science summary

Environment Agency

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SCHO0608BOFL-E-P

Improving the Environment Agency's contribution to wetland bird populations

Science Summary SC070005

The British Trust for Ornithology (BTO) has worked with the Environment Agency to develop indicators for freshwater wetlands using survey data for British birds collected during the spring breeding period. This helps us determine trends in the general quality of the freshwater environment, integrating the multiple pressures acting upon it. These indicators may also help us and our partners better target our activities to contribute to an improved environment for wildlife.

As an extension to this work, the Freshwater Biological Association (FBA) has also worked with the Environment Agency to explore the potential for developing other freshwater wetland indicators using survey data from a wider selection of aquatic and wetland plants and animals.

The BTO, in conjunction with the Royal Society for the Protection of Birds (RSPB), already produces a range of bird-based indicators of environmental quality. This particular project explored the feasibility of developing indicators for a range of freshwater wetland types by applying established methods to bird survey data representative of a range of freshwater habitats of interest. As a result, indicators have been produced for: (1) fast-flowing waters; (2) slow-moving and standing waters; (3) reedbeds; (4) wet meadows (including wet grassland and marshes); and (5) a composite all-species 'freshwater birds' index. Lack of data prevented development of indicators for other freshwater wetland types. A wide range of statistical approaches was tried out before finalising upon the methods underpinning these indicators. To support this work, we have undertaken reviews and analyses to produce an evidence base associating wetland bird species with different freshwater wetland habitat types.

The indicators, derived from combined population trends for selected bird species calculated against a 1975 baseline, demonstrate a slight, but not statistically significant, rise in populations of aggregated freshwater wetland species. Birds of slow-moving and standing waters have increased steadily since the mid-1980s to 60% more than the 1975 baseline. Birds of reedbeds declined strongly between the mid 1970s and the early 1990s but then increased to more than the 1975 baseline. Following an initial dip in numbers, birds of fast-flowing waters have recovered and remained steady since the late 1980s. Meanwhile, birds of wet meadows have declined steadily since the early 1990s.

Although initially developed as a contextual indicator of the Environment Agency's effectiveness in influencing the wider wetland environment, several organisations have related interests in these freshwater habitats. We have worked closely with key organisations across the UK to develop these indicators in synergy with their needs. Organisations now using these new freshwater wetland indicators include:

- Defra: 'Quality of Life' supporting indicators;
- Defra: Public Sector Agreement supporting indicators; and
- England Biodiversity Group: Water and Wetland indicators

The methods may be applied at a range of scales from the UK, country level (England, Wales, Scotland, Northern Ireland or any combination) or individual regions. However, the adequacy of data holdings declines with reducing geographical scale, limiting indicator reliability.

The indicators can help the Environment Agency target policies, practices and influence for wetland management, including our work with partner organisations.

The wetland bird indicators are 'state' indicators; they reflect the quality of different freshwater waterways and wetland habitat types. They were not intended to reflect specific pressures, but rather the cumulative impacts of several pressures on the wetland environment at a landscape scale. Further research, including more detailed exploration of existing datasets, will be required to determine and/or diagnose the ways in which distinct

'pressures' on the environment influence bird populations and the indicators derived from them. In their current state of development, the trend-based indicators serve the needs identified above, but could be further elaborated for example to indicate statistically significant changes in bird population trends.

The study into the feasibility of developing more comprehensive indicators based on survey data for other groups of aquatic and wetland plants and animals, undertaken in collaboration with the Freshwater Biological Association, concludes that:

1. there is the potential for such development;
2. potential candidate taxonomic groups can be identified for inclusion; and
3. existing data are adequate for some taxonomic groups but could be improved for others.

This science work is published externally, using publication routes favoured by our collaborating organisations to maximise publicity and uptake.

This summary relates to information from Science Project SC070005, reported in detail in the following output(s):

BTO Research Report No. 502
Title: Association of British breeding birds with freshwater wetland habitats
ISBN: 978-1-906204-34-1 May, 2008

BTO Research Report No.498
Title: Development of wild bird indicators for freshwater wetlands and waterways: provisional indicators
ISBN: 978-1-906204-35-8 May, 2008

BTO Research Report No.507
Title: Development of wild bird indicators for freshwater wetlands and waterways: provisional indicators – technical document
ISBN: 978-1-906204-38-9 May, 2008

***Freshwater Reviews* journal submission**
Title: The feasibility of developing multi-taxa indicators for freshwater wetland systems

Internal Status: Released to all regions
External Status: Publicly available

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This project was partly funded by the Environment Agency's Science Department, which provides scientific knowledge, tools and techniques to enable us to protect and manage the environment as effectively as possible.

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