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Versión en español

STABLE ISOTOPES ASSOCIATED WITH SATELLITE TELEMETRY TO IDENTIFY FORAGING AREAS OF *LEPIDOCHELYS OLIVACEA* NESTING IN BRAZIL

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BACKGROUND

Sea turtles have a wide geographic distribution and can perform extensive migrations between nesting and foraging areas. Knowledge of the habitats used helps to understand the ecology of these animals. In this study, we used stable isotope analysis ($\delta^{13}C$ and $\delta^{15}N$) in red blood cells and satellite telemetry data to identify the main foraging areas of female olive ridley turtles.

METHODS

During 2018 and 2019, 13 females were equipped with satellite transmitters and blood samples were collected at the time of nesting.

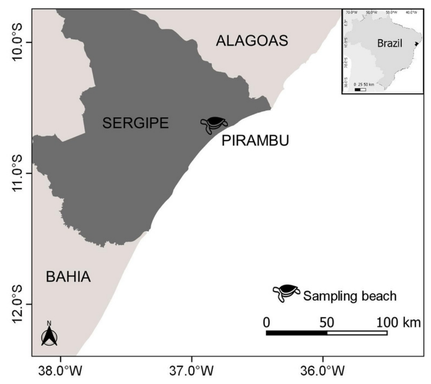

Fig 1. Where the female olive ridley turtles were sampled on Pirambu beach in Sergipe, Brazil.

FINDINGS

3 post-reproductive migration routes from the nesting site were identified based on tracking data. For one individual it was not possible to identify the migratory destination due to the short period of signal transmission.

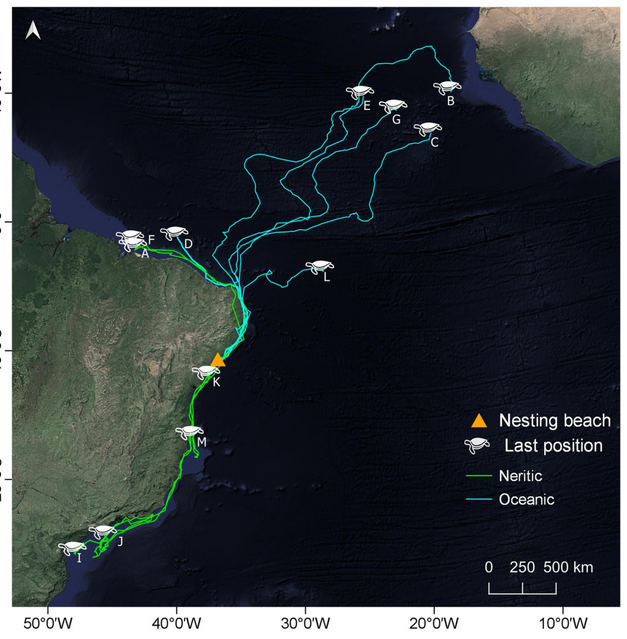

Fig 2. Post-reproductive migration of 12 tracked *Lepidochelys olivacea* females that nesting in Sergipe. Where the nesting beach also corresponds to the sampling beach.

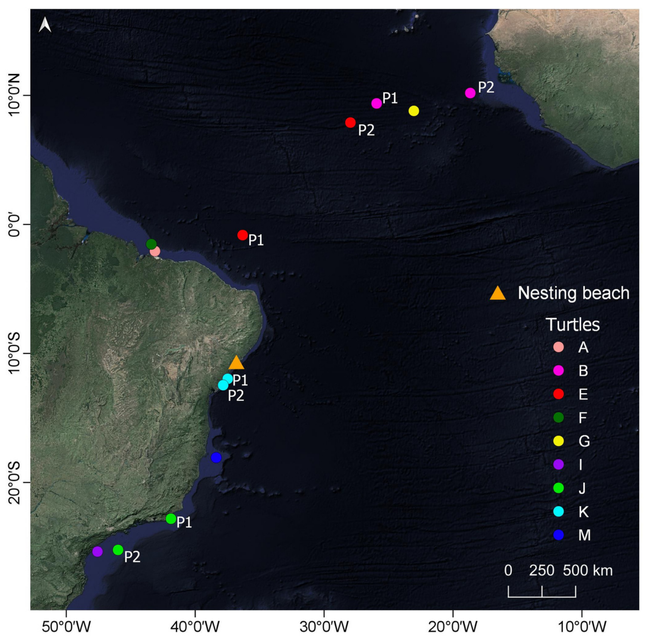

Fig 3. Midpoint of the foraging grounds of nine female *Lepidochelys olivacea*, which nest in Sergipe. The points with the same color represent two different feeding areas used by the same individual, being P1 the first and P2 the second foraging point.

Cluster analyses:

1. Higher $\delta^{13}C$ values, suggesting the use of neritic regions (medoid= -17.3‰; n=4)
2. Lower $\delta^{13}C$ values, indicating the use of oceanic areas (medoid= -19.3‰;n=9).

83.33% of the samples were correctly classified into the neritic and oceanic group.

Large variability in stable isotope values was also found for neritic turtles ($\delta^{13}C$ mean= -17.6‰; sd= 1.5; $\delta^{15}N$ mean= 8.8‰; sd= 2.7) compared to oceanic ones ($\delta^{13}C$ mean = -19.1‰; sd= 0.3; $\delta^{15}N$ mean = 8.9‰; sd= 1.2), is probably related to the variability in isotopic baseline values of habitats used along the Brazilian coast, and/or by different diet preferences.

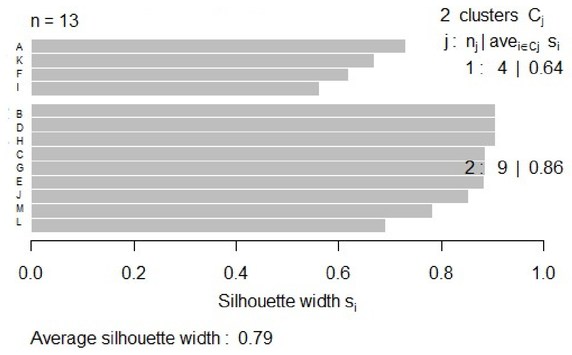

Fig 4. Groups 1 and 2 identified from the isotopic values of $\delta^{13}C$ in the red blood cells of 13 female olive ridley turtles.

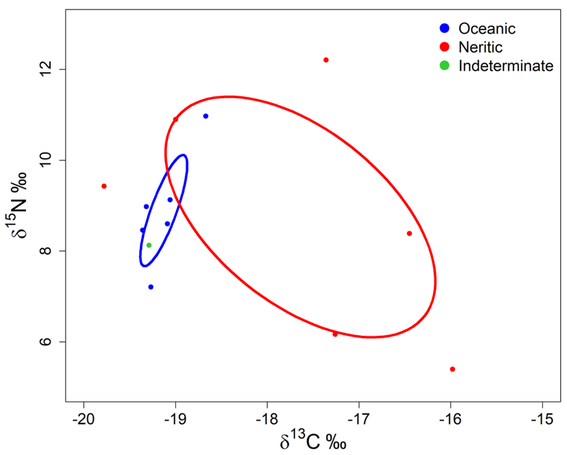

Fig 5. Ellipses representing the isotopic niche of the oceanic and neritic groups, and undefined specimen, from of the isotopic values of $\delta^{13}C$ and $\delta^{15}N$ in the red blood cells of olive ridley turtles.

CONCLUSIONS

- $\delta^{13}C$ is a good predictor for identifying oceanic and neritic destinations in the post-reproductive migration of olive ridley turtles.
- The techniques demonstrating a complexity of spatio-temporal patterns in the use of food resources
- Suggests a generalist species both in feeding behavior and migratory destination, but probably composed of a mixture of specialists and opportunistic individuals.
- The results obtained through stable isotope analysis provided a new perspective for using these biochemical tracers that allow obtaining more representative sample numbers at the population level.

ACKNOWLEDGMENTS