

The Grey Seal *Halichoerus grypus* (Fabricius) and the Common Seal *Phoca vitulina* L. in Sogn og Fjordane, western Norway

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Grey and Common Seals in Sogn og Fjordane county, western Norway, were surveyed by boat during the summers 1985 and 1986. Thirteen Common Seal localities were recorded with a total count of 369 seals of which 53 or 14.4% were pups. The breeding season at two of the localities in 1985 was dated to the last week of June. About 50 Grey Seals were recorded in the Håsteinen-Ryggsteinen area. Grey Seals were not observed during aerial surveys in the breeding season. Twenty-four Common Seal pups and one Grey Seal were tagged.

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INTRODUCTION

The Grey Seal *Halichoerus grypus* (Fabricius) and the Common Seal *Phoca vitulina* L. are the only resident seals on the Norwegian coast. A study of these seals and their interactions with inshore fisheries along the Norwegian coast from Stad (about 62°N) to Lofoten (about 68°N) was initiated by the Institute of Marine Research in 1974. The study was later extended to cover the larger part of the Norwegian coast. Up-to-date information on the stock size is important for the management of coastal seals. Øynes (1964, 1966) reviewed the regional distribution of Grey Seals and Common Seals along the Norwegian coast and gave 350 Common Seals as an estimate for the stock in Sogn og Fjordane county (61°N—62°N). Since then little data has been collected on the seals in this county. The present paper reviews information collected from surveys in Sogn og Fjordane county in 1985 and 1986 (Bergflødt *et al.* 1985, 1986, Fagerheim *et al.* 1986).

METHODS

Numbers of seals have largely been estimated from ground surveys, but aerial surveys were performed in order to locate grey seal pups.

The ground surveys were made from 12'—15' Zodiac inflatable boats which are well

suited for landing on rocky shores and skerries.

According to Venables & Venables (1960) the highest numbers of Common Seals are hauled out at low tide. Summers *et al.* (1980) presumed that the extent to which the haul-out site is exposed at high tide is important in determining the validity of counts made at that state of the tide. In the area covered by this study the difference between high and low tide in June/July is about 120 cm. It was considered desirable to visit all sites at low tide, and every attempt was made to work as close to low tide as possible, although this was not always possible.

The Common Seal pups were caught in the water and tagged with a yellow PVC «Dalton Jumbo Rototag» in the web of one of the hind flippers. Each tag has a serial number and the text «HAVFORSKNING BERGEN NORW» imprinted.

The aerial surveys were made from a twin-engined fixed-wing aircraft on 23 October and 11 December 1986. The ground surveys were performed from 22 June to 2 July 1985 and from 28 June to 13 July 1986.

RESULTS

The numbers of Common Seals observed each day at each locality are given in Table 1

Table 1. Common seal counts in Sogn og Fjordane. Figures are given as number of one year and older seals plus pups.

Locality	June/July 1985										June/July 1986												
	23	24	25	26	27	28	29	30	1	29	30	1	2	3	4	5	6	7	8	9	10	11	12
Lusterfjorden					3		14+4																
Nærøyfjorden				24	4+4	16+3		12+3														4+2	23+3
Nesefjorden				12				33														45+9	22+2
Ospa				27	22			8+8															
Hatløy																							
Sørværet																							
Kvitingane															9+4								
Senholmmane														47+10								31+4	
Håsteinen-														33+3								36+6	
Ryggsteinen																							
Sørværet																							23+2
Smelværet																							
Rekstad																9+3	15+2						
Hovden																	4+3	15+1					
Hundvikfjorden																		12+4	17+3				

Table 2. Maximum total counts and pup counts of Common Seals in Sogn og Fjordane, western Norway, based on ground surveys in the breeding season in 1985 and 1986.

	Max tot. count	Pup counts	Percentage pups
Lusterfjorden	15	1	7
Nærøyfjorden	29	5	17
Nesefjorden	26	3	15
Ospa	54	9	16
Hatløy	24	2	8
Sørværet	19	4	21
Kvitingane	57	10	18
Senholmmane	42	6	14
Håsteinen- Ryggsteinen	21	1	5
Smelvær	25	2	8
Rekstad	18	3	16
Hovden	18	3	16
Hundvikfjorden	21	4	19
Minimum total estimate	369	53	14.4

and the localities are shown in Fig. 1. It is difficult to separate the seals into age groups in the field. Thus, the figures are given as numbers of one year old and older seals plus numbers of pups observed.

The minimum estimate of seals at a locality is given as the maximum count of pups plus the maximum count of older seals (Table 2). The total minimum number in the surveyed area was 369 Common Seals and 53 of these (14.4%) were pups.

In addition to the Common Seals, about 50 Grey Seals were observed in the Håsteinen-Ryggsteinen area during the first days of July 1986. However, Grey Seals were not observed during the aerial surveys in October and December 1986.

Seven Common Seal pups were tagged in 1985 and 23 Common Seal pups and one Grey Seal were tagged in 1986. The grey seal was caught sleeping on shore and was estimated to be in its first or second year of life.

DISCUSSION

Common Seal

Common Seals on the Norwegian coast have their breeding season in June (Øynes 1964, Ugland *et al.* 1984). Lactation lasts for about

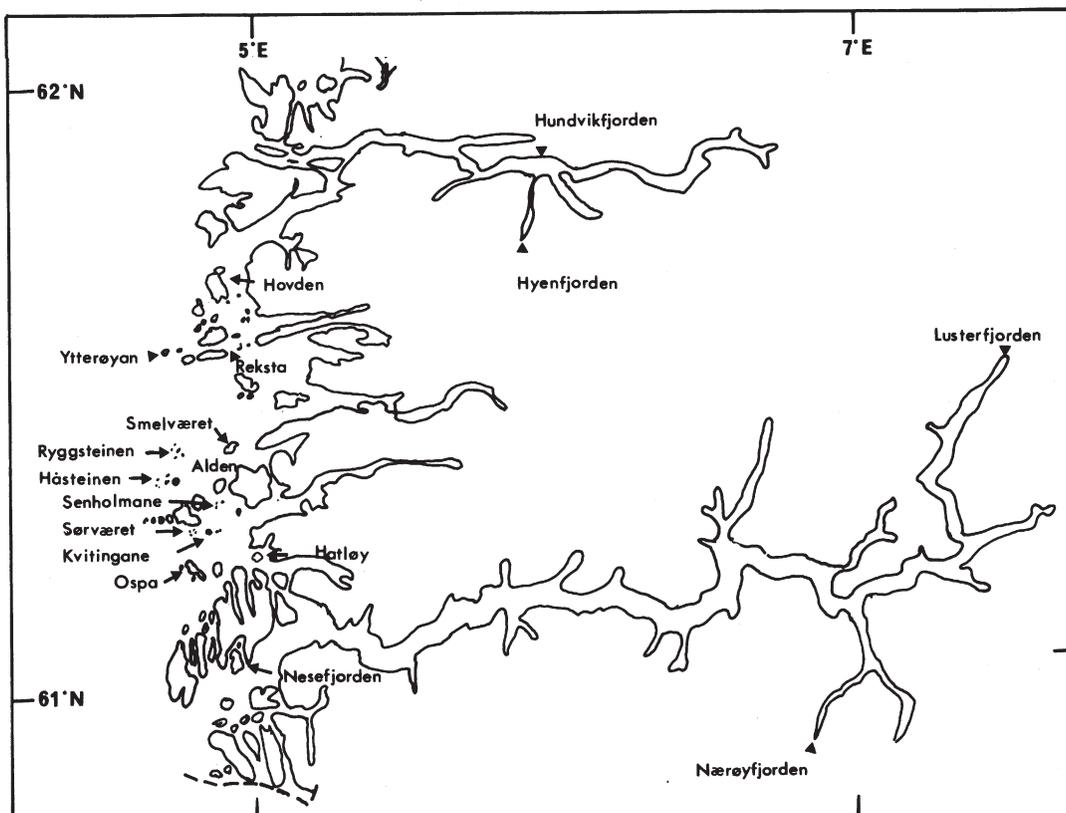


Fig. 1. Coastal seal localities in Sogn og Fjordane, Western Norway.

four weeks followed by ovulation and mating. The moult also occurs towards the end of this period. During breeding and moult the seals aggregate and spend more time on land than through the rest of the year. In the first week of life the pup is relatively easy to catch in the water for tagging. In order to tag the pups as well as count the seals, the ground surveys were performed in late June and early July each year.

The numbers given are actual numbers of seals counted. The figures therefore are minimum estimates and the true numbers of seals are higher.

According to local sources there are few Common Seals in the northern parts of the county which were not surveyed. In the southern part of the county, south of Sognesjøen, several Common Seals have been reported, but they were not found during the survey in 1985.

Øynes (1964) estimated the number of Common Seals in Sogn og Fjordane county

to be about 350. That figure was based on information from local fishermen and is probably not comparable to the minimum estimate presented here.

Percentages of Common Seal pups in relation to the total counts at the end of the breeding season have been found to be between 16 and 21% for stocks in Great Britain (Vaughan 1977, Summers *et al.* 1980) and in the Kattegatt (Heide-Jørgensen & Dietz (1982)). This however, is lower than the percentage of pups found in parts of the Wadden Sea (about 30%) (Reijnders *et al.* 1982).

Ugland *et al.* (1984) recorded 20.5%—22.7% pups during three surveys of Common Seals at Hvaler in Østfold county in the second half of June 1983. Compared to this the 14.4% of pups recorded in Sogn og Fjordane seems rather low. However, as pointed out by Summers *et al.* (1980) differences in pup proportions between sites may reflect different timing of the breeding season or be the result of undercounting.

Results from the 1985 survey make it possible to date the breeding season in parts of the surveyed area. Ospa was surveyed on 22 and 23 June without recording any pups. However, on 1 July eight newly born pups were counted. The three pups tagged in Nærøyfjorden 27 June still had their umbilical cords, indicating an age of less than one week (e.g. Boulva & McLaren 1979). The breeding season in Sogn og Fjordane therefore seems to begin in the last week of June. This is later than at Hvaler (Ugland *et al.* 1984). In 1986, the survey therefore was performed a week later than in 1985. Many of the pups tagged in 1986 were rather large and difficult to catch. Whether the low pup proportion in the total count is an underestimate is not clear. It is, however, important to note that only one of the localities has a pup-count higher than 18% of the total count. If it is assumed that the breeding season can last for one month, surveys within two weeks will surely underestimate the production.

There is no regular hunting in the area and the tagging experiments can not be used to estimate the pup production. However, any recovered seal gives information on migration, and their teeth can be used to verify age determinations from the growth annuli in the cementum of the canine teeth.

Grey Seal

According to local fishermen about one hundred Grey Seals were observed between Håsteinen and Ytterøyane during the winter of 1985—86 and one white pup was observed at Alden in autumn 1985. Together with our own observations this suggested that a breeding colony of grey seals might be found in this area. Breeding was assumed to occur either in October as at Froan, the nearest breeding colony to the north, or in December as in Rogaland to the south (Wiig 1986, 1987). However, no pups were recorded during the aerial surveys in October and December 1986.

Grey Seals are usually not found at the breeding site throughout the year. It may therefore be assumed that the Grey Seals found in Sogn og Fjordane in the winter, spring and summer are migratory animals from other colonies. They can either come from Great Britain as in Rogaland (Wiig 1987) or from the breeding colonies at the coast of Trøndelag. Grey Seals tagged in Great Britain as well as at Froan in Trøndelag have been recovered in Sogn og Fjordane (Bjorge & McConnell 1986, Wiig & Øien 1987).

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