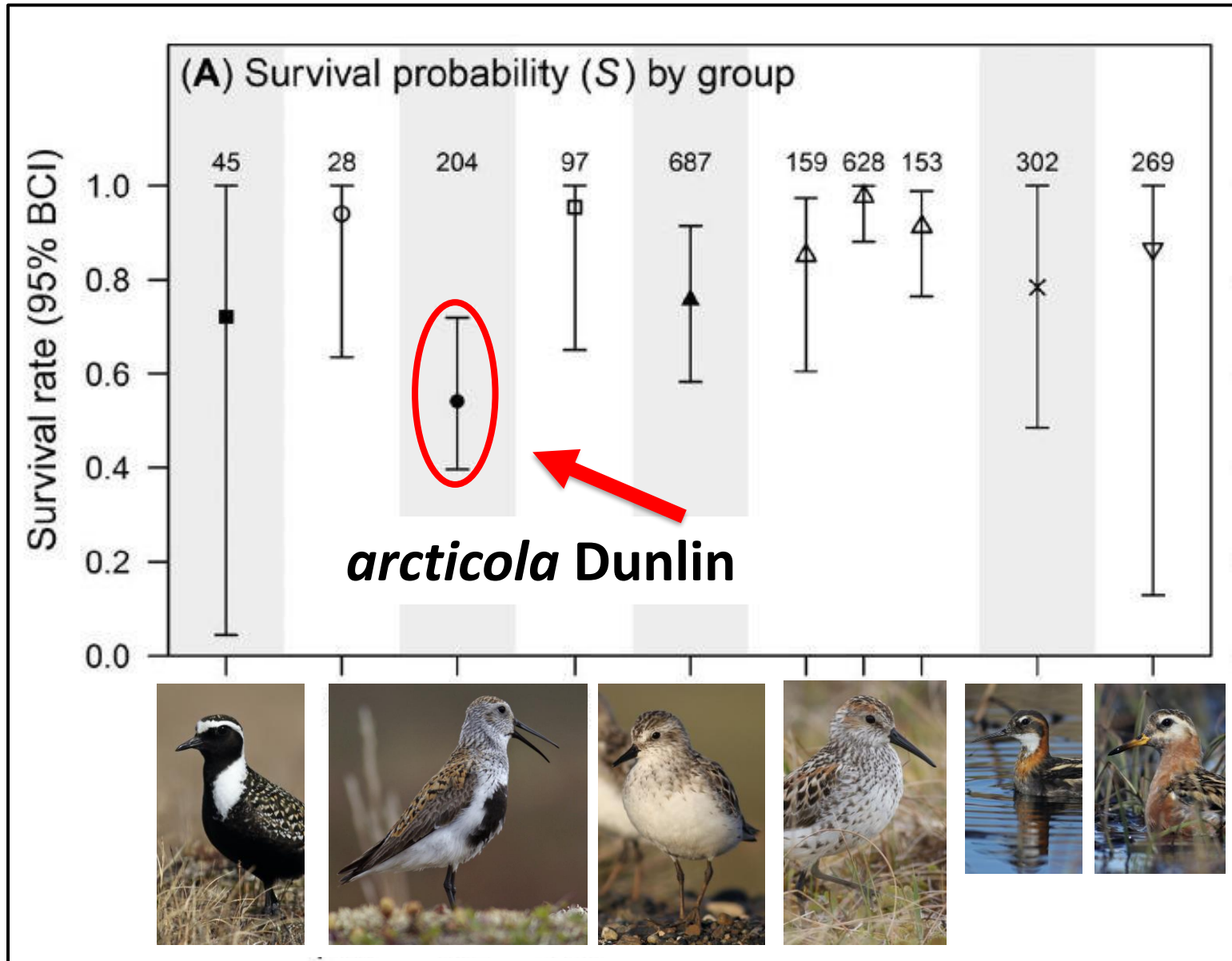
Studds et al. 2017. *Nature Communications* 8:14895



Habitat loss in the Yellow Sea



Low survival in *arcticola* Dunlin (2010–14)



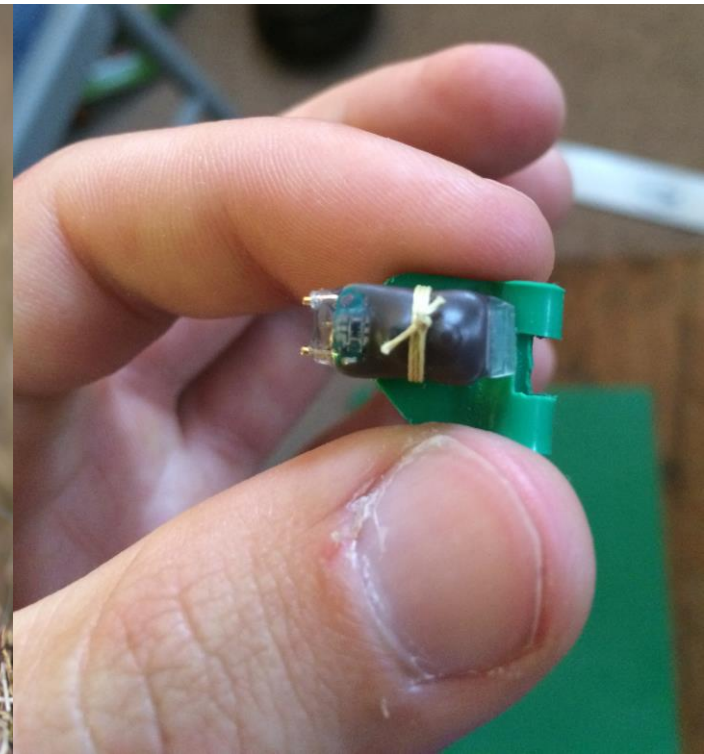
***Are arcticola* declines linked to conditions in the Yellow Sea?**

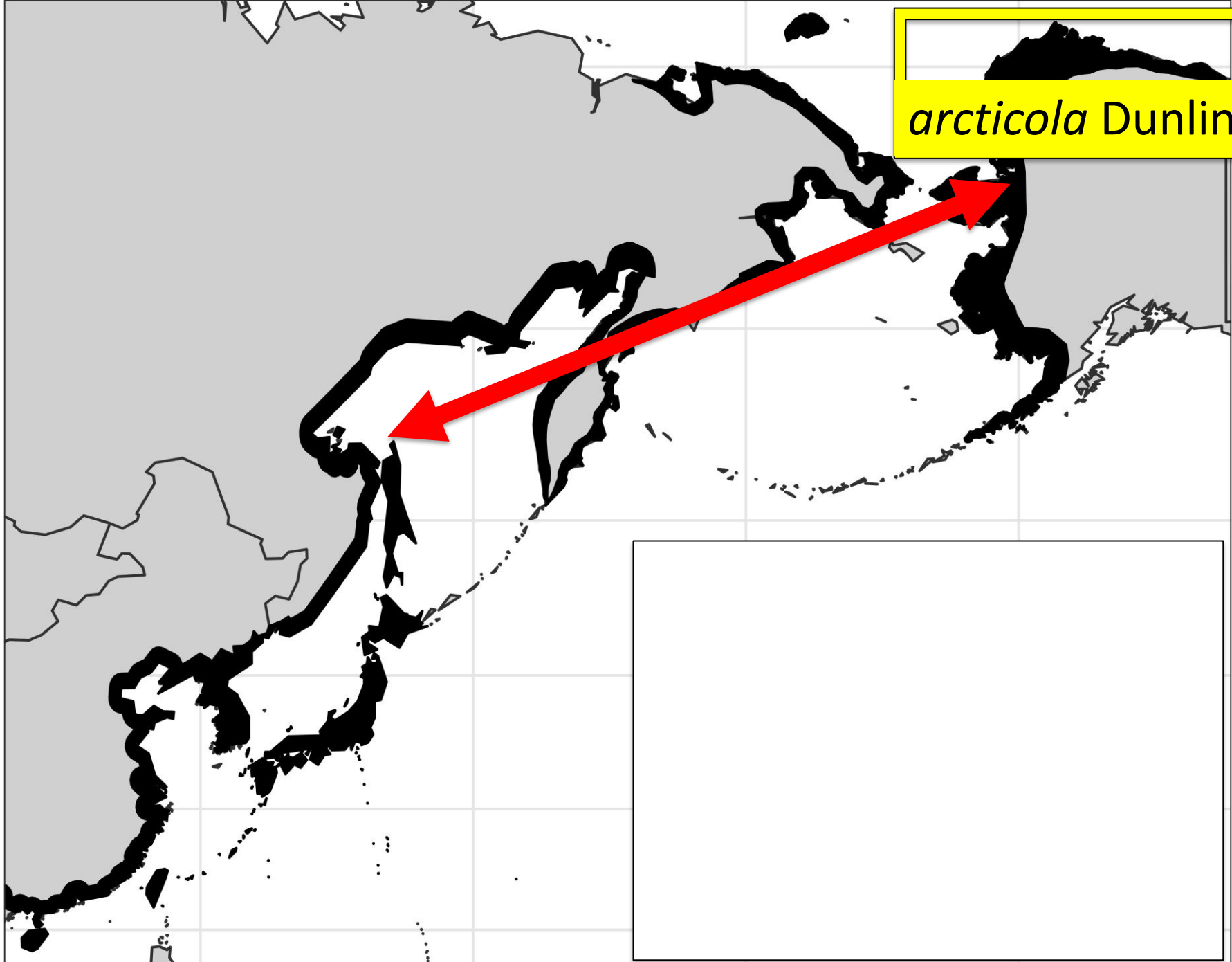
Tracking efforts (2010–2019)

Utqiagvik ($n = 137$ deployed, 41 recovered)

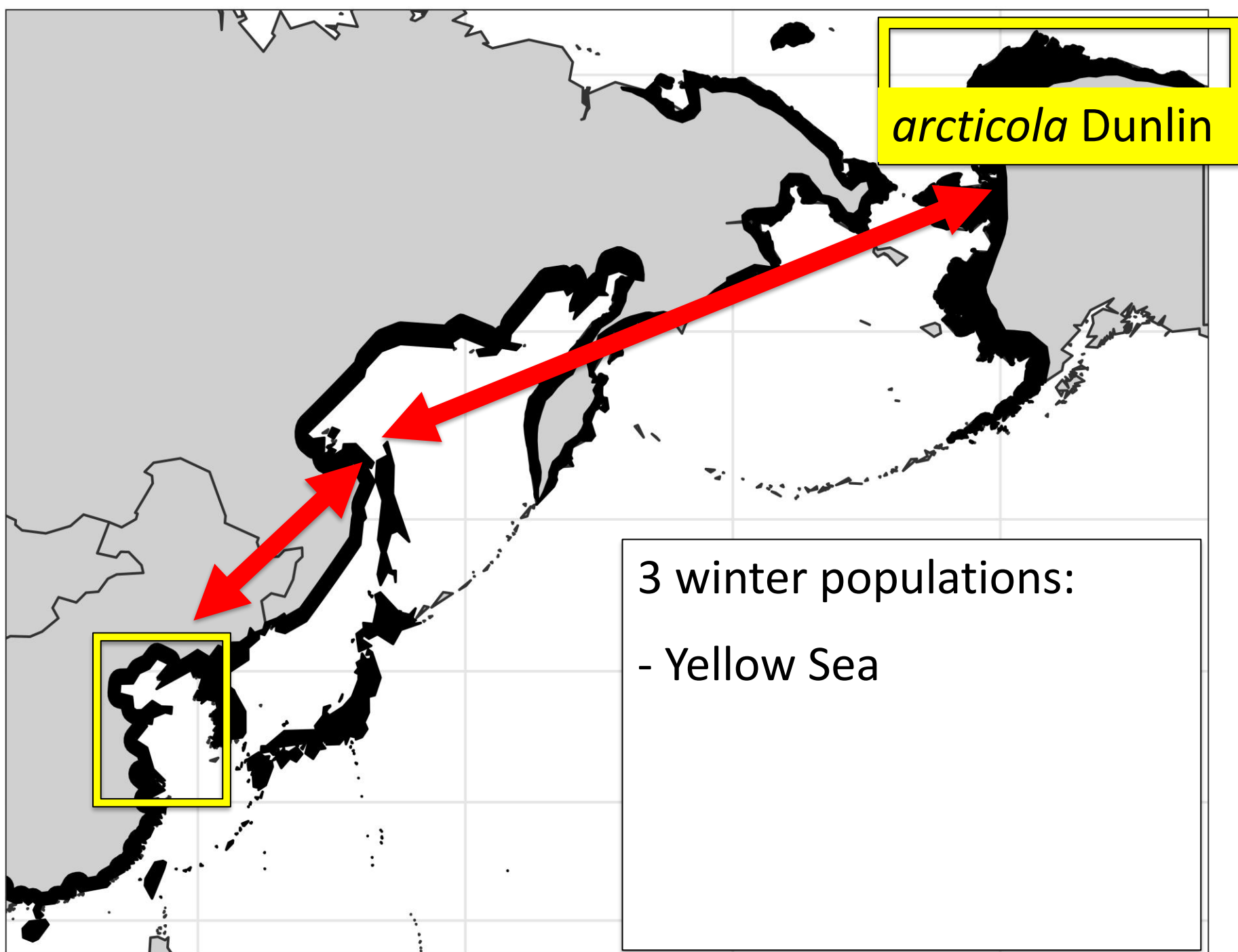
Ikpikpuk River ($n = 35$ deployed, 4 recovered)

Canning River ($n = 35$ deployed, 6 recovered)





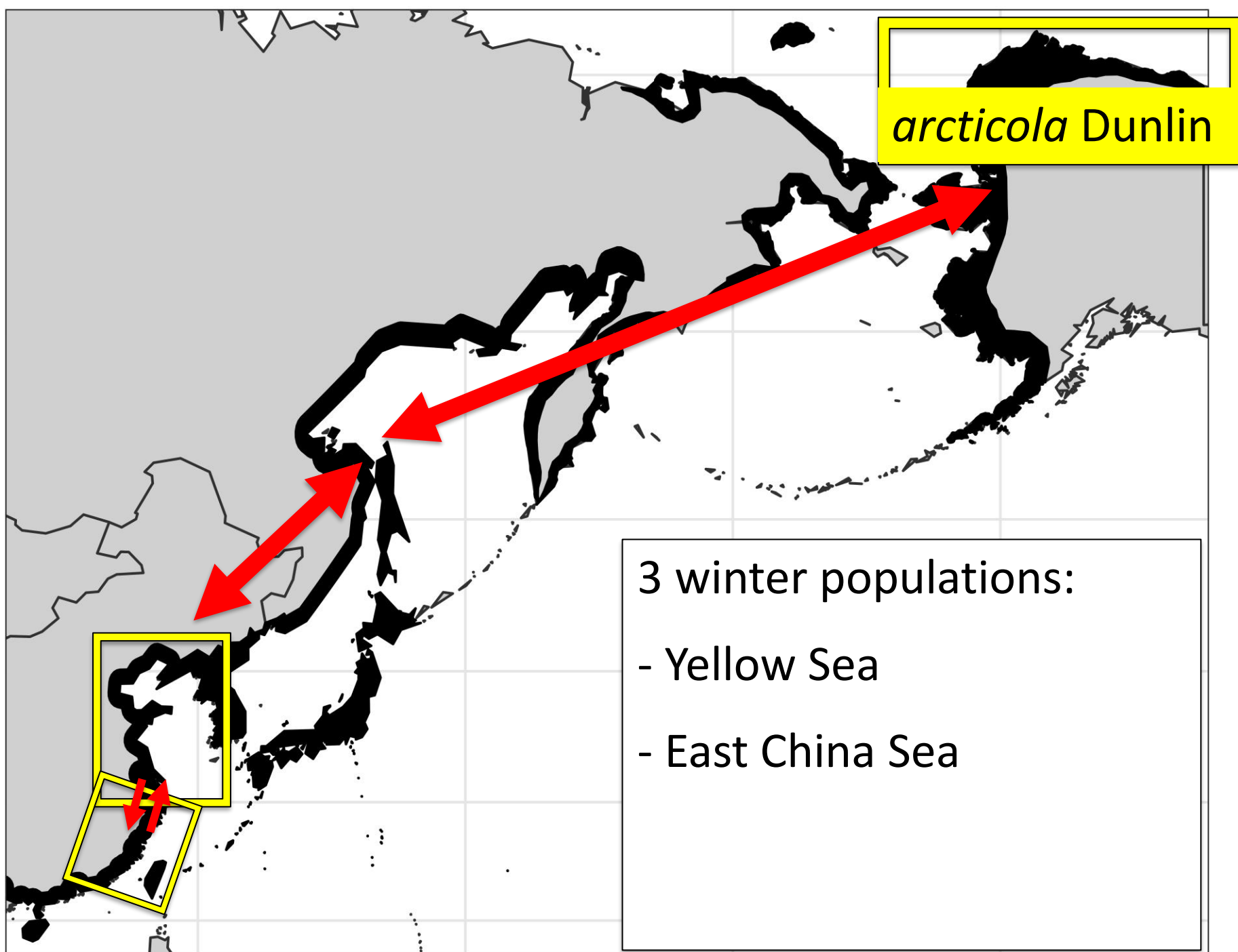
arcticola Dunlin

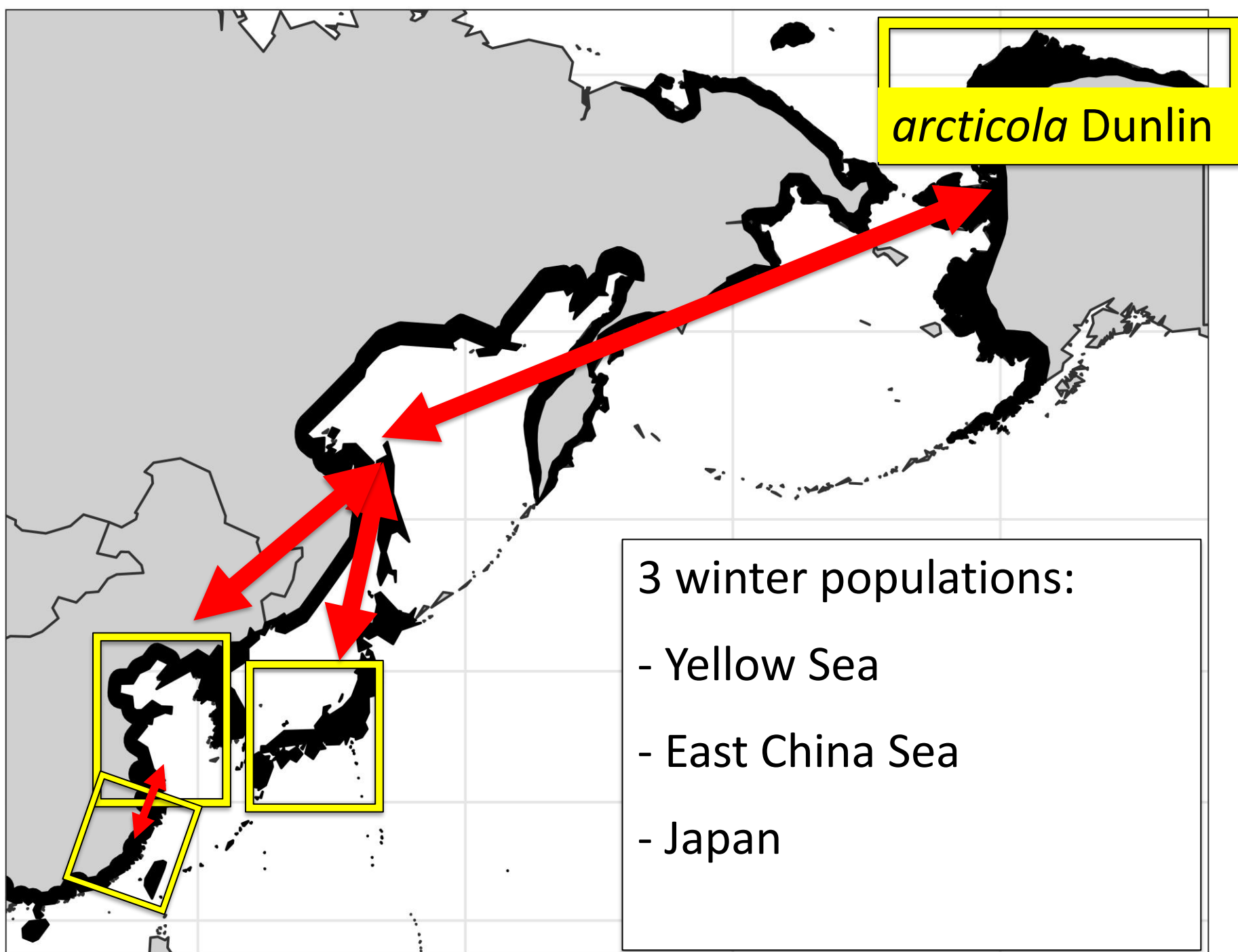


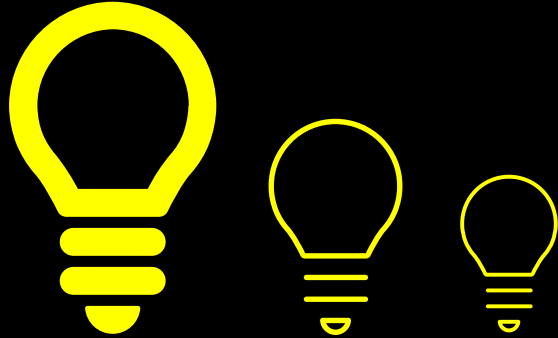
arctica Dunlin

3 winter populations:

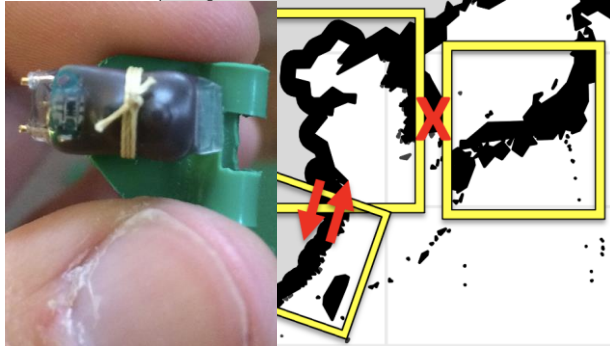
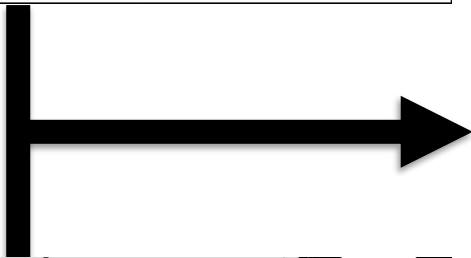
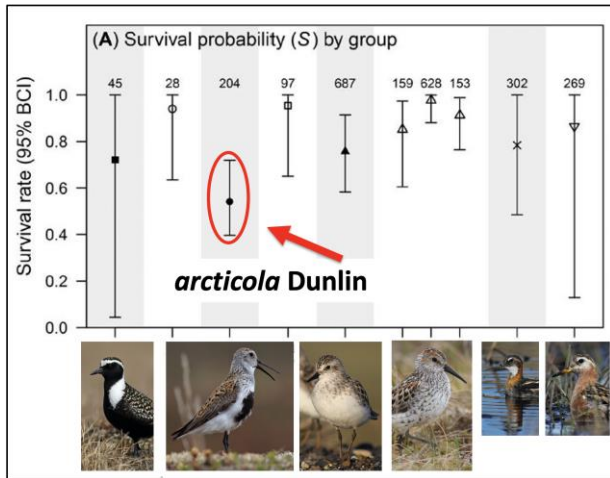
- Yellow Sea







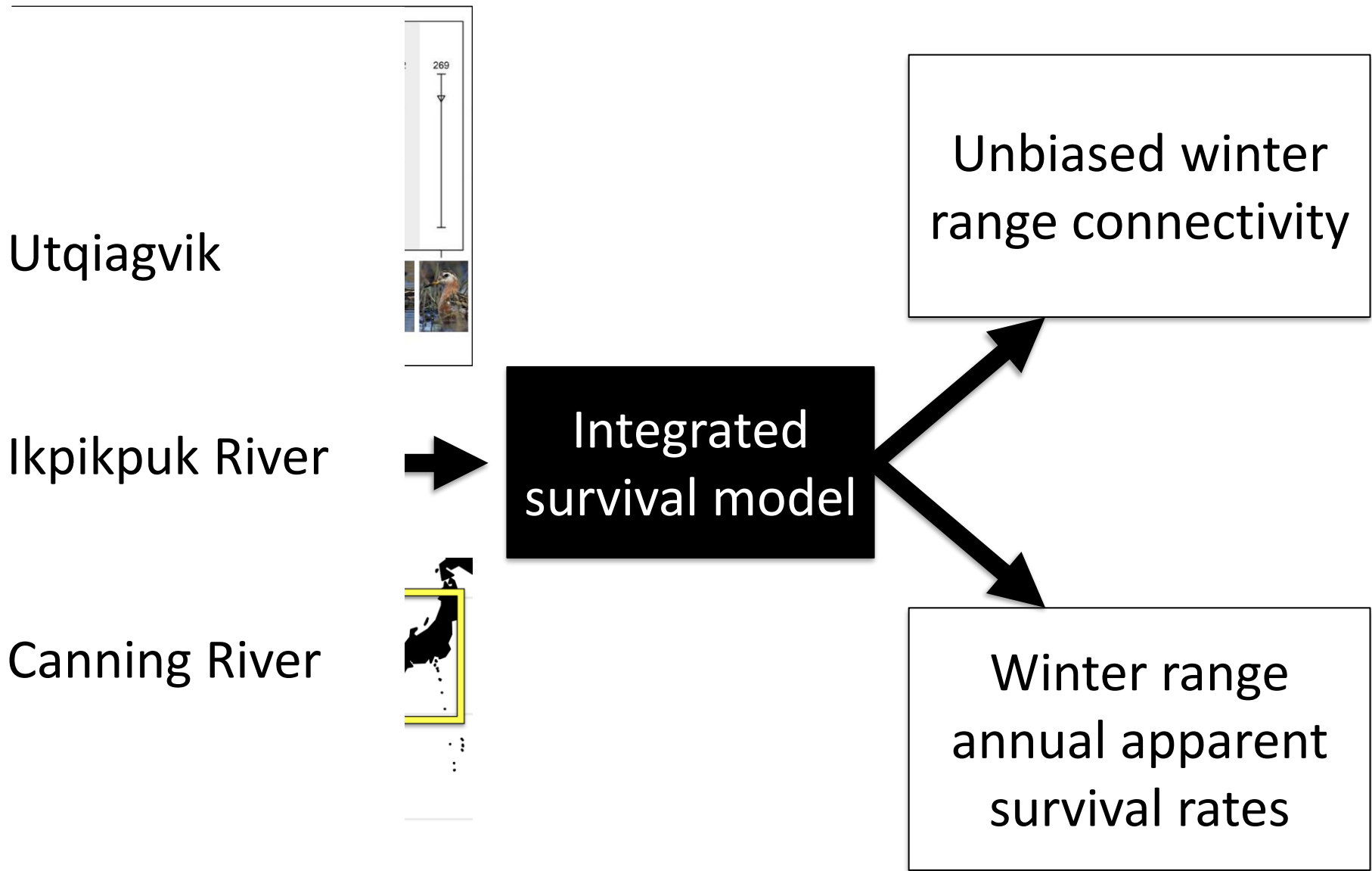
By comparing survival rates between the 3 winter populations, we can begin to identify where and why *arctica* Dunlin have undergone population declines.



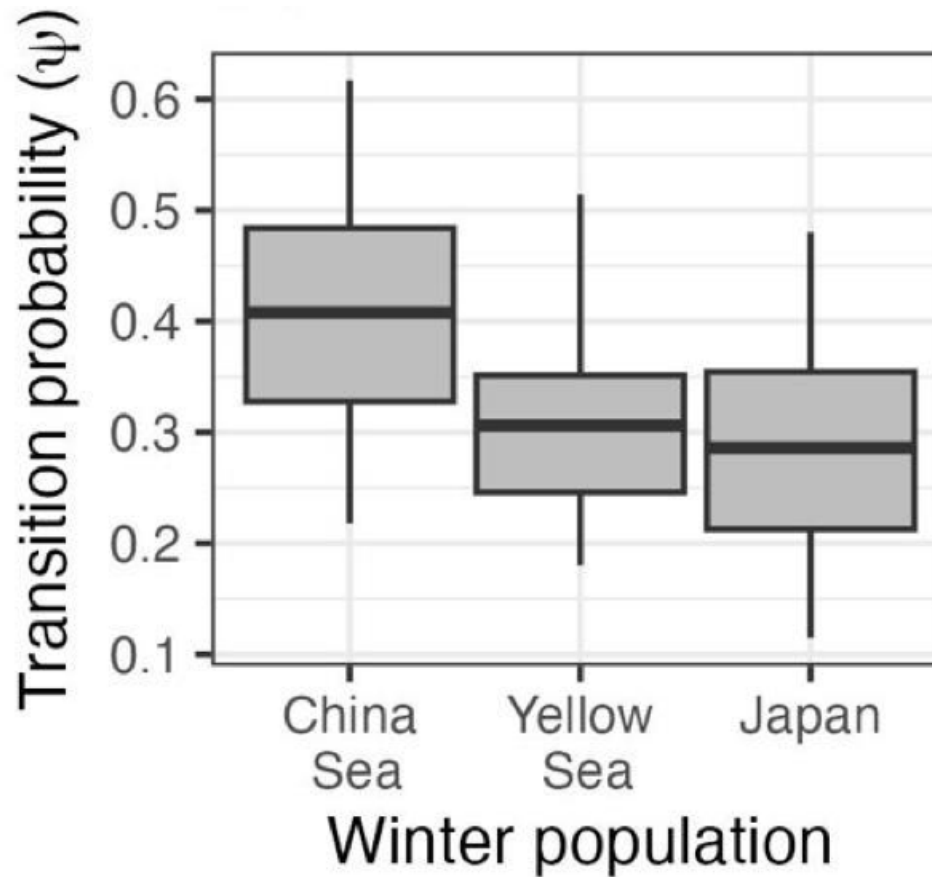
Integrated survival model

Unbiased winter range connectivity

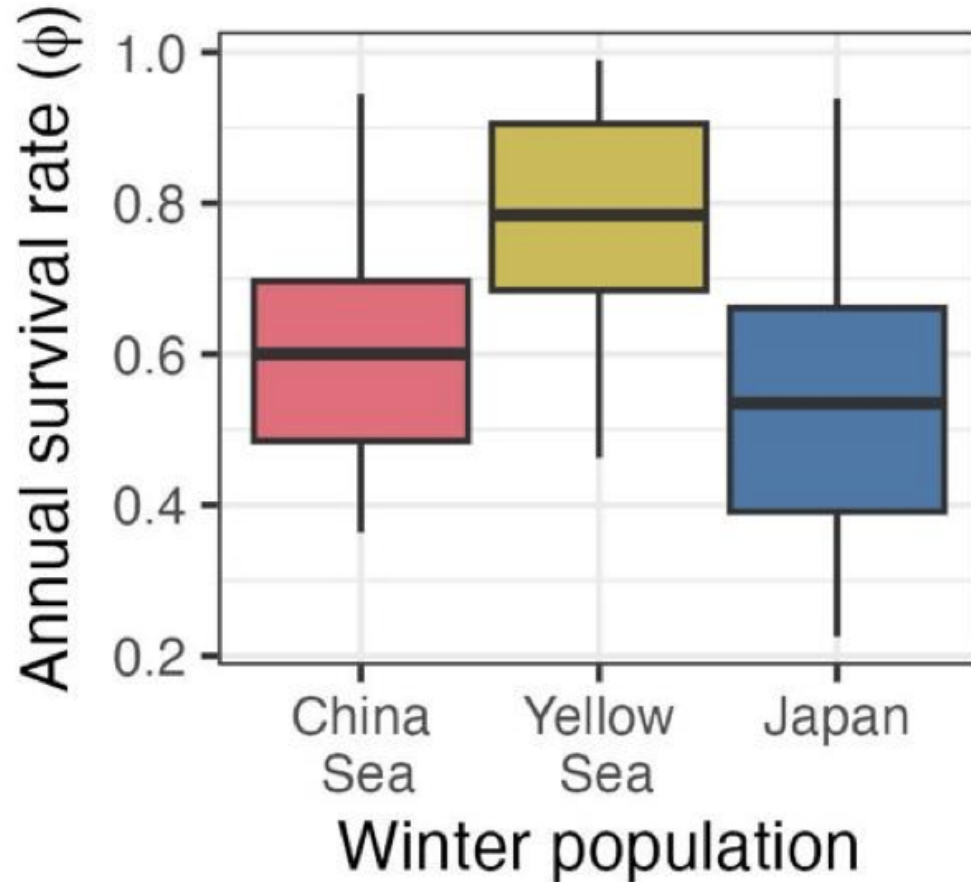
Winter range annual apparent survival rates



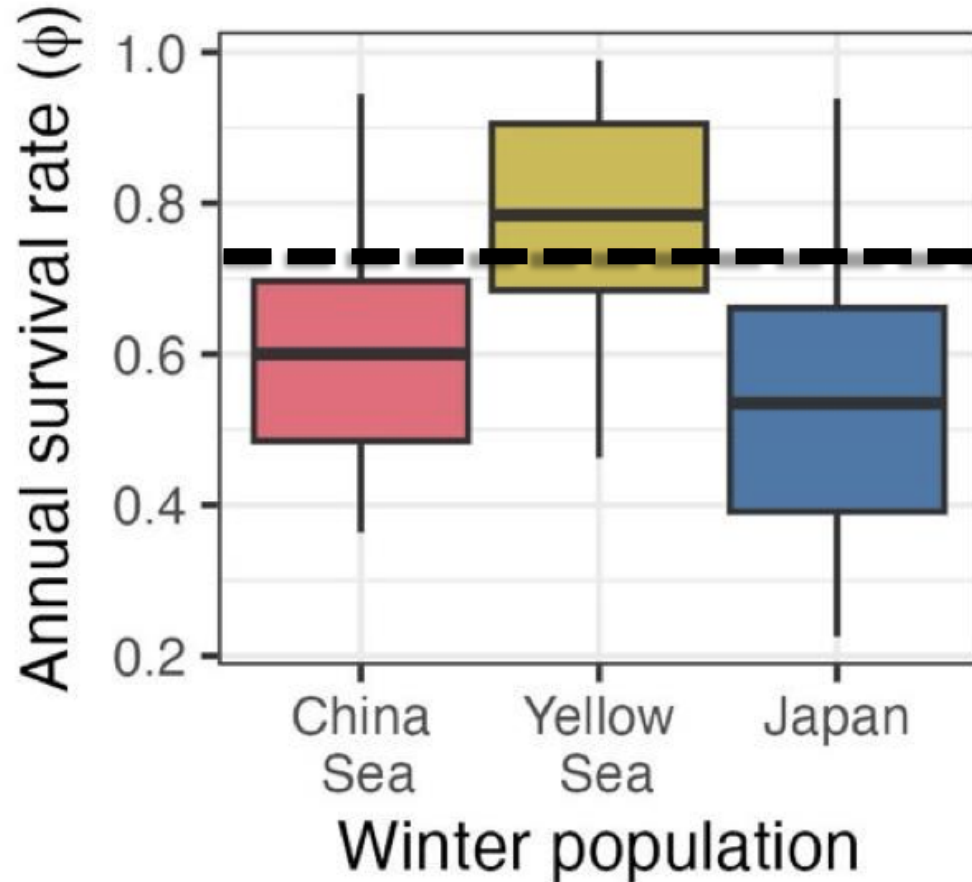
Winter range connectivity



Annual apparent survival (2010–2014)

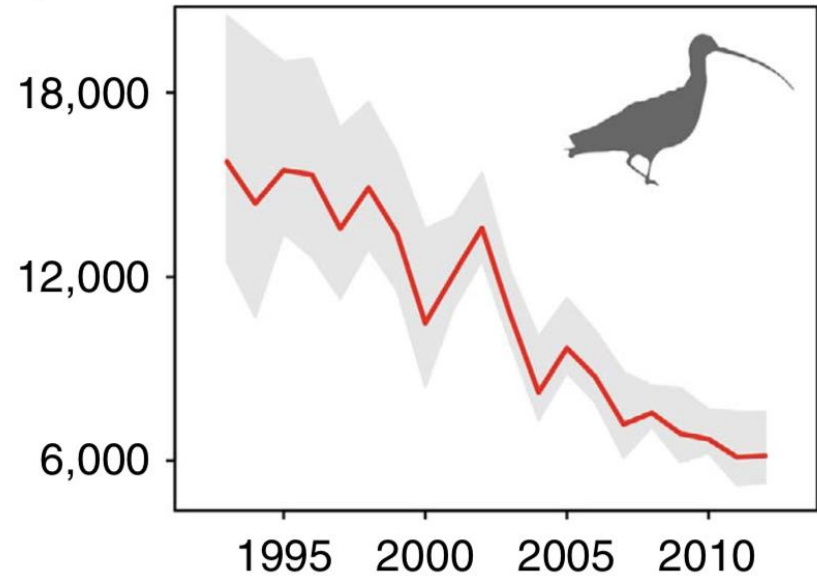
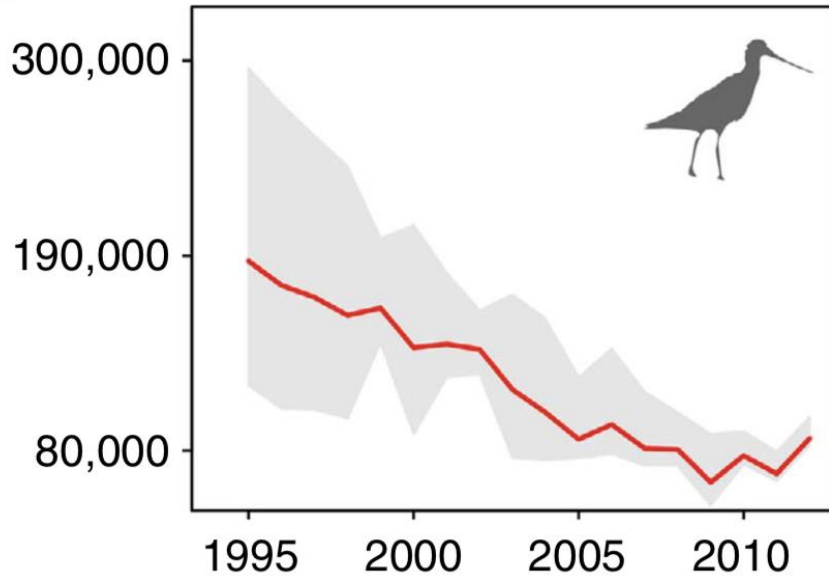


Annual apparent survival (2010–2014)

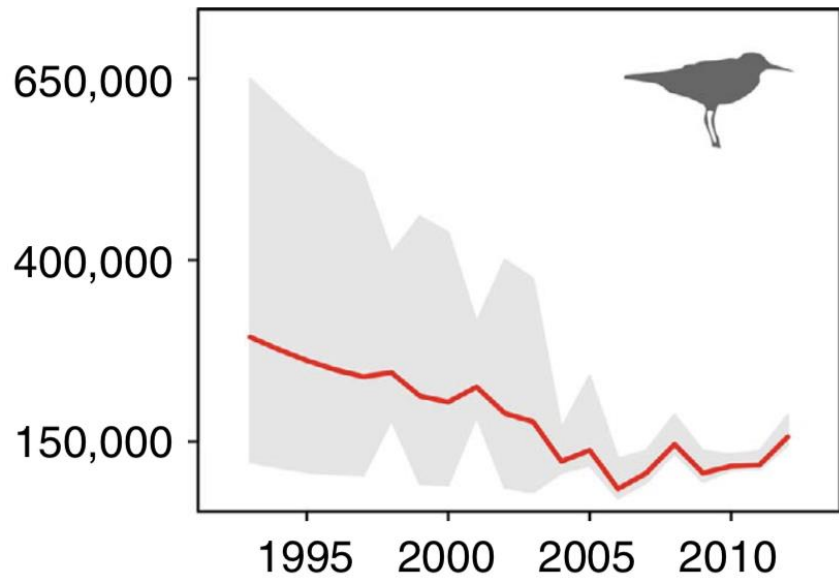
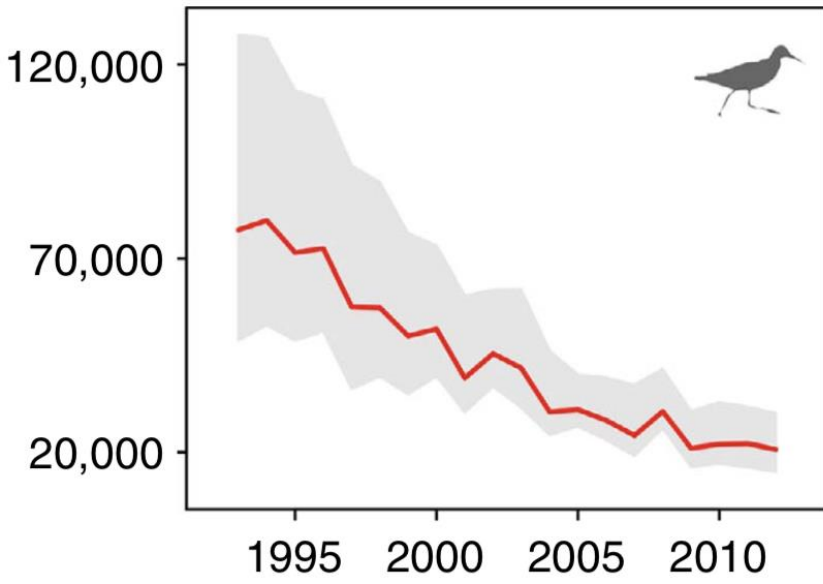


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Declines are linked to the Yellow Sea



Studds et al. 2017. *Nature Communications* 8:14895





Declines linked to the YS

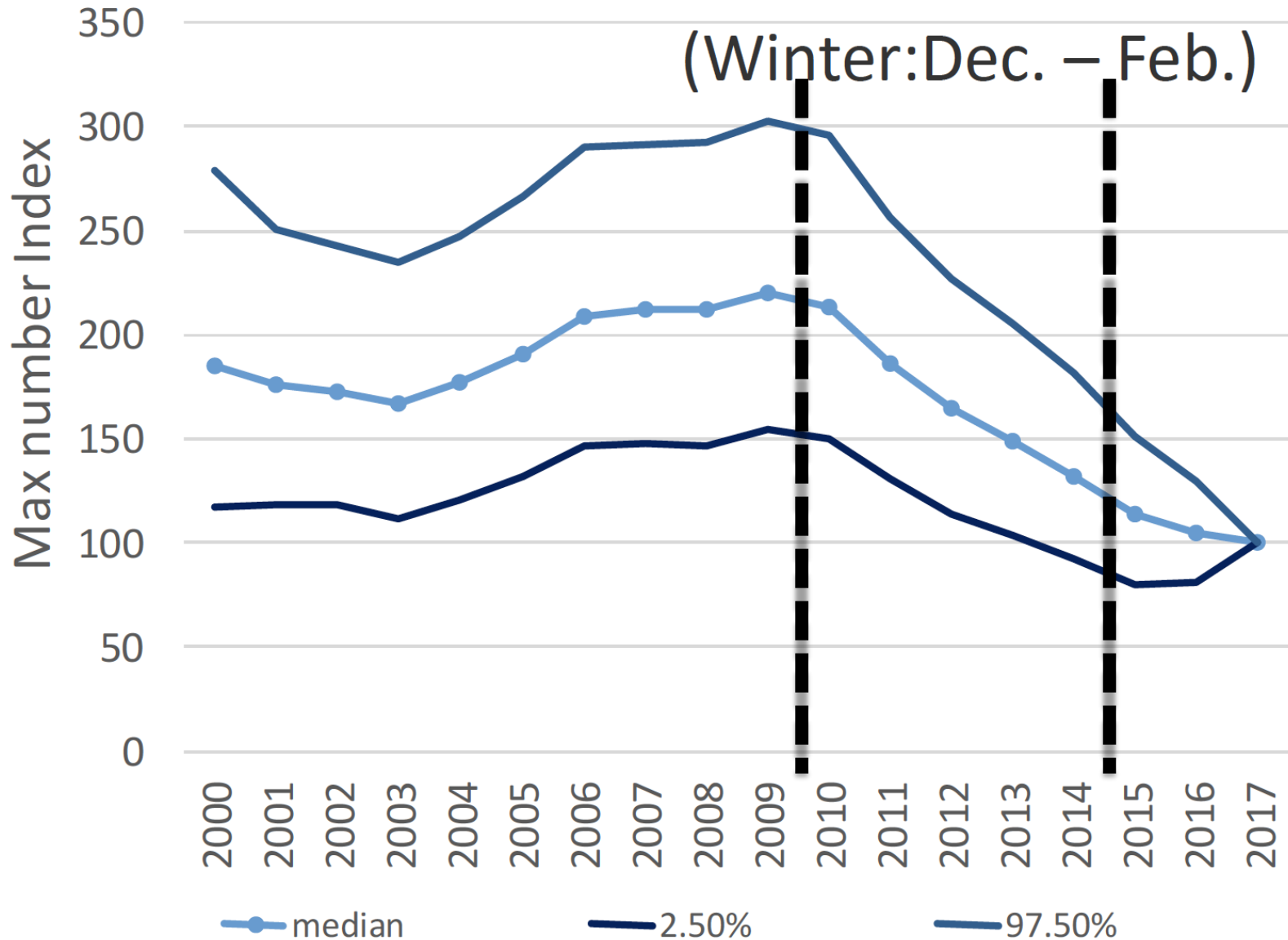
- Specialized prey requirements
- Few critically important sites



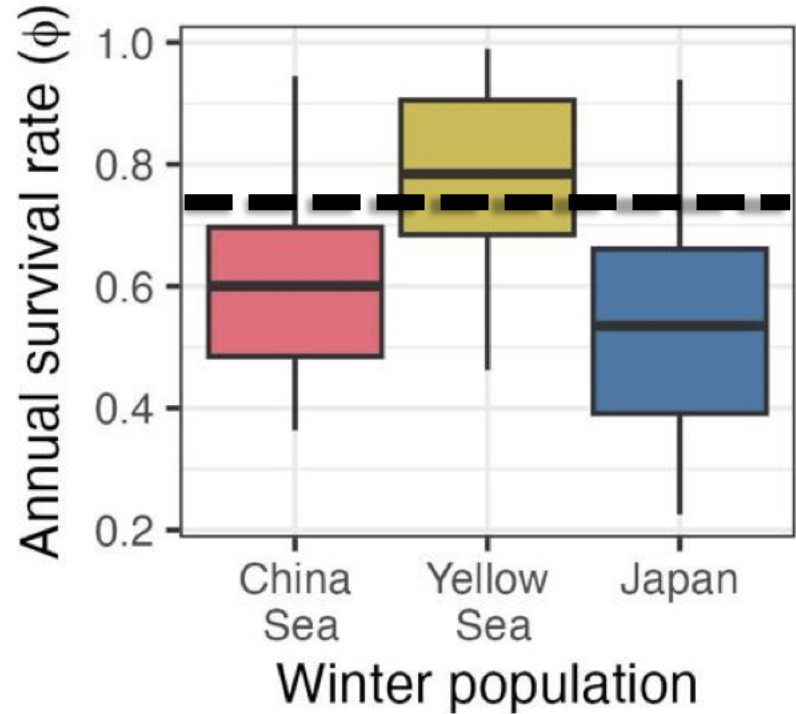
Not linked to the YS ??

- General prey requirements
- Relatively widespread

Declines in Japan



Next steps



- Survival studies on the wintering grounds
 - Update survival estimates
 - Increase certainty and spatial resolution
 - Identify factors driving low adult survival