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Social Structure of Killer Whales (*Orcinus orca*) in the Galápagos Archipelago

Pod structures of killer whales were observed to be much smaller and a strictly matrilineal lineage in low latitude populations.

SOURCE: Marine Mammal Science

By: *Mary Gad* 9 October 2020

Orcinus orcas, commonly known as the killer whale, form stable social and familial groups called pods. Pods have an extremely complex organization and in many cases have a matriarchal leader. Extensive research about pods has been conducted in colder climates where orcas are predominantly found. However, little is known about their behavior and societies in warmer climates and recent studies have revealed that the social order of pods is different among warm versus cold populations.

Denkinger et al. recently monitored the social structure of orca pods in warm and cold climates to see how they differed. The types and length of interactions among orcas within the same pod and orcas from different pods were the first step to understanding the social structure. To explain, the interactions they looked included friendship, mating, or parental exchanges or relationships. The researchers collected 221 sightings over 27 years, using dorsal fin and fluke contours, nicks, and pigmentation to give individual orcas specific identification numbers. Once individual orcas could be identified, interactions among them were tracked using a special computer program that calculated the strength and duration of each interaction. They did this by analyzing how close individuals were to each other and for how long they remained with each other.

The populations from the southern hemisphere followed a strictly matrilineal lineage – meaning that most of the pod is related through the mother. This is opposed to orca pods in the northern hemisphere where the structure can follow the lead of either parent.

Other interesting results the researchers observed include, that in these warmer climates, orca pods tend to be smaller than those in colder climates due to energy conservation. Since production is significantly low in warmer climates, orcas need to maintain as much energy as possible. Prey is normally smaller in warmer climates, therefore, pods can remain relatively small, at about 4 individuals. Researchers also concluded that, in the southern hemisphere, bonds between individual orcas within a single pod can reach up to 5 years, the longest being between mother and offspring. The interaction and relationship between a pod of male orcas and juvenile female orcas was the second strongest and lasted for over 5 years. The bonds between females only were not particularly that strong, but those between males only were moderate but frequent.

Orcinus orca behavior is known to be very complex with extensive social structure in their pods. Orca's intricate social structures are different depending on the hemisphere and temperature they are found in. The researchers determined that more research and education about orca pods in both latitudes would help in understanding their population ecology and behavior. This will help to ensure a better understanding of how to conserve the *Orcinus orca* species.

Citation: Denkinger, J., Alarcon, D., Espinosa, B., Fowler, L., Manning, C., Oña, J., & Palacios, D. (2020). Social structure of killer whales (*Orcinus orca*) in a variable low-latitude environment, the Galápagos Archipelago. *Marine Mammal Science*, **36**(3), 774-785. doi: 10.1111/mms.12672

