

BELUGA SEXUAL BEHAVIOR DURING A LONGITUDINAL STUDY: IMPLICATIONS FOR WELFARE AND CONSERVATION

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Abstract

Like other cetacean species, belugas engage in a variety of sexual and socio-sexual behaviors. Longitudinal observations of belugas at SeaWorld of Texas have provided insight into patterns of behavioral development and reproductive behavior. This knowledge, along with ongoing research, has implications for beluga conservation and welfare.

Belugas (*Delphinapterus leucas*) are gregarious, spending summer months in large congregations in shallow waters and the remainder of the year in smaller groups throughout Arctic and sub-Arctic waters (O’Corry-Crowe et al., 2018; Turgeon et al., 2012). This habitat and large home range make it difficult to learn about beluga behavior, especially social behavior and developmental milestones; however, research with belugas in managed care provides an opportunity to learn more about beluga reproductive behavior and the developmental learning process leading to successful reproduction.

A long-term behavioral study of belugas housed at SeaWorld of Texas has documented the behavior of over 20 belugas since 2007. This dataset has followed the birth and subsequent development of several calves along with the juveniles and adults in the population. Based on this dataset, we have been able to explore many aspects of sexual behavior. Like many other mammals, belugas engage in socio-sexual behavior, which is sexual behavior that does not result in reproduction (Ham, Lilley, & Manitzas Hill, 2023; Hill, Dietrich, et al., 2015). Male belugas typically engage in sexual behavior with each other year-round but turn their attention to receptive females during the annual spring breeding season (Glabicky et al., 2010; Ham et al., 2021). Both male and female belugas begin engaging in socio-sexual behavior at a young age, but unlike other play behaviors, are most frequently with a male conspecific who is older instead of a conspecific of a similar age (Ham et al., 2022; Ham, Lilley, Wincheski, et al., 2023; Lilley et al., 2020). Young belugas develop the behaviors of the socio-sexual repertoire in a piece-meal fashion over time; however, beluga calves who are housed with more male conspecifics of an older age develop their socio-sexual repertoire earlier in life (Ham et al., 2022). Although belugas do show patterns in their choice of social partner, socio-sexual interactions occur between many different pairings, including many group interactions of three or more belugas in a single interaction (Manitzas Hill, Dudzinski, et al., 2023). Socio-sexual behavior is reciprocal in nature and involves a lot of turn-taking (Manitzas Hill, Ortiz, et al., 2023); however, there is no evidence of strong lateralization, as is found in the sexual behavior of some other cetacean species (Lilley, Ham, Miller, et al., 2022). Occasionally, adult females will engage in sexual behavior with juvenile male belugas, which provides the males with practice opportunities (Manitzas Hill et al., 2022).

Socio-sexual behavior may involve many processes of social learning (e.g., imitation, emulation, shaping by conspecifics), which indicates that opportunities to engage in this behavior with a variety of conspecifics throughout the lifespan are important for social welfare and may

improve future reproductive behavior (Manitzas Hill et al., 2024). Finally, adult female belugas have been observed as active participants in reproductive copulation interactions, which suggests that female choice may be involved in the beluga mating system and that males may need to demonstrate their mate value through behavioral displays in addition to physical attributes (Lilley, Ham, & Manitzas Hill, 2022).

With some beluga populations being endangered (e.g., Cook Inlet, Alaska), it is important to learn more about beluga social learning and behaviors related to reproduction as this knowledge can help improve the management of wild beluga populations. In addition to the conservation applications of this knowledge, understanding more about social learning, patterns of socialization, and reproductive behaviors can contribute to high levels of welfare for belugas in managed care. For example, mixed age and sex social groups offer a variety of learning opportunities for young belugas and also socially engage older belugas within the population (Hill, Guarino, et al., 2015).

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