

# Recent Trends in the Ecology of Transient Killer Whales in Monterey Bay, California 2006-2018

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## Introduction

The west coast (WC) transient killer whale (*Orcinus orca*) sub-population range throughout the inland waterways of Washington, British Columbia, and Southeast Alaska; as a result these whales have been extensively studied. Transient killer whales encountered off the Central Coast of California were once considered part of the WC sub-population, but have since been listed as an unknown community due to paucity of information. The majority of sightings occur in the productive waters of Monterey Bay, but individuals identified here have also been sighted in offshore waters along the exposed west coast of North America and may represent an outer coast sub-population that differs from whales encountered in coastal waters. Transient killer whales occur year-around in Monterey Bay, but tend to show seasonal trends in the spring and fall coinciding with known marine mammal prey. The purpose of our research is to gain a deeper understanding of the ecology of transients in Monterey Bay and to understand where they fit in with in the WC sub-population. Here we share information on the ecology of a putative “outer coast” community of transient killer whales.



Figure 1: Transient Killer Whale attacking a Gray whale calf. Photo: Eric Austin Yee

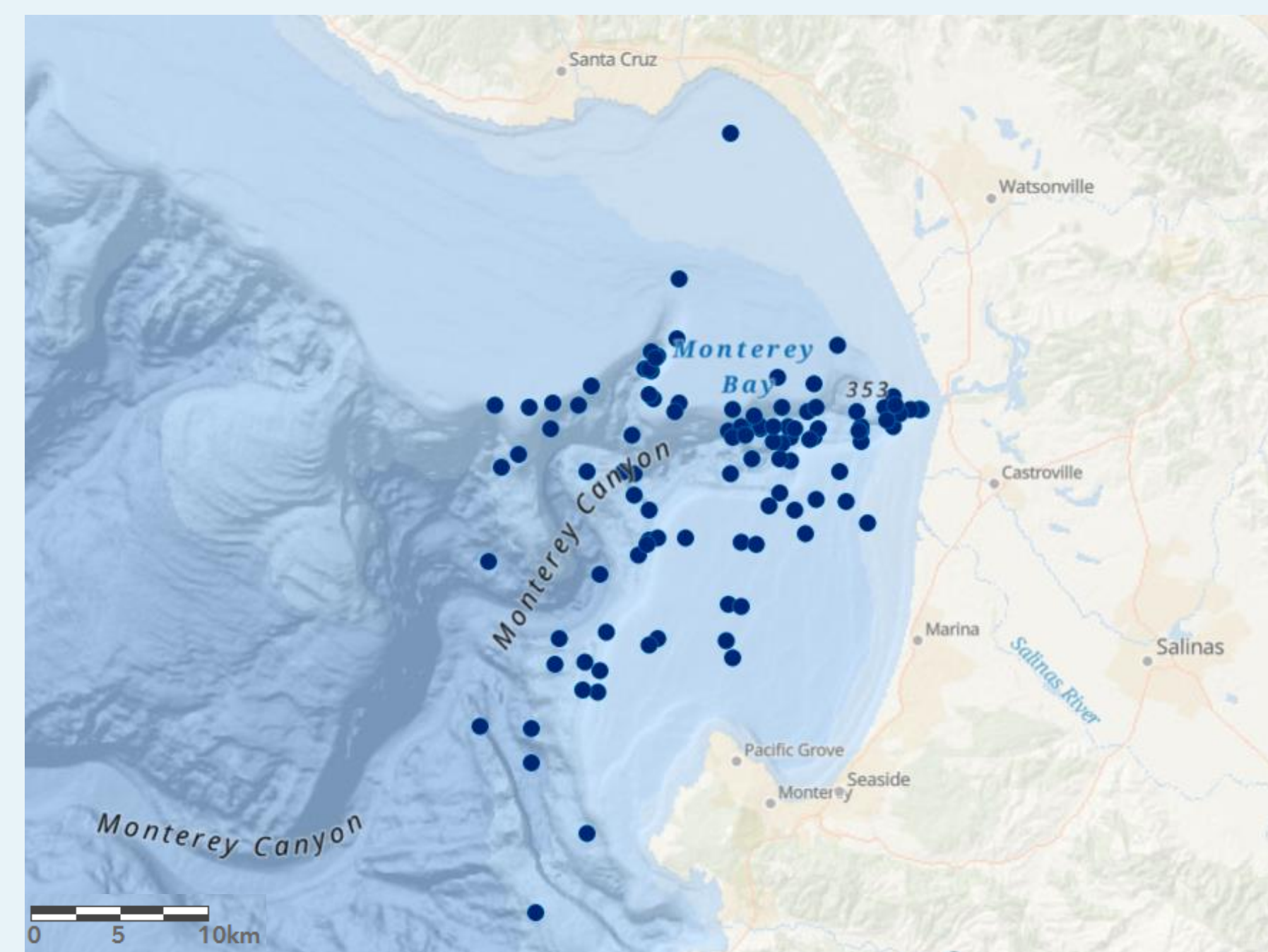


Figure 2: Map of transient killer whale encounters in Monterey Bay, California 2006-2018 (n=106)

## Methods

- Date range: 5/5/2006 through 12/31/2018
- Research vessels: 5.8m R/V Sweet Pea  
12.2m R/V Current'Sea
- Survey methods: Opportunistic
- Data collection: Focal follow  
High-resolution photographs of all individuals present
- Photo-identification: Images were compared to published and internal catalogs using identifying features (including unique markings like nicks, notches, and scars, and overall shape of the dorsal fin, saddle patch, and postocular patch)  
Each whale was given a unique alpha-numeric identifier using our “OCT” (outer coast transient) naming system  
Matrilineal groups determined based on association patterns (where possible)

## Results/Discussion

- We photo-identified 136 unique whales and 28 known matrilineal groups

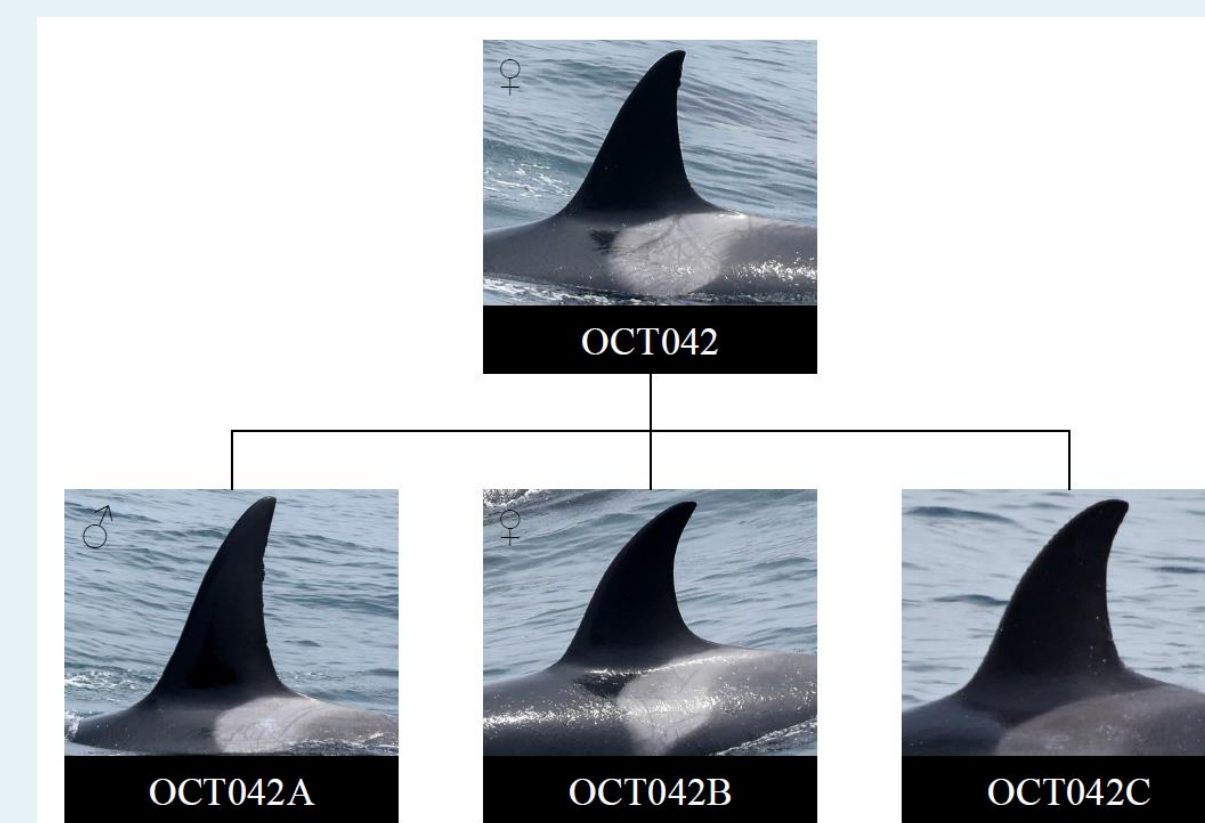


Figure 3: Example of a transient matrilineal group

- We continued to identify new individuals throughout the entire study

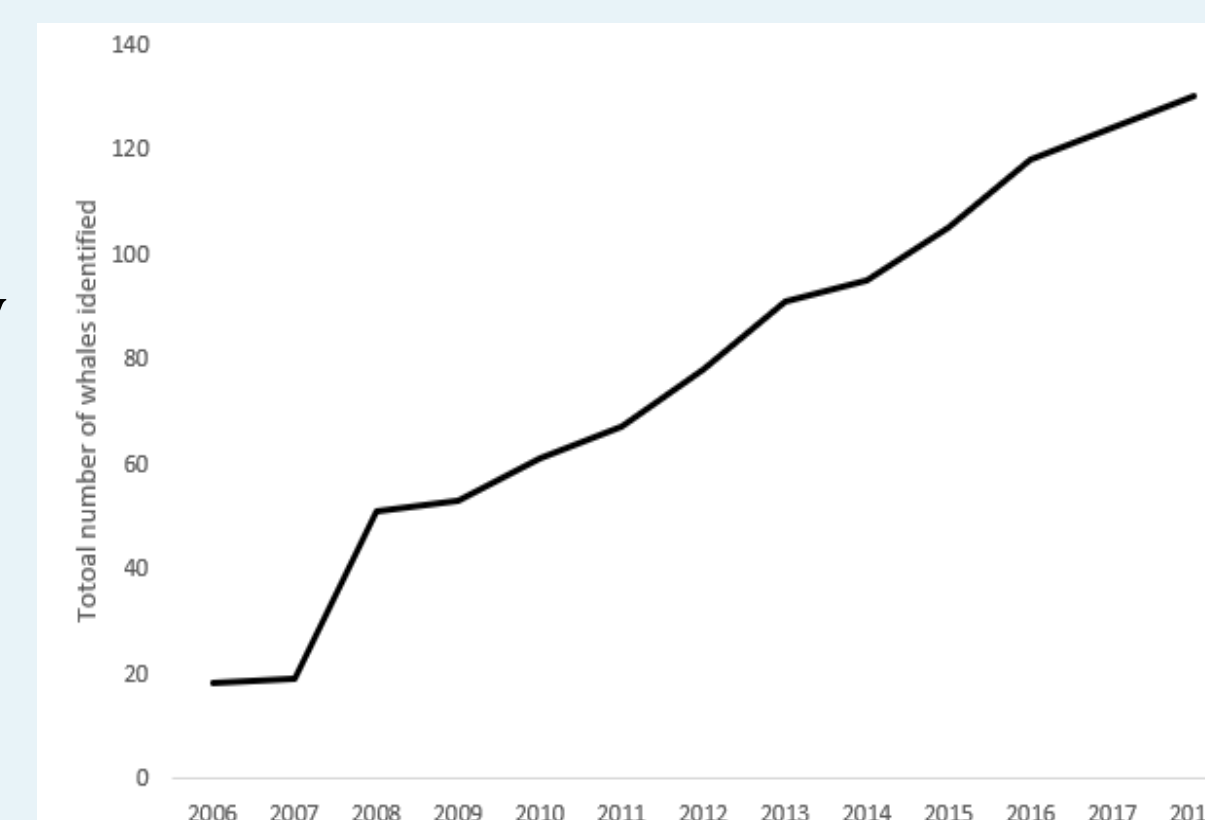


Figure 4: Cumulative number of transients identified 2006-2018

## Results/Discussion Cont'd

- The majority of encounters took place in the spring (March through June) and fall (September through November)

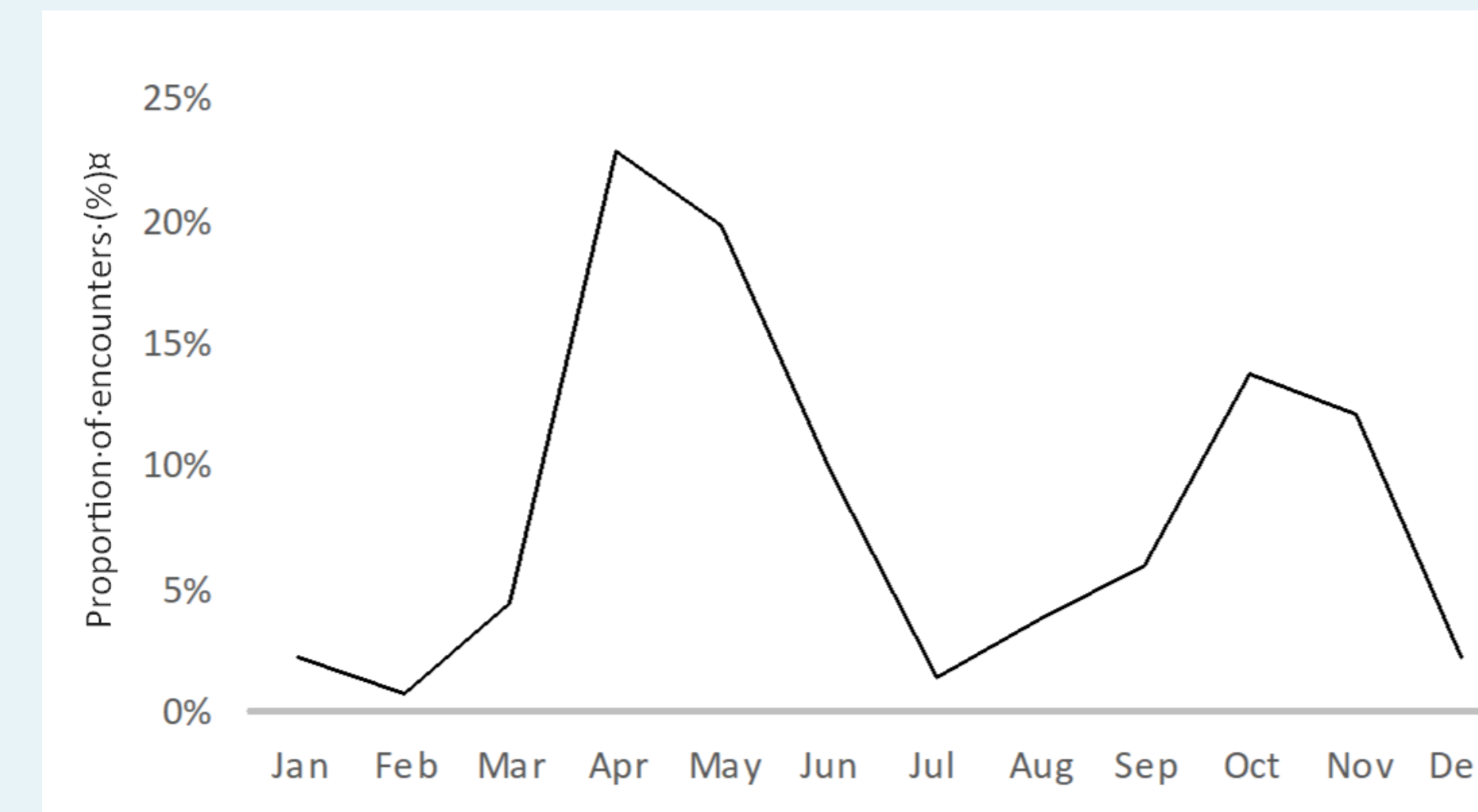


Figure 5: Seasonal distribution of transient killer whale encounters 2006-2018 (n=106)

- Group size averaged between 3-5 animals (minimum 1, maximum 36)

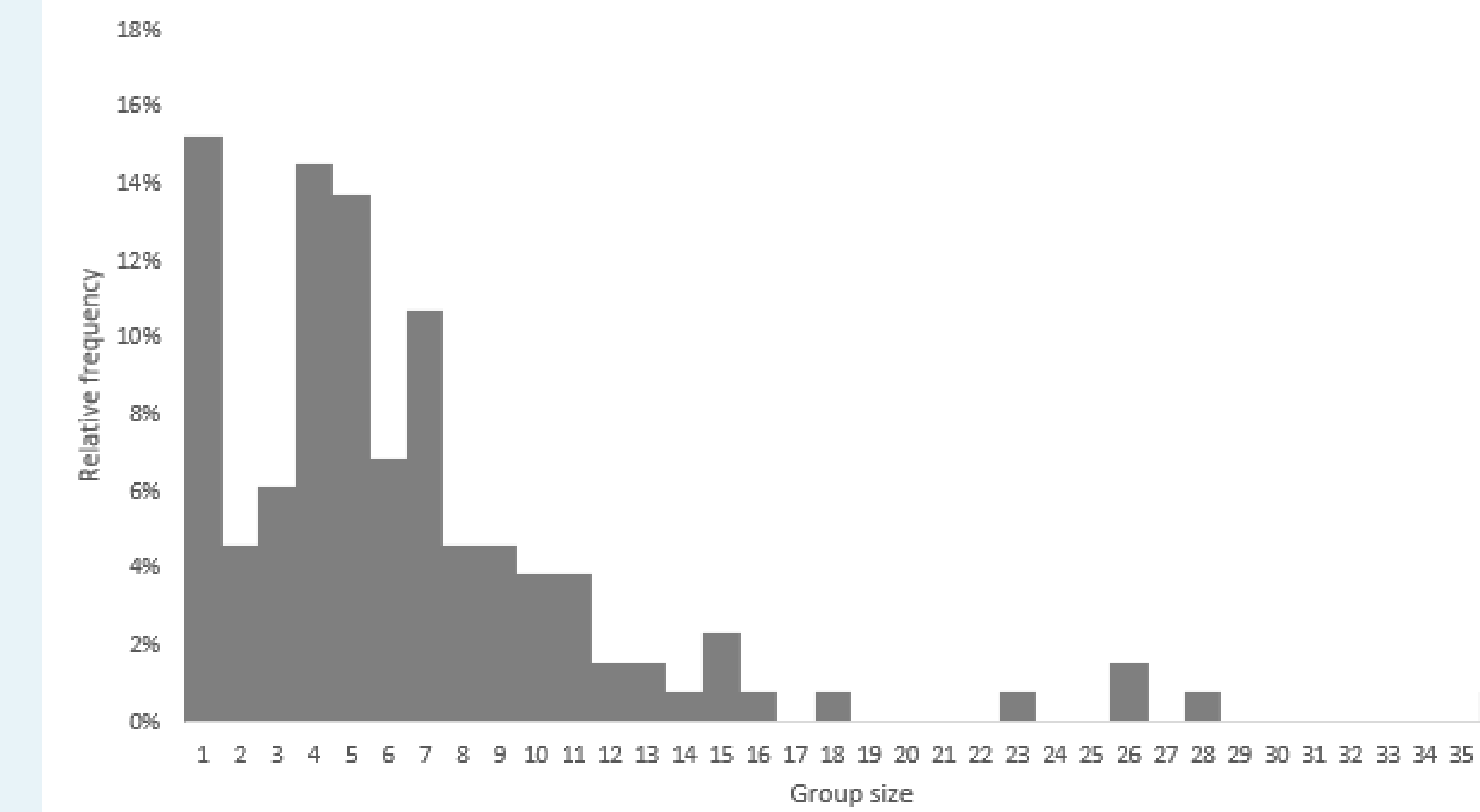


Figure 6: Frequency of observed transient killer whale group size 2006-2018 (n=106)

- Overall, California sea lions (*Zalophus californianus*) were the predominant prey

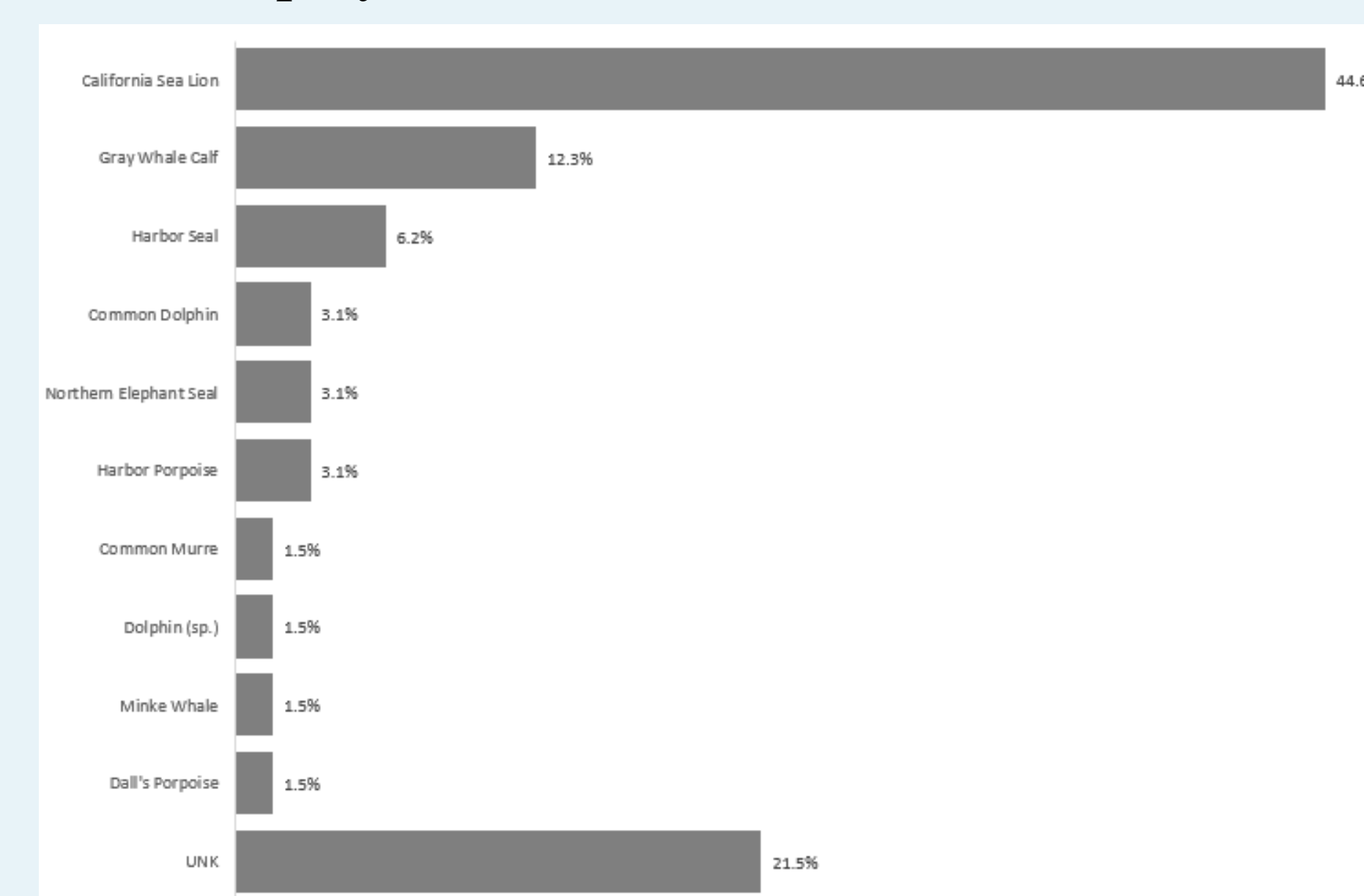


Figure 7: Observed prey of transient killer whales 2006-2018 (n=65)

## Results/Discussion Cont'd

- Gray whale (*Eschrichtius robustus*) calves were only observed as prey during the spring (April through June), coinciding with the annual northbound gray whale migration

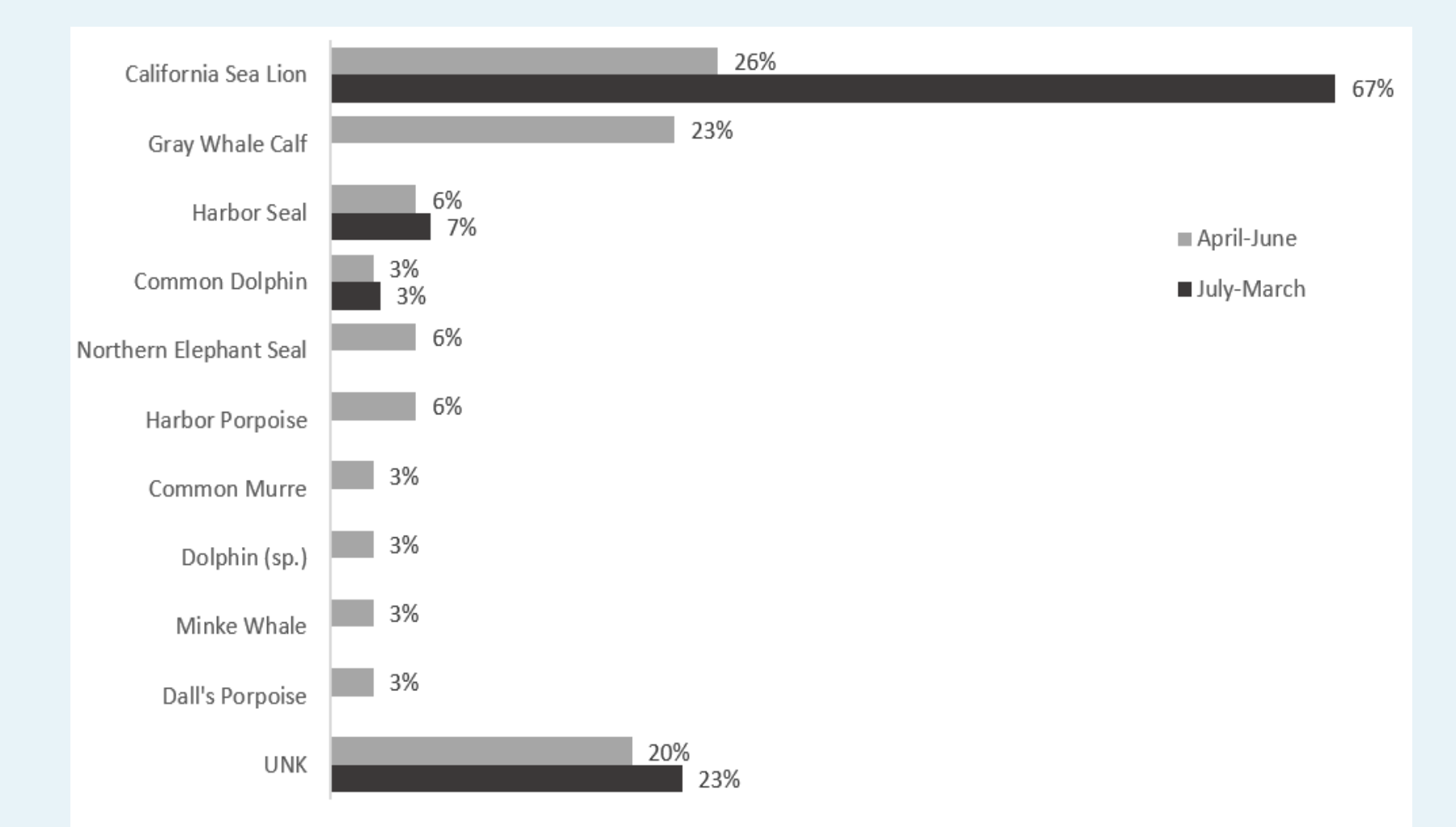


Figure 8: Seasonal differences in observed transient killer whale prey 2006-2018 (n=65)

- The majority of transient killer whales photo-identified were not in catalogs from the coastal waters of Washington, British Columbia, and Southeast Alaska

## Conclusions

- Although we have catalogued 136 transients, we do not know the overall community size in Monterey Bay due to the continual identification of new individuals and the long periods of time between resights
- California sea lions are a key dietary component throughout the year, while grey whale calves are likely an important seasonal prey source for transient killer whales in Monterey Bay
- It is still unclear whether this community of transient killer whales is a subset of the West Coast Transient sub-population, but likely represents an outer coast sub-population due to differences in distribution and diet. Further research is needed

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