![BEST logo] BEST VOLUNTARY SCHEME FOR BIODIVERSITY AND ECOSYSTEM SERVICES IN TERRITORIES OF EUROPEAN OVERSEAS

BEST Initiative
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DG DEVCO through the BEST 2.0 Programme

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Improving the Management of the Invasive Lionfish, *Pterois volitans*, by Mapping Vertical and Horizontal Movement Patterns and Distribution
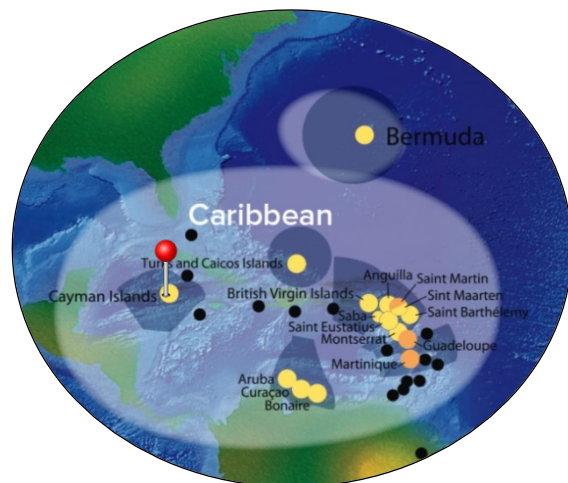
Targeted territory: Cayman Islands

Total project budget: 99,880 Euros

BEST 2.0 grant awarded: 99,880 Euros

Duration: January 2017 – July 2018 (18 months)

Lead organisation: Central Caribbean Marine Institute

CCMI

Background:

The persistence of lionfish, *Pterois volitans*, as an invasive species in the Caribbean has led to major concerns about the loss of biodiversity and both the ecosystem-wide and economic impact to small island communities. Of particular concern for overall reef health and resilience is high predation on essential herbivores including parrotfish, surgeonfish and damselfish. A reduction in biodiversity and a phase shift from coral to algal dominance on the reefs can have deleterious effects on fisheries as well as compromise the attractiveness and therefore value of popular dive destinations, such as the Caymans Islands.

Local efforts to control lionfish through organised group culls have been successful, however, targeted removals can be prohibitively expensive and would benefit from strategies that allow for better spatial and temporal planning and prioritization. Better understanding temporal movement patterns and site fidelity of lionfish and their vertical migration is critical to controlling the population, minimizing impacts, and conserving local and regional biodiversity.

Description of the Project:

The project aims to conserve the biodiversity and ecosystem services of coral reefs in the Caribbean by seeking to enhance the management of the invasive red lionfish, *Pterois volitans*, and thereby limit their deleterious ecological and economic impacts. The proposed project utilizes novel advances in acoustic telemetry to increase the understanding of movement patterns of lionfish. The study will assess (i) spatial and temporal patterns of their horizontal movement, (ii) routine (daily, monthly,

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seasonal) vertical migrations between shallow and deep reef habitats, and (iii) environmental and biological cues which may motivate these movement patterns. The results will be used to improve the control and overall management plan of lionfish populations both locally and regionally.

A principal output from this project will be the creation of a publicly accessible database and map of the lionfish population in Little Cayman by combining data from the proposed telemetry study with population and catch per unit effort data that has been collected since 2011. This database will allow stakeholders to access information on spatial and temporal patterns of the lionfish population in order to select appropriate times and locations for removal efforts and thereby result in optimal protection of coral reef biodiversity from this immediate invasive threat.

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Intended results:

- Improved understanding of the horizontal and vertical movement patterns of lionfish.

- Improved effectiveness and sustainability of the lionfish removal efforts through the development of a publically available database and map with recommendations on site specific culling strategy.

- Strengthened regional and international efforts to reduce the impact of lionfish and conserve biodiversity and ecosystem function.

- The national management strategy for lionfish is updated and improved.

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