



Unusual aggressive behavior encountered by divers from Antillean manatees (*Trichechus manatus manatus*) in Puerto Rico

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Antillean manatees (*Trichechus manatus manatus*) are found throughout the Caribbean Sea and tropical West Atlantic Ocean (García-Rodríguez *et al.*, 1998; Lefebvre *et al.*, 2001). These mammals are frequently sighted in the coastal waters of Puerto Rico, particularly in the southern and eastern coasts. Their presence in Puerto Rico has been documented since the 1500s (Acosta, 1590; Stahl, 1892 as cited in Powell *et al.*, 1981), and the current minimum population estimate is a mere 128 individuals (Deutsch *et al.*, 2008) with past estimates ranging from 170-360 individuals (Powell *et al.*, 1981; Mignucci-Giannoni *et al.*, 2000; Deutsch *et al.*, 2007)^{1,2}, however the exact number of Antillean manatees occurring in Puerto Rico is unknown³. Recent work has addressed the distinct geographical, morphological and genetic differences between the Florida (*T. manatus latirostris*) and the Antillean (*T. m. manatus*) manatee, both subspecies of the West Indian manatee, resulting in two separate populations and further divided into four subpopulations around Puerto Rico (Hunter *et al.*, 2012). Mating behavior of this species has been documented in the past (Moore, 1956) and described as forming mating herds of one female and several males (Hartman, 1979). Due to the increase in anthropogenic disturbances to manatees in Puerto

Rico (*i.e.* hunting, boating collisions), they have been perceived as wary of humans (Mignucci-Giannoni *et al.*, 2000). Furthermore, there are currently no documented reports of aggressive behavior of manatees specifically directed towards divers, therefore our encounter with a herd of six manatees was unusual.

On 28 July 2014, two researchers from the University of Puerto Rico, Mayagüez, were SCUBA diving the inshore reef of Conserva in the La Parguera Natural Reserve (17°58'29"N, 67°02'47"W). At approximately 18m deep and along the fore reef habitat, we encountered a herd of six manatees (each approximately 2m in length) swimming closely together near the surface. We stopped our fish collection to observe their behavior, which appeared to be representative of courtship activity of an estrous herd described by Moore (1956) and Hartman (1979), where a group of up to 17 mature males unabatingly pursue a single female, relentlessly mouthing and riding her to the surface and rolling upside down to gain access to her abdomen. This estrous herd appeared to be comprised of one female and five males. As an attempt to counter the sexual advances, the supposed female broke away from the group and swam towards the surface. She rolled onto her back, which prompted the males to charge and corral her at the top of the fore reef. We were uncomfortable with the close proximity and aggressiveness of the mating herd. Thus, we aborted our collection and chose to return to the boat underwater, as to not be caught between and injured by the vigorous pursuits of the bulls at the surface. However, upon our departure from the area, C. Harms-Tuohy was rammed in the back of the head and pushed towards the reef by a bull that broke away from the herd. This incident solidified our decision to terminate the dive completely and leave the area. We repeatedly encountered

¹Rathbun, G.B. and Possardt, E. (1986) *Recovery plan for the Puerto Rico population of the West Indian (Antillean) manatee* (*Trichechus manatus manatus* L.). US Fish and Wildlife Service, Atlanta, GA.

²Slone, D.H., Reid, J.P., Bonde, R.K., Butler, S.M. and Stith, B.M. (2006) Summary of West Indian manatee (*Trichechus manatus*) tracking by USGS-FISC Sirenia Project in Puerto Rico. *Report prepared for the US Fish and Wildlife Service*

³US Fish and Wildlife Service (USFWS) (2009) Stock assessment West Indian manatee (*Trichechus manatus*) Puerto Rico stock (Antillean subspecies, *Trichechus manatus manatus*). Prepared by the Caribbean Field Office, Boquerón, Puerto Rico. 12 pp.

the group at approximately 1 m away, which halted our forward progress. We tried to diminish our presence and avoid contact by swimming low to the bottom and close to the reef. However, the manatees' advances were unavoidable, so we protected ourselves by shielding our heads and faces from bulls as they repeatedly approached us. As we continued to maintain a visual on their location, we noticed that, in every physical encounter, one manatee would break away from the group to approach us, while the rest of the group continued their courtship behavior near the surface. This activity continued for approximately 30 minutes as we continued along the fore reef until we returned to our anchor and ascended to a depth of 5 m to complete our safety stop. The herd continued this vigorous courtship activity within close proximity of our boat for an additional 10 minutes. We waited until the herd had left the area before surfacing.

After the incident, we reported the encounter to members of the Department of Natural and Environmental Resources of Puerto Rico and discussed the motivations and potential explanations with fellow colleagues in the marine mammal field. We initially believed that the animals' aggressive behavior was a defensive attempt to ward off possible threats. However, it appears that this encounter is indicative of courtship described by Hartman (1979), where bulls engaged in this activity would momentarily leave the herd to approach an anestrus female or engage in homosexual activities. This scenario seems plausible given the relatively poor visibility experienced at the dive site and the comparable appearance and size of a diver in full SCUBA gear to that of the manatees encountered. Although we feel confident in the categorization of this behavior, we did not observe any genitalia to accurately confirm the number of males and females in the group. It was unlikely that copulation was occurring, as manatees may remain in courtship herds for longer than a month, and our account more accurately resembles documented accounts of courtship rather than copulation (Moore, 1956; Hartman, 1979). To our knowledge, this is the first report of repeated aggressive behavior towards SCUBA divers from bull Antillean manatees engaged in an estrous herd.

The purpose for this publication is not only to report this unique encounter, but also to offer recommendations to divers on how to handle these rare situations underwater. Based on our *in situ* observations, it appeared that the bull manatee's advances became more aggressive as the supposed female was corralled at the surface, which simultaneously initiated vigorous rolling and thrashing, as the female attempted to counter their advances. Additionally this activity covered a considerable length of the reef. We were approximately 150 m from our boat at the first encounter, and we continuously observed the herd move in and out of sight as they chased the estrous female along the reef. These reasons prompted our decision to remain underwater as we made our way back to our boat, as this removed us from the more vigorous activity and effectively reduced our risk of incidental injury. Additionally, this gave us a full 360° view of our surroundings, which would have otherwise been hindered

if we had immediately surfaced. Fortunately, our air supply allowed us to remain underwater for the duration of the dive, complete our dive safety stop and exit the water safely. We recognize that this may not always be the case for other divers in similar encounters. However, we urge divers to first consider their own safety when approached by an animal with seemingly aggressive behavior. The initial reaction may be to immediately retreat to the surface, but just a few brief moments of calm, rational thinking could present a safer alternative underwater. Ultimately, we returned from the situation unharmed.

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