



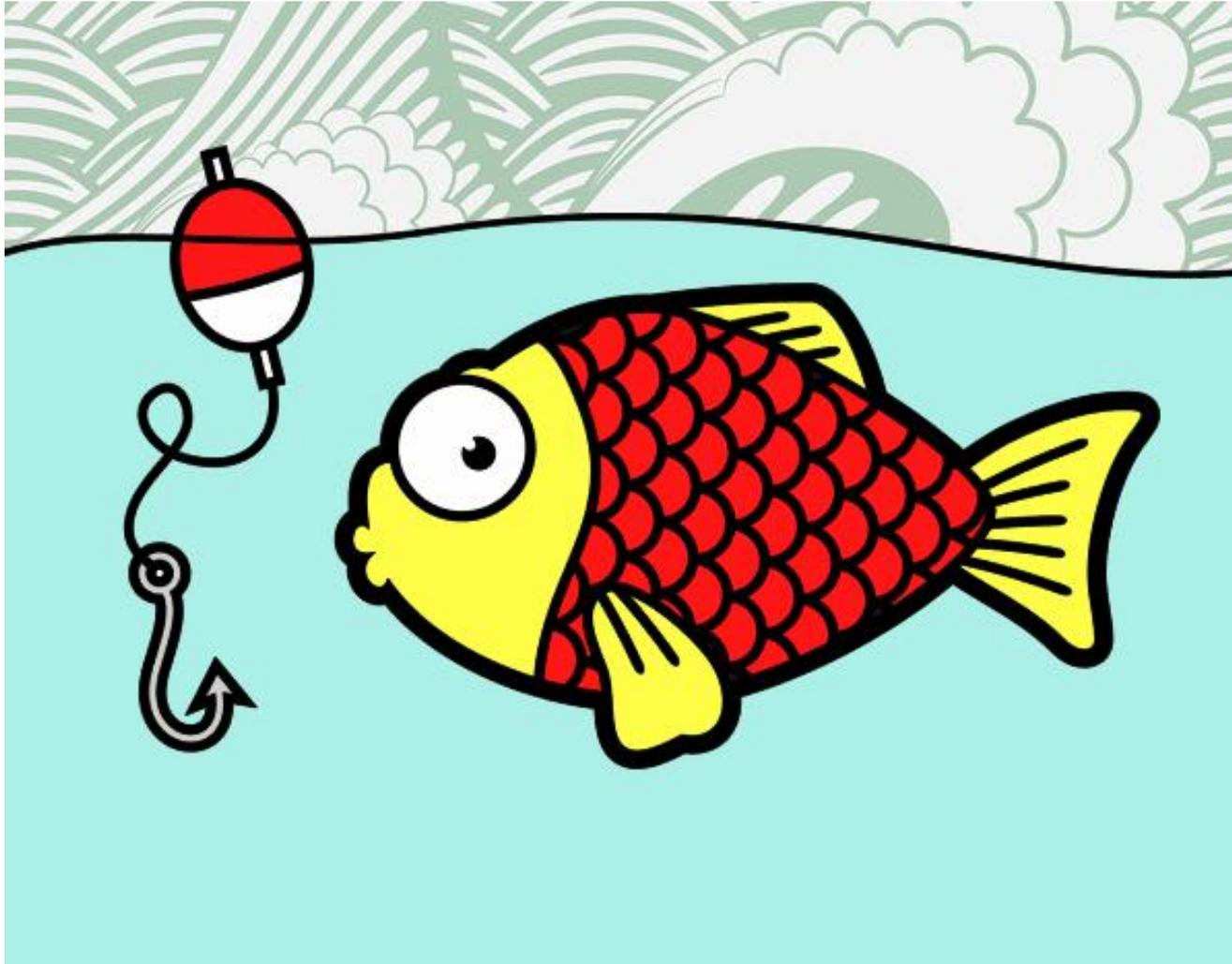
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MARINE

Recreational fishing in the Adriatic Sea: the case study of Marche Region

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«Recreational fishing means a non-commercial fishing activity exploiting marine living resources for recreation, tourism or sport»

General Fishery Commission for the Mediterranean (GFCM, 2020)



INTRODUCTION

- Recreational fishing contributes to fishing mortality
- Several regions of the world have undertaken large-scale data collection activities
- In the Italian context, estimates on data collection to assess the importance of recreational fishing date back to 1998 and then nothing more



The Recreational fishing in Italy

- The number of registered recreational was 1.077.048 (MIPAAF, 2019)
- In order to be able to fish at sea, it is compulsory to communicate the activity to MIPAAF
- The type of equipment, techniques, fishing areas and species sizes are regulated by several decrees of law.



Project funded by FAO - GFCM

GSA 17 (Friuli Venezia Giulia, Veneto, Emilia Romagna, Abruzzo, Molise e Marche)

To Characterize recreational fishing in the Marche region:
To Determine the diffusion of recreational fishing among the population of the Marche region, defining the fishing effort, catches, the economic aspect and the demographic characteristics of the fishermen

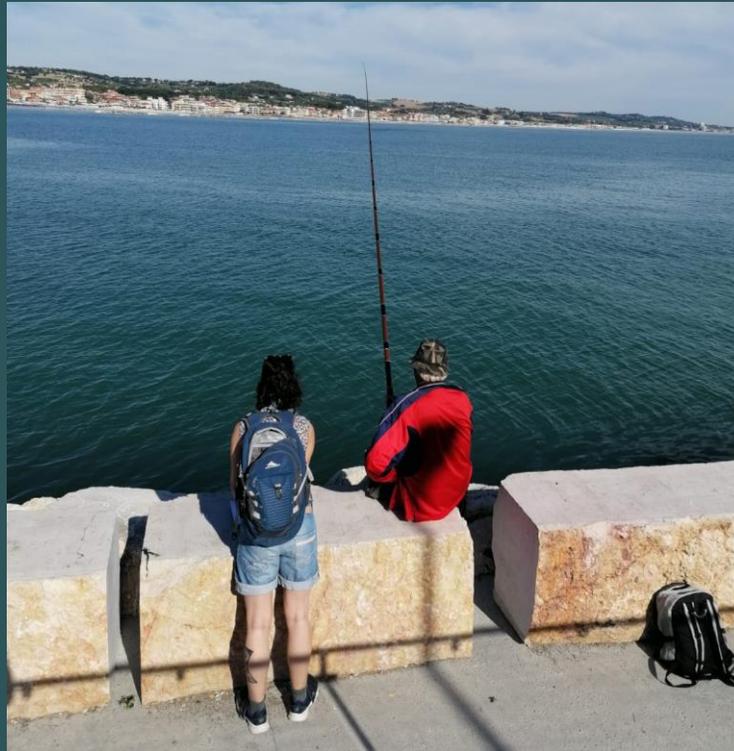
AIM OF THE STUDY



Food and Agriculture
Organization of the
United Nations



Telephone survey



Onsite survey



Recall survey

Materials and methods

Telephone survey



CATI (Computer Assisted Telephone Interview)
and CAMI (Computer Assisted Mobile Interview)



Selection of households (coastal and non-coastal
Municipalities)

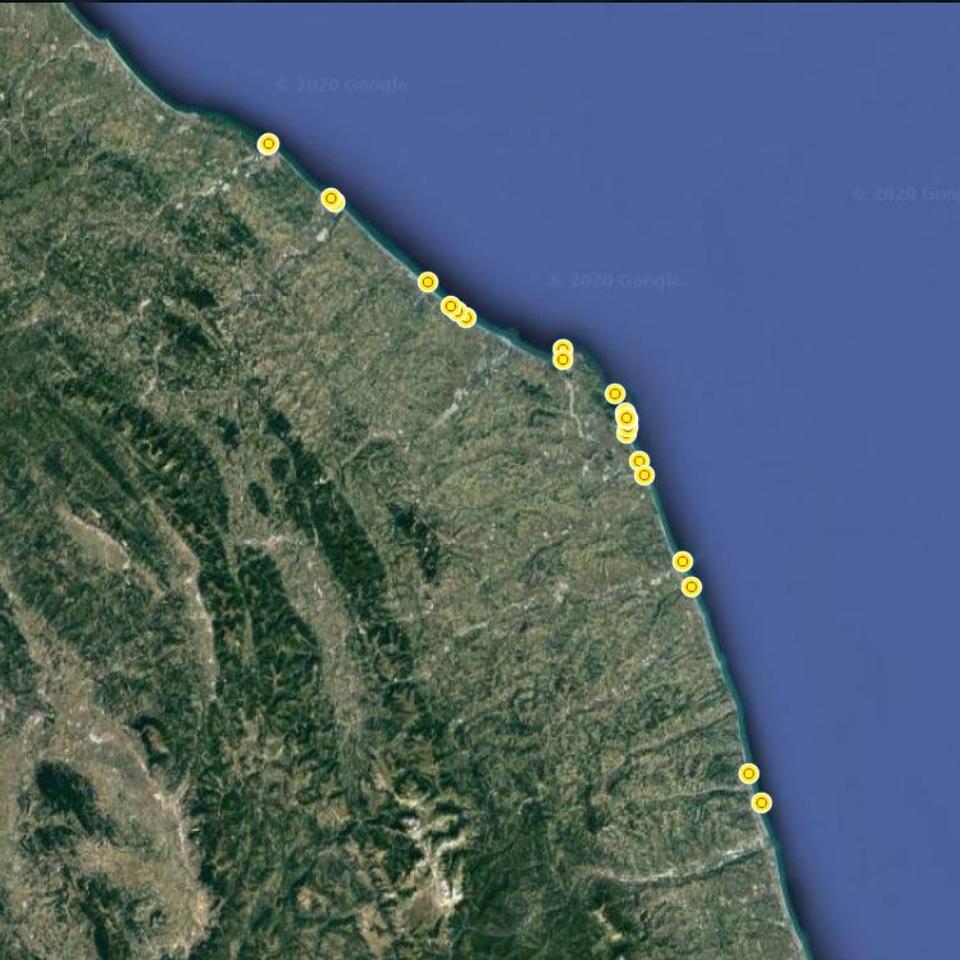


Telephone calls



Fishing days in 2019, in relation to activities
(underwater fishing, shore fishing,
boat fishing)

Onsite survey



- Sampling period: January-September (except March and April)
- Location and sampling days: random
- Places: beaches, cliffs and four harbors
- Sampling area: from the port of Pesaro to San Benedetto del Tronto (160 km of coastline)

GFCM Recreational Fisheries Pilot Study - Italy

Data

Inserisci la data di rilevamento

Inserisci data

yyyy-mm-dd

Georeferenzia la posizione o...

Localizza la battuta di pesca sulla mappa

latitude (x.y °)

longitude (x.y °)

altitude (m)

accuracy (m)

...Inserisci la posizione

Indica l'area di pesca



Panel

Contatto

Dettagli di contatto

Note

Inserisci qui le altre informazioni che ritieni utili

Pescatore

Già intervistato?

E' già stato intervistato?

SI

NO

*Tipologia

Indica il tipo di pescatore

Da riva

Da barca

Sub

Età

Inserisci l'età

Sex

Indica il sesso

Uomo

Donna

In compagnia di

Indica il numero di altre persone

Avidity

Quante volte è andato a pesca l'anno precedente?

Battuta di Pesca

Inizio

Inizio battuta di pesca

hh:mm

Fine

Fine battuta di pesca (o orario intervista)

hh:mm

Numero di canne

Numero totale

Numero di ami

Numero totale

Numero di nasse

Numero totale

Catch

Specie Catch

Indica la specie catturata (aggiungi ulteriori specie sotto)

Numero totale specie Catch

Indica il numero totale della specie

Peso totale specie Catch

Indica il peso totale della specie (in grammi)

Catch totale valori stimati?

Spunta questa opzione se i valori non sono misurati ma stimati

OK

» Catch LT-W esemplare

LT Catch

Lunghezza totale esemplare specie (in centimetri)

Peso Catch

Peso esemplare specie (in grammi)

Catch LT-W valori stimati?

Spunta questa opzione se i valori non sono misurati ma stimati

OK

Release

Specie Release

Nome specie rilasciata (aggiungi ulteriori specie sotto)

Numero Totale Release

Numero totale specie rilasciata

Peso Totale Release

Peso totale specie rilasciata (in grammi)

Release totale valori stimati?

Spunta questa opzione se i valori non sono misurati ma stimati

OK

» Release LT-W

LT Release

Lunghezza esemplare specie rilasciata (in centimetri)

Peso Release

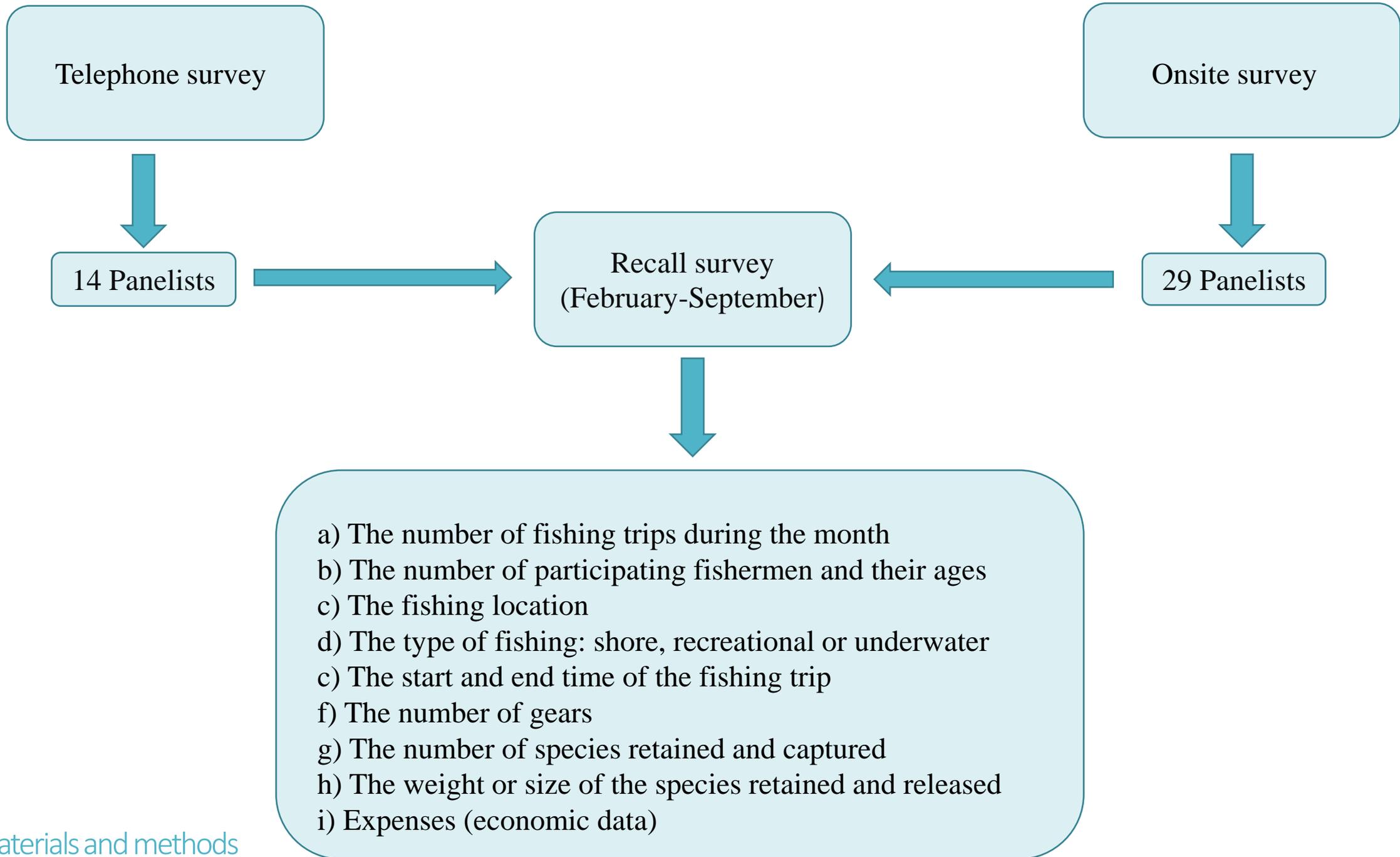
Peso esemplare specie rilasciata (in grammi)

Release LT-W valori stimati?

Spunta questa opzione se i valori non sono misurati ma stimati

OK

- ▼ The type of recreational technique and bait
- ▼ Size or weight measurement (estimated or detected)



DATA ANALYSIS

Considering the data collected with the three different methodologies (telephone survey, onsite survey, recall survey) of both years (2019-2020):

- Univariate analysis of descriptive statistics

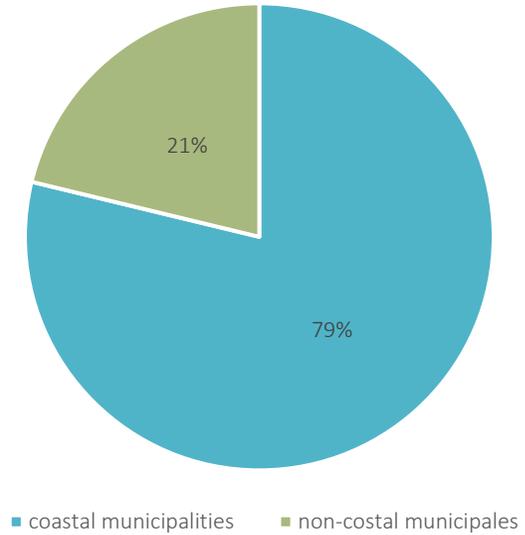
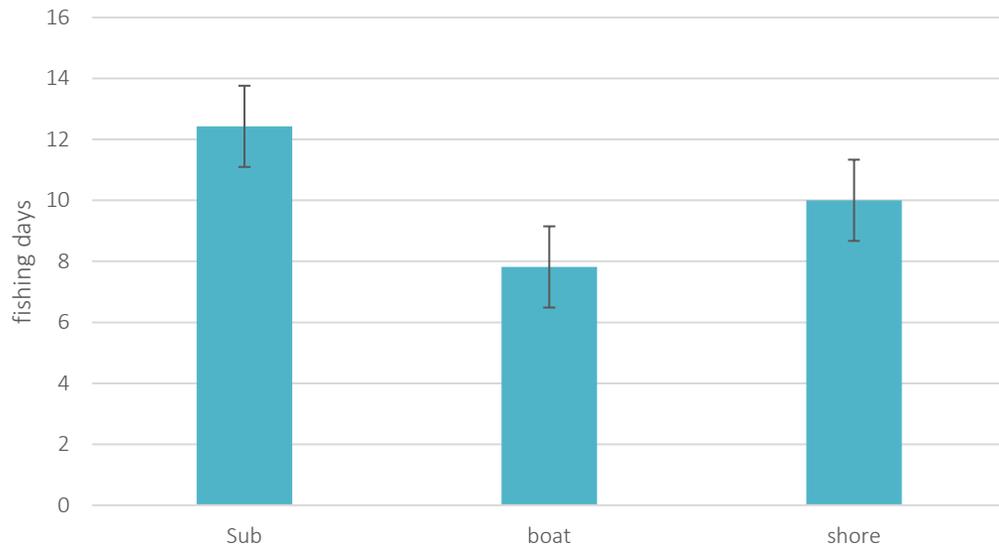
Considering the number and weight of the species captured:

- ANOVA Test
- Correlation test with some numerical covariates (fishing effort)



Telephone survey

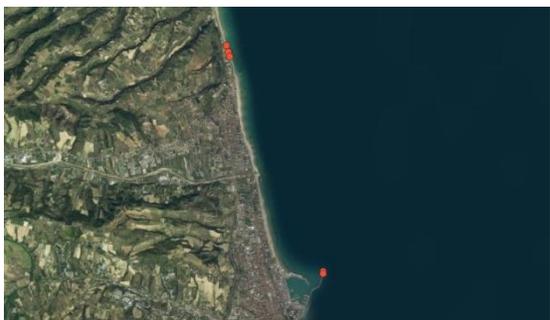
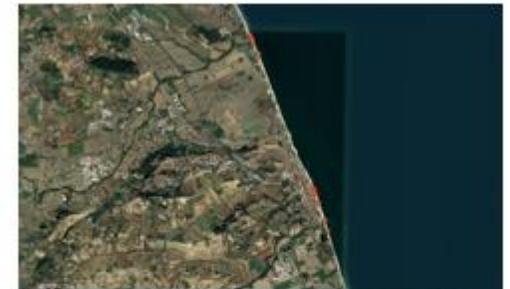
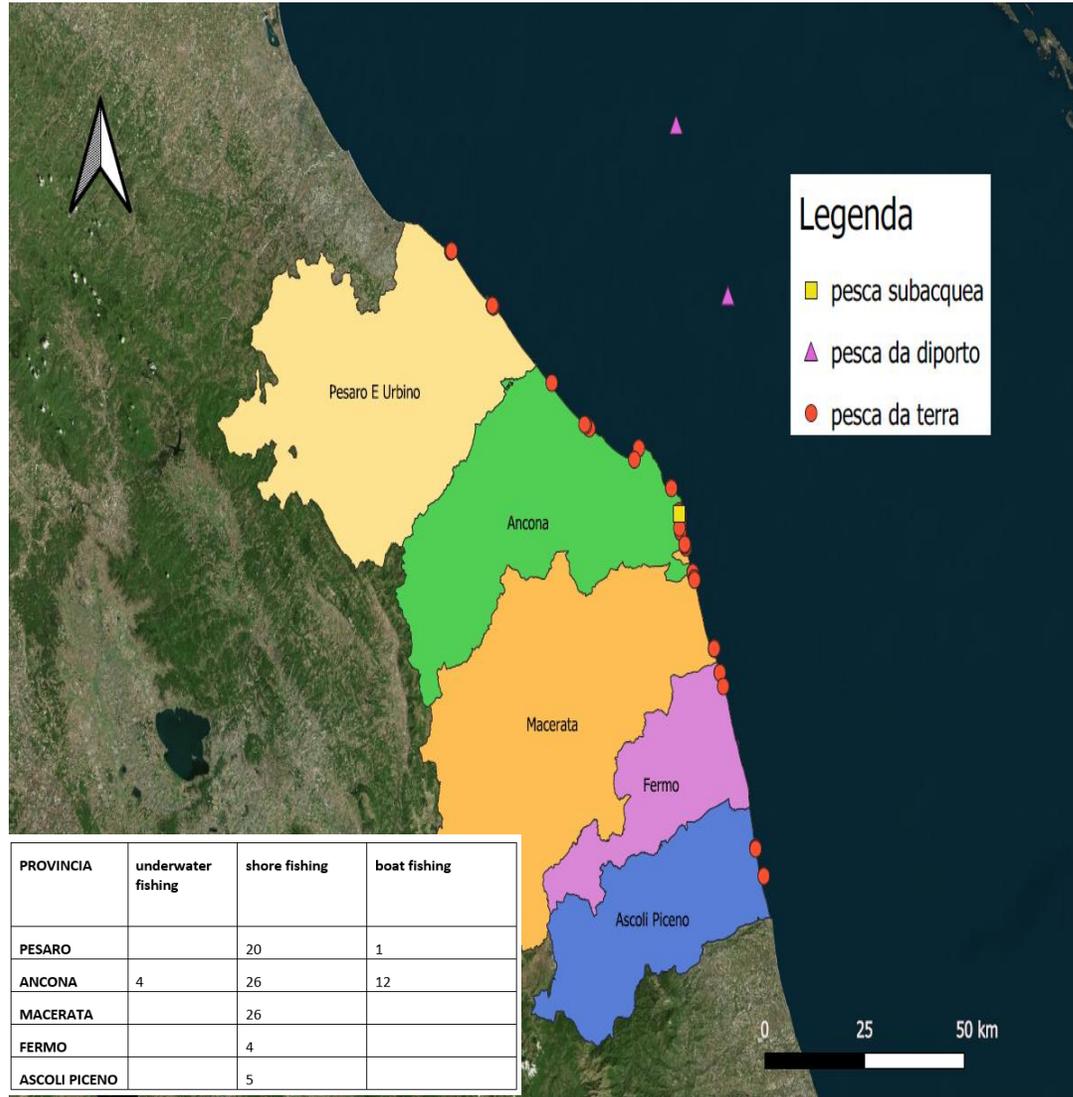
- 33 identified recreational fishermen of which 26 in coastal municipalities and 7 in non-coastal municipalities (total participation rate: 2.1%)
- 28,631 estimated recreational fishermen



- In 2019, recreational fishers in the Marche region fished on average about 9.6 days a year, corresponding to a total of about 275,000 fishing trips

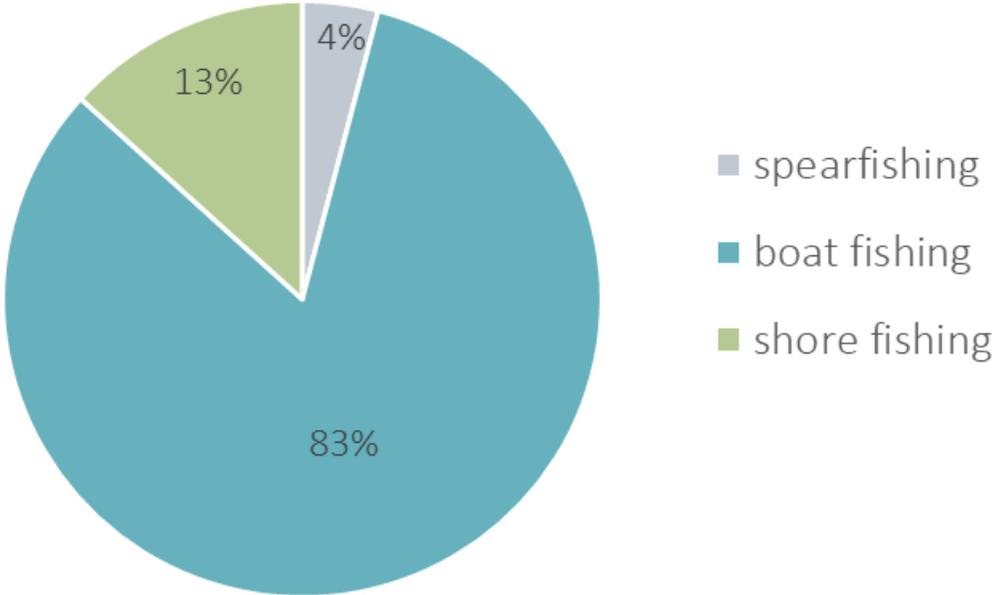
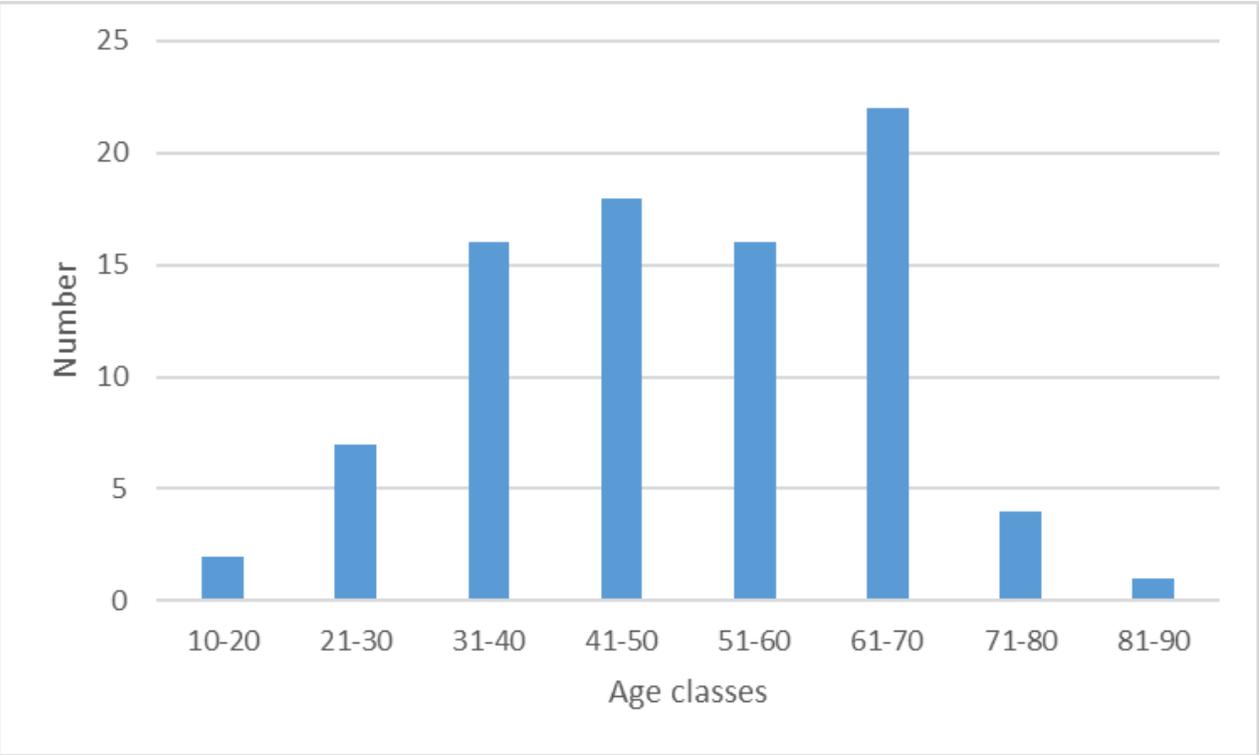
Onsite survey

- 98 recreational fishermen interviewed



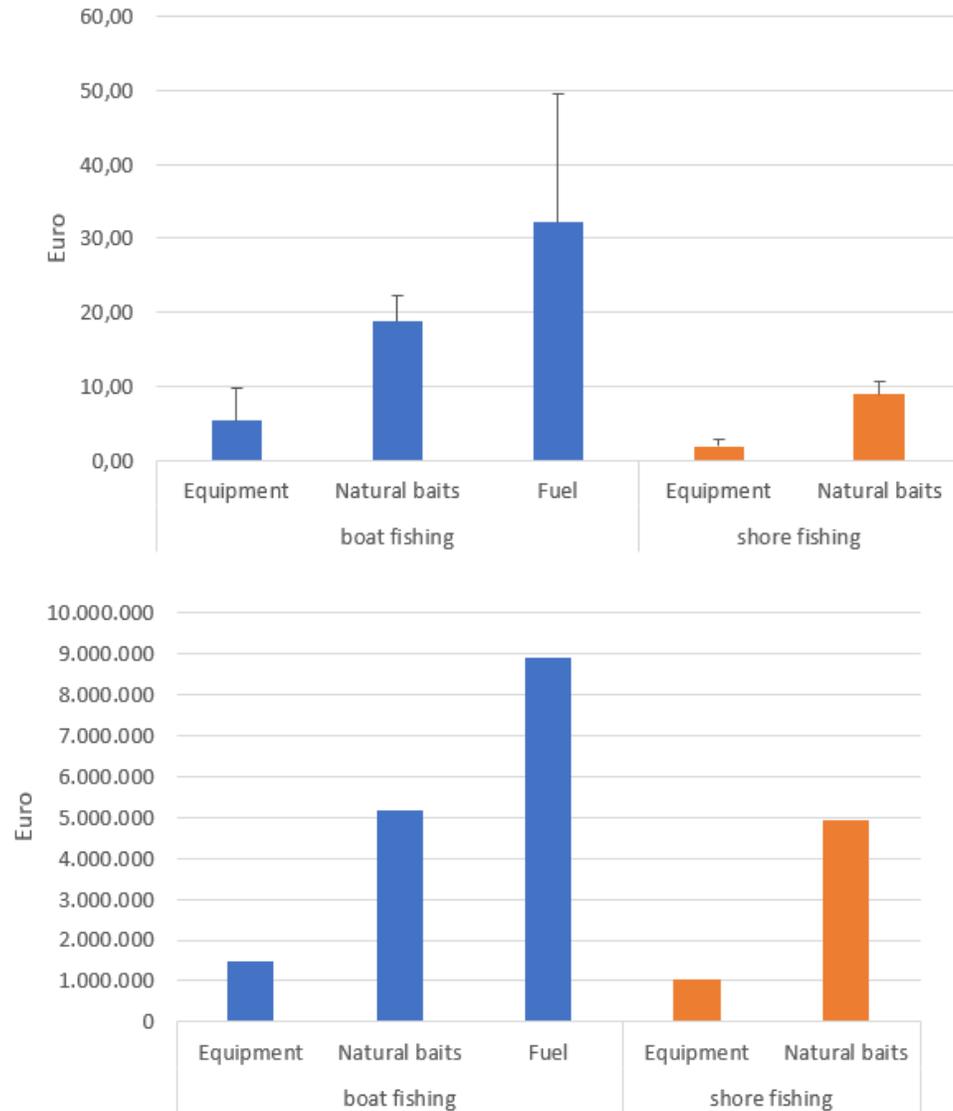
Demography of fishers

Fishing at sea is carried out by men aged between 11 and 90

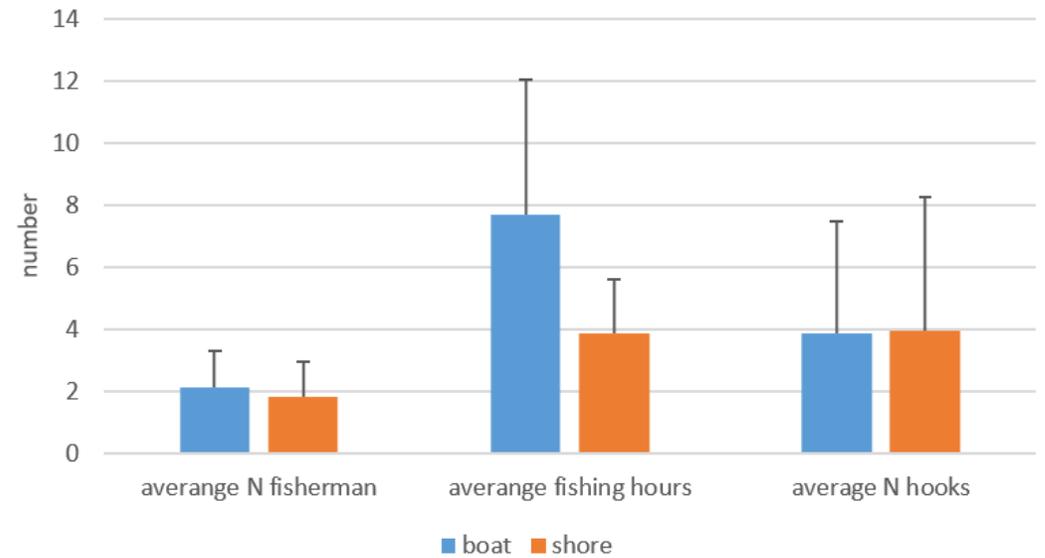


Expenditures and fishing effort

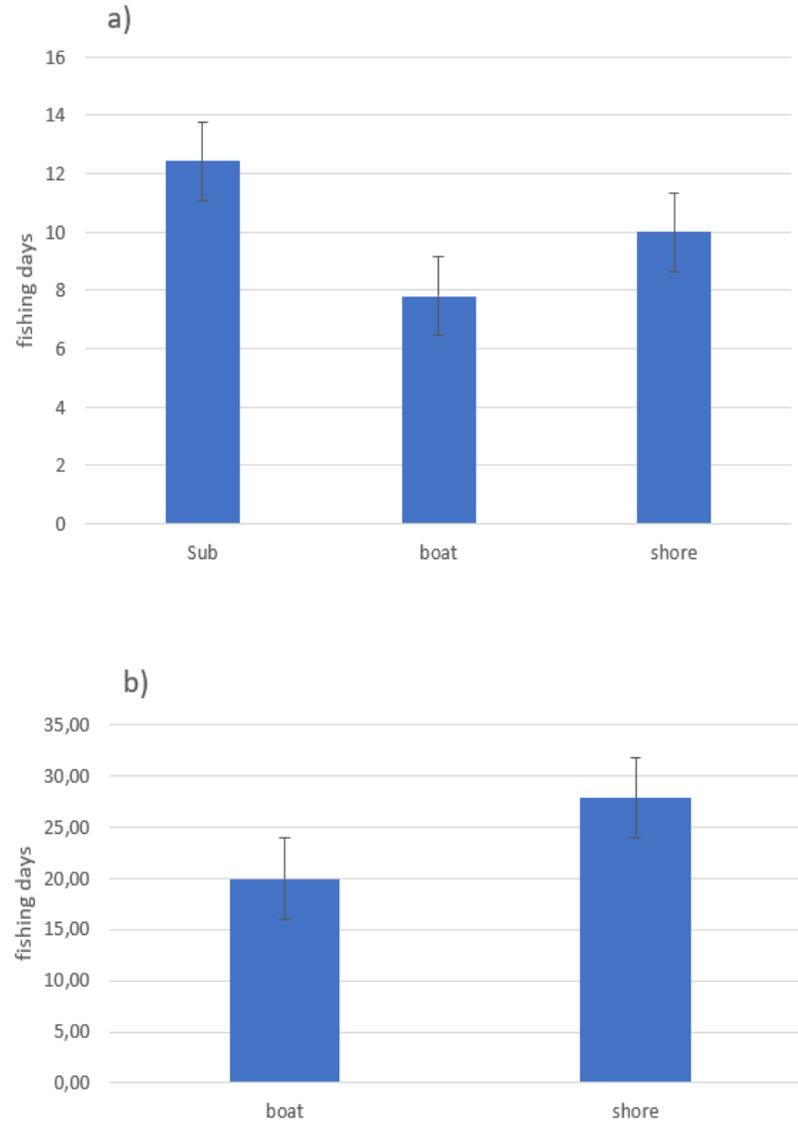
Higher costs for boat fishing than shore fishing



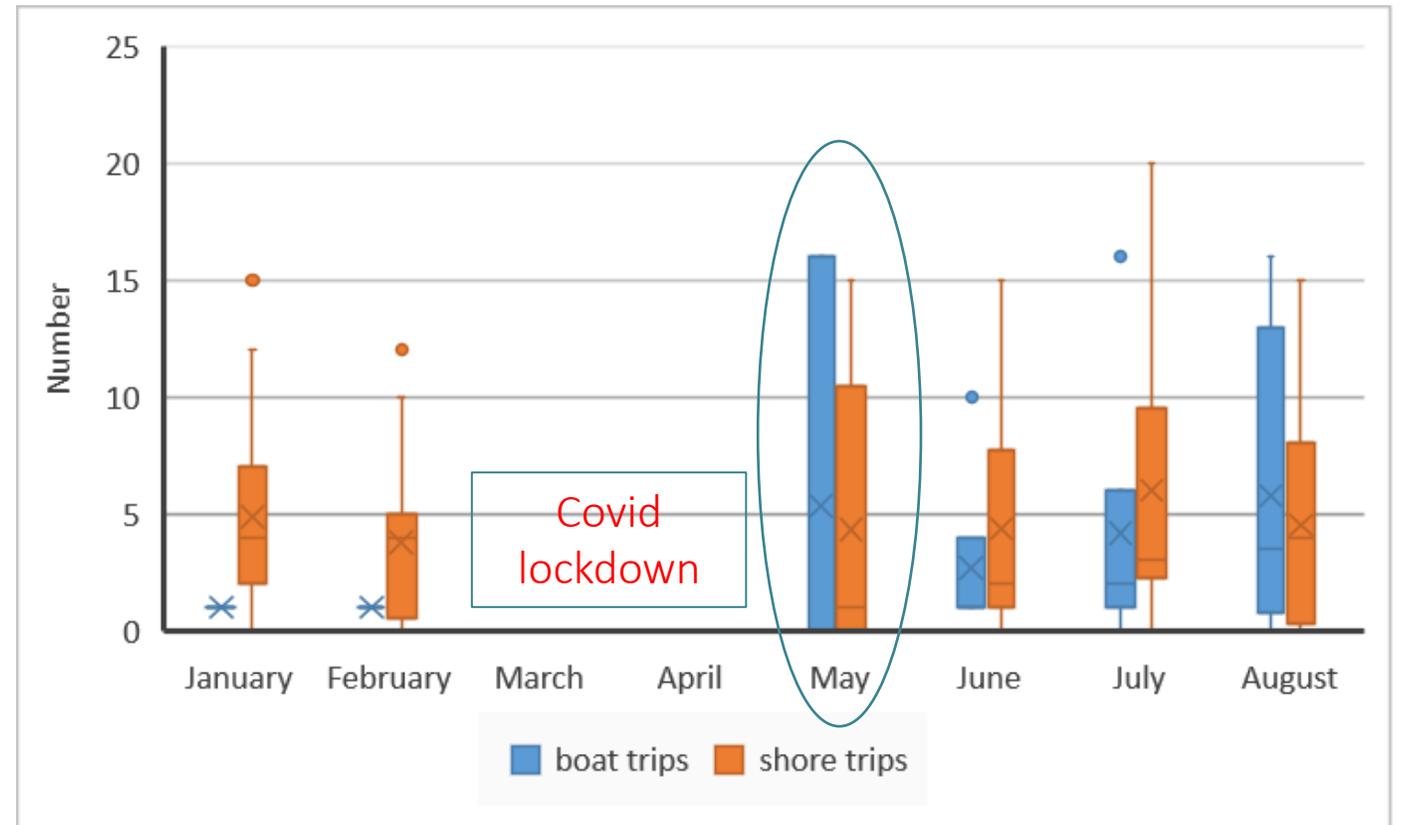
Average fishing effort of boat and shore fishing



Avidity (fishing days) in 2020 (b) was higher than in 2019 (a)

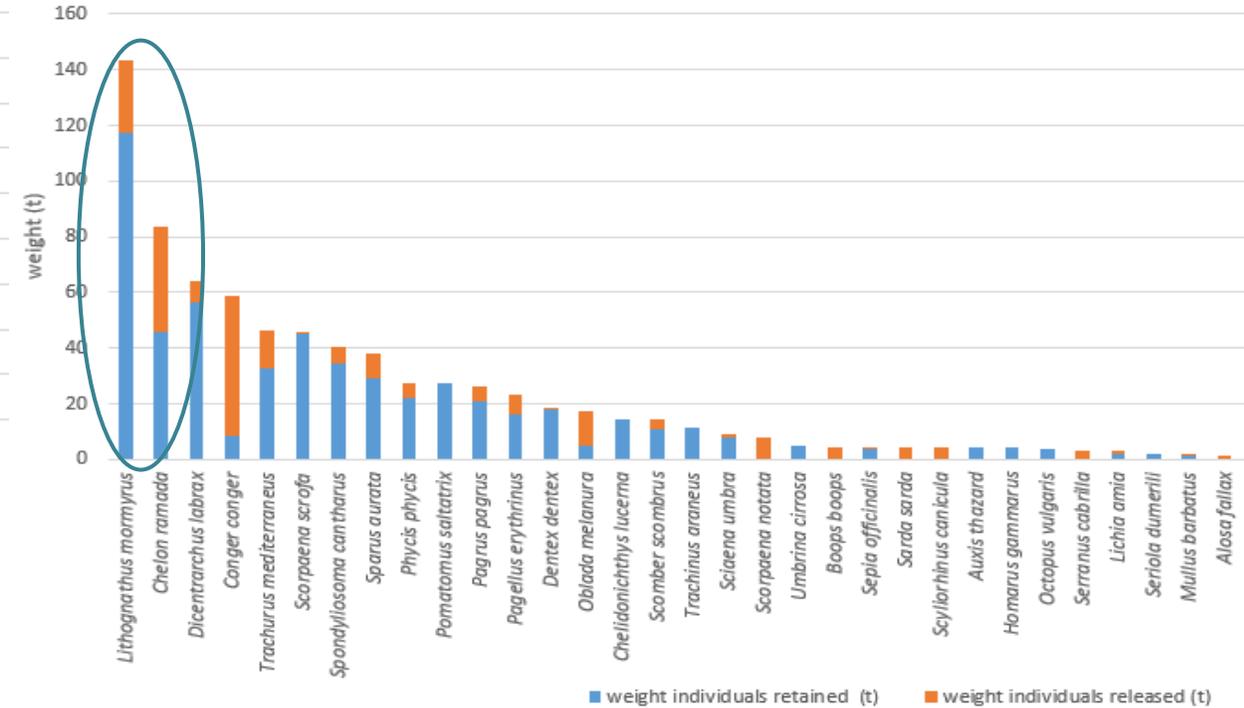
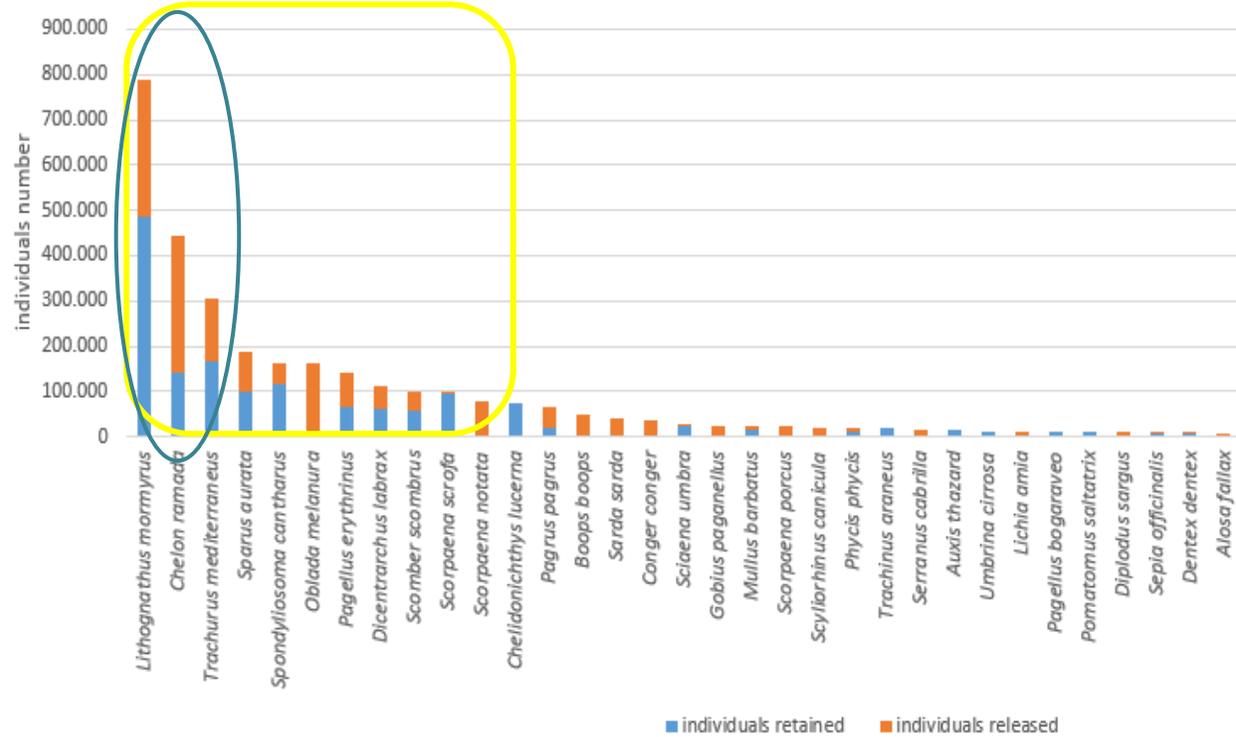


Fishing trips performed in Marche region during 2020



Catches – abundance and biomass

- 47 species have been caught
- Estimated catches are mainly dominated by a few species (11)

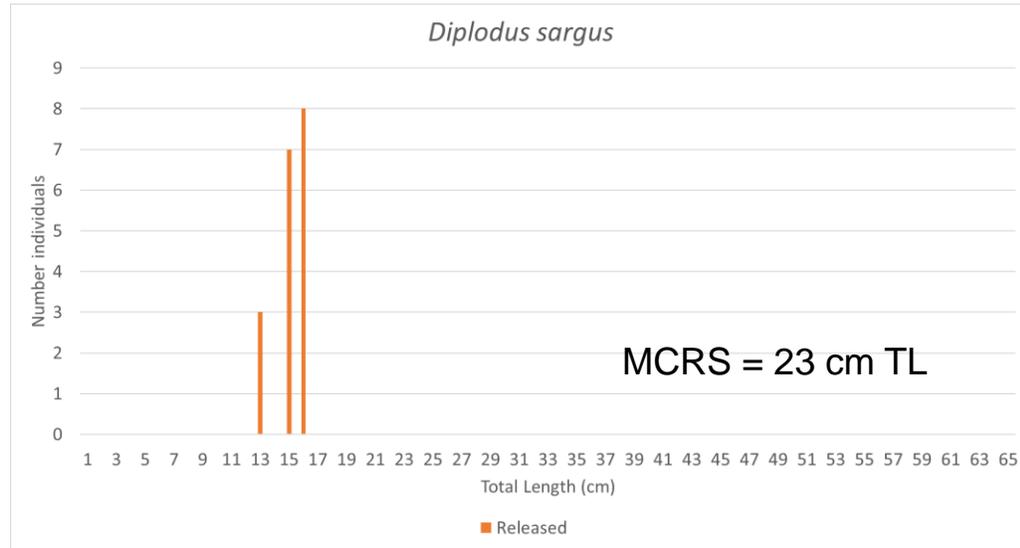


The statistical analysis performed to assess the effect of the status factor (retained-released) on the Number variable is not significant ($p > 0.05$)

The effect of the status factor on the weight variable was significant ($t=3,5$; $p < 0,05$)

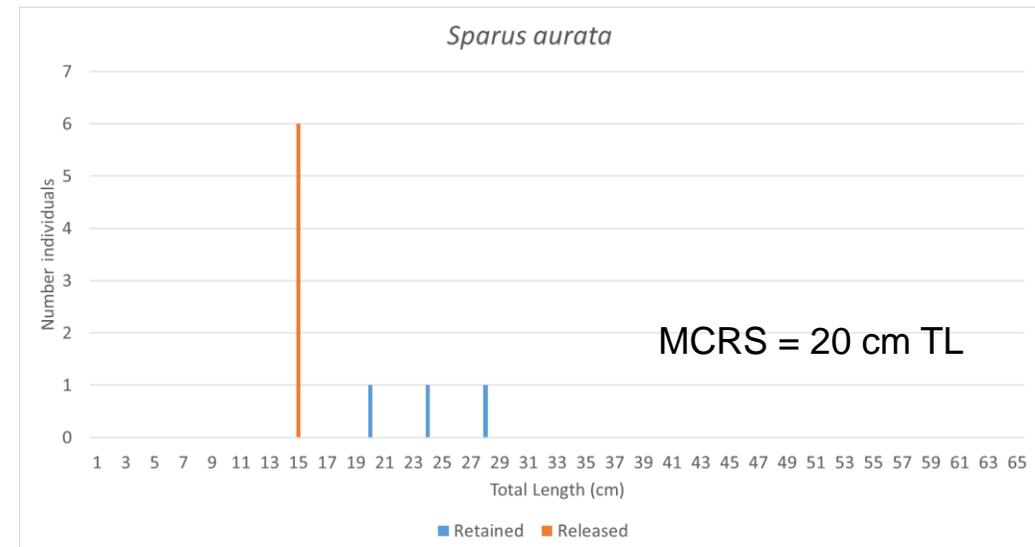
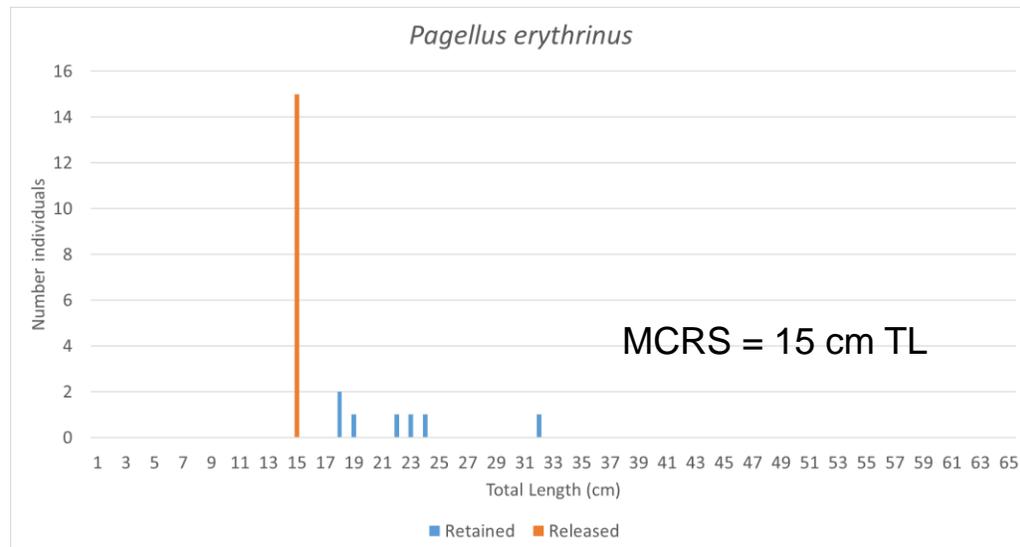
Catches – size frequency distributions

Size frequency distributions of some species show a clear separation between retained and released individuals



Fishers release small individuals of valuable species

Other species are released because of low value



Other comparisons...

The Survey factor on the variable Number and Weight (g) was significant ($p < 0,05$) with Recall $>$ Onsite = Telpan in both cases

Post hoc test: games-howell						
	diff	ci.lo	ci.hi	t	df	p
Recall-Onsite	3341.10	1600.50	5081.71	4.55	130.58	<.001
TelPan-Onsite	-1155.46	-2035.93	-274.98	3.15	60.63	.007
TelPan-Recall	-4496.56	-6105.10	-2888.03	6.65	103.26	<.001

Post hoc test: games-howell						
	diff	ci.lo	ci.hi	t	df	p
Recall-Onsite	14.77	8.75	20.79	5.81	133.36	<.001
TelPan-Onsite	0.80	-7.03	8.63	0.26	19.18	.964
TelPan-Recall	-13.98	-22.84	-5.11	3.86	34.83	.001

Weight and number variables show a positive correlation with number of fishermen and fishing hours

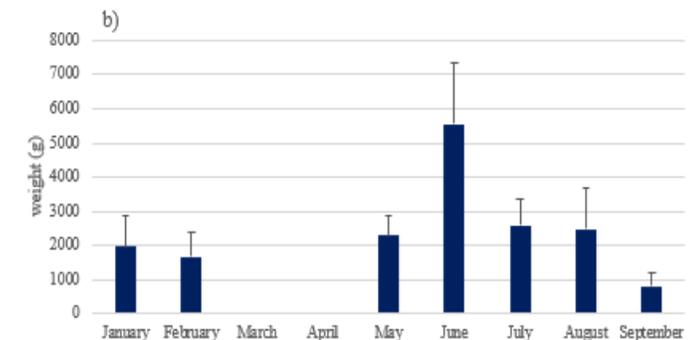
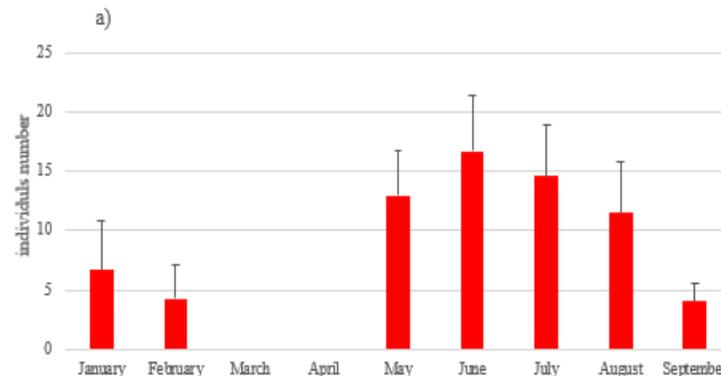
Variable	p-value	tau
N individuals: N fisherman	0.011	0.158
weight (g) individuals: N fisherman	0.001	0.209
N individuals: fishing hours	0.000	0.209
weight (g) individuals: fishing hours	1,16E-02	0.247
weight (g): N hooks	0.020	0.136
weight (g): N fishing rods	0.023	0.136

The Season factor on the variable Number (A) and Weight (B) was not significant ($p > 0,05$)

A)	diff	lwr	upr	p adj
summer-autumn	12.4363636	-5.400270	30.705127	0.2721332
winter-autumn	8.0689655	-9.702681	25.705127	0.6408374
spring-autumn	12.8888889	-5.597805	31.375583	0.2721808
winter-summer	- 4.3673981	-13.703582	4.968786	0.6182945
spring -summer	0.4525253	-10.181890	11.086940	0.9995150
spring-winter	4.8199234	-5.705127	15.344974	0.6344431

B)	diff	lwr	upr	p adj
summer-autumn	2217.3535	-2787.4712	7222.178	0.6587190
winter-autumn	2370.0307	-2616.5591	7356.620	0.6059704
spring-autumn	4391.3333	-795.8935	9578.560	0.1281478
winter-summer	152.6771	-2466.9855	2772.340	0.9987590
spring-summer	2173.9798	-809.9568	5157.916	0.2356132
spring-winter	2021.3027	-931.9470	4974.552	0.2880187

The monthly average catch values, both in terms of abundance (a) and biomass (b) have shown similar trends





DISCUSSIONS

Catch analysis confirms the recreational fisherman's attitude to retain larger individuals, specimens below the MCRS are usually released complying with the Minimum Conservation Reference Sizes (MCRS) established for the Mediterranean by Reg. 2019/1241

The analysis show that the season does not affect catches, but they are conditioned by the number of fishing hours and the number of fishers

Species targeted in GSA17 are not subject of stock assessment by GFCM or STECF working groups

The type of methodology affects the data

The most common fishing mode is from the shore and the number of recreational fishers is higher in coastal municipalities

The expenses are higher for boat fishing and, overall, they generate a consistent economic induction for Marche Region

Catches include many species, with a predominance of some target species and catches are influenced by fishing effort

CONCLUSIONS

Thank you for
your attention!

