

# PESKAS data report (testing version)

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## 1 Aim

This report summarises relevant statistics and insights from the Peskas platform during the period Jul 2017 - Oct 2021. The report examines the main temporal trends in the national revenue related to small-scale fishing in Timor-Leste and provides quantitative and qualitative information on the catches.

## 2 What is Peskas

Peskas is the official fisheries national monitoring system of Timor-Leste and represents one of the most sophisticated data collection systems for small-scale fisheries in the world.

Peskas' platform collects real-time information directly from fishermen's activity via a system of digital surveys developed in [KoBo toolbox](#). In addition, Peskas uses the technology provided by [Pelagic Data System](#) to record vessel movements via solar-powered tracking devices (see Figure 2.1).

The data and the information collected is subjected to an elaborate processing and cleaning through an open-source code pipeline on [GitHub](#), and provide important data in the hands of fisheries officers, researchers and local stakeholders and enables them to better understand the contribution of fish and fisheries to local livelihoods and food security.

Information about the process and user-centred design of the Peskas pipeline and initial analytics, and its application in fisheries research & management can be found in the following publications:

- [PeskaAAS: A near real-time monitoring system for small-scale fisheries in Timor-Leste.](#) In A. Tilley & M. B. Roscher (Eds.), Information and communication technologies for small-scale fisheries (ICT4SSF) - A handbook for fisheries stakeholders. In support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (pp. 11–18). FAO; WorldFish.
- [PeskaAAS: A near-real-time, open-source monitoring and analytics system for small-scale fisheries.](#) PloS One, 15(11), e0234760.
- [Nearshore Fish Aggregating Devices Show Positive Outcomes for Sustainable Fisheries Development](#) Frontiers in Marine Science, 6, 487.

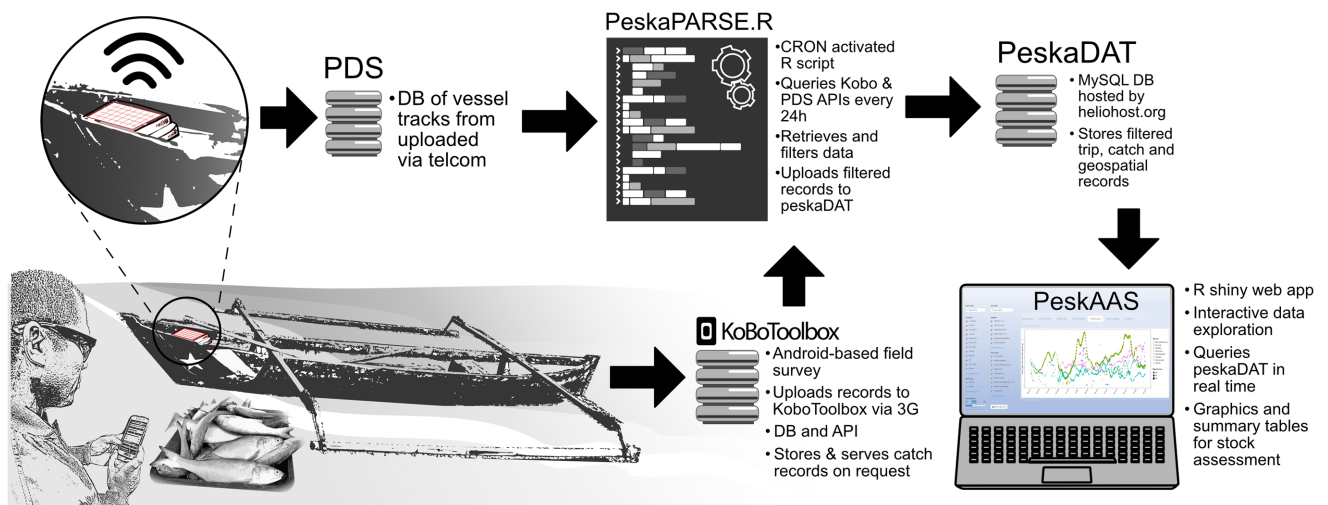


Figure 2.1: A diagrammatic representation of the Peskas application. From [PeskaAAS: A near-real-time, open-source monitoring and analytics system for small-scale fisheries](#)

### 3 Revenue

The landing value in USD is obtained from landing surveys at multiple sites around the country. Fishers are asked for the estimated price of their catch at the landing site regardless of whether the catch is deemed for sale or consumption. Prices may change throughout the year and across landing sites. We then obtain monthly estimates using a random-effect statistical model.

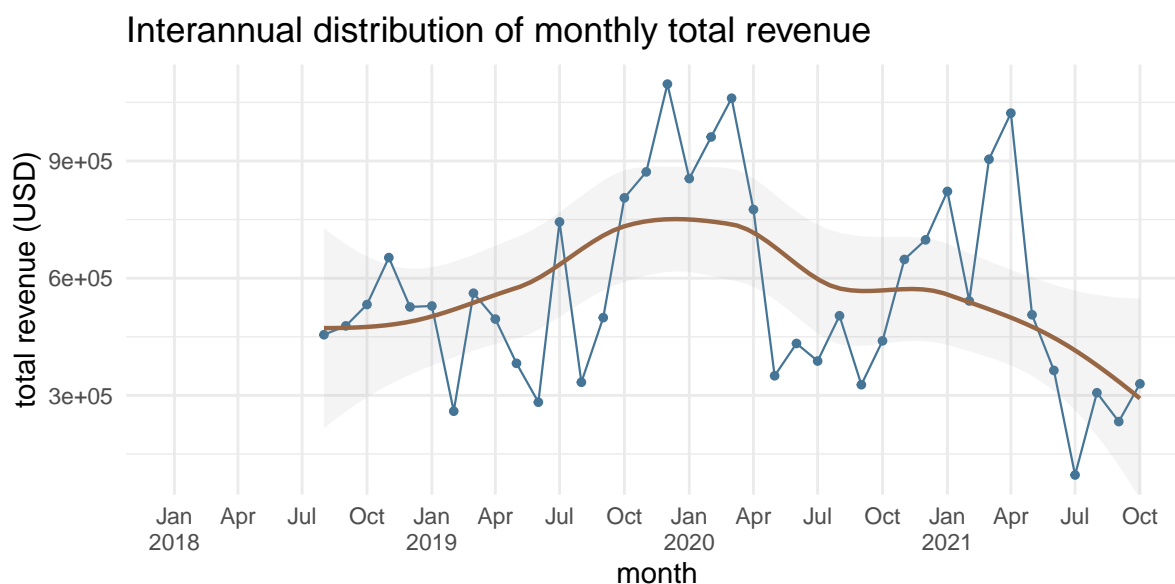


Figure 3.1: Time series of monthly aggregated total revenue. The red line is the local polynomial regression fitted to the time series while the shaded area represents the 0.95 confidence interval.

### Seasonal distribution of monthly total revenue

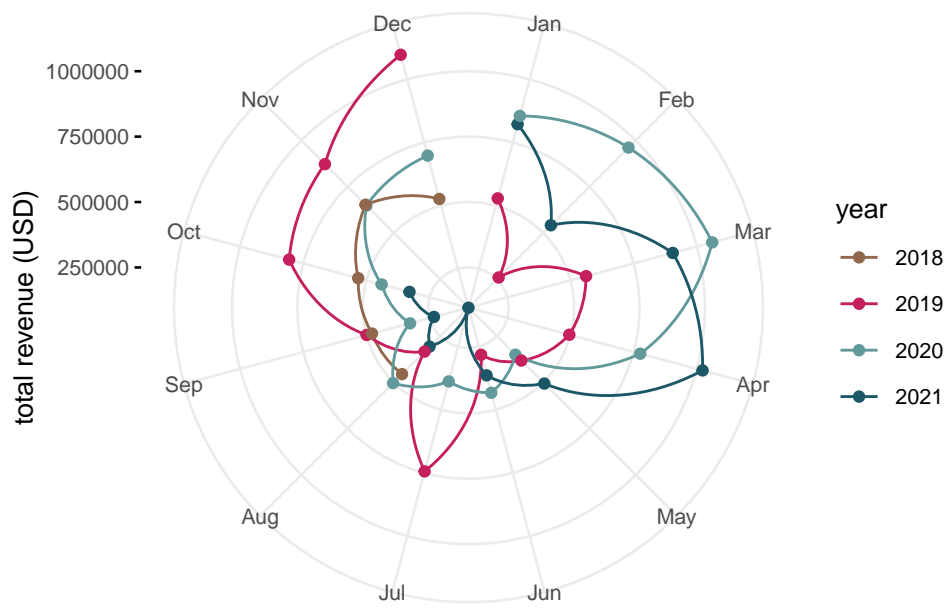


Figure 3.2: Monthly revenue shown for each year of Peskas' activity

## 4 Catches

Through the KoBo toolbox digital surveys, fishermen share several information related to each fishing trip. The fishermen were trained to provide homogeneous data both on the quality of the catch (the type of species caught) and on the quantity, indexed by the number of individuals and their length. In particular, the species caught are categorized in a list that includes the main species and groups caught in Timor-Leste (Table 1).

Table 1: ASFIS codes (FAO 3-Alpha Species Codes), scientific and common names of Peskas catches

n	Catch code	Taxonomic rank (family)	Common name
1	SKH	Carcharhinidae	Shark
2	PWT	Scaridae	Parrotfish
3	GPX	Serranidae	Grouper
4	DRZ	Drepaneidae	Sicklefish
5	THF	Polynemidae	Threadfin
6	PUX	Triacanthidae	Tripodfish
7	GOX	Mullidae	Goatfish
8	BWH	Priacanthidae	Moontail bullseye
9	BEN	Belonidae	Long tom
10	MUI	Muraenidae	Moray
11	COZ	Cardiidae	Cockles
12	YDX	Holocentridae	Soldierfish
13	OCZ	Octopodidae	Octopus
14	DOS	Chirocentridae	Wolf herring
15	FLY	Exocoetidae	Flying fish
16	RAX	Scombridae	Short bodied mackerel
17	MZZ	-	Other
18	THO	Terapontidae	Terapon
19	DSF	Pomacentridae	Sergeant
20	SFA	Istiophoridae	Sailfish
21	MOO	Menidae	Moonfish
22	CGX	Carangidae	Jacks/Trevally/Other Scad
23	SUR	Acanthuridae	Unicornfish
24	APO	Apogonidae	Cardinalfish
25	PEZ	-	Shrimp
26	IHX	Chaetodontidae	Butterflyfish
27	MHL	Pempheridae	Blackspot sweeper
28	CLP	Clupeidae	Herring
29	LGE	Leiognathidae	Ponyfish
30	EMP	Lethrinidae	Emperor
31	SUR	Acanthuridae	Surgeonfish
32	MOB	Nemipteridae	Bream
33	DOX	Coryphaenidae	Dolphinfish
34	SDX	Carangidae	Mackerel scad
35	BAR	Sphyraenidae	Barracuda
36	-	-	No catch
37	MIL	Chanidae	Milkfish
38	SRX	-	Stingrays
39	IAX	Sepiidae	Cuttlefish
40	CRA	-	Crab
41	CLP	Clupeidae	Sardines/pilchards
42	SWX	-	Seaweed

Table 1: ASFIS codes (FAO 3-Alpha Species Codes), scientific and common names of Peskas catches  
(continued)

<b>n</b>	<b>Catch code</b>	<b>Taxonomic rank (family)</b>	<b>Common name</b>
43	CUX	-	Sea cucumber
44	BGX	Haemulidae	Javelin/Grunt
45	MOJ	Gerreidae	Mojarra/Silverbelly
46	KYX	Kyphosidae	Chub
47	LWX	Lutjanidae	Jobfish
48	IHX	Chaetodontidae	Bannerfish
49	SPI	Siganidae	Spinefoot
50	TRI	Balistidae	Triggerfish
51	SNA	Lutjanidae	Snapper/seaperch
52	CBA	Rachycentridae	Cobia
53	SLV	-	Lobster
54	GZP	Hemiramphidae	Garfish
55	TUN	Scombridae	Tuna/Bonito/Other Mackerel
56	MUL	Mugilidae	Mullet
57	ECN	Echeneidae	Remora
58	GRX	Haemulidae	Sweetlips
59	WRA	Labridae	Wrasse
60	MZZ	-	Unknown
61	CJX	Caesionidae	Fusilier

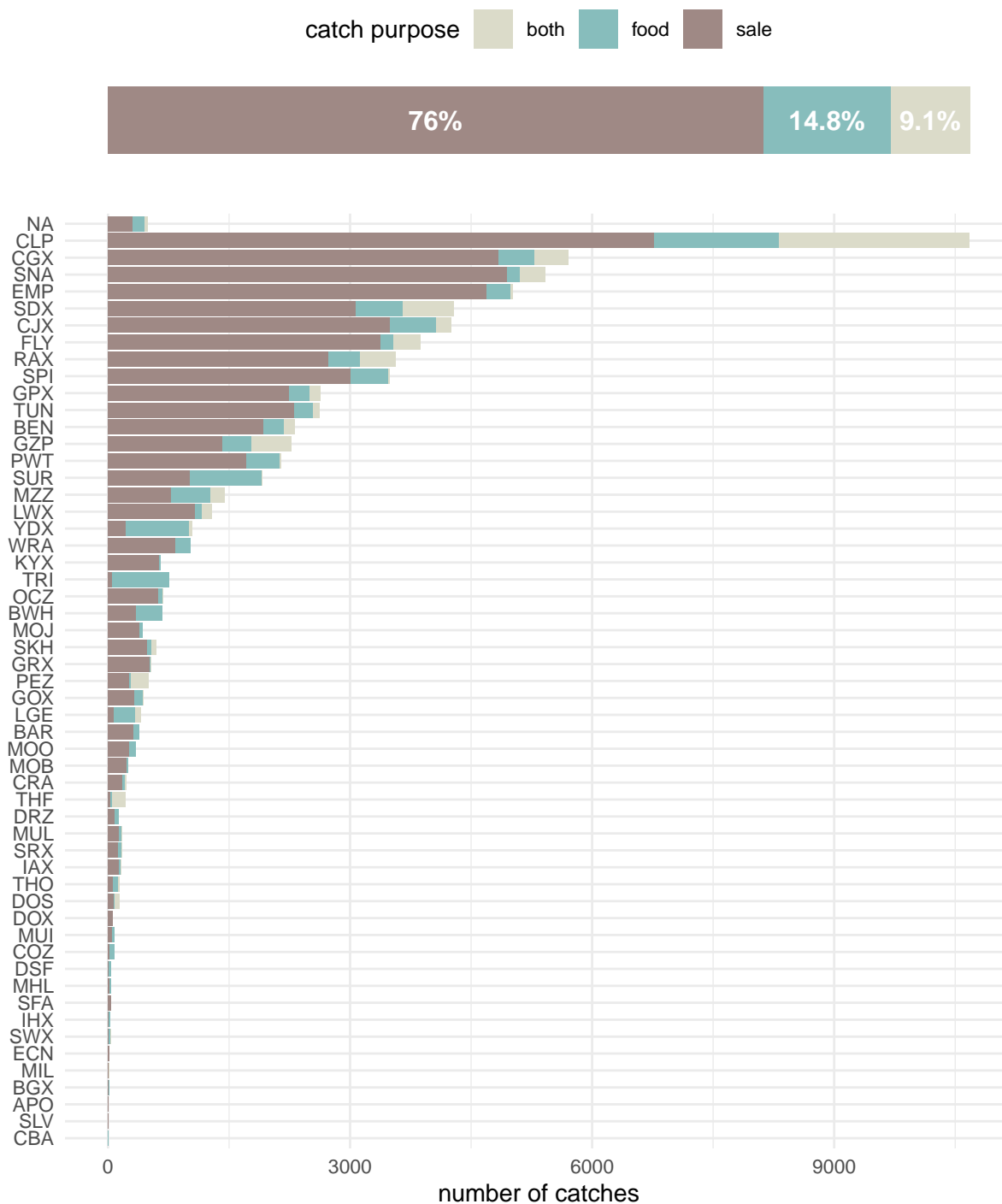


Figure 4.1: Total proportion of catches final usage (top) and usage proportion of each catch ranked by total number of catches (bottom)

## Time series of catches final usage

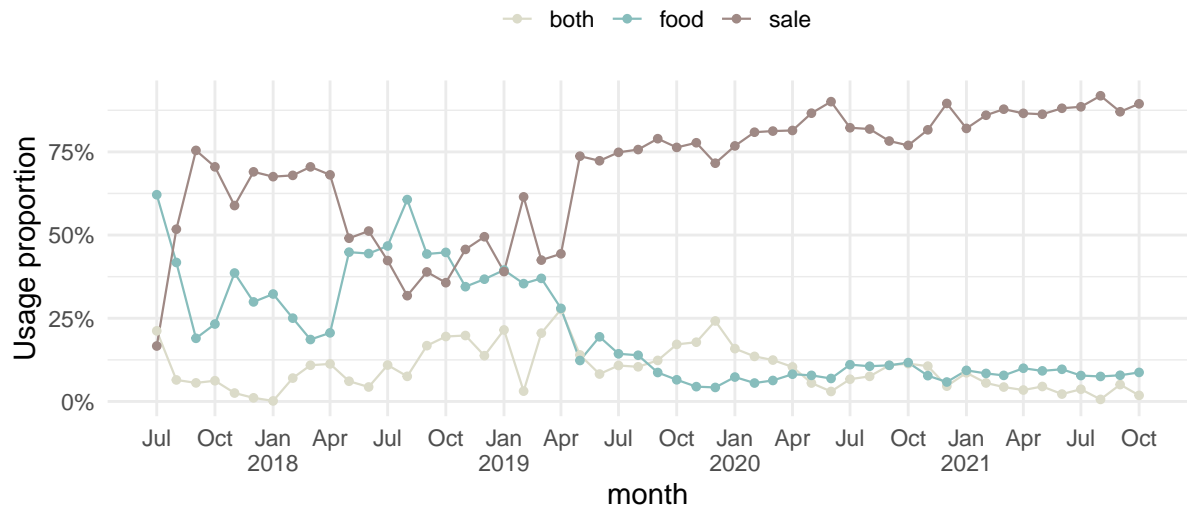


Figure 4.2: Interannual proportion catches final usage

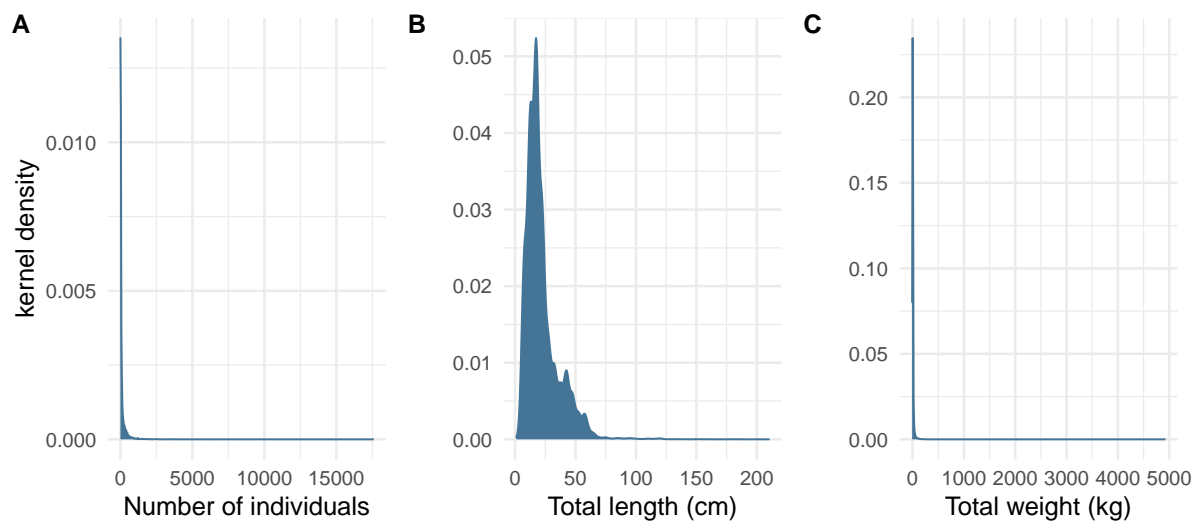


Figure 4.3: Main catches descriptors. Distribution of the number of individuals (A), their length (B) and weight (C) considering all the catches.



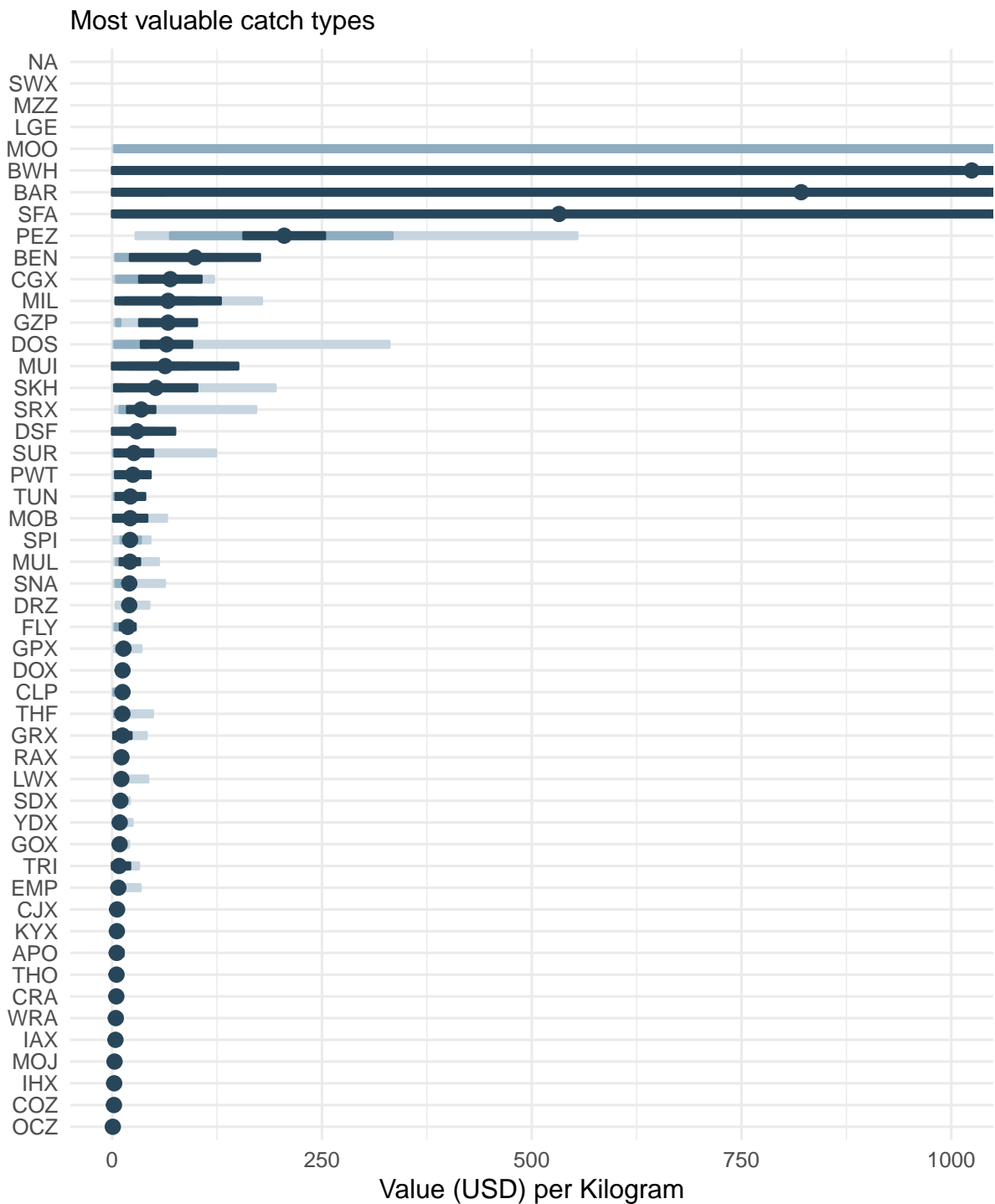


Figure 4.4: Catches ranked by average value (USD). The darkest shade in each bar represent the 95% confidence interval for average, other shades indicate the 5th and the 25th, and the 75th and 95th going from left to right respectively.

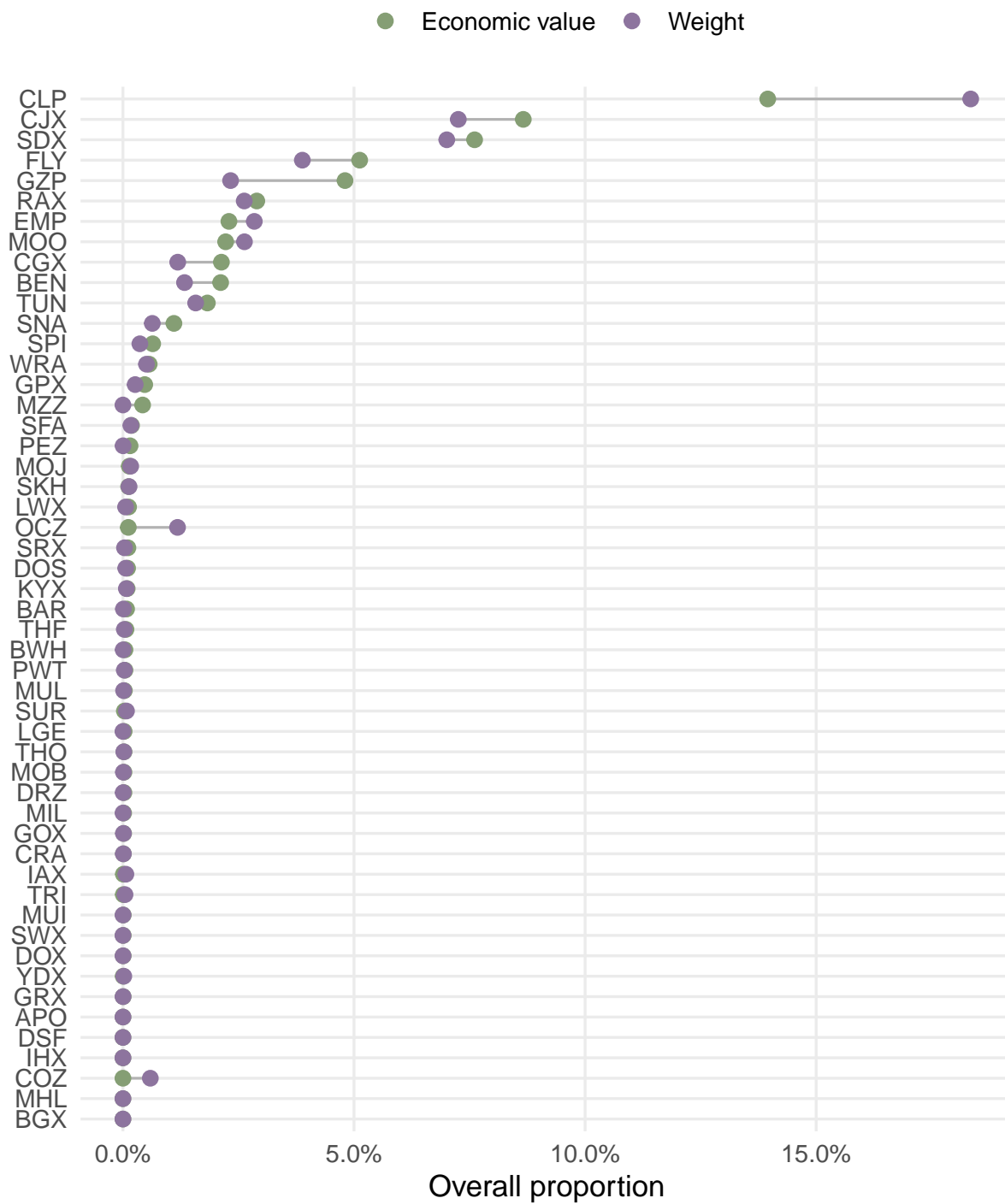


Figure 4.5: Overall proportion of economic value and weight by each catch type.

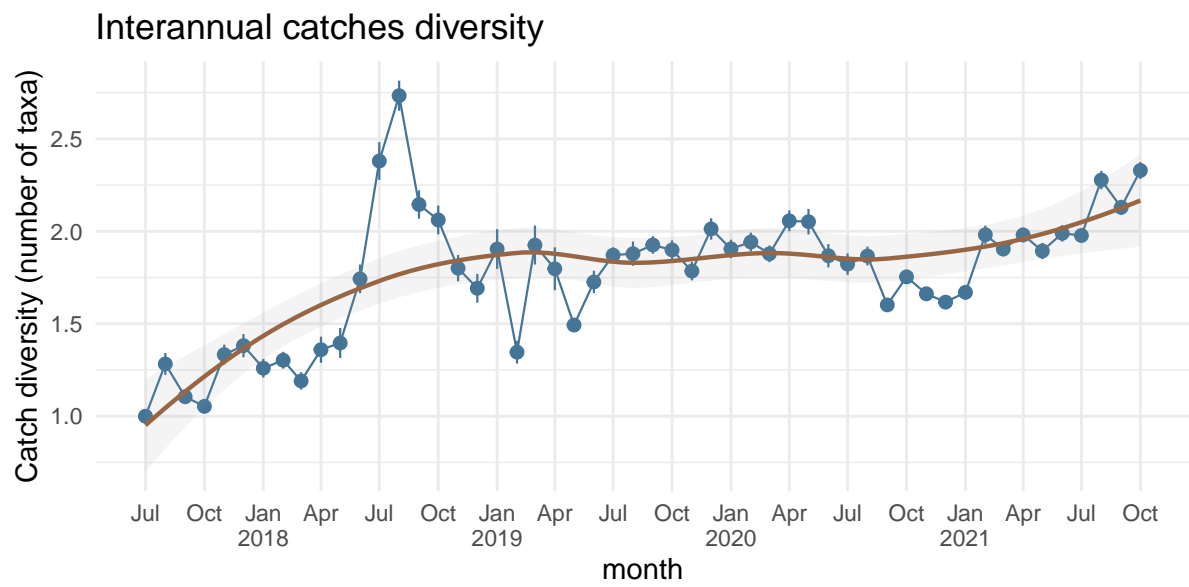


Figure 4.6: Time series of catches diversity on the monthly scale. Points represent average diversity while bars define the 0.95 confidence interval.