

Dog Attacks on Loggerhead Turtles Nesting in Greece

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Nesting sea turtles may suffer attacks from various land predators such as jackals (Peters *et al.* 1994), jaguars (Troëng 2000, Arroyo-Arce & Salom-Pérez 2015, Alfaro *et al.* 2016), coyotes (Drake *et al.* 2003), and dogs (Caldwell 1959, Santos & Godfrey 2001). As far as can be ascertained, there has never been a documented dog attack on a nesting sea turtle in the Mediterranean. The Greek NGO ARCHELON has conducted morning and night surveys on nesting beaches of Greece since the beginning of 1980s. Although stray dogs and foxes regularly visit nesting beaches to predate on turtle eggs or hatchlings, we had never recorded a dog attack on a nesting turtle, until recently in Kyparissia Bay, Greece.

During the nesting seasons of 2014 and 2015, adult female loggerhead turtles were found severely injured at the nesting area of southern Kyparissia Bay, western Peloponnese. In recent years, this 9.5km nesting beach hosts what is considered to be the largest nesting loggerhead aggregation in the Mediterranean (Margaritoulis *et al.* 2015).

The injured turtles were encountered mostly during the night surveys, when individual nesting females are tagged and measured. Injured turtles bore severe wounds on both front limbs at the shoulder area. The skin in this area was torn off and the muscles eaten by the dogs, exposing the bones. In one case, an injured turtle was found on the beach, during a morning survey, unable to move due to its severe injuries (Fig. 1). Identification of dogs

as the attacking animals was initially deduced from their tracks in the sand. Subsequently, during a night survey a pack of three stray dogs was directly observed attacking a nesting turtle. It should be noted that no golden jackals (*Canis aureus*), a known predator of adult turtles in the Mediterranean (Peters *et al.* 1994), exist in this area (Giannatos *et al.* 2005).

Examination of dog tracks and blood stains on sand along the turtles' crawls indicated that the attacks occurred mostly during the procedure of digging or egg-laying. In 2014, 12 individual turtles were found injured by dogs, seven of which were transported to ARCHELON's Rescue Centre (RC) in Glyfada (Fig. 2), three turtles were treated locally and released, and the remaining two turtles died on site before transport to the RC. All seven turtles admitted to the RC were eventually released following varying rehabilitation durations. The total number of injured turtles was certainly more than the 12 found, as blood stains were observed on the sand along several other turtle nesting crawls, as well as during night surveys several turtles were observed bearing partly healed bite marks at the same locations as those attributed to dog attacks.

To counter the threat to nesting turtles from the stray dogs, special night patrols were organized to chase the dogs off the beach. Further, known dog owners near the beach were visited to request that they keep their dogs restrained at night, which all owners reported doing. Moreover, an attempt to catch the stray dogs with



Figure 1. Emergent adult female turtle unable to move due to severe injuries on fore limbs caused by stray dogs on 25 June 2014 in Kyparissia Bay. The turtle did not nest and died on site, before transportation to ARCHELON's Rescue Centre.



Figure 2. Loggerhead turtle, injured by dogs while nesting on 30 June 2014 in Kyparissia Bay, is prepared for transportation to ARCHELON's Rescue Centre.

live traps failed. Dog attacks to nesting turtles finally ceased in late July 2014, before the end of the nesting period, suggesting that the stray dogs had left the area.

During the subsequent nesting season (2015) there were also similar attacks, albeit to a lesser extent: one turtle was transported to RC while five other females were treated locally and released after a few days. The reduced number of attacks in 2015 was possibly a result of running special night-patrols from the beginning of the nesting season (2 June) to discourage dogs from attacking nesting turtles. No other incidents were recorded in subsequent seasons, including 2018. Therefore, we conclude that the attacks were inflicted by an occasional group of stray dogs.

Continuous removal of reproductive females may have a severe impact on a sea turtle population (Margaritoulis & Touliaou 2011). However, the relatively low number of attacks compared to the large number of nesting females in this area (>1200 nests/yr in both 2014 and 2015 with no subsequent decline in numbers), as well as the eventual cessation of attacks, indicates that the overall impact of these attacks to the loggerhead population in southern Kyparissia Bay was minimal.

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