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Southern Indian Ocean Fisheries Agreement
Accord relatif aux Pêches dans le Sud de l'Océan Indien

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ANNUAL NATIONAL REPORT – REPUBLIC OF MAURITIUS

Delegation of Mauritius

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Abstract	

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Recommendations (for proposals and working papers only)

ANNUAL NATIONAL REPORT – REPUBLIC OF MAURITIUS
Southern Indian Ocean Fisheries Agreement (SIOFA)

Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

FEBRUARY 2023

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1. Mauritian Fisheries on the Southern Indian Ocean Fisheries Agreement (SIOFA) Area.

Mauritius carries out different fishing activities in the SIOFA Agreement Area, namely on the Saya de Malha Bank (SIOFA Sub Area 8). The different fisheries targeting demersal species carried out on the Saya de Malha Bank with line gear are:

a) the Industrial Shallow Water Banks Fishery;
b) the Semi-Industrial Shallow Water Banks Fishery; and
c) the Semi-Industrial Deepwater snapper/grouper fishery.

All the fisheries differ with respect to fishing methods, species targeted, catch and vessel/boat size (LOA).

2. Description of the fisheries

Fleet composition

In 2020, the Mauritian fleet comprised a total of six vessels (one industrial shallow water vessel, one operated both in the semi-industrial shallow water and semi-industrial deepwater fishery, and four operated only in the semi-industrial deepwater fishery).

In 2021, the fleet consisted of four vessels. The fleet composition did not change for the industrial and semi-industrial shallow water vessels, but the number of semi-industrial deepwater vessels went down to two.

In 2022, the Mauritian fleet was composed of three fishing semi-industrial vessels. All three operated in the semi-industrial deepwater fishery and two of them also operated in the semi-industrial shallow water fishery. No fishing vessels from the 'Industrial shallow water fishery' operated on the Saya de Malha Bank (SIOFA Sub Area 8).

Table 1 – Number of active vessels by fishery *(Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping)*

	Year				
Type of vessel	**2018**	**2019**	**2020**	**2021**	**2022**
Industrial shallow water vessels	2	2	1	1	Nil
Semi-industrial shallow water vessels	**(1)** (it also operated in the Semi-industrial deepwater fishery)	**(1)** (it also operated in the Semi-industrial deepwater fishery)	**(1)** (it also operated in the Semi-industrial deepwater fishery)	1	**(2)** (also operated in the Semi-industrial deepwater fishery)
Semi-industrial deepwater vessels	5	7	5	2	3
Total	**7**	**9**	**6**	**4**	**3**

Note: Industrial shallow water vessel uses multiple small dories for fishing activities

Effort

Mauritian fisheries are essentially line fisheries, where the lines are operated by hand (industrial and semi-industrial shallow water vessels) or by a hydraulic reel (semi-industrial deepwater vessels).

In 2020, the total effort of the Mauritian fleet was 2,414 fishermen days, from 15 fishing trips: 666 fishermen days from industrial shallow water vessels, 1,176 fishermen days from semi-industrial shallow water vessels, and 572 fishermen days from semi-industrial deepwater vessels.

In 2021, the total effort of the Mauritian fleet was 1,461 fishermen days from 6 fishing trips: 720 fishermen days from industrial shallow water vessels, 504 fishermen days from semi-industrial shallow water vessels, and 237 fishermen days from semi-industrial deepwater vessels.

In 2022, the total effort of the Mauritian fleet was 1,551 fishermen days, from 12 fishing trips: No fishing effort from the industrial shallow water fishery vessels, 573 fishermen days from the semi-industrial shallow water fishery and 978 fishermen days from the semi-industrial deepwater snapper and grouper fishery.

All Mauritian fisheries are conducted around the Saya de Malha bank- SIOFA Sub Area 8.

Table 2 – Effort in fishermen days from the different fisheries that were conducted on the Saya de Malha bank- SIOFA Sub Area 8 from 2018-2022.

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

	Fisherman - days				
Fishery	**2018**	**2019**	**2020**	**2021**	**2022**
Industrial shallow water banks fishery	1 326	6 093	666	720	No fishing
Semi-industrial shallow water fishery	660	1 510	1 176	504	573
Semi-industrial deepwater fishery	931	1 237	572	237	978
TOTAL	**2 917**	**8 810**	**2 414**	**1 461**	**1 551**

For the Industrial fishery it is to be noted that there was a significant change in fishermen days due to a decline in the number of vessels operating in this fishery.

2.1 The Industrial Shallow Water Banks Fishery

The Industrial Shallow Water Banks Fishery is practised using handlines in a "mothership-dory" system. A "mothership" vessel (around 45 to 50 m in length) takes between 45 to 60 days for a fishing trip, and may perform three to four trips annually. The mother vessel carries 15 to 20 glass fiber dories (pirogues), which are launched at sea when the vessel reaches the fishing grounds. Fishing is done at a depth of about 20-50m within a range of 6 km from the mother vessel. The dories return to the mother vessel either at mid-day or evening with the day's catch. The catch is gutted and gilled at sea on the way back to the mother vessel. Upon arrival, the catch for the day is weighed, rinsed with sea water, blast frozen at -20^{o} C and the next day, stored in bags or in bulk in the fish hold on board the vessel. About 80-90% of the banks' fishery catch consists of white fish (emperors): the main species being *Lethrinus mahsena,* and other lethrinids. The rest mainly comprises serranids (Annex 1).

It is to be noted that in 2020 and 2021, only one fishing vessel from the Industrial Shallow Water Banks Fishery fished on Saya de Malha – SIOFA Sub Area 8. In 2022, no vessel was involved in SIOFA Agreement Area from this fishery.

A **Banks Fisheries Management Plan** has been put in place and has as main objectives:

- to ensure that fishery resources harvested by the banks operators are exploited within biologically acceptable levels, as well as social and economic objectives.
- to provide a foundation for management of the fishery to continue moving towards a more integrated management framework of shared responsibilities between the Ministry of Blue Economy, Marine Resources Fisheries and Shipping, and other stakeholders of the sector.

A Baseline Report was prepared by a national expert, Mr. M. Munbodh. Two Ecological Risk Assessment (ERA) workshops were held in 2012 to develop the Management Plan. The Management Plan was finalised in December 2012

and validated in January 2013. The plan is being implemented in a phased manner.

2.2 The Semi-Industrial Shallow Water Fish Fishery

In this fishery, the fishing boats are of length ranging between 12m and 24m. Fishing is practised using handlines. The boats carry ice and fishing gears, and once on the fishing grounds, fishing is carried out from the deck. When the fish is caught, it is placed in a slurry containing ice and sea water. At the end of the fishing day, all the fishes are put in the fish hold. Fish in the fish hold is kept on layers of ice in racks in the ratio of 1 kg of fish to 2 kgs of ice. The fishing boats fish for about ten days and the catch is unloaded chilled for retail distribution in the island.

The main targeted species of this fishery are the white fish lethrinids, mainly *Lethrinus mahsena* and other species, namely 'red fish' (*Plectropomus spp*, *Variola spp*), *Aprion virescens* (Annex 1). Only one fishing boat from this fishery operated on the Saya de Malha SIOFA Sub Area 8 in 2020 and 2021, while two (2) fishing boats operated in 2022.

2.3 The Semi-Industrial Deepwater snapper and grouper fishery

Deepwater snappers/groupers are present at depth of 150-300m on the slopes of the banks. The deepwater snapper and grouper fishery is mainly practised on the drop-offs (slopes) of the fishing banks by fishing boats of length range from 12m to 24 m. The main species caught are: Snappers (*Etelis* spp., *Pristipomoides* spp.), Frenchman seabream (*Polysteganus baissaci*) and comet grouper (*Epinephelus morrhua*). Fishing is carried out from the deck of the fishing boats using hydraulic reels mounted with nylon lines and hooks. Bait is mainly frozen tuna and cuttlefish.

Five (5) fishing boats from this fishery operated on the Saya de Malha SIOFA Sub Area 8 in 2020, two (2) in 2021 and three (3) in 2022.

3. Catch, effort and Catch per Unit Effort (CPUE)

The catch, effort and CPUE details (for the last 3 years) are in Table 3, for the Industrial Shallow Water Banks Fishery. Table 4 and Table 5 show the catch

for the Semi-Industrial Shallow Water Banks fish fishery and the Semi-Industrial Deepwater Snapper and Grouper Fishery. Data was compiled as per logbook data received from fishing vessels/boats. Given that handline gear is highly selective, the volume of discards is minimal and the information on discards is not recorded in logbooks.

Table 3: Catch and effort data 2020-2021 from the Industrial Shallow Water Banks Fishery for the Saya de Malha Bank

	SAYA DE MALHA – SIOFA Sub Area 8		
Year	**Catch (tonnes)**	**Fishermen days**	**CPUE (kg/fishing day)**
2020	55.694	666	83.62
2021	36.4	720	50.6
2022	Nil	-	-

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

Table 4: Catch and effort data from the Semi-Industrial Shallow Water Banks Fishery for the Saya de Malha Bank

SAYA DE MALHA – SIOFA Sub Area 8			
Year	**Catch (tonnes)**	**Fishermen days**	**CPUE (kg/fishing day)**
2020	66.4	1 176	56.5
2021	46.7	504	92.57
2022	43.4	573	75.8

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

Table 5: Catch and effort data from the Deepwater Snapper/Grouper Fishery for the Saya de Malha Bank

SAYA DE MALHA – SIOFA Sub Area 8			
Year	**Catch (tonnes)**	**Fishermen days**	**CPUE (kg/fishing day)**
2020	46.4	572	81.1
2021	22.9	237	96.7
2022	59.4	978	60.7

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

The retained catches by species from each fishery are given in tables 6, 7 and 8, accordingly. Data was compiled from logbooks received from respective fishing vessels/boats. Discards are not recorded in the logbooks.

Table 6: Catch by species – Industrial Shallow Water Banks Fishery

	Industrial Shallow Water Banks Fishery Saya de Malha Bank – SIOFA Sub Area 8 Retained Catch (T)					
	White Fish (Mainly *Lethrinus mahsena*)	**Red Fish (*Variola* spp and *Plectropomus* spp)**	***Aprion virescens***	**Snappers (Lutjanidae)**	**Tuna**	**Total**
2020	50.90	4.40	0.35	0.00	0.04	**55.69**
2021	32.58	2.25	1.58	0.00	0.00	**36.41**
2022	Nil	Nil	Nil	Nil	Nil	**Nil**

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

Table 7: Catch by species – Semi-Industrial Shallow Water Banks Fishery

	Semi-Industrial Shallow Water Banks Fishery Saya de Malha – SIOFA Sub Area 8 Retained Catch (T)				
	White Fish (Mainly *Lethrinus mahsena*)	**Red Fish (*Variola* spp and *Plectropomus* spp)**	***Aprion virescens***	**Snappers (Lutjanidae)**	**Total**
2020	53.74	8.17	3.86	0.67	**66.43**
2021	43.78	1.25	1.63	0.00	**46.66**
2022	38.81	3.16	1.46	0.00	**43.43**

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

Table 8: Catch by species – Semi-Industrial Snappers and Groupers Fishery

	Semi-Industrial Snappers and Groupers Fishery Saya de Malha – SIOFA Sub Area 8 Retained Catch (T)							
	Snappers (Lutjanidae)	***Polysteganus baissaci***	***Epinephelus morrhua***	***Aprion virescens***	**White Fish (Mainly *Lethrinus mahsena*)**	**Red Fish (*Variola* spp and *Plectropomus* spp)**	**Others**	**Total**
2020	26.91	13.36	2.92	1.74	0.79	0.03	0.67	**46.41**
2021	9.17	10.22	2.54	0.52	0.00	0.00	0.45	**22.90**
2022	45.61	9.02	4.60	0.15	0.00	0.00	0.00	**59.38**

Source: Ministry of Blue Economy, Marine Resources, Fisheries and Shipping

It is to be noted that *Variola* spp. and *Plectropomus* spp catches are recorded as 'red fish' in the logbooks. The same applies to 'white fish' which includes mainly *Lethrinus mahsena,* but may also include some *L. nebulosus*, *L. rubrioperculatus*)

With regard to incidental species and bycatch, it is pointed out that no such species (seabirds, mammals, sharks and VMEs) were obtained in the fisheries.

4. Fisheries data collection

Statistical data collection

Data from the different fisheries are collected through a logbook system. Upon arrival of the fishing vessels at the fish landing port at Port-Louis, logbooks

are verified and collected by the Fisheries Protection Officers of the Port State Control Unit. The logbooks are then sent to the Marine Resources Division of Albion Fisheries Research Centre for data verification, processing, analysis and data entry. The logbooks for each vessel provide daily information on catch and effort at specific fishing locations, amongst others. The catch per fisherman day (CPFD) is calculated by dividing the catch in kg by the number of fishermen days and the fishermen days are calculated by multiplying the number of fishermen by the number of fishing days. Table 9 shows a summary of data collected in logbooks.

Length and weight data are collected during sampling exercises during landing of catch at the port. During the year under report, no surveys and research activities was undertaken.

Table 9: Summary of data collected in logbooks

	Fishery: The same logbook templates are used for all the fisheries		
Year	**Time scale**	**Spatial scale**	**Species details (taxonomic resolution)**
2020	Day	Daily positions in Latitude and longitude of Industrial vessels (Mother vessels) and Semi-Industrial vessels	Genus (e.g White fish = Lethrinids; Red fish = *Plectropomus* spp and *Variola* spp) Species: for *Aprion virescens*, *Polysteganus baissaci* and *Epinephelus morrhua*)
2021	Day	Daily positions in Latitude and longitude of Industrial vessels (Mother vessels) and Semi-Industrial vessels	Genus (e.g White fish = Lethrinids; Red fish = *Plectropomus* spp and *Variola* spp) Species: for *Aprion virescens*, *Polysteganus baissaci* and *Epinephelus morrhua*)
2022	Day	Daily positions in Latitude and longitude of Industrial vessels (Mother vessels) and Semi-Industrial vessels	Genus (e.g White fish = Lethrinids; Red fish = *Plectropomus* spp and *Variola* spp) Species: for *Aprion virescens*, *Polysteganus baissaci* and *Epinephelus morrhua*)

5. Vulnerable Marine Ecosystems (VME) Threshold

Mauritian fishing vessels are not involved in fishing with gears that interfere with VMEs.

6. Biological sampling

Industrial Shallow Water Banks Fishery

During unloading, the gilled, gutted and blast frozen catch of *Lethrinus mahsena* from SIOFA fishing vessels is sampled for length frequency data, by officers of the Albion Fisheries Research Centre. Fish are kept in bags of about 20-25 kg in the vessels' fish hold. During unloading, batches of about 25 to 30 bags are removed from the fish hold using cranes with lifting nets and are transferred to refrigerated containers on lorries. Approximately 4-5 of these bags are removed at random and measured on board the mothership. The total length to the nearest cm is recorded. An average of 300 to 400 fish specimens are sampled per fishing vessel. Only length frequency data is recorded. Data are recorded in a sampling sheet designed by AFRC.

Semi-industrial Shallow Water Banks Fishery

Sampling is done during unloading of the semi-industrial chilled fish boats. Chilled fish from the fishing boats is unloaded in small quantities in plastic crates. At random the crates are taken for sampling and length/weight data are measured. The fish is measured on a measuring board and then the weight is recorded from a scale balance. About 100-150 fish specimens are sampled per fishing trip. The main targeted species for collection of length and weight is *Lethrinus mahsena*.

Semi-Industrial Deepwater snapper and grouper fishery

Random sampling is carried out upon calling of vessels at the port. The fish can be chilled or frozen (as a boat can have both frozen and chilled fish on the same trip). If the catch is chilled the same sampling procedure as for the semi-industrial chilled fish fishery (Semi-industrial Shallow Water Banks Fishery) is applied. When the fish is frozen, then only the length frequency sampling

is done as the frozen fish is gilled and gutted. The targeted species for sampling are *Polysteganus baissaci*, *Etelis* spp. and *Pristipomoides* spp.

Table 10: Summary of total number of specimens sampled

	Number of specimens sampled by year		
Species (FAO code)	**2020**	**2021**	**2022**
Lethrinus mahsena (LTQ)	-	375	155
Etelis carbunculus	-	90	105

In 2020, no sampling programme was undertaken due to prevalence of COVID-19 in Mauritius.

7. Description of data verification mechanism

Verification mechanisms:

- Fishing positions of licensed fishing vessels are verified through Vessel Monitoring System (VMS).
- Logbook system. Logbook data include date of departure and arrival, species/group of species caught, positions, depth, no. of fishermen involved, number of fishing days.
- Port State Control Unit enforces port state measures and associated regulations.
- Port sampling is done regularly on a random basis for fish data collection and associated inspection onboard the fishing vessel.

8. Summary of Observer Programmes and Port Sampling Programmes

Port sampling is carried out upon arrival of fishing vessels for the collection of length and weight data.

No Observer programme was undertaken during the period under review (2020-2022).

ANNEX 1

Annex 1: Demersal species caught from Saya de Malha Bank		
Fishery	**Genus and species names**	**Common Name**
The Industrial Shallow Water Banks Fishery	Mainly *Lethrinus mahsena,* but also includes some *Lethrinus nebulosus, Lethrinus rubrioperculatus*,	White fish/Emperors
	Plectropomus spp and *Variola* spp	Red fish/Groupers
	Aprion virescens	Green jobfish
The Semi-Industrial Shallow Water Bank Fishery	Mainly *Lethrinus mahsena,* but also includes some *Lethrinus nebulosus, Lethrinus rubrioperculatus*,	White fish/Emperors
	Plectropomus spp and *Variola* spp	Red Fish/Groupers
	Aprion virescens (Lutjanidae)	Green jobfish
The Semi-Industrial Deepwater snapper/grouper Fishery	*Pristipomoides* spp. *Etelis* spp.	Snappers
	Polysteganus baissaci	Frenchman seabream
	Epinephelus morrhua	Comet grouper
	Some *Aprion virescens*	Green jobfish