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## CHECKLIST OF THE MARINE FISHES COLLECTED DURING HYDROACOUSTIC SURVEYS IN THE SOUTHEASTERN BRAZILIAN BIGHT FROM 1995 TO 2010

CARMEN LÚCIA DEL BIANCO ROSSI-WONGTSCHOWSKI<sup>1,3</sup>

ANDRÉ MARTINS VAZ-DOS-SANTOS<sup>2</sup>

CAROLINA CORREIA SILIPRANDI<sup>1,4</sup>

### ABSTRACT

*The spatial distribution of small pelagic fishes off the Southeastern Brazilian coastal area (22°-29°S) was investigated over six periods, from 1995 to 2010, in the context of the Program "Prospection and Assessment of the Biomass of the Sardine, Sardinella brasiliensis" in order to provide data about their pattern of distribution and biomass. A checklist of the species collected is presented herein with data on geographic position and depth of captures. Such information is intended to be a reference about the fauna that occupied the region in the period under investigation, and allow future comparisons about the resilience of the local fauna, i.e., the detection of future changes caused by environmental factors or human activities. Sampling was conducted during hydroacoustic surveys with mid water trawling plus a few purse seine operations between 10 m and 100 m depth. A total of 86 species were collected.*

KEY-WORDS: Pelagic; Demersal; ECOSAR; Mid-water trawl; Purse seine.

### INTRODUCTION

The Southeastern Brazilian Bight (SBB) comprises the area between 22°S (Cabo Frio) and 28°30'S (Cabo de Santa Marta Grande) (Matsuura, 1986). This area is defined according to geographic, oceanographic and biological features (Nascimento *et al.*, 2012) and a summary of its chemical, physical, geological, climatological and biological characteristics was provided by Rossi-Wongtschowski *et al.* (2006). The SBB is one of the most productive regions along the Brazilian coast and consequently many scientific surveys were carried there in order to assess the richness and abundance of

the ichthyofauna (Matsuura, 1986; Vazzoler *et al.*, 1999; Rossi-Wongtschowski *et al.*, 2006, 2009; Haimovici *et al.*, 2007).

Many hydroacoustic surveys were performed in the 1970's in the Southeast-Southern Brazilian region mostly within the framework of the Brazilian Fisheries Development Program (PDP-SUDEPE-FAO) (Hansen & Hahn, 1973; Rijavec & Amaral, 1977; Johannesson, 1975; Jorge & Mesquita, 1977). These surveys were concentrated south of 23°S and showed that the main small pelagic species in the SBB was the sardine, *Sardinella brasiliensis*, and, the anchovy, *Engraulis anchoita*, in the southern region (29°S-34°S). Unfortunately, the bycatch was only partially recorded

1. Instituto Oceanográfico da Universidade de São Paulo. Praça do Oceanográfico, 191, Butantã, CEP 05508-120, São Paulo, SP, Brasil.

2. Universidade Federal do Paraná. Rua Pioneiro, 2.153, CEP 85950-000, Palotina, PR, Brasil. E-mail: [andrevaz@ufpr.br](mailto:andrevaz@ufpr.br).

3. E-mail: [cwongski@usp.br](mailto:cwongski@usp.br).

4. E-mail: [siliprandi@usp.br](mailto:siliprandi@usp.br).

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providing little information on the composition of the pelagic ichthyofauna (Haimovici *et al.*, 2007).

The detection of high concentrations of *Engraulis anchoita* on the continental shelf between 31°-34°S stimulated the development of the "Anchoita Program" performed by the Fundação Universidade do Rio Grande (FURG) in the 1980's. The results of the distribution of this small pelagic species collected in eight cruises of that Program with mid-water trawl nets were published by Castello & Habiaga (1982), Mello *et al.* (1992) and Castello (1998).

Later Figueiredo *et al.* (2002) and Bernardes *et al.* (2007) published data on the composition and distribution of the pelagic fish species captured during three hydroacoustic surveys carried between 22°S and 34°S, in depths ranging from 100 to 1000 m, during the Program "Evaluation of the Living Resources in the Brazilian Economic Zone", (REVIZEE) (MMA, 2006).

From 1988 to 2010 a series of seven surveys named "Prospection and Assessment of the Biomass of the Sardine, *Sardinella brasiliensis* (ECOSARs I to VII), was conducted on the shelf (10 to 100 m depth) of the SBB using hydroacoustic methods, to assess the sardine distribution and biomass (Rossi-Wongtschowski & Saccardo, 1991; Madureira *et al.*, 2005; Cergole & Dias Neto, 2011).

During the first cruise only the distribution and biomass of the sardine and the anchovy were analyzed because both species yielded the highest biomass values (Castello *et al.*, 1991). Afterwards, with the decrease of the sardine stock, the subsequent cruises also evaluated other small pelagic fish, as alternative stocks.

It is worth noting that small pelagic species such as sardines, herrings, anchovies and mackerels usually form large schools and are important fishery resources in all oceans, except in the Antarctic (Fréon *et al.*, 2005). Usually small pelagic fish have short life-cycles and are associated with high productive areas because most are planctivorous and secondary consumers. They are prey for many nektonic and benthonic organisms, interconnecting the primary producers to higher levels of the marine food web (Ryther, 1969; Neil, 2001).

Many stocks of small pelagic fishes are constantly monitored in order to follow the changes of their community structure over the time (Beverton, 1990; Checkley Jr. *et al.*, 2009). Lowe-McConnell (1999) showed that characteristics of water masses, food availability, shoal abilities and latitudinal and vertical migrations are factors that affect their distribution and abundance.

One of the most expected results from surveys is the accurate and precise record of the species collected. Catalogues and checklists of species constitute initial sources of references for species identification, and their distribution (both horizontal and vertical). In the Southeastern-South Brazilian region, the classic references for fish identification are the Manuals of José Lima de Figueiredo and Naércio Aquino Menezes (Figueiredo, 1977; Figueiredo & Menezes, 1978, 1980, 2000; Menezes & Figueiredo, 1980, 1985). More recently, many other references updated the knowledge of fish species occurrence and distribution in that area (and other regions), including Carvalho-Filho (1999), Figueiredo *et al.* (2002), Menezes *et al.* (2003), Bernardes *et al.* (2005), Santos & Figueiredo (2008), Fischer *et al.* (2011) and Menezes (2011).

In order to record the species collected during the ECOSAR cruises, their spatial and depth distribution are presented. We believe that this information will be useful as a reference for the occurrence of the species inhabiting the SBB during the period under investigation, serving as a basis for future comparisons aimed to detect changes in its composition caused by environmental and/or human activities.

## MATERIAL AND METHODS

Data were obtained during surveys II, III, IV, V, VI and VII of the ECOSAR cruises, carried out between 1995 and 2010, on board of the RV *Atlântico Sul* of the Universidade Federal de Rio Grande (FURG) (Table 1).

The cruises were carried out along pre-established grids during day and night, at a speed of 10 knots. The coverage of the cruises, calculated as the ratio of the number of miles prospected in relation to the total area, was more than 20%. The acoustic data were collected with a digital scientific echo sounder with SIMRAD EK500 echo Integrator model, connected to ES38B and SIMRAD transducers SIMRAD ES 120-7.

Mid-water trawl net sampling was performed whenever schools were detected. The net, designed to catch small pelagic fish, had wings and square with a mesh of 400 mm between knots, gradually decreasing to 50 mm in the tunnel and 20 mm in the bag, plus an internal 12 mm mesh bag. The net was kept open by the use of two doors of 4 m<sup>2</sup> (3 m × 1, 35 m), type Suberkrub and weighting approximately 380 kg each. The hauls were performed at speeds between 3 and 4 knots for a period of time that depended on the size of the schools. The net performance and the

**TABLE 1:** Summary of ECOSAR cruises during the period of 1995-2010.

Survey	Initial Date	Final Date	Initial Latitude (S)	Final Latitude (S)	Initial Longitude (W)	Final Longitude (W)	Minimum Depth (m)	Maximum Depth (m)
II	12/06/1995	01/07/1995	22°59'17"	27°25'94"	41°41'50"	48°22'87"	23.0	145.0
III	18/11/1995	02/12/1995	23°05'37"	28°26'10"	43°28'18"	48°38'66"	23.0	102.0
IV	20/01/2008	05/02/2008	23°03'25"	28°56'99"	43°23'27"	49°03'65"	18.0	75.0
V	08/11/2008	29/11/2008	23°04'30"	29°20'00"	42°06'30"	49°20'00"	22.0	102.0
VI	22/09/2009	08/10/2009	22°39'55"	27°42'85"	41°51'28"	48°29'39"	22.0	128.0
VII	03/03/2010	22/03/2010	22°29'57"	28°36'70"	41°11'94"	48°39'63"	22.5	97.0

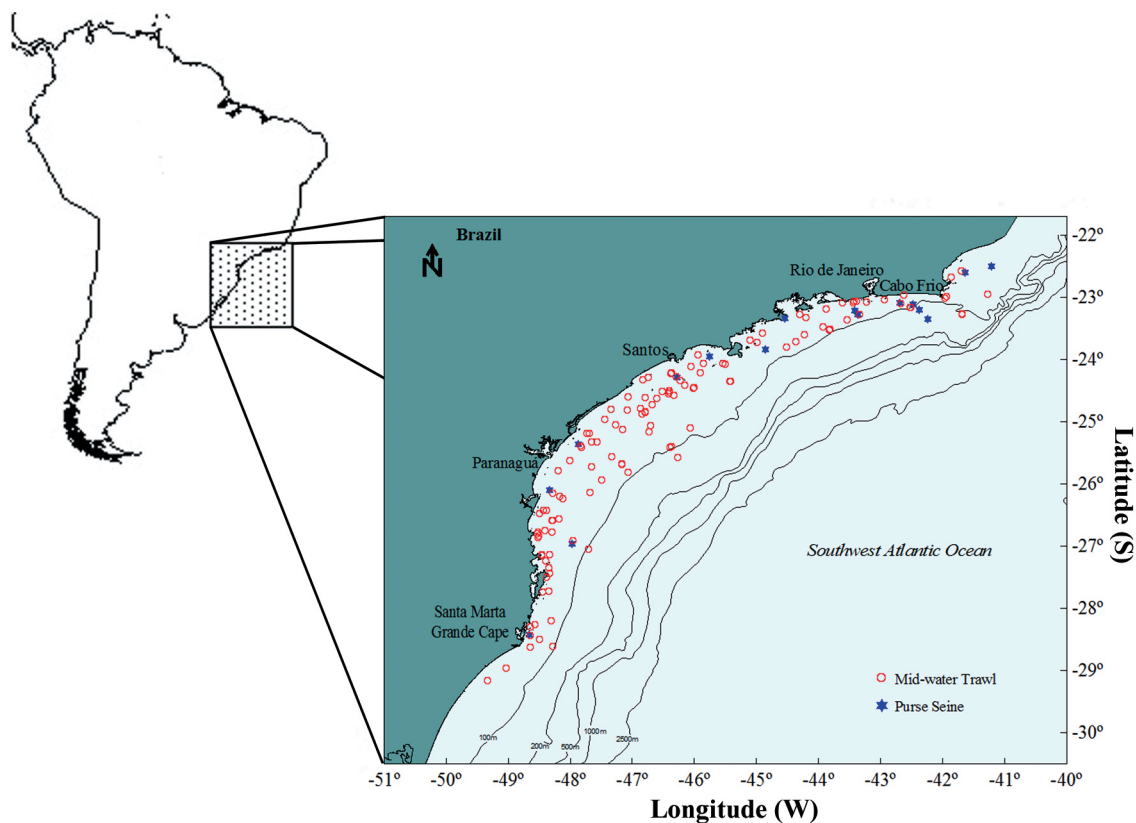
success of the captures were tracked through a probe SIMRAD FR500 (Trawl Eye System). Details of the methodology were presented by Madureira & Rossi-Wongtschowski (2005).

During cruises V, VI and VII, 21 purse seines hauls were also made by industrial vessels in order to help to evaluate more precisely the sardine captures/biomass. In the present list, data on the fishes collected with that purse seine are also provided herein and are indicated by asterisks in Table 2.

The surveyed area covered the continental shelf between 22°S to 29°S and a depth of 10 m to 100 m. Along these cruises, the mid-water trawl net was cast 122 times (Fig. 1). Depth values of the local net

operations were registered and all fish captures were geo-referenced (latitude and longitude).

Collected specimens were frozen on board and posteriorly identified at the Laboratório de Ictiofauna e Crescimento (LABIC-IOUSP) following Figueiredo (1977), Figueiredo & Menezes (1978, 1980, 2000) and Menezes & Figueiredo (1980, 1985). Voucher specimens were deposited at the Museu de Zoologia of the Universidade de São Paulo. The current taxonomic status of the species follows Eschmeyer (2013). Species occurrence in the surveys was compiled in terms of geographic position and depth. In the checklist, for each species we mention the survey(s) in which it was recorded and provide information on

**FIGURE 1:** Study area showing the catch positions of all cruises.

latitude and longitude followed by depth of capture (in meters).

## RESULTS

A total of 86 species belonging to 13 orders and 37 families were caught during the surveys. The number of species recorded in each survey was 50 in the II, 48 in III, 39 in IV, 36 in V, 30 in VI and 39 (Table 2).

## DISCUSSION

This paper is the first to compile all the records of the species collected during the hydroacoustic surveys of the ECOSAR Program including geo-referenced data and the local depth of capture. Formerly, Soares *et al.* (2005) published part of the species composition of ECOSAR cruises II and III, in order to describe the echo records detected during July and November of 1995 and Vaz-dos-Santos & Rossi-Wongtschowski (2013) presented the length-weight relationships of the main species caught during ECOSAR IV to VII cruises.

The distribution of some species represent extensions of the distribution range presented by Menezes *et al.* (2003), such as some clupeiforms (*Anchoa filifera*, *A. tricolor*, *Anchovia clupeioides*, *Chirocentron bleekermanus* and *Harengula clupeiola*) and *Synagrops spinosus* (Acropomatidae), *Heteropriacanthus cruentatus* (Priacanthidae), *Decapterus tabl* and *Trachinotus goodei* (Carangidae), whose records now represent southernmost localities of occurrences of these species.

During the fishing operations a few collections were also made off the SBB and included a few demersal species and mostly small pelagic fishes as defined by Fréon *et al.* (2005) *i.e.*, adult fishes with total length between 10 and 30 cm.

Clupeiforms comprised typical small pelagic fishes in the catches. This is not unexpected since species of this order inhabit estuaries and transitional areas on the continental shelf (Figueiredo & Menezes, 1978). Since depths above 10 m were not prospected, species related to shallow waters were recorded few times, and include *Anchoa* spp., *Anchovia clupeioides*, *Anchoviella lepidentostole*, *Cetengraulis edentulus* and *Lycengraulis grossidens*. On the other hand, *Engraulis anchoita*, *Sardinella brasiliensis* and others sardines that live in neritic regions were largely recorded.

Medium-sized pelagic fishes, *i.e.*, those between 30-60 cm total length (Fréon *et al.*, 2005) were well represented by carangids such as *Chloroscombrus*

*chrysurus*, *Oligoplites saliens*, and *Trachurus lathami*, and the scombrid *Scomber colias* and those species occupy mainly the neritic region. *Pomatomus saltatrix*, a large pelagic species according Fréon *et al.* (2005), was also frequently caught.

Species with different habits were sporadically recorded in the surveys: demersal (*e.g.*, members of the Sciaenidae and *Genidens barbatus*); pelagic juveniles (*e.g.*, *Dactylopterus volitans*); juveniles and young of demersal fishes (*e.g.*, *Ophidion holbrookii* and species of the Gadiformes); shallow waters species (*e.g.*, of the family Gerreidae); oceanic mesopelagic (*e.g.*, *Maurolicus stebmanni*) and rocky and reef fishes (*e.g.*, species of the Priacanthidae). These habits were described according to Menezes & Figueiredo (1980), Cergole & Rossi-Wongtschowski (2005), Velasco *et al.* (2006), Figueiredo & Menezes (2000), Alleman (2013), Tomás (1996), Vaz-dos-Santos & Rossi-Wongtschowski (2007), Haimovici *et al.* (2006), Santos & Figueiredo (2008) and Starnes (1988).

It is important to emphasize that the fishing gear used for collecting was selective for small and medium-size pelagic fishes. So the use of mid-water trawl nets limits the catches of some fast swimming species, such sardine and anchovies (FURG, 2010). Nevertheless, these species can be collected using purse seines.

Most of the small pelagic fishes caught are important fishing resources in the SBB for the industrial purse seine fleet (IBAMA, 2007; UNIVALI/CTTMar, 2011) operating in coastal and neritic waters targeting *S. brasiliensis* (MPA, 2012; Rossi-Wongtschowski *et al.*, 2009).

During the ECOSAR cruises, fish representatives of the provinces described by Figueiredo (1981) were captured including: (1) Caribbean species represented by those from warm waters that have in this region its southern distribution limit (*e.g.*, *Chirocentron bleekermanus*, *Oligoplites saliens*, *Selar crumenophthalmus*); (2) Patagonian species, from cold waters, being the region its northern limit (*e.g.*, *Merluccius hubbsi*), and (3) Transitional species adapted to a combination of warm and cold waters, which is best exemplified by *Sardinella brasiliensis*. Other species present some degree of variation from those patterns of distribution, northward or southward, except for those that have oceanic or circumglobal distribution.

The dynamic of the waters masses in the region was related to the distribution and occurrence of the ichthyofauna groups described by Figueiredo (1981). The hydrology recorded in the ECOSAR is described in Matsuura (1986) and Pires-Vanin *et al.* (1993) as follows: shallow areas and the inner continental shelf (< 50 m) are under influence of Coastal Waters (CW,

TABLE 2: Fish species collected during the ECOSAR cruises, geographic positions and depth of capture. Classification follows Menezes *et al.* (2003). Asterisks indicate purse seine samples.

Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII		
<b>Carcharhiniformes</b>								
<b>Carcharhinidae</b>								
<i>Carcharhinus porosus</i> (Ranzani, 1839)	X							(22°59'6"S, 41°56'99"W, 20); (24°42'80"S, 46°40'58"W, 15).
<i>Rhizoprionodon lalandii</i> (Müller & Henle, 1839)	X							(23°02'28"S, 42°55'50"W, 20).
<i>Rhizoprionodon porosus</i> (Poey, 1861)		X						(24°36'00"S, 47°03'65"W, 16).
<b>Clupeiformes</b>								
<b>Engraulidae</b>								
<i>Anchoa filifera</i> (Fowler, 1915)			X					(23°54'91"S, 45°55'80"W, 18); (24°12'77"S, 46°22'51"W, 30); (27°07'82"S, 48°19'62"W, 30).
<i>Anchoa hylepis</i> (Evermann & Marsh, 1900)	X							(24°24'68"S, 46°09'33"W, 56).
<i>Anchoa mairinii</i> Hildebrand, 1943		X						(24°36'00"S, 47°03'65"W, 16); (25°11'20"S, 47°41'24"W, 23); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (27°08'77"S, 48°27'14"W, 11).
<i>Anchoa tricolor</i> (Spix & Agassiz, 1829)	X	X	X					(24°04'20"S, 45°30'27"W, 30); (24°30'70"S, 46°31'15"W, 38); (24°36'80"S, 46°35'75"W, 36); (25°11'09"S, 47°44'01"W, 21); (26°45'29"S, 48°24'32"W, 22); (26°55'15"S, 47°56'95"W, 50); (26°24'84"S, 48°26'23"W, 14); (28°18'20"S, 48°39'01"W, 20).
<i>Anchovia clupeioides</i> (Swainson, 1839)			X					(24°30'70"S, 46°31'15"W, 38).
<i>Anchoviella lepidontostole</i> (Fowler, 1911)			X					(27°07'97"S, 48°26'85"W, 16).
<i>Cetengraulis edentulus</i> (Cuvier, 1829)				X				(23°54'91"S, 45°55'80"W, 18).
<i>Engraulis anchoita</i> Hubbs & Marini, 1935	X	X	X	X	X	X		(22°33'87"S, 41°46'W, 40); (22°56'81"S, 42°16'32"W, 20); (22°57'26"S, 42°36'65"W, 30); (23°03'25"S, 43°23'72"W, 20); (23°02'28"S, 42°55'50"W, 20); (23°03'67"S, 43°25'32"W, 28); (23°04'30"S, 43°13'28"W, 20); (23°04'85"S, 43°35'86"W, 23); (23°05'25"S, 43°25'58"W, 29); (23°15'79"S, 43°19'64"W, 28); (23°21'60"S, 43°31'90"W, 40); (23°30'75"S, 43°48'99"W, 60); (23°34'26"S, 44°53'68"W, 30); (23°43'11"S, 44°58'70"W, 45); (23°54'91"S, 45°55'80"W, 18); (24°05'94"S, 46°03'27"W, 21); (24°12'77"S, 46°22'51"W, 30); (24°16'19"S, 46°17'51"W, 30); (24°16'76"S, 46°43'77"W, 17); (24°19'74"S, 46°13'46"W, 13); (24°21'03"S, 45°25'00"W, 50); (24°21'20"S, 45°24'83"W, 30); (24°30'09"S, 46°24'00"W, 26); (24°36'28"S, 46°47'39"W, 32); (24°36'80"S, 46°35'75"W, 36); (24°42'80"S, 46°40'58"W, 15); (25°03'22"S, 47°15'58"W, 34); (25°09'33"S, 46°42'93"W, 20); (25°18'87"S, 47°33'83"W, 23); (25°22'90"S, 47°50'10"W, 22); (25°24'31"S, 47°48'94"W, 22); (25°24'34"S, 46°23'18"W, 60); (25°40'47"S, 47°10'14"W, 25); (25°43'14"S, 47°38'97"W, 38); (25°47'20"S, 48°11'47"W, 12); (25°56'17"S, 47°29'33"W, 50); (26°08'41"S, 47°40'59"W, 50); (26°27'99"S, 48°29'39"W, 21); (26°35'07"S, 48°16'75"W, 20); (26°45'29"S, 48°24'32"W, 22); (26°51'60"S, 48°31'15"W, 15); (27°02'90"S, 47°42'34"W, 80); (27°07'82"S, 48°19'62"W, 30); (27°08'77"S, 48°27'14"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°25'94"S, 48°20'09"W, 15); (27°29'58"S, 48°22'56"W, 15); (27°42'85"S, 48°20'64"W, 25); (28°12'04"S, 48°18'08"W, 36); (28°15'33"S, 48°33'61"W, 15); (28°18'20"S, 48°39'01"W, 20); (28°26'10"S, 48°38'66"W, 10); (28°37'40"S, 48°38'38"W, 12); (28°56'99"S, 49°02'10"W, 12); (28°30'00"S, 48°30'00"W, 23).
<i>Lyengraulis grossidens</i> (Spix & Agassiz, 1829)	X							(26°49'82"S, 48°30'45"W, 15); (27°14'38"S, 48°22'87"W, 15); (27°20'50"S, 48°21'02"W, 10); (27°26'01"S, 48°20'11"W, 15).

Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII		
<b>Pristigasteridae</b>								
<i>Chirocentrodon bleekeri</i> (Poey, 1867)	X	X	X	X	X	X	(24°36'00"S, 47°03'65"W, 16); (24°12'77"S, 46°22'51"W, 30); (25°11'09"S, 47°44'01"W, 21); (25°11'20"S, 47°41'24"W, 23); (25°22'90"S, 47°50'10"W, 22); (25°24'31"S, 47°48'94"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (26°27'99"S, 48°29'39"W, 21); (27°08'77"S, 48°27'14"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°07'82"S, 48°19'62"W, 30); (27°07'97"S, 48°26'85"W, 16).	
<i>Pellona harroueri</i> (Fowler, 1917)	X	X	X	X	X	X	(23°15'79"S, 43°19'64"W, 28); (24°36'00"S, 47°03'65"W, 16); (24°12'77"S, 46°22'51"W, 30); (24°36'28"S, 46°47'39"W, 32); (25°47'20"S, 48°11'50"W, 12); (25°22'90"S, 47°50'10"W, 22); (25°24'31"S, 47°48'94"W, 22); (26°45'29"S, 48°24'32"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (26°27'99"S, 48°29'39"W, 21); (27°08'77"S, 48°27'14"W, 11); (27°07'82"S, 48°19'62"W, 30); (27°07'97"S, 48°26'85"W, 16).	
<b>Clupeidae</b>								
<i>Harengula clupeola</i> (Cuvier, 1829)	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (23°15'79"S, 43°19'64"W, 28); (23°20'23"S, 44°32'33"W, 26*); (23°41'25"S, 42°06'30"W, 25); (23°54'91"S, 45°55'80"W, 18); (23°56'76"S, 45°45'00"W, 29*); (24°36'00"S, 47°03'65"W, 16); (24°48'39"S, 47°04'72"W, 15); (24°03'47"S, 45°51'01"W, 22); (24°12'77"S, 46°22'51"W, 30); (24°18'74"S, 46°48'99"W, 17); (24°36'28"S, 46°47'39"W, 32); (25°03'22"S, 47°15'58"W, 34); (25°11'09"S, 47°44'01"W, 21); (25°22'90"S, 47°50'10"W, 22); (25°24'17"S, 46°21'75"W, 40); (25°24'31"S, 47°48'94"W, 22); (26°45'29"S, 48°24'32"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (26°11'63"S, 48°10'34"W, 25); (26°24'84"S, 48°26'23"W, 12); (26°27'99"S, 48°29'39"W, 21); (27°08'77"S, 48°27'14"W, 11); (27°06'01"S, 48°20'11"W, 15); (27°07'82"S, 48°19'62"W, 30); (27°07'97"S, 48°26'85"W, 16); (27°14'38"S, 48°22'87"W, 15); (27°29'58"S, 48°22'56"W, 15); (23°54'91"S, 45°55'80"W, 18); (24°48'39"S, 47°04'72"W, 15); (24°57'62"S, 47°26'54"W, 20); (24°18'74"S, 46°48'99"W, 17); (24°48'05"S, 47°20'27"W, 12); (25°24'31"S, 47°48'94"W, 22); (26°06'19"S, 48°20'12"W, 28,7*); (26°11'63"S, 48°10'34"W, 25); (26°24'84"S, 48°26'23"W, 12); (26°27'99"S, 48°29'39"W, 21); (26°47'47"S, 48°31'53"W, 11); (27°07'82"S, 48°19'62"W, 30); (27°07'97"S, 48°26'85"W, 16); (27°14'38"S, 48°22'87"W, 15).	
<i>Opishonema oglinum</i> (Lesueur, 1818)	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (22°33'87"S, 41°41'46"W, 40); (22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (22°35'79"S, 41°38'04"W, 47,5*); (22°57'26"S, 42°36'65"W, 30); (23°19'43"S, 44°12'22"W, 49*); (23°02'28"S, 42°55'50"W, 20); (23°03'25"S, 43°23'27"W, 20); (23°04'30"S, 43°13'28"W, 20); (23°05'25"S, 43°25'58"W, 29); (23°05'26"S, 42°40'70"W, 65*); (23°06'25"S, 42°27'84"W, 87*); (23°09'45"S, 42°30'47"W, 90); (23°10'57"S, 43°52'31"W, 19); (23°11'60"S, 42°21'80"W, 98*); (23°15'79"S, 43°19'64"W, 28); (23°20'23"S, 44°32'33"W, 26*); (23°20'63"S, 42°14'10"W, 128*); (23°34'26"S, 44°53'68"W, 30); (23°41'25"S, 42°06'30"W, 25); (23°47'57"S, 44°31'13"W, 25); (23°56'76"S, 45°45'00"W, 29*); (24°19'74"S, 46°13'46"W, 13); (24°24'68"S, 46°09'33"W, 56); (24°42'80"S, 46°40'58"W, 15); (24°48'39"S, 47°04'72"W, 15); (24°57'62"S, 47°26'54"W, 20); (24°03'47"S, 45°51'01"W, 22); (24°04'20"S, 45°30'27"W, 30); (24°05'94"S, 46°03'27"W, 21); (24°12'55"S, 46°21'65"W, 10); (24°16'19"S, 46°17'51"W, 30); (24°16'60"S, 46°16'32"W, 30); (24°16'76"S, 46°43'77"W, 17); (24°26'62"S, 45°59'87, 49); (24°26'89"S, 46°00'71"W, 44); (24°30'70"S, 46°31'15"W, 38); (24°36'28"S, 46°47'39"W, 32); (24°48'05"S, 47°20'27"W, 12); (25°05'47"S, 46°03'55"W, 35); (25°07'27"S, 47°09'27"W, 37); (25°18'87"S, 47°33'83"W, 23);	
<i>Sardinella brasiliensis</i> (Steindachner, 1879)	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (22°33'87"S, 41°41'46"W, 40); (22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (22°35'79"S, 41°38'04"W, 47,5*); (22°57'26"S, 42°36'65"W, 30); (23°19'43"S, 44°12'22"W, 49*); (23°02'28"S, 42°55'50"W, 20); (23°03'25"S, 43°23'27"W, 20); (23°04'30"S, 43°13'28"W, 20); (23°05'25"S, 43°25'58"W, 29); (23°05'26"S, 42°40'70"W, 65*); (23°06'25"S, 42°27'84"W, 87*); (23°09'45"S, 42°30'47"W, 90); (23°10'57"S, 43°52'31"W, 19); (23°11'60"S, 42°21'80"W, 98*); (23°15'79"S, 43°19'64"W, 28); (23°20'23"S, 44°32'33"W, 26*); (23°20'63"S, 42°14'10"W, 128*); (23°34'26"S, 44°53'68"W, 30); (23°41'25"S, 42°06'30"W, 25); (23°47'57"S, 44°31'13"W, 25); (23°56'76"S, 45°45'00"W, 29*); (24°19'74"S, 46°13'46"W, 13); (24°24'68"S, 46°09'33"W, 56); (24°42'80"S, 46°40'58"W, 15); (24°48'39"S, 47°04'72"W, 15); (24°57'62"S, 47°26'54"W, 20); (24°03'47"S, 45°51'01"W, 22); (24°04'20"S, 45°30'27"W, 30); (24°05'94"S, 46°03'27"W, 21); (24°12'55"S, 46°21'65"W, 10); (24°16'19"S, 46°17'51"W, 30); (24°16'60"S, 46°16'32"W, 30); (24°16'76"S, 46°43'77"W, 17); (24°26'62"S, 45°59'87, 49); (24°26'89"S, 46°00'71"W, 44); (24°30'70"S, 46°31'15"W, 38); (24°36'28"S, 46°47'39"W, 32); (24°48'05"S, 47°20'27"W, 12); (25°05'47"S, 46°03'55"W, 35); (25°07'27"S, 47°09'27"W, 37); (25°18'87"S, 47°33'83"W, 23);	



Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII	VIII	
<b>Siluriformes</b>								(25°22'90"S, 47°50'10"W, 22); (25°24'17"S, 46°23'18"W, 40); (25°24'31"S, 47°48'94"W, 22); (25°47'20"S, 48°11'47"W, 12); (25°56'17"S, 47°29'33"W, 50); (26°49'82"S, 48°30'45"W, 15); (26°06'19"S, 48°20'12"W, 28.7°); (26°11'63"S, 48°10'34"W, 25); (26°14'19"S, 48°06'95"W, 19); (26°24'94"S, 48°22'62"W, 14); (26°35'07"S, 48°16'75"W, 20); (27°26'01"S, 48°20'11"W, 15); (27°07'82"S, 48°19'62"W, 30); (27°14'38"S, 48°22'87"W, 15); (27°29'58"S, 48°22'56"W, 15); (27°43'83"S, 48°25'92"W, 10); (28°18'20"S, 48°39'01"W, 20); (28°25'21"S, 48°39'54"W, 34°).
<b>Ariidae</b>				X				(23°41'25"S, 42°06'30"W, 25); (27°14'38"S, 48°22'87"W, 15).
<i>Genidens barbatus</i> (Lacepède, 1803)				X				(23°41'25"S, 42°06'30"W, 25); (27°14'38"S, 48°22'87"W, 15).
<b>Stomiiformes</b>								
<b>Sternopychidae</b>								
<i>Maurollicus stehmanni</i> Parin & Kobylansky, 1993	X							(23°16'30"S, 41°41'25"W, 30); (25°33'90"S, 46°15'45"W, 50); (28°36'70"S, 48°16'47"W, 45).
<b>Aulopiformes</b>								
<b>Synodontidae</b>								
<i>Saurida brasiliensis</i> Norman, 1935	X	X						(22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°21'51"S, 43°31'88"W, 40); (25°09'33"S, 46°42'93"W, 20); (25°33'67"S, 47°18'92"W, 45); (25°43'13"S, 47°38'97"W, 38); (25°47'95"S, 47°03'51"W, 40); (27°02'90"S, 47°42'34"W, 80); (28°36'70"S, 48°16'47"W, 45).
<i>Saurida caribbaea</i> Breder, 1927					X			(25°24'17"S, 46°23'18"W, 40).
<i>Synodus foetens</i> (Linnaeus, 1766)		X	X					(24°46'82"S, 46°52'19"W, 35); (25°21'66"S, 47°51'53"W, 22.5).
<b>Ophidiiformes</b>								
<b>Ophidiidae</b>								
<i>Ophidion holbrooki</i> Putnam, 1874		X						(25°11'09"S, 47°44'01"W, 21).
<b>Gadiformes</b>								
<b>Bregmacerotidae</b>								
<i>Bregmaceros atlanticus</i> Goode & Bean, 1886	X	X			X			(22°59'96"S, 41°56'99"W, 20); (23°21'51"S, 43°31'88"W, 40); (25°40'96"S, 47°09'77"W, 25); (25°24'17"S, 46°23'18"W, 40).
<i>Bregmaceros cantori</i> Milliken & Houde, 1984						X		(25°47'95"S, 47°03'51"W, 40); (27°02'90"S, 47°42'34"W, 80); (28°36'70"S, 48°16'47"W, 45).
<b>Phycidae</b>								
<i>Urophycis mystacea</i> Miranda Ribeiro, 1903	X	X						(25°40'96"S, 47°09'77"W, 25); (27°02'90"S, 47°42'34"W, 80).
<b>Merlucciidae</b>								
<i>Merluccius hubbsi</i> Marini, 1933					X	X		(23°09'45"S, 42°30'47"W, 90); (25°24'17"S, 46°21'75"W, 40).
<b>Batrachoidiformes</b>								
<b>Batrachoididae</b>								
<i>Porichthys porosissimus</i> (Cuvier, 1829)	X	X						(25°40'96"S, 47°09'77"W, 25); (25°47'20"S, 48°11'50"W, 12); (28°26'10"S, 48°38'66"W, 10).
<b>Syngnathiformes</b>								
<b>Fistulariidae</b>								
<i>Fistularia petimba</i> Lacepède, 1803		X	X					(23°41'25"S, 42°06'30"W, 25); (27°29'58"S, 48°22'56"W, 20); (28°36'70"S, 48°16'47"W, 45).

Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII		
<b>Scorpaeniformes</b>								
<b>Dactylopteridae</b>								
<i>Dactylopterus volitans</i> (Linnaeus, 1758)	X	X	X	X	X	X	(22°35'79"S, 41°38'04"W, 47.5°); (22°40'46"S, 41°51'42"W, 20); (23°06'20"S, 42°40'41"W, 28), (23°10'57"S, 43°52'31"W, 19); (23°15'79"S, 43°19'64"W, 28); (23°16'23"S, 44°18'23"W, 21); (23°28'12"S, 43°55'22"W, 20); (23°34'26"S, 44°53'68"W, 35); (23°41'25"S, 42°06'30"W, 25); (24°30'09"S, 46°24'00"W, 26); (24°36'80"S, 46°35'75"W, 36); (24°42'80"S, 46°40'58"W, 15); (24°48'39"S, 47°04'72"W, 15); (24°11'95"S, 45°54'30"W, 20); (24°12'77"S, 46°22'51"W, 30); (24°16'19"S, 46°17'51"W, 30); (24°26'89"S, 46°00'71"W, 44); (24°30'70"S, 46°31'15"W, 38); (24°32'70"S, 46°25'18"W, 35); (24°34'45"S, 46°20'06"W, 25); (24°36'28"S, 46°47'39"W, 32); (24°46'82"S, 46°52'19"W, 35); (24°50'08"S, 46°47'46"W, 22); (24°52'15"S, 46°50'37"W, 25); (25°47'20"S, 48°11'50"W, 12); (25°07'27"S, 47°09'27"W, 37); (25°20'66"S, 47°51'53"W, 22.5*); (25°37'17"S, 47°59'83"W, 19); (26°35'06"S, 48°16'85"W, 20); (26°14'19"S, 48°06'95"W, 19); (26°24'84"S, 48°26'23"W, 27); (26°24'94"S, 48°22'62"W, 27); (26°33'48"S, 48°11'07"W, 20); (26°46'49"S, 48°18'07"W, 24); (27°14'38"S, 48°22'87"W, 15); (27°07'97"S, 48°26'85"W, 29).	
<b>Triglidae</b>								
<i>Bellator brachycheir</i> (Regan, 1914)	X						(23°21'51"S, 43°31'88"W, 40).	
<i>Prionotus punctatus</i> (Bloch, 1793)		X	X				(24°36'80"S, 46°35'75"W, 36); (24°46'82"S, 46°52'19"W, 35); (25°20'66"S, 47°51'53"W, 22.5*); (27°43'83"S, 48°25'92"W, 10); (28°36'70"S, 48°16'47"W, 45).	
<b>Perciformes</b>								
<b>Acropomatidae</b>								
<i>Synagrops spinosus</i> Schultz, 1940			X				(25°47'95"S, 47°03'51"W, 40); (27°02'90"S, 47°42'34"W, 80).	
<b>Priacanthidae</b>								
<i>Heteropriacanthus orientatus</i> (Lacépède, 1801)	X						(25°47'20"S, 48°11'50"W, 12).	
<i>Priacanthus arenatus</i> Cuvier, 1829	X	X					(23°21'51"S, 43°31'88"W, 40); (22°35'79"S, 41°38'04"W, 47.5*); (23°41'87"S, 44°20'97"W, 65); (24°19'74"S, 46°13'46"W, 13); (24°24'68"S, 46°09'33"W, 56); (24°30'09"S, 46°24'00"W, 26); (24°11'95"S, 45°54'30"W, 20); (25°47'20"S, 48°11'50"W, 12); (25°20'66"S, 47°51'53"W, 22.5*); (26°06'19"S, 48°20'12"W, 28.7*); (27°26'01"S, 48°20'11"W, 15).	
<b>Pomatomidae</b>								
<i>Pomatomus saltatrix</i> (Linnaeus, 1766)	X	X	X	X			(22°56'81"S, 42°16'32"W, 20); (23°04'30"S, 43°13'28"W, 30); (24°57'62"S, 47°26'54"W, 20); (25°11'09"S, 47°44'01"W, 21); (25°11'20"S, 47°41'24"W, 23); (25°03'22"S, 47°15'58"W, 34); (25°07'27"S, 47°09'27"W, 37); (26°47'47"S, 48°31'55"W, 11); (26°11'63"S, 48°10'34"W, 25); (27°14'38"S, 48°22'87"W, 15); (27°26'01"S, 48°20'11"W, 15); (27°43'83"S, 48°25'92"W, 10); (27°29'58"S, 48°22'56"W, 15); (28°30'00"S, 48°30'00"W, 23).	
<b>Coryphaenidae</b>								
<i>Coryphaena hippurus</i> Linnaeus, 1758						X	(22°29'57"S, 41°11'94"W, 51*); (23°49'95"S, 44°51'31"W, 66*); (25°20'66"S, 47°51'53"W, 22.5*).	
<b>Carangidae</b>								
<i>Caranx crysos</i> (Mitchill, 1815)	X						(23°16'24"S, 43°21'57"W, 68*); (24°19'74"S, 46°13'46"W, 13); (24°57'62"S, 47°26'54"W, 20).	



Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII	VIII	
<i>Chloroscombrus chrysurus</i> (Linnaeus, 1766)	X	X	X	X	X	X	X	(24°03'47"S, 45°51'01"W, 22); (24°05'9"S, 46°03'27"W, 21); (24°16'76"S, 46°43'77"W, 17); (24°18'74"S, 46°48'99"W, 17); (24°19'74"S, 46°13'46"W, 13); (24°21'03"S, 45°25'00"W, 50); (24°24'68"S, 46°69'33"W, 56); (24°30'70"S, 46°31'15"W, 38); (24°36'00"S, 47°03'65"W, 16); (24°36'28"S, 46°47'39"W, 32); (24°42'80"S, 46°40'58"W, 15); (24°48'05"S, 47°20'27"W, 12); (24°48'39"S, 47°04'72"W, 15); (24°57'62"S, 47°26'54"W, 20); (25°03'22"S, 47°15'58"W, 34); (25°03'50"S, 46°41'63"W, 18); (25°05'47"S, 46°03'55"W, 35); (25°07'27"S, 47°09'27"W, 37); (25°11'09"S, 47°44'01"W, 21); (25°22'90"S, 47°50'10"W, 22); (25°24'17"S, 46°21'75"W, 40); (25°24'31"S, 47°48'94"W, 22); (25°43'14"S, 47°38'97"W, 38); (25°47'20"S, 48°11'50"W, 12); (26°06'19"S, 48°20'12"W, 28.7°); (26°11'63"S, 48°10'34"W, 25); (26°14'19"S, 48°06'95"W, 19); (26°24'84"S, 48°26'23"W, 14); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (26°55'15"S, 47°56'95"W, 65); (26°56'94"S, 47°58'22"W, 66°); (27°07'97"S, 48°26'85"W, 16); (27°29'58"S, 48°22'56"W, 15).
<i>Decapterus punctatus</i> (Cuvier, 1829)	X	X		X				(24°19'74"S, 46°13'46"W, 13); (25°07'27"S, 47°09'27"W, 37).
<i>Decapterus tabi</i> Berry, 1968	X						X	(24°57'62"S, 47°26'54"W, 20); (26°35'06"S, 48°16'85"W, 20).
<i>Hemicaranx amblyhynchus</i> (Cuvier, 1833)			X					(26°08'47"S, 48°17'12"W, 12).
<i>Naucrates ductor</i> (Linnaeus, 1758)		X	X	X	X	X	X	(26°56'94"S, 47°58'22"W, 66°).
<i>Oligoplites saliens</i> (Bloch, 1793)	X	X	X	X	X	X	X	(22°56'81"S, 42°16'32"W, 20); (23°54'91"S, 45°55'80"W, 18); (24°21'03"S, 45°25'00"W, 50); (24°36'00"S, 47°03'65"W, 16); (24°03'47"S, 45°51'01"W, 22); (24°12'55"S, 46°21'65"W, 25); (24°16'60"S, 46°16'32"W, 30°); (24°16'76"S, 46°43'77"W, 17); (24°18'74"S, 46°48'99"W, 17); (24°32'70"S, 46°25'18"W, 35); (24°36'28"S, 46°47'39"W, 32); (24°48'05"S, 47°20'27"W, 12); (25°11'09"S, 47°44'01"W, 21); (25°21'66"S, 47°51'53"W, 22.5°); (25°24'31"S, 47°48'94"W, 22); (25°37'17"S, 47°59'83"W, 19); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°08'47"S, 48°17'12"W, 12); (26°11'63"S, 48°10'34"W, 25); (26°24'84"S, 48°26'23"W, 14); (26°24'94"S, 48°22'62"W, 14); (26°27'99"S, 48°29'39"W, 21); (27°07'97"S, 48°26'85"W, 16); (27°08'77"S, 48°27'14"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°26'01"S, 48°20'11"W, 15); (28°15'33"S, 48°33'61"W, 17).
<i>Selae crumenophthalmus</i> (Bloch, 1793)	X	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (24°46'82"S, 46°52'19"W, 35).
<i>Selene setipinnis</i> (Mitchill, 1815)	X	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°03'67"S, 43°25'32"W, 28); (23°34'26"S, 44°53'68"W, 35); (23°43'11"S, 44°58'70"W, 45); (24°19'74"S, 46°13'46"W, 13); (24°24'68"S, 46°69'33"W, 56); (24°36'00"S, 47°03'65"W, 16); (24°48'39"S, 47°04'72"W, 15); (24°57'62"S, 47°26'54"W, 20); (24°16'76"S, 46°43'77"W, 17); (24°18'74"S, 46°48'99"W, 17); (25°11'09"S, 47°44'01"W, 21); (25°03'22"S, 47°15'58"W, 34); (25°22'90"S, 47°50'10"W, 22); (25°24'31"S, 47°48'94"W, 22); (26°49'82"S, 48°30'45"W, 15); (26°06'19"S, 48°20'12"W, 28.7°); (26°11'63"S, 48°10'34"W, 25); (26°24'84"S, 48°26'23"W, 14); (26°27'99"S, 48°29'39"W, 21); (26°55'15"S, 47°56'95"W, 65); (27°08'77"S, 48°27'14"W, 11); (27°26'01"S, 48°20'11"W, 15).
<i>Selene vomer</i> (Linnaeus, 1758)	X	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (23°02'28"S, 42°55'50"W, 20); (24°36'00"S, 47°03'65"W, 16); (24°11'95"S, 45°55'43"W, 20); (24°12'55"S, 46°21'65"W, 25); (24°16'60"S, 46°16'32"W, 30°); (24°32'70"S, 46°25'18"W, 35); (25°11'09"S, 47°44'01"W, 21); (25°11'20"S, 47°41'24"W, 22); (25°43'14"S, 47°38'97"W, 38); (25°47'20"S, 48°11'50"W, 12); (25°24'31"S, 47°48'94"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (27°08'77"S, 48°27'14"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°07'97"S, 48°26'85"W, 16); (28°18'20"S, 48°39'01"W, 20).

Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII		
<i>Trachinotus goodiei</i> Jordan & Evermann, 1896	X	X					(27°29'58"S, 48°22'56"W, 15); (28°26'10"S, 48°38'66"W, 10).	
<i>Trachinotus marginatus</i> Cuvier, 1832		X	X	X	X		(28°15'33"S, 48°33'61"W, 17).	
<i>Trachurus lathami</i> Nichols, 1920	X	X	X	X	X		(22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°02'28"S, 42°55'50"W, 20); (23°09'27"S, 42°30'65"W, 74); (23°09'45"S, 42°30'47"W, 90); (23°10'57"S, 43°52'31"W, 19); (23°16'24"S, 43°21'57"W, 68*); (23°20'63"S, 42°14'10"W, 128*); (23°21'51"S, 43°31'88"W, 40); (23°30'59"S, 43°49'02"W, 60); (23°34'26"S, 44°53'68"W, 35); (23°41'25"S, 42°06'30"W, 25); (23°47'57"S, 44°31'13"W, 25); (24°03'28"S, 45°32'25"W, 35); (24°03'47"S, 45°51'01"W, 22); (24°21'20"S, 45°24'83"W, 30); (24°24'68"S, 46°69'33"W, 56); (24°26'62"S, 45°59'87"W, 49); (24°26'89"S, 46°00'71"W, 44); (24°30'95"S, 46°24'00"W, 26); (24°32'70"S, 46°25'18"W, 35); (24°36'80"S, 46°35'75"W, 36); (24°51'11"S, 46°46'83"W, 12); (25°03'22"S, 47°15'58"W, 34); (25°03'50"S, 46°41'63"W, 18); (25°18'98"S, 47°38'75"W, 23); (25°33'67"S, 47°18'92"W, 45); (25°33'90"S, 43°15'45"W, 50); (25°47'20"S, 48°11'50"W, 12); (25°47'95"S, 47°03'51"W, 40); (26°45'29"S, 48°24'32"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (27°14'38"S, 48°22'87"W, 15); (27°20'50"S, 48°21'02"W, 10); (27°26'01"S, 48°20'11"W, 15); (27°29'58"S, 48°22'56"W, 15); (27°43'83"S, 48°25'92"W, 10); (28°15'33"S, 48°33'61"W, 15); (28°26'10"S, 48°38'66"W, 10).	
<i>Uraspis secundata</i> (Poey, 1860)						X	(23°16'24"S, 43°21'57"W, 68*).	
<b>Lujanidae</b>								
<i>Rhomboplites aurorubens</i> (Cuvier, 1828)		X					(25°33'67"S, 47°18'92"W, 45).	
<b>Gerreidae</b>								
<i>Diapterus rhombus</i> (Cuvier, 1829)		X	X				(24°36'00"S, 47°03'65"W, 16); (25°24'31"S, 47°48'94"W, 22); (27°07'97"S, 48°26'85"W, 16).	
<i>Eucinostomus argenteus</i> Baird & Girard, 1855		X		X			(25°11'09"S, 47°44'01"W, 21); (25°24'31"S, 47°48'94"W, 22).	
<i>Eucinostomus melanopterus</i> (Bleeker, 1863)			X				(23°41'25"S, 42°06'30"W, 25); (24°32'70"S, 46°25'18"W, 35).	
<b>Haemulidae</b>								
<i>Orthopristis ruber</i> (Cuvier, 1830)	X	X	X	X	X		(23°03'67"S, 43°25'32"W, 28); (23°41'25"S, 42°06'30"W, 25); (24°12'77"S, 46°22'51"W, 30); (24°46'82"S, 46°52'19"W, 35); (24°48'39"S, 47°04'72"W, 15); (25°11'09"S, 47°44'01"W, 21); (25°47'20"S, 48°11'50"W, 12); (26°24'94"S, 48°22'62"W, 14); (26°47'47"S, 48°31'53"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°29'58"S, 48°22'56"W, 15); (27°43'83"S, 48°25'92"W, 10).	
<i>Pomadasys corvinaeformis</i> (Steindachner, 1868)	X	X					(24°19'74"S, 46°13'46"W, 13); (25°11'09"S, 47°44'01"W, 21).	
<b>Sparidae</b>								
<i>Pagrus pagrus</i> (Linnaeus, 1758)			X				(24°46'82"S, 46°52'19"W, 35).	
<b>Sciaenidae</b>								
<i>Ctenosciaena guttailicirrhus</i> (Metzelaar, 1919)	X	X	X	X	X		(23°34'26"S, 44°53'68"W, 35); (23°41'25"S, 42°06'30"W, 25); (24°12'77"S, 46°22'51"W, 30); (24°24'68"S, 46°69'33"W, 56); (24°30'09"S, 46°24'00"W, 26); (24°36'80"S, 46°35'75"W, 36); (27°07'97"S, 48°26'85"W, 16).	
<i>Cynoscion guatucupa</i> (Cuvier, 1830)	X	X					(24°30'09"S, 46°24'00"W, 26); (27°14'38"S, 48°22'87"W, 15).	
<i>Cynoscion jamaicensis</i> (Vaillant & Bocour, 1883)	X	X	X	X	X		(23°34'26"S, 44°53'68"W, 35); (23°41'25"S, 42°06'30"W, 25); (24°24'68"S, 46°69'33"W, 56); (24°36'80"S, 46°35'75"W, 36); (24°12'77"S, 46°22'51"W, 30); (26°27'99"S, 48°29'39"W, 21); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (27°08'77"S, 48°27'14"W, 11); (27°26'01"S, 48°20'11"W, 15); (27°43'83"S, 48°25'92"W, 10); (27°07'97"S, 48°26'85"W, 16).	

Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII	VIII	
<i>Isoisthus parvipinnis</i> (Cuvier, 1830)	X							(26°49'82"S, 48°30'45"W, 15); (23°05'25"S, 43°25'58"W, 29); (24°19'74"S, 46°13'46"W, 13); (25°11'09"S, 47°44'01"W, 21).
<i>Macrodon atricauda</i> (Günther, 1880)	X	X						(23°03'25"S, 43°23'27"W, 20); (23°20'23"S, 44°32'33"W, 26*); (23°34'26"S, 44°53'68"W, 35); (23°41'25"S, 42°06'30"W, 25); (24°30'09"S, 46°24'00"W, 26); (24°36'00"S, 47°03'65"W, 16); (24°36'80"S, 46°35'75"W, 36); (24°12'77"S, 46°22'51"W, 30); (25°47'20"S, 48°11'50"W, 12); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (26°55'15"S, 47°56'95"W, 65); (27°07'97"S, 48°26'85"W, 16); (27°08'77"S, 48°27'14"W, 11); (27°43'83"S, 48°25'92"W, 10); (24°12'77"S, 46°22'51"W, 30); (26°49'82"S, 48°30'45"W, 15); (27°07'97"S, 48°26'85"W, 16); (27°08'77"S, 48°27'14"W, 11).
<i>Paralorchurus brasiliensis</i> (Steindachner, 1875)	X	X	X					
<b>Mullidae</b>								
<i>Upeneus parvus</i> Poey, 1852	X	X	X	X				(23°09'45"S, 42°30'47"W, 90); (24°30'09"S, 46°24'00"W, 26); (24°46'82"S, 46°52'19"W, 35); (24°48'39"S, 47°04'72"W, 15); (27°14'38"S, 48°22'87"W, 15); (27°43'83"S, 48°25'92"W, 10).
<b>Ephippidae</b>								
<i>Chaetodipterus faber</i> (Broussonet, 1782)	X	X	X					(24°16'60"S, 46°16'32"W, 30*); (25°11'09"S, 47°44'01"W, 21); (27°29'58"S, 48°22'56"W, 15).
<b>Sphyracnidae</b>								
<i>Sphyracna barracuda</i> (Edwards, 1771)		X						(23°43'11"S, 44°58'70"W, 45); (27°07'97"S, 48°26'85"W, 16); (27°29'58"S, 48°22'56"W, 15); (28°15'33"S, 48°33'61"W, 17).
<i>Sphyracna guachancho</i> Cuvier, 1829	X	X	X	X				(23°21'51"S, 43°31'88"W, 40); (24°21'03"S, 45°25'00"W, 50); (24°24'68"S, 46°69'33"W, 56); (24°36'00"S, 47°03'65"W, 16); (24°36'28"S, 46°47'39"W, 32); (25°11'09"S, 47°44'01"W, 21); (25°11'20"S, 47°41'24"W, 23); (25°33'67"S, 47°18'92"W, 45); (26°11'63"S, 48°10'34"W, 25); (26°45'29"S, 48°24'32"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (27°14'38"S, 48°22'87"W, 15); (28°30'00"S, 48°30'00"W, 23); (22°59'17"S, 41°56'03"W, 30); (22°59'36"S, 41°56'99"W, 20); (24°36'00"S, 47°03'65"W, 16); (26°27'99"S, 48°29'39"W, 21).
<i>Sphyracna tone</i> Fowler, 1903	X	X						
<b>Gempylidae</b>								
<i>Thyrsiops lepidopoides</i> (Cuvier, 1852)	X	X	X	X	X			(22°33'87"S, 41°41'46"W, 40); (22°56'81"S, 42°16'32"W, 20); (22°57'26"S, 42°36'65"W, 30); (22°59'17"S, 41°56'03"W, 30); (22°59'36"S, 41°56'99"W, 20); (23°02'28"S, 42°55'50"W, 20); (23°03'67"S, 43°25'32"W, 28); (23°04'30"S, 43°13'28"W, 30); (23°05'25"S, 43°25'58"W, 29); (23°09'45"S, 42°30'47"W, 90); (23°10'57"S, 43°52'31"W, 19); (23°21'51"S, 43°31'88"W, 40); (23°30'59"S, 43°49'02"W, 60); (23°34'26"S, 44°53'68"W, 35); (23°41'25"S, 42°06'30"W, 25); (23°47'57"S, 44°31'13"W, 25); (24°03'47"S, 45°51'01"W, 22); (24°19'74"S, 46°13'46"W, 13); (24°21'03"S, 45°25'00"W, 50); (24°21'20"S, 45°24'83"W, 30); (24°24'68"S, 46°69'33"W, 56); (24°26'89"S, 46°00'71"W, 44); (24°30'09"S, 46°24'00"W, 26); (24°30'70"S, 46°31'15"W, 38); (24°36'28"S, 46°47'39"W, 32); (24°36'80"S, 46°35'75"W, 36); (25°03'22"S, 47°15'58"W, 34); (25°22'90"S, 47°50'10"W, 22); (25°47'95"S, 47°03'51"W, 40); (26°35'06"S, 48°16'85"W, 20); (27°02'90"S, 47°42'34"W, 80); (27°14'38"S, 48°22'87"W, 15); (27°20'50"S, 48°21'02"W, 10); (27°26'01"S, 48°20'11"W, 15); (27°43'83"S, 48°25'92"W, 10); (28°15'33"S, 48°33'61"W, 17).

Taxons	ECOSAR							Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII		
<b>Trichiuridae</b>								
<i>Trichiurus lepturus</i> Linnaeus, 1758	X	X	X	X	X	X	X	(22°56'81"S, 42°16'32"W, 20); (22°57'26"S, 42°36'65"W, 30); (22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°02'28"S, 42°55'50"W, 20); (23°03'25"S, 43°23'27"W, 20); (23°03'67"S, 43°25'32"W, 28); (23°04'30"S, 43°13'28"W, 23); (23°05'25"S, 43°25'58"W, 29); (23°06'20"S, 42°40'41"W, 28); (23°09'45"S, 42°30'47"W, 90); (23°11'86"S, 43°23'83"W, 60*); (23°15'79"S, 43°19'64"W, 28); (23°16'03"S, 41°41'25"W, 30); (23°21'51"S, 43°31'88"W, 40); (23°30'59"S, 43°49'02"W, 60); (23°41'25"S, 42°06'30"W, 25); (23°43'11"S, 44°58'70"W, 45); (23°47'57"S, 44°31'13"W, 25); (23°54'91"S, 45°55'80"W, 18); (23°56'76"S, 45°45'00"W, 29*); (24°03'28"S, 45°32'25"W, 35); (24°05'94"S, 46°03'27"W, 21); (24°12'77"S, 46°22'51"W, 30); (24°16'19"S, 46°17'51"W, 30); (24°21'03"S, 45°25'00"W, 50); (24°21'20"S, 45°24'83"W, 30); (24°24'68"S, 46°69'33"W, 56); (24°26'62"S, 45°59'87"W, 49); (24°26'89"S, 46°00'71"W, 44); (24°30'09"S, 46°24'00"W, 26); (24°30'70"S, 46°31'15"W, 38); (24°32'70"S, 46°25'18"W, 35); (24°36'00"S, 47°03'65"W, 16); (24°36'28"S, 46°47'39"W, 32); (24°36'80"S, 46°35'75"W, 36); (24°42'80"S, 46°40'58"W, 15); (24°48'05"S, 47°20'27"W, 12); (24°52'15"S, 46°50'37"W, 13); (24°57'62"S, 47°26'54"W, 20); (25°03'22"S, 47°15'58"W, 24); (25°07'27"S, 47°09'27"W, 37); (25°09'33"S, 46°42'93"W, 20); (25°11'09"S, 47°44'01"W, 21); (25°11'20"S, 47°41'24"W, 23); (25°22'90"S, 47°50'10"W, 22); (25°24'17"S, 46°21'75"W, 40); (25°24'31"S, 47°48'94"W, 22); (25°33'67"S, 47°18'92"W, 45); (25°40'96"S, 47°09'77"W, 25); (25°43'14"S, 47°38'97"W, 38); (25°47'20"S, 48°11'50"W, 12); (25°47'95"S, 47°03'51"W, 40); (26°08'41"S, 47°40'59"W, 55); (26°11'63"S, 48°10'34"W, 25); (26°14'19"S, 48°06'95"W, 19); (26°24'84"S, 48°26'23"W, 14); (26°24'94"S, 48°22'62"W, 14); (26°27'99"S, 48°29'39"W, 21); (26°45'29"S, 48°24'32"W, 22); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (26°55'15"S, 47°56'95"W, 65); (26°56'94"S, 47°58'22"W, 66*); (27°02'90"S, 47°42'34"W, 80); (27°08'77"S, 48°27'14"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°20'50"S, 48°21'02"W, 10); (27°26'01"S, 48°20'11"W, 15); (27°29'58"S, 48°22'56"W, 15); (27°43'83"S, 48°25'92"W, 10); (28°12'04"S, 48°18'08"W, 40); (28°15'33"S, 48°33'61"W, 17); (28°18'20"S, 48°39'01"W, 20); (28°25'21"S, 48°39'54"W, 34*); (28°26'10"S, 48°38'66"W, 10); (28°30'00"S, 48°30'00"W, 23); (28°36'70"S, 48°16'47"W, 45); (28°37'40"S, 48°38'38"W, 16); (29°20'00"S, 49°20'00"W, 63).
<b>Scombridae</b>								
<i>Euthynnus alletteratus</i> (Rafinesque, 1810)							X	(23°05'26"S, 42°40'70"W, 65*); (23°11'86"S, 43°23'83"W, 60*); (24°16'60"S, 46°16'32"W, 30*); (26°56'94"S, 47°58'22"W, 66*).
<i>Katsuwonus pelamis</i> (Linnaeus, 1758)							X	(26°56'94"S, 47°58'22"W, 66*).
<i>Sarda sarda</i> (Block, 1793)							X	(22°59'17"S, 41°56'03"W, 30); (25°05'47"S, 46°03'55"W, 35); (26°27'99"S, 48°29'39"W, 21); (28°30'00"S, 48°30'00"W, 23).
<i>Scomber japonicus</i> Houttuyn, 1782							X	(22°33'87"S, 41°41'46"W, 40); (22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°03'25"S, 43°23'27"W, 20); (23°03'67"S, 43°25'32"W, 28); (23°04'30"S, 43°13'28"W, 30); (23°05'25"S, 43°25'58"W, 29); (23°09'45"S, 42°30'47"W, 90); (23°11'60"S, 42°21'80"W, 98*); (23°20'63"S, 42°14'10"W, 128*); (23°21'51"S, 43°31'88"W, 40); (24°03'47"S, 45°51'01"W, 22); (24°19'74"S, 46°13'46"W, 13); (24°24'68"S, 46°69'33"W, 56); (24°26'89"S, 46°00'71"W, 44); (24°30'70"S, 46°31'15"W, 38); (24°48'39"S, 47°04'72"W, 15); (24°57'62"S, 47°26'54"W, 20); (25°03'22"S, 47°15'58"W, 34); (25°09'33"S, 46°42'93"W, 20); (25°18'98"S, 47°38'75"W, 23);

Táxons	ECOSAR								Coordinates and depth of capture in meters
	II	III	IV	V	VI	VII	VIII		
									(25°22'90"S, 47°50'10"W, 22); (27°14'38"S, 48°22'87"W, 15); (27°26'01"S, 48°20'11"W, 15); (28°15'33"S, 48°33'61"W, 17).
<i>Scomberomorus brasiliensis</i> Collette, Russo & Zavala-Camin, 1978	X	X			X				(22°59'17"S, 41°56'03"W, 30); (24°16'76"S, 46°43'77"W, 17); (25°11'09"S, 47°44'01"W, 21); (25°47'20"S, 48°11'50"W, 12).
<b>Ariommatidae</b>								X	(23°20'63"S, 42°14'10"W, 128*); (23°28'12"S, 43°55'22"W, 20); (23°47'57"S, 44°31'13"W, 25).
<i>Ariomma bonidi</i> Fowler, 1930								X	
<b>Stromateidae</b>									
<i>Peprilus paru</i> (Linnaeus, 1758)	X	X	X	X	X	X	X	X	(22°33'87"S, 41°41'46"W, 40); (22°40'46"S, 41°51'42"W, 20); (22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°02'28"S, 42°55'50"W, 20); (23°41'25"S, 42°06'30"W, 25); (23°54'91"S, 45°55'80"W, 18); (24°12'77"S, 46°22'51"W, 30); (24°21'03"S, 45°25'00"W, 50); (24°21'20"S, 45°24'83"W, 30); (24°24'68"S, 46°69'33"W, 56); (24°36'00"S, 47°03'65"W, 16); (24°36'28"S, 46°47'39"W, 32); (24°42'80"S, 46°40'58"W, 15); (25°11'09"S, 47°44'01"W, 21); (26°11'63"S, 48°10'34"W, 25); (26°45'29"S, 48°24'32"W, 22); (26°46'44"S, 48°31'13"W, 11); (26°47'47"S, 48°31'53"W, 11); (26°49'82"S, 48°30'45"W, 15); (27°07'97"S, 48°26'85"W, 29); (27°08'77"S, 48°27'14"W, 11); (27°14'38"S, 48°22'87"W, 15); (27°20'50"S, 48°21'02"W, 10); (27°26'01"S, 48°20'11"W, 15); (27°29'58"S, 48°22'56"W, 20); (27°43'83"S, 48°25'92"W, 10); (28°15'33"S, 48°33'61"W, 32); (28°25'21"S, 48°39'54"W, 34*); (28°26'10"S, 48°38'66"W, 10); (28°37'40"S, 48°38'38"W, 28).
<b>Pleuronectiformes</b>									
<b>Paralichthyidae</b>									
<i>Syacium papillosum</i> (Linnaeus, 1758)								X	(25°20'66"S, 47°51'53"W, 22,5*).
<b>Tetraodontiformes</b>									
<b>Balistidae</b>									
<i>Balistes capricus</i> Gmelin, 1789	X	X	X	X	X	X	X	X	(22°59'17"S, 41°56'03"W, 30); (22°59'96"S, 41°56'99"W, 20); (23°03'25"S, 43°23'27"W, 20); (23°21'51"S, 43°31'88"W, 40); (23°30'59"S, 43°49'02"W, 60); (23°41'25"S, 42°06'30"W, 25); (24°18'74"S, 46°48'99"W, 17); (24°19'74"S, 46°13'46"W, 13); (24°21'03"S, 45°25'00"W, 50); (24°24'68"S, 46°69'33"W, 56); (25°11'09"S, 47°44'01"W, 21); (25°20'66"S, 47°51'53"W, 22,5*); (25°33'67"S, 47°18'92"W, 45); (25°47'20"S, 48°11'50"W, 12); (26°11'63"S, 48°10'34"W, 25); (26°56'94"S, 47°58'22"W, 66*); (27°29'58"S, 48°22'56"W, 20).
<i>Balistes vetula</i> Linnaeus, 1758								X	(24°36'00"S, 47°03'65"W, 16); (25°11'09"S, 47°44'01"W, 21).
<b>Monacanthidae</b>									
<i>Aluterus monoceros</i> (Linnaeus, 1758)								X	(23°16'24"S, 43°21'57"W, 68*).
<i>Sephanolepis hispidus</i> (Linnaeus, 1766)								X	(22°33'87"S, 41°41'46"W, 40); (24°11'95"S, 45°54'30"W, 20); (24°32'70"S, 46°25'18"W, 35); (24°46'82"S, 46°52'19"W, 35); (25°03'50"S, 46°41'63"W, 18); (26°08'41"S, 47°40'59"W, 55); (27°07'97"S, 48°26'85"W, 16).
<b>Diodontidae</b>									
<i>Chilomycterus spinosus</i> (Linnaeus, 1758)	X	X	X	X	X	X	X	X	(23°11'86"S, 43°23'83"W, 60*); (23°35'78"S, 44°12'73"W, 23); (24°11'95"S, 45°54'30"W, 20); (24°30'70"S, 46°31'15"W, 38); (24°32'70"S, 46°25'18"W, 35); (24°36'00"S, 47°03'65"W, 16); (24°36'80"S, 46°35'75"W, 36); (24°51'11"S, 46°46'83"W, 12); (25°20'66"S, 47°51'53"W, 22,5*); (25°24'31"S, 47°48'94"W, 22); (25°56'17"S, 47°29'33"W, 55); (26°08'41"S, 47°40'59"W, 55).

< 36S, > 20°C) with high level of variability. On the outer continental shelf (> 50 m) the Tropical Water (TW, > 36S, > 20°C) predominate in the surface, mainly during autumn-winter. The South Atlantic Central Water (SACW, 6°-20°C, 34-36S) rich in nutrients flows under the TW, and during spring and summer penetrates in the continental shelf, sometimes causing upwellings and enriching the area.

Ecologically, the ichthyofauna caught in these surveys can be defined as a coastal group (Soares *et al.*, 2005). The typical pelagic species off the neritic region of the SBB are important prey for other fishes and larger marine vertebrates (Bernardes *et al.*, 2007; Magro *et al.*, 2000). Clupeids and carangids are important items for *Porichthys porosissimus* in the northern coast of São Paulo (Soares *et al.*, 1993). *Cynoscion guatucupa* e *Trichiurus lepturus* are predators over pelagic fishes in general (Soares *et al.*, 2008), particularly upon clupeiforms (Bittar *et al.*, 2008). *Rhizoprionodon lalandii* also prey on clupeiforms (Lima *et al.*, 2000) and the occurrence of the species as the other two sharks in ECOSAR catches may be related to predation on schooling fishes.

The checklist presented herein was intended to be a detailed and precise compilation of the fishes species (ichthyofauna) caught during the pelagic surveys of ECOSAR Program, which could be also used as a basis for future management actions in the Southeastern Brazilian Bight.

## RESUMO

A distribuição espacial de peixes pelágicos pequenos na área costeira do sudeste brasileiro (22°-29°S) foi investigada durante seis períodos, de 1995 a 2010, no contexto do Programa “Prospecção e avaliação da biomassa da sardinha-verdadeira, *Sardinella brasiliensis*”, cujo objetivo foi fornecer dados sobre seus padrões de distribuição e biomassa. Neste trabalho é apresentada uma lista das espécies capturadas, com dados da posição geográfica e a profundidade de suas capturas. Tais informações têm como objetivo ser um referencial sobre a fauna que ocupava a região no período analisado e permitir comparações futuras sobre as modificações apresentadas por essa fauna no local, ou seja, a detecção de alterações futuras ocasionadas por fatores ambientais ou atividades humanas sobre a mesma. A coleta dos peixes foi realizada com rede de meia-água e cerco durante cruzeiros de ecointegração entre 10 m e 100 m de profundidade. No total foram capturadas 86 espécies.

PALAVRAS-CHAVE: Pelágicos; Demersais; ECOSAR; Rede de meia-água; Rede de cerco.

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