

### Text S1. Local ecological knowledge and social media mining

We estimated the skills, specialization and general information of recreational fishers replying to the questionnaire (Table S1). First we asked five specific questions related to what they caught during the last 12 months. In particular, we asked if they caught: (i) a white grouper (*Epinephelus aeneus*); (ii) A common dentex (*Dentex dentex*) weighing more than 3 kg; (iii) A great amberjack (*Seriola dumerilii*) weighing more than 3 kg; (iv) any fish weighing more than 5 kg; (v) none of the previous replies. Catching one or more of these species indicates skill level of recreational fishers that are specialized to target trophy fishes. Then we asked about the locality where the recreational fisher usually goes fishing; the first time the recreational fisher saw or fished a white grouper in the locality; the depth of capture/sighting of the white grouper; possible changes in the fishing strategy associated with the first sighting or capture of the white grouper (i.e., estimate confounding effects related to technological developments in fishing); frequency of sighting or capture through time; type of recreational fishing practiced; how many days they fished in the last 12 months; when they started fishing and their age; finally, we leave a space for additional comments (Table S1).

We collected data from 173 respondents of the online questionnaire. Among them, 40 (23%) declared to have never seen or captured a white grouper and were thus not asked to respond to the questions from the section 2 of the questionnaire. Therefore, the total number of useful replies was 133 (108 from Italy, 23 from Spain, and 2 from France). Respondents included 92 recreational spearfishers (69%), 27 anglers (21%), and 14 recreational fishers practising both modalities (10%). The most frequent depth at which the white grouper was seen or caught was 10–20 m (38%; 51 out of 133). Among the 133 respondents, 64% (86 out of 134) caught a white grouper in the last 12 months, while only 17% (23 out of 134) did not catch any of the target species (only two respondents did not fish during the last 12 months). The majority of them were avid recreational fishers, i.e., they spent more than 60 (47%; 62 out of 133) or 40 (67%; 89 out of 133) days fishing over the last 12 months. The median fishing experience was 27 years (ranging from 1960 to 2020), while the median age was 42 years (ranging from 18 to 71). Changes of fishing strategy associated to the capture/sighting of a white grouper was declared by 36% of recreational fishers (i.e., fishing deeper and/or using echo sounder to localize isolated fishing spots in the sand).

As regarding YouTube data mining, it is worth noting that the mean weight of the white grouper declared in the videos was  $8.70 \pm 4.15$  kg (N = 115), and the most frequent depth of capture of the white grouper declared in the videos was 30–40 m (37%; 14 out of 38).

**Table S1.** The main questions posed to recreational fishers in the online questionnaire. <sup>a</sup> We specified that such locality was also the locality to which all the following questions were referring to. <sup>b</sup> We also provided a checkbox for those recreational fishers that never saw or fished a white grouper in the locality where they usually go fishing, and if such checkbox was ticked, respondents were redirected to section 3.

Section	Question	Options	Specific reason
1	Confirm to have read the information related to privacy	Mandatory to tick a box	Privacy and ethics
	Indicate which of the following species you "CATCHED" during your fishing trips for the last 12 months:	6 checkboxes with species difficult to catch	Estimate the skills and specialization of the recreational fisher (see Text S1)
	Where do you usually go fishing? <sup>a</sup>	Open-ended	Georeferencing the information
	When did you first see or catch a white grouper in the area where you usually go fishing?	One check box for each year (1992-2021) <sup>b</sup>	Arrival of the species
2	At what depth did you first see or catch a white grouper in the area where you usually go fishing?	5 checkboxes	Habitat
	When you first started catching or seeing white groupers, it may have coincided with changes in your fishing strategy. Indicate which of the following options is right for you:	5 checkboxes	Estimate confounding effects related to technological developments in fishing
	Now think about your fishing experiences in previous years. According to your personal observations in the city or area indicated above, how many times have you caught or seen a white grouper in each of these time frames? Please provide an answer for each interval	6 categorical frequencies 7 time periods	Spatio-temporal reconstruction
	What kind of recreational fisher are you?	4 checkboxes	Compare angling and spearfishing
	How many days have you been fishing in the last 12 months?	5 checkboxes	Estimate avidity
	When did you start fishing?	Open-ended	Estimate experience
	How old are you?	Open-ended	Demographic information
	Space to leave more comments	Open-ended	Additional information
	3	Acknowledgments and non-mandatory request to share personal email address	Open-ended
Links to share the questionnaire with other recreational fishers		---	Disseminate the questionnaire

**Table S2.** Summary of the results for the Wikipedia page views for each of the Italian region. See Table 1 for aggregated results.

Italian region	Volume total	Volume 2013-2015	Volume 2016-2018	Volume 2019-2021
Marche	1600	1121	479	0
Sicily	1501	953	197	351
Calabria	1465	719	747	0
Lazio	1417	751	475	192
Toscana	1357	811	320	226
Sardegna	1352	488	796	68
Friuli-Venezia Giulia	1330	807	420	104
Piemonte	1321	741	481	100
Liguria	1320	936	213	171
Emilia-Romagna	1128	688	189	252
Lombardia	1082	651	320	111
Veneto	1062	616	230	216
Apulia	775	509	153	113
Campania	704	432	105	167
Umbria	619	339	280	0
Abruzzo	313	185	128	0
Basilicata	0	0	0	0
Molise	0	0	0	0
Trentino-Alto Adige	0	0	0	0
Valle d'Aosta	0	0	0	0