



Draft Report Structure

UNDERSTANDING PREDATION

A review bringing together natural science and local knowledge of recent wild bird population changes and their drivers in Scotland

The review will focus on the relative role of avian and mammalian predation, within the wider range of population drivers, on ground-nesting waders and gamebirds in upland and lowland systems, and the evidence for effectiveness of possible management measures to maintain healthy populations of both predators and wild bird prey. It will also summarise wider information on recent population changes of Scottish wild bird and predator populations, and drivers of those population changes, in an accessible form.

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EXECUTIVE SUMMARY

ACKNOWLEDGEMENTS

CONTENTS

1. Background to this study

This section will introduce the study and provide the context in which it was designed.

2. Knowledge and information - methods

- The scientific evidence base relating to all the sections outlined below will be compiled in the review led by BTO and Stirling University.
- The local knowledge will be compiled through the analysis of an online questionnaire and a series of stakeholder workshops, by Aberdeen University and CEH. The questionnaire is open to anyone with an interest in the subject. The workshops will involve stakeholders both from organisations that are part of the Moorland Forum and others that have been identified as interested parties.
- Findings from the questionnaire and workshops will be used to build an understanding of: (a) how stakeholders gain knowledge about predation of ground nesting wild birds in general, which forms of knowledge are preferred in this context and why; (b) whether current understanding from local knowledge differs from that from scientific evidence, how it differs and the possible reasons for these differences.
- The investigation of the commonalities and differences in conclusions from the natural science compared with the local knowledge will allow assessment of whether the differences are due to e.g. gaps in the scientific research undertaken to date or differences in knowledge preferences and belief systems. It will be used to assess future research priorities.
- **All evidence considered by the project will be objectively and critically reviewed to a high standard, using systematic and transparent collation and reviewing approaches. The criteria used to filter evidence for inclusion will be explained clearly and a comprehensive annotated bibliography will accompany the review.**

3. What role can predation play in populations of wild birds?

- The Park *et al.* review was limited in scope and dealt mostly with negative impacts of predators on wild birds.
- This review sets out to consider the wider variety of roles that predation can play in natural systems (positive, negative and neutral effects on prey populations).

4. Recent population trends of wild birds and their predators in Scotland

- The review will present population trends since the 1960s but with a focus on the last 25 years (from the two most recent Bird Atlas datasets).
- It will present new Scottish national trends and regional (NHZ and county) trends and place them in the context of UK/EU/global trends.
- It will provide links to other existing information e.g. Breeding Bird Survey trends; Scottish Raptor Monitoring Scheme trends; atlas maps etc

- It will present summary tables of trends information for predators (avian and mammalian) and wild bird prey (including all major predators of wild birds; all General Licence 1-4 species; all species forming part of the upland and farmland bird indicators).
- It will include appendices giving regional change statistics and map-based material (or links to supplementary web-based material).
- There are 6 focal wild bird prey species for which information will be presented in more detail and used to clearly explain the derivation of trend information and its interpretation. The same focal species will continue through the other sections of the review and will be used by way of case study to better explain the scientific evidence. Some major avian and mammalian predators of these focal species will be treated in a similar manner to exemplify and explain information clearly.
- Results from the questionnaire and workshops with stakeholders will explore perceptions of population trends during the last 25 years for the focal prey species and their major predators at a range of spatial scales (national down to 20km square – allowing direct comparison with scientific material). Similarities and differences will be presented for focal species and reasons for these differences where any exist will be investigated.

5. Drivers of population change of wild birds and their predators, including the role of predation

- Drivers of change of wild bird and predator populations (including predatory birds and mammals) will be identified in the science review, with particular emphasis on the focal species and their major predators.
- The scientific reviewing will critically assess both the strength of inference from the published literature and also the relative strength of effects wherever possible.
- The questionnaire and stakeholder workshops will explore stakeholder understanding of the impact of different drivers of population change, and the evidence underpinning these assessments.
- Differences in findings from the natural science and stakeholder components will be explored.

6. Conservation-management options (mitigating negative impacts of predation on the focal species)

- The review will assess existing evidence from the scientific literature for the success, or otherwise, of a broad range of possible conservation-management options in reaching desired management goals in the upland and lowlands, with a focus on the focal wild bird species and their major predators.
- The stakeholder questionnaires and workshops will explore understanding of what constitutes 'healthy' populations of both predators and wild bird prey, knowledge and experience of the range of conservation-management options, local understanding of their effectiveness and the knowledge base from which this understanding is derived.

7. Gaps in understanding

- The review will highlight major gaps in our understanding in all the topic areas above but particularly those knowledge gaps that are most critical to fill to allow decision-making about the effectiveness of possible conservation-management options.
- The natural science reviewing will identify gaps in relevant knowledge of population trends, drivers of population change and the likely implications of the range of potential

conservation-management interventions on focal species populations and their major predators.

- The stakeholder questionnaires and workshops will provide assessment of where understanding from scientific evidence and local knowledge currently differs and an exploration of the reasons for these differences. The comparison may identify gaps in scientific research or in current understanding of, or trust in, the existing evidence base.
- The three review seminars in autumn 2015 will be used to further assess knowledge gaps and priorities for future research (as well as providing the opportunity to discuss the overall findings of the review and its conclusions).