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Abstract

Horizontal and Vertical Movements of Swordfish in the Atlantic Ocean and Mediterranean Sea †

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Abstract: The swordfish (*Xiphias gladius*) is an epi- and mesopelagic oceanic species with a wide geographical range within the tropical and temperate waters of all oceans, and is one of the most important target species in surface-longline fisheries. In order to study the vertical habitat-use and migration patterns of swordfish, and to help delimit the stock boundaries and mixing rate of swordfish between the Mediterranean Sea and the North and South Atlantic, satellite telemetry tagging is used. A total of 26 miniPAT tags have been deployed so far in the North (n = 13) and South Atlantic Oceans (n = 9) and the Mediterranean Sea (n = 4). Of the deployed tags, eight individuals suffered post-release mortality; one was fished after one day; three did not transmit; three tags had premature releases with less than 30 days; four had premature releases with more than 30 days; six tags reached full term; and one individuals' tag is still at large. The data from ten tags were analyzed for horizontal and vertical habitat use. The results presented herein are preliminary, as more tag deployments are planned. The results show that swordfish moved in several directions, travelling considerable distances in both the North and South Atlantic Ocean, while having shorter displacements in the Mediterranean Sea. Regarding vertical habitat use, swordfish spent most of the day-time in deeper waters, and were closer to the surface during the night-time. The deepest dive recorded was 1480 m. Regarding temperature, swordfish inhabited waters with temperatures ranging from 3.9 °C to 30.5 °C, mostly residing in waters between 10–12 °C during the day-time and in waters >20 °C during the night-time. The migration of swordfish in this study agrees with the current stock boundaries defined for this species in the Atlantic Ocean, and shows a high vertical overlap with pelagic longline fisheries that are set during the night-time.

Keywords: *Xiphias gladius*; telemetry; habitat use; movement patterns; Atlantic; Mediterranean

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