Aerial surveys of Harbour Seals in the Wadden Sea in 2015

Moderate impact of the 2014 influenza epidemic

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Introduction

In 2015, the coordinated aerial surveys for harbour seal counts of the entire Wadden Sea were performed, as in previous years (started in 1975), according to the Seal Management Plan. The counts are synchronized between the three Wadden Sea countries Denmark, Germany and the Netherlands, in order to obtain a single estimate for the number of harbour seals and newborn pups in the entire Wadden Sea. Seals are counted when hauling out on land and counts are scheduled to be carried out when low-tide occurs around midday.
The variation in the number of seals hauling out from year to year and over a longer period may be affected by different weather conditions, disturbance, food availability close to the haul out sites, or a change in the age and sex composition of the population (Härkönen et al. 1999). Also, the timing of birth has been shown to change over time, potentially affecting the percentage of pups counted at the same time of year over a long period (Reijnders et al. 2010). It is unclear if and how this shift might also affect the moult counts. Additional studies should be carried out to determine if a further shift in timing has occurred.

Results and Interpretation

In August 2015, 26,435 harbour seals were present on land. This constitutes a decrease of <1% compared to 2014. The number of newborn pups counted in June showed an increase compared to 2014: a total of 8,484 pups were counted, representing a slight increase of <1%, relative to last year's number of 8,439, which was the highest number of pups counted in the Wadden Sea since the start of the trilateral surveys in 1975. This year's pup count is a new record, in terms of number as well as percentage of moult count (32%, Figure 1).

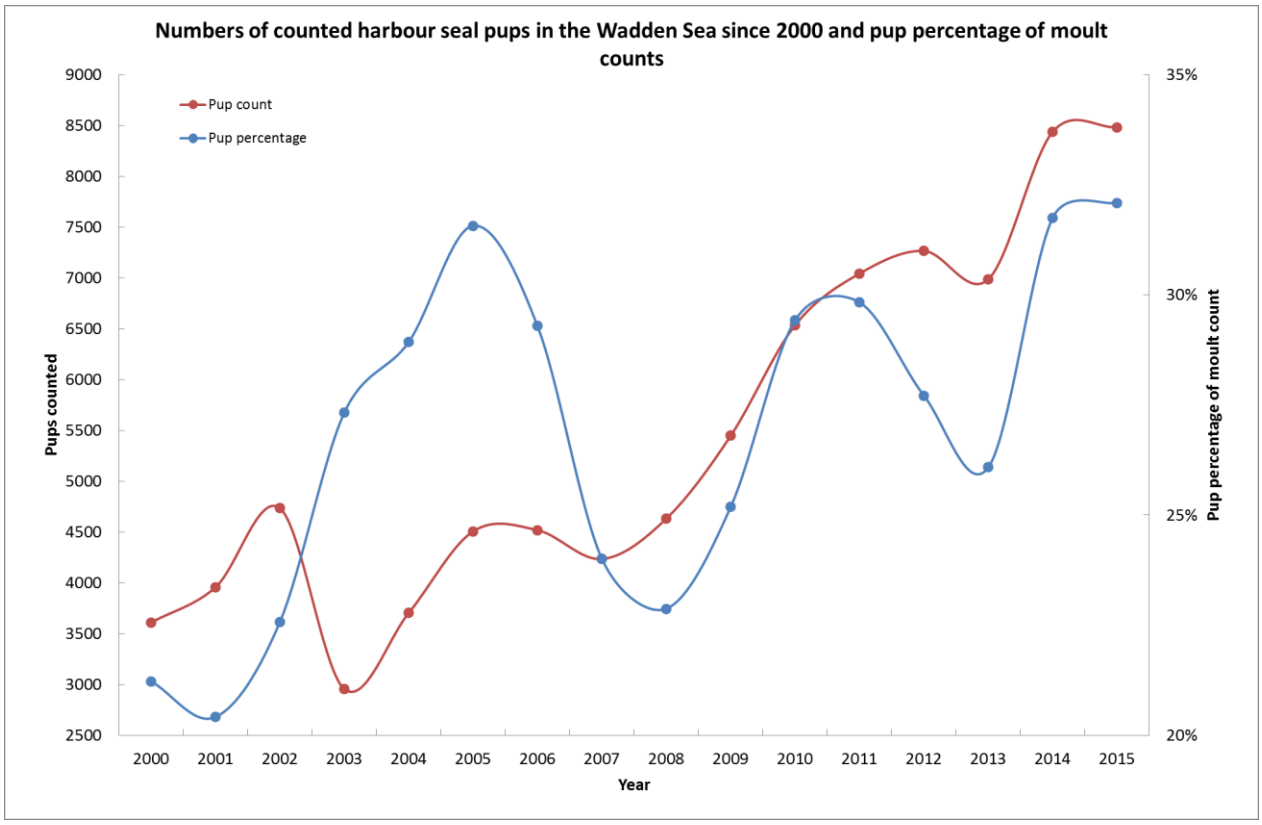

Figure 1.: Number of pups counted in the Wadden Sea in June (red line, left vertical axis) in the years 2000-2015. The number of pups as a percentage of the total moult count is indicated by the blue line (right vertical axis).

The total moult count in the Wadden Sea was composed of 2,849 in Denmark, 8,293 in Schleswig-Holstein, 7,627 in Lower Saxony/Hamburg and 7,666 in the Netherlands (Figure 2). These detailed results reveal regional fluctuations compared to 2014: in Denmark there was a decrease of 15% and in Schleswig-Holstein of 10%, while there were increases of 9% and 8% in Lower Saxony/Hamburg and in the Netherlands, respectively. These shifts may indicate different proportions of seals hauling out in the different regions, caused by variable environmental conditions (e.g., weather) or a shift in the spatial distribution of seals over time. This emphasizes that the harbour seal population in the Wadden Sea must be regarded as a whole. Alternatively, numbers could have been affected by last year's influenza A epidemic.
The numbers for 2015 constitute the first chance to evaluate the impact of this outbreak. Evaluation on the basis of observations from a single year carries a considerable uncertainty, but the pattern would fit with regard to the number of animals found dead during the duration of the epizootic. In Denmark and Schleswig-Holstein, many more animals (ca. 1,300 and 2,100 respectively) were found dead along the shores in the autumn of 2014, when the influenza virus was active in the area. The mortality was lower in Lower Saxony/Hamburg (ca. 330 seals) and negligible in the Netherlands (ca. 120 seals).These areas were affected later in the autumn and early winter. The overall decrease of <1% is modest, considering the trend of decreased growth rates over the previous years.

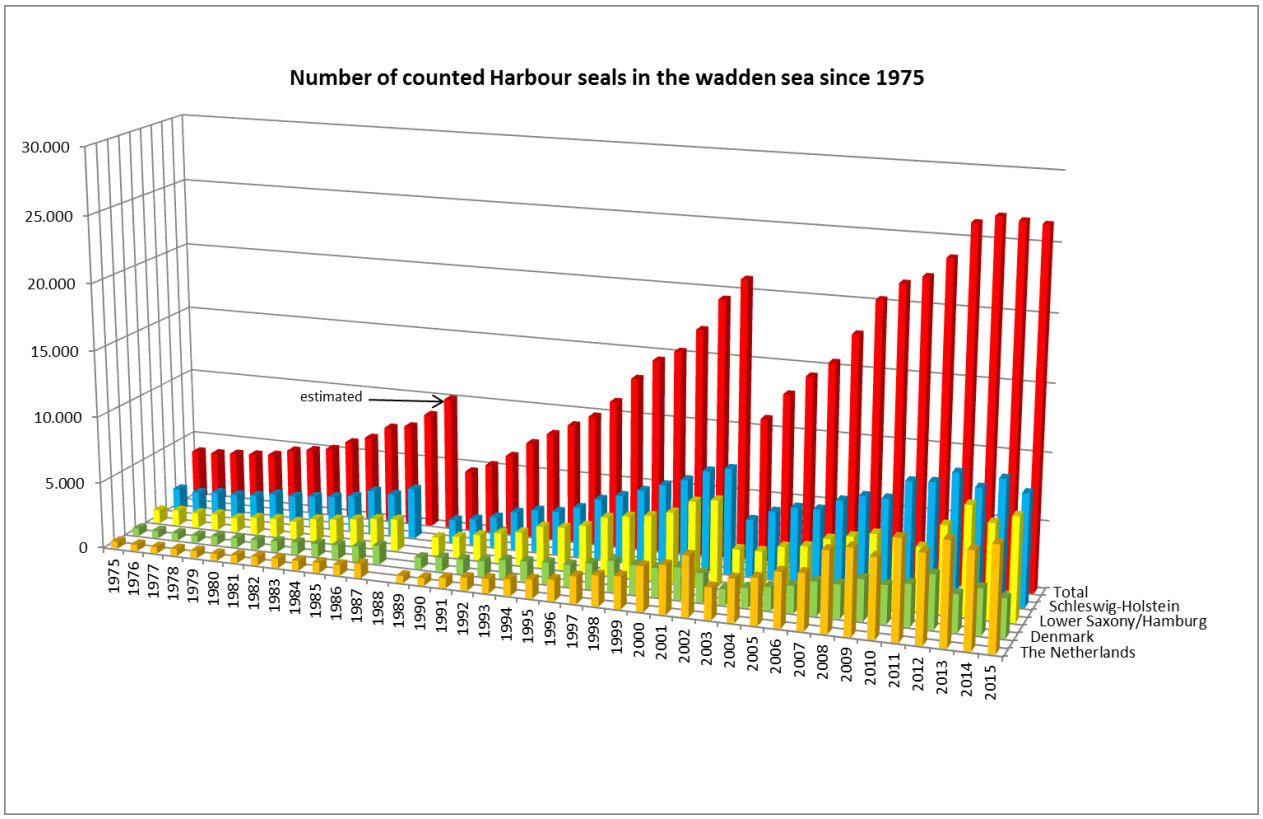

Figure 2.: Total number of harbour seals counted in the Wadden Sea during the moult in August, as well as numbers for each region, from 1975-2015.

The increase in pup numbers compared to June 2014 is attributable to increases of 12% in the Netherlands (2,082 pups) and 5% in Denmark (686 pups), while there were decreases of 6% in Lower Saxony/Hamburg (1,939 pups) and 2% in Schleswig-Holstein (3,777 pups). These rising pup counts follow a massive increase in 2014 after a period of stagnation between 2010 and 2013 (Figure 1). The differences between the regions could be a reflection of local variation, in effect the influenza, but the uncertainty of estimating from a single year precludes any conclusions.

The estimate for the total Wadden Sea harbour seal population, including seals in the water during the survey, can be calculated using a correction factor estimated by Ries et al. (1998). They found that on average 32% of the seals were in the water during summer. By using this correction factor the total population size of harbour seals in the Wadden Sea in 2015 was about 38,900.

References

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Front page photo: Harbour seal in the German Wadden Sea taken by Anders Galatius