REPTILES & AMPHIBIANS

Mating Behavior of Pelagic Seasnakes (*Hydrophis platurus*) in the Golfo Dulce, Puntarenas Province, Costa Rica

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The Pelagic Seasnake (*Hydrophis platurus*; Squamata: Elapidae), the species with the most extensive distribution among all marine snakes, lives in tropical and subtropical seas off the east coast of Africa, the Indo-Australian region, and across the Indian and Pacific Oceans to the West (Pacific) Coast of the Americas (Heatwole 1999; Wallach et al. 2014; Boundy 2020). In the Americas, that range extends from the Gulf of California in North America to the Galapagos Islands, northern Peru, and Chilean waters around Pascua Island (Campbell and Lamar 2004; Quiñones et al. 2014; Boundy 2020). In Costa Rica, these snakes are frequently observed along the Pacific Coast, especially near and within gulfs and bays and also around Cocos Island, Caño Island, and other smaller islands (Solórzano 2022).

Pelagic Seasnakes exhibit extensive variations in color, and a population of entirely yellow snakes occurs in the Golfo Dulce along the southern Pacific Coast of Costa Rica (Solórzano 2011). The Golfo Dulce (8.35000, -83.16000; Fig. 1) is a deep tropical estuary surrounded by steep mountains much like a fjord (Wolff et al. 1996). The gulf is about 50 km long, has an approximate surface area of 680 km^2, a width of 10–15 km, a shallow entrance with a depth of about 60 m, and a maximum depth of 215 m (Quesada-Alpízar and Cortés 2006). This ecosystem is the only anoxic basin on the Pacific Coast of the Western Hemisphere and is one of four systems with these characteristics anywhere in the tropics (Quesada-Alpízar and Morales-Ramírez 2004; Quesada-Alpízar and Cortés 2006; Svendsen et al. 2006).

The population of yellow Pelagic Seasnakes in the Golfo Dulce, although currently healthy and relatively abundant within the basin, is vulnerable, mainly due to the accelerated growth of the tourism industry and related activities (Solórzano and Sasa 2024). However, despite the extensive range and relative abundance of this species in many areas, including the Pacific Coast of Costa Rica (Voris 1983; Tu 1976; Lillywhite et al. 2015; Solórzano and Sasa 2025), few observations of reproductive activity have been recorded (Solórzano and Sasa 2011; Ineich and Dune 2013; Solórzano 2022). In oceanic populations in Costa Rica and Panama, which are predominantly bi- and tricolored, a few encounters of females at different stages of pregnancy or with recently born neonates (Solórzano 2004, 2022) suggest that breeding in the area appears to be non-seasonal, with two annual peaks in births, one in December and January and another in July and August, and a gestation period that varies from five to eight months (Kropach 1975; Solórzano 2004). In the Golfo Dulce, neonates have been reported in March and April 2009 and females with advanced pregnancy during the third week of March 2018 (Solórzano and Sasa 2024).

The yellow seasnakes that inhabit the Golfo Dulce tend to float on the surface, usually in calm waters free of debris (Solórzano 2011; Solórzano and Sasa 2024), whereas snakes of the bicolored oceanic populations tend to concentrate in drift lines (locally called foam cords) along with plant debris and garbage (Kropach 1975; Solórzano 2004, 2022).

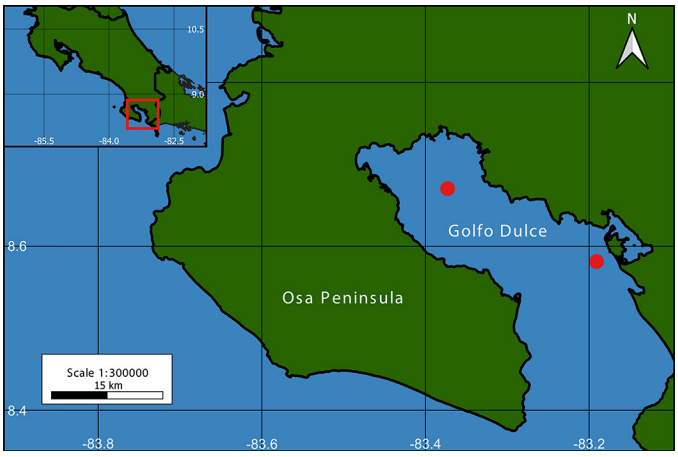

Figure 1. Locations (red dots) in the Golfo Dulce, Puntarenas Province, Costa Rica, where mating Pelagic Seasnakes (*Hydrophis platurus*) were observed (see text for coordinates).

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Figure 2. A pair of Pelagic Seasnakes (*Hydrophis platurus*) mating in the Golfo Dulce near Playa Azul, Puntarenas Province, Costa Rica, on 9 August 2024. Note the male coiled around the base of the female's tail. Photograph by Federico Pizarro Tenorio.

Figure 3. A pair of Pelagic Seasnakes (*Hydrophis platurus*) mating in the central part of the Golfo Dulce Basin, Puntarenas Province, Costa Rica, on 13 August 2024. Note the male coiled around the base of the female's tail. Photograph by Jairo Alpízar Tijerino.

The only observation of mating Pelagic Seasnakes, between a bicolored and a yellow individual on the morning of 12 February 2011 during a tourist tour in the gulf, was of a male coiled around a female's tail while floating passively in calm water (Solórzano and Sasa 2024).

During morning hours on 9 and 13 August 2024, two pairs of mating Pelagic Seasnakes were observed in the interior of the Golfo Dulce, the first near Playa Azul (8.63251, -83.17196) (Fig. 2) and the second near the central part of the interior basin (8.58135. -83.22246) (Fig. 3). As in the previous observation, in both instances males were coiled around the bases of the females' tails and the pairs were floating passively in calm water. Neither pair responded to the presence of the boats from which photographs and videos were taken. The pair encountered on 13 August was observed for about 40 minutes before the boat left the site. To date, the duration of mating in these seasnakes remains unknown.

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