

Project Ptarmigan 2006

Title

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Description and Summary of Results

It is becoming ever more important to understand Scotland's mountains and their wildlife, as they face several potential threats including weather patterns, disturbance, grazing, increases in predators such as crows and, of course, climate change. The (Rock) Ptarmigan *Lagopus muta* is thought to be sensitive to these changes, and can therefore act as an indicator of the condition of the mountain habitats, which are recognised as a high priority under the UK Biodiversity Action Plan.

The Ptarmigan is Britain's only truly resident montane bird, moulting three times a year to maintain year-round camouflage. They are found in the arctic-alpine zone, mostly on the higher hills, and occur widely across the Scottish Highlands and on Skye, Mull, Jura and Arran. A long-term study in the Cairngorms has shown that populations can cycle, with highs and lows at roughly 10-year intervals, but it is not known how Ptarmigan numbers vary across the majority of their range and, although Ptarmigan populations have not been monitored effectively across Scotland, there is evidence of some long-term decline. The species formerly bred in SW Scotland, becoming extinct there during the 19th Century, and populations on Harris, Rum and Hoy have similarly disappeared in the early 20th Century. After some trials in 2005, Project Ptarmigan was set up to operate from April to August 2006 to gather information on Ptarmigan and other upland birds. Wide-scale monitoring of birds in upland areas, particularly the remote mountains of Scotland and parts of Wales and Ireland, has always been limited by the low availability of volunteers to carry out survey work. This survey therefore was designed also as a trial to assess how many new volunteers such a scheme would attract and hopefully establish successful methods for training these surveyors. Long-term monitoring of the habitats is likely to be of wider importance for identifying the influence of changing management practices, for the general condition of specific montane areas and for facilitating broader decisions on policy and management. The survey was therefore targeted especially at hill-walkers, rather than the usual surveyors with the results being used to develop a strategy for long-term monitoring of Ptarmigan and other montane species.

Overall 140 volunteers covered 614 'transects' totaling 3212km. Just over 1000 Ptarmigan were counted with the highest numbers and encounter rates in the Cairngorms, and the least near the edges of the known range. Numbers found by hill-walkers were very similar to those by professional ornithologists and it seemed that both observers and Ptarmigan may avoid the more snowy areas in the spring which has implications for future surveys. Most observers also recorded a range of other species including Dotterel *Charadrius morinellus* and Snow Bunting *Plectrophenax nivalis*.

Methods of Data Capture

There were three options to collect information for the project: a) recording the number of Ptarmigan seen and the number of 'sites' with evidence of their presence along a recorded route or 'Ptarmigan Transect'; b) the same but adding an element of stop-and-searching (point counts); and c) additionally recording the numbers of all bird species seen along the recorded routes.

Information from anywhere in the range of Ptarmigan in Scotland was welcome, and participants could choose which hills they wished to survey. However information was particularly requested from: (a) the Trossachs (the southern Highlands), (b) Wester-Ross and Sutherland (the north-west Highlands) and (c) the 'greater Cairngorms' area (between the hills above the Angus Glens in the east to those around Loch Laggan in the west). Birds in these different areas could show contrasting responses to environmental change.

The aim of the 'Ptarmigan Transects' was to include at least 4km at altitudes greater than 750m above sea level, though this was not always possible. If any Ptarmigan were seen on the 'walk in' to higher ground, recording started at that lower level. Information was accepted from any time within the survey period and repeat transects or different transects on the same hill were also accepted.

The ideal transect was a series of straight(-ish) lines, chosen to sample representative areas of montane habitat and to minimise potential biases which could occur if the most commonly-used routes to summits were chosen. It was accepted that, when walking in the hills with steep slopes, rocks, snow patches and other such features, walking an ideal straight line was often impractical. Also they were often convoluted to achieve 4km on some hills or to avoid crags, and to achieve a practical, and enjoyable, circular route. Observers were asked to count all the Ptarmigan seen or heard (including young birds) and the number of 'Ptarmigan sites' along the transect. A 'Ptarmigan site' was a single or group of birds, one or many piles of droppings or any combination of these. Where birds, or droppings, were scattered a minimum gap of 20m along the route where no signs were recorded was taken to separate different sites. In the event that sites extended for more than 20m, each 20m section was considered separate.

Nil returns, ie reporting a route with no Ptarmigan or any other evidence of presence, were just as important as positive reports. Quite a lot were expected; and even if several Ptarmigan Transects were walked and no evidence of birds was found on any of them, observers were asked to ensure this information was recorded.

Observers also noted the presence of any Ptarmigan feathers on the transect, but feathers alone did not count as a 'Ptarmigan site'. Collection of these was optional and specific instructions were given if necessary. Observers also recorded the number of Red Grouse seen; and optionally the presence or absence of another six species.

The second method (b above) was the same except that every 1km the observer carried out a 10 minute point count.

The date of each survey walk, notes on the route, the proportion covered in snow (as a measure of how much was potentially obscuring any signs), and the number of other people seen (as a measure of disturbance) were recorded.

Purpose of Data Capture

The aim was to set a baseline for Ptarmigan abundance and distribution as an indicator of the environmental conditions, and the effects of management practices, on montane areas in Scotland; and to contribute to the development of a strategy for long-term monitoring of Ptarmigan and other montane species.

A further aim was to encourage and train new volunteers (particularly hill-walkers and others who go into the hills on a regular basis, such as estate staff) to carry out survey work in the Scottish uplands.

Geographic Coverage

The range of the Ptarmigan in UK, encompassing much of the Highlands and Skye, Mull, Jura and Arran.

Temporal Coverage

1 April to 31 August 2006. Some trials were run in spring 2005.

Other Interested parties

The survey was run in partnership with the Scottish Ornithologists' Club; and many of the various Scottish mountaineering clubs, whose members took an active part, also promoted the project. Funding from the Scottish Executive under the Biodiversity Action Grants Scheme (BAGS) allowed the full volunteer survey in 2006.

The pilot fieldwork was funded by the AEB Trust and the Scottish Mountaineering Trust.

Organiser(s)

Staff members of BTO Scotland, especially John Calladine.

Current Staff Contact

scotinfo@bto.org

Publications

The main report of the survey is:

Calladine, J. & Wernham, C. 2009. Extensive monitoring of rock ptarmigan *Lagopus mutus* in Scotland: a pilot to test the efficacy of using volunteer surveyors for monitoring arctic-alpine birds. *Avocetta* 33: 217-224.

Some results from the pilot survey and implications for monitoring of upland birds is:

Calladine, J. 2011. Seasonal variation in the apparent abundance of breeding birds in

arctic-alpine habitats in Scotland: implications for their survey and monitoring. *Bird Study* 58: 27-36.

A report on the survey to participants was also published as a 4-page 'Project Ptarmigan Newsletter' in autumn 2007. The survey was noted in *BTO Scotland News* (2007 edition) and in *BTO News* numbers 259 and 271.

Available from NBN?

No.

Computer data -- location

BTO Scotland.

Computer data -- outline contents

Text files -- different files associated with different sources -- with associated programmes (SAS) for merging, management and description.

Computer data -- description of contents

The files record:

surveyor code, date, number of sites, signs, snow, weather, counts for each species (n=43), grid references.

Information held in BTO Archives

BTO Scotland offices.

Notes on Access and Use

Other information needed

Notes on Survey Design

Specific Issues for Analysis