



**THE STATE OF THE NATURAL ENVIRONMENT
OF THE TEES ESTUARY (SONET)**

A REVIEW OF THE SEAL CHAPTER

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1. INTRODUCTION

The Harbour Seal colony at Seal Sands lives alongside industry and only began to breed successfully again as recently as 1994, following the demise of the original seal population in the late 19th century. As seals are at the top of their food chain, the colony can be used as a biological indicator of the general health of the estuary. The 'State of the Natural Environment of the Tees Estuary' (SONET) report detailed a chapter focusing on the Teesmouth seals colony and the monitoring programme coordinated by INCA between 1989 and 1994 (Parham, 1996). A second volume of SONET was subsequently produced which gave an update about the seal population between 1995 and 2007 (Mann *et al*, 2009).

This latest review gives a report on the seal population to the end of 2011.

2. BACKGROUND AND HISTORY

Both Harbour (Common) Seals and Grey Seals are found at Teesmouth and it is the Harbour Seal that breeds at Seal Sands. Grey Seals require nurseries that are above the high-water mark since their pups do not enter the water for weeks after the birth. This is not possible at Seal Sands as the mudflats are inundated by the tide. Harbour Seal pups swim within hours of birth so this does not pose a problem for them. Locations where seals are known to frequent are shown in appendix 1.

At the start of the 19th century seals were numerous in the estuary, with an estimated population of about 1000 animals. However, numbers rapidly declined and by the mid -1800s only 20-30 animals remained and breeding had ceased (Howes, 1985). In 1862 only three were recorded (Lofthouse, 1899-1900). A survey of the estuary in 1930s by government scientists failed to record any seals (Alexander *et al*, 1935). The reasons for the demise are not fully understood and a number of factors were probably responsible. An increase in shipping during this time not only increased disturbance but also required extensive dredging, which resulted in the loss of essential haul-out sites for the seals. Intensive industrialisation along the river caused increased disturbance and also greatly polluted the estuary.

By the 1960s seals were again being observed in the estuary in ones and twos, these however were mainly Grey Seals. The situation began to improve and by the mid 1980s seventeen Harbour Seals were recorded, the highest number for over a century. It was around this time that the first seal pup for nearly 100 years was seen in the estuary. In 1989 when the current monitoring programme began, Harbour Seal numbers had reached circa 20 individuals at Seal Sands.

3. DATA COLLECTION

Seal monitoring on the Tees is focused upon Harbour Seal, as it is the breeding seal in this estuary. Monitoring is carried out over the low tide period at Seal Sands between June and September, which includes the period in late June and early July when Harbour Seals give birth and in August when they gather to moult. Seal Sands is the main area used at low tide by seals 'hauling out', which is the term used to describe the aspect of seal behaviour when seals move onto exposed sand or mudflats to conserve energy, digest food and thermoregulate. The Seal Sands haul out sites are shown in appendix 2.

Monitoring of the seals hauling out takes place during each daylight low tide period, 2 hours either side of low tide, from the observation hide on the sea wall above Greenabella Marsh. This is approximately 250m from the most regularly used haul-out site (see appendix 1).

Data recording focuses upon the total count of both species of seals; the areas used as haul out sites and the changes in site usage; the number and health of pups and disturbance to the colony and other potential problems, such as injuries and indications of pup desertion. In addition, weather observations and the extent of low tide are made at the time of seal monitoring.

Changes in haul out behaviour which were noticed in 2008 led to Greatham Creek becoming more significant as a low tide haul out location, so from 2009 the mudflats on the south side of Greatham Creek adjacent to the A178 road bridge were monitored simultaneously with Seal Sands throughout the season. This enabled the ongoing combined effect of seals hauling out simultaneously at Seal Sands and Greatham Creek to be assessed.

Seal numbers and behaviour is not routinely monitored at Billingham Beck or the Tees Barrage. It was reported by INCA in the last SONET review that numbers peak here closer to high tide, so seal counts at these locations are not summative with those from the main part of the estuary.

4. RESULTS OF TEESMOUTH SEAL MONITORING TO 2011

Harbour Seal Pups

During the first years of monitoring the Harbour Seal colony produced a single pup in alternate years from 1989 to 1993. These pups died soon after birth, but in 1994 two pups were born and survived to weaning. Figure 1 shows the birth and survival rates of Harbour Seal pups at Seal Sands from 1989 to 2011. The pup numbers have increased from two in 1994 to a record 16 in 2011. The bar chart also shows the number of seal pups each year that needed to be rescued and rehabilitated by

the RSPCA. After recovery these pups were returned to the wild, but unfortunately not always at Teesmouth.

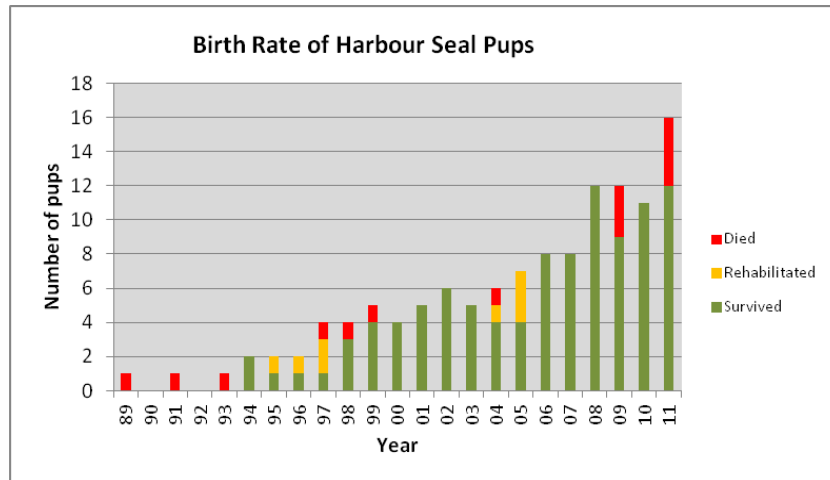


Figure 1: Harbour seal pup birth rate

In recent years it can be seen that there have been pup mortalities. These are usually deaths recorded soon after weaning. Deaths of young seals are usually in early August and post-mortem evidence suggests that most of these have been either undernourished or injured. The mortality rate is to be expected for a colony which has numbers of inexperienced young animals. There is no evidence from data collected of disease or of contamination from pollutants. In terms of breeding success, the colony appears to be steadily growing and is continuing to successfully coexist with commerce and industry within one of the busiest commercial port areas in the UK.

Seal Numbers

Over the 1989 to 2011 period Harbour Seal maximum and mean numbers have increased, as shown in figures 2 and 3 respectively. The current Harbour Seal maximum of 79 seals in the peak season of 2011 is now the highest recorded since 1989. Mean numbers are now approaching the peak of 2002. This was immediately prior to the last epidemic of phocine distemper which decimated the Harbour Seal population particularly in the Wash area of eastern England. This is very encouraging, indicating that the population has virtually recovered from this serious outbreak of disease.

Grey Seal numbers have largely remained stable. Numbers of Grey Seal remain in the estuary during the winter, which is the breeding season for this species. This indicates that many of the Tees animals are probably older adults or those that have not yet reached sexual maturity. Breeding adults are thought to leave the Tees to join large breeding colonies in north Northumberland or in the Humber estuary.

The population data for Harbour Seal and Grey Seal from the Tees are in contrast with the wider picture in UK waters, where Harbour Seal is in decline and Grey Seal is increasing (SMRU, 2010).

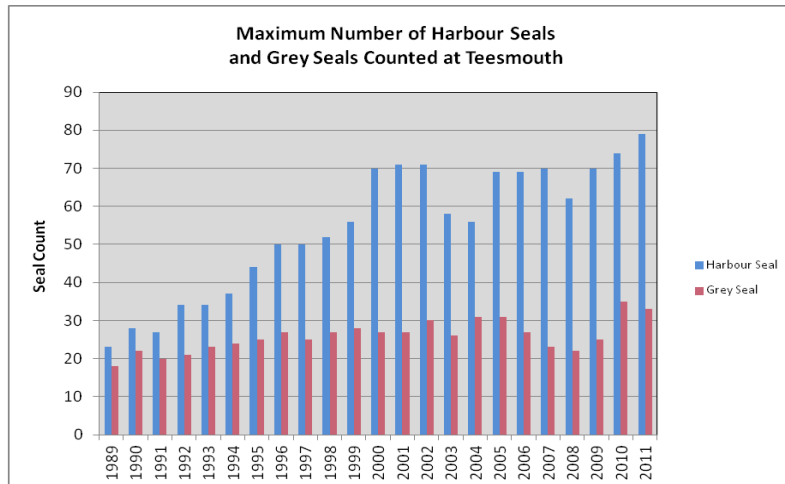


Figure 2: Harbour Seal and Grey Seal maxima

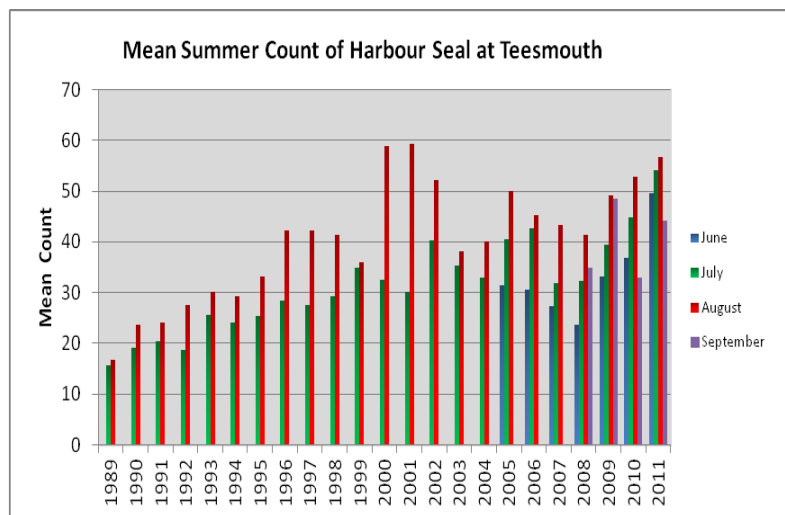


Figure 3: Harbour Seal mean

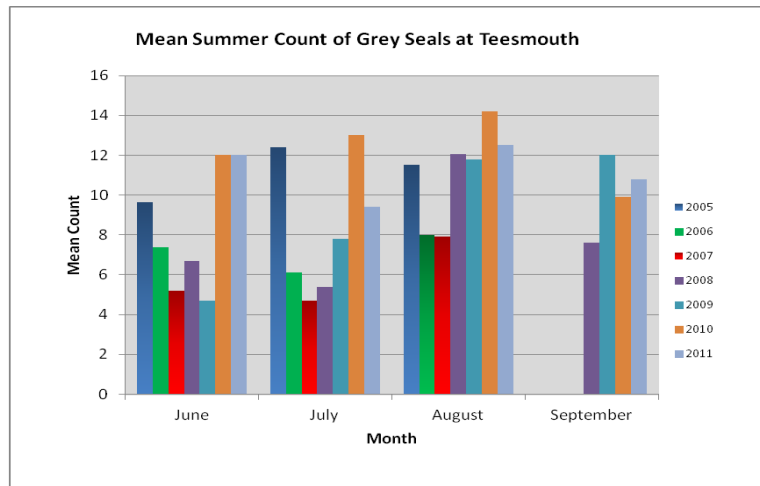


Figure 4: Grey Seal mean

ACKNOWLEDGEMENT

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**APPENDIX 1:
Main Areas of the River Tees
Frequented by Seals**



