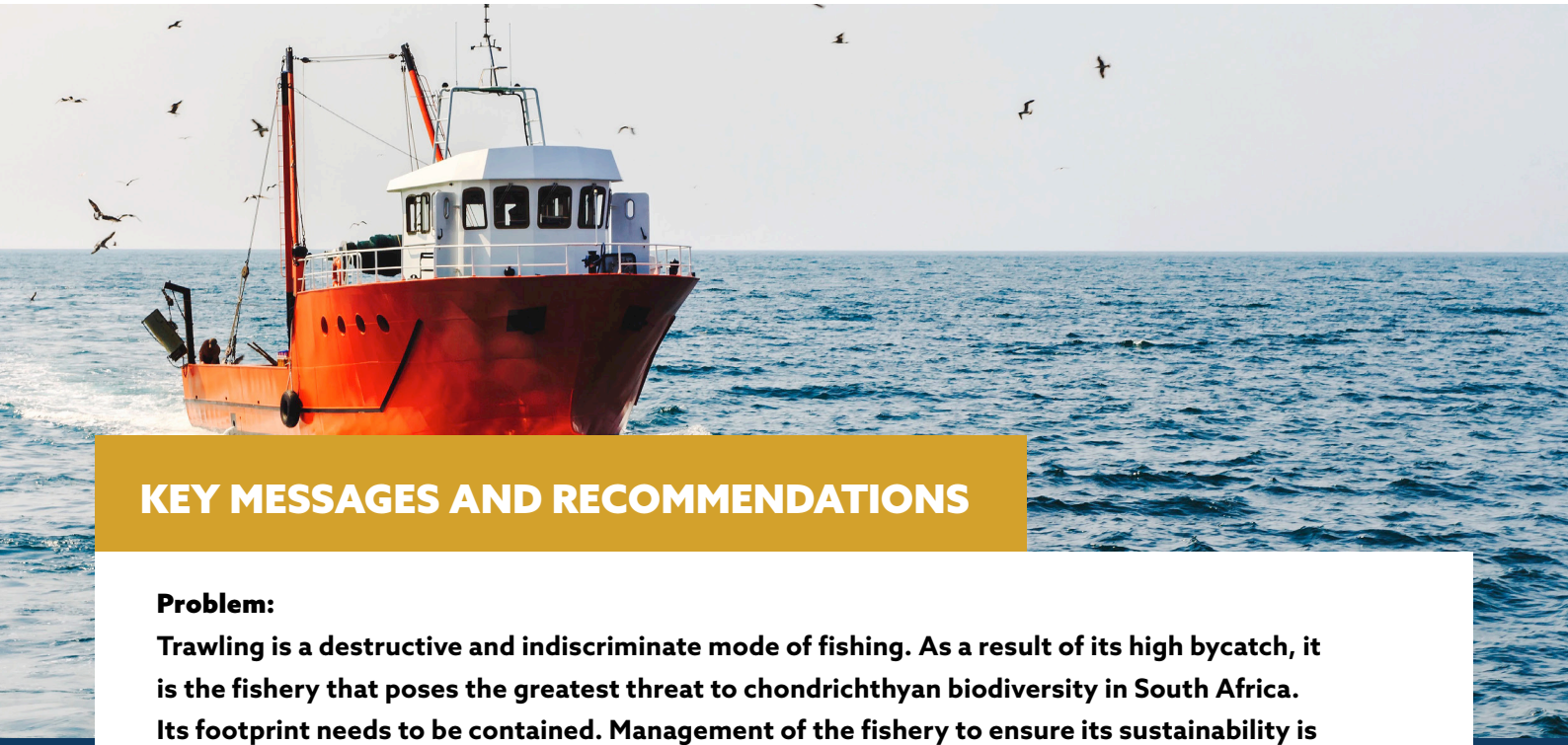
POLICY IMPACTING SOUTH AFRICAN SHARKS & RAYS 2022

COMMERCIAL FISHING SECTOR: BOTTOM/DEMERSAL TRAWLING



KEY MESSAGES AND RECOMMENDATIONS

Problem:
Trawling is a destructive and indiscriminate mode of fishing. As a result of its high bycatch, it is the fishery that poses the greatest threat to chondrichthyan biodiversity in South Africa. Its footprint needs to be contained. Management of the fishery to ensure its sustainability is greatly hampered by its low levels of identification and quantification of the catch, especially the discarded bycatch.

Recommendations:

1. Ensure that trawling is contained within its current footprint through improved monitoring of the movements of fishing vessels and spatial management.
2. Improve the monitoring and data collection of all catches, especially the bycatch discarded at sea, using electronic surveillance systems.
3. Use the data obtained from the enhanced documentation of catches to improve the management of the fishery, with emphasis on the bycatch of ETP (Endangered, Threatened and Protected) chondrichthyan species.
4. Establish a network of Marine Protected Areas (MPAs) within the trawling footprint which are representative of the different substrate types present.
5. Reduce the extremely high bycatch of Critically Endangered soupfin shark.

COMMERCIAL FISHING SECTOR:
BOTTOM/DEMERSAL TRAWLING

Bottom or demersal trawling has a high impact on biodiversity due to the extensive bycatch and its detrimental impact on the substrate. In South Africa identification and quantification of the bycatch, especially the large chondrichthyan component, which is largely discarded at sea, is extremely poor. This makes it extremely difficult to assess the impact of the fishery on the species concerned and to develop measures to reduce its impact on biodiversity.

CONTEXT

Bottom trawling is the only fishing gear type that makes sustained contact with the seafloor in a manner that can damage the substrate. Although it is a very effective way of sourcing cheap protein from the sea, the practice stands alone among fishing gears in that it can be conclusively linked to all three of the major threats of fishing on marine biodiversity: overfishing, bycatch and habitat damage. Bycatch is extremely high with poor levels of identification, very high discard rates and a suspected low rate of survival for the small numbers that are released alive. For the industry to maintain its Marine Stewardship Council (MSC) certification, it is required to reduce bycatch.

WHAT IS BOTTOM TRAWLING?

Demersal or bottom trawling is a technique used to catch aquatic animals that involves dragging a weighted net or rigid structure from a vessel along the seafloor. The demersal trawl fisheries in the Western and Eastern Cape comprise two components: an inshore operation, targeting either shallow-water hake *Merluccius capensis* or East Coast sole *Austroglossus pectoralis,* and an offshore component, targeting both deep-water hake *M. paradoxus* and shallow-water hake *M. capensis*. The regulations prohibit all trawling east of the Kei River mouth and prevent the larger offshore vessels from fishing in the inshore zone.

The fishery is managed on the basis of Total Allowable Catch (TAC), with no bycatch restrictions for chondrichthyans, although "move-on" rules apply to avoid areas of high teleost and chondrichthyan bycatch. Smaller vessels discard all bycatch that cannot be processed for human consumption, as hygiene standards for export prevent retaining both trash and fish for human consumption in the same hold. The larger vessels have onboard fishmeal production facilities, so nothing is discarded. There is a prohibition in the production of squalene. All vessels are monitored by Vessel Monitoring Systems (VMS) and there is limited onboard monitoring by a scientific observer programme. Discharge monitoring at landing sites is implemented on all inshore trawl vessels. On a far smaller scale, there is also deep-water trawling on the shelf edge of the central KZN coast, targeting prawns and langoustines.

STUDY RESULTS, CONCLUSIONS AND RECOMMENDATIONS

Historically rocky areas provided natural refugia from trawling but since 1998 these areas have been fished by the demersal longline fishery. As a result, the overall demersal fishing effort has greatly increased in the last 2-3 decades. Legislation dictates that trawling may not occur outside the current footprint. Currently 14% of the shelf on the west coast and 11% on the east coast is trawled but this could be expanded while still remaining within the current footprint. There is also the danger that technological advances may enable vessels to trawl in previously inaccessible areas. Policy should be introduced to strengthen the containment of trawling within the designated footprint, through improved vessel monitoring and increased penalties for transgression.

Over 50 species of chondrichthyans are caught but most are discarded, with annual landings in the region of 1600 tonnes, which is about half of South Africa's total landings of these cartilaginous fish. Dogfish *Squalus spp.*, soupfin sharks G*aleorhinus galeus*, smoothhound sharks *Mustelus* spp. and St Joseph *Callorhinchus capensis* and skates (family Rajide) comprise the majority of chondrichthyan landings. The inshore trawl fishery has a particularly high bycatch of soupfin *Galeorhinus galeus* assessed in the IUCN Red List as Critically Endangered and smoothhound sharks *Mustelus* spp. In fact, the catches of soupfin sharks in the trawl fishery are the highest (101–400 t per annum; 26–50% of total catch) of all fisheries, including the demersal shark longline fishery, which targets this species.

There are several controls in the fishery. In order to ensure full compliance with the regulations, close to 100% observer coverage would be required, but this is regarded as impractical by the industry. As a result, the limited observer coverage can only provide a representative sample of scientific information on the composition and abundance of the species caught, including all the bycatch. The data obtained are of very limited value if the vessel concerned alters its fishing habits when no observer is present. As a result, compliance is best achieved with electronic surveillance using continuous GPS monitoring and on-deck cameras to film all activities associated with the processing of the catch.

Bigger hake fetch a higher market price than smaller hake, so there is a tendency to discard the smaller hake at sea to maximise the value of the retained catch - a practice known as "high grading". Some vessels also discard low value fish such as jacopever, dory and gurnards. Such dumping is illegal but almost impossible to police. Vessels that land only hake, kingklip and monkfish are obviously high grading but there is currently only a maximum limit on bycatch, no minimum limit. Again, the deployment of on-deck cameras could detect such dumping.

RECOMMENDATIONS

1

Ensure that trawling is contained within its current footprint through improved monitoring of the movements of fishing vessels and spatial management.

While such legislation already exists, there is concern over the levels of compliance. This can be enhanced by improved monitoring and increased penalties for transgression. All vessels are currently fitted with vessel monitoring systems (VMS), however polling the vessels to determine their positions using satellite technology is expensive. All vessels should be compelled to carry tamper-proof recorders that record the entire cruise track, such as log course, speed and position, every 5 minutes. When the vessel docks, the data could be downloaded by fishery inspectors or transmitted to the Department of Forestry, Fisheries and the Environment (DFFE), via the internet, at a fraction of the cost of satellite transmission. A random selection from each vessel's data can then be checked. If any transgressions or suspicious activities are detected during these routine scans, then the entire dataset, including all historical cruises undertaken by that vessel, can be scrutinised for infringements. The fact that a vessel's entire history is available for examination at any time means that fishing companies will be far more compelled to comply.

2

Improve the monitoring and data collection of all catches, especially the bycatch discarded at sea, using electronic surveillance systems.

Here the aim is to improve the levels of identification and quantification of the entire catch. Currently landings are reported in generic categories, but most of the chondrichthyans are discarded, unidentified, at sea. Ideally all reporting should be made to species level and systems need to be implemented with this goal in mind. A major step in this direction is that any shark catches, including skates and rays, that are landed should have head and fins attached, not only to prevent finning, but to greatly facilitate correct identification. This measure also substantiates the claims made by the industry that no finning takes place at sea. Electronic surveillance, through the strategic deployment of cameras to monitor all catches, in particular the discarded component, should be mandatory at various stages in the processing of the catch. Artificial intelligence can be used to assist in the identification process, which is far too time-consuming to be conducted manually but it is unlikely to be able to identify the catch to species level for some species. Such technology is being developed and implemented in other countries.

3

Use the data obtained from the enhanced documentation of catches to improve the management of the fishery, with emphasis on the bycatch of ETP chondrichthyan species.

The improved identification of the catches, especially the discarded bycatch, and more accurate quantification of catches, will provide the basis for better management of the fishery. Here the goal is to reduce bycatch but little is known about the ecology and life history of many of the species, especially those that are discarded. Electronic data should be geo-tagged to provide valuable information on seasonal and geographical distribution of species which can then be used to develop ways of mitigating against bycatch of ETP species.

4

Establish a network of MPAs within the trawling footprint which are representative of the different substrate types.

A mapping exercise has already been undertaken to identify potential deep-water MPAs, based on substrate type. The aim is to preserve portions of each habitat type and its associated fauna, with the added benefit of providing refugia for both the trawl target species as well as bycatch.

5

Reduce the extremely high bycatch of Critically Endangered soupfin sharks.

The bycatch of soupfin sharks in the demersal trawl fishery is higher than the targeted catch in the demersal longline fishery. A Precautionary Upper Catch Limit (PUCL) in the order of 20 tons, combined with a move-on rule, should be implemented to reduce catches of this species, so that the population can recover. Any danger of catch being dumped to avoid exceeding the PUCL can be avoided by ensuring electronic surveillance of the catch. Time and/or area closures is another tool to reduce soupfin shark catches. Examples of seasonal closures on fishing grounds include closure of parts of existing fishing grounds off Cape Point and Port Elizabeth in October and November when the kingklip spawn.

These demersal trawl fisheries potentially pose the greatest threat to several species of deep-water demersal chondrichthyans in South Africa (Prof. Warwick Sauer, Rhodes University 2003).

CONCLUSION

Bottom trawling poses a significant threat to biodiversity through overfishing, high bycatch and damage to the substrate. The trawling footprint needs to be contained within its current geographical limits, through enhanced monitoring of vessel positioning. There is an urgent need to improve the identification and quantification of the bycatch. This is achievable by installing electronic monitoring systems with integrated Artificial Intelligence to capture the entire processing of the catch, including the bycatch. Improved data will facilitate more effective management of the fishery, in particular the high bycatch of chondrichthyans. Efforts to both reduce the bycatch, in particular the high catches of Critically Endangered soupfin sharks, and to improve their survival are imperative.

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ACKNOWLEDGEMENTS

WILDTRUST would like to extend thanks to the Shark Conservation Fund for funding the Shark and Ray Protection Project (2019-2022), and to various contributors and project partners for comments on this policy brief.

HOW TO CITE THIS POLICY BRIEF:

WILDTRUST, 2022. Policy influencing South African sharks and rays. Commercial Fishing Sector: Bottom / demersal trawling. WILDTRUST Policy Brief, number 3. 5pp.