Estimating pre-fledging mortality from ringing data: a proposal

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Despite several detailed, long-term studies of breeding waders, there are large gaps in our knowledge of their population dynamics. The greatest ignorance concerns the period from hatching until the first winter, which is probably the period of greatest mortality. It is with this in mind that I propose a method, for discussion, that might lead to a better understanding of population dynamics in waders.

The data exist for a crude ageing of wader pulli into several age groups. If *all* pulli ringed were assigned to an age group, their post fledging recovery rates would reflect the timing of the mortality in that a higher rate of recovery would be expected from those individuals ringed near fledging.

Habitat differences could be investigated by recording where pulli were ringed. Recovery rates of pulli, ringed when very small, are sometimes affected by the ring slipping from their leg. All individuals should be checked for this and even if any are found to be loose, the ring should be left in place but the fact noted.

In addition to investigating pre-fledging mortality this method will allow the estimation of mortality up to the first winter, by comparison with the recovery rates of individuals ringed as first year in, say, October–November.

This method requires a space on the ringing schedules for recording the information. I suggest that the "brood details" of the BTO schedules could be replaced, for waders, by x/y, where x = age group, and y = habitat code.

The co-operation of all ringers would be required and it would be some time before this method could yield results, but this proposal is in line with the recent policy of the Nature Conservancy Council to increase the effort in studying waders. Comments on this proposal would be welcome.

Estimating the prefledging mortality of waders: a comment on Yates' proposal

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Yates (1981) has drawn attention to the fact that our knowledge of the mortality of wader pulli is sparse, or non-existent, and proposes that the age and habitat for all wader pulli ringed should be recorded on BTO schedules for later analysis. There should be little difficulty in recording the habitat in which pulli are ringed but such data must be interpreted with caution. It will have to be assumed that the 'ringing habitat' is the same as that used by the young during the prefledging period. From my experience, this is not necessarily so, especially when pulli are ringed soon after hatching. For example, Lapwings *Vanellus vanellus* in one Peeblesshire colony nested largely on blanket bog, but the young tended to move off the nesting habitat onto adjacent pasture soon (1–3 days) after hatching [Redfern 1982].

Recording the age of a brood or pullus presents a more immediate problem and it might be better to record a measure of the physiological age (e.g. state of development) of the birds, rather than attempting to estimate chronological age in the field. It can then be left to the analyst to interpret mortality in relation to physiological age. Because growth rates may vary geographically and annually (e.g. Jackson & Jackson 1980) it might be more valid to express prefledging