

The Wild North
Annual Report 2009

**The behaviour and abundance of
harbour seals (*Phoca vitulina*);
How do tourists affect the seals?**

Sandra M. Granquist

Veiðimálastofnun, 2009



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Keldnaholti, 112 Reykjavík, Sími: 580-6300, Bréfasími: 580-6301
Netfang: veidimalastofnun@veidimal.is

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1. Introduction

The interest in seal watching has grown rapidly during the last few years and at this point, it is not uncommon that seal watching is one of the main goals of the trip for tourists coming to Iceland. Nevertheless, several studies suggest that tourism can have a disturbing effect on the seals and negatively affect their behaviour and ecology. For example, in some cases, tourism may lead to changes in abundance and/or to a decrease of fitness among seals (see for example Johnson and Lavigne, 1999). Other studies indicate that direct disturbance of wildlife watching might be reduced by keeping a certain distance from the animals and by behaving calmly (Cassini, 2001).

Until now, the behaviour of seals has not been studied in Iceland and therefore, knowledge about possible effects on seals due to tourism is lacking. To be able to give advice about at which conditions seal watching has the least possible negative effect on seals and thereby, how to develop seal watching as a sustainable form of tourism, it is necessary to study this further. A study was therefore conducted in Vatnsnes peninsula, in the north west of Iceland, which includes some of the most popular seal watching locations in Iceland. In 2008, a pilot study was made and in 2009-2011, this study will be carried out.

The aim of the study was to investigate if tourists affect the haul-out behaviour and abundance of the common seal (*Phoca vitulina*) and how it would be possible to minimize this effect. The aim is also to study the time budget of harbour seals in haul-out sites and to find out what factors affect the possibilities of seeing seals on land.

2. Methods

2.1. Locations

At *Illugastaðir* a seal watching site is being developed at the moment. At this location, an increased tourism is expected during the next following years, giving the possibility to study what effect such an increase will have on the behaviour and abundance of seals hauling out in the area.

Hindisvík is however a former seal watching area that was closed in 2008 by landowners, due to a decrease in the number of seals in the area. Landowners claim to see a strong relationship between the fact that the number of seals has declined and an increasing number of tourists that visited the area before it shut down. Studying changes in the number of seals hauling out in this area, will give an indication of what effect decreasing tourism pressure may have on the seals.

2.2. Data collection

The summer was divided into 4 periods (Table 1). In period 1, the seal watching site in *Illugastaðir* was closed due to eider duck nesting. In period 2 a & b, the highest number of tourists were expected to visit the area. In period 3, the number of tourists was expected to decrease.

Table 1: Different periods of the summer.

Periods	Dates
T1	1 st -18 th of June
T2a	19 th of June-10 th of July
T2b	11 th of July-4 th of August
T3	5 th of August-30 th August

2.2.1. Illugastaðir

In Illugastaðir, seal counting and behaviour observation were carried out. In the summer of 2008, data was collected for 24 days and for 4 hours each day (altogether 120h). In the summer of 2009 data was collected for 47 days and two observation sessions were made each day: 2 hours of observations, 2 hours rest, 2 hours observations (altogether 187 h). Both years, observations were equally divided between the different periods. The data was collected at the time of day when the highest number of tourists was expected to visit the area, or between 08.00 and 19.00.

Each 15 minutes, the area was scanned by the observer and the number of seals on each skerry was recorded. The numbers of tourists present at the seal watching site was also recorded. After each counting session, the behaviour of each seal was observed and recorded. The behaviour observed is described in an ethogram (Appendix 1). In 2009 vigilance was added to the ethogram. Tourist behaviour that we believed could be disturbing to the seals was recorded from 24th of July - 21st of August 2009. Current weather (wind, heat and cloudiness) and tides were recorded each time an observation was made.

2.2.2. Hindisvík

The seals hauling out in Hindisvík was also counted regularly and distribution in different skerries was recorded. In 2008 altogether 16 counting observations were made and in 2009 the seals were counted 3 times every week (altogether 36 times).

3. Results

The results analyzed so far are presented below. Further analyze will be made during the spring of 2010.

3.1. Illugastaðir

There were always seals present in the skerries and at no time did all the seals flush in to the water due to human disturbance. The mean number of seals that hauled out on land was different between periods and years, but the highest number was found in period T2b (late July/early August) both years. In 2009, the mean number was never the less similar also in period 3 (mid-late August). The lowest number of seals was found in the first period (the first part of June) both years (Figure 1).

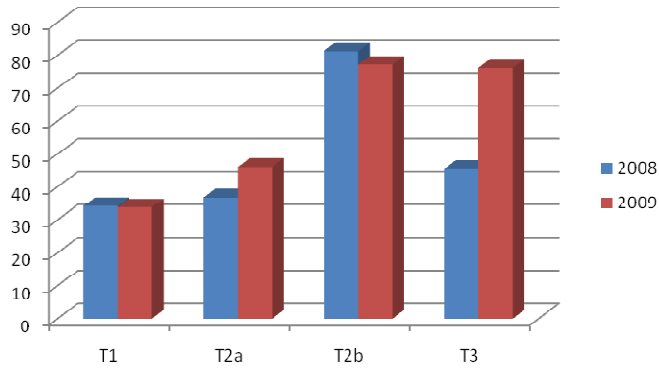


Figure 1: Average number of seals in each period of the summer for 2008 and 2009.

The average number of tourists at the seal watching site was lowest in the second period of the summer both years (period T2a). The highest mean number was in 2008 found to be in period 2b (late July/beginning of August), while in 2009 in the last period of the summer, T3 (late August) (Figure 2).

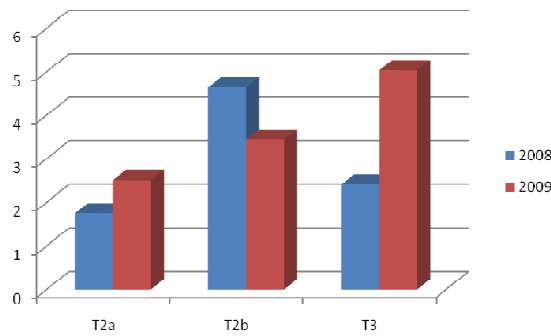


Figure 2: Average number of tourists present in the area in each period of the summer for 2008 and 2009. In T1 the area was closed for tourists due to eider duck nesting.

The seals rested (laying on side, stomach or back) most of the time they spent on land or about 95% of their time in 2008. In 2008 vigilance was not recorded separately, but was included in resting. Therefore a higher percentage in resting behaviour is found in 2008 compared to 2009 (about 85%). In 2009 (24th of July - 21st of August), the seals spent between 5 and 13% of their time vigilant. Interestingly the time spent vigilant was lowest in the period when no visitors were allowed in the area. Communication almost only occurred in the first time period, when the pups were new born (Table 2 and 3, Figure 3 and 4).

Table 2: Time budget of seals hauling out in Illugastaðir for each period (T1-T3) and over the whole summer 2008 (% of whole time budget). Vigilance not recorded.

	Lay on side	Lay on stomach	Lay on back	Splash	Movement	Scratch	Communication
T1	36	52	2	2	2	1	5
T2a	51	41	3	1	1	1	2
T2b	64	31	2	1	1	1	0
T3	55	40	2	1	1	1	0
All periods	54	39	2	1	1	1	2

Table 3: Time budget of seals hauling out in Illugastaðir for each period (T1-T3) and over the whole summer 2009 (% of whole time budget).

	Lay on side	Lay on stomach	Lay on back	Vigilance	Splash	Movement	Scratch	Communication
T1	64	20	1	5	2	1	1	6
T2a	63	23	0	10	1	1	2	0
T2b	68	15	2	12	1	0	2	0
T3	59	25	1	13	1	0	1	0
All periods	63	20	1	11	1	1	2	1

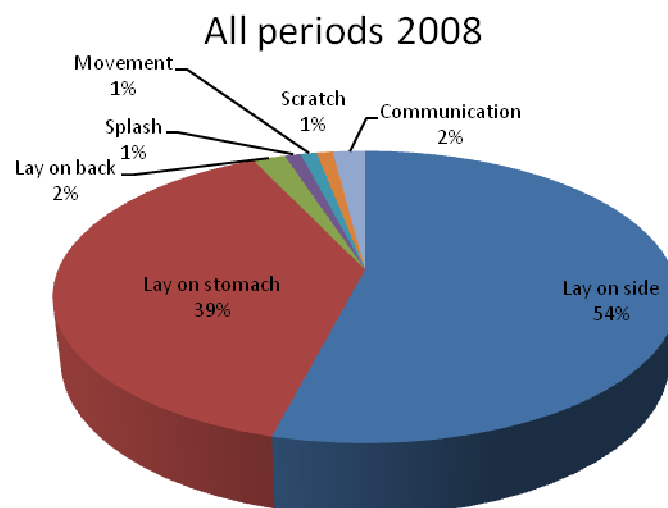


Figure 3: Time budget of seals in the haul-out site of Illugastaðir for all periods of the summer of 2008 (% of whole time budget).

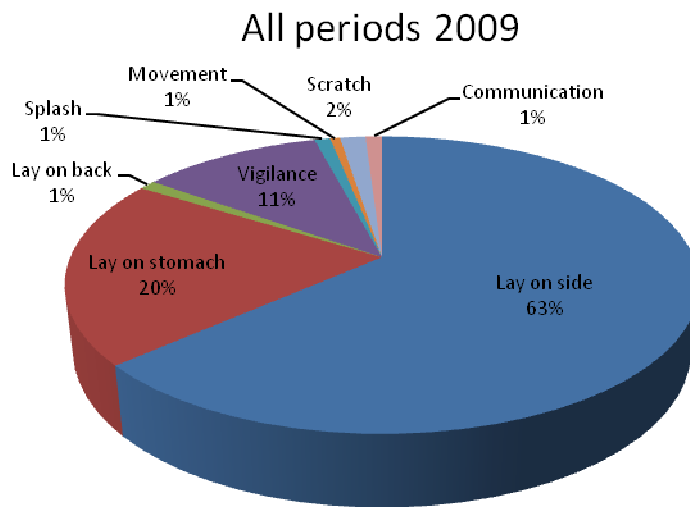


Figure 4: Time budget of seals in the haul-out site of Illugastaðir for all periods of the summer of 2009 (% of whole time budget).

It occurred on several occasions that the tourists' behaviour was particularly disturbing to the seals. Most common was to talk loudly, which was defined as spoken words that the seals would hear from a distance of 100 meters (the distance between the haul out site and the seal watching site). That was recorded 53 times, which is a little less than once every hour (0.98 times/hour) (Figure 5).

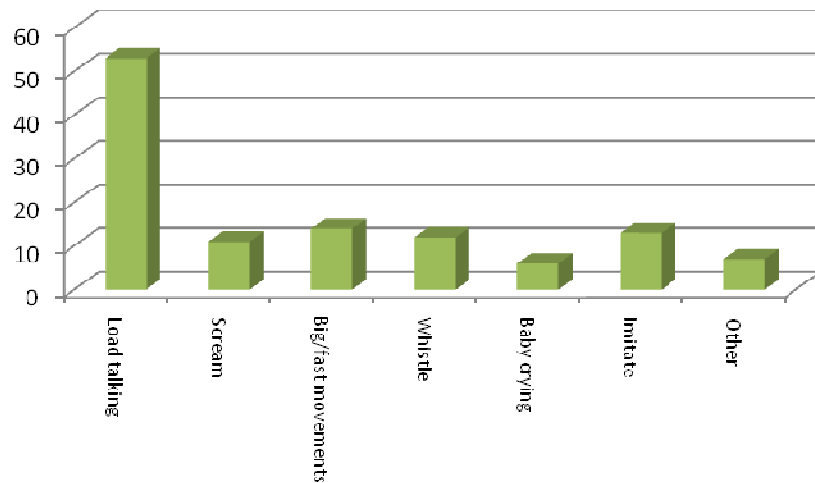


Figure 5: Number of observed occasions of disturbing behaviour by tourists between 24th of July - 21st of August 2009.

3.2. Hindisvík

In 2008, no seal counting was made in Hindisvík for the first period of the summer. The mean number of seals in the haul-out site in Hindisvík was for all periods 83,8 (between 49 and 129,3) in the summer of 2008, but higher, or 108,2 (between 85,1 and 133,5) in 2009 (Table 4).

Table 4: Average number of seals hauling out in Hindisvík in 2008 and 2009.

	T1	T2a	T2b	T3	All periods
2008		67,5	129,3	49	83,8
2009	85,1	116,2	133,5	103,4	108,2

4. Next steps

The research project will be continued over the following two years (2010 and 2011), by collecting behavioural data and counting seals at the locations, using the methods described above. In addition, data on behaviour of the tourists at the seal watching location Illugastaðir will be added to the study. A student will be employed for field assistance each summer (supervised by project manager). The data will then be analyzed, for example regarding correlations between numbers of seals and numbers of tourists present in the area and in respect of if there are differences between the years. Analyze regarding correlations between the numbers of seals hauling out and factors like weather, time of day and tides will also be made.

In the long run, the project will also follow up long time effects of tourism on seals, for example regarding changes in abundance, both in Hindisvík where there is less tourist disturbance than before and in Illugastaðir where the number of tourists will presumably increase.

5. Acknowledgements

Thanks to Helgi Guðjónsson for helping collecting the data and to landowners Guðmundur Jóhannesson and Tómas Þorvaldsson for giving us the permission to study seals on their land.

6. References

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