

Periparturient Behavior in the Beluga Whale (*Delphinapterus leucas*)

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Introduction

In most mammals, the time of birth is associated with tightly controlled species-specific behavioral sequences. Fully documenting the nature of these sequences is essential to understanding the life-style adaptations of any given species, and it is critical to the effective management of that species in captivity.

In nature, beluga whales inhabit high arctic waters where they characteristically stay close to ice edges. Based upon population surveys, it is surmised that it is characteristic for females of this species to give birth in mid-summer. But because of the inaccessibility of their natural habitat, no direct observations of births have been made in the wild. Any pre-, peri-, and post-natal behavioral sequences characteristic of this species have therefore yet to be documented. For example, it is not known whether they are more or less active as their pregnancy ends, whether they separate themselves in order to give birth alone or remain within their social group, etc.

In an effort to fill in this gap in our understanding of this species, the goal of the present investigation was to document the peri-natal behavior of captive beluga whales that were held in semi-natural conditions.

Methods

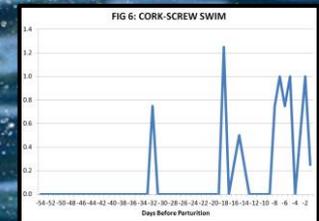
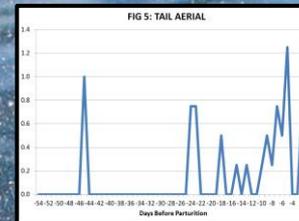
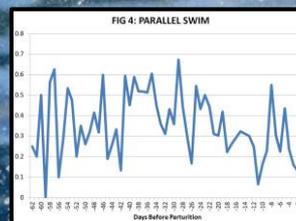
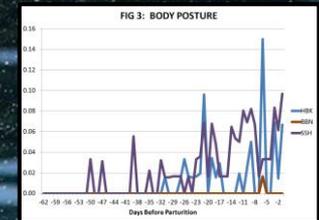
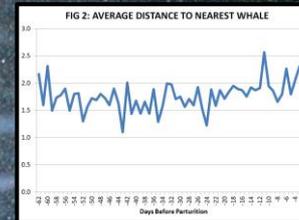
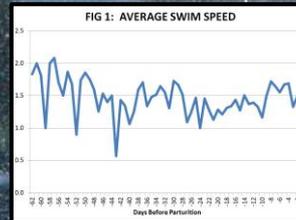
The subjects of this investigation were four wild-caught, adult female beluga whales (*Delphinapterus leucas*) and three of their captive-born offspring. They were housed in a 1 M liter pool at Marineland of Canada, along with 1 adult male and 1 juvenile female. The adults had been captured in the Chuckchi Sea 3-5 years prior to this investigation.

Via an underwater viewing window, a scan-sampling, ethogram-based paradigm was used to record the behavior of each subject fifteen times per day, four days per week, over a six month period. The recorded behaviors included body posture, swimming speed, location in the pool, and proximity of other whales.

Results

The results can be summarized as follows:

- As the time of birth neared, the pregnant females showed
 - a gradual decrease in swimming speed (Figure 1)
 - an increase in average distance to other group members (Figure 2)
 - an increase in distorted body postures (Figure 3)
 - a decrease in coordinated swimming with other whales (Figure 4)
 - an increase in the frequency of tail aerials (Figure 5)
 - an increase in the frequency of cork-screw swimming (Figure 6)
- The parturition process (defined as the period of first appearance of neonatal flukes to final expulsion) was found
 - to last 4-12 hours
 - to be characterized by an even greater frequency of distorted body postures
 - to have a reduced amount of socializing with conspecifics
- Immediately postpartum, it was common for all group members
 - to mouth the newborn
 - to swim in close proximity to it
- The maintenance of a close proximity of each new calf to its own mother
 - was characteristically established within 1-2 hours postpartum
- Placentas
 - were delivered 8-12 hours post birth
 - sank to the bottom of the pool in each instance, and were not eaten (nor attended to in any way) by any individuals
- Nursing
 - was observed to commence within 8-12 hours following birth
 - most often occurred after delivery of the placenta



Discussion

The fact that the subjects of this investigation increased their average distance to other whales as the time of the birth approached suggests that it may be natural for females of this species to temporarily separate themselves to give birth alone.

The increased frequency of distorted body postures that was observed preceding each birth most likely reflected discomfort on the part of the females and/or exertions associated with uterine contractions.

The high level of contact with each neonate made by other group members suggests that allomothering may be a common behavioral trait in this species. However, that a pattern of near-exclusivity in mother-infant dyads emerged shortly afterwards brings such a conclusion into question.

That placentas were not eaten is not a surprise in that the same finding has now been recorded for every other marine mammal whose births have been observed.

That nursing did not ordinarily occur until after the placentas were delivered may imply a functional connection between the two events. It may simply be that the continuing uterine contractions produce a level of discomfort/distraction on the part of the parturient mothers that interferes with nursing. Alternatively, the calves may simply need a certain extent of time to firmly establish higher priority behaviors, such as swimming and breathing, before they are able to settle into nursing postures.

In any event, it is hoped that these findings will establish norms against which other births in this species can be compared.

Acknowledgements

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