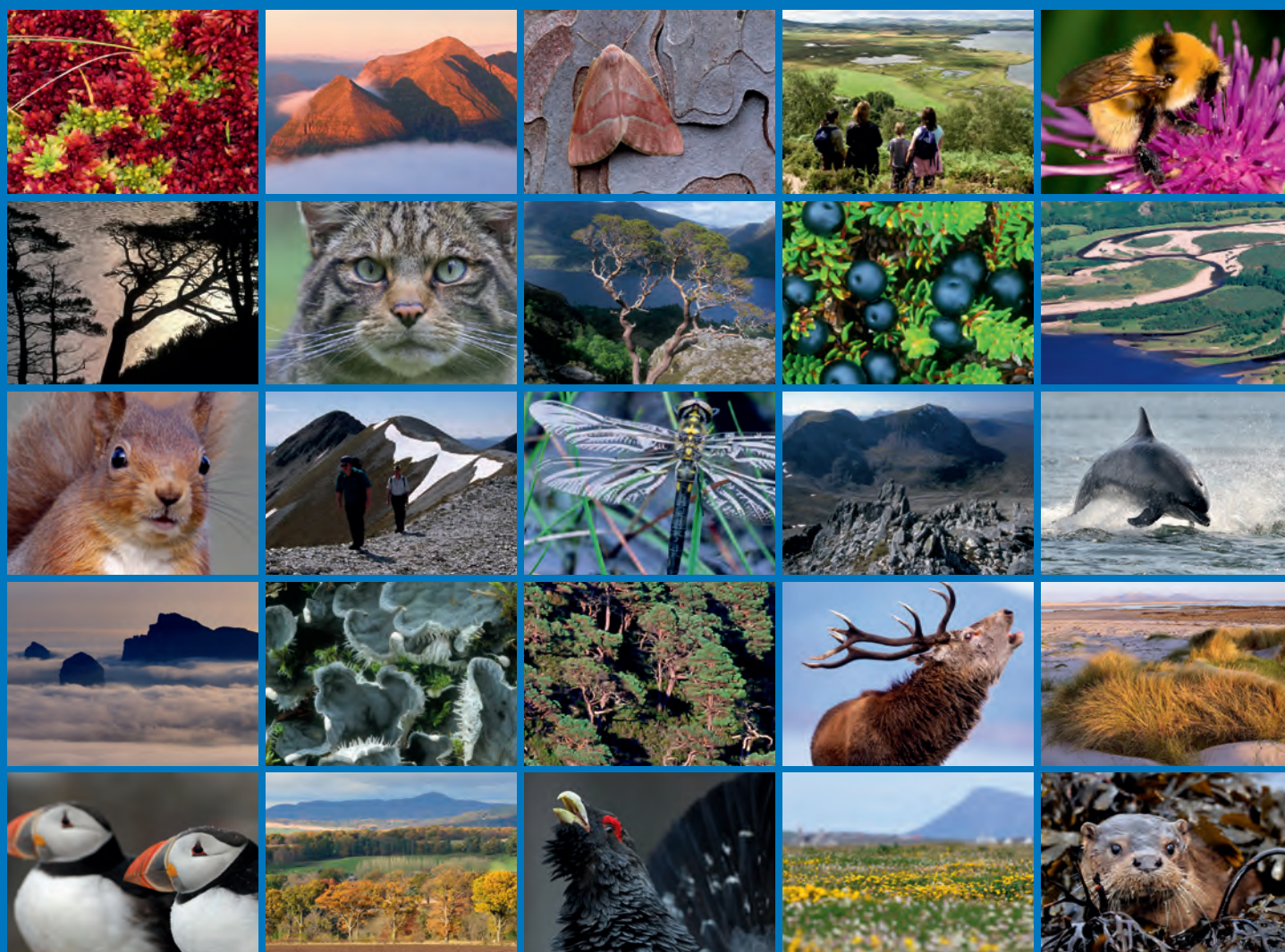


A national freshwater pearl mussel (*Margaritifera margaritifera*, L.) survey of Scotland

Summary report





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COMMISSIONED REPORT

Commissioned Report No. 901

**A national freshwater pearl mussel
(*Margaritifera margaritifera*, L.) survey of
Scotland**

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This report should be quoted as:

Watt, J, Cosgrove, P.J & Hastie, L.C. 2015. A national freshwater pearl mussel (*Margaritifera margaritifera*, L.) survey of Scotland. *Scottish Natural Heritage Commissioned Report No. 901*.

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COMMISSIONED REPORT

Summary

A national freshwater pearl mussel survey

Commissioned Report No. 901
Project No: 13815
Contractor: Waterside Ecology
Year of publication: 2015

Keywords

Freshwater pearl mussel; *Margaritifera margaritifera*; national survey.

Background

To date there has been one national survey of freshwater pearl mussel, *Margaritifera margaritifera*, in Scotland. This took place in 1997-1998 and produced the first overall picture of the species' status in Scotland. The results were instrumental in selecting future designated sites, including Special Areas of Conservation (SAC) for freshwater pearl mussel populations. The current national survey was commissioned by SNH during 2013 to establish the species' present status and establish any trends in abundance, distribution or threats. It is intended to contribute to the Scottish Biodiversity Surveillance Strategy and to allow Scotland and the UK to adequately report on the status of *M. margaritifera* to the European Union. A number of new sites have been discovered since the first national survey and these too were included in the current project.

The project had the following four objectives:

- To survey watercourses in Scotland with extant freshwater pearl mussel populations and report on their current status.
- To conduct surveys for SNH's Site Condition Monitoring programme by undertaking detailed recording of significant mussel beds in identified designated sites.
- Identify positive and negative factors that may be contributing to the present condition of populations in each watercourse.
- If possible, survey watercourses in Scotland where there is reasonable evidence of possible extant freshwater pearl mussel populations and report on their current status.

Main findings

- Pearl mussel populations were classified into three broad status classes, broadly matching the categorisation used in the first national survey: recent successful recruitment, not successfully recruiting and apparently extinct.
- Of 125 watercourses for which post-1998 pearl mussel data are available, 71 showed signs of recent successful recruitment and 43 were not successfully recruiting. Since the first national survey, freshwater pearl mussels have apparently become extinct in 11 watercourses.
- All of the extinctions occurred in watercourses where the mussel populations had previously been assessed as "functionally extinct" i.e. without evidence of recruitment. Extinctions occurred in all hydrological regions for which the total sample size exceeded one watercourse.

- Of the 105 watercourses for which both baseline and current data were available, the pearl mussel population status remained unchanged in 79. Evidence of substantial decline (either extinction or failure of recruitment) was evident in 20 watercourses. No strong regional variation in decline was identified.
- Apparent improvements occurred in only six watercourses. The improved classifications of three rivers resulted from finding single juvenile mussels and may be considered tenuous. Evidence of more regular and recent recruitment was identified in one particular watercourse.
- An analysis of threats was carried out based on survey findings, surveyors' wider knowledge of the rivers, published data and records of pearl fishing incidents.
- Pearl fishing was identified as having occurred since the first national survey (and subsequent ban) on a minimum of 35.2% of rivers. This included a high proportion of designated sites (SACs and/or Sites of Special Scientific Interest).
- Water quality (incl. pollution) and hydrological alterations (inc. river engineering, and abstractions) were identified as threats on 25.4% and 18.0% of watercourses respectively. These figures may be conservative.
- Declines or low numbers of host fish were apparent in 27.0% of watercourses. There was a strong regional trend, with lack of host fish identified as a threat on 43.1% of west Highland watercourses. The figure may be conservative.
- Climate change and associated habitat instability was identified as a direct concern in 21.3% of watercourses. In most regions the figure was close to 25%, but only 15.4% of West Highland rivers were identified as threatened. This may be a substantial underestimate as the natural instability of spate rivers makes change difficult to identify unless it is clear that loss of previously recorded habitat has occurred.

Overall, the data suggest a pattern of continuing decline of *M. margaritifera* in Scotland. Among the most pressing needs is a better understanding of the factors underlying recruitment failure.

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© Scottish Natural Heritage 2015
ISBN: 978-1-78391-374-9

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