

Demographic Seasonality of Sperm Whales in the Central Gulf of Alaska and the Aleutian Islands

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Objectives

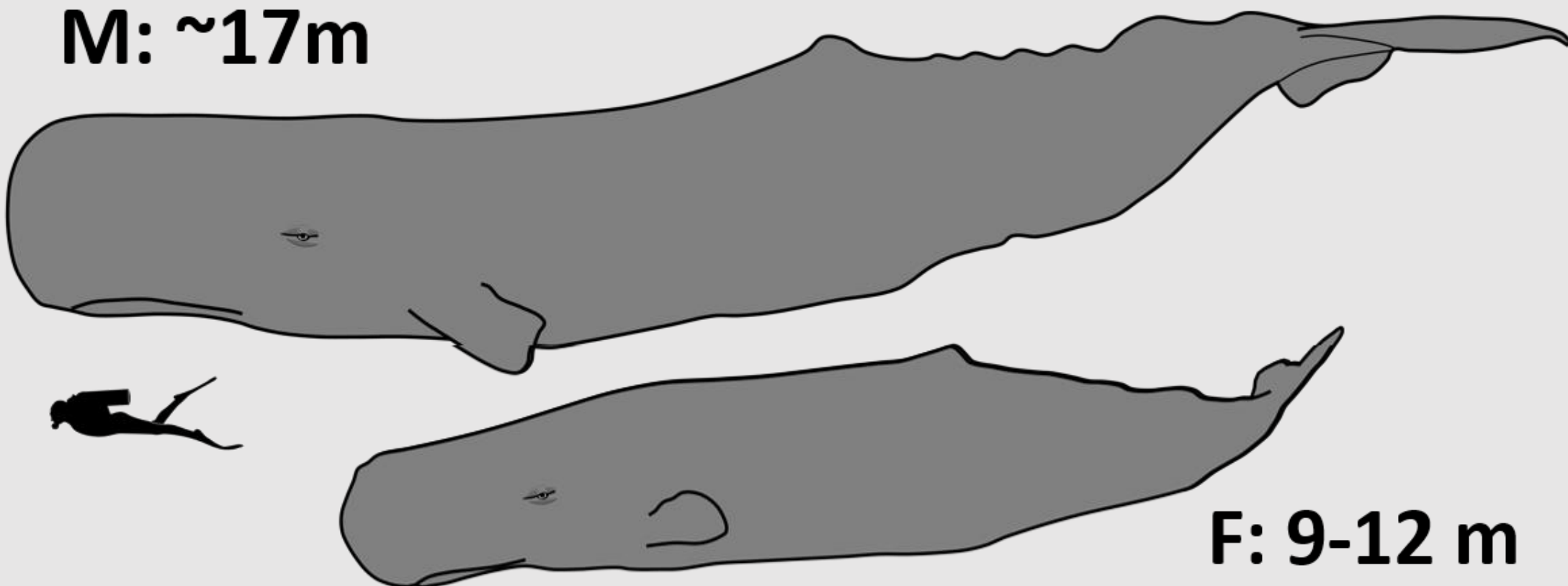
Can we use passive acoustic monitoring to determine demographics?

♀♂ Is there seasonality in the presence of males and social units?

Background

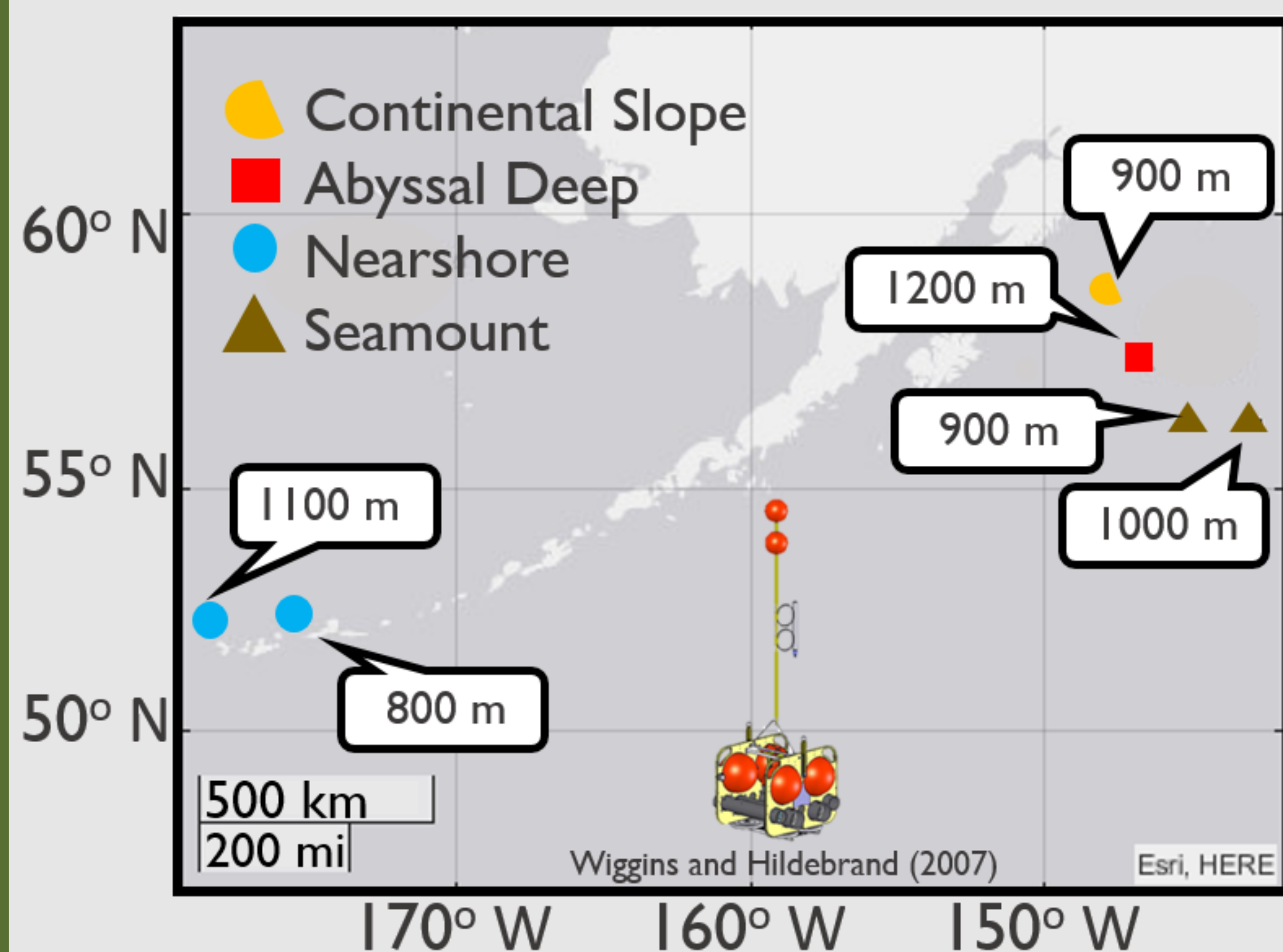
Extreme sexual dimorphism

M: ~17m



F: 9-12 m

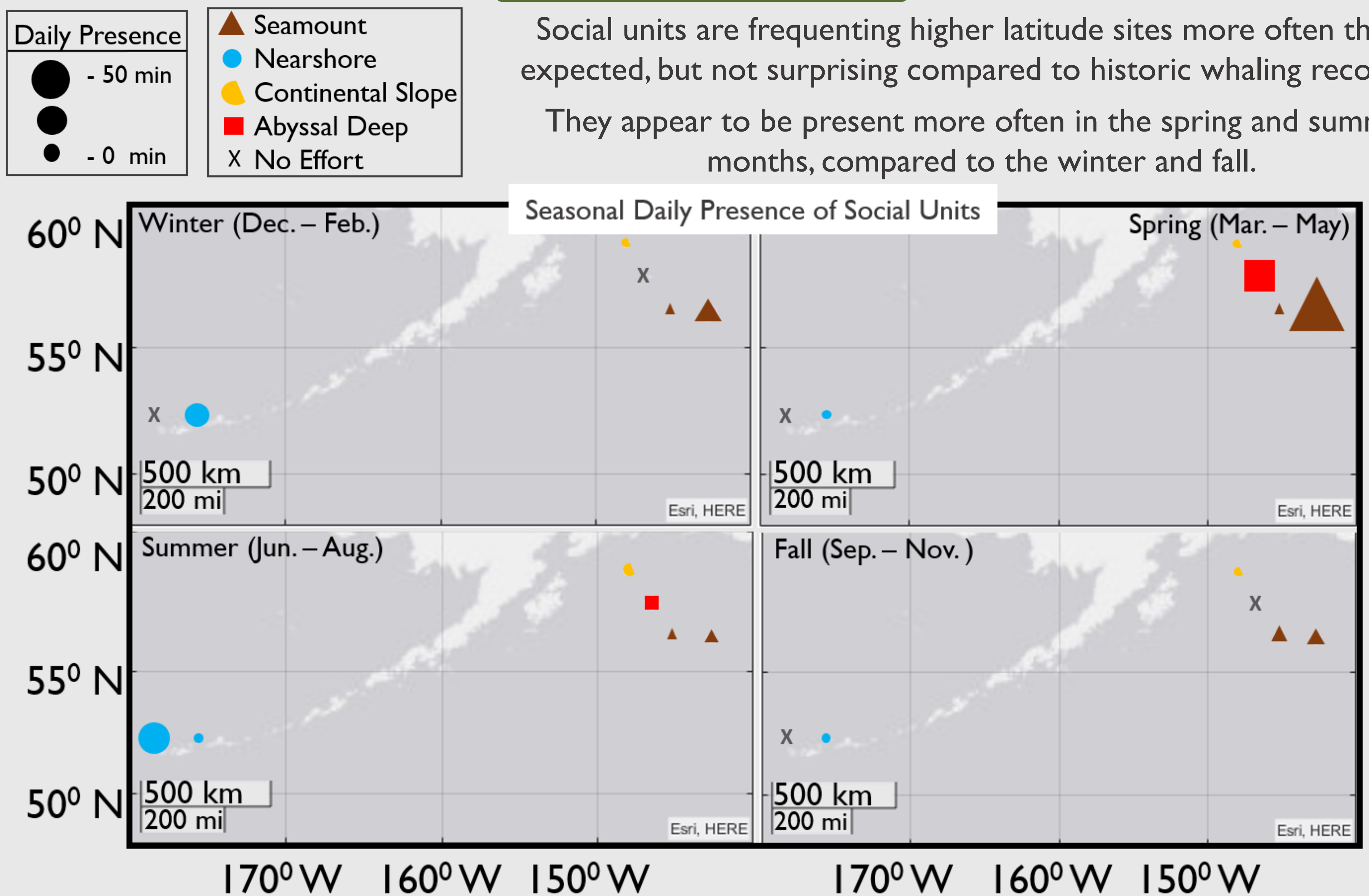
High latitudes are thought to contain mostly males and juvenile bachelor groups (Rice, 1989; Whitehead and Weilgart, 1991).



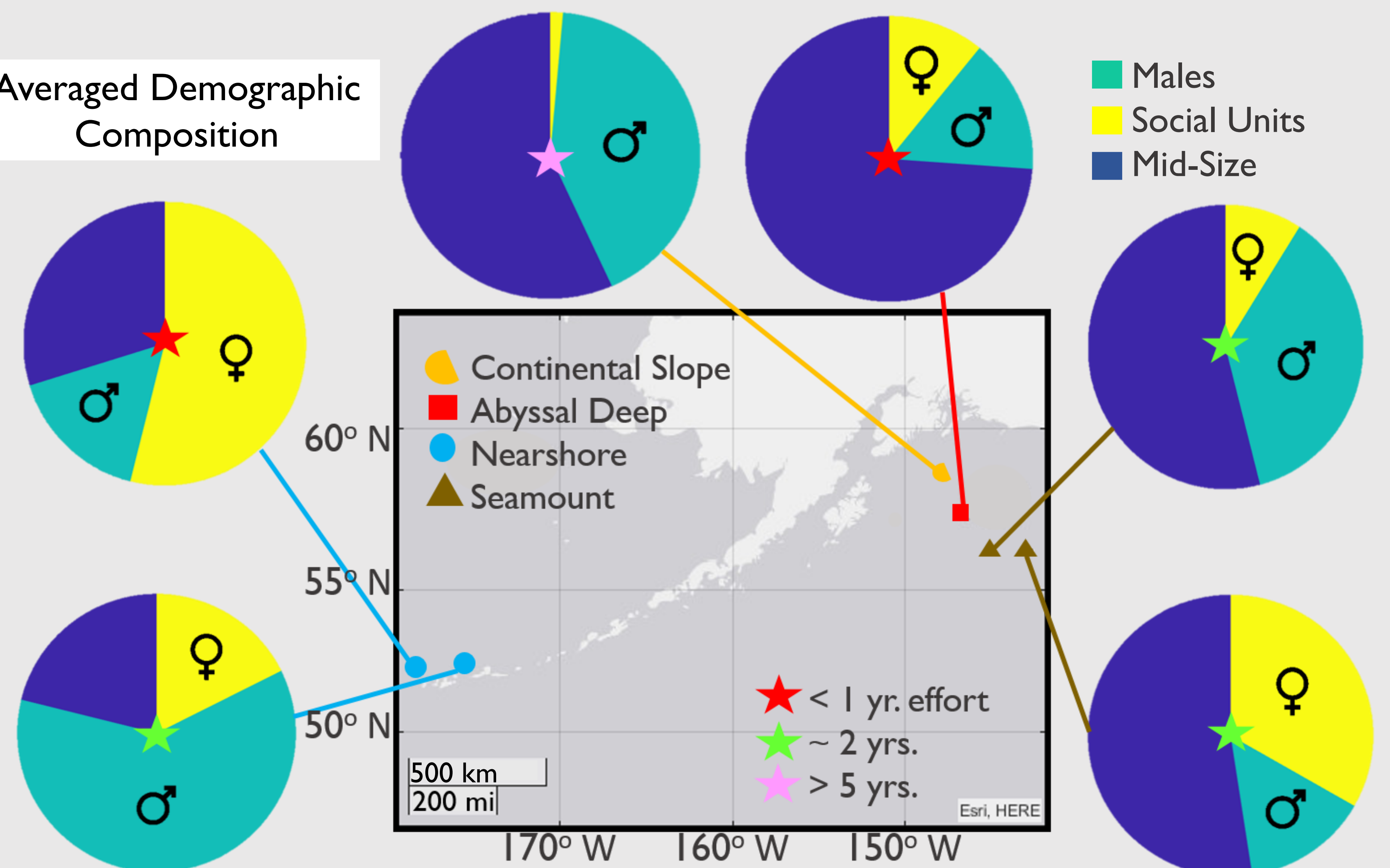
This study included seven long-term passive acoustic recording sites in the central Gulf of Alaska and Aleutian Islands. The depth at each site is noted with symbols representing the dominant habitat type.

Results

Social units are frequenting higher latitude sites more often than expected, but not surprising compared to historic whaling records. They appear to be present more often in the spring and summer months, compared to the winter and fall.



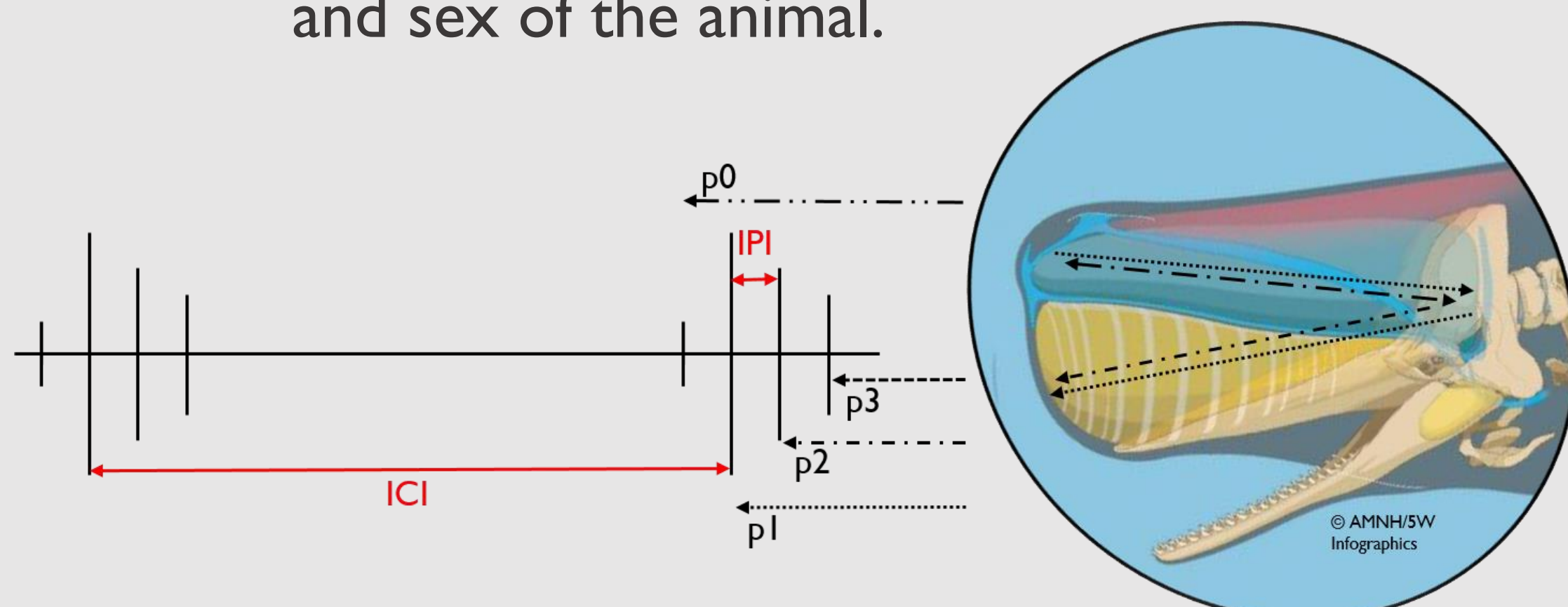
Averaged Demographic Composition



Social units make up a larger ratio of the demographic composition at nearshore and seamount sites, compared to the continental slope and abyssal deep.

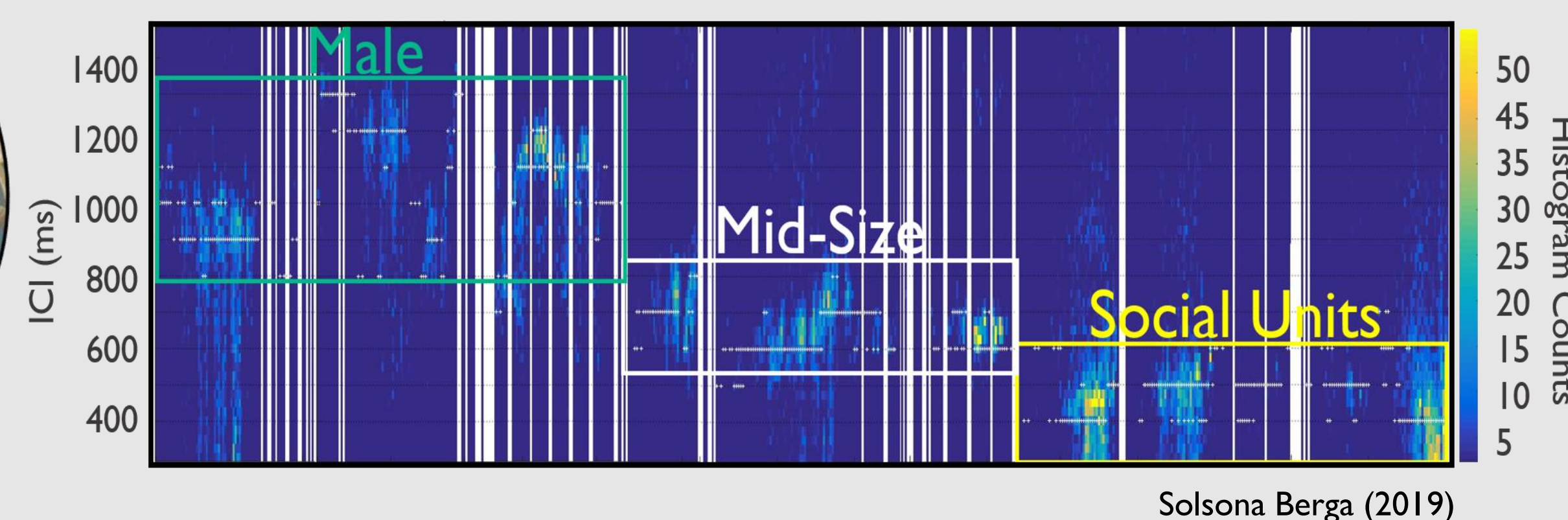
Methods

Sperm whales have a multi-pulse click structure, where the time between each pulse (IPI) gives insight about the length and sex of the animal.



Males ~1 click/sec
Females ~2 clicks/sec

The time between each click (ICI) also varies between males and females and can be used as an indicator of sex.



Conclusions

We can use passive acoustic monitoring to determine demographics and study the complex population structure of sperm whales.

♀♂ Social units appear to prefer nearshore and seamount sites, with the highest presence in the spring and summer months.

Rice, D.W. (1989). "Sperm whale Physeter macrocephalus Linnaeus." In S. H. Ridgway and R. J. Harrison (Eds.), *Handb. Mar. Mamm.*, Academic Press, London, U.K., pp. 177-233.
Solsona Berga, A. (2019). *Advancement of methods for passive acoustic monitoring: a framework for the study of deep-diving cetacean TDX* (Tesis Dr en Xarxa), Universitat Politècnica de Catalunya
Whitehead, H., and Weilgart, L. (1991). "Patterns of Visually Observable Behavior and Vocalizations in Groups of Female Sperm Whales." *41*, 256-279.