

CHECKLIST, RICHNESS OF COMMON NAMES AND CONSERVATION ISSUES OF MARINE FISHES LANDED IN COMMERCIAL FISHERIES OF ESPÍRITO SANTO STATE, BRAZILIAN CENTRAL COAST

Lista das espécies, diversidade de nomes comuns e status de conservação dos peixes marinhos capturados na pesca comercial no estado do Espírito Santo, costa central brasileira

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ABSTRACT

The aim of this manuscript is to provide the first checklist of marine commercial fish species landed in Espírito Santo state (Brazilian central coast), with associated richness of common names and conservation status. The data collection took place under the Fisheries Monitoring Program, throughout the state of Espírito Santo. Altogether 22 fishing landing ports were monitored from May 2011 to August 2012. A total of 91 fish species from 39 families were identified. The richness of common names of fishery resources in Espírito Santo showed an average of two common names per species.

Keywords: folk names, commercial landings, fisheries monitoring, Espírito Santo, Brazil.

RESUMO

O objetivo deste artigo é fornecer a primeira lista de espécies de peixes marinhos com os nomes comuns e status de conservação, desembarcadas no estado do Espírito Santo (ES), costa central do

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Brasil. A coleta de dados ocorreu no âmbito do Programa de Estatística Pesqueira, em todo o estado do Espírito Santo. O monitoramento aconteceu em 22 portos de desembarque de pesca, no período de maio de 2011 a agosto de 2012. Ao todo, foram identificadas 91 espécies de peixes pertencentes a 39 famílias. A diversidade de nomes comuns dos recursos pesqueiros no Espírito Santo apresentou média de dois nomes comuns por espécie.

Palavras-chave: *nomes populares, desembarque pesqueiro, estatística pesqueira, Espírito Santo, Brasil.*

INTRODUCTION

Marine resources have been subjected to several impacts, such as the increase of biodiversity losses driven by fishing (Worm *et al.*, 2006), which have impacted the per capita consumption of fishery resources (Garcia, 2010), catch rates and several commercial stocks (Pauly *et al.*, 2002; FAO, 2014) thereby increasing the debate on fisheries sustainability in the literature (Coulthard, 2012; Jacquet & Pauly, 2008).

Historically, managing and monitoring small-scale tropical fisheries (e.g. Brazil) is a challenging task due to the heterogeneity of fishing gear, landing territoriality and, mainly, the scarcity of data of fishery statistics (Defeo & Castilla, 2005; Begossi, 2014). In this sense, some local fisheries and catches of commercial species can be overestimated if the richness of attributed common fish names is not considered. For instance, multiple common names can be attributed to one fish species by local fishers, while in the vicinity one common name can fit a couple of species (Freire & Pauly, 2005; Freire & Carvalho-Filho, 2009). In Brazil, the richness of common names can be ascribed to a cultural and linguistic richness inserted in a huge coastal territory (> 8,000 km). Thus, the knowledge of richness of common names of marine exploited resources in a region is fundamental to a better managing decisions and fishery estimates. The first step to evaluate and support effective management fisheries measures comprises the knowledge of fishery dynamics and correct identification of target species (Freire & Pauly, 2005; Anticamara *et al.*, 2011).

The last update of Brazilian national production of fisheries resources reported a fishery catch around 1.431.974,4 ton/year (MPA, 2011), of these 13.5% (553.670,0 ton/year) are from marine fisheries; while in the Espírito Santo state (ES) it was approximately 12,000 ton/year (Hostim-Silva & Soares, 2013). The Espírito Santo state covers only 5% of the Brazilian coastline, however, recent studies indicated important pelagic and coastal resources being exploited and landed along their coast (Martins, Olavo & Costa, 2005; Hostim-Silva & Soares, 2013; Musiello-Fernandes *et al.*, 2018). The aim of this manuscript is to provide the first checklist of marine fish species landed in the state of Espírito Santo, central coast of Brazil, and the common names associated to fish species.

MATERIALS AND METHODS

Study area

The Espírito Santo state (18°35' S to 21°31' S) is located in the lower portion of Brazilian central coast (Martins, Olavo & Costa, 2005). This region presents a variation in continental shelf width with higher extension in north part, reaching up to 246 km (Martins & Coutinho, 1981). The continental shelf margin and oceanic region adjacent is marked by

the presence of Vitória-Trindade submarine ridge (20°-21° S). The circulation pattern of the region is dominated by the oligotrophic waters of the Brazilian Current (Campos *et al.*, 2000; Martins; Olavo & Costa, 2005).

Twenty two fishing communities and villages along the Espírito Santo coast were monitored by the Fishery Monitoring Program of Espírito Santo (Programa de Estatística Pesqueira do Espírito Santo) (Hostim-Silva & Soares, 2013). Each fishing community was monitored daily by a local member that interviewed the fishermen about fishery production and dynamics. Concomitantly to fish landings, the identification of fish species was made using the classic and current identification guides, such as Figueiredo (1977), Figueiredo and Menezes (1978, 1980, 2000), Menezes and Figueiredo (1980, 1985), Cervigón *et al.* (1992), Carvalho-Filho (1999), Carpenter (2002). National common names (BRA common names) cited in this paper were based on Carvalho-Filho (1999), Freire and Carvalho-Filho (2009), Froese and Pauly (2019). The state common names used by local fishermen (ES common names) were obtained by interviews applied during the fish landings. The species conservation status was determined following the Brazilian Red Book of the Endangered Species (ICMBio, 2018).

RESULTS AND DISCUSSION

Altogether 91 fish species from 39 families were identified (Table I). The four most speciose families were Scombridae (11%), followed by Sciaenidae (8%), Carangidae (7%) and Lutjanidae (7%). This dominance of scombrids, mainly of the genus *Thunnus* was related to hand line/hook-and-line and longline fleet that operate in the south of Espírito Santo state (Itaipava and Guarapari region), which exploits mainly tunas, dolphinfishes and billfishes as main target resources. According to Martins *et al.* (2005), the artisanal Itaipava fleet comprises small fishing boats (11-15 meters) that fishing generally in the “Bacia de Campos” (21°-23° S), a region of the continental shelf that shelter an important oil drilling platforms field.

The richness of ES common names was, in average, two names per species, which is lower than reported for Brazilian reef fishes (seven common names per species; Freire & Carvalho-Filho, 2009). On the other hand, 56.1% of fish species reported here were associated to two or more common names (e.g. Robalo, Vaquara and Cação), which hamper the accuracy of catch estimates of these fishing resources. The synonyms (different common names for one species) and homonyms (same common name for more than one species) can influence commercial catch statistics of specific resources, as seen for the catfishes *Genidens genidens*, *Aspistor quadris cutis* and *Cathorops spixii* reported by Freire and Pauly (2005), which catch values could be grouped into the “Bagre” common name. In this case, the inventory effort of specific exploited resources may be improved with the exact identification of a target resource or the determination of prevalence of some species in catch data.

Additionally, highly target species usually had their common names in relation to size of catch, such as “Dourado” and “Palombeta” and “Atum galha amarela” and “Vaquara”, which refers to larger and smaller individuals, respectively, of *Coryphaena hippurus* and *Thunnus albacares*. In other case, the high richness of common names seems to refer a natural variation of brazilian common name, as with “Ariocó” and “Biquara”. This variation was observed in small fishery villages of Espírito Santo.

Among the fish landed, *Ginglymostoma cirratum* is classified as Vulnerable (ICMBio, 2018). The main threat to this species in the Espírito Santo coast is the spear-fishing,

however, the *G. cirratum* fisheries recorded in this study were caught by gill netting and hook-and-line activities, being the latter performed in adjacent grounds of the Marine Protected Area “Parque Nacional Marinho dos Abrolhos”. Others species classified as Vulnerable were *Mycteroperca bonaci*, *Epinephelus morio* and *Lopholatilus villarii*. Also, the record of the endemic endangered *Scarus trispinosus* reinforce the need for understanding of fisheries dynamics and target resources in order to develop tools that help the coastal fishery management.

The checklist presented here associated with common names and conservation status data is a step towards improving fishery management activities in the Brazilian central coast. Although the use of common names is an important part of the fishery communities culture, the exact identification of exploited fish resources may help to solve doubts about impacts of local and global fisheries. Future researches about regional catches of target fishes and fishing grounds are necessary to better understanding of fisheries dynamics Brazilian central coast. We also emphasize the need to return to the Fisheries Monitoring Program, both state and national.

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Table I – List of families and species catch in fisheries at Espírito Santo state, Central Brazilian coast, with English, Brazilian (BR) and Local name (ES) and Brazilian conservation status. Species classification follows Nelson (2016). English names are based in Froese and Pauly (2019) and BR common names are based in Carvalho-Filho (1999), Freire and Carvalho-Filho (2009) and Froese and Pauly (2019). The conservation status (CS) of the species was determined following the Brazilian Red Book of the Endangered Species (ICMBio, 2018)

Family	Species	English name	BR common name	ES common name	CS
Ginglymostomatidae	<i>Ginglymostoma cirratum</i>	Nurse shark	Cação-lixia	Cação-lixia, Lixa	VU
Lamnidae	<i>Isurus oxyrinchus</i>	Shortfin mako	Cação-anequim	Cação-anequim, Anequim, Cação Aniquim	
Carcharhinidae	<i>Galeocerdo cuvier</i>	Tiger shark	Tubarão-tigre	Cação-tigre, Tintureiro	
Carcharhinidae	<i>Prionace glauca</i>	Blue shark	Cação-azul	Cação-azul, Cação geleia, Geleia, Cação mole-mole	
Elopidae	<i>Elops saurus</i>	Ladyfish	Ubarana	Ubarana, Barana	
Pristigasteridae	<i>Pellona harroweri</i>	American coastal pellona	Sardinha-cascudo	Olhudo, Olhuda	
Ariidae	<i>Bagre bagre</i>	Coco sea catfish	Ariaçu	Bagre-bandeira, Mabungo	
Ariidae	<i>Notarius grandicassis</i>	Thomas sea catfish	Bagre-beiçudo	Calafate	
Merlucciidae	<i>Merluccius hubbsi</i>	Argentine hake	Merluza	Merluza	
Holocentridae	<i>Holocentrus adscensionis</i>	Squirrelfish	Jaguareçá-açu	Jaguariça, Juriçá, Jaquariça, Jiriça	
Dactylopteridae	<i>Dactylopterus volitans</i>	Flying gurnard	Coió	Falso-voador, Voador	
Triglidae	<i>Prionotus punctatus</i>	Bluewingsearobin	Cabrinha Santo Antônio	Cabrinha	
Centropomidae	<i>Centropomus undecimalis</i>	Common snook	Robalo-verdadeiro	Robalo, Robalo-flecha, Robalão	
Centropomidae	<i>Centropomus parallelus</i>	Fat snook	Robalo-peba	Robalo, Robalo-flecha, Robalão	
Serranidae	<i>Dermatolepis inermis</i>	Marbled grouper	Piranema-pintada	Gostosa	

(continuation Table 1)

Family	Species	English name	BR common name	ES common name	CS
Serranidae	<i>Diplectrum formosum</i>	Sand perch	Michole de areia listrado	Michole, Bichole	
Serranidae	<i>Mycteroperca bonaci</i>	Black grouper	Badejo-quadrado	Badejo, Badejo-pérola	VU
Serranidae	<i>Mycteroperca venenosa</i>	Yellowfin grouper	Badejo-ferro	Piragica, Garoupa-piragica, Pirajica	
Serranidae	<i>Cephalopholis fulva</i>	Coney	Piraúna	Catuá, Catuá grande, Catuá pequeno	
Serranidae	<i>Epinephelus morio</i>	Red grouper	Garoupa São Tomé	Garoupa	VU
Priacanthidae	<i>Priacanthus arenatus</i>	Atlantic bigeye	Olho de cão	Olho de cão, Cacá, Olho de vidro	
Malacanthidae	<i>Malacanthus plumieri</i>	Sand tilefish	Pirá	Bom nome	
Malacanthidae	<i>Lopholatilus villarii</i>	Tile fish	Batata	Batata	VU
Pomatomidae	<i>Pomatomus saltatrix</i>	Bluefish	Enchova	Anchova, Enchova	
Coryphaenidae	<i>Coryphaena hippurus</i>	Common dolphinfish	Dourado	Dourado, Palombeta, Dourado exportação	
Rachycentridae	<i>Rachycentron canadum</i>	Cobia	Bijupirá	Bijupirá	
Carangidae	<i>Caranx crysos</i>	Blue runner	Carapau-verdadeiro	Xixarro, Carapau	
Carangidae	<i>Seriola lalandi</i>	Yellowtail amberjack	Olhete comum	Caranha	
Carangidae	<i>Seriola dumerili</i>	Greater amberjack	Olhete	Olho de boi	
Carangidae	<i>Selene setapinnis</i>	Atlantic moonfish	Galo	Peixe-galo, Galo	
Carangidae	<i>Selene browni</i>	Caribbean moonfish	Galo de recife	Peixe-galo, Galo	
Carangidae	<i>Oligoplites saliens</i>	Castin leatherjacket	Guaivira-salteira	Guaivira, Guaibira, Goibira,	
Lutjanidae	<i>Lutjanus analis</i>	Mutton snapper	Cioba	Cirioba	
Lutjanidae	<i>Lutjanus synagris</i>	Lane snapper	Ariocó	Ariacó, Griacó, Areoco, Greaco, Aroiocó, Oriocó,	
Lutjanidae	<i>Lutjanus jocu</i>	Dog snapper	Dentão	Dentão	
Lutjanidae	<i>Lutjanus vivanus</i>	Silk snapper	Vermelho olho amarelo	Vermelho papa terra	
Lutjanidae	<i>Ocyurus chrysurus</i>	Yellowtail snapper	Guaiúba	Cioba, Saeoba, Cioba exportação	
Lutjanidae	<i>Rhomboplites aurorubens</i>	Vermilion snapper	Realito	Realito, Mulata	
Lobotidae	<i>Lobotes surinamensis</i>	Tripletail	Prejereba	Dorminhoco	
Gerreidae	<i>Diapterus auratus</i>	Irish mojarra	Carapeba branca	Carapeba, Carapeba fraca	
Gerreidae	<i>Diapterus rhombeus</i>	Caitipamojarra	Caratingaitê	Carapeba, Carapeba fraca	
Haemulidae	<i>Haemulon steindachneri</i>	Chere-chere grunt	Cocoroca boca larga	Coró-coró	
Haemulidae	<i>Haemulon plumierii</i>	White grunt	Biquara	Biquara, Boca de velha, Bicuara, Bicuara, Bricuaria, Bicoara, Coara, Abiguara	
Haemulidae	<i>Conodon nobilis</i>	Barred grunt	Canarinho	Roncador	
Haemulidae	<i>Anisotremus virginicus</i>	Porkfish	Frade	Sargofita	
Haemulidae	<i>Anisotremus moricandi</i>	Brownstriped grunt	Fumeiro	Sargo	

(continuation Table 1)

Family	Species	English name	BR common name	ES common name	CS
Haemulidae	<i>Anisotremus surinamensis</i>	Black margate	Sargo-verdadeiro	Sargo	
Sparidae	<i>Pagrus pagrus</i>	Red porgy	Pargorosa	Pargo, Pargo rosa, Pargo legítimo, Pargo vermelho, Calunga	
Sparidae	<i>Calamus pennatula</i>	Pluma porgy	Peixe pena amarelo	Pargopena	
Polynemidae	<i>Polydactylus virginicus</i>	Barbu	Parati-barbudo	Barbubo	
Polynemidae	<i>Polydactylus oligodon</i>	Little scale threadfin	Parati-barbudo	Barbubo	
Sciaenidae	<i>Larimus breviceps</i>	Shorthead drum	Oveva	Cangoa prata	
Sciaenidae	<i>Nebris microps</i>	Smalleye croaker	Banana	Pescada, Pescadinha	
Sciaenidae	<i>Isopisthus parvipinnis</i>	Bigtooth corvina	Pescadinha	Pescada, Pescadinha	
Sciaenidae	<i>Macrondon ancyllodon</i>	King weakfish	Pescada dentuça	Pescada	
Sciaenidae	<i>Cynoscion jamaicensis</i>	Jamaica weakfish	Goete	Pescada, Pescadinha, Pescadinha Maria de Araújo	
Sciaenidae	<i>Cynoscion virescens</i>	Green weakfish	Pescada branca	Pescada, Pescadinha	
Sciaenidae	<i>Cynoscion microlepidotus</i>	Smallscale weakfish	Dente-de-cão	Pescada, Pescadinha	
Sciaenidae	<i>Menticirrhus americanus</i>	Southern kingcroaker	Papa-terra	Papa-terra, Pé de banco, Betara	
Sciaenidae	<i>Menticirrhus littoralis</i>	Gulf kingcroaker	Betara	Papa-terra, Betara	
Sciaenidae	<i>Ctenosciaena gracilicirrhus</i>	Barbel drum	Goretê	Fofa, Fofa papel, Cabeça dura	
Sciaenidae	<i>Micropogonias furnieri</i>	Whitemouth croaker	Corvina	Corvina, Tararaca, Corvina preta, Corvina fraca	
Sciaenidae	<i>Paralichthys brasiliensis</i>	Banded croaker	Maria Luiza	Roncador do norte	
Mullidae	<i>Pseudupeneus maculatus</i>	Spotted goatfish	Saramonete pintado	Trilha	
Labridae	<i>Bodianus pulchellus</i>	Spotfin hogfish	Papagaio azul	Sabonete	
Labridae	<i>Bodianus rufus</i>	Spanish hogfish	Budião papagaio verdadeiro	Sabonete	
Labridae	<i>Halichoeres dimidiatus</i>	Yellowcheek wrasse	Budião azul	Sabonete	
Scaridae	<i>Scarus trispinosus</i>	Greenback parrotfish	Papagaio azul	Budião	EN
Pinguipedidae	<i>Pseudopercis semifasciatus</i>	Argentinian sandperch	Namorado	Namorado	
Pinguipedidae	<i>Pseudopercis numida</i>	Namorado sandperch	Namorado verdadeiro	Namorado	
Gempylidae	<i>Ruvettus pretiosus</i>	Oilfish	Enchova preta	Peixe-prego, Prego	
Gempylidae	<i>Lepidocybium flavobrunneum</i>	Escolar	Escolar	Peixerato	
Trichiuridae	<i>Trichiurus lepturus</i>	Largehead hairtail	Espada	Peixe-espada, Espada	
Scombridae	<i>Scomber japonicus</i>	Chub mackerel	Cavalinha	Cavalinha	
Scombridae	<i>Euthynnus alletteratus</i>	Little tunny	Bonito cachorro	Gaiado, Galhado	
Scombridae	<i>Katsuwonus pelamis</i>	Skipjack tuna	Bonito listrado	Bonito listrado	
Scombridae	<i>Thunnus alalunga</i>	Albacore	Atum voador	Albacora-branca, Atum voador	

(continuation Table 1)

Family	Species	English name	BR common name	ES common name	CS
Scombridae	<i>Thunnus obesus</i>	Bigeye tuna	Albacora-bandolim	Albacora-bandolim, Atum bate, Atum bati	
Scombridae	<i>Thunnus albacares</i>	Yellowfin tuna	Albacora-laje	Albacora-laje, Atum galha amarela	
Scombridae	<i>Thunnus atlanticus</i>	Blackfin tuna	Albacorinha	Atum-atlântico, Pula-pula	
Scombridae	<i>Scomberomorus cavalla</i>	King mackerel	Cavala	Sarda, Sarda branca, Sarda sororó, Sororoca,	
Scombridae	<i>Scomberomorus brasiliensis</i>	Serra Spanish mackerel	Serra	Sarda, Sarda branca, Sarda sororó, Sororoca,	
Scombridae	<i>Acanthocybium solandri</i>	Wahoo	Cavala aipim	Cavala, Cavala aimpim, Sarda cavala, Sarda aipim, Sarda exportação	
Stromateidae	<i>Peprilus paru</i>	American harvestfish	Gordinho	Gordinho	
Xiphiidae	<i>Xiphias gladius</i>	Swordfish	Espadarte	Espadarte, Meca	
Paralichthyidae	<i>Paralichthys patagonicus</i>	Patagonian flounder	Linguado	Linguado	
Balistidae	<i>Balistes vetula</i>	Queen triggerfish	Cangulo-rei	Peroá preta	
Balistidae	<i>Balistes capriscus</i>	Grey triggerfish	Peixe porco verdadeiro	Peroá, Peroá branco	
Monacanthidae	<i>Aluterus monoceros</i>	Unicorn leatherjacket filefish	Gudunho comum	Peroá cação, Peroá leste, Peroá liso, Peroá chinelo, Peroá lanceta, Peroá antena	
Tetraodontidae	<i>Lagocephalus laevigatus</i>	Smooth puffer	Baiacu	Baiacu-arara	