

Satellite Telemetry Reveals Hot Spot for Conservation of East Pacific Green Turtles During Internesting in Costa Rica

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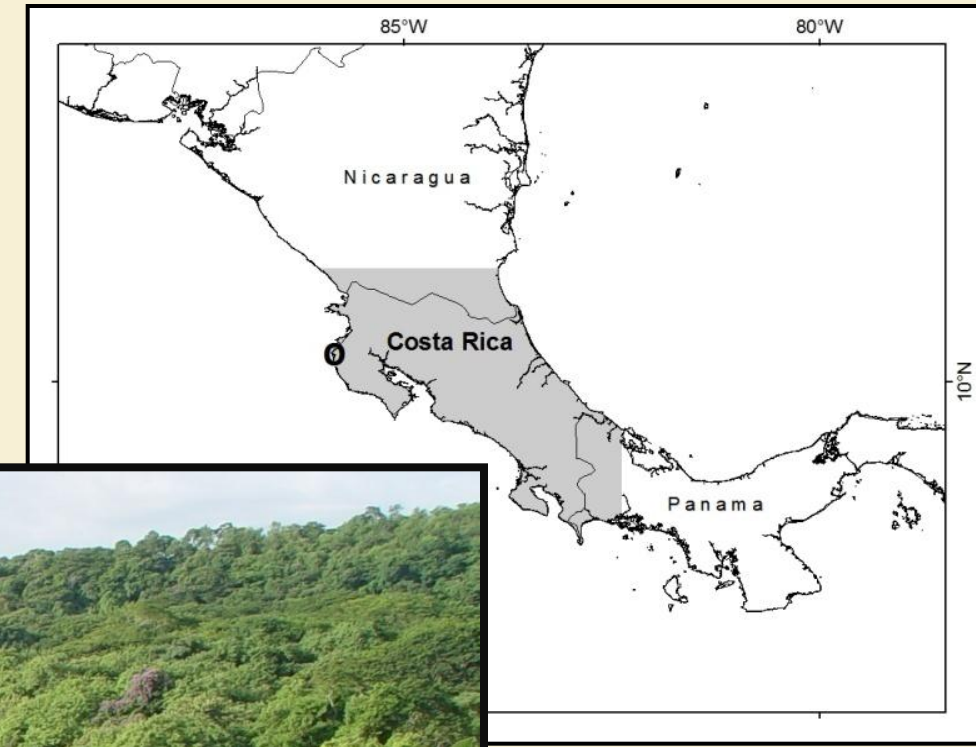
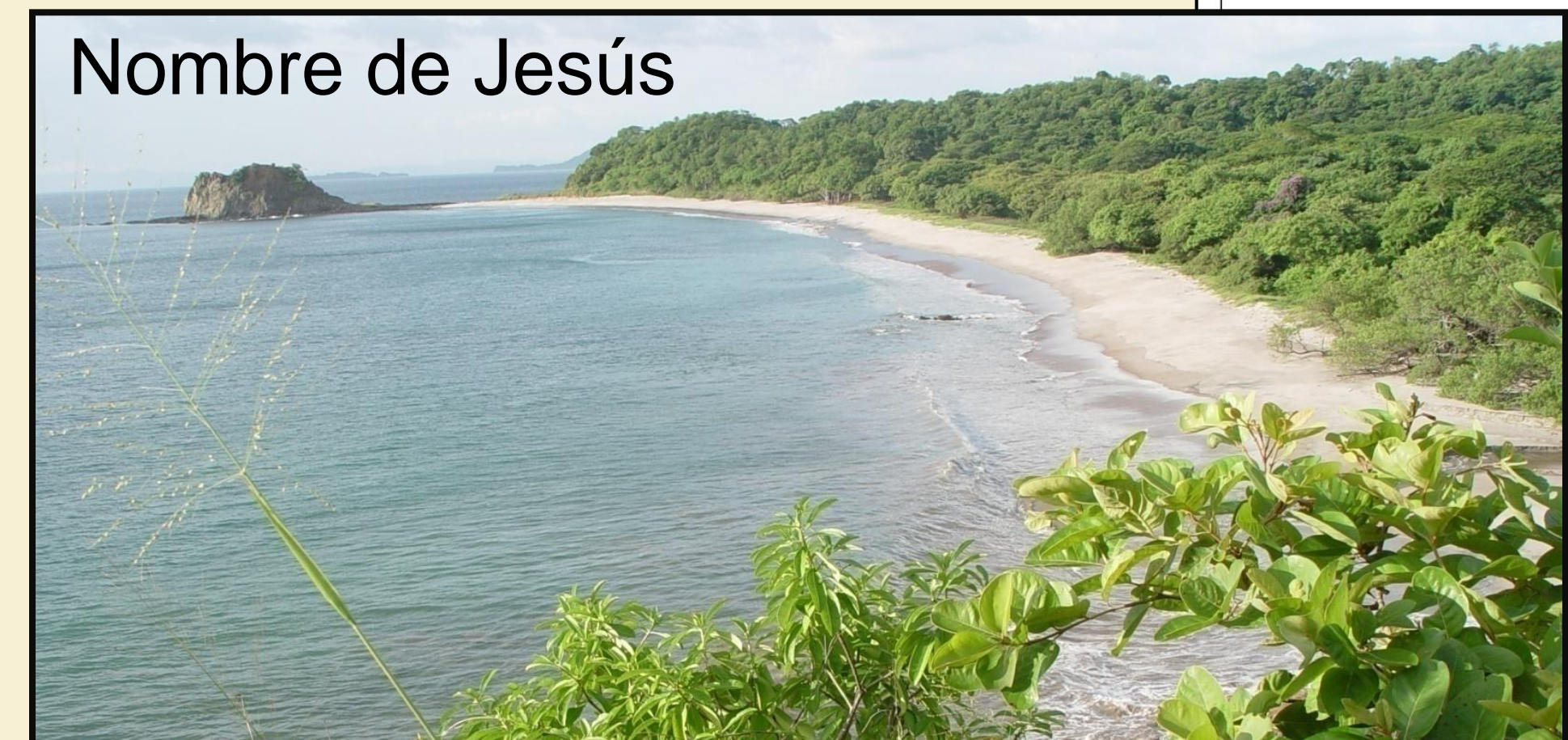
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Introduction

- The green turtle in the eastern Pacific is in danger of extinction due to harvest of eggs, coastal habitat degradation, and by-catch from fisheries.
- Satellite telemetry has helped elucidate distribution and dive patterns of sea turtles as they travel at sea.
- During internesting periods (intervals between successive clutches within the same nesting season) the behavior of adult female sea turtles appears to be characterized by energy optimization.

Study area

Nombre de Jesús



Objective: Identify areas of high use, diving behavior, and submergence patterns during the internesting intervals of the East Pacific green turtles at a recently documented nesting beach in Costa Rica.

Methodology

- Ultrasound Imagery was used to determine reproductive status.



a) Ultrasound scanning of a nesting green turtle; b) Ultrasound image of an ovary of a turtle that will begin internesting behavior.

Satellite transmitter attachment

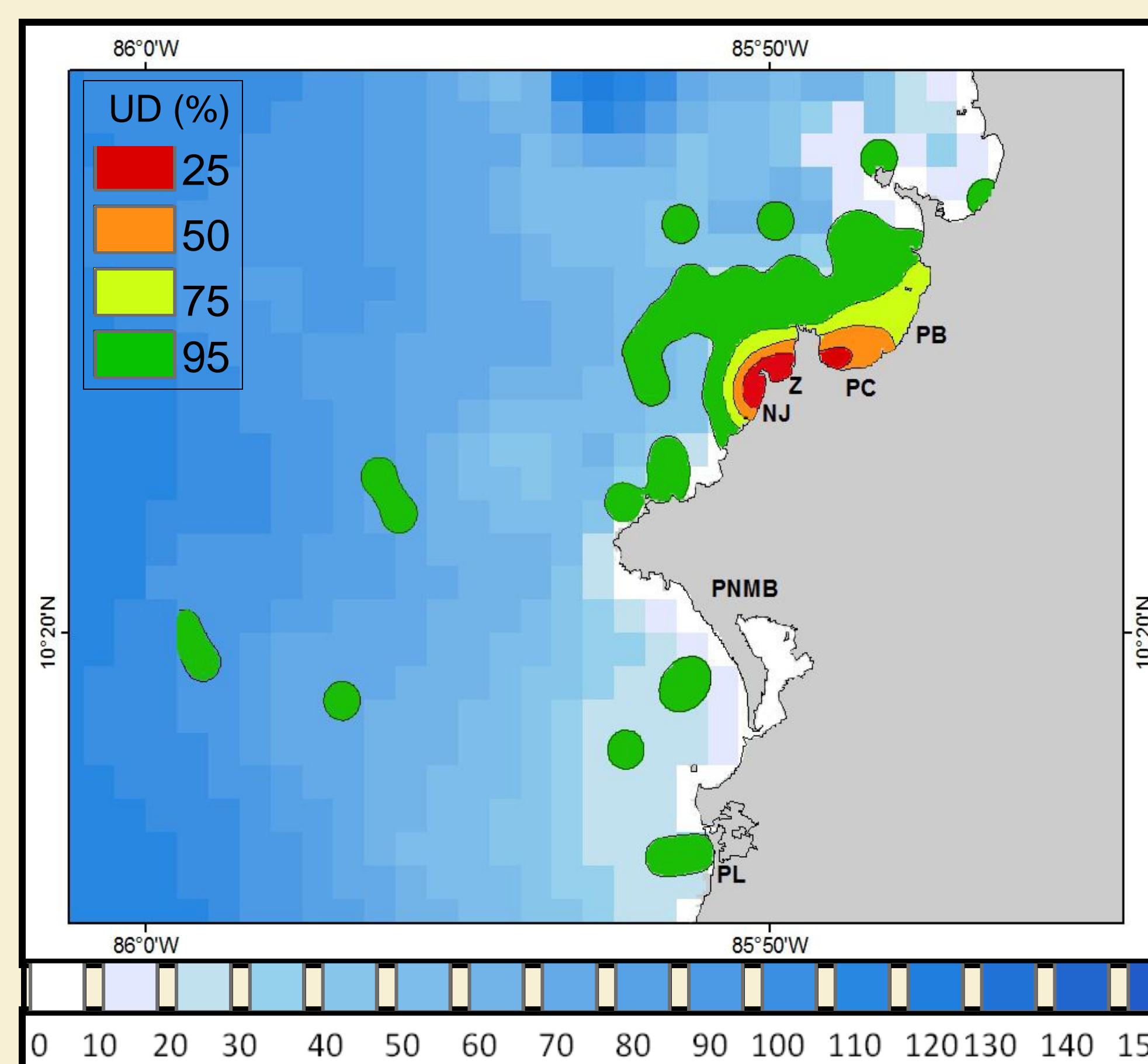
- Towable Mk 10 PAT tag, programmed for opportunistic transmissions to obtain near-real-time locations and dive data.



Transmitters were attached to 13 female Green turtles beginning internesting period.

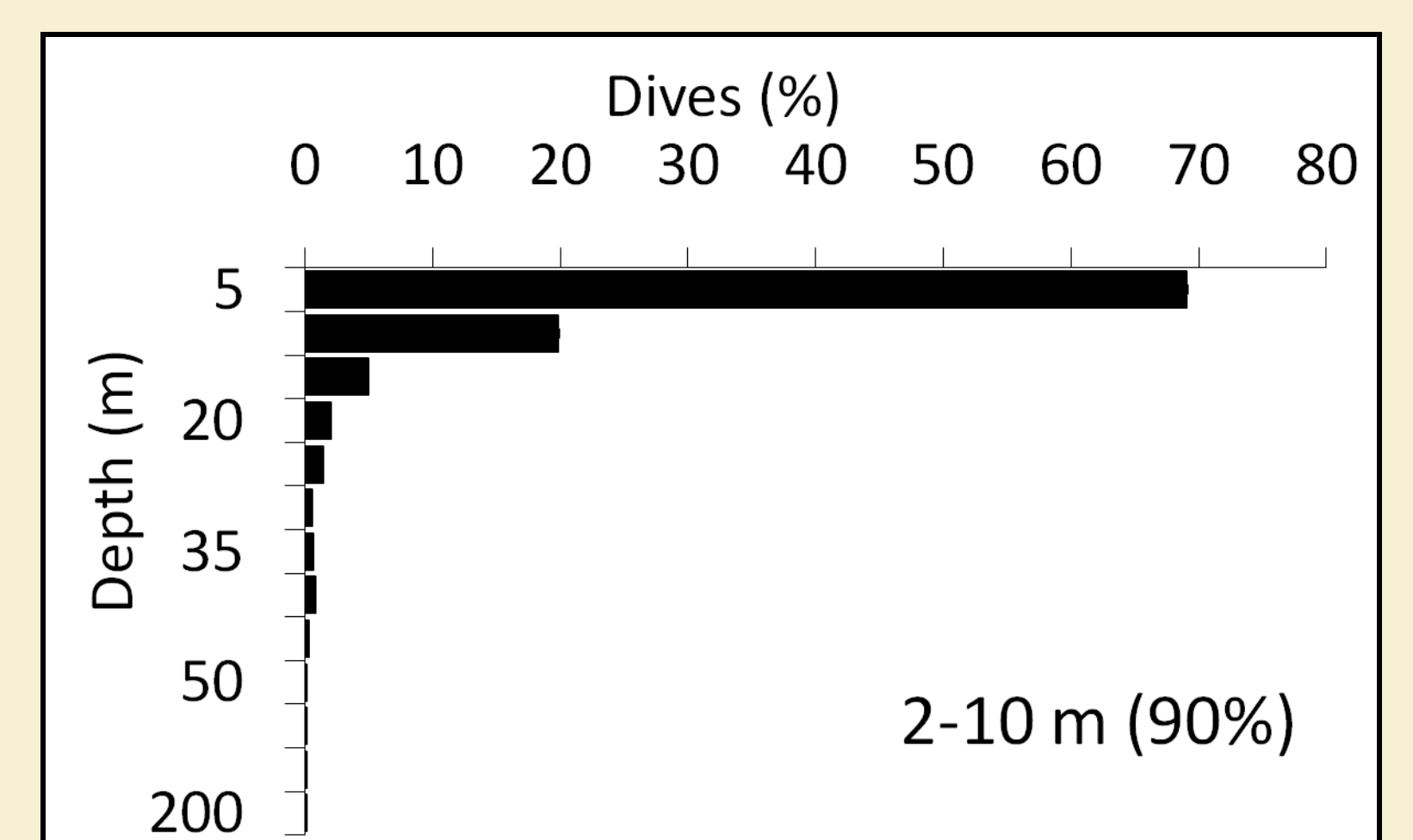
Results

• Fixed Kernel Density Analysis

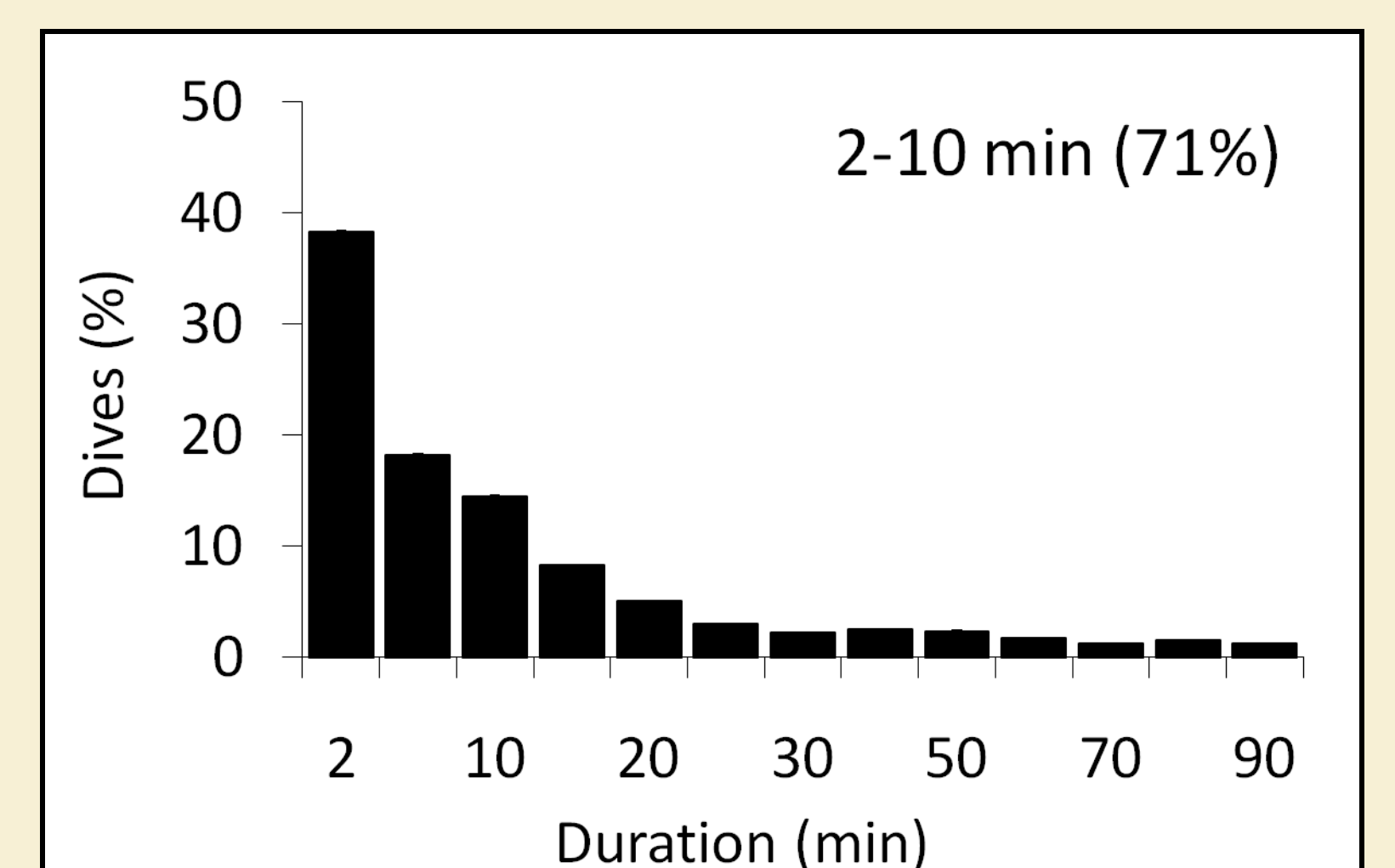


Internesting areas occupied by East Pacific green turtles in Northwestern Costa Rica included Nombre de Jesús (NJ), Zapotillal (Z), Brasilito (PB), Playa Conchal (PC), Parque Nacional Marino las Baulas (PNMB), and Playa Langosta (PL). Utilization Distributions: 25% = 1.57; 50% = 4.5, 75% = 9.4; and 95% = 53.9 km². Blue scale represents depth (m).

• Diving and submergence patterns



Proportions of dives culminating at specific depth intervals.



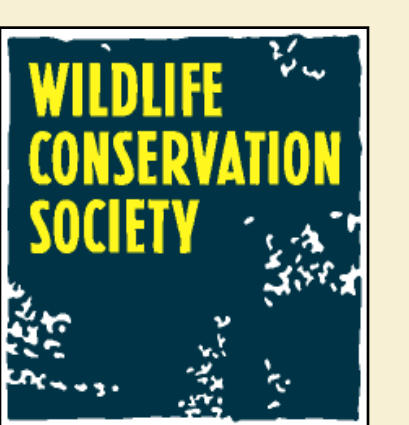
Proportions of duration intervals of dives.

Conclusion

- During internesting periods, Eastern Pacific green turtles remained in the vicinity of the nesting beach, utilizing the entire water column in nearby shallow coastal waters. Their sedentary behavior indicated an energy conservation mode, likely saving resources for yolk and shelling of eggs, and for walking on the beach and the strenuous egg laying process.
- Enhanced protection is essential for the beaches and nearby waters of Northwestern Costa Rica where there appears to be a previously unreported, large breeding population of the highly endangered East Pacific green turtle.



Acknowledgements



- The Leatherback Trust
- Goldring Marine Station
- Parque Nacional Marino Las Baulas.

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