

DO MEDITERRANEAN IMMATURE LOGGERHEAD TURTLES MIGRATE SEASONALLY ? CONTRASTING EVIDENCE FROM STRANDED SPECIMENS, FISHERMEN AND SATELLITE TRACKING

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Abstract

We studied the existence of a northward spring migration of immature loggerhead turtles in the Balearic archipelago. Fishermen claimed that loggerhead turtles are more often observed in summer, when the annual peak for stranded turtles was also recorded. However, none of the five turtles tracked by satellite from April 2003 to July 2003 migrated northwards. This suggested that turtles do not migrate northwards in spring. Reported seasonal patterns of sightings and strandings might reflect an increase in mortality rate due to the incidental catches produced by fishing.

Keywords: *Caretta caretta*, migration, telemetry

Immature loggerhead turtles (*Caretta caretta*) inhabiting cool-temperate areas usually migrate seasonally (1) to avoid cold-stunning at temperatures lower than 12 °C (2). Around the Balearic Islands, immature loggerhead turtles occur year round (3), but in the northern islands they have been claimed to migrate southward in winter.

We investigated the existence of a latitudinal migration using three methods: (i) recording the seasonal number of carcasses stranded in the archipelago from 1998 to 2002; (ii) conducting in 2002 (May-August) a questionnaire-based survey that included questions about monthly variation in sightings; and (iii) deploying in early April 2003 Telonics ST-18 satellite transmitters (4) on five immature loggerhead turtles (average Straight Carapace Length: 41.36 cm; range 37.1-48.7cm) collected off Formentera island. Position data were received and processed by the Argos Service (5). Turtles were tracked till late July. The Rayleigh test (6) was used for testing the existence of a preferred direction.

Fishermen stated that loggerhead turtles were more often observed during summer, when the annual peak for stranded individuals also occurred (Fig. 1). However, none of the five tracked turtles exhibited a consistent northward migration (Fig. 2) and the Rayleigh test did not identify any preferred direction for any of the animals (turtle A, $z=1.8$ $p>0.05$; turtle B, $z=2.4$ $p>0.05$; turtle C, $z=2.2$ $p>0.05$; turtle D, $z=1.2$ $p>0.05$; turtle E, $z=2.8$ $p>0.05$).

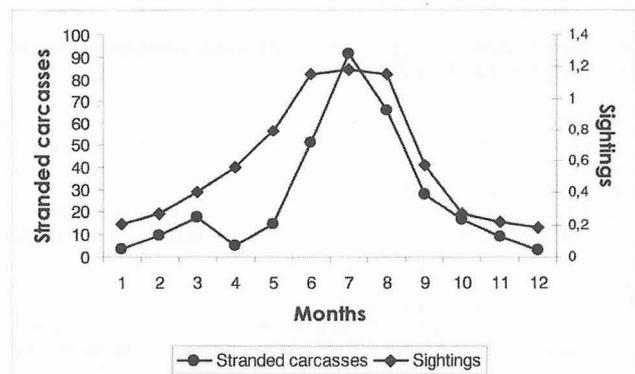


Fig. 1. Seasonal variation in sightings made by professional fishermen (left) and occurrence of stranded turtles (right).

These results suggest that immature loggerhead turtles did not migrate northward in spring. The reported summer increase in sightings and strandings is likely to be the result of the seasonal increase in mortality caused by fishing gears used only during the summer (3, 7). A further element affecting fishermen perception towards turtle abundance is likely to be the fact that these latter fishing gears are set and hauled during light hours, whereas those used in autumn and winter are set and hauled at night, when turtle sightings are unlikely. It is thus concluded that both information from fishermen and seasonal variation in number of stranded animals cannot be used to infer turtle migration or abundance.

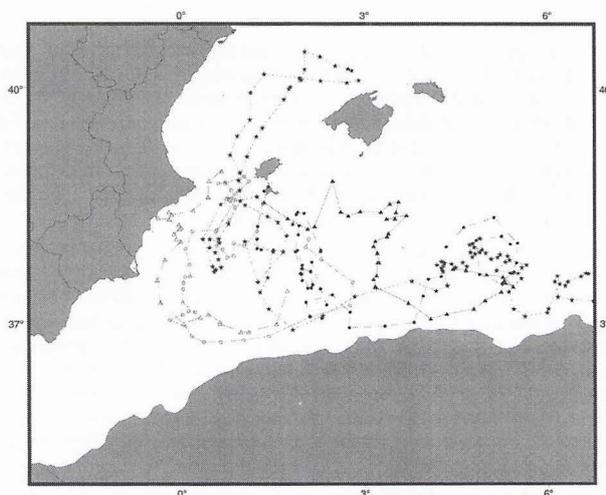


Fig. 2. Tracks followed by the five tagged turtles (early April to late July, 2003) within the Algerian basin.

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