

A particular case of recapture at the small tuna trap of Ceuta?

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RESUMEN: Esta nota documenta un caso de recaptura de una tortuga boba (*Caretta caretta*) en la almadrabetta de Ceuta, en el Mediterráneo occidental. Una tortuga boba fue liberada de la almadrabetta el 26 de julio de 2025 tras su rehabilitación y marcaje satelital, y fue recapturada en la misma almadrabetta tan solo doce días después. Durante este periodo, la tortuga recorrió una distancia estimada de 489,96 km, mostrando movimientos neríticos a lo largo de la costa norteafricana. El caso pone de relieve el potencial de las recapturas para sesgar las estimaciones de captura incidental de tortugas marinas, ya que la mayoría de las evaluaciones no tienen en cuenta las capturas repetidas de los mismos individuos. Estos eventos pueden no ser excepcionales, sino recurrentes, especialmente en pesquerías locales. Estos hallazgos resaltan la importancia de incorporar las probabilidades de recaptura en los modelos de captura incidental y la utilidad de la telemetría para evaluar el comportamiento y la vulnerabilidad de las tortugas.

The objective of this note is to report a particular case of recapture of a loggerhead turtle (*Caretta caretta*) that had been released with a satellite tag after rehabilitation following incidental capture at a small tuna trap of Ceuta. Remarkably, twelve days after its release, the same individual was recaptured in the very same trap. This case has direct implications for the interpretation of sea turtle bycatch estimates, particularly regarding the potential bias introduced by recaptures, and also provides insights into movement patterns of loggerhead turtles in the western Mediterranean.

In June 2025, four loggerhead turtles that had been incidentally captured at the

Ceuta small tuna trap and subsequently transferred to a rescue center, were equipped with satellite tags prior to their release. Tags consisted of Splash10-F-385D models (*Wildlife Computers*) with epoxy/fiber-glass fixation kits. Each tag measured approximately 121 × 66 × 51 mm, weighed 290 g, and had an estimated battery life of 500 days. Tags were attached to the shell (neural scutes) using epoxy resin and a biodegradable, temporary anchoring system, following manufacturer guidelines.

One of the tagged turtles, named Daniela, had a minimum curved carapace length of 65 cm (standard curved carapace length 66,5 cm). It was released from

Ceuta on 26 July 2025 and was recaptured at the same small tuna trap on 7 August 2025 (Figure 1). Turtle locations were obtained from the fastGPS file generated by the Wildlife Computers tag, which provides Fastloc GPS positions. Distances between consecutive positions were calculated using the `distHaversine` function from the `geosphere` R package, which computes the great-circle distance (haversine formula) in meters between pairs of geographic coordinates on the Earth's surface assuming a spherical model. The total distance traveled was then obtained by summing these segment distances along the track. During the twelve days of free range, the turtle travelled a total estimated distance of 489.96 km, remaining in neritic waters and showing coastal movements along the North African shoreline.

Recapture events of loggerhead turtles have been previously documented in Mediterranean fisheries, particularly in surface longline operations (Tomás *et al.*, 2001; Báez *et al.*, 2011).

The Mediterranean is a hotspot for sea turtle bycatch, with some of the highest rates worldwide (Lewison *et al.*, 2004). Recent estimates suggest approximately 132,000 annual interactions with fisheries in the region (Casale *et al.*, 2020). It is important to note, many of these interactions are non-lethal, and turtles can be often released apparently unharmed. However, bycatch estimates rarely account for recapture events, such as the case presented here. Failure to correct recapture rates could lead to overestimations of total interaction levels, as individual turtles may be counted multiple times. This issue becomes particularly relevant in fisheries operating in restricted

Daniela

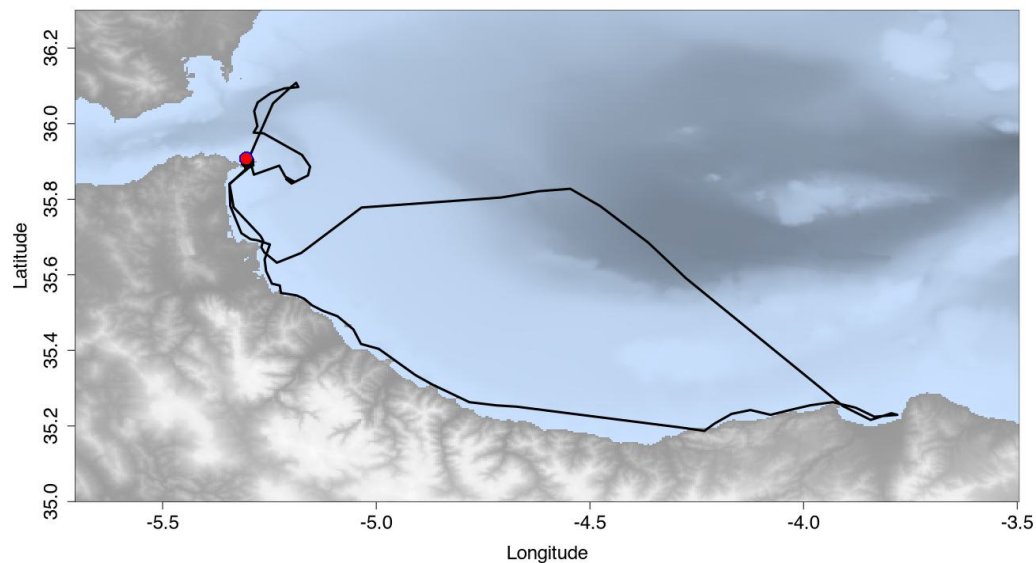


Figure 1: Movement track of the loggerhead turtle Daniela (489.96 km) from its release on 26 July 2025 (red point) until its recapture at the Ceuta small tuna trap on 7 August 2025 (black point).

Figura 1: Trayectoria recorrida de la tortuga boba Daniela (489,96 km) desde su liberación el 26 de julio de 2025 (punto rojo) hasta su recaptura en almadrabeta de Ceuta el 7 de agosto de 2025 (punto negro).

geographic areas, such as tuna traps, where local turtle movements increase the likelihood of repeated capture.

This case may not represent an isolated event but rather a recurrent phenomenon of recaptures, suggesting that capture estimates could be significantly biased. The case reported here highlights two key points: 1) the need to incorporate recapture probabilities into bycatch estimation models to avoid bias in mortality and interaction statistics, and 2) the importance of satellite telemetry in elucidating short-term movement behavior and vulnerability of turtles in neritic habitats.

It is important to emphasize that the tagging model employed has been proved not to interfere with the biology or behavior of sea turtles (Stokes *et al.*, 2025). Nevertheless, it might be hypothesized that the observed recapture could be related to a case of “habituation” whereby the individual altered its natural behavior after having received food and shelter during

its stay at the rescue center. Similar cases of habituation have been reported in other marine turtle studies (e.g., Bellido *et al.*, 2011). However, such an explanation appears unlikely in this case. Ceuta is located on a peninsula connected to the mainland by an isthmus, with the tuna trap and the rehabilitation facility situated on opposite sides of the peninsula. Therefore, it is implausible to speculate that the turtle intentionally returned to the recovery center, as the recapture site is geographically separated from the location of its rehabilitation.

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