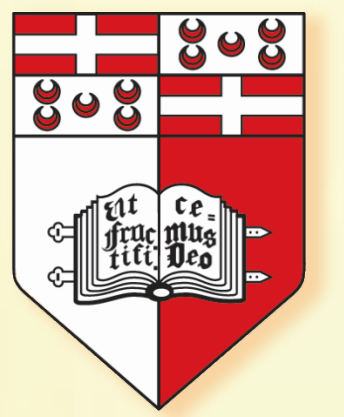


Monitoring bioinvasions:

A collaborative effort with the fishing community

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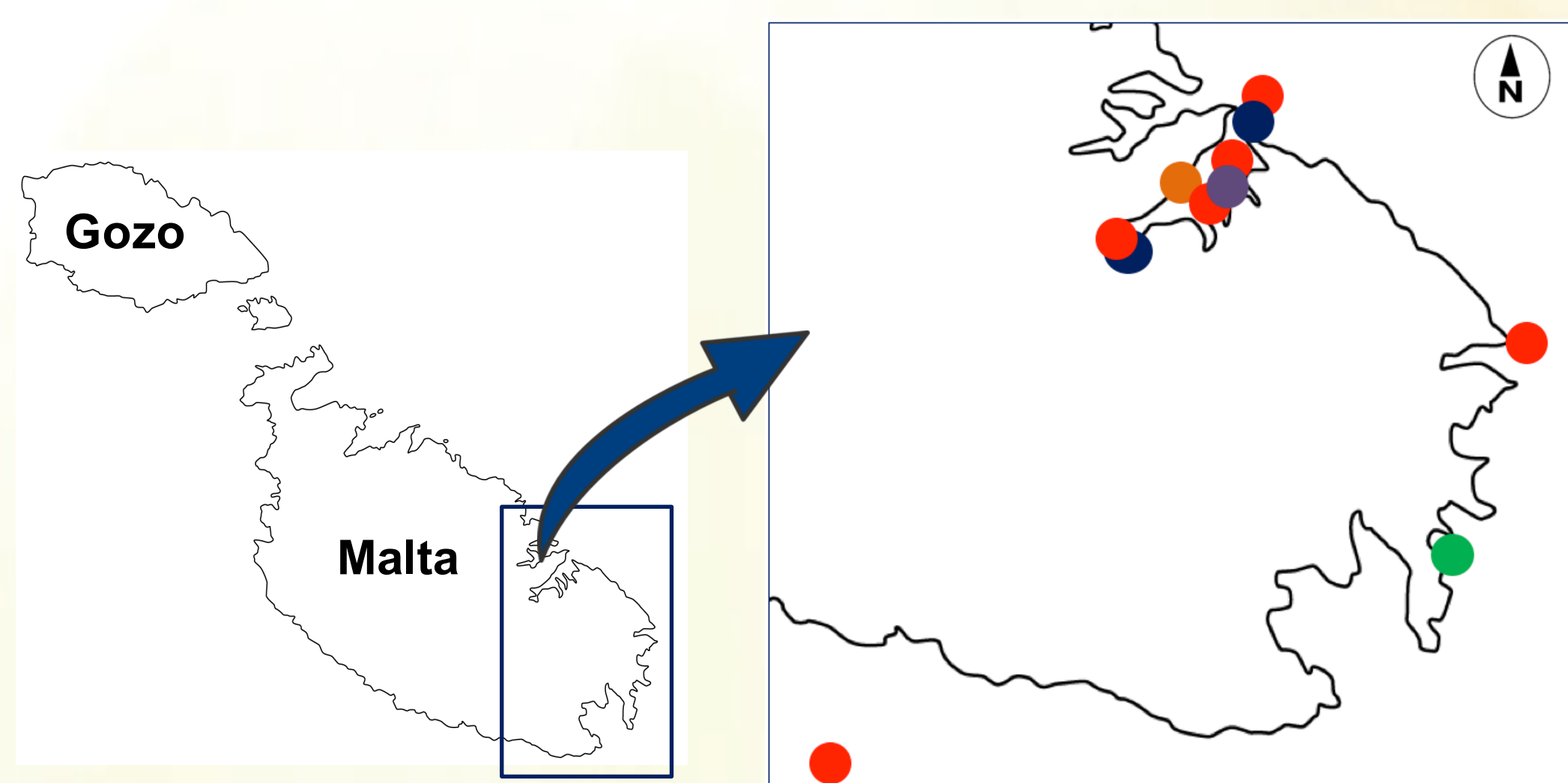
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Introduction: Non-native fish species are increasing in the Mediterranean Sea threatening native biodiversity as they grow in abundance. Closer monitoring of coastal habitats and biodiversity towards achieving timely assessment and management is essential. For many years the Conservation Biology Research Group at the University of Malta (CBRG-UoM) has involved various types of fishermen in research and awareness through active collaboration while recording recreational or commercial fisheries catches of marine species, including alien species.

Methodology: Scientific surveys involved on site recording of alien species through photography and videography together with collection of specimens from fishermen. These were identified through morphological, meristic characters and genetic analyses and deposited in the ichthyology collection of the CBRG-UoM.

Results: This research has so far led to the scientific evidence of the first records of the **Cocoa damselfish**, *Stegastes variabilis*, (Castelnau, 1855) [1], the **African sergeant**, *Abudefduf hoefleri* (Steindachner, 1881) [2] and the **Dory snapper**, *Lutjanus fulviflamma* (Forsskål, 1775) [3] in the Mediterranean Sea together with the first records of the **Indopacific sergeant**, *Abudefduf vaigiensis* (Quoy and Gaimard, 1825) and studies on the **Sergeant major**, *Abudefduf saxatilis* (Linnaeus, 1758) [4] in the Maltese Islands. Sustained monitoring revealed that the latter 2 species are established and expanding in numbers and range at a rapid rate (see map).

Modes of transportation of these species may be possibly via ballast water tanks since all specimens were collected in locations within or in very close proximity to ports, transshipment hubs or off-shore bunkering sites in Malta. Release from the aquarium trade cannot be excluded since species such as *S. variabilis* are exported as ornamental fish.



- *Abudefduf vaigiensis*
- *Abudefduf saxatilis*
- *Abudefduf hoefleri*
- *Lutjanus fulviflamma*
- *Stegastes variabilis*

Conclusion: Ongoing research and monitoring helps to record the presence and spread of non-indigenous marine species in these waters. Fishermen's involvement enhance the monitoring, learning and management processes that are needed to adapt to changes in the marine environment. These changes may procure socio-economic impacts apart from affecting local biodiversity, if unchecked. The greater necessary effort on surveillance of alien and invasive species is therefore achieved.

References:

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