Hülgeprobleemid meil ja lähinaabritel
Mida on tehtud probleemi lahendamiseks?

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Täna arutame:

- Hallhülge arvukus Läänemeres
- Hüljeste mõju kalandusele ja kalavarule
- Hüljeste peletamine kalapüügivahendite juurest
- Mida (kala)teadlased on veel teinud probleemi lahendamiseks?
- Hülgejaht

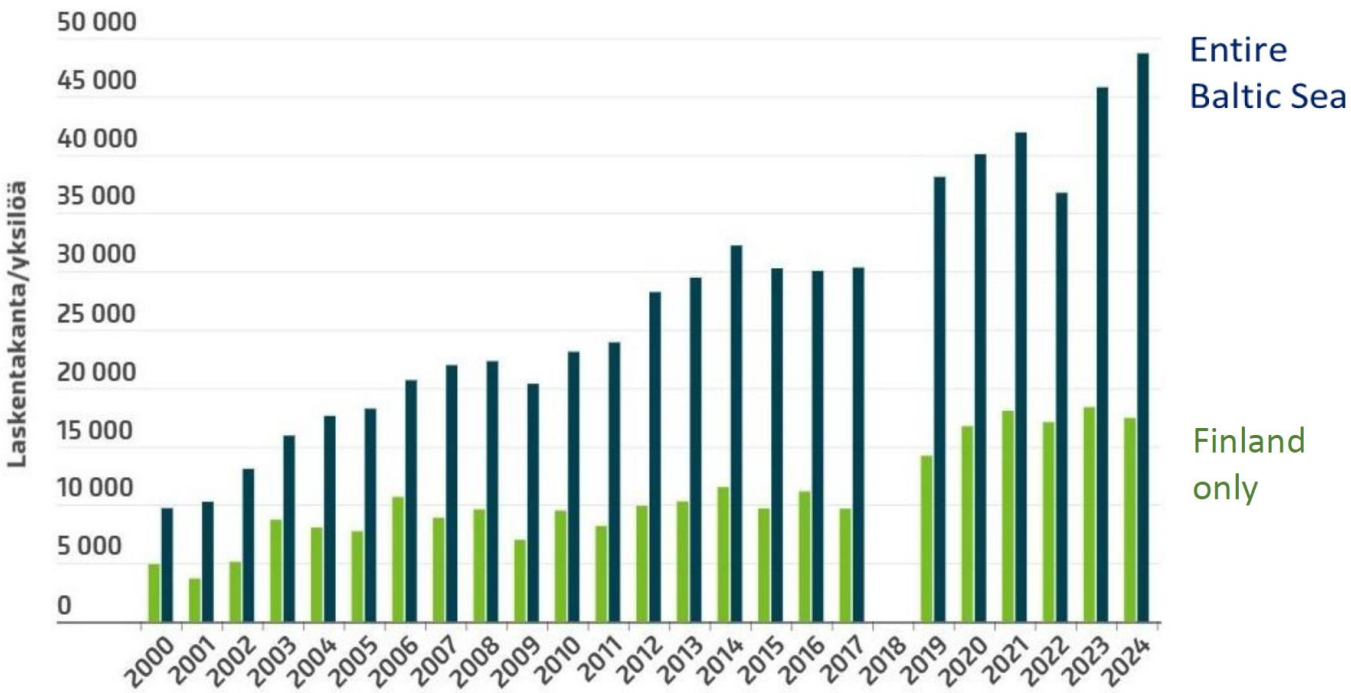
Hallhüljeste arvukus Läänemeres

- Arvukuse langus 1950(60) – ca 1970(80)
- Arvukuse tõus pärast 1980
- Hallhülge arvukus
  - 20 sajandi alguses Läänemeres ca 100000
  - 1970ndad miinimum ca 2500
  - 2024 ca 60000 loendatud
  - Populatsiooni kasv ca 6% aastas
  - Jaht Soomes ja Rootsis alates 1997-1998 (aastakvoot kokku rohkem kui 1000 isendit), Eestis alates 2015.
  - Looduskaitset üleprioritiseerivad eeskirjad muudavad jahi väga raskeks.

Hallhülge arvukuse kasv (slaid Petri Suuronen)

Since early 1990s rapid population growth:

- current growth rate 4-5 % in the core distribution area
- higher in southern Baltic Sea
- current population size ca. 70 000 individuals



Number of grey seals **counted** in 2000–2024 in the Baltic Sea. *Luke 2025*.

Note! We also have *ringed seal* in the northern Baltic Sea.

2014

Uuring eesmärgiga teada saada, kui suur on hüljeste kaaspüük Eestis, Rootsis ja Soomes

PLOS ONE

RESEARCH ARTICLE

By-Catch of Grey Seals (*Halichoerus grypus*) in Baltic Fisheries—A Bayesian Analysis of Interview Survey

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Data Availability: The authors confirm that all data underlying the findings are fully available without restriction. All relevant data are within the paper.

Funding: This work was supported by the Academy of Finland (grant 266349, http://www.aka.fi, to JV), Estonian state financed project SF0180005s10 to MV, and INTERREG project ECOSEAL, (http://www.ecosealproject.eu/, to JV, MV, AH, TA, and RT). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Abstract

Baltic seals are recovering after a population decline. The increasing seal stocks cause notable damage to fisheries in the Baltic Sea, with an unknown number of seals drowning in fishing gear every year. Thus, sustainable seal management requires updated knowledge of the by-catch of seals—the number of specimens that die in fishing gear. We analyse the by-catch of grey seals (*Halichoerus grypus*) in Finland, Sweden, and Estonia in 2012. We collect data with interviews (35 in Finland, 54 in Sweden, and 72 in Estonia) and analyse them with a hierarchical Bayesian model. The model accounts for variability in seal abundance, seal mortality and fishing effort in different sub-areas of the Baltic Sea and allows us to predict the by-catch in areas where interview data was not available. We provide a detailed description of the survey design and interview methods, and discuss different factors affecting fishermen's motivation to report by-catch and how this may affect the results. Our analysis shows that the total yearly by-catch by trap and gill nets in Finland, Sweden and Estonia is, with 90% probability, more than 1240 but less than 2860; and the posterior median and mean of the total by-catch are 1550 and 1880 seals, respectively. Trap nets make about 88% of the total by-catch. However, results also indicate that in one of the sub-areas of this study, fishermen may have underreported their by-catch. Taking the possible underreporting into account the posterior mean of the total by-catch is between 2180 and 2380. The by-catch in our study area is likely to represent at least 90% of the total yearly grey seal by-catch in the Baltic Sea.

2015

Uuring eesmärgiga teada saada, kas „probleemhülged“ on juhuslik valim või mingi tunnuste alusel eristuv hüljeste grupp

Ann. Zool. Fennici 52: 103–114 ISSN 0003-455X (print), ISSN 1797-2450 (online)
Helsinki 17 April 2015 © Finnish Zoological and Botanical Publishing Board 2015

Age, sex and body condition of Baltic grey seals: Are problem seals a random sample of the population?

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Kauhala, K., Kurkilahti, M., Ahola, M. P., Herrero, A., Karlsson, O., Kunnasranta, M., Tiilikainen, R. & Vetemaa, M. 2015: Age, sex and body condition of Baltic grey seals: Are problem seals a random sample of the population? — *Ann. Zool. Fennici* 52: 103–114.

The increasing Baltic grey seal (*Halichoerus grypus*) population causes considerable damage to coastal fisheries. The aim of the present study was to compare the age, sex and blubber thickness of seals that cause problems to coastal fisheries (i.e. by-catch seals and those shot near the fishing gear) with those killed during regular hunting. This knowledge is essential for population management. We collected seal samples from hunters and fishermen from Finland, Sweden and Estonia in 2011–2013. Hunted seals included individuals of all age classes, whereas most by-catch seals were small pups (in spring) or sub-adult and adult males (in autumn). By-catch seals had a thinner blubber layer than hunted seals. Most seals shot near the fishing gear were adult males in good condition. The 'problem seals' were thus not a random sample of the population. We suggest that hunting should be targeted especially at males to mitigate the damage to fisheries without threatening the population.

2017

Inimeste, hüljeste ja kalatoiduliste lindude kalavaru kasutuse analüüs ning võrdlus

ICES Journal of Marine Science

ICES International Council for the Exploration of the Sea
CIEM Conseil International pour l'Exploration de la Mer

ICES Journal of Marine Science (2018), 75(3), 999–1008. doi:10.1093/icesjms/fsx207

Original Article

Competition for the fish – fish extraction from the Baltic Sea by humans, aquatic mammals, and birds

Sture Hansson[1,*], Ulf Bergström[2], Erik Bonsdorff[3], Tero Härkönen[4], Niels Jepsen[5], Lena Kautsky[1], Karl Lundström[6], Sven-Gunnar Lunneryd[6], Maria Ovegård[6], Juhani Salmi[7], Dmitry Sendek[8], and Markus Vetemaa[9]

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Hansson, S., Bergström, U., Bonsdorff, E., Härkönen, T., Jepsen, N., Kautsky, L., Lundström, K., Lunneryd, Sven-G., Ovegård, M., Salmi, J., Sendek, D., and Vetemaa, M. Competition for the fish – fish extraction from the Baltic Sea by humans, aquatic mammals, and birds. – ICES Journal of Marine Science, 75: 999–1008.

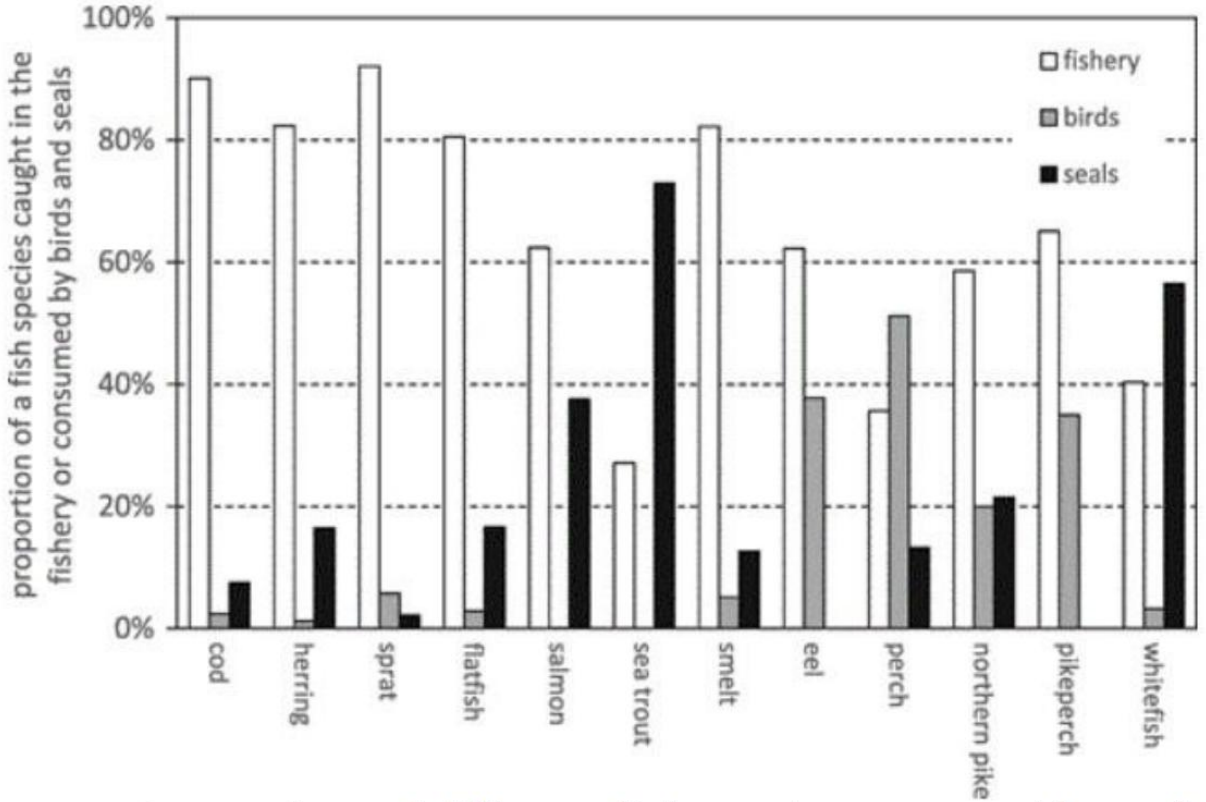
Received 16 May 2017; revised 12 October 2017; accepted 13 October 2017; advance access publication 13 November 2017.

Seals and fish-eating birds have increased in the Baltic Sea and there is concern that they compete with fisheries. Using data from around year 2010, we compare consumption of different fish species by seals and birds to the catch in the commercial and recreational fishery. When applicable this is done at the geographical resolution of ICES subdivisions. Predation by birds and mammals likely has limited impact on the populations of the commercially most important species (herring, sprat, and cod). In the central and southern Baltic, seals and birds consume about as much flatfish as is caught by the fishery and competition is possible. Birds and seals consume 2-3 times as much coastal fish as is caught in the fishery. Many of these species are important to the fishery (e.g. perch and whitefish) and competition between wildlife and the fishery is likely, at least locally. Estimated wildlife consumption of pike, sea trout and pikeperch varies among ICES subdivisions and the degree of competition for these species may differ among areas. Competition between wildlife and fisheries need to be addressed in basic ecosystem research, management and conservation. This requires improved quantitative data on wildlife diets, abundances and fish production.

Keywords: Baltic Sea, bird, catch, competition, fisheries, food consumption, seal.

Grey seal predation impacts in the Baltic Sea

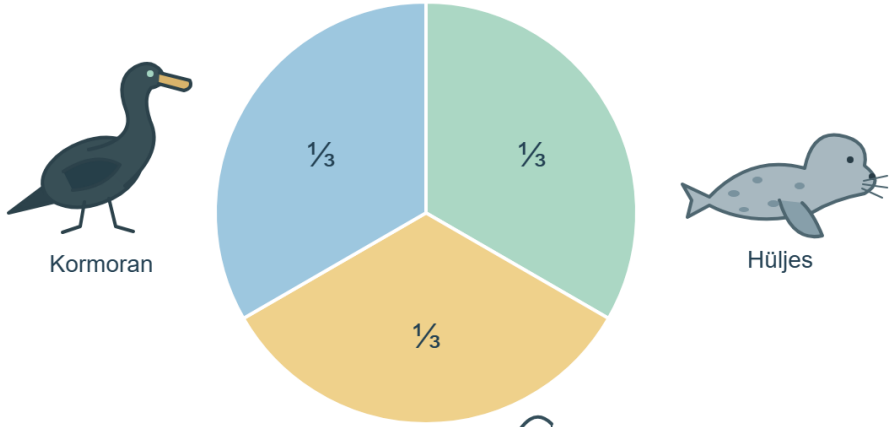
- Large impact on common whitefish (*Coregonus*), pike-perch, salmon, sea trout, pike, flatfish, cod
- Lower impact on herring and sprat:
  - ➢ fishing disturbances serious, though
- More work needed to understand the interactions and impacts!



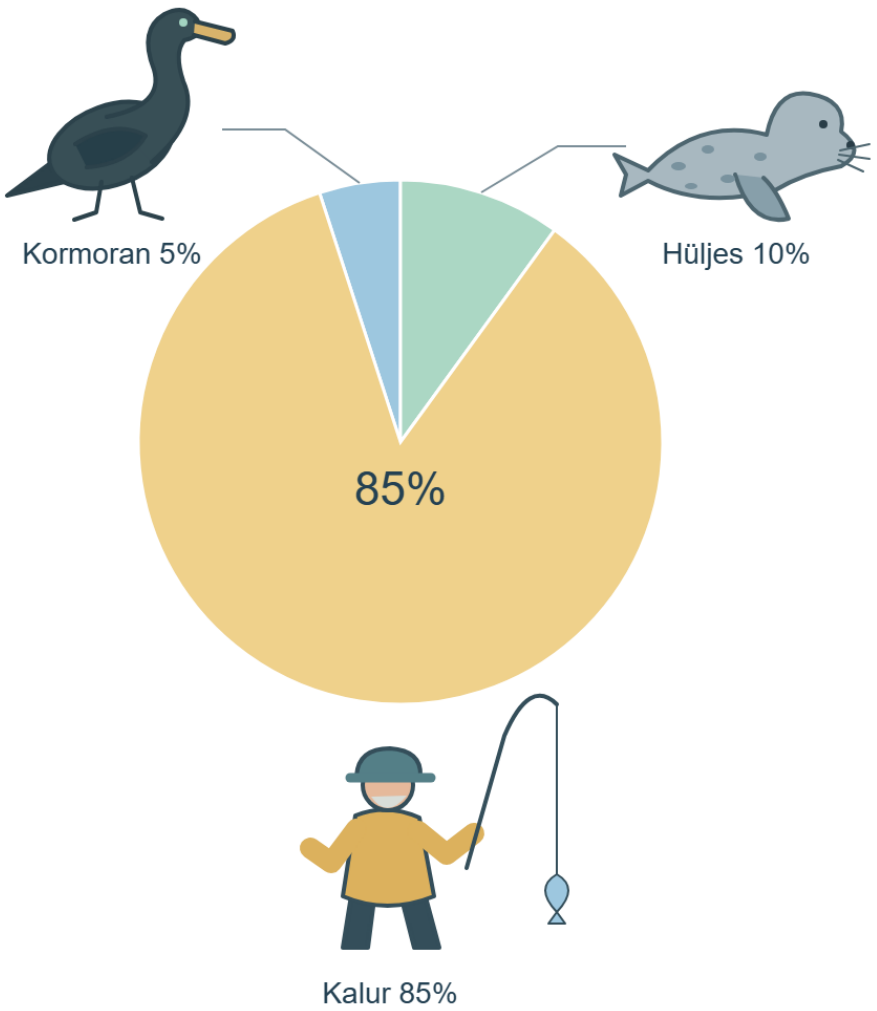
Proportions of different fish species extracted from the Baltic Sea through fishery and by birds and seals.

Hansson et al. 2018. **Competition for the fish – fish extraction from the Baltic Sea by humans, aquatic mammals, and birds.** *ICES Journal of Marine Science 75.* https://doi.org/10.1093/icesjms/fsx207

Kui jätta välja traalpüük ja võrrelda ressursikasutust kalatoiduliste imetajate-lindude ja rannakalurite vahel, siis see jaguneb umbes nii:



Umbes 25-30 aastat tagasi



Mida toob meile tulevik, arvestades et:

- Kormoranide populatsioon kasvab jõudsalt (ca 8-9% aastas) ja just hiljuti saavutasid kormoranisõbrad kohtus võidu – munade õlitamine kuulutati ebaseaduslikuks.
- Hallhülge populatsioon kasvab ca 4-5% aastas ja huvi nende jahi vastu ei ole suur. Jahti on tulenevalt seadustest raske läbi viia ja hülgeprodukte ei tohi müüa.

2. Laiem Kirde-Atlandi võrdlus: mereimetajate kogu toit ja kalapüük

Skern-Mauritzen jt (2022), „Marine mammal consumption and fisheries removals in the Nordic and Barents Seas", ajakiri *ICES Journal of Marine Science*.

Uuritud piirkond	Mereimetajate söödud saakloomad, mln t/a	Kalapüügi saak, mln t/a
Islandi ümbrus, Taani väin ja Islandi meri	13,4	1,55
Gröönimaa ja Norra meri	4,6	1,45
Barentsi meri	7,1	1,16
Kokku	**25,1**	**4,16**

2019

Väga põhjalik uuring kasutas nelja erinevat meetodit hüljeste toidusedeli kindlaks tegemiseks Läänemeres (klassikaline sooltoru analüüs; rasvhapete analüüs pekis; toidukalade DNA analüüs, stabiilsete isotoopide meetod)

PLOS ONE

RESEARCH ARTICLE

Complementary methods assessing short and long-term prey of a marine top predator – Application to the grey seal-fishery conflict in the Baltic Sea

Malin Tverin[1], Rodrigo Esparza-Salas[2¤a], Annika Strömberg[3], Patrik Tang[1¤b], Iiris Kokkonen[1], Annika Herrero[4], Kaarina Kauhala[5], Olle Karlsson[3], Raisa Tiilikainen[6], Markus Vetemaa[7], Tuula Sinisalo[8], Reijo Käkelä[1], Karl Lundström[9]*

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Data Availability Statement: All relevant data are within the paper and its Supporting Information files.

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Abstract

The growing grey seal (*Halichoerus grypus*) population in the Baltic Sea has created conflicts with local fisheries, comparable to similar emerging problems worldwide. Adequate information on the foraging habits is a requirement for responsible management of the seal population. We investigated the applicability of available dietary assessment methods by comparing morphological analysis and DNA metabarcoding of gut contents (short-term diet; n = 129/125 seals, respectively), and tissue chemical markers *i.e.* fatty acid (FA) profiles of blubber and stable isotopes (SIs) of liver and muscle (mid- or long-term diet; n = 108 seals for the FA and SI markers). The methods provided complementary information. Short-term methods indicated prey species and revealed dietary differences between age groups and areas but for limited time period. In the central Baltic, herring was the main prey, while in the Gulf of Finland percid and cyprinid species together comprised the largest part of the diet. Perch was also an important prey in the western Baltic Proper. The DNA analysis provided firm identification of many prey species, which were neglected or identified only at species group level by morphological analysis. Liver SIs distinguished spatial foraging patterns and identified potentially migrated individuals, whereas blubber FAs distinguished individuals frequently utilizing certain types of prey. Tissue chemical markers of adult males suggested specialized feeding to certain areas and prey, which suggest that these individuals are especially prone to cause economic losses for fisheries. We recommend combined analyses of gut contents and tissue chemical markers as dietary monitoring methodology of aquatic top predators to support an optimal ecosystem-based management.

Table 1. Prey items of subadult and adult grey seal males indicated by gut morphological *i.e.* hard part (HP, mass %) and DNA (sequence %) prey proportions, and the frequencies of occurrence (Freq %).

Prey items	Subadult males				Adult males			
	HP (%) n = 37		DNA (%) n = 42		HP (%) n = 51		DNA (%) n = 44	
	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq
Baltic herring *Clupea harengus*	46.7	*59.5*	39.8	*69.0*	29.0	*58.8*	24.6	*63.6*
Perch *Perca fluviatilis*	13.6	*21.6*	11.0	*21.4*	13.0	*35.3*	11.1	*36.4*
Eelpout *Zoarces viviparus*	10.3	*13.5*	6.1	*28.6*	7.0	*17.6*	*8.5*	*18.2*
Bream *Abramis brama*	ND	*ND*	6.0	*16.7*	3.4	*5.9*	10.8	*22.7*
Roach *Rutilus rutilus*	3.0	*8.1*	3.4	*11.9*	5.0	*13.7*	5.1	*31.8*
Sprat *Sprattus sprattus*	2.6	*13.5*	9.2	*23.8*	0.5	*7.8*	2.9	*22.7*
Pikeperch *Sander lucioperca*	4.3	*5.4*	2.4	*16.7*	1.5	*7.8*	5.8	*13.6*
Common whitefish *C. lavaretus*	0.3	*2.7*	ND	*ND*	9.2	*21.6*	ND	*ND*
Atlantic salmon *Salmo salar*	ND	*ND*	0.6	*9.5*	1.5	*3.9*	6.2	*6.8*
European eel *Anguilla anguilla*	3.0	*5.4*	1.7	*7.1*	1.6	*3.9*	1.0	*6.8*
Three-spined stickleback *G. aculeatus*	< 0.1	*2.7*	5.3	*7.1*	ND	*ND*	<0.1	*2.3*
Cod *Gadus morhua*	0.2	*2.7*	3.3	*11.9*	1.1	*5.9*	0.3	*2.3*
Burbot *Lota lota*	ND	*ND*	3.4	*9.5*	0.5	*2.0*	0.5	*4.5*
Pike *Esox lucius*	ND	*ND*	ND	*ND*	1.8	*2.0*	2.2	*6.8*
Isopod crustacean *Saduria entomon*	2.9	*8.1*	ND	*ND*	<0.1	*3.9*	ND	*ND*
Sea trout *Salmo trutta*	0.9	*2.7*	ND	*ND*	<0.1	*2.0*	1.2	*2.3*
Ruffe *Gymnocephalus cernua*	1.0	*5.4*	0.3	*4.8*	<0.1	*2.0*	0.8	*2.3*
European flounder *Platichthys flesus*	ND	*ND*	ND	*ND*	1.7	*5.9*	ND	*ND*
Turbot *Scophthalmus maximus*	ND	*ND*	ND	*ND*	1.4	*2.0*	ND	*ND*
Four-horned sculpin *M. quadricornis*	0.4	*2.7*	ND	*ND*	0.9	*5.9*	ND	*ND*
Smelt *Osmerus eperlanus*	0.5	*8.1*	< 0.1	*2.4*	0.3	*5.9*	0.2	*6.8*
Sand goby *Pomatoschistus minutus*	ND	*ND*	0.7	*2.4*	ND	*ND*	< 0.1	*4.5*
Common dab *Limanda limanda*	ND	*ND*	ND	*ND*	0.7	*2.0*	ND	*ND*
White bream *Blicca bjoerkna*	ND	*ND*	< 0.1	*4.8*	ND	*ND*	0.2	*4.5*
Tench *Tinca tinca*	ND	*ND*	ND	*ND*	0.1	*2.0*	ND	*ND*
Black goby *Gobius niger*	ND	*ND*	< 0.1	*2.4*	<0.1	*2.0*	ND	*ND*
Rainbow trout *Oncorhynchus mykiss*	ND	*ND*	< 0.1	*2.4*	ND	*ND*	ND	*ND*
Cyprinids Cyprinidae	5.0	*16.2*	ND	*ND*	14.4	*31.4*	ND	*ND*
Whitefishes *Coregonus* spp	ND	*ND*	2.2	*11.9*	0.3	*3.9*	13.2	*27.3*
Percids Percidae	2.2	*5.4*	ND	*ND*	3.1	*11.8*	ND	*ND*
Sculpins Cottidae	< 0.1	*2.7*	2.4	*4.8*	<0.1	*3.9*	1.8	*13.6*
European flounder or plaice *Plat. flesus* or *Pleur. platessa*	ND	*ND*	< 0.1	*2.4*	ND	*ND*	2.4	*4.5*
Clupeids Clupeidae	0.3	*2.7*	ND	*ND*	2.0	*5.9*	ND	*ND*
Daces *Leuciscus* sp.	ND	*ND*	1.2	*2.4*	ND	*ND*	1.0	*2.3*
Sand lances Ammodytidae	1.1	*8.1*	0.7	*4.8*	ND	*ND*	ND	*ND*
Lampreys Petromyzontidae	1.7	*2.7*	ND	*ND*	ND	*ND*	ND	*ND*
Gobies Gobiidae	< 0.1	*5.4*	ND	*ND*	<0.1	*15.7*	ND	*ND*

The items identified at species levels were listed first (in the order of decreasing average proportion in the subadult and adult diets, indicated by the HP and DNA analyses) and those identified at species group levels were listed after the species. The number of subadult and adult males from which both HP and DNA were recorded was 33 and 40, respectively.

https://doi.org/10.1371/journal.pone.0208694.t001

Table 2. Prey items of subadult and adult grey seal females indicated by gut morphological *i.e.* hard part (HP, mass %) and DNA (sequence %) prey proportions, and the frequencies of occurrence (Freq %).

Prey items	Subadult females				Adult females			
	HP (%) n = 26		DNA (%) n = 25		HP (%) n = 15		DNA (%) n = 14	
	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq
Baltic herring *Clupea harengus*	54.0	*80.8*	38.3	*76.0*	42.3	*80.0*	59.3	*85.7*
Eelpout *Zoarces viviparus*	9.1	*15.4*	15.4	*28.0*	23.2	*40.0*	20.0	*50.0*
Sprat *Sprattus sprattus*	11.4	*23.1*	12.6	*48.0*	ND	ND	1.1	*21.4*
Three-spined stickleback *G. aculeatus*	3.8	*3.8*	11.0	*20.0*	ND	ND	ND	ND
Cod *Gadus morhua*	3.8	*3.8*	5.7	*20.0*	1.0	*6.7*	3.2	*7.1*
Common whitefish *C. lavaretus*	0.4	*3.8*	ND	ND	12.8	*26.7*	ND	ND
Perch *Perca fluviatilis*	4.1	*7.7*	4.4	*24.0*	2.3	*13.3*	1.1	*7.1*
Black goby *Gobius niger*	ND	ND	ND	ND	1.9	*6.7*	2.8	*14.3*
Sand goby *Pomatoschistus minutus*	ND	ND	4.1	*16.0*	ND	ND	ND	ND
Atlantic salmon *Salmo salar*	ND	ND	3.3	*4.0*	ND	ND	ND	ND
Roach *Rutilus rutilus*	ND	*ND*	1.3	*4.0*	ND			
Vendace *Coregonus albula*	ND	ND	ND	ND	1.1			
Bream *Abramis brama*	ND	ND	0.4	*12.0*	ND			
Ruffe *Gymnocephalus cernua*	< 0.1	*3.8*	0.6	*4.0*	ND			
Pikeperch *Sander lucioperca*	ND	ND	0.2	*8.0*	ND			
Smelt *Osmerus eperlanus*	< 0.1	*3.8*	0.1	*4.0*	< 0.1			
European flounder *Platichthys flesus*	0.1	3.8	ND	ND	ND			
Rainbow trout *Oncorhynchus mykiss*	ND	ND	<0.1	*4.0*	ND			
Isopod crustacean *Saduria entomon*	< 0.1	*3.8*	ND	ND	ND			
Clupeids Clupeidae	4.9	*15.4*	ND	ND	6.7			
Percids Percidae	7.2	*7.7*	ND	ND	0.8			
Whitefishes *Coregonus* spp	ND	ND	0.3	*16.0*	ND			
Salmonids *Salmo* spp	ND	ND	ND	ND	5.9			
Sculpins Cottidae	ND	ND	0.8	*4.0*	ND			
Gobies Gobiidae	0.6	*15.4*	ND	ND	2.1			
European flounder or European plaice *Plat. flesus* or *Pleur. platessa*	ND	ND	1.1	*4.0*	ND			
Sand lances Ammodytidae	0.5	*7.7*	0.3	*8.0*	ND			

The items identified at species levels were listed first (in the order of decreasing average proportion in the subadult and adult diets, ind
analyses) and those identified at species group levels were listed after the species. The number of subadult and adult females from whic
recorded was 23 and 13, respectively.

https://doi.org/10.1371/journal.pone.0208694.t002

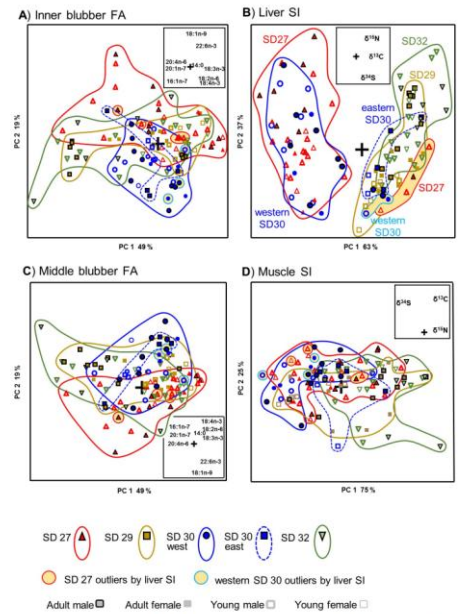


Fig 3. PCA scores plots of the mid-term markers A) inner blubber FA, B) liver SI, and the long-term markers C) middle blubber FA and D) muscle SI data for grey seal individuals (n = 108) collected from ICES-subdivisions 27, 29, 30 and 32. Symbol key is presented below figures. Loadings plots of the variables were added as inserts. Without any subgrouping of the individuals, according to age or sex, the paired SIMCA tests ($P < 0.05$) showed no significances in any comparisons between ICES areas.

https://doi.org/10.1371/journal.pone.0208694.g003

C18 polyunsaturated FAs (PUFAs), especially 18:4n-3. At the same time these individuals had low percentages of 16:1n-7, 20:1n-7 and 20:4n-6, plentiful in demersal fish. However, the SIs alone showed significant difference only between the trawl (T, with high $\delta^{34}S$) versus coastal fyke groups (S and B, with high $\delta^{13}C$ and $\delta^{15}N$) when using muscle SIs as variables. When using Liver SIs, PCA followed by SIMCA showed no statistically significant differences. The individuals that were bycaught in the pelagic surface or coastal bottom fykes (S vs B) did not



2021

Ülevaade hülgekahjudest Eestis 2009 a. ning info hülgepeletite katsetuse tulemused

Proceedings of the Estonian Academy of Sciences,
2021, **70**, 2, 207–214
https://doi.org/10.3176/proc.2021.2.09
Available online at www.eap.ee/proceedings

MITIGATION OF SEAL-FISHERY CONFLICT

Seal-induced losses and successful mitigation using Acoustic Harassment Devices in Estonian Baltic trap-net fisheries

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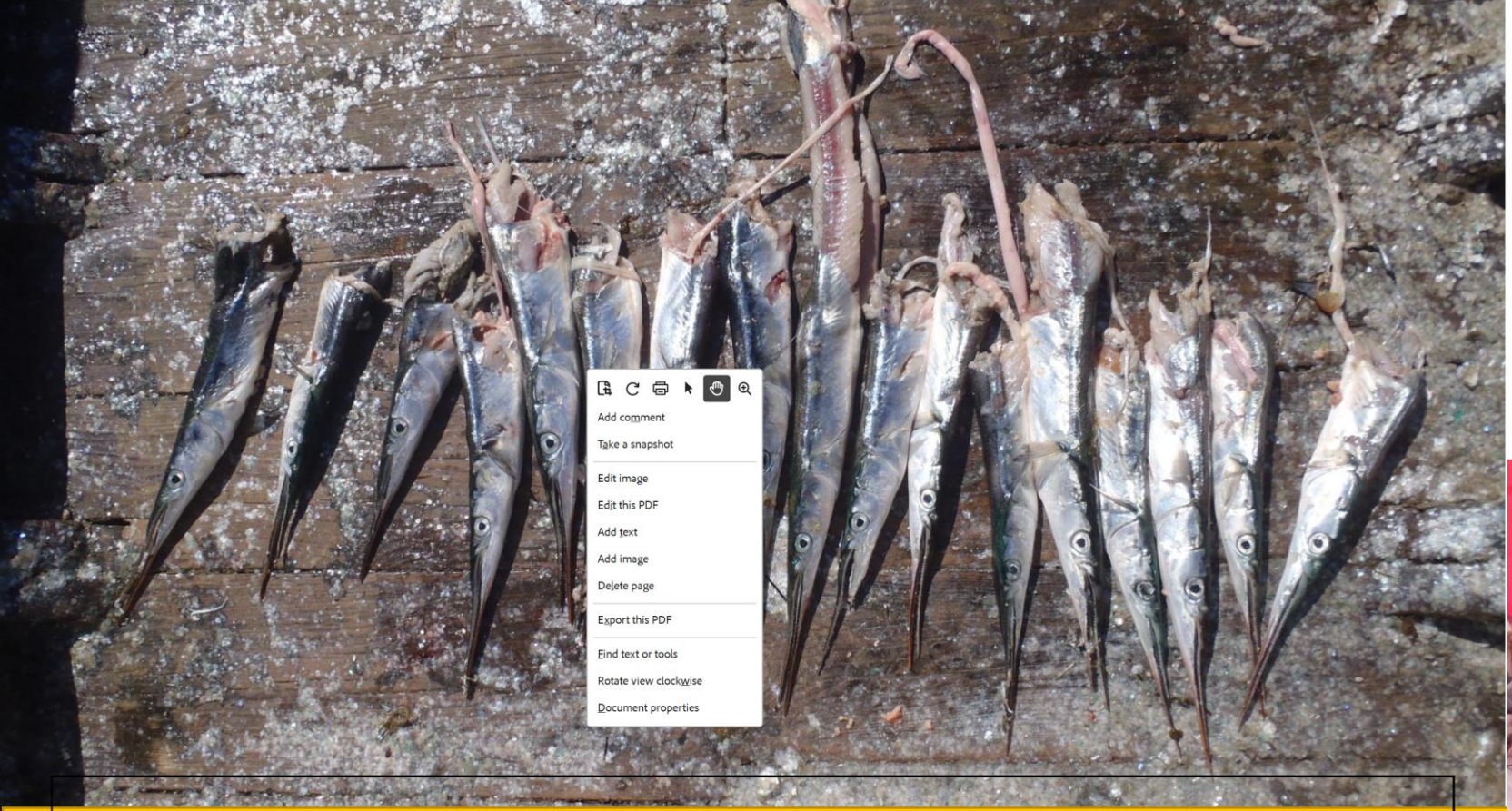
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Abstract. During the last decades the number of grey seals *Halichoerus grypus* has increased more than tenfold in the Baltic Sea, having reached 38 000 in 2019, which has created increasing problems to the coastal fisheries. In the current study, 151 Estonian coastal fishermen were interviewed to sum all direct and indirect monetary losses. The total cost of the damage caused by seals to the Estonian fisheries was around 0.9 million euros in 2009. With the aim of mitigating seal impact, Acoustic Harassment Devices (AHDs, Lofitech) were tested. This study presents quantitative data on seal damage in Estonian trap-net fisheries and analyses the results of the attempts made to mitigate the damage by means of AHDs. It can be concluded that AHDs provided sufficient protection against the seal attacks.

Key words: Acoustic Harassment Devices, coastal fisheries, trap nets, catch damage, Baltic Sea, grey seal.



Seisevnooda päevasaak, Sõrve säär, 2014 kevad





Tööala (mõjuala): ca 300 m
Kindel kaitse: ca 100 m



15000 Hz

185 db
(dBre1uPa@1m)

Impulss:
1 - 3 sec

Intervall:
1 – 4 min

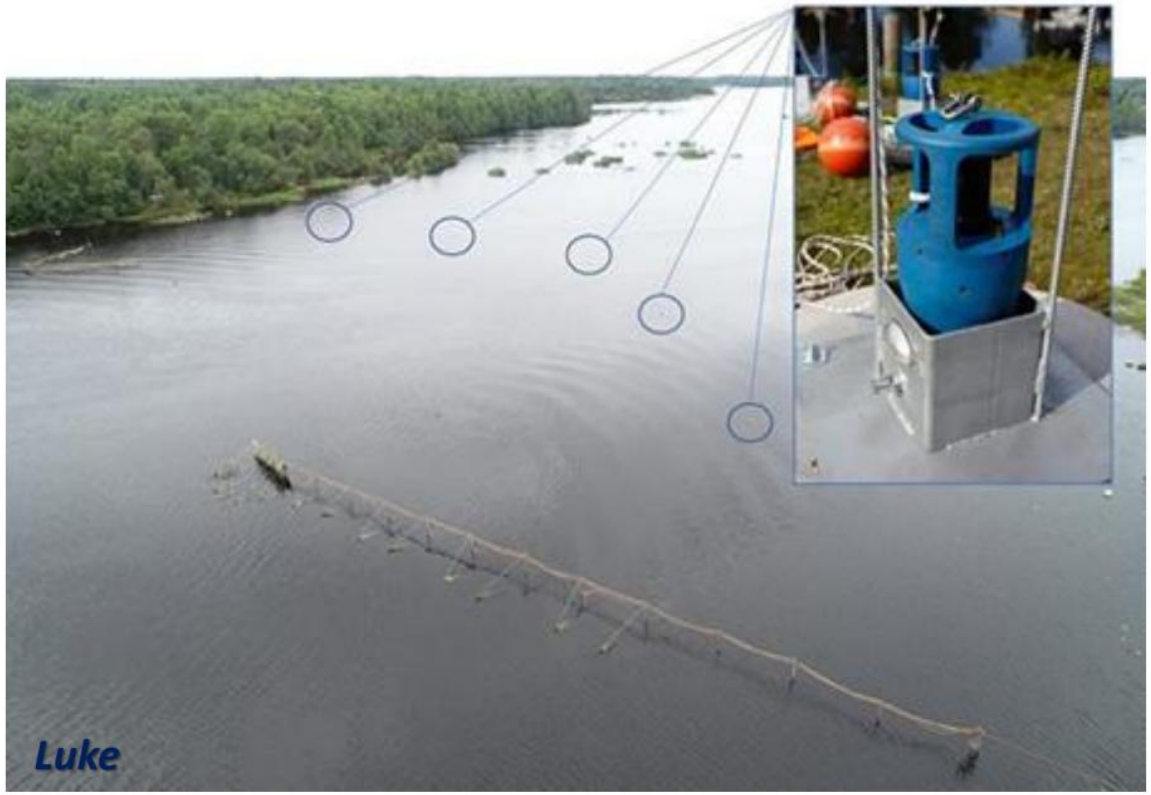




(slaid Petri Suuronen)

Seal deterrents work also in rivers



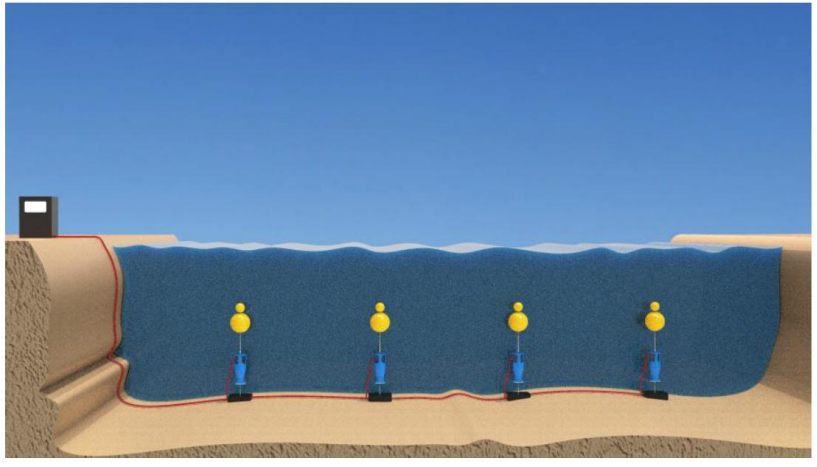


Veneranta, L., Lehtonen, T.K., Lehtonen, E. & Suuronen, P. 2024. **Acoustic seal deterrents in mitigation of human–wildlife conflicts in the whitefish fishery of the River Iijoki in the northern Baltic Sea area**. Fisheries Management and Ecology 31:e12680. https://doi.org/10.1111/fme.12680

(slaid Petri Suuronen)

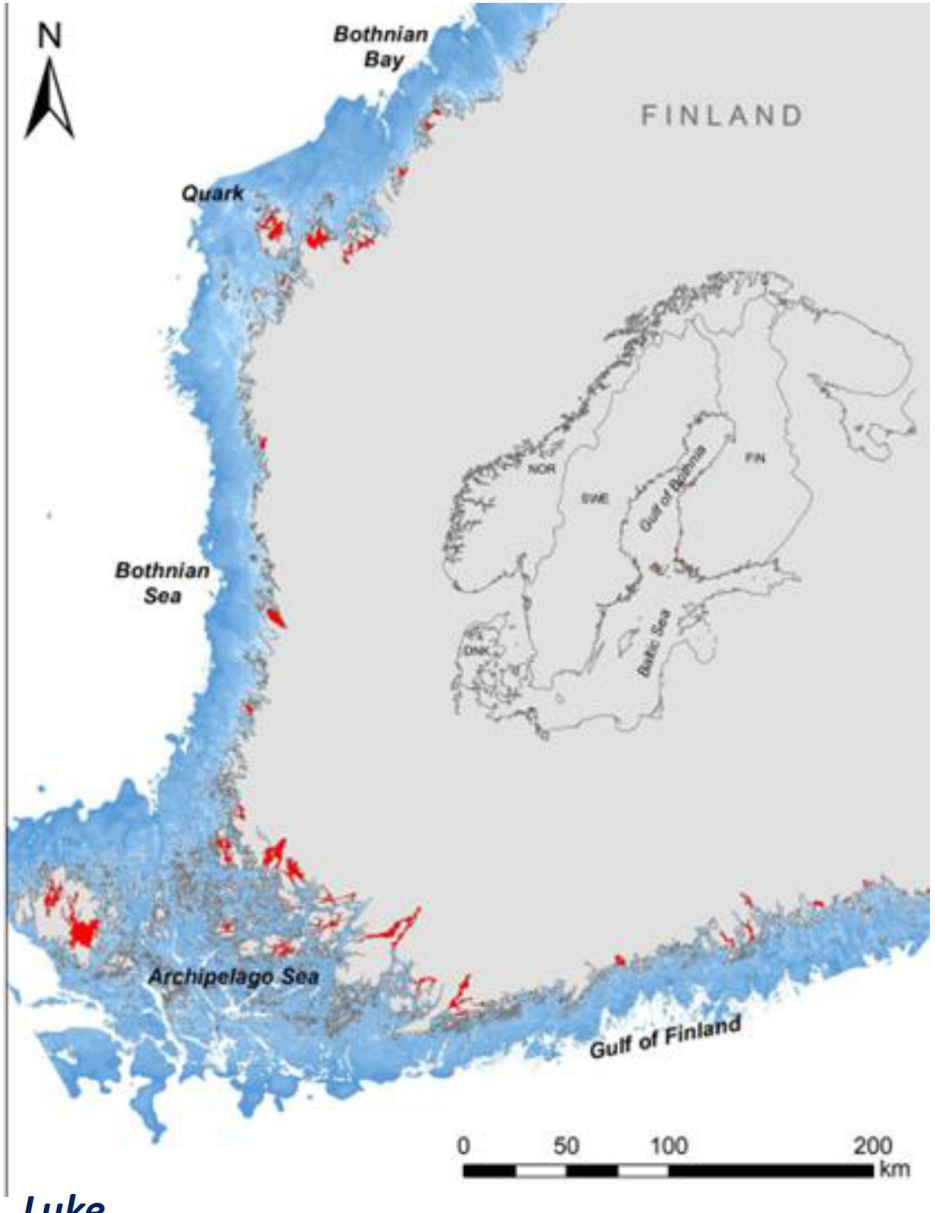
Potential of seal-free areas?







Lehtonen, E., Lehmonen, R. & Suuronen, P. 2023. **Potential of creating seal-free fishing areas with seal deterrents.** *Fisheries Research 264, 106736*



Luke

2023

Artikkel esitab infot, mis tõestab, et hülgeprobleem on kalanduse jaoks äärmiselt oluline ning kasvav loomade arv ei ohusta mitte ainult rannakalandust, vaid rannapiirkondade traditsioonilist elulaadi tervikuna

Marine Policy 155 (2023) 105684

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journal homepage: www.elsevier.com/locate/marpol

Full length article

Reassessing the management criteria of growing seal populations: The case of Baltic grey seal and coastal fishery

Petri Suuronen [a,1], Sven-Gunnar Lunneryd [b], Sara Königson [b], Nelson F. Coelho [c], Åsa Waldo [d], Viktor Eriksson [e], Kristina Svels [f,*], Esa Lehtonen [a], Iwona Psuty [g], Markus Vetemaa [h]

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ARTICLE INFO

Keywords:
Seal-fishery conflict
Optimal population size
Management institutions
Socio-economic
Baltic Sea

ABSTRACT

The unintended consequences of marine mammal recoveries have created complex issues for resource managers to solve. In the Baltic Sea, the grey seal (*Halichoerus grypus*) population has increased rapidly during recent decades, and the conflict between seal conservation and fishery has escalated. Although the magnitude of economic losses varies depending on the type of fisheries, there is strong evidence that the grey seal population negatively impacts coastal fisheries and indirectly threatens the cultural heritage connected to it. The current management paradigm is biased towards the preservation of seal populations and it is failing to adequately consider socio-economic impacts of seal population. There is a need to strike a balance between seal conservation and the viability of coastal fisheries, taking into consideration local circumstances. This paper contributes to resolving this problem by assessing the existing governance arrangement. We conclude that the inconsistencies between and within different regulatory frameworks in HELCOM recommendations and European Union law are a structural constraint to tackling the problem. Further to that, some of the existing management criteria applicable to Baltic grey seal population need to be revisited by giving more consideration to regional conditions within the Baltic Sea. For instance, if the data shows that the Baltic grey seal population in its core distribution area has reached a sustainable status and is no longer at risk, then the use of peripheral areas as an indication of inadequate state of the entire Baltic Sea grey seal population is questionable.

2025

Artikkel analüüsib hüljeste mõju kalandusele ja leiab, et kuigi on olemas leevendusmeetmed (peletid), on siiski ainuke võimalus probleemi lahendada senisest mastaapsem hülgejaht

Maritime Studies (2025) 24:1
https://doi.org/10.1007/s40152-024-00393-x

RESEARCH

Struggling towards co-existence of the Baltic Sea coastal fisheries and the grey seal

Kristina Svels[1] · Pekka Salmi[1] · Nelson F. Coelho[2] · Viktor Eriksson[3] · Sara Königson[4] · Esa Lehtonen[5] · Sven-Gunnar Lunneryd[4] · Petri Suuronen[6] · Markus Vetemaa[7] · Åsa Waldo[8]

Received: 31 March 2024 / Accepted: 26 November 2024 / Published online: 6 December 2024
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Abstract
Commercial small-scale fisheries along the Baltic Sea coasts have declined over the years although these fisheries are viewed as important for coastal development and food security at the local, national, and EU levels. The viability and future of small-scale fisheries are severely challenged by problems caused by grey seals. The conflict, occurring between Baltic Sea coastal fisheries and conservation of the grey seals, has been severe since the mid-1990s and continues despite attempts to find a more balanced situation. Resting on reviews of multiple material, this paper explores the state-of-the-art opportunities for mitigating the seal-fisheries conflict and asks how these are related to social struggles and social justice. Our paper concludes that co-existence of coastal fisheries and the grey seal is possible but necessitates political will and co-designed seal management plans that help implement context-specific measures. Seal deterrents, for instance, give hope as a supplementary conflict mitigation measure – along with seal-proof fishing gear – but provide only partial relief. From the fisheries sector's position, influencing the size of the seal population is a logical solution. The lifting of the EU trade ban of seal products as a regional derogation would allow sustainable management of seal populations so that they be used as renewable natural resource. Monitoring changes in the seal population is crucial for maintaining a balanced population. Reaching co-existence is timely, because – unlike the seal – the diverse Baltic coastal fishing culture is increasingly endangered.

Keywords Coastal fisheries · Grey seal · Conflict · Governance instruments · Baltic Sea · Social struggle

Põdrapeletid?

- Selleks, et põtrade arv ei läheks Eestis nii suureks, et hakkab noori metsi ohustama piiratakse teaduspõhiselt põtrade arvu jahiga.
- Ei arutleta selle üle, kuidas põtra iga kasvava puu juurest peletiga eemale ajada!



2026

Artikkel analüüsib hülgeproduktide turustamise keelu negatiivset mõju EL rannaäärsetele maapiirkondadele ja esitab seisukoha, et keeldu ei ole enam vaja

Maritime Studies (2026) 25:28
https://doi.org/10.1007/s40152-026-00487-8

VIEWPOINT

Check for updates

EU trade ban on seal products: Misguided knowledge and unintended consequences

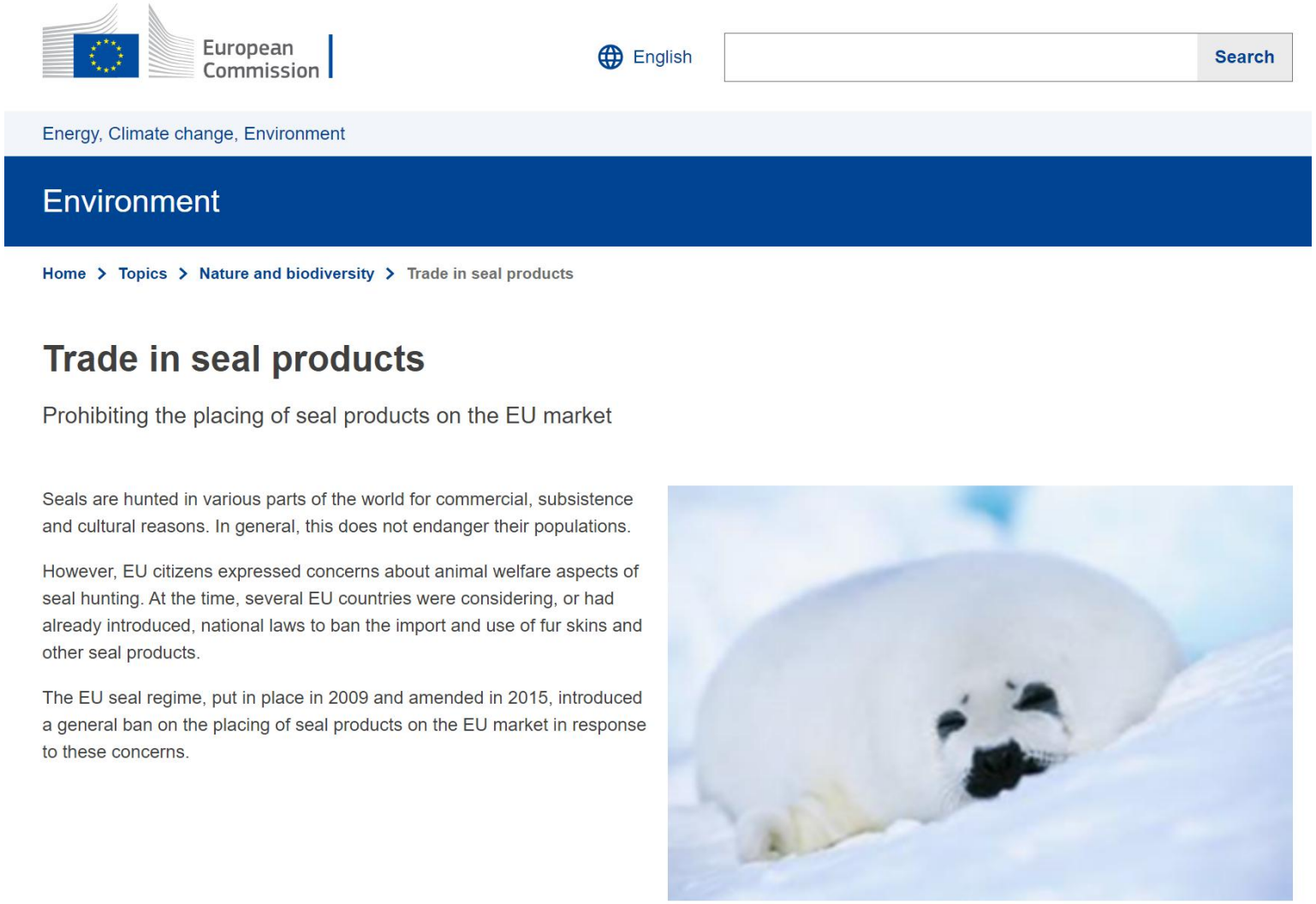
Petri Suuronen[1] · Sven-Gunnar Lunneryd[2] · Markus Vetemaa[3]

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Abstract

Over the past three decades, many seal populations in the Northern Hemisphere have recovered, resulting in various unintended effects on fisheries. In the Baltic Sea, the growing grey seal (*Halichoerus grypus*) population is causing serious problems in coastal fisheries by damaging fishing gear and catches. Largely due to these losses, coastal fishing has declined dramatically during the last decades. The policies in the European Union (EU) strongly support the protection of seal populations. The EU trade ban on seal products, introduced in 2009, is part of this legislation. As a result of this all-inclusive trade ban, legally hunted seals are often dumbed in the sea, or they end up as waste in landfills. This conflicts with traditional hunting practices, where the utilization of prey is an important element of the hunt. In effect, the trade ban has markedly reduced small-scale seal hunting and has contributed to the deepening of the seal-fishery conflict in the Baltic Sea region. Besides, handcrafting skills of seal products as subsidiary income in coastal communities has been lost. We provide evidence that small-scale commercial utilization of legally hunted seals should be considered, rather than wasting such a valuable resource. This would nurture cultural traditions and support favorable development in coastal areas. Seal hunting in the EU is well regulated and monitored, and the current hunting pressure does not endanger the growing and healthy seal populations. We fully agree that thriving marine mammal populations are a valuable element of healthy ecosystems.

- **Hülgetoodetega kauplemine**
- *Hülgetoodete Euroopa Liidu turule laskmise keelamine*
- Hülgeid kütitakse maailma eri paigus kaubanduslikel eesmärkidel, elatise hankimiseks ja kultuurilistel põhjustel. Üldjuhul ei ohusta see nende populatsioone.
- ELi kodanikud väljendasid aga muret hülgejahi loomade heaolu puudutavate aspektide pärast. Sel ajal kaalusid mitmed ELi riigid riiklike seaduste kehtestamist, et keelata hülgenahkade ja muude hülgetoodete import ja kasutamine, või olid need seadused juba vastu võtnud.
- Nendele muredele vastamiseks kehtestati 2009. aastal ELi hülgetoodete regulatsioon, mida muudeti 2015. aastal. Sellega kehtestati üldine keeld lasta hülgetooteid ELi turule.



- Produ

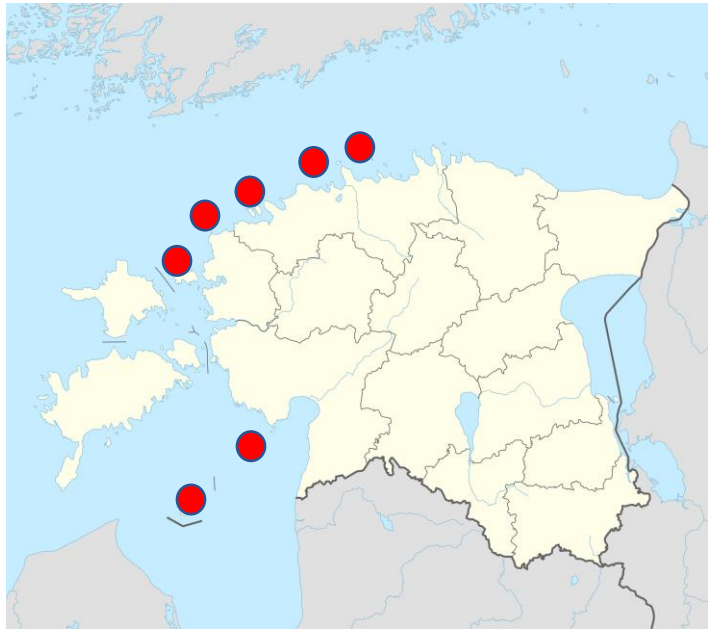




Hülgekonservid oma tarbeks ja kingitusteks

Hülgejahi ajalugu Eestis

- Üks olulisemaid tegevusharusid väikesaartel, Ruhnus näiteks väidetavasti kõige tähtsam meeste töö 1930-ndatel.
- Kõige olulisemad jahipiirkonnad Eestis: Kihnu, Ruhnu, Vormsi, Osmussaar (Odensholm), Naissaar (Nargö), Pakrid Prangli.



Year	Finland (mainland)		Åland		Sweden		Estonia		Total number c
	Quota	Hunted seals	**Quota**	Hunted seals	**Quota**	Hunted seals	**Quota**	Hunted seals	
1998	30	16	0	0	0	0	0	0	16
1999	100	60	0	0	0	0	0	0	60
2000	100	30	84	30	0	?	0	0	60
2001	180	90	89	54	180	54	0	0	198
2002	230	130	156	95	150	79	0	0	304
2003	395	233	171	82	170	79	0	0	394
2004	490	291	232	150	170	81	0	0	522
2005	635	312	234	118	170	83	0	0	513
2006	675	157	390	103	170	107	0	0	367
2007	685	218	450	183	210	96	0	0	497
2008	685	360	450	228	220	130	0	0	718
2009	1050	470	450	146	230	129	0	0	745
2010	1050	350	450	145	230	103	0	0	598
2011	1050	165	450	90	230	74	0	0	329
2012	1050	177	450	115	230	94	0	0	386
2013	1050	134	450	104	250	103	0	0	341
2014	1050	184	450	115	290	110	0	0	409
2015	1050	157	450	123	430	283	53	10	573
2016	1050	185	450	73	480	202	42	10	470
2017	1050	232	450	72	560	263	45	9	576
2018	1050	213	450	128	740	499	37	18	858
2019	1050	316	450	343	1100	1060	58	20	1739
2020	1050	266	500	215	2000	1028	50	19	1528
2021	1050	413	500	207	2000	928	55	26	1574
Total	17 855	5159	8 206	2919	10 210	5585	340	112	13 775

Hallhülge kvoodid ja kütitud isendite arv üle kogu Läänemere

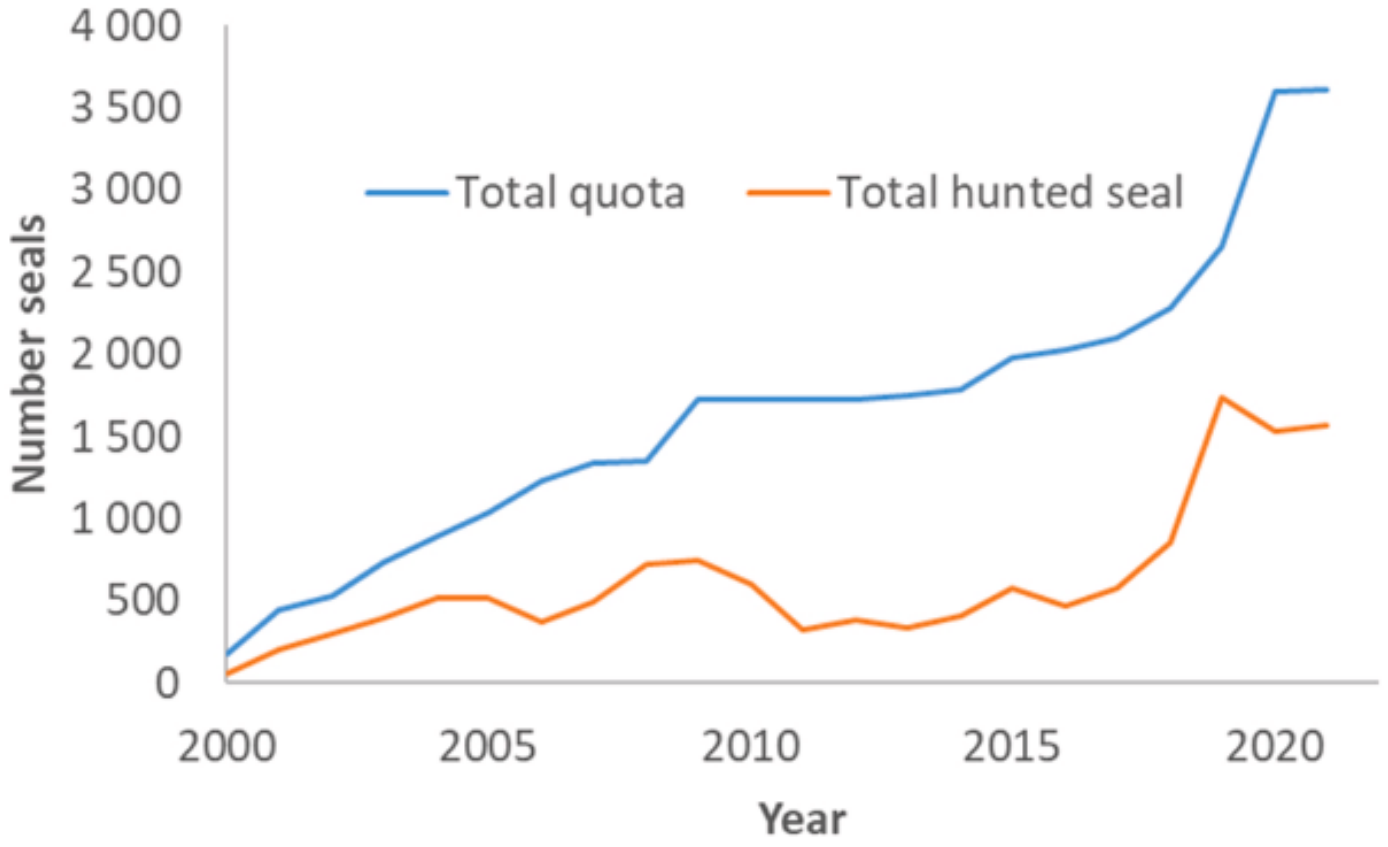
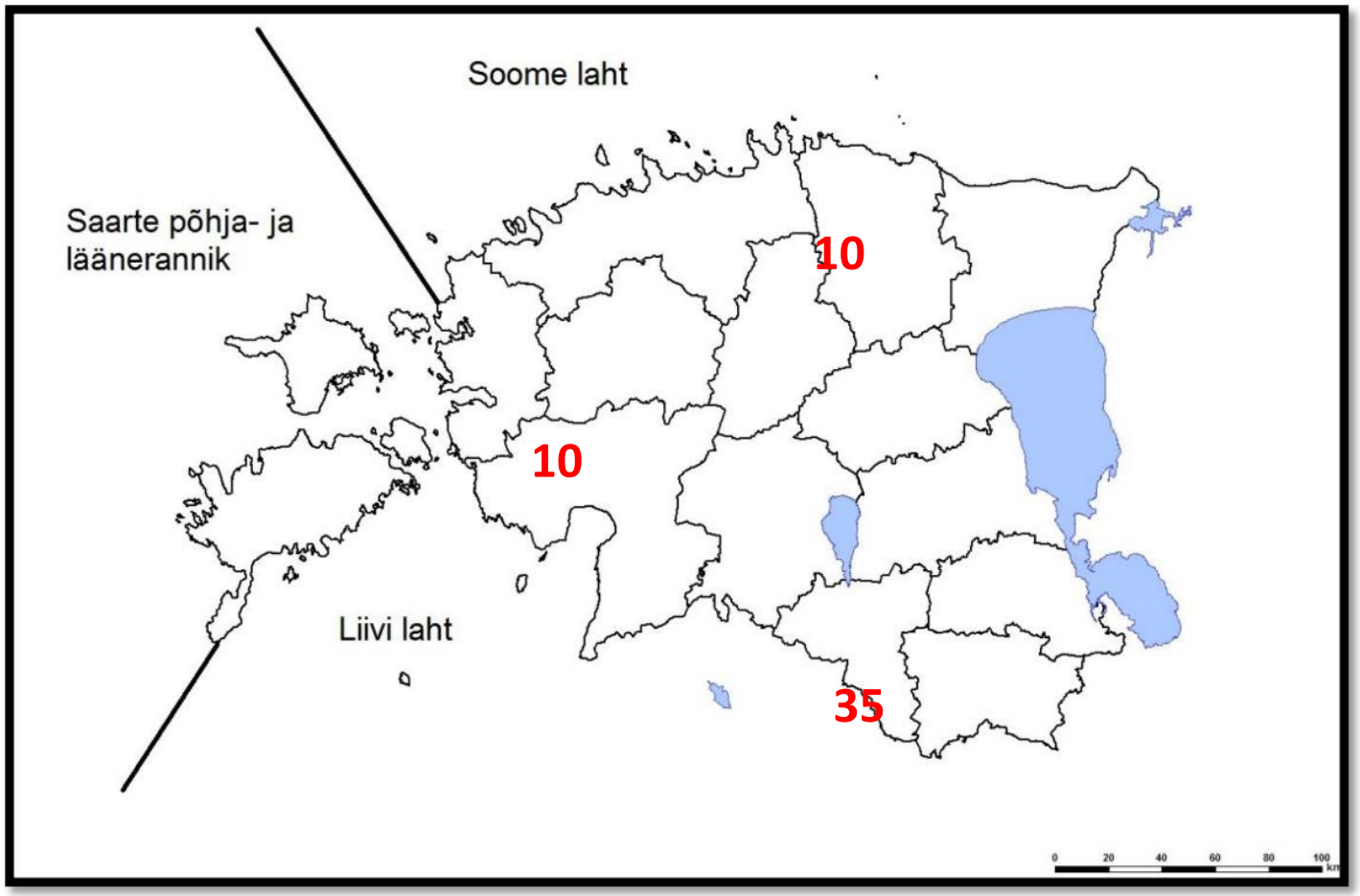


Fig. 3. Total quota and number of grey seals yearly hunted in 1998–2021 in the Baltic Sea. The figure is based on combined data presented in Annex 2.

- Eestis oli varem kolm eraldi kvooti kolme suurema ala peale. Lubatud oli küttida kuni 1% kolmel viimasel aastal loendatud hüljeste keskmisest arvust, kuna hülgeloenduste ajal võib ilmastikust ja muudest teguritest sõltuvalt tekkida viga (loendatud isendite arv erineb tegelikust suuremal määral). Aastal 2026 enam limiiti kolme ala peale ei määratud.

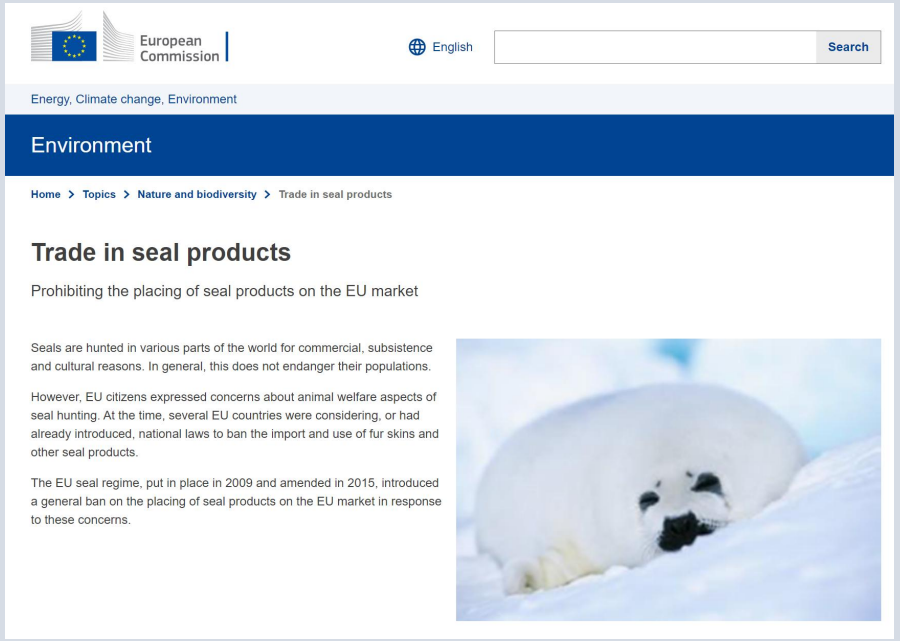


Hülgejaht

- Jahiaeg Eestis jahieeskirja järgi 15.04-31.12
- Küttimismahu kehtestab Keskkonnaamet korraldusega. 2026 a. 176 looma. Üle Eesti üks limiit.
- Loa annab jahipiirkonna kasutaja. Merealal, mis ei jää jahipiirkonda annab loa külgnev kasutaja. Loa eest tuleb riigile eraldi maksta - summa 13€. Vanasti oli 100€, aga seda vähendati. Korralduses kõik info olemas. Link määrusele https://www.riigiteataja.ee/et/akt/102042026002
- Kaitsealadel, kus hallhüljes on kaitse-eesmärgiks, üldjuhul jahti pidada ei saa. Tõendatud ja korduvate kahjude korral väljastab Keskkonnaamet eriloa. Eelmisel anti Matsalu rahvuspargis näiteks välja 3 hallhülge küttimise luba.
- Jahiload on 2026 juunist kõik elektroonsed ja kütt peab kohe märkima looma tabamiskoha ja muud seonduvad andmed.
- Bioproove enam võtma ei pea (emakas jne). Siiski peab hülge üle mõõtma.

Peamised hülgejahiga seotud probleemid Eestis:

- Hülgejaht on küll lubatud, aga üldiselt mitte nendes kohtades, kus jahti saaks tulemuslikult läbi viia. Selle põhjus on ajalooline: hallhülge arvukuse madalseisu ajal katsuti võtta kaitse alla iga paik, mis sellele liigile oluline oli. Tollal õige otsus, aga praegu tundub võimatu seda muuta…
- EL hülgeprodukti de turustamise keeld

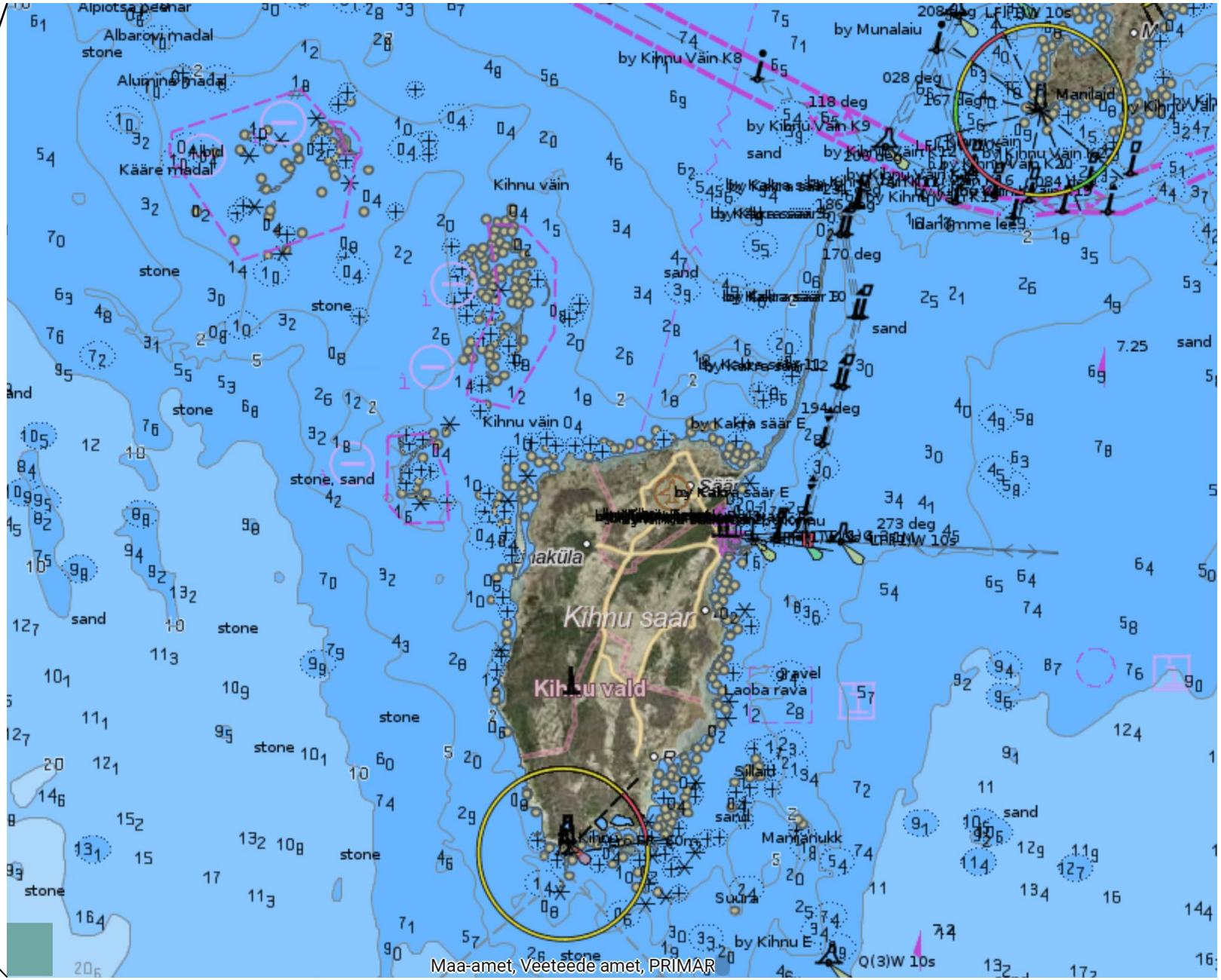


Looduskaitsereziim Lääne-Eestis



- Sangelaid asub umbes 5 km Kihnu saarest loodes
- Jahiturismi jaoks sobiv koht







Viigri kaitsealad Kihnu lähedal







- Kihnu kultuuriruum kanti 2003. aastal UNESCO suulise ja vaimse pärandi meistriteoste nimekirja ning alates 2008. aastast on see UNESCO vaimse kultuuripärandi esindusnimekirjas.
- Aga hülgeprodukte müüa ikkagi ei tohi!







Tänan kuulamast ja kaasa mõtlemast!

