

Save our Sharks in South Africa

INFORMATION FOR THE ATTENTION OF THE NPOA-SHARKS EXPERT REVIEW PANEL

1. Current situation regarding Sharks in South Africa

1.1 Stock assessments

Outlined below are the current stock assessments and the information that can be deduced from it. Let us focus on the two main target species of the DSL (data obtained from DEFF's stock assessments published in 2019)

Smoothhound shark (<i>Mustelus mustelus</i>)	Soupin shark (<i>Galeorhinus galeus</i>)
<i>1 of top 5 most valuable shark species in SA</i>	<i>1 of top 5 most valuable shark species in SA</i>
<i>2 genetically distinct stocks split by Cape Agulhas</i>	<i>shoaling behaviour thus likely susceptible to high fishing mortality</i>
<i>fishery really started in 1990</i>	<i>renew interest in 1990 as direct shark longline industry was established</i>
<i>from 2005, DSL is main contributor (up to 5 times more than other fisheries combined)</i>	<i>from 1990 line fishery is main contributor (DSL ~ 20% contribution to total effort)</i>
<i>seldom more than 3 DSL vessels operating at the same time</i>	
<i>never observers on DSL vessels</i>	
<i>No EIA on DSL</i>	
<i>big drop in effort in 2013-14 as 2 of 3 main DSL vessels lost permits (got them back in 2015)- see the related scale of catch reduction in Fig 1 below</i>	

Smoothhound shark	Soupin shark
42.3% population decline between 1991-2016	50.9% population decline between 1991-2016
63.3% projected decline over 3 generations	85.1% projected decline over 3 generations
55.5% probability to be in the IUCN EN category	60.6% probability to be in the IUCN CR EN category
<i>Averages over 4 scenarios:</i>	
MSY ~ 100 tons	MSY ~ 385 tons
B(2016)/B _{MSY} ~ 1.19	B(2016)/B _{MSY} ~ 0.24
B(1990)/K ~ 80% of original biomass	B(1952)/K ~ 94% of original biomass
B(2016)/K ~ 59% (21% decline in 26 yrs)	B(2016)/K ~ 12% (82% decline in 64 yrs)
F(2016)/F _{MSY} ~ 1.1	F(2016)/F _{MSY} ~ 3.9

<i>F 10% higher than max sustainable</i>	<i>F almost 4x higher than max sustainable</i>
Thus: >50% probability species was already unsustainably fished in 2016	Thus: >99% probability species was already overfished in 2016
<i>LAST data of the 2019 assessment referred to 2016 when:</i>	
F = 124t : considering an average of 7 kg per shark (which is conservative), it means that in 2016 ~ 18,000 smoothhound sharks were processed THAT was already ~ 1.7 x MSY in 2016	F = 329t : considering an average of 4 kg per shark (which is conservative), it means that in 2016 ~ 82,000 soupfin sharks were processed THAT was already ~ 3.3xMSY in 2016 DEFF calculated at such rate the species will be commercial extinction by 2055 (with 98% probability). If F=0 , recovery will happen only by 2070. However DEFF states that "such a large reduction in catch is not feasible"

During a parliamentary examination in August 2019, **data** was provided by **Minister Creecy** that, when included in the 2019 DEFF assessment for the smoothhound sharks, clearly shows a failed implementation of any regulatory measures. The conditions currently is even worse than that published in 2019 (with the data ending in 2016).

DEFF data show smoothhound sharks **ONLY caught by DSL**:

- 2016: 17,588 sharks (~123t) = 1.6x higher than recommended for all fisheries
- 2017: 18,298 sharks (~128t) = 1.7x higher than recommended for all fisheries
- 2018: 30,112 sharks (~211t) = 2.8x higher than recommended for all fisheries
- 2019: the quantity provided for the first semester of 2019, when doubled for that year, reached 23,592 sharks (~165t) = 2.2x higher than recommended for all fisheries

When these quantities are included in the effort graph from the assessment by DEFF reported in 2019, the situation is clearly far from the one recommended by DEFF's own scientists. (A typical example of scientists providing great data but managers deciding not to consider it.) Such an approach has made the situation in 2020 far worse than in 2016 (the one considered as latest in the stock assessment).

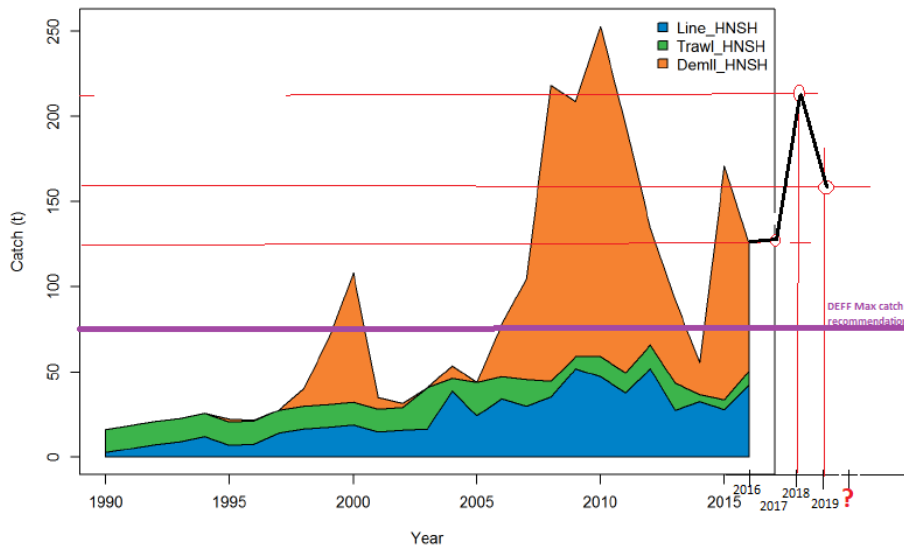


Figure 1. Time-series of estimated catch in metric tons (t) for smoothhound sharks *Mustelus mustelus galeus* (1990-2016).

1.2 Departmental Management issues

To ensure that sustainability as a principle is not subordinated to political goals, managerial procedures need to be strengthened. We need governance principles and statutory policies that do not allow for decisions that have far reaching environmental implications and that may result in fish stock collapse. Permit conditions have to be enforced, fishing in MPAs needs to be enacted upon, illegal fishing of protected species must be stopped, etc.

In the 2018 review by scientists of NPOA-Sharks the following was stated:

- Ensuring compliance with permit conditions (High priority in 2013)
The audit found *little progress due to other priority issues within SA fishery compliance*
- Developing of regulatory tool (Immediate priority in 2013)
The audit found *No progress due to attrition of staff within DAFF, scarcity of skilled resource managers and lack of assessments.*

Even though it was indicated as an immediate requirement in 2013, the development of regulatory tools did not take place during the last 7 years and could not aid to law enforcement as they were intended to.

Even when assessed by an independent organisation like WWF, part of their South African Sustainable Seafood Initiative (SASSI) program, the status of the two species mostly fished by DSL, is confirmed to be seriously worrying (as outlined below):

Name	Method	WWF-SASSI Colour	Year of assessment	Reason for listing
Common smooth hound shark (<i>mustelus mustelus</i>)	Linefishery	ORANGE	2015	Concerns around stock status & management
Common smooth hound shark (<i>mustelus mustelus</i>)	Demersal shark longline	RED	2015	Concerns around stock. Fishing method negatively impacts the environment. Some concerns around management
Soupin shark (<i>Galeorhinus galeus</i>)	Linefishery	ORANGE	2015	Concerns around stock status & management
Soupin shark (<i>Galeorhinus galeus</i>)	Demersal shark longline	RED	2015	Concerns around stock. Fishing method negatively impacts the environment. Some concerns around management
Soupin shark (<i>Galeorhinus galeus</i>)	Inshore demersal trawl	RED	2018	Negative impact on the environment. Stock is considered overfished & overexploited.
White spotted smooth hound shark (<i>Mustelus palumbes</i>)	Inshore demersal trawl	RED	2018	Data deficient. Biology indicates a moderate vulnerability to fishing pressure. Fishing method negatively impacts the environment

All SASSI assessments are based on the most recent, scientific information and are compiled using a combination of fisheries data, independent survey data (when available) and results from peer-reviewed scientific information.

According to the shark NPOA, the precautionary approach should be adopted where there is a cause for concern.

The following concerns are real and current and no precautionary approach was taken:

- when there is stock depletion or collapse (example of smoothhound and soupfin sharks),
- when high numbers of protected species are being killed (examples provided by the public in regards to smooth hammerheads: see evidences below),
- where there are aggregation sites for juvenile sharks, especially of protected species (again example of smooth hammerheads). Bays like Mossel Bay, Plettenberg Bay and all other embayments along the southern Cape's coastline are putative (confirmed in many cases) nursery areas for many species, yet strongly targeted by the DSL vessels.

1.3 Enforcement issues mainly concerning DSL

Fishing in protected areas, such as MPAs, is one of the few prohibitions within the DSL permit. On several occurrences different DSL vessels have been witnessed fishing inside MPAs without any repercussions.

There is currently only one single court case against a DSL vessel (the White Rose) that was caught BY THE PUBLIC. (The public provided ALL the evidences, and not the authorities as incorrectly reported by the Minister during a previous parliamentary questioning). The vessel was fishing in broad daylight well inside the De Hoop Marine Protected Area in April 2019. It was catching sharks of both targeted and protected species. The public had to inform DEFF and Cape Nature and despite this, neither government entities sent out a patrol vessel. It was a public vessel that went out and collected evidence of the transgression of the DL vessel. Sadly, with overwhelming photographic, GPS and witness evidence by way of affidavits the illegal vessel is still allowed to operate to this day, often on the very edge of the MPA they were caught inside. (A court date has been set now in July 2020 only).

Monitoring of fishing vessels' movements are facilitated by Vessel Monitoring System (VMS), which is a permitted condition. Authorities have access and are required to monitor the vessels' movement, specifically at and near protected areas. The questions arise:

- Why are the authorities not cognizant of the fact that vessels are in and fish within MPAs?
- If they are, why are authorities "turning a blind eye" and not acting on vessels fishing in MPAs?
- Why must the public do the work of the authorities?
- Can we find a way forward where the public can work in collaboration with the authorities, to prompt a fast response to illegal activities that are signalled?

1.4 Conservation of sharks in South Africa

The Marine Living Resource Act was established to conserve our marine natural resources and the NPOA-Sharks specifically for the conservation and sustainable use of elasmobranchs in South Africa.

According to many national and international scientists and conservationists, angling communities, shark eco-tourism operators and public with feet on the ground, the situation in South Africa has never been as dreadful as now (seven years after the promulgation of the NPOA). Shark populations are at their lowest, white sharks have basically disappeared from two of the three main aggregations of the Western Cape, vessels regularly fish illegally within Marine Protected Areas, protected species are being caught, our sharks meat is exported to feed people overseas, enforcement is

poor, authorities ignore their own scientists recommendations, public pressure and resentment is mounting... and so we can continue... a dark and bleak picture.

In fact, the situation has deteriorated to such an extent that The Minister has been obliged to act and to establish this expert review panel, not because of the proactive approach of her own department, but because of the public pressure.

1.5 Shark ecotourism: the white shark case

White sharks have been protected since 1991 in South Africa's waters. The main coastal pinniped species is considered recovered (Kirkman et al. 2007). Therefore why don't we see a recovery for white sharks, especially in the last 10 years? At best the white shark population is considered stable (Towner et al. 2013), or even in a possibly more distressing status (Andreotti et al. 2016, 2017; Irion et al. 2017).

A few cases were recorded of white sharks been caught by the DSL. Due to the complete absence of observers on any of the DSL vessels, these reports remain few. However, although not many catches are recorded, it is likely that the numbers are significantly higher. This is based on published figures from similar fisheries in Australia which are extensively monitored. More than 50% of fishers record catching at least one white shark per year and an average of around 40 white sharks per year (read more about it: [link](#)).

Furthermore, there is enough scientific evidence supporting the foraging reliance of white sharks on smaller demersal shark species, even in area where pinnipeds are present (Dr Enrico Gennari in Mossel Bay South Africa -article in review; Prof. Chris Lowe in California; Dr Greg Skomal in the East Coast of the US). The following supports this statement:

Cliff et al 1989 [link](#); Hussey et al 2012 [link](#); Grainger et al 2020 [link](#); Summary by Prof. Chris Lowe: [link](#)

In addition find below statements from studies performed and published by Dr Kock. This provides further scientific credibility to the link between white sharks and their dependence on elasmobranch prey mentioned in various peer reviewed publications:

From Welz, Kock et al 2013:

“Since white sharks are capable of regulating their internal body temperature and tolerating a wide range of water temperatures, it seems more likely that the result of

an increase in sightings in warmer waters is related to the increase in availability of potential prey, rather than a physiological preference for warm water at such a narrow temperature range”.

From Kock et al 2013:

“Previous research has suggested a clear size-based preference for different prey species with white sharks ≤ 3 m feeding predominantly on teleosts and elasmobranchs, while white sharks >3 m supplement their diet with marine mammals, such as seals (Cliff et al 1989; Hussey et al 2012)”

*“The diet of white sharks on the Inshore areas of False Bay is unknown, but they have been observed feeding on seasonally abundant fish such as white steenbras (*Lithognathus lithognathus*), yellowtail (*Seriola lalandi*) and depredating on various elasmobranch species frequently caught by fishermen in False Bay (unpublished data)”.*

“The shift from the Island in autumn and winter to the Inshore region in spring and summer by females mirrors the seasonal peak in abundance of juvenile seals and of migratory teleost and elasmobranch species respectively”

From Kock et al 2018:

“Along the inshore regions of False Bay, potential teleost and elasmobranch prey resources are being heavily overfished and white sharks are occasionally caught in three fisheries, namely recreational rock and surf fishing, beach purse-seine fishing and experimental fishing gear (Lambert 2006; unpublished data). Thus, future Marine Spatial Planning could benefit white sharks by conserving important prey resources, habitats and/or mitigating incidental catches”.

*“Fish and elasmobranch prey species have been confirmed to be more abundant along the inshore areas of False Bay during spring and summer, especially in the northern regions of False Bay when the water is warmer. Strandfontein in particular is a very well-known fishing location for various line-fish species e.g. kob (*Argyrosomus* spp.) and smooth hound sharks (*Mustelus mustelus*)”.*

“We found no effect of shark size on occurrence patterns at inshore sites”.

“The probability of detecting a white shark at both Fish Hoek and Muizenberg beaches has been shown to be significantly higher when prey fish are present”

“White sharks do not benefit much from the current MPA network in False Bay, as high occurrence sites, such as Strandfontein and Seal Island are not included in the

network. Our results suggest that they could benefit in two different ways if these sites were included in the future. Firstly, to conserve important prey resources and secondly, to reduce being caught incidentally by fisheries”.

*“While the Cape fur seal population in False Bay seems to be stable, the same cannot be said for coastal fish populations] and other shark populations in False Bay e.g. soupfin sharks (*Galeorhinus galeus*). It is possible that loss or changes in distribution of prey could impact the distribution, and spatial and temporal movements of white sharks in False Bay, in addition to inadvertently driving sharks to seek alternative prey sources”.*

As final proof, wherever coastal fisheries are well managed, the population of white sharks will be stable, or white sharks will increase in numbers.

It has been suggested that orcas impact on white sharks. They do have an impact on white sharks, but only in the short and medium terms. However, the decline of white sharks from False Bay started earlier than the appearance of white shark carcasses (Hammerschlag et al. 2019). Therefore, even though they are a contributing factor in the current white shark situation, they cannot be considered the main driver.

Furthermore, although uncontrollable factors such as climate change, orca predation etc. can play a part in the continuous disappearing of white sharks from the Southern Cape, a proactive approach from the panel can reverse this trend. By the removal of DLS (by reallocating it to another fishery) the panel can provide the circumstances for the recovery for the white shark in South Africa.

The reallocation process can be straight forward, if one considers that the all the DLS permit holders hold several other fishery permits as well. In fact on one of the main DSL vessels has no less than 9 other fishing rights (5 in his name and 4 in his wife’s name).

As an endnote, the onus of proof of the immense negative impact of the DLS fishery on white sharks should not rest with the public. If you, as a panel, decide that DSL can continue, substantial evidence is required that no such negative impact from the DSL are currently occurring on white sharks, either directly or indirectly.

Lastly, if you had to choose between being in the wrong for having reallocated a fishery which is already proven to be unsustainable versus for having waited too long for the final causative proof of the decline of a species like the white shark, essential as apex predator and provider for thousands of jobs in the tourism sector, which one would you rather take the responsibility for?

2. Previous deficiencies and present consequences

The major nonconformity to environmental good practices (and our environmental legislation requirements) was to permit DSL fisheries without identifying the risks to the environment, shark species, existing businesses and future sustainability of the practice. No environmental impact assessment or socio-economic assessment were performed prior to allowing this very destructive fishery into our seas.

We just would like to point out a few examples of the magnitude of damage that the few DLS boats already had:

- In Algoa Bay, Dr Matt Dicken found that 27 out of 30 smoothhound sharks he tagged, ended up being caught by the one single DLS vessel, within one month from being tagged.
- Anglers from the Cape Infanta area have reported that the the longliners spend fishing on the eastern boundary of the De Hoop MPA for up to four days at a time until every shark in the area has been caught.
- A study still in progress lead by the University of Miami is showing that apart from endangering the stock levels of the targeted species, DLS can also impact CITES protected species, such as smooth hammerheads.

Conflicts with other water users are increasing. The lack of action by DEFF is putting several sectors into jeopardy. Of major importance is the white shark cage diving industry sector that contributes almost 1 billion Rand to the country's GDP per annum. DLS revenue in comparison is estimated at R10-15 million Rand per annum. This is unacceptable.

This comparison is even more skewed if we include other shark tourism related sectors such as the KZN shark diving, Eastern Cape shark diving, the sardine run from PE to KZN, all of which are heavily reliant of coastal shark species, and all of which contribute tens of millions and have transformed and uplifted local towns.

Furthermore, and most importantly, the shark ecotourism industry is indefinitely sustainable, it was growing exponentially and it was generating massive global media exposure for South Africa. It was also contributing to scientific knowledge about shark behaviour and ecology, all with relatively low impacts on the natural shark resources.

But it is not only about ecotourism, commercial fishermen in the Gansbaai, Struisbaai, Arniston, Witsands, Stillbaai, Mossel Bay, Plettenberg Bay and Port Elizabeth areas, all

report significantly decreased catches of shark species. Even professional anglers agree about that.

Demersal shark catches are regulated by fishing effort (TAE as permitted number of vessels) as a mechanism to limit catches. Thus currently permit holders fish under the following conditions:

- No total catch limits
- No size limits
- No seasonal closure
- No buffer zones around Marine Protected Areas
- No independent observers

This has caused an unprecedented unmanaged situation where target stocks are collapsing (or are already collapsed) and there is no reliable record of any bycatch.

We want to report only three examples, among many more, which can give an idea of the difficulty to rely on the official catch data related to the DSL:

- Over the years, the records for the DSL fishery show 0 (zero) official catches of any hammerhead species. Yet, there are video evidences provided by the public of these vessels catching smooth hammerheads and leaving them dying on deck without putting back into the water (2019 and 2020).
- Anglers reported to DEFF the offloading of buckets of hammerheads in Mossel Bay three years ago, and yet none appeared on the official catch data for the DSL.
- In February 2020, after being filmed catching and retaining smooth hammerhead, the DSL vessel White Rose was on its way to the Mossel Bay's harbour to offload its catch. The public informed DEFF's scientists of the situation. The boat took two days to reach Mossel Bay. The public asked for inspectors to be in Mossel Bay when the boat docked. Yet, surprisingly, no inspector was there when the boat offloaded, even though the presence of a DEFF inspector is a permit condition for the DSL.

If one should consider the DSL in isolation, the shark NPOA would appear to be failing in all areas, from the management, to the enforcement, all the way to the conservation of marine resources, and even in regards of the best interest of a sustainable and long-term fishing industry. Therefore it is in the best interest of the shark NPOA to steer away from previous approaches and make radical changes.

3. Proposed future measures

Outlined below are the proposed **slot limits** that have been put forward as urgent recommendations. Again the two main target species of the DSL are listed. (Data obtained from DEFF’s stock assessments published in 2019)

DEFF proposed actions (URGENT recommendations) in 2019 stock assessments	
Smoothhound shark	Soupin shark
to start recover by 2024, max catch <75 tons/year	To start recover by 2024, max catch <100 tons/year
<p><i>THROUGH:</i></p> <ul style="list-style-type: none"> immediate (from 2017) slot limit 70-130cm TL <p>AND extra reduction of 4.4t per year across all fisheries</p>	<p><i>THROUGH:</i></p> <ul style="list-style-type: none"> immediate (from 2017) slot limit (70-130cm TL) <p>However DEFF acknowledges “<i>this limit will likely make DSL fishery unviable</i>”</p> <ul style="list-style-type: none"> AND max of 20t per year for trawl industry AND extra reduction of 40t per year across all fisheries

The urgent request for slot limits by DEFF scientists have a long history:

- it was proposed in 2011 by the Department’s Line Fish Scientific Working group;
- it was formally introduced as scientific recommendation in 2015;
- it was then signed by the delegated authority; and then
- it was gazetted and endorsed by the Minister

Yet, in the middle of 2020, they have not yet been implemented.

Nevertheless, species-specific slot limits alone cannot be effective, as has recently been proven by a study in Papa New Guinea ([link](#)). Added to this, other regulatory measures must be implemented in conjunction with enforcement tools: shift from TAE to TAC and **independent observers** on boats. However, the recommended TAC published in 2019 was based on data up to 2016. We have shown how the situation has worsened since then, thus those proposed limits should still be lowered and implemented as a matter of urgency.

Furthermore, we would suggest the implementation of **buffer areas** around MPAs and other aggregation areas for protected species such as the white shark, CITES-protected species such as the smooth hammerhead shark, and potential nursery areas, again in conformity with the precautionary approach of the shark NPOA.

16 June 2020