Protecting bottlenose dolphins from coastal construction

Professor Ann Weaver of Good-Natured Statistics Consulting, USA, has studied dolphins living free at sea for 20 years. Her numerous scientific discoveries about dolphin behaviour yield ample evidence of intelligence and of sophisticated social behaviour at sea. Drawing from many years of intensive studies in primates, she undertook an impressive 18-year ethological study of the social behaviour and impact of coastal construction on free-ranging bottlenose dolphins. Her results support the need for management of coastal construction projects and surrounding areas to ensure local aquatic life has access to a safe place, away from noisy building works.

Bottlenose dolphins (Tursiops truncatus) are the only wild mammals who choose to play with as well as help humans. Those graceful and sleek swimmers can be very playful and can often be seen leaping out of the water to follow nearby boats. Not only do they have incredible acoustic skills, dolphins also express complex behaviours, including the practice of controlled conflict, sharing food, using various objects like toys and tools, a wide range of symbolic construction of controlled conflict, sharing food, using various objects like toys and tools, and a wide range of symbolic interaction. The lower dolphin, big burly Ski, barely taps the upper dolphin, Scarface, so this is play. Scarface has studied dolphins living free at sea for 20 years. Her numerous scientific discoveries about dolphin behaviour yield ample evidence of peacemaking and social skill development in primates, characterised this as a slow, steady leak rather than an abrupt departure from the area, implying that "old habits die hard".

THE BRIDGE

For many years, Weaver has been trying to uncover this gap. The perfect research opportunity presented itself in the form of a bridge replacement project over a narrow corridor frequently used by dolphins known as John's Pass, located on the west-central coast of Florida. The project involved removing the old bridge and building a new one, which included driving countless piles as barge moorings on the east side facing the Intra-Coastal Waterway and the west side facing the Gulf of Mexico. Inevitably, the bridge removal and replacement project involved increased noise levels, illumination, vessel traffic, and various large floating structures that would not be there otherwise. Most bottlenose dolphins like the familiarity of the same locations year after year, making them particularly vulnerable to long-term disruptions like the ones caused by construction sites. The impact of these human activities on cetacean behaviour is not easy to follow – as most of it happens underwater. Although a sex difference is predicted for predators to feel comfortable enough to visit the area, implying that "old habits die hard".

FEMALES VS MALES

Initially, Weaver wanted to test whether males and females reacted the same way to the bridge replacement project. “Although a sex difference is predicted for predators to feel comfortable enough to visit the area, implying that "old habits die hard".” Weaver drew upon 15 years of intensive studies of peacemaking and social skill development in primates, characterising it as a slow, steady leak rather than an abrupt departure from the area, implying that "old habits die hard". For Weaver, these results did not come as a surprise. Females with young are likely to be more susceptible to noisy disturbances than males. In fact, females observed abandoning the area were raising at least one calf. The way a dolphin mother and her calf communicate with whistles and other vocalisations is vital to maintaining contact, and anything that interferes with maintaining contact jeopardises calf survival. Weaver's results suggested that dolphin mothers prefer quieter waters than males to "talk" to their offspring and remain vigilant for predators to protect herself and her calf. It’s too early to understand what this decline in females will do to the John's Pass dolphin community. Bottlenose dolphins reproduce slowly, and any effects may not be spotted for years to come. However, losing most of its females is never good for any population in the long term.

JUST A LITTLE LATER

After 11 years of sightings along John's Pass and the surrounding area, it turned out it wasn’t just the ratio of females and males that was affected by this construction. Dolphins had to find new feeding areas outside the construction zone. Sightings near the building works became rare, and the effects continued to be visible for five years after construction had ended. These "habitual creatures only change what human impacts force them to change", explains Weaver. “When construction destroys their habitat and prey, dolphins can learn to feed..."
Behind the Research  
Professor Ann Weaver

Bio
Animal behaviourist Ann Weaver has experience with over 200 species. She has academic “dual citizenships” in primatology (bonobos, capuchins, macaques) and bottlenose dolphins. She specialises in intensive ethnological studies of individual animals recognised on sight. Ann works as a statistical consultant, and generates popular works from her research to stimulate public interest in animals, nature, and science.

Collaborators
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References