

SABINE'S GULLS IN THE EASTERN CANADIAN ARCTIC

Since its discovery to science in 1818, the Sabine's Gull (*Xema sabini*) has been rarely studied and little more than anecdotal reports exist regarding the general ecology of this species. As an Arctic breeder and a trans-equatorial migrant, its breeding areas are rarely visited and its wintering areas have been documented only in relatively recent years. It is considered unusual within the *Laridae* and is recognised as phylogenetically distinct, as well as atypical in several aspects of behaviour and breeding biology. It is precisely these characteristics that make the Sabine's Gull an interesting subject for ecological and behavioural study.

An investigation of the reproductive ecology of Sabine's Gulls has been ongoing for three breeding seasons (1998-2000), carried out in the East Bay Migratory Bird Sanctuary, Southampton Island, Nunavut, in the eastern Canadian Arctic (64°01'N, 81°47'W). Despite its location within the Low Arctic region, East Bay is High Arctic in character, influenced in its ecological and physical characteristics by the deep, cold waters of the Foxe Channel. Land-fast sea ice remains in the bay well into July and daily minimum temperatures are close to freezing throughout the summer. The research camp lies on a raised gravel ridge, perpendicular to and approximately 2 km south of the southern shore of the bay. The study area, immediately north of the camp, is a block of low-lying, boggy tundra, with a complex of brackish and freshwater ponds, typical of the area.

In 1998, while on contract with the Canadian Wildlife Service, I found that adult Sabine's Gulls can be caught at the nest using a simple wire mesh 'drop-box' trap. Chicks are also relatively easily caught at the nest, although this must be carefully timed because there is only a short window of opportunity (~48 hrs) before the entire family leaves the nest area. Throughout this study, adults have been ringed with individual colour combinations, while chicks have been ringed with a single colour (indicating year of hatching).



**Sabine's Gull foraging in a meltwater pool
(Photo by Iain Stenhouse)**

All Sabine's Gulls observed within the study area, and further afield in East Bay, are checked for rings. It is rare, however, to even glimpse rings of airborne birds, and confirmation usually requires birds to land.

Since 1998, a total of 37 adults and 85 chicks have been ringed at East Bay. Of the adults banded in 1998 and in 1999, approximately 81% returned in the following year. In the second year, however, only 55% of adults banded in 1998 returned to the study area. Sabine's Gulls are assumed to first breed at two years of age, as they acquire mature plumage in their second spring moult. Two birds (6%) ringed as chicks in 1998 returned to the study area in 2000, although neither paired-up successfully.

In terms of phenology, 1998 was an early year, with the onset of snow-melt and the initiation of breeding 10-14 days earlier than other years. This suggests that the general timing of breeding in Sabine's Gulls is highly dependent on environmental conditions, particularly (but not surprisingly) the extent of snow cover. In 1998, mean clutch size was higher, perhaps due to the shortened period between their arrival and the exposure of tundra.

Sabine's Gulls showed a similar density of nests within the study area and a similar total number of eggs laid in all three years of this study, but

they differ, however, in overall reproductive output.



The author in his study area in June, on the look-out for early arrivals.

Due to increased egg-loss to predators in 1999, the number of chicks hatched per clutch was approximately one third of that found in 1998 or 2000. The extraordinary level of predation in 1999 was the direct result of increased Arctic fox activity in the study area, adding to a growing body of evidence that links the reproductive success of Arctic-breeding, ground-nesting birds to the microtine rodent cycle. Sabine's Gulls exhibit intense anti-predator behaviour, such as calling, chasing, mobbing and distraction displays. Their distraction display is particularly notable, more characteristic of a shorebird than a gull, suggesting that they have evolved in an environment where predation pressures are intense.

In 2000, I initiated investigation of factors influencing reproductive success of pairs of Sabine's Gulls nesting sympatrically. In particular, I focused on the importance of behavioural synchrony within pairs, and nest attendance. In 2001, I intend to expand this work, and will also examine anti-predator behaviour experimentally. My aim is to examine why some pairs are highly successful, even in years of high predation, while others do poorly.

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Iain Stenhouse
iansten@play.psych.mun.ca