

# Marine Protected Areas as complex socio-ecological systems: The importance of people

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*The Woody Cape section of the Addo Elephant National Park includes a marine protected area; marine protected areas double the extent of Addo Elephant National Park.*

**M**arine Protected Areas (MPAs) are important tools for conserving and managing marine ecosystems and biodiversity. They are not just physical spaces with ecological significance, but interconnected systems that involve both natural and human dimensions. MPAs are refuges for species, protect essential habitats, and promote sustainable fisheries. They encompass intricate ecological processes, including habitat connectivity, nutrient cycling, and primary and secondary productivity that nourish foraging grounds for a diverse range of marine plants and animals. Simultaneously, they are entwined with social and economic dynamics that involve people. Recognizing MPAs as socio-ecological systems helps us understand the importance of incorporating human dimensions into their management.



*SANParks and other concerned stakeholders are allowed to witness the ship-to-ship transfer of fuel (also known as bunkering), in Algoa Bay. The spillage of fuel during bunkering poses a huge threat to wildlife.*

## MARINE PROTECTED AREA MANAGEMENT IS AS MUCH ABOUT ACHIEVING ECOLOGICAL OUTCOMES, AS IT IS ABOUT ACHIEVING SOCIAL OUTCOMES

ther marginalised. Current practices to manage MPAs in South Africa aim to acknowledge and address these historical exclusions by engaging in inclusive participatory processes that respect the rights and interests of local communities while achieving biodiversity conservation goals for the country.

**E**ffectively managing MPAs goes beyond established boundaries and the implementation of regulations. It requires ongoing community and stakeholder engagement to achieve objectives and share benefits. Engaging local communities in decision-making processes around MPA establishment is crucial for their success. When communities have a sense of ownership and stewardship, they are more likely to support and comply with conservation measures.



*Overlooking a section of the Alexandria Dunefields, Woody Cape, Addo MPA. Engaging all stakeholders, from local communities to government departments, is essential since regulating activities on or beyond the borders of MPAs are of paramount importance for their success.*



*Bird Island, Addo MPA, an important breeding place for many seabirds. Despite protection, the waters surrounding the island are still subjected to impacts, including pollution and noise from passing vessels.*

**T**hese engagements can lead to a range of benefits including knowledge sharing, as local community members possess valuable cultural, social and historical knowledge relevant to the MPA. Incorporating this knowledge into MPA management approaches, enhances our understanding of local systems and fosters greater acceptance and compliance, which is essential to the future success of the MPA. MPAs also create socio-economic opportunities. For instance, ecotourism initiatives can provide alternative livelihood options while promoting environmental conservation.

Beyond local communities, engaging various other stakeholders is essential since regulating activities on or beyond the borders of MPAs are of paramount importance for their success and effective management. Stakeholders include government agencies, NGOs, scientific institutions, industry representa-

tives, tourism and recreational users. Activities that take place in surrounding areas can have significant impacts on the ecological integrity of the MPA itself. Unregulated or unsustainable practices, such as illegal harvesting, pollution (including from port activities), coastal development, seismic explorations and extractive industries can undermine the conservation goals and long-term outcomes of an MPA by degrading habitats, depleting populations, and disrupting vital ecological processes. Continuous engagement with diverse stakeholder groups is therefore critical to regulating these impacts to minimise negative externalities and ensure that the ecological benefits of the MPA extend beyond its boundaries. This comprehensive approach is essential for maintaining the integrity of MPAs and maximising their conservation impact.

In addition, collaboration with scientists and research institutions plays a vital role in growing understanding of important ecological and biological processes within and beyond the MPA. These collaborations expand scientific capacity and support essential management-related research to inform decision making. Engaged scientific collaborations enhance adaptive management practices, allowing for adjustments based on new scientific information.

Without compliance with MPA regulations the effectiveness of conservation measures may be compromised. Sufficient resources, including funding for personnel and equipment, are necessary to enforce MPA regulations effectively. Insufficient resources can hinder monitoring, surveillance, and enforcement efforts, making it difficult to prevent and address non-compliance. Furthermore, scarce resources can often lead to some MPA objectives being prioritised over others, resulting in failure to meet overall MPA targets.

**S**ANParks-managed MPAs, i.e. Table Mountain, West Coast, Tsitsikamma, and the newly-declared Robben Island, Namaqua, and Addo Elephant National Park MPAs, face operational resource limitations. MPA managers have had to employ creative ways to address these shortcomings, including seeking collaboration and undertaking special joint operations with other marine law enforcement partners, while also incorporating technology to assist in surveillance and monitoring. Seizing opportunities for free training and pursuing donations for essential equipment has also been beneficial. NGOs and honorary rangers provide valuable



assistance in meeting capacity needs, while building capacity, including specialised training that incorporates on site tutoring of MPA rangers and monitors, is essential to ensuring compliance and management are conducted efficiently.

MPAs frequently fall short of achieving their potential due to various factors, including illegal harvesting, regulations that permit harmful extraction, or the movement of animals beyond protected area boundaries due to inadequate habitat continuity or reserve size. MPA conservation benefits increase exponentially when five key features are present: a no-take policy, effective enforcement of regulations, a long period of exis-

tence (>10 years), large area (>100 km<sup>2</sup>), and isolation. However, incorporating human dimensions into MPA evaluation requires assessing effectiveness through other aspects including societal benefits, protection of human rights, social support and acceptance, governance style, and stakeholder engagement. The success of an MPA is determined by having well-defined and meaningful objectives that encompass both ecological and human dimensions. Additionally, an MPA management plan that includes diverse objectives allows for appropriate allocation of resources, for example, ensuring sufficient funds are allocated for stakeholder engagement and communication. By recognising the importance of the human dimensions within MPAs, we

*Stormy seas at Storms River, Tsitsikamma Marine Protected Area. Engaging local communities in decision-making processes around MPA establishment is crucial for their success and well-defined and meaningful objectives should encompass both ecological and human dimensions.*

can achieve conservation goals while also ensuring sustainable socio-economic benefits for present and future generations.