The state of knowledge on the threatened status of marine species in South Africa

*Megan van der Bank (m.vanderbank@sanbi.org.za); Domitilla Raimondo (D.Raimondo@sanbi.org.za); Dewidine van der Colff (D.VanDerColff@sanbi.org.za); Kerry Sink (k.sink@sanbi.org.za)

1South African National Biodiversity Institute, Kirstenbosch National Botanical Garden Kirstenbosch Research Centre, Rhodes Avenue, Newlands, 7700. Private Bag X7, Claremont, 7735

*Presenting author

Background:
South Africa’s (SA) exceptional marine biodiversity provides a wide range of benefits to the economy, society and human wellbeing through the provision of food, coastal livelihoods, rural development, business and employment opportunities. Marine species play a key role in SA’s growing marine tourism industry and support 22 commercial fisheries. In light of SA’s focus on building its blue economy, the health of marine species play a critical role in realizing and maintaining long-term socio-economic benefits. Here we assess the state of knowledge on the threatened status of marine species in SA.

Methods:
The current state of marine species in SA was evaluated using a subset of 376 marine species including birds, mammals, reptiles, sparids, bony and cartilaginous fish of economic importance and corals using national, regional and global IUCN species red list assessments. The IUCN Red List Categories and Criteria is an objective system that can be consistently applied across a range of taxonomic groups. The quantitative criteria are based on scientific studies of populations of a range of different species and the biological conditions under which they are highly likely to go extinct. The quantitative nature of the system demands that assessments are justified by supporting data. No modifications were made to the IUCN Categories and Criteria. Global assessments were conducted for endemics while for non-endemics the IUCN Regional Red List Criteria were applied in order to produce national level assessments.

Results:
A total of 376 marine species were assessed and of these 18.6 % are threatened. Fishing remains the greatest driver of extinction risk across all marine species assessed. Freshwater flow reduction and pollution are driving the threatened status of a number of estuarine dependent and coastal fish species. Emerging pressures such as plastic pollution and underwater noise are increasingly impacting reptiles, birds and mammals. Habitat shifts and shifts in prey abundance due to climate change are increasing the extinction risk for seabirds and mammals. Almost 40 % of South Africa’s seabirds and 16 % of mammals are threatened. More than a third (33.3 %) of SA’s endemic sparids are threatened, many of which are sought after in SA’s R 1.6 billion (average revenue per annum) recreational fishery. Four of the 5 turtle species that have been assessed were threatened as a result of pressures at the global scale. Almost 20 % of 121 commercially important bony fish were assessed as threatened while 34 % are data deficient. More than 7 % of 26 cartilaginous fish were assessed as threatened while 50 % are data deficient. The high data deficiency for bony and cartilaginous fish is due to knowledge gaps in life history, lack of long-term fisheries
catch and effort data, impaired data integrity and challenges in data management. Although some South African marine invertebrate species have been assessed in global or regional assessments, these are outdated. To date, no national IUCN assessments have been conducted for marine invertebrate species primarily due to inadequate taxonomic knowledge, limited distribution data, a lack of systematic surveys and limited capacity to advance species red listing. New datasets through increasing foundational biodiversity research and citizen science species atlas efforts are underway but this work requires further investment to consolidate, address key gaps and analyse.

Conclusions:
Coordinated national, regional and global scale efforts to address knowledge gaps and build red listing capacity are needed to advance marine species red listing in the region. Assessment of marine invertebrates is a key gap and regional effort is needed to strategically identify priority groups for assessments. Increased investment in the comprehensive assessment of species groups and maintaining temporal monitoring data can aid in tracking trends in threatened status of marine species and inform management actions to secure benefits.