

### REPLY BY THE AUTHORS

John Coulson criticizes us for one of our assumptions in our population model, of Black-legged Kittiwakes on Fair Isle, namely that this is a closed unit. We share his concern about this and were careful to state this assumption explicitly in the methods. We also pointed out that although there is evidence of emigration/immigration in this species, there are currently no measures for this colony that could be used to parameterise a more complex, and hopefully, more realistic model.

A recent study by Suryan & Irons (2001, *Auk* 118:636-649) on Black-legged Kittiwakes in Prince William Sound, Alaska found that, although there was evidence of non-natal recruitment, changes in the numbers of birds at a particular colony were significantly influenced by reproductive success at that colony 5 years previously, indicating that natal recruitment (the mean age of first breeding was 5 years) was an important component of colony dynamics. The demography of the Kittiwake in the Pacific and Atlantic may differ (Coulson 2002, *Journal of Avian Biology* 33: 111-112) so we need to be cautious about extrapolating between the two areas but this finding gives some empirical support for our approach.

The main aim of our paper was to present the first estimate of the survival of adult Black-legged Kittiwakes in northern Britain. However, we considered it of interest to see how well a simple model explained previous changes in numbers, provide some tentative population projections and highlight the need for detailed population studies to collect more demographic data. Coulson & Neve de Mevergnies (1992, *Ardea* 80: 187-197) estimated that 79% of Kittiwakes recruited to a colony within 100 km of where they had been hatched. During the last 15 years the numbers of Kittiwakes breeding within this radius of Fair Isle have declined by almost half (Heubeck 2000; *Atlantic Seabirds* 2: 227-244; Thompson & Walsh 2000, *Atlantic Seabirds* 2: 103-132). We are therefore reassured that our results from Fair Isle will be applicable to a wider area.

The Fair Isle Kittiwake population has continued to decline. Monitoring counts in 2001 and 2002 were 695 and 421 nests. Both these figures are within the range of the projected values.

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