



COMMON WADDEN SEA SECRETARIAT

GREY SEAL NUMBERS IN THE WADDEN SEA AND ON HELGOLAND IN 2022-2023



GREY SEAL SURVEYS

INTRODUCTION

Since 2008, coordinated annual surveys are carried out to count grey seals in the Wadden Sea, covering sandbanks in the Netherlands, Germany and Denmark. To assess development of the Wadden Sea breeding population, grey seal pups are counted during the pupping season between November and January. Trends in numbers of grey seals using the Wadden Sea and Helgoland are assessed by counting the seals in March and April when they are going through their moult. As grey seals move between haulout sites, we use the largest numbers of grey seals obtained within the shortest feasible timeframe for our trend analysis, thereby restricting

the possibility of counting the same individuals more than once. All surveys areas were covered using aerial surveys except on Helgoland where land-based counts are carried out during moult and, starting this season, a drone was used during the pupping season.

The grey seals in the Wadden Sea and on Helgoland are part of a larger North Sea population (Brasseur *et al.*, 2022) and there is an apparent exchange between regions. Pups born in the United Kingdom, recruit into the Wadden Sea breeding population. Similarly, during the moult, adults from other colonies in the North Sea also haul out in the

Wadden Sea area and are likely to affect the trilateral counts (Brasseur *et al.*, 2015). So, though not strictly representing the local population, moult counts do reflect the use of the Wadden Sea area by the larger North Sea population. Moreover at any time a fraction of the seals is not on the haulouts where they are counted. Thus, the numbers given here should not be interpreted as absolute numbers, but as an index that can be used to assess trends in abundance and pup production of grey seals over time in the Wadden Sea. These trends are best interpreted over several years as annual changes can be caused by weather or other local and regional influences.

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RESULTS AND INTERPRETATION

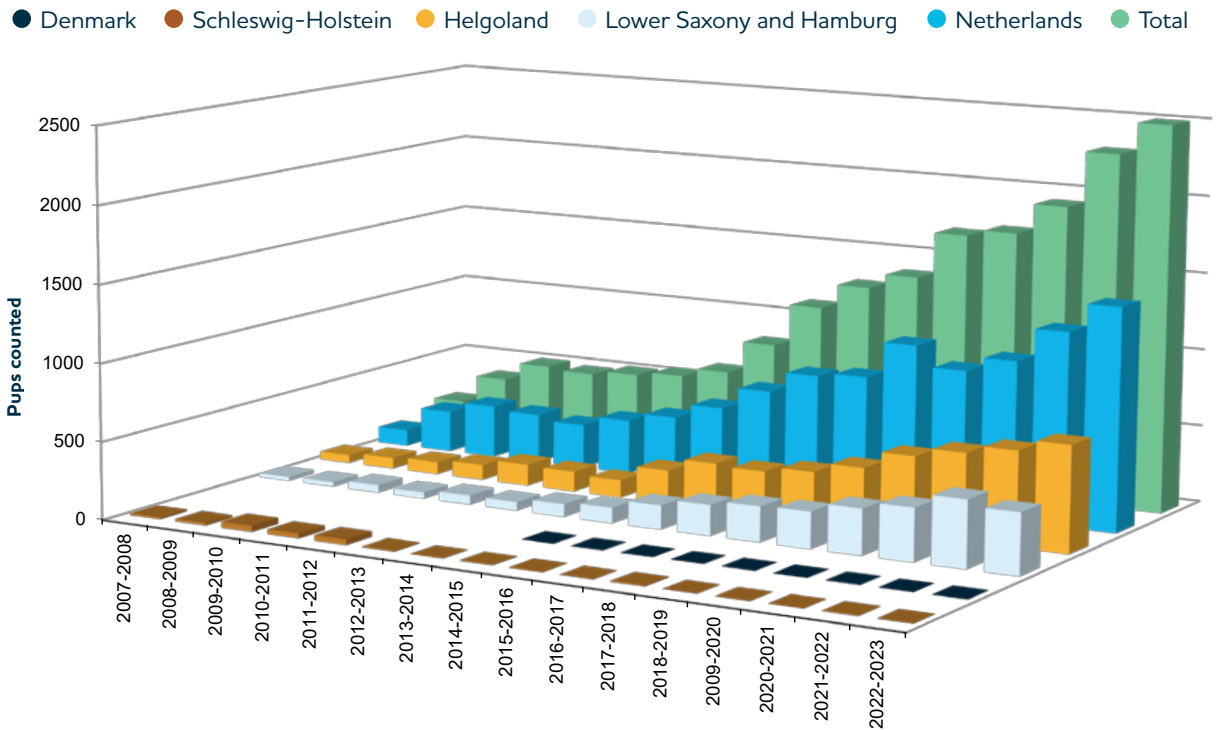
PUP COUNTS

Across the Wadden Sea and Helgoland, the coordinated counts during the pupping season resulted in a total count of 2,515 pups (Figure 1). This represents a growth of 13% over the past five years, and 10% compared to the season of 2021-2022 (Schop *et al.*, 2022).

The Dutch Wadden Sea had the highest proportion of pups (57.1% of total count), followed by Helgoland (27.2%), and Lower Saxony (15.6%). In the Dutch part of the Wadden Sea, the 1,436 pups represented a 15% increase compared to the previous breeding season. The number of pups on Helgoland increased by 12% to 684. In Lower Saxony, the number of pups decreased by 9% compared to last season, to 393 pups. In this area, weather conditions only allowed the primary breeding location, the Kachelotplate (representing ~90% of pups breeding in the region), to be surveyed which may have impacted the number of counted pups. In both Schleswig-Holstein and Denmark, only one grey seal pup was recorded within the period with the maximum numbers across the Wadden Sea. In Denmark, two pups were observed later in the breeding season.

Number of grey seal pups counted in the Wadden Sea between 2008 and 2023

Colours indicate results of the regional counts.



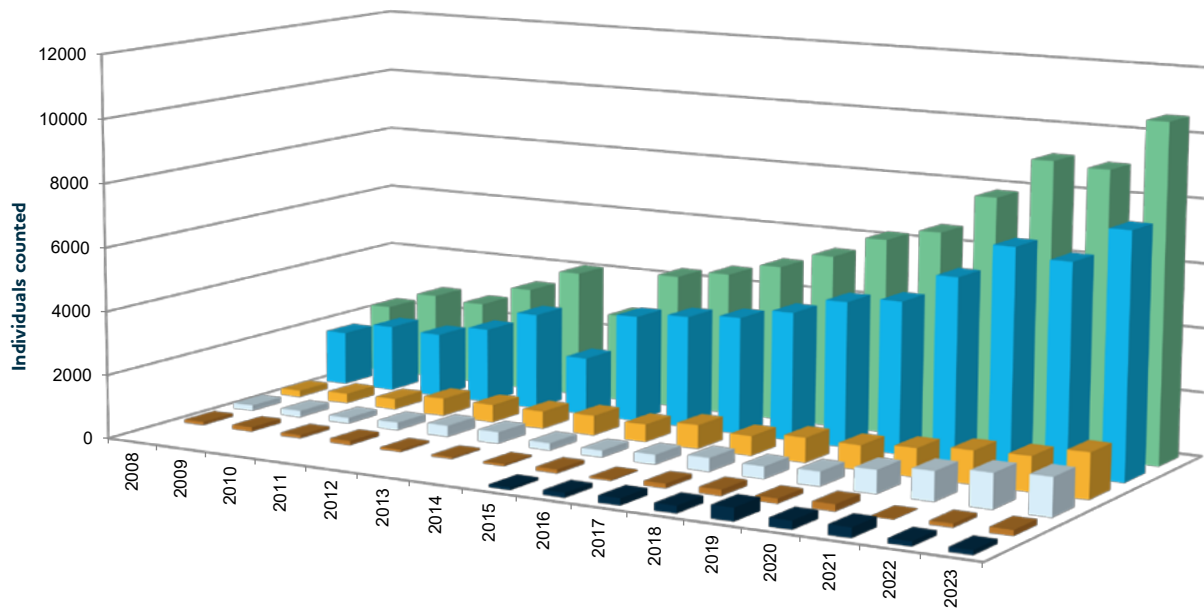
RESULTS AND INTERPRETATION

MOULT SURVEYS

Number of grey seals counted in the Wadden Sea regions during the moult between 2008 and 2023

Colours indicate results of the regional counts.

● Denmark ● Schleswig-Holstein ● Helgoland ● Lower Saxony and Hamburg ● Netherlands ● Total



Although the individual moulting process may take months, higher numbers of grey seals can be found hauled out during the peak of the moulting season, at a stage of moult when changes in colour of the fur are clearly visible. In the Wadden Sea, this occurs between March and April (Schop *et al.*, 2017), making this an ideal time window to count the grey seals. As mentioned above, the proportion of seals at sea at the moment of counting is unknown, so these numbers are used as an index to compare the number of grey seals in the area from year to year.

In 2023, a total of 10,544 grey seals were counted during the moulting season in the Wadden Sea, which constitutes an increase of 18% compared to 2022 and 16% compared to 2021 (Basseur *et al.* 2021; Figure 2). This follows a slight drop of 1% in numbers of counted animals in 2022 compared to 2021 (Schop *et al.* 2022). The average annual growth calculated over the past five years is 12%.

Approximately 70% of the grey seals counted in the Wadden Sea and Helgoland during moult were observed in the Dutch Wadden Sea, where 7,613 grey seals were counted.

Helgoland represented 13% of the total count with 1420 animals. In Lower Saxony and Hamburg 11% of the grey seal (1190 animals) were recorded. In the Wadden Sea area of Schleswig-Holstein 176 individuals were counted. Denmark counted 145 individuals this year.

Compared to the other areas, this year's highest counts in Schleswig-Holstein and Denmark occurred later in the season (outside the time period selected for comparison across the Wadden Sea) when 385 and 280 individuals were counted, respectively. Interestingly, the opposite was observed last year when higher numbers were observed earlier in the moulting season in the eastern part of the Wadden Sea compared to the Western part. With the very few pups recorded in this area, the number of grey seals present during the moult may be more influenced by migration from other colonies. This may explain the annual variation in moult counts in these areas. Other factors may also play a role as in the breeding colony on Helgoland, where substantial day-to-day fluctuations in counts are observed. Elucidation of the causes of such fluctuations may help us to better interpret variations and trends of the grey seal counts in the future.

GREY SEAL SURVEYS

CONCLUSION

Compared to 2021-2022, both grey seal pup and moult counts in the Wadden Sea area were higher in 2022-2023. In total, 2,515 pups and 10,544 moulting grey seals were counted. The pup production has grown at an average annual rate of 13% over the past five years. Over the same

period, the numbers of grey seals counted during the moult have grown at an annual rate of 12%. To better understand the peak of grey seal numbers during moult, an enhanced understanding is necessary of day-to-day and annual variation, potential phenological differences within the Wadden Sea areas, the role of

movements within the Wadden Sea, and migration between the Wadden Sea and the United Kingdom. To obtain absolute abundance estimates of grey seals in the Wadden Sea, we would not only need to assess the proportion of seals in the water during the surveys, but also have an estimate of the migratory rates.

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References

Brasseur, S., Christian Abel, Anders Galatius, Armin. Jeß, Peter Körber, Kristine Meise, Jessica Schop, Ursula Siebert, Jonas Teilmann, and Charlotte B. Thøstesen. 2021. *Grey Seal Surveys of the Wadden Sea and Helgoland 2020-2021*. Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

Brasseur, S., Tamara van Polanen Petel, Tim Gerrodette, Erik Meesters, Peter Reijnders, and Geert Aarts. 2015. "Rapid Recovery of Dutch Gray Seal Colonies Fueled by Immigration." *Marine Mammal Science* 31(2):405-26.

Brasseur, S., Evans, P., Van Neer, A., Galatius, A., Gilles, A., Haelters, J., Kavanagh, A., Roma Banga, A. F., Berrow, S., Biuw, M., Bjørge, A., Brownlow, A., Carlsson, A., Carlström, J., Fernández, D., Rogan, E., Russell, D., Saavedra Penas, C., Puig Lozano, R., Jauniaux, T. (2022). *ICES Scientific Reports of Working Group on Marine Mammal Ecology (WGMME)*. *ICES Scientific Reports*, 4(61). <https://doi.org/10.17895/ices.pub.20448942>

Schop, J., Geert Aarts, Roger Kirkwood, Jenny Cremer, and Sophie Brasseur. 2017. "Onset and Duration of Gray Seal (*Halichoerus grypus*) Molt in the Wadden Sea, and the Role of Environmental Conditions." *Marine Mammal Science* 33(3):830-46.

Schop, J., Abel, C., Brasseur, S., Galatius, A., Jeß, A., Meise, K., Meyer, J., Stejskal, O., Neer, A. van, Siebert, U., Teilmann, J., & Thøstesen., C. B. 2022. *Grey seal numbers in the Wadden Sea and on Helgoland in 2021-2022*. Common Wadden Sea Secretariat, Wilhelmshaven, Germany.





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