BRIEFING NOTE

Shark and ray conservation in Southern Africa

Prepared by

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Objective: A briefing note aims to provide a concise outcome-based synopsis of recent research or expert opinion that may inform decision making and activities by Authorities, Industry, NGOs and NPOs. The briefing note series complements the academic peer-reviewed literature or reports published by NRF-SAIAB. NRF-SAIAB is a Research Institution and not management agency, and as such, the views presented here are for consideration by all stakeholders and are non-binding.

SUMMARY

Effective fisheries management and conservation of fishery resources rely on robust underlying scientific information. Southern Africa is home to well over 200 species of Chondrichthyans (sharks, rays, skates and chimaeras), of which more than a third are considered threatened with extinction, requiring strengthened, effective, science-based management. Southern Africa is also characterised by a significant contingent of shark and ray scientists and conservationists, all producing valuable information to support management and conservation.

The Southern African Shark and Ray Symposium (SASRS) is a biennial symposium series dedicated to bringing together southern Africa's shark and ray scientists, and, in recent years, the region's shark and ray conservationists. The objective of the Symposium is to provide a platform for informed discussion and dissemination of the latest scientific information related to southern Africa's chondrichthyan species.

The 8th Southern African Shark and Ray Symposium was held in Makhanda, at the Amazwi South African Museum of Literature, from 15–19 September 2025, co-hosted by the South African Institute for Aquatic Biodiversity (SAIAB) and the Wildlife Conservation Society's (WCS) Western Indian Ocean Shark Conservation Program. The Symposium brought together over 130 delegates from 12 southern African countries (Figure 1), with three days of presentations from more than 70 individuals, and two policy-focused workshops.

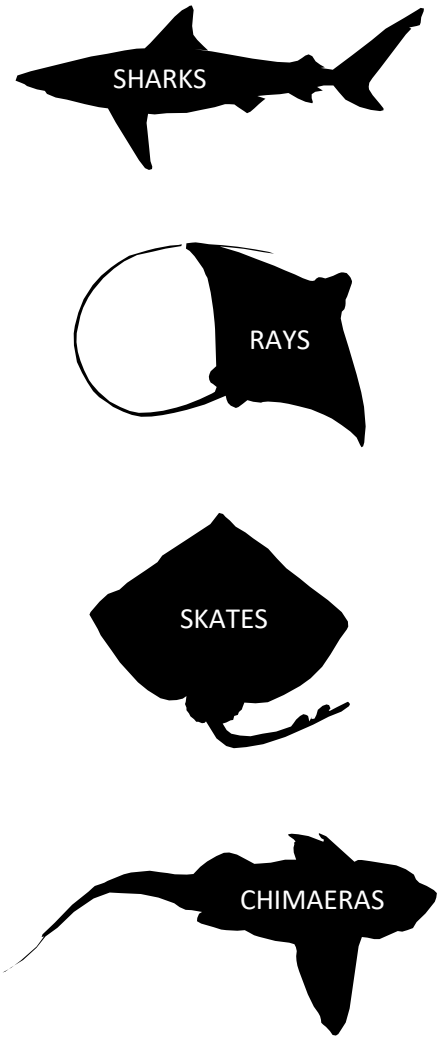

***Figure 1**: Group photograph of delegates attending the 8th Southern African Shark and Ray Symposium at the Amazwi South African Museum of Literature in Makhanda between 15–19 September 2025.*

BACKGROUND

The SASRS series started in Durban, KwaZulu-Natal (KZN) in 2011, and has subsequently progressed through biennial symposia in Mossel Bay, False Bay, Hermanus, Cape Town, and Gansbaai (all Western Cape), back to Durban (KZN) in 2023, with between 22 and 46 presentations per symposium. Themed sessions have included physiology and genetics; ecology; fisheries; conservation and management; and sharks and humans.

The Eastern Cape Province of South Africa represents an incredibly high shark and ray species diversity and a significant biogeographic transition area for shark and ray species. The waters off the Eastern Cape provide a migration route for many shark and ray species in South Africa that undertake considerable longshore movements (including the unrivalled spectacle of the annual sardine run), crossing provincial boundaries, and thus essentially connecting the Western Cape and KZN provinces, as well as the east and west coasts of Southern Africa. However, in its travels around South Africa, the SASRS had never previously been hosted anywhere in the Eastern Cape Province, despite the importance of this province and the work of several shark-focused organizations and leading shark scientists in the province.

Following the successful 7th SASRS held in Durban, in 2023, NRF-SAIAB's Dr Taryn Murray and WCS's Dr Rhett Bennett initiated discussions to prepare an expression of interest (EOI) to jointly host the 2025 symposium. The EOI was successful, and the rights to host the symposium, were awarded SAIAB and WCS, in mid-2024, thus securing the opportunity to bring the symposium to the Eastern Cape for the first time.

***Figure 2**: Dr Taryn Murray (NRF-SAIAB) and Dr Rhett Bennett (WCS), co-hosts of the 8th Southern African Shark and Ray Symposium.*

SYMPOSIUM OVERVIEW

Globally at least one third (33%) of all shark and ray species are threatened with extinction. In East Africa and the Western Indian Ocean (WIO), the proportion of threatened species is higher, at around 40% (Pollom et al. 2024). Within several East/Southern African countries, this is considerably worse, with 50–60% of all known shark and ray species threatened with extinction.

Furthermore, southern African countries generally protect very few shark or ray species, and there are many more that should be protected either because of their poor conservation status, slow reproduction rates and poor resilience to overexploitation, or because they are required by one of several multilateral environmental agreements to be protected at a national level.

However, despite legal protections or the requirements to do so, shark and ray species (even those protected) remain under threat of fishery mortality, through target and non-target capture. Spatial management offers an additional layer or approach to protection, through areas where no shark fishing or no fishing at all is permitted, or where certain (destructive) gears are prohibited, offering opportunities for the reduction of fishery mortality for shark and ray species. Well designed and enforced spatial protection measures (i.e. those informed by robust scientific information on the target conservation species) really can have a positive impact on wild populations. The 8th SASRS therefore had the overarching theme of ***Spatial Management of Sharks and Rays***.

Under this overarching theme, the symposium spanned three days of presentations, each kicked off by a keynote presentation from an international expert on the day's themes. The first day was focused on the animals themselves, with sub-themes including *Biology, physiology and ecology*; *Genetics*; and *Diversity*, with a keynote presentation from Dr Kim Bassos-Hull, a ray and dolphin expert from Mote Marine Laboratory & Aquarium in Sarasota, Florida, USA (Figure 3a). The second day focused on linking the animals and their environment to conservation and management, with the sub-themes of *Conservation and management*; and *Movement ecology*, and a keynote presentation by Mr Miguel Gonçalves, the award-winning manager of Mozambique's Maputo National Park (Figure 3b). The third day of presentations was focused on the people and their relationships with sharks and rays, with presentations under the sub-themes of *Education, science engagement and communication*; *Sharks and humans*; and *Fisheries and trade*, introduced through a keynote presentation by Ms Elisabeth Fahrni Mansur – a Swiss school principal turned marine conservationist based in Bangladesh (Figure 3c).

Figure 3*: Keynote speakers from the 8th Southern African Shark and Ray Symposium, (a) Dr Kim Bassos-Hull (Mote Marine Laboratory & Aquarium, USA), (b) Mr Miguel Gonçalves (Maputo National Park, Mozambique) and (c) Ms Elisabeth Fahrni Mansur (freelance marine conservationist in Bangladesh).*

CONTRIBUTION TO MANAGEMENT OF SOUTHERN AFRICA'S SHARKS AND RAYS

Across the three days and eight sub-themes, 73 oral presentations were delivered. Presenters were encouraged to highlight the relevance of their presented work towards conservation and management, by specifically drawing out and clearly defining their management implications and recommendations, both in their abstracts and presentations.

HIGHLIGHTING KEY MANAGEMENT IMPLICATIONS AND RECOMMENDATIONS

BIOLOGY: Understanding and determining the biology and ecology of elasmobranchs is a crucial element in assessing and managing their populations. Improved understanding of aspects such as reproductive biology can directly inform targeted management strategies, including the establishment of MPAs or other conservation measures.

- The reproductive status and overlap with fishing activity of threatened chondrichthyans in South and southern Africa is not well understood, even within MPAs that have management objectives to protect them. It is important that the science community offers evidence-based recommendations for MPA authorities to provide better protection for target species.
- Currently, many areas of importance to sharks and rays, such as much of the southern Mozambican coastline, remains unprotected, leaving threatened species such as manta rays (Figure 4) susceptible to anthropogenic threats such as bycatch. Seasonal closures during key reproductive periods may offer a valuable opportunity for population recovery.
- Elasmobranch assemblages are often structured by depth, as was shown in areas such as the Maldives. Therefore, depth-stratified spatial management measures should be adopted.

Figure 4: *Spinetail devil rays (Mobula mobular) swimming gracefully in the waters off the northwest coast of Madagascar. © Stella Diamant*

DATA COLLECTION: Numerous survey methods are available, and each can provide useful information for management. For example:

- Sonographic evaluations (Figure 5a) can help to identify areas important for reproduction for sharks and rays, while stable isotope analysis can indicate important feeding areas – information which can help to inform important areas for spatial management.
- Photo identification has been proven useful to identify repeat visits (e.g. seasonal or annual visits) by individual sharks or rays.
- Baited remote underwater video (BRUV) surveys in South Africa and Mozambique highlight their use for assessing elasmobranch composition, habitat use, and seasonality, particularly for threatened species, within MPAs.
- Movement studies, using dart tagging, acoustic telemetry and satellite telemetry can provide important information on residency, area use, and the scale and timing of migratory behaviour, which is particularly useful for species-level management, especially for species that cross jurisdictional boundaries (Figure 5b+c), and for informing MPA design and management.
- Long-term remote monitoring by camera can provide information on species not regularly seen through direct observation, and the timing of movements and habitat use, which can inform spatial management measures.
- Fishery assessments can provide valuable information on species present, size structures of species caught in fisheries, and important areas such as nurseries.
- Dedicated scientific surveys, such as those conducted via the research vessel *Dr. Fridtjof Nansen*, can provide valuable information on important habitats, reproduction areas, and samples for biological information.

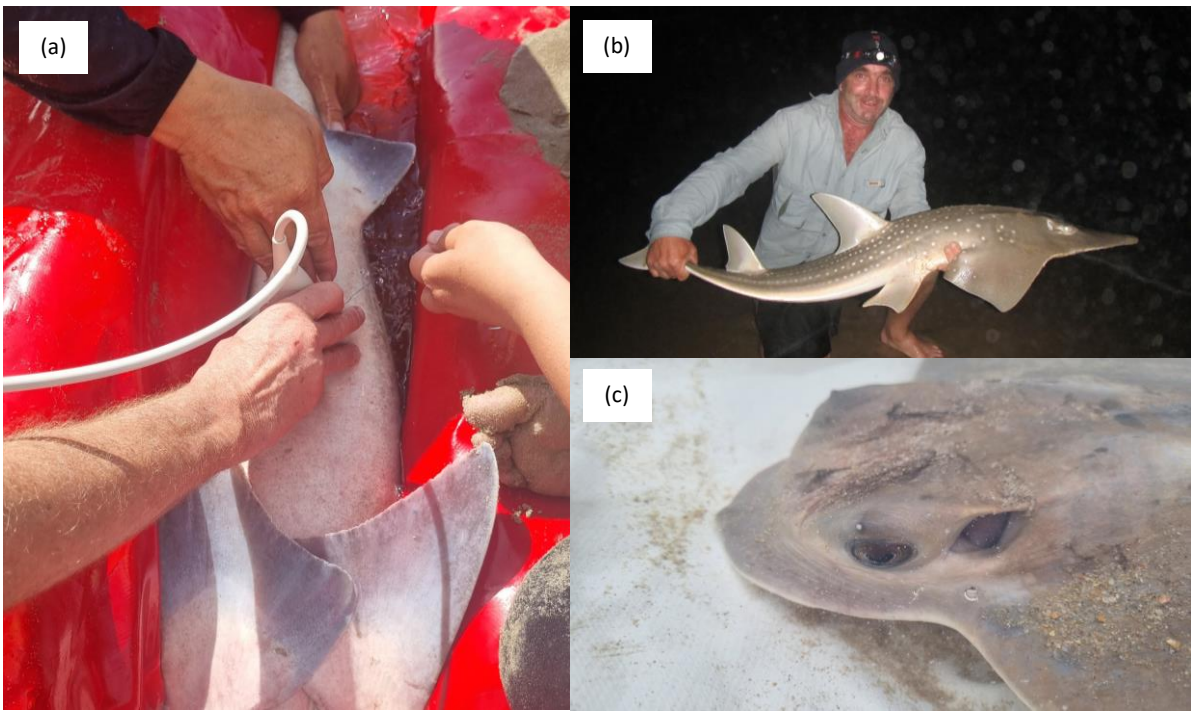

Figure 5: *(a) Sonograph being taken of a mature female smoothhound shark (Mustelus mustelus) in the Port of Ngqura, (b) a whitespotted wedgefish (Rhynchobatus djiddensis) – a popular angling species in South Africa and heavily targeted in Mozambique (©Dr Bruce Mann), and (c) a common eagle ray (Myliobatis aquila), a species whose movements are being studied in four sites along the South African coastline.*

GENETICS: Genetic studies can offer significant contribution to spatial management, particularly through the confirmation of species' ranges and overlap therein, and identification of effective management units. For example, presentations noted:

- Spotted gully *Triakis megalopterus* sharks (Figure 6) in South Africa are genetically distinct from those in Namibia and Angola.
- The common smoothhound *Mustelus mustelus* shows deep genetic divergence between northern and southern hemispheres.
- Scalloped hammerhead sharks show strong flow within their southwest Indian Ocean (SWIO) distribution range, but significant genetic structuring from other areas with their range.
- Whiprays of the genus *Himantura* remain challenging to distinguish to species level, while molecular analyses indicate genetic grouping of individuals appearing visually to represent highly varied spot patterning, confirming that genetic sequencing is the only way to accurately identify these rays to species level.
- In contract, the bronze whaler shark *Carcharhinus brachyurus* shows strong genetic mixing throughout its SWIO range, indicating that management in one SWIO country is contingent on management elsewhere in the SWIO.
- Certain species, such as the South African endemic pyjama shark *Poroderma africanum,* are characterised by very low genetic diversity, and thus poor capacity for adaptation required for predicted climate change, rendering them at greater risk of extirpation.
- Molecular analyses can contribute information on cryptic speciation not otherwise detected through morphometric or visual taxonomic assessments.

Figure 6: *A recently landed spotted gully shark (Triakis megalopterus) awaits surgical implantation of an acoustic transmitter.*

DIVERSITY: Ecological surveys offer valuable information on species present, helping to develop area-based species checklists – fundamental information for area-based and taxon-based management measures. During this symposium, several presentations offered updated information on shark and ray diversity, in Comoros, Seychelles, and southern Mozambique, as well as South Africa and certain specific areas within South Africa, through baited remote underwater video, eDNA surveys, direct observation, and citizen science.

CONSERVATION AND MANAGEMENT: Numerous presentations provided recommendations for conservation and management of sharks and rays:

- iSimangaliso Wetland Park Authorities are encouraged to co-design management measures with scientists and other local stakeholders, and to include threatened and reproductively active sharks and rays in the MPA management plan.
- Coastal fishing communities can play vital roles in the management of coastal resources, through local management measures. Working with such communities to encourage practices that reduce mortality of threatened species, can go a long way towards improved conservation of shark and ray species.
- Integrating coastal communities into scientific monitoring, such as has been done through BRUV surveys in parts of Kenya, helps to build local capacity and stewardship towards coastal resources.
- Well placed and enforced MPAs can be useful for the protection of restricted range species, such as flapnose houndshark *Scylliogaleus quecketti* (Figure 7a).
- Certain areas were identified as being important for threatened species, such as Mayumba (Gabon), southern Mozambique.
- The uThukela MPA in South Africa offers important refuge for sharks and rays from the crustacean trawl fishery.
- Durban beach may be a potential nursery area for Critically Endangered bull rays *Aetomylaeus bovinus* (Figure 7b).
- Movement studies and BRUV surveys repeatedly identified southern Mozambique and northeast South Africa as important areas for sharks and rays, including numerous threatened species. The Maputo Special Reserve and iSimangaliso Wetland Park represent critical MPAs for the protection of threatened sharks and rays in the SWIO.

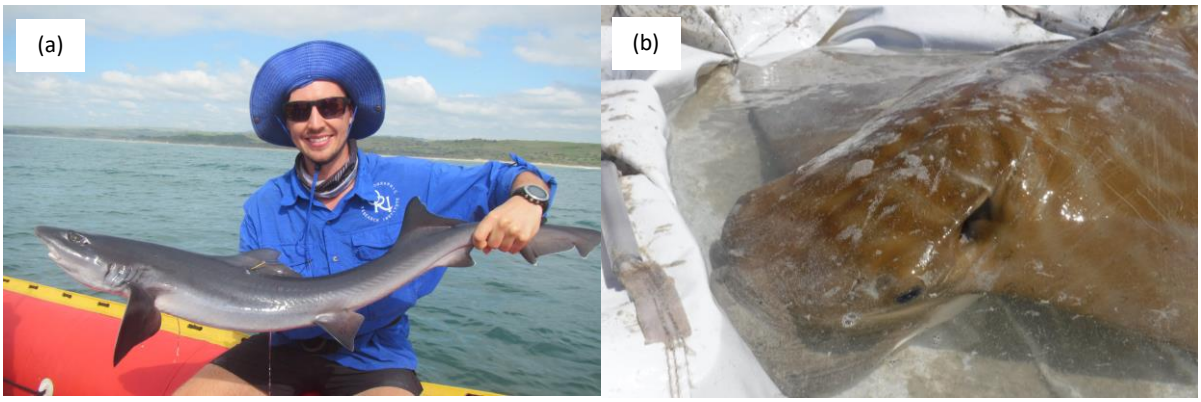

Figure 7: *(a) A landed flapnose houndshark (Scylliogaleus quecketti) caught in the Pondoland Marine Protected Area (© Dr Bruce Mann), and (b) a Critically Endangered bull ray (Aetomylaeus bovinus).*

POLICY: Several strong recommendations were presented to strengthen policy for sharks and rays in southern African countries. For example:

- It was highlighted that South Africa requires improvements to the legal framework, enforcement, prosecution and public engagement processes relating to sharks and rays.
- Mozambique is a key area for sharks and rays, and MPAs within Mozambique should be managed in such a way as to maximise protection for threatened species.
- Mayumba in Gabon, and the southern coastline of Cameroon are identified as important nursery areas for threatened species, such as hammerhead sharks (Figure 8).

Figure 8: *A smooth hammerhead shark (Sphyrna zygaena) gets released back into the waters of Mossel Bay, South Africa. © Adam Trotter*

EDUCATION AND COMMUNICATION: With a dedicated theme on education for the first time in a SASRS, numerous presenters highlighted the importance of education and communication towards strengthening conservation and management.

- Changing perceptions of sharks of sharks, and changing human behaviours, can significantly enhance conservation efforts.
- Management and conservation efforts need to consider the socioeconomic needs and well-being of the resource users.
- Through communication, education, and sustainable livelihood alternatives, artisanal fishers who currently place much pressure on threatened sharks and rays, could become part of the conservation solution for these species.
- Public engagement by scientists and conservationists is important to share messages and raise awareness of the conservation needs of sharks and rays.

- Public education is essential to provides accurate, non-sensational information on sharks, which can empower water users to make informed decisions that reduce shark-human interactions.
- As coastal areas are developed, and the number of human water users increase, there is an increased risk of shark-human interactions – this needs to be addressed pragmatically, with a science-based approach, to reduce risks to humans and repercussions for sharks and other species impacted by bather protection programs.
- Public information is necessary for all stakeholders to understand more about sharks and rays, their conservation status, and potential risks and mitigation of shark-human interactions.

FISHERIES AND TRADE: Fisheries (and in some cases the associated trade) are the primary threat to sharks and rays, with fishing mortality being the main or only threat to almost all threatened species. Presenters provided considerable information on the impacts of fisheries in this region.

- The KwaZulu-Natal crustacean trawl fishery has significant impacts on sharks, rays and other marine species, including numerous threatened species.
- Observer coverage indicates significant under-reporting of shark catches in fishing logbooks mandated by permit conditions in South Africa's hake bottom trawl fishery, identifying areas for reporting improvements. This fishery has a significant impact in terms of catches of sharks and rays.
- Artisanal fisheries in Tanzania, Kenya, Gabon, Cameroon and Ghana have major impacts on inshore shark and ray species, with significant catches of threatened species such as scalloped hammerhead sharks. Catches in these fisheries also have high proportions of juvenile sharks and rays, thus requiring considerable improvements and strengthening of management measures.
- There is significant mis-reporting of export data on shark and rays species, including from South Africa, requiring improved reporting of export and import masses and values, and product-specific customs trade codes.
- Engagement of scientists with recreational anglers has shown that with appropriate outreach and education, recreational anglers can significantly reduce their impacts on sharks and rays, and contribute to scientific monitoring through citizen science platforms.
- Understanding the drivers of recreational angling can also contribute to improved behaviour and attitudes of anglers towards conservation of shark and ray species (Figure 9).

Figure 9: *Competitive recreational anglers often target large sharks and rays because of the number of points associated with these kinds of catches.*

NATIONAL OR INTERNATIONAL PROCESSES THAT MAY USE THE DATA OR OUTCOMES

- **Estuary Management Plans (EMP)**: Estuary-specific information can be shared with the management authority responsible for the development of specific EMPs. Genetic structure and diversity of species moving into or actively using estuaries can inform site-specific conservation priorities.
- **National Biodiversity Assessment (NBA)**: Movement data, population genomics and connectivity can be incorporated into the NBA, contributing particularly to the estuarine and marine components. Molecular analyses are a crucial tool in identifying novel, previously undescribed aquatic species.
- **National Biodiversity Strategic Action Plan (NBSAP)**: Telemetry data can be used to contribute towards the conservation, management and sustainable use of aquatic species to ensure equitable benefits to the people of South Africa (and beyond the borders), both currently and in the future. Genomic data can inform genetic resource management and identify priority species/populations for conservation.
- **Red-listing**: The movement, biological and fishery data collected by researchers and other organisations can be used towards the reassessment of species or provide a local assessment using criteria developed by the International Union for Conservation of Nature's Red List of Threatened Species. Updated information on movements are often missing when evaluating a given species. Genetics data can be used to determine population fragmentation and flag reduced genetic diversity.
- **Global Biodiversity Information Facility** (GBIF): Occurrence records and specimen metadata are published to GBIF for broad use in research, policy and planning (mapping, species-distribution models, national inventories).
- **Global Genome Biodiversity Network** (GGBN): Connects genomic samples (tissues, DNA, RNA) from collections worldwide; ensures standardized metadata and access for genetic research.
- **Barcode of Wildlife**: Tissue/DNA from National Collection Facility feed global barcode reference libraries used in species ID, monitoring, and wildlife forensics.
- **National Science Collection Facility** (NSCF): A virtual facility comprised of a network of institutions that hold natural science collections that are accessible to external researchers.
- **Biodiversity Biobanks South Africa** (BBSA): To increase the range and quality of biodiversity samples stored, and to increase and improve access for research and development.
- **Important Shark and Ray Areas** (ISRAs): Abundance, distribution, genetic and movement data can all be incorporated into the assessments of ISRAs. To date, 48 ISRAs have been identified in the SWIO.

KEY PAPERS FOR CONSIDERATION

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AGENCIES THAT SHOULD BE CONTACTED

Department of Forestry, Fisheries and the Environment (DFFE)

Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)

Department of Science, Technology and Innovation (DSTI)

CapeNature

South African National Parks (SANParks)

Eastern Cape Parks and Tourism Agency (ECPTA)

Ezemvelo KZN Wildlife (EKZNW)

iSimangaliso Wetland Park Authority

South African National Biodiversity Institute (SANBI)

Council for Scientific and Industrial Research (CSIR)

Western Indian Ocean Marine Science Association (WIOMSA)

Coastal Oceans Research and Development in the Indian Ocean (CORDIO)

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