

TELEMETRY AND VISUAL TAG AS TECHNIQUES TO IDENTIFY RAYS DISTRIBUTION AND BEHAVIOUR.

Ana Espino-Ruano*¹, Ángel Curros-Moreno³, David Jiménez-Alvarado¹, Airam Guerra-Marrero¹, Lorena Couce-Montero¹, Jorge Cabrera-Gómez², Antonio C. Domínguez², Irene del Toro Navarro², Diego Gamo-Campos² & José J. Castro¹

¹ Instituto Universitario Ecoaqua, Universidad de Las Palmas de Gran Canaria, Edf., Ciencias Básicas, Campus de Tafira, Gran Canaria, Canary Islands, 35017 Las Palmas de Gran Canaria, Spain.

anamaria.espino@ulpgc.es; david.jimenezalvarado@gmail.com; airam.guerra@ulpgc.es;
l.couce.montero@gmail.com; jose.castro@ulpgc.es

² Instituto Universitario de Sistemas Inteligentes y Aplicaciones Numéricas en Ingeniería (SIANI), Universidad de Las Palmas de Gran Canaria, 35017 Gran Canaria, Spain
jorge.cabrera@ulpgc.es; antonio.dominguez@ulpgc.es; irenedelpino.deltoro@ulpgc.es;
diego.gamo@fpct.ulpgc.es

³Poema del Mar Aquarium, Av. de Los Consignatarios, Gran Canaria, Canary Islands, 35008 Las Palmas de Gran Canaria, Spain.

Abstract: Marine ecosystems are one of the most difficult environments to study, if you add to this the need to increase the knowledge of decimated species like elasmobranch, whose biology, ecology and even more distribution are, in large part, unknown, it is necessary to look forward for new techniques to improve their knowledge.

In the Canary Island, Spiny butterfly ray, *Gymnura altavela*, is a benthonic ray that occasional visit coastal areas during the summer, but after, its distribution and behaviour are already unknown. Tagging techniques have been used, though acoustic tag implanted in the pectoral cavity and T-tag inserted in the dorsal, to increase the information about displacements of this species between coastal breeding areas and deeper waters, and the circadian rhythms in shallow water areas. But we have also used citizen science data provided by coastal users as diver and anglers. With the aim to collect all this ecological and behavioural data, it has been created a network of fixed acoustic receivers along the southern and eastern coasts of Gran Canaria, but also it has been used an autonomous surface vehicle with an integrating mobile acoustic receiver on board.

Key words: acoustic tag, ray, elasmobranch, surgery.

Acknowledgments: We would like to thank the SAVE OUR SEAS FUNDATION and LORO PARQUE FUNDATION for the support and opportunity to complete this work, as

well as all those who have collaborated with us over the years, without whom this work would not have been possible.

References:

- Bass, N. C., Day, J., Guttridge, T. L., Mourier, J., Knott, N. A., Vila Pouca, C., & Brown, C. (2021). Residency and movement patterns of adult Port Jackson sharks (*Heterodontus portusjacksoni*) at a breeding aggregation site. *Journal of Fish Biology*, 99(4), 1455-1466.
- Lavender, E., Aleynik, D., Dodd, J., Illian, J., James, M., Wright, P. J., Smout, S., & Thorburn, J. (2022). Movement patterns of a Critically Endangered elasmobranch (*Dipturus intermedius*) in a Marine Protected Area. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 32(2), 348-365.
- Simpson, S. J., Humphries, N. E., & Sims, D. W. (2021). Habitat selection, fine-scale spatial partitioning and sexual segregation in Rajidae, determined using passive acoustic telemetry. *Marine Ecology Progress Series*, 666, 115-134.