

Comparisons of Harbor Seal Haul-out Behavior among Mother-Pup Pairs, Lone Pups, and Lone Adults in the San Juan Islands

Kara Mattingly & Dr. Eric Anderson

FHL 492



BACKGROUND

Harbor Seals are the most vulnerable to disturbances during their pupping season of June-September. Human disturbances can cause mother seals to abandon their pups, which can be fatal. Harbor Seals are also income breeders meaning mothers must leave their pups to go forage for food. Meaning not every lone pup is abandoned. Social dynamics among Harbor Seals at haul-out sites may provide better understanding for when a Harbor Seal pup is truly abandoned.

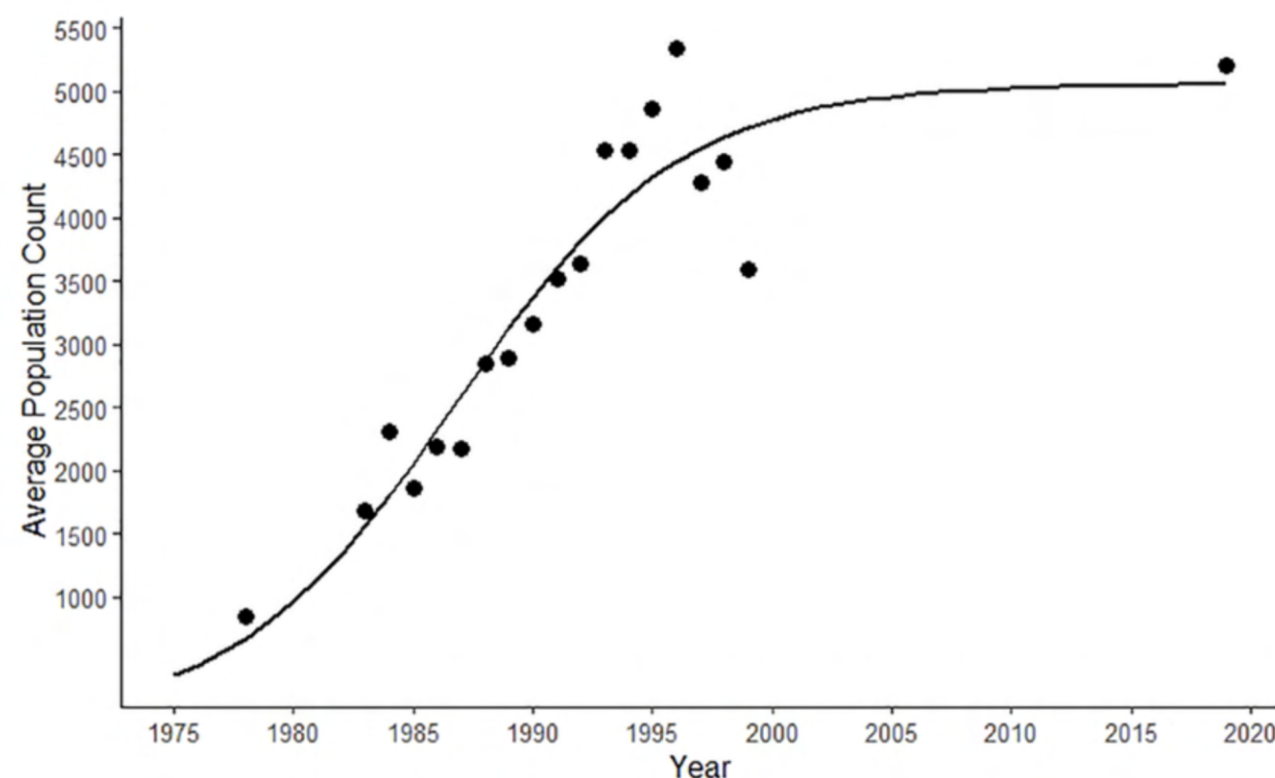


Figure 1: Population of Harbor Seals in the San Juan Islands with a steady increase up to carrying capacity Ashley et al. (2020)

METHODS

Data were collected in late pupping season (August 10th-14th 2025). A haul-out site on the east side of Yellow Island was chosen. Focal surveys were taken from 200m away from 1-2 hours before low tide and 1-2 hours after low tide totalling 12 hours of observations. Seal types were determined based on proximity. Each seal type (lone adult, lone pup, mother with pup, and pup with mother) and their behaviors were recorded every minute for 10 minutes, before selecting a new seal.



Figure 2: Mother-pup Harbor Seal pair nursing at haul-out site on east side of Yellow Island

OBSERVATIONS

- At the haul-out site seals were observed lying on rocky parts of the haul-out site in clusters from August 10th-12th
- On August 13th and 14th the Harbor Seals were found to be in a large group on the sandy part of the haul-out site with a few lone seals spaced out on the rocks in the area
- Lone pups avoided interactions with other seals but stayed close to mother-pup pairs and groups of lone adults
- Mother-pup pairs were observed nursing
- Lone adults were found both isolated from the group and a part of it
- When one seal would flush many other seals would react and follow suit
- As the tide would come in seals would move up the site and mother-pup pairs would stay close to the water
- We also observed multiple adult seals with actively bleeding wounds to their sides and heads



Figure 3: Harbor Seal vocalizing at haul-out site on the east side of Yellow Island

- We observed seals flushing and being vigilant when a drone was flying overhead
- We observed mass flushes with slow moving vessels such as paddle-boards and kayaks
- High vigilance and some flushing was observed from motor and sail boat disturbances as well as planes that passed overhead

RESULTS

- All seal types spent the majority of their time at the haul-out site resting/loafing with lone adults spending the most time exhibiting this behavior (75.27%)
- Lone pups were found to spend the most time being vigilant (30.35%)
- Pups with their mother present spent the least time being vigilant (15.87%)
- Lone pups and pups with their mother present spent the most time locomoting/swimming (12.52% & 21.35% respectively)
- A small percentage of time was spent performing maintenance for all seals
- Swimming was synchronized 100% of the time for mother-pup pairs
- Mother-pup pairs were also 100% synchronized when flushing
- Mother-pup pairs showed the least amount of synchronization when performing maintenance
- Overall mother-pup behaviors were found to be 76% synchronized

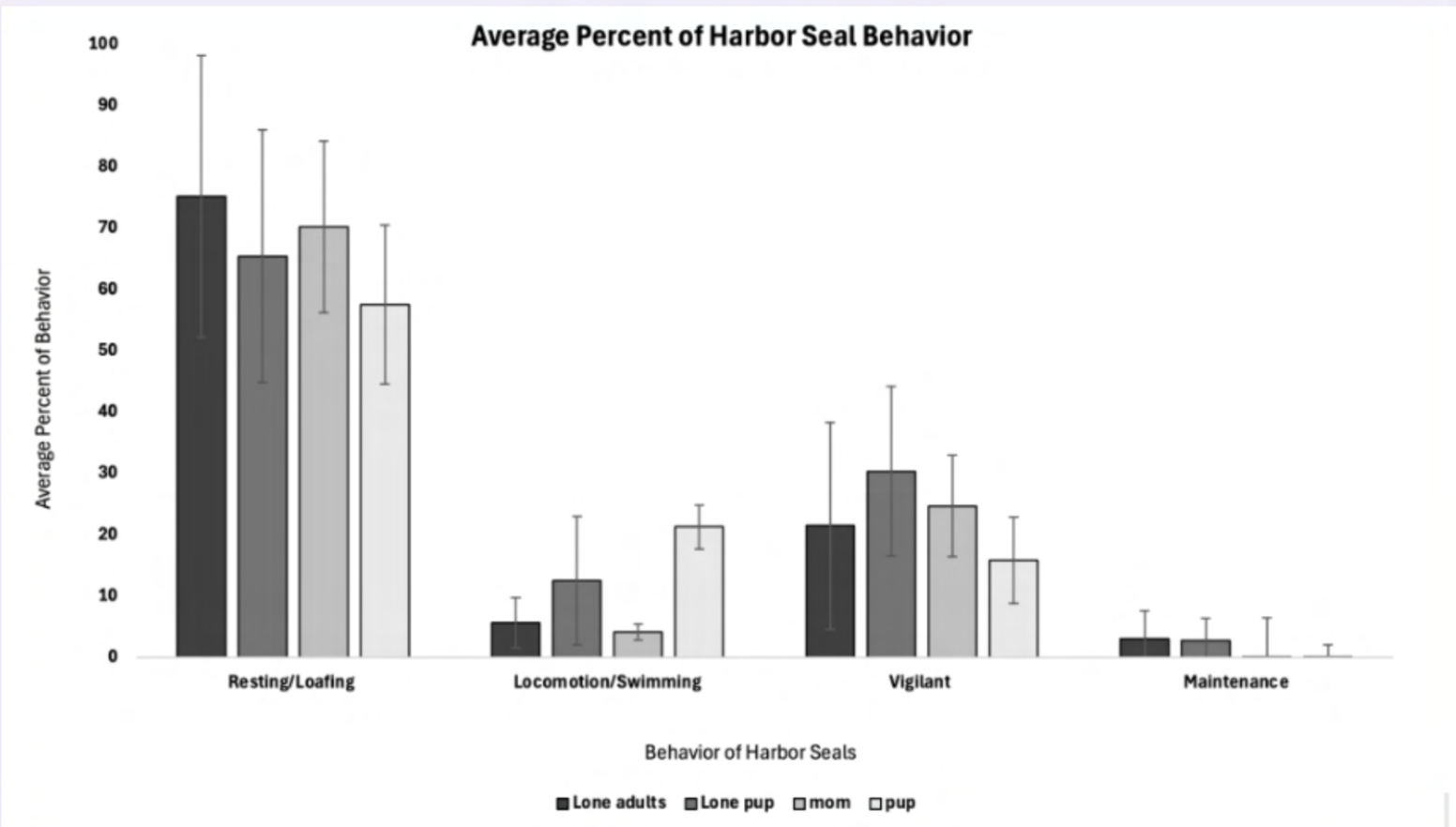


Figure 4: Average time spent by each seal type exhibiting common behaviors at the haul-out site during summer 2025 on Yellow Island

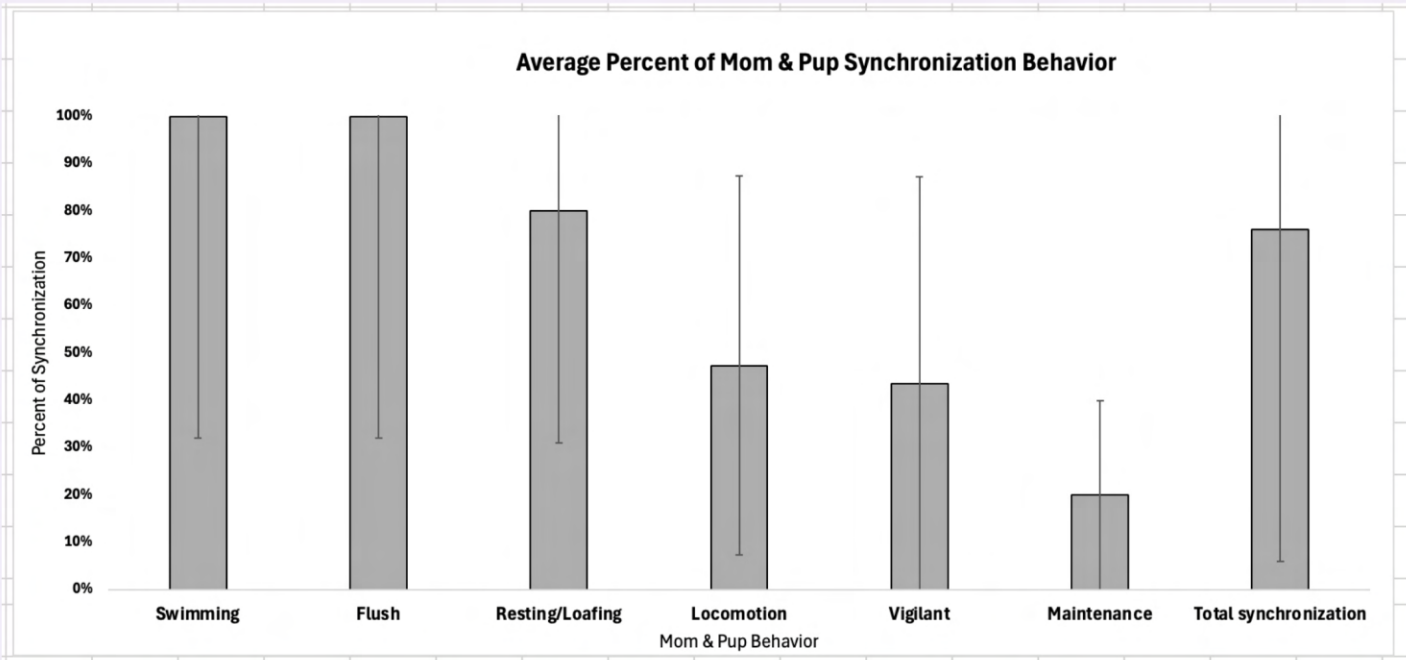


Figure 5: Average percentages of synchronized behaviors by mother-pup pairs during summer 2025 on Yellow Island

CONCLUSIONS

- Harbor Seal pups learn their socialization behaviors from their mother through synchronization
- Mother seals will avoid locomotion when not necessary to conserve energy
- Lone pups stick around larger groups of seals and are more vigilant for their safety
- This is a high traffic area putting these seals at greater risk to vessel strikes
- Future research could be done into how a mother signals to her pup that she is leaving to forage



Figure 6: Harbor Seals resting at haul-out site on the east side of Yellow Island

ACKNOWLEDGEMENTS

Special thanks to my research partner Camille Kay. I would also like to thank Dr. Jack for his guidance through this process.

References

