



Key-site monitoring on Runde in 2008

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Runde (62°24'N 5°36'E), in Herøy municipality, Møre and Romsdal, just north of Stad and the border between the Norwegian and North Sea (at 62°N), was established as a SEAPOP key-site in 2007. Its steep cliffs make field work a great challenge, but the hiring of local field workers that have decades of experience from this site, will hopefully make it easier to overcome this problem. However, the very poor breeding season on Runde in 2008, with total failure for many species (Table 1), exacerbated the problem and made the data collection very difficult.

Population trends

Runde has been an important site for seabird monitoring since the early 1980s, but seabird studies started here long before that. The island has long been known for its huge seabird populations, and has attracted both researchers and tourists. Since the early 1970s, both large population increases and decreases have been observed among the various species (Lorentsen & Christensen-Dalsgaard 2009). This is especially true for the gannet that started to breed with four pairs at Runde in 1946, since when the population has increased to more than 2200 pairs in 2008. The other species that has increased is the puffin, but only by 8% since 1980. The populations of shags, kittiwakes and common guillemots have dropped by 51%, 87% and 99% respectively since the early 1980s. There have, however, been very poor breeding conditions for several species over the past 5-6 years, such that an increased tendency for non-breeding is likely to be part of the explanation. It is therefore much

Table 1 Key population parameters (SE, n) of seabirds on Runde 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).

Species	Population change	Annual adult survival		Reproductive performance	
		Period (yrs)	Estimate %	Sampling unit	Estimate
Common Eider	+ 33.3% ^t				
Gannet	+ 0.2% ^t				
Shag	+ 8.0% ^p	No estimate yet possible ¹		Clutch size ²	1.58 (0.11, 162)
				Clutch size ³	2.64 (0.06, 97)
				Large chicks/nest ⁴	1.03 (n=63)
				Large chicks/nest ⁵	0.38 (n=162)
Great skua	No data ⁶			Large chick/nest	0.85 (n=20)
Kittiwake	+ 13.0% ^p			Large chicks/nest ⁷	0.00 (n=713)
Common guillemot	- 66.7% ^p			Breeding success ⁸	0.00 ⁸
Puffin	- 16.2% ^p	No estimate yet possible ⁹		Fledglings/egg	0.00 (n=80)

1) Colour-ringing for monitoring of survival rates was initiated in 2008; **2)** On 21 May, including empty nests ; **3)** On 21 May, excluding empty nests; **4)** Including only nests where a chick hatched; **5)** Total for all study nests; **6)** Counted in 5 years between 1998 and 2005, but no counts were made in 2007-08; **7)** On 19 July. Many nests in the monitoring plots were still incomplete and only a single nest with one chick were reported in the colony in 2008; **8)** No eggs or chicks were seen on open ledges; **9)** Colour-ringing for monitoring of survival rates was initiated in 2007.

too early to conclude that the steepest negative trends translate into increased mortality of adult birds. Population changes from 2007 to 2008 were positive for the common eider, shag and kittiwake. For the common guillemot and puffin, however, large decreases were again observed (Table 1).

Survival rates

Monitoring of puffin adult survival was initiated in 2007, when 158 individuals were ringed with individually coded colour rings. However, probably due to the poor breeding conditions in 2008, adults were practically absent from the study plots, a phenomenon that was also observed on Sklinna and Røst (Anker-Nilssen 2009, Lorentsen & Eriksen 2009). Only 51 (32%) of the individuals ringed in 2007 were re-sighted in 2008, and no new birds could be caught for colour-ringing. Similar colour-ringing of adult shags for later monitoring of survival rates was initiated in 2008, but also proved difficult because the birds were very wary and only 28 birds (18 males and 10 females) were ringed. Unfortunately, the repeated breeding collapse of kittiwakes and guillemots made it once again impossible to start establishing similar time series for these species.

Breeding success

Since Runde holds the largest colony of great skua in mainland Norway, it is likely that this species will be included as a key species with annual monitoring of at least adult survival rate and breeding success. An estimated 60 pairs held territories in 2008, and within the most concentrated part of the colony, which holds approximately 20 pairs, at least 10 pairs were confirmed to produce successfully. Their mean brood size was 1.7 chicks, and the overall production of at least 0.85 fledglings per pair (Table 1) is still considered to be a rather good breeding success for this species.

The breeding success of shags was poor in 2008. In a study plot with 162 nests, chicks hatched in only 64 (39.5%) of the nests and chicks reached an assumed fledgling size in 47 nests (29.0%). The total production in the study plot was estimated at 0.38 chicks/nest (1.03 when including only the nests where chicks hatched, and excluding one nest with very late hatching). A number of pellets from shags were collected for dietary analysis, but have not yet been analysed.

For the second year in a row, the kittiwakes at Runde experienced a complete breeding failure. On 7-12 June, 713 apparently occupied nests in 10 different study plots were selected. No chicks were seen, and the number of occupied nests diminished very rapidly, and about two weeks later only 28 (3.9%) of the nests were still attended. By 19 July, all nests were deserted. No kittiwake chicks were observed by the field crew anywhere on the island in 2008, while other observers saw only one chick on a single nest.

A complete breeding collapse was also recorded for the common guillemot. Not a single egg was seen on any of the open ledges within or outside the monitoring plots, and only one bird was registered to be apparently sitting on an egg (on 5 and 18 June). Altogether five broken eggshells were found at different sites in the cliffs between 5 and 7 June, and no successful breeding was observed anywhere in the colony. Nevertheless, large numbers of common guillemots gathered at

sea in front of the bird cliffs in April, with a maximum of about 10,000 individuals on 12 and 14 April. These estimates were made by counting individuals in sections of the area, either directly in the field (on 12 April) or from photographs (with 3238 visible guillemots) that covered about a third of the birds present (on 14 April). These numbers are certainly significant when compared to the latest population guesstimate of about 5,000 breeding pairs in the early 2000s (A.O. Folkestad, cited in Barrett et al. 2006), when numbers on the ledges were more than 50 times higher than in 2008. Thus, even though we cannot exclude the possibility that many of these birds were prospecting immatures or birds from other colonies, this strongly indicates that the established methodology of monitoring the common guillemot based on number of individuals on the ledges during the incubation period, does not give reliable estimates of inter-annual rates of population change in periods of breeding failure.

Also the puffins on Runde experienced another total breeding failure in 2008. During the incubation period, 80 nests containing an egg (in some cases only the presumably incubating adult was registered) were selected for monitoring breeding success. A chick hatched in only 13 (16.3%) of these nests. Using growth curves for the head+bill length of known-aged chicks measured in Røst in bad years (Anker-Nilssen & Aarvak 2004), their mean hatching date was estimated to be 14 June. Only 4 (30.8%) of the chicks survived until an estimated 5 days of age, and none until the age of 10 days, indicating food supply was extremely poor. The low hatching success suggests that most birds failed early in the incubation period.

Due to the total breeding failure, no food loads were collected from the puffins in 2008. On 14 June, four birds were seen carrying food loads, two of which consisted of transparent fish larvae, the other two of larger, silvery fish. As late as on 13 July, two of about 300 birds circling the colony were carrying fish, whereas only two puffins (none with fish) were seen in the area on 25th July.

In the last weeks of June, large flocks of puffins and other seabirds were recorded inshore in nearby fjord areas of Sunnmøre and Romsdal, which were obviously serving as the main feeding grounds for the birds at that time. However, the poor breeding performance of the puffins suggests that the availability of prey was either limited or too late. Similar feeding aggregations sometimes also occur in these areas in successful seasons, and the importance of local fjords as a feeding area for (otherwise) pelagic seabirds on Runde deserves special attention in future.

References

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Cover photo:

In contrast to kittiwakes, common guillemots and puffins, some of the shags on Runde produced a few young in 2008, but the overall breeding success in the colony was still poor (© Tomas Aarvak).

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