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Key-site monitoring in Sklinna in 2008

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Sklinna (65°13'N 10°58'E), a small archipelago off Vikna in Nord-Trøndelag, was established as a SEAPOP key-site in 2007. The main island Heimøya has been an important site for seabird monitoring since the early 1980s and the populations of many of the monitored species have increased (Lorentsen & Christensen-Dalsgaard 2009, Table 1). This is especially true for the common guillemot and the razorbill that initiated breeding on the island in the early 1980s. The breeding population of common guillemot in 2008 was nearly 650 pairs. This corresponds to an annual growth rate of 21% since the early 1980s, which suggests there has been extensive immigration. This was, in part, confirmed by the observation of a British-ringed bird in the colony in 2008; ringed as a chick at Isle of Canna on the west coast of Scotland in 2001. The breeding population of razorbills is much lower, about 30 pairs. The breeding population has increased with an annual growth rate of 6% since the early 1980s. The breeding population of great cormorants within the archipelago (Figure 1) has increased by 2.3% annually since the early 1980s, as has also that of the shag, at an annual rate of 7% since 1984. The shags have greatly profited from the establishment of a new breakwater in 1990, in which they breed, but the numbers of birds breeding on the main islands have also increased considerably. Two of the populations of monitored seabird species in Sklinna have decreased; the kittiwake and the puffin with annual rates of –7.3% (since 1980) and –1.7% (since 1981), respectively. Currently, Sklinna has only ca. 20 pairs of kittiwakes (on Heimøya), whereas the breeding population of puffins was estimated to be about 2100 pairs in 2008, following a 30% decrease since 2007.

Figure 1

In 2008, 1850 great cormorant nests, in 6 sub-colonies, were counted within the Sklinna archipelago. This picture is from Måøya, and two other colonies can be seen between this colony and the lighthouse on the main island Heimøya. (© S-H. Lorentsen)

Table 1 *Key population parameters (SE, n) of seabirds on Sklinna in 2008. Population change is the numeric change in size of the breeding population registered between 2007 and 2008 on the basis of plot counts (p) or total censuses (t). For each species, the listed survival estimate was derived from the model(s) that best fitted the data set (i.e. those with ΔQAICc < 2 when adjusting for median c-hat).*

Species	**Population change %**	**Annual adult survival**		**Reproductive performance**	
		Period (yrs)	Estimate %	Sampling unit	Estimate
Fulmar [1]	+ 200% [t]				
Cormorant	+ 23.2% [t]			Clutch size [2]	3.5 (0.08, 151)
Shag	+ 19.5% [p]	2004-08 (4)	83.5 (0.02, 174)	Clutch size [3]	2.5 (0.04, 503)
				Hatching success, nests	0.89 (*n*=54)
				Clutch size hatching	1.9 (0.14, 52)
				Chicks ≥ 10d/nest	1.7 (*n*=42)
				Chicks ≥ 20d/nest	1.4 (*n*=38)
				Chicks ≥ 30d/nest	1.3 (*n*=30)
Eider				Clutch size	4.3 (0.56, 8)
Herring gull	– 7.8% [t]	No estimate yet possible [4]		Clutch size [5]	1.9 (0.12, 90)
				Clutch size [6]	2.4 (0.09, 71)
Great black-b. gull				Clutch size [7]	1.9 (0.20, 20)
Kittiwake	+ 15.7% [t]				
Common guillemot	+ 10.6% [p]	No estimate yet possible [4]			
Razorbill	– 32.3% [p]				
Puffin	– 29.6% [p]	No estimate yet possible [8]		Chicks ≥ 10d/nest	0.0 (*n*=50)
				Chicks ≥ 20d/nest	0.0 (*n*=50)
Black guillemot		No estimate yet possible [4]			

1) *Only three pairs, two more than in 2007;* ***2)*** *Count date 3 June;* ***3)*** *Count date 3-4 June;* ***4)*** *Colour ringing for monitoring of survival rates was initiated in 2008;* ***5)*** *Including empty nests, count date 4 June;* ***6)*** *Not including empty nests, count date 4 June;* ***7****) Count date 5 June;* ***8)*** *Colour ringing for monitoring of survival rates was initiated in 2007.*

Monitoring of the adult survival rate for shag was initiated in 2004 when 150 individuals were ringed with coded rings. This was continued in 2005, 2007 and 2008 with an additional 24, 50 and 35 individuals being ringed, respectively. There was no ringing in 2006. The searches for ringed birds in 2005 and 2006 were inadequate, but with the improved effort in 2007 and 2008 we are now able to obtain survival estimates similar to those at Røst and Hornøya (around 83-85%) where shag survival is also being monitored. For the whole period 2004-2008, the survival of shags at Sklinna was estimated to be 83.5% (Table 1). Monitoring of puffin adult survival was initiated in 2007 when 101 individuals were marked with coded rings. In 2008 not a single puffin was observed ashore after we arrived the colony in early June, thus no additional ringing nor searches for colour-ringed individuals were possible.

Due to the total absence of puffins in the colony, no food loads were collected in 2008. A number of pellets from shags were collected, but these are not yet analysed. In addition we sampled food loads from herring gulls (not yet analysed), common guillemots, and black guillemots (see below).

Results from the national monitoring programme for seabirds (Lorentsen & Christensen-Dalsgaard 2009) show that the breeding population of puffins in Sklinna was halved between 1981 and 2008. To estimate their reproductive performance, 50 puffin nests on Heimøya were monitored throughout the field season. As stated above no adult puffins were observed ashore during our stay, and not a single chick hatched in Sklinna in 2008. Observations from along the Norwegian coast, from Runde in the south to at least Røst in the north, suggest that this was the situation for most puffin colonies in the southeastern part of the Norwegian Sea. Numerous observations of puffins in the fjords along the inner coast suggest they travelled far to obtain food and that the food supply was critically low.

About 3000 pairs of shags bred in Sklinna in 2008. To estimate their reproductive success, 54 nests were monitored throughout the field season. Chicks hatched in 48 of these nests (89%). The mean hatching date was 22 June, the same as in 2007, but as is normal for shags, hatching was spread over an extended time period (from 5 June to 13 July). At the end of the field period (16 July), the number of chicks of age at least 10, 20 and 30 days per nest averaged 1.71, 1.37 and 1.27, respectively (Table 1), more than twice the values recorded in 2007 for the first 20 days. Assuming that all chicks in the control nests survived after we left, overall productivity (including nests that failed at various stages from the incubation period and onwards) averaged 1.2 large chicks (≥ 30 days) per nest (*n*=52).

In 2008, monitoring of key population parameters such as adult survival and diet was initiated for herring gull, common guillemot and black guillemot with the ringing of 10, 135 and 46 individuals with coded rings, respectively. A number of food loads were collected from herring gull chicks but these are not yet analyzed. In addition, food samples from black guillemots was obtained from birds caught for colour ringing, and by visual inspection of food items brought to the nests of common and black guillemots. Gadoids dominated the diet of common guillemots throughout the whole chick rearing period. Nearly 80% of all food items were gadoids, followed by about 20% sandeels (Figure 2). Also black guillemots fed their chicks with gadoids (40%) but sculpins (Cottidae) were more common and constituted about 50% of the diet.

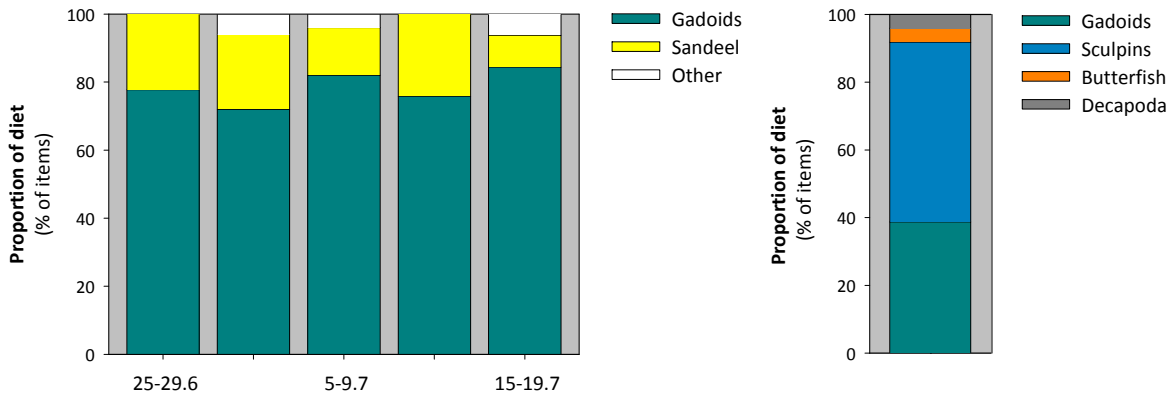

Figure 2

The diet composition (% of food items) of common guillemot (left panel, 5-day periods) and black guillemot (right panel) at Heimøya, Sklinna in 2008.

Figure 3
About 30 pairs of razorbills breed in Sklinna. One of the pairs breeds at the very start of the breakwater near the main shag colony. This pair is so used to our frequent passage that it almost never flees when we pass. (© S.-H. Lorentsen)

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