

Topic Summary:

Paternal care in cetaceans is predominantly provided by females through nursing of their young for months to years depending on the species (Gero & Whitehead, 2007). Suckling/nursing behaviour in cow-calf pairs is described as a maternal behaviour where the mother nurses her calf milk until they have grown enough to sustain themselves on other food sources and be less vulnerable (Burnham & Duffus, 2020). This behaviour occurs at different depths and mother-to-calf positions (Zoidis & Lomac-MacNair, 2017, Xian et al., 2012, Gero & Whitehead, 2007). Nursing/suckling behaviour can be initiated by the mother's visual cue of exposing her ventrally located mammary slits to the calf, which ceases as the calf gets older and gains experience suckling (Ofstedal, 1997). Contrastingly, Vidensen et al. (2017) observed calves initiating nursing through tactile cues (i.e., humpback whale calves bumping their head to the female's genital area). Nursing/suckling has been described predominantly from observational studies.

Observations of this behaviour can be difficult due to lower accessibility to the individuals, particularly those of larger species (i.e., baleen whales) (Zoidis & Lomac-MacNair, 2017). After tagging individuals to track their location, many studies have used surface/land observations to describe the mother-calf pairs as engaged in nursing behaviour based on positioning of the pair (i.e., calf ventrolateral to female) and peduncle diving (calf diving under peduncle of mother) (Vidensen et al. 2017). Meanwhile, Burnham and Duffus (2020) used surface observations (via boats) to observe mother-calf pairs acoustic calls and habitat use for various activities. However, with advancing technology, Zoidis & Lomac-MacNair (2017) collected observations with underwater video monitoring and observed when calves were suckling and if milk transfer was occurring from mother to calf. Similarly, Gero & Whitehead (2007) collected underwater observation of peduncle dives by sperm whale calves. Lastly, suckling data has been collected from species in captivity: Xian et al. (2012) observed porpoises, Eastcott & Dickinson (1987) observed bottlenose dolphins, and both Russel et al. (1997) and Leung et al. (2010) observed beluga whales. The proximity to the individuals, allowed them to record precise duration/frequency of suckling, lateral preference of mammary slit, and physical positioning of mother and calf during suckling.

The results found by various studies demonstrate a clearer understanding of ultimate influences (i.e., evolution) than proximate influences (i.e., hormonal; genetic) on nursing/suckling. The observational studies of suckling/nursing have resulted in some observations of proximate influences and inferences of the ultimate influences of the behaviour. The proximate influence of tactile cues was observed by Vidensen et al. (2017) and Burnham & Duffus (2020) as they observed humpback whales and gray whales in their natural habitats, respectively, and found calves touch/bump the mother's genital area to induce nursing. Ultimate influences (i.e., increased survival and life history traits) of cetacean species have been observed in longer timescale studies that tracked individuals sampled in the wild (i.e., Burnham & Duffus (2020) and Best et al. (2015)). In his review, Ofstedal (1997) found a divergent pattern in suckling/nursing and the ecology of baleen whales (mysticetes) and toothed whales/dolphins (odontocetes) by reviewing various datasets from collections made during the whaling industry and observational studies. Mysticetes often migrate long distances between breeding grounds and

foraging grounds with their calves while fasting and nursing their young (Oftedal, 1997). Odontocetes migrate shorter distances without fasting, allowing them to nurse for longer time periods (1-3 years) than mysticetes (5-7 months) (Oftedal, 1997). Oftedal (1997) inferred extended periods of nursing/suckling are often brought on by lower availability of alternative food sources. Best et al. (2015) and Burnham & Duffus (2020) observed baleen whale mother-calf pairs used coastal, shallower waters when nursing, for their calmer currents and decreased exposure to males and predators. In conclusion, extensive maternal care for increasing calf survival is particularly important in these species with risky migration patterns and low fecundity (few offspring born per season) (Best et al., 2015, Burnham & Duffus, 2020, Oftedal, 1997).

In my opinion, further research on proximate influences of suckling/nursing could advance the field. Exploring hormonal levels of mother-calf pairs before, during or after suckling could increase comparison reviews of cetaceans to other nursing mammals. Similarly, exploring genetic data of species could increase understanding of the sources of the divergent pattern between mysticetes and odontocetes regarding nursing/suckling.

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