



Sacred Heart  
UNIVERSITY

Sacred Heart University  
**DigitalCommons@SHU**

---

Academic Festival

---

Apr 20th, 1:00 PM - 3:00 PM

# Beluga Whales Socio-Sexual Interactions and Behaviors (*Delphinapterus leucas*)

Makayla S. Dole

Rebecca E. Bolmer

Amanda J. Buongiorno

Samantha King

Casey C. Minogue

Follow this and additional works at: <https://digitalcommons.sacredheart.edu/acadfest>

---

Dole, Makayla S.; Bolmer, Rebecca E.; Buongiorno, Amanda J.; King, Samantha; and Minogue, Casey C., "Beluga Whales Socio-Sexual Interactions and Behaviors (*Delphinapterus leucas*)" (2018). *Academic Festival*. 80.

<https://digitalcommons.sacredheart.edu/acadfest/2018/all/80>

This Poster is brought to you for free and open access by DigitalCommons@SHU. It has been accepted for inclusion in Academic Festival by an authorized administrator of DigitalCommons@SHU. For more information, please contact [ferribyp@sacredheart.edu](mailto:ferribyp@sacredheart.edu), [lysobeyb@sacredheart.edu](mailto:lysobeyb@sacredheart.edu).



# Social Interactions in Belugas (*Delphinapterus leucas*)

Makayla S. Dole, Rebecca Bolmer, Amanda Buogiorno, Samantha King, Casey Minogue, and Melissa Weaver

Mentor: Dr. Deirdre Yeater



MYSTIC  
AQUARIUM

## Abstract

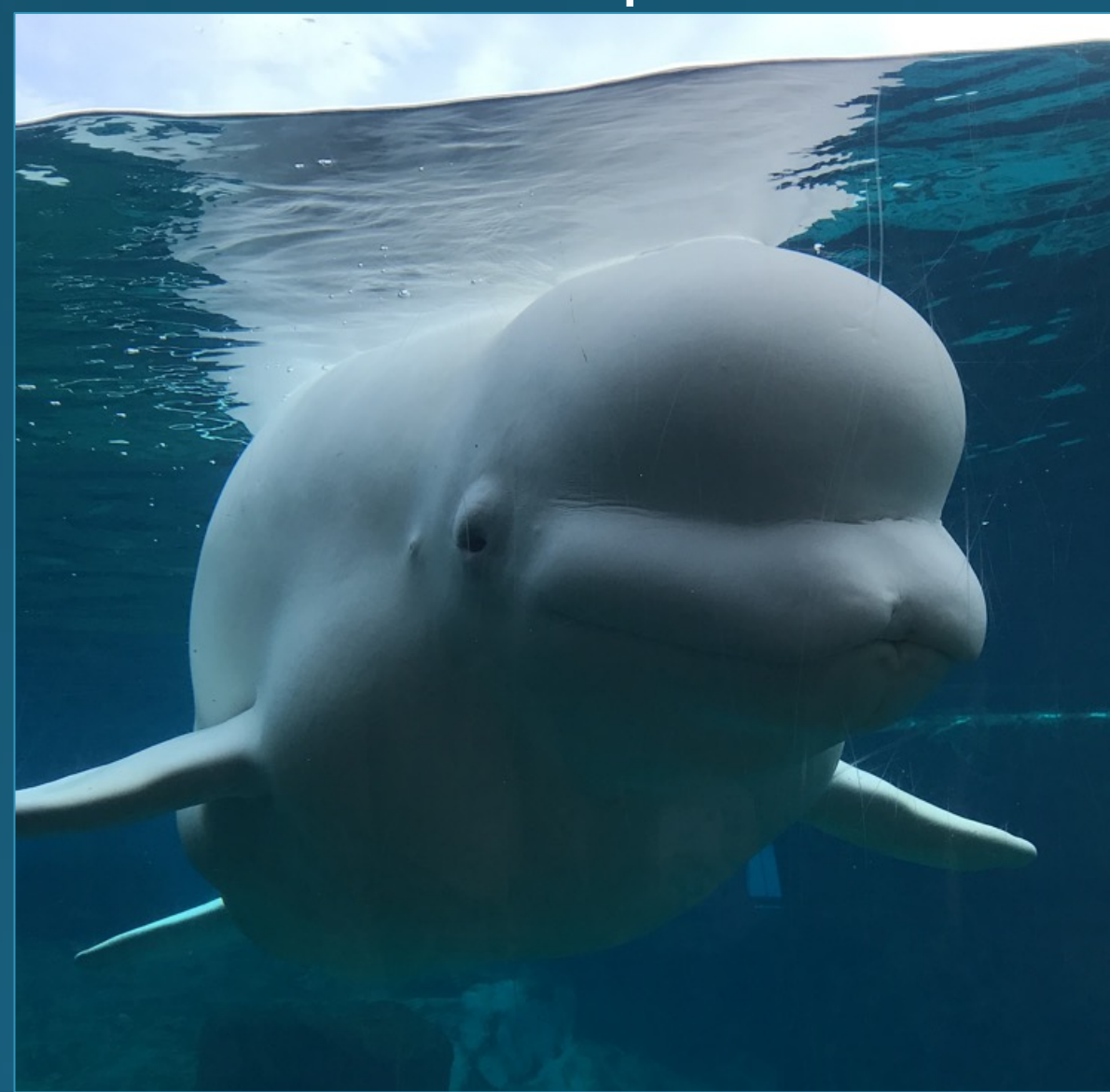
Cetaceans are known for developing social relationships with each other by displaying various social and contact behaviors. Few studies have investigated the social interactions and types of contact behavior between belugas (*Delphinapterus leucas*). The present study focused on the frequencies of many social behaviors observed among four belugas (three males and one female) in the care of humans and the changes in behavior over an extended period of time. Continuous data were collection via video recordings over a three year period and were coded for social interactions. Preliminary analysis revealed that Male C was the most likely to initiate social interactions in this social group. It appears that the social interactions among the individuals may be somewhat stable over time. The findings of this study have implications for better understanding beluga social interactions of whales that are living under managed care.

## Introduction

- Similar to other cetaceans, belugas are considered to be highly affiliative by nature (Hill, 2009). However, few studies have investigated the social and behavioral characteristics of this species.
- Hill, et al (2015a) suggested that male-male social interactions may be of importance in beluga social groups, especially synchronized same sex swimming and socio-sexual behavior.
- The purpose of the current study was to longitudinally investigate the social interactions among a group of belugas whales while following changes in the social grouping.
- Overall, the number of interactions among the adult belugas were expected to be relatively low, since it has been documented that belugas show a more diverse and interactive behavioral repertoire when calves or juveniles are present in the social group (Hill et al, 2015b).

## Method

- Subjects: Four beluga that were housed at the Mystic Aquarium in Mystic, Connecticut.
  - 3 adult males:
    - Male A (November 2014 to February 2016)
    - Male B (March 2016 to August 2016),
    - Male C (November 2014 to November 2017)
  - 1 adult female: Female A
- Video recordings were made between November 2014 through November 2017 (19 hours 22 mins 44 secs).
- Data were collected in continuous fifteen minute intervals, with a focal follow technique after a beluga initiated a social behavior.
- Data were coded for continuous behavioral sequences between initiators and receivers.



**Table 1.** Definitions for the behaviors the had the most frequent social interactions.

Behavior	Definition	Total Number of Interactions
Orient to People/ Window	The whale appears to be “looking” at a person (trainer or other person). This must be done for a duration of two seconds and not in conjunction with other activities such as play.	267
Open Mouth Threat	The actor, while facing another animal, rapidly opens its mouth fully and holds it open for at least 1 second.	112
Melon Press	Animal presses the melon or mouth against the glass of the underwater viewing window in a curious manner towards human.	110
Presenting	An animal turns on its side and presents its ventral side to another animal. It may be reciprocal	51
Solo Swim	Animal swims alone	44
Pair Swim	Animal swims with another whale	36
Bubble Burst	Large purposeful release of air below the surface of the water that creates a visible ripple effect on the surface of the water that is directed towards another animal.	28

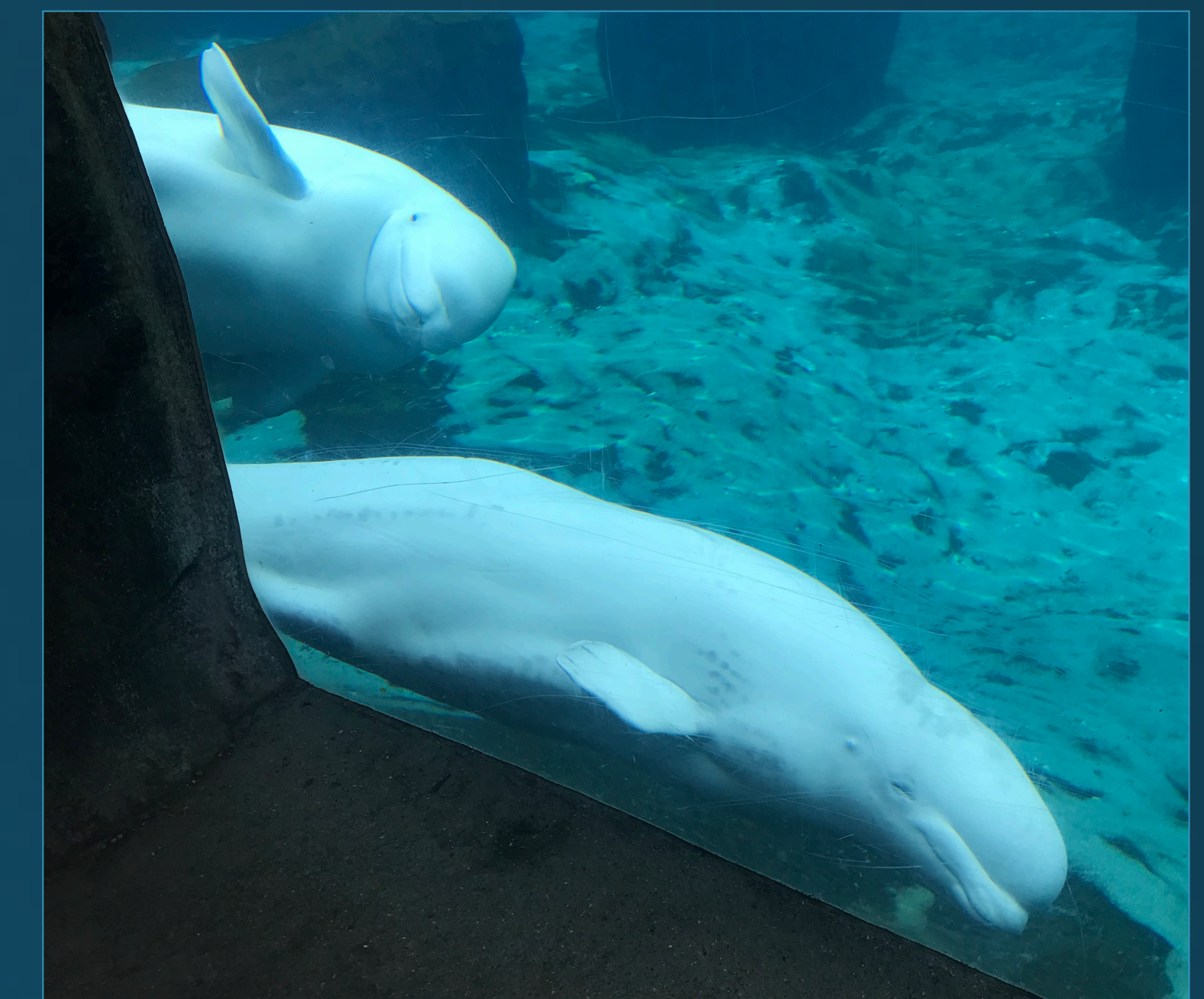
**Table 2.** The number of interactions between social partners. Arrow indicates initiator and receiver.

Beluga Whales	Total Number of Interactions
Male A → Male C	28
Male C → Male A	33
Female A → Male C	8
Male C → Female A	50
Female A → Male B	9
Male B → Female A	3
Male B → Male C	9
Male C → Male B	18
Female A → Male A	2
Male A → Female A	7

**ACKNOWLEDGEMENTS:** Thank you to Mystic Aquarium for allowing us access to the belugas. Furthermore, thank you to the several Sacred Heart University undergraduates who aided in the collection and analysis of data.

## Results

- The most frequent interactions are shown in Table 1.
- Orienting to people (or the window) made up the largest percentage of social behaviors observed (31.34%).
- The total number of social interactions between belugas from 2015 to 2017 is shown in Table 2.
- In the three years of data, Male C was most often the initiator of interactions with all of the animals, and most often with Female A who was his constant social partner.



## Discussion

- Further data analysis are necessary to investigate the sequences of interactions of discrete social behaviors performed in a chain.
- Male A and B were only present during part of the study period which likely explains Male A's preference for interacting with Female A instead of a same sex partner as was expected.
- Similar social behaviors were observed over the entire study period although the social group changed with the removal of Male A and the addition (and later unexpected attrition) of Male B.
- The percentage of time engaging in social interactions was low overall, as anticipated, since all of the individuals in this study were adults.
- Investigating social behaviors, especially socio-sexual behaviors, in this species may have profound influences on our current understanding of the mechanisms involved for successful reproduction, a problem that several groups of belugas in their natural habitat are currently facing.

## References:

- Hill, H. (2009). The behavioral development of two beluga calves during the first year of life. *International Journal of Comparative Psychology*, 22, 234-253.
- Hill, H., Dietrich, S., Yeater, D., McKinnon, M., Miller, M., Aibel, S., & Dove, A. (2015a). Developing a Catalog of Socio-Sexual Behaviors of Beluga Whales (*Delphinapterus leucas*) in the Care of Humans. *Animal Behavior and Cognition*, 2, 105-123.
- Hill, H., Guarino, S., Crandall, S., Lenhart, E., & Dietrich, S. (2015b). Young Belugas Diversify Adult Beluga (*Delphinapterus leucas*) Behavior. *Animal Behavior and Cognition*, 2, 267-284.

