MarinTrust Standard V2

Whole fish Fishery Assessment Report Template

MarinTrust Programme
Unit C, Printworks
22 Amelia Street
London
SE17 3BZ
E: standards@marin-trust.com
T: +44 2039 780 819

Table 1 Application details and summary of the assessment outcome

Application details and summary of the assessment outcome			
Name:			
Address:			
Country: South Africa		**Zip:**	
Tel. No.		**Fax. No.**	
Email address:		**Applicant Code**	
Key Contact:		**Title:**	
Certification Body Details			
Name of Certification Body:		**Global Trust Certification**	
Assessor Name	**CB Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/ Re-approval**
Virginia Polonio	Conor Donnelly	3	Initial
Assessment Period	To July 2021		
Scope Details			
Management Authority (Country/State)		Department of Environment, Forestry and Fisheries (DEFF) South Africa	
Main Species		Anchovy *Engraulis encrasicolus*	
Fishery Location		FAO 47 ATLANTIC, SOUTHEAST	
Gear Type(s)		Purse seine and pelagic trawl	
Outcome of Assessment			
Overall Outcome		PASS	
Clauses Failed		None	
CB Peer Review Evaluation		APPROVE	
Fishery Assessment Peer Review Group Evaluation		Approve – see Appendix	
Recommendation		**APPROVE**	

Table 2. Assessment Determination

Assessment Determination
The Department of Environment, Forestry and Fisheries is tasked with managing the development and sustainable use of marine and coastal resources; maximising the economic potential of the fisheries sector; and protecting the integrity and quality of the country's marine and coastal ecosystems. Within this Ministry, several divisions play key roles in fisheries management. The South African small pelagic fishery is managed using Operational Management Procedures (OMP's). Precautionary Upper Catch Limits (PUCL), TAC and TAB (by-catch) recommendations are considered by the Ministry on receipt of scientific advice. OMP-14 (finalised in Dec 2014) has been used to recommend TACs and TABs (by-catch) for the small pelagic fishery since 2015. A new OMP (OMP-18) is currently in force. Underpinning management is a core group of DEFF Scientists in the Small Pelagic Scientific Working Group (SPSWG). The principle objectives of the SPSWG are to coordinate annual stock assessments, provide recommendations on Total Allowable Catch (TAC) and revise the current OMPs. Three main species falling under the management regime are Anchovy (*Engraulis encrasicolus*), Sardine (*Sardinops sagax*) and Round herring (*Etrumeus whiteheadi*). These Low Trophic Level (LTL) species provide food for hake, snoek and migratory tuna in the assessment area. Anchovy and sardine generally account for most of the catch, the remainder being made up largely by round herring and other species such as Hector's laternfish and lightfish Fishery dependent data collected for anchovy include landed weight, species composition, catch location and date. Additionally, sampling is used to obtain length frequency data, age estimates, sex, maturity stage, and fish condition. Landings data are collected in the directed fisheries and in the components of the small pelagic fishery, targeting other pelagic species that capture anchovy and mackerel. The sardine stock is quite depressed, while the anchovy and round herring stocks are in a much healthier status. Harvest control rules and TAC decision take into account the status of the various small pelagic species. The pelagic industry (2021 fishery) should continue to take appropriate steps to attempt to keep the sardine by-catch as low as possible by avoiding areas where a relatively high proportion of sardine is found mixed with anchovy schools. The main potential ETP impact of the pelagic fishery is indirect, via the removal of prey species for the IUCN Red list Endangered African Penguin, Cape Gannet and Cape Cormorant. St Croix Island near Port Elizabeth is home to the world's largest colony of African Penguins, and has been used as the basis for several studies into the potential impacts of the fishery on the species. Bird Island is an important habitat for the three seabird species. Habitat effects of the purse seine fishery are considered negligible since the gear does not come into contact with the seabed. Anchovy, sardine, round herring (and other components of the small pelagic fishery listed in this report) within South Africa's EEZ have been identified as species of least concern (IUCN Redlist). No species is listed on the current CITES list of endangered or threatened fish species. Anchovy, sardine, round herring and other components of the small pelagic fishery, lantern and light fish, listed in this report are **APPROVED** as whole fish material for the production of fishmeal and fish oil under the current MarinTrust Standard v 2.0.

Fishery Assessment Peer Review Comments
The peer reviewer agrees with the assessor's determination, noting that the management framework and surveillance, control and enforcement system meets the requirements of the MarinTrust Standard. The main target species, anchovy, meets requirements for data collection, stock assessment, harvest strategy and is in a healthy status. The peer reviewer also agrees with the assessment of the other species comprising the bulk of the remainder of the catch, round herring, and the bycatch species, sardine, Hector's lanternfish, chub mackerel and lightfish. With regards to sardine, the stock is in poor status and exceptional circumstances declared so that the OMP-18 process cannot be routinely applied to this stock. Conservative TACs have been proposed (e.g. nil TACs west of Agulhas in 2021). The peer reviewer notes the indirect impacts of the fishery on endangered/declining ETP bird species and measures to address this including closures around important bird island habitat which is showing some success, the consideration of forage requirements in the small pelagic stock assessment process and further mitigation provided by the lack of full uptake of the TAC.
Notes for On-site Auditor

Table 3 General Results

General Clause	Outcome (Pass/Fail)
M1 - Management Framework	PASS
M2 - Surveillance, Control and Enforcement	PASS
F1 - Impacts on ETP Species	PASS
F2 - Impacts on Habitats	PASS
F3 - Ecosystem Impacts	PASS

Table 4 Species- Specific Results

List all Category A and B species. List approximate total percentage (%) of landings which are Category C and D species; these do not need to be individually named here

Category	Species	% landings	Outcome (Pass/Fail)	
A	Anchovy *Engraulis encrasicolus*	52	A1	PASS
			A2	PASS
			A3	PASS
			A4	PASS
B	Southern African Anchovy *Engraulis capensis*	15	PASS	
B	Round herring *Etrumeus whiteheadi*	21	PASS	
C	Sardine *Sardinops sagax*	1	PASS	
C	Hector's Lanternfish *Lampanyctudes hectoris*	0.25	PASS	
D	Chub mackerel *Scomber japonicus*	1	PASS	
D	Lightfish *Maurolicus walvisensis*	0.25	PASS	

Table 5 Species Categorisation Table

Common name	Latin name	Stock	IUCN Redlist Category[1]	% of landings	Management	Category
Anchovy	*Engraulis encrasicolus*	FAO 47	LC	52	DEFF	A
Southern African Anchovy	*Engraulis capensis*	FAO 47	LC	15	DEFF	B
Round herring	*Etrumeus whiteheadi*	FAO 47	LC	21	DEFF	B
Sardine	*Sardinops sagax*	FAO 47	LC	1	DEFF	C
Hector's Lanternfish	*Lampanyctudes hectoris*	FAO 47	LC	0.25	DEFF	C
Chub mackerel	*Scomber japonicus*	FAO 47	LC	1	DEFF	D
Lightfish	*Maurolicus walvisensis*	FAO 47	LC	0.25	DEFF	D

Species categorisation rationale

The assessment team has followed the information on catch composition reported on the application form provided by client, however as no clear requirement regarding IPI species are detailed in the guidelines, the assessment team has used the MSC approach where IPI species can be up to 15% of the total landing, with that in mind and the difficulty to segregate the two species of anchovies, Southern African anchovy will account at 15 % of the total composition and the assessor has assumed that no reference points are defined for this species as information is scarce or no updated.
Therefore, following the MT guidelines and with that percentages on catches the assessment team has categorised the different species reported in the catches as detailed above in table 5.

[1] https://www.iucnredlist.org/

MANAGEMENT

The two clauses in this section (M1, M2) relate to the general management regime applied to the fishery under assessment. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. A fishery must meet all the minimum requirements in every clause before it can be recommended for approval.

M1	Management Framework – Minimum Requirements		
	M1.1	There is an organisation responsible for managing the fishery.	Yes
	M1.2	There is an organisation responsible for collecting data and assessing the fishery.	Yes
	M1.3	Fishery management organisations are publicly committed to sustainability.	Yes
	M1.4	Fishery management organisations are legally empowered to take management actions.	Yes
	M1.5	There is a consultation process through which fishery stakeholders are engaged in decision-making.	Yes
	M1.6	The decision-making process is transparent, with processes and results publicly available.	Yes
		Clause outcome:	PASS

M1.1 There is an organisation responsible for managing the fishery.

In the South Africa purse seine fishery for small pelagic species fishes, anchovy *Engraulis encrasicolus* and redeye round herring *Etrumeus whiteheadi* are the primary target species and collectively make up about 90% of the catches. Further, Southern African anchovy, *Engraulis capensis* is also considered an IPI species and it is included in this assessment.

Responsibility for management of South Africa's fisheries has recently resided with the Fisheries Management Branch of the Department of Agriculture, Forestry and Fisheries (DAFF). Subsequently, in May 2019, the Fisheries Management Branch was transferred to what was previously the Department of Environmental Affairs, which was renamed the Department of Forestry and Fisheries and the Environment, (DFFE). Within the Branch, there are six sub-programmes, namely Aquaculture and Economic Development; Fisheries Research and Development; Marine Resource Management; Monitoring, Control and Surveillance; Fisheries Operations Support and Financial Management.

South African sardine and anchovy Total Allowable Catches (TACs) and Total Allowable Bycatches (TABs) are typically recommended based on a joint Operational Management Procedure (OMP, e.g. de Moor *et al*. 2011). In November 2020 there was a correction of the estimation of the biomass, that has resulted in an initial Anchovy TAC for 2021. The Initial Anchovy TAC has been set at 252,000t. However, the amount exceeded in the 2020 TAC will be deducted as per permit conditions after verification with the Rights Holders.

Precautionary Upper Catch Limits (PUCL), TAC and TAB recommendations are considered by the DEFF Chief Directorate: Marine Resource Management, considering factors such as legislation, socio-economics, the ecosystem approach to fisheries management (EAFM), and stock advice. Recommendations are then submitted to the decision maker (normally the Minister) in line with Departmental protocols. After signature by the Minister, quotas are allocated to the South African Rights Holders, proportionally, according to their share of the rights allocated. A DEFF fisheries manager dedicated to the small pelagic fishery meets with the industry frequently to prepare annual fishing plans and clarify fishing permit conditions.

There is an organisation responsible for managing the fishery. **Clause M1.1 is met**.

M1.2 There is an organisation responsible for collecting data and assessing the fishery.

DEFF Fisheries Research and Development undertakes work to promote the sustainable and optimal management of fisheries resources, and to provide scientific advice. Additional analytical and advisory support is provided by the

Marine Resource Assessment and Management Group (MARAM) at the University of Cape Town. MARAM is primarily funded by DEFF and aims to provide a scientific basis for assessment and management of renewable marine resources[2]. The MARAM group drafts OMP's (Operational Management Procedures) used as the basis for many management decisions in the small pelagic fishery. A formal Scientific Working Group, constituted by DEFF (Small Pelagic Scientific Working Group) and comprising scientists from DEFF, MARAM and members of industry associations decide on a TAC level for the fishery after interpreting the outcome of an OMP (OMP-18rev, FISHERIES/2021/APR/SWG-PEL/20).

There is an organisation responsible for collecting data and assessing the fishery. **Clause M1.2 is met**.

M1.3 Fishery management organisations are publicly committed to sustainability.

Within the Ministry, there are six sub-programmes driven within the branch, namely Aquaculture and Economic Development; Fisheries Research and Development; Marine Resource Management; Monitoring, Control and Surveillance; Fisheries Operations Support and Financial Management. The objectives of these divisions[3] are:

- Fisheries Research and Development: To ensure the promotion of the sustainable development of fisheries resources and ecosystems by conducting and supporting appropriate research.
- Marine Resource Management: Ensures the sustainable utilisation and equitable and orderly access to the marine living resources through improved management and regulation.
- Monitoring, Control and Surveillance: Ensures the protection and promotion of sustainable use of marine living resources by intensifying enforcement and compliance.
- Fisheries Operations Support: The provision of support services in order to ensure the effective and efficient management and administration of the Branch: Fisheries Management and the Marine Living Resources Fund.
- Chief Financial Officer: The provision of financial management for the Branch: Fisheries Management and the Marine Living Resources Fund.

Fishery management organisations are publicly committed to sustainability. **Clause M1.3 is met**.

M1.4 Fishery management organisations are legally empowered to take management actions.

The primary legal basis for fisheries management in South Africa is the Marine Living Resources Act (MLRA) 1998, as amended in 2000, 2014 and 2016[4]. The Act states that the Minister and any other component of government exercising the power within the Act should bear in mind a series of over-arching objectives, including the need to achieve optimum utilisation and ecologically sustainable development of marine living resources; the need to conserve marine living resources; the need to apply precautionary approaches to fisheries management; the need to protect the ecosystem as a whole, the need to preserve marine biodiversity; and the need to engage stakeholders in the decision-making process.

Fishery management organisations are legally empowered to take management actions. **Clause M1.4 is met**.

M1.5 There is a consultation process through which fishery stakeholders are engaged in decision-making.

Decision-making processes respond to important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent and adaptive manner. A formal Scientific Working Group, constituted by DEFF and comprising scientists from DEFF, MARAM and members of industry associations, decide on quotas for the fishery after interpreting the outcome of an OMP.

[2] http://www.maram.uct.ac.za/
[3] https://www.environment.gov.za/branches/fisheriesmanagement#objetives
[4] http://extwprlegs1.fao.org/docs/pdf/saf155134.pdf

Integral to the management process is the participation of the fishing industry, primarily through the small pelagic industrial body, the South African Pelagic Fishing Industry Association (SAPFIA). SAPFIA has a long history of working closely with DEFF. The Scientific Committee members meet regularly with the Scientific Working Group at DEFF, although they are only observers, their input is taken into consideration when scientific decisions are taken for the Industry. SAPFIA also provides research funding when they are able to. If there are decisions made there for the Industry, SAPFIA together with its Members puts them in place[5].

Fishery management organisations are legally empowered to take management actions. There is a consultation process through which fishery stakeholders are engaged in decision-making. **Clause M1.5 is met**.

M1.6 The decision-making process is transparent, with processes and results publicly available.

Decision-making processes respond to important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent and adaptive manner. A formal Scientific Working Group, constituted by DEFF (Small Pelagic Scientific Working Group) and comprising scientists from DEFF, MARAM and members of industry associations decide on a TAC level for the fishery after interpreting the outcome of an OMP (OMP-18rev, FISHERIES/2021/APR/SWG-PEL/20).

The TAC recommendation is then considered by the DEFF Chief Directorate: Marine Resource Management, considering factors such as legislation, socio-economics, the ecosystem approach to fisheries management (EAF), and stock advice. Recommendations are then submitted to the decision maker (normally the Minister) in line with Departmental protocols. After signature by the Minister, the TAC is allocated to rights holders, proportionally, according to their share of the rights allocated. A DEFF fisheries manager dedicated to the small pelagic fishery then meets with industry to prepare annual fishing plans and prepare permit conditions in advance of the fishing season.

Fishing Permit conditions, TAC's and TAB's, closed areas and other information are provided by the Government to industry and directly to rights holders and posted on the industry's website[6]. The DEFF has posted the initial TAC on its website and it is accessible for all the stakeholders.

The decision-making process is transparent, with processes and results publicly available. **Clause M1.6 is met**.

References

Cochrane, K. L., Warwick J., E., Sauer H., H. 2020. A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. Marine Policy Volume 112, February 2020, 103774. https://doi.org/10.1016/j.marpol.2019.103774

DEEF 2021. Fisheries forms and documents | Department of Environmental Affairs

de Moor CL. 2018. Considering alternative constraints to the anchovy Harvest Control Rule. DAFF: Branch Fisheries Document FISHERIES/2018/APR/SWG-PEL/06.

de Moor CL. 2020. Some initial results in the development of OMP-18rev. DEFF: Branch Fisheries Document FISHERIES/2020/DEC/SWG-PEL/123

de Moor, C.L. 2018. Interim OMP-18. FISHERIES/2018/AUG/SWG-PEL/24. https://open.uct.ac.za/bitstream/handle/11427/30591/FISHERIES_2018_AUG_SWG-PEL_24%20Interim%20OMP-18.pdf?sequence=1

[5] https://sapfia.org.za/working-with-deff/
[6] https://sapfia.org.za/tac/

de Moor, C.L. and Coetzee, J.C. 2019. A summary of the method used to provide 2019 catch limit advice for South African sardine. MARAM/IWS/2019/Sardine/P2 http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_P2%20Method%20Used%20to%20set%20Sardine%20quotas%20in%202019.pdf

MARAM. 2020. Homepage. Marine Resource Assessment and Management Group. http://www.maram.uct.ac.za/
SAPFIA. 2021. TAC. South African Pelagic Fishing Industry Association. https://sapfia.org.za/tac/

Links	
MARINTRUST Standard clause	1.3.1.1, 1.3.1.2
FAO CCRF	7.2, 7.3.1, 7.4.4, 12.3
GSSI	D.1.01, D.4.01, D2.01, D1.07, D1.04,

M2	**Surveillance, Control and Enforcement - Minimum Requirements**		
	M2.1	There is an organisation responsible for monitoring compliance with fishery laws and regulations.	Yes
	M2.2	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.	Yes
	M2.3	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.	Yes
	M2.4	Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	Yes
		Clause outcome:	PASS

M2.1 There is an organisation responsible for monitoring compliance with fishery laws and regulations.

Monitoring, control and surveillance is the responsibility of DEFF (Fisheries) Monitoring, Control and Surveillance division tasked with ensuring the protection and promotion of sustainable use of marine living resources by intensifying enforcement and compliance. Monitoring, Control & Surveillance (MCS) is supplemented by Police, Navy[7] and Customs. The area of responsibility (South Africa EEZ) stretches from Port Nolloth on the West Coast to Punto D'Oro on the East Coast approximately 3200km.

All catches are inspected and weighed at off-loading points (designated ports) by monitors and/or fisheries inspectors, to ensure that Rights Holders remain within their quotas, that bycatch species do not exceed conservation limits and that no other gear restrictions have been exceeded. Scientific Fisheries observers accompany fishing vessels to sea on request (see 2021 sardine and anchovy permit conditions at DEEF website), although the task of observers is data collection (catch of target and non-target species, and interactions with ETP species) instead of compliance monitoring. Skippers return logbooks of each trip, detailing fishing effort and catches and are obliged to report on the numbers of sea-bird fatalities and interactions with other ETP species.

There is an organisation responsible for monitoring compliance with fishery laws and regulations. **Clause M2.1 is met**.

M2.2 There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.

A valid fishing license and safety registration certificate issued by the South African Maritime Safety Authority (SAMSA) is required before a fishing permit is issued. The permit holder is further obliged always to have available true certified copies of these documents on board the vessel. In-port-transhipments are allowed only under a strict set of conditions including the application for and issuance of a valid transhipment permit.

[7] https://www.gov.za/about-sa/fisheries

Chapter 6 of the MLRA (1998) sets out law enforcement legislation. This includes empowering fishery control officers (FCO's) to enter and search any vessel or premises, and seize any property considered to be used in or related to an offence. Section 28 of the MLRA makes provision for sanctions if the holder of a right, licence or permit:

- Has furnished information in the application for that right, licence or permit, or has submitted any other information required in terms of this Act, which is not true or complete.
- Contravenes or fails to comply with a condition imposed in the right, licence or permit.
- Contravenes or fails to comply with a provision of the Act.
- Is convicted of an offence in terms of the Act.
- Fails to effectively utilise that right, licence or permit.

Chapter 7 of the MLRA sets out the judicial components of fisheries management, including penalties for non-compliance. Breaches of Regulations are punishable by a fine of up to 2,000,000 Rand or imprisonment for up to five years. Contravention of international conservation or management measures or conditions imposed by a high seas fishing permit or licence is punishable by a fine of up to 3,000,000 Rand.

There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken. **Clause M2.2 is met.**

M2.3 There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.

South Africa ratified the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing in 2014. Transhipment-at-sea is prohibited for all authorised vessels in the South African fleet. In-port-transhipments are allowed for this fleet subject to a strict set of conditions, including the issuance of a valid transhipment permit; 72 hours pre-notification (foreign flagged vessels only) and the nomination of a designated port for transhipment.

The numbers of infringements and penalties issued (South African and Foreign flagged vessels) in each fishery may be available on written request from DEFF's MCS division. Non-compliances detected range from entering South Africa EEZ with gear on board without a valid EEZ permit, to failure to have a valid EEZ permit available for inspection. An observer programme is in place for the large pelagic fishery.

There is no substantial evidence of widespread non-compliance in the pelagic fishery, and no substantial evidence of IUU fishing. DEFF have a zero tolerance to IUU and all the vessels need to comply with the VMS system; internal audits are undertaken to ensure compliance and results are posted on DEFF website. **Clause M2.3 is met**.

M2.4 Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.

South Africa is in the process of improving its Vessel Monitoring Systems (VMS), which should bring about a more stringent monitoring and surveillance regime by applying the most advanced VMS technologies. VMS operated by DEFF is mandatory for all South African flagged vessels. The VMS system tracks these vessels within South Africa's EEZ, ensuring no South African flagged vessel undertakes fishing operations within Marine Protected Areas (MPA) or undertakes illegal transhipments at sea. Fishing permit conditions outline requirements for the installation and operation of a VMS unit and actions to be undertaken by the Rights Holder in the event of a systems failure of the VMS unit at sea. The VMS system has been in operation since March 2000. There are currently in excess of 1000 fishing vessels active on the database. The diversity of fisheries in SA has led to the approval of two different types of VMS units which provide coverage ranging from global coverage (Inmarsat - C) to 50 Nautical Miles (NM) offshore (Ozone VMS units). Each unit utilises different communications protocols that are routed to the central VMS database. The VMS is primarily a Monitoring, Control and Surveillance (MCS) tool, ensuring that the provisions of the Marine Living

Resources Act, the Regulations promulgated in terms thereof, permit conditions and international legislation and agreements are met by utilising data obtained from the VMS, both within and outside of the exclusive economic zone (EEZ).

Inspections of vessels at sea are logged, together with records of infractions and boarding data. As well as remote surveillance (VMS) and monitoring at sea by patrol vessels, DEFF inspectors (Fisheries Control Officers) inspect landings when catches are discharged, and audit catch, landings and processing records for the fishery to ensure compliance with effort (quota) controls.

Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS. **Clause M2.4 is met**.

References

Business Insider. 2019. Three new navy ships will protect South Africa from pirates and illegal fishing - here's what they will look like. https://www.businessinsider.co.za/3-new-military-patrol-vessels-are-being-built-in-cape-town-2019-2

DAFF. 1998. Marine Living Resources Act of 1998, Marine Living Resources Act:. Department of Agriculture, Forestry and Fisheries. https://www.unodc.org/res/cld/document/marine-living-resources-act-18-of-1998_html/MLRA.pdf

DAFF. 2016. VMS Presentation. http://mpaforum.org.za/wp-content/uploads/2016/11/VMS-Presentation-First-DAFF.ppt

DEFF. 2020. Fisheries Management Objectives. Department of Environment, Forestry and Fisheries. https://www.environment.gov.za/branches/fisheriesmanagement#objetives

DefenceWeb. 2018. DAFF working on illegal, unregulated and unreported fishing as part of Phakisa. https://www.defenceweb.co.za/security/maritime-security/daff-working-on-illegal-unregulated-and-unreported-fishing-as-part-of-phakisa/

FAO. 2015. Agreement on Port State Measures (PSMA). http://www.fao.org/port-state-measures/background/en/

Republic of South Africa. 2020. Fisheries. https://www.gov.za/about-sa/fisheries

SAPFIA. 2020. TAC. South African Pelagic Fishing Industry Association. https://sapfia.org.za/tac/

Stop Illegal Fishing. 2016. South Africa accedes to the FAO Port State Measures Agreement https://stopillegalfishing.com/news-articles/south-africa-accedes-fao-port-state-measures-agreement/

Links	
MARINTRUST Standard clause	1.3.1.3
FAO CCRF	7.7.2
GSSI	D1.09

CATEGORY A SPECIES

The four clauses in this section apply to Category A species. Clauses A1 - A4 should be completed for **each** Category A species. If there are no Category A species in the fishery under assessment, this section can be deleted. A Category A species must meet the minimum requirements of all four clauses before it can be recommended for approval. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. The species must achieve a pass rating against all requirements to be awarded a pass overall. **If the species fails any of these clauses it should be re-assessed as a Category B species.**

Species Name	**Anchovy, *Engraulis encrasicolus***	
A1	**Data Collection - Minimum Requirements**	
A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	Yes
A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	Yes
	Clause outcome:	PASS

A1.1 Landings data are collected such that the fishery-wide removals of this species are known.

The last assessment report for sardine and anchovy was published in 2020 as an update of the 2019 stock assessment (de Moor, 2020). Fishery dependent data collected includes landed weight, species composition, catch location and date. The results showed that TAC has been under-caught for many years. The historical average exploitation rate quoted by Bergh (2020) and SAPFIA (2020) (0.086) is not a reflection of the historical management of anchovy, but rather of realised catches, and based on an assessment using data up to 2015. Landings data for anchovy are collected in the directed fishery and are presented in the figure below.

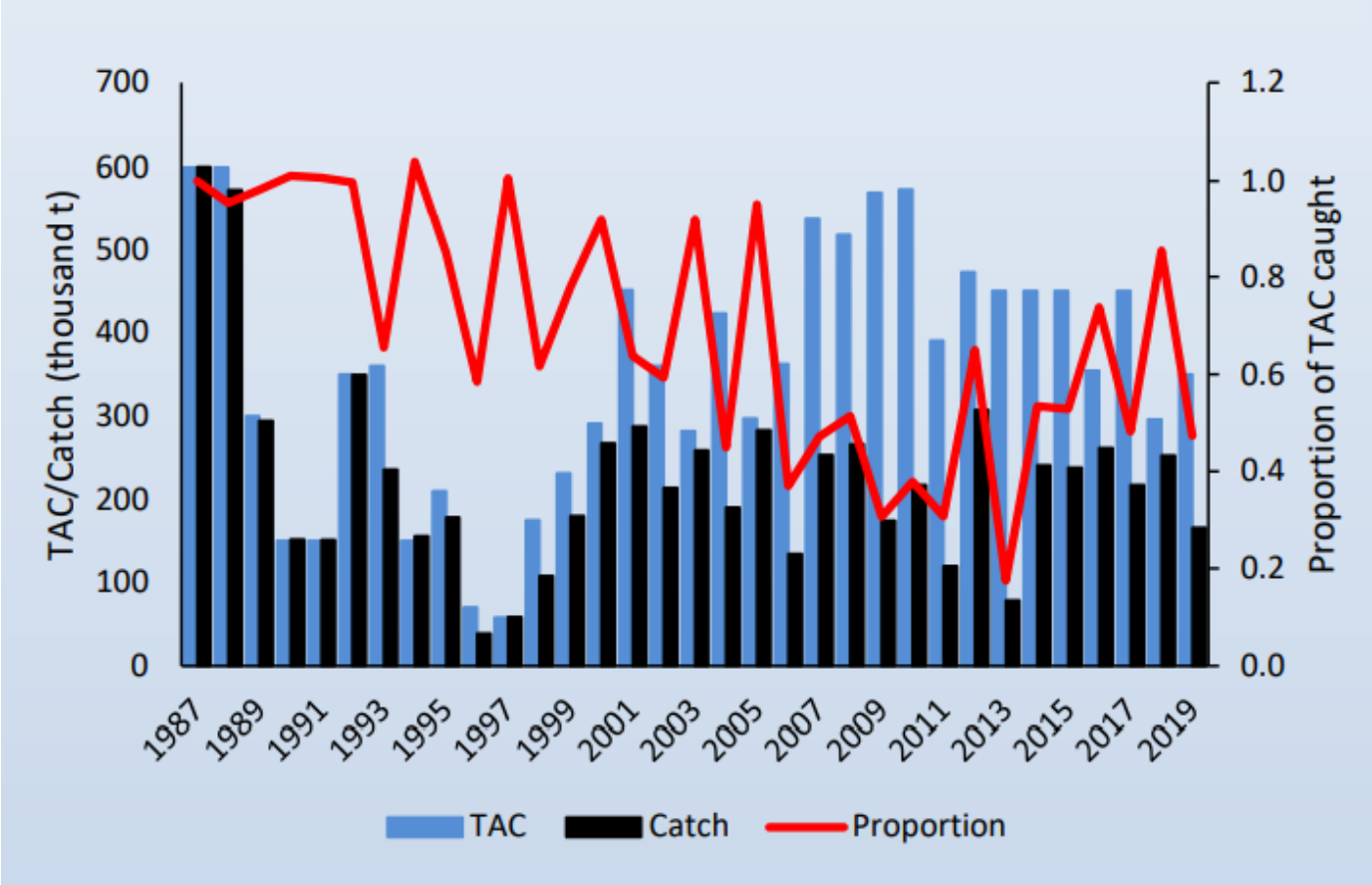


Figure 1: Annual TAC, catch and proportion for anchovy from 1987 to 2019. Source: de Moor 2020a.

Landings data are collected such that the fishery-wide removals of this species are known. **Clause A1.1 is met**.

A1.2 Sufficient additional information is collected to enable an indication of stock status to be estimated.

Biomass and distribution of anchovy and other schooling pelagic and meso-pelagic fish are assessed biannually using hydro-acoustic surveys based on a random stratified sampling design. These surveys, conducted without interruption (apart from the recruit survey of 2018) since 1984, comprise a summer biomass survey and a winter recruit survey. Biomass estimates obtained from these surveys form the basis for recommendations of annual total allowable catches of anchovy and sardine. Sampling effort during recruit surveys is concentrated mainly on the inshore areas of the shelf, biomass surveys extend westward and northward to the Namibian Border.

The biological characteristics of anchovy mean that stock size can fluctuate rapidly, and that environmental factors often influence the stock more substantially than fishery removals. For these reasons, conducting fishery-independent surveys twice per year is seen as an essential mechanism for generating stock status estimates with enough frequency and accuracy to enable informed management of the fishery.

The full set of data available as inputs into the sardine (and anchovy) assessments are described in detail:

- Commercial Catch Data: Monthly catch length frequencies are constructed for the sardine landings. From 1987 onwards, these are available by area (east and west of Cape Agulhas). From 2012 onwards, the sardine landings have again been categorized as either directed >14cm (>50% sardine mass in landing) or bycatch by the scale monitor. The bycatch is now recorded as either 'small' (≤14cm) sardine with directed >14cm, or 'small' (≤14cm) bycatch with anchovy or round herring. Anchovy is seldom landed with adult sardine and/or round herring. The>14cm sardine bycatch is assumed to be primarily bycatch with round herring and the time series is assumed comparable with the 1987-2011 time series of bycatch with round herring.

- Survey biomass estimates and weighted length frequencies: Time series of total biomass estimates and associated CVs from the acoustic surveys in November are available from 1984 to 2018, corresponding to the standard survey area between Hondeklip Bay and Port Alfred. Length frequencies (scaled to the total biomass) are also available. Time series of recruit biomass and associated CVs from the May/June recruit surveys (1985-2017, 2019) are also available. The average recruit weight is calculated by applying a length-weight regression to the survey weighted length frequency. In the assessments, the recruit numbers are used together with the CVs on recruit biomass.

Additional surveys and analyses are conducted as deemed necessary, such as to determine aggregation rates, to measure the impacts of the fishery on penguin abundance, and to determine reasons for the substantial under-utilisation of the anchovy TAC in recent years.

In the last stock updated presented by de Moor et al 2020b the total biomass estimated fit with the surveys calculations and it was presented as follows:

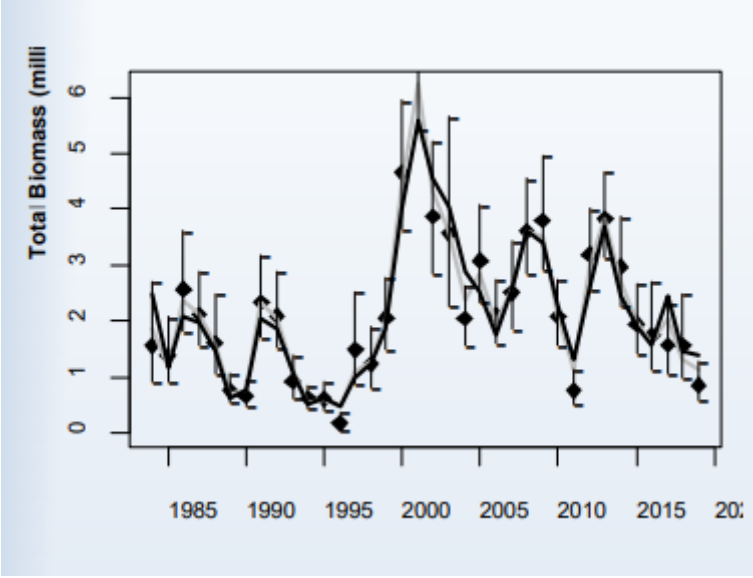


Figure 2. Total Index of Anchovy Abundance from 1985 to 2020. Source: de Moor et al 2020b

Sufficient additional information is collected to enable an indication of stock status to be estimated. **Clause A1.2 is met**.

References

Coetzee, J.C., de Moor, C.L. and Butterworth, D.S. A summary of the South African sardine (and anchovy) fishery. http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

Cochrane, K. L., Warwick J., E., Sauer H., H. 2020. A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. Marine Policy Volume 112, February 2020, 103774. https://doi.org/10.1016/j.marpol.2019.103774

de Moor, C.L. 2020a. Some comments relating to the proposal by FISHERIES/2020/JUN/SWG-PEL/38rev. Presentation to the Small Pelagic Scientific Working Group, Cape Town, 5 June 2020: 11pp. http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/pub/2020/FISHERIES_2020_JUN_SWG-PEL_41_ppt.pdf

de Moor, C.L. 2020b. The South African anchovy assessment with annual maturity ogives SWG-PEL Meeting 14th July 2020. Marine Resource Assessment and Management Group (MARAM) Department of Mathematics and Applied Mathematics. University of Cape Town. https://zivahub.uct.ac.za/articles/presentation/The_South_African_anchovy_assessment_with_annual_maturity_ogives/14034719

Links

MARINTRUST Standard clause	1.3.2.1.1, 1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	7.3.1, 12.3
GSSI	D.4.01, D.5.01, D.6.02, D.3.14

A2	**Stock Assessment - Minimum Requirements**		
	A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.	Yes
	A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	Yes
	A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	Yes
	A2.4	The assessment is subject to internal or external peer review.	Yes
	A2.5	The assessment is made publicly available.	Yes
		Clause outcome:	PASS

A2.1 A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock), and considers all fishery removals and the biological characteristics of the species.

Annual Fisheries Stock Assessment Review Workshops have been published on MARAM's website since 2004. A stock assessment is conducted at least once every 3 years. The last assessment report for sardine and anchovy was published in 2020 as an update of the 2019 stock assessment (de Moor, 2020b). In the last review of the stock assessment, the parameter values used in formulae under OMP-18 and OMP-18rev by the SWG-PEL to set the initial directed anchovy TAC for 2021 have been revised (de Moor, 2021). **Clause A2.1 is met**.

A2.2 The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.

DEFF (2020) have set out the background to the management of the small pelagic fisheries under the OMP and reference values used in the fishery:

The fisheries for anchovy and sardine are managed jointly under an Operational Management Procedure (OMP) since 1994. "This adaptive management system is designed to respond rapidly to major changes in resource abundance without increasing risk […] The joint anchovy-sardine OMP is needed because sardine and anchovy school together as juveniles, resulting in the bycatch of juvenile sardine with the mainly juvenile anchovy catch during the first half of the year. This results in a trade-off between catches of anchovy (and hence juvenile sardine) and future catches of adult sardine, and the OMP aims to ensure the sustainable utilisation of both resources. Total allowable catches (TACs) for both species and a total allowable bycatch (TAB) for juvenile sardine are set at the beginning of the fishing season, based on results from the total biomass survey of the previous November. However, because the anchovy fishery is largely a recruit fishery, the TAC of anchovy and the juvenile sardine TAB are revised mid-year following completion of the recruitment survey in May/June.

The OMP formulae are selected with the objectives of maximising average directed sardine and anchovy catches in the medium term, subject to constraints on the extent to which TACs can vary from year to year in order to enhance industrial stability. These formulae are also conditioned on low probabilities that the abundances of these resources drop below levels at which successful future recruitment might be compromised, however now that the sardine biomass has dropped below that [critical biomass] threshold, the primary and overriding consideration has become assisting its speedy recovery, while still having consideration for the socio-economic implications associated with any TAC recommendation […].

[The latest version of the OMP,] OMP-18, includes a reduction in the maximum anchovy TAC from 450 000 t to 350 000 t, to reflect the maximum catch which the anchovy fishery is expected to be able to achieve at this time given fishmeal processing and environmental limitations; the implementation of a minimum directed sardine TAC of 10 000 t, to reflect the expectation that the directed fishery would never be closed completely in practice, and a reduction in the maximum directed sardine TAC from 500 000 t to 200 000 t, reflecting the low expectancy in the near future for another large pulse in sardine biomass (and therefore catches) as occurred around the turn of the century. Furthermore, the directed sardine TAC is now recommended based only on the November hydro-acoustic estimate of sardine biomass, with no mid-season adjustment as per OMP-14 (this as the mid-season sardine recruitment estimate is considered too imprecise [particularly when sardine abundance is low as recently] to be used reliably to adjust the TAC).

OMP-18, as with previous OMPs, also includes agreed procedures for deviating from the OMP-calculated TACs and TABs in the event of Exceptional Circumstances (ECs) when application of the TAC generated by the OMP is considered to be inappropriate. Such a deviation may occur, for example, when an observed survey biomass falls outside the range of biomass distributions simulated during the development of the OMP. ECs were declared for sardine in 2019 and have been declared for both sardine and anchovy in 2020 on this basis; consequently, OMP-18 cannot be applied routinely at this stage. Conservative interim TACs for anchovy and sardine have been recommended for 2020 until such time as biomass projections from updated assessments for both resources are available."

The detail of how these rules are applied in setting anchovy TACs using biomass estimates is set out in the OMP-18 Harvest Control Rule (de Moor, 2018d; de Moor, 2021)

The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy**. Clause A 2.2 is met.**

A2.3 The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.

The TAC is set in line with the harvest control rules set out in the OMP unless exceptional circumstances apply (as set out in the previous section).

The TAC for 2021 was based on the formulae used to recommend the initial anchovy TAC under OMP-18 (de Moor 2018, cited in de Moor, 2021) and OMP-18rev (under development; de Moor 2020, cited in de Moor 2021). However, the parameter values differ as MARAM are transitioning towards a new anchovy OMP (OMP-18rev) which is still under development (de Moor, 2021).

Following the advice, DEFF have set the initial TAC for 2021 fishing season at 252,000 tonnes. The OMP sets initial TACs lower to allow a buffer if recruitment is poor.

The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status. **Clause A2.3 is met**.

A2.4 The assessment is subject to internal or external peer review.

Decision-making processes respond to important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent and adaptive manner. A formal Scientific Working Group, constituted by DEFF and comprising scientists from DEFF, MARAM and members of industry associations (e.g. South African Pelagic Fishing Industry Association) decide on a TAC level for the fishery after interpreting the outcome of an OMP. SAPFIA also provides research funding when they are able to. If there are decisions made there for the Industry, SAPFIA together with its Members puts them in place.

Annual Stock Assessment Workshops (funded by the NRF and DEFF) include invited overseas scientists and a specific review panel, therefore, the assessment is subject to internal or external peer review. **Clause A2.4 is met.**

A2.5 The assessment is made publicly available.

All stock assessments and papers are publicly available on MARAM's website. Agreed quotas and rules on Total Allowable Bycatch are available on South African Pelagic Fishing Industry Association's (SAPFIA) website[8]. Therefore, The assessment is made publicly available. **Clause A2.5 is met.**

References

Coetzee, J.C., de Moor, C.L. and Butterworth, D.S. A summary of the South African sardine (and anchovy) fishery. http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

Cochrane, K. L., Warwick J., E., Sauer H., H. 2020. A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. Marine Policy Volume 112, February 2020, 103774. https://doi.org/10.1016/j.marpol.2019.103774

DEFF (Department of Environment, Forestry and Fisheries) 2020. Status of the South African marine fishery resources 2020. Cape Town: DEFF.
https://www.environment.gov.za/sites/default/files/reports/statusofsouthafrican_marinefisheryresources2020.pdf

de Moor, C.L. 2021. The formulae used to set the 2021 initial anchovy TAC. DEFF Fisheries document: FISHERIES/2021/JAN/SWG-PEL/06: 2pp.
https://zivahub.uct.ac.za/articles/report/The_formulae_used_to_set_the_2021_initial_anchovy_TAC/14186132

de Moor, C.L. 2020b. The South African anchovy assessment with annual maturity ogives SWG-PEL Meeting 14th July 2020. Marine Resource Assessment and Management Group (MARAM) Department of Mathematics and Applied Mathematics. University of Cape Town.
https://zivahub.uct.ac.za/articles/presentation/The_South_African_anchovy_assessment_with_annual_maturity_ogives/14034719

de Moor CL. 2018a. Considering alternative constraints to the anchovy Harvest Control Rule. DAFF: Branch Fisheries Document FISHERIES/2018/APR/SWG-PEL/06. de Moor CL. 2018b. Final anchovy TAC and small pelagic TABs for 2018. DAFF: Branch Fisheries Document FISHERIES/2018/JUL/SWG-PEL/20

[8] https://sapfia.org.za/tac/

de Moor CL. 2018c. Interim OMP-18: the directed sardine Harvest Control Rule. DAFF: Branch Fisheries Document FISHERIES/2018/AUG/SWG-PEL/22

de Moor CL. 2018d. The 2018 Operational Management Procedure for the South African sardine and anchovy resources. FISHERIES/2018/DEC/SWG-PEL/37.
https://open.uct.ac.za/bitstream/handle/11427/33220/FISHERIES_2018_DEC_SWG-PEL_37%20OMP-18.pdf?sequence=1&isAllowed=y

Butterworth DS and Coetzee J. 2019. Basis suggested, following task group discussions, for determining the 2019 sardine directed TAC and by-catch TAB. DAFF: Branch Fisheries Document FISHERIES/2019/APR/SWG-PEL/08

SAPFIA. 2021. TAC. South African Pelagic Fishing Industry Association. https://sapfia.org.za/tac/

Links	
MARINTRUST Standard clause	1.3.2.1.2, 1.3.2.1.4, 1.3.1.2
FAO CCRF	12.3
GSSI	D.5.01, D.6.02, D.3.14

A3	**Harvest Strategy - Minimum Requirements**		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	Yes
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	Yes
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	Yes
		Clause outcome:	PASS

Evidence

A 3.1 There is a mechanism in place by which total fishing mortality of this species is restricted.

Total removals are limited using a quota system, with Total Allowable Catch (TAC) and Total Allowable Bycatch (TAB) of anchovy defined according to the OMP in force (OMP 18). The MLRA empowers the Minister to apportion the TAC between Rights Holders, regions, components of the fishery, and whoever else as deemed necessary.

In practice, TACs are apportioned between holders of commercial fishing permits for anchovy and/or sardine. The TAC is set at the level defined by the OMP and calculated by subsequent initial and mid-season MARAM recommendation papers. OMPs therefore typically set initial TACs lower to allow a buffer if recruitment is poor, therefore, there is a mechanism in place by which total fishing mortality of this species is restricted. **Clause A3.1 is met.**

A3.2. Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.

In recent years there has been a substantial under-catch of anchovy, with total landings considerably below the TAC Anchovy catch in 2018 was 253,046[9] against a TAC of 315,242t for all rights holders. Catches continue to be well within TAC. **Clause A3.2 is met**.

A3.3 Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).

All catches are inspected and weighed at off-loading points (designated ports) by monitors and/or fisheries inspectors, to ensure that Rights Holders remain within their quotas, that bycatch species do not exceed conservation limits and that no other gear restrictions have been exceeded. Scientific Fisheries observers accompany fishing vessels to sea on request (small pelagic permit

[9] http://oceana.co.za/pdf/Status_of_the_Small_Pelagic_Fishery_2019.pdf

condition), although the task of observers is data collection (catch of target and non-target species, and interactions with ETP species) instead of compliance monitoring.

The harvest control rules under the OMP-18 include a 'critical biomass metarule' (de Moor, 2018d). Under this rule, when setting the initial anchovy TAC (January), if the November survey estimate of anchovy total biomass is below the critical biomass threshold (600-800,000 tonnes in 2021 (de Moor, 2021)) then the TAC may be set to zero where the biomass is below a certain proportion, x^A, of the threshold (0.25 in 2021 (de Moor, 2021)). With regards the final TAC, the results of the most recent November and recruit surveys are projected forward, taking natural and anticipated fishing mortality into account, in order to provide a proxy for the forthcoming November survey, and hence have a basis for invoking the Critical Biomass metarule, if necessary. If the projected biomass is less than the critical biomass threshold, the metarule allows the TAC to be set to zero (or to the initial anchovy TAC, if greater than zero).

As explained in earlier clauses, the fishery is well above any threshold to trigger reduced catch specifications. Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy. **Clause A3.3 is met**.

References

de Moor, C.L. 2021. The formulae used to set the 2021 initial anchovy TAC. DEFF Fisheries document: FISHERIES/2021/JAN/SWG-PEL/06: 2pp.
https://zivahub.uct.ac.za/articles/report/The_formulae_used_to_set_the_2021_initial_anchovy_TAC/14186132

de Moor CL. 2018a. Considering alternative constraints to the anchovy Harvest Control Rule. DAFF: Branch Fisheries Document FISHERIES/2018/APR/SWG-PEL/06. de Moor CL. 2018b. Final anchovy TAC and small pelagic TABs for 2018. DAFF: Branch Fisheries Document FISHERIES/2018/JUL/SWG-PEL/20.

de Moor CL. 2018c. Interim OMP-18: the directed sardine Harvest Control Rule. DAFF: Branch Fisheries Document FISHERIES/2018/AUG/SWG-PEL/22

de Moor CL. 2018d. The 2018 Operational Management Procedure for the South African sardine and anchovy resources. FISHERIES/2018/DEC/SWG-PEL/37.
https://open.uct.ac.za/bitstream/handle/11427/33220/FISHERIES_2018_DEC_SWG-PEL_37%20OMP-18.pdf?sequence=1&isAllowed=y

Butterworth DS and Coetzee J. 2019. Basis suggested, following task group discussions, for determining the 2019 sardine directed TAC and by-catch TAB. DAFF: Branch Fisheries Document FISHERIES/2019/APR/SWG-PEL/08
SAPIA 2021 MPAs and MSP | SAPFIA.

Standard clause 1.3.2.1.3

Links	
MARINTRUST Standard clause	1.3.2.1.3, 1.3.2.1.4
FAO	7.2.1, 7.22 (e), 7.5.3
GSSI	D3.04, D6.01

A4	**Stock Status - Minimum Requirements**		
	A4.1	The stock is at or above the target reference point, OR IF NOT: The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT: The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	Yes
		Clause outcome:	PASS

A4.1 The stock is at or above the target reference point, OR IF NOT:

The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT:

The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.

Target reference points are not defined for this stock. As noted in clause A3.3 critical (limit) threshold points are defined for the stock and the TAC is set at zero where the biomass falls below a quarter of this threshold. Anchovy stocks have not dropped below this threshold but there is evidence that where biomass decreases in other fisheries, notably the sardine fishery, catches are reduced to zero (e.g. nil TAC in the directed sardine fishery west of Cape Agulhas and a reduced TAC in the directed sardine fishery east of Cape Agulhas).

The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure. **Clause A4.1 is met**.

References

DEFF 2020. Initial small pelagic TAC for the 2021 season.
https://sapfia.org.za/?offshore_dl=3567

de Moor CL. 2016. Assessment of the South African anchovy resource using data from 1984-2015: Results at the joint posterior mode. DAFF: Branch Fisheries Document FISHERIES/2016/OCT/SWG-PEL/46. de Moor CL. 2018. Simulation testing framework used during OMP-18 development. DAFF: Branch Fisheries Document FISHERIES/2019/SEP/SWG-PEL/27. de Moor CL. 2020a. South African anchovy assessment sensitivity tests. DEFF: Branch Fisheries Document FISHERIES/2020/SEP/SWG-PEL/90.

de Moor CL. 2020b. The simulation testing framework for OMP-18rev. DEFF: Branch Fisheries Document FISHERIES/2020/DEC/SWG-PEL/122

de Moor, 2021. FISHERIES/2021/APR/SWG-PEL/20The operating model for an anchovy-only OMP-18rev

Links	
MARINTRUST Standard clause	**1.3.2.1.4**
FAO CCRF	**7.2.1, 7.2.2 (e)**
GSSI	**D6 01**

CATEGORY B SPECIES

Category B species are those which make up greater than 5% of landings in the applicant raw material, but which are not subject to a species-specific research and management regime sufficient to pass all Category A clauses. If there are no Category B species in the fishery under assessment, this section can be deleted.

Category B species are assessed using a risk-based approach. The following process should be completed once for each Category B species.

If there are estimates of biomass (B), fishing mortality (F), and reference points

It is possible for a Category B species to have some biomass and fishing mortality data available. When sufficient information is present, the assessment team should use the following risk matrix to determine whether the species should be recommended for approval.

TABLE B(A) - F, B AND REFERENCE POINTS ARE AVAILABLE

Biomass is above MSY / target reference point	Pass	Pass	Pass	Fail	Fail
Biomass is below MSY / target reference point, but above limit reference point	Pass, but re-assess when fishery removals resume	Pass	Fail	Fail	Fail
Biomass is below limit reference point (stock is overfished)	Pass, but re-assess when fishery removals resume	Fail	Fail	Fail	Fail
Biomass is significantly below limit reference point (Recruitment impaired)	Fail	Fail	Fail	Fail	Fail
	Fishery removals are prohibited	**Fishing mortality is below MSY or target reference point**	**Fishing mortality is around MSY or target reference point, or below the long-term average**	**Fishing mortality is above the MSY or target reference point, or around the long-term average**	**Fishing mortality is above the limit reference point or above the long-term average (Stock is subject to overfishing)**

If the biomass / fishing pressure risk assessment is not possible

Initially, the resilience of each Category B species to fishing pressure should be estimated using the American Fisheries Society procedure described in Musick, J.A. (1999). This approach is used as the resilience values for many species and stocks have been estimated by FishBase and are already available online. For details of the approach, please refer to Appendix A. Determining the resilience provides a basis for estimating the risk that fishing may pose to the long-term sustainability of the stock. Table B(b) should be used to determine whether the species should be recommended for approval.

TABLE B(B) - NO REFERENCE POINTS AVAILABLE. B = CURRENT BIOMASS; B_{AV} = LONG-TERM AVERAGE BIOMASS; F = CURRENT FISHING MORTALITY; F_{AV} = LONG-TERM AVERAGE FISHING MORTALITY.

B > B_{av} and F < F_{av}	Pass	Pass	Pass	Fail
B > B_{av} and F or F_{av} unknown	Pass	Pass	Fail	Fail
B = B_{av} and F < F_{av}	Pass	Pass	Fail	Fail
B = B_{av} and F or F_{av} unknown	Pass	Fail	Fail	Fail
B > B_{av} and F > F_{av}	Pass	Fail	Fail	Fail
B < B_{av}	Fail	Fail	Fail	Fail
B unknown	Fail	Fail	Fail	Fail
Resilience	**High**	**Medium**	**Low**	**Very Low**

Assessment Results

Species Name		Round herring
B1	Species Name	***Etrumeus whiteheadi***
	Table used (Ba, Bb)	Bb
	Outcome	PASS

Evidence:

The targeted redeye fishery is still considered underdeveloped, information on the species is comparatively limited. However, landings data are recorded, and total catch monitored and used to ensure targeted fishing does not exceed the precautionary upper catch limit (PUCL, currently set at 100,000t for the 2020 season). Catch of round herring in 2018 was less than 48,000 tonnes.

Biomass and distribution of round herring are assessed biannually using hydro-acoustic surveys based on a random stratified sampling design (Table 6 Column 6 Redeye 1984-2018). A biomass graph for round herring has been shown below. The biomass has been relatively stable in the past 10 years, at a mid to high level, relative to the overall 1984–2018 time series.

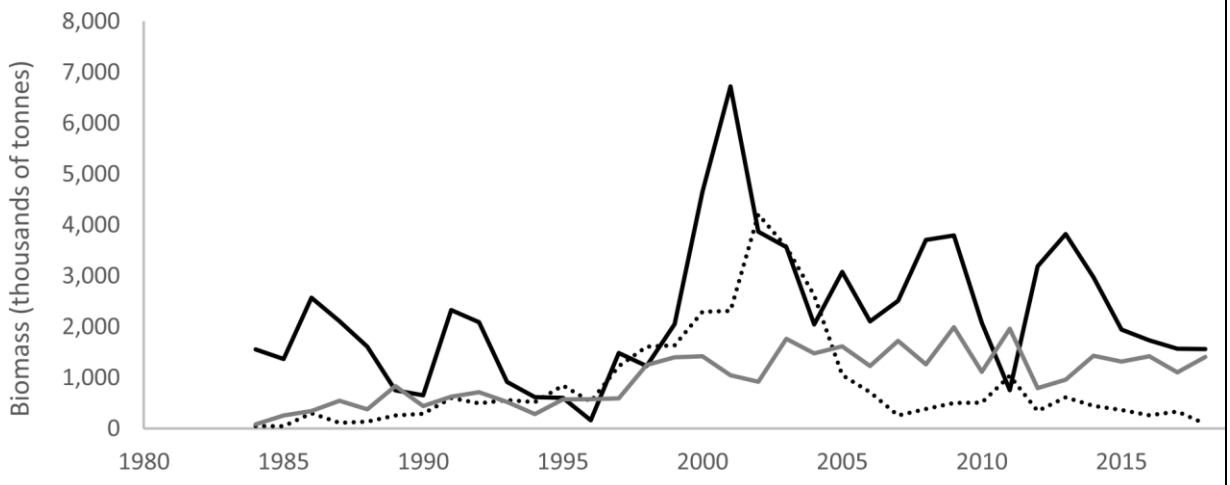


Figure 3. Estimated biomass (thousands of tonnes) of anchovy (black line), sardine (black dotted) and redeye round herring (grey line) for the years 1984–2018. Source: Cochrane *et al*. 2020[10].

The round herring resource in South African waters is currently believed to be under-utilised at present, and attempts at greater exploitation have been encouraged. The PUCL is set at around 10% of estimated biomass, if landings remain below the PUCL, the exploitation rate remains low. The PUCL decreases linearly if the November survey biomass is less than 750,000t.

Based on fishbase data, the resilience for this species is high, with a minimum population doubling time less than 15 months (K=0.7)[11].

Although the quantity of information available for redeye appears to be limited, what information is available is utilised in management decisions, and scientific understanding appears to be fully utilised in the management of the primary target species of the small pelagic fishery.

[10] https://www.sciencedirect.com/science/article/abs/pii/S0308597X19307006
[11] https://www.fishbase.se/summary/1456

Current biomass is greater than Bav. F or Fav unknown. **The species passes Category B assessment**.

References

Coetzee, J.C., de Moor, C.L. and Butterworth, D.S. 2019. A summary of the South African sardine (and anchovy) fishery.
http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

Cochrane, K. L., Warwick J., E., Sauer H., H. 2020. A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. Marine Policy Volume 112, February 2020, 103774. https://doi.org/10.1016/j.marpol.2019.103774
SAPFIA. 2020. TAC. South African Pelagic Fishing Industry Association. https://sapfia.org.za/tac/

Fishbase. 2020. Etrumeus whiteheadi Wongratana, 1983, Whitehead's round herring. https://www.fishbase.se/summary/1456

SAPFIA. 2021. 2021 INTERIM INITIAL TAC and more information JdG

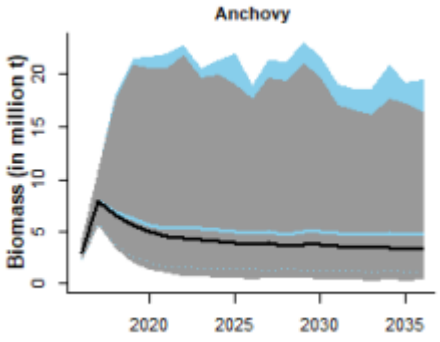
Links	
MARINTRUST Standard clause	**1.3.2.2, 4.1.4**
FAO CCRF	**7.5.1**
GSSI	**D.5.01**

Species Name		**Southern African Anchovy**
B1	Species Name	***Engraulis capensis***
	Table used (Ba, Bb)	Bb
	Outcome	PASS

Evidence:

Based on fishbase data, the resilience for this species is high, with a minimum population doubling time less than 15 months.

Although the quantity of information available for Southern African anchovy appears to be limited, what information is available is utilised in management decisions, and scientific understanding appears to be fully utilised in the management of the primary target species of the small pelagic fishery. A combined TAC is set up for the small pelagic species. Operational Management Procedure (OMP) 2018 drafter to manage the TAC during 2019 to 2022, defines a TAC for anchovies of 350,000t which is has been decreased from the previous one set up at 450,000t.



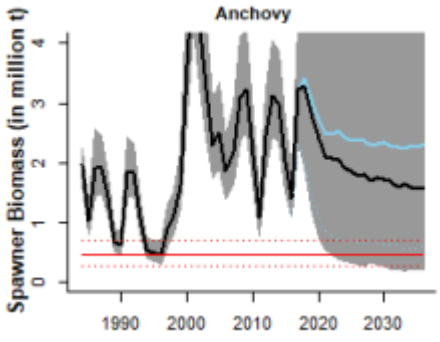


Figure 4. Left. Anchovy biomass (lower plot) under a no future catch scenario (blue) compared to OMP-18 (grey). **Right.** The median (solid lines) and 90% probability intervals of future projected anchovy spawning biomass under OMP-18 (grey) compared to under a no future catch scenario (blue). The anchovy risk threshold (red) of the 1996 (lowest) historical spawning biomass. Source OMP -18

Following the information in the figure 3, the current biomass is greater than Bav and well above the lower peak of SSB of 1996 (< 1million tones). F or Fav unknown. **The species passes Category B assessment**.

References

de Moor CL. 2018c. Interim OMP-18: the directed sardine Harvest Control Rule. DAFF: Branch Fisheries Document FISHERIES/2018/AUG/SWG-PEL/22

de Moor CL. 2018d. The 2018 Operational Management Procedure for the South African sardine and anchovy resources. FISHERIES/2018/DEC/SWG-PEL/37.

https://open.uct.ac.za/bitstream/handle/11427/33220/FISHERIES_2018_DEC_SWG-PEL_37%20OMP-18.pdf?sequence=1&isAllowed=y

https://www.fishbase.se/Summary/SpeciesSummary.php?ID=64907&AT=southern+african+anchovy

SAPFIA. 2021. 2021 INTERIM INITIAL TAC and more information JdG

Links	
MARINTRUST Standard clause	**1.3.2.2, 4.1.4**
FAO CCRF	**7.5.1**
GSSI	**D.5.01**

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment.

Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. Where a species fails this Clause, it may be assessed as a Category D species instead, EXCEPT if there is evidence that it is currently below the limit reference point.

Species Name	**Hector's lanternfish, *Lampanyctodes hectoris***	
C1	**Category C Stock Status - Minimum Requirements**	
C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	Yes
C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	Yes
	Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

No one currently has permission to target lanternfish and lightfish (*Lampanyctodes hectoris and Maurolicus walvisensis*, respectively) off South Africa. Only small amounts (typically less than 5t per annum) of incidental bycatches remain in the purse-seine fishery for anchovy and sardine. For 2021, Lantern and Lightfish (Combined) has a TAC of 50,000t when they are caught by fishers in possession of issued anchovy or sardine permits. Therefore, Lanternfish fishery removals are considered by scientific authorities to be negligible. **Clause C1.1 is met**.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

Lantern- and light fish are assessed biannually using hydro-acoustic surveys based on a random stratified sampling design. These surveys, which have been conducted without interruption (apart from the recruit survey of 2018) since 1984, comprise a summer biomass survey and a winter recruit survey. Biomass estimates obtained from these surveys are key inputs into the anchovy and sardine assessments and form the basis for recommendations of annual total allowable catches of anchovy and sardine. Lanternfish fishery removals are considered by scientific authorities to be negligible and although biomass is not well defined, as the removals are considered negligible, **it PASSES clause C1.2**.

References

MARAM/IWS/2018/Sardine/BG1. A summary of the South African sardine (and anchovy) fishery J.C. Coetzee1 , C.L. de Moor2 and D.S. Butterworth2

Links	
MARINTRUST Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

Species Name	Sardine, *Sardinops sagax*	
C1	**Category C Stock Status - Minimum Requirements**	
	C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	Yes
	C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	Yes
	Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Fishery dependent data collected includes landed weight, species composition, catch location and date. Additionally, sampling is used to obtain length frequency data, age estimates, sex, maturity stage, and fish condition. Landings data for sardine are collected in the directed fishery, but also in the components of the small pelagic fishery which target anchovy and redeye herring. Monthly catch length frequencies are constructed for the sardine landings. From 1987 onwards, monthly catch length frequencies are available by area, therefore fisheries removals are considered in the stock assessment and it **PASSES clause C1.1.**

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The biomass of sardine increased gradually from under 50,000 tons in 1984 to around 2.5 million tons in 2000, and whilst consecutive years of very good recruitment pushed the total biomass up to record levels above 4 million tons in 2002, a period of prolonged poor (or below average) recruitment since 2004 has led to a decline in the adult biomass to below 500 thousand tons in most years since 2007, and to recent lows of 258,000 t in 2016 and 334,800 in 2017 (see figure below).

The most recent stock assessment was posted on 2018 (OMP-18) and it showed that the sardine resource consisting of two mixing components with differential exploitation levels. The model of two sardine components, assumed to be distributed west and east of Cape Agulhas, estimates the extent of west to south movement of fish of ages 1 and above each year. This assessment indicates that in terms of recruits-per-spawner, the western component is much more productive than the southern component by about an order of magnitude (de Moor *et al.* 2017). Simulations using this two-component Operating Model of population dynamics for the sardine resource assume that the proportion of future catches west of Cape Agulhas will mimic that which has been observed in the past with the proportion of directed sardine catch taken west of Cape Agulhas decreasing when the ratio (TAC: west coast biomass) increases.

As noted previously, OMP-18 includes agreed procedures for deviating from the OMP-calculated TACs and TABs in the event of Exceptional Circumstances (ECs) when application of the TAC generated by the OMP is considered to be inappropriate. Such a deviation may occur, for example, when an observed survey biomass falls outside the range of biomass distributions simulated during the development of the OMP. ECs were declared for sardine in 2019 and 2020; consequently, OMP-18 cannot be applied routinely to this stock at this stage [as far as the assessment team can tell this includes the application of the critical biomass metarule]. Conservative interim TACs for sardine have been recommended for 2020 until such time as biomass projections from updated assessments for both resources are available. In the initial TAC set for 2021, this has led to a nil directed sardine TAC west of Cape Agulhas and a very small directed TAC (8,500t) east of Cape Agulhas and followed a nil directed TAC for all sardine in 2020.

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point so the stock PASSES clause C1.2.

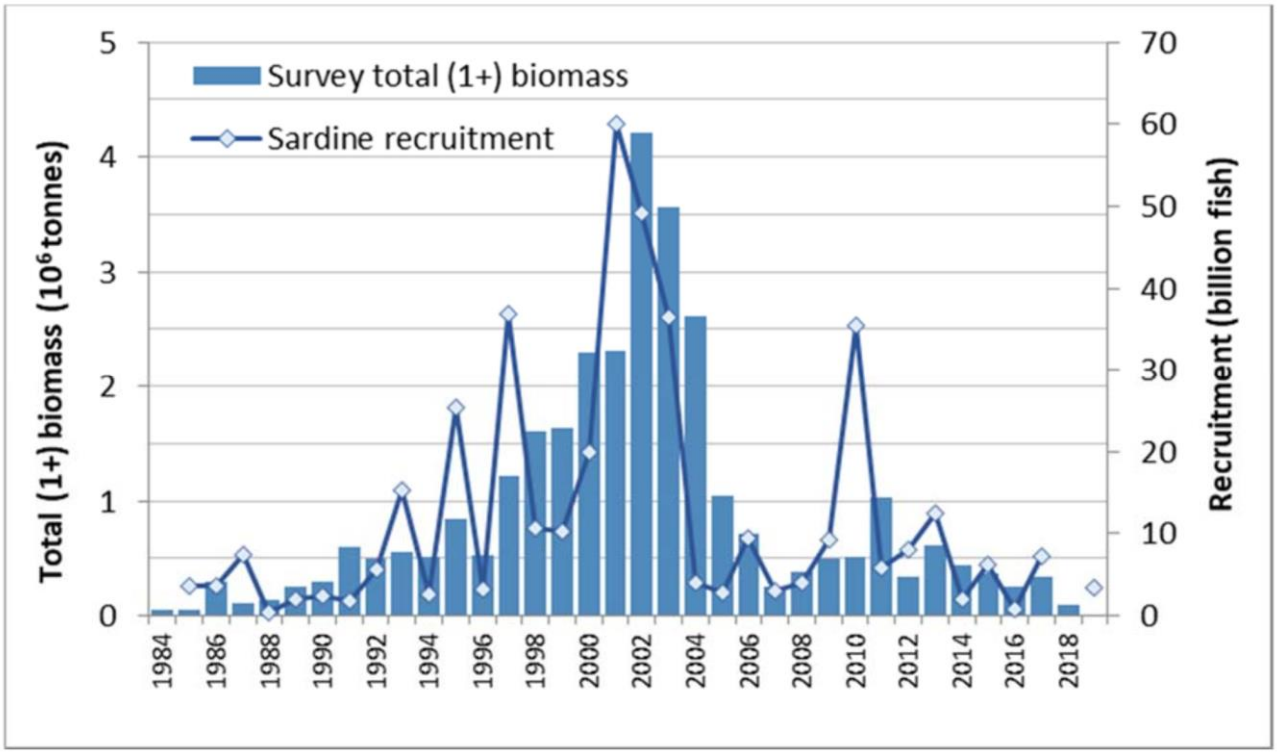


Figure 3. Time-series of acoustic survey estimates of total sardine biomass in October/November (bars) and recruitment in May/June (lines) since the start of the acoustic survey program. SOURCE. OMP-18.

References

DEFF (Department of Environment, Forestry and Fisheries) 2020. Status of the South African marine fishery resources 2020. Cape Town: DEFF.
https://www.environment.gov.za/sites/default/files/reports/statusofsouthafrican_marinefisheryresources2020.pdf

de Moor, CL 2021. Exploitation rates corresponding to 2021 sardine TACs and TABs. FISHERIES/2021/APR/SWG-PEL/21
https://doi.org/10.25375/uct.14602650

MARAM/IWS/2018/Sardine/BG1 1 A summary of the South African sardine (and anchovy) fishery J.C. Coetzee1 , C.L. de Moor2 and D.S. Butterworth

TACs: https://sapfia.org.za/tac/

Links	
MARINTRUST Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

CATEGORY D SPECIES

Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that

D1	Species Name	Chub Mackerel, *Scomber japonicus*	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	2	2
	Average maximum age (years)	7.9	1
	Fecundity (eggs/spawning)	135,962 [86,616-213,422 Estimated as geometric mean	1
	Average maximum size (cm)	64	2
	Average size at maturity (cm)	22	1
	Reproductive strategy	Open water / substratum egg scatterers	1
	Mean trophic level	3.4	3
		Average Productivity Score	**1.57**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	<25% of stock occurs in area fished	1
	Distribution	Not scored	Not scored
	Habitat	Not scored	Not scored
	Depth range	0-300m	1
	Selectivity	Up to 4m in length	3
	Post-capture mortality	Short tows	2
		Average Susceptibility Score	**1.75**
		PSA Risk Rating (From Table D3)	**PASS**
		Compliance rating	**PASS**

References

Fishbase. 2020. Scomber japonicus Houttuyn, 1782, Chub mackerel. https://www.fishbase.se/summary/Scomber-japonicus.html

Fishbase. 2020. Scomber japonicus life history tool. https://www.fishbase.se/popdyn/KeyfactsSummary_1.php?ID=117&GenusName=Scomber&SpeciesName=japonicus&vStockCode=131&fc=416

Standard clauses 1.3.2.2

a risk-assessment style approach must be taken.

D1	Species Name	Lightfish, *Maurolicus walvisensis*	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	1	1
	Average maximum age (years)	2.9	2
	Fecundity (eggs/spawning)	No value	No value
	Average maximum size (cm)	4.7	1
	Average size at maturity (cm)	3.6	1
	Reproductive strategy	Broadcast spawners	1
	Mean trophic level	3.1	2
		Average Productivity Score	**1.33**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	>50 % occurs where fishing activities take place	3
	Distribution	Limited range in the region	2 (not used)
	Habitat	Bathypelagic	1
	Depth range	0-50 m	1 (not used)
	Selectivity	Species < mesh size	1
	Post-capture mortality	Mostly dead	3
		Average Susceptibility Score	**2**
		PSA Risk Rating (From Table D3)	**PASS**
		Compliance rating	**PASS**

References

https://www.fishbase.se/summary/Maurolicus-walvisensis.html

Standard clauses 1.3.2.2

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk	Medium productivity/ Medium risk	High productivity/ Low risk
	Score 3	Score 2	Score 1
Average age at maturity (years)	>4	2 to 4	<2
Average maximum age (years)	>30	10 to 30	<10
Fecundity (eggs/spawning)	<1 000	1 000 to 10 000	>10 000
Average maximum size (cm)	>150	60 to 150	<60
Average size at maturity (cm)	>150	30 to 150	<30
Reproductive strategy	Live bearer, mouth brooder or significant parental investment	Demersal spawner "berried"	Broadcast spawner
Mean trophic level	>3.25	2.5–3.25	<2.5

Susceptibility attributes		High susceptibility/ High risk	Medium susceptibility/ Medium risk	Low susceptibility/ Low risk
		Score 3	Score 2	Score 1
Availability	1) Overlap of adult species range with fishery	>50% of stock occurs in the area fished	Between 25% and 50% of the stock occurs in the area fished	<25% of stock occurs in the area fished
	2) Distribution	Only in the country/ fishery	Limited range in the region	Throughout region/ global distribution
Encounterability	1) Habitat	Habitat preference of species make it highly likely to encounter trawl gear (e.g. demersal, muddy/sandy bottom)	Habitat preference of species make it moderately likely to encounter trawl gear (e.g. rocky bottom/reefs)	Depth or distribution of species make it unlikely to encounter trawl gear (e.g. epi-pelagic or meso-pelagic)
	2) Depth range	High overlap with trawl fishing gear (20 to 60 m depth)	Medium overlap with trawl fishing gear (10 to 20 m depth)	Low overlap with trawl fishing gear (0 to 10 m, >70 m depth)
Selectivity		Species >2 times mesh size or up to 4 m length	Species 1 to 2 times mesh size or 4 to 5 m length	Species <mesh size or >5 m length
Post capture mortality		Most dead or retained Trawl tow >3 hours	Alive after net hauled Trawl tow 0.5 to 3 hours	Released alive Trawl tow <0.5 hours

Note: Availability 2 is only used when there is no information for Availability 1; the most conservative score between Encounterability 1 and 2 is used.

D3		Average Susceptibility Score		
		1 - 1.75	1.76 - 2.24	2.25 - 3
Average Productivity Score	1 - 1.75	PASS	PASS	PASS
	1.76 - 2.24	PASS	PASS	TABLE D4
	2.25 - 3	PASS	TABLE D4	TABLE D4

D4	Species Name		
	Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements		
	D4.1	The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.	
	D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.	
		Outcome:	

Evidence

D4.1: The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.

D4.2 There is no substantial evidence that the fishery has a significant negative impact on the species.

References

Links	
MARINTRUST Standard clause	1.3.2.2, 4.1.4
FAO CCRF	7.5.1
GSSI	D.5.01

FURTHER IMPACTS

The three clauses in this section relate to impacts the fishery may have in other areas. A fishery must meet the minimum requirements of all three clauses before it can be recommended for approval.

F1	Impacts on ETP Species - Minimum Requirements		
	F1.1	Interactions with ETP species are recorded.	Yes
	F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	Yes
	F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	Yes
		Clause outcome:	PASS

F1.1 Interactions with ETP species are recorded.

DAFF Annual Reports include examples of longline and demersal trawl fisheries catching significant numbers of vulnerable sharks. Landings in the pelagic sector are observed by DEFF inspectors as per permit conditions issued for anchovy and sardine fishing[12]. The current Scientific Observer coverage is around 8% and the program is used to record catches and any interactions with endangered species. Government officials report no evidence of ETP species bycatch in the small pelagic fishery. As explained below, there does not appear to be any significant direct bycatch (or threat) of any ETP species. Instead the main threats for the species highlighted below are prey food competition with the purse seine fishery. Therefore, Interactions with ETP species are recorded. **Clause F1.1 is met**.

F1.2 There is no substantial evidence that the fishery has a significant negative effect on ETP species.

The purse seine fishing method itself is considered to be fairly selective as it targets mono-specific schools. However, similar to a number of small pelagic fish, sardine and anchovy are a key food source to a number of marine species, some of which are listed as threatened, endangered, protected (ETP)[13]. A number of species affected include:

Cape cormorants (*Phalacrocorax capensis*) are classified as Endangered on the IUCN Red list. Their most recent available estimates are of c.2,600 pairs in Angola in 2005 (Dyer 2007), c.57,000 pairs in Namibia in 2005 (Crawford *et al.* 2007, Kemper and Simmons 2015) and c.57,000 pairs in South Africa in 2010–2014 (Crawford *et al.* 2016)[14]. Bird Island is an important breeding and roosting site for seabirds, particularly Cape gannets and Cape cormorants[15]. Shortage of food due to commercial overfishing is one of the primary threats to this species (Crawford et al. 1992a, 2007, 2014, 2015, 2016), a result of competition with the South African purse-seine fishery for anchovy and sardine, which are essential prey items. The positive trends in two cormorant spp. that do not compete with fisheries for prey (*Phalacrocorax lucidus, Microcarbo coronatus*), contrasted by the negative trends in species that do (*P. capensis, P. neglectus*) supports the role of fishing in causing population declines via reduced prey availability (Crawford 2015).

Cape gannet (*Morus capensis*) is also classified as Endangered on the IUCN Red list[16]. The most recent population estimate is made up of 10,500 pairs at Ichaboae Island, 2,200 pairs on Mercury Island and 380 pairs on Possession Island, all in 2010 (Kemper 2015). 81,000 pairs were estimated at Bird Island (Algoa Bay), 21,000 pairs at Malgas Island and 8,000 pairs at Bird Island (Lambert's Bay) in 2015 (Crawford et al. 2015 updated by R. Crawford in litt. 2016). Since the 1960s, there has been an ongoing redistribution of the species from northwest to southeast around southern Africa, and ~70% of the population now occurs on the south coast of South Africa, at Bird Island in Algoa Bay, on the eastern border of the Benguela upwelling ecosystem (BUS)[17]. Presently, major threats to Cape Gannet include: substantially

[12] 2020 Sardine final conditions and 2020 Anchovy final conditions
[13] https://sapfia.org.za/sustainability/
[14] https://www.iucnredlist.org/species/22696806/132594943#population
[15] https://www.capenature.co.za/reserves/bird-island-nature-reserve/
[16] https://www.iucnredlist.org/species/22696668/132587992#threats
[17] https://www.tandfonline.com/doi/abs/10.2989/00306525.2019.1684396

decreased availability of their preferred prey in the west; heavy mortalities of eggs, chicks and fledglings at and around colonies, inflicted by Cape Fur Seals *Arctocephalus pusillus* and other seabirds; substantial disturbance at colonies caused by Cape Fur Seals attacking adult gannets ashore; oiling; and disease.

The removal of prey species for the African Penguin *Spheniscus demersus*[18] is also considered a threat. St Croix Island near Port Elizabeth is home to the world's largest colony of African Penguins, categorised as Endangered by the IUCN Red List[19], and has been used as the basis for several studies into the potential impacts of the fishery on the species.

Fishing near islands used by penguins for breeding could be having a negative impact on the breeding success of penguins. This possible impact is being examined through an experiment, initiated in 2008, that involves alternately opening and closing the areas around two pairs of islands, Robben and Dassen Islands on the West Coast and Bird and St Croix Islands on the South coast.

Bird Island and Dassen Island have been closed for the 2020 season[20]. Purse seine fishing is currently prohibited within a 10.8 nm radius around Bird Island Dassen Island.

Government officials report no evidence of ETP species bycatch in the small pelagic fishery. A paper published in 2014 summarised results of the island closure feasibility study for both pairs of islands. Scientists found predominantly positive effects of closures; however, traits and islands differed in their responses. Clear benefits to chick condition or foraging behaviour were apparent at three of four islands; fledging success improved at one colony. Results thus far suggest that by enhancing breeding conditions for penguins, closures will likely benefit both juvenile and adult penguin survival in the long run, leading to improved population trajectories.

Ecosystem considerations in the purse seine small pelagic fishery currently include the experimental closure of areas to fishing around some important seabird (e.g. African penguin and Cape gannet and Cormorant) breeding colonies (islands) in an attempt to assess the impact of localized fishing effort on the breeding success of these birds. The benefit of such closure has been demonstrated for some breeding islands but not for others. A model of penguin dynamics has also been developed for use in conjunction with the small pelagic fish OMP so that the impact on penguins of predicted future pelagic fish trajectories under alternative harvest strategies can be evaluated. These studies have so far indicated that even with large reductions in the sardine TAC there would be little benefit for penguins[21].

Given that anchovy catches are well within the TAC, and that between 2006 and 2016, anchovy catches in the purse seine fishery were about half the TAC, it is probably unlikely that such level of exploitation could be considered as "substantial evidence that the fishery has a significant negative effect on ETP species". **Clause F1.2 is met**.

F1.3 If the fishery is known to interact with ETP species, measures are in place to minimise mortality.

Bird Island and Robben Island offshore were closed for fishing in 2019. The fisheries off St. Croix, Riy Banks and Dassen Island remained open for the 2019 campaign, while Bird Island and Dassen Island have been closed for the 2020 season[22]. Purse seine fishing is currently prohibited within a 10.8 nm radius around Bird Island Dassen Island. Bird Island is a particularly important habitat for all the seabird species highlighted above.

[18] https://www.int-res.com/articles/esr2017/34/n034p373.pdf
[19] https://www.iucnredlist.org/species/22697810/132604504#threats
[20] 2020 INTERIM INITIAL TAC and more information JdG
[21] http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf
[22] 2020 INTERIM INITIAL TAC and more information JdG

In addition to the above, Oceana's horse mackerel mid-water trawler, Desert Diamond, has successfully piloted a new device designed to optimise the chances of large fish swimming out of the trawl unharmed while mitigating the loss of targeted species through the escape hatch. To guide the path of the fish, the device uses netting, with a long taper forming a tunnel to the top of the cod end where unwanted catch is liberated. The success, which has also been independently verified, follows several years of trials by the trawler of various excluders aimed at mitigating the risk of the by-catch of larger pelagic species.

References

BirdLife International. 2018. Phalacrocorax capensis. The IUCN Red List of Threatened Species 2018: e.T22696806A132594943. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22696806A132594943.en. Downloaded on 25 September 2020.

BirdLife International. 2018. Morus capensis. The IUCN Red List of Threatened Species 2018: e.T22696668A132587992. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22696668A132587992.en. Downloaded on 25 September 2020.

BirdLife International. 2018. Spheniscus demersus. The IUCN Red List of Threatened Species 2018: e.T22697810A132604504. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22697810A132604504.en. Downloaded on 25 September 2020.

Capenature. 2020. Bird Island Nature Reserve. https://www.capenature.co.za/reserves/bird-island-nature-reserve/

Coetzee, J.C., de Moor, C.L. and Butterworth, D.S. 2019. A summary of the South African sardine (and anchovy) fishery. http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

Cochrane, K. L., Warwick J., E., Sauer H., H. 2020. A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. Marine Policy Volume 112, February 2020, 103774. https://doi.org/10.1016/j.marpol.2019.103774
SAPFIA. 2020. TAC. South African Pelagic Fishing Industry Association. https://sapfia.org.za/tac/

Crawford Ret al. 2017. Tangled and drowned: a global review of penguin bycatch in fisheries. Endanger. Spec. Res. 34, 373–396. doi:10.3354/esr00869

Fishbase. 2020. Etrumeus whiteheadi Wongratana, 1983, Whitehead's round herring. https://www.fishbase.se/summary/1456

SAPFIA. 2021. 2021 INTERIM INITIAL TAC and more information JdG

SAPFIA. 2020. 2020 Anchovy final conditions

SAPFIA. 2020. 2020 Sardine final conditions

SAPFIA. Sustainability Assessments by WWF using the Common Wild Capture Fishery Methodology. https://sapfia.org.za/sustainability/

Sherley, R. B., Crawford, R. J. M., Byer, B. M., Kemper, J., Makhado, A. B., Masotla, M., Winker, H. 2019.The status and conservation of Cape Gannets Morus capensis. Journal of African Ornithology Volume 90, 2019, Ostrich. Pages 335-346. https://doi.org/10.2989/00306525.2019.1684396

Links	
MARINTRUST Standard clause	1.3.3.1
FAO CCRF	7.2.2 (d)
GSSI	D4.04, D.3.08

F2	Impacts on Habitats - Minimum Requirements		
	F2.1	Potential habitat interactions are considered in the management decision-making process.	Yes
	F2.2	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	Yes
	F2.3	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	Yes
		Clause outcome:	PASS

F2.1 Potential habitat interactions are considered in the management decision-making process.

F2.2 There is no substantial evidence that the fishery has a significant negative impact on physical habitats.

Purse seine and pelagic trawls are known to rarely interact with physical habitats. Pelagic trawls are fished in the water column and do not impact benthic habitats. Most studies in the assessment area focus on the effects of bottom trawl fisheries on vulnerable marine habitats and ecosystems (VME's).

VMS operated by DAFF is mandatory for all South African flagged vessels and has been in operation since 1998. Currently 22 commercial fisheries, Marine Protected Areas (MPAs) and MSC Certified Fisheries offshore are managed by DAFF's VMS Department, in addition to RFMO Obligations. Breaches of Regulations are punishable by a fine of up to 2,000,000 Rand or imprisonment of up to five years. Contravention of international conservation or management measures or conditions imposed by a high seas fishing permit or licence are also punishable by fines up to 3,000,000 Rand.

As the Competent Authority in the assessment area DEFF's Strategic Goal are broken down by objectives and divisions[23] as:

- Fisheries Research and Development: To ensure the promotion of the sustainable development of fisheries resources and ecosystems by conducting and supporting appropriate research.
- Marine Resource Management: Ensures the sustainable utilisation and equitable and orderly access to the marine living resources through improved management and regulation.
- Monitoring, Control and Surveillance: Ensures the protection and promotion of sustainable use of marine living resources by intensifying enforcement and compliance.
- Fisheries Operations Support: The provision of support services in order to ensure the effective and efficient management and administration of the Branch: Fisheries Management and the Marine Living Resources Fund.
- Chief Financial Officer: The provision of financial management for the Branch: Fisheries Management and the Marine Living Resources Fund.

Potential habitat interactions are considered in the management decision-making process. There is no substantial evidence that the fishery has a significant negative impact on physical habitats. **Clauses F2.1 and F2.2 are met**.

F2.3 If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.

As explained above purse seine and pelagic trawls are known to rarely interact with physical habitats. Pelagic trawls are fished in the water column and do not impact benthic habitats. **Clause F2.3 is met**.

References

[23] https://www.environment.gov.za/branches/fisheriesmanagement#objetives

Coetzee, J.C., de Moor, C.L. and Butterworth, D.S. A summary of the South African sardine (and anchovy) fishery. http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

DAFF. 2016. Marine Living Resources Act of 1998, Marine Living Resources Act: Regulations relating to small-scale fishing 2016. Department of Agriculture, Forestry and Fisheries. http://extwprlegs1.fao.org/docs/pdf/saf155134.pdf

DAFF. 2016. VMS Presentation. http://mpaforum.org.za/wp-content/uploads/2016/11/VMS-Presentation-First-DAFF.ppt

DEFF. 2020. Fisheries Management Objectives. Department of Environment, Forestry and Fisheries. https://www.environment.gov.za/branches/fisheriesmanagement#objetives

DefenceWeb. 2018. DAFF working on illegal, unregulated and unreported fishing as part of Phakisa. https://www.defenceweb.co.za/security/maritime-security/daff-working-on-illegal-unregulated-and-unreported-fishing-as-part-of-phakisa/

de Moor, C.L. 2018. Interim OMP-18. FISHERIES/2018/AUG/SWG-PEL/24. https://open.uct.ac.za/bitstream/handle/11427/30591/FISHERIES_2018_AUG_SWG-PEL_24%20Interim%20OMP-18.pdf?sequence=1

MARAM. 2019. Publications. Marine Resource Assessment and Management Group. http://www.maram.uct.ac.za/maram/publications/2019

MARAM. 2019. Workshop. Marine Resource Assessment and Management Group. http://www.maram.uct.ac.za/maram/workshops/2019

SAPFIA. 2020. TAC. South African Pelagic Fishing Industry Association. https://sapfia.org.za/tac/

SAPFIA. 2020. 2020 Anchovy Final Conditions. 2020 Anchovy final conditions

Links	
MARINTRUST Standard clause	1.3.3.2
FAO CCRF	6.8
GSSI	D.2.07, D.6.07, D3.09

F3	**Ecosystem Impacts - Minimum Requirements**		
	F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.	Yes
	F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.	Yes
	F3.3	If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.	Yes
		Clause outcome:	PASS

Evidence

F3.1 The broader ecosystem within which the fishery occurs is considered during the management decision-making process and F3.2: There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.

As the Competent Authority in the assessment area DEFF's Strategic Goal are broken down by objectives and divisions[24] as:

- Fisheries Research and Development: To ensure the promotion of the sustainable development of fisheries resources and ecosystems by conducting and supporting appropriate research.
- Marine Resource Management: Ensures the sustainable utilisation and equitable and orderly access to the marine living resources through improved management and regulation.
- Monitoring, Control and Surveillance: Ensures the protection and promotion of sustainable use of marine living resources by intensifying enforcement and compliance.
- Fisheries Operations Support: The provision of support services in order to ensure the effective and efficient management and administration of the Branch: Fisheries Management and the Marine Living Resources Fund.
- Chief Financial Officer: The provision of financial management for the Branch: Fisheries Management and the Marine Living Resources Fund.

Scientific Observers accompany fishing vessels to sea on request (refer to small pelagic permit condition)[25], the task of observers is data collection (catch of target and non-target species, and logging of interactions with ETP species). Integral to the management process is the participation of the fishing industry, primarily through the small pelagic industrial body, the South African Pelagic Fishing Industry Association (SAPFIA)[26].

The Marine Living Resources Act (MLRA) includes as one of its recognised principals "the need to apply precautionary approaches in respect of the management and development of marine living resources". OMPs are aimed at quantifying risks and benefits of alternative short- and long-term management options, in terms that resource managers and decision-makers can understand and relate to.

OMPs perform a risk analysis, which allows results to be expressed as the probability that a defined event will occur (e.g. the biomass falling below a specified threshold level or the fishery collapsing) within a fixed period. Commonly used risk statistics include the probability of depleting the (spawning-stock) biomass below some threshold or the median biomass expected at the end of the simulation period (compared with the biomass at the onset of this period).

Incorporation of ecosystem considerations and the development of ecosystem-based management was first undertaken through the revised Operational Management Procedure (OMP-14) and has been included in OMP-18. Ecosystem considerations in the purse seine small pelagic fishery currently include the experimental closure of areas to fishing around some important seabird (e.g. African penguin and Cape gannet and Cormorant) breeding colonies (islands) in an attempt to assess the impact of localized fishing effort on the breeding success of these birds. The benefit of such closure has been demonstrated for some breeding islands but not for others. A model of penguin dynamics has also been developed for use in conjunction with the small pelagic fish OMP so that the impact on penguins of predicted future pelagic fish trajectories under alternative harvest strategies can be evaluated. These studies have so far indicated that even with large reductions in the sardine TAC there would be little benefit for penguins[27].

VMS operated by DEFF is mandatory for all South African flagged vessels and has been in operation since 1998. Currently 22 commercial fisheries, Marine Protected Areas (MPA's) and MSC Certified Fisheries offshore are monitored

[24] https://www.environment.gov.za/branches/fisheriesmanagement#objetives
[25] 2020 Sardine final conditions and 2020 Anchovy final conditions
[26] https://sapfia.org.za/working-with-deff/
[27] http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

and managed by the VMS Department, in addition to its RFMO Obligations. Breaches of Regulations are punishable by a fine of up to 2,000,000 Rand or imprisonment of up to five years.

Purse seine and pelagic trawls are known to rarely interact with physical habitats. Pelagic trawls are fished in the water column and do not impact benthic habitats.

The broader ecosystem within which the fishery occurs is considered during the management decision-making process and there is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem. **Clauses F3.1 and F3.2 are met**.

F3.3 If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals

Sardine and Anchovy play an important role in regulating ecosystem functioning. Total removals for these species are limited using a quota system, with the Total Allowable Catch (TAC) and Total Allowable Bycatch (TAB) of anchovy defined according to the rules in the OMP. In practice, TACs are apportioned between holders of commercial fishing permits for anchovy and/or sardine. The TAC is set at the level defined by the OMP 18 and calculated by subsequent initial and mid-season MARAM recommendation papers.

The TAC and TAB system considers both targeted (anchovy, round herring) and bycatch (sardine, horse-mackerel) fisheries and the effects of fishing activities on all species in the ecosystem. Shifts in sardine distribution and fluctuations in sardine abundance have been hypothesised to have had substantial ramifications for top predators, distribution and relative abundance of seabird species for which sardine are an important dietary component such as Cape gannets *Morus capensis* and African penguins *Spheniscus demersus.* These Low Trophic Level (LTL) species also provide food for hake, snoek and migratory tuna in the assessment area.

As noted in clause F1.2, experimental closures have been put in place around key island habitat for birds since 2008, involving alternately opening and closing the areas around two pairs of islands, Robben and Dassen Islands on the West Coast and Bird and St Croix Islands on the South coast. A paper published in 2014 summarised results of the island closure feasibility study for both pairs of islands. Scientists found predominantly positive effects of closures; however, traits and islands differed in their responses. Clear benefits to chick condition or foraging behaviour were apparent at three of four islands; fledging success improved at one colony. Results thus far suggest that by enhancing breeding conditions for penguins, closures will likely benefit both juvenile and adult penguin survival in the long run, leading to improved population trajectories.

Given that anchovy catches are well within the TAC, and that between 2006 and 2016, anchovy catches in the purse seine fishery were about half the TAC, it is unlikely that such level of exploitation could be considered as significantly detrimental to the wider ecosystem.

If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals. **Clause F3.3 is met.**

References

Coetzee, J.C., de Moor, C.L. and Butterworth, D.S. A summary of the South African sardine (and anchovy) fishery. http://webcms.uct.ac.za/sites/default/files/image_tool/images/302/workshop/IWS2019/Sardine2019_IWS/MARAM_IWS_2019_Sardine_BG1%20background%20A%20summary%20of%20the%20sardine%20fishery.pdf

DAFF. 2016. Marine Living Resources Act of 1998, Marine Living Resources Act: Regulations relating to small-scale fishing 2016. Department of Agriculture, Forestry and Fisheries. http://extwprlegs1.fao.org/docs/pdf/saf155134.pdf

DAFF. 2016. VMS Presentation. http://mpaforum.org.za/wp-content/uploads/2016/11/VMS-Presentation-First-DAFF.ppt

DEFF. 2020. Fisheries Management Objectives. Department of Environment, Forestry and Fisheries. https://www.environment.gov.za/branches/fisheriesmanagement#objetives

DefenceWeb. 2018. DAFF working on illegal, unregulated and unreported fishing as part of Phakisa. https://www.defenceweb.co.za/security/maritime-security/daff-working-on-illegal-unregulated-and-unreported-fishing-as-part-of-phakisa/

de Moor, C.L. 2018. Interim OMP-18. FISHERIES/2018/AUG/SWG-PEL/24. https://open.uct.ac.za/bitstream/handle/11427/30591/FISHERIES_2018_AUG_SWG-PEL_24%20Interim%20OMP-18.pdf?sequence=1

MARAM. 2019. Publications. Marine Resource Assessment and Management Group. http://www.maram.uct.ac.za/maram/publications/2019

MARAM. 2019. Workshop. Marine Resource Assessment and Management Group. http://www.maram.uct.ac.za/maram/workshops/2019

SAPFIA. 2020. Working with DEFF. South African Pelagic Fishing Industry Association. https://sapfia.org.za/working-with-deff/

SAPFIA. 2020. 2020 Anchovy Final Conditions. 2020 Anchovy final conditions

SAPFIA. 2020. 2020 Sardine Final Conditions. 2020 Sardine final conditions

Links	
MARINTRUST Standard clause	1.3.3.3
FAO CCRF	7.2.2 (d)
GSSI	D.2.09, D3.10, D.6.09

SOCIAL CRITERION

In addition to the scored criteria listed above, applicants must commit to ensuring that vessels operating in the fishery adhere to internationally recognised guidance on human rights. They must also commit to ensuring there is no use of enforced or unpaid labour in the fleet(s) operating upon the resource.

Appendix A - Determining Resilience Ratings

The assessment of Category B species described in this assessment report template utilises a resilience rating system suggested by the American Fisheries Society. This approach was chosen because it is also used by FishBase, and so the resilience ratings for many thousands of species are freely available online. As described by FishBase, the following is the process used to arrive at the resilience ratings:

"*The American Fisheries Society (AFS) has suggested values for several biological parameters that allow classification of a fish population or species into categories of high, medium, low and very low resilience or productivity (Musick 1999). If no reliable estimate of r_m (see below) is available, the assignment is to the lowest category for which any of the available parameters fits. For each of these categories, AFS has suggested thresholds for decline over the longer of 10 years or three generations. If an observed decline measured in biomass or numbers of mature individuals exceeds the indicated threshold value, the population or species is considered vulnerable to extinction unless explicitly shown otherwise. If one sex strongly limits the reproductive capacity of the species or population, then only the decline in the limiting sex should be considered. We decided to restrict the automatic assignment of resilience categories in the Key Facts page to values of K, t_m and t_{max} and those records of fecundity estimates that referred to minimum number of eggs or pups per female per year, assuming that these were equivalent to average fecundity at first maturity (Musick 1999). Note that many small fishes may spawn several times per year (we exclude these for the time being) and large live bearers such as the coelacanth may have gestation periods of more than one year (we corrected fecundity estimates for those cases reported in the literature). Also, we excluded resilience estimates based on r_m (see below) as we are not yet confident with the reliability of the current method for estimating rm. If users have independent r_m or fecundity estimates, they can refer to Table 1 for using this information*."

Parameter	High	Medium	Low	Very low
Threshold	0.99	0.95	0.85	0.70
r_{max} (1/year)	> 0.5	0.16 - 0.50	0.05 - 0.15	< 0.05
K (1/year)	> 0.3	0.16 - 0.30	0.05 - 0.15	< 0.05
Fecundity (1/year)	> 10,000	100 - 1000	10 - 100	< 10
t_m (years)	< 1	2 - 4	5 - 10	> 10
t_{max} (years)	1 - 3	4 - 10	11 - 30	> 30

[Taken from the FishBase manual, "Estimation of Life-History Key Facts", http://www.fishbase.us/manual/English/key%20facts.htm#resilience]

Glossary

Non-target: Species for which the gear is not specifically set, although they may have immediate commercial value and be a desirable component of the catch. OECD (1996), Synthesis report for the study on the economic aspects of the management of marine living resources. AGR/FI(96)12

Target: In the context of fishery certification, the target catch is the catch of stock under consideration by the unit of certification – i.e. the fish that are being assessed for certification and ecolabelling. (GSSI)

Appendix

Fishery Assessment Peer Review Template

This section comprises a summary of the fishery being assessed against version 2 of the MarinTrust Standard.

Fishery under assessment	South Africa – Anchovy - Purse seine and pelagic trawl
Management authority (Country/State)	Department of Forestry and Fisheries and the Environment (DFFE) South Africa
Main species	Anchovy (*Engraulis encrasicolus*)
Fishery location	FAO Area 47 ATLANTIC, SOUTHEAST
Gear type(s)	Purse seine and pelagic trawl

Summary: in this section, provide any additional information about the fishery that the reviewers feel is significant to their decision.

A couple of comments about the fishery under assessment. The report indicates that the management authority is the Department of Environment, Forestry and Fisheries (DEFF) South Africa, but I am not sure it is the right name. I think that the correct name is Department: Forestry and Fisheries and the Environment, and the right acronym is DFFE.

CB response: Noted and checked
My second comment/question is about the fishery location: Is the fishery carried out inside the South Africa EEZ, could you include it in the fishery location, please?
CB response: following the client application form the fishery takes place in FAO 47 southeast Atlantic but there is no specifications about EEZ.

Summary of Peer Review Outcomes

Peer reviewers should review the fishery assessment report with the primary objective of answering the key questions listed in the table below. Where the situation is more complicated, reviewers may instead answer "See Notes".

	YES	NO	See Notes
A – Fishery Assessment			
1. Has the fishery assessment been fully completed, using the recognised IFFO RS fishery assessment methodology and associated guidance?	X		
2. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?	X		
3. Are the scores in the following sections accurate (i.e. do the scores reflect the evidence provided)?			
Section M - Management	X		
Category A Species	X		
Category B Species	X		
Category C Species			X
Category D Species	X		
Section F – Further Impacts	X		

Detailed Peer Review Justification

Peer reviewers should provide support for their answers in the boxes provided, by referring to specific scoring issues and any relevant documentation as appropriate.

Detailed justifications are only required where answers given are one of the 'No' options. In other (Yes) cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (without any implications for the scores).

Boxes may be extended if more space is required.

1. Is the scoring of the fishery consistent with the IFFO RS standard, and clearly based on the evidence presented in the assessment report?
The information shown in the assessment report seems to be adequate but I have important concerns in regard to the impact of the fishery on the species assessed under category C. See my comments there. Is the stock of sardine over the limit reference point? If it is not, I would not recommend the approval of this fishery. I have also my doubts about how the stocks of lanterfish (and maybe lightfish) are managed in this fishery and how the assessor concludes the catch of the first species is negligible. Other minor comments in the correspondent sections.

2. Has the fishery assessment been fully completed, using the recognised IFFO RS fishery assessment methodology and associated guidance?
Generally speaking yes, the IFFO RS standard has been adequately applied to this assessment, but please see my comments in Category C species. Yes,

3. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?
The species categorisation is based on the information provided by the client, which I understand is correct. Primary target species include anchovy and redeye round herring. CB response: after a request to extend the scope of the assessment, Southern African anchovy, *Engraulis capensis* is also included in the assessment as an IPI species.

3M. Are the scores in "Section M – Management" clearly justified?
A management system is in place for the fishery in South African waters. Some minor comments: M1 The DFFE is the organisation responsible for managing the fishery. The MARAM is responsible for collecting fisheries data and conduct the stock assessment of the fishery and these organisations are publicly committed to sustainability. Nothing to add. CB response: Noted M2.1 Refers to "*monitoring compliance*". If the role of Scientific Fisheries observers is data collection, I would not include this information here. I think it would be more relevant in M.1.2. CB response: Noted and modified

3A. Are the "Category A Species" scores clearly justified?
Data on fisheries removals, biomass and distribution is regularly collected for the anchovy stock. Stock assessments are regularly undertaken for the species. Although the biomass of the stock has decreased in recent years, it seems to be above the limit reference point.

3B. Are the "Category B Species" scores clearly justified?
Only one species, round herring, is assessed under this category. The standard seems to be adequately applied and the species pass it. No further comments necessary.

3C. Are the "Category C Species" scores clearly justified?
Two species are assessed in this category: lanternfish and sardine. Important concerns here. *Lanterfish*

At the end of the justification, the assessor concludes that the removal of this species is negligible. But previously, it is indicated that a combined TAC (for lanternfish and lightfish together) of 50,000 t has been set for 2021. This quantity does not seem to be negligible. It is true that it is also indicated that "only 5t" are landed annually, but the TAC set is quite high, is this fishery going to be further developed?

CB responses: There are no permissions for this direct fisheries, so all landings form the fishery under assessment are from incidental catches and it has been typically reported as 5 tonnes.

Sardine

Sorry, but I am not sure if I have understood the assessor's rationale here. According to the most recent stock assessment, the stock of sardine is over the biomass limit point? I cannot find the data in the rationale to double-check if it is. If it is not, I would not recommend the approval of this fishery based on the impact that it has on the stock of sardine.

CB responses: however, changes in recruitment has been identified over the years, in the last stock assessment OMP 18 the recruitment has shown and increase. Further, a conservative interim TACs for sardine have been recommended for 2020 until such time as biomass projections from updated assessments for both resources are available. In the initial TAC set for 2021, this has led to a nil directed sardine TAC west of Cape Agulhas and a very small directed TAC (8,500t) east of Cape Agulhas and followed a nil directed TAC for all sardine in 2020. Therefore, based on this information the fishery can achieves a pass in clause C1.2.

3D. Are the "Category D Species" scores clearly justified?
Two species assessed under this category, chub mackerel and lightfish. I have not checked all the values given but they seem to be based on the Fishbase and I understand they are correct. The IFFO standard has been adequately applied.

3F. Are the scores in "Section F – Further Impacts" clearly justified?
I consider that the information provided is correct, the direct impact of the fishery on ETP species is low and the main potential ETP impact of the fishery is indirect, via the removal of prey species, mainly for Cape gannet and the African Penguin. F1 Very interesting information provided by the assessor. The direct impact of the fishery on ETP species seems to be negligible. No further comments. F2 The impact of the fishery on habitat is minimal.

Optional: General comments on the Peer Review Draft Report
The name used for *Lampanyctodes hectoris* in Fishbase is Hector's lanternfish. CB response: Noted and amended