ESTONIAN FISHERY
2022–2023

FISHERIES INFORMATION CENTRE

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Contents

Foreword

Dear reader,

Since one financing period ended in the meantime and the next one has not yet begun, the Fisheries Information Centre skipped a year in its publishing cycle. That is why an overview of both 2022 and 2023 appear within the covers of this one volume.

Naturally, these were trying years, with the attention of the entire democratic world focused on Russia's war of aggression against Ukraine. It is precisely this aspect, however, that drives home how important food sufficiency is for every country, and it is precisely the calling of the fisheries sector to contribute to the food supply.

In general, the development of fishery in these two years bore similarities to the previous years. Fish farming mainly treaded water and the long-awaited quantum leap failed to happen. The trawling sector scraped by and fortunately arrangements for shipping fish to war-torn Ukraine, our biggest export market, were very quickly re-adjusted. A trend discerned in coastal fishing was that the round goby, which had in the past been considered a much-maligned, non-native species, began playing a very important economic role in some areas. At the same time, cormorant populations have resisted efforts to rein in their range. This avian species has, over the past few decades, become the most numerous marine bird that consumes fish on the same scale as coastal fishermen – if not even more voraciously – and thereby very directly dents our common stock.

The Fisheries Information Centre has been publishing these yearbooks since 2010. We have tried to keep the same structure in the interest of easy retrieval and comparison of data. Since 2018, I have closed the foreword of the yearbooks by urging readers to 'Eat fish, and if at all possible, Estonian fish'. This time is no different.

Toomas Armulik
Head of the Fisheries Information Centre

Abbreviations

AFB	Agriculture and Food Board
ARIB	Agricultural Registers and Information Board
B_{lim}	the biomass limit, the reaching of which should be prevented by fisheries management because, below this level, the risk of stock collapse increases significantly
$B_{trigger}$	the minimum spawning stock biomass that ensures the maximum possible yield in the long run at the F_{MSY} fishing mortality
BIAS	Baltic International Acoustic Survey
BITS	Baltic International Trawl Survey
EFF	European Fisheries Fund
EIC	Environmental Investment Centre
EU	European Union
EULS	Estonian University of Life Sciences
F	fishing mortality
F_{MSY}	fishing mortality maximum sustainable yield
F_{PA}	sustainable mortality rate, i.e. maximum sustainable exploitation intensity (fishing mortality precautionary approach)
GT	gross tonnage
ICES	International Council for the Exploration of the Sea
M	natural mortality
MOE	Ministry of the Environment
MORA	Ministry of Rural Affairs
MRA	Ministry of Regional Affairs and Agriculture
NAFO	Northwest Atlantic Fisheries Organization
NEAFC	North-East Atlantic Fisheries Commission
NIPAG	The Joint NAFO/ICES Pandalus Assessment Working Group
NPUE	number per unit effort
SE	Statistics Estonia
SL	standard length: the length of a fish measured from the tip of the snout to the end of scale cover
SSB	spawning stock biomass
TAC	total allowable catch
TL	total length: the length of a fish measured from the tip of the snout to the end of the caudal fin
TW	total weight of a fish
UT EMI	Estonian Marine Institute of the University of Tartu
VFB	Veterinary and Food Board
WPUE	weight per unit effort
Z	total mortality

Distant-water fishery

Distant-water fishery means fishing outside the Baltic Sea by fishing vessels flying the flag of the Republic of Estonia. Estonian distant-water fishing vessels have fishing rights on three fishing grounds: NAFO, NEAFC, and Svalbard (Figure 1). After acceding to the European Union, Estonia retained fishing rights as a member of these international organisations on the basis of the principle of relative stability and as a share of the fishing quota of the European Union (Aps et al. 2005).

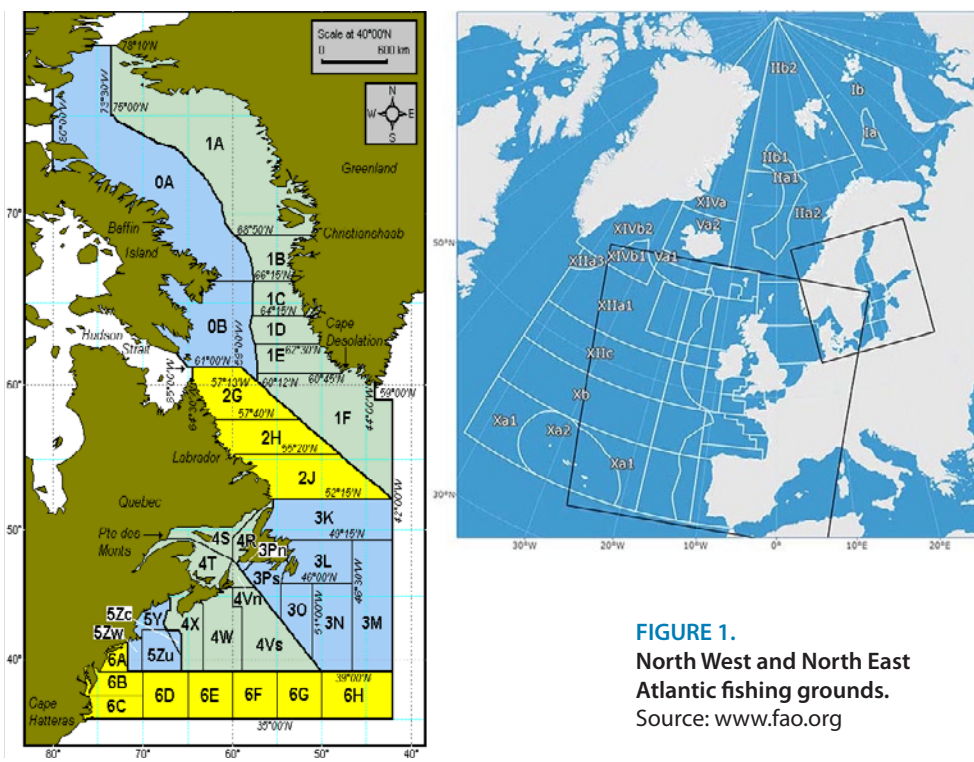


FIGURE 1.
North West and North East Atlantic fishing grounds.
Source: www.fao.org

Fleet

The distant-water fishing fleet consists of trawlers, most of which use bottom trawls. The fish and shrimp caught by a vessel undergo initial or final processing on board the vessel. A vessel's crew usually consists of up to 20 people.

According to the data from the EU Fleet Register, seven vessels were owned by three companies in the Estonian distant-water fishery sector as of 31 December 2023. Three ships conducted fishing, with the target species being the caridean shrimp (*Pandalus borealis*). The average length of the vessels was 61 metres; the average age in 2023 was 23 years; the combined power of the vessels' main engines was 14,730 kW; and the gross tonnage (GT) was 7,261 tonnes (Table 1).

TABLE 1. Main characteristics of Estonian distant-water fishing fleet, 2014–2023

Year	Number of vessels	Combined power of main engines (kW)	Total capacity (GT)
2014	5	13 174	7 697
2015	5	13 174	7 697
2016	5	13 941	8 472
2017	5	13 941	8 472
2018	5	15 385	9 834
2019	5	15 385	9 834
2020	7	18 193	11 598
2021	7	18 193	11 598
2022	6	17 966	10 195
2023	3	14 730	7 261

Sources: VFB, AFB.

State of fish stocks and fishing opportunities

The state of fish stocks in the **NAFO area** is assessed by the Scientific Council of NAFO on the basis of exploratory trips and/or commercial fishing data. UT EMI observers on board vessels collect information on Estonia's commercial fishing. Fishing opportunities depend above all on the state of fish stocks: in the determination of the total allowable catch (TAC), a precautionary approach is applied in the NAFO area, which is based on the Scientific Council's recommendations and should ensure the preservation of stocks and the ecosystem.

The assessment of stocks also takes into consideration the interplay between environmental conditions and species, i.e. an ecosystem approach to fisheries management is used and increasingly more attention is paid to the protection of vulnerable marine ecosystems. As a result, 27 areas have been closed for commercial bottom trawling in NAFO waters since 2021 and the protection zone for vulnerable marine ecosystems makes up 14% of the NAFO-regulated area (NAFO 2021, Figure 2).

Fishing quotas are agreed between Member States at the annual meetings of NAFO and NEAFC held in autumn. Bans on the fishing of certain stocks, which have been subject to moratoria for several years (Atlantic cod (*Gadus morhua*), witch flounder (*Glyptocephalus cynoglossus*) and shrimp (*Pandalus borealis*) in division 3L; American plaice (*Hippoglossoides platessoides*) in divisions 3LNO and 3M; and cod, capelin (*Mallotus villosus*) and shrimp in division 3NO) were extended in NAFO fishing grounds once again.

Thus, **shrimp fishing** was prohibited in the entire third division from 2015–2019 (NAFO 2018, 2019). A short-term increase in biomass in division 3M was noted in 2018–2019, and in 2020–2021 small-scale experimental fishing was allowed there (NIPAG 2018; NAFO 2021). The increased recruitment in 2020, however, did not increase biomass and stocks (NAFO 2022) and due to the low accrual and abundance of predatory fish, they again entered a deep trough (Figure 3). In 2022, due to the

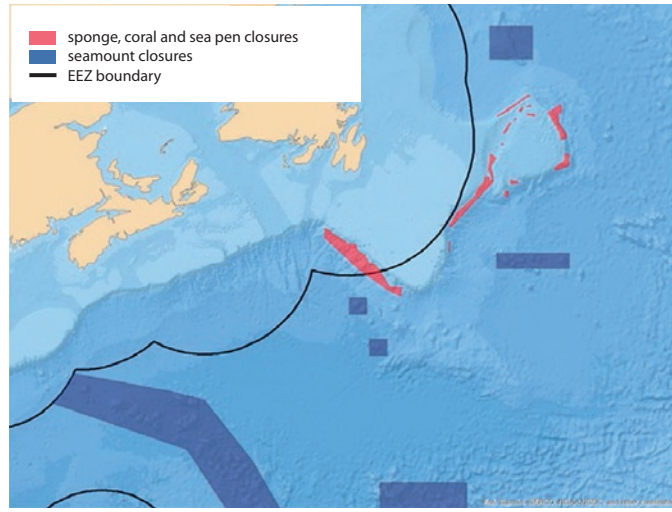


FIGURE 2.
NAFO vulnerable marine ecosystem (VME) closures
Source: STACFIS 2024.

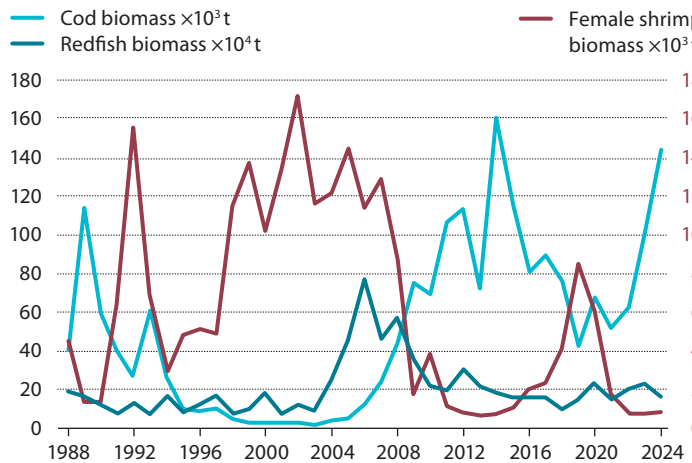


FIGURE 3.
Cod, redfish and female shrimp biomass in EU trawling studies in division 3M, 1988–2024
Source: STACFIS 2024.

very poor status and unpromising outlook, a ban on fishing in the entire third division was established (NAFO 2021, 2022, 2023)

The impact of the strong year classes 2009–2011 of **cod** in division 3M is still being seen in catches. Later generations have been much weaker, but biomass and the spawning stock situation have stabilised. The 2021 generation was again relatively strong, while the indicators for the subsequent years have not followed the same trend (NAFO 2023). In recent years, recommended catches have been reduced several times and catches have been small.

The biomass of **redfish** in division 3LN has recovered and the fishing mortality is below the critical limit. Fishing opportunities in this division have therefore been increased every two years since 2014. The stock of redfish in division 3M is stable but recruitment has fluctuated greatly in recent years. According to the scientific advice, the fishing quotas, which have been stable for years, will be gradually increased in the coming years (NAFO 2021). The redfish quota is the largest of the fishing quotas allocated to Estonia in NAFO fishing grounds (Table 2).

TABLE 2. **Estonia's distant-water fishing quotas for 2014–2024 (before charter arrangements and quota transfers) in tonnes and fishing days, by fishing ground, and change (%) between 2022 and 2023**

Species, scientific name and code	Unit	Fishing ground	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Change (%) in fishing quota in 2023 compared to 2022
Shrimp or northern prawn, *Pandalus borealis*, PRA	fishing day	NAFO 3M	0	0	0	0	0	0	391	391	0	0	0
	tonne	NAFO 3L	48	0	0	0	0	0	0	0	0	0	0
Atlantic redfish nei, *Sebastes* spp, RED	tonne	NAFO 3M	1 571	1 571	1 571	1 571	1 571	1 571	1 571	1 571	1 571	1571	0
	tonne	NAFO 3LN	346	514	514	702	702	895	895	895	895	895	0
Northern shortfin squid, *Illex illecebrosus*, SQI	tonne	NAFO 3 ja 4	128[1]	128[1]	128[1]	128[1]	128[1]	128[1]	128[1]	128[1]	128[1]	128[1]	0
Greenland halibut, *Reinhardtius hippoglossoides*, GHL	tonne	NAFO 3LMNO	310	313	297	297	331	332	340	331	318	304	–4,40
Skates, *Rajidae*, SKA	tonne	NAFO 3LNO	283	283	283	283	283	283	283	283	283	283	0
Atlantic cod, *Gadus morhua*, COD	tonne	NAFO 3M	161	153	155	155	124	195	95	17	44	68	54,55
Witch flounder, *Glyptocephalus cynoglossus*, WIT	tonne	NAFO 3NO	0	0	96	98	49	52	52	52	52	58	11,54
Mackerel, *Scomber scombrus*, MAC	tonne	NEAFC	163	223	189	216	172	138	195	152	137	131	–4,40
Roundnose grenadier, *Coryphaenoides rupestris*, RNG	tonne	NEAFC	63	59[2]	60[2]	45[3]	46[3]	37[3]	37[3]	34[3]	34[3]	34[3]	0
Black scabbardfish, *Aphanopus carbo*, BSF	tonne	NEAFC	22	20	19	17	15	14	14	11	11	10	–21,43
Blue ling, *Molva dypterygia*, BLI	tonne	NEAFC	4	8	8	18	17	18	17	18	16	16	0
Atlantic redfish nei, *Sebastes* spp, RED	tonne	NEAFC	93[4]	44[4]	39[4]	35[4]	30[5]	28[5]	26[5]	0	0	0	0
Greenland halibut, *Reinhardtius hippoglossoides*, GHL	tonne	NEAFC	11	17	16	16	16	14	14	29	29	29	0
Skates, *Rajidae*, SKA[4] / rays, *Rajiformes*, SRX	tonne	NEAFC	4	4	4	4	5	5	5	5	5	5	0
Shrimp or northern prawn, *Pandalus borealis*, PRA	fishing day	Svalbard	377	377	377	377	377	377	377	377	377	377	0
Total	tonne		3 584	3 714	3 756	3 942	3 866	3 710	3 609	3 364	3 361	3 370	0,27
	fishing day		377	377	377	377	377	377	768	768	377	377	0

[1] Fishing permitted from 1 July to 31 December 2014–2023 as by-catches.
[2] By-catches are permitted to comprise up to 3% of the quotas for 2009.
[3] May only be taken as by-catches. Landings may not exceed 95% of the quota allocated to each Member State.
[4] Only allowed to be caught from 10 May to 1 July 2015–2017.
[5] Allowed to be caught from 10 May to 31 December 2018–2020.

Sources: MOE, MORA, MRA, VFB, AFB, Council of the European Union regulations (EL) 43/2014, 1367/2014, 2015/104, 2016/72, 2017/127, 2018/120, 2019/124, 2020/123, 2021/92, 2022/109, 2022/515 and 2023/194.

A renewed recovery plan for **Greenland halibut** (*Reinhardtius hippoglossoides*) was adopted in 2017. The plan was in force from 2018 to 2023 and the TAC for this stock is adjusted annually under the plan in accordance with the agreed Harvest Control Rule (NAFO 2018). The Greenland halibut recovery plan has been successful and fishing quotas have been more or less stable in recent years (NAFO 2023).

Fishing for witch **flounder** in division 3NO was prohibited during the period 1994–2014. In the context of increased biomass and limited fishing mortality, fishing was allowed from 2015 to 2018. However, as the stock deteriorated, fishing for this target species was subsequently banned again (NAFO 2020).

The stocks of **skates** are stable and catches are low.

The population of **yellowtail flounder** (*Limanda ferruginea*) in division 3LNO is in a good state, the fishing mortality rate is below the critical level and fishing quotas have been stable in recent years (NAFO 2023). It is reasonable to limit the impact of fishing for yellowtail flounder on the stocks of cod and American plaice, which are frequently caught as by-catches, by means of introducing additional by-catch limits or closing fishing grounds for a certain period.

The ICES is the body that assesses the status of fish stocks in the **NEAFC fishing grounds**. Shrimp is the most important species for Estonia in the North East Atlantic. It is currently an unregulated species in the Barents Sea. The shrimp stock continues to be in good condition and is being used sustainably. However, some vessels find fishing for this stock unattractive and inefficient due to area closures intended to protect young fish and due to the movement of shrimp away from traditional fishing grounds. The fishing mortality rate is low and stable and the biomass index also remains close to the historical mean value (NIPAG 2020; STACFIS 2022). The largest quota was allocated for mackerel fishing (Table 2) but Estonian ships have not caught mackerel for years.

Assessment and scientific advice concerning stocks in NAFO fishing grounds are available on the website of NAFO (www.nafo.int). Materials on NEAFC fishing grounds can be found on the websites of NEAFC (www.neafc.org) and ICES (www.ices.dk).

Catches

From 2014 to 2023, distant-water fishing vessels flying the flag of Estonia only fished in the Atlantic Ocean, in the NAFO and NEAFC grounds, with shrimp and various fish being the target species. In 2022, the greatest catch was for shrimp (72% of the total catch) and it was caught only in the NEAFC grounds, followed by redfish (13%) in NAFO waters, and cod (5%), mostly from NEAFC (Figure 4, Table 3).

Close to 310 tonnes less redfish was caught in the NAFO area in 2022 compared to the year before. Among the other major species, the catch of yellowtail flounder and American plaice increased compared with 2021, while the catches of Greenland halibut, witch flounder, cod and silver hake decreased.

In NEAFC waters, Estonia catches shrimp and, as a by-catch thereof, Greenland halibut, cod and American plaice (Table 4). In 2022, the shrimp catch increased by close to 2,500 tonnes, but overall across all fish species, catch decreased. Most of the shrimp is caught in division 1a, but catches have also increased in division XIVb in recent years.

In 2023, Estonian ships did not fish in NAFO waters. In the NEAFC waters, shrimp was at the top of the catch rankings, with 92%, followed by cod with 5%. The catch for both species increased compared to 2022. To a lesser extent, American plaice and Greenland halibut were caught.

Total distance-water fishery catches have varied to a great extent over the last ten years. Starting from 2015, it rose consistently until 2020, at which point it declined, and then resumed a moderate rise in 2022. This is largely due to technical problems and reduces quota shares from lower fishing trips to NAFO waters, which were interrupted completely in 2022. In contrast, the quantities caught in the North East Atlantic increased steadily from 2005 to 2019 and have exceeded the catches made in the North West Atlantic several times since 2011 (Figure 5, Tables 4 and 5). Catches made in the South West Atlantic grew from 2010 to 2012, but Estonian vessels have not been fishing there since 2013.

Estonia's total catch amounted to 15,681 tonnes in 2022. Catches are mainly landed in Norwegian, Spanish and Portuguese ports, with occasional landings in Iceland. The 13,854-tonne total catch in 2023 was landed only in Norway and Iceland.

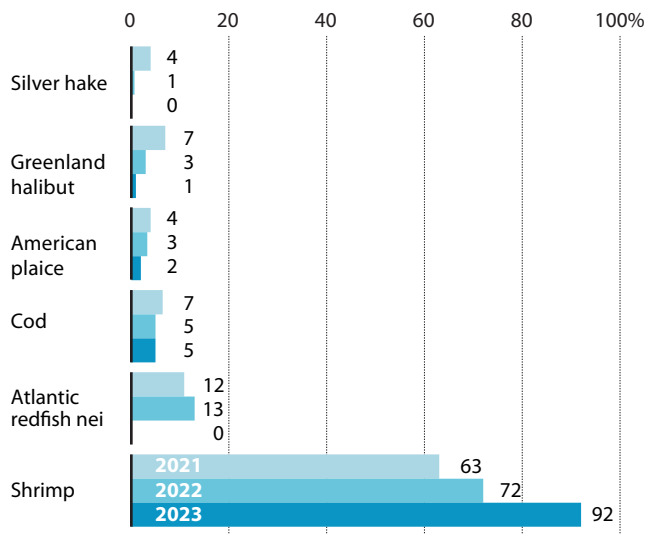


FIGURE 4.
Proportion (%) of catch by main species in distant-water fishery sector in 2021–2023
Sources: VFB, AFB.

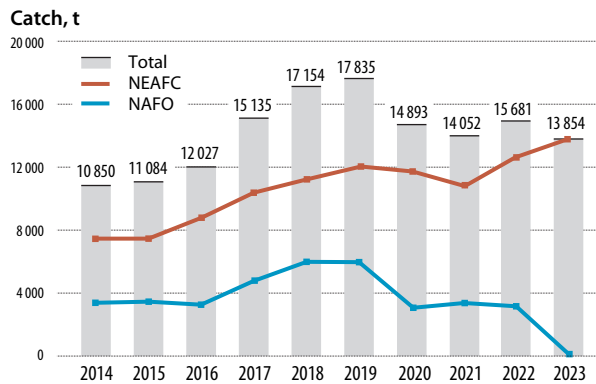


FIGURE 5.
Estonia's total distant-water fishery catches (t) by fishing ground, 2014–2023
Sources: MORA, MRA, VFB, AFB.

TABLE 3. Estonia's distant-water fishery catches (t) by species, 2014-2023

Species and scientific name	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
American anglerfish, *Lophius americanus*	27	2	7	<1	<1			1	<1	
Atlantic halibut, *Hippoglossus hippoglossus*	25	22	30	41	44	44	31	37	31	
American plaice, *Hippoglossoides platessoides*	1 177	537	1 105	1 249	1 689	1 071	1 000	585	488	258
Silver hake, *Merluccius bilinearis*	151	114	57	55	21		20	523	142	
Roundnose grenadier, *Coryphaenoides rupestris*	4							4		
Haddock, *Melanogrammus aeglefinus*	79	30	24	30	<1		4			
Northern prawn, *Pandalus borealis*	5 665	6 740	6 954	7 413	8 019	9 795	9 174	8 810	11 282	12 752
Northern shortfin squid, *Illex illecebrosus*				<1				9		
Atlantic redfish nei, *Sebastes* spp	1 300	1 512	1 656	2 198	3 590	3 252	1 820	1 707	2 018	
Wolffish nei, *Anarhichas* spp	14	1								
Witch flounder, *Glyptocephalus cynoglossus*	40	22	40	66	31	27	27	73	4	
Roughhead grenadier, *Macrourus berglax*	136	26	13	23	12	3	11	46	3	
Raja rays nei, *Raja* spp	246	47	162	304	46	7	2	26	27	
Yellowtail flounder, *Limanda ferruginea*	24	342	351	39	347	358	335	315	393	
Greenland halibut, *Reinhardtius hippoglossoides*	1 037	694	1 092	1 141	1 286	1 103	1 067	897	495	98
Lanternshark, *Etmopterus* spp	2									
Atlantic cod, *Gadus morhua*	907	989	529	2 544	2 031	2 159	1 289	1 016	798	746
Spotted wolffish, *Anarhichas minor*	14	7	8	30	36	15	3			
White hake, *Urophycis tenuis*	2			<1	<1		10	2		
Total	10 850	11 084	12 027	15 135	17 154	17 834	14 893	14 052	15 682	13 854

Sources: MORA, MRA, VFB, AFB.

TABLE 4. Estonia's distant-water fishery catches (t) by fishing ground and species in 2022

Species and scientific name	Code	NAFO	NEAFC	Total
American anglerfish, *Lophius americanus*	ANG	0,436		0,436
Atlantic cod, *Gadus morhua*	COD	88,423	709,782	798,205
Greenland halibut, *Reinhardtius hippoglossoides*	GHL	242,365	252,917	495,282
Atlantic halibut, *Hippoglossus hippoglossus*	HAL	31,312		31,312
Silver hake, *Merluccius bilinearis*	HKS	142,006		142,006
American plaice, *Hippoglossoides platessoides*	PLA	98,459	389,706	488,165
Northern prawn, *Pandalus borealis*	PRA		11 281,882	11 281,882
Atlantic redfish nei, *Sebastes* spp	RED	2 018,283		2 018,283
Roughhead grenadier, *Macrourus berglax*	RHG	2,530		2,530
Raja rays nei, *Raja* spp	SKA	26,659		26,659
Witch flounder, *Glyptocephalus cynoglossus*	WIT	3,791		3,791
Yellowtail flounder, *Limanda ferruginea*	YEL	393,140		393,140
Total		**3 047,401**	**12 634,286**	**15 681,688**

Source: AFB.

TABLE 5. Estonia's distant-water fishery catches (t) by North East Atlantic fishing grounds and species in 2023

Species and scientific name	Code	Division				Total
		Ia	Ib	IIb	XIVb	
Atlantic cod, *Gadus morhua*	COD	745,517				745,517
Greenland halibut, *Reinhardtius hippoglossoides*	GHL	98,115				98,115
American plaice, *Hippoglossoides platessoides*	PLA	257,917				257,917
Northern prawn, *Pandalus borealis*	PRA	6 951,053	4 051,969	498,149	1 251,246	12 752,417
Total		**8 052,601**	**4 051,969**	**498,149**	**1 251,246**	**13 853,965**

Source: AFB.

Outlook

The shrimp stock of the third division of the North West Atlantic has been in a recession for a long period, and fishing for it was banned for several years before 2020. The opportunity of small-scale fishing allowed in division 3M in 2020 and 2021 was not used by vessels flying the flag of Estonia because it was not considered economically viable. As said above, catch was suspended again starting in 2022 and there are no signs of fish abundance increasing. A switch from the current fishing day-based approach to a quota-based system in division 3M is under discussion.

The state of the stocks in the North West Atlantic is very volatile. Some stocks show signs of recovery; however, owing to the precautionary principle, fishing opportunities are unlikely to be increased considerably in the near future.

Estonian shrimp fishers are increasingly shifting their fishing efforts to the North East Atlantic, where the shrimp stock is in good condition. Estonian distant-water vessels once again obtained a certificate for shrimp fishing in the Barents Sea from the Marine Stewardship Council, having successfully completed a full assessment. From 2017, the certificate covers cod taken as a by-catch in shrimp fishing. Obtaining the certificate improves the sector's competitiveness on the world market.

Baltic Sea fisheries

COASTAL FISHERY IN THE BALTIC SEA

In 2022, a total of 2,304 people were entered on fisherman's fishing permits in Estonia, including 2,241 men and 63 women. In 2023, the number of fishermen entered on fishing permits dropped to 2,282, of whom 2,220 were men and 62 were women. In 2022, the oldest one was 92 years old and in 2023, 93 (Table 6). The oldest women in the profession were 70 and 71 (two women of each age in each year). The average age of fishers was 54.5 in 2022 and 55 in 2023, with the average for men being 54.5 and 55.1, respectively, and that of the women, 47.2 and 48.2.

The number of fishermen entered on permits for fishing in the Baltic Sea was 1,924 in 2022, and 1,935 in 2023. There were 1,870 male fishermen among coastal fishermen in 2022 and 1,880 in 2023, while there were 54 and 55 women (Figure 6). The number of coastal fishers thus remains nearly unchanged. The total number of fishermen cannot be obtained by adding up numbers county by county, as a fisherman can be entered on the permits of several counties (i.e. the total is lower than all counties combined). The total number of fishers fishing on the basis of a fishing

TABLE 6. Age of fishers by county in 2022 and 2023

County	Oldest fisherman		Average age of fishermen		Number of female fishers	
	2022	2023	2022	2023	2022	2023
Harju (Baltic Sea)	92	93	57,6	58,0	8	8
Hiiu (Baltic Sea)	87	88	52,1	52,7	13	13
Ida-Viru (Baltic Sea)	77	78	54,3	55,2	2	3
Lääne, sh Vormsi (Baltic Sea)	84	84	54,5	55,3	8	7
Lääne-Viru (Baltic Sea)	89	90	56,5	57,5	3	3
Pärnu, incl Kihnu ja Manija (Baltic Sea)	91	92	52,3	53,1	13	12
Saare, incl Ruhnu (Baltic Sea)	90	91	55,8	55,9	7	9
Lakes Peipus, Lämmijärv and Pskov	74	75	49,5	50,4	4	2
Lake Võrtsjärv	78	79	51,8	53,1	2	2
Other inland water bodies	89	90	55,0	55,5	10	9

Source: MORA, MRA, VFB, AFB.

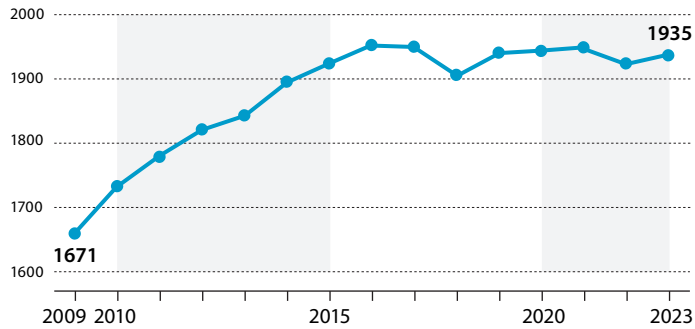


FIGURE 6.
Number of coastal fishermen fishing in the Baltic Sea, 2009–2023
Sources: MOE, MoRA, VFB, AFB.

permit, however, is not equal to the total number of inland waters fishers and coastal fishers because some fishers operate in both coastal seas and inland waters.

The greatest numbers of fishers are in Saare, Pärnu, Hiiu and Harju counties (Table 7). It is estimated that fishing is the main source of income for no more than 10% of coastal fishermen.

According to the Occupational Register, over 20 years from 2004 to 2024, 4,458 coastal fisher certificates were issued. With support from the European Maritime and Fisheries Fund, 323 people were trained from 2019 to 2023 and with support from the Maritime, Fisheries and Aquaculture fund, 35 people since 2024. A total of 358 certificates have thus been issued since 2019. As of 2024, 109 of their holders have not yet been entered on fishing permits, which allows us to suppose that about 30% of those trained are not actively engaged in coastal fishing.

According to the Fisheries Information System of the MoRA, the number of vessels with a length of less than 12 metres used by our coastal fishermen in the Baltic Sea amounted to 1,986 in 2022 and 2,015 in 2023, somewhat more than in previous years (1,516 in 2016, 1,557 in 2017, 1,679 in 2018 and 1,783 in 2019, 1,863 in 2020 and 1,921 in 2021). The main engines of the vessels used in coastal fishery had a combined power of 22,014.69 kW in 2022 and 21,936.35 kW in 2023; the total gross tonnage was 2,344.18 and 2,348.06 GT, respectively. The number of vessels used in inland waters, which had also grown in previous years consistently (from 494 in 2018 to 499 in 2019, 500 in 2020 and 504 in 2021) rose to 511 in 2022 and remained the same in 2023.

As in previous years, the biggest catches taken in 2022 in Estonian coastal fishery were those of herring – around 6,806 tonnes, which is significantly less than in 2021 (around 9,176 tonnes). Second was perch (about 760 tonnes) followed by smelt

TABLE 7. Number of coastal fishermen entered on fishing permits, by county, 2013–2023

County	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Harju	303	307	314	316	309	310	304	304	306	307	312
Hiiu	294	311	319	329	333	333	337	340	345	341	335
Ida-Viru	91	92	97	100	98	93	85	82	92	84	91
Lääne (incl Vormsi)	267	282	274	288	279	270	280	290	283	277	299
Lääne-Viru	135	133	140	147	141	145	133	144	132	133	129
Pärnu (incl Kihnu ja Manija)	393	401	399	402	413	326	392	419	395	379	377
Saare (incl Ruhnu)	415	431	445	442	448	428	453	457	451	446	455
Total	**1 841**	**1 895**	**1 923**	**1 952**	**1 950**	**1 905**	**1 938**	**1 943**	**1 950**	**1 924**	**1 935**

Sources: MORA, MRA, VFB, AFB.

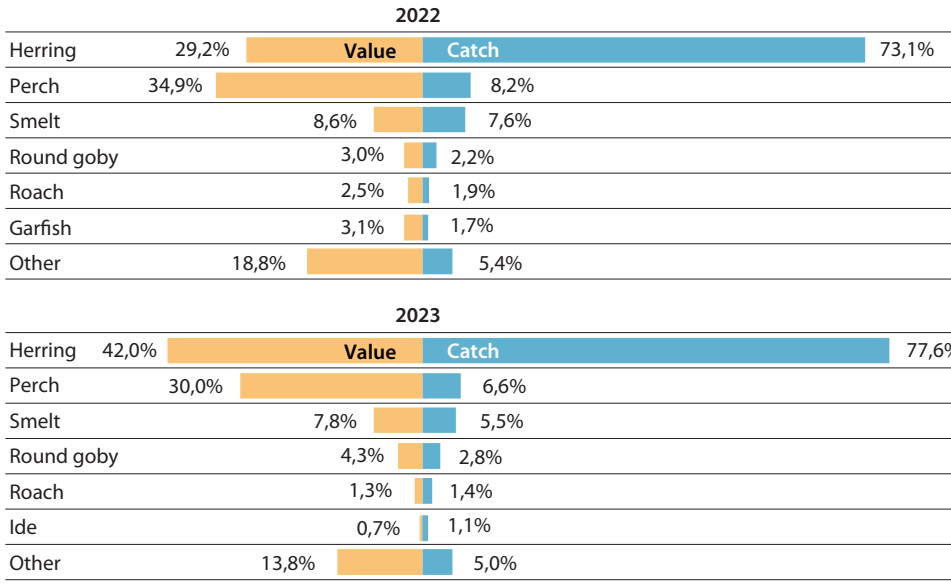


FIGURE 7. Proportions (%) of catches and revenues in coastal fishery, by species, 2022 and 2023 Source: AFB.

(approx. 704 t), round goby (approx. 206 t), roach (approx. 178 t) and garfish (approx. 159 t) (Figure 7, Table 8). The regional distribution of the key target species in 2022 is shown in Figure 8 on p. 20.

In 2023, herring led the rankings for Estonian coastal fishing (about 9,328 t), perch (about 793 t), smelt (about 660 t), round goby (about 341 t) and roach (about 166 t). However, compared to 2022, ide catch increased (about 127 t), which exceeded the figure for garfish (about 107 t) (Figure 7, Table 8, p. 29). The regional distribution of key commercial fish for 2023 is shown on Figure 9, p. 24.

In Estonian coastal fishing, perch usually leads in terms of catch when calculated on the basis of the year's average first-sale prices. The exceptions were 2021 and 2023, when herring was the highest in price.

In 2022; the total value of the perch caught was about 1.7 million euros (Table 9, page 30). It was followed by herring (approx. 1.4 million euros), smelt (approx. 0.4 million euros), garfish (about 0.15 million euros) and round goby (approx. 0.14 million euros). In 2023, the herring catch was of especially high value (approx. 3.1 million euros (Table 9). Perch came second (approx. 2.2 million euros) followed by smelt (approx. 0.6 million euros) and round goby (approx. 0.3 million euros).

The estimated revenues of coastal fishermen, based on annual average first-sale prices, fell to 4.8 million euros in 2022 (2014: around 5.0 million euros, 2015: around 5.2 million euros; 2016: around 5.4 million euros; 2017: around 5.2 million euros; 2018: around 5.3 million euros; 2019: around 5.1 million euros, 2020: around 4.8 million euros, 2021: around 5.4 million euros) but then grew in 2023 to 7.4 million euros, which is obviously significantly more than in the previous years. This jump was the result of a rise in buying-up prices for herring and an increase in the amount caught.

The first-sale price rose in 2023 compared to 2022 for perch by 25%, for round goby by 35%, for pikeperch by 5%, and a whopping 60% and 50%, respectively, for herring and smelt. However, the buying-up price for roach (12%), flounder (10%) and garfish (7%) dropped (Table 10, page 31, Figure 10, page 28).

Fishing efforts decline in years when the abundance of fish is low as well as when fishermen find better-paid jobs. However, fishing efforts will grow as soon as the cost-effectiveness or relative cost-effectiveness of fishing increases, given that the maximum amount of permitted fishing gear is high. The maximum amount of permitted fishing gear should be adjusted according to the state of the stock, which is currently not the case.

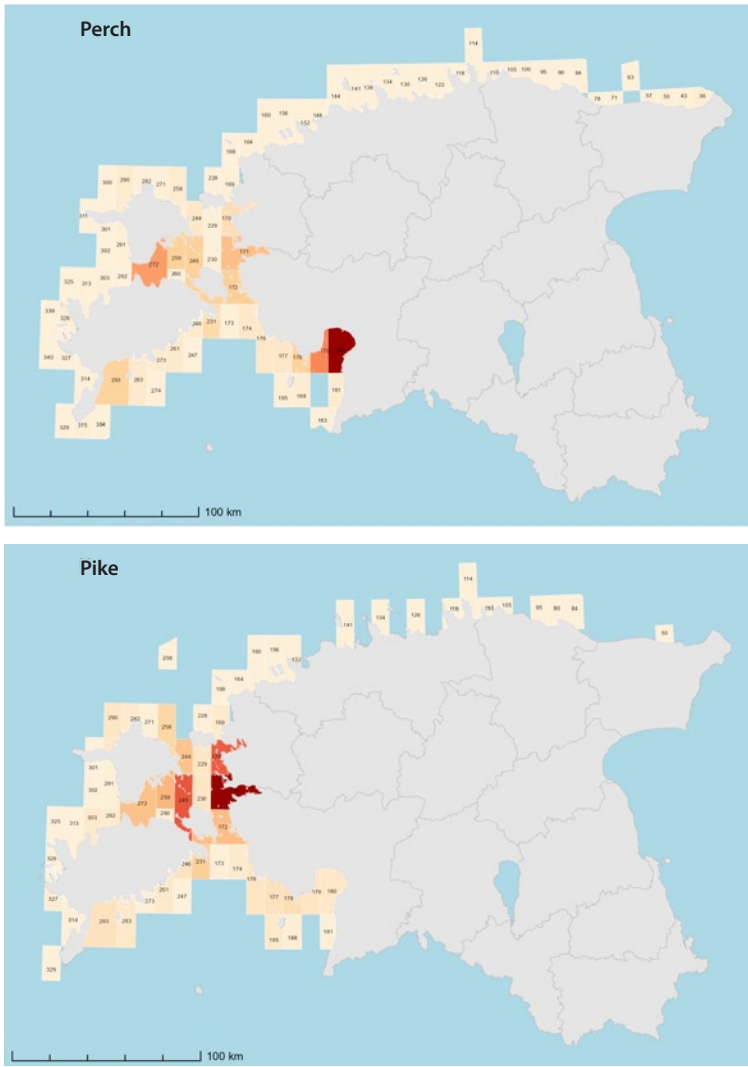
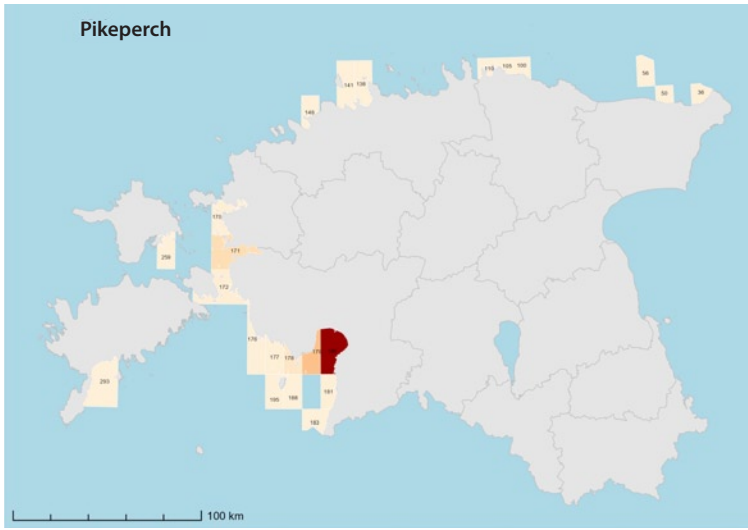
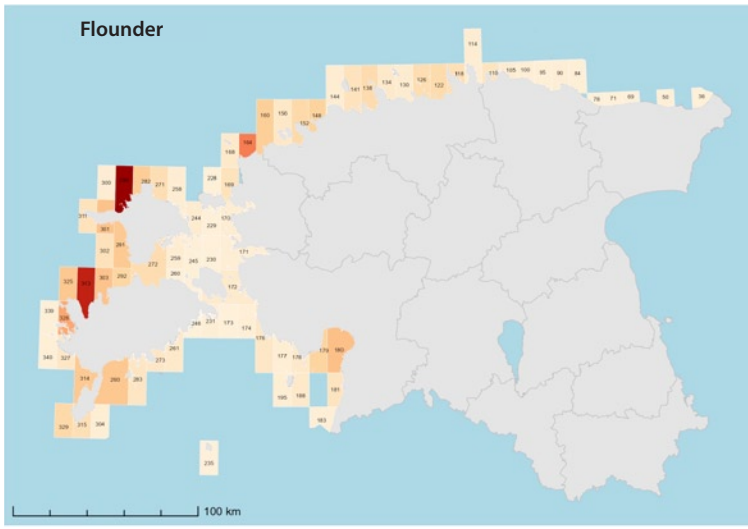


FIGURE 8.
Catches (t) of key target species in different fishing squares, 2022
Sources: MoRA, UT EMI.





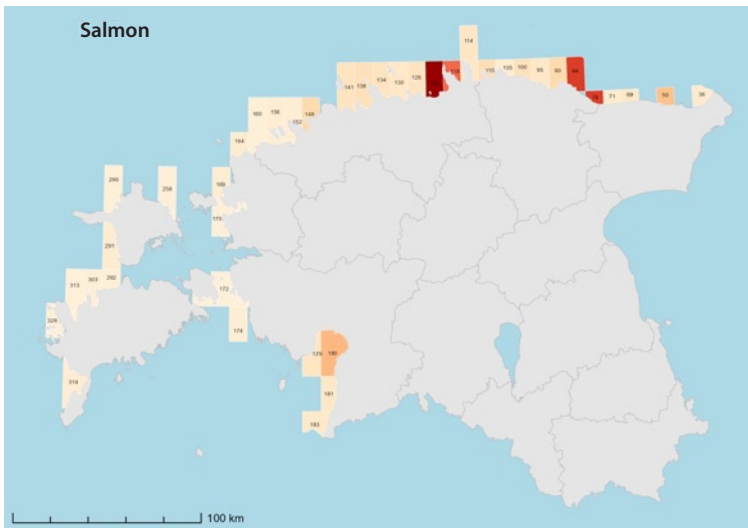
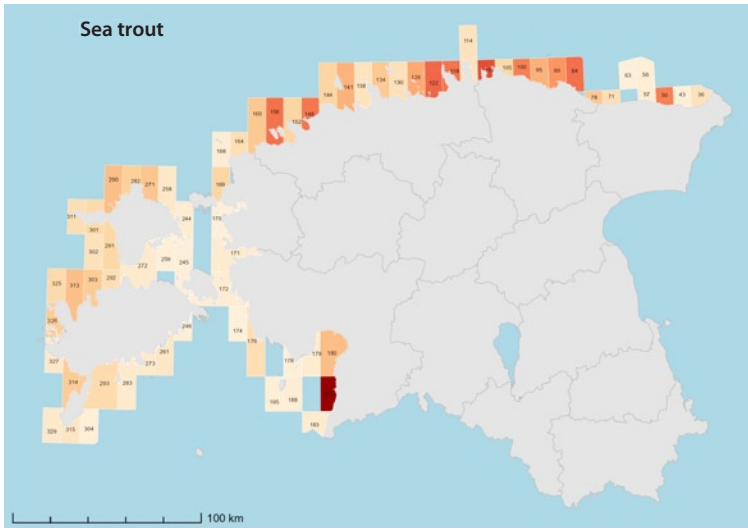
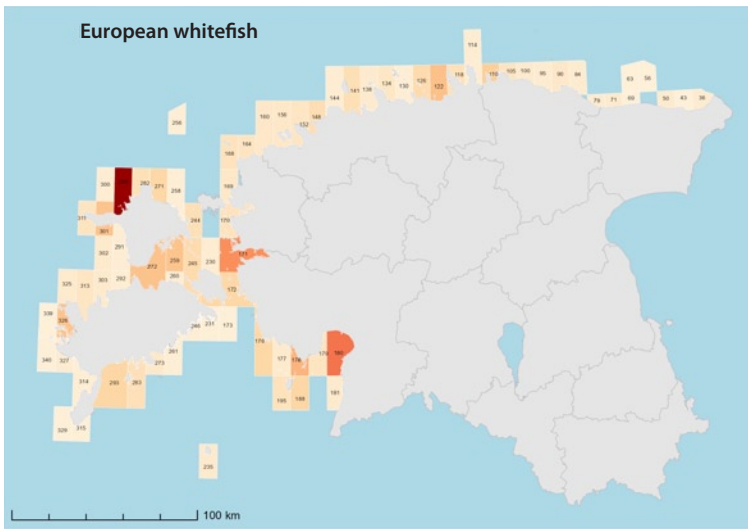


FIGURE 8 (cont.)
Catches (t) of key target species in different fishing squares, 2022

Sources: MoRA, UT EMI.





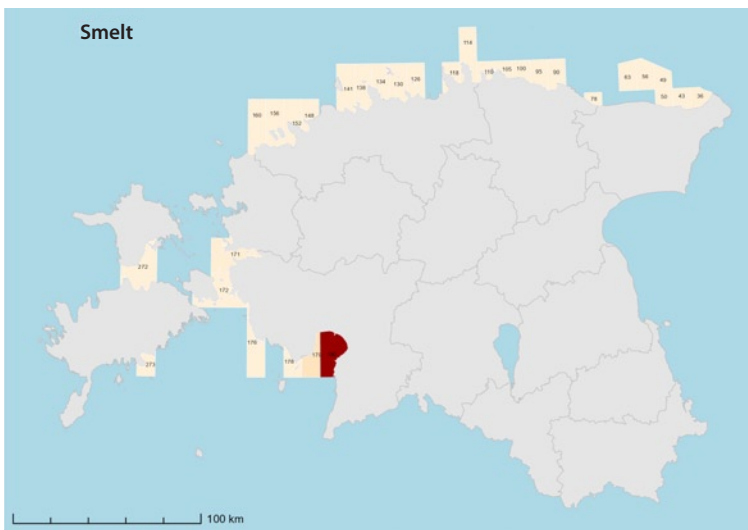
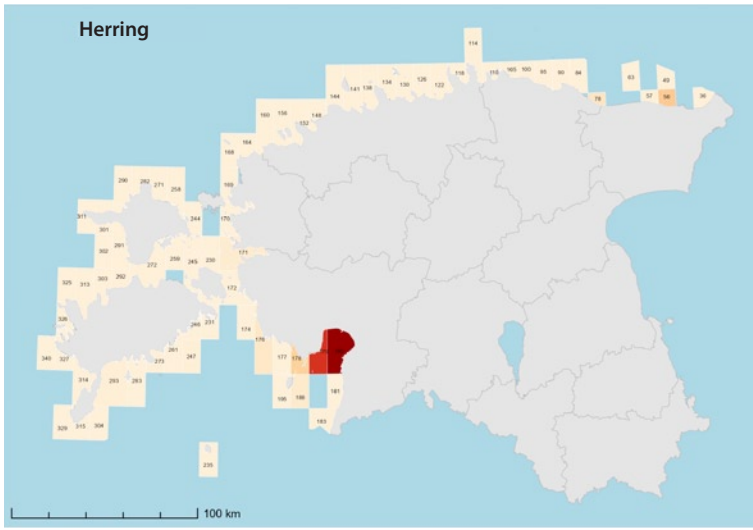


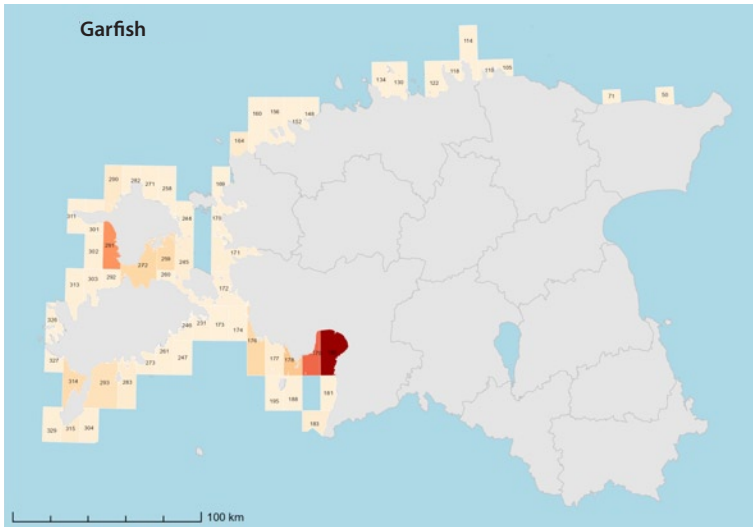
FIGURE 8 (cont.)
Catches (t) of key target species in different fishing squares, 2022
Sources: MoRA, UT EMI.

Catch, t
1,2
0,9
0,6
0,3
0

Catch, t
3
2
1
0

Catch, t
600
400
200
0





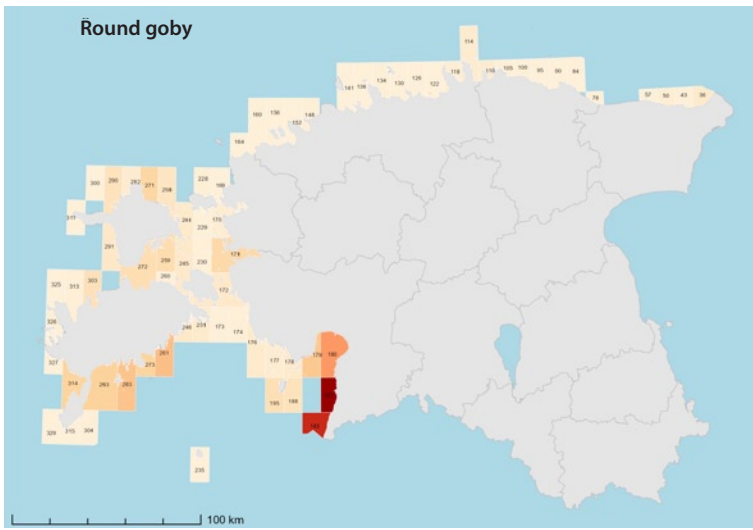


FIGURE 8 (cont.)
Catches (t) of key target species in different fishing squares, 2022
Sources: MoRA, UT EMI.

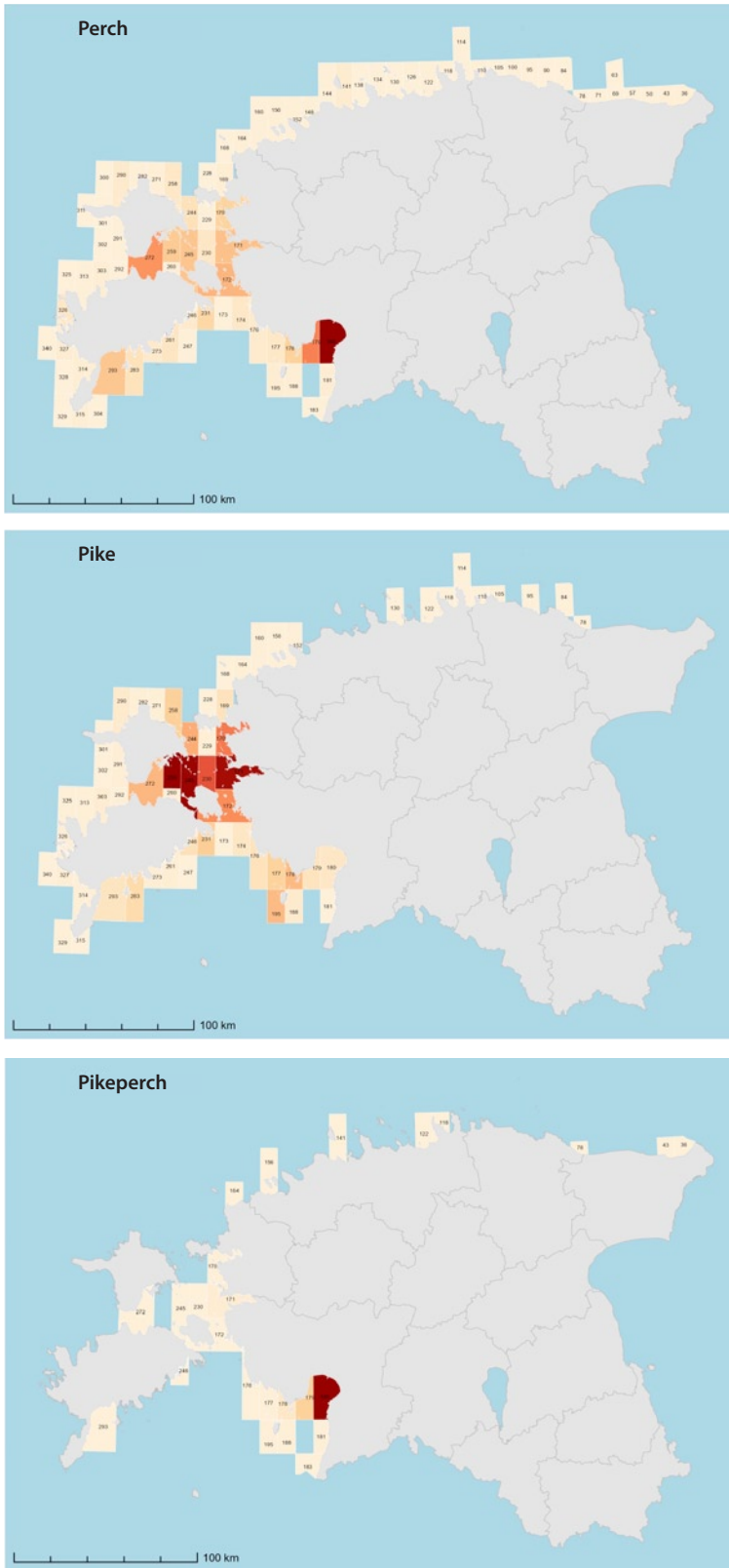
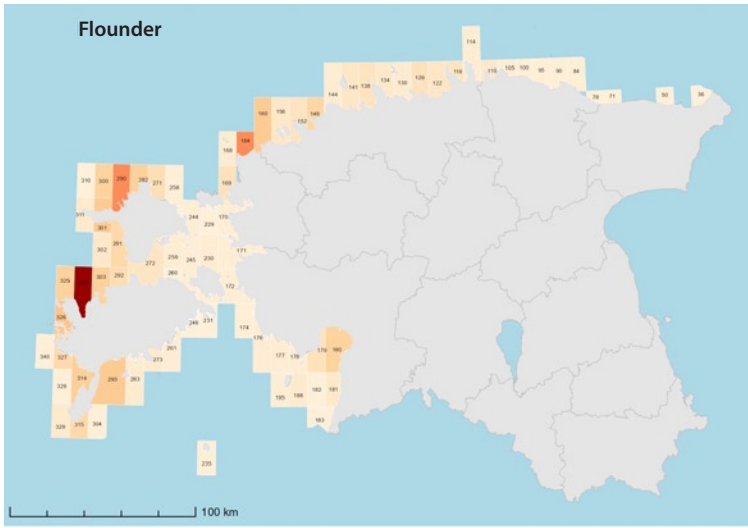
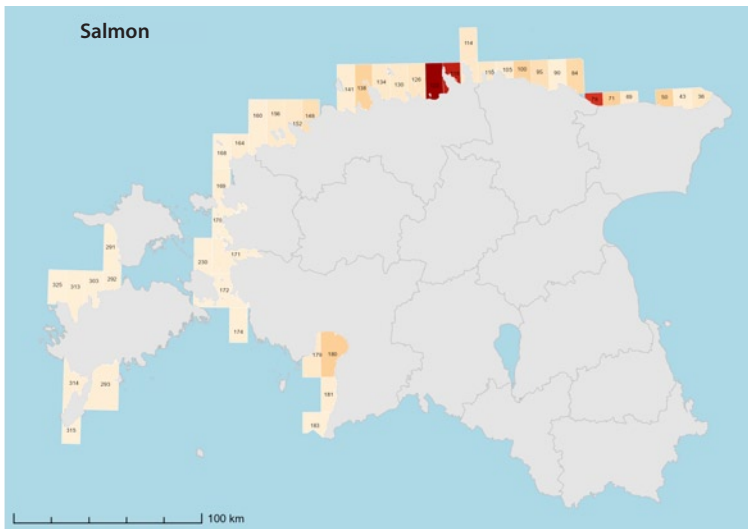


FIGURE 9.
Catches (t) of key target species in different fishing squares, 2023
Sources: MORA, MRA, UT EMI.





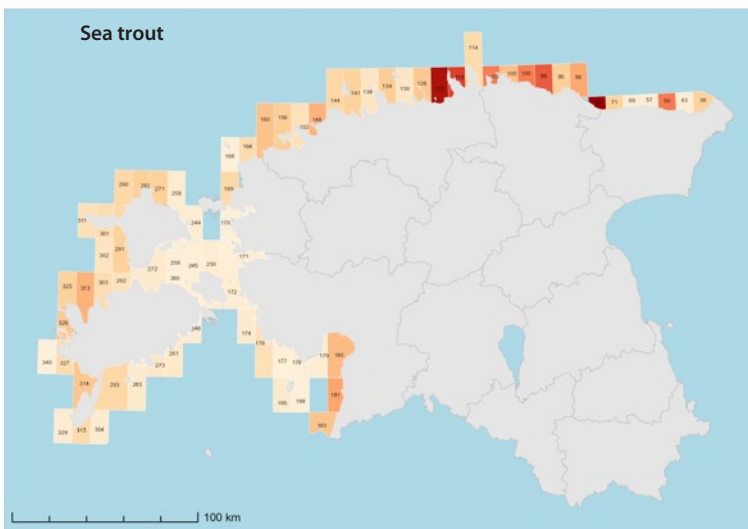
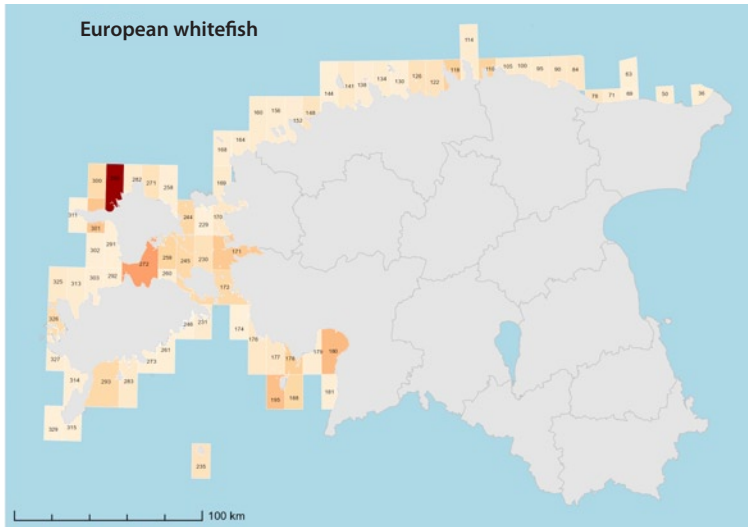
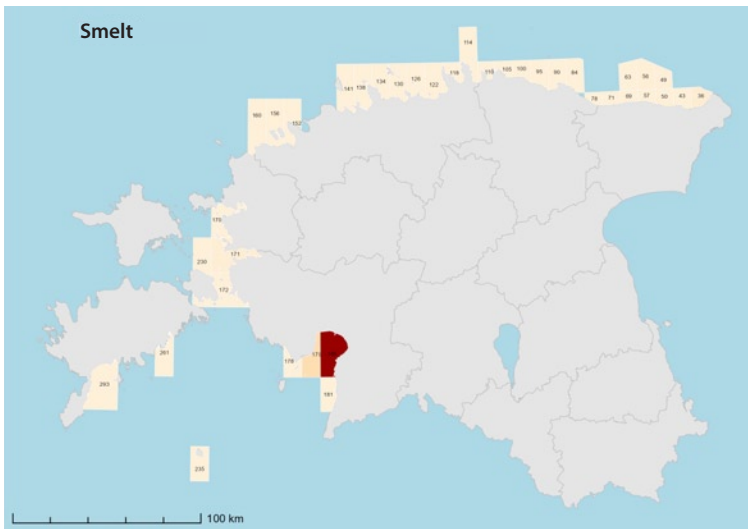


FIGURE 9 (cont.)
Catches (t) of key target species in different fishing squares, 2023

Sources: MORA, MRA, UT EMI.





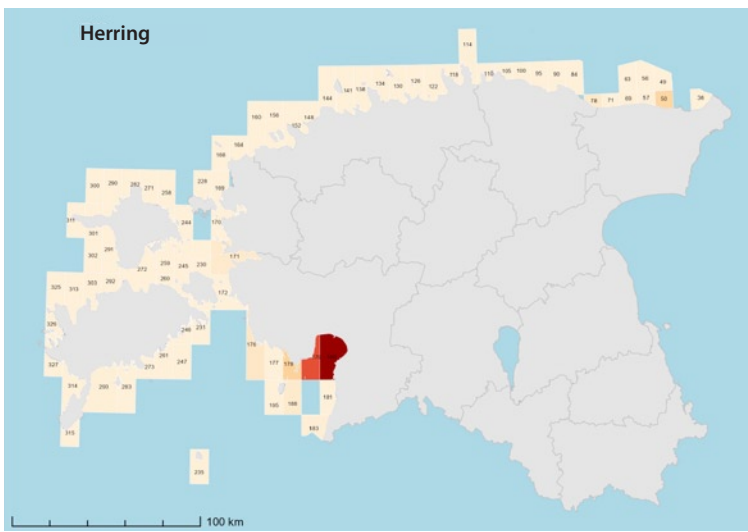
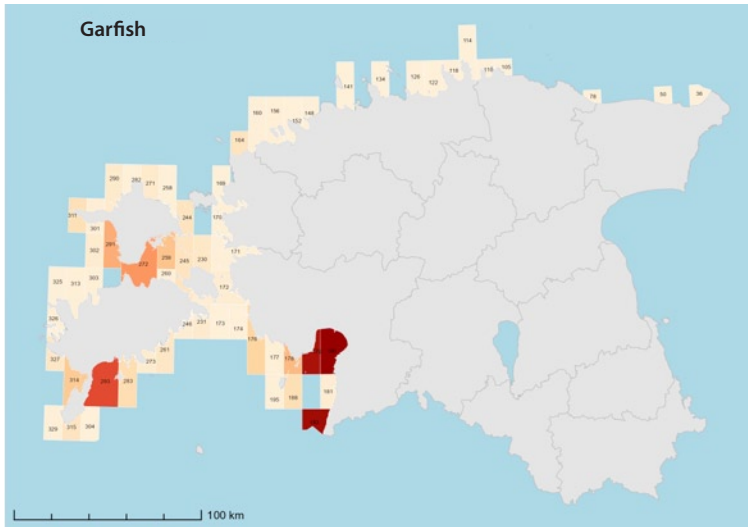


FIGURE 9 (cont.)
Catches (t) of key target species in different fishing squares, 2023
Sources: MORA, MRA, UT EMI.



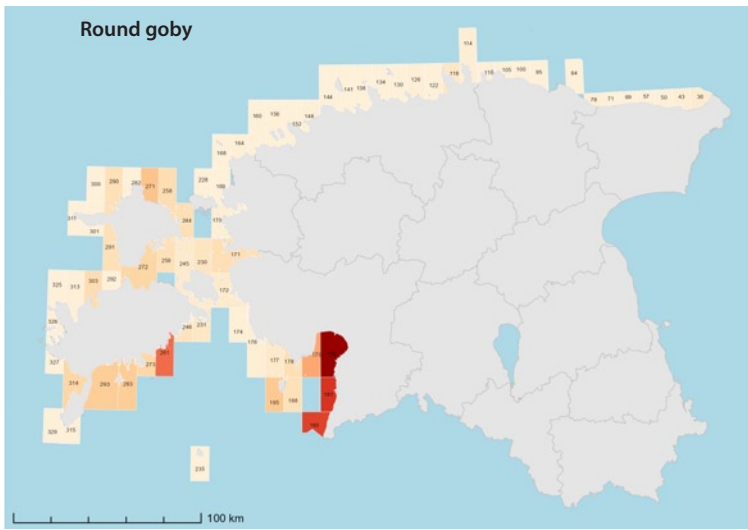


FIGURE 9 (cont.)
Catches (t) of key target species in different fishing squares, 2023

Sources: MORA, MRA, UT EMI.

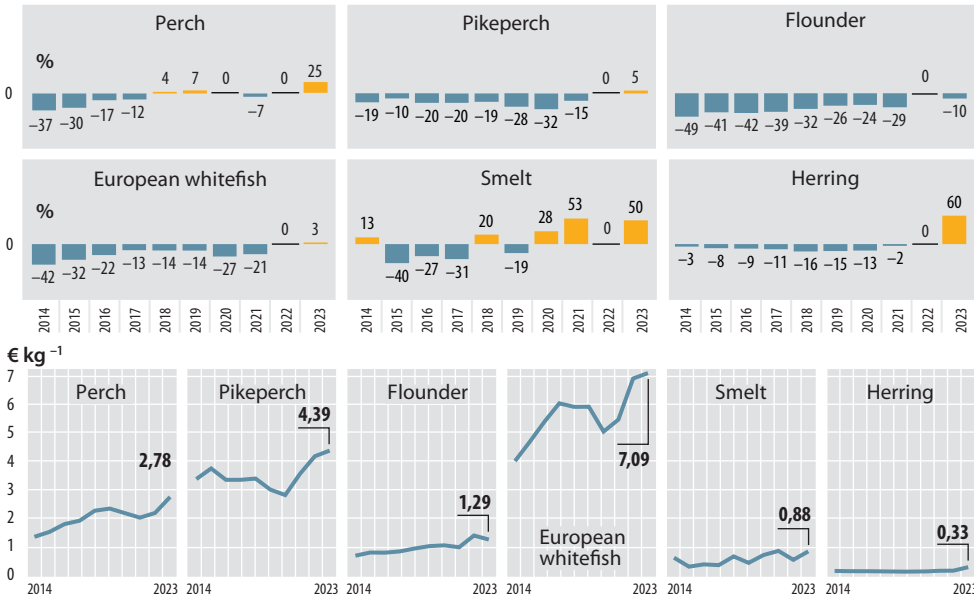


FIGURE 10. **Change (%) in average first-sale prices of fish species most important to coastal fishery in 2014–2023 compared with prices in 2022** Sources: MORA, MRA, AFB.

TABLE 8. Coastal fishery catches (t) and proportions (%) of total catch from the Baltic Sea, by species, in 2018–2023

Species	2018		2019		2020		2021		2022		2023	
	Catch	%	Catch	%	Catch	%	Catch	%	Catch	%	Catch	%
Perch	1136,73	10,9	979,16	9,1	748,68	7,1	792,22	6,8	759,95	8,2	792,81	6,6
Eel	0,50	<0,1	0,98	<0,1	1,52	<0,1	1,93	<0,1	1,56	<0,1	2,42	<0,1
European plaice							<0,01	<0,1	<0,01	<0,1		
Eelpout	0,52	<0,1	0,01	<0,1	0,06	<0,1	0,16	<0,1	0,03	<0,1	<0,01	<0,1
Anglerfish							<0,01	<0,1	<0,01	<0,1		
Turbot	0,67	<0,1	0,20	<0,1	0,38	<0,1	0,25	<0,1	0,20	<0,1	0,10	<0,1
Pike	68,07	0,7	76,31	0,7	76,91	0,7	59,84	0,5	54,95	0,6	100,81	0,8
Chinese mitten crab	<0,01	<0,1			<0,01	<0,1	<0,01	<0,1	<0,01	<0,1	<0,01	<0,1
European seabass					<0,01	<0,1	<0,01	<0,1	<0,01	<0,1		
Gibel carp	64,55	0,6	64,97	0,6	73,31	0,7	53,81	0,5	56,29	0,6	74,20	0,6
Lamprey	0,08	<0,1	0,13	<0,1	0,04	<0,1	0,06	<0,1	0,17	<0,1	0,06	<0,1
Common carp	0,08	<0,1	0,52	<0,1	0,19	<0,1	0,10	<0,1	0,11	<0,1	0,19	<0,1
Cephalopods									<0,01	<0,1		
Ruff	48,73	0,5	55,77	0,5	37,54	0,4	22,04	0,2	14,45	0,2	11,05	0,1
Sprat	0,61	<0,1	0,05	<0,1	0,35	<0,1	0,34	<0,1	0,38	<0,1	0,21	<0,1
Two-spotted goby							0,01	<0,1	<0,01	<0,1		
Crucian carp	<0,01	<0,1					0,49	<0,1	0,64	<0,1	0,66	<0,1
Pikeperch	65,96	0,6	52,14	0,5	20,04	0,2	52,77	0,5	24,12	0,3	22,68	0,2
Bream	9,44	0,1	8,85	0,1	6,28	0,1	5,28	<0,1	5,58	0,1	8,06	0,1
Flounder	168,90	1,6	149,66	1,4	175,92	1,7	114,91	1,0	107,84	1,2	97,81	0,8
Tench	4,69	<0,1	3,73	<0,1	3,73	<0,1	1,50	<0,1	2,38	<0,1	3,62	<0,1
Burbot	2,25	<0,1	2,02	<0,1	1,25	<0,1	0,90	<0,1	0,86	<0,1	1,03	<0,1
Salmon	8,15	0,1	8,44	0,1	10,76	0,1	7,45	0,1	7,34	0,1	7,39	0,1
Sea trout	16,29	0,2	16,82	0,2	16,79	0,2	14,76	0,1	15,99	0,2	15,60	0,1
Four-horned sculpin	0,02	<0,1	0,04	<0,1	0,03	<0,1	0,04	<0,1	0,11	<0,1	0,01	<0,1
European whitefish	17,39	0,2	16,21	0,1	25,24	0,2	24,96	0,2	24,03	0,3	15,85	0,1
Smelt	283,92	2,7	501,74	4,6	915,47	8,7	720,24	6,2	704,43	7,6	657,00	5,5
Lumpfish					<0,01	<0,1	<0,01	<0,1	<0,01	<0,1	<0,01	<0,1
Sunbleak									<0,01	<0,1		
Gobiidae, nei									<0,01	<0,1		
Silver bream	36,71	0,4	34,96	0,3	35,25	0,3	27,20	0,2	22,24	0,2	42,86	0,4
Rudd	1,78	<0,1	2,53	<0,1	2,49	<0,1	2,50	<0,1	3,48	<0,1	3,21	<0,1
Herring	8064,46	77,3	8293,11	76,7	7734,97	73,7	9175,65	78,4	6805,51	73,1	9327,81	77,6
Starry sturgeon							<0,01	<0,1	<0,01	<0,1		
Siberian sturgeon					<0,01	<0,1	<0,01	<0,1	<0,01	<0,1		
Ide	49,09	0,5	50,42	0,5	48,11	0,5	65,06	0,6	68,69	0,7	126,73	1,1
Roach	94,06	0,9	120,76	1,1	145,67	1,4	124,59	1,1	177,99	1,9	165,56	1,4
Dwarf mud crab									<0,01	<0,1		
Dace	<0,01	<0,1	0,03	<0,1					0,02	<0,1	0,06	<0,1
Cod (Atlantic cod)	0,98	<0,1	1,30	<0,1	1,36	<0,1	0,86	<0,1	1,11	<0,1	1,25	<0,1
Garfish	74,87	0,7	130,09	1,2	121,53	1,2	104,73	0,9	159,32	1,7	106,91	0,9
Acipenseridae									<0,01	<0,1		
Asp					<0,01	<0,1	<0,01	<0,1	<0,01	<0,1		
Bleak	0,13	<0,1	0,02	<0,1	0,05	<0,1	0,12	<0,1	0,02	<0,1	0,04	<0,1
Rainbow trout	0,34	<0,1	0,24	<0,1	0,34	<0,1	0,17	<0,1	0,09	<0,1	0,12	<0,1
Vimba bream	97,33	0,9	118,71	1,1	80,46	0,8	74,80	0,6	85,86	0,9	87,86	0,7
Twaite shad	<0,01	<0,1	<0,01	<0,1					0,03	<0,1	2,35	<0,1
Lesser sand eel	0,05	<0,1	0,03	<0,1			0,04	<0,1	0,02	<0,1		
Round goby	119,46	1,1	118,95	1,1	211,21	2,0	255,62	2,2	205,60	2,2	340,88	2,8
Total	**10 436,78**	**100,0**	**10 808,91**	**100,0**	**10 495,95**	**100,0**	**11 705,40**	**100,0**	**9311,41**	**100,0**	**12 017,26**	**100,0**

Sources: MORA, MRA, AFB.

TABLE 9. Value of coastal fishery catches in thousands of euros from the Baltic Sea and proportion (%) of total value by species, 2018–2023

Species	2018		2019		2020		2021		2022		2023	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Perch	2 613,62	49,5	2 322,94	45,9	1 658,84	34,2	1 629,07	30,4	1 686,28	34,9	2 202,60	30,0
Eel	4,71	<0,1	8,50	0,2	10,78	0,2	13,43	0,3	11,95	0,2	14,57	0,2
Eelpout	0,10	<0,1	<0,01	<0,1	0,01	<0,1	0,03	<0,1	0,03	<0,1	0,00	<0,1
Pike	120,99	2,3	118,92	2,3	117,85	2,4	102,21	1,9	108,82	2,3	201,92	2,7
Gibel carp	17,38	0,3	15,48	0,3	15,26	0,3	13,01	0,2	14,69	0,3	20,16	0,3
Lamprey	0,33	<0,1	0,44	<0,1	0,12	<0,1	0,18	<0,1	0,53	<0,1	0,21	<0,1
Carp	0,15	<0,1	0,40	<0,1			0,11	<0,1	0,22	<0,1	0,21	<0,1
Ruff	10,08	0,2	11,48	0,2	8,74	0,2	4,88	0,1	4,64	0,1	3,33	<0,1
Sprat	0,11	<0,1	0,01	<0,1	0,06	<0,1	0,06	<0,1	0,08	<0,1	0,08	<0,1
Crucian carp	0,00	<0,1	<0,01	<0,1					0,16	<0,1	0,23	<0,1
Pikeperch	225,32	4,3	158,07	3,1	57,00	1,2	189,20	3,5	101,16	2,1	99,67	1,4
Bream	4,48	<0,1	5,06	0,1	4,21	0,1	2,68	<0,1	3,06	0,1	4,49	0,1
Flounder	165,16	3,1	159,01	3,1	191,51	4,0	117,59	2,2	154,65	3,2	126,44	1,7
Tench	7,51	0,1	5,49	0,1	5,79	0,1	2,44	<0,1	4,48	0,1	5,83	0,1
Burbot	1,72	<0,1	1,29	<0,1	0,63	<0,1	0,56	<0,1	0,75	<0,1	0,85	<0,1
Salmon	61,12	1,2	67,77	1,3	87,12	1,8	58,98	1,1	83,59	1,7	87,71	1,2
Sea trout	116,85	2,2	124,96	2,5	129,60	2,7	109,11	2,0	156,72	3,2	170,11	2,3
Four-horned sculpin	0,00	<0,1							0,02	<0,1	0,00	<0,1
European whitefish	102,86	1,9	95,97	1,9	127,62	2,6	136,56	2,6	165,96	3,4	112,43	1,5
Smelt	199,98	3,8	239,28	4,7	685,87	14,2	647,26	12,1	412,91	8,6	577,20	7,8
Silver bream	3,26	<0,1	3,25	0,1	3,37	0,1	4,14	0,1	5,31	0,1	9,21	0,1
Rudd	0,37	<0,1	0,18	<0,1	0,26	<0,1	0,31	<0,1	0,92	<0,1	0,86	<0,1
Herring	1 406,57	26,6	1 462,18	28,9	1 387	28,6	1 865,47	34,8	1 410,01	29,2	3 089,57	42,0
Ide	27,79	0,5	22,25	0,4	24,21	0,5	33,38	0,6	28,25	0,6	50,61	0,7
Roach	59,41	1,1	70,04	1,4	88,85	1,8	89,91	1,7	119,49	2,5	98,31	1,3
Atlantic cod	0,93	<0,1	0,38	<0,1	4,69	0,1	2,61	<0,1	5,23	0,1	5,32	0,1
Garfish	50,96	1,0	68,87	1,4	72,46	1,5	81,18	1,5	147,74	3,1	92,65	1,3
Rainbow trout	2,31	<0,1	1,29	<0,1	1,63	<0,1	0,87	<0,1	0,56	<0,1		
Vimba bream	50,79	1,0	57,22	1,1	35,04	0,7	48,80	0,9	56,47	1,2	57,02	0,8
Twaite shad	<0,01	<0,1							0,03	<0,1	2,88	<0,1
Round goby	22,37	0,4	42,78	0,8	123,06	2,6	200,66	3,7	143,05	3,0	319,20	4,3
Total	**5 278,01**	**100,0**	**5 063,83**	**100,0**	**4 844,06**	**100,0**	**5 354,69**	**100,0**	**4 827,78**	**100,0**	**7 353,67**	**100,0**

Sources: MoRA, VFB, AFB, Official publication *Ametlikud Teadaanded.*

TABLE 10. Average first-sale prices of fish (€ kg^{-1}) and change (%) therein from 2013–2023

Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Change
Perch	1,82	1,39	1,56	1,83	1,95	2,30	2,37	2,22	2,06	2,22	2,78	+25
Eel	8,36	7,41	7,34	7,20	8,35	9,43	8,64	7,08	6,96	7,65	6,02	−21
Eelpout	0,46	0,50	0,12	0,04	0,18	0,19	0,17	0,20	0,21	1,00	0,45	−55
Pike	1,23	1,20	1,49	1,52	1,62	1,78	1,56	1,53	1,71	1,98	2,00	+1
Gibel carp	0,13	0,16	0,23	0,26	0,25	0,27	0,24	0,21	0,24	0,26	0,27	+4
Lamprey	4,86	4,63	5,39	4,94	4,98	4,37	3,46	2,82	3,00	3,02	3,21	+6
Common carp	0,84	1,38	0,89	1,05	1,66	1,87	0,78	1,73	1,13	2,05	1,09	−47
Ruff	0,19	0,13	0,19	0,15	0,22	0,21	0,21	0,23	0,22	0,32	0,30	−6
Sprat	0,22	0,21	0,33	0,18	0,18	0,17	0,17	0,17	0,19	0,22	0,37	+70
Crucian carp	0,24	0,27	0,33	0,49	0,38	0,75	0,30			0,26	0,35	+35
Pikeperch	3,15	3,40	3,77	3,37	3,37	3,42	3,03	2,84	3,59	4,19	4,39	+5
Bream	0,55	0,73	0,69	0,53	0,47	0,47	0,57	0,67	0,51	0,55	0,56	+1
Flounder	0,64	0,73	0,84	0,84	0,88	0,98	1,06	1,09	1,02	1,43	1,29	−10
Tench	1,38	1,28	1,44	1,46	1,40	1,60	1,47	1,55	1,63	1,88	1,61	−14
Burbot	0,91	0,87	0,96	0,74	0,75	0,77	0,64	0,50	0,62	0,87	0,83	−5
Salmon	4,40	4,40	4,97	5,93	6,79	7,50	8,03	8,10	7,92	11,39	11,88	+4
Sea trout	3,99	2,87	4,94	4,84	6,94	7,17	7,43	7,72	7,39	9,80	10,90	+11
Four-horned sculpin	0,25					0,15				0,21	0,38	+83
European whitefish	2,97	4,03	4,70	5,40	6,04	5,91	5,92	5,06	5,47	6,91	7,09	+3
Smelt	1,00	0,66	0,35	0,43	0,40	0,70	0,48	0,75	0,90	0,59	0,88	+50
Silver bream	0,10	0,13	0,11	0,08	0,10	0,09	0,09	0,10	0,15	0,24	0,22	−10
Rudd	0,11	0,11	0,10	0,12	0,17	0,21	0,07	0,10	0,12	0,27	0,27	+1
Herring	0,23	0,20	0,19	0,19	0,19	0,17	0,18	0,18	0,20	0,21	0,33	+60
Ide	0,62	0,66	0,46	0,56	0,58	0,57	0,44	0,50	0,51	0,41	0,40	−3
Roach	0,55	0,61	0,52	0,61	0,55	0,63	0,58	0,61	0,72	0,67	0,59	−12
Atlantic cod	1,03	1,25	0,68	0,98	1,50	0,95	0,29	3,44	3,02	4,73	4,25	−10
Garfish	1,43	1,16	0,68	1,06	0,72	0,68	0,53	0,60	0,78	0,93	0,87	−7
Rainbow trout				5,00		6,88	5,48	4,82	5,00	6,00		
Vimba bream	0,50	0,53	0,43	0,46	0,48	0,52	0,48	0,44	0,65	0,66	0,65	−1
Twaite shad										1,00	1,23	+23
Round goby	0,14	0,20	0,06	0,15	0,16	0,19	0,36	0,59	0,78	0,70	0,94	+35

Source: Official publication *Ametlikud Teadaanded.*

Dynamics of coastal fishery catches in different parts of the Baltic Sea

Gulf of Finland

Trap nets and gill nets are the main fishing gear in coastal fishing. In 2022 and 2023, the greatest amounts of fish by species caught with them were herring, flounder, perch, smelt, European whitefish, sea trout, round goby, gibel carp, salmon and garfish (Table 11, p. 38).

As in previous years, the most lucrative species in 2022 and 2023 was herring (173,000 and 285,000 euros, respectively). This were followed in terms of lucrativeness by sea trout (around 103,000 and 114,000 euros) and salmon (around 74,000 and 81,000 euros). In 2022, noteworthy revenue came from sales of European whitefish (around 39,000 euros) and flounder (around 39,000 euros), and in 2023, from perch (around 54,000 euros and flounder (around 33,000 euros).

Herring is caught in the Gulf of Finland mainly using trap nets. The highest catch in the 2007–2023 period was landed in 2015 (1,657 tonnes). Catches had been growing since 2019 and been above average for the data series but fell in 2022 to the lowest levels of the last 10 years (834 t), and the 2023 figure (860 t) was likewise below average for the period in question (1029 t). Open sea herring stocks are in poor condition and since Gulf of Finland herring makes up one share of the open sea stock unit, the quota decreases.

Flounder is usually caught using gill nets and mainly in the western part of the gulf. Catches of flounder have been declining for a longer period. The result for 2022 (27 t) was the second to lowest for the 2009–2023 period but larger than the smallest catch for the entire period (18 t), which came in 2021. In 2023, the catch decreased further, to 26 t. No significant growth of flounder stocks is expected and the catch will remain meagre for many years to come.

Perch is mostly caught using gill nets, with the proportion of trap net catches varying from year to year. There is little perch in the Gulf of Finland, but the 10 t catch in 2022 was larger than in the three preceding years. In 2023, the catch increased even further, hitting 19 tonnes, which is the highest in the past nine years, but still lower than in 2009–2014.

European whitefish is caught in the Gulf of Finland mainly with gill nets. Whitefish catches exceeded the 20-tonne limit in two years (2007 and 2008). The whitefish catch in 2021 (5.1 t) was the lowest of the 2009–2022 period, and the 2022 catch (5.6 t) was the second lowest, but the 2023 figure fell to 3.3 t.

Smelt is generally also caught using gill nets. In 2022, 5 tonnes of smelt was caught, which is less than half the average for the years in question. In 2023, the smelt catch was 16 tonnes. Sea trout and salmon are mainly caught with gill nets as well. Over the period observed, the largest catches of **sea trout** and **salmon** were landed in 2016 and 2017, respectively. Compared with the catch figures of 2021 (sea trout 9.2 tonnes and salmon 6.4 tonnes), the catches of these valuable species were slightly higher in 2022 and 2023: 10.4 and 10.5 tonnes for sea trout and 6.5 and 6.8 tonnes for salmon. In each of the three years, salmon catch exceeded the long-term average, but the sea trout catch was less than that level.

The catch of **round goby**, an invasive non-native species, decreased for the first time in 2013 by almost twofold after a consistent and rapid increase in the preceding years and has thereafter both declined and increased, while still not exceeding the record catch of 2012. In early summer of 2018, mass die-off of round goby occurred almost in the entire coastal sea due to a disease outbreak. Only 0.7 tonnes of this species was caught in the Gulf of Finland in 2019. The population has since recovered rapidly. The figure for 2022 was over 6 tonnes and that of 2023 over 8 tonnes.

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To sum up, the total catch in the Gulf of Finland in 2022 was 919 tonnes, and in 2023 968 tonnes, which is lower than in the preceding years. Leaving out herring, considered a mass fish, 2022 and 2023 was among the most meagre of the years in this review.

High seas

Fishing gear used in coastal regions towards the Central Baltic near the Saaremaa and Hiiumaa islands includes gill nets, trap nets, seine nets and, to a very little extent, longlines. Longlines used to be employed mainly in eel fishing, but their importance has declined as the eel stock is in recession. In 2022 and 2023, flounder comprised the highest catch in the open sea. In 2022, flounder was followed by garfish, round goby, perch, ide, whitefish, Baltic herring, roach, silver bream, pike, and sea trout. However, in 2023, the order was slightly different: round goby, perch, ide, garfish, silver bream, whitefish, roach, pike, herring, and sea trout (Table 12, p. 40).

As in previous years, flounder was the key source of revenue for coastal fishermen fishing in high seas in 2022 (around 87,000 euros), followed by European whitefish (around 49,000 euros), perch (around 43,000 euros), sea trout (around 31,000 euros), and garfish (around 30,000 euros). The most lucrative species ranked by fisherman revenue in 2023 turned out to be, for the first time, perch (around 95,000 euros) followed by flounder (around 73,000 euros), round goby (41,000 euros), and European whitefish (around 35,000 euros).

Flounder is mostly caught in the high seas using gill nets, with the share of trap nets being much lower and the share of seine catches having been low in the last five years. Flounder catches have been at record lows since 2021: 61 tonnes in 2022 and only 56 tonnes in 2023.

Garfish is mostly caught using trap nets. Catches of this fish have increased in the last decade. The figure for 2022 was a record high (33 tonnes) but in 2023 it more than halved (14 tonnes).

Herring is mainly caught with trap nets, but gill nets are also used and their share is higher than in other parts of coastal waters. Herring catches in the period 2009–2023 were highest in 2014 (18 tonnes), and the 2022 figure, 7 tonnes, and 2023 catch, 4 tonnes, were far behind that. In terms of catch volume, herring ranked third during the period 2013–2016, sixth during the period 2017–2020, fourth in 2021, seventh in 2022 and only 10th in 2023.

The **round goby** catch rose to 25 tonnes in 2022 (2021: 21 tonnes) and to 46 tonnes in 2023. Stocks of this invasive non-native species have been rising for the last decade and after a mass die-off and sudden dwindling of the catches in 2018, it has reached record levels.

Perch catch increased from 19 tonnes in 2022 to 34 tonnes in 2023, but perch remained the freshwater species with the largest share of the catch. **Roach** catch was 6 tonnes in 2022 and 5 tonnes in 2023.

Ide displayed the best result of the 2009–2023 period in 2021 (28 tonnes), after which the catch dropped to 15 tonnes in 2022, rising again to 25 tonnes in 2023, which made the perch the freshwater species with the greatest proportion of the catch.

The **European whitefish** catch in 2022 was the largest of the period in question (7 tonnes), falling to 5 tonnes in 2023.

The **sea trout** and **salmon** catches were 3 and 0.1 tonnes in 2022 and 3 and 0.06 tonnes in 2023.

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In summary, the total catch in 2022 in coastal regions towards the Central Baltic near Saaremaa and Hiiumaa was smaller than the average for the years 2009–2023, but the result for 2023 outpaced 2022.

Väinameri Sea

Fishing gear used in the Väinameri Sea includes mostly gill nets and trap nets. The relative importance of longlines in fishery is small; in 2013, 2014 and 2019–2023, seine nets were also used to a limited extent. Catches in the Väinameri Sea are dominated by freshwater species. Based on the total catch volume from 2009 to 2023, the species ranked as follows: perch, herring, pike, roach, and gibel carp. Less frequently caught species included silver bream, garfish, ide, vimba bream, etc. The sharp decline in the herring catch in 2019 made pike the second most caught species by volume, but since 2020, herring has once again ranked second. In 2022, it was followed by ide, pike, roach, round goby, gibel carp, garfish, silver bream, vimba bream, and ruff. In 2023, the order was ide, pike, roach, silver bream, round goby, gibel carp, garfish, vimba bream, smelt, and ruff (Table 13, p. 42).

As is typical, perch was most lucrative in both 2022 and 2023, bringing in 620,000 and 881,000 euros, respectively. The pike catch's value was around 82,000 euros and 147,000 euros in each of the years. Third place was claimed by European whitefish in 2022 (around 35,000 euros) and by herring in 2023 (around 47,000 euros). Whitefish came only sixth in 2023 (around 27,000 euros) and was outranked by ide (around 34,000 euros), roach (around 32,000 euros), and round goby (around 29,000 euros).

Perch as the most important species to coastal fishermen has produced substantial catches during the last 11 years (2013–2023) in the Väinameri Sea. Perch has mainly been fished using gill nets, but from 2014–2018, almost equivalent quantities were landed with trap nets. In 2019, for the first time, the proportion of trap nets was higher than that of gill nets (61% and 38%, respectively); in 2020, 57% by trap net, in 2021, 54%, in 2022, 59%, and in 2023, 55%. The importance of the trap net is up because when the perch catch rose severalfold in the Väinameri Sea in 2013, starting from 2014, the trap nets that had not been used in the intervening fish-poor years have also been deployed. The 2019 catch (425 tonnes) was the highest since the perch stock crisis in the early 1990s. Following the crisis, the catch remained at a lower level but has been on an upward trend since: in 2021, the perch catch was 250 tonnes; in 2022, 277 tonnes; and in 2023, 317 tonnes.

Pike is caught using both trap nets and gill nets. The share of the latter was about two-thirds until 2018, at which point there was an even split between the two types of net in the total catch and then the trap nets have had the upper hand. The catch landed in 2022 (41 tonnes) was higher than the average for the period under review, but lower than in 2021 (46 tonnes). The 74-tonne figure for 2023 was a record, on the other hand.

Herring is mostly caught using trap nets. Herring catches were large in 2009, 2010, 2013 and 2018, but fell in 2019 to 45 tonnes. In 2022, 64 tonnes of herring was caught; in 2023, the result (142 tonnes) already exceeded the long-term average.

Gibel carp was caught mostly using gill nets, but an increase in the share of trap nets in the catch can be observed for this species, too. The record catch of the period 2007–2023 occurred in 2014, but catches declined in subsequent years. The figure for 2022 (18 tonnes) was on the same scale as that of 2021 and was lower than average for the period in question. In 2023, 21 tonnes of gibel carp was caught.

The catch of **garfish**, which is mostly caught using trap nets, amounted to 15 tonnes in 2022, being more than in 2021 (13 tonnes) and grew further in 2023 (to 16 tonnes).

Starting in 2013, an increase in the **ide** catch can be seen. The figures for 2022 and 2023 (44 and 84 t, respectively) were records for the data series. While in 2018 the quantity of ide caught in trap nets exceeded the quantity caught with gill nets for the first time during the period under review, in the

past three years the share of trap nets has been around two-thirds, and in 2023 it was even greater.

The 37-tonne catch of **vimba bream** was record high in 2019, but catches declined sharply in the following years: In 2022, a total of 9 tonnes was caught and in 2023, 13 tonnes – the latter was slightly more than the average for 2009–2023 (12 tonnes). In 2023, the majority of vimba bream was caught using trap nets, which was the first time that had happened. In the case of **roach** as well, use of trap nets has been more frequent than gill nets in the last four years. The 2022 catch fell to 26 tonnes, but the 2023 figure of 54 tonnes was the best in the data series.

The **eel** catch, which has been at a low level for years, grew for the fourth year in a row, reaching 288 kg in 2022. However, 2023 was characterised by some decline (263 kg).

The **pikeperch** catch was lower than the average for the years 2009–2023 for the sixth year in a row. A total of 1.9 tonnes of perch was caught in 2022, and 0.4 tonnes in 2023. In the catches of pikeperch, the proportion of trap nets also reached the highest levels in the last five years.

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In summary, the largest catch of the period 2007–2023 was taken from the Väinameri Sea in 2023. If herring is not taken into consideration, the best total catch was landed in 2019. The status of fish stocks in the Väinameri Sea has been good in recent years.

Gulf of Riga

The most common fishing gear used in the Gulf of Riga (except Pärnu Bay) includes gill nets and trap nets, with seine nets and longlines being used to a lesser extent. Seine net catch was not declared in 2022, but in 2023, to a limited extent, some seine catch was declared. The biggest catches in 2022 were herring, followed by perch, round goby, roach, garfish and flounder. In 2023, round goby rose to the second spot after herring, followed by perch, roach, garfish, pike, gibel carp, ide, and flounder (Table 14, p. 44).

The value of the perch catch taken from the Gulf of Riga was around 274,000 euros in 2022 and around 368,000 euros in 2023. Round goby came second (around 87,000 euros and around 166,000 euros, respectively). In 2022, roach (around 79,000 euros) and herring (around 58,000 euros) were third and fourth; in 2023, herring (around 136,000) and garfish (around 32,000 euros).

Herring is caught in the Gulf of Riga mostly with trap nets and less so with gill nets. The lowest catch of the period 2009–2023 was in 2022 (280 tonnes). In 2023, 411 tonnes of herring was caught, but it was less than half of the average.

The proportions of fishing gear used for catching **garfish** are similar to those of herring. The catch in 2023 (38 tonnes) was more than average in the data series and more than double the 18 tonnes in 2022. In addition to stocks, garfish catches depend to a considerable extent on herring quotas and how fast quotas are reached as well as on the weather conditions prevailing during the fishing period.

Gill nets are preferred in **perch** fishing, but considerable quantities are also caught using trap nets. The perch catch has increased slightly during the last three years, but the 128 tonnes taken in 2022 and 132 tonnes from 2023 were lower than average for the period under observation.

In 2022, there was a record **roach** catch for the 2009–2023 period (117 tonnes), while the 2023 result of 44 tonnes was less than the average (46 tonnes). While gill nets were preferred over trap nets in roach fishery from 2012–2015 and in 2017, trap nets prevailed in other years of the period.

Flounder has mostly been caught with trap nets and less so with gill nets in the Gulf

of Riga while considerable quantities were also taken with seine nets in some years; however, gill nets have prevailed in the total catch since 2018. The flounder catch in 2022 and 2023 was the lowest in the data series (10 and 9 tonnes, respectively).

The **gibel carp** catch was 15 tonnes in 2022 and 13 tonnes in 2023.

The proportions of gill nets and trap nets are more or less equal in **pike** fishery. The catch has been consistently declining up to 2022, when it stood at 7 tonnes, but the 16 tonnes in 2023 was much better than the average for the data series.

According to official statistics, **ruff** has mainly been caught with gill nets and mostly near the island of Kihnu in the past few years. In 2016–2020, the majority of the ruff catch was from trap nets, and the 1.3 tonne result in 2021 was mainly caught with nets, yet the meagre figure for 2022 and 2023 (0.7 and 0.2 tonnes, respectively) was declared primarily as trap net catch. The by-catch of ruff in gill net fishing for perch generally indicates that gill nets with a smaller than permitted mesh size are used in perch fishery.

Vimba bream is caught mainly with gill nets and on a considerably smaller scale also with trap nets. The results for 2022 and 2023 (5 and 5.5 tonnes) for vimba were not all that much smaller than the record in 2013 (6 tonnes).

European whitefish is caught in the Gulf of Riga mostly with gill nets. Whitefish catch in 2022 and 2023 was 2.6 and 2.4 tonnes, respectively. The increase in the catches of European whitefish has not been due to the reproduced Finnish whitefish but an increase in the number of local Estonian whitefish species.

Round goby, mainly caught with trap nets, was taken in a quantity of 125 tonnes in 2022 and 177 tonnes in 2023.

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In summary, the total catch taken in the Gulf of Riga in 2023 was smaller than the average for the period 2007–2023, and this was mainly due to the low herring catch. Leaving out herring, the catch in 2023 was more than the result for previous years, and less only than the 2016 catch. The increased catch of round goby played a major role in the increase in total catch.

■ Pärnu Bay

The fishing gear used in Pärnu Bay includes mainly gill nets and trap nets, with longlines and seine nets being employed on a small scale. No seine net catch was declared in Pärnu Bay in 2023. From 2009 to 2023, the biggest catches taken in these fishing grounds were produced by herring, followed by perch, smelt, pikeperch, vimba bream, and garfish (Table 15, p. 46). In terms of both the value and volume of catches, Pärnu Bay is undeniably the most important coastal fishing area in Estonia.

The species with the greatest value in Pärnu Bay is herring, which was sold for around 1,165,000 euros in 2022 and around 2,615,000 euros in 2023. The value of the perch catch taken from the Gulf of Riga was around 727,000 euros in 2022 and around 805,000 euros in 2023. Smelt brought in revenue of around 406,000 euros and around 558,000 euros in the two respective years; while for pikeperch, the figures were around 91,000 euros and around 96,000 euros. In 2022, pikeperch was followed by garfish (around 85,000 euros; in 2023, only around 32,000 euros), while in 2023, round goby was about 75,000 euros (around 21,000 euros in 2022).

Herring is caught mainly using pound nets and its catches fluctuated to a great extent in the 2009–2023 period. The catch made in 2023 (7,895 tonnes) was higher than the catch landed in 2022 (5,621 tonnes) and rose to the highest level of the last 17 years. Catches depend on coastal fishing quotas as well as on the weather prevailing in the fishing period and the price of fish.

Perch is caught mainly with gill nets and trap nets, with the proportions of these types of fishing gear in catch differing from year to year. In 2022, the perch catch was 328 tonnes, and in 2023, 290 tonnes.

Smelt catch in 2023 (636 tonnes) was slightly less than in 2021 and 2022 (693 tonnes), but more than the average. Unlike the Gulf of Finland, where gill nets represent the main fishing gear, in Pärnu Bay, almost all of the smelt catch is taken using trap nets.

Pikeperch, which fell in 2020 to the lowest figure in the data series during the time under observation (19 tonnes), remained low in 2022 and 2023 (22 tonnes in each year). After the spring prohibition on fishing was established, a large share of pikeperch is landed with nets from under the ice in the winter period. According to test fishing data, the status of pikeperch stocks in Pärnu Bay has not improved much.

The stock of **vimba bream** used to depend mainly on the situation in spawning rivers, most of which are Latvian rivers flowing into the Gulf of Riga. The removal of Sindi dam from the Pärnu River has quickly increased vimba stocks. In 2022, 70 tonnes of vimba was caught; in 2023, 68 tonnes – both figures exceed the average of the period. Most vimba bream is caught using trap nets.

Garfish is mostly caught using pound nets. The most imposing garfish catch of the period 2009–2023 in Pärnu Bay was in 2022 (92 tonnes), but the 2023 catch (37 tonnes) was also larger than average. Herring fishing using pound nets has shifted to individual quotas and therefore the fishing season lasts longer and is no longer on an 'Olympic-Games-type' schedule. Going forward, this change will allow for more effective garfish fishing, since it is no longer an impediment to taking garfish if the herring quota is rapidly reached, after which the pound nets had to be decommissioned.

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In summary, catches taken from Pärnu Bay have been fluctuating greatly. The total catch landed in 2023 was higher than the average for the period 2009–2023. The total catch is most affected by the so-called mass species – herring and smelt. Leaving these out of the calculation, the catch for the rest of the species was the greatest in 2014, but since 2019 it has stayed below average.

TABLE 11. Species composition and catches (kg) of commercial fishing in Gulf of Finland (ICES subdivision 32) by coastal fishing gear type, 2011–2023 (as of February 2024)

Species[1]	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total
Perch	37 142	24 369	68 597	43 041	18 106	18 098	15 471	10 187	6 635	9 010
Eel	772	660	609	388	330	330	132	57	55	67
Eelpout	11	16	49	9	10	2	6	9	4	4
Pike	2 043	2 349	2 984	2 882	2 552	2 036	1 367	2 185	2 151	2 047
Gibel carp	4 609	8 307	6 933	8 249	8 171	7 612	6 213	5 260	3 647	6 099
Lamprey	14	3		2	14				6	0,2
Turbot	11	35	16	22	18	79	138	219	100	160
Carp	11	23	13	16	9	9		6	1	10
Ruff	129	220	185	121	43	51	19	6	22	20
Sprat	599	34	802	434	24	91	49	106	4	287
Crucian carp										
Pikeperch	4 622	697	2 127	285	286	188	66	188	54	24
Bream	855	914	952	497	562	595	172	184	184	104
Flounder	83 390	67 446	75 261	65 655	63 823	51 926	32 973	30 937	30 566	33 799
Tench	112	62	13	37	38	37	33	156	117	10
Burbot	12	26	40	44	48	24	27	13	17	6
Salmon	2 701	3 500	5 281	3 720	3 948	4 703	7 062	6 450	6 957	9 259
Sea trout	9 846	10 696	8 968	9 769	11 414	13 461	12 872	9 787	11 087	11 162
Four-horned sculpin	11	67	26	27	264	10	15	2	3	4
European whitefish	8 842	11 378	14 011	11 027	7 034	7 297	6 367	8 990	5 163	7 873
Smelt	3 639	12 085	15 255	17 749	20 049	14 101	7 015	3 708	3 864	21 618
Silver bream	506	527	991	226	209	114	506	183	106	112
Rudd	507	442	82	276	167	50	182	39	16	28
Herring	801 101	698 456	982 538	1 253 544	1 656 531	1 112 999	1 189 006	944 848	1 223 515	1 225 684
Ide	127	64	94	261	547	774	1 384	1 190	894	965
Roach	4 002	3 112	2 249	2 638	2 179	2 651	2 261	1 247	1 137	717
Cod	2 065	1 440	2 404	3 329	1 787	854	315	321	947	1 159
Garfish	11 194	5134	665	971	6 381	2 626	5 398	342	4 671	3 078
Bleak	27	127	52	1		31		5	8	45
Rainbow trout	85	38	42	32	26	70	65	54	43	65
Vimba bream	1 347	1 276	1 316	896	1 034	2 041	1 883	1 219	1 376	1 725
Twaite shad		6						0,2		
Round goby	4 051	16 809	8 565	11 169	8 902	11 888	15 965	6 924	716	3 017
Total[2]	**984 424**	**870 317**	**1 201 201**	**1 437 314**	**1 814 609**	**1 254 746**	**1 306 967**	**1 034 820**	**1 304 068**	**1 338 157**

[1] The catch also includes Arctic char, Atlantic sturgeon, European anglerfish, grayling, two-spotted goby, mackerel, buffalo fish, lumpfish, belica, black goby, shorthorn sculpin, sichel, thicklip grey mullet, common sea-snail, Siberian sturgeon, dace, European chub, and other sturgeon species.

[2] Also includes the quantity of the species specified in comment 1.

[3] The complete data used to calculate the mean can be found on the AFB website https://pta.agri.ee/ettevotjale-tootjale-ja-turustajale/kutseline-kalapuuk/puugistatistika.

Sources: MORA, MRA, AFB.

Table 11 abbreviations: TN – Trap net, GN – Gill net, LL – Longline

Species	2021				2022				2023				2007–2023
	TN	GN	LL	Total	TN	GN	LL	Total	TN	GN	LL	Total	average[3]
Perch	3 893	4 770	9	8 672	4 674	5 419	5	10 098	6 009	13 328	25	19 361	30 842
Eel	125			125	39			39	69			69	664
Eelpout													11
Pike	246	1 032		1 278	122	519		641	437	833		1 271	1 889
Gibel carp	439	3 540		3 980	332	3 399		3 731	268	2 413	5	2 685	5 705
Lamprey	1			1	12	6		18					6
Turbot	1	146		147	1	115		116	1	58		59	76
Carp		6		6									8
Ruff	1	12		13		2		2	0	84		84	82
Sprat	80	4		84	170	47		217	106	40		146	187
Crucian carp	10	43	7	60	17	153	3	173	19	72	9	99	22
Pikeperch	14	53		67	13	85		97	18	13		31	1 434
Bream	148	194		342	51	43		93	209	223	1	432	861
Flounder	1 141	17 285	7	18 433	1 690	25 378	31	27 098	1 300	24 381	77	25 758	58 526
Tench	5	52		57	9	23		32	5	153		158	64
Burbot	13	4		17	13	1		14		8		8	27
Salmon	3 019	3 417		6 437	3 849	2 665		6 514	4 024	2 809		6 833	5 141
Sea trout	1 654	7 496		9 150	1 485	8 949	6	10 440	2 970	7 520		10 490	10 520
Four-horned sculpin		7		7		14		14		7		7	29
European whitefish	308	4 779	2	5 089	1 126	4 527		5 653	593	2 658		3 251	10 153
Smelt	132	17 228		17 360	81	5 055		5 136	37	16 191		16 228	13 281
Silver bream		91		91		17		17		26		26	401
Rudd	16	3		18	8	2		10	3			3	128
Herring	1 300 571	2 033		1 302 604	832 250	1 731		833 980	857 824	2 000		859 823	1 028 944
Ide	60	1 495		1 555	302	3 477		3 779	839	6 608		7 447	1 189
Roach	274	512		786	229	538		767	291	308		599	2 201
Cod	1	716		717	1	683		684		851		851	1 283
Garfish	1 521	327		1 848	1 788	292		2 080	1 478	240		1 718	4 524
Bleak	53			53	7			7	28	0		29	32
Rainbow trout	22	56		78	5	41		46	12	42		54	76
Vimba bream	213	913		1 126	268	1 066		1 334	728	1 192	1	1 922	1 701
Twaite shad						0		0	177	83		260	16
Round goby	3 657	1 290	8	4 955	4 372	1 361	3	5 735	7 111	947	2	8 060	6 401
Total	**1 317 617**	**67 516**	**33**	**1 385 165**	**852 912**	**65 612**	**48**	**918 522**	**884 559**	**83 094**	**120**	**967 773**	**1 186 434**

TABLE 12. Species composition and catches (kg) of commercial fishing in the high seas (ICES subdivision 28.2 and 29.2) by coastal fishing gear type, 2011–2023 (as of February 2024)

Species[1]	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total
Perch	11 063	5 945	22 695	23 208	12 072	16 319	11 447	23 554	13 817	12 756
Eel	259	347	251	144	130	96	55	44	99	119
Eelpout	1	3	23	28	13	1	7	0,4		
Pike	2 661	1 353	3 721	3 299	2 581	2 300	1 841	4 115	2 978	2 539
Gibel carp	2 978	3 125	2 412	2 984	3 354	3 325	3 697	4 017	5 472	5 309
Turbot	91	47	20	67	25	80	169	282	71	140
Ruff	142	135	703	431	403	349	301	365	754	74
Sprat	23		5		1	86	1	105	2	
Crucian carp										
Pikeperch	1		15	4		5				1
Bream	127	1	5	9	1		13	1	241	3
Flounder	136 271	122 738	145 620	111 530	101 450	119 147	120 730	95 137	91 243	103 563
Tench	220	29	45	35	24	322	23	508	75	125
Burbot	1 012	504	567	468	439	369	377	499	302	188
Salmon	366	491	458	488	638	1246	610	773	638	528
Sea trout	2 372	4 577	3 630	3 287	2 977	4 426	2 749	4 315	3 778	3 831
Four-horned sculpin	1		5	10	10	1	1	0,4		
European whitefish	2 036	2 658	4 658	4 575	3 765	3 396	2 896	2 238	2 606	5 330
Smelt	14	2				1	24	56	21	6
Silver bream	5	190	143	2		95	5	14	40	281
Rudd	181	283	79	72	8	6	6	6	8	15
Herring	5 264	9 591	13 337	18 341	9 666	12 779	9 045	8 759	7 176	7 915
Ide	3 646	2 253	3 768	4 247	4 557	6 846	9 936	9 923	9 530	10 067
Roach	6 919	5 269	4 837	8 258	4 970	8 206	6 579	9 580	6 198	4 410
Cod	1 089	1 460	1 913	2 704	1 415	619	294	506	303	131
Garfish	4 986	2 190	2 204	3 162	7 263	11 952	14 763	21 775	23 745	29 255
Bleak	7	10	13	9	5	13	16	7	1	
Rainbow trout	35	31	120	109	24	49	57	250	173	119
Vimba bream	55	7	36	71	46	125	26	84	26	82
Round goby		1	10	103	778	21 140	16 514	7840	10 792	16 746
Total[2]	**181 841**	**163 232**	**211 296**	**187 647**	**156 614**	**213 300**	**202 181**	**194 752**	**180 088**	**203 529**

[1] The catch also includes Atlantic sturgeon, European anglerfish, common carp, mackerel, lumpfish, sichel, thicklip grey mullet, gudgeon, Siberian sturgeon, dace, and twaite shad.
[2] Also includes the quantity of the species specified in comment 1.
[3] The complete data used to calculate the mean can be found on the AFB website https://pta.agri.ee/ettevotjale-tootjale-ja-turustajale/kutseline-kalapuuk/puugistatistika.

Sources: MORA, MRA, AFB.

Table 12 abbreviations: TN – Trap net, SN – Seine net, GN – Gill net, LL – Longline

Species	2021					2022					2023					2007–2023
	TN	SN	GN	LL	Total	TN	SN	GN	LL	Total	TN	SN	GN	LL	Total	average[3]
Perch	10 945	100	3 936	4	14 985	11 257	14	7 935		19 205	15 580	63	18 466	24	34 133	13 865
Eel	224				224	186		1		187	244		3	1	248	257
Eelpout	0,2				0,2											8
Pike	1 067		783		1 849	2 625	248	695		3 568	3 225		965		4 190	2 549
Gibel carp	759		2973		3 732	1 706		2 143		3 848	2 613		5 852	6	8 471	3 462
Turbot	4		81		85	1		37		38			23		23	73
Ruff	173		0,2		173	107				107	164		1		165	249
Sprat	54				54	1				1						17
Crucian carp	4		19		23			52		52			267		267	20
Pikeperch						2		3		5	3		3		6	2
Bream	110		3		113											31
Flounder	15 970		54 429	1	70 400	7414	24	53 356		60 793	5 937	379	49 849		56 165	116 574
Tench	73		92		165	89		25		114	272		78		350	128
Burbot	200		23		223	130		19		149	103		7		110	486
Salmon	28		213		242	47		54		100	10		46		56	569
Sea trout	82	14	2 881		2 977	86		3 046		3 131	41		2 839		2 879	3 343
Four-horned sculpin			1		1			80		80						7
European whitefish	24	17	3595		3636	605		6554		7159	8		4874		4882	3365
Smelt	6		3		9											10
Silver bream	1		0,4		1						151		128		279	64
Rudd	12				12	83				83			10		10	54
Herring	9 032		395		9 427	6 360		384		6 744	3 347		468		3 815	9 310
Ide	22 124	15	5 822		27 961	7 019		7 710	5	14 733	14 148		10 963		25 111	8 427
Roach	6 501		496		6 997	5 331		639		5 970	2 567		2 254	10	4 830	6 141
Cod	8		85		93	44		321		365	28		264		291	916
Garfish	21 589		4 068		25 657	29 596		3 142		32 738	9 173		5 085		14 258	13 784
Bleak						1				1	1				1	11
Rainbow trout	10		61		71			31		31	1		59		60	80
Vimba bream	34		141		175	27		74		101	22		93		115	58
Round goby	20 227		550		20 777	24 868		106		24 973	44 339		214		44 553	9 660
Total	**109 262**	**146**	**80 655**	**5**	**190 068**	**97 584**	**286**	**86 410**	**5**	**184 285**	**101 979**	**442**	**102 818**	**40**	**205 279**	**193 528**

TABLE 13. Species composition and catches (kg) of commercial fishing in the Väinameri Sea (ICES subdivision 29.4) by coastal fishing gear type, 2011–2023 (as of February 2024)

Species[1]	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total
Perch	17 208	32 521	152 062	246 738	226 789	292 148	274 496	373 062	424 766	278 358
Eel	293	171	123	123	80	39	42	32	69	111
Eelpout		2		4	149	2	1		0,1	
Pike	19 196	24 194	43 262	44 955	37 059	26 810	26 622	41 794	51 135	53 371
Gibel carp	23 847	25 615	23 138	40 716	29 541	25 694	18 873	18 556	15 659	19 131
Turbot			4	8	3	27	82	168	30	62
Carp	1	23	26	29	12	19	6	10	1	28
Ruff	1 469	3 994	4 676	13 565	8 160	14 728	11 504	13 491	26 915	21 958
Sprat	11	2	32	4		15	20	51	13	14
Crucian carp										
Pikeperch	477	395	8 044	16 674	10 308	6 983	3 932	1 400	2 267	408
Bream	794	483	1 031	3 520	2 615	1 301	1 986	1 036	1 659	2 057
Flounder	8 805	9 080	8 131	5 751	4 620	4 206	5 073	5 900	3 535	5 581
Tench	1 470	2 321	2 686	4 189	2 049	1 401	1 100	1 576	1 314	1 454
Burbot	347	880	1 768	3 146	3 473	2 969	2 496	1 592	1292	812
Salmon	56	227	127	138	57	91	83	90	91	55
Sea trout	436	736	698	334	303	377	245	270	214	163
European whitefish	2 011	2 714	2 850	4 197	4 762	3 626	4 718	4 201	5 070	6 412
Smelt	36	81	60	17	29	62	611	94	612	1091
Silver bream	10 121	14 902	17 396	22 982	23 814	19 304	27 168	26 287	30 683	29 755
Rudd	1 743	899	1 590	2 324	1 999	1 833	1 195	1 026	1 918	2 191
Herring	181 703	142 635	133 157	122 460	97 329	119 960	122 778	196 768	45 550	70 515
Ide	2 267	2 107	3 086	7 061	10 253	17 590	21 387	29 779	31 978	31 100
Roach	19 034	19 359	23 320	26 536	27 980	26 251	25 438	23 033	40 724	36 675
Cod	59	58	78	107	166	17	9	19	16	27
Garfish	31 004	8 705	4 088	6 488	23 486	10 726	23 527	11 564	20 019	18 924
Bleak	27	182		54	819	60	15	33	8	7
Rainbow trout	8			1	14	4	48	16	15	153
Vimba bream	3 777	3 921	5 769	9 612	17 203	12 997	18 944	21 359	37 280	23 544
Round goby		13	0,15		49	93	5 028	12 192	5 053	15 452
Total[2]	**326 201**	**296 216**	**437 209**	**581 732**	**533 120**	**589 331**	**597 428**	**785 399**	**747 888**	**619 415**

[1] Also represented in the catch are Atlantic sturgeon, European seabass, lamprey, four-horned sculpin, stickleback, dace, European chub, asp, twaite shad, and sand goby.
[2] Also includes the quantity of the species specified in comment 1.
[3] he complete data used to calculate the mean can be found on the AFB website https://pta.agri.ee/ettevotjale-tootjale-ja-turustajale/kutseline-kalapuuk/puugistatistika.
Sources: MORA, MRA, AFB.

Table 13 abbreviations: TN – Trap net, SN – Seine net, GN – Gill net, LL – Longline

Species	2021					2022					2023					2007–2023
	TN	SN	GN	LL	Total	TN	SN	GN	LL	Total	TN	SN	GN	LL	Total	average[3]
Perch	134 388	2 826	112 834	7	250 055	163 002	819	115 521	2	279 344	174 301	2 042	140 870	6	317 219	190 310
Eel	139		15		154	276		6	5	288	257		6		263	232
Eelpout																12
Pike	28 167	202	17 910		46 279	23 367	159	17 763		41 289	52 405	1 006	20 187	1	73 599	33 288
Gibel carp	9 922		8 072		17 994	9 766		8 470		18 114	11 900		9 576		21 477	22 454
Turbot			3		3	12		34		46			2		2	26
Carp	3		6		9						34				34	19
Ruff	10 330		615		10 945	6 288		191		6 479	3 653		229		3 882	8 984
Sprat	19		18		37								1		1	19
Crucian carp	1		8		9	6		1		7	9		9		18	2
Pikeperch	356		171		527	1 030		904		1 934	186		187		372	3 206
Bream	655		909		1 564	1 198		1 170		2 368	1 000		409		1 410	1 352
Flounder	5 198		2 676	2	7 876	895		2 180	4	3 080	1 387		1126		2 513	6 626
Tench	276		228		504	359		407		766	1 415		536		1 951	1 724
Burbot	203		344		548	68		258		326	371		373		744	1 357
Salmon	43		44		86			8		8	26		13		39	94
Sea trout	81		143		224	35		115		149	60		85		146	315
European whitefish	336		5 973		6 309	357		4 740		5 097	391		3 452		3 843	3 787
Smelt	5 986		87		6 073	6 070		177		6 247	4 997		159		5 156	1 305
Silver bream	9 312		13 773		23 085	4 748		9 940		14 688	26 265		8 850		35 115	19 390
Rudd	1 108		492		1 599	1 228		463		1 691	1 045		943		1 988	1 603
Herring	112 974		504		113 477	63 574		317		63 891	141 100		604		141 707	122 588
Ide	22 258	12	7 734		30 004	30 425		13 283	6	43 714	67 932		16 159	8	84 098	19 797
Roach	15 647	15	10 607		26 269	17 973		7 957		25 930	43 010		11 408		54 418	25 341
Cod	35		6		41	3		6		9	6		9		15	43
Garfish	9 633		3 609	63	13 305	11 399		3 262	1	14 662	11 353		4 469		15 822	17 784
Bleak	16		56		72	8				8	4		4		8	90
Rainbow trout	13		12		25			1		1			2		2	18
Vimba bream	3 304		8 217		11 521	2 618		7 105		9 724	7 323		5 488		12 811	11 503
Round goby	19 214		398		19 611	19 548		264		19 812	30 605		257		30 862	6 363
Total	**389 618**	**3 055**	**195 463**	**72**	**588 207**	**364 131**	**978**	**194 542**	**18**	**559 669**	**581 701**	**3 048**	**225 445**	**15**	**810 209**	**499 690**

TABLE 14. Species composition and catches (kg) of commercial fishing in Gulf of Riga (ICES subdivision 28.1, excluding Pärnu Bay) by coastal fishing gear type, 2011–2023 (as of February 2024)

Species[1]	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total
Perch	166 484	148 083	212 042	198 721	222 426	231 080	155 377	216 219	159 923	116 170
Eel	797	603	539	335	205	218	222	152	207	282
Eelpout	30	2	10	3		9			3	
Pike	6 434	6 454	9 964	10 579	7 385	7 759	7 913	17 362	16 063	14 353
Gibel carp	8 072	10 316	9 329	14 083	12 838	16 473	18 734	20 171	15 748	17 351
Turbot						1				19
Carp	9		11	9	57	3	33	5		
Ruff	7 476	7 976	4 711	4 081	4 764	5 734	5 646	1 561	2 948	1 145
Sprat	10	105	336	138	154	168	71	346	30	45
Crucian carp	816		1 099				2	1		
Pikeperch	4 217	2 585	2 652	1 631	720	664	301	351	512	462
Bream	214	250	172	176	201	332	268	141	211	102
Flounder	15 279	12 403	18 637	17 856	20 730	18 388	17 348	24 709	16 547	20 435
Tench	1 103	901	1 192	2 619	2 855	1 735	1 310	2 448	2 190	2 141
Burbot	230	216	327	1 035	780	286	150	113	365	223
Salmon	520	796	257	382	473	489	390	341	361	334
Sea trout	743	1 140	1 107	1 011	1 239	1 548	1 183	1 576	1 432	1 345
Four-horned sculpin	12	1			15	6	2	20	33	23
European whitefish	953	1 625	1 827	2 153	2 129	2 209	1 331	893	1 809	3 677
Smelt	554	396	902	23	881	22	12	55	19	1
Silver bream	483	421	331	837	2 438	7 211	2 216	1 978	2 669	2 469
Rudd			2		41	557	164	669	586	82
Herring	1 326 441	793 359	580 067	851 761	875 555	767 642	653 815	572 215	822 900	318 611
Ide	89	44	97	355	610	1 715	3 001	8 102	7 992	5 943
Roach	25 933	26 501	19 895	28 013	42 263	109 115	33 188	42 133	51 059	78 410
Dace	1									
European chub					1				32	
Cod	272	443	804	856	533	349	123	125	28	45
Garfish	21 208	8 882	11 521	24 906	33 359	33 189	87 059	37 765	56 106	28 617
Bleak		21	30		21	7		86		
Rainbow trout	11		32	18		13	5	12	6	2
Vimba bream	2 976	3 577	6 074	5 584	5 390	4 332	4 053	3 453	4 103	3 925
Twaite shad										
Round goby		88	506	7 906	20 859	49 262	68 860	56 753	44 880	91 348
Total[2]	**1 591 407**	**1 027 195**	**884 472**	**1 175 069**	**1 258 919**	**1 260 520**	**1 062 775**	**1 009 756**	**1 208 767**	**707 558**

[1] Also represented in the catch are Atlantic sturgeon, lamprey, bighead carp, sea lamprey, lumpfish, stickleback, and lesser sand eel.
[2] Also includes the quantity of the species specified in comment 1.
[3] The complete data used to calculate the mean can be found on the AFB website https://pta.agri.ee/ettevotjale-tootjale-ja-turustajale/kutseline-kalapuuk/puugistatistika.
Sources: MORA, MRA, AFB.

Table 14 abbreviations: TN – Trap net, SN – Seine net, GN – Gill net, LL – Longline

Species	2021					2022				2023					2007–2023 average[3]
	TN	Noot	GN	LL	Total	TN	GN	LL	Total	TN	SN	GN	LL	Total	
Perch	40 494	145	76 9475	87	117 670	52 800	70 744	70	123 615	62 020	35	68 880	1 498	132 433	176 255
Eel	474				474	316		4	320	343			18	361	656
Eelpout	5				5	27			27	4				4	17
Pike	4 559	15	3 769		8 342	3 695	3 440		7 135	6 000		9 585	8	15 593	8 697
Gibel carp	5 405	12	9 477		14 894	6 312	8 533	4	14 849	5 000		7 933	100	13 032	13 164
Turbot			14		14					1		19		20	3
Carp	4		10		14	12	14		26	7				7	22
Ruff	660		689		1 349	679	37	6	722	205		31	1	237	4 789
Sprat	85		81		166		163		163			60		60	113
Crucian carp	98		200		298	93	296		389	34		117		151	162
Pikeperch	33		480		513	16	272		288	9		315		324	1 203
Bream	450		210		660	140	115		255	113		96		209	208
Flounder	5 121		5 748		10 869	4 963	4 977	6	9 946	3 942		5 045	4	8 991	16 648
Tench	526		248		774	1 001	466		1 467	854		260		1 114	1 383
Burbot	79		17		96	322	34		356	104		41		145	313
Salmon	140		194		334	44	100		144	5		70		75	430
Sea trout	129		1 919		2 048	87	1 758		1 844	88		1 495		1 583	1 193
Four-horned sculpin			28		28		19		19			1		1	10
European whitefish	48		4 130		4 177	54	2 592		2 646	22		2 340		2 362	2 173
Smelt	17		30		47	6	5		11	11		14		25	686
Silver bream	1 909		1 315		3 224	4 456	1 802		6 257	3 983		2 879		6 885	2 287
Rudd	445	84	305		834	659	995		1 654	490		657		1 147	344
Herring	660 226		5 276		665 502	271 622	8 112		279 734	407 392		3 594		410 985	862 164
Ide	2 790	15	2 688	7	5 500	2 299	4 028		6 382	4 963		4 768		9 868	2 995
Roach	47 611		19 577		67 187	93 765	24 506	1	118 272	24 528		19 614		44 292	45 966
Dace						20			20	61				61	6
European chub										45		21		66	6
Cod	2		4		6	12	31		43	33		56		89	300
Garfish	33 377		2 529	3	35 910	16 173	1 454		17 627	35 973	54	1 746		37 774	32 170
Bleak															13
Rainbow trout	1				1										8
Vimba bream	234		3041		3 275	677	4 441		5117	504		5 002		5 510	4 174
Twaite shad										344		10		354	21
Round goby	150 960		4 779		155 738	123 444	1 989	1	125 433	171 697	19	5 470		177 186	46 989
Total	**955 880**	**281**	**143 700**	**97**	**1 099 958**	**583 693**	**140 976**	**92**	**24 761**	**728 773**	**108**	**140 116**	**1 944**	**870 941**	**1 225 577**

TABLE 15. Species composition and catches (kg) of commercial fishing in Pärnu Bay (ICES fishing squares 178–180) by coastal fishing gear type, 2011–2023 (as of February 2024)

Species[1]	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total
Perch	564 317	338 862	761 605	1 054 968	1 043 423	847 901	832 473	513 711	374 015	332 388
Eel	86	128	132	66	98	102	235	214	554	946
Eelpout	50	372	1 072	136	598	41	253	510	1	56
Pike	1 722	1 057	5 969	3 726	2 212	2 719	2 614	2 616	4 053	4 603
Gibel carp	12 776	19 556	13 634	21 722	16 093	7 565	17 226	16 544	24 624	25 421
Lamprey	871	349	996	304	201	85	120	75	112	34
Carp	46	78	246	151	300	164	65	58	516	155
Ruff	51 582	38 855	28 488	17 102	10 798	16 473	24 986	33 307	25 137	14 343
Crucian carp										
Pikeperch	101 200	143 140	109 327	154 683	71 705	98 870	51 783	64 023	49 301	19 147
Bream	5 564	9 450	6 612	8 728	4 854	4 374	5 188	8 081	6 553	4 010
Flounder	1 191	1 232	2 405	3 320	7 756	6 901	10 408	12 217	12 987	12 541
Tench	57	8	68		55	17		5	38	1
Burbot	19	36	101	259	354	173	114	29	40	19
Salmon	134	322	700	492	471	297	748	499	425	586
Sea trout	3	132	264	191	207	111	235	340	375	294
European whitefish	784	2 053	2 414	3 904	1 800	1 739	878	1 070	1 597	1 951
Smelt	116 121	285 721	490 197	210 889	325 865	343 645	163 914	280 005	497 230	892 756
Silver bream	11 410	17 215	11 967	6 393	3 313	2 676	2 068	8 244	1 461	2 631
Rudd			8		5			45		180
Herring	6 282 757	5 444 876	5 378 670	5 289 522	6 651 588	6 851 104	6 397 467	6 341 867	6 194 639	6 112 242
Ide			1	38	3	20	54	91	145	37
Roach	27 356	23 556	20 781	27 857	17 673	15 995	18 610	18 064	21 650	25 460
Cod	10	9	57	22	23	27	11	8	10	2
Garfish	49 349	127	658	8 317	45 452	11 510	45 014	3422	25 648	41 652
Bleak				85	513					
Vimba bream	41 927	44 468	43 219	67 807	69 260	53 938	63 109	71 211	75 927	51 188
Twaite shad										
Lesser sand eel	52	192	735	37	325	145	32	50	25	
Round goby					38	7026	32 949	35 750	57 522	84 650
Total[2]	**7 269 403**	**6 371 790**	**6 880 325**	**6 880 717**	**8 274 990**	**8 273 624**	**7 671 553**	**7 412 057**	**7 374 613**	**119 938**

[1] Also represented in the catch are mullets, bighead carp, four-horned sculpin, sea lamprey, stickleback, starry sturgeon, dace, European chub, and rainbow trout.
[2] Also includes the quantity of the species specified in comment 1.
[3] The complete data used to calculate the mean can be found on the AFB website https://pta.agri.ee/ettevotjale-tootjale-ja-turustajale/kutseline-kalapuuk/puugistatistika.

Sources: MORA, MRA, AFB.

Table 15 abbreviations: TN – Trap net, SN – Seine net, GN – Gill net, LL – Longline

Species	2021					2022					2023				2007–2023
	TN	SN	GN	LL	Total	TN	SN	GN	LL	Total	TN	GN	LL	Total	average[3]
Perch	330 604		70 135	49	400 788	276 655		51 030	8	327 693	249 492	40 216	3	289 711	572 765
Eel	947			5	952	729				729	1 478			1 478	368
Eelpout	152				152										242
Pike	1 395		694	1	2 090	990		1 323		2 313	2 466	3 669		6 134	2 704
Gibel carp	7 446		5 740	27	13 213	8 199		7 550	1	15 750	20 350	8 268	3	28 620	17 314
Lamprey	57				57	157				157	61			61	274
Carp	43		18		61	46		33		79	127	22		149	154
Ruff	9 300		261		9 561	7 067		77		7 144	6 669	10		6 679	19 738
Crucian carp	102				102	5		14		19	9	117		126	423
Pikeperch	4 016		47 636	12	51 664	6 216		15 571	9	21 796	5 021	16 844		21 865	72 951
Bream	2 501		104		2 605	2 818		44		2 862	5 984	18		6 002	5 231
Flounder	5 761		1 571		7 332	5 230		1 670	20	6 920	3 268	1 094		4 362	5 615
Tench						2				2	43			43	21
Burbot	13		6		19	12		6		18	16	3		19	74
Salmon	243		106		349	463		108		571	355	29		383	369
Sea trout	179		180		359	268		163		431	176	253		429	201
European whitefish	801		4 946		5 747	38		3 439		3 477	24	1 476		1 500	1 881
Smelt	694 228		2 524		696 752	692 152		880		693 031	634 359	1 232		635 590	462 979
Silver bream	630		171		801	760		518		1 278	488	63		551	9 679
Rudd			35		35			40		40	66			66	23
Herring	7 084 539		96		7 084 635	5 621 147		18		5 621 165	7 894 585	77		7 894 662	6 463 010
Ide	24		12	3	39	39		44		83	93	82		175	44
Roach	22 382		952	12	23 346	25 923		1 123	4	27 050	58 983	2 422	2	61 407	22 475
Cod	6		1		7	3		3		6	1	5		6	13
Garfish	27 879		127		28 006	92 111		108		92 219	37 249	96		37 345	26 718
Bleak															36
Vimba bream	53 479		5 221	6	58 706	62 871		6709	1	69 581	63 690	3 815	1	67 506	51 012
Twaite shad						31				31	1 031			1 031	62
Lesser sand eel		30			30		20			20					101
Round goby	51 393		3 142	7	54 542	28 987		659		29 646	78 915	1 300		80 215	22 490
Total	**8 298 168**	**30**	**143 680**	**122**	**8 442 000**	**6 832 926**	**20**	**91 137**	**43**	**6 924 126**	**9 064 995**	**81 109**	**9**	**9 146 113**	**7 757 978**

TRAWL FISHERY IN THE BALTIC SEA

Stocks and catches of herring, sprat and cod and future outlooks

Räim, kilu ja tursk on rahvusvaheliselt reguleeritud kalaliigid, mille varu seisundi kohta annab ICES igal aastal püügipiirkondade ja ühikvarude kaupa hinnanguid ja haldamissoovitusi.

■ Herring

Herring (*Clupea harengus membras* L.) is a subspecies of Atlantic herring that inhabits the entire Baltic Sea, forming local populations. Based on the time of spawning, a distinction is made between spring-spawning herring, which spawn from March to June, and autumn-spawning herring, which spawn in August and September and whose proportion has been less than 5% since the 1970s in all areas. During the last decades, however, the share of autumn-spawning herring has slightly increased, e.g. on the south coast of the island of Saaremaa and in the spawning grounds in the north-east part of the Gulf of Riga.

Herring and sprat stocks are assessed in accordance with the methodology of the ICES, while biological material is collected under Regulation (EU) 2017/1004 of the European Parliament and of the Council as well as Implementing Decision (EU) 2021/1168 of the European Commission.

Unlike sprat, which is treated as a single stock unit (i.e. population) across the Baltic Sea, in the case of herring, the state of stocks is assessed and advice on exploitation is given for four stock units, as shown in Figure 11.

The Gulf of Riga and the Bothnian Sea (and possibly also the Bothnian Bay) are inhabited by local natural herring populations, but Central Baltic herring (in subdivisions 25–28.2, 29 and 32) comprises several populations (Gulf of Finland herring, Swedish coast herring, et al.).

The following overview primarily discusses the first two stock units, as these are of more interest to Estonian fishermen.

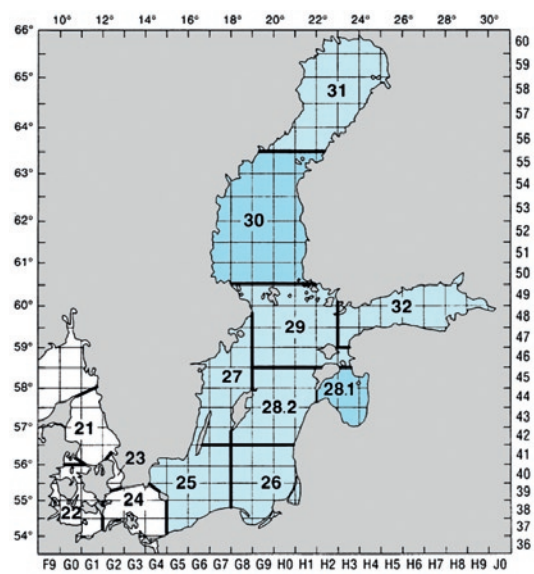


FIGURE 11. Agreed herring stock units in the Baltic Sea:

- **Central Baltic herring (also referred to as open sea herring) (ICES subdivisions 25–27, 28.2, 29 and 32)**
- **Gulf of Riga herring (subdivision 28.1)**
- **Bothnian Sea herring (subdivision 30)**
- **Bothnian Bay herring (subdivision 31)**

Source: ICES, 2024.

Central Baltic herring (subdivisions 25–27, 28.2, 29 and 32)

After years of decline, the herring catch taken from the Central Baltic increased to 137,000 tonnes in 2010, then decreased to 101,000 tonnes in 2012 and 2013 due to reductions in TACs, but increased again over the period from 2014 to 2018 due to improved fishing opportunities, reaching 240,739 tonnes in 2018 (Figure 12). Catches then declined again due to a reduction in fishing opportunities, and they stood at 83,821 tonnes in 2022 and 98,696 tonnes in 2023, which also includes open sea herring caught in the Gulf of Riga. These quantities were slightly more than the allowable total catch agreed for this management unit (TAC_{2022} = 80,753 tonnes, TAC_{2023} = 97,822 tonnes).

Unlike the previous period when the main herring fishing countries were Sweden and Poland, Russia has replaced Sweden in the rankings since 2022. In 2023, Russia's share was 25% and that of Poland was 20% of the total catch. Estonia's share made up 7,700 tonnes in 2022 (around 9%) and 11,200 tonnes in 2023 (around 11% of the total catch) (Table 16). In terms of catch weight, the most herring was caught in subdivisions 25, 26, 28.2 and 32, while subdivisions 29 and 32 dominated in terms of numbers. This can be explained by geographical differences in the mean body

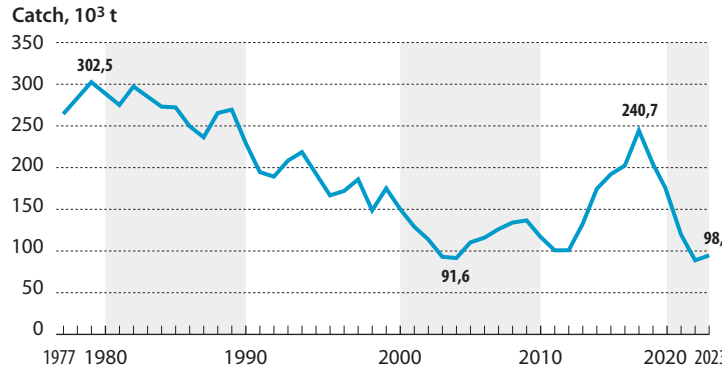


FIGURE 12.
Central Baltic herring catches, 10^3 t, 1977–2023
Source: ICES, 2024.

TABLE 16. Central Baltic herring catches by country in thousands of tonnes in 2010–2023 and proportions (%) in 2022 and 2023

Year	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Poland	Russia	Sweden	Total
2010	5,9	17,9	21,6	2,2	3,9	1,5	25,0	9,1	50,0	**136,7**
2011	3,6	14,9	19,2	2,7	3,4	2,0	28,0	8,5	36,2	**116,8**
2012	2,0	11,4	18,0	0,9	2,6	1,8	25,5	13,0	26,2	**101,5**
2013	2,9	12,6	18,2	1,4	3,5	1,7	20,6	10,0	29,5	**100,5**
2014	4,5	15,3	27,9	1,7	4,9	2,1	27,3	15,9	34,9	**134,5**
2015	0,8	18,8	31,6	2,9	5,7	4,7	39,0	20,9	50,6	**174,9**
2016	2,6	20,1	28,9	4,3	8,4	5,2	41,0	24,2	56,0	**190,6**
2017	6,3	23,3	40,7	3,6	7,9	4,0	40,1	22,3	51,2	**199,4**
2018	7,7	24,3	45,4	4,0	11,2	6,6	49,3	25,4	66,9	**240,7**
2019	5,4	21,5	37,0	1,8	7,6	6,1	40,3	25,8	55,6	**201,0**
2020	6,7	17,1	31,9	0,8	5,2	5,6	35,9	26,0	45,3	**174,5**
2021	6,6	12,5	19,8	0,6	3,8	4,3	26,7	23,7	30,8	**129,0**
2022	2,1	7,7	10,3	0,3	4,2	1,8	17,8	25,3*	14,6	**84,1**
2023	5,2	11,2	13,7	0,6	5,7	1,5	19,9	24,5*	16,4	**98,7**
Proportion, %										
2022	3	9	12	<1	5	2	21	30	17	**100,0**
2023	5	11	14	<1	6	2	20	25	17	**100,0**

* Estimated Russian catches

Source: ICES, 2024.

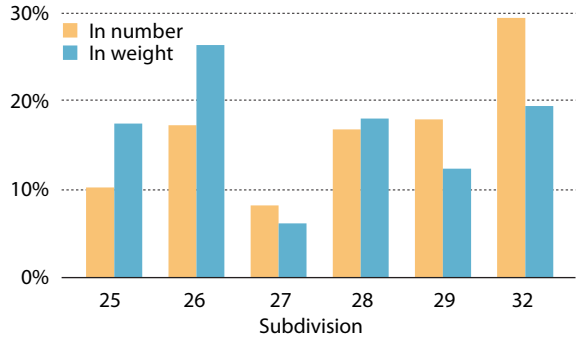


FIGURE 13. Central Baltic herring: proportion of catch in weight and number in 2023
Source: ICES, 2024.

weight of herring (Figure 13). Compared to previous years, the herring catch in the Gulf of Finland is up (subdivision 32), which is probably due to some relocation of the stocks.

The average age composition of herring catches has been relatively similar over time: age group 1–3 prevails, representing around 60% of catches. This can be attributed to the domination of pelagic cohorts mainly composed of younger herring in trawl catches (Figure 14). Unlike sprat, greater stability of age composition has been observed in herring catches, which is due to the smaller variation in the abundance of herring year classes.

The mean body weight of herring has decreased considerably over the past decades throughout the Baltic Sea, accounting for just 40–50% of the common weight level of the 1970s and 1980s in the age groups that are more abundant today. The mean body weight of different age groups has stabilised at a low level since the 2000s (Figure 15).

Herring spawning stock biomass (SSB / MSY $B_{trigger}$) was 0.62 in early 2024, which is much lower than the recommended spawning stock biomass and is around the level of 2017–2018 (Figure 16). This ratio has not been above the recommended level since 1985. From 1990 to today, only four herring cohorts have been observed whose abundance at age 1 exceeded the long-term average, with the most recent such cohort being that of 2022 (Figure 17). The short-term future of the stocks depends on the number of 2022–2024 cohorts because they will in the near future make up the predominant share of the spawning stock and catch.

The stock status of Central Baltic herring is mostly assessed against the reference levels of fishing mortality and biomass. The most important of these are: (1) comparison of spawning stock biomass (SSB) against minimum spawning stock biomass that ensures the maximum yield (MSY $B_{trigger}$) at fishing mortality F_{MSY} ; and (2) comparison of actual fishing mortality (F) against maximum sustainable yield fishing mortality (F_{MSY}).

Looking at herring fishing mortality since 1974, there appears to be a period of particularly high mortality (1994–2002) when the actual mortality rate significantly exceeded the recommended level. The relative fishing mortality for herring in 2010–2013 decreased, and thereafter it exceeded the F_{MSY} level in 2015–2021, but then again fell below that level in 2022 and 2023 (Figure 16).

According to the EU's multi-annual management plan (MAP), the total catch for 2025 should be in the range of 95,340–125,344 tonnes. A total catch exceeding the level that corresponds to F_{MSY} is possible only if the specific conditions set out in the

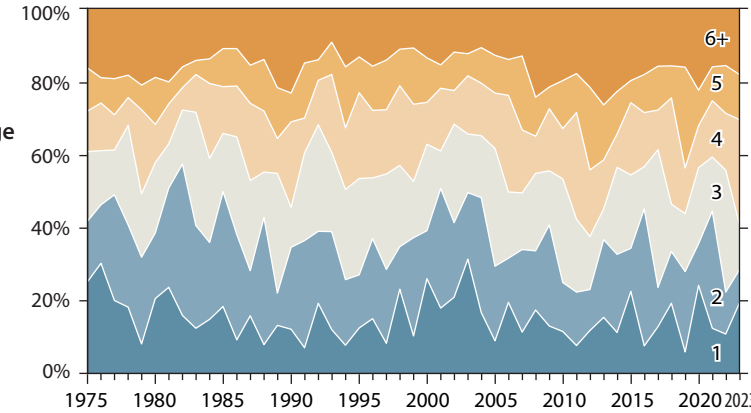


FIGURE 14. Central Baltic herring: average age composition of catches, 1975–2023
1: age 1, 2: age 2 etc., 6+: age 6 and older
Source: ICES, 2024.

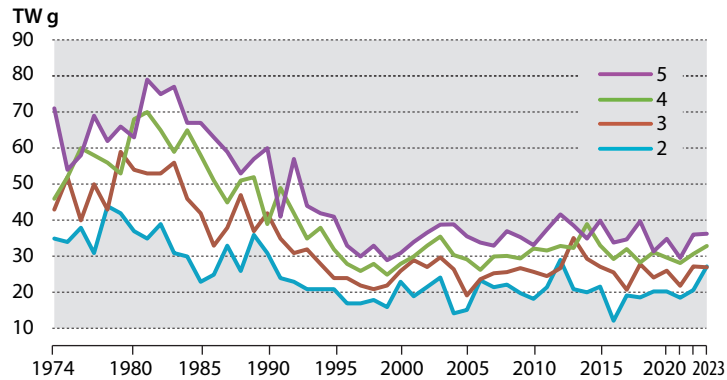


FIGURE 15. Central Baltic herring: dynamics of mean body weight (TW) of herring aged 2–5, 1975–2023
Source: ICES, 2024.

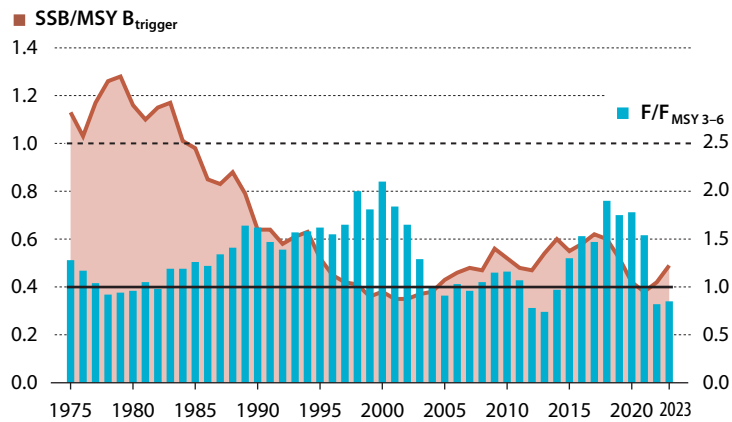


FIGURE 16. Relative spawning stock biomass for Central Baltic herring (SSB / MSY $B_{trigger}$) in 1975–2023 and relative fishing mortality for 3–6-year-old herring ($F_{3–6}$ / F_{MSY}) in 1975-2023. The horizontal line denotes F_{MSY}, and the dotted line is the minimum MSY $B_{trigger}$ for maximum sustainable biomass
Source: ICES, 2024.

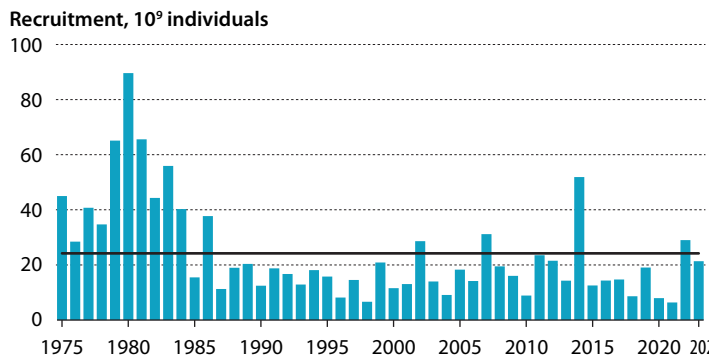


FIGURE 17. Central Baltic herring: dynamics of abundance of recruitment (age 0), 1975–2023. The horizontal line marks the long-term average.
Source: ICES, 2024.

MAP are met. For 2024, the ICES recommended a total catch of up to 52,549 tonnes and the agreed quota is 67,368 tonnes.

The ICES gives recommendations for the stock unit, which means that catches of Central Baltic herring traditionally taken from the Gulf of Riga should be deducted from the quantity recommended by the ICES and catches of gulf herring caught in the Central Baltic should be added. As a result, the total allowable catch of herring in subdivisions 25–27, 28.2, 29 and 32 is expected to amount to 122,942 tonnes in 2025.

Gulf of Riga herring (subdivision 28.1)

Gulf of Riga herring are only fished by Estonian and Latvian fishermen. The proportion of Latvia's catches has been 60–70% in the last couple of decades. According to Latvian researchers, a significant part of Latvian herring catches (around 10–20%) was not reflected in official statistics until 2010 (Table 17, Figure 18). From 2019, herring catches have grown, reaching 43,000 tonnes in 2022 and 48,200 tonnes in 2023.

TABLE 17. Estonian, Latvian and unreported herring catch in thousands of tonnes in the Gulf of Riga in 2010–2023

Year	Estonia	Latvia	Unreported (Latvia)	Total
2010	15,4	17,8	1,8	**34,9**
2011	14,7	20,2	–	**34,9**
2012	13,8	17,9	–	**31,7**
2013	11,9	18,5	–	**30,4**
2014	10,6	20,1	–	**30,6**
2015	16,5	21,0	–	**37,5**
2016	15,8	19,1	–	**34,9**
2017	17,9	13,8	–	**31,7**
2018	12,5	16,9	–	**29,4**
2019	13,3	18,0	–	**31,3**
2020	12,2	21,0	–	**33,2**
2021	16,1	22,0	–	**38,1**
2022	18,8	24,2	–	**43,0**
2023	20,7	27,5	–	**48,2**

Source: ICES, 2024.

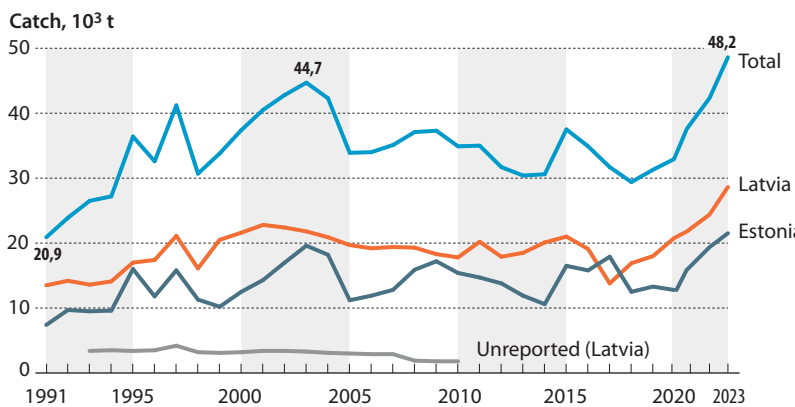


FIGURE 18. Gulf of Riga herring: Estonian, Latvian and unreported landings (10^3 t), 1991–2023
Source: ICES, 2024.

In addition to local gulf herring, catches also include Central Baltic herring that spawns in the Gulf of Riga. Both varieties come under a single catch quota. The proportion of Central Baltic herring in the total herring catch taken from the Gulf of Riga has been less than 5% in recent years.

The long-term age structure of herring catches from the Gulf of Riga is generally similar to that of Central Baltic herring catches. The only difference is the greater variation in the abundance of the Gulf of Riga year classes, especially since the 1990s. The year 2023 was characterised by the very large proportion of 1-year-old herrings in the catch (Figure 19).

Similar to Central Baltic herring, the mean body weight of different age groups of herring caught in the Gulf of Riga has decreased significantly compared to the early 1980s. While it nonetheless remained stable in the last few decades, albeit at a low level, for a few years now, we have seen some increase in average body mass in all age groups (Figure 20).

Since the 1990s, the spawning stock biomass of Gulf of Riga herring is up to twice the level of the 1970s (Figure 21). The good condition of the stock is mostly due to the abundance of the year classes 1990–2006. Then again, the cohorts that were born after the cold winters of 1996, 2003 and 2006 were of medium or smaller size in the Gulf of Riga during that period (Figure 22). The year-class strength of Gulf of Riga herring seems to depend on the severity of the winter and the abundance of zooplankton in spring, which determines the feeding conditions of juveniles in spring

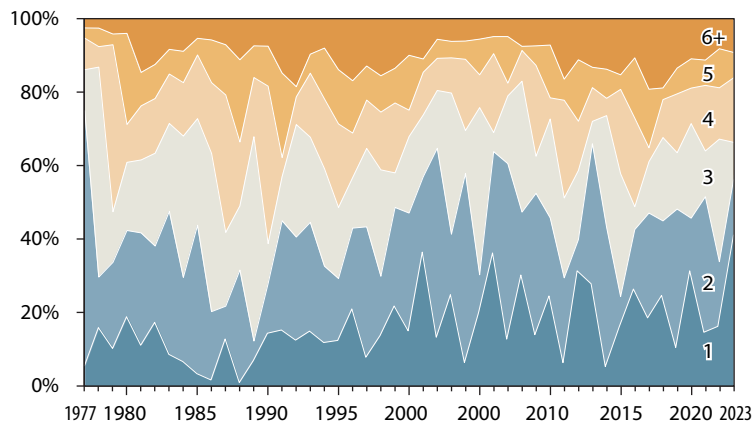


FIGURE 19. Gulf of Riga herring: age composition of catches, 1977–2023
1: age 1, 2: age 2 etc., 6+: age 6 and older
Source: ICES, 2024.

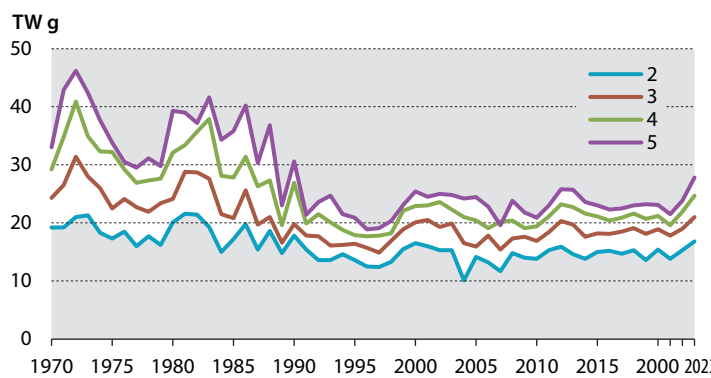


FIGURE 20. Gulf of Riga herring: dynamics of mean body weight (TW) of herring aged 2–5, 1970–2023
Source: ICES, 2024.

and thus their survival. The mild winters in the last couple of decades have apparently been favourable for the reproduction of Gulf of Riga herring. However, looking separately at the data of the past ten years or so, it appears that the abundance of the year classes of 2011, 2012, 2015, 2017, 2019, and 2022 exceeded the average, while those of 2010, 2013, 2014, 2016, and 2018 proved weak. The outlook for catches in the near future is greatly influenced by the strong 2022 year class (Figure 22).

At the beginning of 2024, the spawning stock biomass of Gulf of Riga herring amounted to 131,262 tonnes, which exceeded the long-term average (83,897 tonnes) by more than 60%. The dynamics of herring catches in the Gulf of Riga have been similar to changes in spawning stock biomass: catches have ranged from 25,000–40,000 tonnes since the second half of the 1990s, which is twice as high as in the 1970s and 1980s (ICES, 2024). It should be remembered that catches of Gulf of Riga herring are currently mainly dependent on the TAC. Although management of the stock has generally been sustainable in the Gulf of Riga in the recent past, high fishing mortality is a major concern. This phenomenon can likely be explained by the low body weight of the herring.

The status of the Gulf of Riga herring stock is assessed against the reference levels of fishing mortality mentioned above. According to current estimations, the sustainable fishing mortality FPA is 0.35, the maximum fishing mortality for sustainable yield F_{MSY} is 0.28 and $B_{trigger}$ is 72,907 tonnes for Gulf of Riga herring.

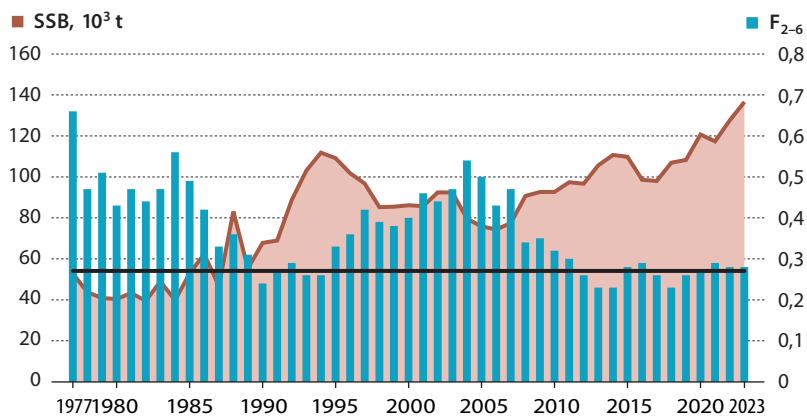


FIGURE 21.
Central Baltic herring: spawning stock biomass (SSB) and fishing mortality in age group 2–6 (F_{2-6}), 1977–2023. The horizontal line represents the maximum sustainable fishing mortality for sustainable yield F_{MSY} = 0.28
Source: ICES, 2024.

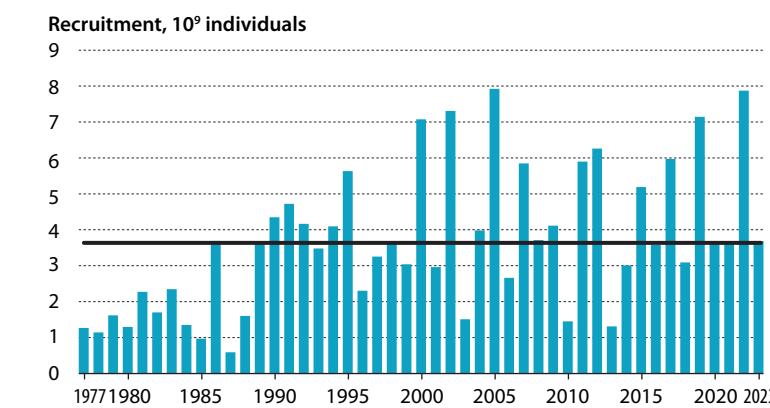


FIGURE 22.
Gulf of Riga herring: dynamics of abundance of recruitment (age 1), 1977–2023. The horizontal line marks the long-term average.
Source: ICES, 2023.

Applying the MAP, the 2025 catch will range between 30,394 and 45,235 tonnes. A total catch exceeding the level that corresponds to F_{MSY} (0.28), i.e. 39,233 tonnes, can be taken subject to the specific conditions set out in the MAP. For 2024, the ICES recommended a total catch of up to 35,902 tonnes.

Since the recommendation of the ICES only concerns gulf herring, the TAC for the Gulf of Riga is to be calculated by deducting from the recommendation for 2024 the catch of gulf herring taken in the Central Baltic and adding the average catch of open-sea herring caught in the Gulf of Riga.

The condition of Central Baltic herring and, to a lesser extent, possibly also Gulf of Riga herring, may improve if sprat stocks decrease, as this would reduce food competition between sprat and herring and lead to an increase in the mean body weight of herring. This would contribute to a reduction in the fishing mortality of both stock units, which in turn would create preconditions for increased fishing opportunities. Long-term dynamics (from 1977) indicate, however, that despite the high biomass of Gulf of Riga herring, the fishing mortality of this stock unit was usually below the F_{MSY} level (Figure 9).

Sprat

Sprat (*Sprattus sprattus balticus*) is a pelagic fish, like herring. The main biological difference lies in the high fecundity and pelagic spawning of sprat: its spawn roe develops while floating in water, whereas herring mostly spawns on benthic vegetation. Also, sprat is a so-called batch spawner, which means that, unlike herring, it spawns in parts and over a longer period of time. These characteristics cause remarkable variation in the reproduction of sprat, which depends on whether the environmental conditions prevailing in a particular year are favourable for embryonic development and the growth of larvae.

The main spawning grounds of sprat in the Baltic Sea are located on the slopes of the Bornholm and Gotland deeps as well as in the Gdansk Deep, partly overlapping with the spawning grounds of cod. In periods when sprat abundance is high, sprat move out of these reproduction centres, which are characterised by the best environmental conditions, and spread throughout the Baltic Sea, except in freshwater areas in the northern part of the Bothnian Bay and the eastern part of the Gulf of Finland. Sprats are also present in the Gulf of Riga in relatively low numbers. In addition to fishing, the state of sprat stocks is primarily influenced by the abundance of its main natural enemy – the cod. During the periods when cod abundance is high, there are few sprats in the Baltic Sea, and vice versa. Some researchers believe, however, that sprat may also act as a 'predatory fish' for cod, feeding on its pelagic roe. Of course, this situation only occurs on the spawning grounds of cod.

Over the last decade, catches of Baltic sprat have ranged from 242,000 to 318,000 tonnes depending on the total allowable catch (TAC). The catch landed in 2023 amounted to 265,900 tonnes, or 1% less than the agreed TAC (269,200 tonnes) (Figure 23, Table 18). Poland (25%), Sweden (17%), and Russia (15%) landed the largest catches of sprat in 2023. According to ICES' preliminary estimates, Estonia's catch was 24,800 tonnes (9%).

TABLE 18. Sprat catches from the Baltic Sea by country (10^3 t), 2010–2023

Year	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Poland	Russia	Sweden	Total
2010	43,0	47,9	24,4	17,8	45,9	9,2	56,7	25,6	70,4	**341**
2011	31,1	35,0	15,8	11,4	33,4	9,9	55,3	19,5	56,2	**268**
2012	19,4	27,7	9,0	11,3	30,7	11,3	62,1	25,0	46,5	**243**
2013	26,1	29,8	11,1	10,3	33,3	10,4	79,7	22,6	49,7	**273**
2014	25,0	28,5	11,7	10,2	30,8	9,6	56,9	23,4	46,0	**242**
2015	22,5	24,0	12,0	10,3	30,5	11,0	62,2	30,7	44,1	**247**
2016	19,7	23,7	16,9	10,9	28,1	11,6	59,3	34,6	42,4	**247**
2017	29,9	25,3	16,1	13,6	35,7	12,5	68,4	38,7	48,3	**289**
2018	28,0	29,3	16,4	15,2	37,1	16,2	79,4	41,4	49,1	**312**
2019	34,4	29,2	16,1	14,6	38,9	16,2	82,4	40,7	45,1	**318**
2020	29,0	24,3	12,5	8,9	28,9	11,2	72,5	45,7	41,1	**274**
2021	24,8	25,6	14,8	12,0	29,1	11,4	79,2	43,4	44,8	**285**
2022	26,2	27,3	13,5	14,9	31,4	11,9	79,8	42,2	53,8	**301**
2023*	24,2	24,8	14,7	12,2	28,8	11,2	66,5	39,1	44,3	**266**

* Data for 2023 are preliminary and subject to change. Source: ICES, 2024.

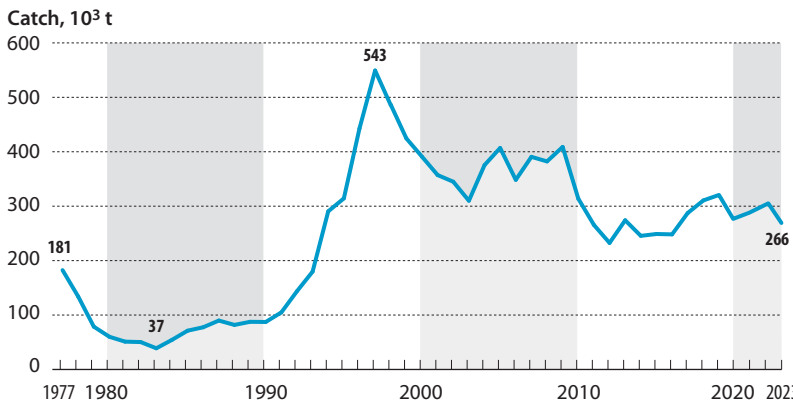


FIGURE 23. Sprat catches from the Baltic Sea (10^3 t), 1977–2023
Source: ICES, 2024.

The age composition of the stocks and catches of sprat is characterised by the dominance of younger age groups: the 1–3 age group usually accounts for 50–80% of catches, depending on the abundance of cohorts (Figure 24).

Changes in the body weight of sprat generally followed the corresponding trend of herring in the 1990s and 2000s. However, the decline in the mean body weight of sprat was significantly slower compared to that of herring in the 1990s, and the mean body weight of sprats of the same age currently amounts to 70–75% of the figure from the first half of the 1980s. The mean body weight increased somewhat in 2012 and 2013 but declined again in the period 2014–2019. Starting from 2022, the average body weight of sprat has started growing again (Figure 25).

Sprat in the Baltic Sea is treated as a single stock unit and therefore a single total allowable catch (TAC) is specified for sprat, which covers the entire Baltic Sea.

The abundance and biomass of sprat started to increase rapidly in the second half of the 1980s when the abundance of cod declined significantly. In 1994, the SSB for sprat exceeded 1.42 million tonnes and thereafter the highly abundant year classes of 1994 and 1995 took the figure to a record 1.7 million tonnes In 1997. From 2004 to 2011 the SSB was 0.7–1.3 million tonnes and then it started consistently decreas-

FIGURE 24.
Average age composition of sprat catches, 1974–2023
1: age 1, 2: age 2 etc., 6+: age 6 and older
Source: ICES, 2024.

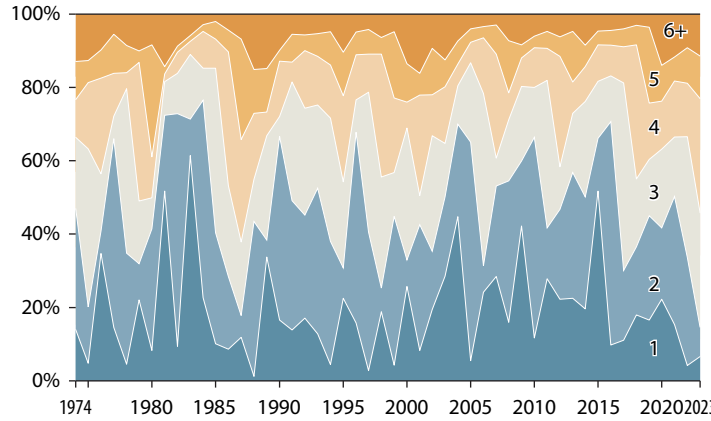


FIGURE 25.
Dynamics of mean body weight (W) of sprats aged 2–5, 1974–2023
Source: ICES, 2024.

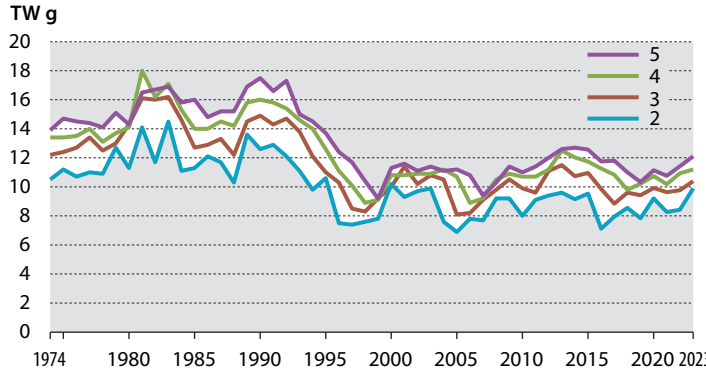


FIGURE 26.
Sprat spawning stock biomass (SSB) and fishing mortality in age groups 3–5 (F_{3-5}), 1974–2023
Source: ICES, 2024.

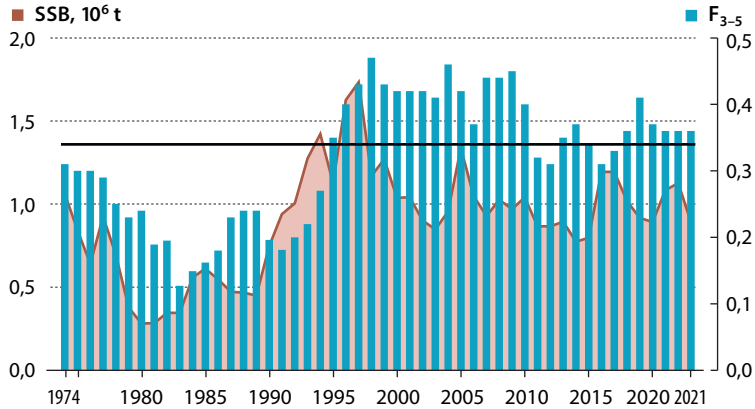
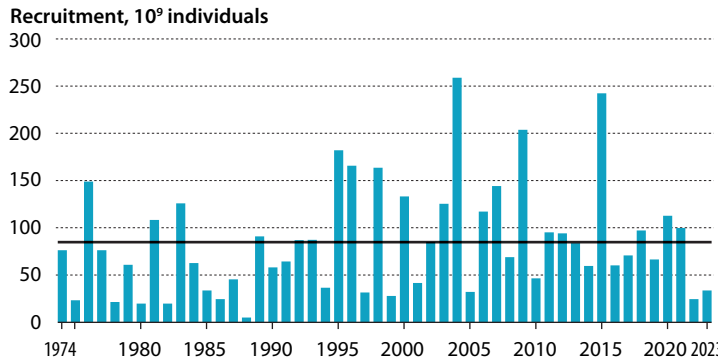


FIGURE 27.
Dynamics of sprat recruitment (age 1), 1974–2023. The horizontal line marks the long-term average.
Source: ICES, 2024.



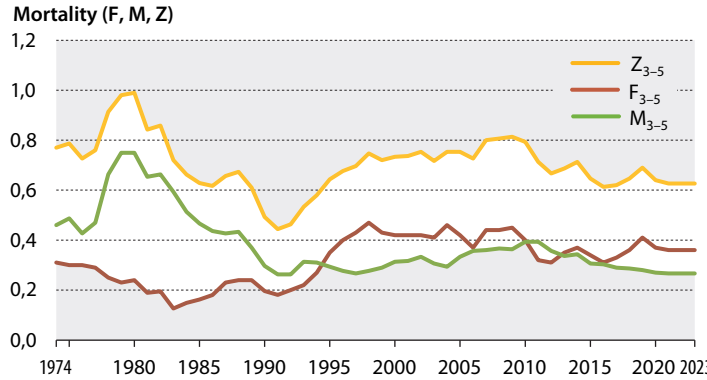


FIGURE 28.
Fishing mortality ($F_{3–5}$), natural mortality ($M_{3–5}$) and total mortality ($Z_{3–5}$) of sprat, 1974–2023
Source: ICES, 2024.

ing, since the year classes for 2009 and 2012–2013 were small and fishing mortality was high. The very large year class in 2014, which swelled the SSB in 2016–2018 once again, had become exhausted by 2022–2023. Since 2014, there have been no abundant year classes. This will probably lead to a drop in the entire spawning stock in the near future (Figures 26 and 27). Then again, as the sprat stock is extremely dependent on recruitment, any assessment of the prospects of the stock is plagued by considerable uncertainties. At the beginning of 2024, the ICES estimated the SSB of sprat to amount to 696,000 tonnes, which is almost 30% lower than the long-term average (Figure 27) but exceeds $B_{trigger}$ (541,000 tonnes).

The international autumn acoustic surveys of pelagic fish stocks conducted in the Baltic Sea in 2023 indicate that a significant portion of both sprat and Baltic herring stocks are located in the northeastern part of the Baltic Sea (Figure 28), which differs from their previous distribution. The reasons for the relocation and its stability require additional study.

The current status of the sprat stock in the economic zone of Estonia can be regarded as relatively satisfactory. However, it should be noted that fishing prospects still depend on the overall status of the stock in the Baltic Sea, i.e. the relatively better situation in Estonian waters does not automatically mean better fishing opportunities for Estonian fishermen. In its advice of 2024, the ICES classifies the current level of exploitation of the Baltic sprat stock as unsustainable, given that the fishing mortality rate for the period from 2018 strongly exceeded F_{MSY} (0.34) and F_{PA} (0.35) (Figure 26).

Natural mortality prevailed, in particular, from 1978–1986, when the spawning stock biomass of cod was high (250,000 to 300,000 tonnes). Since 1994, the overall mortality of sprat has primarily depended on fishing mortality (Figure 28), which should be reduced to ensure the sustainability of the sprat stock, especially given the current low cod stock. This is further emphasised by the fact that the spatial overlap between cod and sprat has significantly decreased in recent years (Figure 29).

According to the EU's multi-annual management plan (MAP), the total catch of sprat for 2025 should be in the range of 130,195 to 169,131 tonnes. A total catch exceeding the level that corresponds to F_{MSY} (0.34), i.e. 164,947 tonnes, can be taken subject to the specific conditions set out in the MAP. For 2024, the ICES recommended a total catch of up to 241,604 tonnes; TAC_{2024} is 245,200 tonnes.

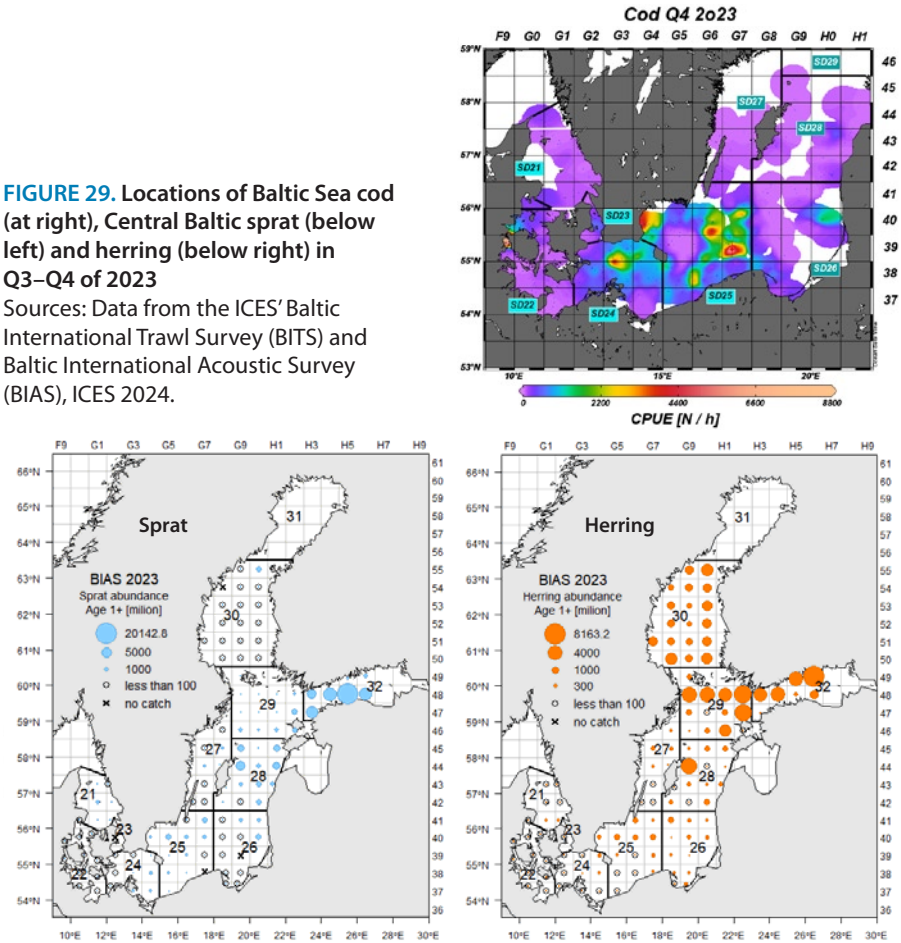


FIGURE 29. Locations of Baltic Sea cod (at right), Central Baltic sprat (below left) and herring (below right) in Q3–Q4 of 2023
Sources: Data from the ICES' Baltic International Trawl Survey (BITS) and Baltic International Acoustic Survey (BIAS), ICES 2024.

Cod in the eastern Baltic (subdivisions 25–32)

Being a marine fish species, the distribution and abundance of cod (*Gadus morhua callarias*) in the brackish Baltic Sea depend on suitable reproduction conditions. The low salinity of the Baltic Sea is generally not conducive to the wide distribution of cod. The main spawning grounds of cod are located on the slopes of the Bornholm, Gdansk and Gotland deeps.

As in the case of sprat, subject to the availability of favourable salinity, oxygen and temperature conditions, the high fecundity of cod may rapidly increase its abundance. This last occurred in the late 1970s when the spawning stock biomass of cod tripled in less than a decade. However, a lack of favourable reproduction conditions (no inflow of saline water from the North Sea) and intense and at times uncontrollable fishing, especially in the early 1990s, led to the depletion of the biomass at the same pace. Cod stocks have remained at low levels in the eastern part of the Baltic Sea since the 1990s. In 2013–2014, the catch decreased further: while in 2010–2012 it was around 50,000 tonnes, in 2018 only 15,799 tonnes was caught, 8,327 tonnes in 2019 and thereafter even less. Catches of cod in subdivisions 25–32 in 2022 were estimated by the ICES at only 1,095 tonnes, and at 989 tonnes in 2023.

Since the total catch allowed from these subdivisions (TAC, EU, and Russia together) was 2,195 tonnes in 2023, only about 45% of the catch was landed. However, if the 19 tonnes caught in subdivision 24 and the discards of 57 tonnes are added to the catches taken in subdivisions 25–32, the total catch of cod in the Eastern Baltic amounted to 1,065 tonnes in 2023.

The catch was divided mainly between Russian and Polish fishermen, who accounted for 81% and 12% of the total catch, respectively (Figure 30, Table 19). Russia's catches for sprat, herring and cod are merely estimates since Russia has not sent their catch data to ICES since 2022. There is still no commercial cod resource in Estonian waters, and directed fishing for this species is not economically reasonable.

In 2010–2014, the ICES advice for the exploitation of Eastern Baltic cod was based on the EU Multi-annual Management Plan for Cod Stocks in the Baltic Sea, according to which the recommended fishing mortality of cod (F_{MTG}) is 0.3. Implementation of the Management Plan requires an analytical assessment of stocks (fishing mortality rate). Unfortunately, no analytical assessment of the stock could be made during the period from 2015 to 2020. There were several reasons for this, nota-

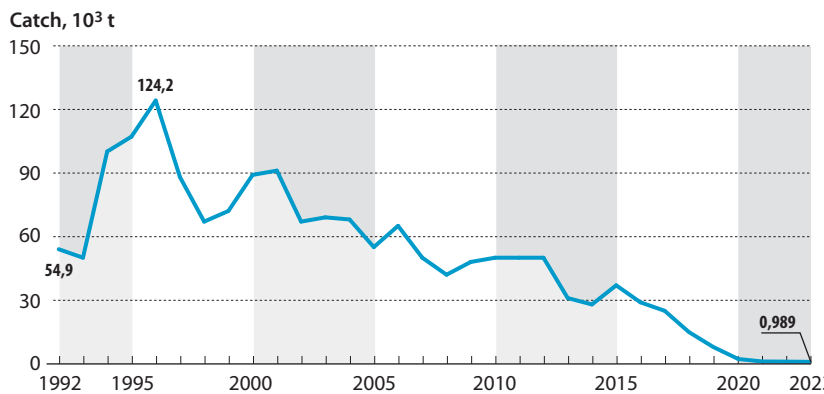


FIGURE 30. Catches of Eastern Baltic cod (t), 1992–2023 Source: ICES, 2024.

TABLE 19. Catches of Eastern Baltic cod by country (t), 2010–2023 (ICES estimates)

Year	Denmark	Eastonia	Finland	Germany	Latvia	Lithuania	Poland	Russia	Sweden	Total
2010	10 739	796	826	3 908	5 001	3 140	11 433	4 264	10 169	**50 277**
2011	10 842	1 180	958	3 054	4 916	3 017	11 348	5 022	10 031	**50 368**
2012	12 102	686	1 201	2 432	4 269	2 212	14 007	3 954	10 109	**50 972**
2013	6 052	247	399	540	2 442	1 744	11 761	2 870	5 299	**31 354**
2014	6 035	165	349	676	2 000	1 088	11 026	3 444	4 125	**28 908**
2015	9 652	188	387	1 477	2 586	1 974	12 937	3 512	4 628	**37 341**
2016	6 756	2	57	918	2 717	1 698	9 583	3 392	4 189	**29 312**
2017	6 109	1	191	337	2 079	1 726	6 484	4 124	4 405	**25 456**
2018	2 668	1	53	231	1 237	684	5 687	3 376	1 862	**15 799**
2019	1 051	2	85	281	251	111	3 180	2 701	665	**8 327**
2020	20	2	24	12	76	11	376	1 778	11	**2 310**
2021	15	2	35	20	11	2	66	1 225	8	**1 384**
2022	33	1	30	5	15	2	100	900	9	**1 095**
2023	15	1	26	5	18	2	114	799	9	**989**

Source: ICES, 2024.

bly changes in the reproduction capacity of the cod population and the slowdown of growth due to poor oxygen conditions, the different distribution patterns of cod and its important food target – sprat (see Figure 28) – and likely also a parasitic infection transmitted from grey seals. This has led to a situation where Eastern Baltic cod does not end up in commercial fishing catches as adult fish, even in the case of the generations for which the initial abundance estimate from the ICES Baltic international trawl survey (BITS) was promising. This means that a large proportion of cod no longer reaches the minimum catch length, i.e. 35 cm (TL).

From 2015 to 2018, therefore, the ICES gave its advice for the exploitation of Eastern Baltic cod on the basis of its Approach to Data-Limited Stocks (DLS), i.e. the rules that the ICES applies when no comprehensive scientific information on a stock unit is available. According to the DLS approach, advice is given on the basis of the dynamics of an index describing the size of biomass. In the case of cod, it has been decided to use the average CPUE (kg/h) of individuals ≥30 cm in BITS test trawling catches as the index. In order to formulate the advice on exploitation, the average yield of the last two years is compared with that of the preceding three years. The resulting advice is then either proportionately increased or reduced, as appropriate.

During the period 2019–2024, the ICES used the Stock Synthesis Model, which is based on an analysis of the length composition of a given cod stock, the results of which indicated that the biomass of the stock unit in question (0.45) is critically low, below B_{lim} (0.64). Therefore, the ICES recommended that fishing for Eastern Baltic cod be stopped starting from 2020. This advice also applies to the part of the Eastern Baltic cod stock that is caught in subdivision 24. The agreed TAC for 2024 was 2015 tonnes, which is around 92% of the figure for 2023.

ESTONIA'S TRAWL FLEET IN THE BALTIC SEA

Overview of sector

In 2023, catches were reported for a total of 22 trawlers with a combined main engine power of 8,565 kW and a combined gross tonnage (GT) of 3,397. The average age of the vessels was 36 years, and a total of 116 people were employed on them. Compared with 2022, the number of trawlers engaged in fishing increased by two in 2023. Figure 31 shows that in 2019–2021, the decrease in the number of trawlers slowed, staying at around 27–28 ships, and resumed again in 2022. Starting in 2022, Estonia's Baltic Sea trawler fleet consists of only >18-metre ships (Figure 32).

The Estonian trawl fleet's final sprat and herring quotas (after exchanges and transfers) in 2022 were 28,734 and 23,601 tonnes, respectively, and in 2023, 26,406 and 19,481 tonnes, respectively (Figure 33). The sprat quota rose in 2020–2022 by 13% but then dropped again by 8%. The herring quota also underwent major growth in 2022 (25%) but fell 17% in 2023.

Unlike the catch quota dynamics, the herring catch increased just 3% in 2022, rising from 18,002 to 18,508 tonnes. In 2023, 8% more herring was caught despite the lower catch opportunities, and the catch was 20,039 tonnes. This was due to the use of the herring quota, which was 78% and 96% in 2022 and 2023, respectively. On the other hand, the sprat catch was aligned to catch opportunities. In 2022, 7% more sprat

FIGURE 31.
Number, combined gross tonnage (GT) and combined power of main engines (kW) of fishing vessels engaged in fishing, 2005–2023
Sources: AFB, VFB.

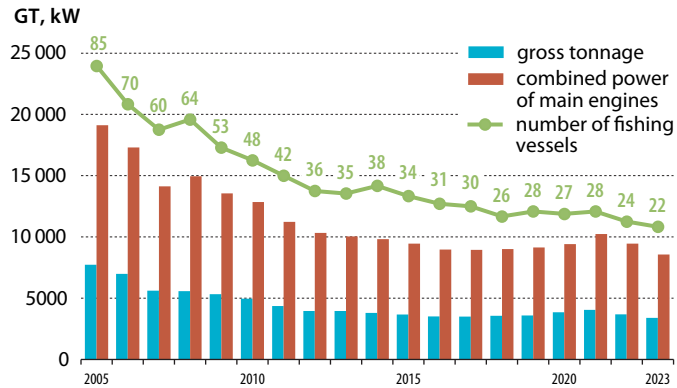
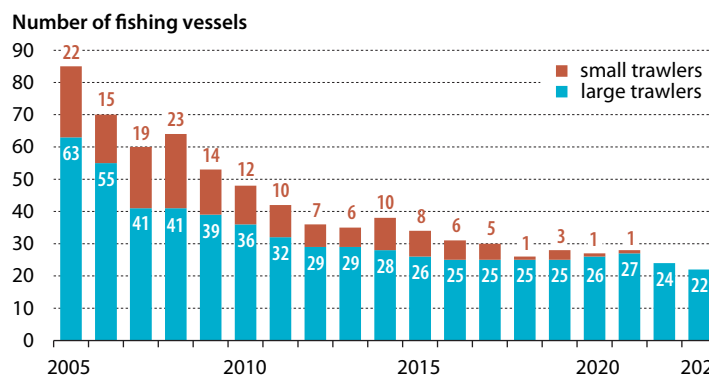


FIGURE 32.
Number of large (18–40 m) and small (12–18 m) ships participating in the catch in Estonia's Baltic Sea trawl fleet, 2005–2023
Sources: AFB, VFB.



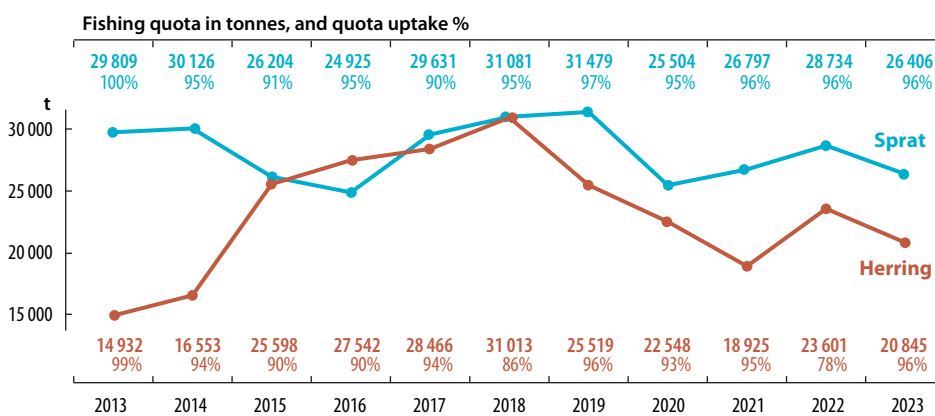


FIGURE 33. Estonian trawl fleet's final sprat and herring quotas (after exchanges and transfers) and quota uptake (%), 2013–2023 Source: AFB.

was caught (27,551 tonnes) than a year earlier, and in 2023, the catch dropped 8%, to 25,364 tonnes. The uptake of the sprat quota was 96% in both of these years. There was no directed fishing for cod in 2022 and 2023.

In 2022 the rights to catch sprat, herring and cod in the Baltic Sea on the basis of fishing vessels' fishing permits were distributed between 17, 17 and 7 companies; and in 2023, between 17, 16 and 5 companies, respectively. The total catch of Estonian trawlers in the Baltic Sea amounted to 46,238 tonnes in 2022. Based on average first-sale prices, the value of the catch was 9.7 million euros. In 2023, the total catch decreased to 45,488 tonnes, but its value was 61% greater than the year before, i.e. 15.6 million euros. By species, sprat and herring were caught the most, and to a lesser degree, smelt, eelpout, four-horned sculpin, etc. (Figure 34). The proportion of trawlers in Estonian fishers' commercial fishing in the Baltic Sea amounted to 83% in 2022 and 79% in 2023.

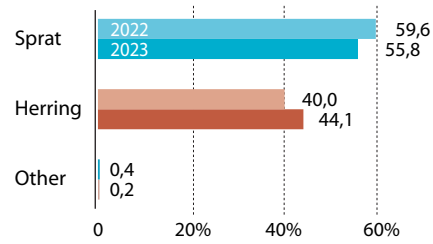


FIGURE 34. Proportion of fish species caught in the Baltic Sea in the Estonian Baltic Sea trawl fleet catch, 2022–2023
Source: AFB.

Sprat and herring were mainly landed at Estonian ports, where the catch was sold to fish freezing or processing companies, unless the fishing company itself was engaged in the processing and marketing of fish. In total, Estonian Baltic Sea trawlers landed fish in 2022 and 2023 in 16 and 15 ports (Tables 20 and 21). The largest quantity of fish came ashore in the ports of Dirhami, Miiduranna, Roomassaare, and Virtsu, which together accounted for more than half of the fish caught. In addition,

TABLE 20. Landings in Estonian ports of fish caught from the Baltic Sea by Estonian trawlers in 2022

County	Place of landing	Fish quantity, t	Proportion (%) of total landings of trawlers
Lääne	Dirhami	9 585	22,37
Pärnu	Virtsu	5 589	13,05
Harju	Miiduranna	5 560	12,98
Saare	Roomassaare	4 389	10,24
	Mõntu	4 199	9,80
	Saaremaa	3 512	8,20
Harju	Paldiski South Harbour	2 994	6,99
Saare	Veere	2 736	6,39
Harju	Meeruse	2 554	5,96
	Loksa	712	1,66
Lääne	Westmeri	620	1,45
	Rohuküla	174	0,41
Pärnu	Pärnu	132	0,31
	Virtsu fish port	84	0,2
Hiiu	Heltermaa	1	<0,01
	Sõru	1	<0,00

Source: AFB.

TABLE 21. Landings in Estonian ports of fish caught from the Baltic Sea by Estonian trawlers in 2023

County	Place of landing	Fish quantity, t	Proportion (%) of total landings of trawlers
Lääne	Dirhami	10 185	24,09
Harju	Miiduranna	5 974	14,13
Saare	Roomassaare	4 706	11,13
Pärnu	Virtsu	4 641	10,98
Saare	Saaremaa	3 927	9,29
	Mõntu	3 220	7,62
Harju	Meeruse	2 402	5,68
Harju	Paldiski South Harbour	2 291	5,42
Saare	Veere	1 989	4,70
Harju	Loksa	1 134	2,68
Lääne	Rohuküla	863	2,04
Lääne-Viru	Kunda	408	0,96
Lääne	Westmeri	350	0,83
Pärnu	Pärnu	174	0,41
	Virtsu fish port	12	0,03

Source: AFB.

fish was landed in Latvian ports, and in 2022 in Poland as well (Table 22). Compared to 2021, the proportion of fish landed in foreign ports decreased in 2022 and 2023, from 9% to 7% of the catch.

In February 2022, Russia launched its full-scale invasion of Ukraine, which led to a temporary halt in the sale of products bound for Ukraine, uncertainty in export markets, and a general price rise. Since the export of fish products to Ukraine recovered in large part in the second half of the year, the war did not affect trawler companies' economic results further. Annual reports show that compared to 2021, most companies in 2022 saw their revenue and profit increase. The same trend continued in 2023 as well, from which we can conclude that the general economic situation in the Estonian fishing sector was good in these years.

TABLE 22. Landings (t) of fish caught from the Baltic Sea by Estonian trawlers, by country, in 2022 and 2023

Species	Year	Estonia	Latvia	Poland
Sprat	2022	27 276	268	7
	2023	25 246	119	
Herring	2022	15 527	2 980	<1
	2023	16 985	3 054	
Smelt	2022	35	77	
	2023	35	13	
Eelpout	2022	<1	29	
	2023	1	11	
Four-horned sculpin	2022	<1	35	
	2023	2	11	
Stickleback	2022	2		
	2023	5		
Shorthorn sculpin	2022	<1		
	2023	3		
Total	2022	42 841	3 389	8
	2023	42 277	3 210	

Source: AFB.

The growth in revenue and profit was mainly driven by a rise in the sales price of product. Compared to 2021, the average first sale price for sprat and herring rose 11% and 14% respectively in 2022. While in 2021, a kilogram of sprat and herring cost 19 and 18 cents, respectively, an average of 21 cents was paid for each fish in 2022. In 2023, the average first-sale price rose dramatically: 71% for sprat and 52% for herring, reaching 36 and 32 cents, respectively.

Estonian sprat and herring were mainly exported to foreign markets in frozen form. According to Statistics Estonia's foreign trade data, in 2022, 46,800 tonnes of frozen sprats and herring were exported to foreign markets, which was the same amount as the year before. At the same time, the total value of the goods increased by 27%, reaching 24.1 million euros (compared to 19.1 million euros in 2021). In 2023, the export volume of Estonia's frozen sprats and herring decreased by 24%, amounting to 35,700 tonnes, but the total value of the goods only dropped by 8%, to 22.3 million euros. The main export countries in 2023 were Ukraine (23,300 tonnes), Latvia (3,600 tonnes), Belarus (2,400 tonnes), Moldova (2,000 tonnes), and Kazakhstan (1,400 tonnes).

Inland fisheries

LAKE VÕRTSJÄRV FISHERY

In 2022, commercial fishermen caught 204.7 tonnes from Võrtsjärv; in 2023, 207.4 tonnes (Table 23, Figure 35). Compared to 2021, total catch rose 6% in 2022 and remained almost the same in 2023. There was a noteworthy increase in 2022 in the amount of pikeperch caught (50%, total catch 92.3 tonnes) and eel also increased somewhat (10%; 49.5 tonnes) while bream and pike catch fell (29 and 30%, respectively, 38.2 and 17.9 tonnes). In 2023, slightly more eel was caught (11%, 55.2 tonnes), while pikeperch catch dropped a little (5%, 87.8 t) and bream and pike stayed about the same.

TABLE 23. Catches (t) from Lake Võrtsjärv, 2000–2023

Year	Eel	Pikeperch	Pike	Bream	Burbot	Perch	Other	Second-rate fish	Total
2000	38,8	29,5	40,7	54,4	3,8	18,3	2,0	150,1	337,6
2001	37,6	32,8	50,8	56,8	4,0	12,6	0,2	191,7	386,5
2002	20,4	25,2	44,8	30,5	3,5	9,7	0,1	184,3	318,5
2003	26,4	19,2	49,8	42,3	6,0	14,2	0,1	157,9	315,9
2004	20,1	27,3	55,5	59,1	4,1	10,1	0,1	176,9	353,2
2005	17,6	46,7	52,6	57,3	2,5	15,4	–	192,5	384,6
2006	19,9	42,3	79,5	65,5	2,8	44,1	0,1	127,9	382,1
2007	21,5	29,7	57	105,2	3,6	17,1	0,1	174,6	408,8
2008	20,5	48,3	31,6	158,2	7,8	10,8	1,7	229,0	507,9
2009	13,6	74,1	33	81,5	2,9	9,0	1,6	131,9	347,6
2010	10,3	29,1	34,3	56,9	2,3	13,7	0,8	119,2	266,6
2011	11,3	40,7	32,2	77,9	2,3	16,9	1,2	–	182,5
2012	12,6	39,9	47,7	88,3	3,8	13,9	7,5	–	213,7
2013	12,7	40,5	70,1	79,3	5,2	9,7	47,8*	–	265,3
2014	13,3	60,1	64,2	79,1	2,7	5,5	12,6	–	237,5
2015	12,3	44,1	44,2	80,8	2,4	2,8	13,1	–	199,7
2016	13,0	42,3	45,3	61,2	1,5	5,0	5,2	–	173,5
2017	13,8	81,6	34,4	54,6	1,3	7,1	6,0	–	198,8
2018	16,7	71,8	39,3	44,9	1,2	3,6	4,9	–	182,4
2019	19,6	50,5	35,0	44,0	1,6	5,1	4,7	–	160,5
2020	35,8	42,2	31,9	56,4	2,3	3,7	3,1	–	175,4
2021	44,8	61,0	25,5	53,4	1,5	2,6	3,3	–	192,1
2022	49,5	92,3	17,9	38,2	0,9	3,4	2,5	–	204,7
2023	55,2	87,9	18,5	37,5	0,4	4,8	3,1	–	207,4

* of which 40 tonnes was gibel carp.

Source:AFB.

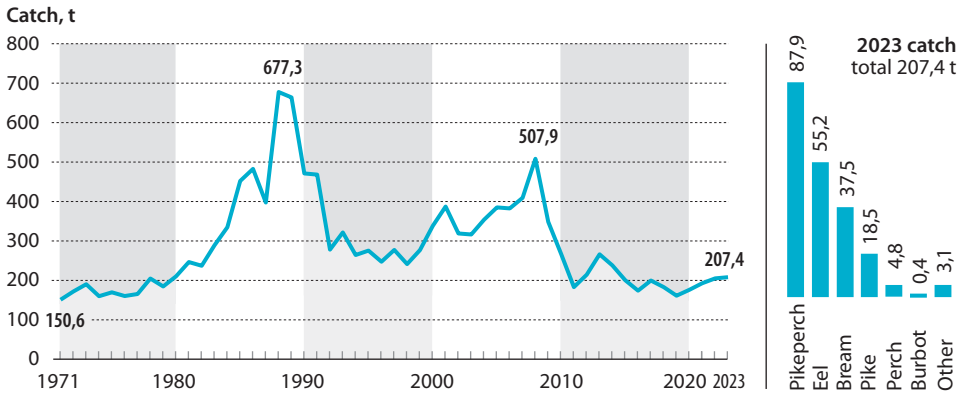


FIGURE 35. Catches (t) from Lake Võrtsjärv, 1971–2023 Source: EULS.

As in previous years, the most successful type of fishing gear used to land pikeperch in 2023 was the gill net, which brought in 78.5 tonnes (Figure 36). The autumn/winter fishing season was the highest yielding. Trap nets caught 9.4 tonnes of pikeperch, which was 3.8 tonnes less than in 2022. Pike was still in a slump, making up just 45% (18.5 tonnes) of the average for the last 10 years (40.7 tonnes). Trap nets were used for the majority of the bream caught (70%, 26.2 tonnes). Although bream ranks first among Võrtsjärv species in biomass, its yield has been poor in recent years. The main reason is its low market value, thus fishermen are disinclined to sell it. In 2023, the eel catch rose to the highest level of the past 33 years. The most successful months were May (15.7 tonnes) and September (11.1 tonnes). Thanks to intensive restocking in the mid-2010s, eel catches have burgeoned in recent years.

The ratio of the preferred gear types is relatively the same through the years. In 2023, trap nets were used to catch 53.9% (111 tonnes) of the total, of which eel made up 49%, bream 29% and pikeperch and pike each accounted for 11% (Figure 36). Pikeperch comprised 82% of fish caught with gill or trap nets (78.5 tonnes), with other species far less significant.

In 2023, 323 trap net permits and 321 gill net permits were issued. Fishing permits were granted to 65 fishers or companies in 2022 and 63 in 2023 (Figure 37).

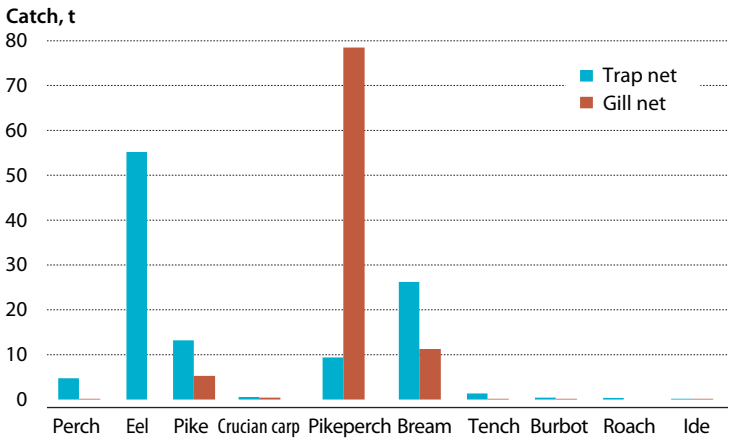


FIGURE 36. Species composition of commercial fishing catches from Lake Võrtsjärv in 2023 by fishing gear type
Source: AFB.

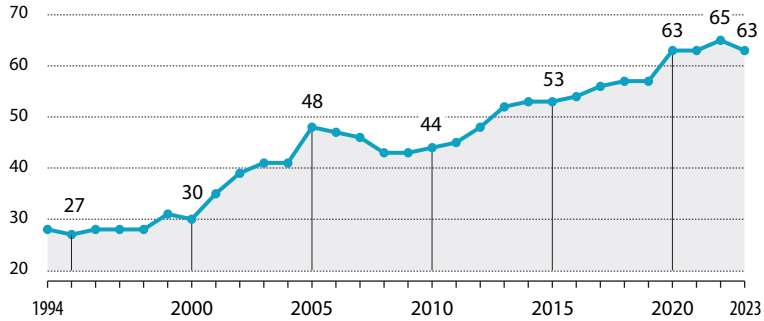


FIGURE 37.
Number of commercial fishing permits issued for Lake Võrtsjärv, 1994–2023
Sources: AFB, VFB.

Eel

The natural influx of eels into Lake Võrtsjärv has been hindered since the 1950s, when the Narva hydroelectric power plant was built, which means all of the lake's eel population consists of restocked eels. Over the years, both glass and pre-farmed eels have been released into Lake Võrtsjärv and, according to research, the lake is a high-quality living environment for eels. Tests with tagged eels have shown that eels can reach the Baltic Sea via Emajõgi River, Lake Peipus, and Narva River.

The growth rate of eels in Lake Võrtsjärv largely depends on the stage at which they are released into the lake. It has been found that eels released as glass eels reach fishing size (TL = 55 cm) faster than pre-farmed eels. In recent years, eels aged 6–8 years have prevailed in catches.

In both 2022 and 2023, only glass eels were restocked in Lake Võrtsjärv. Restocking is organised by MTÜ Võrtsjärve Kalanduspiirkond and funded by the Environment Investment Centre, which also collects the fees for fishing rights. The restocking volumes in the lake depend above all on the market price of glass eels, which is usually lowest in the winter months. That is why eels were restocked in winter in both years, when the lake was covered by ice. In 2022, 297.6 kg of glass eels were released (around 892,800 individuals) and in 2023, 304 kg (about 912,060 individuals). The eel supplier in both cases was EURL Aguirrebarrena, a French entity. The eels were transported in a live fish truck to the lake and fishermen dispersed them.

In 2022, 49.5 tonnes of eels were caught from the lake. In 2023, the figure was 55.2 tonnes (Figure 38). The greatest catch was reported in May and September and it

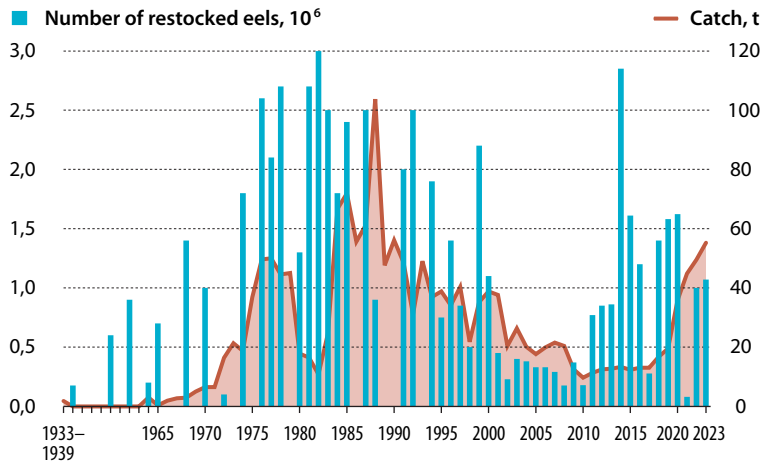


FIGURE 38.
Eel restocking (number of individuals) and catches (t) in Lake Võrtsjärv, 1933–2023
Source: EULS.

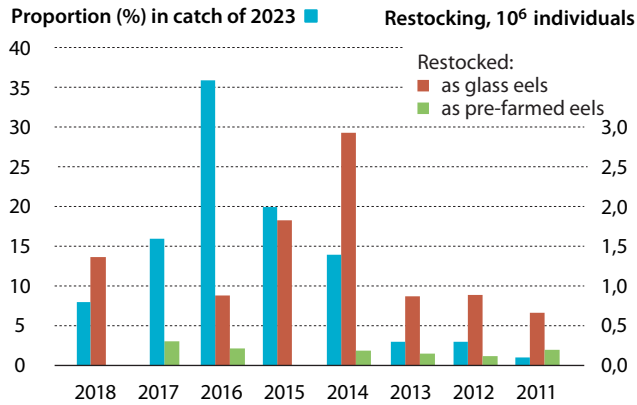


FIGURE 39.
Proportion of restocked eel cohorts in test fishing catches in 2023 (blue bars)
Source: EULS.

made up nearly half of the figure for the entire year. Seven-year-old eels were caught the most in 2023 using trap nets (these eels were restocked in 2016, see Figure 39); these eels made up 36% of the catch. The average length of eels caught was 61.4 cm and average body mass was 457 g.

The proportion of migrating silver eel in the commercial harvest was 4%. The silver eel biomass rose in 2022 and 2023 (72 and 81 tonnes, respectively). Above all, the reasons for this was the restocking volume growth in the early to mid-2010s. Official catch figures by commercial fishermen were taken into consideration in the assessment; therefore the actual silver eel biomass leaving the lake is likely to be somewhat lower.

■ Pikeperch

The pikeperch catch in 2023 (87.8 tonnes) dropped somewhat in compared to 2022 but was still well above the average for the last 10 years (53 tonnes). The yield for pikeperch is generally highest in late autumn and winter; in 2023 as well, the most pikeperch was caught in December (19.9 tonnes, Figure 40). Wintertime test fishing with gill nets in 2023 showed that the average length of the pikeperch (TL) was 56.4 cm and the most abundant age group caught in the nets was that of five-year-olds. Test fishing catches with gill nets carried out in the autumn were mainly made up of 4–6-year-old pikeperch and the average total length (TL) of the individuals caught was 52.5 cm. Based on the allowed quotas, an average of 244 kg of pikeperch per gill net and 29 kg

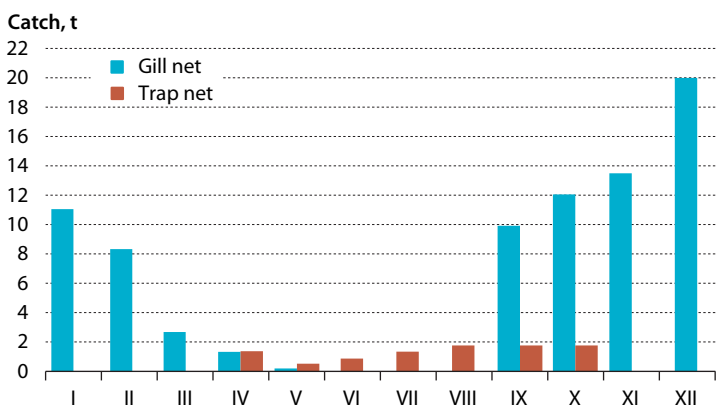


FIGURE40.
Pikeperch catches by month and fishing gear in 2023
Source: AFB.

per trap net was caught in 2023.

In 2023, pikeperch mainly spawned in mid-May, but test fishing showed that some individuals may have spawned as early as late April. According to autumn test trawling results, the abundance of pikeperch from the same summer was 40 individuals per trawl hour, which is 33% more than during the same period in 2022. The ratio of plankton-feeding to predatory individuals among the same summer cohort was nearly even (51% and 49%) The transition of the summer cohort to predatory feeding is affected by stocks of Lake Peipus smelt, which have been low in recent years. It is likely that other suitable species of fish – roach, bleak or ruff – made up a significant part of the diet for the pikeperch fry in 2023.

Similarly to previous years, the one- and two-year-old undersized pikeperch being caught in the fishing gear continued to be a concern – 88% of the fish caught in the traps were undersized. Of commercially significant cohorts, four-year-old individuals were found in greatest numbers in the trap net catch.

Pike

Pike are abundant in the shoreline zone of Lake Võrtsjärv as well as in the southern part of the lake, which is why trap nets are the most productive fishing gear in pike fishery. The best pike catches are usually taken immediately after the end of the period of closure in spring as well as in autumn (October). In gill net fishing, late autumn and winter are the most favourable fishing periods, when pike holds second place after pikeperch in terms of importance to fishermen.

The pike catch in 2023 (18.5 tonnes) was at a similar level to that of 2022 (17.9 tonnes). As in previous years, most of the catch (71%) was taken with trap nets (Figure 41). By quantity, the most successful month was October, when 5.2 tonnes of pike was caught.

The average length of pike take by test trap net fishing in 2023 on Võrtsjärv was 47.8 cm; body weight, 720 g. Thirty-five per cent of the catch consisted of undersized individuals and 65% were fishing-size individuals, which was a somewhat better result than in 2022, when the figures were 41% and 59%, respectively. Still, the abundance of large (>70 cm) pike in the trap net catch was still very small: only 1%. Three-, four- and five-year-old pike were mainly represented in the age groups. In 2023, pike spawned in the first half of April when the water temperature was 3–7 °C.

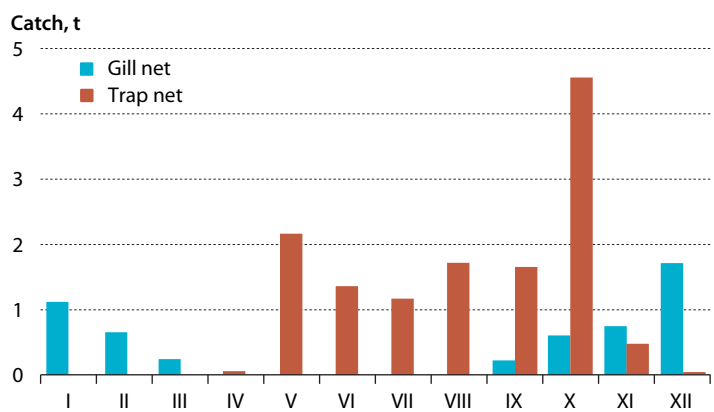


FIGURE 41.
Pike catches by month and fishing gear in 2023
Source: AFB.

The new minimum measurement that came into force in 2024, 50 cm, ensures that all three-year-old and most four-year-old pike are relieved of fishing pressure and gives them the possibility of spawning at least once more compared to years past. This in turn could contribute to improved pike stocks in Võrtsjärv.

Bream

The bream catch in 2023 was the smallest in the last 20 years (37.5 tonnes, Figure 42). At the same time, test trawling showed that bream biomass was 100 kg/trawl hour higher than it was in 2022 (WPUE = 222.1 kg/h). The majority of the bream biomass comprised one- to six-year-old fish (82%), while individuals significant for commercial fishing with a mass of over 1 kg made up only 11%. As usual, the majority of bream (70%) was caught by trap net and the best month was May, when over 10 tonnes was caught. Presumably the good pikeperch and eel catch has lowered motivation on the part of fishers to land bream because the catch is still low despite sufficient stocks.

Test fishing in 2023 showed that commercially significant individuals made up 32% of the bream caught in trap nets and 27% of the bream caught in gill nets. One-year-old bream made up the biggest proportion in the trap net catch.

As in years past, a problem in the case of bream is the fact that there is very low interest on the market in bream less than 1 kg, so it is mostly released back into the lake. In the interests of reducing competition for food both among breams and with respect to other species, ways should be found for the commercial sector to also sell individuals weighing less than 1 kg.

The catch forecast for the most important fish species in Lake Võrtsjärv in the coming years is presented in Table 24.

TABLE 24. General assessment of state of stocks and fishing mortality in Lake Võrtsjärv in 2023–2025, by key species

Species	State of stocks			Fishing mortality
	2023	until 2024	until 2025	
Eel	1	1	1	B
Pikeperch	1	1	2	B
Pike	4	3	2	C
Bream	1	1	1	A
Perch	3	3	3	D
Burbot	4	4	4	D
Lake Peipus (dwarf) smelt	3	3		–

Note: **state of stocks** – 1: good; 2: moderate; 3: poor; 4: depleted; **fishing mortality** – A: low; B: moderate; C: high; D: insufficient data. Source: EULS.

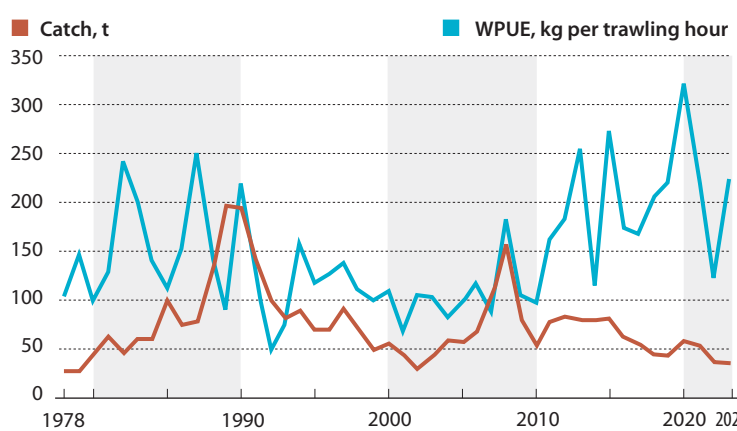


FIGURE 42. Relationship between commercial fishing of bream (catch in tonnes) and test trawling WPUE (kg per trawling hour) in Lake Võrtsjärv, 1978–2023
Source: EULS.

LAKE PEIPUS FISHERY

In terms of fishing opportunities and catch, 2022 and 2023 were quite similar in Lake Peipus (Tables 25 and 26), yet in terms of how fishing was organised, they differed substantially. In both years, state quotas were established, true, but unlike 2022, they were distributed in 2023 based on fishing gear and the allowed annual catch was established in terms of specific types of gear. In essence, instead of being involved in a race, fishing enterprises received individual fishing quotas that they could use as they saw fit in the context of the agreed-upon fishing arrangements.

State of fish stocks and changes

In 2022–2023, the status of the Lake Peipus **pikeperch** stocks fell between bad and moderate: in terms of abundance, the situation was poor, while in terms of mass, it was moderate (Figure 43). The bulk of the pikeperch stocks in 2022 were made up by fish born in 2016 and 2020; in 2023, it mainly comprised fish from the 2020 year

TABLE 25. Estonia's state fishing quota in tonnes in Lake Peipus and Lämmijärv, 2011–2023

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Pikeperch	672	714	650	650	650	758	866	677	695	954	566	447	470
Perch	900	1 400	1 000	800	850	1 032	1 182	1 288	1 562	1 255	499	842	895
Pike	110	160	165	120	125	121	131	86	119	175	144	137	125
Bream	600	614	650	750	710	761	836	915	844	1025	1214	853	735
Roach	305	300	280	350	275	300	350	250	280	360	295	355	400
Whitefish	5	3	2	1	1	1	1	1	1	1	1	1	1
Smelt*	5	5	5	5	5	5	5	400	150	200	170	5	5
Vendace	10	15	15	25	15	15	45	400	325	170	89	49	10
Burbot	50	50	50	50	50	50	50	50	50	50	50	55	55
Ruff	300	300	150	150	150	150	150	150	150	150	150	150	150
Other species**	50	50	25	25	25	25	1	0	25	25	25	25	25
Total	**3 007**	**3 611**	**2 992**	**2 926**	**2 856**	**3 217**	**3 618**	**4 217**	**4 200**	**4 366**	**3 202**	**2 919**	**2 871**

* In 2011–2017 and 2022–2023, the quota was intended only for test fishing, while in 2018–2021, it was also for commercial fishery.
** Until 2016, and in 2019–2023 – tench, ide, silver bream, crucian carp, vimba bream, and eel; in 2017 – only eel; no quota was allocated in 2018.

Sources: MOE, MRA, UT EMI.

TABLE 26. Estonian fish catch (including research fishing catch) in tonnes in Peipus and Lämmijärv, 2011–2023

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Pikeperch	672	646	637	599	420	720	839	667	653	908	564	386	381
Perch	757	1 061	914	787	818	1 000	661	553	786	1 246	497	836	822
Pike	100	153	143	120	94	94	97	78	105	110	91	80	85
Bream	578	577	604	748	676	665	758	664	574	574	678	622	500
Roach	225	207	185	217	211	194	191	185	152	175	199	192	199
Smelt	0	<1	<1	<1	<1	4	4	355	19	56	149	<1	<1
Whitefish	<1	<1	<1	1	<1	<1	<1	1	<1	<1	1	<1	1
Vendace	1	3	10	22	13	15	45	313	303	143	84	47	10
Burbot	30	21	23	20	17	26	44	39	46	45	48	27	22
Other species	9	3	5	6	8	5	4	5	3	4	4	3	2
Total	**2 371**	**2 671**	**2 520**	**2 521**	**2 256**	**2 723**	**2 644**	**2 860**	**2 640**	**3 261**	**2 314**	**2 192**	**2 021**

Sources: MORA, MRA, VFB, AFB.

class. The new cohort from 2022 was low in number; while the one in 2023 had medium abundance (Figure 44). Bolstered by the latter, stocks should start increasing in the coming years.

Stocks of another valuable commercial fish, **perch**, were at a moderate level. In 2022, the 2015 and 2019 cohorts were predominant, and in 2023, those of 2019 and 2020. From this point on, the perch stocks should increase because preliminary indications suggest that the fish of the 2023 class will strengthen the stocks.

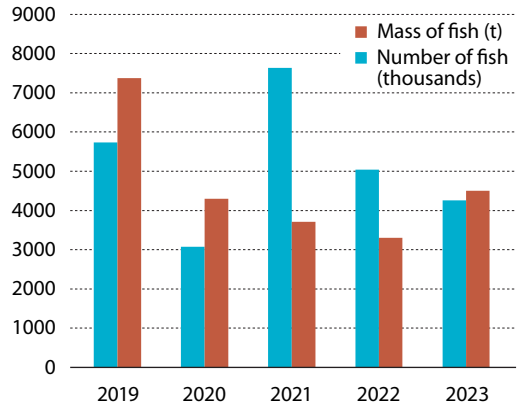
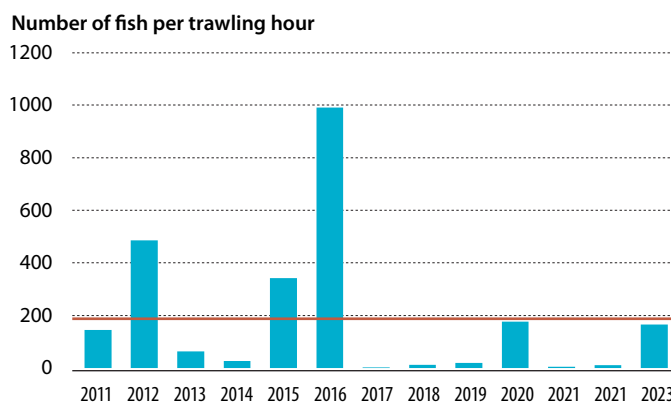


FIGURE 43. Pikeperch stock of Lake Peipus (number of fish in thousands and mass in tonnes) in the autumn of the years 2019–2023 (excluding one-summer-old fish) Source: UT EMI.

The stock of the third most important species – **bream** – remained in good condition, although stocks decreased a bit. Unlike pikeperch and perch, the bream stock is made up of fish from many year classes, with a predominance of fish born in 2014 and earlier. **Pike** stocks remained moderate in 2022 and 2023, decreasing slightly. In 2022–2023, the 2016 class was the most numerous. **Roach** stocks were solid in 2022–2023, growing mainly thanks to fish born in 2014–2015. **Peipus smelt** stocks were poor in both 2022 and 2023 and no commercial fishing could take place. The low stocks for this species consisted mainly of one-year-old individuals. **Vendace** stocks in 2022–2023 were poor and became worse. In 2022, this mainly consisted of fish from the small populations born in 2019–2020, supplemented by a new, low-abundance generation of vendace in 2023. The stocks of **burbot** and **Lake Peipus whitefish** were at the same low level as the year before and these species were only allowed to be landed as by-catches.

In 2021–2023, at the initiative of the Fishermen's Union for Lake Peipus Sub-Basin and in cooperation with the Põlula Fish Farming Centre and the Estonian Maritime Institute, 1,033,800 larval Lake Peipus whitefish and 58,940 whitefish fry from the same summer were introduced into the lake.

FIGURE 44. Abundance of one-summer-old pikeperch in Lake Peipus (number of fish per trawling hour) in the autumn of the years 2011–2023 (the red line marks the average abundance) Source: UT EMI.



Fishing regime

In 2022 and 2023, the lake's fishery regime was essentially similar to that of previous years in terms of both limits on fishing gear and fishing time. According to the agreement made in the Estonia-Russia Fisheries Commission, from 1 January to 5 May and from 1 September onwards, up to 3,000 offshore nets with a minimum mesh size of 130 mm could be used for fishing. From 1 March to 5 May, 1,553 shore nets with a mesh size of 60–80 mm could be used. Trap nets were allowed only during the one-month summer vendace fishing season. From 15 September, 20 Danish seines with a minimum mesh size of 48 mm could be used for up to 300 fishing days, and with a minimum mesh size of 100 mm for another 300 fishing days. The minimum size of pikeperch during the fine-mesh seine fishing period was 35 cm. The Estonian-Russian agreement does not regulate limits on trap nets, and Estonia was allowed to use up to 906 of them, which is a domestic regulation. The fishing closures during spawning of pike, pikeperch and bream – agreed in years past – and a ban on trap net fishing in lakes Lämmijärv and Pskov were in force. All trap nets had to be removed from the lake during the closure so as not to impede fish migration. Fishing was allowed until the state quotas were full.

As in the past, fishing in 2022 also proceeded with many additional restrictions on fish species (pikeperch, perch, smelt, vendace, and burbot) and fishing gear (offshore gill net, trap net, Danish seine, and anchored seine). For example, due to the exhaustion of the six-month quota, fishing for pikeperch and the use of 130 mm mesh offshore gill nets were prohibited from 13 March, and fishing for perch along with trap nets were prohibited from 14 May. The fishing ban on vendace and trap nets came into force on 11 July (after 10 days of fishing). Since the annual quota for perch was largely exhausted by mid-September, fine-mesh seine fishing was not allowed at all.

Overall, national quotas were 75% used. In the case of perch, nearly 100% of the quota was used up; and for pikeperch, 86% was used (Table 27). The amount of pikeperch caught was more modest than usual due to the ban on use of the fine-mesh seine and the fact that the minimum size of pikeperch was not lowered.

TABLE 27. Estonian catches (incl. research fishing), quotas and balances (t) and quota uptake levels (%) in Lakes Peipus and Lämmijärv in 2022

Species	Catch	Quota	Balance	Uptake
Pikeperch	386	447	61	86
Perch	836	842	6	99
Pike	80	137	56	59
Bream	622	853	231	73
Roach	192	355	163	54
Whitefish	<1	1	1	49
Smelt	<1	5	5	<1
Vendace	47	49	2	95
Burbot	27	55	28	49
Ruff	<1	150	150	<1
Other species	3	25	22	11
Total	**2 192**	**2 919**	**727**	**75**

Sources: MOE, AFB.

TABLE 28. Estonian catches (incl. research fishing), quotas and balances (t) and quota uptake levels (%) in Lakes Peipus and Lämmijärv in 2023

Species	Catch	Quota	Balance	Uptake
Pikeperch	381	470	89	81
Perch	822	895	73	92
Pike	85	125	40	68
Bream	500	735	235	68
Roach	199	400	201	50
Whitefish	1	1	<1	71
Smelt	<1	5	5	<1
Vendace	10	10	<1	96
Burbot	22	55	33	41
Ruff	0	150	150	0
Other species	2	25	23	9
Total	**2 021**	**2 871**	**850**	**70**

Sources: MOE, MRA, AFB.

In 2023, in conditions of new fishing arrangements, fishing mainly took place according to the agreed regime. During the year, only one additional closure had to be applied, which pertained to vendace fishing using ordinary trap nets, the quota for which was exhausted before the term. Compared to 2022, the catch allowed under national catch quotas in 2023 dropped as a whole as well as for pikeperch and perch (Table 28). The main reason was a reapportioning of catch quotas among fishing enterprises due to the new fishery management.

It will probably take several years to adapt to the new fishery management procedure. The balances of the annual quotas of key commercial species (pikeperch, perch, pike, bream and, this time, vendace) were permitted to be carried over to the next year to the extent of 5%.

In 2022, 83 enterprises (who reported catch) were engaged in fishing and 86 in 2023, while 200 and 180 fishermen were listed on fishing permits for these years. The number of fishermen going out on the lake has dwindled to less than half over the years; the number of fishing enterprises has however stabilised in recent years (Table 29). This shows that the fragmentation of fishing rights has wound up.

TABLE 29. Number of companies and fishermen related to Lakes Peipus and Lämmijärv, 2011–2023

	Companies*	Fishermen**
2011	70	406
2012	68	383
2013	66	367
2014	69	367
2015	71	325
2016	68	302
2017	67	282
2018	72	264
2019	84	259
2020	85	238
2021	85	211
2022	83	200
2023	86	180

* Companies that have claimed their fishing permits and registered a catch.
** Fishermen are the persons indicated on fishing permits.
Source: AFB, VFB.

Catches

Catches in 2022 and 2023 were low compared to previous years; this was mainly due to the low abundance of pikeperch. In 2023, significantly less bream was also caught (Table 26). The proportion of predatory and mainly-for-export fish (pikeperch, perch, pike, burbot) remained high, making up over 60% of the total catch in 2022 and 2023. Non-predatory fish and species with mainly local importance (bream, roach, vendace, smelt, ruff) made up less than 40%, and plankton-feeding species (vendace, smelt) dropped to 1–2% of the total catch of the Estonian side of the lake.

The highest-yielding catch months in 2022 were spring and summer, while in 2023, more fish were caught in autumn. The most striking change pertained to perch, as the catch during May spawning was supplanted by autumn catch (Figures 45 and 46).

As in years past, various types of trap nets were the most productive in 2022 and 2023 – half or more of the annual catch came from these. In 2023, the catch taken with Danish seines increased significantly, but the catch taken with all other types of gear dropped (Table 30).

Pikeperch continued to be caught in 2022 and 2023 mainly with offshore nets, while perch was mainly caught in 2022 by trap net and in 2023, with Danish seine. The third-most important fish species bream was caught by trap net, lines of trap nets and offshore nets (Figure 47).

The most prized commercial fish continued to be pikeperch and perch, the value of which in both years made up more than 80% of the total value of the fish catch

TABLE 30. **Catches (t) from Lakes Peipus and Lämmijärv (without research fishing), average for type of fishing gear and proportions (%), 2011–2023**

Fishing gear	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Offshore gill nets	673	553	779	798	617	719	814	545	664	997	843	615	501
Inshore gill nets	77	60	57	99	93	83	71	84	76	74	134	137	101
Trap/fyke nets	671	403	458	539	629	712	657	599	630	614	446	572	511
Lines of trap nets	635	564	664	733	657	671	609	585	559	649	619	757	496
Smelt trap nets	0	0	0	0	0	0	0	355	20	57	150	0	0
Pound nets	0	0	0	0	0	4	6	153	123	52	29	12	4
Danish seines	287	1058	524	320	225	494	451	507	527	778	53	57	387
Other fishing gear*	10	13	8	11	12	12	16	8	15	19	23	20	6
Total	**2353**	**2651**	**2490**	**2500**	**2232**	**2695**	**2626**	**2837**	**2615**	**3239**	**2298**	**2172**	**2006**

* Mostly catches of anchored seines.

Sources: MORA, MRA, VFB, AFB.

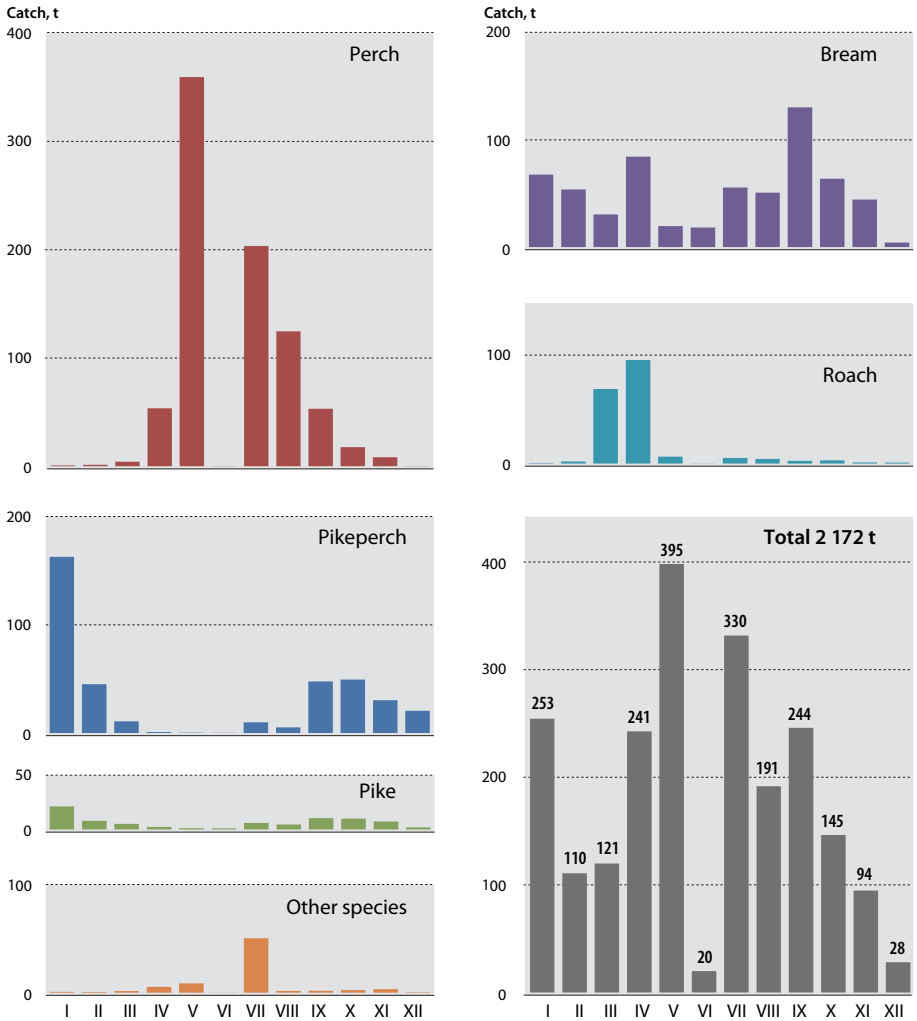


FIGURE 45. **Dynamics of catches from Lakes Peipus and Lämmijärv by species in 2022 (only commercial fishing))** Source: AFB.

from the lake. The pikeperch catch was worth about 1.6 million euros in both years, perch about 1.8 million euros in 2022 and 2.3 million euros in 2023 (Figure 48). The value of bream, which ranked second in catch in 2022–2023, was only about 0.3 million euros. This explains the current low interest in catching bream.

Fish caught from the lake were landed in more than 40 ports. In 2022, the most fish was landed in the port of Varnja (293 tonnes) and in 2023 in the port of Kallaste (285 tonnes). Approximately more than 100 tonnes was also landed in the ports of Lohusuu, Kolkja, Laaksaare, Mehikoorma, Rannapungerja, Vasknarva, Kalmaküla, and Raja.

Changes in unit effort

In 2022, fine-mesh seines were not allowed to be used for fishing. In 2023, this option did arise thanks to individual quotas and the option was used as well. Of the allowed 300 fishing days, 217 were used.

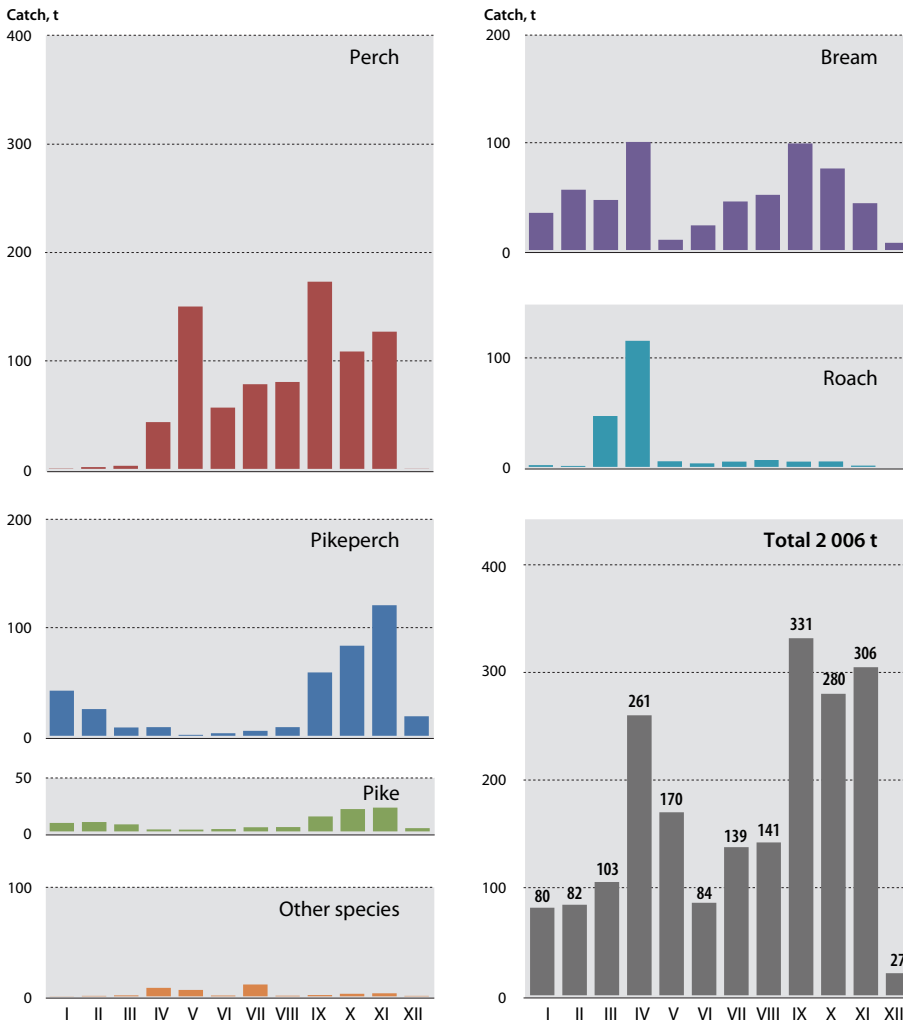


FIGURE 46. Dynamics of catches from Lakes Peipus and Lämmijärv by species in 2023 (only commercial fishing) Source: AFB, VFB.

Trap nets and lines of trap nets were deployed for a longer period in 2023 (around 104,500 fishing days) than in 2022 (around 85,000 fishing days) since no additional spring bans on trap nets were established. During a given month in 2022, 624 trap nets were deployed on average, while the figure for 2023 was 588.

In 2022, offshore gillnets were used for approximately 294,000 fishing days, while in 2023, they were used less – on approximately 250,000 fishing days – due to less intensive autumn fishing. There were around 2,250 offshore gillnets deployed during a month in 2022; while the figure was around 2,100 in 2023.

Thus, the fishing capacity of trap nets and offshore gillnets was not maximised, nor were the number of Danish seine fishing days in 2023.

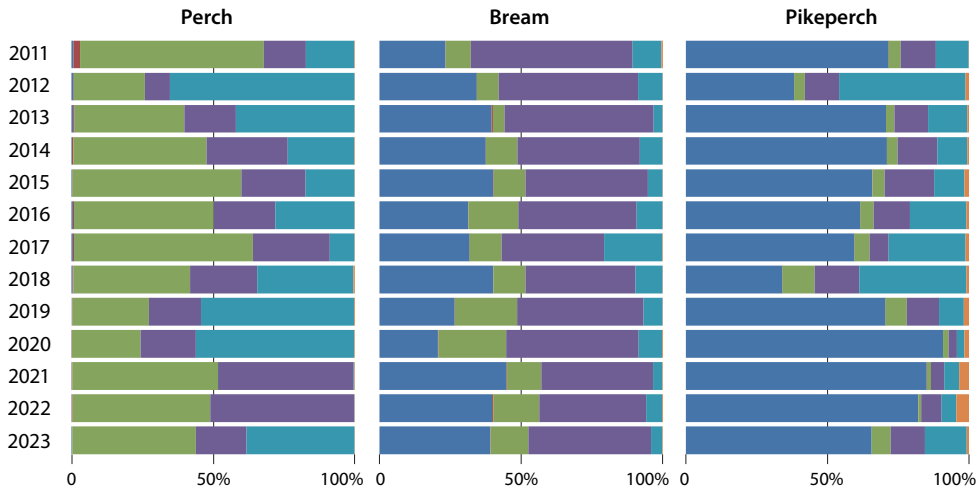


FIGURE 47. Distribution of perch, bream, and pikeperch catch from lakes Peipus and Lämmijärv on the basis of type of fishing gear, 2011–2023
Sources: AFB, VFB.

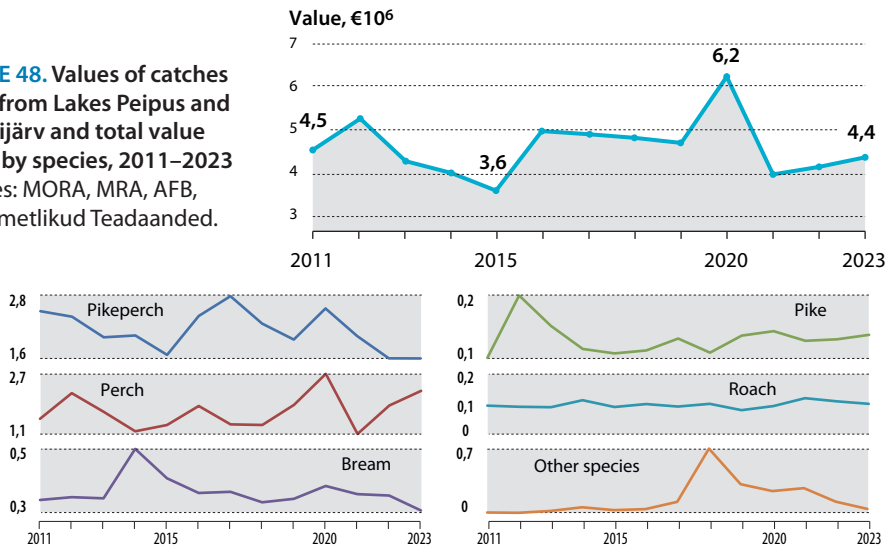


FIGURE 48. Values of catches taken from Lakes Peipus and Lämmijärv and total value (€10⁶) by species, 2011–2023
Sources: MORA, MRA, AFB, VFB, Ametlikud Teadaanded.

EMAJÕGI RIVER FISHERY

The Emajõgi River is a very important fishing area for professional and recreational fishermen. The official annual catch of fishermen fishing on the river has fluctuated between 16 and 128 tonnes this millennium, but it has been on an upward trend over the past dozen years, and 2023 was a record year. Catch figures for recreational fishermen are not continuously recorded, but according to a survey-based study of recreational fishing, this indicator may have been even higher than that of professional fishermen in certain periods (Jalak, Rakko 2012).

Species composition, abundance and catch of fish in the Emajõgi River

The Emajõgi River connects two of Estonia's largest lakes, Lake Peipus and Lake Võrtsjärv, as well as numerous oxbow lakes, tributaries, smaller lakes, etc. The fish species there are diverse. Over the past ten years, 11 fish species have been consistently recorded in the official catch of professional fishermen fishing in the Emajõgi River, and a total of 19 species have been recorded during this period (Table 31). Species composition, abundance and changes in different months are affected by fishing management and species protection restrictions.

Since the 100-kilometre-long Emajõgi River is an important migration route for fish, they are mainly caught during migration. The main species caught is bream, the catch of which has been steadily increasing since 2011. In 2023, based on data provided by professional fishermen, the largest amount of bream was caught – 113

TABLE 31. Official commercial fishing catch in kilograms by species of in the Emajõgi River in 2014–2023

Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bream	21 872	26 819	26 195	28 923	38 302	44 576	78 984	64 808	81 597	113 464
Roach	3 585	2 789	3 728	7 366	3 890	3 603	5 948	2 931	7 741	7 008
Pike	860	1 701	1 064	748	1 793	1 913	2 571	2 041	1 901	3 159
Ide	660	507	249	361	302	662	277	271	979	972
Tench	607	660	225	299	342	502	292	373	309	367
Pikeperch	240	141	250	487	732	1 675	1 385	1 722	2 432	1 831
Perch	181	193	216	289	378	793	395	309	986	772
Silver bream	196	126	35	97	74	52	23	23	23	19
Crucian carp	155	197	91	62	155	159	137	65	476	83
Burbot	60	45	53	122	163	119	155	227	245	156
Ruff	–	–	2	9	–	–	–	–	–	–
Rudd	–	–	–	–	15	–	–	–	–	–
Eel	13	4	14	26	34	29	48	32	28	91
Common carp	14	3	2	14	–	–	–	29	7	–
Gibel carp	–	–	30	–	–	–	–	–	–	–
Lake Peipus whitefish	–	6	–	1	–	–	–	13	11	34
Dace	1	–	–	–	–	–	–	–	–	–
Bleak	1	–	–	–	–	–	–	–	–	–
Rainbow trout	–	–	–	1	–	–	–	–	–	–
Total	**28 444**	**33 189**	**32 154**	**38 804**	**46 179**	**54 083**	**90 215**	**72 843**	**96 735**	**127 956**

Source: MORA, MRA, VFB, AFB.

tonnes, which is almost 10 times more than at the beginning of the previous decade. The share of bream in the total catch of professional fishermen was relatively stable between 2014 and 2023, varying between 74.5 and 89% (average 82.9%). It has been observed that in years with lower bream catches, the total catch of other fish species is generally also low (Figure 49).

In addition to bream, commercial fishing in the Emajõgi River yields large quantities of roach (average catch share 9.1% in 2014–2023), pike (3.1%) and pikeperch (1.6%), and somewhat less ide (1%), tench (0.9%), and perch (0.7%), and tiny quantities of 10 other species of fish (total 0.8%, Table 31). Unlike bream, the share of other fish in the catch has been variable in these years – for example, in the case of ide, tench and pikeperch, it fluctuated sevenfold. The largest catches of roach were in 2017 (19%), while the analogous figure for pike came in 2015 (5.1%), although the largest catches of roach and pike – 7.7 and 3.1 tonnes, respectively – have been recorded by professional fishermen in the last couple of years. In addition to the aforementioned species, record quantities of ide, pikeperch, perch, Crucian carp, burbot, eel, and Peipus whitefish have been caught in the last two years. Only in the case of a few species (such as tench and silver bream) was the largest catch in the early years of the period in question.

Protected fish species, mainly asp and catfish, also fall into fishermen's traps, but they are not reflected in the catch because they must be released alive. Grayling is more

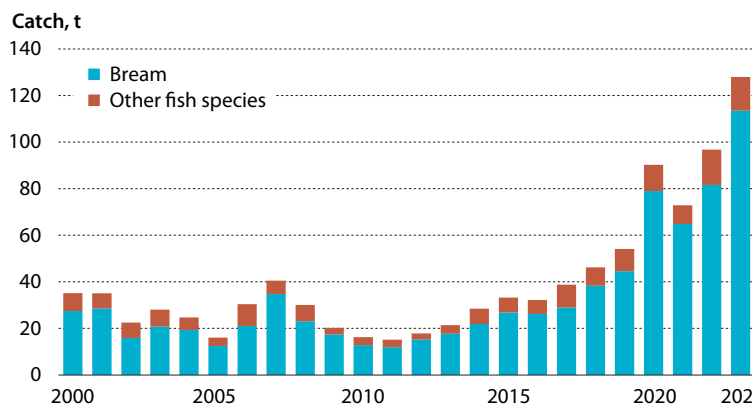


FIGURE 49. Dynamics of the official catch of commercial fishing in the Emajõgi River and the share of bream therein in 2000–2023
Source: MORA, MRA, VFB, AFB.

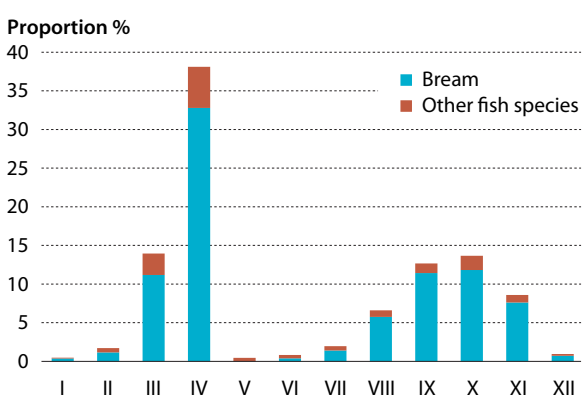


FIGURE 50. Distribution of official catch of commercial fishing in the Emajõgi River by month (%) in 2014–2023
Source: MORA, MRA, VFB, AFB.

of an occasional visitor in the river, and the weatherfish and spined loach do not usually get caught in traps due to their small body size. According to the current fishing regulations, it is also prohibited to catch sturgeon, although it is known that only foreign sturgeon species have been registered in the Emajõgi River, apparently accidentally released from farms. Estonia's only native sturgeon species – the Atlantic sturgeon – cannot enter the Emajõgi River from the sea. Undersized fish must be released as well. In the Emajõgi River, the minimum sizes primarily concern eel, pike, pikeperch, bream, tench, burbot, and whitefish as well as brown trout, vendace, and vimba bream.

The fish yield in the Emajõgi River is uneven in different months (Figure 50), and it can also differ significantly in the same months of different years. For example, in most years the main share of bream is caught in the first half of the year. While on average it accounts for 56% of the annual bream catch, in 2016 it was as high as 84%, but in 2019 it was only 27%. However, the years 2018–2020 were exceptional, as commercial fishermen landed more bream in the second half of the year than in the first.

In addition to bream, the first half of the year's catch of roach, ruff, whitefish, silver bream, crucian carp, gibel carp, burbot, and common carp also exceeded the respective average figures for the second half of the year over the past ten years. However, the majority of the perch, ide, tench, pike, pikeperch, eel and rudd catches are caught in the second half of the year. In terms of months, professional fishermen catch the most fish in April (on average 38%), the only exception has been the aforementioned 2019, when there was an exceptionally strong bream catch in October.

Fishery management

The large fluctuations in the catch of different fish species in different months are primarily due to their migration period (Figure 50) and fishing management restrictions. The largest bream catch is obtained during its migration to spawning grounds just before the ban on commercial fishing gear comes into effect (from 1 May to 10 June). The majority of the pike catch (64% on average) is caught in the second half of the year, partly because the fishing ban for this species lasts from 15 March to 30 April. Pikeperch fishing is prohibited from 5 May to 10 June, which is why the autumn catch for this species is also higher. Tench, which is not allowed to be caught by commercial means from 20 June to 20 July, is also more abundant in the catches of commercial fishermen in the second half of the year (59%). For the aforementioned species bream, pike, and pikeperch, the duration of the closure periods has been shortened since 2021.

For the effective management and protection of fish stocks, fishing restrictions have been established in the Emajõgi River, which take into account the times and places where fish congregate. For example, from 1 May to 15 June, fishing is prohibited from the mouth of the Emajõgi River to the beginning of the Koosa River, and from 1 April to 30 June in the meander scars of the Emajõgi River from the mouth of the Pedja River to the Kärevere highway bridge. Fishing with professional fishing gear is prohibited year-round in the meander scars of the Emajõgi River and from the source of the Emajõgi River to the new road bridge in Jõesuu.

Commercial fishermen used five types of gear on the Emajõgi from 2014–2023. The main part of the catch – an average of 87.1% – was taken by one-winged trap net (river trap net), 7.4% by shore seine. The proportion of catch taken by other means was negligible: fyke nets with a mouth height of three metres and above covered 0.8%,

traps with a mouth height of up to one metre covered 4.4%, and gill nets covered an average of 0.3% of the annual catch. The least frequent fishing was done with open water traps in 2014–2023 (in the two years observed).

In 2023, the total registered catch value taken by commercial fishermen on the Emajõgi River was approximately 77,000 euros based on first-sale prices, of which 63,000 euros were from bream. The highest price per kilogram was for eel (average 9.8 euro/kg), followed by Peipus whitefish and pikeperch (2.08 and 1.71 euro/kg, respectively). While bream caught in the Emajõgi River has previously been relatively valuable compared to bream caught in, for example, Võrtsjärv, the current price per kilo of bream from both Võrtsjärv and Lake Peipus is almost at the same level as that from Emajõgi (0.56 euro/kg).

Investigations of fish stocks on the Emajõgi

Several studies have been conducted to optimise the management of fish stocks in the Emajõgi River. One study focusing on fish, including bream, was conducted in 2015–2017. In its final report, Wildlife Estonia assessed the current bream fishing regime as sustainable.

Asp was also studied to gather information on whether limited asp fishing could be allowed. A study of downstream eel migration in the Emajõgi is underway.

The implementation of the strategic integrated project 'Implementation of climate change adaptation activities in Estonia' (AdaptEst) of the LIFE Programme for the Environment and Climate Action may have a positive impact on the fisheries of the Emajõgi River, as a result of which the migration of fish in the Emajõgi River can be better understood, contributing to the improvement of the condition of the spawning grounds of fish in the Emajõgi River and creating better access to them.

LAMPREY FISHING ON ESTONIAN RIVERS

Lamprey is highly valued in Estonia and in Estonia's neighbouring countries. In 2022, the estimated first-sale price of lamprey was 3.0 euros per kg^{-1}, and in 2023 it was 3.2 euros per kg^{-1}, which placed lamprey close to 10th position in the ranking of average first-sale prices among a total of 38 species. In addition, outside the Narva region, the price of a kilo of lamprey rose so high (up to 9.5 euros per kg^{-1}) at times that it was surpassed by no other species.

According to official data, in 2023 lamprey was caught in 30 watercourses in Estonia (Table 32), and in a negligible amount also in the coastal sea. Only commercial fishing is allowed. Official data also state that lamprey catches amounted to 27.2 and 34.8 tonnes in 2022 and 2023, respectively (up to half a million individuals per year). The biggest catches continue to be taken from Narva River (64% of total catch in 2023), while the sequence of the other lamprey rivers in terms of catches varies from year to year. In 2023, Reiu, Pärnu, Jägala, Vääna, Rannametsa, and Pirita rivers as well as Valgejõgi River and Uruste Stream stood out more clearly in terms of annual catches of more than half a tonne. Along with Narva River, lamprey catches on these eight rivers accounted for 91% of Estonia's total lamprey catch. Over a period of

two years, higher catches have also been taken from Vasalemma, Kunda, and Lemme rivers. In only five watercourses was the catch taken in 2023 lower than the catch for 2022. The growth in productivity in absolute terms was greatest in Pärnu and Reiu rivers – in 2023, 1.7 tonnes and 1.5 tonnes more lamprey was caught from these rivers than in 2022. On a relative scale, the Pirita, Pärnu, and Sauga rivers stood out with a significant increase in catch in 2023, where 13.6, 6.8, and 5.7 times more lamprey were caught, respectively, than in the previous year.

Looking at the official lamprey catches over the last decade, the catch for 2022 was meagre and the catch for 2023 was average or even good. Table 33 details lamprey catches taken from Narva River because this large river provides the bulk of Estonia's total catch each year, and changes occurring there might overshadow the rest of the trends. Over the last ten years, the average proportion of lamprey catches from Narva River has been 69% (63–79%). Only around 0.5% of the total catch is taken from the coastal sea.

The lamprey catch has been variable: during the more unfavourable times of the last century, the smallest annual catch was 3 tonnes and the largest reached 102 tonnes. This instability is partly due to the fact that individuals of one year class are fished for and the catch depends on the abundance of the particular year class. Against this backdrop, catches taken in the past decade have been relatively stable.

The estimated revenue from lamprey sales, based on average first-sale prices, amounted to 157,000 euros in 2023. The

TABLE 32. Commercial lamprey catches (kg) taken from Estonian water bodies in 2022 and 2023 according to official data

	2022	2023
Narva River	**21 547**	**22 272**
Other inland water bodies	**5 454**	**12 462**
incl. Reiu River	946	2 634
Pärnu River	259	1 769
Rannametsa River	608	1 107
Uruste Stream	702	1 022
Jägala River	411	851
Valgejõgi River	140	638
Vääna River	417	628
Pirita River	44	600
Vasalemma River	209	464
Kunda River	250	445
Lemme River	293	350
Sauga River	59	337
Keila River	101	219
Häädemeeste River	213	214
Selja River	182	213
Nõva River	37	177
Riguldi River	56	158
Loode Stream	233	152
Pudisoo River	58	110
Pada River	83	67
Audru River	21	66
Vainupea River	–	65
Loobu River	16	57
Treimani Stream	64	48
Ura River	–	19
Mustoja River	29	19
Priivitsa Stream	4	15
Toolse River	20	12
Kadaka Stream	–	8
Coastal sea	**175**	**64**
incl. Gulf of Riga	157	61
Gulf of Finland	18	–
Central Baltic	–	3
Total	**27 175**	**34 798**

Source: AFB.

TABLE 33. Official lamprey catch in Estonia (t), 2014–2023

Year	Total catch	Narva River	Other inland water bodies	Coastal sea
2014	30,0	20,8	8,9	0,3
2015	46,7	34,5	12,0	0,2
2016	30,8	21,2	9,5	0,1
2017	40,9	26,9	13,9	0,1
2018	24,9	16,5	8,3	0,1
2019	34,0	21,6	12,2	0,1
2020	35,8	22,7	13,1	<0,1
2021	26,8	19,4	7,4	0,1
2022	27,2	21,5	5,5	0,2
2023	34,8	22,3	12,5	0,1
Total	**331,9**	**227,4**	**103,3**	**1,3**

Source: MORA, MRA, VFB, AFB.

TABLE 34. Maximum number of lamprey fishing gear permitted to be used in inland water bodies in 2023 under commercial fishermen's permits

County	Cone trap	Lamprey fyke net
Ida-Viru	15 000	–
Pärnu	2 000	15
Harju	700	45
Lääne-Viru	500	17
Lääne	100	–
Saare	–	4
Total	**18 300**	**81**

Source: State Gazette.

TABLE 35. Official commercial lamprey catches (kg) in 2022 and 2023, by type of fishing gear

Fishing ground and gear	2022	2023
Narva River (cone trap)	**21 547**	**22 272**
Coastal sea	**175**	**64**
incl. open-water fyke net	59	13
gill net	6	–
line of fyke nets	–	3
trap/fyke net with a mouth height of up to 1–3 m	87	44
trap/fyke net with a mouth height of up to 1 m	23	4
Other inland water bodies	**5 454**	**12 462**
incl. Lamprey fyke net	238	699
cone trap	5 216	11 763
Total	**27 175**	**34 798**

Source: AFB.

catch value varied across regions and seasons. A large part of the revenue (around 69,000 euros) was earned by fishermen fishing on the Narva River and this revenue has significant economic importance in the region. The large share of the sales revenue generated by lamprey caught outside Narva River is striking: 56% of the total sales revenue was produced by catches that made up only 36% of the total catch in Estonia. Therefore, despite the smaller quantities caught, the rest of the lamprey rivers are financially comparable to Narva River.

Lamprey is caught using cone traps and lamprey fyke nets in Estonian rivers. The maximum number of fishing gear was the same in 2022 and 2023 (Table 34). The bulk of the maximum number of cone traps (15,000) was allocated to Narva River, but lamprey fyke nets were not used in this river during these years.

Like on the Narva River, most of the catch is taken with cone traps in other inland water bodies as well (Table 35). The proportion of lamprey fyke nets in the total catch was only around 2% in 2023. The largest catch taken with lamprey fyke nets (42% of the total fyke net catch in 2023) originated in Valgejõgi River. A significant percentage was taken by fyke nets on Pudisoo and Loobu rivers and Uruste

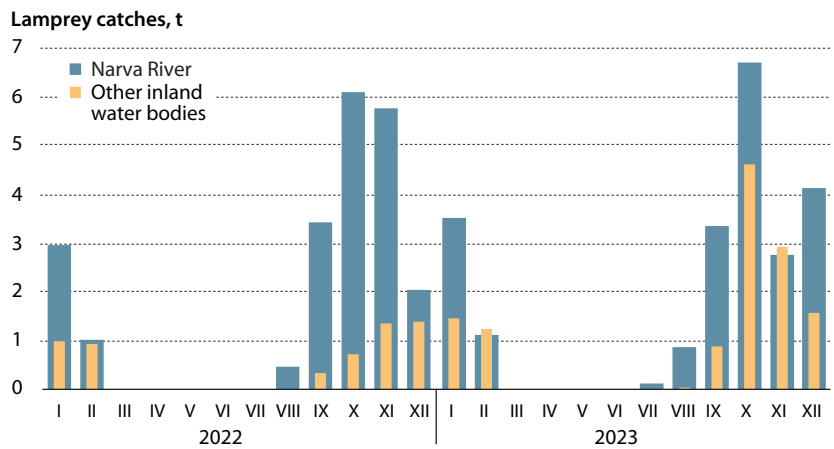


FIGURE 51. Dynamics of official commercial lamprey catches taken from Estonian inland water bodies by month in 2020 and 2021 Source: AFB.

Stream as well (a total of 35%). The remaining 23% was divided between eight watercourses.

The temporal distribution of lamprey fishery is described in Figure 51. The largest monthly catch was obtained in both 2022 and 2023 in October, when over six tonnes of lamprey were caught from the Narva River. The November 2022 lamprey catch also came close to this. This time of year is characterised by the arrival of windier weather in the Narva region, a drop in water temperature below 10 degrees, and an increase in flow.

For consumers, lamprey is of the best quality in autumn. It has just finished eating and is migrating to wintering grounds at that time. Lamprey will spawn in the spring and will not eat in the meantime; thus, its weight and body length begin to decline due to starvation and the production of reproductive products. Its weight and length will decrease by approximately 20% and 15%, respectively, and its fat content will decline as well. In view of the rational exploitation of stocks, the current temporal restriction on fishing serves its purpose (fishing in rivers is prohibited from 1 March to 30 June).

For decades, shrinking spawning grounds have been the main factor behind the decrease in the abundance of lamprey. Lamprey migrating from the sea to rivers in order to spawn can reproduce only in rapid sections of rivers, but access to these is severely limited due to dams. The situation has begun to improve in recent years because the state has initiated the construction of fish passes in dams. They have already been completed on many rivers, and this has happened on several larger rivers in the last few years. For example, in 2023, the Vanaveski dam on the Vasalemma River was replaced with a fish migration route, and in 2024, a fish pass as a section of rapids was built to replace the Püssi dam on the Purtse River. It is to be hoped that a solution will be found to the water supply problem of the currently dry Narva River gorge. This would enable the lamprey stock of Narva River to be increased considerably.

The opening of the Sindi dam for the migration of fish in Pärnu River is worth highlighting in this regard – a huge area is again available for breeding, wintering before spawning, and larval growth. The range of the lamprey, which previously only reached the Sindi dam, now extends to Paide. Studies of the abundance of lamprey larvae show that lampreys have already managed to reproduce widely and successfully in this large repopulated area. Abundance has increased and replenishment of the lamprey stock in the region can be expected soon. The first juveniles of lamprey that hatched upstream from the former Sindi dam have completed their growth period in the river and headed to the sea to feed; soon the first of them will arrive in the rivers to spawn.

Lamprey has a special conservation status in the European Union – while being one of the species in need of protection according to the Habitats Directive (92/43/EEC), it may be caught in a manner and volume that does not jeopardise the good conservation status of populations. Thus, overfishing of lamprey must be avoided and its habitats must be improved for stock management as well as conservation purposes.

In summary, fishing for lamprey is important in Estonia. Lamprey is still in good enough condition to provide fishing opportunities. The situation is expected to improve further in the coming years thanks to the restoration of the quality of river habitats.

Recreational fishing

Changes in the recreational fishing sector

On 1 March 2022, the new recreational fishing permit sales platform kalaluba.ee was launched. It was introduced to replace the previous environment, pilet.ee, which had been in operation since 1 January 2011. In addition to fishing rights, hunting rights are sold on the kalaluba.ee platform. While until now the Ministry of Climate and the Environmental Board farmed out the sale of these rights to the private sector through procurements, the new platform belongs entirely to the state. That has significantly decreased the cost price of the service. The development of kalaluba.ee was funded from the European Maritime and Fisheries Fund (EMFF) for 2014–2020 (308,080 euros).

In the autumn of 2022, for the first time in Estonia, spinning and fly fishing for salmon and sea trout during the hours of darkness was banned on eight rivers (Purtse, Selja, Pirita, Vääna, Loobu, Narva, Jägala, and Pühajõgi). The ban applies during the salmon and sea trout spawning season from 19:00 to 07:00. This step made the lives of poachers more complicated. Obviously casting is not possible in the dark and the only way to catch fish would be to illuminate the river with a flashlight and then physically spear sighted fish on a hook. That is an unethical method, but no less important in this regard are the injuries this causes to fish. Seriously injured fish die and may not spawn before.

While a daily catch limit was established for four fish species (perch, pike, pikeperch, bream) in 2020, ide and vimba bream were added to the list in 2023. In the case of the first, the maximum allowed quantity was set at 15 individuals, in the case of the second, at 20. The justification for the restriction was the need to protect the fish stock and thereby enable more recreational fishermen to use it. Sometimes fish bit very readily, leading to excessive quantities of fish being caught. While the reasons for the restrictions on the first four types were understandable to enthusiasts and the majority agreed with them, there was no such public support in the case of the restrictions on ide and vimba bream. Fishing pressure was not considered a factor threatening the stock in either case.

Fishing with a recreational fishing licence

In 2022, there were a total of 94,667 valid recreational fishing rights for Estonians and foreigners, and 108,376 in 2023 (Figure 52).[1] The average for the years 2012–2023 was 98,678, which indicates that approximately 100,000 recreational fishing rights continue to be purchased in Estonia annually. The growth for foreigners stands out. While at the peak of the coronavirus pandemic in 2020 and 2021, just over 2,000 foreigners (various individuals) purchased permits, in 2022 this figure rose to over 5,000, and in 2023 it reached almost 7,000 (Figure 53). The latter is comparable to the pre-pandemic years, when the number of fishing rights sold to foreigners reached almost 8,000. If we add the persons exempted from fees, who accounted for 25–35%, the number of foreign fishermen visiting Estonia in 2023 would be between 8,500 and 10,000.

While in 2020 and 2021, the restrictions of the coronavirus pandemic affected people's choices and some decided to spend their time fishing, in 2022 the sale of fishing rights fell by almost 11% (Table 36). However, 2023 surprised with an increase that reached the level of 2020 and 2021.

FIGURE 52.
Number of persons with recreational fishing right by duration of right, 2014–2023
Sources: MOE, MRA.

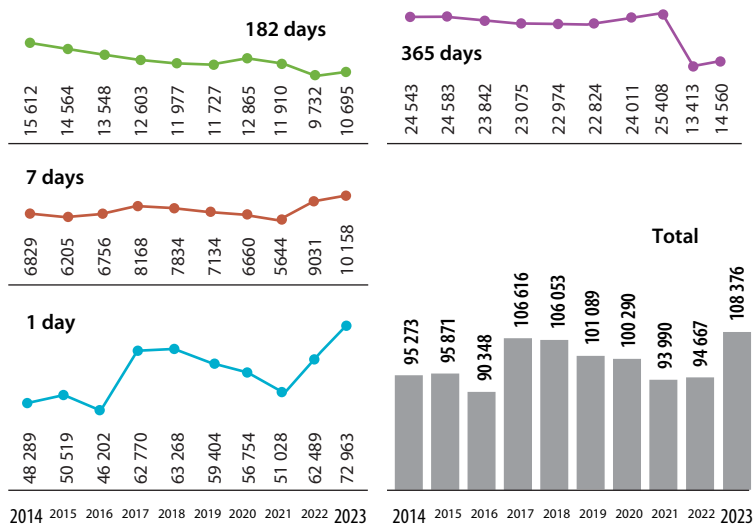
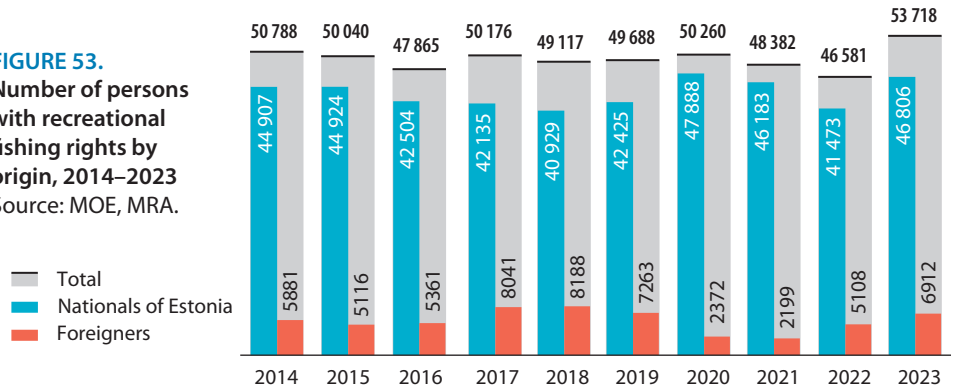


FIGURE 53.
Number of persons with recreational fishing rights by origin, 2014–2023
Source: MOE, MRA.



[1] When fishing with longline nets, a recreational fishing fee must be paid for the right to fish. A person can buy several permits with different validity periods (e.g. one-day permits) during the year.

TABLE 36. Number of recreational fishermen, 2014–2023

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fishing right holders with an Estonian ID code (not including people exempted from fees)*	44 916	44 924	42 504	42 135	40 929	42 425	47 888	46 183	41 473	46 806
Holders of free fishing rights (30% of those fishing for a fee)	13 475	13 477	12 751	12 641	12 279	12 728	14 366	13 854	12 441	14 041
Fishing card holders with an Estonian ID code	8 545	9 093	9 189	9 943	9 778	10 085	11 320	10 041	10 194	10 730
Total	**66 936**	**67 494**	**64 444**	**64 719**	**62 986**	**65 238**	**73 574**	**70 078**	**64 108**	**71 577**
Number of both fishing right and fishing card holders	3 779	4 593	4 618	5 163	4 906	5 077	5 126	5 527	5 278	5 553
Number of Estonian recreational fishermen	**63 157**	**62 901**	**59 826**	**59 556**	**58 080**	**60 161**	**68 448**	**64 551**	**58 830**	**66 024**

* People exempted from fees: students under 16 years of age; pensioners; people who faced political persecution during Soviet times and persons equated with the above; disabled persons; persons with partial or no capacity for work.
Sources: research and recreational fishing database, Environmental Board.

In 2012–2021, there were an average of 44,227 Estonian fishermen with different personal identification codes among those who purchased a recreational fishing permit. In 2022, this figure was lower than average (41,473) and higher in 2023 (46,806). Including those who catch fish on the basis of a fishing card and those who fish for free, the number of recreational fishermen was 58,830 in 2022 and 66,024 in 2023 (Table 36). It is hard to determine the cause of the major decline in 2022. It is possible that this is related to the transition to a new sales platform, but it is not possible to provide solid evidence of this, especially since there was no similar trend for fishing cards.

When a foreigner purchases a recreational fishing licence on the kalabuba.ee platform, they must now also enter their country of residence, which was not necessary in the previous sales environment. The new indicator allows, among other things, to see which countries' nationals go fishing the most in Estonia. According to the 2023 data, Latvians were in first place, Lithuanians surprisingly came in second place, and Ukrainians came in third. A total of 56 countries of residence were noted in 2023 (Table 37). However, the reliability of this data cannot be completely assured because the country code is entered by the buyer themselves and the system cannot verify it.

TABLE 37. Number of recreational fishing rights purchased by country in 2023 (top 30)

Country, code	Number of permits	Country, code	Number of permits	Country, code	Number of permits
Latvia, LV	10 635	United States of America, US	21	Mongolia, MN	8
Lithuania, LT	695	Netherlands, NL	16	Romania, RO	7
Ukrainae, UA	357	Czechia, CH	15	Georgia, GE	6
Finland, FI	219	Italy, IT	14	Norway, NO	6
Germany, DE	167	Libya, LY	14	Ireland, IE	5
Poland, PL	77	Belarus, BY	13	Australia, AU	4
Rissia, RU	47	Austria, AT	12	Denmark, DK	4
Sweden, SE	36	Czechia, CZ	11	Spain, ES	4
Great Britain, GB	27	France, FR	11	Hungary, HU	4
Moldova, MD	25	Slovakia, SK	10	Iisrael, IL	4

Source: research and recreational fishing database.

For example, some fishermen from Latvia (by verified name) have mistakenly indicated LT as their country code, which is quite similar to their Latvian code LV. Still, it provides a pretty good overview of the country of origin of foreign fishermen.

Fishing on the basis of fishing card

In 2022, 34,146 fishing cards were issued for recreational fishing, in 2023, 36,421 (Table 38). These are higher than in 2021. In 2022, this growth was undoubtedly driven by the sale of network permits for Lake Peipus, as it was the last of the Estonian water bodies to switch to weekly permits. However, in 2023, sales of Peipus fishing licences decreased. Apparently, this was due to the habit that fishermen there had developed over the years of buying all of the permits for the following year in advance at the end of the previous year (i.e. 2022). The fishing season on Lake Peipus runs from 1 March to 4 May. Formerly, if monthly permits were not purchased in time, they were no longer available before the fishing season. However, it is now different with weekly permits – there were plenty of them even right before the start of fishing,

TABLE 38. Number of fishing cards issued by type of fishing gear and fishing grounds, 2014–2023

Fishing gear	Fishing ground	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Gill net	Sea*	6 204	6 271	6 320	9 409	7 907	9 250	22 388	16 373	15 721	16 290
	Lakes Peipus, Pskov, and Lämmijärv**	864	820	815	771	1 442	1 348	1 538	1 553	3 608	2 747
	Rivers and small lakes***	605	609	403	1 205	1 728	3 553	3 978	3 404	3 141	3 254
	Total	**7 673**	**7 700**	**7 538**	**11 385**	**11 077**	**14 151**	**27 904**	**21 330**	**22 470**	**22 291**
Hand line, simple hand line, spinning reel, fly hook, pulling device	Endla Nature Reserve	755	1 272	1 055	1 158	1 138	720	916	750	832	859
	Matsalu National Park	1 347	1 802	1 811	1 719	1 669	2 364	2 444	2 241	2 068	2 373
	Silma Nature Reserve	1 765	1 555	982	1 396	894	1 023	984	1 011	1 120	1 152
	Total	**3 867**	**4 629**	**3 848**	**4 273**	**3 701**	**4 107**	**4 344**	**4 002**	**4 020**	**4 384**
Spinning reel, fly hook	Trout fishing grounds	1 087	1 069	980	1 222	1 096	943	1 475	2 049	1 868	2 026
	Salmon fishing grounds	1 895	1 653	3 607	5 014	3 222	3 436	4 669	3 333	3 040	4 944
	Total	**2 982**	**2 722**	**4 587**	**6 236**	**4 318**	**4 379**	**6 144**	**5 382**	**4 908**	**6 970**
Longline (100 hooks)	Sea	263	288	155	155	93	131	186	118	116	98
	Lakes Peipus, Pskov and Lämmijärv	61	50	38	36	27	35	69	44	27	29
	Lake Võrtsjärv	225	291	188	197	215	186	229	158	109	159
	Emajõgi River	136	102	114	104	95	71	67	50	59	31
	Other lakes and rivers	474	409	429	460	419	398	425	331	268	321
	Total	**1 159**	**1 140**	**924**	**952**	**849**	**821**	**976**	**701**	**579**	**638**
Crayfish trap and dip-net	Lakes, rivers	946	906	997	1 408	1 326	1 476	1 670	1 476	1 805	1 741
Harpoon gun and harpoon	Lakes Kuremaa and Saadjärv	409	401	451	318	372	254	374	211	243	278
Hoopnet, dragnet	Small lakes	42	73	51	43	28	38	43	30	11	14
Trap net	Small lakes	–	–	28	62	66	88	88	56	110	105
	Total number of fishing cards	**17 078**	**17 571**	**18 424**	**24 677**	**21 737**	**25 314**	**41 516**	**33 188**	**34 146**	**36 421**

* For fishing at sea, week-long gill net permits were introduced in 2017. At the same time, month-long gill net permits remained in use. From 2020, only week-long gill net permits can be used.

** During the years 2014–2017, gill net permits were issued for lakes Peipus, Pskov, and Lämmijärv for the period from 1 March to 4 May; from 2018 for two periods: 1–31 March and 1 April to 5 May. From 2022, only week-long gill net permits are available.

*** For fishing in Lake Võrtsjärv, week-long gill net permits were introduced in 2018, while month-long gill net permits remained in use in parallel. From 2020, only week-long gill net permits are available for Lake Võrtsjärv. As regards the other inland water bodies, there were no permits with two validity periods in parallel; week-long gill net permits apply from 2019 (except for Lake Peipus, where the changeover to week-long permits occurred in 2022).

Source: research and recreational fishing database.

partly because their number was quadrupled compared to monthly permits, meaning that one monthly permit became four weekly permits. There is no more need to buy them well in advance.

Purchases of permits in 2023 were more modest. This is also expressed in the lower (by almost 1000) number of fishing cards sold (Table 38). Since fishing cards cannot be cancelled or changed, what this means for locals along Lake Peipus is that if the lake ice is declared off-limits, there is not much they can do with a net permit. Making such an investment as an article of faith may thus not pan out. A similar observation applies to other water bodies, where the demand for monthly permits often greatly exceeded the actual possibilities. Switching to weekly passes was a simple solution to this problem and has allowed more interested parties to purchase them.

Switching to weekly passes was a simple solution to this problem and has allowed more interested parties to purchase them. The most popular fishing gear was the gill net, the least popular were the old traditional fishing gear, the hoopnet, and the dragnet (Table 38). The katiska, which is popular in neighbouring Finland, has not yet been warmly received by fishermen in Estonia. One reason could be overly restrictive restrictions. Use of the katiska is not permitted during the most active fish movement period, and it cannot be used in running waters. In both 2022 and 2023, katiska fishing was permitted on 51 lakes from 21 July to 30 November.

Fees payable for fishing rights

In 2022, a total of 484,384 euros was received for recreational fishing rights and 281,876 euros for fishing cards, thus a total of 766,260 euros was received for recreational fishing (Table 39). In 2023, the corresponding amounts were 475,288 and 266,565 euros, for a total of 741,853 euros. A total of 1,078,425 euros came in for commercial fishing rights in 2022, and 1,140,083 euros in 2023. In addition, about 13,000 euros was paid for special fishing rights in each year. The majority of this is the fee received for the sale of fish caught on Lake Peipus under a special fishing permit.

Some of the proceeds from fishing rights are transferred to the state budget and the rest are allocated to the Environmental Investment Centre (EIC). In 2022, the EIC

TABLE 39. Fees received for professional, recreational and special fishing rights in millions of euros in 2013–2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total commercial fishing fees	**0,696**	**0,766**	**0,751**	**0,761**	**0,840**	**0,803**	**0,815**	**0,906**	**1,018**	**1,078**	**1,140**
incl. trawling fee	0,204	0,226	0,217	0,195	0,218	0,212	0,197	0,158	0,148	0,163	0,179
coastal fishing fee	0,318	0,346	0,356	0,366	0,404	0,386	0,390	0,417	0,418	0,465	0,412
distant-water fishing fee	0,174	0,194	0,179	0,199	0,218	0,206	0,228	0,331	0,452	0,450	0,549
Total recreational fishing fees	**0,789**	**0,675**	**0,757**	**0,743**	**0,770**	**0,742**	**0,732**	**0,744**	**0,690**	**0,766**	**0,742**
incl. fishing card fee	0,267	0,186	0,279	0,299	0,310	0,292	0,294	0,267	0,243	0,282	0,267
fishing fee	0,522	0,488	0,478	0,444	0,460	0,451	0,439	0,488	0,448	0,484	0,475
Total special fishing fees	**0,029**	**0,022**	**0,015**	**0,023**	**0,014**	**0,022**	**0,028**	**0,013**	**0,007**	**0,013**	**0,013**
Grand total	**1,514**	**1,463**	**1,523**	**1,527**	**1,624**	**1,568**	**1,573**	**1,663**	**1,716**	**1,858**	**1,895**

Note: The trawling fee is a fishing fee payable by companies fishing in the Baltic Sea under the fishing permit of a fishing vessel; the coastal fishing fee is a fishing fee payable by companies fishing in the Baltic Sea (and inland bodies of water) under the fishing permit of a fisherman; the distant-water fishing fee is a fishing fee payable by companies fishing outside the jurisdiction of Estonia under the fishing permit of a fishing vessel; the special fishing fee comprises a fee payable for the right to fish under a special fishing permit and a fee for the sale of fish caught under a special fishing permit.
Sources: Environmental Board, MEAC, MORA, MRA.

supported 40 fisheries projects from its environmental programme for a total of 575,693 euros, and in 2023, 129 projects for 603,036 euros (Table 40).

As of 2019, ministries and their subordinate agencies whose previous operating expenses with permanent funding were transferred to the state budget can no longer apply for projects from the EIC. Along with this, some of the money received from fisheries also moved there; therefore, the allocated subsidies are smaller in 2019 compared to before.

TABLE 40. Number and amount of support for fisheries projects funded by the Environmental Investment Centre in 2012–2023

Year	Number of projects	Support allocated
2012	39	1 115 766
2013	37	1 697 256
2014	40	1 601 444
2015	35	1 101 201
2016	30	793 957
2017	31	716 222
2018	52	1 572 612
2019	22	415 200
2020	26	328 278
2021	44	525 065
2022	40	575 693
2023	129	603 036

Source: EIC.

Recreational fishermen's associations

During the Soviet era, membership in fishing clubs was mandatory – without membership, you could only angle, and even then not on every body of water. On 31 December 1992, the Estonian Fishermen's Association, the umbrella organisation of county clubs, ceased its activities, which had operated uninterrupted since 1974. Despite sharing the same name in Estonian, the non-profit founded in 2014 and currently active, MTÜ Eesti Kalastajate Selts, is not a successor to the Association. Subsequently, most of the Association's member organisations discontinued joint activities as well.

There was no longer any reason to assemble because from now on everyone could fish wherever they wanted, with no further need for membership dues and other obligations. This caused a fragmentation of the recreational fishing sector that essentially continues to this day. Clubs exist, but membership is relatively small since there is no legal necessity to belong to one. Nor is there an umbrella organisation. Attempts have been made to establish one but to no avail so far.

According to the Commercial Register, in 2023, Estonia had 40 recreational fishing organisations whose field of activity was marked as 'Sports and recreational hunting and fishing' (associations engaged solely in hunting are excluded). The greatest number are in Harju County, while there are none in Saare and Põlva counties (Table 41).

In general, clubs fall into three categories: recreational fishing and popularising it, fishing guide services, and fishing education. Some deal with only one of these, a couple are involved in all three. There is a lack of detailed information about the total membership for clubs, but the number of 250–500 has been mooted. It should be noted that the Estonian Fishermen's Association reached its maximum size in 1988, when it had 58,294 members.

TABLE 41. Numbers of recreational fishing associations by county in 2023

County	Associations
Harju	17
Valga	4
Järva	3
Tartu	3
Hiiu	2
Jõgeva	2
Rapla	2
Viljandi	2
Ida-Viru	1
Lääne	1
Lääne-Viru	1
Pärnu	1
Võru	1

Source: Commercial Register.

Aquaculture

Overview of sector

In 2023, 47 active aquaculture farms were registered with the Agriculture and Food Board as aquaculture producers, including 28 fish farms and 19 crayfish farms (Figure 54). In 2022, the production volume for commercial fish and crayfish was 800.8 tonnes (Table 42), and the output in 2023 grew by about 118 tonnes, to 918.5 tonnes.

There were no changes in the species being farmed in either year. Rainbow trout was most commonly farmed, making up 85% of the total. Other species farmed in larger quantities include eel, carp, sturgeon and African catfish.

The volume of fish farmed in sea cages has not grown in recent years. Estonia's only sea farm is operating within the limits of maximum production as authorised by the environmental permit, but no new sea farms have been established. In 2023, the Consumer Protection and Technical Regulatory Authority recognised the environmental impact assessment report regarding the establishment of an offshore fish farm in the Tagalahe estuary as compliant with the requirements. According to the report, it is planned to start producing rainbow trout in the ponds with an estimated annual increase of 2,050–2,182 tonnes. There continues to be great interest in establishing new marine fish farms, but because the environmental impact assessment required for issuing permits is time-consuming, no additional environmental permits have been issued to date.

TABLE 42. Sales volume of Estonian fish farms' raw fish (t), 2011–2023

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Eel	2,0	*	*	127,0	*	*	*	*	*	*	*	*	36,6
Crayfish	0,6	0,1	0,4	0,2	0,6	0,7	0,8	0,6	0,9	1,09	0,7	0,6	0,5
Carp	37,5	38,2	43,7	*	*	33,8	*	*	29,8	*	*	16,4	*
Rainbow trout	333,8	455,3	465,5	569,6	559,0	680,4	702,2	804,1	927,0	869,9	711,9	677,5	784,8
Other fish	18,7	87,2	223,5	172,1	238,7	152,9	167,4	139,0	104,3	168,9	136,9	106,3	96,6
Total	**392,6**	**580,8**	**733,2**	**868,9**	**798,3**	**867,7**	**870,5**	**944,0**	**1062,0**	**1039,9**	**849,5**	**800,8**	**918,5**
Fish roe for human consumption	0,1	4,1	5,0	3,1	7,3	4,9	3,8	3,2	6,3	10,6	21,2	2,7	9,9

* Data cannot be published due to data protection requirements.

Source: Statistics Estonia.

To support the sector, the Fisheries Information Centre commissioned two studies. One concerned modelling of nutrient flows related to industrial fishing and fish farming in the Baltic Sea and validation of the resulting model using the example of fish farming in the Tagalaht Bay, and the other concerned enhancing value of cultivated mussels in Baltic Sea conditions. In addition, the information centre conducted a study in 2022 that estimated the production volume of rainbow trout (800–900 g) in Estonian fish farms for a scenario in which they raised stocking material for marine fish farms. According to the results of the study, the total potential production volume of rainbow trout suitable for marine fisheries in Estonia is estimated to be 860–1200 tonnes.

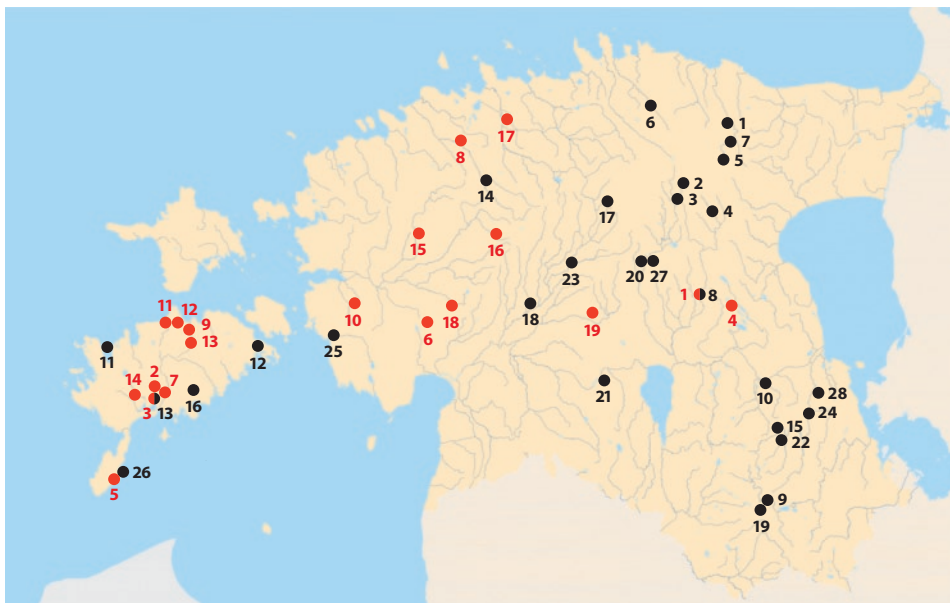


FIGURE 54. Fish farms licensed and operating by the Agriculture and Food Board and crayfish farms licensed as of 2023 Sources: Land Board, AFB.

● **Fish farms:**

1 – RMK Põlula kalakasvatustalitus OÜ Simuna Ivax (2, 3, 4, 5):
2 – Äntu Fish Farm
3 – Nõmmeveski Fish Farm
4 – Käruveski Fish Farm
5 – Mõdriku Fish Farm
6 – OÜ Aviiso Härjanurme Fish Farm (sole proprietor) (7, 8):
7 – Aravuse Fish Farm
8 – Jõune Fish Farm
9 – Leokitalu OÜ
10 – Riina Kalda's fish holding CARPIO FIE
11 – Redstorm OÜ
12 – OÜ AquaMyk
13 – OÜ Pähkla Vähi- ja Kalakasvatus
14 – SK Trade OÜ
15 – OÜ Karilatsi Kalamajand
16 – OÜ Ösel Harvest
17 – Neli Elementi OÜ
18 – For Angula OÜ
19 – Paadi Talu OÜ
20 – Lapavira OÜ
21 – BM Trade OÜ
22 – Krei-Jõe OÜ
23 – Aquaculture training and testing base of Järva County Vocational Training Centre
24 – Ahja Kalakasvatus OÜ
25 – OÜ Jaesto
26 – Conversio Design OÜ
27 – OÜ Vikerkala
28 – Pärli Kala OÜ

● **Crayfish farms:**

1 – Härjanurme Fish Farm (sole proprietor)
2 – OÜ Astacus
3 – OÜ Pähkla Vähi- ja Kalakasvatus
4 – Pahur Part OÜ
5 – OÜ Vana-Tooma Talu
6 – OÜ Halinga Puu
7 – Metsa Johani Farm (sole proprietor)
8 – TP Invest OÜ
9 – OÜ Vähilakk
10 – Amento OÜ
11 – Jüri Lest FIE
12 – OÜ Liki Mõis
13 – OÜ Ülejõe Vähi- ja Kalakasvatus
14 – Vareste Invest OÜ
15 – Arkadel Invest OÜ
16 – Maimar OÜ
17 – OÜ Selimäe
18 – Põlde Vähk OÜ
19 – Peetri A-23 Farm (sole proprietor)

In 2022, a number of studies under the measure 'Aid for aquaculture innovation' under the European Maritime and Fisheries Fund (EMFF) ended. At the University of Life Sciences, research was conducted on the development of artificial reproduction and farming technologies and the identification of the best performing strains of catfish (*Silurus glanis*) as a prospective new aquaculture species; and at the University of Tartu, a study on creating mussel farming solutions throughout the value chain was conducted.

There are two representative organisations in the aquaculture sector: the Estonian Association of Fish and Crayfish Farmers, and the Estonian Aquaculture Association. The Estonian Offshore Aquaculture Association is a producer organisation uniting seven fish farming companies and its aim is to increase the production volume of fish farmed at sea, improve the marketing conditions for its members' production, and promote sustainable aquaculture.

Rainbow trout farming

The production of rainbow trout as the most common farmed fish species amounted to 784.8 tonnes in 2023, or 107.3 tonnes less than in 2022. Output has been between 700–900 tonnes during the last eight years.

In 2023, the average world market price of salmon, which affects the price of rainbow trout as a fish with red meat, was 8.26 euros per kilogram according to the Fish Pool index of the Nasdaq OMX Oslo Stock Exchange. Although the price has been stable in the last two years, it is significantly higher than the 5.74 euros from three years ago. The high salmon price promotes the farming and marketing of domestic rainbow trout.

Among salmonids, Arctic char is also increasingly farmed in Estonia, and the farming of European whitefish and peled (Northern whitefish) is being piloted on a small scale.

Crayfish farming

Nineteen crayfish farms were licensed by the Agriculture and Food Board in Estonia in 2023. The production of crayfish amounted to 0.5 tonnes. In recent years, crayfish output has been declining. Six crayfish farms have been dissolved.

Algae and mussel cultivation

The only mussel farm in Estonia is located in Tagalahe Bay, Saaremaa, in the immediate vicinity of aquaculture cages. The mussel farm is a compensatory measure that increases the sustainability of sea cage-based farming, as mussels absorb nutrients.

Various studies on algae and mussels are being carried out in order to identify suitable species for cultivation and find solutions for adding value to and marketing these products.

Fish restocking

In 2022, salmon, European eel, Atlantic sturgeon, whitefish, and Peipus whitefish were introduced into Estonian waters (table 43), and in 2023, pikeperch, pike, perch, asp, tench, and crayfish were introduced (table 44).

The most salmon was introduced to Pärnu River. In 2022, 180,597 individuals were released; in 2023, 255,180 individuals. In 2022, 599 kg of eel was stocked in

TABLE 43. Fish and crayfish juveniles released in water bodies in 2022

Species	Age/size	Number of individuals
European eel	fry (0,3–4 g)	1 024 kg
Salmon	one-summer-old	162 110
	one-year-old	76 237
	two-year-old	16 196
Sea trout	two-year-old	177
European whitefish	larvae	145 050
	one-summer-old	26 779
Lake Peipus whitefish	larvae	252 300
	one-summer-old	18 956
Atlantic sturgeon	larvae	5 772
	one-year-old	1 637
	two-summer-old	1 851
Tench	one-summer-old	25

Sources: MOE, State Forest Management Centre, Wildlife Estonia.

TABLE 44. Fish and crayfish juveniles released in water bodies in 2023

Species	Age/size	Number of individuals
European eel	fry (0,3 g)	356,94 kg
	264 g	1 200
Salmon	larvae	10 090
	one-summer-old	211 710
	one-year-old	71 260
	two-year-old	16 140
European whitefish	larvae	327 900
	one-summer-old	21 160
Lake Peipus whitefish	larvae	178 300
	one-summer-old	11 170
Atlantic sturgeon	larvae	214 800
	one-year-old	350
	two-summer-old	930
Pikeperch	one-summer-old	13 000
Pike	larvae	25 000
Asp	one-summer-old	1 000
Tench	one-summer-old	120
Crayfish	fishing-size	5 500

Sources: MOE, State Forest Management Centre, Wildlife Estonia.

inland bodies of water and the bays around Saaremaa and Hiiumaa. In 2023, 357 kg of eel was released in Lake Võrtsjärv. As an experiment for driving out signal crayfish, the University of Life Sciences stocked 1,200 eels weighing 264 grams in Ropka Lake and Reo quarry. The restocking of the Atlantic sturgeon population continues. In 2023, besides restocking in Narva River, 60 sturgeons were introduced to Pärnu River. A total of 5500 crayfish from Lake Pangodi and Kärla River were relocated to other bodies of water.

Research and development

Formal education in fish farming is offered at two educational institutions: the Estonian University of Life Sciences, and Järva County Vocational Training Centre. While the University of Life Sciences focuses on research and studies and organising postgraduate training in fish farming (curriculum 'Fisheries and Applied Ecology'), Järva County Vocational Training Centre prepares qualified fish farm workers (fish farmer, qualification level 4).

Grants

In 2022 and 2023, aquaculture producers were able to apply for support from the ARIB under the measure 'Support for reducing the negative environmental impact of aquaculture enterprises' and in 2023 under the measure 'Extraordinary support for electricity compensation for enterprises engaged in fishing, aquaculture or processing of fishing and aquaculture products'.

Through the European Maritime and Fisheries Fund, the Rural Development Foundation offers investment loans to companies initiating or engaged in the production of aquaculture products.

Estonian fish processing industry

General overview of sector

According to the data entered in the Commercial Register, there were 77 and 72 companies in Estonia in 2022 and 2023, respectively, whose main business comprised the processing and preservation of fish, crustaceans, and molluscs. Based on the classification given in Commission Recommendation 2003/361/EC,[1] the majority of Estonian fish processing enterprises were small, as their average number of employees was less than 50. Compared to 2022, the number of small enterprises increased in 2023 and the number of micro and medium-sized enterprises decreased (Figure 55).

In 2022, the total sales revenue of the companies whose main business is fish processing amounted to 229.7 million euros, with processing and canning fish, crustaceans, and molluscs accounting for 92% of the revenue, i.e. 212 million euros. In 2023, the total sales revenue of companies increased by 18%, reaching 261.6 million euros, with the processing and preservation of fish, crustaceans and molluscs accounting for 244.6 million euros, or 93%. On average,[2] 1,275 people were employed by the companies in 2022, and the number was 6% less in 2023 (1,204).

Processing and canning of fish, crustaceans, and molluscs was an auxiliary activity for 10 companies in 2022 and 17 in 2023.

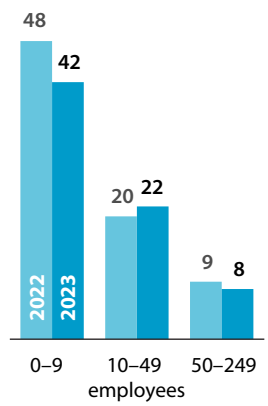


FIGURE 55.
Number of companies whose main business comprised processing and canning fish, crustaceans, and molluscs based on average number of employees in 2022 and 2023
Source: Commercial Register.

1 Commission Recommendation 2003/361/EC divides enterprises into four groups based on the number of employees: (1) microenterprises: 0–9 employees; 2) small enterprises: 10–49 employees; 3) medium-sized enterprises: 50–249 employees; 4) large enterprises: 250 or more employees.

2 Average number of full-time employees (full-time equivalent)

While in 2022 these companies received sales revenue of 251,000 euros in this sector, in 2023 this figure increased to 1.1 million euros. More than half of the companies' processing facilities were located in Harju and Pärnu counties (Table 45).

In the manufacturing industry, the keywords of 2022 and 2023 were uncertainty in the markets and general price increases. Russia's invasion of Ukraine at the beginning of 2022 resulted in the temporary suspension of sales of products exported to Ukraine and the interruption or restriction of trade relations with Russia and Belarus. To the relief of companies transporting fish products to the Ukrainian market, the export volume partially recovered in the second half of the year.

The impact of the unstable economic environment on the Estonian fish industry varied from company to company. Some of them were forced to stop their production because the cost price of the production increased, but it was not possible to increase the sale price. On the other hand, there were companies that increased both sales revenue and profit by increasing the selling price of their products. State aid helped to alleviate the negative impact of crises as well. Despite the difficulties, the Estonian fishing industry as a whole was able to increase sales revenue and make a profit in 2022 and 2023.

TABLE 45. Number of processing facilities of fish processing companies in 2022 and 2023 by county

County	Number of processing facilities	
	2022	2023
Harju	25	26
Pärnu	24	23
Jõgeva	9	9
Tartu	8	8
Saare	5	7
Ida-Viru	4	4
Lääne	4	4
Hiiu	3	3
Viljandi	3	3
Põlva	2	3
Võru	1	1
Lääne-Viru	1	1
Total	**89**	**92**

Source: Commercial Register, AFB.

Basic and economic indicators and trends of companies whose main business is fish processing

Compared with 2021, the number of fish processing companies increased somewhat in 2022 (Table 46). Total sales revenue grew 21%. The average number of employees decreased by 86 (6%). The average annual wage cost per employee was 13,947 euros in 2022, up 6% from the preceding year. In 2023, the average number of fish processing enterprises and employees decreased by 6%, but total sales revenue was 16% higher than in 2022. Average wage expense per employee per year continued rising (7%), reaching 14,927 euros in 2023.

TABLE 46. Basic and economic indicators and trends of companies whose main business is fish processing, 2013–2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of companies	60	64	66	65	73	69	72	71	74	77	72
Total sales revenue, €10^6	175	187	187	160	147	150	180	179	191	230	262
Average number of employees	1 954	1 972	1 935	1 738	1 642	1 609	1 476	1 419	1 361	1 275	1 204
Average annual wage cost per employee, euro	8 113	8 701	9 122	9 558	9 999	10 720	11 872	12 417	13 158	13 947	14 927
Gross value added, €10^6	27	26	34	19	28	27	25	31	29	33	40
Investments in fixed assets, €10^6	6	10	11	3	8	11	9	8	7	10	12
Debt ratio, %	51	54	54	51	51	53	55	47	46	44	44

Sources: Statistics Estonia, Commercial Register.

Forty-eight out of 77 companies closed out the financial year 2022 with a profit (62%). Total earnings were 8.7 million euros and total added value was 33 million euros. In 2023, 52 out of 72 companies (72%) made a profit of 14.9 million euros and offered a total added value of 40 million euros. The assets of fish processing companies in 2022 and 2023 totalled 181 and 198 million euros respectively, of which fixed assets accounted for 60% and 55% (107 and 110 million euros) respectively.

Compared to 2021, investments into fixed assets grew in 2022 and 2023: From 7 million euros in 2021, they increased to 10 million euros in 2022 and 12 million euros in 2023. The debt ratio, which shows the share of debt (liabilities) in the funding of the assets of companies, was 44% in 2022 and 2023. The production-related operating costs of fish processing companies totalled 220 million euros in 2022 and 246 million euros in 2023. Raw materials and supplies accounted for the bulk of the costs (64% and 62%; Figure 56).

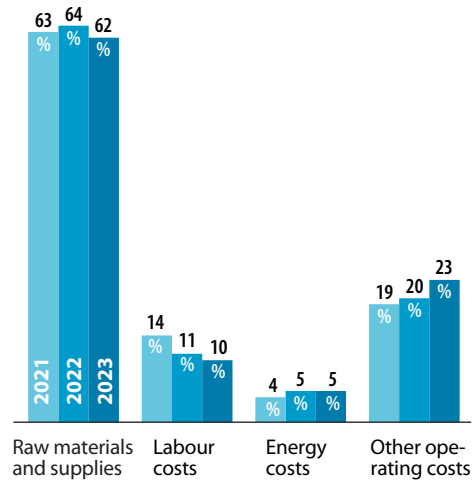


FIGURE 56. Proportion (%) of production-related operating costs of companies whose main business is fish processing, 2020–2023
Source: Commercial Register.

Basic and economic indicators in 2022

If we compare the basic and economic indicators in the different size classes of fish processing companies (Table 47), it appears that the most imposing proportion (46%) of the total sales revenue of the fish processing industry in 2022 came from nine medium-sized enterprises, which accounted for just 12% of the total number of companies. This size class also employed the highest number of people (54% of the total number of employees) and produced 48% of the gross value added. The highest average salary was paid by small businesses, which, however, had the highest level of risk compared to the other two groups based on the overall debt ratio.

The operating costs of fish processing companies (220 million euros) were divided as follows in 2022: microenterprises – 18.6 million euros; small enterprises – 98.1 million euros; and medium-sized enterprises – 103.1 million euros. The distribution of operating costs was similar in these size classes (Figure 57), but a higher proportion of energy costs in microenterprises and a higher proportion of costs of raw materials and supplies in medium-sized enterprises can be observed.

Basic and economic indicators in 2023

In contrast to 2022, in 2023, small businesses accounted for the largest share (52%) of the total sales revenue of the fishing industry (Table 48). At the same time, the largest proportion (49%) of value added came from medium-sized companies. Similarly to the year before, the highest average salary was paid in small companies.

The production-related operating costs of fish processing companies (246 million euros) were divided as follows in 2023: microenterprises – 20.2 million euros; small enterprises – 129.6 million euros; and medium-sized enterprises – 96.2 million euros.

TABLE 47. Basic and economic indicators in different size classes of fish processing companies in 2022

Size class	Number of companies	Sales revenue, €10⁶	Average number of employees	Average annual wage cost per employee, €	Fixed assets, €10⁶	Investments in fixed assets, €10⁶	Gross value added, €10⁶	Debt ratio, %
0–9 employees	48	20,4	145	11 046	14,7	1,7	3,8	31
10–49 employees	20	103,2	444	14 645	45,4	5,2	13,7	57
50–249 employees	9	106,1	686	14 109	47,1	2,8	15,9	38

Source: Commercial Register.

TABLE 48. Basic and economic indicators in different size classes of fish processing companies in 2023

Size class	Number of companies	Sales revenue, €10⁶	Average number of employees	Average annual wage cost per employee, €	Fixed assets, €10⁶	Investments in fixed assets, €10⁶	Gross value added, €10⁶	Debt ratio, %
0–9 employees	42	23,1	112	10 031	12,7	2,5	4,4	33
10–49 employees	22	135,0	474	16 258	50,1	5,5	15,9	59
50–249 employees	8	103,5	618	14 793	46,7	3,9	19,5	31

Source: Commercial Register.

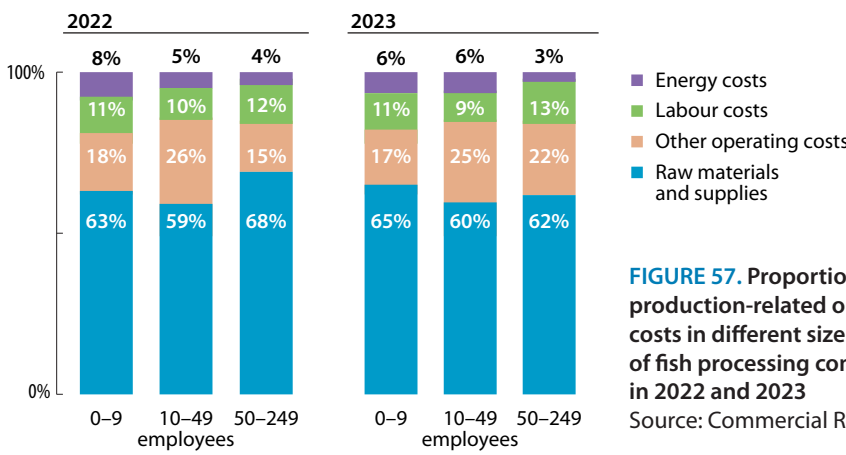


FIGURE 57. Proportion (%) of production-related operating costs in different size classes of fish processing companies in 2022 and 2023
Source: Commercial Register.

Operating costs were distributed uniformly among different groups (Figure 57). Compared to the year before, the proportion of raw material expenses increased in micro-enterprises and small enterprises, while it dropped in medium-sized enterprises.

Production and sales

According to the data of Statistics Estonia, the Estonian fish processing industry sold 97,400 tonnes and 130,200 tonnes of fishery products in 2022 and 2023 (Table 49). Frozen, salted, spiced, dried, frozen, and breaded fish accounted for the bulk of production. Compared to 2021, the quantity of production sold increased by 21% in 2022, which was mainly due to an increase in the sales volume of frozen fish. This trend continued in 2023 as well, when the volume of fish products sold grew 36%. Still, the Statistics Estonia figures on 2022 and 2023 output should be viewed with some caution (Table 49). According to the representative of the Estonian Fishing

TABLE 49. Sales of the production (10^3 t) of Estonian fish processing industry by product type, 2013–2023

Fishery products	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fresh and chilled fish, fish fillets, minced fish	2,3	2,4	2,6	1,7	1,8	2,3	2,2	3,2	5,2	4,2	4,4
Frozen fish	41,3	34,0	35,7	30,6	33,4	31,8	41,5	48,6	47,6	72,8[2]	99,6[2]
Smoked fish	1,9	2,5	2,5	1,7	1,8	1,5	1,1	0,7	1,2	1,1	1,0
Salted, spiced, dried, deep-frozen and breaded fish	14,1	14,1	10,9	10,4	10,1	11,3	12,4	14,1	14,4	10,9	11,1
Culinary fishery products in oil, marinade or sauce	4,5	5,5	4,9	4,4	4,7	3,8	3,2	3,7	3,9	3,6	4,6
Fish preserves	3,9	2,6	2,8	0,6	[1]	0,5	0,6	0,8	0,9	0,4	0,2
Products unfit for human consumption (e,g, fish meal), fish waste, etc,	6,2	6,2	6,6	4,4	1,7	1,3	1,3	7,7	7,5	4,4	9,3
Total	**74,2**	**67,3**	**66,0**	**53,8**	**53,5**	**52,5**	**62,3**	**78,8**	**80,7**	**97,4**	**130,2**

[1] Data cannot be published due to data protection requirements. Source: Statistics Estonia.
[2] See comment in the text.

TABLE 50. Total sales in the domestic market and exports of companies whose main business is fish processing, 2013–2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total sales, €10^6	175	187	187	161	148	150	180	179	191	230	262
Domestic market, €10^6	47	55	52	58	61	61	77	68	75	90	104
Exports, €10^6	128	132	135	103	86	88	103	111	115	140	158
Proportion of exports (%)	73	71	72	64	58	59	57	62	60	61	60

Source: Commercial Register.

Association, these numbers probably include the fish sent to the Paldiski component factory. Companies that also freeze fish are responsible for the first sales of this fish. In these years, about 30,000 tonnes of raw material was delivered to the Paldiski plant for production of fish meal and fish oil.

In 2022 and 2023, exports accounted for 61% and 60% of the total sales revenue of companies whose main business is fish processing, indicating the high dependence of the Estonian fish processing industry on exports (Table 50). Compared to 2021, export sales revenue grew 22% in 2022, while sales to domestic market increased by 20%. In 2023, sales revenue from export and sales to domestic market was up 13 and 16%.

Tables 51–54 lists the top ten countries in exports and imports of fish and fishery products in 2022 and 2023 based on the quantities of fish and fishery products. The largest amount of fish and fish products was exported to Ukraine in both years. Compared to 2021 (39,251 tonnes), the export volume of products transported to Ukraine decreased to 34,447 tonnes (12%) in 2022, and by 2023 dropped another 8% to 31,810 tonnes. Although the quantity of fish and fish products exported to Ukraine was lower, the value of the exported production was characterised by an increase. If in 2021 the value of fish and fish products going to Ukraine was 17.6 million euros, then in 2022 and 2023 it reached 21 million and 28.4 million euros, respectively, i.e. the annual growth was 19% and 36%, respectively. The main import destinations (by country of origin) in terms of both value and quantity were Norway, Finland, and Lithuania.

TABLE 51. Top ten countries in exports and imports of fish and fishery products in 2022, by production quantity and value. In addition to Estonian production, the table reflects the quantities of fish and fishery products that transited Estonia

	Export volume in tonnes	
1.	Ukraine	34 447
2.	Belarus	11 401
3.	Latvia	9 169
4.	Lithuania	5 666
5.	Poland	4 489
6.	Iceland	4 007
7.	China	3 899
8.	Finland	2 784
9.	Portugal	2 783
10.	Moldova	2 758

	Export volume in euros	
1.	Sweden	21 946 659
2.	Ukraine	20 950 665
3.	China	18 534 081
4.	Finland	15 348 464
5.	Belarus	14 991 426
6.	Latvia	13 668 430
7.	Lithuania	10 405 518
8.	Denmark	9 855 778
9.	Iceland	9 748 151
10.	Poland	8 210 908

Source: Statistics Estonia.

TABLE 52. Top ten countries in imports of fish and fishery products in 2022, by country of origin, in terms of production quantity and value

	Import quantity in tonnes	
1.	Finland	24 650
2.	Norway	9 686
3.	Lithuania	9 084
4.	Latvia	3 052
5.	Unspecified countries	2 285
6.	Russia	1 283
7.	Vietnam	1 235
8.	Faroe Islands (DK)	1 116
9.	Denmark	1 010
10.	United States of America	892

	Import volume in euros	
1.	Norway	57 377 348
2.	Lithuania	19 641 982
3.	Finland	15 336 744
4.	Vietnam	14 327 971
5.	Albania	9 703 811
6.	Unspecified countries	8 562 579
7.	Russia	6 642 805
8.	Latvia	6 322 959
9.	China	4 538 282
10.	Denmark	4 123 346

Source: Statistics Estonia.

TABLE 53. Top ten countries in exports of fish and fishery products in 2023, by production quantity and value. In addition to Estonian production, the table reflects the quantities of fish and fishery products that transited Estonia

	Export volume in tonnes	
1.	Ukraine	31 810
2.	Latvia	8 107
3.	Belarus	5 909
4.	Iceland	5 570
5.	China	3 770
6.	Moldova	3 086
7.	Lithuania	2 731
8.	Sweden	2 498
9.	Finland	2 487
10.	Poland	2 413

	Export volume in euros	
1.	Ukraine	28 447 731
2.	Sweden	22 050 420
3.	China	21 243 252
4.	Belarus	17 724 334
5.	Finland	14 085 173
6.	Latvia	11 189 315
7.	Iceland	10 595 319
8.	Germany	8 736 306
9.	Switzerland	7 892 384
10.	Lithuania	6 965 610

Source: Statistics Estonia.

TABLE 54. Top ten countries in imports of fish and fishery products in 2023, by country of origin, in terms of production quantity and value

	Import quantity in tonnes	
1.	Finland	24 888
2.	Norway	8 918
3.	Lithuania	8 267
4.	Latvia	4 429
5.	United States of America	1 628
6.	Russia	1 627
7.	Ecuador	1 501
8.	Canada	1 394
9.	Unspecified countries	1 145
10.	Denmark	932

	Export volume in euros	
1.	Norway	52 894 824
2.	Finland	22 523 104
3.	Lithuania	22 010 968
4.	Vietnam	9 012 102
5.	Russia	7 787 687
6.	Albania	7 481 982
7.	Ecuador	6 541 643
8.	United States of America	6 431 501
9.	Unspecified countries	6 239 632
10.	Latvia	5 803 804

Source: Statistics Estonia.

Grants

Support has been granted under the European Fisheries Fund (EFF) measures in Estonia since 2008 when 13 projects were supported. The number of supported projects has continued to grow since then (Figure 58). In 2015, the European Maritime and Fisheries Fund (EMFF) was set up for the 2014–2020 programming period. In 2016, the first applications for aid from the EMFF were received and the first payments were made to the applicants.

In 2022, EMFF grants were awarded for 15,310,796 euros and in 2023 for 19,107,831 euros, and 17,270,354 and 23,949,120 euros were paid out, respectively. In 2022, 252 decisions on grant allocation were made and 352 applicants received payments; in 2023, 590 decisions were made and money was paid out to 418 applicants.

The highest amounts were allocated to Harju, Pärnu, and Lääne counties in 2022; the highest numbers of support applications were granted in Pärnu, Saare, and Harju counties (Table 55). In 2023, Viljandi, Harju, and Saare counties ranked first in terms of amount, and Pärnu, Harju, Saare, and Hiiu counties in terms of the number of grants (100 applications were submitted in each of the last mentioned counties, see table 56). The largest disbursements were received in 2022 by Harju, Tartu, and Pärnu counties; in 2023, Harju, Viljandi, and Lääne counties. In terms of disbursements, Pärnu, Harju, Saare, and Hiiu counties led the pack in 2022 (Table 57), while in 2023, the leaders were Harju, Pärnu, and Hiiu counties (Table 58).

Tables 59 and 60 show the applications submitted by the EMFF in the 2022 and 2023 calendar years and the approval decisions for these applications in 2022 and 2023. The table does not include cancelled or withdrawn applications.

FIGURE 58.
Number of projects supported by EFF and EMFF, 2008–2023
Source: ARIB.

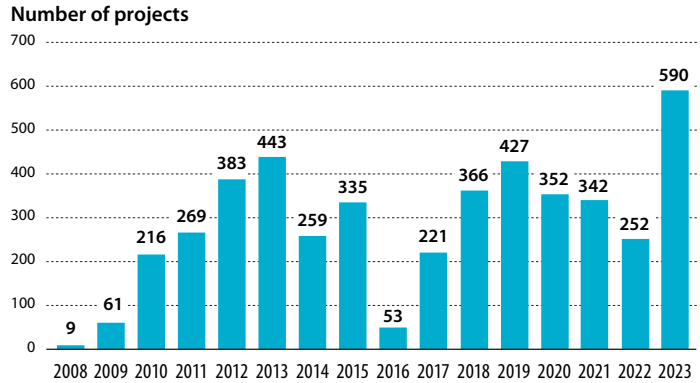


TABLE 55. Grants awarded in 2022 (€), by county

County	Awarded	
	amount of grants	number of grants
Harju County	4 698 821	33
Pärnu County	2 326 355	49
Lääne County	2 017 575	28
Viljandi County	1 778 727	11
Saaremaa	1 327 849	34
Tartu County	787 568	13
Hiiu County	696 377	27
Jõgeva County	601 585	25
Ida-Viru County	511 392	15
Lääne-Viru County	375 438	14
Võru County	78 305	1
Järva County	55 434	1
Põlva County	55 372	1
Total	**15 310 796**	**252**

Source: ARIB.

TABLE 56. Grants awarded in 2023 (€), by county

County	Awarded	
	amount of grants	number of grants
Viljandi County	10 440 222	5
Harju County	5 957 706	123
Saaremaa	821 396	100
Pärnu County	712 571	161
Lääne County	662 970	50
Järva County	178 793	2
Hiiu County	177 676	100
Tartu County	73 593	3
Lääne-Viru County	31 087	23
Jõgeva Countya	26 458	2
Ida-Viru County	16 082	18
Põlva County	6 559	2
Võru County	2 719	1
Total	**19 107 831**	**590**

Source: ARIB.

TABLE 57. Grants paid in 2022 (€), by county

County	Paid in 2022	Number of grants paid in 2022
Harju County	6 785 124	54
Tartu County	3 411 066	29
Pärnu County	2 939 552	78
Saaremaa	1 103 841	42
Lääne County	818 674	33
Hiiu County	686 413	42
Jõgeva County	661 712	28
Ida-Viru County	515 545	15
Viljandi County	244 818	23
Lääne-Viru County	103 610	8
Põlva County	0	0
Järva County	0	0
Võru County	0	0
Total	**17 270 354**	**352**

Source: ARIB.

TABLE 58. Grants paid in 2023 (€), by county

County	Paid in 2023	Number of grants paid in 2023
Harju County	7 888 995	96
Viljandi County	4 006 834	24
Lääne County	2 478 172	37
Pärnu County	2 326 822	60
Saaremaa	1 836 887	53
Tartu County	1 661 845	21
Hiiu County	1 025 431	57
Jõgeva County	930 344	24
Ida-Viru County	732 635	16
Lääne-Viru County	518 989	21
Järva County	234 226	3
Põlva County	226 915	4
Võru County	81 024	2
Total	**23 949 120**	**418**

Source: ARIB.

TABLE 59. Applications submitted to EMFF and satisfied in 2022 calendar year and amounts, by measures and sub-measures

EMFF measure or sub-measure	Year of the call for applications	Budget of the call for applications	2022			
			Number of applications	Amount applied for applications	Number of applications satisfied	Amount awarded
2.3. Support for reducing the negative environmental impact of aquaculture companies	2022	650 000	3	176 096	3	176 096
3.3. Support for implementation of local development strategies of fisheries areas	2019	*	198	4 382 796	152	3 222 425
3.4. Support for collaborative activities of action groups	2019	*	32	475 921	32	450 357
4.1. Support for production and marketing plans	2022	551 179	5	551 179	5	444 669
4.4.3. Support for energy and resource audits of fishery and aquaculture product handling companies	2022	51 174	1	5 850	1	5 850
4.4.4. Support for improving energy and resource efficiency in the processing of fishery and aquaculture products	2022	6 876 508	15	2 143 184	15	2 062 103
6.1. Support for fisheries inspection and surveillance	2022	800 000	2	472 500	2	472 500
7.1. Technical assistance	2022	334 616	1	334 616	1	334 616
Total			**259**	**8 542 143**	**211**	**7 168 617**

* Leader measures have a budget based on the programme period, therefore the field remains empty. Source: ARIB.

TABLE 60. Leader measures have a budget based on the programme period, therefore the field remains empty.

EMFF measure or sub-measure	Year of the call for applications	Budget of the call for applications	2023			
			Number of applications	Amount applied for applications	Number of applications satisfied	Amount awarded
2.3. Support for reducing the negative environmental impact of aquaculture companies	2023	410 000	9	429 237	5	288 472
4.3. Marketing measures	2023	156 000	3	156 000	3	156 000
4.3.3.1. Extraordinary support for fuel compensation for enterprises engaged in fishing, aquaculture or processing of fishing and aquaculture products	2023	2 180 000	20	2 095 309	18	1 562 647
4.3.3.2. Extraordinary support for electricity compensation for enterprises engaged in fishing, aquaculture or processing of fishing and aquaculture products	2023	5 180 600	40	1 354 530	35	1 277 534
4.4.4. Support for improving energy and resource efficiency in the processing of fishery and aquaculture products	2023	1 937 067	22	1 934 861	20	1 488 953
6.1. Support for fisheries inspection and surveillance	2023	877 223	8	1 117 748	8	1 117 748
6.1.2. Support for purchase of equipment for electronic submission of fishing data	2023	259 475	507	145 241	447	127 495
6.2. Support for collection of fisheries data	2023	720 000	2	717 320	2	717 320
7.1. Technical assistance	2023	61 360	1	61 360	1	61 360
8.3. Support for improvement of knowledge of the marine environment	2023	81 677	1	81 677	1	81 677
Total			**613**	**8 093 283**	**540**	**6 879 207**

Source: ARIB.

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