



Academic Festival

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

Bottlenose Dolphins Mom-Calf Interactions over the First and Second Year of Life

Samantha King

Rebecca E. Bolmer

Amanda J. Buongiorno

Makayla S. Dole

Casey C. Minogue

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

King, Samantha; Bolmer, Rebecca E.; Buongiorno, Amanda J.; Dole, Makayla S.; and Minogue, Casey C., "Bottlenose Dolphins Mom-Calf Interactions over the First and Second Year of Life" (2018). *Academic Festival*. 134.

<https://digitalcommons.sacredheart.edu/acadfest/2018/all/134>

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, lysobeyb@sacredheart.edu.



Bottlenose dolphin mom-calf interactions over the first and second year of life

Samantha R. King, Rebecca Bolmer, Amanda Buongiorno, Makayla Dole, & Casey Minogue & Dr. Deirdre Yeater

Sacred Heart University, 5151 Park Avenue, Fairfield, CT, 06825

Email: kings10@mail.sacredheart.edu



Abstract

As both wild and captive dolphin calves develop, they spend less time with their mothers and more time engaged in independent activities. In this study, the social development of six captive dolphin calves (*Tursiops truncatus*) were examined over the first and second year of life. Focal animal behavioral ethogram data were collected using a 30 second scan sampling technique. The predominant swim position and individual behaviors were recorded. There were a number of general developmental patterns: (1) an increase in the percentage of time that the calves engaged in solo swimming, (2) a decrease in infant position, and (3) a decrease in echelon position. The shift in primary swim position and increase in independent (solitary) behaviors exhibited over the study is consistent with past research on calf development. The basis for the difference each calf's behavior could be a result of the experience or type of mother, the unique personalities in the calves, or a combination of both.

Introduction

- As dolphin calves grow and develop, they spend less time with their mothers and more time independently in both wild and captive settings.
- Adult females placed (accidentally or intentionally) with newborn calves without mothers, will begin lactating and nurse the orphan calves.
- Adoption or surrogate behavior has been documented in several captive mother-calf bottlenose dolphin pairs (i.e., Smolders, 1988; Kastelein, Dokter, & Zwart, 1990; Ridgeway, Kammolick, Reddy, Curry, & Tarpley, 1995).
- The purpose of the current study was to determine if there were differences in calf behavioral development and in swim positions based on growth.

Methods

- Subjects: six bottlenose dolphin (*Tursiops truncatus*) calves housed at the Navy Marine Mammal Program in San Diego, CA.
- Observations were collected from August 2009 through December 2014.
- Focal animal data was collected using instantaneous scan sampling every 30 seconds (Altmann, 1974).
- Predominate swim position and individual behaviors (solitary and social) were recorded for each dolphin.
- Swim position definitions were based on Mann and Smuts (1999).
 - Infant Position* – calf swims under the mother, head lightly touching the mother's abdomen
 - Echelon Position* – the calf swims in close proximity along side the mother, roughly parallel, touching the mother's flank above midline

Acknowledgements

The authors would like to thank Stan Kuczaj, Erika Putman and the Navy Marine Mammal Program trainers and interns for their assistance collecting the data. In addition, the authors thank Sacred Heart University undergraduates for assistance with data entry.

Percent of Time Spent in Different Swim Positions During Year One

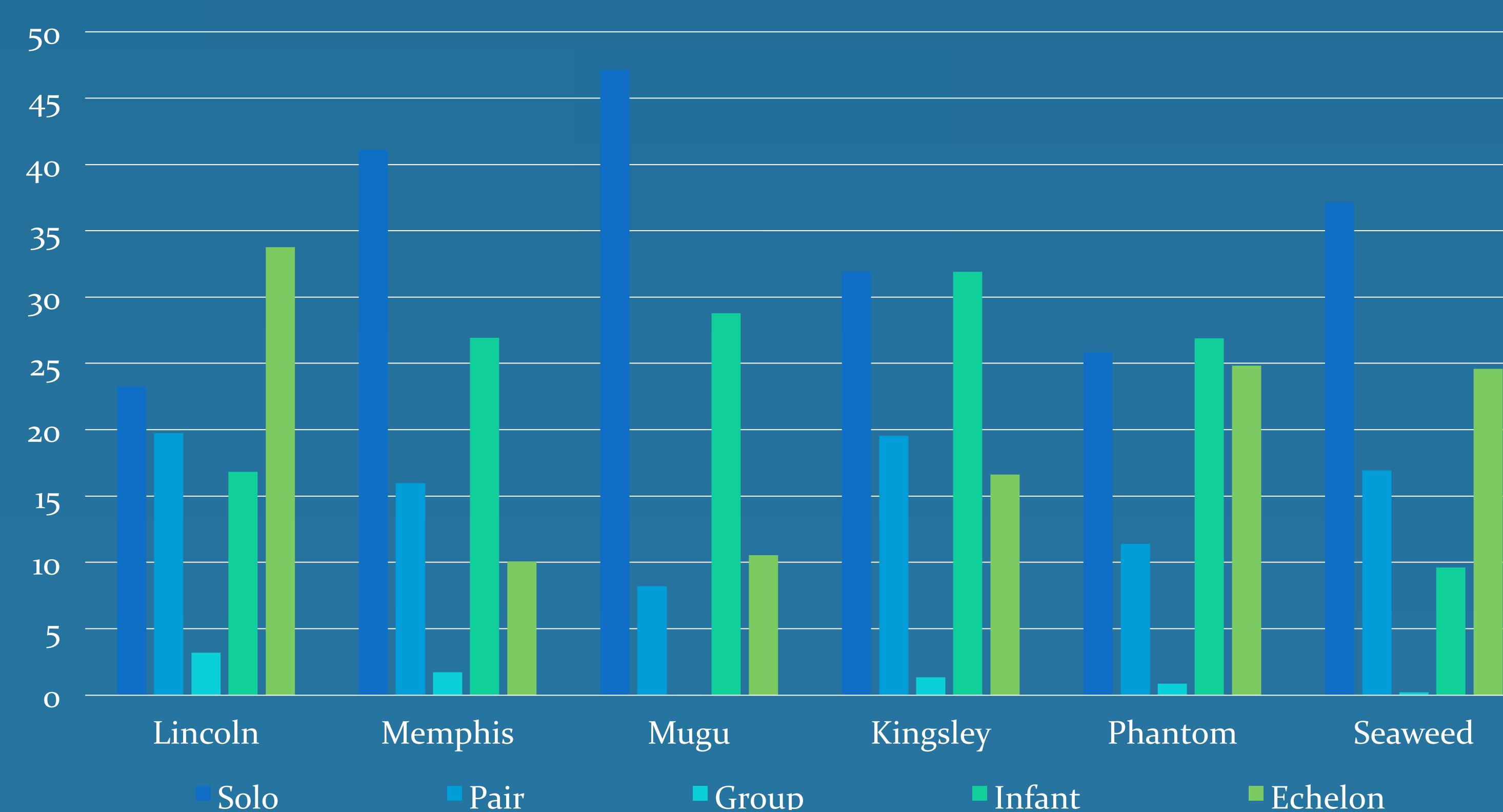


Figure 1. Swim positions for the six calves during year one.

Percent of Time Spent in Different Swim Positions During Year Two

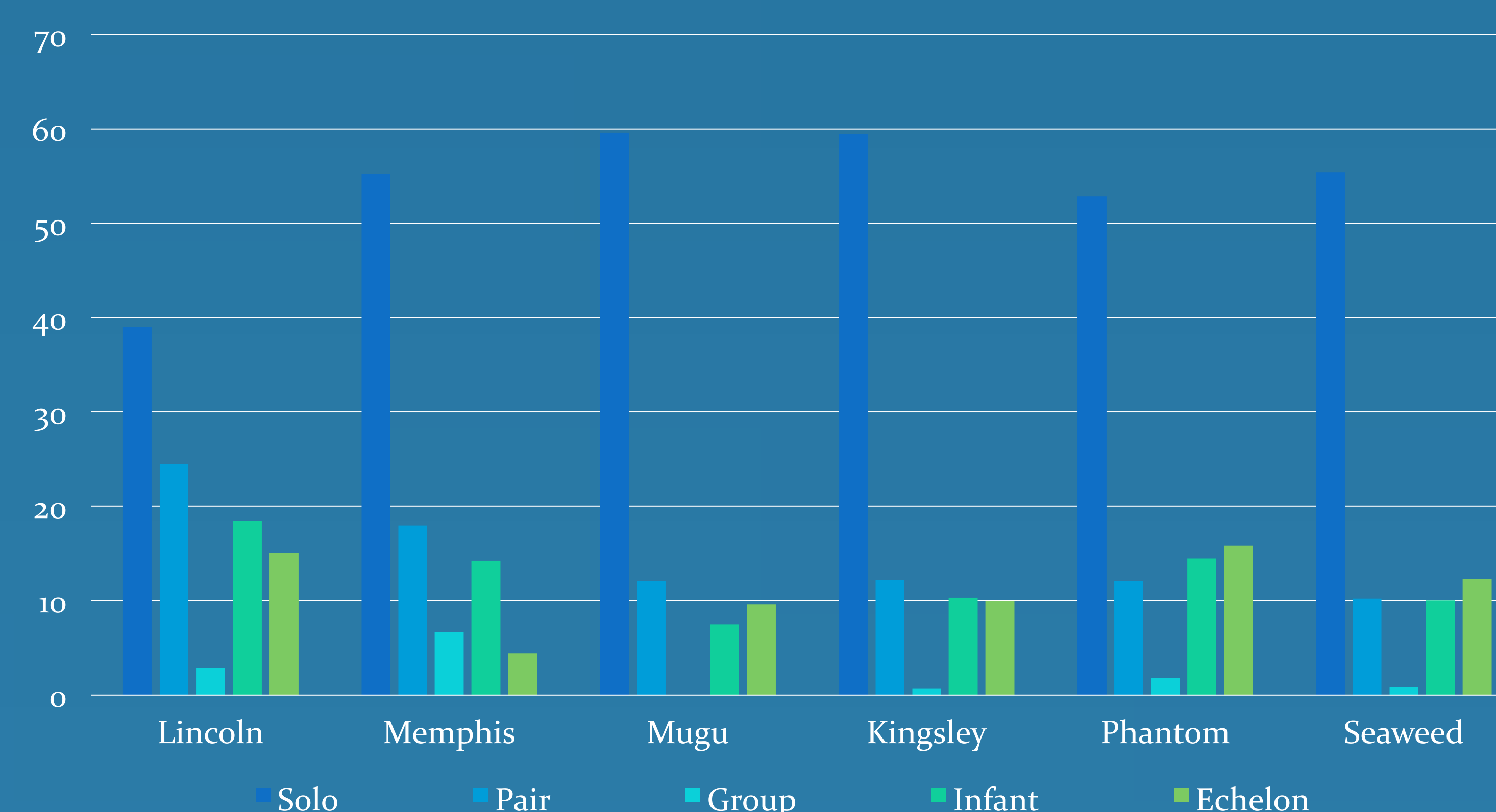


Figure 2. Swim positions for the six calves during year two



Results

- In general, the calves increased the percentage of time engaged in solo swimming from year one to year two by 19.18%.
- Calves decreased the percentage of time engaged in echelon and infant swimming from year one to year two by nearly 50% each.
- There was a similar percentage of group swimming from year one compared to year two, with less than a 1% difference between years.
- Phantom, who was paired with a surrogate mother, showed the same developmental pattern as the other calves and their biological mothers.

Conclusions

- The shift in primary swim position over time was consistent with findings with wild (Mann & Smuts, 1999) and captive bottlenose dolphins (Reid, Mann, Weiner, & Hecker, 1995; Gubbins, McGowan, Lynn, Hooper, & Reiss, 1999).
- Decrease in infant swimming can be attributed to decrease in the calves nursing from their mothers as they get older.
- There appeared to be an increase in solitary behavior over time which was consistent with research on other captive bottlenose dolphins (Reid, et al., 1995).
- The difference in predominant swim position in this study could have been a result of the type of mother (Hill, 2007).
- The individual differences in swim position could also be attributed to the dolphins' personalities. The development of stable and unique personalities is something which is currently under investigation with these individuals.
- It appears that there is no difference in development in the adopted calf compared to the calves reared by their birth mothers. Future studies are necessary this rare surrogate behavior in dolphins.

References

- Altmann, J. (1974). Observational study of behavior: Sampling methods. *Behavior*, 49, 227-267.
- Gubbins, C., McGowan, B., Lynn, S., Hooper, S., & Reiss, D. (1999). Mother-infant spatial relations in captive bottlenose dolphins, *Tursiops truncatus*. *Marine Mammal Science*, 15, 751-765.
- Hill, R., Greer, T., Solangi, M., S. A., II. (2007). All mothers are not the same: maternal styles in bottlenose dolphins (*Tursiops truncatus*). *International Journal of Comparative Psychology*, 20.1.
- Kastelein, R., Dokter, T., & Zwart, P. (1990). The suckling behavior of a bottlenose dolphin calf (*Tursiops truncatus*) by a foster mother, and information on transverse birth bands. *Aquatic Mammals*, 16, 134-138.
- Mann, J. & Smuts, B. (1999). Behavioral development in wild bottlenose dolphin newborns (*Tursiops* sp.). *Behavior*, 136, 529-566.
- Reid, K., Mann, J., Weiner, J., & Hecker, N. (1995). Infant development in two aquarium bottlenose dolphins. *Zoo Biology*, 14, 135-147.
- Ridgeway, S., Kammolick, T., Reddy, M., Curry, C., & Tarpley, R. (1995). Orphan-induced lactation in *Tursiops* and analysis of collected milk. *Marine Mammal Science*, 11, 172-182.
- Smolders, J. (1988). Adoption behaviour in the bottlenose dolphin. *Aquatic Mammals*, 14, 78-81.