

Article

The Rich Get Stronger: The Purse Seine Fishery of the Turkish Straits System

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Table S1. Specifics of the Mediterranean Sea purse seine fleets including number of vessels, engine power and gross tonnage by country and region (for Turkey; Source: GFCM, 2022). Our study area, Sea of Marmara purse seine fleet details are presented in bold.

Country	# Vessels	Engine Power (kW)	GT
Albania	11	4853	502
Algeria	330	99981	18574
Croatia	145	49293	12413
Cyprus	4	1243	284
Egypt	241	34954	9381
France	7	4735	1023
Georgia	19	13513	5248
Greece	211	49754	14881
Israel	7	1392	387
Italy	191	56315	13372
Lebanon	1	53	1.7
Morocco	8	2127	447
Spain	151	27044	9593
Tunisia	134	49284	9863
Ukraine	4	328	133
Turkey (total)	474	257013	54351
Turkey (Aegean Sea)	39	15754	3417
Turkey (Levant Sea)	61	25733	4622
Turkey (Black Sea)	255	149976	32173
Turkey (Sea of Marmara)	119	65549	14138

Table S2. Change.org petitions showing the topics raised pertaining to fishing in the region with number of signatures and commencement year.

Topic issue	Petition creating group type	Number of signatory	Status	Starting year
Petitions on industrial fishing in Istanbul Strait				
Purse seine fishing should be banned in the Istanbul Strait!	Nonprofit member-supported association	17653	Closed	2016
No small fish, no big fish. Let the Istanbul Strait be closed to purse seine fishing	Citizen	15547	Closed	2015
Trawl fishing should be done at a depth of 40 meters, purse seine fishing should be banned in the Istanbul Strait	Citizen	6935	Ongoing	2021
Be the silent cry of the fish!	Fishery Cooperatives Union	4355	Closed	2019

We don't want purse seiners in the Istanbul Strait, fish will go extinct	Citizen	3052	Closed	2020
Increase fishing with purse seine nets from 24 meters to 50 meters in our territorial waters	Citizens	2274	Closed	2014
Increase the minimum landing size limit of the bluefish to 22 cm	Citizen	1303	Closed	2016
Migratory fish slaughter must end	Citizen	507	Ongoing	2021
All kinds of fishing activities with nets in the Istanbul Strait should be banned immediately!!!	Environmental activist	267	Ongoing	2019
Protecting the Fish Population	Citizen	148	Ongoing	2020
Let's protect our seas	Citizen	78	Ongoing	2018
Minimum Fishing Depth must be 50 m!	Citizen	68	Closed	2015
Banning of fish slaughter with purse seine boats	Citizen	30	Closed	2013
The minimum purse seine fishing depth must be from 24 meters to 50 meters	Citizen	23	Ongoing	2018
Bluefish wanted!	Citizen	7	Closed	2015
Petitions on purse seine fishing				
Ban purse seine and trawl fishing in the Gulf of Gemlik/Mudanya	Citizen	697	Closed	2016
No to slaughter in our sea	Amateur fisher	179	Ongoing	2021
Petitions for an anchovy fishing ban				
Anchovy injustice	Citizen	8	Ongoing	2021
Anchovy ban should be cancelled!	Citizen	7	Ongoing	2021
Petitions on the sea snout (mucilage)				
Don't let the Sea of Marmara die. We invite institutions against sea snout	A group of citizen	191716	Ongoing	2021
To finish the mucilage in Marmara	Citizen	10	Ongoing	2021
Petitions on dolphin protection				
Ban terrestrial hunting weapons on fishing boats!	A marine foundation	1482	Ongoing	2015

Table S3. Total itemized costs pertaining to the purse seine vessels and their technological investments. Prices in US Dollar.

Vessel Equipment	Vessel A (n = 1)	Vessel B (n = 1)	Vessel C (n = 1)	Vessel D (n = 1)
Vessel and auxiliary boat	1.576.000 \$	924.214 \$	642.123 \$	448.000 \$
3 main engines and 5 generators	1.000.000 \$	1.000.000 \$	1.000.000 \$	780.000 \$ (2 main engines)
Shaft, sleeve, propeller, rudder parts	250.000 \$	250.000 \$	250.000 \$	250.000 \$
Front and middle propeller	100.000 \$	50.000\$ (just front)	50.000 \$ (just front)	50.000 \$ (just front)

Vessel Equipment	Vessel A (n = 1)	Vessel B (n = 1)	Vessel C (n = 1)	Vessel D (n = 1)
Bow anchor, main capstan and reducers	250.000 \$	250.000 \$	250.000 \$	250.000 \$
Crane	150.000 \$ (3 cranes)	100.000 \$ (2 cranes)	100.000 \$ (2 cranes)	50.000 \$ (1 crane)
Refrigerated sea water (RSW)	350.000 \$	-	-	-
Fish vacuuming system	125.000 \$	125.000 \$	125.000 \$	125.000 \$
Ice machine	50.000 \$ (2 pc 10 ton capacity)	25.000 \$ (1 pc 10 ton capacity)	25.000 \$ (1 pc 10 ton capacity)	12.500 \$ (1 pc 5 ton capacity)
Panel and electrical installation, drivers	400.000 \$	400.000 \$	400.000 \$	400.000 \$
Furniture, glass and kitchenware	200.000 \$	200.000 \$	200.000 \$	200.000 \$
Current meter, fish meter & radars	750.000 \$	750.000 \$	750.000 \$	250.000\$ (radar only)
hydraulic machine & water pump	150.000 \$	150.000 \$	150.000 \$	150.000 \$
Sonar-Operational frequency band from 70 to 120 kHz	250.000 \$	250.000 \$	-	-
Sonar- (Operational frequency 85 kHz)	150.000 \$	150.000 \$	150.000 \$	-
Sonar (Operating frequency vary from 54 to 60 kHz)	120.000 \$	120.000 \$	120.000 \$	120.000 \$
Net reels (4 pieces)	60.000 \$	60.000 \$	60.000 \$	60.000 \$
Purse seine nets	500.000 \$	500.000 \$	500.000 \$	500.000 \$
Engine of Auxiliary vessels (2 pieces)	100.000 \$	100.000 \$	100.000 \$	100.000 \$
Toplam	6.881.000 US \$	5.404.214 US \$	4.872.123 US\$	3.745.500 US \$

Table S4. National regulations changes for the depth limit, overall drop and length of purse seine nets, and status of Istanbul Strait for purse seiners from 1986 to present.

Implementation Year	Depth limitation for purse seine fishing	Status of Strait	Overall drop of the purse seine net	Overall length of the purse seine net
1986–1987	5 m for all territorial waters	NA	NA	730 m
1987–1988	5 m for all territorial waters	Open	NA	
1988–1989	8 m for all territorial waters	Open	145 m	
1989–1990	8 m for all territorial waters	Open	145 m	
1990–1991	8 m for all territorial waters	Open	145 m	
1991–1992	16 m for all territorial waters 16 m for mechanized	Open	145 m	
1992–1993	10 m for non-mechanized vessels 8 m in Marmara 18 m for mechanized vessels	Open	145 m	730 m
1993–1994	11 m for non-mechanized vessels 9 m in Marmara 18 m for mechanized vessels	Open	145 m	
1994–1995	11 m for non-mechanized vessels 9 m in Marmara 18 m for mechanized vessels	Open	110 m	
1995–1996	11 m for non-mechanized vessels 9 m in Marmara 18 m for mechanized vessels	Open	110 m	
1996–1997	11 m for non-mechanized vessels 9 m in Marmara 18 m for mechanized vessels	Open	NA	
1997–1998	11 m for non-mechanized vessels 18 m for mechanized vessels	Open	NA	
1998–1999	NA	Open	NA	730 m
1999–2000	18 m for 1 April–1 May 1999 and 1 January–1 May 2000 11 m for 1 September–31 December 1999 18 m for mechanized vessels	Open	NA	
2000–2002	11 m for non-mechanized vessels 11 m for mechanized just in Marmara between 1 September–1 December 18 m for mechanized vessels	Open in just 1 September–1 December	164 m in the Sea of Marmara	
2002–2004	11 m for non-mechanized vessels 11 m for mechanized just in Marmara between 1 September–1 December	Open	164 m in the Sea of Marmara	
2004–2006	18 m for other territorial waters 11 m just in Marmara between 1 September–1 December	Open	164 m in the Sea of Marmara	
2006–2008	18 m for other territorial waters 11 m just in Marmara between 1 September–1 December	Open	164 m for all territorial waters	
2008–2012	18 m for other territorial waters 11 m just in Marmara between 1 September–1 December	Open	164 m for all territorial waters	

2012–2016	24 m for all territorial waters	Open	164 m for all territorial waters
2016–2020	18 m for 1 September–15 December in the Black Sea 24 m for 16 December–14 April in Black Sea 24 m for other territorial waters	Open	164 m for all territorial waters
2020–2024	18 m for 1 September–15 December in Black Sea 24 m for 16 December–14 April in Black Sea 24 m for other territorial waters	Open	164 m for all territorial waters
