

TRACKING ALL LIFE STAGES: 130 SATELLITE TRACKS DEPLOYED IN THE INDIAN OCEAN UNRAVELED INVALUABLE SPATIAL KNOWLEDGE AND HIGHLIGHT NEW CHALLENGES FOR SEA TURTLE BIOLOGY AND CONSERVATIONBourjea Jérôme¹, & Dalleau Mayeul^{1,2,3}

Ifremer, rue Jean Bertho BP 60 97 822 Le Port Cedex, La Réunion, France

Université de la Réunion, 15 avenue René Cassin, BP7151 97715 Saint-Denis Cedex9, La Réunion, France

Kélonia, 46 rue du Général de Gaulle 97436 Saint-Leu, La Réunion, France

UMR Espace-Dev - Université de la Réunion, 15 avenue René Cassin, BP7151 97715 Saint-Denis Cedex9, La Réunion, France

More than 130 satellite tags have been deployed in the South-West Indian Ocean during the last 3 years making up one of the most comprehensive and innovative satellite tracking program on sea turtle. Here, we present the experimental design and the essential results of this spatially explicit study.

Firstly, to study the dispersal of juveniles at oceanic stage, we equipped 10 green turtles (<2years old) with ultra-light tracking devices. Swimming capabilities could be a key for the survival of juveniles during the first years of their life-stage. In addition, we tracked 18 juvenile loggerheads (50-70cm) accidentally captured in the open ocean by drifting long liners. A majority of individuals undertook a trans-hemispheric migration with individuals traveling more than 11000kms. Such impressive migrations could support the hypothesis of a transoceanic developmental cycle of the loggerhead in the Indian Ocean. We also characterized the home ranges of juvenile green turtles at neritic stage. For that purpose, we used 10 high precision Fast-Loc satellite tags deployed in 2 islands exposed to contrasted human pressure. Last but not least, on nesting female green turtles we deployed 100 tags to compare post-nesting migration patterns on 6 rookeries during and out of the nesting peak to see or not if they used the same feeding ground according to season. Migration pathways exhibited a marked spatial dispersion. Nevertheless, we were able to point out preferable migration corridors priority zones. Turtles from each rookery visited a broad range of feeding sites, occasionally shared between rookeries. For the record, the EEZ of 12 countries have been visited by turtles and a significant number used MPA as foraging ground, highlighting the importance of an international strategy to ensure the conservation of this endangered animal.

This massive tracking datasets constitutes a goldmine that has - and will continue to have - major implications on the study of the biology of sea turtles in the region and worldwide. Linking this great amount of data generated in relation with the forthcoming oceanographic measurements, the known regional genetic structure as well as dispersal modeling of hatchling will be the next step of our analyses. Moreover, besides providing fundamental knowledge, tracking data are explicit and easily understandable which simplify communication with conservation managers and decision makers.