Poster presentation:

SHALLOW TALES: DEVELOPING CAPACITY AND LOCAL INFRASTRUCTURE IN THE COMOROS ISLANDS OF THE WESTERN INDIAN OCEAN

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The shallow waters surrounding the Comoros Islands in the Western Indian Ocean (WIO) are home to a rich diversity of marine life. Here, coral reefs, tropical fish species and an array of invertebrate taxa contribute to making these benthic ecosystems some of the most unique in the World. These ecosystems are vital in sustaining local communities, and their conservation and protection are managed as part of the WIO Marine Protected Area (MPA) network. A difficult task when data on overall marine diversity inhabiting these areas are scarce. This highlights the importance of conducting baseline assessments to establish the full scope of biodiversity afforded protection, followed by long-term monitoring to establish the effectiveness of these areas. Such objectives are virtually unachievable without sufficient infrastructure and the required training.

The past, present, and future Second International Indian Ocean Expeditions (IIOE2), co-ordinated by the South African governments Department of Environmental Affairs (DEA), is a collaborative effort to build capacity within the WIO. On the latest (2018) expedition, participants from various institutes within the WIO region, including the University of Comoros, were trained on how to apply methodologies and utilize equipment to conduct marine research across multiple disciplines. Utilizing remote imagery cameras like DEAs Jump/Drop camera system used for benthic surveys, was one such training exercise. The Jump camera is a simple, locally-built piece of equipment consisting of a metal frame with a downward-facing GoPro camera held inside a customised pressure housing. This allows for visual sampling to depths of up to 300 m. The data collected are 30 x 30 cm photoquadrats of both hard and soft substrate benthic habitats. It is operated from a winch off a small boat, covers an extensive sampling area relatively quickly, and is without the risks and complications involved with diving activities. An added feature is the easy conversion of the system into a BRUV (Baited Remote Underwater Video), by which fish surveys can be conducted. Currently, benthic sampling in the Comoros is restricted to SCUBA and limited to depths of 15 – 20 m. The Jump camera system was therefore recognised as an easy, affordable and effective tool which could be utilised to better explore the Island's benthic invertebrate and ichthyofaunal communities. During the latest IIOE2 expedition, novel footage inside the National Park of Moheli, the first MPA established in 2001, revealed an

area of high species diversity. At a depth of 74 m, the Jump camera recorded a striking array of corals, hydroids and large barrel sponges. Currently, available benthic data from the park exists at only 10 – 15 m.

Thus, to improve and significantly advance benthic research in the area, officials from DEA and the science fraternity at the University of Comoros are uniting to develop capacity, infrastructure, and transfer skills. The immediate goal is to equip Comoros with a Jump camera and winch system suited to local boats, and provide the necessary training. Training will include the manual operation, data processing using available software packages (Coral Point Count with Excel Extensions), and data analyses. Our ultimate goal is a standardized protocol for conducting long-term monitoring of benthic communities within the MPA and surrounds. Potential outputs will include opportunities for early career scientists and ongoing collaboration.

DEAs quest to develop capacity and infrastructure, and most importantly, strengthen partnerships, will be extended to countries throughout the WIO (e.g. regional workshops). Local communities should be educated on the importance of studying and preserving benthic ecosystems within their local MPAs, as it is these systems by which livelihoods are sustained. With the establishment of three new MPAs in the region; the National Park of Shisiwani in Anjouan, and zones within the North and South of Grande Comore (Mitsamihuli-Ndroude and the Marine Park of the Coelacanth), such efforts will prove invaluable.

Key words: Marine Protected Area, Benthic invertebrates, Shallow water, Jump camera, Developing infrastructure, Capacity development, Collaboration.