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Short Communication

First report of courtship and mating behavior by loggerhead sea turtle (*Caretta caretta*) in the Gulf of Ulloa, Baja California Sur, México

Ana Sofía Merino-Zavala[1], Eduardo Reséndiz[1,2,3], Yoalli Hernández-Gil[1] & María Mónica Lara-Uc[1,2,3]
[1]Universidad Autónoma de Baja California Sur, Área de Conocimiento de Ciencias del Mar y de la Tierra
Departamento Académico de Ciencias Marinas y Costeras, La Paz, B.C.S., México
[2]Proyecto Salud de Tortugas Marinas, Universidad Autónoma de Baja California Sur
Área de Conocimiento de Ciencias del Mar y de la Tierra
Departamento Académico de Ciencias Marinas, La Paz, B.C.S., México
[3]Alianza Keloni A.C., La Paz, B.C.S., México
Corresponding author: María Mónica Lara-Uc (mlara@uabcs.mx)

ABSTRACT. Courtship and mating behavior are important life cycle aspects of marine turtles not easily observed by researchers. A pair of loggerhead sea turtles (*Caretta caretta)* was documented circling, attempting and successfully mounting in the Gulf of Ulloa, Mexico. This type of activity is part of an already described courtship and mating behavior for other sea turtle species; however, this is the first report of open-ocean courtship and mating behavior by loggerheads in the Northern Mexican Pacific Ocean.

Keywords: *Caretta caretta*, sea turtle, animal conduct, reproduction, Baja California Peninsula, Mexico.

Direct observations of marine animal behavior, including sea turtles, may be restricted by the time that organisms spend on the surface and harsh environmental conditions which may limit visibility, depth, light, and glare. Sea turtle behavior may also be affected by introduced anthropogenic factors such as the close proximity of boats, the divers presence or research equipment. Non-invasive methods are often employed to describe and infer important natural and not easily witnessed behaviors (Bevan *et al.*, 2016; Patel *et al*., 2016), like courtship and mating activities, such as the use of Unmanned Aerial Vehicles (UAV), commonly known as drones (Bevan *et al.*, 2016). While there are several previous studies to understand these behaviors among sea turtles (Booth & Peters, 1972; Wood & Wood, 1980; Comuzzie & Owens, 1990), the majority of these concentrated on the green sea turtle species (*Chelonia mydas*). Documenting the frequency, location and timing of courtship and mating are fundamental for defining critical conservation areas and determining effective protections measures for sea turtles (Mills *et al.*, 2005).

Between September and December of 2016 at The Gulf of Ulloa, located in the Pacific of the Baja California Peninsula, México 28 field trips were conducted on small research vessels to capture loggerhead turtles, *C. caretta*, to evaluate their distribution and condition. We incidentally observed, eight pairs of loggerheads at the surface exhibiting courtship behavior (Fig. 1). It is important to note that from these eight pairs observed, only one pair was properly documented and thus is reported in this paper. We observed one sea turtle mounting another one from an approximate distance of 25-30 m; as we approached (~15 m), we confirmed that they were *C. caretta* turtles. We took as many pictures and videos using a GoPro Hero4 silver® camera for later analysis. In reviewing the video footage and still photos, we confirmed mating behavior as suggested by Comuzzi & Owens (1990) indicated by "circling" activity followed by attempted and successful mounting at the surface. Comparing our photos with those taken from a UAV (Bevan *et al.*, 2016), we further confirmed the mating behavior. It is important to mention that as we got closer, the pair separated highlighting the influence of anthropogenic presence over mating behaviors of wild species.

The Gulf of Ulloa is a highly productive area (González-Rodríguez *et al.*, 2012) that was established as a fishing refugee area to reduce the possible interaction of fishing with sea turtles (Cepeda *et al*.,

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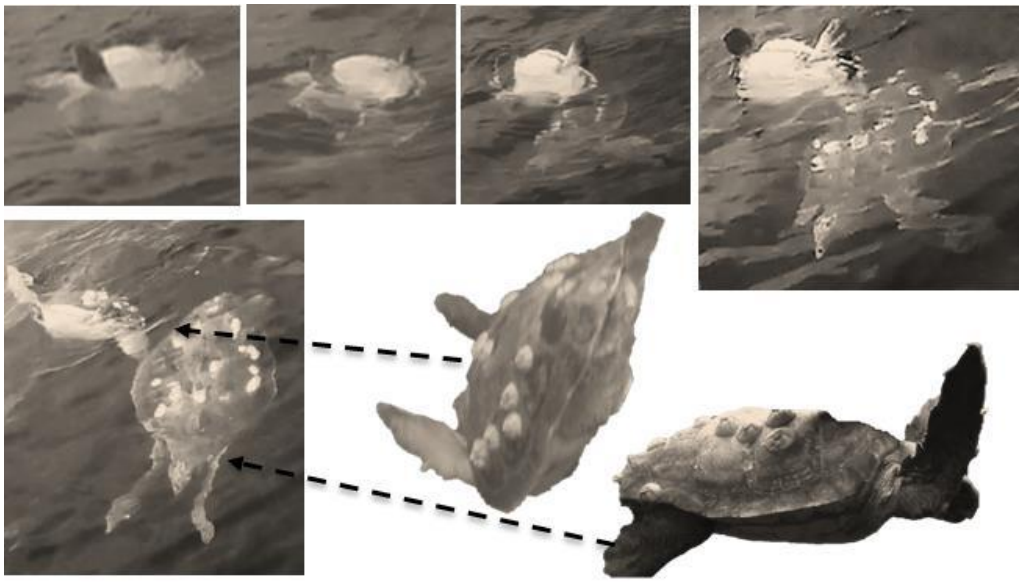

Figure 1. Pair of *Caretta caretta* separating from mounting at Gulf of Ulloa, B.C.S., México.

2012; DOF, 2016), it is also an important foraging habitat for the juvenile loggerhead turtles (Pekham *et al*., 2008; Seminoff *et al.*, 2014). However, to date, there is no published record of mating of *C. caretta* in this region neither nesting in the Mexican Pacific coast, thus this is the first reported evidence of this behavior in the Northern Mexican Pacific waters, with the possibility that not only juvenile *C. caretta* are using this feeding ground, as reported so far (Seminoff *et al.*, 2014), but adults are also present in the area. This valuable observation strengthens the proposal for this area to be protected for the conservation of this species. To have this type of behavior at an already important site like Gulf of Ulloa increases the loggerheads conservation concerns and for our team having observed these behaviors, came clear that we need to be prepared for further encounters.

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