

## Short Note

# Predation of a Sperm Whale (*Physeter macrocephalus*) by Killer Whales (*Orcinus orca*) in Guanaja, Honduras

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Killer whales (*Orcinus orca*) have been extensively studied for their complex social structures and remarkable hunting prowess across their cosmopolitan distribution (Baird, 2000; Ford & Reeves, 2008). Their versatile diet includes a wide variety of sharks, rays, finfish, marine mammals, and other vertebrates, including documented instances of predation on sperm whales (*Physeter macrocephalus*) in diverse oceanic regions (Jefferson et al., 1991; Pitman et al., 2001). Pitman et al. (2001) documented three instances of groups of killer whales hunting, killing, and preying upon groups of sperm whales. They are also known to prey on larger baleen whales, including blue whales (*Balaenoptera musculus*; Ford & Reeves, 2008; Ford, 2019; Totterdell et al., 2022), gray whales (*Eschrichtius robustus*; Ljungblad & Moore, 1983), humpback whales (*Megaptera novaeangliae*; Pitman et al., 2015), bowhead whales (*Balaena mysticetus*; Willoughby et al., 2020), and smaller species like Antarctic minke whales (*Balaenoptera bonaerensis*; Seyboth et al., 2024).

Despite extensive documentation of killer whale behavior in various oceanic regions (Baird, 2000), the Caribbean Sea remains relatively unexplored in terms of predator–prey dynamics between killer whales and sperm whales. Killer whales in the Caribbean have been reported to feed on sperm whales, short-finned pilot whales (*Globicephala macrorhynchus*), and dwarf sperm whales (*Kogia breviceps*) (Dunn & Claridge, 2014; Kiszka et al., 2021). There is an abundance of research focused on killer whale feeding ecology and behaviors in many regions, including the Pacific Northwest, British Columbia, Southeastern Alaska, Norway, and Argentina (Hoelzel, 1991; Similä et al., 1996; Baird, 2000; Saulitis et al., 2000; Ford & Ellis,

2006), leaving the Caribbean as an understudied area in terms of these predator–prey relationships (Bolaños-Jiménez et al., 2014, 2023).

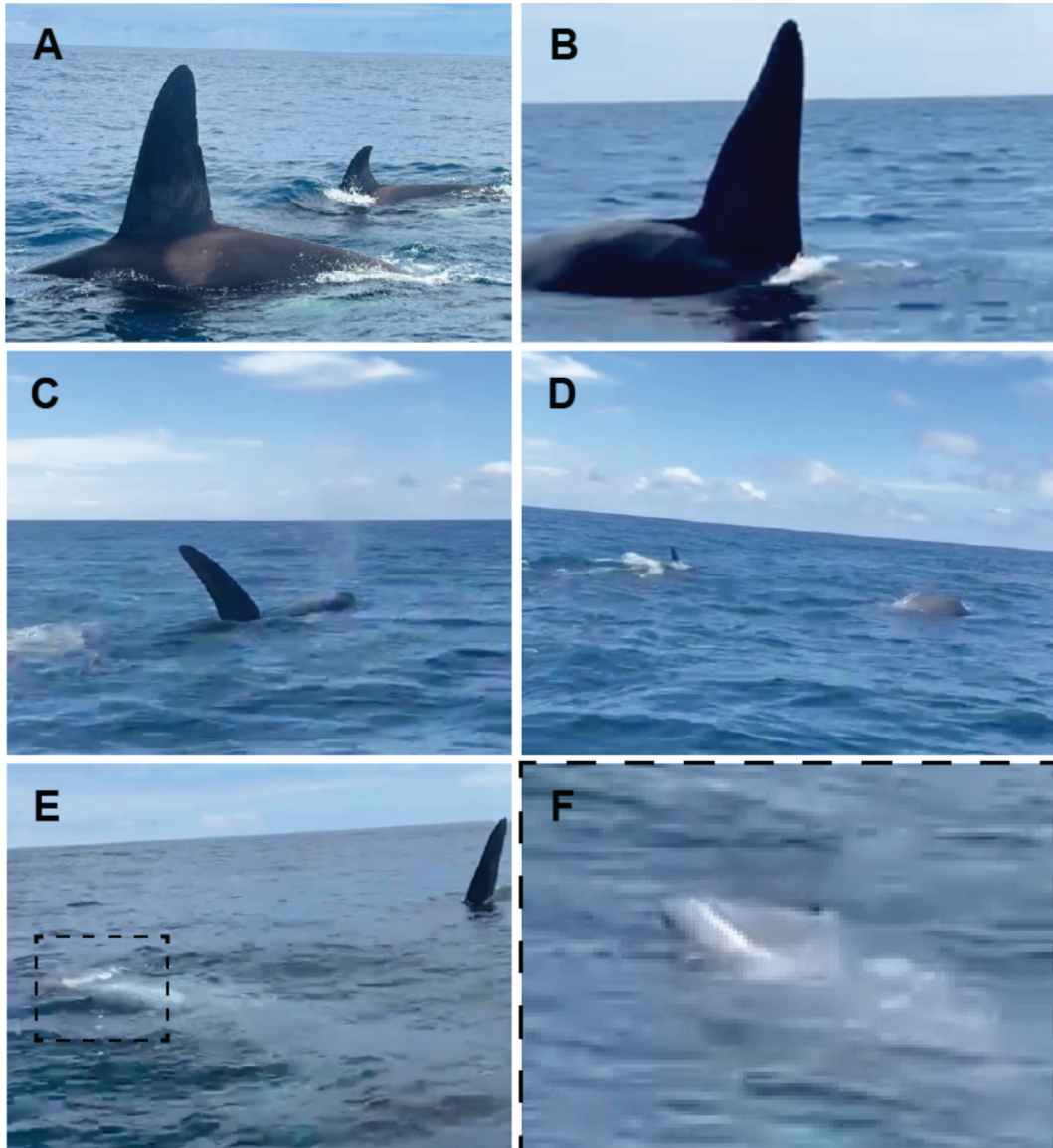
Information on killer whales and sperm whales in the western Caribbean Sea is particularly scarce. Reports of the occurrence of both species in the western Caribbean come from opportunistic observations of tourist SCUBA dive boats. For example, both species were reported in opportunistic observations gathered from the public and scientists in Belize (Ramos et al., 2016), the Mexican Caribbean (Niño-Torres et al., 2015), and Colombia (Franco & Delgado, 2021; Avila et al., 2022). Killer whales have also been observed off the Bay Islands in Honduras (Bolaños-Jiménez et al., 2014, 2023) and in the Bahamas (Dixon et al., 2023). The rarity of observations in these waters highlights the significance of any firsthand accounts to fill the void in understanding the ecological roles and relationships of these marine mammals within the Caribbean ecosystem.

Herein, we describe a single event involving a group of three killer whales preying on a sperm whale (under 6 m total length) in the off-shore Caribbean Sea waters of Honduras. The event took place on 24 November 2023 at 1130 h, northwest of Guanaja Island, approximately 16 km offshore of the community of Mangrove Bight (approximate location: 16° 37' 43" N, 85° 56' 39" W). The interaction was observed by three recreational anglers during a fishing trip. The anglers were trawling for bonito (family Scombridae) when at a distance they observed splashing and surface activity. They moved closer and encountered a group of three killer whales attacking a sperm whale (Murphy Moore, pers. comm., 7 August 2024). The group included a mother–calf pair, determined based on the calf's

proportionally smaller size, light gray color, and persistent swimming next to one adult (Figure 1A; Baird, 2000), and a male adult, based on the large pointy and triangular shape of its dorsal fin (Figure 1B; Emmons et al., 2019). The account was documented through photos and videos using smartphones by one of the anglers (Figure 1A-F; Supplemental Video S1; the supplemental video

for this short note is available on the *Aquatic Mammals* website). Additionally, two of the three anglers were interviewed briefly via phone call (Mark Moore, pers. comm., 4 December 2023; and Murphy Moore, pers. comm., 7 August 2024).

The anglers initially observed the group of killer whales at a distance of ~10 m from their skiff, which had an outboard motor. According



**Figure 1.** Images of killer whales (*Orcinus orca*) consuming a sperm whale (*Physeter macrocephalus*) in the waters off Guanaja Island, Honduras, in the Caribbean Sea: (A) the mother and calf killer whales surfacing near the vessel; (B) the dorsal fin of the other killer whale as it took a breath near the deceased sperm whale; (C) the floating sperm whale with the killer whales swimming nearby; (D) the white patchy bottom jaw of the dead sperm whale; (E) a killer whale returning to the body to take off pieces of flesh; and (F) a zoomed-in shot of the sperm whale's lower jaw. (Photo credits: Mark Moore)

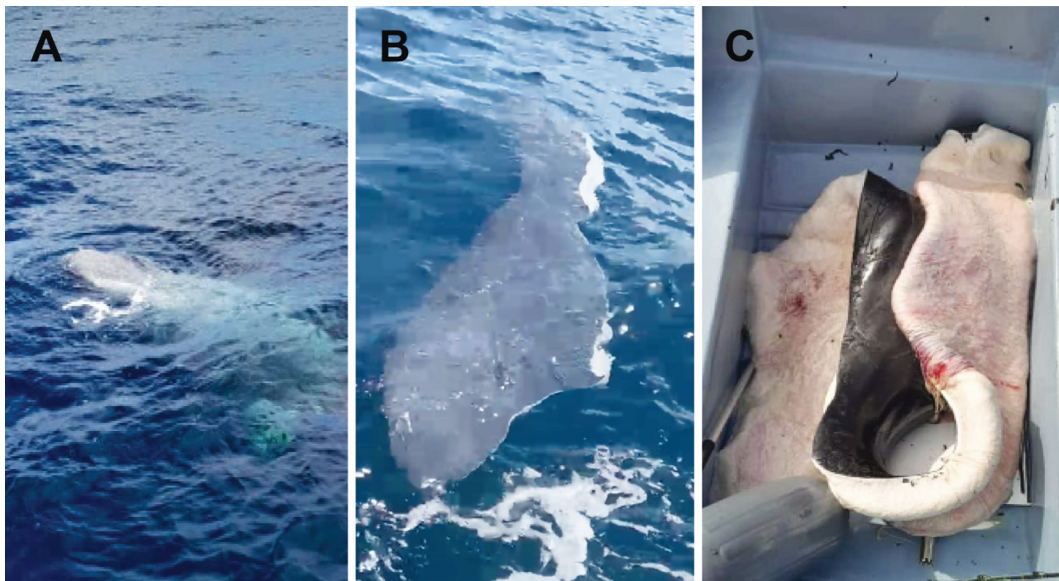
to the anglers, the attack was already underway when they arrived as the killer whales were observed coordinating their attack on the sperm whale in waves. Its species was confirmed with clear images of the whale's lower jaw and head (Figure 1E & F). Initially and for approximately 30 min, the adult killer whales took turns biting the sperm whale and dragging it underwater. They were also observed trying to pin the sperm whale down, using their bodies to restrict its movement and keep it underwater. The sperm whale was observed surfacing and breathing, but immediately after, the killer whales would resume the attack. During this time, the young calf remained in proximity to one of the adult killer whales (presumably the mother) and was not observed engaging in the attack. After ~30 min, the killer whales were not observed at the surface for about 20 min, remaining primarily submerged. Following this, the anglers observed large chunks of blubber and blood coming to the surface (Figure 2A-C).

The anglers remained at the scene after the death of the sperm whale. The two adult killer whales were observed directly interacting with a dead sperm whale and, despite vessel proximity (10 m), continued feeding. A section of the sperm whale's blubber and skin was seen floating on the water's surface and was recovered by the anglers for inspection (Figure 2C). The anglers observed the killer whales for about 1 h after the sperm whale's death. During this time, they observed the two adult killer whales taking turns feeding

on the sperm whale carcass (Figure 1D & E). As the anglers tried to get closer to observe the killer whales feeding, the large male began vocalizing and charging directly at the anglers' vessel. After these behaviors, the anglers decided to withdraw from the site while the killer whales were still actively engaged in feeding on the sperm whale carcass.

Killer whales in tropical waters are hypothesized to be generalist hunters (Weir et al., 2010; Bolaños-Jiménez et al., 2014) compared to specialist ecotypes found in temperate and cold waters (Baird et al., 2006). While direct evidence for fish predation is still lacking, there is strong indirect evidence from several locations throughout the Caribbean Sea (Bolaños-Jiménez et al., 2014). Confirmed prey items for killer whales in the Caribbean Sea are few but include leatherback sea turtles (*Dermochelys coriacea*; Caldwell & Caldwell, 1969), pygmy sperm whales (*Kogia breviceps*; Dunn & Claridge, 2014), and dwarf sperm whales (Dunn & Claridge, 2014). Our report is the first to offer documented witness of sperm whale predation by killer whales in the western Caribbean Sea.

Marine mammals may play an important part of the diet of killer whales in the Caribbean Sea. Other marine mammal species that have been reported to be attacked by killer whales in the region, but with no confirmed predation, include short-finned pilot whales, pantropical spotted dolphins (*Stenella attenuata*), and Bryde's whales



**Figure 2.** Images of a large piece of the deceased sperm whale's flesh observed floating at the sea surface (A & B) and recovered on the boat (C). (Photo credits: Mark Moore)

(*Balaenoptera brydei/edeni*; Bolaños-Jiménez et al., 2014). Using stable isotopes, Kiszka et al. (2021) determined that large, toothed whales, including sperm whales and short-finned pilot whales, contribute indirectly to 20% of killer whale diets in the eastern Caribbean Sea.

This probable predation event showcased a likely cooperative hunting strategy employed by the killer whales as they targeted the sperm whale. Previous studies have emphasized the orchestrated efforts of killer whale groups in overpowering and subduing larger prey through coordinated effort (Jefferson et al., 1991). In the three instances of killer whales hunting sperm whales reported by Pitman et al. (2001), killer whale groups were of varying sizes from five to 35 individuals and involved complex hunting tactics to effectively hunt sperm whales. The group size observed of three individuals is consistent with the average group size reported for the Caribbean region ( $\bar{x} = 4.1$ ; Bolaños-Jiménez et al., 2014) and other tropical regions, including West Africa ( $\bar{x} = 5.6$ ; Weir et al., 2010), Hawaii ( $\bar{x} = 4.2$ , Baird et al., 2006), and the Bahamas ( $\bar{x} = 4.2$ ; Dunn & Claridge, 2014). Comparable group sizes have also been reported in marine mammal-eating killer whales in Scottish waters of the North Atlantic Ocean ( $\bar{x} = 5.5$ ; Beck et al., 2012) and in the Northeast Pacific Ocean ( $\bar{x} = 4.2$ ; Baird & Dill, 1995).

Since the video footage begins once the sperm whale is already dead, we cannot independently corroborate that this represents an actual predation event and must rely on the eyewitness account of the anglers. However unlikely, it is possible that this encounter instead involved scavenging on a dead or dying sperm whale rather than a predation event. Killer whales are highly specialized predators and are known to shift their diets. According to a broad search of whaling literature, killer whales were known to often scavenge carcasses of baleen whales that were made available by the whaling industry (Whitehead & Reeves, 2005). It was hypothesized that scavenging killer whales were specialists, and that the cessation of the whaling industry triggered a diet shift from scavenging to direct predation on living whales (Whitehead & Reeves, 2005). Alternatively, some killer whales may scavenge for prey remains following group hunts as speculated to occur with the type B pack ice killer whales in the waters of the Antarctic Peninsula (Pitman & Durban, 2012). While there have been no documented reports of scavenging killer whales in the Caribbean, the apparent generalist nature of tropical killer whales suggests that such behavior cannot be entirely ruled out.

This documented event of killer whale predation on a sperm whale in the Caribbean Sea serves

as a critical addition to the existing knowledge of cetacean interactions within this region. The scarcity of such observations underscores the need for continued research efforts and future monitoring initiatives to unravel the complexities of marine mammal predator–prey dynamics in understudied areas of the Caribbean Sea. For example, dedicated studies of sperm whale and killer whale distribution and diet in the western Caribbean Sea through biopsy work and satellite tagging would provide a better understanding of the importance of this region to both species.

**Note:** The supplemental video for this short note is available in the “Supplemental Material” section of the *Aquatic Mammals* website: <https://www.aquatic-mammalsjournal.org/supplemental-material>.

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