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Abstract Preview

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PELAGIC HABITAT CHARACTERIZATION OF LOGGERHEAD TURTLES, *CARETTA CARETTA*, IN THE SOUTH PACIFIC OCEAN (2008-2009): INSIGHTS FROM SATELLITE TAG TRACKING AND ENVIRONMENTAL DATA

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The location and migration behavior of loggerhead turtles is of importance to the protection of the species, particularly in the high seas. In the North Pacific, work on loggerhead turtle migrations to minimize bycatch resulted in the discovery of the Transition Zone Chlorophyll Front as a migration corridor and foraging area. Similar work has yet to be done in the South Pacific. This study presents the preliminary investigations on loggerhead turtle movements in the open ocean of the western South Pacific using 42 captive-reared juveniles (19 months of age) tagged and released in a group off of the coast of New Caledonia. The turtles were tracked using SPOT-5 ARGOS satellite tags. The satellite position data was processed through a state space model (SSM) to produce corrected, daily tracks. The description of the habitat was accomplished using various satellite remotely-sensed data and other data products including sea surface temperature, ocean color, sea surface height, geostrophic currents, wind stress curl, bathymetry, and earth magnetic field data. For most variables, gradients were examined as well. The analysis was primarily a resource selection experiment with the environmental variables deemed possible turtle resources. The variable as found on the closest pixel resolution to the turtle's location was taken as the utilized portion of the resource. The available portion of the resource was taken from a circle of habitat centered on the release point and with an expanding radius at a rate determined by the swimming behavior of the turtles. The relative percentage of time occupying a value of the resource was compared to the relative abundance of that value within the habitat circle using a Kolmogorov-Smirnov test. For the variables where the cumulative distributions differed significantly, the difference between the percentage of time the turtle spent at that level of resource and the percentage of temporal and spatial abundance of that level was analyzed using an index of selectivity. Of the 16 variables tested, 7 were significant. Contrary to the findings in the North Pacific, the habitat area in the South Pacific appears to encompass a much larger spatial region. The loggerhead turtles appear to travel to three distinct habitat areas: the Tasman Sea between Australia and New Zealand; north and east towards Fiji, Kiribati, and the Cook Islands; and off of the east coast of New Zealand between 40-45 degrees South. There was evidence of turtles using the East Australian Current to forage, with some tracks circling along the coast of Australia. An analysis of turtle location in various EEZs and the high seas indicated that the majority of time was spent within various EEZs in the South Pacific.

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