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Short Note

An Unusual Record of a Marine Dolphin (Likely *Sotalia guianensis*) Being Scavenged by Jaguar (*Panthera onca*) at the Northern Brazilian Amazon

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On 27 April 2023, at approximately 1520 h, at low tide, a jaguar (*Panthera onca*) mother-and-cub pair was observed onshore on the western coast of the southern island of Maracá-Jipioca Ecological Station by GD and AG from a boat navigating around the island. A dolphin carcass with few signs of predation was identified on land, halfway between the water line and the top of a 3-m muddy slope (02º 02' 21.9" N, 50º 30' 48.4" W; Figure 1).

Maracá-Jipioca Ecological Station (MJES; 02° 01' 13" N, 50° 30' 20" W) is a 75,000 km^2 federal coastal-marine protected area. It is comprised of three islands (Northern Maracá, Southern Maracá, and Jipioca Islands, the latter currently submerged) on the Atlantic shore off the coast of the Brazilian Amapá State, under the direct influence of the Amazon River delta (Santos et al., 2014; Instituto Chico Mendes de Conservação da Biodiversidade [ICMBio], 2017). The distance from the islands to the mainland varies from 6 to 10 km. Sediment deposits form deep mud banks along the edges of the islands (Anthony et al., 2014). Mangroves, flooded forests, and wetlands are common due to the 10-m tidal range and large volume of rains (Santos et al., 2014; Duarte et al., 2023). Southern Maracá is known as Island of the Jaguars due to its unique insular population of jaguars, estimated at around 43, in 580 km^2 (Duarte et al., 2022), representing a nursery, shelter, and feeding area. No other terrestrial carnivore occurs in the area. The two main islands harbor crocodilian, turtle, and wetland bird populations (ICMBio, 2017), all of which are part of the jaguars' diet (Duarte et al., 2023). The Maracá Island complex is also a nursery for species such as sharks and rays, and commercial fish such as acoupa weakfish (*Cynoscion acoupa*), gillbacker sea catfish (*Sciades parkeri*), and crucifix sea catfish (*Sciades proops*) (ICMBio, 2017). Fishing activities, especially those conducted by large boats from neighbouring Pará State, are an important pressure on fishing stocks and associated fauna (ICMBio, 2017). Among marine mammals occurring in the area, the Guiana dolphin (*Sotalia guianensis*) is relatively common, with resident populations (Gabaglia, 1916; ICMBio, 2017). Information on dolphin carcasses being scavenged by jaguars is scarce, dispersed, and poorly documented in the literature, producing a limited understanding about this behaviour. Few records have been documented in Latin America (Defler, 1994; Castañeda et al., 2013; Thomson et al., 2022).

The jaguar pair described herein was observed for almost 4 h, until early evening. The jaguar pair consisted of an adult female and its 4- to 5-mo-old cub (based on size; Y. Barros, pers comm., 13 June 2023). Two video-equipped camera traps (Bushnell Trophy Cam HD Camo 119875; Bushnell Outdoor Products, Hyde Park, UT, USA) were set up near the carcass on 28 April 2023 and left running for 2 d. The camera traps were relocated on 29 April 2023, following the animals' movement. On the same day of the observation, a floating dolphin carcass, with several dorsal cuts likely made by a sharp cutting instrument, was photographed on the water nearby (Figure 2). The dolphin carcass on land was recognized as most likely a code 2 (*sensu* Geraci & Lounsbury, 2005) female Guiana dolphin based on morphological characteristics (i.e., color, size, dorsal fin shape, head shape, teeth, and position of genital slit and teats; Figure 3).

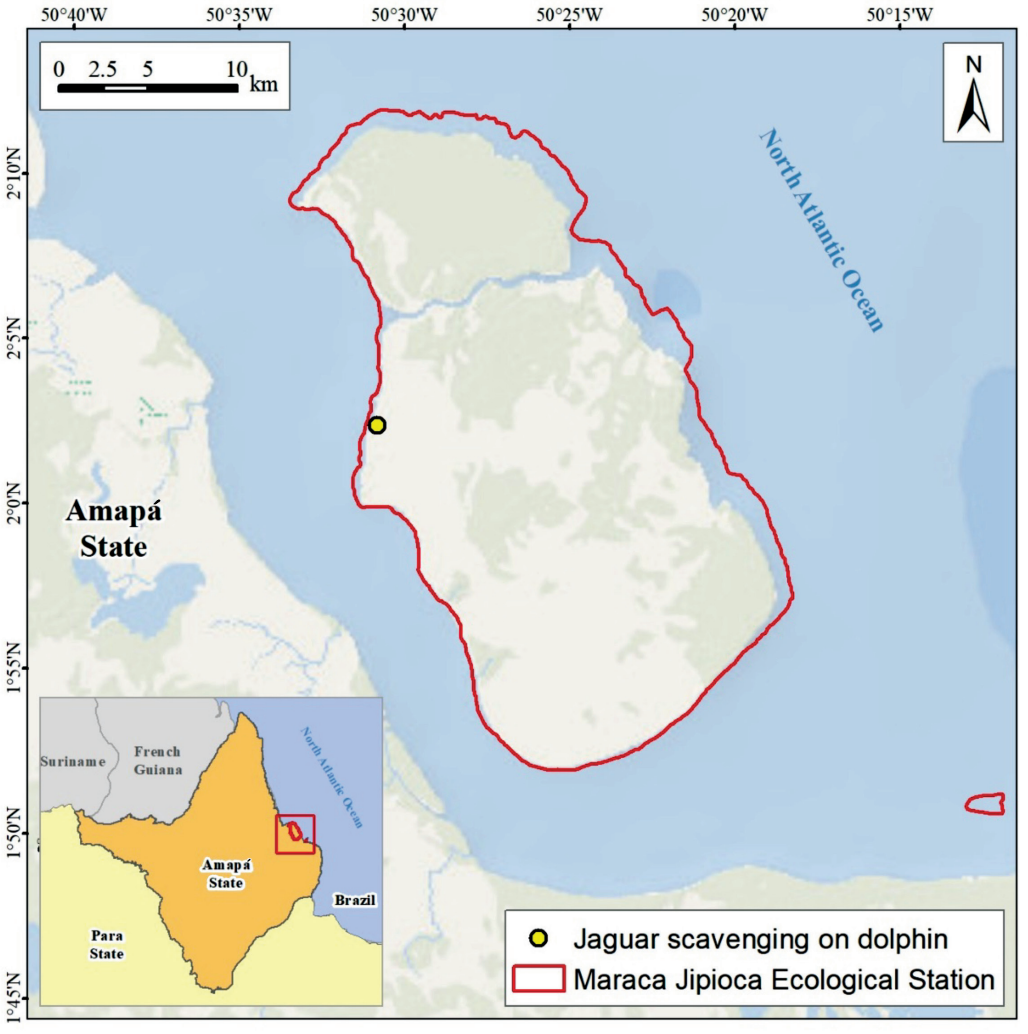

Figure 1. Maracá-Jipioca Ecological Station, with site where the marine dolphin (likely a Guiana dolphin [*Sotalia guianensis*]) carcass reached the beach and was scavenged by jaguars (*Panthera onca*)

On 27 April 2023, upon hearing the engine noise of the approaching boat, the adult jaguar walked away from the carcass, returning soon after to keep black vultures (*Coragyps atratus*) away. After about 2 h, the pair started walking around the top of the hill to leave, but a movement by vultures towards the carcass made the female turn around. From the first encounter until 1900 h, the jaguar pair accessed the dead dolphin five times, alternating among eating the carcass, climbing the hill, chasing vultures, and laying on the vegetation. These feeding bouts occurred generally at 20- to 30-min intervals. Sometimes the pair scavenged together, and sometimes the female was alone; the cub was never seen scavenging by itself. Except for one instance in which the cub became distracted by some vultures perched on a tree at the top of the hill, most of the time it was hiding in the woods or next to the adult female (all scenes were photographed and drone-filmed by AG and GD; see supplemental figures; the supplemental figures for this short note are available in the "Supplemental Material" section of the *Aquatic Mammals* website). The following morning (28 April 2023), the carcass had been dragged to the top of the slope and 17 m into the mangrove forest. The mother-and-cub pair were feeding on the carcass but left upon our arrival. At 1520 h, the camera recorded the mother and cub approaching, scaring vultures away, and resuming feeding. On the third day (29 April 2023), the carcass had been dragged

Figure 2. Carcass of a marine dolphin (likely *Sotalia guianensis*) found floating near Maracá Jipioca Ecological Station on 27 April 2023, with marks of a cutting instrument (likely a large fishing knife or machete) along its flanks made by fishermen to remove muscle to be used as shark bait (*Photo credit:* Adriano Gambarini)

an additional 8 km into the forest and placed next to a black mangrove tree (*Avicennia schaueriana*) (Figure 4).

At 2019 h, the camera recorded the arrival of the mother and several feeding bouts, while the cub showed greater curiosity with the camera. The mother-and-cub pair continued scavenging the carcass on 29 April 2023. Behaviors by the adult female included licking, ripping pieces of flesh, and munching on the carcass. Whenever the jaguars left the carcass, vultures accessed it, but when the pair returned, they chased the vultures away, even making attempts to climb the mangrove trees. On the first day, the adult jaguar was seen consuming the top of the dolphin's head, near the blowhole; on the second day, the ventral portion of the dolphin had been accessed. By 30 April 2023, the jaguars had consumed 70% of the carcass, and for the third time, the mother dragged the dolphin remains farther into the mangrove forest. No bones were collected, but a tissue sample is available and stored at the ecological station.

MJES is an area of occurrence of Guiana dolphins (Siciliano et al., 2008; Marmontel et al., 2021). Large groups have been captured on film in front of the islands by one of the authors (GD), and a skull was collected in 2018 by GD and MM. Even though the cause of death of the specimen in question could not be ascertained with certainty, the carcass was likely the result of intentional capture or bycatch from industrial fishing boats (Barbosa et al., 2010; Marmontel et al., 2021). In days prior to the event, large fishing boats that deploy 2- to 3-km-long nets were documented in the region (despite being illegal; Figure 5). The sliced-up carcass (likely a Guiana dolphin) found floating in the same area suggests it was a victim of incidental capture and used as bait. The May-June time period entertains the highest fishing pressure from mid- to large-size boats from other Brazilian states around the MJES. Boats use 2- to 5-km-long nets, which often bycatch dolphins and sea turtles (ICMBio, 2017).

Carnivores have been documented eventually scavenging stranded aquatic mammals in different areas: dingoes (*Canis familiaris dingo*) on dugong (*Dugong dugon*), humpback whales (*Megaptera novaeangliae*), and melon-headed whales (*Peponocephala electra*) in estuarine and mangrove habitats (Behrendorff et al., 2018); polar bears on large, unidentified stranded whales (Laidre et al., 2018), sperm whales (*Physeter macrocephalus*), belugas (*Delphinapterus leucas*), and narwhals (*Monodon monocerus*) (Smith & Sjare, 1990; Thiemann et al., 2008; Galicia et al., 2015); brown bears (*Ursus arctus*) and grey wolves (*Canis lupus*) on humpback whales in Alaska (Lewis & Lafferty, 2014); Arctic fox (*Vulpes lagopus*) on ringed seals (*Pusa hispida*) in the Canadian High Arctic (Tarroux et al., 2012); black-backed jackals (*Canis mesomelas*), lions (*Panthera leo*), and brown hyaenas (*Parahyaena brunnea*) on Cape fur seals (*Arctocephalus pusillus*); and lions on pilot whales (*Globicephala melas*) on the Namib

Figure 3. Mother-and-cub jaguar pair scavenging on a Guiana dolphin, Maracá Jipioca Ecological Station, 27 April 2023 (Photos taken by Adriano Gambarini)

Figure 4. Guiana dolphin carcass scavenged by a mother-and-cub pair of jaguars dragged upland into a mangrove forest, Maracá-Jipioca Ecological Station, 29 April 2023 (*Photo credit:* Adriano Gambarini)

Figure 5. Commercial boats fishing off the coast of Amapá State in the surroundings of Maracá-Jipioca Ecological Station, 29 April 2023 (*Photo credit:* Adriano Gambarini)

Desert coast (Hiscocks & Perrin, 1987; Kuhn et al., 2008; Stander, 2019). Harbor seal (*Phoca vitulina*) and river otter (*Lontra canadensis*) hairs have been found in grey wolf faeces in coastal British Columbia (Darimont et al., 2009); and harbor seal, elephant seal (*Mirounga angustirostris*), and California sea lion (*Zalophus californianus*) hairs have been found in coyote (*Canis latrans*) faeces in coastal California (Reid et al., 2018). Jaguar, the largest felid of the Americas, is considered an apex predator and a more obligate hunter than canids, ursids, hyenids, or mustelids (Pereira et al., 2013). Nevertheless, jaguars have been documented patrolling beaches and scavenging items brought in by the tide such as sea turtles (Autar, 1994; Carrillo et al., 2009; Castañeda et al., 2013; Guilder et al., 2015; Escobar-Lasso et al., 2016). Castañeda et al. (2013) also reported the scavenging of an unidentified marine dolphin by two male jaguars in Honduras, and Thomson et al. (2022) documented two female jaguars scavenging a common bottlenose dolphin (*Tursiops truncatus*) carcass in Costa Rica.

Although jaguars are excellent swimmers (Ramalho, 2012), the event reported herein is treated as a case of scavenging rather than predation due to the fishing activities nearby and as it is unlikely that a jaguar could catch a free-swimming dolphin in its medium. Jaguars are usually seen walking the island shores and beaches of MJES searching for food, and their paw prints were seen in several stretches of the island, always on the slopes. Furthermore, due to the unique insular characteristic of the MJES, the population of jaguars may have had ecological and behavioral patterns particularly shaped to exploit terrestrial and aquatic resources (Duarte et al., 2023), including marine resources. Consumption of a carcass by more than one jaguar is rare (Cavalcanti & Gese, 2010; Castañeda et al., 2013; Guilder et al., 2015), except in the case of a mother and its cub when shared scavenging is tolerated. In the case reported herein, the mother may have been protecting its dependent cub by offering food and possibly teaching or training it as often occurs with mammals (Box & Gibson, 1999).

This is only the third report of a jaguar scavenging a marine dolphin. It is the first record for South America, and the only one dealing with an insular situation. It is advised to maintain a monitoring system of the fishing efforts around the Maracá Islands to document similar episodes of bycatch/direct dolphin killing, and to monitor predation/scavenging/beach patrolling by jaguars (possibly with the use of camera traps) to better understand the meaning of this event and the contribution of dolphin meat to the jaguar ecology in the MJES.

Note: The supplemental figures for this short note are available in the "Supplemental Material" section of the *Aquatic Mammals* website: https://www.aquaticmammalsjournal.org/supplemental-material.

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