

**MSC Pre-Assessment
for the Brazil Croaker (*Umbrina canosai*)
Trawl and Bottom Gillnet Fishery**

prepared by



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1. Executive Summary

This work presents a preevaluation of the croaker (*Umbrina canosai*) trawl and bottom gillnet fishery in Brazil against the Marine Stewardship Council (MSC) *Standard*, using the Fisheries Certification Requirements from version 2.01.

This report was commissioned from CeDePesca by the Beaver Street Fisheries according to a Memorandum of Understanding signed on February 24th, 2021.

It was impossible to perform onsite visits due to the severe COVID-19 situation in Brazil. Nevertheless, an extensive review of the relevant documents and research regarding the croaker fishery in Brazil was undertaken by the evaluation team. The objective was to evaluate the fishery performance against the MSC standard. The following stakeholders were identified:

- Secretariat of Aquaculture and Fisheries of the Ministry of Agriculture, Livestock and Food – SAP/MAPA;
- Federation of Fishermen and Fish Farmers of Rio Grande do Sul – FEPARS
- Federation of Fishermen of the State of Santa Catarina – FEPESC;
- Industrial and Shipowners Union of Itajaí and Região – SINDIPI;
- Fishermen Union of the State of Santa Catalina – SINDPESCA;
- Federal University of Rio Grande (FURG);
- University of Vale de Itajaí (UNIVALI)
- Company Cais do Atlântico

According to the available information, as well as other data provided by the fishery stakeholders, the evaluation team concluded that the croaker (*Umbrina canosai*) trawl and bottom gillnet fishery in Brazil does not meet the MSC standard and recommends to enter into a Fishery Improvement Project to face the sustainability challenges.

2. Introduction

2.1. Objectives and Scope of Preevaluation

This a preevaluation of the croaker (*Umbrina canosai*) trawl and bottom gillnet fishery in Brazil against the sustainable fisheries Marine Stewardship Council (MSC) *standard* (version 2.01). This provisional evaluation is based on limited data gathered by the evaluation team and provided by the stakeholders to the date of this report. This document aims at presenting actionable information regarding the fishery status against the *standard*. The main focus would be to identify sustainability issues within the fishery that should be approached to turn it into a certifiable fishery according to the MSC *standard*.

2.2. Restriction to the Fishery Preevaluation

The main limitations to this preevaluation were: lack of information regarding the composition of species that interact with the fleet under evaluation in order to identify primary, secondary and ETP species; scarcity of data regarding the impact on the habitat and ecosystem, as well as updated information about the fishery. To solve some of these hurdles, the evaluation team used, in addition to scientific papers, media reports and data provided by the stakeholders during online interviews. Due to the COVID-19 situation, it was impossible to perform onsite visits. Whenever the available information was not enough to clarify a scoring issue, the evaluation team made that clear in the scoring justification/rationale.

2.3. Unit of Analysis

The MSC Standard defines the Unit of Analysis as the ensemble of the stock of the target species in a specific geographical area, harvested by a certain fleet with specific fishing gear and under certain fishery management system. For this preevaluation, the unit of analysis is the following:

Specie	Croaker/Brazilian croaker/Argentine croaker/Castanha, <i>Umbrina canosai</i> .
Geographical area	Brazil EEZ (FAO Statistical area 41)
Method of capture	Trawl and bottom gillnet
Stock	Atlantic Ocean
Management system	Ministry of Agriculture, Livestock and Food (MAPA), through the Secretariat of Aquaculture and Fisheries (SAP).
Client group	Beaver Street Fisheries INC, USA

2.4. Total Allowable Catch and Landing Data

There is no Total Allowable Catch for the croaker (*Umbrina canosai*) trawl and bottom gillnet fishery in Brazil. The government does not have a continuous data gathering program since 2008. The MPA

published data of fishery statistics only till 2011. Currently, there are a few isolated initiatives that do not become effective policies. According to IBAMA reports, for the period under analysis from 2000 till 2006, the states of Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul are the harvesters of croaker in Brazil. Among them, Santa Catarina and Rio Grande do Sul, represent more than 95% of the harvest (Table 1).

More recent data regarding species catch were obtained by means of statistical reports resulting from Monitoring Programs implemented in agreement with the government. Those reports were carried out by the University of Vale de Itajaí (UNIVALI) for the state of Santa Catarina, by the Center for Research and Management of Fishery Resources in Lagoons and Estuaries (CEPERG-IBAMA) and by the Federal University of Rio Grande (FURG), for the state of Rio Grande do Sul.

As the statistical reports (2000 to 2006) used by IBAMA do not classify harvest according to the fishing gear, data from UNIVALI, CEPERG and FURG were used to analyze the harvest for the period 2000 to 2019 for Santa Catarina (Table 2) and Rio Grande do Sul (Table 3). UNIVALI, since 2000, carries out fishery monitoring programs for the state of Santa Catarina. According to the University, the industrial fishery data from 2013 to 2016 are incomplete, not representing the entire harvest in the state. In the case of Rio Grande do Sul, statistical reports provided by IBAMA/CEPERG were used for the period 2000 to 2011 and, since 2012, reports provided by the Federal University of Rio Grande.

Data show that the croaker (*Umbrina canosai*) trawl and bottom gillnet fishery in Brazil is mainly an industrial fishery. Till the end of the 1980s, the bottom trawl fishery accounted for all the landings of the industrial fleet, when the bottom gillnet industrial fishery started (BARCELLOS *et al.*, 1991 *apud* HAIMOVICCI, CARDOSO; 2016). In 2006, gillnet fishery represented 56% of the croaker landings in Rio Grande do Sul (IBAMA/CEPERG, 2006) and 32% in Santa Catarina (UNIVALI/CTTMAR, 2006).

The *Umbrina canosai* fishery in Santa Catarina takes place mainly using trawls (single and pair) (Figure 1). The main landing ports are Itajaí, Navegantes, Laguna, Porto Belo and Florianópolis. In general terms, Navegantes and Itajaí present the largest landing volumes, followed by Laguna, Porto Belo and Florianópolis. In 2010, the two first municipalities received 82% of the croaker landed and in 2018, 92% of the total harvest. In terms of volume, in 2018 and 2019, the species lagged behind the Brazilian sardine (*Sardinella brasiliensis*), skipjack tuna (*Katsuwonus pelamis*) and white croaker (*Micropogonias furnieri*). In the single and pair trawls, croaker was the species with the highest catch (UNIVALI/CTTMAR, 2011).

In Rio Grande do Sul, the fishery takes place mainly with the use of pair trawls and bottom gillnet (Figure 2). The largest fishing center of the state is located in the fishing port of the city of Rio Grande, on the exit of the Laguna dos Patos. According to FURG (2012), the municipalities of Rio Grande, Pelotas, São José do Norte and São Lourenço do Sul, present the largest proportion of landing within the state. Since 2012, there is a reduction in the landings of croaker. The statistics indicate a harvest of barely 371.9 t (Table 2), when in 2011 it reached 7,523.236t. However, the evaluation team could not account for the harvest reduction in 2012 and data show a gradual increase in the following years. In 2018, among the teleost fish landed in Rio Grande do Sul, croaker was the second species in terms of volume, behind skipjack tuna (*Katsuwonus pelamis*). In 2019, it was the main species landed among teleost fish, with a harvest of 4,417.96t.

YEAR	STATES	INDUSTRIAL (t)	ARTISANAL (t)	TOTAL (t)
2000	Rio de Janeiro	190,5	26,5	217,0
	São Paulo	34,5	0,0	34,5
	Paraná	0,0	0,0	0,0
	Santa Catarina	2.710,5	0,0	2.710,5
	Rio Grande do Sul	4.258,5	508,0	4.766,5
	Total (t)	7.194,0	534,5	7.728,5
2001	Rio de Janeiro	293,0	33,5	326,5
	São Paulo	38,0	0,0	38,0
	Paraná	0,0	0,5	0,5
	Santa Catarina	5.496,0	0,0	5.496,0
	Rio Grande do Sul	7.237,0	469,0	7.706,0
	Total (t)	1.3064	503	13.567
2002	Rio de Janeiro	174,5	37,0	211,5
	São Paulo	34,5	0,0	34,5
	Paraná	1,0	0,0	1,0
	Santa Catarina	6.978,5	0,0	6.978,5
	Rio Grande do Sul	6.899,0	471,5	7.370,5
	Total (t)	14.087,5	508,5	14.596,0
2003	Rio de Janeiro	189,0	36,5	225,5
	São Paulo	197,0	0,0	197,0
	Paraná	0,0	0,5	0,5
	Santa Catarina	5.594,5	0,0	5.594,5
	Rio Grande do Sul	4.937,5	345,5	5,283,0
	Total (t)	10.918,00	382,5	11.300,5
2004	Rio de Janeiro	181,0	38,5	219,5
	São Paulo	147,5	0,0	147,5
	Paraná	0,0	0,5	0,5
	Santa Catarina	5.656,0	0,0	5.656,0
	Rio Grande do Sul	5.889,0	986,0	6.875,0
	Total (t)	11.873,5	1.025	12.898,5
2005	Rio de Janeiro	183,5	40,5	224,0
	São Paulo	158,5	0,0	158,5
	Paraná	0,0	0,5	0,5
	Santa Catarina	4.224,5	0,0	4.224,5
	Rio Grande do Sul	5.778,0	906,0	6.684,0
	Total (t)	10.344,5	947,0	11.291,5
2006	Rio de Janeiro	216,05	47,5	264
	São Paulo	50,5	0,0	50,5
	Paraná	0,0	0,5	0,5
	Santa Catarina	5.442,5	0,0	5.442,5
	Rio Grande do Sul	5.643,0	1.500,5	7.143,5
	Total (t)	11.352,05	1548,5	12.901,0

Table 1. Croaker harvest in Brazil for the period 2002-2006 (in tons). The states of Santa Catarina and Rio Grande do Sul were the main harvesters in Brazil. Source: IBAMA (2000-2006)

Over the last few years, some vessels specialized in the midwater trawling of croaker shoals. Croaker became the main target for this type of fleet. As a result, in 2012, despite the drop of the harvest in Santa Catarina, croaker was still responsible for 45% of all the volume landed by single trawls (UNIVALI/CTTMar, 2013).

SANTA CATARINA	ARTISANAL	TRAWLS			BOTTOM GILLNET	SURFACE GILLNET	PURSE SEINE	LONGLINE	TOTAL
		SINGLE TRAWL	DOUBLE TRAWL	PAIR TRAWL					
YEAR									
2000			658,243	2012,430	29,000		10,925		2710,598
2001		607,740	538,001	3815,724	527,371		7,100	0,320	5496,256
2002		1496,219	901,055	4359,105	218,865	0,040	2,780	0,020	6978,484
2003		1299,408	378,010	3660,533	230,625		21,168		5594,464
2004		973,170	631,429	3255,243	756,181		0,040		5656,063
2005		246,014	789,325	2262,725	925,198		1,022		4224,284
2006		696,698	513,713	2478,226	1750,247		3,485		5442,369
2007		647,620	432,819	4515,726	445,526		0,092		6041,783
2008		912,530	314,392	2341,876	752,822		4,020	0,422	4326,062
2009		1952,907	358,322	1404,994	610,219		42,486		4368,928
2010		3848,295	727,775	1709,884	551,881		0,020		6837,855
2011		1810,153	464,420	1810,153	97,461		0,020		6419,086
2012		3263,736	522,921	1426,854	51,003		120,320		5384,834
2013		1684,960	606,870	1772,691	827,487		0,320		4892,328
2014		226,005	292,634	888,632	77,632		0,940	0,010	1485,853
2015			18,160	154,330	2,272				174,762
2016	351,721	448,488	113,771	2366,751	683,832				3964,563
2017	172,520	608,551	186,259	1643,010	516,338		0,165		3126,843
2018	25,662	325,381	143,819	1520,088	327,563				2342,513
2019	5,822	67,000	60,348	686,097	9,306		0,004		828,577

Table 2. Croaker harvest in Santa Catarina for the period 2000-2019 (in tons). Source: UNIVALI/EMCT/LEMA (2000-2019).

RIO GRANDE DO SUL	ARTISANAL	TRAWLS			BOTTOM GILLNET	DIVERSE GEAR	PURSE SEINE	LONGLINE	TOTAL
		SINGLE TRAWL	DOBLE TRAWL	PAIR TRAWL					
YEAR									
2000	507,915	1.007,831	88,919	1.471,673	1.645,253	14,840	29,994		4.766,42
2001	468,78	1.047,177	332,290	2.885,545	2.513,124	459,051			7.705,968
2002	471,404	977,054	245,166	2.025,744	3.246,098	384,287	20,900		7.370,65
2003	345,622	261,625	138,930	1.218,04	3.131,427	146,644	40,665		5.282,96
2004	986,290	217,216	137,220	1.809,220	3.705,064	20,240	0,320		6.875,570
2005	906,007	149,600	70,716	2.180,693	3.303,275	65,680	8,300		6.684,271
2006	1.500,658	204,80	70,952	1.247,940	3.989,707	104,604	25,120		7.143,784
2007	1.623,598		115,460	1.256,941	3.966,375	630,260	19,900		7.612,534
2008	1.217,996		406,817	971,378	3.448,321	604,691			6.649,203
2009	1.382,867		173,652	3.139,221	2.790,206			77,220	7.563,166
2010	726,833	33,380	218,180	2.609,266	1.999,146	75,480		543,319	6.205,604
2011	580,496	43,985	224,043	4.226,190	1.328,855	236,737		882,930	7.523,236
2012	1,500				367,900	2,500			371,900
2013	15,40	64,500		845,500	267,196				1.192,596
2014		447,752	39,280	1.587,752	1.129,15		106,226		3.310,16
2015		105,240	89,440	2.018,606	849,639				3.062,925
2016		190,561	69,900	3.185,056	1.376,985				4.822,502
2017		1.029,520	630,420	2.695,350	605,859				4.961,149
2018		599,416	49,500	2.443,168	1.005,623				4.097,707
2019		351,820	35,100	2.834,150	1.196,894				4.417,964

Table 3. Croaker harvest in Rio Grande do Sul for the period 2000-2019 (in tons). Source: IBAMA/CEPERG (2000 to 2011); FURG (2012 to 2019).

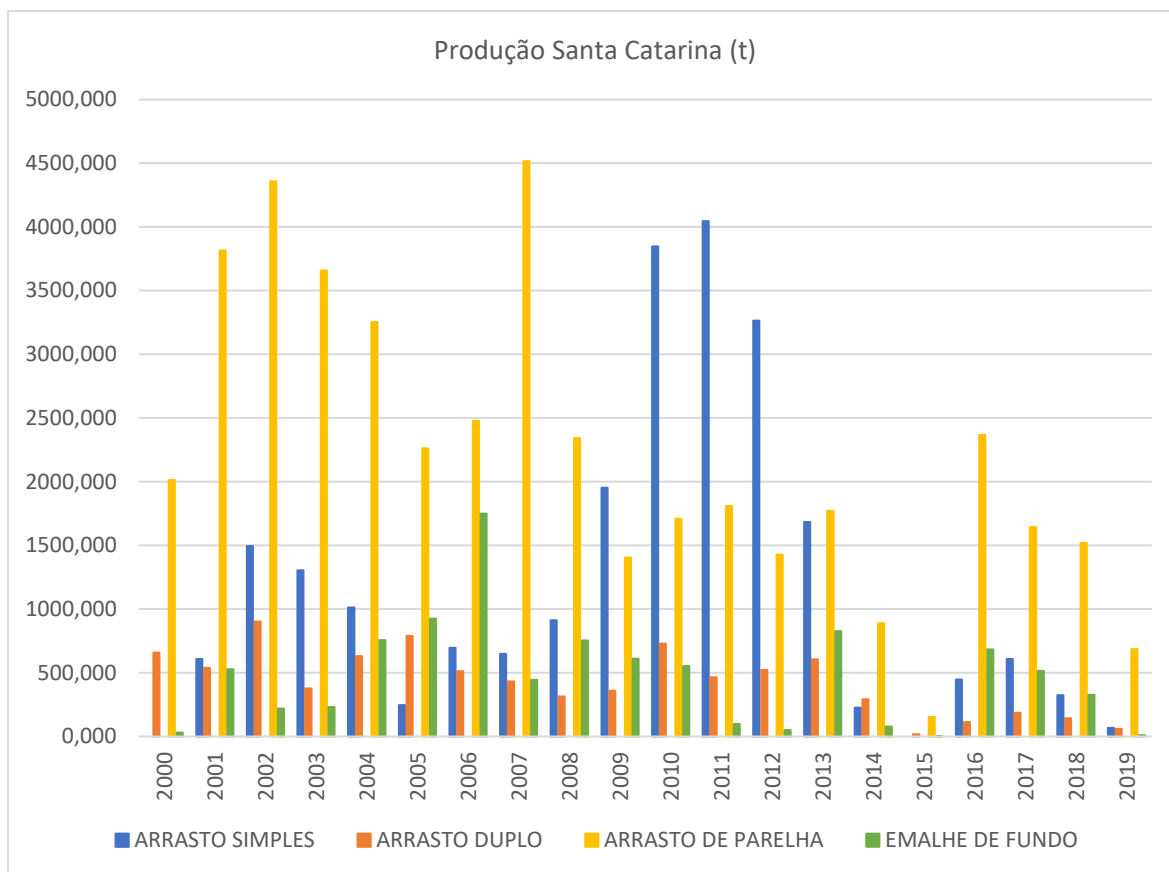


Figure 1. Chart representing Table 2. Croaker harvest in Santa Catarina for the period 2000 - 2019.

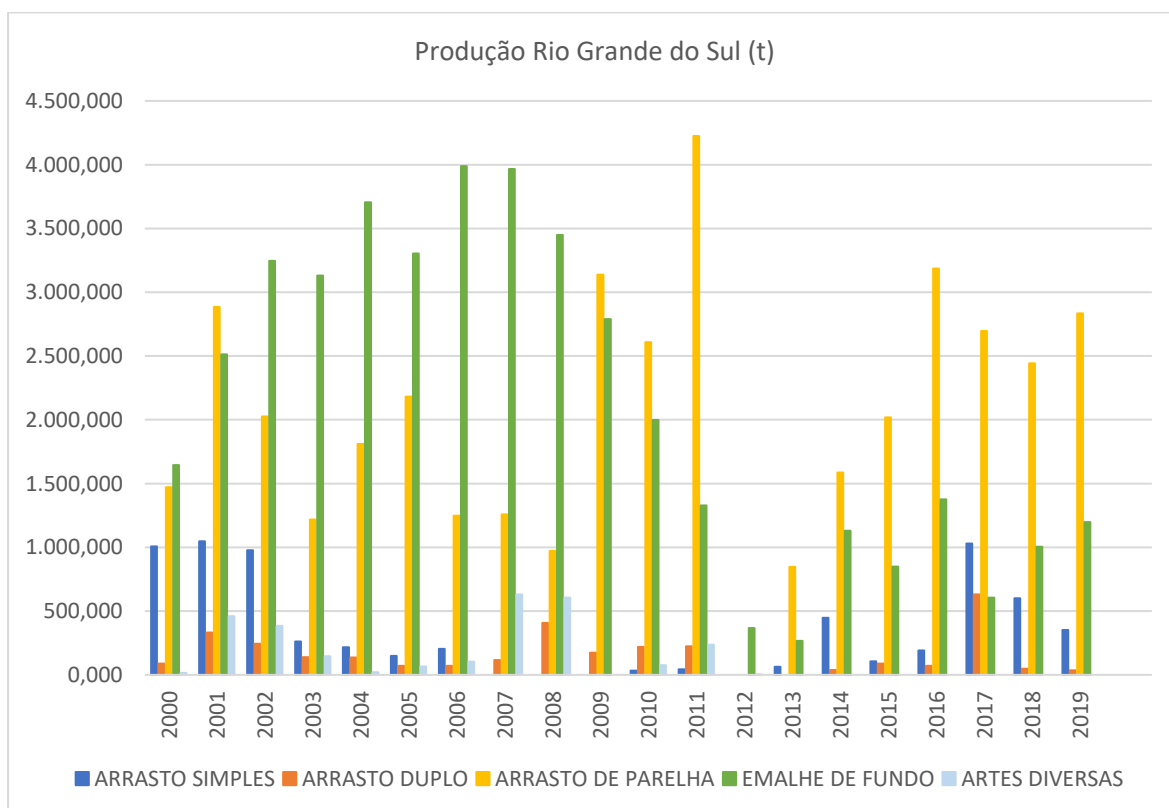


Figure 2. Chart representing Table 3. Croaker harvest in Rio Grande do Sul for the period 2000 - 2019.

3. General Description of the Fishery

3.1. Scope of the Fishery Regarding the MSC Program

- ✓ The fishery under evaluation is within the scope of the MSC standard for sustainable fisheries;
- ✓ It is a capture fishery;
- ✓ The fishing operations are not performed using poisons or explosive substances;
- ✓ The fishery is not carried out according to unilateral exceptions that could be controversial in the face of international agreements;
- ✓ There have been no successful claims against the group of clients due to violations related to forced labor in the past two years; and,
- ✓ The fishery is not under controversy and/or conflict.

3.2. Description of the Fishery

Umbrina canosai (croaker) is one of the most abundant and harvested species in the Southern Brazilian continental shelf (HAIMOVICI *et al.*, 2006). Mainly caught using trawls and gillnets, it is an industrial fishery. The states of Rio Grande do Sul and Santa Catarina are the main harvesters.

Industrial trawling started in the coast of Rio Grande do Sul in 1947, with two wooden vessels owned by the company Leal Santos: Albamar and Brisamar, both with 23.7 m of length, followed by two others in 1948, Libertador and Pioneiro of 17.1 and 15.7 m, respectively. These vessels used pair trawlers till 1952. In the early days, trawling took place at less than 20 m in depth between Rio Grande and Albardão, spreading after 1953 to reach Punta Médanos (37°S latitude) in Argentina. The main target species were white croaker (*Micropogonias furnieri*), king weakfish (*Macrodon atricauda*), croaker (*Umbrina canosai*), striped weakfish (*Cynoscion guatucupa*) and common hake (*Merluccius hubbsi*), the latter in Uruguayan and Argentinian waters (HAIMOVICI, *et. al.*, 2014).

In the 1970s, the activity increased in the South of Brazil due to the closure of the Uruguayan and Argentinian territorial waters to the Brazilian vessels. An additional reason was the tax incentives of the federal government for fisheries industrialization (PEZZUTO, *et al.*, 2007). Till the early 1980s, trawlers had between 22 to 35 m in length and between 250 to 650 HP. Otter trawls were common in winter and pair trawls during the rest of the year (HAIMOVICI, *et al.* 1989). The demersal fishery in the continental shelf takes place with otter trawls, pair trawls, double / single or outrigger nets and bottom gillnets (VASCONCELLOS, *et. al.*, 2007). Pair trawls represented the largest portion of the demersal species landings till 2001, when the gillnet fishery landings began to exceed those of the trawls (HAIMOVICI, *et. al.*, 2014).

The bottom gillnet is a type of net that is placed vertically at the bottom by means of anchors (poita), and are signaled by mooring buoys on the surface. The mesh size varies depending on the type of species harvested. Trawls can be of different types: (a) single, which uses a conic net that is trawled by a single vessel. The horizontal opening of the net is maintained by a pair of hydroports; (b) pair trawl, involving two vessels that should maintain uniform speed and constant distance between them. It consists in the use of a large conic net whose opening is maintained by the distance between the vessels, in general of the same size and; (c) double trawl, using two identical conic nets, with two hydroports to maintain the horizontal opening of the nets. They are trawled by an outrigger vessel to allow for simultaneous trawl. (CEPSUL/IBAMA, 1994).

In addition to the simple, double, pair trawl and gillnet modalities for harvesting croaker, a new industrial fishing gear appeared over the last few years in the South of Brazil: the midwater trawl. With

astonishing yields in the years 2011 and 2012, four times higher than the rest of the 300 vessels operating with pair trawls and bottom gillnets that had croaker as their main target. This is an illegal fishing gear, as it does not appear on the bottom trawls licenses (HAIMOVICI & CARDOSO; 2016). Through the use of the sonar shoal positioning technology, they discovered that in the depth range from 80 to 140 m, thick shoals concentrated some meters above the seabed during the reproductive migration towards the North. These shoals escaped the bottom trawls. These shoals are looked after from the month of May and, once they are positioned, several vessels trawl in depths till 40 m above the seabed.

The croaker midwater trawl could be considered as a fishery with a single target species. Indeed, 99.7% of the harvest is croaker, in contrast with bottom trawls and gillnets, that could be considered as multi-species. Individuals caught by midwater trawls were mostly adults, 91% males and 97% females. The majority were found in full reproductive activity; 65% of males and 64% females were classified in stage 5, with hydrated oocytes ready for spawning (HAIMOVICI e CARDOSO, 2017).

Otter and pair trawls have experienced little technological advances as time went by, although the fishing power has increased due to the addition of satellite navigation and the use of echo sounders. The use of small mesh (50 to 70 mm) and a pocket lining made both fisheries scarcely selective. Pair trawls target croaker. Recently, otter trawls were limited to the winter months, targeting mainly croaker, striped weakfish and, to a lesser degree, white croaker and dogfish (VASCONCELLOS *et al.*, 2007). Even if double trawl is a fishery that targets multiple species, croaker in Brazil represents an average of 27% of all the landings. Thus, it is the main target species landed per day per trawl (HAIMOVICI *et al.*, 2006).

The gillnet fishery is divided in: (a) coastal, also known as semi-industrial gillnet, performed by small size vessels that till 1992 were considered as part of the artisanal fishery and, (b) oceanic or industrial gillnet, performed by medium/large size vessels. The sailing autonomy of coastal vessels increased with time, staying at sea for as long as the oceanic fleet, using the same quantity of nets and fishing generally in the same area (CEPERG, 2009). Initially, the industrial fleet targeted elasmobranchs in the outer shelf. Later, it started fishing in all the shelf targeting white croaker (*Micropogonias furnieri*), striped Weakfish (*Cynoscion guatucupa*) and croaker (*Umbrina canosai*) (VASCONCELLOS; HAIMOVICI & RAMOS, 2014). According to these authors, over the last 20 years, the gillnet fishery suffered several challenges due to the changes in the fishing grounds of the different fleets and the increase in the size of mesh. The intensification contributed to the fall in density of the target species, estimated from the landings per Unit-Effort.

Each modality has specific technical characteristics, depending on the fishing grounds and target species. Por instance, pair trawls focus on coastal demersal fish. On the other hand, otter trawls target mainly shrimp. However, the vessels that use that fishing gear present significant overlap in fishing grounds and a lot of common catch species with the pair trawls fleet.

The industrial pair trawl fleet in the Southeast and South of Brazil included 324 vessels, 194 from the state of Santa Catarina and 130 from other states. As regards the authorized catch species, 57 vessels have as target demersal fish, 10 oceanic fish, 230 pink shrimp and 27 shrimp. In general, trawlers fishing in the slope (oceanic trawl) and on the continental platform (demersal fish) presented a slightly larger size in comparison with the shrimp vessels that also operate in the medium and outer shelf (QUEIROLO, *et al.*, 2016).

Analyzing the demersal gillnet fishery in the South of Brazil between 1999 and 2011, Vasconcellos; Haimovici e Ramos (2014) claim that the bottom gillnet fishery targeting “bottom fish”, basically croaker and striped weakfish (*Cynoscion guatucupa*), is predominant between May and September, with some vessels also fishing in spring and summer in deeper waters (>100 m). The results showed

that in time there was a gradual increase in the size of nets, growing from 4 km in length (1990s) to average lengths of 14.5 km for coastal gillnets (2008-2011) and 18.2 km for industrial gillnets (Santa Catarina), as well as in the size of vessels and in the hold capacity of all the fleets. For the Rio Grande fleets, the engine power of the fishing vessels increased. This was not the case in Santa Catarina (Table 5). The net heights did not change, with variations between 2 to 5 meters and the mesh size staying around 9 cm. As regards the number of active vessels, the authors estimated that it is above 350.

Periods	Rio Grande do Sul		Santa Catarina
	Coastal	Industrial	Industrial
Size of vessel (m)			
1999-2001	15,9	20,2	19,8
2005-2007	18	20,7	20,5
2008-2011	17,4	21,2	20,8
Engine power (HP)			
1999-2001	149	244	266
2005-2007	215	313	313
2008-2011	220	304	263
Hold capacity (ton)			
2005-2007	25,2	41,8	46,9
2008-2011	31,4	42,3	48,3
Length of net (km): bottom fish			
1999-2001	9,8	11,4	10,3
2005-2007	12,9	14,9	14,8
2008-2011	14,5	17	18,2

Table 5. Length of vessels and gillnets targeting bottom fish *Cynoscion guatucupa* and *Umbrina canosai* between 1999 and 2011. Source: Vasconcellos; Haimovici & Ramos (2014).

In 2012, the MPA/MMA published Interministerial Instruction 12/2012 (see Section 3.5.2) defining the maximum length (depending on the gross tonnage of the vessel) and height of the gillnets allowed in Brazilian territorial waters in the South and Southeast regions.

According to the Register of marine fishing gear and vessels in Brazil (2020), the following vessels are used for the industrial fishery in Santa Catarina and Rio Grande do Sul, with croaker as target species: (a) pair trawls: engine powered vessels, engine power 280 hp and average length 20 meters (b) single bottom trawls: engine powered vessels, engine power 340 hp and length from 20 to 26 meters and (c) gillnets: engine powered vessels, engine power 160-270 hp and length from 10 to 22m.

The trawl and bottom gillnet fisheries could be defined as multi-species. Haimovici e Cardoso (2016), analyzing the specific compositions of the different fleets landing at Rio Grande port from 2011 to 2012, concluded that croaker is an important target species for the bottom gillnet fleet (representing 32% of landings), otter trawl (36%) and pair trawl (28%). As regards the midwater trawl, croaker can be considered as the only target species, as 99,7% of the harvest corresponds to croaker.

Umbrina canosai is also commercially exploited by the Uruguayan and Argentinean fisheries. It is not a direct target species for the demersal coastal fishery. The landings of this species only represent a small and variable percentage of the total of landings in mixed species (HAIMOVICI, et al., 2021; RICO, 2000).

The croaker fishery takes place throughout the year all over its distribution area (Figure 3a). In Brazil most of the catch takes place in winter and spring, and in the South in summer and autumn. Figure 3b illustrates the general downward trend of the total landings from approximately 25,000 t in the 1970s, (more than 20,200 t in Brazil), with fish and landings decreasing gradually to a minimum of 5,300 t in

1998. Later, there was an increase to more than 15,000 t in the 2000s (Haimovici e Cardoso 2017), falling again to less than 8,000 t in 2018 (HAIMOVICI com Pers. 2019 *apud* KIKUCHI et. al, 2021).

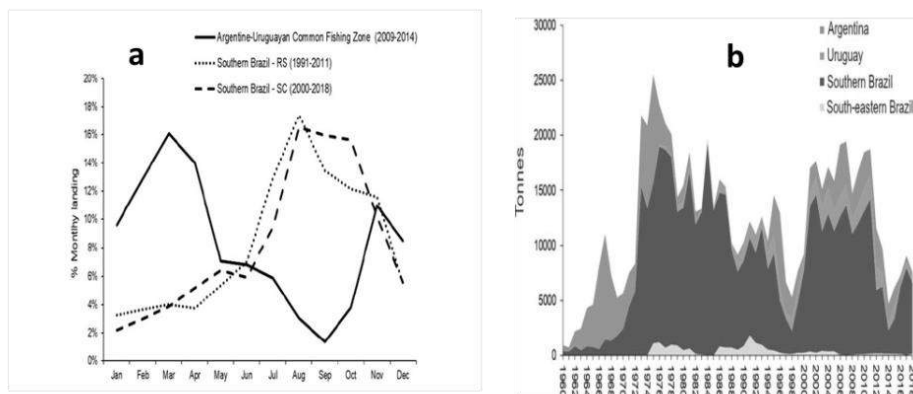


Figure 3a. Average monthly landings of *Umbrina canosai* in the South of Brazil (State of Santa Catarina-SC and State of Rio Grande do Sul-RS) and in the Argentine-Uruguayan Common Fishing Zone. 3b. Recorded landings of *Umbrina canosai* in the South and Southeast of Brazil, Uruguay and Argentina between 1960 and 2018. Sources: CEPERG; CTMFM; FIPERJ; IBAMA; IP; SAGyP; Sánchez e col. (2012); UNIVALI; VALENTINI e PEZZUTO (2006) en KIKUCHI, et. al., 2021.

3.3. Principle 1: Stock Status

Principle 1 of the MSC *standard* states that “a fishery should be managed in a way that avoids recruitment overfishing or stock reduction. Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe.”

3.3.1. Description of the Species

Croaker *Umbrina canosai* Berg, 1895 (Sciaenidae), belongs to the Sciaenidae Family, one of the more numerous of the Order Perciformes. It includes medium and large fish, living mainly in marine and euryhaline waters. However, it also includes fish living in fresh water, but in this case only in America. This species lives in the inner continental shelf (Nion, et. al., 2013). (Figure 4).



Figure 4. Croaker *Umbrina canosai* berg, 1895 (Scianidae). Source: Nion et al (2013).

Croaker is a demersal fish, endemic to the subtropical and temperate zones of the Southeast Atlantic between the São Tomé Cape in Brazil (22°S) (Figueiredo; Menezes, 1980) and the north of the San Matías Gulf in Argentina (41°30'S) (COUSSEAU; PERROTTA, 2013) (Figure 5).

Umbrina canosai, as many other world stocks, is a migratory species. The perpendicular movements to shore clearly follow the development stages of the individuals; "minor juveniles" are found in very coastal regions between isobaths 12-15 m; at the stage of "small juveniles", they start to move away, whereas in the "big juvenile" stage they live between isobaths 50-100 m; once they become "small adults", they travel to coastal regions at depths between 20 and 50 m.

Frequently, for this type of fish, migratory movements are not the same for different groups of sizes and sexes (HARDEN JONES, 1970). Zaneti (1979), reports that croaker stocks migrate towards the spawning area in Rio Grande do Sul (Brazil) in autumn (April/June). Within the distribution of the species, three zones can be identified: a) feeding area, in the region of Mar del Plata, Argentina, during the summer; b) breeding area, along the shoreline in the South of Brazil, between 31-33°S; c) development area, where individuals stay till they reach their first sexual maturity, in more distant regions (between 50-100 m) of the South coast of Brazil, between latitudes 29-34°S.

The species presents partial spawning, divided over the months. This allows for the sequential growth of different larvae batches. In turn, this reduces the intraspecific competition during adverse conditions in which all the eggs and larvae produced can be damaged by the stock in one season. This strategy is frequent in species of intermediate latitudes with long annual reproductive cycles (HAIMOVICI, 1982).

Spawning occurs gradually in the winter and spring months, after the displacement of adults towards the north, simultaneously to the arrival of colder waters to the shoreline of Rio Grande do Sul. According to Haimovici & Cousin (1989), in the following months, they move south towards the feeding areas, in the coastline of Uruguay and Argentina. The older females are the first to migrate. The males stay longer in the spawning areas and, together with the younger females, are the last ones to migrate to the south. The most important breeding area for the croaker south stock correspond to the intermediate shelf from the north of Rio Prata to the north of Rio Grande do Sul (HAIMOVICI *et al.*; 2006). Juveniles stay in the inner shelf during the winter till reaching 8 to 10 cm in length, migrating to the intermediate shelf in autumn. They remain there till the end of the second year of their life (20 cm) (HAIMOVICI *et al.*; 1996).

Average lengths reported at first maturity for males are 184 mm and for females 219 mm (HAIMOVICI, 1982). Sexual maturity starts for both sexes in the second year of life and is completed when the males and females reach 4 or 5 years of age, respectively (ZANETI, 1979). Fecundity for *Umbrina canosai* is highly variable between individuals, but increases consistently with total length (mm), total weight (g) and age (years). For instance, between sizes 187 and 377 mm, it varied between 44.6 and 1,450.6 thousand oocytes (HAIMOVICI, 1982). Female croaker presents slightly larger growth than males for all ages above 3 years (HAIMOVICI; GIRONDI, 1984).

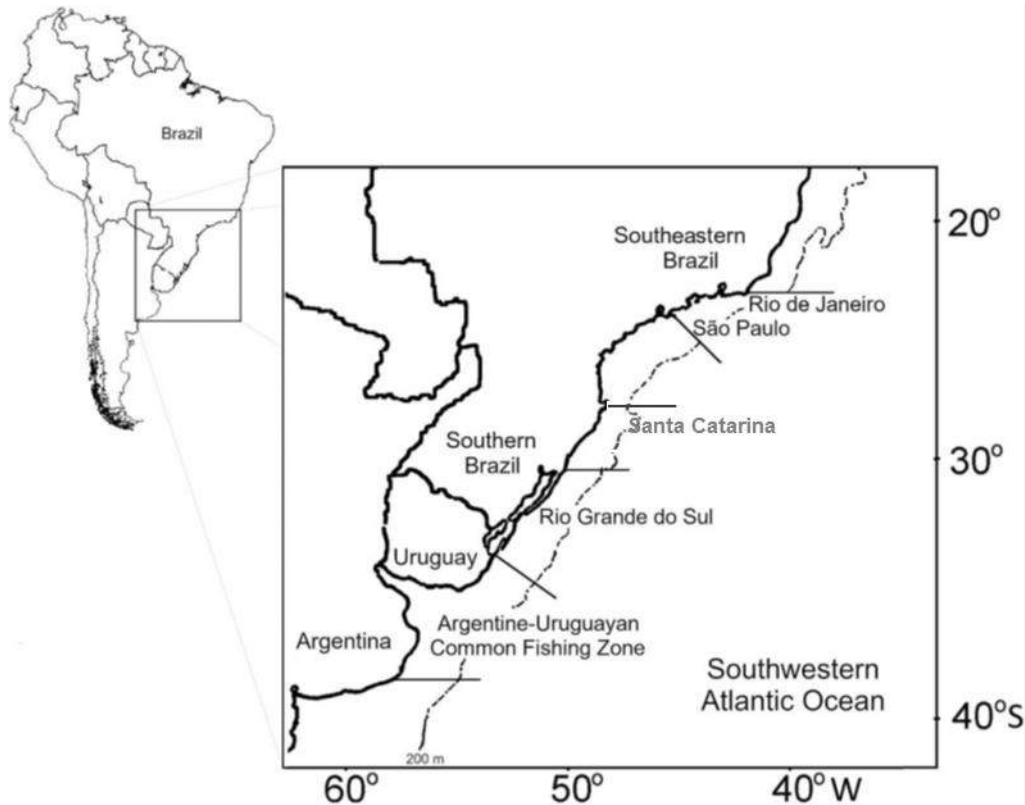


Figure 5. Main commercial fishing grounds of *Umbrina canosai* in the Southeast of the Atlantic Ocean. The lines indicate the approximate limits of the different harvest areas. Source: Kikuchi *et. al.*, (2021).

Among the adaptive characteristics that account for the species abundance in the South of Brazil, there is longevity (above 20 years), the migratory behavior with different feeding areas for the young and adults, high fecundity and long spawning season within a wide geographical area (HAIMOVICI e COUSIN; 1989).

Umbrina canosai diet includes benthic organisms: annelids, polychaetes, molluscs bivalves, ophiuroidea and crustaceans (amphipods, isopods, shrimp, crabs, etc. There is no difference among sexes, but it might vary according to size. For instance, for individuals below 180 mm, polychaetes and amphipods are predominant. As regards those individuals between 180 and 299, they feed on polychaetes, amphipods, ophiuroidea and crustaceans. As regards species above 300mm, they ingest more preys (HAIMOVICI; TEIXEIRA, 1989).

3.3.2. Stock Assessment

The stock identification and the establishment of the connection between neighboring populations are core questions to assess and manage marine coastal fish species (CANEL *et al.*, 2019). Two populations of *Umbrina canosai* are actually recognized: a small one in the Southeast of Brazil and a large migratory one from the South of Brazil to Argentina (HAIMOVICI, *et al.*, 2021; CANEL *et al.*, 2019).

Kikuchi *et. al.*, (2021) analyzed otoliths shape and growth parameters of *U. canosai*, identifying three consistent morphotypes of otoliths, one in the latitudinal north strip towards the Southeast of Brazil and two in the south strip of the South of Brazil towards Argentina, thus verifying the existence of discrete populations already described by Haimovici, *et al.*, 2021 and Canel *et al.*, 2019. Therefore, certain degree of mixture and segregation, that cannot be easily quantified, seems to exist between

the fish that spawn in Argentina, Uruguay and in the South of Brazil. Although genetically it could be considered that *U. canosai* barely creates a panmitic population (namely: the crossings between individuals of different genotypes take place at random), the genotypes of different otoliths reflect two life stories with different characteristics within the same population.

Regarding the distribution in the South, croaker should be considered as a single population as regards fisheries management. However, the potential existence of two groups or subpopulations in the South cannot be disregarded, overlapping in their reproductive features, but diverging in their feeding and migrations. Thus, additional studies are necessary, such as marking experiments or otolith microchemistry to widen the research about the migration patterns of *U. canosai* in the region (KIKUCHI *et. al.*, 2021).

The *U. canosai* stock status results from several reports from the South of Brazil. These reports show a clear reduction in its abundance over time, with high mortality and exploitation rates, reduction in the average size of catch and loss in reproductive potential. Thus, it has been included in the group in species with overfishing status in the South of Brazil.

Haimovici (1982), initially assessed the stock status using the Schaefer Equilibrium Biomass Model based in catch and effort data from 1976 to 1982, and total mortalities estimated according to catch curves for the same period. At the time, the annual equilibrium yield was around 15,000 t per year and the exploitation rate was above the sustainable level.

The evolution in biomass and mortality from 1977 to 1982 was analyzed by means of the catch and effort of a registered fleet, and cohort analyses based on total catch registers for Brazil, Uruguay and Argentina. In addition, the age composition of the landings in Rio Grande was taken into account. However, this analysis underestimated the total stock biomass, as not all the landings were recorded. Moreover, the natural mortality coefficient was also underestimated. Nevertheless, the results confirmed the high mortality rates, the quick reduction in abundance (less than a third of the abundance in 1976) and in the stock reproductive potential (HAIMOVICI, 1982).

Haimovici *et al.*, (2006), using pair trawl landing data in Rio Grande do Sul, between 1976 and 2001, determined population structure and mortality of croaker. Regarding the population structure in the South region, average length was 29 cm till 1989, showing a decreasing trend down to 24 cm in 2001 (Figure 6). This reduction in length is consistent with the age class registers, where the most frequent age class till the end of the 1980s was 4 years, with 33% occurrence. Over the last decade, it fell to age class 2, whereas age class 4 barely represented 6% (Figure 7). Regarding total mortality (Z) and survival rate (S) they showed an upward trend, moving from less than 0.4 to more than 0.8 years⁻¹. Considering a value of M between 0.2 and 0.3 years⁻¹, the exploitation rate (E) progressed over time, reaching values between 0.6 and 0.8 years⁻¹ (Figure 8).

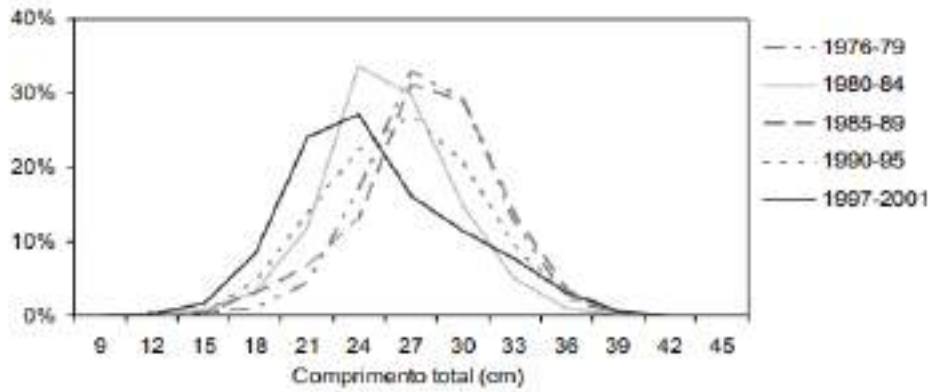


Figure 6. Croaker (*Umbrina canosai*) composition per length in the commercial pair trawl fishery in Rio Grande do Sul in the second half of each year in the periods under consideration. Source: Haimovici *et al.*, (2006).

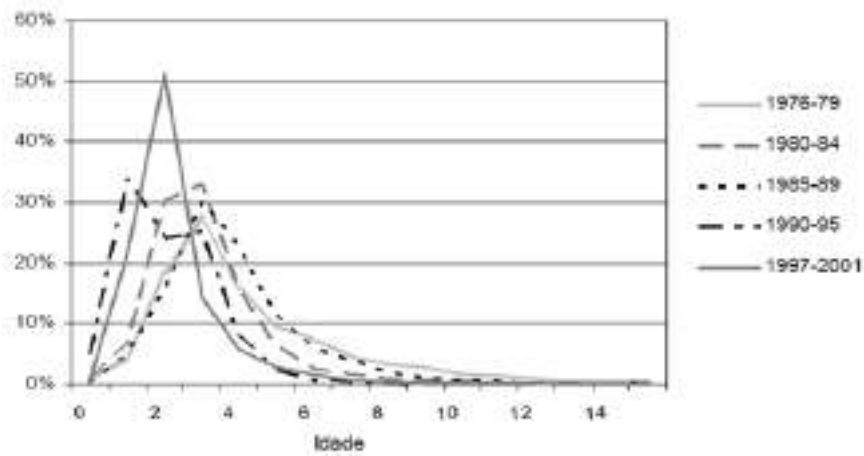


Figure 7. Croaker (*Umbrina canosai*) composition per age in the commercial pair trawl fishery in Rio Grande do Sul in the second half of each year in the periods under consideration. Source: Haimovici *et al.*, (2006)

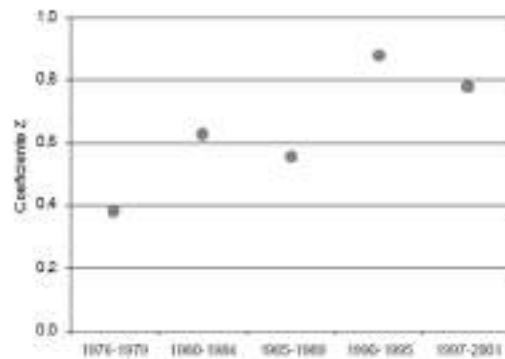


Figure 8. Average values of instantaneous total mortality coefficient (Z), during five years, for the croaker (*Umbrina canosai*) stock, estimated from the catch curves. Source: Haimovici et al., (2006)

Haimovici *et. al.*, (2006) determined the evolution of the stock biomass, using a Schaeffer Biomass Dynamic Model: $B_t = B_{t-1} + rB_{t-1} (1 - B_{t-1} / k) - Lt_{-1}$ and $CPUE_t = q B_t$, where B is the stock estimated biomass, C, catch, r, an intrinsic growth rate of the population, k, stock virgin biomass, q, harvest coefficient and t, the year. Parameters r, k and q were estimated minimizing the differences between the CPUEs observed and using a Bayesian method model. A priori, this model applies a probability distribution for parameter r and it is considered that all the errors occur in the relation between biomass and CPUE. Applied to a total series of South stock landings and to the CPUE of the fleet since 1976, the model showed the best adjustment to a series with an initial biomass of 132,000 t that quickly fell to 50,000 t in 1988 and 35,500 t in 2003 (Figure 9).

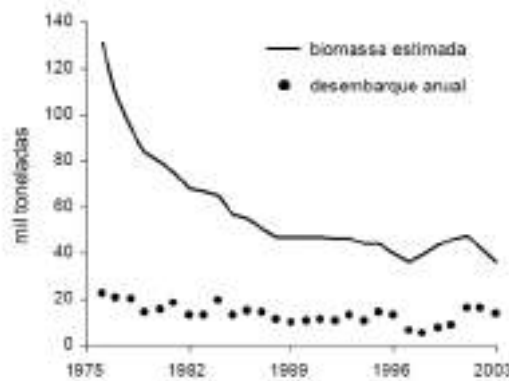


Figure 9. Biomass variation according to Schaeffer Biomass Dynamic Model, adjusted to catch and effort data of the pair trawl fleet in Rio Grande. Source: Haimovici et al., (2006)

Cardoso *et. al.*, (2019), based on the results of two projects, one financed by the Ministry of Environment, entitled “Fisheries monitoring in the extreme South of Brazil and assessment of impact on biodiversity” and a second one financed by the Foundation Grupo Boticário, estimated *Umbrina canosai* spawning potential ratio (SPR) with a model commonly used for assessing the remaining reproductive potential in fish populations under any level of fishing pressure. Based on length frequencies and basic life-cycle data, an estimate was obtained, calculating the difference between the expected length composition in a virgin situation and that observed in catches (HORDYK *et al.* 2014). The model assumes that the length composition shown is representative of the population: the length compositions are obtained from bottom trawl landing samplings. Bottom trawls could be considered a non-selective fishing gear. The result for *Umbrina canosai*, regarding the potential spawning fraction estimated for the period 2015 to 2017, was of 14% (Figure 10). This suggests that the fishing mortality in previous years caused a loss of 86% of the stock reproductive potential. The steep decline in older individuals could be considered an additional source of concern regarding the stock status.

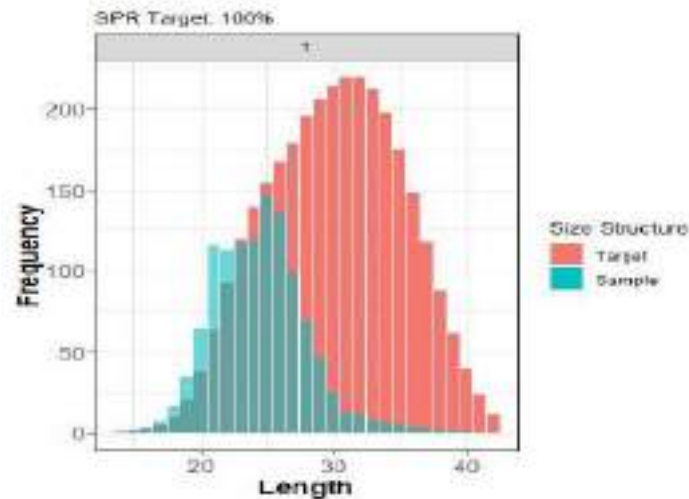


Figure 10. Length composition in red represents a virgin situation. Length composition in green represents the remnant of the *Umbrina canosai* stock between 2014 and 2017 in South Brazil with the addition of the fishing mortality. Source: Cardoso, *et. al*, (2019)

3.4. Principle 2: Interaction with other Components of the Ecosystem

The MSC Standard defines primary species as those non target species caught by the fishery, are within the scope of the standard and have management measures and limit or target reference points. On the other hand, it defines as secondary species those non-target species within the scope of the standard, but are not managed according to reference points; or those species outside the scope of the standard (amphibians, birds, reptiles, marine mammals) that are not considered as Endangered, Threatened and Protected Species (ETP).

Within the categories of primary and secondary species, we consider as main species, those that represent more than 5% or more of the catches of the UoA fleet, or those species considered as vulnerable that represent 2% of the catches of the UoA fleet. The species below those thresholds are considered as minor. Figure 11 shows the decision tree for the classification of species according to Principle 2.

Rosso (2015), analyzing demersal fishery data landed in Santa Catarina from 2010 to 2012, identified six main fishing areas, based on the spatial distribution of demersal stocks, in the spatial dynamics of the industrial fishery and the characteristics of the benthic environment in the Southeast-South Region of Brazil. Croaker was included in the South Inner Continental Shelf Group, together with other similar species (Table 6).

Grupo de Pesca	Profundidade	Limites latitudinais	Associação de recursos	Tipo de fundo	Tipo de frota
Plataforma Continental Interna Sul	Até 100m	28°S (Sul de Santa Catarina) a 34° S (Sul do RS)	Camarão barba-ruça; camarão santana; a brótea; bagre; betara; castanha; cabra; corcoroca; corvina; emplastro; espada; garoupa; goete; gordinho; linguado; linguado-areia, maria-mole; papa-mosca; pargo-rosa; peixe-porco; pescada; pescada-amarela, pescadinha-real, tiravira	Lamoso (47,9%) Arenoso (21,5%) Lamoso (23,6%) Arenoso	Emalhe fundo; Arrasto parelha; Arrasto duplo; Arrasto simples

Table 6- Fishing units for the Southeast-South of Brazil proposed for *Umbrina canosai*, with its corresponding features. Source: ROSSO, 2015.

3.4.1 Trawl Fishery

Trawl is a scarcely selective fishing gear that operates in areas of high biodiversity. According to Port (2015), in the South and Southeast it is distributed around two main areas: (a) covering the continental shelf area of the southeast bay of Brazil (22-28°S), with Penaeidae shrimp as target species of the double trawl vessels and; (b) in the area included in the continental shelf along Rio Grande do Sul, considered as one of the largest areas of the Brazilian continental shelf margin, that presents high primary and secondary productivity.

This area is responsible for the important trawl fishery targeting sciaenidae fish (*Micropogonias furnieri*, *Cynoscion acoupa*, *C. guatucupa*, *Umbrina canosai*), bastard halibut (*Paralichthyes* spp.) and shrimp species (*Pleoticus muellery* and *Artemesia longinaris*). Still, according to the author, it is likely that the benthic habitats of that area would be the most disrupted in the Brazilian continental margin, due to the long years of bottom trawl fishing pressure when harvesting different species. Habitats are composed mainly of sand and mud, and for the period under study, this was the area that presented the highest fishing productivity (0.5-0.6t/km²).

The industrial pair trawl fishery in the Southeast-South region of Brazil is one of the most traditional. According to the analysis by Port (2015), landing data in Santa Catarina from 2003 to 2011 by the industrial trawl fleet, resulted in the identification of approximately 130 fish species, more than 15 crustacean species (shrimp, lobster and crabs) and 7 mollusc species (squids, octopuses and bivalves), in a depth range of 10 m to 800 m. Considered as a multi-species fishery of demersal fish, the main harvested species are sciaenidae fish such as croaker (*Umbrina canosai*), white croaker (*Micropogonias furnieri*), and striped weakfish (*Cynoscion guatucupa*) (ROSSO, 2015; PORT, 2015). During a meeting with the *Umbrina canosai* processing company in Santa Catarina, it was confirmed that in the trawl fishery those three species are harvested. However, it was impossible to estimate the catch percentage of each species.

Regarding the ecosystem structure, Port (2015) analyzed the impact of the industrial trawl fishery on the ecosystems of the Southeast/South continental margin of Brazil. The conclusion was that more than 74% of the area trawled by this type of fleet is located in the intervals of latitudes South (29°-

34°) and Center (25°-29°). Of the total accumulated trawled area, almost 60% was covered with muddy sand and mud and the rest were substrates with fine and medium sand. In areas above 200 m in depth, and on the interval of latitude North (19°-25°), are found respectively sediments of the slope and gravel substrates. They were barely impacted by the trawl fishery. Of the landed biomass (from 2003 to 2011), almost 63% was original from areas with muddy sand and mud substrates, which is precisely the croaker habitat according to other authors.

This study also defined three main “fishing strategies”, two with croaker as target species (Table 7), according to the identification from Dias *et al.* (2012), *apud* Port (2015). The three strategies are: (a) shrimp trawl (AC), operating in the inner and medium shelf, mainly using pair trawls, and concentrating in two different areas: one between 24°S-29°S and the other south of 29°S, targeting some coastal shrimps and a group of demersal fish including croaker (*U. canosai*), Atlantic searobin (*Prionotus punctatus*) and bastard halibut (*Paralichthys* spp.), representing 60% of the landed biomass between 2003-2011 for this strategy; (b) slope trawl (AT), operating in the slope areas (250-400 m in depth), using double and single trawls that have as main target the Brazilian codling (*Urophycis mystacea*), common hake (*Merluccius hubbsi*) and monkfish (*Lophius gastrophysus*) e; (c) Pair trawl (AP), operating in the inner shelf (<75m) with two vessels trawling a single net. Target species are some sciaenidae fish, including *Umbrina canosai*, white croaker (*Micropogonias furnieri*), striped weakfish (*Cynoscion guatucupa*), yellow hake (*C. acoupa*) and Jamaica weakfish (*C. jamaicensis*). They represent almost 78% of the total landed biomass for the period under analysis. According to the author, the shrimp trawl fishing strategy (AC) had the highest impact on the substrate.

To assess the fishery impacts as regards the Average Trophic Level, the Fishing in Balance Index (FiB) was analyzed. Fishing strategies AC and AT, followed the general trawl pattern, whereas the pair trawl started to register a decline in the FiB value from 2008, reaching negative values in 2010 and 2011. Port (2015) argues that this situation for AP could be an indicator that the environment exploited by this fishing strategy (inner shelf) is suffering a disruption in its ecological functions.

Estratégia de pesca	Espécies-alvo		Outras espécies	
Arrasto de camarão	camarão-rosa	<i>Farfantepenaeus</i> spp.	lula (moluscos)	<i>Doryteuthis plei</i>
	camarão-sete-barbas	<i>Xyphopenaeus kroyeri</i>	abrótea	<i>Urophycis brasiliensis</i>
	camarão-barba-ruça	<i>Artemesia longinaris</i>	abrótea-de-profundidade	<i>Urophycis mystacea</i>
	camarão-santana	<i>Pleoticus muelleri</i>	merluza	<i>Merluccius hubbsi</i>
	castanha	<i>Umbrina canosai</i>	peixe-sapo	<i>Lophius gastrophysus</i>
	cabra	<i>Prionotus punctatus</i>	congrão-rosa	<i>Genypterus brasiliensis</i>
	linguados	<i>Paralichthys</i> spp.	maria-mole	<i>Cynoscion guatucupa</i>
			corvina	<i>Micropogonias furnieri</i>
Arrasto de parelha			palombeta	<i>Chloroscombrus chrysurus</i>
			raias emplastro	Família Rajidae
	castanha	<i>Umbrina canosai</i>	pescada-amarela	<i>Cynoscion acoupa</i>
	corvina	<i>Micropogonias furnieri</i>	goete	<i>Cynoscion jamaicensis</i>
	maria-mole	<i>Cynoscion guatucupa</i>	cabra	<i>Prionotus punctatus</i>
			raias emplastro	Família Rajidae
			pescadinha-real	<i>Macrondon ancyllodon</i>
		gordinho	<i>Perpilus paru</i>	
		olho-de-boi	<i>Seriola lalandi</i>	

Table 7- Fishing strategies with *Umbrina canosai* as target species and other species caught. Source: PORT. 2015.

Summarizing, analyzing the biological indicators, Port (2015) identified two scenarios for the trawl fishery in the South and Southeast: (a) coastal exploitation of stocks, presenting wider diversity and lower trophic level organisms, less vulnerability and more resilience to the fishing activity and; (b) exploitation of external areas to the shelf and slope, less diversity, with higher trophic level species, more vulnerable and less resilient to the fishing activity.

The study by Port (2015) did not consider the discards, which could imply an underestimate of the values. The author considers that a total catch evaluation should be performed, including discard data. Indeed, according to Perez *et. al* (2001), they represent on average 33% of the catch (pair and single) and 45% (double catch). This evaluation would also allow a better understanding of the interaction of the fishing gear with the ocean seabed.

The ecological impact of the disruptions caused by the trawl fishery depend on the equipment used and the type of substrate. According to Kaiser *et al.*, (2006), those communities that inhabit the shelf with sand and mud substrate present significant negative impacts in the short-term when they suffer the otter trawls. However, those impacts tend to be of short duration. This disruption in the seabed is similar to the one produced by double and pair trawls used in the Brazilian coast.

64 bycatch species were identified in 47 sets monitored in the spring of 2011 and summer and autumn of 2012 by observers onboard of bottom trawls. Of those, 37 teleost fish (representing 92.5% in number and 78.4% in weight), 13 elasmobranchs (5% in number and 21.3% in weight), 11 crustaceans (1.6% in number and 0.8% in weight), 3 molluscs, in addition to cnidarians and echinoderms that were not identified at the level of species (representing less than 1%). The bycatch percentage (40%) was larger between 10 to 20 m in depth, decreasing at greater depths (CARDOSO, *et al.*, 2021).

Among discards, the presence of 5 teleost fish with commercial value was observed: *M. furnieri* (2% in number and 3% in weight), *U. canosai* (8% and 7%), *C. guatucupa* (14% and 8%), *Macrodon atricauda* (2% and 2%) and *Urophycis brasiliensis* (1% and 1%). The first three species included fish with a total length below 20 cm (sexually immature individuals), *M. atricauda* presented fish mainly below 20 cm (males can be sexually mature and females are immature) and *U. brasiliensis* mainly below 30 cm (include mature organisms).

Taxonomic group	Species	Taxonomic group	Species
Elasmobranchs	<i>Sympterygia acuta</i>	Teleost fish	<i>Paralichthys orbignianus</i>
Elasmobranchs	<i>Atlantoraja platana</i>	Teleost fish	<i>Oncopterus darwinii</i>
Elasmobranchs	<i>Atlantoraja cyclophora</i>	Teleost fish	<i>Paralichthys patagonicus</i>
Elasmobranchs	<i>Zapterix brevirostris</i>	Teleost fish	<i>Astroscopus sexspinosus</i>
Elasmobranchs	<i>Psammobatis sp.</i>	Teleost fish	<i>Pagrus pagrus</i>
Elasmobranchs	<i>Sphyrna lewini</i>	Teleost fish	<i>Gymnachirus nudus</i>
Elasmobranchs	<i>Sympterygia bonapartii</i>	Teleost fish	<i>Selene sp.</i>
Elasmobranchs	<i>Squatina guggenheim</i>	Teleost fish	<i>Citharichtays spilopterus</i>
Elasmobranchs	<i>Atlantoraja castelnaui</i>	Teleost fish	<i>Engraulius anchoita</i>
Elasmobranchs	<i>Mustelus sp.</i>	Teleost fish	<i>Lagocephalus laevigatus</i>
Elasmobranchs	<i>Pseudobatos horkellii</i>	Teleost fish	<i>Menticirrhus americanus</i>
Elasmobranchs	<i>Myliobatis sp.</i>	Teleost fish	<i>Zalieutes mcgintyi</i>
Elasmobranchs	<i>Gimnura altavela</i>	Teleost fish	<i>Balistes capriscus</i>
Teleost fish	<i>Paralonchurus brasiliensis</i>	Teleost fish	<i>Paralichthys isosceles</i>
Teleost fish	<i>Stephanolepis hispidus</i>	Teleost fish	<i>Oligoplites saliens</i>
Teleost fish	<i>Cynoscion guatucupa</i>	Teleost fish	<i>Percophis brasiliensis</i>
Teleost fish	<i>Trichiurus lepturus</i>	Teleost fish	<i>Syngnathus folletti</i>
Teleost fish	<i>Umbrina canosai</i>	Crustaceans	<i>Arenaeus cribrarius</i>
Teleost fish	<i>Prionotus punctatus</i>	Crustaceans	<i>Dardanus insignis</i>

Teleost fish	Trachurus lathami	Crustaceans	Hepatus pudibundus
Teleost fish	Steliffer sp	Crustaceans	Ovalipes trimaculatus
Teleost fish	Peprilus paru	Crustaceans	Portunus spinimanus
Teleost fish	Micropogonias furnieri	Crustaceans	Artemesia longinaris
Teleost fish	Dules auriga	Crustaceans	Callinectes sapidus
Teleost fish	Macrodon atricauda	Crustaceans	Libinia spinosa
Teleost fish	Brevoortia pectinata	Crustaceans	Loxopagurus loxochelis
Teleost fish	Ctenosciaena gracilicirrus	Crustaceans	Scyllarides sp.
Teleost fish	Porychthys porosissimus	Molluscs	Adelomelon brasiliensis
Teleost fish	Chylomicterus spinosus	Molluscs	Doryteuthis sp. (lulas)
Teleost fish	Cynoscion jamaicensis	Molluscs	Octopus tehuelchus
Teleost fish	Urophycis brasiliensis	Cnidarians	-
Teleost fish	Mullus argentinus	Echinoderms	-

Table 8- Sampled species from the bycatch in monitored trawls in the South of Brazil. Data from 2011-2012. Source: Cardoso *et al.*, (2021).

3.4.2 Bottom gillnet fishery

Bottom gillnet, used to catch several fish and crustacean species (PIO, 2011), is considered a passive fishing gear, catches occur by the retention of fish in the net meshes. It is considered as one of the most selective fishing gears as regards the size and species harvested. Indeed, in addition to the fishing ground location, the mesh size can be chosen according to the target species. Therefore, gillnets can be used from the shore to the high seas (HAIMOVICI *et al.*, 2006).

As the fishery targets mainly demersal fish, such as angel sharks (*Squatina guggenheim*, *Squatina occulta* and *Squatina argentina*), white croaker (*Micropogonias furnieri*) and croaker (KLIPPEL, *et al.*, 2005), it is obvious that there is lack of information regarding bycatch, fishing effort and fishing grounds of those fisheries (PIO, 2011).

According to Ferreira (2009), the bottom gillnet fishery in Rio Grande do Sul (RS) has three main target species: white croaker (*Micropogonias furnieri*), croaker (*Umbrina canosai*), and striped weakfish (*Cynoscion guatucupa*). The specificity of the bottom gillnets of the Southeast-South industrial fleet according to the target species, is represented in Table 9.

Target species	Mesh (cm)	Height (m)
Croaker (<i>Umbrina canosai</i>)	9-10	3-4
Striped weakfish (<i>Cynoscion guatucupa</i>)	9-10	3-4
White croaker (<i>Micropogonias furnieri</i>)	13-16	2-4
Southern kingfish (<i>Menticirrus spp</i>)	7	1,5-3
Flounder (<i>Paralichthys isosceles</i>)	20	2-3
Guitarfish (<i>Rhinobatos spp</i>)	18	3
Demersal dogfish	18-20	2-4
Angel shark	35-40	3,6-5

Table 9. Characteristics of the bottom gillnets according to the main target species. Source: adapted from Klippel *et al.*, 2005.

Pio (2011), analyzing the data (2001 to 2008) of the bottom gillnet industrial fleet in the Southeast-South of Brazil, concluded that there is a species composition pattern in the different mesh sizes.

Indeed, croaker is caught using a 10 cm net mesh and white croaker using a 13 cm net mesh, thus confirming the values presented by Klippel *et al.*, (2005).

Performing a characterization of the industrial bottom gillnet fisheries, with data from 2001 to 2008, in the Southeast-South of Brazil, the same author highlighted the existence of 5 fishing groups, according to the respective target species, bycatch, fishing gear and fishing grounds. In one of the groups, croaker was the main stock harvested, followed by white croaker, and its bycatch included mainly Brazilian codling, lumptail searobin, striped weakfish and different species of hake. It used mainly the 100 mm mesh and operated mostly in the South region of Santa Catarina and North of Rio Grande do Sul.

Fogliarini (2017), assessing the bycatch in the gillnet fishery in the South of Brazil, with data between 2013 and 2015 obtained by the observers onboard of vessels in Rio Grande, obtained an average discard rate of 6% for the sets targeting the bottom fish category (hake and croaker).

In the bottom gillnet sets, white croaker and bottom fish (croaker and hake) categories, discards included crustaceans, echinoderms, chondriactians, teleost fish, reptiles and mammals (Table 10). From these, chondriactians represented most of the discarded biomass (34%), and the Brazilian guitarfish *Pseudobatos horkeli* and the angel shark *Squatina* spp, represented 20.4% of the total biomass (Fogliarini, 2017). Due to the reduction in abundance of these species over time, the landings and commercialization are banned (Brazil, 2014). Therefore, even if they have commercial value, they are discarded onboard.

From the teleost fish, Argentine menhaden (*Brevoortia pectinatai*) was one of the most discarded, around 23% of the total biomass. Discard is caused by its low commercial value. The catch of 6 franciscana dolphins (*Pontoporia blainvillei*) was registered in 111 sets targeting bottom fish (croaker and hake) performed close to the coast (the species is distributed in waters below the 30 m isobath 30m). Also, the catch of 1 green turtle (*Chelonia mydas*) was recorded in sets targeting hake and croaker. Fogliarini (2017) concluded that the highest discard rates occurred in areas near the coast, close to the 50m isobath, during the summer, in 0 to a 20 m depth ranges, decreasing with greater depths.

Dolphins in Brazil were classified as “Vulnerable” in the National Action Plan for Aquatic Mammals (IBAMA, 2001) and appear in the Official List of Bycatch Threatened with Extinction. Contudo, Ferreira (2009), analyzing the dolphin bycatch from 1994 to 2005, observed that the highest dolphin catch rates were related with white croaker nets, that the catches diminish when the fishing effort moves away from the shoreline and that, since 2000, there was a reduction in bycatch. The conclusion was that the decline in the white croaker landings by the gillnet fleet and the increase in croaker landings suggests a change in the target species of the fleet, causing a space and time adjustment in the fishing grounds, fishing at 35 m in depth. Thus, there is a reduction in the overlap of the fishing grounds with the dolphin concentration areas. This could also indicate a drop in the species abundance.

Comparing the discard rates of the gillnet fisheries studied by Fogliarini (2017) with those of the bottom trawl fisheries in the South of Brazil, it can be observed that the discard of the gillnet fleet targeting bottom fish was lower.

As indicated in items **3.4.1** and **3.4.2**, and based on the data obtained from the review of the literature, it can be claimed that during the catch of croaker with the trawl and bottom gillnet fleets in the Southeast/South region of Brazil, the catch of other species also takes place. Among them, teleost fish, crustaceans, molluscs and elasmobranchs. Regarding discards in the bottom trawl fishery, Artigo claims the presence of cnidarians and echinoderms. For the bottom gillnet fishery, among the bycatch the following species were observed: teleost fish, crustaceans, elasmobranchs, reptiles and mammals.

Reptiles and mammals were reported in a revision of the article. From those species, the Brazilian guitarfish (*Pseudobatos horkellii*), angel shark (*Squatina* sp.), franciscana dolphin (*Pontoporia blainvillei*) and the green turtle (*Chelonia mydas*) are considered as ETP species. However, further research would be necessary to confirm the list of non-target species in the croaker trawl and bottom gillnet fishery. It is not certain if any of the other mentioned species is managed according to biological reference points. Therefore, they would be considered as “secondary species”, as defined by the MSC. Nevertheless, there is not enough information regarding bycatch or discard to classify these species as “minor” or “main” secondary species.

Taxon	Common name	Taxon	Common name
Filo cnidaria	Água viva	<i>Porichthys porosissimus</i>	Mamangava
Ordem Isopoda	-	<i>Lophius gastrophysus</i>	Peixe-sapo
Infraordem Brachyura	-	<i>Zenopsis conchifer</i>	Peixe-galo-de-fundo
<i>Dardanus</i> sp	Ermitão	<i>Prionotus nudigula</i>	Cabrinha
<i>Farfantepenaeus</i> sp	Camarão-rosa	Prionotus sp.	Cabrinha
<i>Metanephrops rubellus</i>	Pitú	<i>Epinephelus marginatus</i>	Garoupa-verdadeira
<i>Acanthocarpus alexandri</i>	Caranguejo pontudo	<i>Hyporthodus niveatus</i>	Garoupa-pintada
Classe asteroidea	Estrela-do mar	<i>Priacanthus arenatus</i>	Olho-de-cão
Classe Echinoidea	Ouriço-do-mar	<i>Lopholatilus villarii</i>	Batata
<i>Callorhynchus callorynchus</i>	Peixe-elefante	<i>Pomatomus saltatrix</i>	Anchova
<i>Squalus</i> sp.	Cação bagre	<i>Parona signata</i>	Peixe-tábua
<i>Squatina guggenheim</i>	Cação-anjo-espinhoso	<i>Chloroscombrus chrysurus</i>	Palombeta
<i>Squatina</i> sp	Cação-anjo	<i>Trachinotus marginatus</i>	Pampo
<i>Isurus oxyrinchus</i>	Cação-anequim	<i>Pagrus</i>	Pargo-rosa
<i>Mustelus</i> sp	Cação	<i>Cynoscion guatucupa</i>	Pescada-olhuda
<i>Mustelus schimitti</i>	Cação-cola-fina	<i>Cynoscion jamaicensis</i>	Goete
<i>Rhizoprionodon lalandii</i>	Cação-cortador	Menticirrhus sp.	Papa-terra
<i>Sphyrna</i> sp.	Cação-martelo	<i>Paralanchurus brasiliensis</i>	Maria-luiza
<i>Pseudobatos</i> sp.	Cação-martelo	<i>Nemadactylus bergi</i>	Lambreta
<i>Atlantoraja</i> sp.	Raia-viola	<i>Astroscopus sexspinosus</i>	Miracéu
<i>Bathyraja</i> sp	Raia-emplastro	<i>Percophis brasiliensis</i>	Tira-vira
<i>Sympterygia acuta</i>	Raia-emplastro	<i>Trichiurus lepturus</i>	Peixe-espada
<i>Dasyatis hypostigma</i>	Raia-prego	<i>Katsuwonus pelamis</i>	Bonito-listrado
<i>Myliobatis</i> sp.	Raia	<i>Paralichthys patagonicus</i>	Linguado-branco
Tubarão não identificado	-	<i>Paralichthys</i> sp.	Linguado-branco
Raia não identificada	-	Familia bastidae	Peixe-porco
<i>Conger orbignianus</i>	Congro	<i>Dermochelys coriácea</i>	Tartaruga-de-couro
<i>Brevoortia pectinata</i>	Savelha	<i>Chelonia mydas</i>	Tartaruga-verde
<i>Genidens</i> sp.	Bagre	<i>Pufinus griseus</i>	Pardela-escura
<i>Urophycis brasiliensis</i>	Abrótea	<i>Pontoporia blainvillei</i>	Toninha

Table 10. Discard biomass composition of the bottom gillnet fishery between August 2013 and March 2015. Sets targeting white croaker and bottom fish (croaker and hake) categories. Source: Fogliarini (2017).

3.5. Principle 3: Management System Background

3.5.1. General Management

From 1962 to 1989, fisheries in Brazil were managed by the SUDEPE (Superintendency of Fisheries Development). It had in its jurisdiction all the main fishery management tools. According to Dias-Neto (2010), the rise and fall of the national fishery took place in this period. From 1989 till 1998, the environmental body IBAMA remained responsible for the fisheries management. It was not until 1998 that the Department of Fisheries and Aquaculture (DPA-MAPA) was created and the fisheries were divided between “overexploited” (under the jurisdiction of IBAMA) and “underexploited” (under the jurisdiction of DPA). In 2003, the government creates the Special Secretariat of Aquaculture and Fisheries (SEAP), that maintains all the roles of the DPA but it is no longer linked to the MAPA. The SEAP falls under the jurisdiction of the Presidency.

In 2009, **Law nº 11.959** transformed the Special Secretariat of Aquaculture and Fisheries (SEAP) into the Ministry of Fisheries and Aquaculture (MPA). Some of the roles were not clearly divided between the MPA and the Ministry of the Environment (MMA/IBAMA). Hence, **Decree n º 6.981 / 2009** was published, joining the efforts of MPA and MMA for the sustainable use of resources, thus establishing the Shared Management System (SGC). The SGC aimed to support the drafting and implementation of rules, criteria and management measures and it was structured through Permanent Management Committees (CPGs), of consulting and advisory nature (IPEA, 2013). Among the CPGs, the Permanent Management Committee for the Sustainable Use of Southeast and South Demersal Stocks - CPG Demersal Southeast and South would be responsible for the *Umbrina canosai* fishery. This CPG was created by **Directive Nº 9/2015**.

The fishing activity is regulated by **Law nº 11.959, dated June 29th, 2009** that rules the National Policy for the Sustainable Development of Aquaculture and Fisheries (BRAZIL, 2009). The law was enacted to promote:

- The sustainable development of fisheries and aquaculture as a source of food, employment, income and leisure, guaranteeing the sustainable use of the fishing stocks, as well as the optimization of the ensuing economic benefits, in harmony with the preservation and conservation of the environment and the biodiversity.
- The management, promotion and surveillance of the fishing activity.
- The preservation, conservation and recovery of fishing stocks and aquatic ecosystems.
- The socioeconomic, cultural and professional development of those involved in the fishing activity, as well as their communities.

The last few years have seen a lot of changes in the institutions responsible for the management of fishery resources in Brazil. In 2015, The Ministry of Aquaculture and Fisheries was extinguished and incorporated to the Ministry of Agriculture, Livestock and Food – MAPA, in ministerial reform of October 2015. In March 2017, the Secretariat of Aquaculture and Fisheries from the MAPA is transferred to the Ministry of Industry, Foreign Trade and Services - MDIC, which becomes responsible for the national fisheries and aquaculture policy. In November of the same year, the Secretariat of Aquaculture and Fisheries was transformed again into the Special Secretariat of Aquaculture and Fisheries (SEAP), linked to the Presidency of the Republic.

In January 2019, **Provisional Measure nº 870/2019** terminates the SEAP and, together with **Decree nº 9.667, dated January 2nd, 2019** (later revoked by **Decree nº 10.253, 2020**), transferred to the Ministry of Agriculture, Livestock and Food, by means of the Secretariat of Aquaculture and Fisheries, the competence of the national fisheries and aquaculture policy, even the management of the use of the

resources and the licenses, registers and authorizations to practice the aquaculture and fishing activity. Moreover, the decree highlighted the jurisdiction of the Ministry as regards research, cooperatives and associations and international aquaculture and fisheries negotiations. This implied that fisheries management in Brazil, shared in the past between the Secretariat of Fisheries and the Ministry of the Environment (MMA), now became the only responsibility of the Ministry of Agriculture, Livestock and Food (MAPA).

The Secretariat of Aquaculture and Fisheries (SAP/MAPA) has three departments: Department of Aquaculture Management and Development (DEPOA), Department of Fisheries Management and Development (DEPOP) and Department of Aquaculture and Fisheries Registering and Monitoring (DRM).

Regarding fisheries management, it is the responsibility of DEPOP to: (I) propose policies, programs and actions for the development of sustainable fisheries; (II) present management measures and criteria for fishing activities; (III) organize the institutional internal and external support on those issues related to fisheries; (IV) monitor goals and performance indicators established for the management and development of the fisheries; (V) implement the actions derived from treaties, agreements and conventions with foreign governments and national and international entities; (VI) analyze authorization requests regarding management; (VII) coordinate the Management System for the Sustainable Use of Fishing Resources; (VIII) subsidize policies to encourage fisheries research; (IX) put in place health control policies, programs, actions, measures and criteria on the vessels and; (X) grant an economic subsidy to the diesel oil price. It is the responsibility of DRM to: (I) design fisheries register and monitoring policies; (II) coordinate, organize and maintain the General Fisheries Registry; (III) support the standardization of fishing activities; (IV) coordinate and guide the procedures for awarding requests of licenses, permits and authorizations for operating in the aquaculture and fishing sectors; (V) issue authorizations for rented or nationalized foreign fishing vessels, according to the assumptions foreseen in fishing international agreements signed by the Federal Republic of Brazil; (VI) control the issuance of fishing licenses, permits and authorizations in the national territory, according to the only paragraph of article 29; (VII) coordinate the fishery data gathering and systematization system; (VIII) provide to the federal public administration organisms the General Fisheries Registry data regarding licenses, permits and authorizations for operating in the aquaculture and fishing sectors, in order to maintain an automatic register of the recipients in the Federal Technical Registry of Potentially Contaminating Activities and Users of Environmental Resources; and (IX) coordinate and issue the legal, reported and regulated catch certificate, for the export of fishery products.

In April 2019, the federal government published **Decree Nº 9.759** terminating the Management Committees. The Secretariat of Aquaculture and Fisheries (SAP) published on the MAPA website (<http://www.agricultura.gov.br/assuntos/aquicultura-e-pesca/comites-permanentes-de-gestao-cpgs>) that the procedures to reestablish the Committees by Decree had been launched.

During the drafting of this preevaluation, the team was informed that the CPGs would be reestablished as soon as possible, but no expected date was indicated. Once the assessment was coming to an end, the Federal Government published on June 30th, 2021 **Decree Nº 10.736, dated June 29th, 2021** establishing the National Collaborative Network for the Sustainable Management of Fishery Resources -Rede Pesca Brasil, that will include a technical-scientific bank and 10 Permanent Management Committees (CPGs), among them the Permanent Management Committee for the Fishery and the Sustainable Use of the Demersal Fishing Stocks of the Southeast and South Regions.

The technical scientific bank will be composed of researchers, technicians and professionals with proven experience in research, management of fisheries or areas related to the fishing sector. This entity will support the Secretariat of Aquaculture and Fisheries of the Ministry of Agriculture, Livestock

and Food and Rede Pesca Brasil in their responsibilities related to the fishing sector. Each committee will have 1 representative from SAP that will be the coordinator, 15 representatives of public administration organisms and entities and 15 representatives from the stakeholders (selected by means of a public call) involved in the fishing sector. Their role would be to advise the Secretariat of Aquaculture and Fisheries of the Ministry of Agriculture, Livestock and Food in the adoption of measures and implementation of actions related to the management unit, in addition to support the monitoring and assessment.

Article 9° of the Decree establishes that the committees will meet at least once a year. The recommendations should be approved, preferably, by consensus. If reaching a consensus proved impossible, it should be subjected to voting during the permanent committee meeting. The Decree also defines the structure of the Committees, setting the procedures for appointing the Executive Secretariat, the creation of specific working teams and technical-scientific groups.

In 2018, the State of Rio Grande do Sul, published **Law nº 15.223, dated September 5th, 2018** establishing the State Policy for the Sustainable Development of the Fisheries. Among other provisions, it banned the use of any trawl pulled by motor vessels within 12 MN of the coastal area of Rio Grande do Sul (Figure 13). After its publication, several actions were undertaken to revoke the ban, contending that it was unconstitutional. As there had been no discussion with the representatives of the users of the regional resources, the Federal Supreme Court suspended the law in December 2020, mentioning that the Constitution delegated to the Union the exclusive competency to legislate over the territorial waters. In January 2021, the SAP published **Directive SAP/MAPA Nº 9, dated January 14th, 2021** suspending again the fishing activities within the 12 MN limit until a Plan for the Sustainable Recovery of Trawling in the Coast of Rio Grande do Sul was put in place.

Within this context, in March 2021, the SAP/ MAPA published a “Plan for the Sustainable Recovery of Trawling in the Coast of Rio Grande do Sul”, considering social, environmental and economic issues through **Directive SAP/MAPA Nº 115, dated April 19th, 2021**. The plan is applicable to the trawl fisheries targeting demersal fish and shrimp *Artemesia longinaris* and *Pleoticus mulleri*, within the 12 nautical miles strip of the coast of Rio Grande do Sul. The aim is to establish complementary measures to the ones already in place to ensure the sustainability of trawls targeting demersal fish and shrimp in the shores of the state of Rio Grande do Sul, as regards the reduction of bycatch and discards. This would cause the reduction/elimination of bycatch, mortality of ETP species and fishing activities in their reproductive/spawning areas (SAP/MAPA, 2021).

The plan included 14 actions to be implemented in the short term (1 to 2 months), medium term (6 to 9 months) and in the long term (12 to 18 months), listed in Table 11 according to the nature of the action (management measures; monitoring; research and assessments; and control).

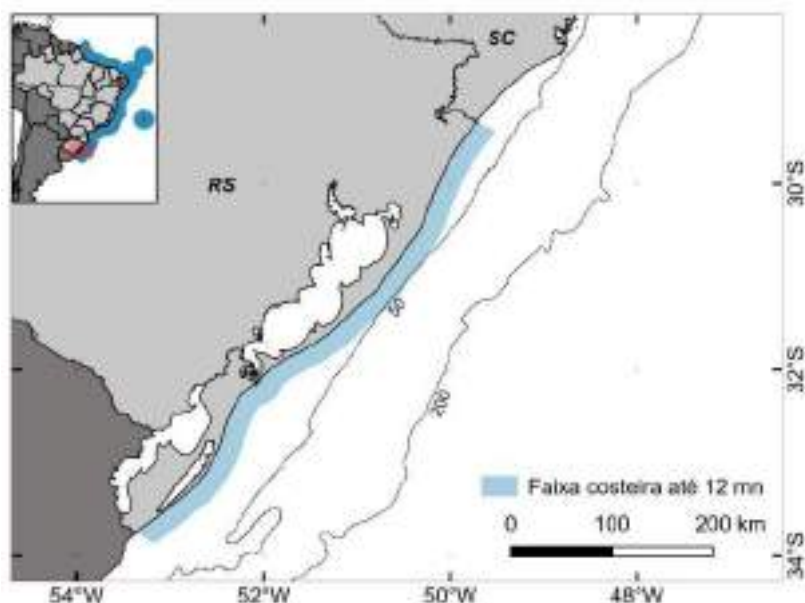


Figure 13. Coastal strip up to 12 nautical miles (~22,23 km, in pale blue) that includes the territorial waters in front of the State of Rio Grande do Sul with an approximate area of 13,700 km². Source: Cardoso *et al.*; (2019).

In 2020, through **Decree 10.544 dated November 16th, 2020**, the Federal Government approved the X Sectorial Plan for Marine Resources. The plan, implemented from January 1st, 2021 till December 31st, 2023, sets goals for the sustainable development of fisheries and aquaculture in Brazil, drafted in accordance with the Sustainable Development Goals (SDG). Measures referring to fisheries are:

- Restructure the General Fisheries Registry system and update the fleet data (ODS 14.4)
- Re-register fishermen in the General Fisheries Registry (RGP) system (ODS 14.4).
- Restructure the National Program for Satellite Tracking of Fishing Vessels (ODS 14.4).
- Resume the activities to improve fishery statistics and support biodiversity monitoring programs, focusing on the monitoring of the fishing activity and its associated biodiversity, as well as other initiatives already in place (ODS 14.4).
- Support policies to encourage the consumption of sustainable fishery products.
- Strengthen the participative management technical actions among those institutions related to the fishing activity.
- Assess, strengthen and put in place recovery plans for threatened species (ODS 14.4)
- Review and update regulatory acts related to the fishing activity, trying to strengthen sustainability, based on the best technical and scientific data available and with social participation (ODS 14.4, 14.b, 14.c);
- Assess, strengthen or implement management plans for the fishing stocks (ODS 14.4)
- Support scientific research projects, as well as the monitoring and development of the fishing sector (ODS 14.4);
- Support the organization of professional training courses for fishermen (ODS 14.b);
- Strengthen the Brazilian participation in international fisheries agreements (ODS 14.4, 14.c);
- Support actions against the dumping of garbage at sea (ODS 14.1); and
- Fight illegal, not reported and non-regulated fishing, as well as the destructive fishing practices (ODS 14.4).

Some actions have already been implemented, such as the revision of regulatory acts that rule fishing activities and the re-registration of fishermen in the RGP system. On June 30th, 2021, the Secretariat of Aquaculture and Fisheries published **Directive SAP/MAPA Nº 270, dated June 29th, 2021** establishing, on an exceptional and temporary basis, the rules, criteria and administrative procedures for the national registration and re-registration of private individuals in the General Fisheries Registry, Fishermen and Professional Fishermen category.

In Brazil, the Federal Constitution defines the fishing stocks as a State property, allowing the users to appropriate those resources under certain binding rules. As we have seen, management faces certain challenges (IPEA, 2013). Castello (2007), talking about the factors that posed difficulties to fisheries management in Brazil and worldwide, claims that the key issue to reach sustainable development would be to review the condition of free access and common property of the resources. Indeed, it is impossible to allow unrestrained access to the resources to the users when they are limited. Otherwise, it would lead to the loss of economic value and recruitment and growth overfishing.

Cardoso *et. al.*, (2019) used FISHPATH (www.fishpath.org), management decisions support system, to perform an analysis about the management alternatives for the demersal fishery in the South of Brazil, characterizing the demersal fishery in terms of: (1) Institutional monitoring capacity; (2) Availability of data about species biology, catch and effort to perform stock assessment; (3) The management context in which the fisheries are included; (4) Socioeconomic characteristics of the fishery; (5) Technological characteristics of the fishery; (6) Company's ability to put in practice management measures (monitoring, assessment and surveillance).

The results depict the following scenario: there is lack of data about the species, the Brazilian fisheries management system has little ability to perform a continuous follow-up of the fisheries, mainly bottom gillnet and trawl, as they are multi-species, have an impact on a large number of species and a lot of them are in danger of collapse. Therefore, the management measures selected in this work as the most likely to be effective are those related to the creation of closed areas and establishing fishing effort limits. These are the four main management alternatives: 1) Space restriction: closed areas. 2) Effort limits per fishing grounds. 3) Space restriction: seasonal closure of areas whenever there is information about the use of the area per species. 4) Time restriction: period of fixed effort limit or fishing days' limit. The system points at two basic types of measures as the most effective: space restriction and time restriction of the fishing effort. These measures are translated into closed areas and closed fishing seasons.

Moreover, it highlights that the existing measures within the current national management context (technical restrictions of the fishing gears, restriction of minimum sizes, restriction of the fishing effort) are not considered as good management options. More complex options such as catch quotas, entry control (effort limits) and exit control (catch limits) are not recommended for the Brazilian context due to the low control and monitoring capacity for ensuring compliance with such measures.

Table 11. Actions for the Sustainable Recovery of Trawling in the Coast of Rio Grande do Sul. Source: SAP/MAPA (2021).

NATURE OF ACTION	ACTION	RESPONSIBLE	TIMEFRAME	ENFORCEMENT INDICATOR
MANAGEMENT MEASURES	Compulsory use of square mesh in one of the nets, with or without <i>fisheye</i> (olho de peixe), and use of grid in both nets, in 100% of the shrimp trawling fleet operating on the coastline of the State of Rio Grande do Sul (from 3 MN till 12 MN)	SAP/MAPA, REBYC-II LAC Project and fishing sector	Short	Published regulatory act
	Compulsory use of square mesh in one of the nets, with or without fisheye (olho de peixe), in 100% of the fish (outrigger and pair) trawling fleet operating on the coastline of the State of Rio Grande do Sul (from 5 MN till 12 MN)	SAP/MAPA, REBYC-II LAC Project and fishing sector	Medium	Published regulatory act
MONITORING	Self-monitoring (performed by the crew members) – register the results obtained according to the protocol proposed for each test to be handed to the responsible institution	SAP/MAPA, REBYC-II LAC Project and fishing sector	Short	Registers from each vessel operating in the area
	Maintain a specific statistics data bank for the coastline of the State of Rio Grande do Sul	SAP/MAPA	Medium	Updated data bank to be published on the website of SAP/MAPA
	Sharing all data (raw and processed) of the trawling fleet operating on the coastline of the State of Rio Grande do Sul	SAP/MAPA	Medium	Available on the website of SAP/MAPA
	Improve Onboard Maps for the trawling fleet	SAP/MAPA	Medium	Maps available <i>on line</i>
	Compulsory boarding of scientific observers on a percentage of the fleet	SAP/MAPA	Medium	% of coverage of the trawling operations within the 12 miles

Table 11 continued

NATURE OF ACTION	ACTION	RESPONSIBLE	TIMEFRAME	ENFORCEMENT INDICATOR
RESEARCH AND ASSESSMENTS	Carry out a general diagnosis regarding the trawl fishery on the coastline of the State of Rio Grande do Sul	SAP/MAPA	Medium	Published diagnosis
	Definition of the harvest period of Argentine stiletto shrimp (<i>Artemesia longinaris</i>) and Patagonian Shrimp (<i>Pleoticus muelleri</i>) on the coastline of the State of Rio Grande do Sul (*August to February)	Productive sector and SAP/MAPA	Medium	Assessment performed
	Characterization of the socioeconomic significance of the fish trawl fishery on the Southeast and South coast of Brazil	SAP/MAPA	Medium	Published terms of reference
	Assess the possibility of rotating the fishing grounds (alternating among the three main fishing areas)	SAP/MAPA	Long	Assessment performed
	Assess the possibility of setting up a Management Unit on the Southeast and South coastline for the trawl shrimp and fish fisheries	SAP/MAPA	Long	Assessment performed
	Establishing a “multi-species” (fish) closed fishing season, on the coast of RS, to maintain the demersal fish stocks (for 2 years and assessment of the results with the participation of the fishing sector) *60 days of closure (January and February)	SAP/MAPA, REBYC-II LAC Project and fishing sector	Long	Published regulatory act
CONTROL	Assess the obligation for all the trawl fleet (artisanal and industrial) that operates in the territorial waters in front of Rio Grande do Sul to adhere to the National Program for Satellite Tracking of Fishing Vessels PREPS	SAP/MAPA	Medium	Assessment performed and availability of the new tracking system

3.5.2. Fishery Specific Management

Since Law nº 11.959 was passed, fishing regulations in Brazil are enforced by means of different directives, guidelines and regulations. Find here below some of the most significant laws applicable to the trawl and gillnet fisheries in the South region.

- **Directive SUDEPE Nº N-26, dated July 28th, 1983.** Forbids any kind of trawls at less than 3 (three) miles from the coastline of the state of Rio Grande do Sul.
- **Directive IBAMA Nº 95, dated August 22nd, 1997.** Limits to the territorial waters located between parallels 21º17' S (border between the states of Espírito Santo and Rio de Janeiro) and the border between Brazil and Uruguay, the bottom trawl fleet, whatever the fishing gear, fishing for demersal fish: white croaker (*Micropogonia furnieri*), croaker (*Umbrina canosai*), king weakfish (*Macrodon ancylodon*), striped weakfish (*Cynoscion guatucupa*), and corresponding bycatch. Fishing is limited to those vessels dully registered in the General Fisheries Registry that are already in possession of a Fishing Permit for bottom trawl (demersal fish/bycatch).
- **Regulatory Instruction SEAP/PR Nº 03, dated May 12th, 2004.** Sets up the criteria and procedures for the General Fisheries Registry. Applicable to private individuals (fishermen) and legal entities (fishing vessels and companies).
- **Regulatory Instruction MMA Nº Nº 31, dated December 13th, 2004.** Establishes the compulsory use of TED, incorporated to trawls used in vessels above 11m, in the Brazilian coast, independently from the target species.
- **Regulatory Instruction MMA Nº 53, dated November 22nd, 2005.** Sets up the minimum catch size for marine and estuarine species of the Southeast and South coast of Brazil. It is not applicable to the species caught by trawls. For croaker (*Umbrina canosai*), the minimum catch size is 20 cm.
- **Interministerial Regulatory Instruction SEAP/MMA/MD Nº02, dated September 4th, 2006.** Establishes the National Program for Satellite Tracking of Fishing Vessels - PREPS in order to monitor, manage and control the fishing fleet authorized to operate. Annex I of the instruction rules that all the vessels with gross tonnage above or equal to 50 and total length above 15 m, targeting demersal fish using trawls in depths below 100 m (in the South and Southeast regions) and bottom gillnets (in the South and Southeast regions) must be equipped with a tracking device established by PREPs.
- **Directive IBAMA Nº 43, dated September 24th, 2007.** Considering the crises caused by the operation of purse seiners (trawlers) on the following stocks: white croaker (*Micropogonia furnieri*), croaker (*Umbrina canosai*), king weakfish (*Macrodon ancylodon*) and striped weakfish (*Cynoscion guatucupa*, sin. *C. striatus*), it bans the harvest of those species by purse seiners (trawlers) in the territorial waters and the Exclusive Economic Zone-ZEE of the Southeast and South regions.
- **Regulatory Instruction Nº 18, dated June 18th, 2008.** Defines the procedures to put in place the administrative measures (warning, suspension or termination of the fishing license and vessel register), recording the non-compliance with the regulations applicable to the fishing sector.

- **Interministerial Regulatory Instruction MPA/MMA Nº 10, dated June 10th, 2011, modified by IN MPA Nº14 2014, 02, INI MPA / MMA Nº01 / 2015, INI MPA / MMA Nº46 / 2015.** Approves the general regulations and the organization of the fishing vessels authorization system for access and sustainable use of the fishing stocks, establishing the fishing gear, target species and fishing grounds allowed. *Umbrina canosai* fishery is allowed according to the conditions illustrated in **Table 12**.
- **Interministerial Regulatory Instruction MPA/MMA Nº 12, dated August 22nd, 2012.** Sets up the criteria and standards for managing the gillnet fishery in the Brazilian territorial waters in the Southeast and South regions. Some of the criteria established are:
 - I. In the Brazilian territorial waters neighboring the coastline of the states of Santa Catarina, Paraná, São Paulo, Rio de Janeiro, Espírito Santo and Rio Grande do Sul, the maximum allowable gillnet length, including the lengths of the baskets or nets, is of:
 - 3,000 (three thousand) meters for vessels with gross tonnage (GTon) below or equal to 10 (ten);
 - 7,000 (seven thousand) meters for vessels with gross tonnage (GTon) above 10 (ten) and below 20 (twenty);
 - 10,000 (ten thousand) meters for vessels with gross tonnage (GTon) above 20 (twenty) and below or equal to 50 (fifty);
 - 13,000 (thirteen thousand) meters for vessels with gross tonnage (GTon) above 50 (fifty).
 - II. Maximum height for gillnets is 4 meters.
 - III. Ban, each year, between May 15th and June 15th, the operations of vessels above 20 (twenty) GTon using bottom gillnets in the Brazilian territorial waters in the Southeast and South regions.
 - IV. Ban any modality of gillnet fishery in closed areas corresponding to the geographical zones defined in the Regulatory Instruction
 - V. Forbid the gillnet fishery to motor propelled vessels in a distance of less than 1 (one) nautical mile from the shoreline.
 - VI. Forbid the gillnet fishery to motor propelled vessels in a distance of less than 5 (five) nautical miles from the shoreline, from the Albardão lighthouse/RS to the south limit of the state of Rio Grande do Sul;
 - VII. Urgently create the Permanent Management Committee for the Demersal Fishery in the Southeast and South and Working Groups - GTs, to advise on management measures and rules for the bottom gillnet fishery in those regions.
 - VIII. Ban the granting of new fishing licenses, as well as any previous fishing permit for vessels construction or conversion (modification of fishing gear), for any gillnet modality.
- **Interministerial Regulatory Instruction Nº4, dated October 16th, 2013.** Establishes criteria and standards for the gillnet fishery targeting anchovy (*Pomatomus saltatrix*), white croaker

(*Micropogonias furnieri*), striped weakfish (*Cynoscion guatucupa*), croaker (*Umbrina canosai*), Brazilian codling (*Urophycis brasiliensis*) and corresponding bycatch in the coastline of the state of Rio Grande do Sul.

- Allow in the coastline of the state of Rio Grande do Sul the transport, storage and gillnet fishery to national fleet vessels duly authorized to use coastal gillnets diversified for the catch of anchovy, white croaker, hake, croaker and Brazilian codling as target species.
 - The vessels included in the head of this article must be duly registered in the General Fisheries Registry-RGP, with fishery authorization for the modality of diversified coastal gillnet for the use of coastal bottom and surface gillnets.
 - Limit to a total of 68 (sixty-eight) the total of vessels included in the head of this article, which must have a Gross Tonnage (GTon) below or equal to 50 (fifty).
 - The vessels must prove their adherence to the PREPS and maintain in good operation the remote monitoring equipment linked to the National Program for Satellite Tracking of Fishing Vessels -PREPS.
 - In the case of those vessels concerned by this Interministerial Regulatory Instruction, the bottom gillnet used must abide by the Interministerial Regulatory Instruction 12, dated August 22nd, 2012.
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- **Regulatory Instruction MPA Nº 20, dated September 10th, 2014.** Establishes the criteria and procedures to register the fisheries data through the Onboard Maps, that should be handed to the SEAP and/or IBAMA.
 - **Interministerial Directive Nº 9, dated September 1st, 2015.** Creates the Permanent Management Committee for the Sustainable Use of Southeast and South Demersal Stocks - CPG Demersal Southeast and South and the Scientific Subcommittee.
 - **Law nº 15.223, dated September 5th, 2018.** Establishes the State Policy for the Sustainable Development of the Fisheries and creates the State Fund for Fisheries. In Indent “e”, Item VI, of Art. 30, the law bans the use of any trawl pulled by motor vessels, in all the State of Rio Grande do Sul, including the 12 MN of the coastal area of the State.
 - **Decree Nº 9.759, dated April 11th, 2019.** Terminates the Management Committees.
 - **Directive SAP/MAPA Nº 9, dated January 14th, 2021.** Forbade the use of any trawl pulled by motor vessels in the 12 MN of the coastal area of Rio Grande do Sul, until a Plan for the Sustainable Recovery of Trawling in the Coast of Rio Grande do Sul was put in place.
 - **Directive SAP/MAPA Nº 115, dated April 19th, 2021.** Approves the Plan for the Sustainable Recovery of Trawling in the Coast of Rio Grande do Sul, enforced on the date of publication.
 - **Directive SAP/MAPA Nº 270, dated June 29th, 2021.** Establishes, on an exceptional and temporary basis, the rules, criteria and administrative procedures for the national registration and re-registration of private individuals in the General Fisheries Registry, Fishermen and Professional Fishermen category.
 - **Decree Nº 10.736, dated June 29th, 2021.** Reestablish the Permanent Management Committees, among them the Permanent Management Committee for the Fishery and the Sustainable Use of the Demersal Fishing Stocks of the Southeast and South Regions.

Table 12. Authorization for fishing croaker (*Umbrina canosai*) as target and bycatch species in the gillnet and trawl fisheries. Source: MPA/MMA (2011).

REDES DE ESPERA E DE ARRASTO					
AUTORIZAÇÃO DE PESCA PRINCIPAL				AUTORIZAÇÃO COMPLEMENTAR	ÁREA DE OPERAÇÃO
MODALIDADE E/OU PETRECHOS	ESPÉCIE ALVO	CAPTURA INCIDENTAL	FAUNA ACOMPANHANTE PREVISÍVEL		
Emalhe costeiro (fundo)	Castanha, corvina, pescada, abrótea	Viola, cação anjo, boto e tartaruga	Savelha, cabrinha, cações, peixe-espada, guayira, linguado, maria-luiza, papateira , pescadas, pescadinha, raias, anchova, gordinho, miraçel , merluza, tira-vira, congrão , namorado, pargo, batata, bagres, camarão branco, robalo, preiereba , vermelho, sororoca, siri e guete		Mar territorial S/SE; e ZEE S/SE
Arrasto (fundo) - duplo	Camarão rosa (santana e barba ruça)	Tartaruga, cherne poveiro, mero, cação anjo, viola, demais sp.	Castanha, linguado, trilha, abrótea, lula, corvina, betara, cabrinha, pescada, pescadinha, sapateira , raias, cações, pargo-rosa, congro rosa, congro-preto, polvo, peixe-sapo, tira-vira, namorado, batata, merluza, maria-mole, lacraia, sapateira, pitú , cavaca, lagosta, vermelhos, garoupa, badejo, olho de cão, peixe espada, xixarro , trombeta, porquinho, siri e goete	Arrasto (fundo). Espécies: camarão cristalino, pitu, fauna acompanhante das espécies ocorrentes na área.	Mar territorial S/SE; e ZEE S/SE (fora da área do camarão rosa) – acima de 100M
Arrasto (fundo) – duplo	Camarão santana e barba ruça	Boca-de-velho, canejo, cação-bico-doce e cação-cola-fina	Castanha, Abrótea, savelha, tainha, bagre, pescada olhuda, pescada-gó, pescada-rabo-de-fogo, pescada- dentusca , curuca, cururuca, corvina, caçote , papa-terra, judeu, betara, miraguaia, cabeça-de-coco, corvina-riscada, linguado, enxova e peixe-espada		Mar territorial RS; e ZEE RS
Arrasto (fundo) - duplo ou simples	Camarão sete barbas (Santana e barba ruça)	Cação-anjo-liso	Castanha, linguado, trilha, abrótea, lula, corvina, betara, cabrinha, pescadas, pescadinha, raias, cações, camarão-branco, maria-luiza, porquinho, siri, goete, maria-mole, siri e peixe sapo	Garatêa com atração luminosa (vulgo zangarilho) Espécie: lula	Mar territorial S/SE; e ZEE S/SE
Arrasto (fundo) - duplo ou simples	Camarão sete barbas (Santana e barba ruça)	Cação-anjo-liso	Castanha, linguado, trilha, abrótea, lula, corvina, betara, cabrinha, pescadas, pescadinha, raias, cações, camarão-branco, maria-luiza, porquinho, siri, goete, maria-mole, siri e peixe sapo	Rede de espera (superfície) Espécies: tainha, anchova, sororoca, guayira	Mar territorial S/SE; e ZEE S/SE
Arrasto costeiro (fundo) - duplo	Castanha, corvina, pescada e pescadinha real, linguado, abrotea , cabrinha.	Cação-anjo espinhoso	Trilha, lula, betara, pescadas, sapateira, raias, pargo-rosa, congro-rosa, congro-preto, peixe sapo, tira-vira, namorado, batata, lacraia, pitú , cavaca, vermelhos, garoupa, badejos, olho de cão, peixe espada, goete e maria-mole.		Mar territorial S/SE (profundidades inferiores a 250 metros); e ZEE S/SE (profundidades inferiores a 250 metros)
Arrasto costeiro (fundo) simples e parelha	Castanha, corvina, pescada e pescadinha real	Raia-viola	Linguado, trilha, abrótea, lula, cabrinha, pargos, congro-rosa, peixe-sapo tira-vira, namorado, batata, lacraia, pitú , cavaca, vermelhos, garoupa, badejos, olho de cão e peixe espada		Mar territorial S/SE (profundidades inferiores a 250metros); e ZEE S/SE (profundidades inferiores a 250 m)

4. Preevaluation under the MSC guidelines

4.1. Summary of Likely Scoring Levels

Table 13. Key to likely scoring levels

The information available to the assessment team suggests that the fishery would not meet the scoring guideposts to achieve 60 points in the relevant performance indicator.	< 60
The information available to the assessment team suggests that the fishery would meet the scoring guideposts to achieve 60 points in the relevant performance indicator, but not all scoring guideposts to achieve 80 points. Therefore, a condition would be raised during a full assessment in order to improve the score.	60 – 79
The information available to the assessment team suggests that the fishery would meet or exceed the scoring guideposts to achieve 80 points in the relevant performance indicator. Therefore, an unconditional pass for the relevant performance indicator might be achieved.	≥ 80

Table 14. Summary of preevaluation scoring

Principle	Component	PI	Performance Indicator	Likely scoring
1	Outcome	1.1.1	Stock status	<60
		1.1.2	Stock rebuilding	<60
	Management	1.2.1	Harvest Strategy	<60
		1.2.2	Harvest control rules and tools	<60
		1.2.3	Information and monitoring	<60
		1.2.4	Assessment of stock status	60
2	Primary Species	2.1.1	Outcome	100
		2.1.2	Management	80
		2.1.3	Information	<60
	Secondary species	2.2.1	Outcome	No score
		2.2.2	Management	<60
		2.2.3	Information	<60
	ETP species	2.3.1	Outcome	No score
		2.3.2	Management	<60
		2.3.3	Information	<60
	Habitats	2.4.1	Outcome	No score
		2.4.2	Management	<60
		2.4.3	Information	<60
	Ecosystem	2.5.1	Outcome	No score
2.5.2		Management	<60	
2.5.3		Information	<60	
3	Governance & policy	3.1.1	Legal and customary framework	<60
		3.1.2	Consultation, roles and responsibilities	80
		3.1.3	Long term objectives	80
	Fishery specific management system	3.2.1	Fishery specific objectives	60
		3.2.2	Decision making processes	<60
		3.2.3	Compliance and enforcement	<60
		3.2.4	Management performance evaluation	60

The recommendations to improve each Performance Indicator (PI) scoring below 80 are summarized in the following table:

MSC PI	Sustainability problem	Recommendations to score SG80
1.1.1	It is likely that the <i>Umbrina canosai</i> stock is below the point where recruitment would be impaired (PRI).	The possible existence of two groups or substocks in the South that overlap as regards their reproductive features but differ in terms of feeding and migration should be clarified beforehand, prior to testing the harvest strategy. Data gathering should be improved to determine the likelihood of the stock being above the PRI.
1.1.2	There is no evidence of <i>Umbrina canosai</i> stock rebuilding within a specified timeframe.	Specify a rebuilding timeframe that is 2 times <i>Umbrina canosai</i> generation time. Monitoring to provide evidence that the stock rebuilding strategies are achieving their goal.
1.2.1	There is no harvest strategy designed for <i>Umbrina canosai</i> .	Put in place specific management measures for <i>Umbrina canosai</i> that take into account the current stock status and structure. They should include harvest control rules and tools, surveillance and control measures, fishery and stock monitoring programs, etc.
1.2.2	There is no harvest control rule in place for <i>Umbrina canosai</i> .	Immediate action is necessary to avoid a new decline in abundance. Establish well defined and effective harvest control rules to guarantee a reduction in the exploitation rate as the PRI is approached to keep the stock fluctuating at a target level consistent with MSY. These rules should be permanently monitor abundance regarding target and limit references, for instance, including the possibility of setting TACs. These HCRs should be robust to the main uncertainties.
1.2.3	Significant weakness due to the lack of consistency and continuity in the data gathering programs. There is lack of logistic structure and human resources to perform the necessary tasks.	Gather relevant information in a timely manner related to stock structure, stock productivity and fleet composition, abundance, and fishery removals, in addition to regular monitoring of stock abundance to support the harvest control rule, in addition to the monitoring of other fisheries that have <i>Umbrina canosai</i> as a bycatch.
1.2.4	The harvest of the gillnet coastal and industrial fleets that catch croaker in the South is not considered. Moreover, it does not take into account the stock shared between Argentina and Uruguay. In addition, it does not consider the major sources of uncertainty.	Design a sophisticated stock assessment, including plenty of data, adequate for the stock and harvest control rule. The assessments should be subject to peer review.
2.1.3	Primary species have not been identified and there is no fishery monitoring. Therefore, there is not enough available data to identify the main primary species.	Monitoring should be implemented to be able to identify the fishery non-target species. Data gathered should include quantitative and qualitative information adequate to assess the impact of the UoA on those species.
2.2.1	There is no comprehensive list of non-target species for the croaker trawl and bottom gillnet fishery that could be used	Idem 2.1.3 A RBF would be necessary to score this PI.

	for analysis. There is not enough data to classify which species are main or minor.	
2.2.2	Given the information available, it is unclear which are the species involved with the <i>Umbrina canosai</i> fishery. In addition, it is not clear if shark finning occurs in the fishery or not.	Once the list of main secondary species caught in the croaker fishery is defined, a partial strategy should be implemented to guarantee that the fishery does not hinder rebuilding. Moreover, data should provide sufficient evidence that shark finning does not take place in the fishery.
2.2.3	Available information is not enough to provide a complete list of secondary species, or to classify them as main and minor, or to assess the impact of the UoA with respect to status or to support a partial strategy to manage them.	Idem 2.1.3
2.3.1	Even if there is some information regarding the interaction with turtles, dolphins and elasmobranchs, it is unclear which ETP species truly interact with the UoA. The direct or indirect effects of the UoA on the stocks involved cannot be assessed.	Idem 2.3.1 To score this PI, it would be necessary to gather more data and perform a Productivity-Susceptibility Analysis (PSA).
2.3.2	It is unclear which are the ETP species that truly interact with the fishery. Therefore, it cannot be claimed that a strategy is necessary to guarantee that the interaction does not hinder the recovery of those species.	In case a strategy was required, it should ensure that the effects of the trawl and gillnet fishery do not hinder the recovery of the ETP species. It would be necessary to gather significant data and a proper monitoring strategy to evaluate the performance and signal changes in the risk level in order to consider how to improve the measures/strategy.
2.3.3	Information available is not enough to confirm the ETP species that interact with the UoA and there is no clear evidence of direct effects of the fishery on those species.	Idem 2.1.3
2.4.1	Data available are not enough to claim that the UoA is unlikely to cause harm to habitat structure and function.	Adequate information about the interaction of the trawl and bottom gillnet fishery with the habitats should be collected to perform a Consequence Spatial Analysis (CSA).
2.4.2	There are regulations in place for the trawl and gillnet fishery. However, it cannot be claimed that those measures minimize the impacts on the habitat structure and function.	Idem 2.4.1
2.4.3	Information is not adequate to determine the spatial overlap of habitat with fishing gear.	Idem 2.4.1 A Consequence Spatial Analysis should be regularly performed with the data gathered to detect any increase in risk.
2.5.1	Data available are not enough to claim that the UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	Specific studies about the impact of the UoA on the ecosystem function should be encouraged and performed. In addition, a Scale Intensity Consequence Analysis (SICA) should be developed to assess the impact of the fishery on the ecosystem in general.

2.5.2	Even if there are measures in place that protect the ecosystem, it cannot be claimed that the potential impact of the fishery on primary, secondary or ETP species -that are also key elements of the ecosystem- are taken into account, thus ensuring the protection of the ecosystem structure and function.	Idem 2.5.1
2.5.3	Even if some impacts of the trawls and gillnet fishery could be analyzed with the information available, the information is not adequate to study the interaction with ETP species or habitats. Moreover, information regarding secondary species are also incomplete.	Idem 2.5.1. Data gathering should continue and a SICA analysis should be performed to detect any risk increase.
3.1.1	The legal framework in Brazil cannot be considered as effective and consistent with MSC Principles 1 and 2. In Brazil, there is no official statistics program.	A monitoring plan should be implemented to gather more information in order to assess transparency and effectiveness of the mechanism for the resolution of legal disputes arising within the system.
3.2.1	Well defined and measurable short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are not included in the fishery management system.	It is necessary to review the fishery specific management objectives currently established and look for improvement.
3.2.2	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives. However, there is no approved management plan for the Umbrina canosai fishery that could establish decision-making processes. There is no evidence that the management system can respond to serious issues and there is no data gathering program. Moreover, it cannot be claimed that decision-making processes use the precautionary approach and there is evidence that the official reports regarding fishery performance and management measures are not provided to the stakeholders.	The Permanent Management Committees should be reestablished, resuming their meetings to relaunch decision-making processes resulting in strategies to attain fishery specific objectives and using the precautionary approach. The fishery needs a management plan. Moreover, the government must implement a data gathering plan and guarantee that formal reporting is offered to all interested stakeholders, providing comprehensive information on the fishery's performance and management actions.
3.2.3	There is evidence showing that the monitoring, control and surveillance mechanism is not effective. Sanctions to deal with non-compliance exist but there must be evidence that they are consistently applied.	A monitoring plan should be applied. There must be evidence that onboard maps are being presented and that vessels are using the satellite tracking system. There must be evidence that the sanctions are consistently applied and the fishermen are compliant with the management system.
3.2.4	The Management Committees evaluate some parts of the management system, scoring SG60 for this coring issue.	Once the harvest control rules are established for the fishery, mechanisms should be put in place to assess them. The Permanent Management

	However, they were suspended in 2019. Moreover, the system is not subject to regular internal or external review.	Committees should be reestablished and meetings resumed. In addition, the management system should be subject to permanent review and improvement.
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4.2. Evaluation against Indicators

Table 7. Key used in Section 4.2.

The information available to the assessment team suggests that the scoring guidepost would not be met for a particular scoring issue.	
The information available to the assessment team suggests that the scoring guidepost would be met for a particular scoring issue.	
The information available to the assessment team strongly suggests that the scoring guidepost would be met for a particular scoring issue.	
The Scoring Issue on a performance indicator does not apply or the relevant Component has not been detected in the fishery.	

PI 1.1.1 – Stock Status

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue	SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment		
Guidepost	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
Met?	NO		
Justification	<p>The most recent assessment of <i>Umbrina canosai</i> stock status in Southern Brazil was based on the spawning potential ratio (SPR), during period 2015 to 2017. The result of 14% SPR is well below the SPR_{limit} = 20% level, known internationally as the “point of recruitment impairment” necessary to reach stock stability. Results show that fishing mortality in previous years caused a loss of 86% of the stock reproductive potential. Therefore, it is likely that the stock is below the point where recruitment would be impaired and the fishery would not score SG60 for this scoring issue.</p> <p>This means that Stock Rebuilding would score PI 1.1.2.</p>		
b	Stock status in relation to achievement of MSY		
Guidepost		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
Met?	BY DEFAULT	NO	
Justification	<p>The stock is well below the point of recruitment impairment (SPR = 14%) necessary to reach stock stability (SPR_{limit} = 20%). Therefore, it is likely that the stock is not at or fluctuating around a level consistent with MRS.</p> <p>According to the standard, it would score SG60 but it would not reach SG80.</p>		
References	<p>- CARDOSO, L. HAIMOVICI, M. BRICK, M. ANTUNES, C. 2019. Medidas de manejo para espécies de peixes marinhos explorados no sul do Brasil. Laboratório de recursos pesqueiros demersais e cefalópodes. Instituto de Oceanografia. Universidade Federal do Rio Grande.</p>		

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RBF Required?	NO	Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 1.1.2 – Stock Rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guidepost	A rebuilding timeframe is specified for the stock that is the shorter of 20 years or 2 times its generation time . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the stock.
	Met?	NO		
Justification		There is no evidence of a stock rebuilding strategy or measures within a specified timeframe for the <i>Umbrina canosai</i> stock. Therefore, the fishery would not score SG60. As a result, the fishery would not score SG60 for this scoring issue.		
b	Rebuilding evaluation			
	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, or it is likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is strong evidence that the rebuilding strategies are rebuilding stocks, or it is highly likely based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	NO		
Justification		Currently, management authorities are not monitoring to determine if a rebuilding strategy is effective. Therefore, the fishery would not meet SG60 for this scoring issue.		
References				
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 1.2.1 – Harvest Strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	NO		
Justification		Presently, there is no harvest strategy in place for <i>Umbrina canosai</i> . The management system is based on general control rules for the trawl and bottom gillnet fishery harvesting demersal species. Therefore, they might not reflect the reality of <i>Umbrina canosai</i> . As a result, it cannot be expected that the harvest strategy would achieve stock management objectives reflected in P.I 1.1.1 SG80. The fishery would not meet SG60 for this scoring issue.		
b	Harvest strategy evaluation			
	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	NO		
Justification		This scoring issue would not meet SG60 . Indeed, it is unlikely that, based on prior experience or plausible arguments, the harvest strategy would achieve its objectives. There is no evidence that it is maintaining <i>Umbrina canosai</i> stocks at target levels. The current stock status shows that it is well below the PRI necessary to reach stock stability ($SPR_{limit} = 20\%$).		
c	Harvest strategy monitoring			
	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	NO		
Justification		There is no evidence of monitoring in place to determine whether the harvest strategy is working. Available data (Haimovici e Rico, (2021), Cardoso, <i>et. al.</i> , (2019), Torres, <i>et. al.</i> , 2019, IBAMA, 2007) indicate that, in Southern Brazil, mainly as regard the bottom gillnet fisheries, there is little information and low capacity of the Brazilian fisheries management system to ensure continuous monitoring of the fisheries. Consequently, the current monitoring would not be enough to determine if the harvest strategy is working. As a result, the fishery would not score SG60 .		
		Harvest strategy review		

d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?	BY DEFAULT	BY DEFAULT	
Justification		According to the standard, the fishery would score SG60, as well as SG80 by default.		
e*	Shark finning			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	DOES NOT APPLY		
Justification		This scoring issue is not applicable because the target species is not a shark.		
f*	Review of alternative measures*			
	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	NO		
Justification		<p>Recently, a plan was unfolded to resume sustainable trawling between 3 and 12 miles off the coast of Rio Grande do Sul (SAP / MAP N ° 115). The aim would be to minimize the mortality of ETP species in reproductive areas. The idea is to maintain a specific statistical database for the coastline of Rio Grande do Sul, by means of self-monitoring of the crew members. They would be in charge of collecting data per each trawl, including photos and videos taken onboard given the fact that, due to the COVID-19 protocol, onboard observers and scientist cannot board fishing vessels. Moreover, they are studying the possibility of making compulsory for all the trawling fleets (artisanal and industrial) that operate in the territorial waters in front of Rio Grande do Sul, to register into the National Program for Satellite Tracking of Fishing Vessels (PREPS). Meanwhile, to the date of this report, there is no evidence that the measures suggested in the plan are going to be implemented, and no alternative measures have been considered for the rest of the fishing area of bottom trawlers.</p> <p>Consequently, this scoring issue would not score SG60.</p>		
References		<ul style="list-style-type: none"> - CARDOSO, L. HAIMOVICI, M. BRICK, M. ANTUNES, C. 2019. Medidas de manejo para espécies de peixes marinhos explorados no sul do Brasil. Laboratório de recursos pesqueiros demersais e cefalópodes. Instituto de Oceanografia. Universidade Federal do Rio Grande. - HAIMOVICI, M., RUARTE, C. & RICO, R. 2021. <i>Umbrina canosai</i>. The IUCN Red List of Threatened Species 2021: e.T195077A49223922. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T195077A49223922.en - Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis. Estatística da pesca 2007 Brasil: grandes regiões e unidades da federação / Brasília: Ibama, 2009. 175 p. ; 29 cm. ISBN 978-85-7300-303-1 - ORDENANZA SAP / MAP No. 115, DE 2021. Aprueba el Plan de Reanudación Sostenible de la Pesca de Arrastre en la Costa de Rio Grande do Sul en el rango de 12 millas náuticas frente a la costa del estado de Rio Grande del Sur. - TORRES, K. MORIGA, L. MIYASHITA, L. 2019. Estrategia integrada de monitoramento marinho costeiro: Programa Nacional de Monitoramento da Biodiversidade do ICMBio (MONITORA) - subprograma Marinho e Costeiro. ISBN: 978-65-5024-011-0. 		

	https://www.icmbio.gov.br/portal/images/stories/o-que-fazemos/monitoramento/estrategia_integrada_de_monitoramento_marinho_costeiro.pdf
Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 1.2.2 – Harvest Control Rules and Tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guidepost	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	NO		
Justification		There is no harvest control rule in place for <i>Umbrina canosai</i> . There is no evidence of a specific control plan that might be considered or enacted to achieve a reduction on the exploitation rate as the point of recruitment impairment is approached ($SPR_{limit} = 20\%$). ($SPR_{limit} = 20\%$). Therefore, the fishery would not score SG60.		
b	HCRs robustness to uncertainty			
	Guidepost		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?	BY DEFAULT	NO	
Justification		According to the standard, the fishery would score SG60 by default. Neither are there harvest control rules for <i>Umbrina canosai</i> , nor a system to achieve a reduction on the exploitation rate as the point of recruitment impairment is approached. Therefore, it is impossible to evaluate if the HCRs are robust to the main uncertainties. Therefore, the fishery would not score SG80.		
c	HCRs evaluation			
	Guidepost	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	NO		
Justification		Even if there are no specific harvest control rules, some tools are used to control trawls. However, they do not seem to be enough to keep the stock at exploitation levels consistent with MSY. They did not succeed either in containing the reduction of the biomass, illustrated by all the evaluation models applied (Haimovici <i>et. al.</i> , 2006 e Cardoso, <i>et. al.</i> , 2019). Consequently, the scoring issue would reach SG60 by default, but it would not reach		

	SG80	
References	<ul style="list-style-type: none"> - CARDOSO, L. HAIMOVICI, M. BRICK, M. ANTUNES, C. 2019. Medidas de manejo para especies peixes marinhos sobre explotadas no sul brasil. Laboratorio de recursos pesqueiros demersais e cefalopodes. Instituto de oceanografia. Universidad federal do rio grande. https://demersais.furg.br/images/Cartilha_medidas_de_manejo_espcies_Sul_do_Brasil_com_capa.pdf - HAIMOVICI, M., ABSALONSEN, L., VELASCO, G., MIRANDA, L. V. 2006. Diagnóstico do estoque e orientações para o ordenamento da pesca de <i>Umbrina canosai</i> (Berg, 1895). In: Rossi-Wongtschowski, C. L. D. B.; Ávila-da-Silva, A. O.; Cergole, M. C. (Ed.) Análise das Principais Pescarias Comerciais da Região Sudeste-Sul do Brasil: Dinâmica Populacional das Espécies em Exploração – II. São Paulo: USP, p. 77-85. - Ordenanza SUDEPE No. 26, de 1983. Prohibición de la pesca con el uso de redes de arrastre de cualquier tipo, a menos de 3 (tres) millas de la costa del Estado de Rio Grande del Sur. - Ordenanza IBAMA No. 95 de 1997. Prohíbe el ingreso de nuevos buques de arrastre de fondo, bajo ninguna modalidad, que operen en la captura de peces demersales. - Ordenanza MMA No. 31, de 2004. Establece el uso obligatorio de TED, incorporado en las redes de arrastre. - Ordenanza SAP / MAPA No. 9, de 2021. Deroga la prohibición de cualquier red de arrastre remolcada por embarcaciones motorizadas en las 12 millas náuticas de la franja marítima de la zona costera del estado de Rio Grande do Sul. - ORDENANZA SAP / MAP No. 115, DE 2021. , Aprueba el Plan de Reanudación Sostenible de la Pesca de Arrastre en la Costa de Rio Grande do Sul en el rango de 12 millas náuticas frente a la costa del estado de Rio Grande del Sur. 	
	Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 1.2.3 – Information/Monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	YES	NO	
Justification		<p>There is information related to the croaker (<i>Umbrina canosai</i>) trawl and bottom gillnet fishery in Brazil, obtained from several sources: SUDEPE, IBAMA, FURG, REVIZEE Program, CEPERG, CGMAP, SINPESQ, UNIVALI, CTTMAR and MAPA. Scientists have conducted research on the basis of these data. This research can be accessed online by means of technical reports or scientific papers published in scientific magazines. Different information categories were identified, such as total landings per month and per year, per fishing port, description of biological features (size, sex, growth and distribution), population parameters (growth, mortality, reproduction, migration and stock identification), distribution of spawning areas, type of fishing fleet, fleet characteristics, harvest method, CPUE, tropic features, etc. All these information categories were used to monitor the fishery. Meanwhile, a significant weakness is the lack of consistency and continuity in the data gathering programs. There is lack of logistic structure and human resources to perform the necessary tasks. It was acknowledged that a significant part of the catches was not recorded, as they are directly landed in other ports or commercialized through other intermediaries.</p> <p>Consequently, some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy (in case it existed). The fishery would score SG60 but not SG80.</p>		
b	Monitoring			
	Guidepost	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	NO		
Justification		Basic data regarding the marine extractive fishery production were obtained by landing control systems, onboard maps, production reports provided by the fishing companies		

	<p>and statistical sampling. These control systems are deficient basically due to the lack of sufficient data gathering staff, low commitment from the productive sector, poor reporting and the absence of an integrated institutional policy focused on the creation of national fishery statistics (IBAMA 2007). In addition to these problems, in 2012, the Brazilian government cancelled the program that collected national fishery statistics, including those areas where the majority of landings corresponded to sciaenidae (Rio Grande do Sul and Santa Catarina). The Laboratory of Demersal and Cephalopods of the Federal University of Rio Grande is still collecting data regarding effort and catch by means of interviews on the port pier (Haimovici & Rico, 2021). According to the report of the National Program for Biodiversity Monitoring of the ICMBio 2019 (Torres, <i>et. al.</i>, 2019), Marine and Coastal Subprogram, there is a clear need for consistent monitoring data, as well as research, related to the fishery and conservation measures. This would ensure the continuity of activities with socioeconomic significance, within the general framework of conservation and stock recovery management of threatened species such as <i>Umbrina canosai</i>. Currently, there is no monitoring of the stock abundance. Moreover, indicators are not available or monitored with sufficient frequency to support the harvest control rule as defined by the MSC.</p> <p>Therefore, the fishery would not meet SG60.</p>		
c	Comprehensiveness of information		
Guidepost		There is good information on all other fishery removals from the stock.	
Met?	BY DEFAULT	YES	
Justification	<p>Regarding <i>Umbrina canosai</i> removals by other fleets in Brazil: it is known that this fishery is an allowable bycatch in several bottom trawl fleets with overlapping fishing areas. In addition, they are retained by vessels from the industrial and coastal sector. This fleet uses bottom gillnets, representing 43% of the croaker landings in Brazil, in the state of Rio Grande (IBAMA / CEPERG, 2011). Moreover, the Joint Argentine-Uruguayan Technical Commission (CTMFM) updated the removals per fleet from Argentina and Uruguay, as it is a joint operation (Kikuchi <i>et. Al.</i>, (2021), Haimovici & Rico, 2021 e Canel <i>et al.</i>, 2019).</p> <p>Therefore, there is good information on all other fishery removals from the stock and the fishery would score SG80. If scoring issue a) would have reached SG100, it would have been the same for this scoring issue.</p>		
References	<ul style="list-style-type: none"> - CANEL, D., LEVY, E., SOARES, I.A., BRAICOVICH, P.E., HAIMOVICI, M., LUQUE, J.L. and TIMI, J.T. 2019. Stocks and migrations of the demersal fish <i>Umbrina canosai</i> (Sciaenidae) endemic from the subtropical and temperate Southwestern Atlantic revealed by its parasites. <i>Fisheries Research</i> 214: 10-18. - CARDOSO, L. HAIMOVICI, M. BRICK, M. ANTUNES, C. 2019. Medidas de manejo para especies peixes marinhos sobre explotadas no sul brasil. Laboratorio de recursos pesqueiros demersais e cefalopodos. Instituto de oceanografia. Universidad federal do rio grande. https://demersais.furg.br/images/Cartilha_medidas_de_manejo_espcies_Sul_do_Brasil_com_capa.pdf - HAIMOVICI, M., RUARTE, C. & RICO, R. 2021. <i>Umbrina canosai</i>. The IUCN Red List of Threatened Species 2021: e.T195077A49223922. https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T195077A49223922.en - KIKUCHI, E. CARDOSO, L. CANEL, D. TIMI, J. & HAIMOVICI, M. 2021. Using growth rates and otolith shape to identify the population structure of <i>Umbrina canosai</i> (Sciaenidae) from the Southwestern Atlantic, <i>Marine Biology Research</i>, DOI: 10.1080/17451000.2021.1938131 - INSTITUTO BRASILEIRO DO MEIO AMBIENTE E DOS RECURSOS NATURAIS RENOVÁVEIS. Estatística da pesca 2007 Brasil: grandes regiões e unidades da federação / Brasília: Ibama, 2009. 175 p. ; 29 cm. ISBN 978-85-7300-303-1 		

	<ul style="list-style-type: none"> - TORRES, K. MORIGA, L. MIYASHITA, L. 2019. Estratégia integrada de monitoramento marinho costeiro: Programa Nacional de Monitoramento da Biodiversidade do ICMBio (MONITORA) - subprograma Marinho e Costeiro. ISBN: 978-65-5024-011-0. https://www.icmbio.gov.br/portal/images/stories/o-que-fazemos/monitoramento/estrategia_integrada_de_monitoramento_marinho_costeiro.pdf. - MSC. 2018. Fisheries Standard v2.01.
Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 1.2.4 – Assessment of Stock Status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?	BY DEFAULT	YES	NO
Justification		<p>The fishery scores SG60 by default. As indicated in PI 1.2.1 and 1.2.2, there is no harvest control rule for this fishery. The assessment of Cardoso <i>et al.</i>,(2019) was commissioned by the Ministry of the Environment and by the Foundation Grupo Boticário. If it was applied consistently, it would be useful and appropriate for the harvest control rule.</p> <p>Consequently, the fishery would score SG80.</p>		
b	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	YES	NO	
Justification		<p>The assessment by Cardoso <i>et al.</i>, (2019) estimates stock status relative to generic reference points (SPRtarget = 40% y SPRlimit = 20%) appropriate to the species category (Sciaenidae family).</p> <p>Therefore, the fishery would meet SG60 for this scoring issue. However, it would not score SG80 because the reference points were not estimated according to the stock available information.</p>		
c	Uncertainty in the assessment			
	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account .	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	YES	NO	
Justification		<p>The assessment by Cardoso <i>et al.</i>, (2019), considers the bottom demersal fishery catches, among them <i>Umbrina canosai</i>, that were landed in Rio Grande do Sul because they represent the largest proportion of sciaenidae catches in the region. In addition, the Unit Effort could be compared among periods as there is no record of an increase in fishing power in time. Moreover, its low selectivity regarding the size of the individuals in the catch secures a more significant representativeness of the population structure. However, it does not consider the catches of the gillnet coastal and industrial fleets that fish for croaker in the South. Furthermore, it does not take into consideration the entire stock shared between Argentina and Uruguay. Even if the</p>		

	assessment takes uncertainty into account, it does not identify major sources of uncertainty.		
	As a result, the fishery would score SG60 for this scoring point, but not SG80.		
d	Evaluation of assessment		
	Guidepost		The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?	BY DEFAULT	BY DEFAULT
Justification	The fishery would score SG60 and SG80 by default.		
e	Peer review of assessment		
	Guidepost		The assessment of stock status is subject to peer review. The assessment has been internally and externally peer reviewed.
	Met?	BY DEFAULT	NO
Justification	The fishery would score SG60 by default. For the fishery to score SG80, the assessment should be subject to peer review.		
References	<ul style="list-style-type: none"> - CARDOSO, L. HAIMOVICI, M. BRICK, M. ANTUNES, C. 2019. Medidas de manejo para especies peixes marinhos sobre explotadas no sul brasil. Laboratório de recursos pesqueiros demersais e cefalopodes. Instituto de oceanografia. Universidade Federal do Rio Grande. https://demersais.furg.br/images/Cartilha_medidas_de_manejo_espcies_Sul_do_Brasil_com_capa.pdf		
	Likely PI Scoring Level (<60, 60-79, ≥ 80)	60	

PI 2.1.1 – Primary Species Status

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guidepost	Main primary species are likely to be above the Point of Recruitment Impairment (PRI) OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	BY DEFAULT		
Justification		The MSC standard defines as “primary species” those that are not covered by P1, that fall within the scope of the MSC program, and for whom there are management tools in place, destined to achieve management of the target stock by means of limit reference points. Several species are harvested by the croaker trawl and gillnet fishery. However, it is known that beyond the species considered as ETP, none is managed according to biological reference points. Therefore, there are no “primary species” in this fishery and it would score SG100 by default .		
b	Minor primary species stock status			
	Guidepost			Minor primary species are highly likely to be above the PRI OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species
	Met?	BY DEFAULT		
Justification		As there are no primary species in this fishery, it would score SG 100 by default for this scoring issue.		
References		- MSC (2018). Fisheries Standard v2.01.		
RBF Required?	NO	Likely PI Scoring Level (<60, 60-79, ≥ 80)	100	

PI 2.1.2 – Primary Species Management Strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimize the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?		BY DEFAULT	
Justification		There are no primary species. Therefore, the fishery would score SG80 by default .		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?		BY DEFAULT	
Justification		There are no primary species. Therefore, the fishery would score SG80 by default for this scoring issue.		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		BY DEFAULT	
Justification		There are no primary species. Therefore, the fishery would score SG80 by default for this scoring issue.		
d*	Shark finning*			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?		BY DEFAULT	
Justification		There are no primary species. Therefore, the fishery would score SG80 by default for this scoring issue.		
Review of alternative measures*				

e*	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?		BY DEFAULT	
Justification		There are no primary species. Therefore, the fishery would score SG80 by default for this scoring issue.		
References		- MSC. 2018. Fisheries Standard v2.01.		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	80

PI 2.1.3 – Primary Species Information/Monitoring

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	NO		
Justification		Currently, no primary species have been identified for this fishery. Bearing in mind the lack of continuity of the different data collecting programs and that there is no consistent monitoring program in place, it is impossible to identify the main primary species (those that represent 5% or more of the total fishery) with the information available. Thus, the evaluation team considers that the qualitative information would not be adequate to estimate the impact of the UoA on the status of the main primary species. Therefore, the fishery would not score SG60 for this scoring issue.		
b	Information adequacy for assessment of impact on minor primary species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?	BY DEFAULT	BY DEFAULT	
Justification		The fishery would score SG60 and SG80 by default.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species and evaluate with a high degree of certainty whether the strategy is achieving its objective.

	Met?	NO		
	Justification	<p>Currently, no primary species have been identified for this fishery. The information available would not be adequate to support measures to manage main primary species, if they were established. In fact, it would be impossible to identify the main primary species (for instance, those that represent 5% or more of the total fishery) with the information available.</p> <p>Thus, the fishery would not score SG60.</p>		
	References	- MSC. 2018. Fisheries Standard v2.01.		
		Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60	

PI 2.2.1 – Secondary Species Status

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidepost	<p>Main secondary species are likely to be within biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are highly likely to be above biologically based limits</p> <p>OR</p> <p>If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main secondary species are within biologically based limits.</p>
Justification		<p>The MSC standard defines as “secondary species” those non-target species that are caught by the fishery that fall within the scope of the MSC program, but are not considered as “primary”; or non-target species that do not fall within the scope of the program, but for whom the definition of ETP is not applicable. Secondary species within the scope of the standard that represent 5% or more of the fleet catches or vulnerable species that represent 2% or more of the catches of the fleet under assessment, are considered as “main secondary species”.</p> <p>Fogliarini (2017) identified the presence of crustaceans, echinoderms, chondrichthyans, teleost fish, reptiles and mammals (see Table 10, page 29). There were 60 species in total, in bottom gillnet sets (from 2013 to 2015) fishing for weakfish and demersal species (croaker and hake). However, the author does not identify which of those species were found in the sets that targeted croaker. Thus, it is impossible to define non-target species for the fishery under assessment. Regarding teleost fish, the author claims that Argentine menhaden (<i>Brevoortia pectinatai</i>) was one of the most discarded, around 23% of the total discarded biomass. Pio (2011), analyzing data from 2001 till 2008, mentioned the presence of white croaker (<i>Micropogonias furnieri</i>), Brazilian codling (<i>Urophycis brasiliensis</i>), lumptail searobin (<i>Prionotus spp</i>), striped weakfish</p>		

(*Cynoscion guatucupa*) and different hake species in the fishery targeting croaker. Excepting white croaker, those species were also present in Fogliarini's list. Bearing in mind the selectivity of the gillnet regarding fish size and species, and the mesh sizes, it is likely that the presence of striped weakfish, white fish and Southern kingfish in the fishery targeting croaker is more significant among those species listed by Pio.

Target species	Mesh (cm)	Height (m)
Croaker (<i>Umbrina canosai</i>)	9-10	3-4
Striped weakfish (<i>Cynoscion guatucupa</i>)	9-10	3-4
White croaker (<i>Micropogonias furnieri</i>)	13-16	2-4
Southern kingfish (<i>Menticirrhus spp</i>)	7	1,5-3
Flounder (<i>Paralichthys isosceles</i>)	20	2-3
Guitarfish (<i>Rhinobatos spp</i>)	18	3
Demersal dogfish	18-20	2-4
Angel shark	35-40	36-5

Rosso (2017) defined a demersal fishery group in the Southeast-South of Brazil including croaker together with the following species: Argentine stiletto shrimp; Patagonian Shrimp; Brazilian codling; catfish; Southern kingcroaker; croaker; lumptail searobin; gold-lined grunt; white croaker; bignose fanskate; swordfish; grouper; Jamaica weakfish; American harvestfish; flounder; sand sole, striped weakfish; hawkfish; pink snapper; triggerfish; hake; yellow hake, king weakfish and Brazilian flathead. This analysis was based on the space distribution of the demersal stocks, on the space dynamics of the industrial fisheries and the characteristics of the benthic environment in the Southeast-South region of Brazil.

For the trawling fishery, studying landing data from 2003 to 2011, Port (2015) listed white croaker, striped weakfish, lumptail searobin and flounders as the main species landed together with croaker, accompanied by more than other 13 species (see **Section 3.4.1**). Cardoso *et al.*; (2021), identifies 64 bycatch species in 47 sets monitored in the spring of 2011 and summer and autumn of 2012 in the bottom trawl fishery.

Consequently, a complete list of non-target species that could have been used for this analysis was impossible to obtain for the croaker trawl and bottom gillnet fishery. Its multi-species character and the overlap between the catch of the bottom gillnet fleet and the catch of the demersal trawls, makes the analysis even more difficult. The research made available to the assessment team, present more general information, focusing on the gillnet and trawl fishery in the Southeast-South region of Brazil, without specifying the catches of the *Umbrina canosai* fisheries. That information would be necessary to define the primary and secondary species for the preevaluation. Analyzing the lists provided by the authors previously mentioned, a lot of the bycatch species in the gillnet fishery coincide with those of trawls. However, analyses performed by other researchers for the same modality, throw different results. This shows the diversity of the species caught and stresses the need to gather data separately for each modality.

When comparing the lists with the allowable bycatch species (Regulatory Instruction N° 10) for the modalities that target *Umbrina canosai*, it can be observed that a lot of the species caught do not comply with the legislation. Therefore, there is no certainty about the total or which species are being caught by the fishery.

In a meeting held with the *Umbrina canosai* processing company during the drafting of this report, it was confirmed that trawls harvest croaker, white croaker and striped weakfish, the latter in much lower proportions. The person interviewed reports that the gillnet fishery is quite selective, barely catching croaker with the 10 cm mesh and only individuals within the standard lengths.

Haimovici and Miranda (2005), analyzed striped weakfish *Cynoscion guatucupa* with data till 2002. The conclusion was a potential growth overfishing. However, the authors

	<p>claim that, even if the indicators point at an overexploitation of the stock, with the available information it is impossible to draw a conclusion about the UoA status. The analysis performed by Haimovici and Ignácio (2006) for white croaker <i>Micropogonias furnieri</i>, with fishing data from 1976 to 2002, concluded that the harvest levels since 1990 are not sustainable, with a serious risk of catch reduction in the next years. This was confirmed by Pio (2015) who, analyzing data from 2008 to 2012, set an exploitation rate of 68%. This illustrates that, according to the diagnosis, the white croaker harvest levels of the demersal industrial fisheries are not sustainable.</p> <p>It would be reasonable to suppose that white croaker and striped weakfish could be defined as “main species”. However, during the drafting of this document, there is no certainty about the species that interact with the croaker fishery and which ones should be considered as primary or secondary. Moreover, some of them are not within biologically based limits.</p> <p>Thus, to score this PI, more data would be necessary, as well as a RBF to determine the risk that this fishery represents for other species.</p>		
b	Minor secondary species stock status		
	Guidepost		<p>Minor secondary species are highly likely to be above biologically based limits.</p> <p>OR</p> <p>If below biologically based limits’, there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species</p>
	Met?		
Justification		To score this PI, it would be necessary to gather more information and apply a RBF.	
References		<ul style="list-style-type: none"> - Haimovici, M., Ignácio, J. M. 2005. <i>Micropogonias furnieri</i> (Desmarest, 1823). In: Cergole, M. C.; Ávila-da-Silva, A. O.; Wongtschowski, C. L. D. B. R. Análise das Principais Pescarias Comerciais da Região Sudeste-Sul do Brasil: Dinâmica Populacional das Espécies em Exploração. Série Documentos Revizee-Score Sul, IOUSP: 101-107p. - Fogliarini C.O. 2017. Avaliação das capturas incidentais na pesca de emalhe no Sul do Brasil: descartes e bycatch de pinguim-de-Magalhães. MD Thesis, Biological Oceanography, Universidade Federal do Rio Grande, Rio Grande, 86 pp. - Haimovici, M., Miranda, L. V. 2005. <i>Cynoscion guatucupa</i> (Cuvier,1830). In: Cergole, M. C.; Ávila-da-Silva, A. O.; Wongtschowski, C. L. D. B. R. Análise das Principais Pescarias Comerciais da Região Sudeste-Sul do Brasil: Dinâmica Populacional das Espécies em Exploração. Série Documentos Revizee-Score Sul, IOUSP: 40-45p. - Pio, V.M. 2015. Avaliação do desempenho biológico, econômico e social de medidas de gestão da pesca industrial da corvina (<i>Micropogonias furnieri</i>) com redes de emalhar de fundo em Santa Catarina, Brasil. Ph.D. Dissertação, Universidade do Vale do Itajaí, Itajaí, 129 pp - Rosso, A. P. 2015. Análise das relações entre frotas pesqueiras, recursos demersais e características do ecossistema: subsídios para a identificação de Unidades Geográficas de Gestão para a pesca industrial do Sudeste-Sul do Brasil. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 106p. 	

	<ul style="list-style-type: none"> - PIO, V. M. 2011. A pesca industrial de emalhe de fundo em Santa Catarina: Brasil: dinâmica. Tecnologia, economia e gestão. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 117p. - PORT, D. 2015. O impacto da pesca industrial de arrasto sobre os ecossistemas da margem continental do sudeste/sul do Brasil. Tese de Doutorado. Universidade do Vale do Itajaí. 162p., 2015. - MSC. 2018. Fisheries Standard v2.01. 		
RBF Required?	YES	Likely PI Scoring Level (<60, 60-79, ≥ 80)	

PI 2.2.2 – Secondary Species Management Strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimize the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	NO		
Justification		<p>There are management measures in place for the trawling and gillnet fleets. Nevertheless, it is not clear yet which species are really involved in the <i>Umbrina canosai</i> fishery. Both species under assessment are currently below the PRI. It is necessary to identify the species and their proportion to determine if they require a strategy for managing secondary species.</p> <p>Therefore, the fishery would not score SG60 for this scoring issue.</p>		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	NO		
Justification		<p>It cannot be claimed that the current measures work, based on a plausible argument.</p> <p>Thus, the fishery would not score SG60.</p>		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?	BY DEFAULT	NO	

Justification		The fishery would score SG60 by default. However, as there is not enough information to determine if management measures are necessary, it is impossible to assess if the measures are being implemented successfully. Thus, the fishery would not score SG80 for this scoring issue.		
d*	Shark finning*			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	NO		
Justification		Some authors claim that the trawl and bottom gillnet fishery includes shark catches. Despite Regulatory Instruction MPA/MMA N°14, dated November 26 th , 2012, that forbids shark finning in Brazil, it is not clear if the removals are taking place or not. Therefore, the evaluation team considers that the fishery does not score SG60 for this scoring issue.		
e*	Review of alternative measures to minimize mortality of unwanted catch* [Scoring issue need not be scored if are no unwanted catches of secondary species]			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	NO		
Justification		During the drafting of this report, it was impossible to present a list of species that truly interact with the croaker fishery. Nevertheless, as stated by some authors, the volume of bycatch of the trawl and bottom gillnet fisheries is very high. As a result, it cannot be affirmed that there are alternative measures to minimize UoA-unwanted catch of main secondary species Thus, the fishery does not score SG60 for this scoring issue.		
References		<ul style="list-style-type: none"> - IN MPA/MMA N°14, de 26 de novembro de 2012 - MSC. 2018. Fisheries Standard v2.01. 		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 2.2.3 – Secondary Species Information/Monitoring

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	NO		
Justification		During the drafting of this report, it was impossible to present a comprehensive list of secondary species for this fishery. Regulatory Instruction MPA/MMA N° 10, dated June 10 th , 2011, defined fishing methods (see section 3.5.2) and gave a list of species that could be part of the allowable bycatch of those fisheries targeting <i>Umbrina canosai</i> . Nevertheless, when analyzing some bycatch and discards research on the trawl and gillnet fishery in the South and Southeast of Brazil, the evaluation team observed that many species did not comply with Regulatory Instruction N° 10, without certainty about the total and which species are being caught by the fishery. Some research points out to a figure larger than indicated in the Regulatory Instruction. Consequently, there is no adequate information to identify the secondary species that truly interact with the fishery. Consequently, the fishery would not score SG60 for this scoring issue.		
b	Information adequacy for assessment of impacts on minor secondary species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?	BY DEFAULT	BY DEFAULT	
Justification		The fishery scores SG60 and SG80 by default.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage main secondary species.	Information is adequate to support a partial strategy to manage main secondary species.	Information is adequate to support a strategy to manage all secondary species, and evaluate with

				a high degree of certainty whether the strategy is achieving its objective .
	Met?	NO		
Justification		<p>There is no adequate information to identify the main secondary species and there is no monitoring strategy that could support the implementation of management measures for those species.</p> <p>Therefore, the fishery would not score SG60 for this fishing issue.</p>		
References		<ul style="list-style-type: none"> - Instrução Normativa MPA/MMA Nº 10 de 10 de junho de 2011. - PEREZ, J. A. A.; PEZZUTO, P.R.; RODRIGUES, L.F.; VALENTINI, H.; VOOREM, C. M. 2001. Relatório da reunião técnica de ordenamento da pesca de arrasto nas regiões sudeste e sul do Brasil. Notas. Técn. Facimar. 5:1-34. - ROSSO, A. P. 2015. Análise das relações entre frotas pesqueiras, recursos demersais e características do ecossistema: subsídios para a identificação de Unidades Geográficas de Gestão para a pesca industrial do Sudeste-Sul do Brasil. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 106p. - PORT, D. (2015). O impacto da pesca industrial de arrasto sobre os ecossistemas da margem continental do sudeste/sul do Brasil. Tese de Doutorado. Universidade do Vale do Itajaí. 162p., 2015. - Fogliarini CO. 2017. Avaliação das capturas incidentais na pesca de emalhe no Sul do Brasil: descartes e bycatch de pinguim-de-Magalhães. MD Thesis, Biological Oceanography, Universidade Federal do Rio Grande, Rio Grande, 86 pp. - PIO, V. M. 2011. A pesca industrial de emalhe de fundo em Santa Catarina: Brasil: dinâmica. Tecnologia, economia e gestão. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 117p. - CARDOSO L.G; DA SILVEIRA MONTEIRO D.; HAIMOVICI M. Evaluación de las capturas descartadas de la pesquería de arrastre de fondo a la pareja en el sur de Brasil. Mar Fish Sci [Internet]34(2):197-210.Disponível em: https://ojs.inidep.edu.ar/index.php/mafis/article/view/183 		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 2.3.1 –ETP Species Status

PI 2.3.1		<p>The UoA meets national and international requirements for the protection of ETP species</p> <p>The UoA does not hinder recovery of ETP species</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population/stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?			
Justification		<p>The criteria to determine if a species should be considered as Endangered, Threatened and Protected Species (ETP) are:</p> <p>(a) Recognized as ETP species by the national legislation;</p> <p>(b) Its listing in Appendix I of the Convention on International Trade in Endangered Species (CITES);</p> <p>(c) If the species is included in any binding international conservation agreement, such as Annex 1 of the Agreement on Conservation of Albatross and Petrels (ACAP) and;</p> <p>(d) Species classified as “out of scope” of the MSC Program (amphibians, reptiles, marine birds and mammals) but that appear on the IUCN Red List as vulnerable species, endangered or in critical danger.</p> <p>In some research made available to the assessment team to perform this preevaluation, the following species appeared on the ETP list: Brazilian guitarfish (<i>Pseudobatos horkellii</i>), angel shark (<i>Squatina sp.</i>), franciscana dolphin (<i>Pontoporia blainville</i>) and green turtle (<i>Chelonia mydas</i>).</p> <ul style="list-style-type: none"> • <i>Pseudobatos horkellii</i> is listed in the IUCN as “critically endangered”. It was listed in Directive N° 445 of the Ministry of Environment banning its harvest and commerce, enforced in December 2014. Nevertheless, due to the industry pressure, the ban was suspended during 2015 and first half of 2016. Directive N° 445 faces a legal claim from the National Secretariat of Aquaculture and Fisheries (SAP) for its suspension. • <i>Squatina guggenheim</i> is listed in the IUCN as “endangered” and it is included in Directive MMA N° 445, banning its harvest and commercialization. • <i>Pontoporia blainvillei</i> is listed in the IUCN as “vulnerable”. Its main threat is the accidental mortality due to net fishing. The threats also include habitat degradation, such as the destruction of the benthic community and the bycatch of small sciaenidae fish, main prey of the franciscana dolphin. Analyzing the species bycatch with data from the bottom gillnet fishery in Rio Grande (RS) from 1994 to 2005, it was observed that the largest percentages are related to the white croaker nets. Moreover, after 2000 there was a reduction in the bycatch. This reduction could be due to the change in the target species for the fleet, that decreased the catch of white croaker to increase that of croaker, which is caught at greater depths. In addition, there was a drop in franciscana dolphins’ abundance. The author reported the catch of 6 franciscana dolphins in 111 sets targeting croaker and hake. 		

	<ul style="list-style-type: none"> <i>Chelonia mydas</i> listed in the IUCN as “vulnerable”, presents as one of its main threats the mortality related to bycatch mainly in the coast when using bottom gillnets. Analyzing the species bycatch with data from the bottom gillnet fishery in Rio Grande (RS) from 1994 to 2005, the author reported the catch of 1 green turtle in the 111 sets targeting hake and croaker. However, no other research mentioned the presence of turtles in the croaker fishery. <p>With the information gathered during the drafting of this report, there was no more certainty regarding the ETP species that interact with the croaker fishery. Therefore, it is impossible to determine the specific impact of the croaker bottom trawl and bottom gillnet fishery on each one of the ETP species with whom the fishery might be interacting. It is necessary to collect data confirming the ETP species that suffer a direct or indirect impact of the UoA and estimate its effects on the stock.</p> <p>Thus, to score this PI it would be necessary to gather more information and apply a RBF, through the Productivity-Susceptibility Analysis (PSA). The PSA is a semiquantitative analysis based on the assumption that the potential risk for a species (scoring issue) depends on the degree in which it is susceptible to an impact and of its intrinsic productivity (or its ability to recover from such fishery impact).</p>			
b	Direct effects			
	Guidepost	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?			
Justification		Currently, it is impossible to ensure that known direct effects of the UoA are not likely to hinder recovery of ETP species. It would be necessary to collect data to estimate the mortality rate in relation to the total number of species interactions with the fishery or the stock size.		
		Thus, a RBF should be applied to score this PI.		
c	Indirect effects			
	Guidepost		Indirect effects have been considered and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?			
Justification		In general, a RBF should be applied to score this PI.		
References		<ul style="list-style-type: none"> POLLOM, R., BARRETO, R., CHARVET, P., CHIARAMONTE, G.E., CUEVAS, J.M., HERMAN, K., MARTINS, M.F., MONTEALEGRE-QUIJANO, S., MOTTA, F., PAESCH, L. & RINCON, G. 2020. <i>Pseudobatos horkelii</i>. <i>The IUCN Red List of Threatened Species</i> 2020: e.T41064A2951089. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T41064A2951089.en. BRASIL (2014). Portaria MMA Nº 445, de 17 de dezembro de 2014. CHIARAMONTE, GE 2000. <i>Squatina guggenheim (subpopulação brasileira)</i> . <i>A Lista Vermelha de Espécies Ameaçadas da IUCN 2000</i>: e.T39465A10239986. https://dx.doi.org/10.2305/IUCN.UK.2000.RLTS.T39465A10239986.en . FERREIRA, E. C. (2009). A dinâmica da pesca costeira de emalhe e o efeito nas taxas de captura accidental de toninhas <i>Pontoporia blainvillei</i> (Cetacea, Pontoporiidae), na costa sul do Rio Grande do Sul. Dissertação de mestrado. Programa de Pós-graduação em Oceanografia Biol[ogica da Universidade Federal do Rio Grande/FURG. 2009. 		

	<ul style="list-style-type: none"> - SEMINOFF, J.A. (Southwest Fisheries Science Center, U.S.). 2004. <i>Chelonia mydas</i>. <i>The IUCN Red List of Threatened Species</i> 2004: e.T4615A11037468. https://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T4615A11037468.en. - ZERBINI, AN, SECCHI, E., CRESPO, E., DANILEWICZ, D. & REEVES, R. 2017. <i>Pontoporia blainvillei</i> (versão da errata publicada em 2018). <i>A Lista Vermelha de Espécies Ameaçadas da IUCN</i> 2017: e.T17978A123792204. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T17978A50371075.en - MSC. 2018. Fisheries Standard v2.01. 		
RBF Required?	YES	Likely PI Scoring Level (<60, 60-79, ≥ 80)	

PI 2.3.2 –ETP Species Management Strategy

PI 2.3.2		<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimize the mortality of ETP species.</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	<p>Management strategy in place (national and international requirements)</p> <p>[Scoring issue need not be scored if <u>there are no</u> requirements for protection or rebuilding provided through national ETP legislation or international agreements].</p>			
	Guidepost	There are measures in place that minimize the UoA-related mortality of ETP species and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimize mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimize mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	NO		
Justification		<p>There are national strategies to reduce the interaction of marine mammals with the Brazilian fisheries, such as the National Action Plan for the Conservation of Porpoises and the National Action Plan for the Conservation of Small Cetaceans. There has been a reduction in the level of species bycatch due to the reduction in the fishing effort and the creation of new marine protected areas. Regulatory Instruction MPA/MMA N° 12/2012 regulates the use of gillnets in the South and Southeast regions, as well as the prohibition to increase the fishing fleet as far as the fishing effort is above the sustainable levels. Other strategies include the definition of different conservation areas.</p> <p>In Brazil, the green turtle is protected by laws that forbid the use of any part of the animal or any product derived therefrom. There is a National Action Plan for the Conservation of Marine Turtles, as well as protecting the species within several conservation units. Brazil has signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora-CITES, as well as the Interamerican Convention for the Protection and Conservation of Marine Turtles.</p> <p>The National Plan of Action (PAN) for the Conservation of Marine Skates and Sharks Threatened with Extinction aims at mitigating the impact on elasmobranchs threatened with extinction in Brazil.</p> <p>However, it would be necessary to confirm the list of ETP species that Interact with the UoA and gather evidence in order to claim that national and international requirements for protecting these species are met. Thus, the fishery would not score SG60 for this scoring issue.</p>		
b	<p>Management strategy in place (alternative)</p>			
	Guidepost	There are measures in place that are expected to	There is a strategy in place that is expected to ensure	There is a comprehensive strategy in place for

		ensure the UoA does not hinder the recovery of ETP species.	the UoA does not hinder the recovery of ETP species.	managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	NO		
Justification		<p>As mentioned here above, there are measures in place that try to reduce the catch of mammals, elasmobranchs and reptiles in Brazil. Nevertheless, it is impossible with the information available to assess if these measures are adequate. It would be necessary to gather significant data and a proper monitoring strategy to evaluate the performance and signal changes in the risk level in order to consider how to improve the measures/strategy.</p> <p>Therefore, as long as the adequate information is not available, this scoring issue would not meet SG60.</p>		
c	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	NO		
Justification		<p>Despite existing measures, there is no evidence that they will work. These measures should be assessed and reviewed to guarantee their efficacy. Moreover, there should be a continuous follow-up. However, there is no consistent monitoring plan to collect those data.</p> <p>Thus, this scoring issue does not meet SG60.</p>		
d	Management strategy implementation			
	Guidepost		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?	BY DEFAULT	NO	
Justification		<p>The fishery would score SG60 by default. However, there is no evidence that the measures are being implemented successfully, in addition to the fact that they are not sufficient.</p> <p>As a result, the fishery would not score SG80 for this scoring issue.</p>		
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to	There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimize

		minimize UoA-related mortality of ETP species.	mortality of ETP species and they are implemented as appropriate.	UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	NO		
Justification	There has been no review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of ETP. As a result, SG60 would not be reached for this scoring issue.			
References	<p>- Instituto Chico Mendes de Conservação da Biodiversidade. 2018. Livro Vermelho da Fauna Brasileira Ameaçada de Extinção: Volume II - Mamíferos. In: Instituto Chico Mendes de Conservação da Biodiversidade (Org.). Livro Vermelho da Fauna Brasileira Ameaçada de Extinção. Brasília: ICMBio. 622p.</p> <p>- Instituto Chico Mendes de Conservação da Biodiversidade. 2018. Livro Vermelho da Fauna Brasileira Ameaçada de Extinção: Volume IV - Répteis. In: Instituto Chico Mendes de Conservação da Biodiversidade. (Org.). Livro Vermelho da Fauna Brasileira Ameaçada de Extinção. Brasília: ICMBio. 252p.</p>			
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 2.3.3 –ETP Species Information

PI 2.3.3		<p>Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guidepost	<p>Qualitative information is adequate to estimate the UoA related mortality on ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.</p>	<p>Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.</p>	<p>Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.</p>
	Met?	NO		
Justification		<p>During this assessment, literature was used to study the ETP that could be suffering the impact of the croaker fishery. Data was found regarding the general catch of different target species during the trawl and bottom gillnet fishery. However, it would be necessary to learn more precisely the catches that are a direct consequence of the croaker fishery. As a result, the assessment team cannot claim that the qualitative information is adequate to estimate the UoA related mortality on ETP species. Moreover, the information is not enough to use RBF.</p> <p>Consequently, the fishery would not score SG60 for this scoring issue.</p>		
b	Information adequacy for management strategy			
	Guidepost	<p>Information is adequate to support measures to manage the impacts on ETP species.</p>	<p>Information is adequate to measure trends and support a strategy to manage impacts on ETP species.</p>	<p>Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.</p>
	Met?	NO		
Justification		<p>As mentioned in PI 2.3.2, there are strategies to reduce the catch of mammals, elasmobranchs and reptiles in the Brazilian fishery. However, it would be necessary to confirm the list of ETP species that truly interact with the UoA, in order to claim that the information is adequate to support measures to manage the impacts on ETP species.</p>		

	Thus, the fishery would not score SG60 for this scoring issue.		
References			
	<table border="1"> <tr> <td>Likely PI Scoring Level (<60, 60-79, ≥ 80)</td> <td><60</td> </tr> </table>	Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60
Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60		

PI 2.4.1 – Habitat Status

PI 2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
Scoring Issue	SG 60	Scoring Issue	SG 60
a	Commonly encountered habitat status		
Guidepost	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
Met?			
Justification	<p><i>Umbrina canosai</i> harvest takes place mainly in the inner continental shelf (30m to 100m in depth), with trawls and bottom gillnets as fishing gear. It also takes place in the coastal area (0-30m) and continental shelf break (100 a 250m). According to some authors, the marine ecosystem of the South region has the largest abundance of demersal fishery stocks in Brazil. Port (2015) describes the continental margin of the Southeast-South of Brazil with more than 99% of the area covered by soft substrata. The North area (25°S) presents a variety of sediments, whereas sand and mud greatly dominate the Center and South intervals. According to Haimovici (1998), substrates go from sandy to muddy in the South shelf with the increase in depth, with the majority of the continental shelf in the 10 to 100m depth range, adequate for the trawling fleet.</p> <p>The communities that inhabit the continental shelf with sand and mud substrate show negative impacts with trawls (Kaiser <i>et al.</i>, 2006). Instead, soft bottoms tend to recover more quickly when compared with hard bottoms, of sponges and corals. Nevertheless, when assessing the trawl impact on the Average Trophic Level in the Southeast-South region of Brazil, Port (2015) identified that in the pair trawl strategy where the croaker fishery was the most representative, the Fishing in Balance Index (FIB) dropped, reaching negative levels. The author concluded that this situation could indicate that the environment under study in the inner shelf might have its ecological functions undermined. Still according to this author, it is likely that the benthic habitats of the area responsible of the largest fishery targeting sciaenidae fish, would be the most affected of the Brazilian continental margin. However, those impacts and changes in the community structure have been little studied or are practically unknown.</p> <p>In the croaker fishery, there is overlap between the catches of the gillnet fleet and those of the trawls fishing for demersal fish. When performing an analysis of management geographical units for the industrial demersal fishery in the Southeast-South region, based on biological, fishing and environmental criteria, Rosso (2015) observed this overlap between the demersal fishing fleets. Double trawl took place</p>		

b	VME habitat status [Scoring issue need not be scored if there are no VMEs].			
	Guidepost	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?			
Justification		In the literature analyzed by the assessment team during the drafting of this document, no vulnerable marine ecosystem habitats are mentioned in the UoA. Therefore, this scoring issue need not be scored.		
c	Minor habitat status			
	Guidepost			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			
Justification		To score this issue, a Consequence Spatial Analysis (CSA) is recommended.		
References		<ul style="list-style-type: none"> - https://www.oeco.org.br/reportagens/desperdicio-do-arrasto-aumenta-chances-de-extincao-da-vida-marinha/ - HAIMOVICI, M. 1998. Present state and perspectives for the southern Brazil shelf demersal fisheries. Fisheries Management and Ecology, 5: 277-289. - KAISER, M.J., CLARKE, K.R., HINZ, H., AUSTEN, M.C.V., SOMERFIELD, P.J., KARAKASSIS, I., 2006. Global analysis of response and recovery of benthic biota to fishing. Mar. Ecol. – Prog. Ser. 311, 1–14. http://dx.doi.org/10.3354/meps311001 - PORT, D. (2015). O impacto da pesca industrial de arrasto sobre os ecossistemas da margem continental do sudeste/sul do Brasil. Tese de Doutorado. Universidade do Vale do Itajaí. 162p., 2015. - ROSSO, A. P. 2015. Análise das relações entre frotas pesqueiras, recursos demersais e características do ecossistema: subsídios para a identificação de Unidades Geográficas de Gestão para a pesca industrial do Sudeste-Sul do Brasil. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 106p. 		
RBF Required?	YES	Likely PI Scoring Level (<60, 60-79, ≥ 80)		
		<p>mainly till 100m in depth, pair trawl did not occur below 100m, single trawl between 100 and 200m and bottom gillnet till 100m in depth.</p> <p>Nevertheless, it is recommended to gather more information about the trawl and bottom gillnet fishery interaction with the habitats in order to perform a Consequence Spatial Analysis (CSA) that would allow to assess, for each fishing modality, the risks posed to the different types of habitats and score this PI.</p>		

PI 2.4.2 – Habitat Management Strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	NO		
Justification		<p>Despite the existence of some regulations for the trawl and gillnet fishery (see Section 3.5.2), the assessment team cannot claim at the present moment that there are measures in place to minimize the impacts on the structure and function of the habitats. The fishery impact should be assessed, as mentioned in PI.2.4.1, to be able to study adequately this scoring issue.</p> <p>Therefore, the assessment team considers that the fishery does not score SG60 for this scoring issue.</p>		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	NO		
Justification		<p>As already mentioned, there is no detailed information about the impact of the trawl and bottom gillnet fishery in the habitats. Thus, it cannot be argued that the measures are considered likely to work, based on plausible argument.</p> <p>Consequently, the fishery would not score SG60 for this scoring issue.</p>		
c	Management strategy implementation			
	Guidepost		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?	BY DEFAULT	NO	
Justification		The fishery would score SG60 by default.		
d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guidepost	There is qualitative evidence that the UoA	There is some quantitative evidence that the UoA	There is clear quantitative evidence that the UoA

		complies with its management requirements to protect VMEs.	complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?			
Justification		No VME was reported in the trawl and bottom gillnet UoA.		
References				
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 2.4.3 – Habitats Information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	The types and distribution of the main habitats are broadly understood .	The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	YES	YES	NO
Justification		As shown by Rosso (2015) and Port (2015), the types, distribution and vulnerability of the main habitats in the UoA area are broadly understood. Therefore, the fishery would score SG60 and SG 80 for this scoring issue.		
b	Information adequacy for assessment of impacts			
	Guidepost	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	NO		
Justification		Currently, the information is not adequate to understand the spatial overlap of habitat with fishing gear. Therefore, the fishery would not score SG60 for this scoring issue.		
c	Monitoring			
	Guidepost		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?	BY DEFAULT	NO	
Justification		The fishery would score SG60 by default. To score SG80, adequate information should be collected to detect any increase in risk to the main habitats.		
References		<ul style="list-style-type: none"> - Rosso, A. P. 2015. Análise das relações entre frotas pesqueiras, recursos demersais e características do ecossistema: subsídios para a identificação de Unidades Geográficas de Gestão para a pesca industrial do Sudeste-Sul do Brasil. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 106p. - PORT, D. (2015). O impacto da pesca industrial de arrasto sobre os ecossistemas da margem continental do sudeste/sul do Brasil. Tese de Doutorado. Universidade do Vale do Itajaí. 162p., 2015. 		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 2.5.1 – Ecosystem Status

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
Guidepost	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	
Met?				
		<p>The <i>Umbrina canosai</i> fishery takes place within the Large Marine Ecosystem (LMEs) of the Brazilian South Platform, considered by several authors the most productive area bathed by the Brazilian current. Harvest takes place mainly in the inner continental shelf (30m to 100m in depth), with trawls and bottom gillnets as fishing gear. It also takes place in the coastal area (0-30m) and continental shelf break (100 a 250m). According to some authors, the marine ecosystem of the South region has the largest abundance of demersal fishery stocks in Brazil.</p> <p>However, due to the lack of information that would allow an adequate score for the ETP species components (Component 2.3) and Habitats (Component 2.4), it is impossible, at the present moment, to assess the impact of the croaker trawl and bottom gillnet fishery on the ecosystem. It would be necessary to study in detail each fishing gear.</p> <p>As a result, the assessment team considers that a RBF should be applied to score this PI.</p>		
References	<ul style="list-style-type: none"> - Rosso, A. P. 2015. Análise das relações entre frotas pesqueiras, recursos demersais e características do ecossistema: subsídios para a identificação de Unidades Geográficas de Gestão para a pesca industrial do Sudeste-Sul do Brasil. Dissertação de Mestrado. Universidade do Vale do Itajaí-UNIVALI. 106p. - PORT, D. (2015). O impacto da pesca industrial de arrasto sobre os ecossistemas da margem continental do sudeste/sul do Brasil. Tese de Doutorado. Universidade do Vale do Itajaí. 162p., 2015. 			
RBF Required?	YES	Likely PI Scoring Level (<60, 60-79, ≥ 80)		

PI 2.5.2 – Ecosystem Management Strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, which take into account the potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan , in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	NO		
Justification		<p>The croaker is a target species, among others, of the bottom gillnet, pair trawl and single trawl fisheries. It is a bycatch of the single and double trawls.</p> <p>The trawls are regulated (see Section 3.5.2): trawls are forbidden at less than 3 miles off the coast of Rio Grande do Sul; the concession of new fishing authorizations is banned for certain demersal species such as <i>Umbrina canosai</i> and corresponding bycatch; the compulsory use of TED in trawls for those vessels larger than 11m in length authorized to fish for shrimp, whatever the target species. Moreover, the use of any trawl pulled by motor vessels within 12 MN of the coastal area of Rio Grande do Sul is forbidden. The latter measure aims at reducing the bycatch.</p> <p>For gillnets, the Brazilian legislation establishes the length of the nets according to the length of the vessels. It also sets the height of the nets. Moreover, it imposes a ban on fishing in defined no-take zones, a ban on fishing within 1 MN from the coast, and at a distance of 5 MN off Albardão in the South of the State of Rio Grande do Sul (RS) as well as forbidding new fishing authorizations. In addition, there are also measures to create marine areas to protect ETP species.</p> <p>However, even if there are measures in place aiming at the protection of the ecosystem, it cannot be claimed that the potential impacts of the UoA on primary, secondary or ETP species – that are also key elements of the ecosystem – are taken into account, thus ensuring the protection of the ecosystem structure and functions. Therefore, the fishery would not score SG60 for this scoring issue.</p>		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	NO		
Justification		As mentioned before, there is neither confirmation of the ETP species and list of non-target species that are interacting with the fishery, nor representativeness of the croaker trawl and bottom gillnet fishery catches. As a result, measures cannot be considered as likely to work based on plausible arguments.		

	Therefore, the fishery would not score SG60 for this scoring issue.		
c	Management strategy implementation		
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully . There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?	BY DEFAULT	NO
Justification	The fishery would reach SG60 by default for this scoring issue. However, it would be necessary to have some evidence that the measures in place for the trawl and gillnet fishery are being implemented successfully to score SG80. So far, that evidence has not been provided.		
References	<ul style="list-style-type: none"> - Portaria SUDEPE N° N-26, 28 de julho de 1983 - Portaria IBAMA N° 95, de 22 de agosto de 1997 - Instrução Normativa MMA N° N° 31, de 13 de dezembro de 2004 - MPA/MMA N° 10, de 10 de junho de 2011 - Normativa Interministerial MPA/MMA N° 12, de 22 de agosto de 2012 - Instrução Normativa Interministerial N°4, de 16 de outubro de 2013 - Lei n° 15.223, de 5 de setembro de 2018. - Portaria SAP/MAPA N° 9, de 14 de janeiro de 2021 - Portaria SAP/MAPA N° 115 de 19 de abril de 2021. 		
	Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60	

PI 2.5.3 – Ecosystem Information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	YES	NO	
Justification		Information is adequate to identify the key elements of the ecosystem but not to broadly understand them. Therefore, the fishery would score SG60 , but not SG80.		
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information and have been investigated in detail .
	Met?	NO		
Justification		Although some impacts of the trawl and gillnet fishery could be inferred from existing information, it is not possible to reach a conclusion regarding the interaction with ETP species or the habitats. Moreover, data regarding secondary species are also incomplete. Therefore, it cannot be claimed that the main impacts of the UoA on these key ecosystem elements can be inferred from existing information during the drafting of this document. Thus, the fishery would not score SG60 for this scoring issue.		
c	Understanding of component functions			
	Guidepost		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood .
	Met?	BY DEFAULT	YES	NO
Justification		The fishery scores SG60 by default. The evaluation team considers that the main functions of the ecosystem components (target species, primary, secondary and ETP species and habitats) are known, thus meeting the requirements for SG80 . However, it does not meet the requirements for SG100, as the information available was not enough to identify the detailed composition of these species. Thus, the fishery would score SG80 for this scoring issue.		
Information relevance				

d	Guidepost		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?	BY DEFAULT	NO	
Justification		The fishery scores SG60 by default. However, some impacts on the ecosystem components could not be assessed during this preevaluation. More information would be necessary about the interaction of the UoA with non-target and ETP species, as well as habitats to score SG80.		
e	Monitoring			
	Guidepost		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?	BY DEFAULT	NO	
Justification		The fishery scores SG60 by default. However, to score SG80 it would be necessary to collect data systematically for key ecosystem components.		
References				
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 3.1.1 – Legal and/or Customary Framework

PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainability in the UoA(s); and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guidepost	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organized and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	NO		
Justification		<p>While the fishery within the Brazilian Exclusive Economic Zone is still under assessment, the croaker stocks caught in the South region of Brazil (Rio Grande do Sul and Santa Catarina) are shared with Uruguay and Argentina, as explained in Section 3.3. Therefore, cooperation with those countries is necessary to deliver management outcomes consistent with MSC Principles 1 and 2. The National Director of Marine Resources in Uruguay, declared that the governments of Uruguay and Brazil are discussing since 2020 the creation of a regional fishery organization (RFMO) for the South Atlantic. However, it was impossible to offer a concrete deadline, as Argentina (in February 2021) showed that they were not willing to negotiate the RFMO at the time. Thus, at an international level, there are no actions and policies in place focused on the shared stocks with Uruguay and Argentina.</p> <p>At a national level, fisheries in Brazil are regulated by Law Nº 11.959 of 2009. It rules the National Policy for the Sustainable Development of Aquaculture and Fisheries, to promote: (I) the sustainable development of fisheries and aquaculture as a source of food, employment, income and leisure, guaranteeing the sustainable use of the fishing stocks, as well as the optimization of the ensuing economic benefits, in harmony with the preservation and conservation of the environment and the biodiversity; (II) the management, promotion and surveillance of the fishing activity; (III) the preservation, conservation and recovery of fishing stocks and of the aquatic ecosystems and ; (IV) the socioeconomic, cultural and professional development of those involved in the fishing activity, as well as their communities. The Law was enforced by means of different Directives, Decrees and Instructions. See Section 3.5.2 that includes those more relevant to the fishery.</p> <p>However, there is no official statistics program in Brazil. The last National Fishery Statistics Report was published by the MPA in 2011, without official consolidated data since. From 2010 to 2019, FURG and UNIVALI filled in the role of the state in collecting and analyzing the data from Rio Grande do Sul and Santa Catarina. It is necessary to establish a consistent and continuous statistical program.</p> <p>As a result, the legal framework in Brazil cannot be considered as effective by the assessment team. Therefore, the fishery would not score SG60.</p>		
		Resolution of disputes		

b	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective .
	Met?	YES	NO	
Justification		<p>The Permanent Management Committees (CPGs), encompassed different stakeholders (managers, scientists, fishermen union leaders, shipowners, NGOs etc.), offering an opportunity to debate and solve problems that could arise among the stakeholders. However, they were terminated in April 2019. In June 2021, the Federal Government passed Decree Nº 10.736 reestablishing the Permanent Management Committees. Nevertheless, the public notices to organize each CPG have not been published yet.</p> <p>In contrast, the SAP/MAPA offers to organizations and individuals through the web page https://www.gov.br/pt-br/servicos/solicitar-a-elaboracao-ou-revisao-de-atos-normativos-da-atividade-pesqueira the possibility to present regulatory proposals or challenge current regulations for the fishing activities within the jurisdiction of the Secretariat of Aquaculture and Fisheries for the sustainable management of fishery resources, aiming at the economic, social and environmental sustainability of the activity. This service can be used by fishermen, shipowners, companies, cooperatives, colonies, councils, associations, government bodies, among others.</p> <p>Therefore, the fishery would score SG60 for this scoring issue. To score SG80, more information would be necessary to assess the transparency of the mechanism and its effectiveness in dealing with most issues within the context of the UoA.</p>		
c	Respect for rights			
	Guidepost	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	YES	YES	NO
Justification		<p>Article 3º of Law 11959/2009 establishes that the fishery management system must take into account the peculiarities and needs of artisanal fishermen, people dependent on fishing for food or livelihood and family aquaculture, aiming at ensuring their survival and continuity. In article 24º, the law defines that any physical or legal person that operates in the fishing activity, as well as any vessel, should be registered in the General Fisheries Registry-RGP as a pre-requirement to obtain a fishing license. The license is allocated to a registered vessel, detailing the allowed species, fishing gears and fishing grounds.</p>		

	<p>Thus, SG60 and SG80 are met.</p> <p>However, it cannot be considered as a mechanism that formally commits to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood. Thus, the fishery would not score SG100.</p>	
<p>References</p>	<ul style="list-style-type: none"> - Lei nº 11.959, de 29 de junho de 2009. - VAZ-DOS-SANTOS, A. M.; ROSSIWONGTSCHOWSKI, C. L. D. B.; FIGUEREDO, J. L. (2007) Recursos pesqueiros compartilhados: bioecologia, manejo e aspectos aplicados no Brasil. <i>Boletim do Instituto de Pesca</i>, São Paulo: submetido. - IBDMAR (2021). Potenciais para suprir uma lacuna na gestão pesqueira: avanço nas discussões internacionais sobre a criação de organização regional de pesca para o Atlântico Sul. Disponível em: http://www.ibdmar.org/2021/04/potenciais-para-suprir-uma-lacuna-na-gestao-pesqueira-avanco-nas-discussoes-internacionais-sobre-criacao-de-organizacao-regional-de-pesca-para-o-atlantico-sul/Portaria Interministerial Nº 9, de 1 de setembro de 2015 - Seafood Brasil (online): https://www.seafoodbrasil.com.br/revisao-das-normativas-pesqueirasprocesso-bem-vindo-mas-ainda-fragil - https://www.gov.br/agricultura/pt-br/acao-a-informacao/participacao-social/consultas-publicas - https://www.gov.br/pt-br/servicos/solicitar-a-elaboracao-ou-revisao-de-atos-normativos-da-atividade-pesqueira. 	
	<p>Likely PI Scoring Level (<60, 60-79, ≥ 80)</p>	<p><60</p>

PI 3.1.2 – Consultations, Roles and Responsibilities

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guidepost	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood .	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	YES	YES	NO
Justification		<p>Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are described in Section 3.5.1.</p> <p>Decree Nº 9.872, dated January 2nd, 2019 established that the MAPA, through the Secretariat of Fisheries, is responsible for the national fishery and aquaculture policy, including the stock management, fishing licenses, permits, registration and aquaculture and fishing authorizations. This clarifies that the fisheries management in Brazil, previously shared between the Secretariat of Fisheries and the Ministry of the Environment (MMA), is now the only responsibility of the Ministry of Agriculture, Livestock and Food (MAPA).</p> <p>The committees were established by Interministerial Directive Nº 2, dated November 13th, 2009. They were defined as consultative and advisory bodies for defining rules, criteria and standards regarding the sustainable use of the fishing stocks. They will be jointly organized by the State Minister of the Environment and Minister of Fisheries and Agriculture. In the case of the South and Southeast demersal stocks, Interministerial Directive Nº 9, dated September 1st, 2015, created the CPG Demersal Southeast and South, defining its responsibilities and structure.</p> <p>Thus, functions and responsibilities of the Secretariat of Aquaculture and Fishery in Brazil, of its Departments and Committees are explicitly defined and well understood. However, since 2019, the activities of the CPGs are suspended while a new participative management structure is being defined. On June 29th, 2021, Decree Nº 10.736 was published, reestablishing the Permanent Management Committees. Nevertheless, the public notices to organize each CPG have not been published yet.</p> <p>As a result, SG80 would be met for this scoring issue.</p> <p>Considering that the new participative management structure, through the Permanent Management Committee for the Fishery and the Sustainable Use of the Demersal Fishing Stocks of the Southeast and South Regions is still to be defined, the assessment team does not consider that the functions, roles and responsibilities are explicitly defined and well understood for <i>all areas</i> of responsibility and interaction, as requested by SG100.</p>		

b	Consultation processes			
	Guidepost	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used .
	Met?	YES	YES	NO
Justification		<p>For different fisheries in Brazil there is a consultation process based on Permanent Management Committees, including demersal fish. Nevertheless, these committees did not always work regularly and, currently, they are suspended while the government decides about the new CPGs structure.</p> <p>Since the CPGs were suspended, some joint meetings between the government, academia and the fishing sector have taken place: for instance, the Workshop for the Revision of Interministerial Regulatory Instruction nº 10/2011. In 2020 and 2021, virtual meetings took place between the government, academia and the fishing sector to discuss issues such as the trawling ban within 12 miles of the coast of Rio Grande do Sul.</p> <p>In addition, SAP/MAPA has opened public consultations on law revisions for those stakeholders willing to contribute. They should fill in online forms with their suggestions regarding the drafting of the rules.</p> <p>Consequently, the management system would score SG80 for this scoring issue. To score SG100, there should be evidence that the management system demonstrates consideration of the information and explains how it is used or not used.</p> <p>Therefore, the fishery would score SG80 for this fishing issue.</p>		
c	Participation			
	Guidepost		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved and facilitates their effective engagement.
	Met?		YES	NO
Justification		<p>The Permanent Management Committees (CPGs) offered an opportunity to debate and solve problems that could arise among the stakeholders. However, they were terminated in April 2019. In June 2021, Decree Nº 10.736/2021 was published, reestablishing the Permanent Management Committees. Nevertheless, the public notices to organize each CPG have not been published yet. Article 8 of the Decree establishes that each Committee will be composed by a representative of the Secretariat of Aquaculture and Fisheries of the MAPA, up to 15 representatives of bodies and entities of the Federal, State, District and Municipal Administrations and up to 15 representatives of the fishery stakeholders. Thus, SG80 will be maintained for</p>		

	<p>this scoring issue. However, the lack of this mechanism in the future could imply a score reduction.</p>		
Overall PI justification	<p>Scoring issues (a), (b) and (c) do not meet SG100. Thus, Performance Indicator 3.1.2 would probably score 80 points.</p>		
References	<ul style="list-style-type: none"> - Decreto Nº 9.872, de 2 de janeiro de 2019 - Portaria Interministerial Nº 2, de 13 de novembro de 2009 - Portaria Interministerial Nº 9, de 1 de setembro de 2015 - Decreto Nº 10.736, de 29 de junho de 2021 - https://www.seafoodbrasil.com.br/retorno-dos-comites-permanentes-de-gestao-promessa-ou-realidade - https://www.gov.br/agricultura/pt-br/aceso-a-informacao/participacao-social/consultas-publicas 		
	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Likely PI Scoring Level (<60, 60-79, ≥ 80)</td> <td style="text-align: center; background-color: #d9ead3;">80</td> </tr> </table>	Likely PI Scoring Level (<60, 60-79, ≥ 80)	80
Likely PI Scoring Level (<60, 60-79, ≥ 80)	80		

PI 3.1.3 – Long Term Objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are explicit within and required by management policy.
	Met?	YES	YES	NO
Justification		<p>Law nº 11.959, of June 29th, 2009, that regulates the fishing activities in Brazil, established that “the fishery must be managed in order to guarantee the sustainable use of fishery resources”. Inter-Ministerial Directive Nº2/2009 states that the best scientific data available will be used and that, in the case of absence or lack of scientific data, the precautionary principle should be applied for defining criteria and standards for sustainable use”.</p> <p>Therefore, the fishery would score SG80 for this scoring issue. To meet SG100, there must be evidence that the long term objectives are explicit within the management policy.</p> <p>Therefore, the fishery would score SG80 for this scoring issue.</p>		
References		<ul style="list-style-type: none"> - Lei nº 11.959, de 29 de junho de 2009. - Portaria Interministerial Nº 2, de 13 de novembro de 2009. 		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	80

PI 3.2.1 – Fishery Specific Objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC’s Principles 1 and 2.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	Objectives , which are broadly consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives , which are consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives , which are demonstrably consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	YES	NO	
Overall PI justification		<p>The fishery-specific management system considered for this assessment includes all the measures, procedures and strategies in place for the demersal fisheries in the South of Brazil and they are described in item 3.5.2. Bottom trawl demersal fisheries are limited to those vessels dully registered in the RGP, that already have a fishing license for this fishing gear. The use of TED is compulsory in trawls for those vessels larger than 11m. The minimum catch size for <i>Umbrina canosai</i> is established at 20 cm. The maximum length of the gillnet according to the vessels gross tonnage is defined in the South and Southeast regions. The gillnet fleet that operates in the coast of Rio Grande do Sul fishing for croaker, anchovy, white croaker, forkbeard and bycatch is fixed in up to 68 vessels, with gross tonnage less or equal to 50. Recently, the use of any trawl pulled by motor vessels within 12 MN of the coastal area of Rio Grande do Sul was forbidden.</p> <p>In April 2021, a plan was designed for the sustainable recovery of trawling within 3 to 12 miles of the coast of Rio Grande do Sul (SAP / MAP N ° 115). The aim was to reduce the mortality of ETP species in the reproductive area. Hence, the idea is to maintain a specific statistical database for the coastline of Rio Grande do Sul, by means of self-monitoring of the crew members. They would be in charge of collecting data per each trawl, including photos and videos taken onboard given the fact that, due to the COVID-19 protocol, onboard observers and scientists cannot board fishing vessels. Moreover, they are studying the possibility of making compulsory for all the trawling fleets (artisanal and industrial) that operate in the territorial waters in front of Rio Grande do Sul, to register into the National Program for Satellite Tracking of Fishing Vessels (PREPS). Meanwhile, to the date of this report, there is no evidence that the measures suggested in the plan are going to be implemented, and no alternative measures have been considered for the rest of the fishing area of the bottom trawlers.</p> <p>These measures tend to manage the fishing effort and the impact on other species. Therefore, it can be concluded that the objectives, which are broadly consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are implicit within the fishery-specific management system. Thus, this fishery would score SG60 for this scoring issue.</p>		
References		<ul style="list-style-type: none"> - Portaria IBAMA Nº 95, de 22 de agosto de 1997. - Instrução Normativa MMA Nº Nº 31, de 13 de dezembro de 2004. 		

PI 3.2.1	The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.
	<ul style="list-style-type: none"> - Instrução Normativa MMA Nº 53, de 22 de novembro de 2005. - Instrução Normativa Interministerial SEAP/MMA/MD Nº 02, de 04 de setembro de 2006. - Normativa Interministerial MPA/MMA Nº 12, de 22 de agosto de 2012. - Instrução Normativa Interministerial Nº4, de 16 de outubro de 2013. - Portaria SAP/MAPA Nº 9, de 14 de janeiro de 2021. - Portaria SAP/MAPA N 115, de 19 de abril de 2021.
Likely PI Scoring Level (<60, 60-79, ≥ 80)	60

PI 3.2.2 – Decision-Making Processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives and has an appropriate approach to actual disputes in the fishery.		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	YES	NO	
Justification		There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives, as described in item 3.2.1. However, there is no approved management plan for the <i>Umbrina canosai</i> fishery that could establish decision-making processes. Thus, the fishery would score SG60 for this scoring issue , but not SG80.		
b	Responsiveness of decision-making processes			
	Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	NO		
Justification		There is no evidence that the management system can respond to serious issues in a transparent, timely and adaptive manner, as required by this scoring issue. There is no management plan in place for the fishery and there is no data gathering program from the Secretariat of Aquaculture and Fisheries (SAP/MAPA). In addition, as observed in P1, the stock assessment for the species shows that, in the early 2000s, the stock was already overfished. Therefore, the fishery would not score SG60 .		
c	Use of precautionary approach			
	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?	BY DEFAULT	NO	
Justification		The fishery scores SG60 by default . However, during the drafting of this report, it cannot be claimed that decision-making processes use the precautionary approach and are based on the best available information.		

	Therefore, the fishery would not score SG80 .			
d	Accountability and transparency of management system and decision-making process			
	Guidepost	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request , and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	YES	YES	NO
Justification	<p>The CPGs, when in operation, allow the participation in their meetings of other institutions as observers or speakers to present a specific issue. This guarantees that the stakeholders are involved in the decision-making processes. Therefore, SG80 would be met.</p> <p>However, on the MAPA website, only the reports of the CPG Pelagic SE/S meetings are available, as well as the minutes of the CPG Water Drainage Basins of the Northeast of Brazil meeting. The meetings of the CPGs have not been reestablished so far. Moreover, the data gathered by the assessment team are not enough to claim that formal reporting is offered to all interested stakeholders providing comprehensive information on the fishery's performance and management actions.</p> <p>Therefore, the fishery does not score SG100.</p>			
e	Approach to disputes			
	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	YES	NO	
Justification	<p>For the assessment team there is no evidence that the management authority or fishery are subject to continuing court challenges. Therefore, the fishery would score SG60.</p> <p>To score SG80, there should be evidence that the management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.</p>			
References	<ul style="list-style-type: none"> - Portaria Interministerial Nº 2, de 13 de novembro de 2009 - Decreto Nº 10.736/2021 			

	<ul style="list-style-type: none"> - https://www.gov.br/agricultura/pt-br/assuntos/aquicultura-e-pesca/pesca/comites-permanentes-de-gestao-cpgs - HAIMOVICI, M., ABSALONSEN, L., VELASCO, G., MIRANDA, L. V. 2006. Diagnóstico do estoque e orientações para o ordenamento da pesca de <i>Umbrina canosai</i>.
Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 3.2.3 – Compliance and Enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guidepost	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	NO		
Justification		<p>The Brazilian legislation includes monitoring, control and surveillance measures. Law Nº 11.959, dated June 29th, 2009, regulating fishing activities, establishes in Art. 31 that the surveillance would cover the fishing, harvest, landing, conservation, transport, processing, storage and commercialization of the water resources. In addition, surveillance is the responsibility of the Federal Government, in conformity with the state, district and municipal rules. Art 32 of the same law, determines that “the competent authority could determine the use of onboard maps and satellite monitoring systems, as well as any other device or procedure that could enable remote monitoring. This would offer automatic and real time geographical location and depth of the vessels’ fishing place, according to the terms of the specific regulation”. This would meet the first part of the SG60 requirement.</p> <p>However, in this preevaluation, evidence was produced showing that the mechanism is not effective. Thus, the fishery would not score SG 60 for this scoring issue.</p>		
b	Sanctions			
	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	NO		
Justification		<p>There are sanctions to deal with non-compliance. Regulatory Instruction Nº 18, dated June 18th, 2008, establishes the procedures to implement administrative measures (warning, suspension or cancellation of the fishing license and vessel registration), once non-compliance with the fishing regulations has been verified, regarding the Fisheries General Register - RGP, National Program for Satellite Tracking of Fishing Vessels - PREPS, National Fishing Vessels Observers Program - PROBORDO and Onboard Maps.</p> <p>However, the assessment team did not find evidence that sanctions were applied. Therefore, the fishery would not score SG60 for this scoring issue.</p>		
c	Compliance			
	Guidepost	Fishers are generally thought to comply with	Some evidence exists to demonstrate fishers	There is a high degree of confidence that fishers

		the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	NO		
Justification		<p>There are management measures such as the compulsory handing of onboard maps and the use of the satellite vessel tracking system. As a result, there is a Mechanism for the Control and Supervision (MCS), thus meeting the first part of the SG60 requirement for this scoring issue.</p> <p>However, in 2016, researchers warned about the appearance of the midwater trawling modality (described in item 3.2), considered as illegal as it was not registered in the licenses of the bottom trawls. They added that shipowners and skippers claimed that trawls do not take place in midwater, but rather at the bottom. Nevertheless, in an interview with the processing company, it was reported that it was an isolated event when 3 to 4 vessels risked to fish using midwater trawls.</p> <p>Consequently, there is no rational expectation that the MCS mechanism would be effective and the fishery would not score SG60 for this scoring issue.</p>		
d	Systematic non-compliance			
	Guidepost		There is no evidence of systematic non-compliance.	
	Met?	BY DEFAULT	NO	
Justification		The fishery scores SG60 by default . However, considering the new midwater trawling modality mentioned here above, the fishery does not score SG80 for this scoring issue.		
References		<ul style="list-style-type: none"> - https://www.gov.br/agricultura/pt-br/assuntos/noticias/mais-de-31-mil-licencas-de-pescadores-artesanais-sao-canceladas-apos-identificacao-de-irregularidades - Haimovici, M.; Cardoso, L. G. 2016. Colapso do estoque de Umbrina canosai do Sul do Brasil devido à introdução do arrasto-de-meia-água. Boletim do Instituto de Pesca, 42(1): 258–267. 		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	<60

PI 3.2.4 – Monitoring and Management Performance Evaluation

PI 3.2.4		<p>There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.</p> <p>There is effective and timely review of the fishery-specific management system.</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guidepost	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	YES	NO	
Justification		<p>The Management Committees evaluate some parts of the management system, scoring SG60 for this scoring issue. However, they were suspended in 2019. Recently, in June 2021, Decree Nº 10.736/2021 was published, reestablishing the Permanent Management Committees, among them the Permanent Management Committee for the Fishery and the Sustainable Use of the Demersal Fishing Stocks of the Southeast and South Regions.</p> <p>Thus, the fishery scores SG60 for this scoring issue. However, the absence of that mechanism in the future could cause a score reduction.</p>		
b	Internal and/or external review			
	Guidepost	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	YES	NO	
Justification		<p>Given the changes in the specific fishery management system, such as the recent publication of the Plan for the Sustainable Recovery of Trawling within 3 to 12 miles of the coast of Rio Grande do Sul and the debates in the Management Committee between the State and the Union, it could be said that it is subject to occasional internal review, but not regular internal or external review.</p> <p>Consequently, the fishery would score SG60 for this scoring issue, but not SG80.</p>		
References		<ul style="list-style-type: none"> - https://www.gov.br/agricultura/pt-br/assuntos/aquicultura-e-pesca/pesca/comites-permanentes-de-gestao-cpgs - Decreto Nº 10.736/2021 		
			Likely PI Scoring Level (<60, 60-79, ≥ 80)	60

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