



Dotterel

Charadrius morinellus

Status

Amber listed: BL
Non-SPEC
Schedule 1 of WCA 1981
Annex I of EC Wild Birds Directive

National monitoring

National surveys: 1987–88 and 1998 (SNH).
Rare Breeding Birds Panel.

Population and distribution

In Britain, the dotterel breeds in the montane zone, mainly on plateaux above 800 m. Its stronghold in the UK is the central Scottish Highlands, although a handful of pairs breeds in the north of England and the southern and northern Highlands. Since the 68–72 *Atlas*, the number of dotterel estimated to be breeding in Britain has increased, partly owing to a more intensive survey effort and partly to a genuine increase (Galbraith et al 1993b). The most recent population estimate is 840–950 pairs (*Population Estimates*).

Ecology

The dotterel breeds in montane areas (above the former treeline) characterised by heaths of prostrate dwarf-shrubs, small herbs, mosses and lichens. Within this broad habitat type, it prefers areas of 25 ha or more, at or above the altitude where heather *Calluna vulgaris* becomes stunted or prostrate due to exposure (about 800 m above sea-level); heaths of *Racomitrium lanuginosum*, reindeer moss *Cladonia* and *Cetraria* lichens; open fell-fields especially with *Juncus trifidus*; and flat or gently sloping ground. It avoids steeply sloping ground (Galbraith et al 1993a). The dotterel is a solitary or loosely social bird. Birds display and scrape nests in May, but will not necessarily nest at those sites (Galbraith et al 1993b). The breeding season is not synchronised, and nests with eggs may be found from mid-May to the second half of July. Birds are mobile between sites in a single season; males may feed close to the nest or hundreds of metres away and chicks may also move long distances, up to several kilometres (*BWP*). The female lays a single clutch of 2–4 eggs from mid-May to late July, and incubation is almost entirely by the male. Most of the young fledge by early or mid-August (*Red Data Book*).

Breeding season survey – population

Dotterels are difficult birds to survey, partly because of the inaccessibility of their mountain breeding habitat and partly because of their unusual mating system, which involves male parental care with occasional polyandry (Kálás and Byrkjedal 1984).

The survey method given here was devised by the SNH Montane Ecology Project (Whitfield 1994). This method involves a single visit. Based on SNH's studies, the number of single males detected on a single visit represents about 42% of dotterel breeding attempts, thus allowing counts from a single visit to be corrected to give an estimate of the

actual number of breeding attempts. The correction factor accounts for any failed breeding attempts that may have been missed; extra visits add little further information. Obtaining a more accurate count of the breeding population, especially at higher altitudes, would require intensive studies (up to three days a week throughout the season to cover an area of about 5 km²).

Information required

- number of single males (regardless of whether breeding was proven)
- map showing the site boundary and all dotterel registrations.

Number and timing of visits

One visit, between 23 June and 14 July (20 June to 18 July if the timing of site visits is adjusted according to likely differences in timing of breeding).

Time of day

From 1000 BST until dusk.

Weather constraints

Avoid poor weather such as persistent precipitation, low cloud and wind speeds greater than Beaufort force 5. Expect that about 50% of days will be lost to poor weather.

Sites/areas to visit

High (>800 m) level or gently sloping montane plateaux heaths of prostrate dwarf shrubs, small herbs, mosses and lichens.

Equipment

- 1:25 000 OS maps of the area
- prepared recording forms
- Schedule 1 licence.

Safety reminders

A reliable person should know where you are and when you are due back. Carry a compass and know how to use it. If possible, work in teams. Take spare warm clothing, a plastic survival bag, a whistle, food supplies and a first-aid kit.

Disturbance

Observers may have to get quite close to birds to find and sex them, but do not stay too close for too long.

Methods

Mark on the map the area of possible breeding habitat according to the above criteria. If a site is particularly large, it is more efficient for two or more surveyors to walk abreast, particularly if they are experienced at surveying dotterel. Walk 50–100 m apart. This 'team' approach has the benefit of being safer in difficult terrain.

It may take time to reach the site and to determine whether the weather will be suitable. Two surveyors can cover about 3 km² a day, including walk-in and walk-off time.

Before carrying out the survey, map out a prearranged route to save time and increase accuracy. Although there are no rules about how much time should be spent surveying, an individual surveyor should spend 2–3.5 hours covering an area of 1 km² (about 2–3 minutes for a 100 × 100 m quadrat). Take as long as is necessary to cover the site adequately (as described below).

Walk at a comfortable pace, with periodic scanning using binoculars about every 50–100 m. About half the time should be spent walking and the other half scanning. All ground within 50–100 m of the surveyor should be covered by each scan, including areas behind you and those already covered. Follow up any signs of dotterels, such as a bird calling out of sight or a bird on the skyline behind you. This will undoubtedly mean deviating from the planned route. Always return to the route, which should be easy to pick up again.

Sexing any birds seen is very important. Since it is the male that incubates and cares for the young, this method is essentially a survey of males, although all dotterel registrations should be recorded. Record the sex and behaviour of any adult seen and the presence of nests or young. Sexing the birds can take time but the confirmation of a nest/brood is not necessary as almost all single males present between late May and mid-July will have a nest or brood (Whitfield 1994, SNH unpubl).

The male and female are very similar with only subtle plumage characteristics separating them. As a generality, the female tends to be brighter, more clearly marked than the male. An adult breeding female has a purer black and less streaked crown; the supercilium is wider and purer white; the forehead is less streaked with white; cheeks and throat usually lack narrow dull black streaks; the chest is purer grey and only faintly barred and dusky, not slightly brownish as in the male (*BWP*). The 'back' feathers of the females have less distinct buff edging and so they appear less 'scaly' than the males. Observers unfamiliar with sexing dotterels may find it useful to visit a breeding site in May, when pairs are present, to familiarise themselves with these plumage characteristics. Once the bulk of males is incubating, most females leave Britain (SNH unpubl).

With experience, the sexes can also be separated on vocalisations and behaviour as follows:

<i>Song</i>	A series of peeps, delivered at about 2 per second. Given by male and female, but more often by the female.
<i>Twitter</i>	A song can develop into a twitter when the notes are much faster. Again both male and female, but more often the female.
<i>Distraction-displays</i>	The male will try to lure you away from the nest/chicks and often give a soft squeaking call. This should be noted as a distraction-display. Only males perform this display.
<i>Head-bobbing</i>	A male will start head-bobbing when he has chicks and occasionally does so when he has a nest. The rate of head-bobbing increases with the observer's proximity to the bird and with the chicks' age. A male with a brood also usually alarm-calls (a short 'wheet' call) but the call is soft and may not be heard because of the wind. Again, only males give this display.

Surveyors working together should attract each others' attention (without causing alarm!) whenever they spot or hear a dotterel, as this will help avoid double registrations of the same bird. It may still help for all those involved in the survey to compare notes immediately afterwards to check that different registrations are of different birds. Record all registrations on a map using standard BTO codes (Appendix 1) and cross reference these to a notebook which should also include details of observers' names, times and weather conditions. Compile a single summary map after each visit to a site.

The number of single males detected on a single visit between the prescribed dates will represent approximately 42% of all dotterel breeding attempts. Multiply the number of males detected by 2.38 (1/0.42) to determine the number of dotterel breeding attempts (Whitfield, SNH unpubl). Females, pairs and flocks of birds should be reported separately.

References

- Galbraith, H, Murray, S, Duncan, K, Smith, R, Whitfield, D P and Thompson, D B A (1993a) Diet and habitat use of the dotterel (*Charadrius morinellus*) in Scotland. *Ibis* 135: 148–155.
- Galbraith, H, Murray, S, Rae, S, Whitfield, D P and Thompson, D B A (1993b) Numbers and distribution of dotterel *Charadrius morinellus* breeding in Great Britain. *Bird Study* 40: 161–169.
- Kålås, J-A and Byrkjedal, I (1984) Breeding chronology and mating system of the Eurasian dotterel *Charadrius morinellus*. *Auk* 101: 838–847.
- Whitfield, P (1994) *Instructions to Montane Ecology Project Surveyors*. Scottish Natural Heritage, unpubl.