

# Tracking turtles in the Mediterranean

## How much do we need to know to develop a good plan?

By Tessa Mazor (University of Queensland)

It's quite a challenge developing a conservation plan for a threatened migratory animal like the loggerhead sea turtle. Their movements may be uncertain and variable, span vast distances, cross international borders and traverse land and sea habitats. The information available to conservation managers to create their plans is often thin, patchy and comes from various sources. Filling in the gaps in that information can be costly and time consuming. And, of course, for a threatened species delays in action can be costly. So, the question is: what degree of spatial information provides sufficient results for directing management actions?

A group of us from CEED set out to answer this question. We developed and evaluated an approach that incorporates habitat and movement information to advance the conservation of migratory species. And we tested our approach by using information on loggerhead sea turtles (*Caretta caretta*) in the Mediterranean.

We developed conservation plans for the loggerhead turtles using four approaches. Each approach required increasing amounts of information (and therefore cost more). And then we compared the results.

These approaches involved (1) maps of the turtle's broad distribution, (2) maps showing multiple habitat types used by the turtles (feeding, nesting and inter-nesting habitats), (3) movement information based on mark-recapture studies (in which turtles were caught, tagged and later re caught) and (4) migration tracks derived from radio-tracked turtles.

The analysis revealed that spatial priorities for sea turtle conservation are very sensitive to the type of information being used.

Setting conservation targets for migration tracks altered the location of conservation priorities. This indicates that conservation plans designed without such data would miss important sea turtle habitat.

Based on this analysis, we proposed that future telemetry studies tailor their efforts towards conservation prioritization needs, meaning that spatially dispersed samples rather than just large numbers should be obtained.

### The view from on high

Satellite tracking can record the movements of migratory animals that travel large distances over multiple jurisdictions. These projects are logistically difficult and very expensive (the cost of satellite transmitters ranges from USD \$2000–5000 each), but the data are gold for conservation.

More collaboration between ecologists and conservation managers could improve the conservation impact of these telemetry datasets, and such work is increasingly possible through open-access data banks that combine data from many projects.

**Movebank:** <https://www.movebank.org>

**Zoatrack:** <http://oztrack.org>



### Key messages

- Spatial priorities for sea turtle conservation are very **sensitive to the type of information being used**
- Setting conservation **targets for migration tracks altered the location of conservation priorities**
- **Telemetry data needs to be better harnessed** in conservation planning



*Developing conservation plans for a threatened migratory animal like the loggerhead sea turtle presents multiple challenges. (Photo by Tessa Mazor)*

Our work highlights how valuable information from telemetry research (satellite tracking) can be for the conservation of migratory species.

Telemetry studies provide a wealth of connectivity information for migratory species. Unfortunately, this information is not often applied to conservation planning. Our hope is that this analysis will encourage telemetry studies in the future to be aimed at improving the management of threatened migratory species.

There is a need for better dialogue and understanding between the 'telemetry camp' and conservation planners. Conservation planners must highlight the value that telemetry data can provide to a conservation plan and determine how much of that data actually needs to be collected in the first place. This information needs to be relayed to those undertaking telemetry studies and collaborations need to be established before tracking projects commence.

When there is only a short window of time to act for threatened species, it is critical that decision makers invest and act in those areas that will generate the best conservation outcomes. 📌

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### Reference

Mazor T, M Beger, J McGowan, HP Possingham & S Kark (2016). The value of migration information for conservation prioritization of sea turtles in the Mediterranean. *Global Ecology and Biogeography* 25: 540–552. doi: 10.1111/geb.12434 <http://onlinelibrary.wiley.com/doi/10.1111/geb.12434/full>