The impact of Swedish seal hunting quotas on the conservation status of harbour and grey seal populations in Denmark

Scientific note from DCE – Danish Centre for Environment and Energy

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Data sheet

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Front page photo: Grey seals at sea, Anders Galatius

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1 Summary

This note aims to assess the significance of hunting quotas that the Swedish Environmental Protection Agency has set for harbour seals and grey seals in Swedish waters, in terms of conservation status of both species within Denmark. In an email from the Swedish Environmental Protection Agency to the Danish Environmental Protection Agency, it is stated that the quotas for 2026-2027 will be a protective hunt of 200 harbour seals in the Kattegat and Skagerrak population areas and licensed hunt of 1,350 grey seals in the Baltic population area with protective hunting of an additional 150 grey seals if the quota of 1,350 is fulfilled.

For harbour seals in the Danish part of Kattegat, DCE assesses that the proposed hunting quota is unlikely to directly contribute to a change in the favourable conservation status. This is in part because harbour seals in the area do not usually move over large distances and the annual exchange between Danish and Swedish colonies is estimated to be small and in part due to the quota being relatively small.

The grey seal is currently recolonising Danish waters after being driven to local extinction around 1900. The recolonisation process is at an early stage in Denmark with low occurrences in most areas and few breeding animals. Therefore, the grey seal is currently considered to be in an unfavourable conservation status in Denmark. It is possible that the proposed Swedish hunting quota, in combination with hunting in Finland and bycatch, will delay the achievement of favourable conservation status for grey seals in Danish waters.

2 Sammenfatning

Dette notat har til formål at vurdere betydningen af jagtkvoter, som det svenske Naturvårdsverket har fastsat for spættede sæler og gråsæler i svensk farvand, i forhold til bevaringsstatus for begge arter i Danmark. I en e-mail fra Naturvårdsverket til Miljøstyrelsen anføres det, at kvoterne for 2026-2027 vil være på 200 spættede sæler i form af 'beskyttelsesjagt' i bestandsområderne Kattegat og Skagerrak og licensjagt på 1.350 gråsæler i bestandsområdet i Østersøen med 'beskyttelsesjagt' på yderligere 150 gråsæler, hvis kvoten på 1.350 opfyldes.

For spættede sæler i den danske del af Kattegat vurderer DCE, at den foreslåede jagtkvote sandsynligvis ikke direkte vil bidrage til en ændring i den gunstige bevaringsstatus. Dette skyldes dels, at spættede sæler i området normalt ikke bevæger sig over store afstande, og at den årlige udveksling mellem danske og svenske kolonier således anslås at være lille, og dels at kvoten er relativt lille. Gråsælen er i øjeblikket ved at genkolonisere de danske farvande efter at være blevet drevet til lokal udryddelse omkring år 1900. Rekoloniseringsprocessen er på et tidligt stadie i Danmark med lave forekomster i de fleste områder og få ynglende dyr. Derfor vurderes gråsælen i øjeblikket at have en ugunstig bevaringsstatus i Danmark. Det er muligt, at den foreslåede svenske jagtkvote i kombination med jagt i Finland og bifangst vil forsinke opnåelsen af gunstig bevaringsstatus for gråsæler i danske farvande.

3 Assignment

The Swedish Environmental Protection Agency is considering quotas for protective hunting of 200 harbour seals in the Swedish parts of Kattegat and Skagerrak and 1,350 grey seals in the inner part of the Swedish Baltic Sea. These populations are shared with Denmark.

The Danish Environmental Protection Agency has requested a note commenting on the attached email and note from the Swedish Environmental Protection Agency regarding the setting of hunting quotas. DCE should make an assessment and comment on whether the Swedish plan potentially influences the Danish part of the populations of harbour seals and grey seals with respect to maintaining or achieving favourable conservation status.

4 Background

In Sweden, seals are hunted under licenses or as protective hunting, the latter taking place in the vicinity of fishing gear or within protected areas for fish (Swedish EPA 2025). Both licensed and protective seal hunting is carried out according to annually set quotas, whereas in Denmark, only derogation shooting of individuals near fishing gear is permitted (Danish EPA 2020). Seal populations often have cross-border distributions. Sweden and Denmark share two populations of harbour seals, one in the Kattegat and one in the southwestern Baltic Sea (Olsen et al. 2014), as well as two populations of grey seals, one in the North Sea and one in the Baltic Sea (Fietz et al. 2016, Galatius et al. 2024). Increased mortality, for example due to hunting in part of a population's range, can affect numbers and distribution in other parts of the population's range. Thus, seal hunting in Swedish waters can potentially affect seal populations in the Danish parts of the range.

In addition to the number of animals killed, the impact of hunting on a population depends on which individuals are killed. In the case of seals, the potential recruitment to the population is limited by the fact that each adult female can give birth to a maximum of one pup per year. At the same time, there is a high natural mortality rate among pups and young seals compared to a low natural mortality rate among adult seals (e.g., Ashley et al. 2020, Hall et al. 2008; Harding et al. 2007). These factors mean that the population development of seals will be affected to a much greater extent by hunting adult females than other parts of the population. A seal population can generally be estimated to contain 60-80% adult animals (Svensson et al. 2011) . Tissue is collected from some of the animals killed in Sweden for examination. Data from these (National Museum of Natural History, https://shark-web.smhi.se/hamta-data/) suggests an underrepresentation of adult grey seal females in the hunt, with only 19% of the grey seals collected in the period 2017-2022 being females aged 5 years or older. There is no information on the proportion of adult harbour seals in the hunting bag.

Both grey seals and harbour seals exhibit a high degree of site fidelity during the breeding season (Härkönen and Harding 2001; Pomeroy et al. 2000; Dietz et al. 2013). Outside the breeding season, the seals are significantly less local. In the case of harbour seals, average distances of up to approximately 55 km from the tagging site have been observed in Danish waters, where the adult seals are more stationary than the yearling and juvenile seals (Dietz et al. 2013), while grey seals tagged in Denmark have swum to both Estonia and the area around Stockholm (Dietz et al. 2003). This means that, all other things being equal, local breeding populations will be more affected by local hunting around the breeding season than outside the breeding season, where hunting may impact a wider geographic range.

Monitoring of population dynamics of both seal species in the affected areas is conducted by aerial surveys of seals at their resting places during their annual moult, where a large and relatively stable proportion of the population is on land (Galatius et al. 2014; 2021). A proportion of the seals will be in the water during these counts and will therefore not be counted. Estimates of the total population size will thus be based on assumptions about the proportion of seals that are on land at the time of the count. In its communication to the

Danish Environmental Protection Agency, the Swedish Environmental Protection Agency has included estimates of the population sizes in the hunting areas. These, together with the results of the counts in 2024 and the proposed quotas, are presented in Table 1.

In the following sections, we will assess the significance of the proposed Swedish hunting quotas for the size and development of harbour seal and grey seal populations in Danish waters, with the aim of assessing their significance with regard to Danish seal populations maintaining or achieving favourable conservation status in accordance with the EU Habitats Directive.

Table 1. Number of seals counted on land in the affected population areas in 2024, provided by the Swedish Environmental Protection Agency (Swedish EPA 2025). The numbers for harbour seals are combined for Denmark and Sweden, while grey seal numbers are for the entire Baltic Sea. The Swedish hunting quotas proposed for the 2026-2027 season are listed as stated in a note and an email to the Danish Environmental Protection Agency.

Population	Seals counted on land 2024	Total population estimate (Swedish EPA 2025)	Proposed Swedish hunting quota 2026-2027
Harbour seal, Kattegat	9,040	13,000-15,000	190 (incl. Skagerrak)
Harbour seal, southwestern Baltic	1,562	2,000-2,300	10
Grey seal, Baltic Sea	45,877	57,000-76,000	1,350+150

5 Harbour seal assessment

For harbour seals, a Swedish protective hunting quota for 2026-2027 at 200 individuals has been proposed, divided between the counties Västra Götaland (140 seals), Halland (50 seals) and Skåne (10 seals). The quotas in these counties will potentially affect three different management units/populations of harbour seals, Skagerrak, Kattegat and the southwestern Baltic. As there are no Danish seal haul-outs in Skagerrak, only the latter two units are relevant for the conservation status of harbour seal in Denmark. As such, we do not agree with the notion in the note from the Swedish Environmental Protection Agency (Swedish EPA 2025) that the areas included in the planned protected hunting scheme should be considered a single management unit. The haul-outs in Skåne; Skabbrevet and Måkläppen are considered part of the southwestern Baltic population (Banga et al. 2023), so all hunting in Skåne south of Helsingborg will impact this population.

5.1 Kattegat

As the quota of 10 harbour seals in Skåne will target seals from the southwestern Baltic population, a maximum of 190 harbour seals will be shot from the Kattegat and Skagerrak populations. As there is no quota for the northernmost Swedish county, Bohus Län, practically all hunted seals will probably be from the Kattegat population. Although harbour seals move between Danish and Swedish localities, the movements observed among satellite-tagged individuals of harbour seals in the Kattegat is relatively limited (Dietz et al. 2013). The Swedish Environmental Protection Agency (2025) estimates that there are approximately 13,000-15,000 harbour seals in the Kattegat. This is based on a count of ca. 9,000 seals on land during the moulting season, of which 5,500 were counted in Sweden. There is a maximum natural annual growth rate for harbour seal populations of around 10-12% (Härkönen et al. 2002). In recent years, population growth has been negative (Figure 1, the numbers in the chart do not include seals that are in the water at the time of the count). The quota of 190 is thus set at 2-3% of the seals estimated to occur in the Swedish part of Kattegat. Silva et al. (2021) estimated that Swedish Skagerrak and Kattegat subpopulations could withstand a hunting pressure at this level, even under a multi-stressor scenario. In addition to hunting, bycatches in fisheries are a cause of direct anthropogenic mortality. Glemarec et al. (2022) estimate that 366 seals are bycaught by Danish commercial gillnet fisheries annually in the Kattegat and Belt Seas, presumably mainly harbour seals. Added to the hunting quota and unknown bycatch in Swedish fisheries, this is a significant fraction of the population, considering a maximum annual rate of net recruitment at 10-12%. The Kattegat population is in decline, probably due to density dependent effects caused by habitat degradation and overfishing (Carroll et al. 2025), in addition to density independent effects, such as bycatch and hunting. Density independent mortality such as the proposed hunting quota, may reduce the ability to recover once the environmental conditions improve. However, we estimate that the set quota will probably not result in a significant impact on the abundance of harbour seals in Danish waters. As such, we also assess that the quota will not have any immediate impact on the population development of harbour seals in Danish waters. That said, it will be important to know the age and sex composition of the hunted seals to estimate a more precise impact on the population.

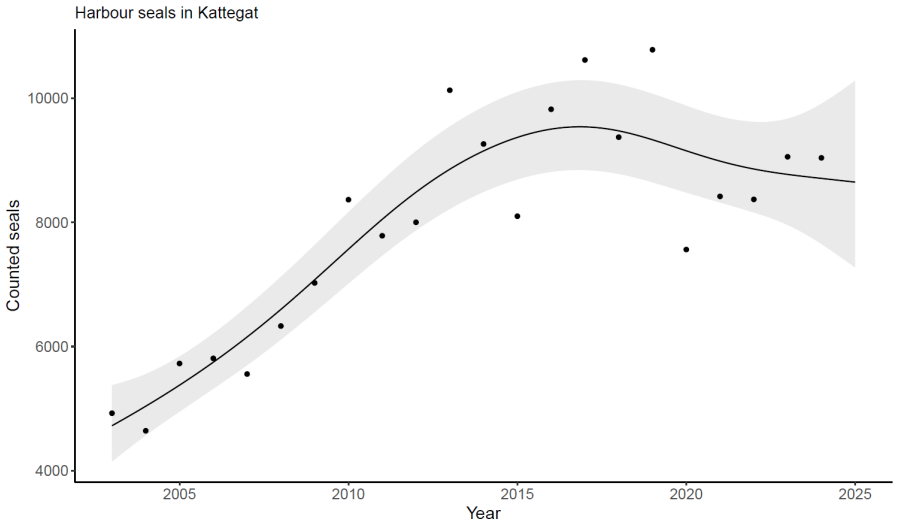

Figure 1. Development in the number of harbour seals counted during the August moult at resting sites in the population area "Kattegat" as a combined number for Denmark and Sweden for the period 2003-2024. The black line represents the modelled number of seals; the grey shaded area represents the 95% confidence interval. The counted seals do not include seals that are in the water at the time of the count (data from DCE and Swedish Museum of Natural History).

5.2 Southwestern Baltic Sea

The note from the Swedish Environmental Protection Agency (Swedish EPA 2025) mentions that the harbour seal populations in Kalmarsund (Baltic Proper) and the southwestern Baltic are too small for hunting under the HELCOM threshold, however, hunting in Skåne south of Helsingborg will predominantly target the southwestern Baltic population. In the southwestern Baltic Sea, only a small part of the population is counted at resting places in Sweden. In recent years, 1,200-1,700 harbour seals have been counted, of which approximately 200 and 100 respectively at two haul-outs in Skåne: Måkläppen and Skabbrevet (Data from DCE and the Swedish Natural History Museum). These Swedish haul-outs are closer to Danish haul-outs than is the case in the Kattegat, but the quota of 10 seals for Skåne in 2026-2027 is small in relation to the total population size (Figure 2, the counted seals do not include seals that are in the water at the time of the count). It is assessed that fulfilling the hunting quota of 10 seals per year will not have a direct effect on the conservation status in Denmark. If the quotas along the entire Swedish west coast are not fulfilled before the 31st of January 2027, the remaining quotas are summed and accessible for hunt along the entire coastline until April 19th 2027. This opens a risk for excessive hunting in the smaller population unit in the southwestern Baltic in this second phase of the hunting season, starting February 1st. Given the small population size and the large proportion of the population being in Danish waters, we do not recommend additional hunting in the southwestern Baltic population of harbour seals, to reduce the risk of significant impact of an unknown number of hunted seals.

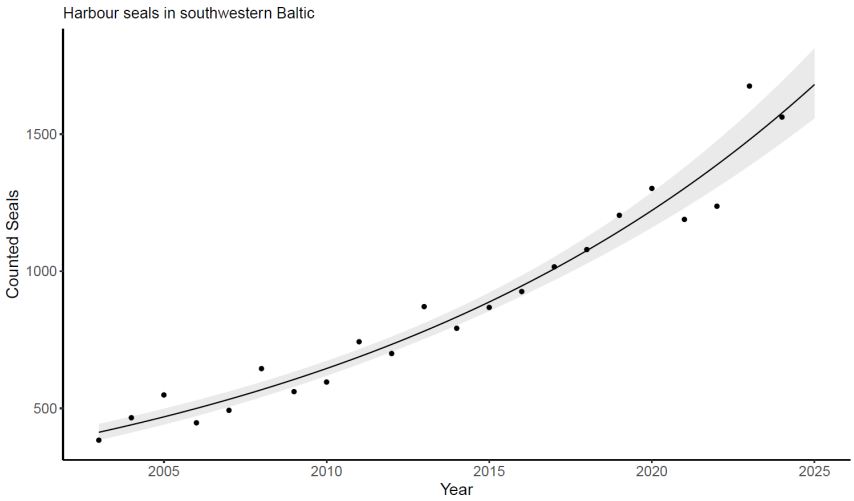

Figure 2. Development in the number of harbour seals counted at resting sites during the moulting period in August in the population area in the southwestern Baltic Sea combined for Denmark and Sweden in the period 2003-2024. The black line represents the modelled number of seals, the grey shaded area represents the 95% confidence interval. The counted seals do not include seals that are in the water at the time of the count (Data from DCE and Swedish Museum of Natural History).

6 Grey seal assessment

For grey seals, the Swedish quotas for the 2026-2027 season consist of licensed hunting quota of 1,350 animals, with the addition of 150 seals shot under protective hunting if the licensed hunting quota is fulfilled, for a potential total of 1,500 seals. Although grey seals in the Baltic Sea must be considered as a single genetic population (Fietz et al. 2016), the seals site fidelity in relation to breeding grounds means that there is a risk of hitting locally breeding individuals and thus affecting local breeding activity. This is relevant for Danish waters, where the grey seal in Denmark is assessed to fail favourable conservation status according to Article 17 of the EU Habitats Directive, among other things due to low breeding activity and limited breeding distribution (Fredshavn et al. 2025). The recolonization of the southern Baltic Sea and Kattegat as a breeding species is slow compared to the recolonization of other areas, potentially due to high mortality among breeding females (Galatius et al. 2020) and favourable conservation status of the species in Denmark therefore has long prospects. The quota for Skåne, nearest Danish breeding sites is 50 grey seals, so only a modest part of the hunt will be conducted in the proximity of Danish pupping sites. The hunt takes place outside the breeding period, between 20 April and 31 January, which reduces, but does not eliminate, the risk of killing locally breeding females. After August 14th 2026, the unfulfilled quotas from all counties will be combined to a national quota for the remaining hunting season until January 15th 2027, providing a risk of shooting many more seals in Skåne.

In addition to Sweden, grey seal hunting is also conducted in Finland on the same population. Here, the total quota for the 2026-2027 hunting season is 1,050 grey seals (https://riista.fi/sv/jakt/tjanster-for-jagarna/tillstandsforvaltningen/kvoterad-jakt-pa-grasal/). In addition, there is a significant bycatch of grey seals in fisheries in the Baltic Sea. Vanhatalo et al. (2014) estimated that bycatch exceeded 2,000 grey seals per year in Swedish, Estonian and Finnish gillnets and purse seines. Together with potential hunting in line with the above quotas as well as regulation and bycatch in other areas and fisheries, the annual, direct human-caused mortality could exceed 5,000 animals, a significant pressure on a population that the Swedish Environmental Protection Agency (2025) estimates at 57,000-76,000 individuals. Two recent modelling exercises of Baltic grey seal population dynamics provide slightly different predictions of sustainable harvest: Carroll et al. (2024) estimate that combined hunting pressure should be below 1,900 to enable continued recovery while Vanko et al. (2025) estimated that the current hunting quotas at 2,400 seals would allow the Baltic grey seal to grow towards carrying capacity. However, slightly elevated harvests at 3,600 seals per year would make the recovery uncertain (Vanko et al. 2025).

At any rate, the combined hunting and bycatch pressures will slow down population development, probably extending the timeframe for the achievement of favourable conservation status in Denmark, as the recruitment of breeding animals is likely to be reduced. So far, the grey seal population in the Baltic Sea has grown despite bycatch and hunting, by around 5% annually since 2003 (Figure 3, the numbers in this figure do not include seals that are in the water at the time of the count). It should be mentioned that the hunting quotas in both Sweden and Finland have generally not been fully utilized (HELCOM data, Swedish EPA 2025).

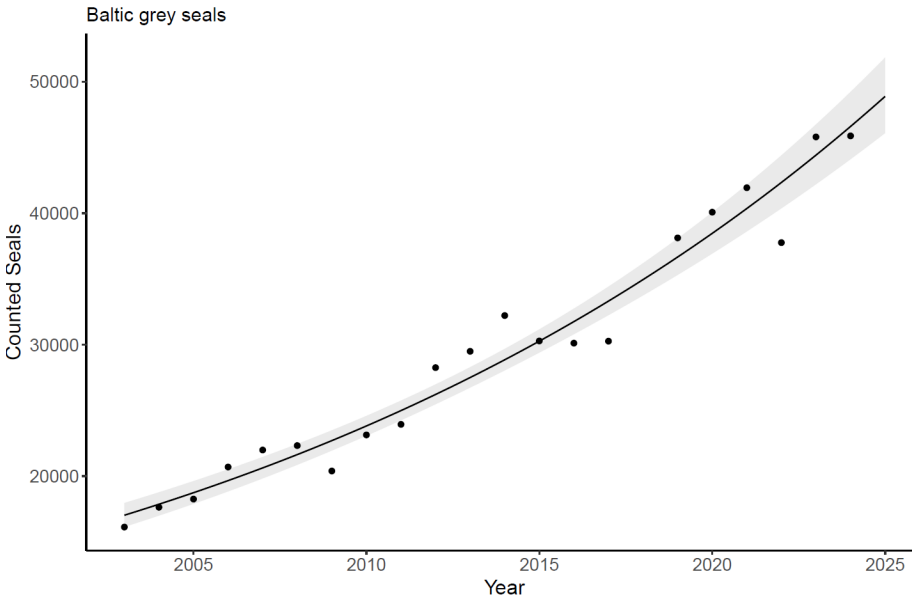

Figure 3. Development in the number of grey seals counted at resting sites during the moulting period in May in the population area in the Baltic Sea in the period 2003-2024. The black line represents the modelled number of seals; the grey shaded area represents the 95% confidence interval. The counted seals do not include seals that are in the water at the time of the count (Data from HELCOM).

7 Other considerations

In order to assess the potential effects of Swedish hunting on seal populations in Denmark, it would be beneficial to have information on the long-term plans, strategies and objectives of the hunt. The Swedish Environmental Protection Agency (2025) states that the purpose of the hunting quotas is to protect fish stocks, to limit seal population growth, and to reduce damages to fisheries. We find this rather vague and specific targets for population development would make it easier to evaluate effects beyond those based on quotas for one season. A single year of hunting at the described level will likely not have significant effects on the populations. To better assess the long-term effects, insight into the forward-looking Swedish strategy behind setting the quotas and more specific goals for the seal population development could be developed in an adaptive management plan, ideally in an international forum to include countries with shared populations. Estimation of the effect of the hunting quotas should be followed closely in both population trends and population dynamics and will be strengthened if data are available on the age, sex and location of the animals killed.

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