

Grey Seal Behaviour and Photo ID Study on the Calf of Man.

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Introduction

During the autumn of 2009 a study was carried out on the Calf of Man into its importance as a breeding site for grey seals (*Halichoerus grypus*). This comprised of three elements; a pup census, photo ID and behavioural observations. The pup census began with the first pup sighting on the 28th September and includes all pups seen up until the 4th November. The photo ID and behavioural studies were carried out at one location, in the north of the island, between the 13th and 21st October.

Methods

The pup count was carried out on an ad hoc basis, with sightings of pups being recorded as part of other work being done around the Calf. Pups were recorded as being at one of 5 developmental stages, according to body size and colour. This meant that pups could be charted over time, with new pups added to the count when born. This prevented double counting so an accurate figure of the total number of pups could be calculated.

Behavioural observations were carried out at both Cow Harbour and Grants Harbour, which are connected by a series of inlets. Many of the same individuals could be seen from either survey location, especially when the seals were in the water. Due to the number of individuals present and the nature of their behaviour, the survey method was altered slightly from the initial proposal. Information was recorded every 15 minutes and if a behaviour was seen in a 15 minute interval it was recorded as a positive interval for that behaviour. This would ensure that both behavioural states (eg resting) and behavioural events (eg fighting, which typically lasted less than a minute) would be recorded.

Photo identification (ID) was carried out opportunistically before and during behavioural observations. Again this was a change from the project proposal as it was not always possible to get useful images at the outset of the watch period. Instead of spending too long trying to get pictures at the start of the observations, the seals were allowed to become accustomed to the observers presence, when there would then be little or no reaction to being approached or photographed. This ensured minimal disturbance to the seals. Images were taken of all females, males and pups present. Photos of pups show development, from the first morning after birth to a fully moulted pup about to leave the pupping area, which gives an estimate of the length of time at each developmental stage.

Results

Pup census

Twenty-seven pups were recorded in total, of which two were known to have died. Therefore there was a pre-weaning pup mortality rate of 7%. Pre-weaning pup mortality is highly variable between sites and years, for example at other key breeding sites in the Irish Sea, it can be as low as 2% or as high as 19%, although on average it is between 10-20% (Kiely *et al*, 2000).

The distribution of pups was along the north and south coasts of the Calf, as shown in Figure 1. It can be seen from this map that often more than one pup was present in the same location, with the Cow harbour and Grants harbour areas being especially highly populated with 12 pups in total. Twenty-seven represents a minimum number of total pups born on the Calf, as it is likely there were others born in areas that are inaccessible from the land. In similar areas, such as Ramsey Island, Pembrokeshire, only 50% of pups born are visible from the cliff tops (RSPB, press release 21/09/09).

Pups were present in a variety of habitats, most commonly on open beaches, in narrow gorges/inlets or in small, rocky bays, for example those shown in Figure 2. However, one pup was seen on a steep cliff face and another on a dock showing utilisation of any available and suitable space.

Figure 1: The number of pups at each location. One dead pup was observed at each of the two locations with the number underlined.



Figure 2: The variety of habitats used for pupping.

a) Open beach at Cow harbour, at low tide (5 pups in total, 4 visible in this photograph)



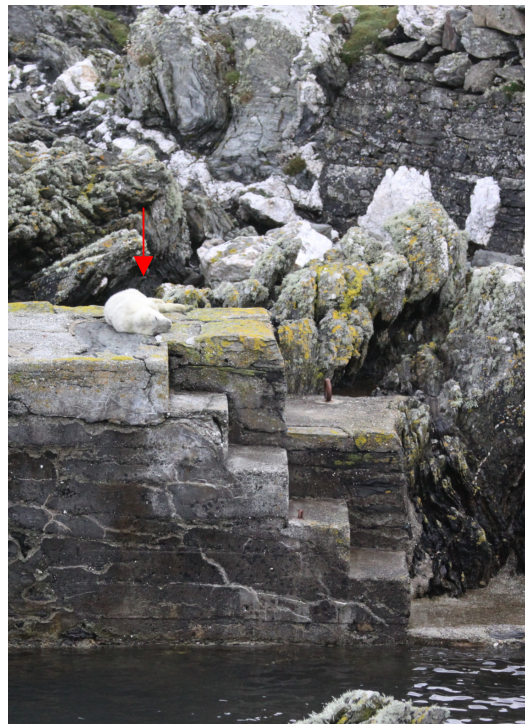
b) Narrow gorge at Ghaw Lang (4 pups in total, 3 visible in this photograph including 1 dead)



c) Small rocky bay at The Leodan, at low tide (1 pup in total)



d) Steep cliff and dockside.



Behavioural study

Figure 3 below shows an aerial photograph of the Cow harbour and Grant's harbour study site. This shows the observer location and the general position of the pups. At Cow harbour there were between 0 and 3 females present and at Grant's harbour between 2 and 6 females present. There was one male always present at each site.

Figure 3: Cow harbour and Grant's harbour. O=observation position.



Behavioural observations were carried out for a total of 35.5 hours, over 8 days. This generated 142 15-minute intervals. The breakdown of different behaviours is shown in Figure 4 below. For each behaviour, this represents the total number of intervals in which that behaviour (exhibited by either males or females) was recorded. Therefore this does not represent the proportion of actual time engaged in each behavioural state.

As can be seen from figure 4, the most frequently recorded behaviour was resting, whether in the water or on land. The only other regularly seen behaviours were travelling and fighting and so these have been looked at in further detail below.

It is interesting to note that suckling was only observed in 8% of intervals. However the majority of these positive intervals (81%) were recorded at Grant's harbour. This is because the pups at Grant's harbour were younger than those at Cow harbour during the time of observations. Indeed, only 1 pup at Cow harbour was ever accompanied by a female.

The other noticeable different between the two sites was of fighting behaviour. Both in the water and hauled, fighting was more frequently seen at Grant's harbour (69% of hauled and 61% of in water fighting was at Grant's harbour). This is also likely due to being at an earlier stage in the pupping process, as the females were still fighting for places to give birth and fighting off the male.

Figure 4: Pie chart displaying the relative frequency of each behaviour. H=hailed, W=in the water, L-S=moving from land to sea, S-L=moving from sea to land.

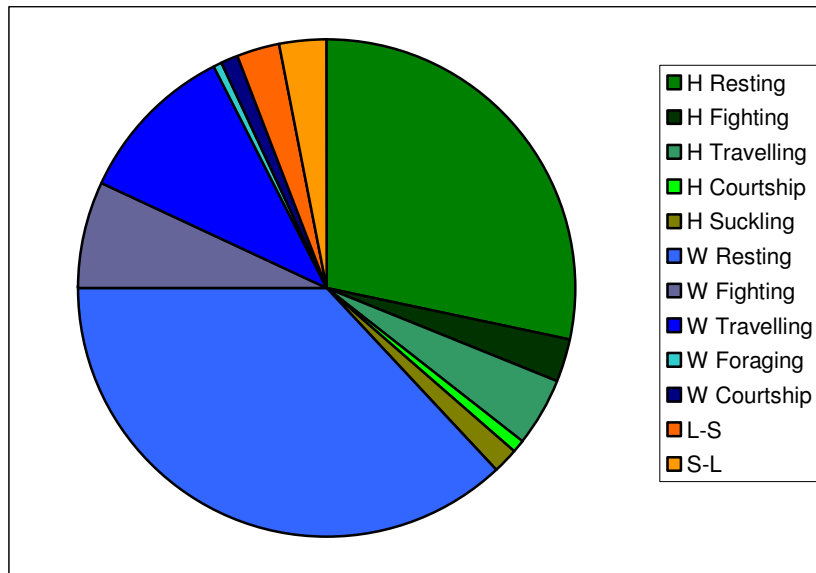
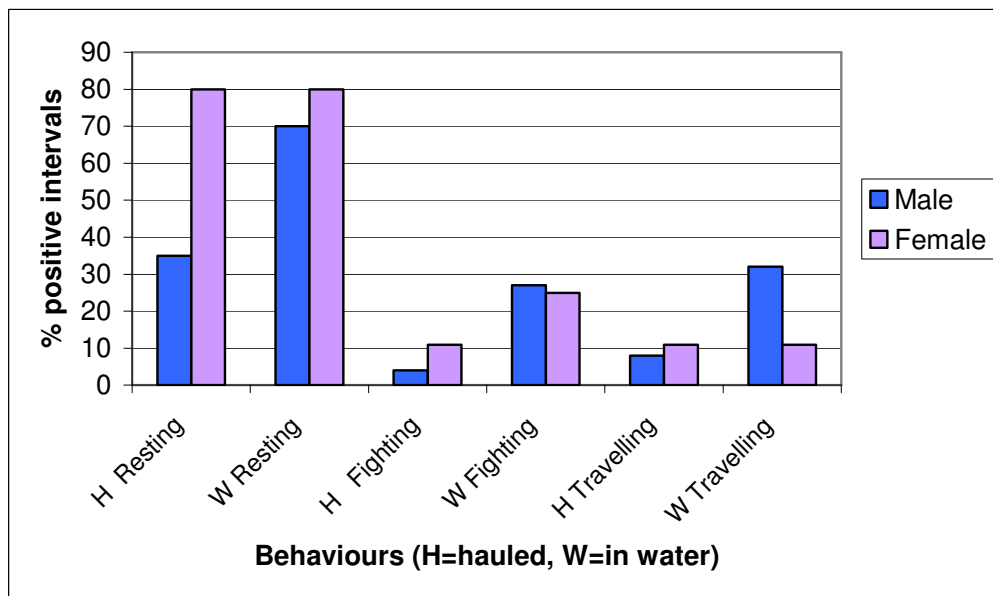


Figure 5 below shows a breakdown of the more frequently seen behaviours. Again this shows that resting was the most observed behaviour, especially for females. Females were seen resting in the water and on land with equal frequency, whereas males were seen resting in the water a lot more often. Indeed, for males, travelling in the water was observed with almost as much frequency as resting on land. Travelling in the water was also a lot more frequent than on land, for males only. This graph also shows that fighting in the water was a lot more common than on land, for both sexes.

Figure 5: Graph to show breakdown of observed behaviours.



Pups also showed a variety of behaviours, although this has not been quantified. Weaned pups spent a considerable amount of time travelling on land and were frequently seen playing with seaweed. At Grant's harbour, some of the pups were in the water for a lot of the time, due to the nature of the inlets flooding at high tide. All three of the newly born pups had to swim in deep water on their first morning.

Photo ID

Good images were collected of the right and left sides of 8 females and 2 males. These can be used to identify the individuals by the pattern of pelage markings. Of the females, 8 were easily identified as having pups. One female was present only on one day and was not associated with a pup at that time. Another female may be identifiable in the future due to a damaged right eye, although there are not any good enough images for pelage identification. Additionally, 2 pups had moulted by the end of the study and may be recognisable again in the future.

It is hoped that these images can be compared with other catalogues of grey seals around Britain to see if any of these individuals have been recorded elsewhere. It is also anticipated that in 2010, the same survey will be carried out and the site fidelity of grey seals to this area can be determined.

Potential Disturbance

All efforts were made to keep disturbance of the seals to a minimum. It is not believed that the presence of the observer had a negative impact on the behaviour of the seals or was detrimental to the development of pups. Seals are naturally inquisitive animals and often showed a reaction to the presence of the observer. This typically was no more than looking up at the observer and following their movements with their head. Occasionally seals would retreat into the water for a short period of time, returning to their original position after only a few minutes. Several females showed habituation to the observer over time and did not react at all to their presence after a few days.

Pups showed very little response to the presence of the observer, seeming to not even notice them on many occasions. Increased reactions were shown to humans when there were more than one or two people present, for example when the wardens or visitors were also there. Although habituation to more people was also noted, this highlights the importance of keeping the large numbers of the public away from pupping areas.

Conclusions

The Calf of Man is recognised as being the main haul out site for grey seals around the Isle of Man. Previous surveys also suggest that it is the most important pupping site around the Manx coastline. In boat-based surveys around the whole coastline, completed between April 2006 and March 2007, 11 out of 24 pups were seen around the Calf (Manx Bird Atlas, 2007). In 2009, 27 pups were recorded in total around the Calf. The figures from both this project and the boat surveys are likely to be underestimates due to missing inaccessible pups and lack of complete coverage over the potential pupping season. Nevertheless, this project confirms that the Calf is a well used location for grey seal pupping. There is also a relatively low level of pup mortality, indicating it is also a suitable location for pupping.

Behaviour at the pupping sites was typical. Pups developed over the course of approximately 5 weeks, with weaning taking place after about 2 weeks. A male patrolled each of Cow harbour and Grant's harbour and courtship with the females was observed. Although for both sexes resting was the most common behaviour, fighting was also frequently seen. Although this was usually short lived and might more accurately be described as 'aggressive interactions', on one occasion a very brutal fight was observed between the 2 males. This lasted approximately 20 minutes, took place in the water and caused considerable bloodshed.

This project should be repeated in future years, to determine the longer term use of the Calf as a pupping site for grey seals. It will be especially important to monitor the future number of pups born on the Calf and the identification/re-identification of breeding females.

References

Kiely, O., Lidgard, D., McKibben, M., Connolly, N. & Baines, M. (2000). Grey Seals: Status and Monitoring in the Irish & Celtic Seas. Maritime Ireland/Wales INTERREG report.

Manx Bird Atlas (2007). Report on a survey of Grey Seals around the Manx coast, undertaken from April 2006 to March 2007. DAFF report.