

## Unusual Record of a Juvenile Hawksbill Sea Turtle in a Mangrove Estuary, El Salvador

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Hawksbill, *Eretmochelys imbricata*, turtles are not frequently reported in El Salvador, Central America (East Pacific). However, a juvenile hawksbill turtle was captured in January 1988 by a group of fishermen using gill nets approximately 6 km inside the Barra de Santiagos estuary in the area of Gloria Linda. Photographic records and measurements were taken (curved carapace length of 45 cm with a curved carapace width of 40 cm). The turtle appeared healthy and swam vigorously when released by the fishermen on the ocean

front. Red mangrove, *Rhizophora mangle*, trees which border this estuary grow on a muddy substrate. Rocks and other hard substrate occur principally near the estuarine mouth. However, a variety of molluscs and crustaceans live attached and between the mangrove root system further inside the estuary mouth. It is not known if this turtle was feeding or how long it had been inside this estuary or if its presence corresponded to an accidental event.

## Possible Link Between Sea Turtle Bycatch and Flipper Tagging in Greece

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On the island of Kefalonia, Greece, a tagging programme has been in place since 1984. Plastic roto-tags are applied to the rear flippers of all loggerhead turtles (*Caretta caretta*) nesting at the rookery of Mounda. Double tagging is utilised to minimise errors resulting from tag loss. To date, 139 females have been tagged. Tag loss over the 14-year period has been calculated at approximately 8% per year (Stringell *et al.* 1997).

In terms of meeting research goals, this practice may be deemed relatively successful. It has allowed both the accurate assessment of the return rate of individual females and a reasonable idea of population fluxes (Hays & Sutherland 1991; Houghton *et al.* 1998). Additionally, the use of these tags has given us an insight into sea turtle movements outside the nesting season via strandings (n=4, winter 1996) and at-sea sightings by fishermen (n=11, winter 1996).

This has led to concern amongst fishermen and researchers alike, as the majority of sightings are a result of entanglement (73% of reported sightings, winter 1996). This finding may be indicative of a successful saturation tagging programme, or alternatively may suggest that turtles bearing plastic flipper tags are more likely to become entangled in nets, as suggested in a

study by Nichols *et al.* (1998). This claim is further substantiated by observations, in 1997, of sea turtles coming ashore (n=4; 7% of emergences; 27% of nesting females) with remnants of fishing net tangled around their tags.

In terms of conservation, this poses two major problems: the first, and most obvious, is the potential loss of reproductively active females through drowning; the second is the financial burden inflicted on the fishing communities through damage to their nets. In addition, if tagged individuals face increased mortality, erroneous population estimates may arise.

The most commonly used nets around Kefalonia are comprised of three layers of square nylon mesh (32mm; K. Xeneopoulos pers. comm.). Fishing vessels in the area typically deploy approximately 1200m of fixed net, although larger boats can deploy as much as 3000m. The entrapment of loggerheads in fixed netting around Kefalonia may also result from their opportunistic feeding behaviour, with numerous observations being made of turtles feeding on fish previously caught in nets. This suggests that turtles around Kefalonia may be attracted to fixed netting to feed on entrapped fish.

A tagging method is required that allows individual