

# Temporal Synchrony in Beluga Whale Nursing Behavior in Captivity (*Delphinapterus leucas*)

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## Introduction

Behavioral synchrony is often seen in social animals, and may be particularly prevalent in reproductive behaviors. When it occurs, questions concerning the adaptive value of such synchrony and the proximal mechanisms which underlie it emerge.

We report here on evidence of temporal synchrony in the nursing behavior of two baby beluga whales born only days apart at Marineland of Canada.

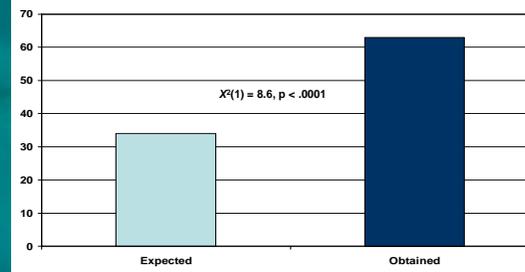


## Results

The nursing behavior of neonatal beluga whales is, like that of most cetaceans, rather infrequent and brief in duration. We observed one of our calves nursing 380 times and the other 263 times, for an average rate of 6.7 nursing bouts per calf per hour.

Our report hinges upon a single finding. The obtained frequency of simultaneous nursing was nearly double that predicted by chance. Specifically, the number of minutes (out of 2880) in which the nursing of the both calves was simultaneously observed was 63, while chance coincidence was calculated at 33.9 (Binomial  $\chi^2(1) = 8.6, p < .0001$ ).

Simultaneous Nursing



## Procedure

Our subjects were two female beluga whales (*Delphinapterus leucas*) and their two male calves (born seven days apart). These two mother-calf pairs were held together in a 10 m by 25 m holding pen by means of a porous net that separated them from other adult male and female belugas in a much larger 40 m by 25 m pool.

Our observations were made by sampling continuously recorded videotape. We defined a nursing bout by two easily recognizable events: 1. A calf making contact with its rostrum on the mammary area of a female for more than one second, 2. The female simultaneously ceasing propulsive tail strokes (i.e., gliding).

The mothers and calves were visually distinguishable by slight variations in body shape and distinct tail notches. For each mother-calf pair, we recorded the minute in which the onset of each nursing bout took place, over 48 one-hour-long daytime epochs randomly spaced over their first six months of life.

For our analysis, we assumed that the onset of any given nursing bout had an equal probability of occurring in any of our 2880 observation minutes. We arbitrarily designated the mother-calf pairs as 1 & 2, and we calculated the expected probability of nursing bouts being initiated in the same minute as the total number of nursing bouts by Pair 1 times the total number of nursing bouts by Pair 2 divided by the total number of minutes (i.e.,  $NB1 \times NB2 / 2880$ ).



## Discussion

We tentatively attribute this affect to social facilitation in which the nursing of one mother-calf pair elicited similar behavior in the other pair.

On the assumption that maternal-calf pairs are more vulnerable when in nursing postures, it could be argued that social facilitation of nursing may be adaptive in a way comparable to the Fraser-Darling Effect. Alternatively, the synchrony may simply be consequent to proximal cues, such as taste in the water (perhaps entirely attributable to the close proximity of captivity), and not be adaptive in any ultimate sense.

In order to explore these possibilities, it will be interesting to ascertain whether evidence for nursing synchrony can be obtained in wild populations, and whether there is in fact greater attrition among calves when they are nursing.

It might also be interesting to explore the possible proximate cues underlying the putative social facilitation by conducting experiments in which different sensory modalities are restricted.

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