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FISH SPECIES CAUGHT BY SHRIMP TRAWLERS OFF THE COAST OF SERGIPE, IN NORTH-EASTERN BRAZIL, AND THEIR LENGTH–WEIGHT RELATIONS

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Abstract. The objective of this study was to report all fish species caught by shrimp trawlers based in Pirambu, in the state of Sergipe, Brazil and estimate the length–weight relation (LWR) for the most abundant species in the samples. Four samples were collected monthly from four shrimp trawlers. A total of 8522 fishes were caught (89 species; 38 families). LWRs were estimated for 18 species having the parameter *b* within the range of 2.5–3.5: *Cathorops spixii* (Agassiz, 1829); *Stellifer brasiliensis* (Schultz, 1945); *Pellona harroweri* (Fowler, 1917); *Odontognathus mucronatus* Lacepède, 1800; *Paralonchurus brasiliensis* (Steindachner, 1875); *Stellifer rastrifer* (Jordan, 1889); *Isopisthus parvipinnis* (Cuvier, 1830); *Selene brownii* (Cuvier, 1816); *Anchoa spinifer* (Valenciennes, 1848); *Trinectes paulistanus* (Miranda Ribeiro, 1915); *Symphurus plagusia* (Bloch et Schneider, 1801); *Chirocentrodon bleekerianus* (Poey, 1867); *Stellifer stellifer* (Bloch, 1790); *Citharichthys spilopterus* Günther, 1862; *Ctenosciaena gracilicirrhus* (Metzelaar, 1919); *Anchoviella lepidentostole* (Fowler, 1911); *Peprilus crenulatus* Cuvier, 1829; *Genyatremus cavifrons* (Cuvier, 1830). Five new maximum size records were reported in this study for *Trinectes paulistanus*, *Citharichthys spilopterus*, *Anchoviella lepidentostole*, *Chirocentrodon bleekerianus*, and *Stellifer brasiliensis*. Fifty-four new maximum weight records were also registered. LWR estimated here are the first for *Genyatremus cavifrons* and *Peprilus crenulatus*.

Keywords: weight–length relation, shrimp trawlers, bycatch, discard, WLR

INTRODUCTION

Length–weight relations (LWR) are used to estimate the weight corresponding to a given length, which reflects different conditions for various populations throughout their life cycle (Wootton 1998, Freire et al. 2009). LWRs and their parameter *b* are not considered interesting science for some fisheries scientists (Hilborn and Walters 1992, Froese 2006), even though these relations are important for estimating biomass where weighing fishes is not possible (Macieira and Joyeux 2009) or for species where such relations were not previously known (Froese 2006). Although LWRs have been estimated for many fish species along the Brazilian coast, data are still missing for many species, especially those that are not commercially important, or localities (Freire et al. 2009). This paper aims to identify all fish species caught by shrimp trawlers off the coast of Sergipe and estimate LWRs for the most abundant species.

MATERIAL AND METHODS

Samples were collected from the artisanal shrimp trawl fishery based in the municipality of Pirambu, in the state of Sergipe (Fig. 1). Four samples were obtained monthly from March 2015 to May 2016, with the exception of April and December 2015 and April 2016 due to two closed seasons per year for the shrimp fishery (90 days in total). Each sample, with approximately 6 kg, was separated immediately after the last trawl before heading to the port and was stored on ice and later kept frozen

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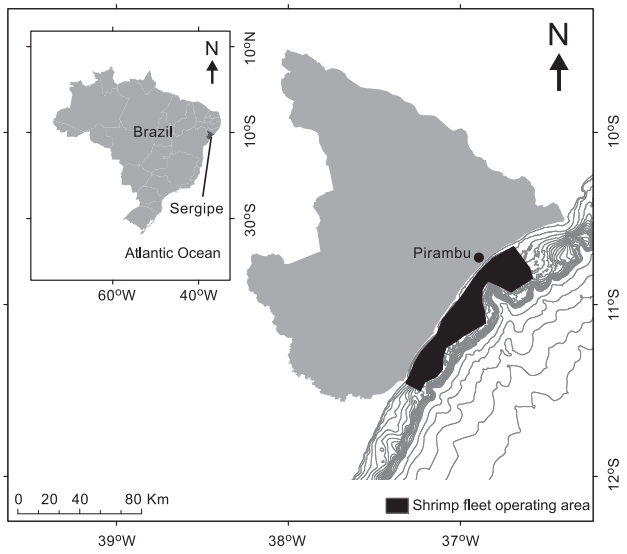

Fig. 1. The municipality of Pirambu, in the state of Sergipe, and the shrimp-fleet operating area

at the Laboratório de Ecologia Pesqueira da Universidade Federal de Sergipe (LEP/UFS) until further processing. All fish species collected here were identified and catalogued at LEP/UFS collection. Additional specimens were sent to the Acervo Zoológico da Universidade Santa Cecília (AZUSC/UNISANTA).

Total length (TL, cm) and total weight (TW, g) of each specimen were determined using an ichthyometer (precision: 1 mm) and a digital scale (precision: 0.1 g), respectively. Length–weight relations

$$TW = a \cdot TL^b$$

were estimated for all species with the sample size larger than 20 and with the maximum observed length corresponding to more than 70% of the maximum size reported in FishBase (Froese and Pauly 2018) or significantly higher than the length at first maturity (L_m). A linear regression was applied to the logarithm of both length and weight to estimate the parameters *a* and *b* and their respective confidence intervals were calculated. A *t*-test was used to determine if *b* was statistically different from 3 ($\alpha = 0.05$).

The occurrence of the fish species reported in this study for the state of Sergipe was compared with existing information available in FishBase as well as their LWRs. FishBase is the largest online encyclopaedia of fishes and contains information on 34 000 species (Froese and Pauly 2018), based on scientific publications, which has been increasingly cited in the scientific literature (Stergiou and Tsikliras 2006).

RESULTS

A total of 8522 fishes were caught, representing 89 species and 38 families (Table 1). The total weight of all samples was about 151.6 kg and the most representative families were Sciaenidae (35% of the total weight caught), Ariidae (17%), Pristigasteridae (10%), and Haemulidae (7%). The most abundant species in the samples were *Cathorops spixii* (Agassiz, 1829); *Larimus breviceps* Cuvier, 1830; *Stellifer brasiliensis* (Schultz, 1945); and *Pellona harroweri* (Fowler, 1917); representing about 15%, 11%, 8%, and 7% of the total weight, respectively. *Pellona harroweri* was the main species considering number (1077) and was present in all samples, followed by *L. breviceps* (1075), *C. spixii* (1022), and *S. brasiliensis* (961). Eleven of these species are not reported in FishBase for the state of Sergipe: *Aspistor quadriscutis* (Valenciennes, 1840); *Cyclopsetta chittendeni* Bean, 1895; *Cynoscion leiarchus* (Cuvier, 1830); *Cynoscion microlepidotus* (Cuvier, 1830); *Bathytoshia centroura* (Mitchill, 1815); *Diplectrum radiale* (Quoy et Gaimard, 1824); *Notarius grandicassis* (Valenciennes, 1840); *Ogcocephalus parvus* Longley et Hildebrand, 1940; *Raneya brasiliensis* (Kaup, 1856); *Stellifer brasiliensis* (Schultz, 1945); and *Stellifer stellifer* (Bloch, 1790).

Five new maximum size records were established in this study in relation to the information currently available in FishBase (Froese and Pauly 2018): 18.2 cm for *Trinectes paulistanus* (Miranda Ribeiro, 1915), 21.0 cm for *Citharichthys spilopterus* Günther, 1862, 16.4 cm for *Anchoviella lepidentostole* (Fowler, 1911), 16.1 cm for *Chirocentrodon bleekerianus* (Poey, 1867), and 17.0 cm for *Stellifer brasiliensis* (Schultz, 1945) (all of them unsexed).

Parameters *a* and *b* of the LWR estimated for 18 fish species are summarized in Table 2, along with their standard errors. All regressions were statistically significant ($P < 0.05$). Parameter *a* ranged from 0.00240 for *Paralonchurus brasiliensis* (Steindachner, 1875) to 0.03135 for *Genyatremus cavifrons* (Cuvier, 1830), and parameter *b* ranged from 2.578 for *C. bleekerianus* to 3.424 for *P. brasiliensis*.

DISCUSSION

Freire and Araújo (2016) listed commercial fish species for the state of Sergipe. Thirty species are also listed here, indicating they are, in fact, commercially important. Juveniles of important species correspond to a high proportion of the bycatch of shrimp trawlers and species without market value are probably discarded or consumed by fishers (Tischer and Santos 2001, Branco 2005). Thus, a high proportion of the catch may not be accounted for in officially reported catch statistics. It is also worth pointing out that many species reported here were never registered in previous studies carried in the area related to the bycatch of shrimp trawlers in the state of Sergipe (Santos 1996, Decken unpublished*, Anonymous unpublished**).

* Decken K.V. 1986. O setor pesqueiro na economia do estado de Sergipe. [The fishing sector in the economics of the state of Sergipe.] Superintendência de Desenvolvimento da Pesca, SUDEPE, Aracaju-Sergipe. [In Portuguese.]

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Table 1

Principal biometric and catch parameters for all fish species caught by shrimp trawlers off the coast of Sergipe, Brazil

Order	Family	Species	*n*	Total catch [g]	Total length [cm]		Total weight [g]	
					Range	Mean ± SD	Range	Mean ± SD
Torpediniformes	Narcinidae	*Narcine brasiliensis* (Olfers, 1831)	9	1184	10.6–36.6	19.24 ± 9.64	11.6–576.2	131.58 ± 4.47
Pristiformes	Rhinobatidae	*Pseudobatos percellens* (Walbaum, 1792) [2]	15	2241	17.5–67.2	31.99 ± 12.72	15.6–955.1[1]	149.41 ± 235.81
Myliobatiformes	Dasyatidae	*Hypanus guttatus* (Bloch et Schneider, 1801)[2, 3]	12	4013	56.9–106.5	79.55 ± 10.19	106.3–689.6[1]	334.40 ± 233.30
		Bathytoshia centroura (Mitchill, 1815)[2]	1	149	62.4	—	148.9	—
	Gymnuridae	*Gymnura micrura* (Bloch et Schneider, 1801)	1	90	15.6	—	90.0[1]	—
	Myliobatidae	*Rhinoptera bonasus* (Mitchill, 1815)[3]	1	953	60.5	—	953.0[1]	—
Anguliformes	Muraenidae	*Gymnothorax ocellatus* Agassiz, 1831	18	1863	27.0–46.7	39.73 ± 5.33	38.5–184.4[1]	103.51 ± 38.00
	Muraenescidae	*Cynoponticus savanna* (Bancroft, 1831)	3	281	40.0–52.5	45.10 ± 6.56	6.2–130.3[1]	93.73 ± 34.33
Clupeiformes	Pristigasteridae	*Pellona harroweri* (Fowler, 1917)	1077	10279	5.0–16.5	10.34 ± 1.67	0.6–33.0[1]	9.54 ± 5.18
		Odontognathus mucronatus Lacepède, 1800	432	4517	8.6–18.4	14.94 ± 1.65	0.7–21.4[1]	10.46 ± 4.33
		Chirocentrodon bleekerianus (Poey, 1867)	92	742	7.0–16.1[1]	11.49 ± 2.39	0.8–19.3[1]	8.06 ± 4.29
	Engraulidae	*Anchoa spinifer* (Valenciennes, 1848)[3]	140	1849	8.1–21.0	12.00 ± 2.15	3.5–66.3[1]	13.27 ± 9.76
		Lycengraulis grossidens (Spix et Agassiz, 1829)	83	1123	5.2–9.2	11.66 ± 2.76	1.0–57.0[1]	13.53 ± 10.83
		Anchoviella lepidentostole (Fowler, 1911)[3]	34	231	5.5–16.4[1]	9.37 ± 1.94	1.2–32.0[1]	6.79 ± 5.33
		Cetengraulis edentulus (Cuvier, 1829)	10	162	9.0–14.0	12.09 ± 1.62	5.6–21.1[1]	16.20 ± 5.53
	Clupeidae	*Harengula clupeola* (Cuvier, 1829)	23	559	10.7–14.0	13.06 ± 0.92	14.6 – 33.8[1]	24.73 ± 5.41
		Opisthonema oglinum (Lesueur, 1818)[3]	5	90	11.1–14.9	12.68 ± 1.39	11.8–27.8	17.98 ± 6.07
Siluriformes	Ariidae	*Cathorops spixii* (Agassiz, 1829)[3]	1022	21996	9.1–29.1	13.49 ± 2.33	3.9–97.5[1]	21.48 ± 13.64
		Bagre marinus (Mitchill, 1815)[3]	126	1589	8.3–20.7	12.17 ± 1.98	3.7–52.4	12.61 ± 8.07
		Bagre bagre (Linnaeus, 1766)[3]	125	1497	6.9–22.6	12.08 ± 3.06	1.2–101.2[1]	12.09 ± 11.80
		Notarius grandicassis (Valenciennes, 1840)[3]	39	686	7.9–18.7	11.7 ± 2.91	3.6–58.3[1]	17.60 ± 15.82
		Aspistor luniscutis (Valenciennes, 1840)[3]	9	417	11.5–21.4	15.98 ± 3.70	8.9–144.0[1]	46.36 ± 45.50
		Aspistor quadriscutis (Valenciennes, 1840)	3	53	8.8–16.0	12.40 ± 3.60	4.2–33.3[1]	17.63 ± 14.68
Ophidiiformes	Ophidiidae	*Raneya brasiliensis* (Kaup, 1856)	6	124	15.3–19.3	16.95 ± 1.48	12.1–36.0[1]	20.58 ± 9.26
Batrachoidiformes	Batrachoididae	*Porichthys plectrodon* Jordan et Gilbert, 1882	1	11	10.9	—	10.7[1]	—
Perciformes	Polynemidae	*Polydactylus* spp.	57	2172	12.3–20.7	16.05 ± 2.10	13.7–75.5	38.11 ± 16.44
Carangiformes	Rachycentridae	*Rachycentron canadum* (Linnaeus, 1766)	2	127	15.0–28.2	21.60 ± 9.33	18.5–108.2	63.55 ± 63.43
	Carangidae	*Selene brownii* (Cuvier, 1816)	153	2934	3.6–20.2	11.38 ± 2.32	0.8–119.3[1]	19.18 ± 12.84
		Chloroscombrus chrysurus (Linnaeus, 1766)	98	1448	7.0–16.1	11.71 ± 1.93	3.9–32.0[1]	14.88 ± 6.08
		Selene vomer (Linnaeus, 1758)[3]	64	237	2.3–11.9	5.70 ± 2.01	0.5–22.8	3.71 ± 3.93
		Selene setapinnis (Mitchill, 1815)[3]	6	11	4.3–6.7	4.95 ± 0.90	0.9–4.0	1.87 ± 1.14
		Oligoplites saliens (Bloch, 1793)[3]	3	72	15.2–17.2	15.97 ± 1.08	21.4–27.5	14.07 ± 1.08

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Table 1 cont.

Order	Family	Species	*n*	Total catch [g]	Total length [cm]		Total weight [g]	
					Range	Mean ± SD	Range	Mean ± SD
Istiophoriformes	Sphyraenidae	*Sphyraena guachancho* Cuvier, 1829[3]	2	20	13.0–14.6	13.80 ± 1.13	8.4–12.0	10.20 ± 2.55
Pleuronectiformes	Paralichthydae	*Citharichthys spilopterus* Günther, 1862	61	970	5.5–21.0[1]	11.13 ± 3.08	1.8–92.7[1]	19.90 ± 15.93
		Cyclopsetta chittendeni Bean, 1895	2	81	8.5–19.0	13.75 ± 7.42	7.2–76.0[1]	41.6 ± 48.65
	Achiridae	*Trinectes paulistanus* (Miranda Ribeiro, 1915)	106	2705	5.4–18.2[1]	10.75 ± 1.72	2.7–63.3[1]	24.33 ± 12.10
		Achirus declivis Chabanaud, 1940	22	1043	11.4–16.0	13.23 ± 1.37	18.8–90.2[1]	47.85 ± 18.22
		Achirus lineatus (Linnaeus, 1758)[3]	6	126	8.7–11.1	9.95 ± 0.89	12.1–29.5[1]	20.98 ± 6.67
		Trinectes microphthalmus (Chabanaud, 1928)	3	10	5.0–5.7	5.40 ± 0.36	2.3–4.5[1]	3.30 ± 1.11
	Cynoglossidae	*Symphurus plagusia* (Bloch et Schneider, 1801)	103	1784	4.2–18.2	12.82 ± 2.91	0.5–51.3[1]	17.42 ± 11.83
Syngnathiformes	Fistulariidae	*Fistularia tabacaria* Linnaeus, 1758	1	279	90.3	—	279.01[1]	—
	Dactylopteridae	*Dactylopterus volitans* (Linnaeus, 1758)	13	65	6.2–11.0	7.26 ± 1.19	3.5–14.2	5.02 ± 2.84
Scombriformes	Trichiuridae	*Trichiurus lepturus* Linnaeus, 1758[3]	420	7632	11.0–56.2	34.22 ± 5.59	0.6–95.2	18.17 ± 10.74
	Stromateidae	*Peprilus crenulatus* Cuvier, 1829[2]	31	855	3.5–15.0	9.71 ± 3.78	0.7–66.8[1]	24.25 ± 17.52
Perciformes	Gerreidae	*Diapterus rhombeus* (Cuvier, 1829)[3]	17	712	8.7–17.1	13.31 ± 3.02	8.1–76.3[1]	41.89 ± 24.11
		Eucinostomus melanopterus (Bleeker, 1863)	8	105	8.9–13.5	10.20 ± 1.48	9.0–26.5[1]	13.18 ± 5.62
		Eucinostomus jonesii (Günther, 1879)	4	54	9.9–10.9	10.25 ± 0.47	11.6–16.9[1]	13.50 ± 2.48
		Eucinostomus argenteus Baird et Girard, 1855	3	45	9.8–12.1	10.93 ± 1.15	9.8–20.5[1]	15.13 ± 5.35
	Mullidae	*Upeneus parvus* Poey, 1852	5	215	12.6–15.1	14.08 ± 1.20	24.2–75.5[1]	42.92 ± 20.06
	Serranidae	*Rypticus randalli* Courtenay, 1967	7	163	11.3–13.9	12.40 ± 0.94	16.5–31.8[1]	23.33 ± 6.01
		Diplectrum radiale (Quoy et Gaimard, 1824)	1	101	18.8	—	101.4[1]	—
	Haemulidae	*Haemulopsis corvinaeformis* (Steindachner, 1868)[2]	227	5460	9.2–17.2	12.21 ± 1.32	10.4–71.4	24.01 ± 9.52
		Conodon nobilis (Linnaeus, 1758)[3]	183	4195	8.1–20.0	11.62 ± 1.93	7.3–118.7	22.92 ± 15.70
		Genyatremus cavifrons (Cuvier, 1830)[2]	21	385	7.3–12.6[1]	9.90 ± 1.62	5.6–10.0[1]	7.91 ± 1.36
		Haemulon steindachneri (Jordan et Gilbert, 1882)	1	93	18.2	—	93.2	—
		Haemulon aurolineatum Cuvier, 1830	1	86	18.6	—	85.6[1]	—
	Lutjanidae	*Lutjanus synagris* (Linnaeus, 1758)[3]	2	96	8.9–18.2	13.55 ± 6.58	11.7–84.7	48.20 ± 51.62
		Pristipomoides aquilonaris (Goode et Bean, 1896)	1	17	10.7	—	17.4	—
Scorpaeniformes	Scorpaenidae	*Scorpaena plumieri* Bloch, 1789[3]	7	1633	19.0–26.2	21.57 ± 2.58	158.5–361.5	233.21 ± 6.01
	Triglidae	*Prionotus punctatus (*Bloch, 1793)	83	2190	7.7–21.0	12.55 ± 2.26	5.2–114.1[1]	26.38 ± 17.62
Moroniformes	Ephippidae	*Chaetodipterus faber* (Broussonet, 1782)[3]	23	748	4.3–17.0	8.83 ± 3.22	4.8–165.8	32.90 ± 40.66
Acanthuriformes	Sciaenidae	*Larimus breviceps* Cuvier, 1830[3]	1075	16887	3.7–18.0	10.26 ± 2.65	0.5–81.2	15.72 ± 12.69
		Stellifer brasiliensis (Schultz, 1945)	961	11601	4.4–17.0[1]	10.09 ± 2.17	0.9–61.0[1]	12.09 ± 9.19
		Paralonchurus brasiliensis (Steindachner, 1875)	423	6364	5.0–19.6	12.13 ± 2.72	0.4–72.2[1]	15.05 ± 12.43
		Stellifer rastrifer (Jordan, 1889)	338	7473	5.0–17.0	12.06 ± 1.62	1.3–70.2[1]	22.14 ± 9.48
		Isopisthus parvipinnis (Cuvier, 1830)	309	3516	4.8–22.5	10.8 ± 3.06	0.6–73.9	11.38 ± 10.99

Table continues on next page.

Table 1 cont.

Order	Family	Species	*n*	Total catch [g]	Total length [cm]		Total weight [g]	
					Range	Mean ± SD	Range	Mean ± SD
		Stellifer stellifer (Bloch, 1790)	79	1435	6.6–15.5	11.16 ± 1.68	2.7–53.2[1]	16.74 ± 9.39
		Nebris microps Cuvier, 1830[3]	56	525	3.3–23.5	8.63 ± 3.16	0.2–31.1	7.40 ± 7.08
		Ctenosciaena gracilicirrhus (Metzelaar, 1919)	47	1816	7.0–17.0	13.59 ± 2.06	4.0–77.2[1]	37.75 ± 15.55
		Macrodon ancylodon (Bloch et Schneider, 1801)[3]	39	1154	6.5–23.5	15.11 ± 4.35	1.3–109.6[1]	29.58 ± 27.00
		Cynoscion virescens (Cuvier, 1830)[3]	34	873	10.0–21.3	16.65 ± 2.37	3.7–52.5	25.66 ± 11.29
		Stellifer sp. B[4]	19	132	5.9–10.4	8.52 ± 1.36	2.3–11.4	6.97 ± 2.75
		Menticirrhus americanus (Linnaeus, 1758)[3]	18	591	10.5–18.7	14.82 ± 2.39	8.7–71.8	32.54 ± 17.47
		Cynoscion acoupa (Lacepède, 1801)[3]	17	112	4.9–17.6	8.16 ± 3.07	0.8–49.3	6.56 ± 11.40
		Cynoscion microlepidotus (Cuvier, 1830)[3]	14	353	5.5–18.3	12.63 ± 4.40	1.9–65.1	25.23 ± 22.60
		Micropogonias furnieri (Desmarest, 1823)[3]	13	449	13.5–17.4	15.23 ± 1.07	21.2–55.3[1]	34.31 ± 8.28
		Cynoscion leiarchus (Cuvier, 1830)[3]	6	257	17.3–18.2	17.75 ± 0.64	26.3–57.0	42.77 ± 9.99
		Menticirrhus littoralis (Holbrook, 1847)	3	80	10.9–18.1	13.90 ± 3.75	10.0–48.9	26.60 ± 20.07
		Odontoscion dentex (Cuvier, 1830)	1	14	9.5	—	13.7[1]	—
Lophiiformes	Antennariidae	*Antennarius striatus* (Shaw, 1794)	1	33	8.7	—	32.9[1]	—
	Ogcocephalidae	*Ogcocephalus vespertilio* (Linnaeus, 1758)	3	87	7.3–16.7	11.30 ± 4.85	8.0–60.8[1]	20.07 ± 27.97
		Ogcocephalus parvus Longley et Hildebrand, 1940	2	9	5.8–7.1	6.45 ± 0.92	3.3–5.8[1]	4.45 ± 1.63
Tetraodontiformes	Ostraciidae	*Acanthostracion polygonius* Poey, 1876	2	214	14.0–20.5	17.25 ± 4.60	61.4–152.4[1]	106.90 ± 64.35
	Tetraodontidae	*Sphoeroides testudineus* (Linnaeus, 1758)	7	761	12.3–26.6	17.78 ± 5.43	30.5–306.9	108.67 ± 103.83
		Sphoeroides tyleri Shipp, 1972	6	15	4.1–5.8	4.87 ± 0.73	1.3–3.9[1]	2.57 ± 1.03
		Lagocephalus laevigatus (Linnaeus, 1766)[3]	4	1149	4.5–39.3	12.55 ± 7.02	1.4–976.5	16.19 ± 33.9
	Diodontidae	*Chilomycterus spinosus* (Linnaeus, 1758)	1	12	6.0	—	12.21[1]	—

Order level affiliation according to Nelson et al. (2016); *n* = number of individuals, SD = standard deviation; [1]Data not available in FishBase (Froese and Pauly 2018); [2]Revised scientific name; [3]Commercially important, cited in Freire and Araújo (2016); [4]According to Carpenter (2002).

Table 2

Length–weight relations (LWRs) for all fish species caught by shrimp trawlers off the coast of Sergipe, Brazil (with $n \geq 20$)

Species	n	TL [cm] Range	TL_{max}	L_m	a	SE $\log_{10}a$	b	SE b	r^2
Cathorops spixii	922	9.1–29.1	30.0	—	0.00501	0.07250	3.181[5]	0.028	0.981
Stellifer brasiliensis	883	4.4–17.0[4]	14.5	7.3	0.00563	0.04333	3.257[5]	0.019	0.932
Pellona harroweri	755	5.0–16.5	18.0	—	0.00952	0.06468	2.969	0.028	0.971
Odontognathus mucronatus	428	8.6–18.4	19.2	—	0.00277	0.07587	3.248[5]	0.030	0.964
Paralonchurus brasiliensis	400	5.0–19.6	30.0	15.7	0.00240	0.08994	3.424[5]	0.036	0.923
Stellifer rastrifer	322	5.0–17.0	32.1	9.8	0.00756	0.09541	3.182[5]	0.038	0.977
Isopisthus parvipinnis	302	4.8–22.5	25.0	15.9	0.00630	0.07832	3.078	0.033	0.955
Selene brownii [1]	149	3.6–20.2	29.0	—	0.01754	0.10391	2.833[5]	0.043	0.955
Anchoa spinifer	128	8.1–21.0	24.0	—	0.00386	0.14540	3.222[5]	0.059	0.967
Trinectes paulistanus	104	5.4–18.2[4]	18.0	—	0.01824	0.25548	3.009	0.108	0.959
Symphurus plagusia	101	4.2–18.2	25.0	—	0.00389	0.12819	3.225[5]	0.051	0.882
Chirocentrodon bleekerianus[2]	89	7.0–16.1[4]	11.2	7.6	0.01324	0.28281	2.578[5]	0.116	0.963
Stellifer stellifer	68	6.6–15.5	21.0	7.5	0.00552	0.22621	3.287[5]	0.094	0.884
Citharichthys spilopterus	59	5.5–21.0[4]	20.0	—	0.01522	0.21824	2.799[5]	0.091	0.852
Ctenosciaena gracilicirrhus[2]	45	7.0–17.0	21.0	—	0.00631	0.16291	3.302[5]	0.063	0.960
Anchoviella lepidentostole	28	5.5–16.4[4]	13.1	—	0.00474	0.32489	3.181	0.146	0.941
Peprilus crenulatus[3]	27	3.5–15.0	—	—	0.01836	0.12115	2.979	0.054	0.992
Genyatremus cavifrons[3]	21	7.3–12.6	—	—	0.03135	0.29881	2.751	0.131	0.959

n = number of individuals, TL = total length observed, TL_{max} = total length reported in FishBase, L_m = length at first maturity reported in FishBase; a and b = parameters of the LWR, SE = standard error, r^2 = coefficient of determination; only species with more than 20 specimens examined and the maximum observed length representing more than 70% of the maximum size reported in FishBase (Froese and Pauly 2018) or significantly higher than L_m are presented; [1]no LWR found for Brazil, [2]LWR not found for NE Brazil; [3]new species name according to Tavera et al. (2011) and Marceniuk et al. (2016), [4]TL_{max} obtained in this study higher than currently reported in FishBase, [5]b statistically different from 3.

All results for b from the LWR are within the usual range (2.5–3.5) described by Carlander (1969). Species for which only juveniles were sampled were excluded from this analysis as small individuals change during growth (Lima Filho et al. 2006), resulting in very different b values. These values may also be influenced by differences among seasons (Pauly 2010), localities, and feeding habits (Wootton 1998). This is the first time that an LWR is presented for *G. cavifrons*, and *P. crenulatus* under their revised scientific names (Tavera et al. 2011, Marceniuk et al. 2016).

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