

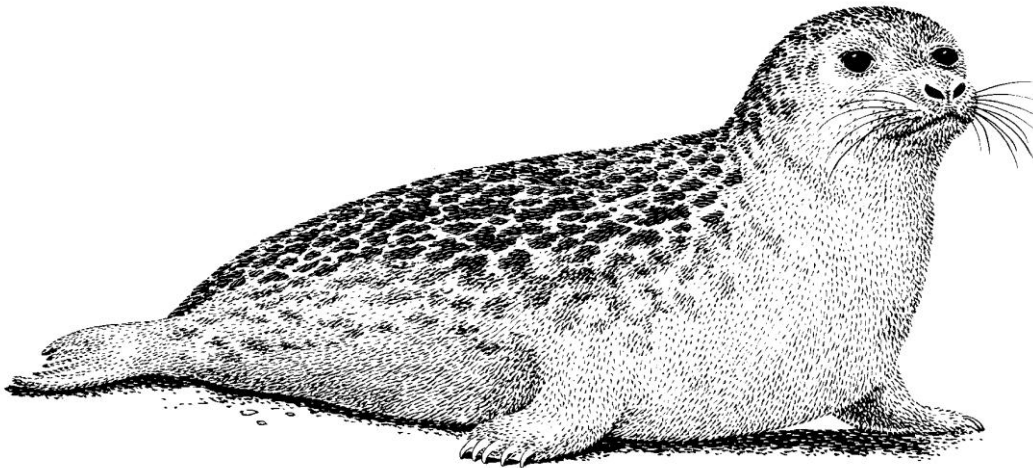


# **Tees Seals Research Programme**

## **Monitoring Report No.23**

**(1989 – 2011)**

**Compiled by Robert Woods**



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## **Summary**

The 2011 seal monitoring season began with the birth of 16 Harbour Seal pups, of which 12 survived to weaning. Four pup deaths were noted in the early season prior to weaning. Their deaths were attributed to natural causes.

Harbour Seal and Grey Seal numbers built to a maximum in August. The Harbour Seal daily maximum count of 79 is the highest recorded since the project began in 1989. Mean data for this species was also higher than the previous year and is the highest since 2001.

Daily Grey Seal numbers reached a maximum of 32, which is the second highest number recorded since the start of the seal monitoring project in 1989. Mean data for Grey Seal was also the second highest since the study began.

## **1. Introduction**

The Tees Seals Research Programme was initiated by the Teesside Development Corporation to monitor the effects of the 1988 phocine distemper virus outbreak. Since 1989 the programme has been managed by INCA in order to observe the status of the seal colony at Seal Sands as a general indicator of the health of the River Tees environment.

Seals have lived at the mouth of the River Tees for many hundreds of years, but declined rapidly by the mid 1800s. A number of factors were probably responsible:

- Industrial use of the estuary increased.
- Large areas of habitat were lost due to land claim of parts of the estuary.
- Increasing volume of shipping led to further habitat loss due to dredging.
- Industrial pollution led to the demise of the once-thriving Tees salmon population.
- Fishermen mistakenly blamed the seals for this decrease, persecuting the already low numbers of animals present.

As a result of a combination of these factors by the 1930s seals had totally disappeared from the Estuary.

The mid 20<sup>th</sup> century saw old-style steel and coke plants being replaced by newer, less polluting works. Reclamation of the lower estuary restricted river access and probably reduced disturbance to the seals. In the late 1960s and early 1970s there began a concerted effort by regulators and industry to reduce the pollution load. Eventually Harbour Seals began to re-appear and by the mid 1980s there was a resident population.

Teesmouth is the only known estuary in Europe where Harbour Seals have re-colonised as a direct result of environmental improvements and the colony is once again breeding. This report details the situation in 2011.

## **2. Seal Identification**

At Seal Sands the species present are the Harbour or Common Seal (*Phoca vitulina*) and the Grey Seal (*Halichoerus grypus*). Grey Seals are much larger than Harbour Seals.

Male Grey Seals (bulls) are up to 2.7m in length and 230kg in weight. The females (cows) are smaller, rarely exceeding 1.7m long and 150kg in weight. Grey Seals have a 'Roman' nose and nostrils which are close together and vertical.

Harbour Seal males can be up to 1.9m long and weigh up to 170kg, while the females are around 1.5m long and weigh up to 100kg. Harbour Seals have a smaller, more rounded head, with smaller nostrils which are further apart and more horizontal.

Figures 1 and 2 show the two species described.



Figure 1: Harbour Seal (*Phoca vitulina*)

(courtesy: John Bridges, [www.northeastwildlife.co.uk](http://www.northeastwildlife.co.uk))



Figure 2: Grey Seal (*Halichoerus grypus*)

(courtesy: John Bridges, [www.northeastwildlife.co.uk](http://www.northeastwildlife.co.uk))

### **3. Behaviour**

#### **3.1. Haul-out**

At Seal Sands the two species of seal generally haul-out in separate groups. Harbour Seals tend to leave a significant amount of space between individuals in the group, whereas Grey Seals haul-out in a tightly-bunched group and do not mind being in close proximity to each other. Occasional confrontations do occur when Harbour Seals attempt to haul-out close to a group of Grey Seals.

All seals moult once a year. They haul-out in groups as they moult and are often seen to be very irritable and listless during this period. For Grey Seals, moulting occurs between January and March, compared to August for Harbour Seals.

#### **3.2. Breeding**

Harbour Seals usually have their pups between late June and early July. The pups are very small when born, being around 0.7m long and 10kg in weight. They appear very dark in colour, almost black from a distance. Pups are taken into the water only hours after birth, remaining with their mother constantly. The mother/pup relationship is critical in ensuring that the pup is cared for and is not malnourished or abandoned. Typically, a pup will need to feed for at least 10 minutes in every hour to wean successfully and there is a four week lactation period during which the pups more than double their birth weight.

The Grey Seal does not breed at Seal Sands, as conditions are unsuitable. Newborn Grey Seal pups, which are born around October and November, are fur-covered at birth and cannot swim. Therefore, Grey Seal cows haul-out above the high water mark for long periods of time during and after giving birth. This is not possible at Seal Sands, as haul-out sites are inundated at high tide. The Grey Seals at Teesmouth probably originate from the large colonies at the Farne Islands or Donna Nook on the

Humber. Towards the end of the year, many Grey Seals leave the River Tees to return to their breeding sites. This takes place between September and December. However, a small number of non-breeding seals, particularly juveniles, remain at Seal Sands.

#### **4. Monitoring Methods**

Appendix 1 shows the main areas of the River Tees which the seals frequent, while Appendix 2 shows the specific haul-out sites used at Seal Sands.

In 2011, monitoring at Seal Sands was carried out between mid June and mid September, which includes the period in late June and early July when the Harbour Seals give birth and in August when they gather to moult. It is the third year in succession that monitoring in the estuary has been extended into September because maximum numbers of Harbour Seal and Grey Seal are often seen either in the last days of August or in early September.

At each daylight low tide period, monitoring was undertaken from the observation hide on the sea wall above Greenabella Marsh, which is approximately 250m from the most regularly used haul-out site.

Monitoring took place 2 hours either side of low tide, using a 60X magnification telescope to record the following observations:

- Total population of each species.
- Variation in the number of seals which had hauled out on each low tide.
- Areas used as haul out sites and the changes in site usage.
- Number and health of pups.
- Disturbance to the colony and other potential problems, such as injuries and indications of pup desertion.
- Inter- and intra-species behavioural interaction. This included feeding observations, porpoising activity, play, aggression and so on.

In addition, weather observations and the extent of low tide were made at the time of seal monitoring.

In 2011 the programme continued to monitor seals hauling out on the south side of Greatham Creek adjacent to the A178 road bridge. This took place over the 2 hours preceding and 2 hours following low tide so that the combined effect of seals hauling out simultaneously at Seal Sands and Greatham Creek could be assessed.

The methods employed were similar to those at Seal Sands, except that binoculars were employed at Greatham Creek due to proximity of the seals to the observer.

Monitoring was not carried out by INCA at Billingham Beck and at the Tees Barrage in 2011.

## 5. Results of Seal Monitoring in 2011

### 5.1. Low Tide Haul-out Behaviour at Greatham Creek

One of the objectives of ongoing seal monitoring is to ascertain the contribution of Harbour Seals hauling out at Greatham Creek to the Teesmouth total. The low tide haul out frequency at Greatham Creek for June to September 2011 is displayed in the tables which follow. Occasions when the daily maximum of Harbour Seals in the estuary was supplemented by seals hauling out at Greatham Creek are noted in red text for each month in the data shared subsequently.

#### June 2011

Date	Low Tide	Number of Harbour Seals at Greatham Creek (GC)									Contribution of GC seals to daily max.	
		LT-2h	LT-1.5h	LT-1h	LT-0.5h	LT	LT+ 0.5h	LT+1.0h	LT+1.5h	LT+2.0h		
13.6.11	1.4m	5	5	1	0	0	0	0	0	0	0	0 (max was at LT+1.5)
14.6.11	1.1m	9	2	1	1	0	0	0	0	0	0	0 (max was at LT+1.5)
15.6.11	0.9m	3	0	0	0	0	0	0	0	0	2	0 (max was at LT)
16.6.11	0.8m	8	0	0	0	0	0	0	0	0	0	0 (max was at LT+0.5)
17.6.11	0.7m	15	2	2	2	0	0	0	0	0	0	0 (max was at LT+0.5)
18.6.11	0.7m	6	0	0	0	0	0	0	0	0	0	0 (max was at LT+0.5)
19.6.11	0.8m	6	2	2	0	0	0	0	0	0	0	6
20.6.11	1.0m	15	1	0	0	0	0	0	0	0	0	15
21.6.11	1.2m	22	5	3	0	0	0	0	0	0	0	0 (max was at LT-0.5)
22.6.11	1.5m	20	2	0	0	0	0	0	0	0	0	20
23.6.11	1.7m	28	15	12	7	4	2	2	0	0	0	12
24.6.11	1.9m	53	27	21	8	3	2	1	1	1	1	53
25.6.11	2.0m	38	25	8	5	2	2	2	2	0	0	38
26.6.11	2.2m	53	27	10	2	2	0	0	0	0	0	53
27.6.11	2.0m	13	9	6	5	2	2	2	4	8	8	2
28.6.11	1.8m	20	4	2	0	0	0	0	0	3	3	0 (max was at LT+0.5)
29.6.11	1.5m	16	15	10	2	1	1	1	1	1	1	1
30.6.11	1.3m	11	6	2	0	0	0	0	0	0	2	2

#### July 2011

Date	Low Tide	Number of Harbour Seals at Greatham Creek (GC)									Contribution of GC seals to daily max.	
		LT-2h	LT-1.5h	LT-1h	LT-0.5h	LT	LT+ 0.5h	LT+ 1.0h	LT+ 1.5h	LT+ 2h		
1.7.11	1.0m	19	3	1	0	0	0	0	0	0	0	0 (max was at LT+1.5)
2.7.11	0.8m	13	1	1	1	1	1	1	1	2	2	1
3.7.11	0.7m	17	3	2	1	1	1	1	1	0	0	1
4.7.11	0.8m	23	1	1	1	0	0	0	0	0	0	1
5.7.11	0.6m	5	4	1	1	1	1	1	1	0	0	1
6.7.11	0.7m	10	1	1	1	1	1	1	1	1	1	10
7.7.11	0.9m	15	3	2	1	1	0	0	0	0	0	15
8.7.11	1.2m	10	0	0	0	0	0	0	0	0	0	0 (max was at LT)
9.7.11	1.4m	7	3	0	0	0	0	0	0	0	0	0 (max was at LT+1)
10.7.11	1.5m	25	4	0	0	0	0	0	0	0	0	0 (max was at LT-0.5)
11.7.11	1.5m	29	5	1	1	0	0	0	0	0	0	29
12.7.11	1.6m	8	3	0	0	0	0	0	0	0	0	0 (max was at LT+1.5)
13.7.11	1.3m	5	5	3	3	3	3	3	3	3	1	3
14.7.11	1.1m	25	10	4	4	0	0	0	0	0	0	0 (max was at LT-0.5)
16.7.11	0.8m	6	2	0	0	0	0	0	0	0	3	6
17.7.11	0.8m	17	12	2	1	1	0	0	0	0	0	0 (max was at LT+1)
18.7.11	0.8m	28	1	1	1	1	1	1	0	0	0	28
19.7.11	1.0m	40	7	7	7	7	7	7	7	7	7	7
20.7.11	1.2m	26	12	3	1	1	1	1	1	1	1	1
21.7.11	1.4m	5	3	0	0	0	0	0	0	0	0	0 (max was at LT+1)
22.7.11	1.6m	58	30	36	18	12	8	8	8	8	8	58
23.7.11	1.9m	44	44	38	38	38	38	26	26	18	18	44
24.7.11	2.1m	62	56	40	40	40	40	24	31	31	31	62
25.7.11	2.1m	68	62	52	55	55	48	46	45	43	43	68
26.7.11	2.2m	23	20	23	14	16	22	24	24	29	29	29
27.7.11	1.9m	33	32	27	26	22	22	20	22	24	24	22
28.7.11	1.6m	15	12	5	3	2	0	0	0	0	2	2
29.7.11	1.2m	2	1	1	1	1	1	0	0	0	0	0 (max was at LT+1.5)
30.7.11	0.9m	20	0	0	0	0	0	0	0	0	0	0 (max was at LT+2)
31.7.11	0.6m	19	9	6	5	2	2	1	1	1	1	1

## August 2011

Date	Low Tide	Number of Harbour Seals at Greatham Creek (GC)									Contribution of GC seals to daily max.
		LT-2h	LT-1.5h	LT-1h	LT-0.5h	LT	LT+ 0.5h	LT+ 1h	LT+ 1.5h	LT+ 2h	
1.8.11	0.4m	0	0	0	0	0	0	0	0	0	0 (max was at LT-0.5)
2.8.11	0.4m	4	1	0	0	0	0	0	0	0	0 (max was at LT+2)
3.8.11	0.4m	5	0	0	0	0	0	0	0	0	0 (max was at LT)
4.8.11	0.6m	20	0	0	0	0	0	0	0	0	20
5.8.11	0.9m	17	9	9	8	7	7	0	0	0	8
6.8.11	1.2m	34	7	0	0	0	0	0	0	0	34
7.8.11	1.6m	46	16	9	3	2	0	0	0	0	46
8.8.11	1.9m	44	44	44	37	33	22	15	10	10	33
9.8.11	1.9m	11	11	7	4	4	4	4	8	14	14
10.8.11	1.7m	4	1	0	0	0	0	0	3	6	4
11.8.11	1.3m	27	2	0	0	0	0	0	0	9	9
12.8.11	1.1m	16	9	3	2	2	2	2	1	0	2
13.8.11	0.9m	17	5	4	0	0	0	0	0	0	0 (max was at LT+2)
14.8.11	0.8m	21	2	2	2	2	2	2	2	0	2
15.8.11	0.8m	0	0	0	0	0	0	0	0	0	0 (max was at LT+0.5)
16.8.11	0.9m	3	1	0	0	0	0	0	0	0	0 (max was at LT+1.5)
17.8.11	1.0m	1	1	1	1	1	1	1	1	1	1
18.8.11	1.2m	26	3	1	1	0	0	0	0	1	0 (max was at LT+0.5)
19.8.11	1.4m	38	12	3	3	2	0	0	0	0	0 (max was at LT+1)
20.8.11	1.6m	55	48	3	3	3	3	3	3	3	55
21.8.11	1.9m	68	50	15	11	6	6	6	6	8	6
22.8.11	2.2m	70	60	38	31	29	29	26	26	30	70
23.8.11	2.3m	63	58	62	56	41	31	30	27	25	62
24.8.11	2.2m	72	70	70	65	65	39	39	46	51	72
25.8.11	2.0m	2	3	0	0	0	0	0	0	0	3
26.8.11	1.6m	45	41	20	1	1	1	1	1	12	45
27.8.11	1.1m	26	16	1	0	0	0	0	4	6	0 (max was at LT+1)
28.8.11	0.8m	2	2	0	0	0	0	7	14	23	14
29.8.11	0.4m	16	2	0	0	0	0	0	0	6	0 (max was at LT+0.5)
30.8.11	0.2m	4	2	2	2	2	2	2	2	2	2
31.8.11	0.2m	2	2	0	0	0	0	0	0	0	2

## September 2011

Date	Low Tide	Number of Harbour Seals at Greatham Creek (GC)									Contribution of GC seals to daily max.
		LT-2h	LT-1.5h	LT-1h	LT-0.5h	LT	LT+ 0.5h	LT+1.0h	LT+1.5h	LT+2.0h	
1.9.11	0.3m	6	4	4	0	0	0	0	0	0	0 (max was at LT+1)
2.9.11	0.6m	12	0	0	0	0	0	0	0	0	0 (max was at LT+1.5)
3.9.11	1.0m	22	0	0	0	0	0	0	0	3	0 (max was at LT+1.5)
4.9.11	1.4m	40	21	10	3	2	1	1	1	3	40
5.9.11	1.9m	52	52	13	9	8	8	8	8	8	52
6.9.11	2.1m	40	52	32	21	18	18	10	10	14	52
7.9.11	2.1m	50	46	45	43	39	32	0	0	0	43
8.9.11	1.6m	40	21	17	4	4	2	2	7	11	40
9.9.11	1.3m	29	13	0	0	0	0	1	1	15	29
10.9.11	1.1m	15	2	1	0	0	0	0	0	9	0 (max was at LT+1)
11.9.11	1.0m	6	5	1	1	1	1	1	1	1	0
12.9.11	0.9m	2	0	0	0	0	0	0	0	0	0 (max was at LT+1)
13.9.11	0.9m	12	3	3	1	1	1	1	1	10	1
14.9.11	0.9m	15	1	1	1	1	1	1	1	11	1
15.9.11	1.0m	18	7	3	0	1	0	0	0	0	0 (max was at LT+1.5)
16.9.11	1.2m	9	8	3	3	3	3	3	3	3	3
17.9.11	1.4m	3	0	0	0	0	0	0	0	0	0 (max was at LT+0.5)
18.9.11	1.6m	34	28	13	2	2	1	0	1	2	2
19.9.11	1.9m	42	37	23	11	9	1	1	1	1	42
20.9.11	2.2m	45	45	38	30	31	28	27	26	25	45
21.9.11	2.4m	22	17	13	9	0	0	0	0	0	22

## 5.2. Haul-out Behaviour at Seal Sands

The following data give a summary of monthly mean numbers of both Harbour and Grey Seal observed over the four hour low tide period at each of the haul-out sites on Seal Sands and is discussed in Section 6.1. The named sites (Site 'A', 'B', etc) are shown in Appendix 2.

Monthly means were obtained using the maximum numbers of seals present on each site during each low tide period on the days where monitoring took place. Comparative data from the period 2007 to 2010 is shown in the figures which follow in order to place the 2011 data into context. The bar charts below show blue columns corresponding to the average number of Harbour Seals, while red columns correspond to the number of Grey Seals.

### 5.2.1. 'Site A'

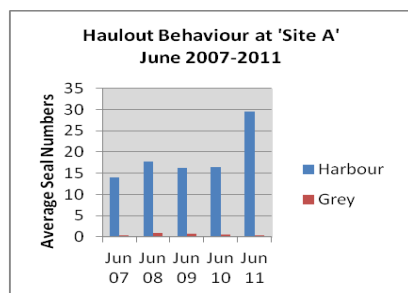


Figure 3a: June 2007-2011

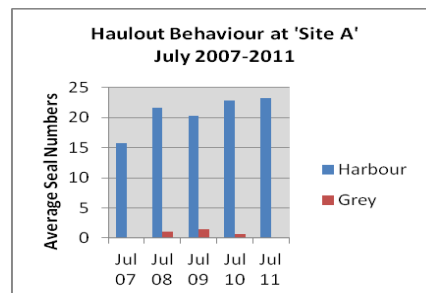


Figure 3b: July 2007-2011

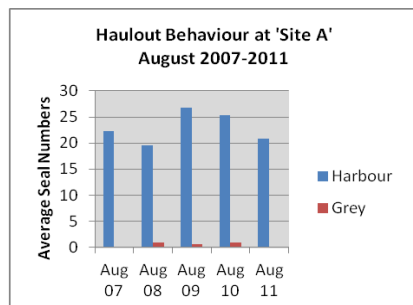


Figure 3c: August 2007-2011

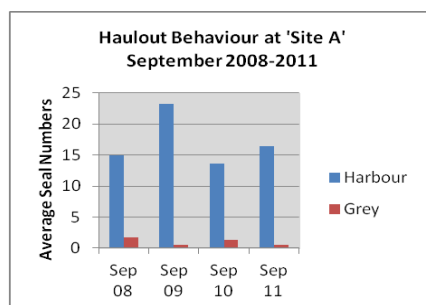


Figure 3d: September 2008-2011

**Figure 3:** Incidence of seals using 'Site A' between 2007 & 2011

### 5.2.2. 'Site B'

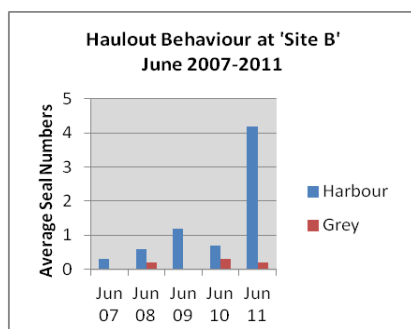


Figure 4a: June 2007-2011

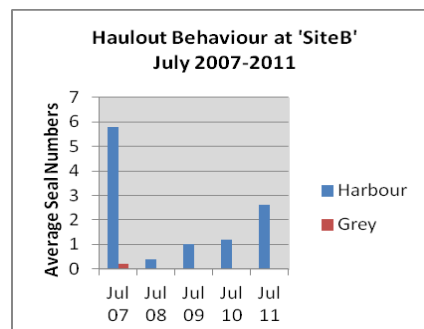


Figure 4b: July 2007-2011

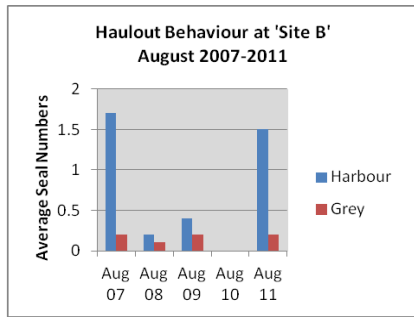


Figure 4c: August 2007-2011

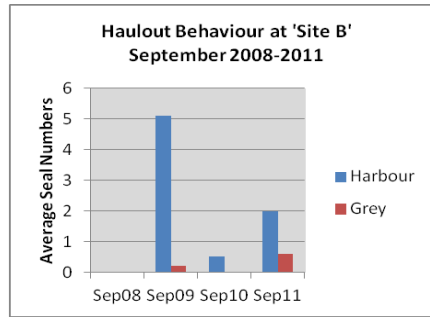


Figure 4d: September 2008-2011

Figure 4: Incidence of seals using 'Site B' between 2007 and 2011

### 5.2.3. 'Site C'

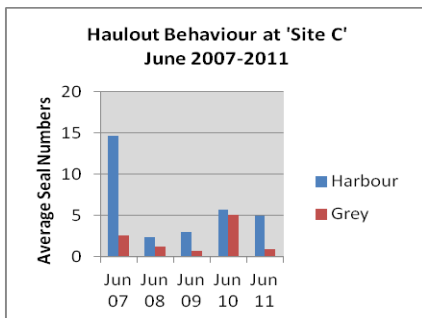


Figure 5a: June 2007-2011

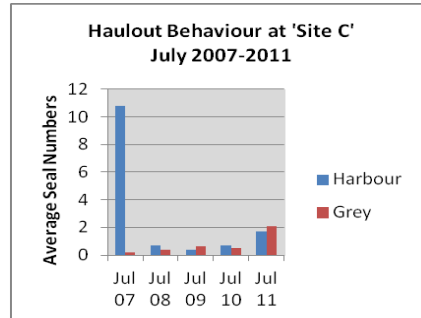


Figure 5b: July 2007-2011

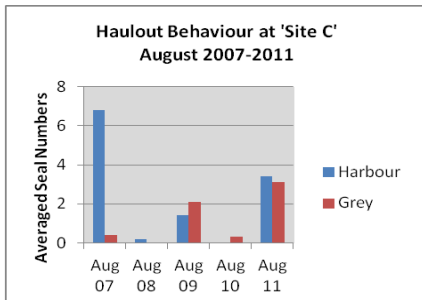


Figure 5c: August 2007-2011

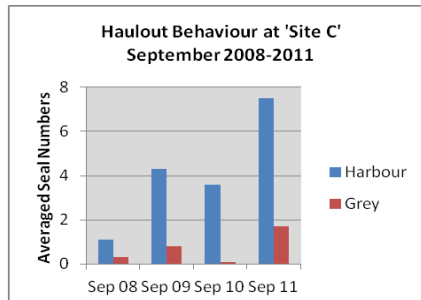


Figure 5d: September 2008-2011

Figure 5: Incidence of seals using 'Site C' between 2007 and 2011

### 5.2.4. 'The Spit'

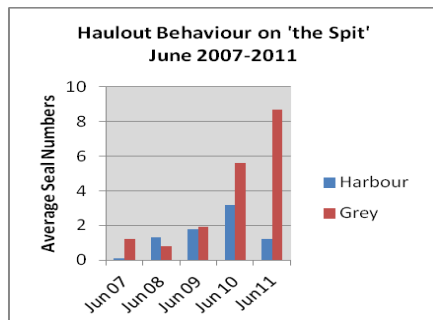


Figure 6a: June 2007-2011

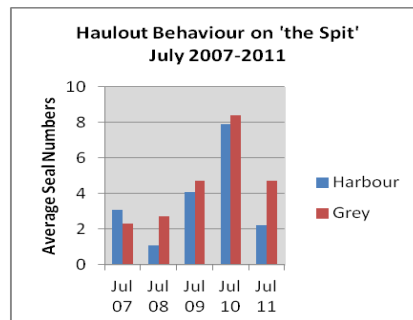


Figure 6b: July 2007-2011

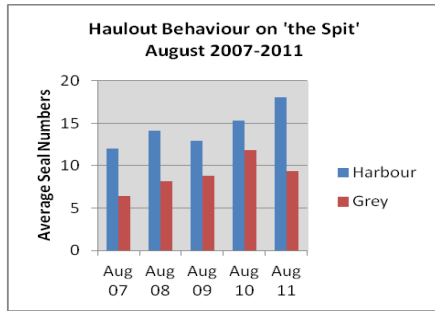


Figure 6c: August 2007-2011

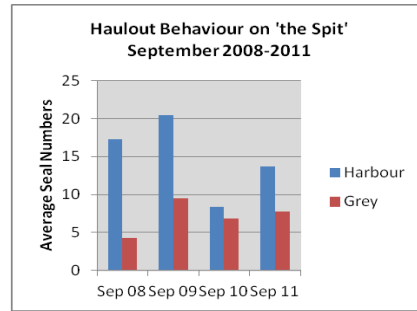


Figure 6d: September 2008-2011

Figure 6: Incidence of seals using the 'Spit' between 2007 and 2011

### 5.2.5. 'The Wall'

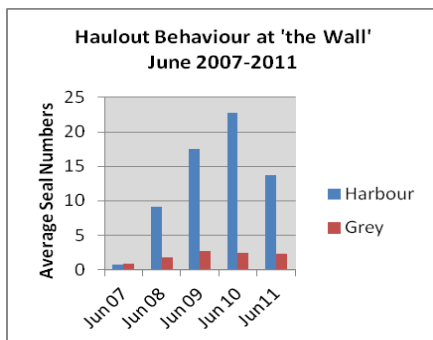


Figure 7a: June 2007-2011

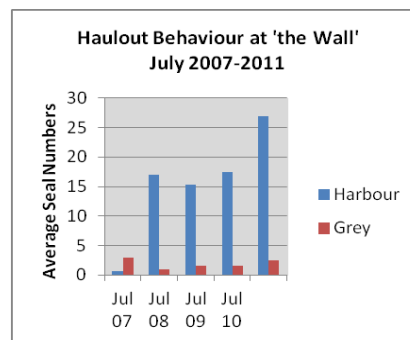


Figure 7b: July 2007-2011

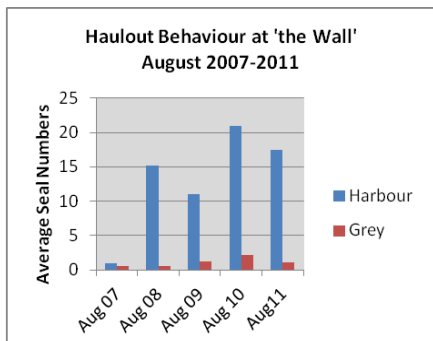


Figure 7c: August 2007-2011

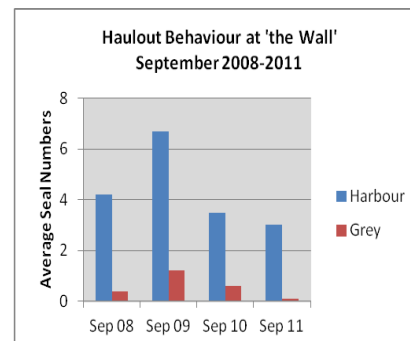


Figure 7d: September 2008-2011

Figure 7: Incidence of seals using the 'Wall' between 2007 and 2011

### 5.2.6. 'Site D'

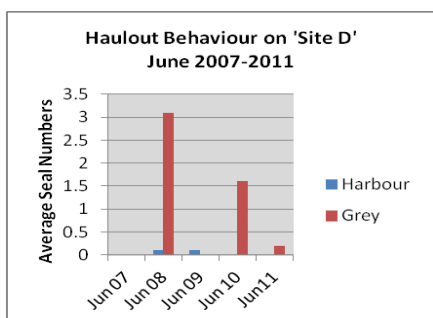


Figure 8a: June 2007-2011

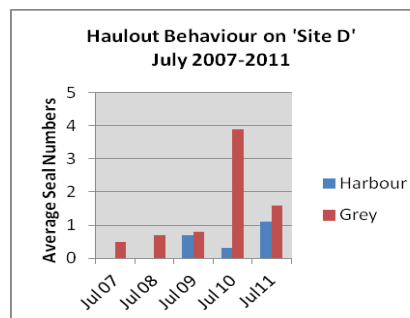


Figure 8b: July 2007-2011

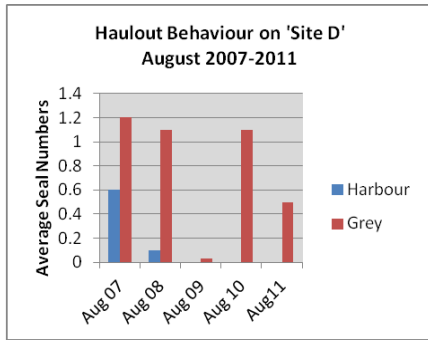


Figure 8c: August 2007-2011

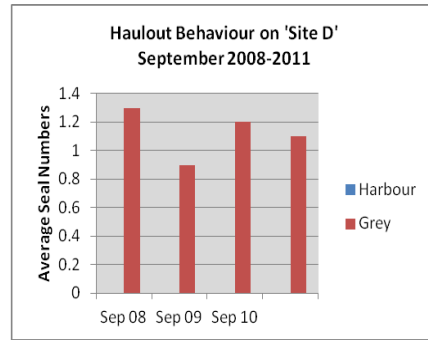


Figure 8d: September 2008-2011

**Figure 8:** Incidence of seals using 'Site D' between 2007 and 2011

### 5.2.7. 'Site E'

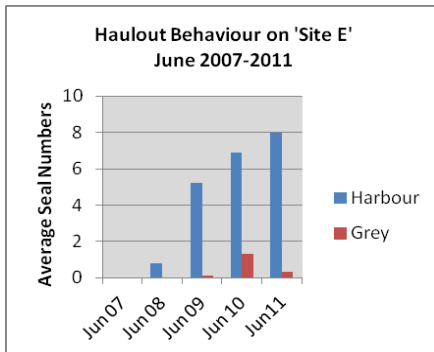


Figure 9a: June 2007-2011

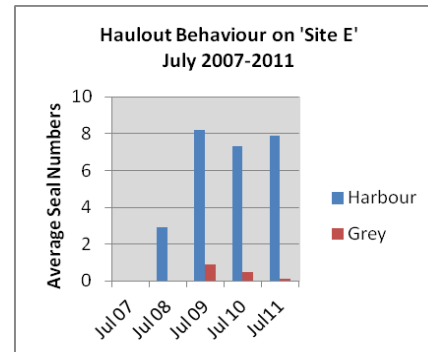


Figure 9b: July 2007-2011

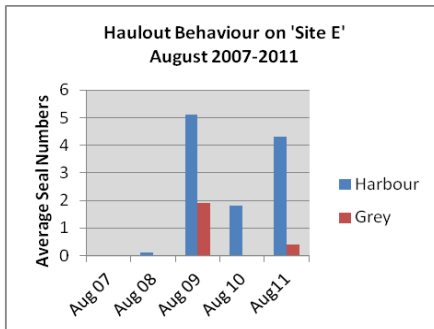


Figure 9c: August 2007-2011

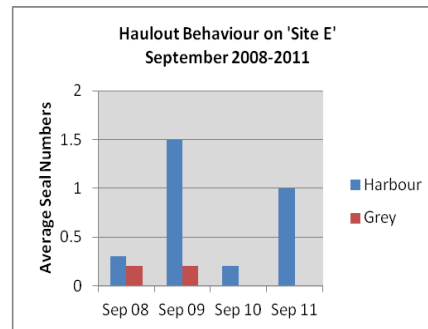


Figure 9d: September 2008-2011

**Figure 9:** Incidence of seals using 'Site E' between 2007 and 2011

### 5.3. Birth and Survival of Harbour Seal Pups

Sixteen pups were born in 2011. Twelve survived to weaning. Figure 10 shows the birth and survival rates of Harbour Seal pups at Seal Sands since inception of the seal monitoring project.

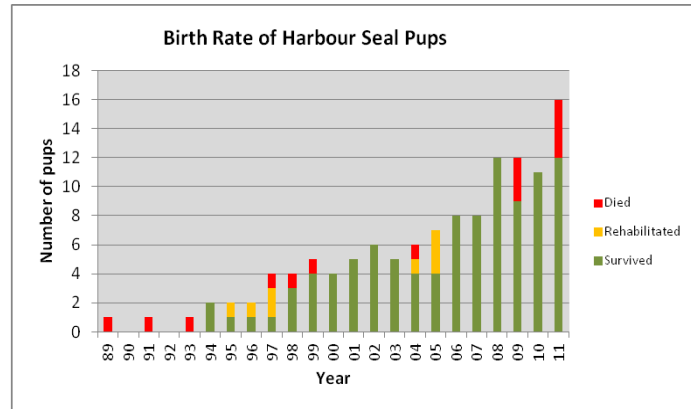


Figure 10: Harbour Seal Birth Rate (1989 – 2011)

### 5.4. Maximum Count of Seals at Seal Sands / Greatham Creek

Data recorded for 2011 are contrasted with that from previous years in Figure 11.

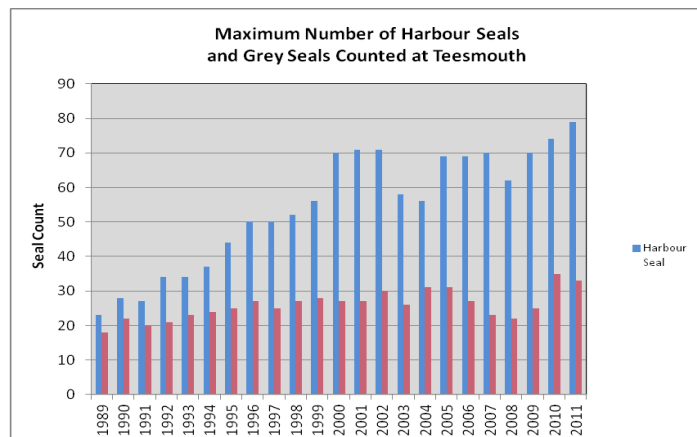


Figure 11: Maximum Number of Seals Recorded Per Day (1989 – 2011)

As for 2010 the maximum data recorded for Harbour Seal in 2011 were a result of pooling numbers simultaneously hauling out at Seal Sands and Greatham Creek. Details are discussed later.

There is very little contribution of Greatham Creek in the Grey Seal numbers as there were only 19 individuals recorded hauling out there during the whole of the 2011 season (in 2010 there were nine Grey Seals recorded at Greatham Creek).

## 5.5. Mean Count at Seal Sands / Greatham Creek

The mean number of seals present during 2011 was calculated for the four months of the year during which the survey was conducted (June, July, August and September).

### 5.5.1. Harbour Seal

The mean number of Harbour Seal observed was 49.5 for June (36.8 in 2010; 33.2 in 2009), 54.1 for July (44.9 in 2010; 39.5 in 2009), 56.8 for August (52.9 in 2010; 49.2 in 2009) and 44.2 for September (33 in 2010; 48.5 in 2009), each month in 2011 being supplemented by numbers hauling out over the low tide period at Greatham Creek.

Figure 12 shows the mean numbers of Harbour Seal which have been observed in previous years. Note: data are not available for June in years prior to 2005 or September for years prior to 2008.

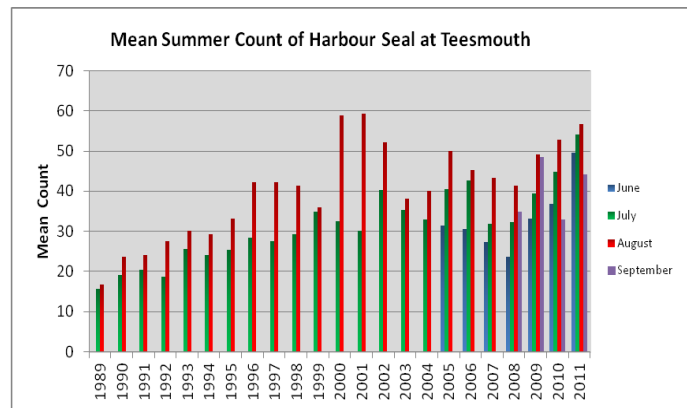


Figure 12: Mean Harbour Seal Count from June to September (1989 – 2011)

### 5.5.2. Grey Seal

The mean number of Grey Seal observed was 12.0 in June (12.0 in 2010; 4.7 in 2009), 9.4 for July (13.0 in 2010; 7.8 in 2009), 12.5 for August (14.2 in 2010; 11.8 in 2009) and 10.8 for September (9.9 in 2010; 12.0 in 2009).

Figure 13 shows the mean numbers observed in the years 2005 to 2011 for which there are available data.

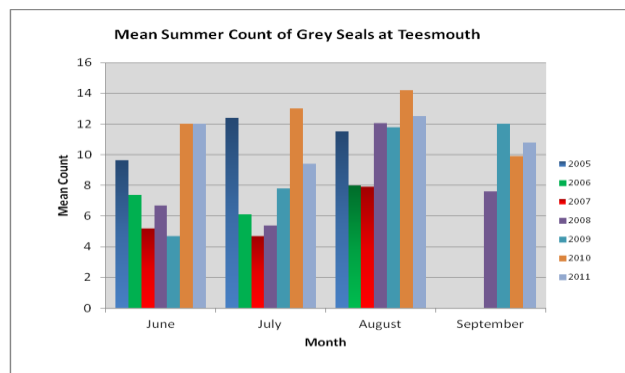


Figure 13: Mean Grey Seal Count from June to September (2005 – 2011)

## **6. Discussion**

### **6.1. Haul-out Behaviour**

#### **6.1.1. Studies at Greatham Creek**

During 2011 simultaneous monitoring of seals over the low tide period took place through the season at both Seal Sands and Greatham Creek. Section 5 shows the results of monitoring from the period June to September 2011.

The frequency of occasions when the daily maximum number of Harbour Seals in the estuary was supplemented by the seals hauling out at Greatham Creek is summarised as follows:

- June - 55.6%
- July - 66.6%
- August - 67.7%
- September - 66.6%

Simultaneous low tide survey at Greatham Creek and Seal Sands started in 2009. Data from 2011 shows that Greatham Creek is becoming increasingly popular with Harbour Seal over the low tide period. As for previous years this steady rise does not appear to be in response to any stimulus at Seal Sands.

Where the estuary maximum received a contribution from seals hauling out at Greatham Creek in 2011 this mainly occurred several hours before low tide due to seals remaining longer at Greatham Creek after their usual haul out at high tide.

Large numbers of seals often remain at Greatham Creek through the whole low tide period. In 2011 this was always the case when the low tide level was 1.9m or higher, except in one case. It is rare for large numbers of seals to remain through the whole low tide period at a level lower than this, but it has been noted on several occasions during 2011 for a low tide at 1.6m and once at 1.4m.

In addition to the usual mudflats, seals at Greatham Creek have occasionally hauled out in unusual locations in comparison to the last few years. During the 2011 season they regularly hauled out in small numbers on mudflats very close to Greatham bridge, both on the north and south sides of the creek. This included mothers hauling out with pups.

Occasional seals are now also seen on mudflats almost as far as 1km westward of the Greatham road bridge.

#### **6.1.2. Seal Sands**

Appendix 2 shows the key haul-out sites used at Seal Sands. Site 'A', 'B', 'E' and the 'Wall' are used mainly by Harbour Seals, while Site 'D' is used by Grey Seals. Site 'C' and the 'Spit' are used by both species.

Site usage is dependent upon the height of the low tide. The position of Site 'A' is relatively high in comparison to most of the other haul-out sites (except Site 'D', which is exposed for most of the tidal cycle). In fact Site 'B', Site 'C', the 'Spit' and the 'Wall' are only 2.3m above the Lowest Astronomical Tide (LAT), so they are often mostly covered by water on neap tides. Haul out data from across Seal Sands from 2011 is shown in Section 5.2.

Site 'A' use has been at the same generally consistent level over the last five years that data has been closely analysed. It is used most heavily by Harbour Seals on almost every low tide, because it is exposed for most of the low tide cycle.

The 'Spit' and the 'Wall' continue to be popular for seals. In the early season the 'Spit' is favoured by Grey Seals, but by August the Harbour Seals predominate. The 'Wall' continues to be used mainly by Harbour Seal, particularly in July and August.

The remaining sites, as previous years see less frequent use.

## **6.2. Birth-rate of Harbour Seal Pups**

The 2011 season saw the birth of 16 pups, the highest number observed to date. The first pup was born on the 19<sup>th</sup> of June, within a day or so of what would be expected. All pups had been born by the end of June which is slightly earlier than normal. It is likely that 12 of these survived to weaning.

Within the first two weeks of the pupping season two young seals had been found dead at Greatham Creek, one on the 29<sup>th</sup> of June and the other a day later.

Post-mortem investigation by the Veterinary Laboratories Agency (VLA) in Newcastle found that the first of these was a newborn and still had the umbilical cord attached. It appears that this pup was born at Greatham Creek, which is in itself unusual, as observations of newborn seals are usually at Seal Sands. The post mortem findings were consistent with peritonitis, probably as a result of an infected navel due to a torn umbilical cord.

Findings from investigation into the death of the second pup were not conclusive although the stomach was completely empty, suggesting the starvation, as if the pup had been abandoned by a possibly inexperienced mother.

The two additional pup deaths were noted around the time of weaning, on the 2<sup>nd</sup> of August, which is when such events usually take place. The animals were both found at the confluence of Claxton Beck and Cowbridge Beck some distance upstream from the haulout site at Greatham Creek. They were both were in a state of decomposition so could not be taken for post mortem.

## **6.3. Seal Numbers**

In 2011, the maximum daily number of 79 Harbour Seals were counted on the 4<sup>th</sup> of August. These were divided across Greatham Creek and Seal Sands. This is the highest daily maximum recorded since monitoring began in 1989 and is also the earliest peak date for a number of years.

At 56.8 the mean Harbour Seal count in August has also increased in comparison with recent years and is now the highest recorded since 2002. Only two years, 2000 and 2001, show a higher mean. These data show that the Harbour Seal population has almost recovered to levels last recorded just prior to the last Phocine Distemper outbreak on the East Coast in 2002.

The maximum number of 32 Grey Seals recorded on 17<sup>th</sup> of August is the second highest recorded since 1989. The previous maximum of 35 seals was recorded in August 2010. There was no contribution from Greatham Creek to this figure. The mean Grey Seal count for August (12.5) was also the second highest recorded in this

project, again 2010 being the highest. Although Grey Seal numbers do fluctuate at Seal Sands the average has remain reasonably static over the last four years, being in the range 12 to 14 seals at peak season.

#### **6.4. Disturbance**

The term 'disturbance' relates to any observed reaction of seals to a stimulus, in particular of seals taking to the water. It is important to limit disturbance experienced by seals during the summer period when mothers are suckling pups as this can influence the ability of pups to survive their first winter.

This year there were 10 occasions when seal disturbance was observed, in comparison to 16 instances in both of the preceding years. They were:

- 17<sup>th</sup> June. Disturbance took place when a dinghy was seen approaching too close to the 'Spit' causing all seals to vacate the site.
- 24<sup>th</sup> June. Noise and movement from a large group of visitors on the A178 Greatham bridge caused seals to leave the haul out site.
- 11<sup>th</sup> July. Member of the public walking along the public footpath on the north side of Greatham Creek led to seals to leave the haul out site.
- 17<sup>th</sup> July. A large group of people observing seals from the A178 Bridge adjacent to Greatham Creek led to seals vacating the haul out site.
- 2<sup>nd</sup> August. Two boats, the 'Tees Sentinel' and 'Mariner' were very close to the 'Spit', causing all seals to vacate.
- 3<sup>rd</sup> August. Observers on the north side of Greatham Creek caused seals to leave the haul out site.
- 16<sup>th</sup> August. Observers on the north side of Greatham Creek caused seals to leave the haul out site.
- 23<sup>rd</sup> August. Walker with dog on the north side of Greatham Creek caused seals to leave the haul out site.
- 17<sup>th</sup> September. Noise at TERRC dock caused seals to leave their haul out sites at Seal Sands.
- 19<sup>th</sup> September. Members of public walking along the footpath on the north side of Greatham Creek led to seals leaving their haul out site.

Of these events, three took place at Seal Sands and seven at Greatham Creek. The events are categorised in the following manner:

- Two events where vessels approached too close to haul out sites (five events in 2009 and seven events in 2010)
- One event where sudden industrial noise caused disturbance (no events in 2009 and one in 2010)
- Seven events where members of public caused disturbance of seals at Greatham Creek (eight events in 2009 and seven in 2010)

It is pleasing to report that the incidence of disturbance at Seal Sands has declined markedly in 2011. INCA has worked with partners to try to reduce the number of disturbance events at this location. The help that various organisations have given in addressing this is very much appreciated.

There were no recorded occasions in 2011 where bait digging caused disturbance to seals.

The most significant disturbance events are now at Greatham Creek where the incidence has remained roughly at levels seen in each of the previous two years. There were no observations of intentional disturbance among the 2011 reports. The RSPB organised a season of seal watching days during the year, starting on 10<sup>th</sup> August 2011. These educational visits will hopefully assist in reducing disturbance to seals as visitors become more aware of the sensitivity of these animals.

## **6.5. Deaths**

There was only one additional reported death of Harbour Seal in 2011 other than the pup deaths already discussed. This was a female seal found at the Heugh, Hartlepool on the 15<sup>th</sup> of August. The seal was emaciated. Post-mortem revealed a large internal abscess in soft tissues between the cranial and thoracic areas. It was suggested that this may have resulted from a prior bite wound or penetrative wound which had since healed.

The only reported Grey Seal deaths occurred early in 2011, a pup being found at Seaton Beach, Hartlepool on 11<sup>th</sup> January and an adolescent at Seaton Carew on 8<sup>th</sup> March. These dates are normal for Grey Seal which give birth to pups in the early winter months. The carcasses were not retrieved.

## **7. Acknowledgement**

This ongoing project would not have been possible without the funding in 2011 which was provided by Natural England and the Dow Chemical Company Ltd. Huntsman Pigments also provided ongoing support in provision of the observation hide at Seal Sands and giving access to this site.

The raw data for this report is collected by a dedicated set of monitors. Particular thanks are due to Linda Watson, the co-ordinator of the group. In addition to Linda in 2011 they were David Laing, Dave Miles, Paul Thomson, Dave Thew, Dez Watson, Mel Watson and Terry Wells.



