



**Sixth Quinquennial Review
of Schedules 5 and 8
of the Wildlife and Countryside Act, 1981**

**Report and Recommendations from the
Joint Nature Conservation Committee**

10 March 2014

Contents

1	The statutory basis of Quinquennial Reviews	1
2	Previous Quinquennial Reviews	4
3	Statutory changes since the Fifth Quinquennial Review	4
4	Criteria used for the selection of species for Schedules 5 and 8 of the Wildlife and Countryside Act, 1981 during the 6 th QQR	6
5	Conduct of the Sixth Quinquennial Review	9
6	The Current Review	9
7	Recommendations regarding Schedule 5	10
8	Recommendations regarding Schedule 8	13
9	Taxonomic changes	17
10	European Protected Species	18
11	Statement of reasons for recommendations	19
12	Additional comments and recommendations	19
13	References	22
	APPENDIX 1 List of organisations consulted as part of the Fifth Quinquennial Review	23
	APPENDIX 2 Stakeholders' letters	27
	APPENDIX 3 Proformae for each taxon in Schedule 5	34
	APPENDIX 4 Proformae for each taxon listed in Schedule 8	71
	APPENDIX 5 List of species on Schedules 5 & 8 if all recommendations in the current report were to be accepted (note that European Protected Species (EPS) are not listed in Schedules 5 or 8 in Scotland).	109

Executive summary

1. This report by the Joint Nature Conservation Committee (the JNCC) contains advice to Defra, the Scottish Government and the Welsh Government following the Sixth Quinquennial Review of Schedules 5 and 8 of the Wildlife and Countryside Act, 1981 (WCA), which lists protected animals and plants respectively.
2. Following the recommendations made by JNCC in the Fifth Quinquennial Review (December 2008), Defra and the Welsh Government approved increased protection for the angel shark (*Squatina squatina*) and the twaite shad (*Alosa fallax*), approved the addition of the white skate (*Rostroraja alba*), the pool frog (*Pelophylax lessonae*) (for England only), the Talisker burnet (*Zygaena lonicerae jocelynae*) and the slender Scotch burnet moth (*Zygaena loti scotica*), the rock nail (*Calicium corynellum*) and the tree lungwort (*Lobaria pulmonaria*), and approved removal from the schedules of the Essex emerald moth (*Thetidia smaragdaria*), the lagoon snail (*Paludinella littorina*), churchyard lecanactis (*Lecanactis hemisphaerica*), the dune thread-moss (*Bryum mamillatum*), the long-leaved thread-moss (*Bryum neodamense*), and Young's helleborine (*Epipactis helleborine* var. *youngiana*). Reduced protection was agreed by Defra and the Welsh Government for the tentacled lagoon worm (*Alkmaria romijni*) and lagoon sand shrimp (*Gammarus insensibilis*).
3. Following new taxonomic work on the rock nail (*Calicium corynellum*), this species was found to be the common *C. viride* and the 6th QQR recommends that it be removed from Schedule 8. In the Fifth QQR, Defra and the Welsh Government asked for more information about population sizes and trends for the spiny lobster (*Palinurus elephas*) before it could be added to Schedule 5. This information is provided in the 6th QQR and the species is again recommended for addition. The bedstraw hawk-moth (*Hyles gallii*) was not added to Schedule 5 in the 5th QQR because it had only recently started to overwinter in GB and was believed it might disappear naturally. This hawk-moth has continued to overwinter in GB and is again proposed for addition to Schedule 5.
4. The Scottish Government has not, as yet, laid down legislation to enact the outcome of the 5th QQR.
5. Following the Sixth Quinquennial Review, the addition of 4 animal species to Schedule 5 and 12 plant species to Schedule 8 is proposed; and the removal of 1 animal species from Schedule 5 and 28 plant species from Schedule 8. In addition, reduced protection for 10 animal species and 1 vascular plant is recommended.
6. In the Fifth QQR, the JNCC recommended that a consultation exercise be undertaken between the Fifth and Sixth Quinquennial Reviews to consider the issue of modifying Schedule 8 in relation to neophytes. The consultation has taken place and as a result 13 taxa are proposed for removal from Schedule 8 on the basis of neophyte status.
7. During the consultations for the 5th QQR, some respondents raised concerns about perceived inconsistencies in the legislation, requesting amendments to bring Schedules 5 and 8 in line with one another. These were deemed to be outside the scope of the 5th QQR. Some respondents declined to engage in the 6th QQR for the same reasons and also because they argued that the legislation was not fit for purpose (that of conferring protection on our most threatened species). To address these concerns, in addition to the recommendations of addition, change in protection status or removal from the schedules, five additional recommendations are made in this report.

SIXTH QUINQUENNIAL REVIEW OF SCHEDULES 5 AND 8 OF THE WILDLIFE AND COUNTRYSIDE ACT, 1981

1 The statutory basis of Quinquennial Reviews

1.1 Schedules 5 and 8 of the Wildlife and Countryside Act (1981) (WCA) list animals (other than birds) and vascular plants, bryophytes, lichens and fungi (hereafter referred to as plants) which are specially protected. The Quinquennial Reviews are the process by which the species protected under Schedules 5 and 8 are reviewed every five years by the GB conservation bodies acting through the JNCC. There have been 5 previous QQRs.

1.2 Under Section 24 of the Wildlife and Countryside Act (1981) and Section 34 of the Natural Environmental and Rural Communities Act, the Secretary of State, the Scottish Ministers, or the Welsh Government (as appropriate) may, by order, add any animal (other than a bird) to Schedule 5 or any plant to Schedule 8 when one or both of the following circumstances apply:

- i. in his opinion, the animal or plant is in danger of extinction in Great Britain or likely to become so endangered unless conservation measures are taken;
- ii. for the purpose of complying with an international obligation.

Conversely, the Secretary of State, the Scottish Ministers or the Welsh Government (as appropriate) may remove any animal from Schedule 5 or any plant from Schedule 8, if, in their opinion, it is no longer endangered or likely to become so.

1.3 The protection afforded by the Wildlife & Countryside Act to animals and plants listed on Schedules 5 and 8 extends throughout Great Britain unless otherwise specified, and to adjacent territorial waters, which currently extend 12 miles out to sea.

Furthermore, The Secretary of State, the Scottish Ministers or the Welsh Government (as appropriate) may apply all or only some of the relevant provisions of the Act to animals and plants listed on the Schedules and may limit the protection afforded to certain times of the year or to particular areas of Great Britain. Indeed, there are separate lists of Schedule 5 and 8 species for England & Wales and for Scotland. The provisions relate to a range of activities as summarised in the following paragraphs 1.4 to 1.6.

1.4 Under Section 9 of the Wildlife and Countryside Act (1981) the provisions for animals are:

Section 9(1)

“If any person intentionally (or recklessly¹) kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence.”

Section 9(2)

“If any person has in his possession or control any live or dead wild animal included in Schedule 5 or any part of, or anything derived from, such an animal, he shall be guilty of an offence.”

¹ Nature Conservation Act (Scotland) 2004

Section 9(3)

A person shall not be guilty of an offence under subsection 9(2) if he shows that-

- (a) The animal had not been killed or taken (at or from a place in Scotland¹) otherwise than in contravention of the relevant provisions; or (“or” is repealed in Scotland¹)
- (b) The animal or other thing in his possession or control had been sold (“at a place in Scotland²”) (whether to him or any other person) otherwise than in contravention of these provisions;

Also in Scotland²

- (c) “That the animal or other thing in his possession or control had been killed at, taken from or sold at a place outwith Scotland and—
 - (i) that the act of killing, taking or sale would not, if it had been committed in Scotland, have been in contravention of the relevant provisions; or
 - (ii) that the animal or other thing had been brought from the place where it was killed, taken or sold in accordance with the relevant regulations”².

Also in Scotland²

“Subsection (3A)—

“the relevant provisions” means such of the provisions of the Conservation of Wild Creatures and Wild Plants Act 1975 (c. 48) and this Part as were in force at the time when the animal was killed or taken or, as the case may be, the animal or other thing was sold, and

“the relevant regulations” means—

- (a) Council Regulation 338/97/EC on the protection of species of wild fauna and flora by regulating trade, and
- (b) Commission Regulation 1808/2001/EC on the implementation of that Council Regulation,

as amended from time to time (or any Community instrument replacing either of them).”²

Section 9(4)

“Subject to the provisions of this Part, a person is guilty of an offence if intentionally or recklessly -

- (a) he damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;
- (b) he disturbs any such animal while it is occupying a structure or place which it uses for shelter or protection; or
- (c) he obstructs access to any structure or place which any such animal uses for shelter or protection.”

Section 9(4A)

“Subject to the provisions of this Part, if any person intentionally or recklessly disturbs any wild animal included in Schedule 5 as-

- (a) a dolphin or whale (Cetacea), or
- (b) a basking shark (*Cetorhinus maximus*)

he shall be guilty of an offence.”

Section 9(5)

“If any person

- (a) sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5, or any part of, or anything derived from, such an animal; or
- (b) publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things,

² Nature Conservation Act (Scotland) 2004

he shall be guilty of an offence.”

“Section (5A)

Subject to the provisions of this Part, any person who knowingly causes or permits to be done an act which is made unlawful by any of the foregoing provisions of this section (other than subsection (5)(b)) shall be guilty of an offence”³

- 1.5 Under Section 13 of the Wildlife and Countryside Act (1981) the provisions for plants are:

Section 13(1)

“If any person

- (a) Intentionally (or recklessly³) picks, uproots or destroys any wild plant included in Schedule 8; or any seed or spore attached to any such wild plant; or³
 - (b) not being an authorised person, intentionally (or recklessly³) uproots any wild plant not included in that Schedule,
- he shall be guilty of an offence.”

Section 13(2)

“Subject to the provisions of this Part, if any person

- (a) sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant; or
 - (b) publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things,
- he shall be guilty of an offence.”

- 1.6 Activities under Sections 9(2), 9(5) and 13(2) apply to live individuals, dead specimens or derivatives. All wild plants are protected under Section 13(1)(b) of the Wildlife & Countryside Act against deliberate uprooting by unauthorised persons, but additional protection is afforded through scheduling.

- 1.7 Part of the protection conferred on species listed on Schedules 5 and 8 is a consequence of the legal requirement to avoid the unnecessary killing, injury, destruction *etc.* of protected wild animals and plants by organisations or individuals undertaking or authorising activities which might have this result. Public authorities have to comply with this requirement in their administrative decisions e.g. planning decisions.

- 1.8 Under Section 133 of the Environmental Protection Act, 1990 (which was superseded in England and Wales by Section 36 of the Natural Environment and Rural Communities Act 2006) the Joint Nature Conservation Committee (JNCC) became responsible for discharging the following functions:

- Under Section 24 of the Wildlife & Countryside Act, the Nature Conservancy Council (NCC) was required, five years after the passing of the Act in 1981 and every five years thereafter, to review Schedules 5 and 8 and to advise the Secretary of State whether in its opinion any animal or plant should be added to or removed from the Schedules. The NCC was also empowered to make such recommendations at any time, outside the constraints of the five-yearly reviews. Recommendations were to be accompanied by a statement of the reasons which led to the advice.

³ Nature Conservation Act (Scotland) 2004

- 1.9 Following adoption of the EC Habitats and Species Directive (1992), analogous protection was afforded to certain wild animals and plants through the Conservation (Natural Habitats, &c.) Regulations, 1994, and subsequent amendments⁴. The Scottish Statutory Instrument no. 80, made on 14 February 2007⁵, amended both Schedules 5 and 8 to remove European Protected Species from the protection provided by sections 9 and 13, respectively, of the Wildlife & Countryside Act. England and Wales still list the European Protected Species on the Schedules 5 and 8.
- 1.10 For Scotland, the Nature Conservation (Scotland) Act 2004 (asp 6) applies, specifically Schedule 6 - Protection of Wildlife which outlines amendments and repeals made in Scotland to the Wildlife and Countryside Act. As a consequence, there are slight differences between the law in Scotland and in England and Wales (relevant changes are listed in paragraphs 1.3 and 1.4)
- 1.11 The purpose of Schedules 5 and 8 is thus to protect certain non-avian animals and plants from killing, injury, uprooting, collection and trade as well as damage or obstruction to any structure or place which any such non-avian animal may use for shelter or protection. Whilst the legislation is clear enough for the most part, there is considerable scope for interpretation of the meaning of what might be meant by a structure or place used for shelter or protection. One extreme interpretation might consider only nests, dreys or burrows *etc* as places of shelter or protection, whilst another might consider that an animal's habitat, essential to it as a place of shelter or protection, is - or ought to be - the subject of protection, especially where the species involved is extremely rare, threatened or restricted to a very small number of sites.

2 Previous Quinquennial Reviews

- 2.1 In accordance with Section 24 of the WCA, the Nature Conservancy Council and, subsequently, the JNCC have carried out successive reviews of Schedules 5 and 8.
- 2.2 In total, these Reviews have recommended additional protection for 160 animals and 774 plants, lichens and fungi, and have recommended reduced protection for 13 species.
- 2.3 At the start of the current review there were 115 animal taxa on Schedule 5 and 183 plant taxa on Schedule 8 (see accompanying spreadsheet).
- 2.4 In 2008, Defra and the Welsh Government published their responses to the [Fifth Quinquennial Review](#). The Scottish Government has not, as yet, laid down legislation to enact the outcome of the 5th QQR.
- 2.5 In this, the 6th Quinquennial Review, the working group (see paragraph 5.1) proposes the addition of 4 animal species to Schedule 5 and 12 plant species to Schedule 8; and reduced protection for 10 animal species on Schedule 5 and 1 plant taxon from Schedule 8. The working group recommends the removal of 2 animal species from Schedule 5 and 30 plant species from Schedule 8.

3 Statutory changes since the Fifth Quinquennial Review

- 3.1 Changes since the 5th QQR are listed in Table 1.

4 The Conservation (Natural Habitats, &c.) (Amendment) Regulations, 1997 (Statutory Instrument 1997, No.3055); The Conservation (Natural Habitats, &c.) (Amendment) (England) Regulations, 2000 (Statutory Instrument 2000, No.192); The Conservation (Natural Habitats, &c.) (Amendment) (England and Wales) Regulations 2008.

5 Scottish Statutory Instrument 2007 No. 80 The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2007.

Table 1. Statutory changes to the Wildlife and countryside Act since 2007.

The Wildlife and Countryside Act 1981 (Variation of Schedules A1 and 1A) (Scotland) Order 2013	2013 No. 31	Scottish Statutory Instruments
The Wildlife and Countryside Act 1981 (Keeping and Release and Notification Requirements) (Scotland) Amendment Order 2012	2012 No. 206	Scottish Statutory Instruments
The Wildlife and Countryside Act 1981 (Exceptions to section 14) (Scotland) Amendment Order 2012	2012 No. 205	Scottish Statutory Instruments
The Wildlife & Countryside Act 1981 (Keeping and Release & Notification Requirements) (Scotland) Order 2012	2012 No. 174	Scottish Statutory Instruments
The Wildlife and Countryside Act 1981 (Exceptions to section 14) (Scotland) Order 2012	2012 No. 173	Scottish Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedules 5 and 8) (England and Wales) Order 2011	2011 No. 2015	UK Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010	2010 No. 609	UK Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedule 4) (Wales) Order 2009 Gorchymyn Deddf Bywyd Gwylt a Chefn Gwlad 1981 (Amrywio Atodlen 4) (Cymru) 2009	2009 No. 780 (W. 68)	Wales Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedule 4) (Scotland) Order 2009	2009 No. 418	Scottish Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedule 4) (England) Order 2008	2008 No. 2356	UK Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedule 5) (Wales) Order 2008 Gorchymyn Deddf Bywyd Gwylt a Chefn Gwlad 1981 (Amrywio Atodlen 5) (Cymru) 2008	2008 No. 1927 (W. 183)	Wales Statutory Instruments
The Wildlife and Countryside Act 1981 (Variation of Schedule 5) (England) Order 2008	2008 No. 431	UK Statutory Instruments

4 Criteria used for the selection of species for Schedules 5 and 8 of the Wildlife and Countryside Act, 1981 during the 6th QQR

4.1 Rationale underlying scheduling

In compliance with the purpose and provisions of the relevant Sections of the WCA 1981, the statutory nature conservation agencies will pursue scheduling when an animal or plant is in danger of extinction in Great Britain, or is likely to become so, and legal protection is likely to improve its chances of survival or there is an international obligation to afford the species legal protection. Evidence is required to show that a species is in danger of extinction or likely to become so, and that this status is likely to be addressed by legislation as described in paragraphs 4.2 and 4.5. The detailed criteria used during the 6th QQR for the selection (or removal) of species from Schedules 5 and 8 are set out below. Individual proposals were evaluated on the evidence contained within completed proformae that were provided in the 6th QQR [Information Pack](#) used during the public consultation

4.2 Listing species on Schedule 5 or 8

An animal or plant taxon meeting the Eligibility Criteria (paragraph 4.4 below) will only be recommended for listing on the relevant schedule where there is a strong case that scheduling will afford significant benefits to it through a decrease in any of the direct human pressures listed in the Decision Criteria (see paragraph 4.5) (as defined in Sections 9 and 13 of the Wildlife & Countryside Act). This benefit to help arrest a decline or to facilitate an increase in population size, number of localities occupied or range and hence to address the risk of its extinction or risk of it becoming so threatened.

4.3 Range of taxa under consideration

- i. For Schedule 5 – invertebrates and vertebrates other than birds⁶.
- ii. For Schedule 8 - vascular plants, bryophytes, lichens, fungi and algae.
- iii. All species of the groups listed above, including species at present on the schedules (as it may be appropriate to reassess these for the purposes of changing the level of protection, or for de-scheduling).
- iv. Taxa below species level under some circumstances (see 'Eligibility criteria' 4.4).

4.4 Eligibility Criteria

4.4.1 Eligibility criteria for native species

For a species to be recommended for scheduling, one of the eligibility criteria in each of the Sections A, B and C should be met:

Section A - UK Status

The species must satisfy one or more of the following:

- i. native in the wild in Great Britain i.e. arrived in Great Britain without intervention by man, whether intentional or unintentional, having come from an area in which it is native or one which has arisen *de novo* in Great Britain (Preston *et al* 2002); or
- ii. occur as a vagrant in Great Britain and requires international protection; or a native that is believed extinct in Great Britain as a breeding species, but be in the process of reintroduction; or

⁶ WCA Schedules ZA1; 1; 2; 3 & 4 apply to birds

- iii. a native that is believed extinct in Great Britain, but with the possibility it could become re-established naturally; or
- iv. a native to Great Britain and listed on Appendices I, II or III of the Bern Convention; Annexes II or V of the EC Habitats and Species Directive⁷; Appendix I of the Bonn Convention (unless specific derogations apply).

Section B - Conservation Status

The species must satisfy one or more of the following:

- i. the species must be endangered⁸ in Great Britain; or
- ii. the species is likely to become endangered, unless conservation measures are taken; or
- iii. there is an international obligation to afford the species legal protection (if not protected elsewhere e.g. the Habitat Regulations).

A species may be accepted as endangered when:

- it is included in a JNCC-approved [British Red List](#), using the revised IUCN criteria, as Extinct in the Wild, Critically Endangered, Endangered or Vulnerable⁹; or
- records indicate that the species is known from only a single locality or it's population is severely fragmented

It is important to emphasise that endangerment, on its own, is insufficient justification for recommending a taxon for scheduling. Many taxa will be endangered principally due to changes in land-use or land management leading to increased habitat fragmentation, deterioration or outright habitat loss. Such causes of endangerment do not, for the purposes of the 6th QQR, constitute 'direct human pressures' as covered by Sections 9 and 13 of the Wildlife and Countryside Act (and listed in paragraph 4.2 above). To be recommended for scheduling, the endangerment of a taxon must, at least in part, be due to one or more of the direct human pressures listed in paragraph 4.5.

In all but one case, the IUCN status of a taxon in Great Britain was used in the QQR. The exception to this was when the status in England only was used to add *Aster linosyris* to Schedule 8 in England.

Section C – Nomenclature

The species must satisfy the following:

- i. The taxonomic status of the species must meet recognised international standards of nomenclature (i.e. with an authenticated authority)¹⁰.

Taxa below the species level could be considered, providing they are:

- clearly recognisable (i.e. morphologically distinct);
- geographically or ecologically distinct.

⁷ Except in Scotland

⁸ Endangered is interpreted as Threatened under the IUCN Red list Criteria (incorporates the categories of Critically Endangered, Endangered & Vulnerable) (IUCN 2003).

⁹ For species yet to be assessed for Red Listing, they may be added if they can be shown to meet IUCN criteria for a threatened category. For example, if a species is rapidly declining in population, number of localities occupied or range according to the IUCN criteria. The decline must transcend normal fluctuations;

¹⁰ For further information see the *International Code for Zoological Nomenclature* <http://www.nhm.ac.uk/hosted-sites/iczn/code/> and/or the *International Code for Botanical Nomenclature* <http://ibot.sav.sk/icbn/main.htm>

4.4.2 Eligibility criteria for non-native species

- i. Generally, only native (including reintroduced native) taxa are to be considered (See Part 4.4.1 A). In exceptional circumstances, non-native taxa which have been introduced or thought to have been introduced to Great Britain by man could be considered if the species is endangered⁸ or extinct in its native range and if current information suggests that the species is unlikely to have an adverse impact on UK native species or ecosystems.

If a non-native species meets criterion 4.4.2 (i), preference will be given to those non-native species whose native range reaches the north west coast of Europe (i.e. continental distribution extends to the Atlantic coast of France, Belgium, the Netherlands, Germany or Scandinavia) and for marine taxa, the distribution includes the north west Atlantic area.

There are different types of non-native plants. The following definitions were used in the 6th QQR:

- Non-native species brought into Great Britain by man, intentionally or unintentionally, even if native to the source area or one which has come into Great Britain without man's intervention, but from an area in which it is a non-native (Preston *et al* 2002)
- Neophytes: (naturalised after AD 1500). Where there is clear evidence that a species is a neophyte it will be excluded from listing on Schedule 8 except where new evidence shows these neophytes are to be considered natives (Cheffings & Farrell 2005).
- Archaeophytes: (naturalised before AD 1500) and can be included in the selection process (see Cheffings & Farrell 2005).
- "Native or Alien": evidence for and against native status is too finely balanced to decide the status. These species will be eligible for the selection process under the precautionary principle unless new evidence is available to decide the status one way or the other, e.g., *Gastrium ventricosum* (Cheffings & Farrell 2005).

No non-native species were submitted for addition to the Schedules in the 6th QQR.

4.5 Decision Criteria

An animal or plant taxon meeting the eligibility criteria would only be recommended for listing on the relevant Schedule where there is a strong case that scheduling will afford significant benefits to it through a decrease in any of the direct human pressures listed below:

- i. intentional killing or injuring, picking or uprooting or reckless disturbance; or
- ii. 'collection' including possession, dead or alive, in full or part thereof; or
- iii. intentional or reckless damage, disturbance or obstruction to any structure or place of shelter and protection which is regarded as essential for the survival of the species¹¹ (such as nests, burrows, holes, scrapes, or similar resting sites; sites used to raise young (and eggs), holts); or
- iv. currently or potentially damaging trade, or other forms of exploitation or pressure.

It was the original intention to review all taxa currently on Schedules 5 and 8 as well as list additions and removals. However, only a few proposals were received that reviewed all species within a particular grouping, so that all species on the current schedules were unable to be reviewed fairly or comprehensively. As a result taxa were only considered for removal if specialist groups and/or stakeholders had provided sound justification. The working group recommends that a thorough review of the schedules be undertaken after the 6th QQR (see section 12).

¹¹ This excludes the wider habitat in which the organism ranges.

5 Conduct of the Sixth Quinquennial Review

- 5.1 The 6th QQR was conducted by a group comprising Natural England, Natural Resources Wales, Scottish Natural Heritage, and JNCC (hereafter known as the working group). Initially, during the planning stages, including acceptance of the criteria used in previous QQRs, the working group was augmented by representatives from Defra, Scottish Government and Welsh Government (hereafter known as the steering group). The steering group largely adopted the consultation process of previous QQRs but there were differences as noted below.
- 5.2 An [Information Pack](#) was sent to all stakeholders (Appendix 1) with the necessary information for submitting species for addition or removal from Schedules 5 or 8.
- 5.3 A one month advance notice period was used to notify stakeholders of the upcoming consultation and a nine month period (6 months in previous reviews) was allowed for the consultation itself. Collaboration between the statutory agencies and potential consultees was encouraged during this period and contact details of representatives of the three statutory agencies and JNCC were provided in the [Information Pack](#).
- 5.4 The steering group attempted to improve the clarity of the terminology used in previous QQRs, including use of the term “endangered”, the treatment of neophytes/ arch-aeophytes and the relevant position of native versus non-native species. It also offered a strict definition of the phrase “place of shelter” to mean a nest, drey, burrow *etc*.
- 5.5 Stakeholders were asked to use proformae to provide all the evidence in support of the submissions and it was these proformae that were assessed by the working group. Stakeholders were asked to identify species currently on Schedules 5 and 8 for which WCA protection is judged no longer relevant (in fact there was an inconsistent response to this in the consultation such that this task was unable to be effected).
- 5.6 Following the consultation, the working group analysed the consultation submissions and, where necessary, contacted the proposers to discuss any issues that were unclear or required further evidence.

6 The Current Review

- 6.1 The phrase “place of shelter or protection”, has long caused difficulties for the QQR process. Previous QQRs have been rather inconsistent in their interpretation of what is meant by this phrase, and as a consequence some of the species now listed on Schedule 5 and 8 are there only because their habitat needs to be protected. The tighter definition used in the 6th QQR was not met with universal approval by all stakeholders: some declined to engage in the process and many made submissions which did not accord with the consultation criteria (see Appendix 2).
- 6.2 There is provision under the WCA which allows Sites of Special Scientific Interest (SSSI) to be selected and notified to protect species whose habitat is under threat, irrespective of how restricted or extensive it may be, or whether it is used exclusively as a “place of shelter or protection” or not, or whether the species is threatened or a typical component of that habitat. There are also lists of species and habitats of conservation concern (Section 41 and 42; NERC Act 2006; Wildlife and Natural Environment (Scotland) Act 2011) and European Protected Species (Conservation of Habitats and Species Regulations 2010) all of which call for some form of conservation attention. In practice, however, these provisions may not offer the particular type or

level of protection that some of threatened species need. For example, the species habitat may otherwise be of limited interest or it may be too small to warrant priority consideration as a SSSI.

- 6.3 In view of comments received during the consultation, the 6th QQR highlights the issue surrounding the definition of a place of shelter and the consequent inconsistencies within the current schedules. It first makes recommendations on changes to the schedules (as in QQRs 1-5) but it also addresses some long-standing issues that concern stakeholders. It uses specific worked examples (selected from those submitted during the public consultation) and makes recommendations for a new approach for the scope and purpose of the schedules in the context of GB species conservation legislation. It recommends an in-depth review of all species on the current schedules to be conducted between the 6th QQR and the 7th QQR.

7 Recommendations regarding Schedule 5

Schedule 5 additions, changes in protection, and removals that were re-proposed from the 5th QQR and which are still to be finalised by Scottish Government are not considered in this report.

7.1 Addition of species to Schedule 5

The working group recommends that the following species be added to Schedule 5:

Invertebrates:

Brachinus sclopeta
Hyles gallii

Osmerus eperlanus
Palinurus elephas

Table 2. Species recommended for addition to Schedule 5.

Species	Country	Protection required	Summary of reasons
<i>Brachinus sclopeta</i> Streaked bombardier beetle	E, S & W	9 (4)a	Highly collectable being comparatively large, gaudy and from a popular group of beetles. The last sites for this species are targeted by collectors with evidence of collections from at least one site which has been made public suggesting potential for further collection. The extreme rarity of this species and the fragility of the UK population makes the species at risk.
<i>Hyles gallii</i> Bedstraw hawk-moth	E, S & W	Full	Resident and rare in Britain, confined to a few sites, no sign of range expansion and expected to become threatened. Evidence of collection provided. Easily driven to local or national extinction because easy to find and collect a large number of larvae. Rejected in the 5 th QQR because it had only recently started to overwinter and believed it might disappear naturally. In contrast, has continued to overwinter since 5 th QQR.
<i>Osmerus eperlanus</i> Sparling	E, S & W	9(1), 9(4) a-c, 9(5)	Commercially valuable and threatened by illegal over-exploitation. Rapid decline (80% in Scotland; 33% in England & Wales). Spawn in freshwater en masse and congregate in very small areas where they are particularly vulnerable to capture.
<i>Palinurus elephas</i> Spiny lobster	E, S & W	Full	Rejected in the 5 th QQR because more information was needed on population size. In addition to the evidence provided in the 5 th QQR such as declines being the result of exploitation (Natural England Report NECR065), new research shows an 87% decrease between 1963 and 2008 providing evidence of very low population sizes. Fishing threats continue and recovery rates remain slow as a result of the species late maturity.

7.2 Additional protection under Schedule 5

The working group is not recommending additional protection for species on Schedule 5.

7.3 Reduced protection under Schedule 5

The working group recommends that protection under Schedule 5 be reduced for the following species:

Invertebrates:

Alkmaria romijni
Armandia cirrhosa
Caecum armoricum
Edwardsia ivelli
Gammarus insensibilis

Hydrochara caraboides
Nematostella vectensis
Pachycordyle navis = *Clavopsella navis*
Tenellia adspersa
Victorella pavida

Table 3. List of Species recommended for reduced protection Schedule 5.

Species	Country	Protection required	Summary of reasons
<i>Alkmaria romijni</i> Tentacled lagoon worm	Scotland	Reduce to 9(4)a only	No evidence of risk of decline or extinction from collection or of a market for this species. There are pressures on its habitat which continues to be at risk from coastal re-alignment and flood defence works ¹² .
<i>Armandia cirrhosa</i> Lagoon sand worm	E, W & S	Reduce to 9(4)a only	No evidence of risk of decline or extinction from collection. But it occurs in only three sites and its habitat remains under pressure.
<i>Caecum armoricum</i> De Folin's lagoon snail	E, W & S	Reduce to 9(4)a only	No evidence of decline or extinction from collection or of a market for this species but pressures on habitat which continues to be at risk. Reduced protection rejected in 5 th QQR because species was believed to be too vulnerable.
<i>Edwardsia ivelli</i> Ivell's sea anemone	E, W & S	Reduce to 9(4)a only	No evidence of risk of decline or extinction from collection. But it occurs in one site only and its habitat remains under pressure.
<i>Gammarus insensibilis</i> Lagoon sand shrimp	Scotland	Reduce to 9(4)a only	No evidence of risk of decline or extinction from collection. There are pressures on its habitat which continues to be at risk from coastal re-alignment and flood defence works ¹³ .
<i>Hydrochara caraboides</i> Lesser silver water beetle	E, W & S	Reduce to 9(4)a only	Known from more sites than when put on the WCA, habitat robust to collecting and habitat management beneficial for this species.
<i>Nematostella vectensis</i> Starlet sea anemone	E, W & S	Reduce to 9(4)a only	No evidence of decline or extinction from intentional collection or of a market. But it occurs in few coastal lagoons and its habitat remains under pressure.
<i>Pachycordyle navis</i> Brackish hydroid	E, W & S	Reduce to 9(4)a only	No evidence of risk of decline or extinction from intentional collection or of a market. Occurs at a single site and habitat remains under pressure.
<i>Tenellia adspersa</i> Lagoon sea slug	E, W & S	Reduce to 9(4)a only	No evidence of risk of decline or extinction from intentional collection or of a market. Habitat remains under pressure
<i>Victorella pavida</i> Trembling sea mat	E, W & S	Reduce to 9(4)a only	No evidence of risk of decline or extinction from intentional collection or of a market. Occurs in one site only. Habitat remains under pressure.

De-listing of the saline lagoon species should be re-examined if there are alternatives for protection of its habitat, particularly those in few sites (e.g. *Caecum armoricum* and *Armandia cirrhosa*; see Section 12).

7.4 Removal from Schedule 5

The working group recommends the following species is removed from Schedule 5:

Invertebrates:

Thyasira gouldi

Table 4. List of Species recommended for removal from Schedule 5.

Species	Country	Summary of reasons
<i>Thyasira gouldi</i> Northern hatchet shell	E & W	Not collected and much commoner than previously thought.

¹² Protection for this species was reduced to 9(4)a in England & Wales in 2010 by Defra and the Welsh Government.

¹³ Protection for this species was reduced to 9(4)a in England in 2010 by Defra.

8 Recommendations regarding Schedule 8

Schedule 8 additions, changes in protection, and removals that were re-proposed from the 5th QQR and which are still to be finalised by Scottish Government are not considered in this report.

8.1 Addition of species to Schedule 8

The working group recommends that the following species be added to Schedule 8:

<i>Aster linosyris</i>	<i>Epipactis sancta</i>
<i>Boletus pseudoregius</i>	<i>Myriostoma coliforme</i>
<i>Cephalanthera longifolia</i>	<i>Orchis anthropophora</i>
<i>Dactylorhiza incarnata ochroleuca</i>	<i>Orchis purpurea</i>
<i>Draba aizoides</i>	<i>Polystichum lonchitis</i>
<i>Dryopteris cristata</i>	<i>Pulsatilla vulgaris</i>

The vascular plant experts considered the idea of assigning collecting threat to orchids and ferns generally based on their desirability and a high collecting demand on these groups. Although, not entirely in favour of this type of classification, the plant experts agreed that for the species of orchids and ferns proposed above, collection was a real threat. The working group therefore accepted the addition of these ferns and orchids as a group rather than individual species proposals.

Table 5. Species recommended for addition to Schedule 8.

Species	Country	Summary of reasons
<i>Aster linosyris</i> Goldilocks aster	E	Threatened (VU) in England but not GB and evidence of populations being collected. Generally threat is assessed at a GB level but this species is threatened in England where there is more collection. Add to Schedule 8 in England only.
<i>Boletus pseudoregius</i> The pretender	E & W	Formerly protected under <i>B. regius</i> . All British collections named <i>B. regius</i> and their accompanying notes and photographs were examined by A.E. Hills and all except one were redetermined as <i>B. pseudoregius</i> (Kibby 1998). Now that <i>B. pseudoregius</i> is recognised as a species, it should be listed to regain the former level of protection. Target for collectors of edible boletes.
<i>Cephalanthera longifolia</i> Narrow-leaved helleborine	E, S & W	High desirability and actual or potential collection pressures of orchids in general & this orchid in particular.
<i>Dactylorhiza incarnata ochroleuca</i> Early marsh-orchid	E, S & W	Restricted to two sites in East Anglia where species is close to extinction. High desirability and actual or potential collection pressures of orchids in general & this orchid in particular could result in loss from these sites.
<i>Draba aizoides</i> yellow Whitlowgrass	E, S & W	Gower Peninsula; with evidence of some decline & losses caused by collection. Extremely rare, collectable, and likely to become highly threatened without proper protection.
<i>Dryopteris cristata</i> Crested buckler-fern	E, S & W	Considerable horticultural value and/or likely to be collected by fern lovers. Prone to being picked or uprooted. Present in very low numbers and attractive to growers. High desirability.
<i>Epipactis sancta</i> Lindisfarne helleborine	E, S & W	Endemic to Lindisfarne and under threat by orchid collectors. Turned down in the 5 th QQR because the taxonomy was uncertain but now taxonomy is accepted by plant experts (see Squirrell <i>et al</i> 2002, Deforge & Gevaudan 2002, Bateman 2006, BSBI Current taxonomic research). Consensus that orchids generally are

Species	Country	Summary of reasons
		collectable and the situation regarding this species was sufficient to accept the general collection threat to orchids.
<i>Myriostoma coliforme</i> Pepper pot	E & W	Only two fruiting patches in Britain, neither within a SSSI. Fruits on wayside ground accessible to the public. Its rarity and distinctiveness make it a target for collectors. The fruiting population is at such a low level that removal of fruit bodies should be prohibited to give the species the best chance of recolonising its former range
<i>Orchis anthropophora</i> Man orchid	E, S & W	Extinct, or close to extinction, in a number of counties. High desirability and actual or potential collection pressures of orchids in general and this orchid in particular could result in significant losses from remaining sites in SE England and E. Anglia.
<i>Orchis purpurea</i> Lady orchid	E, S & W	Kent speciality now reduced to small numbers. Decline stabilised. But high desirability and actual or potential collection pressures of orchids in general and this orchid in particular could result in significant losses from remaining sites.
<i>Polystichum lonchitis</i> Holly-fern	E & W	Marked declines. Considerable horticultural value and/or likely to be collected by fern lovers. Prone to being picked or uprooted. Present in low numbers and attractive to growers. Well distributed in Scotland although can be locally rare. Not under any particular threat that would warrant listing in Scotland.
<i>Pulsatilla vulgaris</i> Pasque flower	E, S & W	Habitat destruction, neglect and theft caused widespread population decline. Severely fragmented distribution. Evidence of collection (removed from SSSIs and NNRs) suggests that they should receive protection.

8.2 Additional protection under Schedule 8

The working group is not proposing any plant species for additional protection under Schedule 8.

8.3 Reduced protection under Schedule 8

The working group recommends that the following species is given reduced protection under Schedule 8.

Hyacinthoides non-scripta

Table 6. Species recommended for reduced protection to Schedule 8.

Species	Country	Reduction in protection	Summary of reasons
<i>Hyacinthoides non-scripta</i> Bluebell	E, S & W	Remove the collection of bluebell seed from Section 13(1)a	Not threatened. But taking the whole plant off Section 13(1)a could lead to a return to mass removals of the 1980's and 1990's. Therefore allow collection of seed only.

8.4 Removal from Schedule 8

The working group recommends that the following species be removed from Schedule 8:

Althaea hirsuta
Alyssum alyssooides

Arabis alpina
Arenaria norvegica norvegica

Bupleurum falcatum
Calicium corynellum

<i>Chenopodium vulvaria</i>	<i>Gnaphalium luteoalbum</i>	<i>Microthlaspi perfoliatum</i> =
<i>Crepis foetida</i>	<i>Gymnomitrium apiculatum</i>	<i>Thlaspi perfoliatum</i>
<i>Cystopteris dickieana</i>	<i>Hypnum vaucheri</i>	<i>Orthotrichum obtusifolium</i>
<i>Dactylorhiza lapponica</i>	<i>Limosella australis</i>	<i>Physcia tribacioides</i>
<i>Epipactis youngiana</i>	<i>Lythrum hyssopifolia</i>	<i>Plagiothecium piliferum</i>
<i>Fumaria reuteri</i>	<i>Mentha pulegium</i>	<i>Pulicaria vulgaris</i>
<i>Gentiana verna</i>	<i>Mielichoferia mielichoferi</i>	<i>Rhinanthus angustifolius</i>
<i>Gentianella uliginosa</i>		<i>Teucrium botrys</i>

Table 7. List of Species recommended for removal from Schedule 8.

Species	Country	Summary of reasons
<i>Althaea hirsuta</i> Rough marsh-mallow	E, S & W	Neophyte first recorded in 1792.
<i>Alyssum alyssoides</i> Small alison	E, S & W	Neophyte was first recorded in GB in 1829.
<i>Arabis alpina</i> alpine Rock-cress	S	Not under threat and not collected.
<i>Arenaria norvegica norvegica</i> Norwegian sandwort	S	Subspecies in Scotland is not under threat and not collected.
<i>Bupleurum falcatum</i> Sickle-leaved hare's-ear	E, S & W	Neophyte first recorded in 1831.
<i>Calicium corynellum</i> Rock nail	E, S & W	DNA evidence shows that putative <i>C. corynellum</i> in Britain is likely to be the common <i>C. viride</i> .
<i>Chenopodium vulvaria</i> Stinking goosefoot	E, S & W	New sites recently found around the Thames Estuary. Although EN but not declining or at risk due to collecting or intentional damage or destruction. Unlikely to be threatened by persecution or collection pressures.
<i>Crepis foetida</i> Stinking hawk's-beard	E, S & W	No longer declining or at risk due to collecting or intentional damage or destruction. Small risk that part of the recently discovered population outwith the existing SSSI could be destroyed.
<i>Cystopteris dickieana</i> Dickie's bladder fern	S	Collection pressures in Scotland have eased and not threatened by collection.
<i>Dactylorhiza lapponica</i> Lapland marsh-orchid	E, S & W	Taxonomic status in Great Britain has changed & now more a widespread species.
<i>Epipactis youngiana</i> Young's helleborine	E, S & W	No longer taxonomically distinct entity in GB.
<i>Fumaria reuteri</i> Martin's ramping-fumitory	E, S & W	No longer threatened or collected. Nationally Rare, not under threat nationally (several new records of it in recent years), and considered as Least Concern (Leach & Walker 2013).
<i>Gentiana verna</i> Spring gentian	S	Neophyte in Scotland
<i>Gentianella uliginosa</i> Dune gentian	S	In England evidence of collecting is weak, but is a collectable genus and surviving English populations are small and potentially highly vulnerable. NE and NRW recommend retention. SSAG and SNH recommend deletion. Recommend deletion from Scotland only as not under threat of human interference and habitat protected by two SSSIs.
<i>Gnaphalium luteoalbum</i> Jersey cudweed	E, S & W	Neophyte first record was in 1882.
<i>Gymnomitrium apiculatum</i> Pointed frostwort	E, S & W	Vulnerable habitat, but remote and not significantly threatened.
<i>Hypnum vaucheri</i> Vaucher's feather moss	E, S & W	Rare but sites relatively remote and secure.
<i>Limosella australis</i> Welsh mudwort	E, S & W	Neophyte considered a recent introduction.
<i>Lythrum hyssopifolia</i> Grass-poly	S	Neophyte in Scotland.

Species	Country	Summary of reasons
<i>Mentha pulegium</i> Pennyroyal	S	Neophyte in Scotland.
<i>Microthlaspi perfoliatum</i> (= <i>Thlaspi perfoliatum</i>) Perfoliate penny-cress	S	Neophyte in Scotland. Endangerment not due to any direct human pressures.
<i>Mielichoferia mielichoferi</i> Alpine copper moss	E, S & W	All specimens have been found to be other species. Advise that it is removed as there are no confirmed records in GB.
<i>Orthotrichum obtusifolium</i> Blunt-leaved bristle moss	E, S & W	No longer appropriate as it is increasing.
<i>Physcia tribacioides</i> Southern grey physcia	S	Does not occur in Scotland.
<i>Plagiothecium piliferum</i> Hair silk moss	E, S & W	Not seen for years and no collection threat.
<i>Pulicaria vulgaris</i> small Fleabane	S	Neophyte in Scotland.
<i>Rhinanthus angustifolius</i> Greater yellow rattle	S	Neophyte in Scotland.
<i>Teucrium botrys</i> Cut-leaved germander	E, S & W	Neophyte only recorded in the wild in 1844.

9 Taxonomic changes

As it is important that the scientific names of all species listed on Schedules 5 and 8 are correct, Tables 8 and 9 notify the governments of spelling corrections, new scientific names, as well as pointing out taxonomic changes that have occurred recently.

Table 8. List of taxonomic changes to species on Schedule 5.

Former name	New name	Common name
<i>Arvicola terrestris</i>	<i>Arvicola amphibius</i>	Water vole
<i>Bembecia chrysidiformis</i>	<i>Pyropteron chrysidiformis</i>	Fiery clearwing moth
<i>Bufo calamita</i>	<i>Epidalea calamita</i>	Natterjack toad
<i>Clavopsella navis</i>	<i>Pachycordyle navis</i>	Hydroid
<i>Lacerta vivipara</i>	<i>Zootoca vivipara</i>	Viviparous lizard
<i>Lysandra bellargus</i>	<i>Polyommatus bellargus</i>	Adonis blue butterfly
<i>Lysandra coridon</i>	<i>Polyommatus coridon</i>	Chalkhill blue butterfly
<i>Maculinea arion</i>	<i>Phengaris arion</i>	Large blue butterfly
<i>Mellicta athalia</i>	<i>Melitaea athalia</i>	Heath fritillary
<i>Siona lineata</i>	<i>Idaea lineata</i>	Black-veined moth
<i>Strymonidia pruni</i>	<i>Satyrium pruni</i>	Black hairstreak
<i>Stymonida w-album</i>	<i>Satyrium w-album</i>	White-letter hairstreak
<i>Triturus helveticus</i>	<i>Lissotriton helveticus</i>	Palmate newt
<i>Triturus vulgaris</i>	<i>Lissotriton vulgaris</i>	Smooth newt

Table 9. List of spelling and taxonomic changes to species on Schedule 8.

Former name	New name	Common name
<i>Arabis alpina</i>	<i>Arabis alpina</i>	Alpine rock cress
<i>Buglossoporus pulvinus</i>	<i>Piptoporus quercinus</i>	Oak polypore
<i>Cicerbita alpina</i>	<i>Cicerbita alpina</i>	Alpine blue sow-thistle
<i>Cypripedium calceolus</i>	<i>Cypripedium calceolus</i>	Lady's slipper
<i>Calamintha sylvatica</i>	<i>Clinopodium menthifolium</i>	Wood calamint
<i>Catillaria laureri</i>	<i>Megalaria laureri</i>	Lichen
<i>Cladonia stricta</i>	<i>Cladonia trassii</i>	Upright mountain cladonia
<i>Gentianella ciliata</i>	<i>Gentianopsis ciliata</i>	Fringed water gentian
<i>Halimione pedunculata</i>	<i>Atriplex pedunculata</i>	Stalked orache
<i>Hamatocaulis vernicosus</i>	<i>Drepanocladus vernicosus</i>	Slender green feather-moss
<i>Heterodermia japonica</i>	<i>Heterodermia propagulifera</i>	Coralloid rosette lichen
<i>Lychnis alpina</i>	<i>Silene suecica</i>	Alpine catchfly
<i>Megalaria laureri</i>	<i>Catellaria laureri</i>	Laurer's catillaria
<i>Mielichoferia mielichoferi</i>	<i>Mielichoferia mielichoferiana</i>	Alpine copper moss
<i>Pannaria ignobilis</i>	<i>Fuscopannaria ignobilis</i>	Caledonia pannaria
<i>Parmentaria chilensis</i>	<i>Pyrenula hibernica</i>	Oil stain parmentaria
<i>Rhinanthus seroti</i> = <i>Rhinanthus serotinus</i>	<i>Rhinanthus angustifolius</i>	Greater yellow rattle
<i>Rhynchosinapis wrightii</i>	<i>Coincya wrightii</i>	Lundy cabbage
<i>Scirpus triquetrus</i>	<i>Schoenoplectus triqueter</i>	Triangular club-rush
<i>Microthlaspi perfoliatum</i>	<i>Thlaspi perfoliatum</i>	Perfoliate penny-cress

10 European Protected Species

Tables 10 and 11 list the animals and plants on Schedules 2 and 5 of the Habitat Regulations. These are listed on the WCA in England and Wales but not in Scotland.

Natator depressus the flatback turtle and *Lepidochelys olivacea* the Olive ridley turtle was added to the WCA in 1981 on the basis of it being a European Protected Species. However they are not listed on Schedule 2 of the Habitat Regulations, and do not occur in British waters. They should therefore be removed from Schedule 5.

Table 10. List of animals on Schedule 2 of the Habitat Regulations.

Scientific name	Common name	Comment
<i>Triturus cristatus</i>	Great crested newt	
<i>Epidalea calamita</i> = <i>Bufo calamita</i>	Natterjack toad	
<i>Pelophylax lessonae</i>	Pool frog	
Dolphins – all species	Cetacea	
<i>Acipenser sturio</i>	Sturgeon	
<i>Maculinea arion</i>	Large blue butterfly	
<i>Rhinolophidae</i>	Bats – all species	
<i>Vespertilionidae</i>	Bats – all species	
<i>Lutra lutra</i>	Common otter	
<i>Muscardinus avellanarius</i>	Dormouse	
<i>Felis silvestris</i>	Wild cat	
<i>Anisus vorticulus</i>	Lesser whirlpool ram'shorn snail	
<i>Gortyna borelii</i>	Fisher's estuarine moth	
Porpoises – all species	Cetacea	
<i>Natator depressus</i>	Flatback turtle	Remove from Schedule 5
<i>Chelonia mydas</i>	Green turtle	
<i>Eretmochelys imbricate</i>	Hawksbill turtle	
<i>Lepidochelys olivacea</i>	Olive ridley turtle	Remove from Schedule 5
<i>Lepidochelys kempii</i>	Kemp's Ridley turtle	
<i>Dermochelys coriacea</i>	Leatherback turtle	
<i>Caretta caretta</i>	Loggerhead turtle	
<i>Lacerta agilis</i>	Sand lizard	
<i>Coronella austriaca</i>	Smooth snake	
Whales – all species	Cetacea	

Table 11. List of plants on Schedule 5 of the Habitat Regulations.

Scientific name	Common name	Comment
<i>Apium repens</i>	Creeping marshwort	
<i>Gentianella anglica</i>	Early gentian	
<i>Liparis loeselii</i>	Fen orchid	
<i>Luronium natans</i>	Floating-leaved plantain	
<i>Trichomanes speciosum</i>	Killarney fern	
<i>Cypripedium calceolus</i>	Lady's-slipper	
<i>Rumex rupestris</i>	Shore dock	
<i>Najas flexilis</i>	Slender naiad	

<i>Saxifraga hirculus</i>	Yellow marsh saxifrage	
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11 Statement of reasons for recommendations

The supporting information for all taxa recommended for listing, delisting or increased protection is in Appendices 3 and 4. Appendix 5 lists all species that would appear in Schedules 5 and 8 if all the 6th QQR recommendations for additions, removals and changes in protection status were to be accepted.

12 Additional comments and recommendations

12.1 As mentioned in Section 6, there is difficulty in deciding where to draw the line between a place of shelter or protection and the broader habitat used by a species. This is an important distinction, not least because a list of all threatened species whose habitat was also threatened would be exceptionally long and the consequent licensing burden on relevant authorities could be considerable. The following wording formed part of the rationale for scheduling during the 5th QQR: scheduling will be particularly appropriate when there is a need to “protect elements of habitat essential for the survival of an endangered species”. In the 6th QQR, the working group concluded that this paraphrasing of Section 9(4) of the WCA failed to provide the required clarity on where a line ought to be drawn. In order to provide this clarity the above-listed part of the rationale was removed from the 6th QQR guidance ([Information Pack](#)) and replaced with the following wording:

“Many taxa will be endangered principally due to changes in land-use or land management leading to increased habitat fragmentation, deterioration or outright habitat loss. Such causes of endangerment do not constitute ‘direct human pressures’ as covered by Sections 9 and 13 of the Wildlife and Countryside Act (and listed in Part 3.2 above sic). To be recommended for scheduling, the endangerment of a taxon must, at least in part, be due to one or more of the direct human pressures” (i.e. killing, injuring, picking, uprooting, disturbance, collection, damage, disturbance or obstruction to any structure or place of shelter and protection essential for the survival of the species¹⁴ (such as nests, burrows, holes, scrapes, or similar resting sites; sites used to raise young (and eggs), holts), damaging trade, or other forms of exploitation or pressure).”

12.2 There are several consequences of this change. Rather fewer species are recommended for addition to Schedule 5 than may have been the case in the past, as all species recommended for addition must now be shown to be affected by direct acts of man (as opposed to indirect effects such as causing habitat loss). Second, in cases where stakeholders have made a case for reducing the protection afforded to a species rather than removing it from the schedules altogether, that species has remained on the schedules, irrespective of whether it is directly threatened by man or not (the saline lagoon invertebrates are an example). Third, where no recommendations have been made to remove a species, the species is retained on the schedules, irrespective of whether or not it meets the rationale used to determine scheduling during the 6th QQR. As a consequence, the revised schedules will list species which fit the rationale for selection at the 6th QQR as well as many which do not.

12.3 Mindful of these issues and inconsistencies, the working group makes the following five recommendations:

¹⁴ This excludes the wider habitat in which the organism ranges.

Additional Recommendation 1

In studying all the submissions (and aware that some stakeholders were dissatisfied with the approach taken at the 6th QQR to the extent that they refused to engage in the process (see Appendix 2)), the working group recognises that many of the species which failed to meet the 6th QQR rationale (and so have not been recommended for listing), are nonetheless highly vulnerable to human activity. Given that these taxa are also threatened, the working group believes that their protection is warranted.

There are two issues to outline. First, reference is made to four species that have not been selected for scheduling because of the difficulties in defining a place of shelter. These species are the ant *Formica exsecta*, fly *Hammerschmidtia ferruginea*, and beetles *Gnorimus variabilis* and *Gnorimus nobilis*. There is no doubt that these species would benefit from some form of protection but lack of clarity regarding the distinction between a place of shelter and the wider habitat makes this decision subjective.

Second, the other species listed in Table 12 would benefit from some form of protection too but none meet the rationale for listing although they are highly threatened (often by habitat loss) and very restricted in their distribution. It is not known how many other species could be listed in Table 12 because there has been no comprehensive assessment of the species threatened by wider habitat loss. It is likely that many native, threatened, range-restricted species could benefit from listing on the schedules or by being protected by some other means.

The working group therefore recommends that Defra and the Devolved Administrations consider how best to provide this protection. JNCC can facilitate these discussions among stakeholders if required.

Table 12. Examples of threatened species not selected for listing in Schedules 5 or 8 which were considered as candidates during the 6th QQR and which may warrant some form of protection.

Species	Major Taxonomic Group	No sites on which species occurs in GB	IUCN threat status
<i>Adelanthus lindenbergianus</i>	Liverwort	1 site	EN
<i>Athalamia hyalina</i>	Liverwort	1 site	VU
<i>Atrichum angustatum</i>	Moss	1 site	CR
<i>Bruchia vogesiaca</i>	Moss	1 site	CR
<i>Cephaloziella dentata</i>	Liverwort	1 site	CR
<i>Cerceris quadricincta</i>	Wasp	6 sites	EN
<i>Didymodon cordatus</i>	Moss	1 site	EN
<i>Didymodon glaucus</i>	Moss	1 site	CR
<i>Grimmia anodon</i>	Moss	1 site	CR
<i>Grimmia unicolor</i>	Moss	2 sites	VU
<i>Hygrohypnum polare</i>	Moss	1 site	EN
<i>Liochlaena lanceolata</i>	Liverwort	1 site	CR
<i>Moneses uniflora</i>	Vascular plant	1 site 80%	VU
<i>Nothophantes horridus</i>	Spider	2 sites	CR or VU
<i>Philonotis marchica</i>	Moss	1 site	EN

<i>Pulmonaria obscura</i>	Vascular plant	3 sites	EN
<i>Seligeria carniolica</i>	Moss	1 site	CR
<i>Seligeria oelandica</i>	Moss	1 site	VU
<i>Sitticus distinguendus</i>	Spider	2 sites	CR or VU
<i>Telaranea europaea</i>	Liverwort	1 site	EN
<i>Thamnobryum angustifolium</i>	Moss	2 sites	EN
<i>Thamnobryum cataractarum</i>	Moss	1 site	EN
<i>Tortula leucostoma</i>	Moss	2 sites	EN
<i>Weissia multcapsularis</i>	Moss	2 sites	CR
<i>Hammerschmidtia ferruginea</i>	Fly	6 sites	CR
<i>Gnorimus variabilis</i>	Beetle	2 sites	VU
<i>Gnorimus nobilis</i>	Beetle	Several sites	VU
<i>Formica exsecta</i>	Ant	7 sites	EN

Additional Recommendation 2

The working group also recommends that the rationale for selection of all species currently on Schedules 5 and 8 is reviewed before the start of the 7th QQR. The need for this is well illustrated by, but not restricted to, the proposed 're-grading' of several saline lagoon species (Table 3). These species are not threatened by collection and there is no market for them, but their habitat remains under threat. This appears to be at odds with the rationale underlying scheduling adopted in the 6th QQR which implies that that species whose habitat is under threat will not be selected. Again JNCC can lead this work if required.

Additional Recommendation 3

Several *Hieracium* spp. were proposed for listing on grounds that there was an inconsistency between the Scottish taxa (already listed on Schedule 8) and those in England and Wales which are not listed. The need for consistency between Scotland and England and Wales does not satisfy the rationale or criteria for scheduling. Further, there is no evidence for collection of the proposed *Hieracium* spp. and it is likely that the governments will reject the listing of these *Hieracium* spp. on the grounds that they cannot be distinguished in the field. The working group therefore rejected these submissions and asks the governments to advise on how to deal with differential listing in Scotland and in England and Wales. Note that the listing of several hundred *Hieracium* species may need review, following their recent elevation to specific status and the recognition that many are either or both threatened and endemic.

Additional Recommendation 4

Animals and plants on Schedule 2 and 5 of the Habitat Regulations are listed on the WCA in England and Wales but not in Scotland. The working group asks the Welsh Government and Defra to advise on how they want to deal with this (see Section 10).

Additional recommendation 5

One of the issues raised in previous QQRs was the application of a "place of shelter" to animals on Schedule 5 but the immediate substrate on which plants grow is excluded from Schedule 8. This difference affords fewer options for the protection of plants compared to animals. The working group recommends that Defra, the Welsh Government and the Scottish

Government reconsider this difference and assess whether this inconsistency is leading to biodiversity losses and consider new legislative options, if appropriate.

13 References

CHEFFINGS, C.M. & FARRELL, L. (eds.), DINES, T.D., JONES, R.A., LEACH, S.J., MCKEAN, D.R., PEARMAN, D.A., PRESTON, C.D., RUMSEY, F.J., TAYLOR, I., 2005. The Vascular Plant Red Data List for Great Britain. Species Status 7: 1-116. Joint Nature Conservation Committee, Peterborough.

DEFRA, 2011. Summary of Responses to the Consultation on the Fifth Quinquennial Review of Schedules 5 and 8 of the Wildlife and Countryside Act 1981 and the Government's Decisions. Defra and Welsh Government. http://jncc.defra.gov.uk/pdf/QQR5_wildlife-countryside-act-gov-response110805.pdf

JNCC, 2008. Fifth Quinquennial Review of Schedules 5 and 8 of the Wildlife and Countryside Act, 1981. Report and Recommendations from the Joint Nature Conservation Committee. 94 pages, Peterborough.

KIBBY G.G., 1998. Editor's Note. *Field Mycology* 1(3):98.

PRESTON, C.D., PEARMAN, D.A. & DINES, T.D. (eds.), 2002. *New Atlas of the British and Irish Flora*. Oxford University Press, Oxford.

APPENDIX 1 List of organisations consulted as part of the Fifth Quinquennial Review

Forms sent to:	Responses received
ABP Marine Environmental Research Ltd	
Agri-Food & Biosciences Institute - Fisheries & Aquatic Ecosystems	
AM Seafoods	
Amateur Entomologists' Society	via Invert Link
Amphibian and Reptile Conservation Trust	
Anglers' Conservation Association	
Angling Trust	Received
Anglo Scottish Fish Producers Organisation Ltd	
Anglo Scottish Fishermen's Association	
Aquatic Environments	
ARG UK (Amphibian and Reptile Groups UK)	
Association for the Protection of Rural Scotland	
Association of British Fungus Groups	
Association of Marine Scientific Industries	
Atlantic Salmon Trust	
Badger Trust	
Balanced Seas	
Balfour Browne Club	
Bass Anglers' Sportfishing Society	
Bat Conservation Trust	
Bees, Wasps, & Ants Recording Society	Received
Biological Records Centre	
Botanical Society of the British Isles	
Bridlington and Flamborough Fishermen's Society	
British Arachnological Society	via Invert Link
British Association for Shooting & Conservation	
British Association of Nature Conservationists (journal Ecos)	
British Beekeepers Association	
British Bryological Society	via Plink Scotland
British Deer Society	
British Divers Marine Life Rescue	
British Dragonfly Society	via Invert Link
British Ecological Society	
British Entomological and Natural History Society	via Invert Link
British Hedgehog Preservation Society	
British Herpetological Society	Received
British Horse Society	
British Lichen Society	Received
British Marine Federation	
British Mycological Society	
British Myriapod and Isopoda Group	
British Naturalists' Association	
British Ornithologists Union	
British Phycological Society	
British Ports Association	
British Pteridological Society	
British Spearfishing Association	
British Sub Aqua Club	

Forms sent to:	Responses received
British Trust for Conservation Volunteers	
British Trust for Ornithology	
Buglife – The Invertebrate Conservation Trust	Central Association of Bee-keepers, Staffordshire Invert Grp, Badenoch & Strathspey Cons Grp, Invert Link, Wild Trout Trust)
Bumble Bee Conservation Trust	Received via Invert Link
Butterfly Conservation	Received via Invert Link
Byways and Bridleways Trust	
CABI Bioscience UK Centre	
Campaign for National Parks	
Campaign for the Protection of Rural Wales	
Cardigan Bay Fisherman's Association Ltd.	
Care for the Wild	
Centre for Ecology & Hydrology (CEH)	
Centre for Environment, Fisheries, Aquaculture	
Chester Zoo	
Coastal Assessment, Liaison and Monitoring	
Conchological Society of Great Britain & Ireland	Received via Invert Link
Confederation of Forest Industries (Confor)	
Council for National Parks	
Council for the Protection of Rural England	
Countryside Alliance	
Countryside Management Association	
Dipterists' Forum	Received
English National Parks Authorities Association	
Environment Agency	Received via Invert Link
Environment Research Funders' Forum	
Environmental Investigation Agency	
Environmental Resources Management	
European Federation of Sea Anglers	
European Union for Coastal Conservation - University of Aberdeen	
Fauna & Flora International	
Fauna and Flora Preservation Society	
Field Studies Council	Received via Invert Link
Fish	
Fishery trusts	
Flora Locale	Received
Forest Research, Alice Holt Research Station	
Freshwater Biological Association	
FreshwaterLife	
Friends of the Earth	
Froglife	
Game & Wildlife Conservation Trust	
Green Alliance	
Heriot-Watt Centre for Marine Biodiversity & Biotechnology	
Herpetological Conservation Trust	
Hymettus Ltd	
Institute of Environmental Management and Assessment	
Institute of Estuarine Coastal Studies -	
Institute of Marine Sciences	
International Fund for Animal Welfare	

Forms sent to:	Responses received
International Fund for Animal Welfare	
Invertebrate Link	Received (Ancient Tree Forum; Oxford Uni Museum of Nat Hist; + several associated organisations)
IUCN Red List Unit	
John Muir Trust	
Loch Lomond & The Trossachs National Park Authority	
Macaulay Institute	
Mammal Society	
Mammals Trust UK	
Marine Biological Association of the United Kingdom	
Marine Conservation Society	
Marine Ecological Surveys	
Marine Management Organisation	
Marine Protected Areas Fishing Coalition	
Marine Scotland	
Mountaineering Council of Scotland	
National Association for Areas of Outstanding Natural Beauty	
National Federation for Biological Recording	
National Federation of Fisherman's Organisation	
National Museum of Scotland: Natural Sciences	
National Museum of Wales	
National Oceanography Centre - DEEPSEAS Group	
National Small Woods Association	
National Trust	
National Trust (including NT for North & South Wales)	
National Trust for Scotland	
Natural Environment Research Council	
Natural History Museum	
Nature Bureau International	
Open Spaces Society	
People's Trust for Endangered Species	Received via Invert Link
Plantlink Scotland	Received (Bot Soc Scotland; Brt Bryological Soc;+ others)
Plantlife	Received via Plink Scotland
Pond Conservation: the Water Habitats Trust	
Proudman Oceanographic Laboratory	
Ramblers' Association	
Rare Birds Breeding Panel	
Reforestation Scotland	
River Tweed Commission	
Royal Botanic Garden Edinburgh	Received via Plink Scotland
Royal Botanic Gardens Kew	
Royal Entomological Society	Received via Invert Link
Royal Society for the Prevention of Cruelty to Animals	
Royal Society for the Protection of Birds	Received via Invert Link
Scottish Association for Marine Science	
Scottish Council for National Parks	
Scottish Countryside Alliance	
Scottish Countryside Rangers Association	
Scottish Environment Link	

Forms sent to:	Responses received
Scottish Environment Protection Agency	
Scottish Fishermen's Federation	
Scottish Gamekeepers Association	
Scottish Land & Estates	
Scottish Ornithologists' Club	
Scottish Pelagic Fishermen's Association	
Scottish Raptor Study Group	
Scottish Seabird Centre	
Scottish Water	
Scottish White Fish Producers Association	
Scottish Wild Land Group	
Scottish Wildlife Trust	
Sea Anglers Conservation Network	
Sea Mammal Research Unit	
Sea Mammal Research Unit - Scottish Oceans Institute	
Sea Shepherd	
Sea Trout Group	
Sea Watch Foundation	
Seafield Estates	
Seahorse Trust	Received
Seas at Risk	
Seasearch	
SeaWatch Foundation	
Shark Trust	Received
Shellfish Association of Great Britain	
SSA Vascular Plants	Received
The Centre for Marine and Coastal Studies	
The Scottish Sea Angling Conservation Network	
Wildlife Trusts (The Royal Society of Wildlife Trusts)	Received via Buglife
TRAFFIC International	
Vincent Wildlife Trust	
Wales Environment Link	
Wales Environment Research Hub	
Welsh Aquaculture Producers' Association	
Welsh Federation of Fishermens Associations	
Welsh Federation of Sea Anglers	
Welsh Historic Gardens Trust	
Welsh Scallop Association	
Welsh Water (Dwr Cymru)	
Whale and Dolphin Conservation Society	
Wildflower Society	
Wildfowl and Wetlands Trust	
Wildlife and Countryside Links	
Woodland Trust	
World Conservation Monitoring Centre	
World Museum Liverpool	
World Wide Fund for Nature - UK	
Young People Trust for Environment & Nature Conservation	
Zoological Society of London	

APPENDIX 2 Stakeholders' letters

Consultation on the sixth Quinquennial Review of Schedule 8

A statement from the undersigned members of Plant Link Scotland

Plant Link Scotland is a forum of organisations working for the conservation of plants and their habitats in Scotland, with 14 member organisations, including non governmental organisations, scientific societies and the statutory agency, Scottish Natural Heritage. We therefore bring a wide expertise to bear on the ongoing consultations and discussions on Schedule 8 of the Wildlife and Countryside Act (1981). This response is made on behalf of the undersigned member bodies of Plinks and pertains to the situation in Scotland.

Fifth quinquennial review:

Members of PLINKS responded to the 5th quinquennial review in Scotland in 2011 and some submitted a comment ahead of the 6th quinquennial review in January 2012. The main points made in these responses still stand:

1. We support the 5th quinquennial review recommendations to add *Lobaria pulmonaria* to Schedule 8.
2. We support the rationale that scheduling should be pursued when an animal or plant is in danger of extinction in Scotland, or is likely to become so endangered unless conservation measures are taken. Scheduling also has the effect of raising awareness of the threats to species and the need for their protection. These benefits of scheduling are particularly important for improving the effectiveness of conservation mechanisms such as the Scottish Biodiversity Priority List, under the Nature Conservation (Scotland) Act.
3. We believe the consultation emphasis on persecution, collection or trade not to be within the spirit of the Wildlife and Countryside Act (1981) Section 22, which suggests species can be added to Schedule 8 if "in danger of extinction in Great Britain or is likely to become so endangered unless conservation measures are taken". Indeed, the 'Report and Recommendations from the JNCC on the Fourth Quinquennial Review of Schedules 5 and 8 of the Wildlife and Countryside Act 1981' (JNCC, 2002) recognised the usefulness of Schedule 8 for the wider protection of listed species in sectors such as the planning system, acknowledging that the threat from collection is of lesser importance to Schedule 8 species in present times.
4. In specific relation to Schedule 8 and the planning sector it should be noted that the protection afforded to scheduled species is already mentioned in Scottish Planning Policy Guidelines (2010), itself under review: "Many species are legally protected and their presence or potential presence is an important consideration in decisions on planning applications..... Planning permission must not be granted for development that would be likely to have an adverse effect on a species protected under the Wildlife and Countryside Act 1981". Species should therefore be recommended for addition to Schedule 8 in order to afford protection from intentional destruction through development.
5. We were disappointed that the opportunity in the Wildlife and Natural Environment Act (2011) was not taken to amend the WCA to ensure that the places where plants grow are protected, in line with the protection given to scheduled animals. It remains an offence to destroy a plant but not its habitat. SSSI site selection guidelines for plants and fungi recommend that all viable populations of Schedule 8 species should be notified, which should therefore provide protection of the places where these species occur. However, SSSI designation is not consistent with this guideline. This leaves many populations of Schedule 8 species vulnerable to destruction.

6. We believe that legal protection through Schedule 8 serves to strengthen and support conservation action taken through the Scottish Biodiversity Strategy. We are concerned that a two-tier system of protected and unprotected species within Scottish Biodiversity Priority List creates confusion and has the potential to undermine species recovery activities for unprotected priority species.

6th Quinquennial Review:

Rationale for scheduling:

We believe that it is essential to ensure that species protection afforded through the Wildlife & Countryside Act is fit for purpose and works alongside other mechanisms available to safeguard our most vulnerable wildlife. We support the rationale underlying scheduling, outlined in the 6th QQR consultation documentation, that scheduling should be pursued when an animal or plant or fungus is in danger of extinction in Great Britain, or is likely to become so endangered unless conservation measures are taken, and legal protection is likely to improve its chances of survival.

However we disagree that the evidence required to show that a species is in danger of extinction or is likely to become so, should only relate to persecution. The greatest threats to plants and fungi in GB today focus on the loss of habitat. This threat, despite it being the most important, is not addressed by Schedule 8, which we would argue, as a result is not fit for purpose.

Given therefore that Schedule 8, in its current form, does not address the key threats to plants in GB, and also given the Schedule is one of only two legislative mechanisms currently in place to protect plants from extinction, the other being the protected areas mechanisms, we do not agree that species should be removed from Schedule 8, unless there is clear taxonomic evidence that the species no longer exists, is a variant of a species that is not at threat of extinction and is not undergoing active speciation.

We would urge governments at Holyrood, Westminster and Cardiff to put in place a legislative mechanism that addresses the ongoing loss of plant diversity across the UK (Countryside Survey 2007). While we strongly support action through the country biodiversity strategies to reverse this decline, we also believe that legislation is the most effective backstop to prevent future extinctions.

This means that the places where threatened plants and fungi grow, their habitats, have some protection by law, thus bringing parity for plants with animals (Schedule 5). We believe Schedule 8 could be much more effective in achieving its aim to prevent extinctions, if it included protection for the places where scheduled species grow. Without this change, we can see little progress being made in addressing plant diversity loss.

Specifics in relation to proposals for Schedule 8:

We do not support the removal of any species from Schedule 8 unless for strong taxonomic reasons (see above). We do not believe that there are other adequate legislative protection in place to prevent loss of those species already listed.

In particular, we would not support the removal of *Hyacinthoides non scripta* from Schedule 8. This would be a backward step and would result in bulb removal from the wild. Although the UK is estimated to have up to 70% of the world's bluebell population¹, it

remains at threat, especially in England from the impact of genetic hybridisation. This issue is particularly pertinent in Scotland where arguably the largest native populations remain secure from the genetic impact of *Hyacinthoides hispanica* and the hybrid. Removal from Schedule 8 also removes the current licencing checks and balances to ensure bulbs being traded are *H. non scripta*.

We supported the inclusion of *Calicium corynellum* and *Lobaria pulmonaria* in the 5th quinquennial review. It is not clear to us whether that change has actually been made or not. We would again support the inclusion of *Lobaria pulmonaria*. Taxonomic research is currently suggesting that *Calicium corynellum* is not a separate species.

Alpine species: although these species may not be at risk from persecution, they are at significant risk of extinction through habitat change. If the rationale behind Schedule 8 is to be delivered, this group of species are a key example of where species should be listed. Other species proposed for listing by the SSAG, *Moneses uniflora* and *Cephalanthera longifolia* we would also support.

This statement is supported by the undersigned PLINKS member organisations:

Plantlife Scotland

Botanical Society of Scotland

British Lichen Society

Royal Botanic Garden Edinburgh

British Bryological Society

For further information, please contact Deborah Long, Chair of PLINKS:

TEL: 01786 478509

Deborah.long@plantlife.org.uk

¹ Fred Rumsey, pers comm. 2012



BRITISH BRYOLOGICAL SOCIETY

Cuillin Views
15 Earlish
Portree
Isle of Skye
IV51 9XL

26 March 2013

6th Quinquennial Review: Statement from the British Bryological Society

We fully endorse the statement from Plantlife Link Scotland on the subject of 6th QQR, especially:

“The greatest threats to plants and fungi in GB today focus on the loss of habitat. This threat, despite it being the most important, is not addressed by Schedule 8, which we would argue, as a result is not fit for purpose.

Given therefore that Schedule 8, in its current form, does not address the key threats to plants in GB, and also given the Schedule is one of only two legislative mechanisms currently in place to protect plants from extinction, the other being the protected areas mechanisms, we do not agree that species should be removed from Schedule 8, unless there is clear taxonomic evidence that the species no longer exists, is a variant of a species that is not at threat of extinction and is not undergoing active speciation.

We would urge governments at Holyrood, Westminster and Cardiff to put in place a legislative mechanism that addresses the ongoing loss of plant diversity across the UK (Countryside Survey 2007). While we strongly support action through the country biodiversity strategies to reverse this decline, we also believe that legislation is the most effective backstop to prevent future extinctions.”

We are disappointed that the apparent opportunity for improving Schedule 8, presented in the October 2011 criteria for the selection of species, has been lost in the subsequent revision of the criteria in July 2012. We believe that Schedule 8 is no longer fit for purpose and that it is necessary either to revise the criteria extensively, or to institute new and more effective legislation for species protection.

We are therefore not making any recommendations for removing species from or adding species to Schedule 8.

I attach a slightly revised version of a paper that I distributed early in 2012 as a potential response to the October 2011 revision of the Schedule 8 criteria. This clearly sets out the most threatened bryophyte species in the UK and suggests consequent changes to Schedule 8. Legislation directed at preventing very rare and threatened species from becoming extinct needs to address the protection of sites and habitats for these species.

Nick Hodgetts, Conservation Officer, British Bryological Society

Email from BWARS

Dear Ant,

Many thanks for this. From a BWARS perspective the policy remains that, in requesting a Schedule 5 status, there is more room for damaging confusion regarding the correct identity of species, than gain for the population of any one species. We will not, therefore, be making an application and would not wish to support any application for such a status for any aculeate Hymenopteran from any other body or organisation.

Best wishes

Mike Edwards



British Lichen Society

Registered Charity Number 228850

Conservation Officer: Bryan Edwards, Dorset Environmental Records Centre, Dorset History Centre, Bridport Road, Dorchester, Dorset. DT1 1RP

Email: b.edwards@dorsetcc.gov.uk

Tel.: 01305 228250

Dear Ant,

Consultation on the sixth Quinquennial Review of Schedule 8 - Response from the British Lichen Society

Our response is in the form of this letter rather than the official proforma as we do not wish to make any recommendations for additions or deletions to the current Schedule 8 list. Details of taxonomic / nomenclature changes have already been sent to you.

The BLS has discussed QQR over the past year and have come to the conclusion that in its present form Sch. 8 is biased towards a very small number of 'glamorous' taxa that may be threatened by collection (e.g. *Teloschistes* spp. *Heterodermia* spp and *Pseudocyphellaria aurata*), although this threat is much less for lichens than for larger 'showy' plants such as orchids. We have had conflicting information that the criteria for adding species under QQR6 was to be widened to include any species threatened by extinction and then later were told that only those threatened by collection were being considered. The vast majority of lichens are threatened with extinction by inappropriate management or development and habitat change, but these factors do not seem to be included in the current criteria for additions to Sch. 8. If this is the case then some other mechanism needs to be found to protect species threatened by inappropriate development or management. This could be achieved for example by strengthening the legislation for species on Section 41 of the NERC Act (2006) for England, Section 42 of the NERC Act (2006) for Wales and Section 2(4) of The Nature Conservation (Scotland) Act 2004. However, this could lead to confusion and a single system would be preferable over a two-tier system.

We are also reluctant to add species to the list in its present form as we do not wish to endorse the use of Schedule 8 as an effective conservation tool for most threatened lichens. The wording of Sch. 8 indicates that while the plant / fungus is fully protected under the Act, the substratum on which it is growing (e.g. the host tree) is not. This differs from Sch. 5 where the habitats occupied by mammals (e.g. a Badger sett) are also protected from intentional disturbance under the Act. Protection for the host tree for lichens is especially important as for the vast majority of species mitigation such as transplanting or moving the host tree is not possible, and in situ conservation is the only viable option. There are a number of highly threatened lichens (e.g. *Anaptychia ciliaris*) that are found on wayside and pasture trees in the wider countryside that are not protected within the SSSI network and Sch. 8 would be a way of affording them protection, but protection of the host tree is also needed. This scenario is also true of other species highly threatened not by collection but by other intentional disturbance, e.g. the River Jelly Lichen (*Collema dichotomum*), which is threatened by changes to hydrology as expected with new hydropower schemes.

Recommendations:

1. For QQR7 the criteria for which species added to the Schedule needs to be clearer.

2. If Sch. 8 is only to there for species for which collection is the main threat then another mechanism has to be found to protect other species threatened by inappropriate development and management. This could be achieved by strengthening existing planning legislation.

3. The BLS strongly recommends that the wording of Schedule 8 is amended so that the substratum on which the plant / fungi directly grows is afforded protection, bringing it in line with the protection for mammals in Sch. 5.

If you have any queries on the above please do not hesitate to contact me.

Yours sincerely,

Bryan

Bryan Edwards
Conservation Officer, British Lichen Society

APPENDIX 3 Proformae for each taxon in Schedule 5

The proformae published below are largely as received from stakeholders during the consultation phase of the 6th QQR. Each proforma is preceded by a short section that contains any comments on the proformae and summarises the working group decisions for that species.

Addition

Brachinus sclopeta

Hyles gallii

Osmerus eperlanus

Palinurus elephas

Reduced protection

Alkmaria romijni

Armandia cirrhosa

Caecum armoricum

Edwardsia ivelli

Gammarus insensibilis

Hydrochara caraboides

Nematostella vectensis

Pachycordyle navis = *Clavopsella navis*

Tenellia adspersa

Victorella pavida

Removals

Thyasira gouldi

Species recommended for addition to Schedule 5

Brachinus sclopeta Fabricius, 1792 Streaked bombardier beetle

Type of organism: Invertebrate, Beetle
Submitted by: Buglife, Invertebrate Link

Working group summary

There is evidence that the last known site for this species being destroyed by brownfield development and has been targeted by beetle collectors. Given this and the extreme rarity of this species, which is likely to be highly collectable by virtue of its striking appearance suggests that addition to Schedule 5 to protect this species from collection is appropriate.

Addition to Schedule	9(4)a & 9(1)
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

UK BAP Priority species previously thought to be extinct until rediscovered on a London brownfield site in 2005.

Global distribution

Extinct in Belgium, Red list in Switzerland (strongly endangered), Rare in France, occurs in Spain and Italy (status unknown).

Distribution in Great Britain

Pre-1930s record from Devon, East Sussex and East Kent. It was declared extinct in the 1970's. Rediscovered on a brownfield site in London in 2005 next to the Thames Barrier Park, populations have been subsequently found at two nearby sites -Silver Town Quays and London City airport. Two of these three sites have been completely destroyed, leaving only one intact population which is under significant threat from development. In 2007 about 70 specimens of the beetle were translocated to a nearby site, the success of this is unknown although no beetles have been recorded there since 2010- indicating failure. The known population is entirely restricted to brownfield sites in London. Due to massive development pressures in London over 50% of wildlife rich brownfield sites have been lost in the city since 2008.

Habitat

Usually associated with sparsely vegetated calcareous grassland sites including brownfield sites and unstable coastal cliffs and dune slacks. On the sites in London, the species occurred in large banks of loose chalky rubble with abundant annual flowers such as hawkweeds, mallow, fleabane, toadflax and vetches. The larvae of the Streaked bombardier beetle are parasitic on another species of ground beetle (probably an *Amara* and/or *Ophonus* species) this dependence on a host species makes the habitat requirements particularly strict, but we currently do not understand its ecology sufficiently to be able to exactly define its habitat requirements.

Threats

Historically this bombardier beetle may have declined through cliff stabilisation schemes and the construction of sea defences. Coastal developments may have reduced the amount of available habitat. The degradation of suitable habitat through natural succession and the invasion of scrub on stabilised areas may also have contributed to this species decline. The last sites for this species are targeted by collectors and destroyed through brownfield development. There is evidence of collections from at least one site and a publication of the grid references of this site. There is potential for this site to be targeted further. The species is highly collectable being comparatively large and gaudy and from a popular group of beetles. As its appearance is distinctive there is no need to collect the species to identify it from established sites and for recording purposes a single specimen taken under licence would be sufficient to verify and record additional sites for posterity.

Apart from collecting the main threat now to the known population is the loss of sites to development, and there is a high probability of the loss of any further sites discovered unless the species is protected. The likelihood of the translocation working are very low due to the complex ecological requirements of this species so the development of brownfield sites in the East Thames corridor may have already effectively caused the extinction of this beetle in the UK. If the species survives on the translocation site then this is unlikely to be a sustainable option in the long term, additional work will be required to protect that site and to ensure that the species spreads to additional sites.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9(1)	Intentionally kills, injures or takes any wild animal included in Schedule 5	X
9. (4)	a) damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

The Streaked bombardier beetle is on the verge of extinction in the UK. The last known site for this species is being destroyed through brownfield development, should other populations be found in similar circumstances they will need protecting from the high development pressure.

The extreme rarity of this attractive beetle and the fragility of the UK population, together with evidence of collection, makes the species at risk from collection. Therefore it is sensible and precautionary to afford 9(4)a protection.

Benefits to accrue from acceptance of the recommendation

Averting UK extinction.

Species recommended for addition to Schedule 5

Hyles gallii Rottenburg, 1775 Bedstraw hawk-moth

Submitted by: Buglife, Invertebrate Link

Type of organism: Invertebrate, moth

Working group summary

Although previously there was doubt about the residency of bedstraw hawk-moth, evidence of this species being resident in the UK has been provided. Given climate change scenarios, the working group considered that this species would likely remain in the UK. Small population size, desirability and evidence for collection, make it appropriate to add to Schedule 5.

Addition to Schedule	Full
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Eligibility criteria

Native in the wild in Great Britain	X
Vagrant in Great Britain	X
Endangered in Great Britain	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Rare as a breeding species, perhaps six or seven residential sites. Also a regular immigrant.

Global distribution

Pittaway (1993) describes the moth as being “resident throughout temperate Europe, apart from Britain, northern France and much of the Low Countries, much of the Iberian Peninsula, Scandinavia, northern Russia and most of the Balkan Peninsula, where it occurs only as a migrant”. This statement is not accurate, at least as far as Britain is concerned as the species is clearly resident here. Investigations of the dune systems along the west coast of Holland were carried out in 2002 and 2003 (Tunmore 2002 & 2003) but no evidence of resident populations was found there, despite the presence of suitable habitat and proximity to the east coast of England.

Distribution in Great Britain

Bedstraw Hawk-moth is currently known to be established at six or seven British sites. There are eight additional sites where past records have suggested the presence of possible resident populations but investigation as part of the English Nature/Natural England funded research between 2001 and 2007 has failed to locate their continued presence (Tunmore, 2001, 2002, 2003, 2004, 2005/2006 & 2007). A very wide and intensive search has been carried out during the seven years of fieldwork, focusing on the coasts of Kent, Essex, Suffolk, Norfolk, Lincolnshire, Yorkshire, Teeside and Northumberland. Inland searches have been carried out in some of these counties. Limited searches were also carried out in the north-west of England in 2007. As an immigrant *H. gallii* continues to occur annually. Until recently the species was considered to be an annual immigrant that reaches Britain varying numbers, primarily along the east coast and Northern Isles, but occasionally along the south coast; larvae were occasionally been found in the late summer after periods of influx. Whilst there had been occasional speculation in the entomological literature about possible temporary residency, most notably in Norfolk between 1955–1958, *H. gallii* had not generally been widely regarded as capable of surviving the winter in Britain and thus unlikely to be a resident species. Investigations as part of the English Nature/Natural England funded fieldwork between 2001 and 2007 revealed a continuous history of records over at least a 20 year period. In the late summer of 2001/2002, at a known site for the species, a giant outdoor cage was built in situ over an area of food plant hosting larvae (Tunmore 2001

& 2002); at least one of these larvae emerged the following spring, thus providing the first documented evidence that the species can survive the British winter. The fieldwork programme has produced substantial counts of larvae (the highest total being 87 in 2002) and observations of nectaring adults at established sites, but if this work had not taken place the current resident status of *H. gallii* would not be evident from the occasional records of immigrants and larvae that appear in the entomological literature (generally immigrant individuals seem to occur within a distinctly different period to British-bred stock). It is now thought that this species is a long term resident that has simply gone undetected as a larvae and adults dismissed as immigrants. Indeed, attention has recently been drawn to a series of records from a site in the north-west of England between 1870 and 1907. The regularity of records and suitability of the habitat there suggest possible residency.

That the species is resident in Britain is beyond doubt. Furthermore, despite a very wide and intensive search over a number of years the fieldwork has found few new sites, even in areas that were seemingly suitable for the species. Fieldwork investigations in Holland and correspondence with European entomologists has failed to find any evidence of range expansion in Europe. These factors, combined with past documentary evidence and the often remote locations involved, make it entirely plausible that this species has been part of our native fauna for a considerable period of time.

Mark Tunmore continues to monitor this species as time and funding allows and has data up from 2011 and 2012 for several sites but no recent records of breeding for Suffolk.

Habitat

In Britain the resident populations of Bedstraw Hawk-moth have a requirement for sandy soils, which by their nature are well-drained. It is thus likely that the pupa is susceptible to water logging and the effects of high rainfall. The known population distribution is currently confined to the eastern side of England, which may reflect rainfall totals in the drier east of England. A further observation is that resident colonies tend to be exposed to hot summer temperatures. Data-logging to investigate temperatures experienced at widely separated sites was carried out over a two year period in order to investigate apparent differences in lifecycle. These results have yet to be analysed.

Threats

Bedstraw hawk-moth has been considered to be a rare immigrant to the British Isles and is highly sought after by the moth collector. The survey work and current status of the species in Britain has been kept highly confidential due to concerns that the species may suffer from the attention of over-zealous collectors, and concerns by individual site managers about the possible impacts upon other species by those looking for larvae. Nevertheless, there have been three known instances of collecting at the resident sites – in 1997, 2000 and 2003. One of these resulted in a collector being banned for taking larvae without permission. Another incident related to wild larvae being taken that were subsequently made available for sale at livestock exhibitions with the claim that they were from wild populations (allegedly 300 pupae were on sale at £2.50 each on one occasion). Indeed, enquiries with the person concerned reveal that larvae have been 'found' every year for 11 years at the site from which the stock was taken. The location of the Suffolk site was broadcast on the Internet for a limited period in 2003; some larvae are known to have been taken from this site and the County Moth Recorder, Tony Prichard, reported seeing likely evidence of collecting in that year and subsequent ones. Despite searches, larvae have not been seen at this site since 2004 and the species may now be locally extinct, though of course it is not possible to scientifically attribute this to the collecting activity.

The bold markings and bright colours of the larva make it an attractive species to rear for a much wider audience than the dedicated moth collector, hence its attraction for livestock sale. It is also important to consider that the above quoted instances of collecting apply to a

moth whose resident status has necessarily been shrouded in secrecy, and of course these are only the incidents that we are aware of, it may well be the tip of an iceberg. Considering the level of secrecy maintained, these incidents indicate the species could become a more serious target of collecting were information about the species to be more widely known. With the best will in the world it is possible to keep something secret for only a limited time, especially when reports to Natural England are being published and circulated (albeit in a limited way) and with the turn-over of seasonal nature reserve staff (who are involved in protecting the species).

Whilst the level of secrecy employed seems to have been largely successful in maintaining the moth's low profile, this in itself presents a potential problem as it leaves the species open to inappropriate management (particularly on sites where it is has not yet been discovered). There is also the danger that any collector tempted to take larvae will not exercise restraint, dismissing the species as an immigrant that is unable to survive the winter in Britain. According to Pittaway (1993) the species is susceptible to a high rate of parasitism, which also seems to be the view amongst some experienced entomologists; during the fieldwork in recent years a number of dead larvae were found, but the causes of this were not established. Natural volatility within populations seems to be a feature of this species, which is mentioned by Pittaway (1993) and has been observed within some of the British resident populations. This perceived high risk of mortality adds to the temptation for the collector to remove large numbers of larvae as an insurance against failure.

There is the distinct possibility that *H. gallii* could be lost from a site through management policy. This is also a significant threat to the continued survival of the species.

Legal obligations or protection

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (1)	Intentionally kills, injures or takes any wild animal included in Schedule 5	X
9. (2)	Has in his possession or control any live or dead wild animal included in Schedule 5	X
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X
9. (5)	sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5	X
	publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things	X

Justification for the recommendation

Bedstraw hawk-moth is a rare species in Britain, which is confined to a few sites and thus far, despite extensive searching over a number of years, shows no sign of range expansion; indeed it appears to have been recently lost from at least one established site. *H. gallii* is a highly attractive species, both in the larval and the adult stages. It is of considerable interest both to the dedicated collector, those with a more general interest in rearing larvae, and livestock dealers, as has been demonstrated by incidents of collecting and sale in recent years. Populations are susceptible to natural volatility and the species is currently widely perceived amongst entomologists as being an immigrant species, and thus of no conservation value. These factors combined mean that it is both a likely target for over-

collecting, and a species that could easily be driven to local or even national extinction as a result of the additional pressure placed upon populations by collecting.

Resident populations of *H. gallii* occur in specialised habitat, and suitable areas of the most favoured foodplant is often restricted in distribution within the known sites, being linear or patchy in its distribution. It is thus be relatively easy for a dedicated searcher, armed with the appropriate knowledge, to find a large number of larvae (=proportion of the population) in a short period of time. For these reasons, the species would benefit from legal protection. Currently there is a conflict between the need to make more public some of the knowledge about this species in Britain, and the need to maintain secrecy due to concerns about collecting. Giving the species legal protection would allow profile raising of the moth, which should add to current knowledge and encourage more sympathetic management.

Even if, despite the evidence, there is any doubt about the length of time that this species has been resident the following general principle should be considered. Species will need to adapt to climate change by changing their distributions. The UK may in the future develop populations of a number of species of international conservation importance that do not currently occur here. Species that are highly collectable habitat specialists in the UK should not be prevented from establishing here due to exploitation.

Benefits to accrue from acceptance of the recommendation

Most immediately, legal protection would help to minimise the potential negative effects of collecting and send out a clear and much needed message that Bedstraw hawk-moth is of conservation importance and not just an immigrant. Furthermore, it would give more credibility and legal power to nature reserve staff, who currently remain vigilant over populations of the moth on their site patrols but are often overstretched by additional responsibilities. This proposal has been discussed with Natural England and National Trust staff, who have responsibilities for some of the core populations of the moth, and they were very supportive of the proposal to include *H. gallii* on Schedule 5. It was also felt that raising the profile of the moth in this way would help to justify habitat management for *H. gallii*, which would have benefits for other species.

Raising the profile of the moth will also stimulate further research and add to our current understanding of the distribution and ecology of the species. In particular, there is a need to learn more about possible relationships with parasites in this country, species of which could be of conservation interest within their own right.

Furthermore, giving the species legal protection would allow the veil of secrecy surrounding this species to be at least partially lifted, providing an enigmatic and colourful mascot species for sand dune and heathland habitats. This would add further to our current knowledge of distribution and biology and encouraging more sympathetic management of habitats

Species recommended for addition to Schedule 5

Osmerus eperlanus (L.) Sparling (Scotland), smelt (other parts of the UK)

Type of organism: Freshwater (Bony) Fish

Submitted by: Scottish Natural Heritage

Working group summary

Sparling are commercially valuable and illegal exploitation is a continuing threat. Spawning fish congregate in small areas of freshwater where they are vulnerable to capture.

Addition to Schedule	9 (1), 9(4) & 9(5)
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Eligibility criteria

Native in the wild in Great Britain	X
Likely to become endangered	X
Taxonomic status meets recognised international standards	X

Global distribution

The family Osmeridae, or smelts, occur throughout the northern hemisphere, where various species are marine, anadromous or freshwater in habit. There are six genera with ten species in the Atlantic, Arctic and Pacific Oceans and their basins. The anadromous form of the European Smelt, known in Scotland as Sparling, occurs from southern Norway around the western coasts of Europe (including the Baltic Sea) in Denmark, Germany, the Netherlands, the United Kingdom, Ireland and France to north west Spain where the southern limit appears to be near Vigo (Galicia). It is found in coastal waters and estuaries from 38°N to 70°N and migrates into large clean rivers at spawning time. There have been significant declines in UK but over a long timescale. Considered to be vulnerable, endangered, threatened or extinct in six European countries/areas. Present in the Red Lists of Ireland, Denmark, Holland, Belgium, Germany, Baltic Sea.

Distribution in Great Britain

In the United Kingdom, the sole freshwater resident population of Sparling, in Rostherne Mere in Cheshire, became extinct in the 1920's, probably due to eutrophication. Elsewhere, the Sparling was once a common estuarine species and occurred in most larger rivers from the Clyde and Tay southwards. Over the last century, the species has gone into decline and has disappeared from many rivers. However, in recent years, some populations have made remarkable recoveries - for example in the River Thames, where the species disappeared many decades ago, fish have returned naturally as pollution decreased. More recently, Sparling have started returning to the Forth Estuary, where they had not been seen for over 20 years.

Status in Great Britain

Numerical data on fish density within sites is lacking – as is the case for most freshwater fish species in GB. This should not detract from the case for conservation measures. Some data are available for sparling populations in the River Cree in Scotland where this species is a feature of the Lower Cree and Cree Estuary SSSIs. Because this fish spawns at night, during the winter and in association with high tides, even these data are of variable quality.

What we do know, however, is that sparling populations have been recorded from at least 15 rivers in Scotland (Almond, Annan, Bladnoch, Clyde, Cree, Dee, Esk, Fleet, Forth, Girvan, Lochar, Nith, Stinchar, Tay and Urr), but over the 20th century the species has suffered a severe decline and has disappeared from all its former sites except the Rivers Cree, Forth and Tay. These populations must now be regarded as having high conservation importance. An

estimated loss of 33% of known smelt populations in England and Wales and a loss of 80% of sites in Scotland. IUCN Category: DD

Habitat

Anadromous; it therefore travels between marine and freshwater habitats. Access to and from the sea is essential as is good water quality. Within the river, the presence of suitable spawning and egg hatching habitat is essential.

Threats

Poor water quality, the presence of barriers to migration (sparling are not capable of ascending even minor barriers) and overexploitation have been the principal causes of population loss. Because these fish come into freshwaters to spawn en masse and congregate in very small areas of the river, they are particularly vulnerable to capture and overexploitation. In the River Cree for example, the whole populations could be lost in a very short period if exploitation was allowed to take place. Illegal exploitation is a continuing threat.

International legal obligations

Despite their vulnerability, this species is not protected under British or European legislation.

Existing legal protection in GB

Sparling are included in the UKBAP Priority list, but have no legal protection in GB.

Recommendation

WCA (1981) Section	Text	Qualify
9. (1)	Intentionally kills, injures or takes any wild animal included in Schedule 5	X
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X
	disturbs any such animal while it is occupying a structure or place which it uses for shelter or protection; or	X
	obstructs access to any structure or place which any such animal uses for shelter or protection	X
9. (5)	sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5	X

Justification for recommendation

These measures will protect Sparling during the most vulnerable period in their life history when they ascend the river to spawn. Similar measures are in place for other species during spawning time (Atlantic salmon is a good example), which are under lesser threat than Sparling. This species has a commercial value and as such is vulnerable to those who may wish to exploit it.

Benefits to accrue from acceptance of the recommendation

Protection of the species whilst it is spawning from disturbance or exploitation. This will help safeguard those populations which continue to exist in GB estuaries/ivers and protect recovering populations.

References

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MAITLAND, P.S., 2004. Keys to the Freshwater Fish of Britain and Ireland with notes on their distribution and ecology. Freshwater Biological Association, Scientific Publication No. 62, 245pp.

Species recommended for addition to Schedule 5

Palinurus elephas (Fabricius, 1787) Crawfish, crayfish, spiny lobster, rock lobster

Submitted by: Natural Resources Wales, Buglife

Type of organism: Invertebrate, marine crustacean

Working Group summary

Two proposals were received for this species; from Natural Resources Wales and Buglife. The two proformae have been merged into one.

This species was submitted for addition to Schedule 5 in the 5th QQR and turned down by Defra and the Welsh Government who stated that there is already a minimum landing size imposed by the CFP and local by-laws are even stricter. They called for more information before reviewing their decision. The working group believes that the extra information gathered since 2008 is sufficient to resubmit this species.

In addition to the evidence provided in the 5th QQR new research shows an 87% decrease between 1963 and 2008 providing evidence of very low population sizes. Fishing threats continue and recovery rates remain slow as a result of the species late maturity.

Addition to Schedule	Full
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Eligibility criteria

Native in the wild in Great Britain	X
Likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Due to changes in fishing intensity and methodology over the last 30-40 years, crawfish *P. elephas* are at risk from the impacts of commercial and recreational fisheries.

Until the late 1970's, species-specific landing data for *P. elephas* was not collected in the UK, thus preventing an accurate historical documentation of the UK decline of this species. Commercial Fishing: In the UK, targeted *P. elephas* fisheries are restricted to Cornwall, West Wales and occasional catches from the Scottish Western Isles (Hunter 1999). The species was traditionally fished with pots, and although these are still used in some areas, tangle and trammel netting introduced in the 1960's and 1970's are now the principal means of capture (Groeneveld *et al* 2006). This increase in fishing effort and greater efficiency of gear has caused stocks to decline. *P. elephas* is also caught by SCUBA divers.

Where this species was once taken in a targeted fishery, it is still commercially sought after but is largely caught as a bycatch in multi-species net fisheries.

In Welsh waters two minimum landing size (MLS) limits are currently in force. The EU minimum landing size of 95 mm carapace length (CL) in North West and North Wales, and a MLS of 110 mm in South Wales (bylaw only extends to 6 nm). Hunter (1996) reported a mean size of male *P. elephas* in South Wales (Strumble Head & St Govan's Head) of 155.5mm CL (range 89 to 182 mm CL) and mean size of berried females was 138.7 mm CL (range 121 to 150 mm CL). The smallest unberried female recorded was 113 mm CL. The results of which indicate that the current EU MLS, as well as the 110 m CL bylaw in South Wales is not appropriate for crawfish in this area, and would do little to increase the reproductive output of the population, as all reproductive females, and majority of males, were larger than the MLS (Leslie 2012).

It is possible that a substantially higher MLS would be required to increase the reproductive potential of *P. elephas* populations. However, the scale of any such recovery would be difficult to predict for several reasons. These include attaining length distribution data in order to establish what proportion of the population would be removed, as well as information on size of maturity (SOM), in order to establish the potential gains related to egg production. In any case, and if egg production did occur, it would be expected to take a minimum of four to five years before any upturn in the fishery was observed (Leslie 2012). Any potential *P. elephas* recovery would also be dependent on attaining an age and length structure indicative of a health stock, consisting of greater numbers of larger and older individuals (Piet *et al* 2010).

Not listed on the IUCN Red List. Marine species are not well represented on the IUCN list due to them not being assessed rather than a lack of threat.
UK Biodiversity Action Plan priority species (JNCC 2010)

Global distribution

Eastern Atlantic Ocean, from southern Norway to Morocco and the Azores. Widely recorded from west Africa, its most southerly distribution, to the west coast of Norway (Mercer 1973), but is also present in the Mediterranean, Azores, and the Adriatic and Aegean Seas (Goñi and Latrouite 2005, Jackson *et al* 2009).

Distribution in Great Britain

Mainly along western coasts from Shetland in the north, southwards to the Isles of Scilly. There are also isolated historic records from the east coast of Scotland (Ansell and Robb 1977). Species distribution is not continuous as habitat requirements are not continuous.

An ICES assessment of the Celtic Sea (including the Irish Sea, the Western Channel and the west of Scotland) describes the current catches and the stock as 'residual' (ICES. 2006. Report of the ICES Advisory Committee on Fishery Management, Advisory Committee on the Marine Environment and Advisory Committee on Ecosystems, 2006. ICES Advice. Books 1 – 10.5, 271 pp) South-West coastal regions (Cornwall, Devon including Lundy, and to the Isle of Purbeck, Dorset). However many records are historical (1950-70's), with sightings apparently no longer occurring in many previous locations. Rare in the eastern English Channel & the North Sea.

In South Wales, apart from a increase in landings between 1990-93 due to the introduction of tangle netting in remote areas (Davies 1999), total landing figures for *P. elephas* since the late 1970s indicate stock depletion (Hunter 1996). Landings per unit effort (LPUE) for the pot fishery have also shown a decline from a high of 0.65 kg per 100 pot hauls in 1980 to below 0.1 kg per pot haul since 1988, with lows of 0.003 kg per pot haul in 2003 and 2010 (Welsh Government data). Data from the Marine Management Organisation show that Welsh registered vessels fishing for *P. elephas* have landed less than five tonnes since 2000 (Leslie 2012).

Scuba diving is also identified as a cause of population decline. A fishery operating around the Llyn Peninsula (North Wales) using divers during the late 1970's, led to a rapid decline in numbers in that area – within 2 years, diving for *P. elephas* became economically unviable (Rowland Sharp, *pers comm.*).

In Cornwall, the *P. elephas* fishery employed over 30 full time divers during its peak toward the end of the 1960's, but this eliminated crawfish from shallow waters within a period of seven years (Hunter *et al* 1996). The introduction of net fisheries in the 1970's has gradually replaced pot fisheries and landings have reduced considerably since that time (Leslie 2012). Declined considerably since the 1970's in Scotland, with reduced fishery landings and a smaller average size caught. Between 1983 and 1991 landings of *P. elephas* were less than 5

tonnes per year until the introduction of tangle netting in 1992 which resulted in an increase to more than 40 tonnes per year. Landings following a peak in 1995 (54 tonnes), have reduced to a similar size to that before the increase: less than 6 tonnes a year (Hunter 1999). Yearly landings data for 2000 to 2011 in Scotland are less than 7.2 tonnes.

The Irish fishery for crawfish in the late 1960s targeted both lobsters and crawfish using pots, which resulted in an overall decline in landings as well as a mean decline in crawfish length in some areas (Molly 1970). Recent trammel net fisheries in Ireland with crawfish taken as bycatch have resulted in depletion of stocks and a reduction in the mean size of individuals (Goni & Latrouite 2005).

Habitat

Subtidal on exposed rocky sea beds in depths typically between 5-70m, but is also recorded as deep as 170m (Jackson & Marshall 2008). *P. elephas* is thought to undertake large-scale seasonal migratory patterns (Ansell and Robb 1977; Mercer 1973) as well as smaller scale movements related to feeding, weather conditions and moulting (i.e. deeper water for shelter) (Mercer 1973).

Exposed rocky seabed habitat is not continuous within the range of this species. Other habitats that are not suitable for *P. elephas*, e.g. sediment floored sea beds and rocky sea beds in less exposed areas, also occur within this species range.

It is not considered that habitat changes are impacting directly on the place of shelter of *P. elephas* (rather it is targeted and non-targeted direct removal of the species). It lives on rocky exposed coasts below the intertidal zone mainly at depths of 20 to 70 metres (66 to 230 ft).

Threats

Declining over most of its range. Low resilience (sexual maturity at 4–5 years and lives up to 25 years), along with the intense exploitation to which it has been submitted for decades, have led to overfishing of many European populations.

“Only declines in the past 50 years have been observed and recorded and those are considered to be due to exploitation. In the 7 years between 1962 and 1968 just four English ports landed approximately 10 000 cwt [=508 tonnes] of *P. elephas* with yearly landings averaging 1 400 cwt [=71 tonnes] per year². Landings of *P. elephas* in England and Wales between 1998 and 2008 have averaged just 9 tonnes per year⁸ (87% decrease or 13% of 1960’s landings). Size has also declined - male carapace size from landings in Cornwall from 140 - 180mm (1963 to 1971) to 100 - 130mm (1993 to 1994). Score (range 0-16): 12 (High). Current threats are continued commercial exploitation by potting and netting as well as extraction by divers.” Natural England Commissioned Report NECR065 A *recovery/conservation programme for marine species of conservation importance:*

In the UK, targeted *P. elephas* commercial fisheries are restricted to Cornwall, West Wales and occasional catches from the Scottish Western Isles (Hunter 1999). The species was traditionally fished with pots, and although these are still used in some areas, tangle and trammel netting are now the principal means of capture. *P. elephas* can also be caught by SCUBA divers. Where once taken in a targeted fishery, it is still commercially sought after but is largely caught as a bycatch in multi-species net fisheries or as an incidental catch within pot fisheries targeting other crustacean species. In Cornwall, the *P. elephas* fishery employed over 30 full time divers during its peak toward the end of the 1960’s, but this eliminated crawfish from shallow waters within a period of seven years (Hunter *et al* 1996). The introduction of net fisheries in the 1970’s has gradually replaced pot fisheries and landings have reduced considerably since that time (Leslie 2012).

Direct removal of the species, either through commercial or recreational purposes, is considered the primary reason for this species decline in distribution and population density. A fishery around the Lleyn Peninsula (N Wales) using divers during the late 1970's, led to a rapid decline in numbers in that area within 2 years, diving became economically unviable (Rowland Sharp, pers comm.). In South Wales, apart from an increase in landings between 1990-93 due to the introduction of tangle netting in remote areas (Davies 1999), total landing figures since the late 1970's indicate stock depletion (Hunter 1996). LPUE for the pot fishery also show a decline from 0.65 kg per 100 pot hauls in 1980 - 0.1 kg per pot haul since 1988, with lows of 0.003 kg per pot haul in 2003 and 2010 (Welsh Government data). Data from the Marine Management Organisation show that Welsh registered vessels fishing for crawfish have landed less than five tonnes since 2000 (Leslie 2012). Declined considerably since the 1970's in Scotland, with reduced fishery landings and a smaller average size caught. Between 1983 and 1991 landings were less than 5 tonnes per year until the introduction of tangle netting in 1992 which resulted in an increase to more than 40 tonnes per year. Landings following a peak in 1995 (54 tonnes), have reduced to a similar size to that before the increase: less than 6 tonnes a year (Hunter 1999). Yearly landings data for 2000 to 2011 in Scotland are less than 7.2 tonnes. The Irish fishery for crawfish in the late 1960's targeted both lobsters and crawfish using pots, which resulted in an overall decline in landings as well as a mean decline in crawfish length in some areas (Molly 1970). Recent trammel net fisheries in Ireland with crawfish taken as bycatch have resulted in depletion of stocks and a reduction in the mean size of individuals (Goni & Latrouite 2005)

International legal obligations

None, though it is covered by regulations in some European countries.

The UK Biodiversity Action Plan (UK BAP) represents the UK Government's response to the Convention on Biological Diversity. The UK BAP outlines the UK's biological resources in most need of priority conservation action. In 2007, the list of priority habitats and species were reviewed, and *P. elephas*, was added to the list of UK priority BAP species.

Under the Marine Strategy Framework Directive, one of the qualitative descriptors for determining good environmental status is: '*Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.*' *P. elephas* are one of the UK's exploited shellfish species. The EU signed up to a target of achieving Maximum Sustainable Yield levels by 2015 at the World Summit on Sustainable Development in 2002 and to the new 2020 fisheries target adopted at CBD COP10. The EU biodiversity strategy to 2020 has reflected this in its' Target 4: Fisheries: Achieve Maximum Sustainable Yield (MSY) by 2015. Achieve a population age and size distribution indicative of a healthy stock, through fisheries. There is an EU minimum size limit for *P. elephas*.

Existing legal protection in GB

EU minimum size limit
Various regional minimum size limits
Various other fisheries-related measures

Recommendation

WCA (1981) Section	Text	Qualify
9. (1)	Intentionally kills, injures or takes any wild animal included in Schedule 5	X
9. (2)	Has in his possession or control any live or dead wild animal included in Schedule 5	X
9. (5)	sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5	X
	publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things	X

Justification for the recommendation

(From jncc.defra.uk data sheet) This species has declined substantially across much of its range. It is commercially fished offshore in SW England. Reports of commercial exploitation by divers are probably no longer appropriate. The species may be on the decline in certain areas due to overfishing. Numbers have been severely depleted on most coasts by tangle net fishing. The species would benefit from no take zones. Full protection would support its status as a UK Priority species.

This species satisfies selection criteria

Populations have experienced significant decline in the UK, and the commercial interest in this species means that it remains under threat of further decline, even though the fishery is not always directly targeted at this species (Hunter *et al* 1996).

Survivability following capture is good.

Distributed within 12 nm of the coast.

Slow growth rate and low fecundity in comparison to other commercial spiny lobsters (Goni & Latrouite 2005), reducing the ability of the population to self-sustain or recover in the face of already depleted stock status and continued impacts. As populations along the European Atlantic coast are also depleted, the potential for recruitment from non-UK waters is limited. Current MLS regulations for this species are currently inappropriate for areas of the UK and a complete landing prohibition would provide the maximum potential gains in both reproductive output and increased abundance (Leslie 2012)

It has been identified as a priority species for conservation action in the UK under the Biodiversity Action Plan (BAP) process, and inclusion on Schedule 5 of the WCA would contribute significantly to the recovery of this species.

Benefits to accrue from acceptance of the recommendation

Averting UK extinction. The high unit value makes the bycaught fishery economically feasible despite low yields. Listing under Schedule 5 of the WCA would not only prevent targeted fisheries for this species, but also result in the release, unharmed, of individuals caught as bycatch.

It is intended that inclusion of this species on Schedule 5 is to provide protection for the species to enable its recovery. Once the population has recovered, it would then be appropriate to remove it from Schedule 5 and instigate effective management of the fishery.

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Species recommended for addition to Schedule 5

Alkmaria romijni Horst, 1919 Tentacled lagoon worm

Submitted by: Buglife

Type of organism: Invertebrate, polychaete worm

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

No evidence of collection but it occurs in only three sites and its habitat is under threat. Its presence on Schedule 5 should be re-examined if there are alternatives for protection.

Regrade to	9(4)a Scotland
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Native in the wild in Great Britain; or	X
The species is likely to become endangered; or	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Nationally Scarce. It is also a UKBAP priority species.

Global distribution

South from Baltic and North Sea coasts to Morocco.

Distribution in Great Britain

Southern shores of the North Sea as far north as the Humber, along the English Channel and round into Pembrokeshire.

Habitat

Lagoons and sheltered estuarine sites, where it inhabits a mud tube in muddy sediments.

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works and associated infilling and from pollution, drainage and other activities.

Legal obligations

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for schedule or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receive full protection on Schedule 5, however there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. It is therefore sensible to retain protection for this species through Section 9(4)(a).

Benefits to accrue from acceptance of the recommendation

This species is already downgraded to 9(4)a in England and Wales, but has Full Protection in Scotland (where it is not recorded). Downgrading to 9(4)a in Scotland brings it into line with the rest of Britain and will assist with its conservation in Scotland if it is recorded there.

Species recommended for addition to Schedule 5

Armandia cirrhosa Filippi, 1861 Lagoon sand worm

Submitted by: Buglife, Invertebrate Link

Type of organism: Invertebrate, polychaete worm

Working Group summary

Note: Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but it occurs in only three sites and its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
Likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

RDBI Insufficiently known but possibly Endangered. It is classified as a nationally Rare benthic marine species. It is also a UKBAP priority species.

Global distribution

Recorded from the Mediterranean, Adriatic, Madeira and the eastern Atlantic coasts.

Distribution in Great Britain

Recorded from only three UK sites Eight Acre Pond, Hampshire; Small Mouth Spit, Portland Harbour, Dorset and East Fleet Sandbank, Fleet Lagoon, Dorset.

Habitat

Saline lagoons

Threats

The habitat is vulnerable to loss through coastal defence and re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

Legal obligations

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receives full protection on Schedule 5,

however there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. It is therefore sensible to retain protection through Section 9(4).

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Section 9(4)a will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Caecum armoricum De Folin, 1869 De Folin's lagoon snail

Submitted by: Buglife, Invertebrate Link
Type of organism: Invertebrate, mollusc

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in great britain	X
Likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Rare RDB3.

Global distribution

Shell records from the Black Sea, Mediterranean, Azores, Canary Isles and the Atlantic coast from Gibraltar to the Channel. The only other known live colony is from a site in the south Gibraltar Strait, N. Africa. One shell record from Connemara, W. Ireland.

Distribution in Great Britain

Only recorded living from The Fleet, Dorset.

Habitat

Saline lagoons

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works. The habitat is also under threat from pollution, drainage and other activities.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receives full protection on Schedule 5, but there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. Therefore sensible to retain protection through Section 9(4).

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Edwardsia ivelli Manuel, 1975 Ivell's sea anemone

Submitted by: Buglife, Invertebrate Link

Type of organism: Invertebrate, coelenterate, anemone

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but it occurs in one site only and its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
There is an international obligation to protect the species (state which)	?
Taxonomic status meets recognised international standards	X

Status in Great Britain

Endangered RDB1. Endemic species. It is also a UK BAP priority species.

Global distribution

Endemic to Britain.

Distribution in Great Britain

This endemic sea anemone is only known from Widewater lagoon, West Sussex.

Habitat

Saline lagoons

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receive full protection on Schedule 5, however there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. It is therefore sensible to retain protection for this species through Section 9(4)a.

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Gammarus insensibilis Lagoon sand shrimp

Submitted by: Buglife

Type of organism: Invertebrate, marine crustacean

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

Removed from full protection in England because it was more widespread than previously thought. There is no evidence of collection for this species but its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Rare RDB3. The species is regarded as Nationally Scarce in a recent review of benthic marine species. It is also a UK BAP priority species.

Global distribution

Outside the UK, the lagoon sand shrimp is known from the Black and Mediterranean seas to the Atlantic coast of Europe, extending in distribution as far north as the English Channel. Although usually occurring at depths down to 15m in sheltered brackish waters, in the Mediterranean it can be found in fully marine conditions. As this species is morphologically close to *Gammarus locusta* it may be under-recorded in parts of its range.

Distribution in Great Britain

Within the UK fairly widely distributed in lagoons along the south and east coasts of England, between Dorset and Lincolnshire. The species was initially recorded in the UK at only two localities, the Chesil Fleet in Dorset (in 1947 as *G. locusta*) and New England Creek on the Thames estuary in Essex (1939, again as *G. locusta*). It has since been recorded on the south coast of England from the Chesil Fleet (Dorset), Hengistbury Head Lagoon (Dorset), the Keyhaven-Lymington lagoons (Hampshire), Warren Park Shore Lagoons (Hampshire), Stansore Point Lagoon (Hampshire), Ashlett Mill Pond (Hampshire), Gilkicker Lagoon (Hampshire), Little Anglesey (Hampshire), Cockle Pond (Hampshire), Seaward Tower Moat (Hampshire), Newtown Quay Lagoon (Isle of Wight), Harbour Farm Lagoons (Isle of Wight), Thorney Great Deep (W. Sussex), Birdham Pool (W. Sussex) and Widewater (W. Sussex). On the east coast of England, it has been recorded from Sheerness Lagoon (Kent), New England Creek (Essex), Shingle Street (Suffolk), Aldeburgh P8 Lagoon (Suffolk), Reedland Marshes Lagoon (Suffolk), Benacre Broad (Suffolk), Salthouse Broad (Norfolk), New Moon (Norfolk), West and East Gramborough Hill (Norfolk), Titchwell Lagoon (Norfolk), Lawyer's Farm Lagoon (Lincolnshire) & Humberston Fitties Lagoon (Lincolnshire). Recent surveys indicate that the species is no longer present at Stansore Point Lagoon or Hengistbury Head Lagoon, Widewater Lagoon and Benacre Broad.

Habitat

Saline lagoons

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receives full protection on Schedule 5; however there is no evidence of risk of decline or extinction from intentional collection of the species. Similarly, there is no evidence of a market for this species. There are however still pressures on its habitat which continues to be at risk from coastal re-alignment and flood defence works. It is therefore sensible to retain protection for this species through Section 9(4)a.

Benefits to accrue from acceptance of the recommendation

This species is already downgraded to 9(4)a in England and Wales, but retains Full Protection in Scotland (where it is not recorded). Downgrading to 9(4)a in Scotland brings it into line with the rest of Britain and will assist with its conservation in Scotland should it be recorded there.

Species recommended for addition to Schedule 5

Hydrochara caraboides Linnaeus, 1758 Lesser silver water beetle

Submitted by: Buglife, Invertebrate Link

Type of organism: Invertebrate, beetle

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

Found to be more common than when first listed on the WCA. There is no evidence of collection for this species and the habitat where it occurs is well managed. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Endangered RDB 1. Increasing but still highly localised. UK BAP 1994-2007 – now delisted.

Global distribution

Found across Europe, 82 5 km squares in the Netherlands, otherwise frequency not known.

Distribution in Great Britain

This species was widely distributed during the 19th century. When listed on the WCA the only known breeding population was in the Somerset Levels. In the 1990s it was found to be in several ponds in Cheshire. Since then, larvae have been found as more sites on the Somerset Levels and in north Wales.

Habitat

A variety of ditches and ponds in grazed fields and marshes.

Threats

Mismanagement of ditch systems (too frequent and not done in sections on a several year rotation basis).

Conversion of grazing marsh to arable land, resulting in steeper ditch profiles and overgrowth of ditches in the absence of grazing.

Peat extraction. Infilling of ponds. Loss of ponds to development. Pollution.

Legal obligations or protection

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

Now known from more areas and sites than when it was put onto the WCA. There is no

likelihood of the species being targeted particularly by collectors and even if it were, the beetle is hard to find and its habitat is reasonably robust to collecting pressures. It is extremely unlikely that even locally populations of the beetle could be eliminated by collecting. There is no evidence of an international market for the species, or that the UK population would be under any special pressure.

It has been the case that the quality of ditch and pond management has benefitted from the listing of *H. caraboides* on the WCA. Land managers in the Somerset Levels taken the species into account when planning and undertaking ditch management, the intensity and proportions of ditches excavated in one operation have been reduced which has probably been a positive conservation benefit to this beetle and other aquatic invertebrates.

Planning applications to develop peat extraction in areas where the beetle has occurred have been opposed on the basis of the need to protect the species – probably to the benefit of this and other threatened invertebrates.

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species (specific ditches/ditch systems and ponds) remains protected and well managed.

Species recommended for addition to Schedule 5

Nematostella vectensis Stephenson, 1935 Starlet sea anemone

Submitted by: Buglife, Invertebrate Link

Type of organism: Invertebrate, coelenterate, anemone

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but it occurs in a few coastal lagoons and its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Rare RDB3.

Global distribution

In North America from Nova Scotia to Georgia on the Atlantic coast, from Florida to Louisiana in the Gulf of Mexico and from California to Washington on the Pacific coast. Also found on the South and East coast of England. It is listed as Vulnerable by IUCN/WCMC

Distribution in Great Britain

The starlet sea anemone occurs in only a few coastal lagoons in the Isle of Wight, Sussex, Hampshire, and in Dorset and along the East Anglian coast.

Habitat

Saline lagoons

Threats

The habitat is vulnerable to loss through coastal defence, re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection. This species currently receive full protection on Schedule 5, however there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. It is therefore sensible to retain protection through Section 9(4).

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Pachycordyle navis (formerly *Clavopsella navis*) Millard, 1959 Brackish hydroid

Submitted by: Buglife, Invertebrate Link
Type of organism: Invertebrate, coelenterate

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but its habitat remains under threat and it occurs at a single site in Sussex. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	?
Taxonomic status meets recognised international standards	X

Status in Great Britain

UKBAP priority species

Global distribution

In Europe, it is known from the Kiel Canal, Germany, and the Azores. Outside of Europe, it is only known from Cape Town harbour, South Africa.

Distribution in Great Britain

Known only from Widewater Lagoon, West Sussex.

Habitat

Saline lagoons

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receive full protection on Schedule 5, however there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. It is therefore sensible to retain protection for this species through Section 9(4).

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Tenellia adspersa Nordmann, 1845 Lagoon sea slug

Submitted by: Buglife, Invertebrate Link
Type of organism: Invertebrate, marine mollusc

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

RDBI Insufficiently known but at least Rare. Classified as Nationally Rare in a recent review of benthic marine species. This is a UK BAP Priority species.

Global distribution

Outside of the UK the species is widespread but in north-western Europe it is sporadically distributed and apparently not common at any locations.

Distribution in Great Britain

Recent records for the species are from Portishead (Bristol Channel), the Fleet (Dorset) and St. Osyth (Essex). The species has been recorded from four other localities in Britain last century - Snettisham Pits lagoon and a creek near Dersingham (both Norfolk), New England Creek (Essex), and saltmarsh pools in the Firth of Forth. Records from before 1900 include Rotherhithe (London docklands), where the species was reported to be common. The species may prove to occur more widely in the UK as it can be easily overlooked.

Habitat

Saline lagoons

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

Legal obligations or protection

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receives full protection on Schedule 5, however there is no evidence of risk of decline or extinction from intentional collection of the species.

Similarly, there is no evidence of a market for this species. There is however still pressures on its habitat which continues to be at risk from coastal re-alignment and flood defence works. It is therefore sensible to retain protection for this species through Section 9(4).

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Victorella pavid Saville Kent, 1870 Trembling sea mat

Submitted by: Buglife, Invertebrate Link

Type of organism: Invertebrate, Bryozoan, sea mat

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

There is no evidence of collection for this species but it occurs at one place only and its habitat remains under threat. Presence of this species on Schedule 5 should be re-examined if there are alternatives for its protection.

Regrade to	9(4)a
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Eligibility criteria

Native in the wild in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Classified as Nationally Rare in a recent review of benthic marine species. A UK BAP priority species

Global distribution

Various sites on the southern shores of the North Sea on the European Mainland. Common in the Mediterranean. Also reported from India, the Black Sea, the Baltic, Brazil, the eastern United States and Japan.

Distribution in Great Britain

Only found in Swanpool, Cornwall.

Habitat

Saline lagoons

Threats

The habitat of this species is vulnerable to loss through coastal defence and re-alignment works and associated infilling. The habitat is also under threat from pollution, drainage and other activities.

International legal obligations

None

Existing legal protection in GB

None

Recommendation

WCA (1981) Section	Text	Qualify
9. (4)	damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;	X

Justification for the recommendation

A saline lagoon is a readily identified and defined structure that provides shelter and protection to its inhabitants. This species currently receive full protection on Schedule 5, however there is no evidence of risk of decline or extinction from intentional collection. Similarly, there is no evidence of a market for this species. There is however still pressure on its habitat which continues to be at risk from coastal defence and realignment works, drainage, pollution and other activities. It is therefore sensible to retain protection for this species through Section 9(4).

Benefits to accrue from acceptance of the recommendation

Removing full protection from this species would allow better focus of legal enforcement measures where there will be real benefits to the species. It will also encourage more recording and study of the species, thereby furthering its conservation. Retention of this species on Schedule 5 with protection through Section 9(4) will ensure that the habitat of this species remains protected.

Species recommended for addition to Schedule 5

Thyasira gouldi Philippi, 1845 Northern hatchet shell

Submitted by: Buglife

Type of organism: Invertebrate, marine bivalve

Working Group summary

Note: Although stated otherwise in this proforma, the legal status for this species in the UK is that it is on Schedule 5 of the WCA.

Removal from Schedule	Full
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Eligibility criteria

Native in the wild in Great Britain	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

Classified as Nationally Rare in a recent review of benthic marine species.

Global distribution

Various sites on southern shores of the North Sea on the European Mainland. Common in the Mediterranean. Reported from India, Black Sea, Baltic, Brazil, eastern United States & Japan.

Distribution in Great Britain

Shown to have a wider British distribution than previously thought. It has been confirmed to range along the west coast of Scotland from Loch Sween in the south to Loch Etive, Loch Eil and "Cape Wrath" in the north. Additionally it is a frequent component of the fauna of Sullom Voe, Shetland and has recently been found on the east coast of Scotland in the Firth of Forth.

Habitat

This species is not recorded from the open North Sea and is confined to inlets and sea lochs.

Threats

The habitat is vulnerable to loss through coastal defence and re-alignment works, associated infilling and is under threat from pollution, drainage and other activities.

Legal obligations

None

Justification for the recommendation

Surveys have shown that this species is much more common than previously thought.

Benefits to accrue from acceptance of the recommendation

Removal from Schedule 5 allows better focus of legal enforcement measures where there will be real benefits to other species in greater need of the protection. Removal from Schedule 5 (Scotland) will bring Scotland in line with England and Wales.

APPENDIX 4 Proformae for each taxon listed in Schedule 8

The proformae published below are largely as received from stakeholders during the consultation phase of the 6th QQR. Each proforma is preceded by a short section that contains any comments on the proformae and summarises the working group decisions for that species.

Addition

Aster linosyris
Boletus pseudoregius
Cephalanthera longifolia
Dactylorhiza incarnata ochroleuca
Draba aizoides
Dryopteris cristata

Epipactis sancta
Myriostoma coliforme
Orchis anthropophora
Orchis purpurea
Polystichum lonchitis
Pulsatilla vulgaris

Reduced protection

Hyacinthoides non-scripta

Removal

Althaea hirsuta
Alyssum alyssoides
Arabis alpina

Arenaria norvegica norvegica
Bupleurum falcatum
Calicium corynellum
Chenopodium vulvaria
Crepis foetida
Cystopteris dickieana
Dactylorhiza lapponica
Epipactis youngiana
Fumaria reuteri
Gentiana verna
Gentianella uliginosa
Gymnomitrium apiculatum
Gnaphalium luteoalbum
Hypnum vaucheri
Limosella australis
Lythrum hyssopifolia
Mentha pulegium
Microthlaspi perfoliatum = *Thlaspi perfoliatum*
Melichoferia melichoferi
Orthotrichum obtusifolium
Physcia tribacioides
Plagiothecium piliferum
Pulicaria vulgaris
Rhinanthus angustifolius
Teucrium botrys

Species recommended for addition to Schedule 8

Aster linosyri Goldilocks aster

Submitted by: GB species Status Assessment Group

Type of organism: Vascular plant

Working group summary

Although not threatened in GB, this species is considered VU in England and there is evidence of collection. For these reasons it seems appropriate to add it to Schedule 8 for England only.

Addition to Schedule in England Only	8
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Eligibility criteria

Native in the wild in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain (all taxa)

LC on GB *Red List* (Cheffings & Farrell 2005), but known to have declined in recent years and may now be threatened in GB, listed as **VU** in Welsh *Red List* and likely to be assessed as at least **VU** in England. Nationally Rare (15 or fewer 10km squares in GB).

Global distribution (all taxa)

European Temperate element, with continental distribution in Europe.

Distribution in Great Britain (all taxa)

Exclusively coastal, restricted to a single site in Devon (Berry Head), two in Somerset (Brean and Uphill), the Gower, Pembrokeshire (Castlemartin/Stackpole), Great Orme and Humphrey Head. Declining at several sites (e.g. Humphrey Head), and known to have suffered from collection pressures in at least one site (Uphill).

Habitat (all taxa)

Open grassland and rock-ledge communities on coastal limestone; sometimes in close-grazed limestone grassland or maritime heath.

Threats

Likely to be particularly vulnerable to collection or habitat damage as a result of human disturbance. An attractive plant that is prone to being picked or dug up; because it is so rare, with total numbers of individuals not exceeding a few thousand plants in each case, we believe collection pressures pose a significant threat, with some populations known to be especially vulnerable. We therefore recommend that, taking a precautionary approach, it should be added to the list of specially protected taxa. We are aware of collection pressures being an issue. The Uphill population has in recent years also been targeted with several plants/clumps uprooted.

International legal obligations (all taxa)

None

Existing legal protection in GB (all taxa)

Most, if not all, populations lie within SSSIs, but this provides little protection from collectors.

Recommendation

WCA (1981) Section	Text	Qualify
13. (1)	intentionally picks, uproots or destroys any wild plant included in Schedule 8; or	X
	not being an authorised person, intentionally uproots any wild plant not included in that Schedule	X

Justification for the recommendation

WCA 1981 13 (b) already applies, but due to its rarity, desirability and the actual or potential collection pressures, we recommend that it should receive special protection under 13 (a), and should therefore be added to Schedule 8. Extremely rare and highly attractive and collectable, and is likely to become highly threatened without proper protection.

Benefits to accrue from acceptance of the recommendation

The majority of sites support relatively small populations and therefore they are all highly vulnerable to site-factors such as disturbance, up-rooting, etc. Inclusion on Schedule 8 will enhance the safeguarding against such threats thereby improving the longer term survival in GB.

Listing will send out a strong message that this species is threatened by collectors and as a consequence is receiving special protection by being added to the Schedule. It will act as a strong deterrent against botanists, horticulturalists, gardeners and others, who (for whatever reason) might be tempted to collect or otherwise 'remove' it from their surviving strongholds.

Species recommended for addition to Schedule 8***Boletus pseudoregius* (Hubert) Estadès** The pretender**Submitted by:** Natural England**Type of organism:** Non-lichenised fungus**Working group summary**

Formerly protected under *Boletes regius*. All the British collections named *B. regius* and their accompanying notes and photographs were examined by A.E. Hills and all except one were redetermined as *B. pseudoregius* (Kibby 1998). Now that *B. pseudoregius* is recognised as a species, it should be listed to regain the former level of protection. Target for collectors of edible boletes.

Addition to Schedule	8
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Eligibility criteria

Native in the wild in Great Britain	X
Likely to become endangered in Great Britain	X
Taxonomic status meets recognised international standards	X

Distribution in Great Britain

Distribution of breeding populations/individuals is scattered predominantly across southern England and northwards to Herefordshire and Warwickshire. The fungus is dependent on presence of mycorrhizal partner trees (British records/collections almost all with oak). Usually fruiting where trees are in open conditions with short surrounding vegetation such as in parkland and wood pasture or former wood pasture. These constraints, in accordance with a thermophilous habit, have resulted in a fragmented distribution and its stronghold is therefore now likely to be where the largest areas of such habitat remains - the New Forest.

Status in Great Britain

Breeding (fruiting) populations/individuals are estimated to be present in 15-20 occupied hectads in Britain based on national databases of records (FRDBI & CATE2) and national database of reference collections (Kew). Away from the larger occupied areas (Windsor Great Park and the New Forest), the occupied hectads often contain just a single fruiting patch. It is likely therefore that several hectads are occupied by just a single mycelial genotype (genet). Past abundance is not clear because this is a relatively recently-described species (1988) and its records would previously have been subsumed under *B. regius*, an existing WCA species. A morphological study of dried reference material at Kew (A. Hills unpubl.) suggested that almost all historical material assigned to *B. regius* should be assigned to *B. pseudoregius*. This has been taken into account in the above estimate for *B. pseudoregius* and leaves just one putative British site for the true *B. regius*. There is no evidence for any past trends with respect to population size and it seems likely that this has always been a rarity in Britain. There is no JNCC-approved Red List rating for British fungi. When a "preliminary assessment" was carried out using IUCN criteria on behalf of the British Mycological Society (Evans *et al* 2006), this was assessed as NT on the basis that there were 15 occupied hectads and a habitat decline was inferred from concerns over inappropriate habitat management.

Habitat

The fungus is ectomycorrhizal, dependent on living roots of suitable trees and seems to be site-faithful. In Britain it is likely that this partnership almost always involves oak. Fruiting populations are found in predominantly southern sites indicative of a thermophilous

requirement such as open woodland, wood pasture, parks, woodland edges and sites with thin soils overlying large rock formations (possibly acting as a storage heater).

Threats

The fungus is regarded as an edible bolete, one of the most sought-after and easily-recognised groups of edible fungi. Collection of wild edible fungi including boletes seems to be on the increase. The inclusion of *B. regius* on the WCA effectively protected *B. pseudoregius* at the time because it was not recognised as a separate species. Taxonomic separation of *B. regius* and *B. pseudoregius* now means that the former (putatively at just one British site) remains legally protected but the latter is now unprotected. It is proposed that the former level of protection is restored to *B. pseudoregius*. This will remove the inherent difficulties of trying to distinguish between two similar species with respect to WCA.

International legal obligations

None

Existing legal protection in GB

The species receives some protection within the SSSI series but it does not seem to be a notified feature on any SSSI. Its location(s) within the SSSI boundary might not be known to the site managers and it can therefore suffer from management planning which prioritises other interests, including those of conservation and amenity, and fails to take the fungus into account.

It is currently on BAP and a Section 41 species

Recommendation

WCA (1981) Section	Text	Qualify
13. (1)	intentionally picks, uproots or destroys any wild plant included in Schedule 8; or	X
	not being an authorised person, intentionally uproots any wild plant not included in that Schedule	X

Justification for recommendation

This fungus was formerly protected by WCA Sch. 8 (under the name *B. regius*). Now that *B. pseudoregius* is recognised as a species in its own right, it should be listed on Sch. 8 to regain the former level of protection. Both species are attractive targets for collectors of edible boletes

Benefits to accrue from acceptance of the recommendation

Reducing fruit body picking and damage will improve the species' chances of genetic recombination (assuming it employs an outcrossing breeding strategy) and spore dispersal. Recombination is particularly important to generate the genetic variation essential to survival and adaptation in a relatively rapidly changing environment. Specialised invertebrates which depend to some extent on boletoid fruit bodies for food and shelter are also likely to benefit. Boletes are popular fungi and there would be a greater chance for interested people to see and appreciate the fruit bodies of this species if it was legally protected (again).

References

EVANS, S., HENRICI, A. & ING, B., 2006. Red data list of threatened British fungi (preliminary assessment)
http://www.fieldmycology.net/Download/RDL_of_Threatened_British_Fungi.pdf pdf
 accessed: 31 Jan. 2012.

KIBBY G.G., 1998. Editor's Note. Field Mycology 1(3):98.

Species recommended for addition to Schedule 8

Cephalanthera longifolia Narrow-leaved helleborine
Dactylorhiza incarnata ochroleuca Early marsh-orchid
Epipactis sancta Lindisfarne helleborine
Orchis anthropophora Man orchid
Orchis purpurea Lady orchid

Submitted by: GB species Status Assessment Group

Type of organism: Vascular plant

Working group summary

The vascular plant experts considered the idea of assigning general collecting threat to orchids based on desirability and general high collecting demand on this group. Although, not entirely in favour of this type of classification, the plant experts agreed that for this group of orchids, collection was a real threat. The working group therefore accepted the addition of these species as a precautionary approach despite no direct evidence of collection.

Addition to Schedule	8
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
Taxonomic status meets recognised international standards	X
Clearly recognisable (i.e. Morphologically distinct).	X
Geographically or ecologically distinct.	X

Status in Great Britain

Cephalanthera longifolia – **VU** on GB *Red List*, qualifying under IUCN criterion A2(c) due to severity of decline (Cheffings & Farrell 2005). Also, **EN** on the Welsh *Red List*, qualifying under IUCN criterion D (Dines 2008). Nationally Scarce (16-100 10km squares in GB). UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England.

Dactylorhiza incarnata subsp. *ochroleuca* – **CR** on GB *Red List* (Leach 2010) under IUCN criteria B1ab(v)+2ab(v), C2a(i) and D. Nationally Rare (15 or fewer 10km squares in GB). UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England.

Epipactis sancta – **EN** on GB *Red List*, qualifying under IUCN criterion D. An English endemic and Nationally Rare (15 or fewer 10km squares in GB); actually restricted to a single site. UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England.

Orchis anthropophora – **EN** on GB *Red List*, qualifying under IUCN criterion A2(c) due to severity of decline (Cheffings & Farrell 2005). Nationally Scarce (16-100 10km squares in GB). UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England.

Orchis purpurea – **EN** on GB *Red List*, qualifying under IUCN criterion A2(c) due to severity of decline (Cheffings & Farrell 2005). Nationally Scarce (16-100 10km squares in GB).

Global distribution

Cephalanthera longifolia – European Temperate element; also in C. Asia (Preston, Pearman & Dines 2002). Widespread in S. and C. Europe, with isolated occurrences in N.

Africa and east to the Himalayas (Stewart, Pearman & Preston 1992). Outside core range, distribution appears to be markedly disjunct and/or fragmented.

Dactylorhiza incarnata subsp. *ochroleuca* – European temperate element (Preston, Pearman & Dines 2002). Occurs widely but locally in Europe, from the Alps northwards through Germany, Poland and Estonia in Scandinavia and NW Russia (Wigginton 1999). *Epipactis sancta* – An English endemic, restricted to a single site (Lindisfarne).

Orchis anthropophora – Mediterranean-Atlantic element (Preston, Pearman & Dines 2002). Predominantly in Europe, with a distinctly southern and western distribution, reaches northern-most limit in England and extending in the Mediterranean region as far east as Rhodes and Cyprus; also occurs in N. Africa (Algeria and Morocco) (Stewart, Preston and Pearman 1992).

Orchis purpurea – European Temperate element (Preston, Pearman & Dines 2002). Widespread through much of W and SW Europe from Netherlands and Denmark to NW Africa, and east through C. Germany to Poland, Greece and the Crimea (Stewart, Preston & Pearman 1992).

Distribution in Great Britain

Cephalanthera longifolia - a species with a highly disjunct distribution, in part due to a dramatic decline in area of occupancy in 19th and 20th centuries leaving once-continuous parts of its range markedly fragmented. But it has an unusual distribution, with current strongholds as far apart as S. England (especially Hants) and W. Scotland see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/cephalanthera-longifolia>.

Dactylorhiza incarnata ochroleuca - restricted to East Anglia where now reduced to probably just two sites, and even at these precariously close to extinction. see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/unmatched-species-name-735>.

Epipactis sancta English endemic, only on Lindisfarne (Northumberland) see http://www.bsbimaps.org.uk/atlas/map_page.php?spid=9685.0.

Orchis anthropophora - S. England and East Anglia. Major losses in 19th and early 20th centuries, by which time most East Anglian sites had been destroyed by ploughing. Extinct, or close to extinction, in a number of outlying counties (e.g. Somerset, Herts, Bucks, Norfolk, Leics) see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/aceras-anthropophorum>.

Orchis purpurea - substantial losses of this Kent speciality prior to 1930, distribution now pretty stable see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/orchis-purpurea>.

Habitat

Cephalanthera longifolia – see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/cephalanthera-longifolia>. It is found in a variety of woodland types on calcareous soils, usually on chalk and hard limestone but also on calcareous schist in Scotland. It prefers permanent patches of light and is most frequent on steep, rocky slopes with an open tree canopy, but is also found along woodland edges and rides, and in scrub.

Dactylorhiza incarnata subsp. *ochroleuca* – see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/unmatched-species-name-735>. Periodically inundated calcareous fens. High level of habitat specificity, and suitable habitats geographically highly restricted.

Epipactis sancta – restricted to sand dune slacks, showing high habitat specificity and extreme geographical restriction to a single locality.

Orchis anthropophora – see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/aceras-anthropophorum>. Occurs in old chalk pits and limestone quarries, in lightly grazed calcareous grassland and on road verges in chalk and limestone districts. It tolerates considerable shade, so can persist in grass/scrub mosaics and along scrub/woodland edges. Patches of suitable habitat often quite small, and geographically/climatically restricted to SE England and E. Anglia.

Orchis purpurea – see <http://www.brc.ac.uk/plantatlas/index.php?q=plant/orchis-purpurea>. On thin calcareous soils, typically over chalk but also on clay, ragstone and Carboniferous limestone. It grows in open *Corylus*, *Fagus* or *Fraxinus* woodland and scrub and, more rarely, in open grassland. Geographically highly restricted (Kent only).

Threats

(i) All five orchids covered by this recommendation have been assessed as likely to be particularly vulnerable to collection and habitat changes arising from the physical disturbance caused by 'orchidophiles', whether or not their intention is to collect specimens or merely take photographs of their quarry. Orchids already feature prominently on Schedule 8, and it is well known that **all** orchid species – even widespread/common and non-threatened species like bee orchid *Ophrys apifera* or pyramidal orchid *Anacamptis pyramidalis* – are prone to being picked or dug up by orchid enthusiasts. In the case of the four *threatened* orchid taxa covered by this recommendation, we believe collection pressures could significantly increase their vulnerability to local or national extinction. We therefore recommend that, taking a precautionary approach, all five should be added to the list of specially protected orchid taxa.

International legal obligations

EC regulations treat all species of orchids as if they are listed in CITES Appendix II (category C1) [trade subject to licencing]

Existing legal protection in GB

All five species have a relatively high proportion of their GB occurrences lying within the protected sites network (SSSIs or nature reserves), but this fact doesn't necessarily confer protection from unscrupulous collectors. The entire world population of *Epipactis sancta*, and both the extant (or probably extant) colonies of *Dactylorhiza incarnata* ssp *ochroleuca* lie within SSSIs/NNRs, and a large proportion of *Orchis purpurea* populations also occur within SSSIs. Rather more *Orchis anthropophora* and *Cephalanthera longifolia* colonies lie outside protected sites (especially roadside colonies in the case of *O. anthropophora*), and these could be particularly vulnerable to collection, or to deliberate or unwitting destruction. The BSBI is undertaking for NE an assessment of SSSI coverage for all Nationally Rare, Nationally Scarce and threatened vascular plant taxa. This work will enable us to assess much more precisely the extent to which these orchid taxa occur outside the SSSI network.

All five taxa are listed on Section 41 of the NERC Act as "species of principal importance for the conservation of biodiversity in England".

Recommendation

WCA (1981) Section	Text	Qualify
13. (1)	intentionally picks, uproots or destroys any wild plant included in Schedule 8	X
	not being an authorised person, intentionally uproots any wild plant not included in that Schedule	X

Justification for the recommendation

WCA 1981 13 (1) (b) already applies, but due to their high desirability and the actual or potential collection pressures directed at orchids in general and to these orchids in particular, we recommend that they should receive added special protection under 13 (1) (a), which would require them being added to Schedule 8.

Benefits to accrue from acceptance of the recommendation

Orchids already feature prominently on Schedule 8, and we believe the addition of these five taxa will help to establish a more consistent approach to the listing of threatened orchid taxa on the Schedule.

Listing will send out a strong message that these orchids are threatened (and in two cases, extremely rare), and that, as a consequence, merit special protection by being added to the Schedule. It will act as a strong deterrent against orchid enthusiasts and others who might otherwise be drawn to collect these taxa.

Species recommended for addition to Schedule 8

Draba aizoides Yellow whitlowgrass

Submitted by: GB species Status Assessment Group

Type of organism: Vascular plant

Working group summary

Extremely rare. There is evidence of decline and of losses caused by collection. And as the species is collectable it is likely to become highly threatened without protection.

Addition to Schedule	8
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Eligibility criteria

Native in the wild in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X

Status in Great Britain

NT on GB and Welsh *Red Lists* (Cheffings & Farrell 2005, Dines 2008). Nationally Rare (15 or fewer 10km squares in GB).

Global distribution

Mediterranean-montane element; mainly Alpine.

Distribution in Great Britain

Gower Peninsula; a number of populations but evidence of some decline and losses as a result of collection pressures.

Habitat

Rock crevices on Carboniferous limestone.

Threats

This species has been assessed as likely to be particularly vulnerable to collection or habitat damage as a result of human disturbance. It is an attractive plant that are prone to being picked or dug up; because it is so rare, with total numbers of individuals not exceeding a few thousand plants in each case, we believe collection pressures pose a significant threat, with some populations known to be especially vulnerable. We therefore recommend that, taking a precautionary approach, it should be added to the list of specially protected taxa.

In both cases we are aware of collection pressures being an issue. RDB (Wigginton 1999) reports populations of *Draba aizoides* being damaged by collectors.

International legal obligations

None

Existing legal protection in GB

Most, if not all, populations lie within SSSIs, but this provides little protection from unscrupulous collectors.

Recommendation

WCA (1981) Section	Text	Qualify
13. (1)	intentionally picks, uproots or destroys any wild plant included in Schedule 8	X
	not being an authorised person, intentionally uproots any wild plant not included in that Schedule	X

Justification for the recommendation

WCA 1981 13 (b) already applies, but due to its rarity, desirability and the actual or potential collection pressures, we recommend that it should receive special protection under 13 (a), and should therefore be added to Schedule 8. The species is extremely rare and highly attractive and collectable, and are likely to become highly threatened without proper protection.

Benefits to accrue from acceptance of the recommendation

The majority of sites for this species support relatively small populations and therefore they are all highly vulnerable to site-factors such as disturbance, up-rooting, etc. Inclusion on Schedule 8 will enhance the safeguarding against such threats thereby improving the longer term survival of the species in GB.

Listing will send out a strong message that these species are threatened by collectors and as a consequence are receiving special protection by being added to the Schedule. It will act as a strong deterrent against botanists, horticulturalists, gardeners and others, who (for whatever reason) might be tempted to collect or otherwise 'remove' this taxon from its few surviving strongholds.

Species recommended for addition to Schedule 8

Myriostoma coliforme (With.) Corda Pepper pot

Submitted by: Natural England

Type of organism: Non-lichenised fungus

Working group summary

Species is under threat and is collected because of its rarity and distinctiveness. There are only two fruiting patches in Britain, neither within a SSSI.

Addition to Schedule	8
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
Taxonomic status meets recognised international standards	X

Global distribution

Widespread; most northerly sites in Sweden, elsewhere in Northern Europe rare, including southern England and Channel Islands, more frequent in southern Europe; also found in parts of Russia, Afghanistan, Iran, Pakistan, South Africa, India, Hawaii, Brazil, and in Australia where it may have been introduced. Rare in Europe and red-listed in 12 European countries (see Kew Species Page; <http://www.kew.org/plants-fungi/Myriostoma-coliforme.htm>).

Distribution in Great Britain

Distribution of breeding populations/individuals is encapsulated in two patches in Suffolk. This distinctive and attractive earthstar fungus (Mahler & Ainsworth 2010, see Kew Species Page, <http://www.kew.org/plants-fungi/Myriostoma-coliforme.htm>) was apparently not recorded in Britain between 1880 (Norfolk) and 2006 (Suffolk) and believed to be extinct. The second extant breeding population/individual was found in 2010. Despite an extensive search of 66 likely sites in the area of the most recent collection (Mahler, unpubl.), no further specimens have been found. The two extant sites are in different hectads.

Status in Great Britain

Breeding (fruiting) populations/individuals are estimated to be very low, comprising two extant fruiting patches of, perhaps, just two genets in total. It is present in 2 occupied hectads (post 1960) in Britain based on national databases of records (FRDBI & CATE2) and national database of reference collections (Kew).

Historical collections and records show that it was sporadically seen in sandy ground in south-eastern England (usually in East Anglia or Kent) between the 17th and late 19th centuries. Although believed to have become extinct with a last authenticated record in 1880, its timely rediscovery in 2006 led to a Red List status of Critically Endangered in a "preliminary assessment" carried out using IUCN criteria on behalf of the British Mycological Society (Evans *et al* 2006).

There is no JNCC-approved Red List rating for British fungi, this was assessed as CR on the basis that there was one occupied hectad post-1960 and ten such hectads pre-1960 - cited as evidence of decline.

Habitat

The fungus is probably a litter saprotroph favouring sandy soil and fruiting in wayside places, hedgerows, banks, nettle-beds and verges, sometimes in company with other earthstars and/or the legally-protected Sandy Stiltball (*Battarraea phalloides*).

Threats

The fungus, like its relatives the earthstars and stiltballs, forms very durable fruit bodies which are easily preserved. They are held in high regard and sought by a minority of field mycologists for their personal collections. Indeed this species has been called “the Holy Grail of Norfolk mycology” (Leech *et al* 2009). Despite the extremely limited number of people who were informed about the most recent site, nevertheless several of the youngest fruit bodies “disappeared” during 2010 and were presumably deliberately collected before they had chance to release any/many spores.

International legal obligations

The fungus was one of the “33 Threatened Fungi in Europe” proposed for listing in Appendix 1 of the Bern Convention.

Existing legal protection in GB

The species is not present on any SSSI and is vulnerable to verge and wayside maintenance in addition to targeted collecting.

It is currently on BAP and a Section 41 species

Justification for recommendation

This attractive and distinctive fungus has only two known fruiting patches in Britain, neither within a SSSI, and fruits on wayside ground that is often accessible to the public. Its rarity and distinctiveness make it an attractive target for specialist collectors for their personal fungaria. The British fruiting population is at such a low level that removal of fruit bodies for personal collections should be legally prohibited to give the species the best chance of recolonising its former range.

Benefits to accrue from acceptance of the recommendation

Reducing fruit body picking will improve the species’ chances of genetic recombination (assuming it employs an outcrossing breeding strategy) and spore dispersal. Recombination is particularly important to generate the genetic variation essential to survival and adaptation in a relatively rapidly changing environment. Schedule 8 listing will give the best chances for natural recolonisation of former sites. Earthstars are popular fungi and there would be a greater chance for interested people to see and appreciate the fruit bodies of this species if it was legally protected.

References

EVANS, S., HENRICI, A. & ING, B., 2006. Red data list of threatened British fungi (preliminary assessment)
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MAHLER N. & AINSWORTH A.M., 2010. A second recent record of *Myriostoma coliforme* (Critically Endangered) from East Suffolk. *Field Mycology* 11(4): 144-inside cover.
Myriostoma species page <http://www.kew.org/plants-fungi/Myriostoma-coliforme.htm>
accessed: 31 Jan. 2012.

Species recommended for addition to Schedule 8***Dryopteris cristata*** Crested buckler-fern***Polystichum lonchitis*** Holly-fern**Submitted by:** GB species Status Assessment Group**Type of organism:** Vascular plant**Working group summary**

The vascular plant experts considered the idea of assigning collecting threat to ferns in general based on their desirability and general high collecting demand on this group. Although, not entirely in favour of this type of classification, the plant experts agreed that for these two ferns, collection is a real threat. The working group therefore accepted the addition of these species as a precautionary approach despite no direct evidence of collection.

Addition to Schedule	8
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X
Clearly recognisable (i.e. Morphologically distinct).	X

Status in Great Britain

Dryopteris cristata – **CR** on GB *Red List* (Leach 2010) under IUCN criteria A2c due to severity of decline. Nationally Rare (15 or fewer 10km squares in GB). UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England.

Polystichum lonchitis – **VU** on GB *Red List*, qualifying under IUCN criterion A2(c) due to severity of decline (Cheffings & Farrell 2005). UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England. Schedule 8 (Wildlife (Northern Ireland) Order (1985). Extremely rare in England.

Global distribution

Dryopteris cristata – Eurosiberian temperate element, with a continental distribution in western Europe (Preston, Pearman & Dines 2002), reaching its southern range limit in the Alps. Its European distribution is focused upon the Baltic Sea, becoming more disjunct eastwards into western Siberia and southwards to northern Italy and Romania. It occurs also in Japan and North America. It is rare in south-western Central Europe, and is Endangered in Austria, France, Germany and Switzerland (Lander Gott *et al* 2000).

Polystichum lonchitis – Circumpolar Boreal-montane element, with a disjunct distribution (Preston, Pearman & Dines 2002) across Europe, Siberia, Asia and North America.

Distribution in Great Britain

Dryopteris cristata - see <http://www.brc.ac.uk/plantatlas/index.php?q=node/1063>. Lost from most historical locations in England and Scotland, and now restricted to the fens of east Anglia and one outlier population in Broadmoor to Bagshot Woods and Heaths on the Surrey/Berkshire border.

Polystichum lonchitis – see <http://www.brc.ac.uk/plantatlas/index.php?q=node/1009>. Strongholds in western and north-west Scotland, with disjunct populations present in Caernarvonshire, North-west Yorkshire, Durham, Cumberland and the Lake District.

Habitat

Dryopteris cristata - see <http://www.brc.ac.uk/plantatlas/index.php?q=node/1063>. A plant of base-poor fens, often growing with *Sphagnum* species and a sparse cover of *Phragmites australis* and other tall-herb fen plants. It is not a strong competitor and populations are highly susceptible to birch *Betula* spp. encroachment. In its Broadland strongholds, sites are usually on 'floating' late-hydroseral fen surfaces.

Polystichum lonchitis – see <http://www.brc.ac.uk/plantatlas/index.php?q=node/1009>. A calcicole plant of well-drained, cool and moist positions, often found in stabilised boulder-scrub or at the bases of cliffs and rocky ledges, and also as a component of limestone pavement grike vegetation communities.

Threats

Both species have been assessed as likely to be particularly vulnerable to collection and anthropogenic habitat change leading to a continuing decline of fragile populations. They are attractive plants (of considerable horticultural merit and/or likely to be particularly attractive to pteridophiles), and are prone to being picked or uprooted. Both are elegant ferns which are present in very low numbers in GB (*P. lonchitis* is extremely rare in England) and are attractive to growers. *D. cristata* is available through the horticultural trade and specialist stockists, while *P. lonchitis* is not available in GB but is an attractive and easily identifiable fern at risk of persecution. They have shown marked declines in AOO, EOO and/or the number of mature individuals, and collection pressures could significantly increase their vulnerability to local or national extinction. We therefore recommend that, taking a precautionary approach, both should be added to the list of specially protected taxa.

International legal obligations

None

Existing legal protection in GB

Both species have a relatively high proportion of their GB occurrences lying within the protected sites network (SSSIs or nature reserves), but this doesn't necessarily confer protection from unscrupulous collectors, and many extant locations are in remote areas. The majority of *D. cristata* locations are within SSSI, although past theft from protected sites highlights the desirability of these plants to collectors. Although most locations for *P. lonchitis* and *D. cristata* are within the statutory network, habitat preferences and corresponding remote locations of many protected populations means that they remain highly vulnerable to collection. The BSBI is currently undertaking for NE an assessment of SSSI coverage for all Nationally Rare, Nationally Scarce and threatened vascular plant taxa which will enable us to assess much more precisely the extent to which these taxa occur outside the SSSI network. Listed on Section 41 of the NERC Act.

Recommendation

WCA (1981) Section	Text	Qualify
13. (1)	intentionally picks, uproots or destroys any wild plant included in Schedule 8	X
	not being an authorised person, intentionally uproots any wild plant not included in that Schedule	X

Justification for the recommendation

WCA 1981 13 (b) already applies, but due to their high desirability and the actual or potential collection pressures to these species in particular, we recommend that they should receive special protection under 13 (a), and should therefore be added to Schedule 8.

Benefits to accrue from acceptance of the recommendation

The majority of sites for both species support relatively small and declining populations and therefore they are all highly vulnerable to site-factors such as disturbance, uprooting, *etc.* Inclusion on Schedule 8 will enhance the safeguarding against such threats thereby improving the longer term survival of each species in GB. Listing will send out a strong message that the taxa are threatened and are receiving special protection. It will act as a strong deterrent against enthusiasts and others who might be drawn to collect these taxa.

Species recommended for addition to Schedule 8***Pulsatilla vulgaris*** Pasque flower**Submitted by:** GB species Status Assessment Group**Type of organism:** Vascular plant**Working group summary**

It has shown a marked decline in area of occurrence, area of occupancy and number of mature individuals. The species is attractive and prone to being picked or uprooted with examples of plants being taken from SSSIs and NNRs. The working group therefore accepted that the plant is likely to be particularly vulnerable to collection and anthropogenic habitat change leading to a continuing decline of fragile populations.

Addition to Schedule	8
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Eligibility criteria

Native in the wild in Great Britain	X
Endangered in Great Britain	X
The species is likely to become endangered	X
Taxonomic status meets recognised international standards	X
Clearly recognisable (i.e. Morphologically distinct).	X

Status in Great Britain

VU on GB *Red List*, qualifying under IUCN criterion A2(c) due to severity of decline in both number of locations and AOO (Cheffings & Farrell 2005). Nationally Scarce (16-100 10km squares in GB). UKBAP Priority Species, listed in Section 41 of the NERC Act 2006 as a 'species of principal importance for the purpose of conserving biodiversity' in England.

Global distribution

European Temperate element, with a continental distribution in western Europe (Preston, Pearman & Dines 2002). Widely distributed across north-west Europe, but declining across its core range as habitat destruction continues (Stewart, Preston & Pearman 1992).

Distribution in Great Britain

See <http://www.brc.ac.uk/plantatlas/index.php?q=node/1200>. Habitat destruction, neglect and theft have resulted in widespread population decline and a severely fragmented distribution. It is now confined to 19 sites in 10 vice-counties, being formerly widespread in the Midlands and northern England, extending as far northwards as County Durham. In the north of England it is now restricted to a single site near Wakefield. Of the 19 extant locations, 7 have very small populations (<10 individuals).

Habitat

See <http://www.brc.ac.uk/plantatlas/index.php?q=node/1200>. Almost entirely confined to short herb-rich turf on steep south to south-west facing slopes, old quarries, and ancient earthworks with relatively shallow calcareous soils overlying Chalk or Oolitic limestone.

Threats

Assessed as likely to be particularly vulnerable to collection and anthropogenic habitat change leading to a continuing decline of fragile populations. The species is attractive and prone to being picked or uprooted. For example, there are reports of plants being taken from SSSIs (e.g. Knocking Hoe in Bedfordshire; Fleam Dyke in Cambridgeshire) and NNRs (e.g. Barton Hills in Bedfordshire). Shown marked decline in AOO, EOO and/or the number of mature individuals, and we believe collection pressures could significantly

increase its vulnerability to local or national extinction. We therefore recommend that, taking a precautionary approach, it should be added to the list of specially protected taxa.

International legal obligations

None

Existing legal protection in GB

Relatively high proportion of the GB occurrences lying within the protected sites network (SSSIs or nature reserves), but this fact doesn't necessarily confer protection from unscrupulous collectors, and many extant locations are in remote areas. All but one location is within SSSI, although past theft from protected sites highlights the desirability of the plants to collectors. The BSBI is currently undertaking for NE an assessment of SSSI coverage for all Nationally Rare, Nationally Scarce and threatened vascular plant taxa. This work will enable us to assess much more precisely the extent to which this taxon occurs outside the SSSI network. Listed on Section 41 of the NERC Act as "species of principal importance for the conservation of biodiversity in England".

Recommendation

WCA (1981) Section	Text	Qualify
13. (1)	intentionally picks, uproots or destroys any wild plant included in Schedule 8	X
	not being an authorised person, intentionally uproots any wild plant not included in that Schedule	X

Justification for the recommendation

WCA 1981 13 (b) already applies, but due to its high desirability and the actual or potential collection pressures in particular, we recommend that it should receive special protection under 13 (a), and should therefore be added to Schedule 8.

Benefits to accrue from acceptance of the recommendation

The majority of sites support relatively small and declining populations and therefore it is highly vulnerable to site-factors such as disturbance, uprooting, *etc.* Inclusion on Schedule 8 will enhance the safeguarding against such threats thereby improving the longer term survival in GB. Listing will send out a strong message that this taxon is threatened and is receiving special protection by being added to the Schedule. It will act as a strong deterrent against enthusiasts and others who might otherwise be drawn to collect it.

Species recommended for reduced protection on Schedule 8

Hyacinthoides non-scripta Bluebell

Submitted by: Flora locale

Type of organism: Vascular plant

Working group summary

The bluebell is not threatened nor is the plant threatened from harvesting its seed. Increasing the stocks and availability of seed would encourage greater use of wild Bluebell seed for large restoration projects, and make it easier for those wishing to establish wild Bluebell to obtain genuine wild stocks. The alternative is that the public will continue to rely on buying bulbs – many of which are the non native Spanish Bluebell. Taking Bluebell off the schedule entirely is not advised as this may result in the mass removals from the wild as happened in the past.

Reduce protection to allow collection of seed	8
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Distribution in Great Britain:

All areas – common and widespread.

Distribution elsewhere:

Atlantic biogeographic region – NW Europe

Status in Britain:

IUCN criteria don't apply as it is a common and widespread species.

Habitat:

Semi-natural broadleaved woodlands (most types); also occurs on coastal grassland (e.g. western seaboard) and heathland (e.g. New Forest) where it grows in open communities with acid grassland and bracken.

Threats:

Not threatened. However, commercial bulb-digging may have an impact on local populations if undertaken indiscriminately and this was the original reason for listing wild Bluebell under Schedule 8 (sale only). This is, in effect, what happened with a related species with a more localised and restricted distribution, Wild Daffodil (*Narcissus pseudonarcissus*), which was dug up for gardens in the 19th century. As a result many woodlands where it was probably abundant have been denuded of the species. Wild Daffodil is not protected under Schedule 8.

Recommendation:

To qualify the inclusion of Bluebell on Schedule 8 as requiring only the sale of bulbs to be licensed.

Justification for recommendation

1. Wild Bluebell is not threatened in the UK. On the contrary, this species is abundant in most suitable habitats over much of the British Isles.
2. There is no evidence that individual populations of wild Bluebell are threatened by the collection, sale and use of wild Bluebell seed for creative conservation
3. There is no evidence that donor populations (where seed is collected) are threatened by seed collection.
4. The collection, sale and use of wild Bluebell seed is beneficial to biodiversity, landscape

and public enjoyment of created woodlands that currently lack a diverse woodland ground flora.

5. The current licensing provision has created a barrier to those wishing to collect and sell seed for ecological restoration.
6. Third parties seeking licences have reported to us that the current licensing provision isn't effectively managed. In 2011, guidelines on licensing bluebells were drafted by Natural England, as a means to inform and improve the licensing process. Our comments were provided but, as a key stakeholder, we still have had no indication that these guidelines have been finalised nor are in use.
7. The operation of the licensing system is placing an undue burden on legitimate trade in and sustainable use of Bluebell.
8. The current licensing system results in no or questionable benefits for bluebell or its native habitats.

Currently the licensing provision not only covers the sale of bulbs but also covers the sale of seed. This is unduly restricting to the legitimate trade in the seed of wild Bluebell. This seed is in increasing demand for ecological restoration schemes, particularly those which are associated with the improvement of woodland ground flora in woodland plantations. The use of bluebell seed for woodland wild flora enhancement projects in recently established woodland is encouraged by organisations such as Flora Locale (wild-plant restoration charity) and Landlife.

The collection of seed causes no harm to populations of wild bluebell as the quantities of seed produced in the wild and at any one site are huge, and the plant does not depend on seed for its reproduction. Seed is also extremely time-consuming to collect and it is impossible to collect large quantities from wild populations. Moreover, its use in restoration projects, the majority of which are for enhancing recently created woodlands and hedgerows, generally poses no threat to wild bluebell populations. In any case, wild bluebell as a species is not threatened in the UK.

There is no justification for requiring licensing for the sale of seed – any more than there is for the sale of seed of other wild flower species which are also commonly in the trade and used for ecological restoration. In fact many of the species already in trade are far less common than bluebell.

The process of applying for licenses to sell seed has become unnecessarily cumbersome and bureaucratic, with applications sometimes taking many months for the responsible agencies to process making the act of collecting and sale untenable and difficult to manage, especially if the choice of collection site changes.

There is no scientific justification for requiring the licensing for sale of bluebell seed. Neither is there a scientific justification for suggesting to those applying for licences to sell seed that they should pay for an expensive test for their seed. In fact, the red tape that has been created in relation to selling bluebell seed has the result of being counter productive and has created a barrier for those wishing to support valid woodland wild flora restoration schemes where no other species is so regulated.

It has also added to the workload of staff employed by the agencies responsible for authorising and advising on the issuing of licences to sell Bluebell seed.

Benefits which would accrue from acceptance of the recommendation

It would make it much easier and straightforward for individuals and organisations to collect and sell the seed of wild Bluebell, and thus the stocks and availability of seed would increase. This would also encourage greater use of wild Bluebell seed for large scale restoration projects, and make it easier for those wishing to establish wild bluebell to obtain genuine wild stocks. The alternative is that the general public will continue to rely on buying bulbs – many of which turn out to be the non native Spanish Bluebell.

The staff time released could then be effectively used to get on top of the companies which are illegally selling wild Bluebell (or claiming to) without a valid licence.

Previous recommendations

A report commissioned in 2002 made a number of recommendations to English Nature, concerning the licensing procedure for Bluebell, with the aim of recommending a simple framework for issuing licences. This report was produced following discussion with a number of groups including suppliers and the police.

The recommendations in the 2002 report should be re-considered. However, Flora Locale remains of the view that seed should be removed from the licensing requirement.

The framework reasoning for the report's recommendations are given below and it would seem appropriate for regulators to review the current situation with these points in mind:

- The need to minimise bureaucracy, costs and associated resources to administer and enforce the Bluebell licensing scheme (among the conservation agencies, Police and DEFRA)
- The need to avoid over-regulating activities likely to result in nature conservation benefits (particularly the collection of seed from the wild for habitat enhancement)
- The need to encourage plant and bulb nursery production from licensed wild-collected seed of recorded British origin
- The need to reduce the landscape industry's requirements for bulbs (seed works most cost-effectively)
- The need for a simple approach, while at the same time enabling the licensing process to improve the ability to detect "real" Bluebell crime – the digging and sale of bulbs collected from the wild
- Making the purchase of licensed (wild) Bluebell attractive to purchasers, but at the same time ensuring that other bona fide traders in British native Bluebell that do not trade wild seed are not disadvantaged
- Interpretation of the term "wild plant".

Licensing has the potential to result in negative impacts on nature conservation (and some say that the listing of Bluebell on the Schedule 13 already has had some negative impacts), notably:

- Responsible trade in seed discouraged
- Proven creative conservation techniques using seed stifled
- Trade in imported substitutes (often *H hispanica*) encouraged
- Restricted legitimate trade (insufficient legitimate supplies) results in greater amount of wild bulb digging to supply the horticultural trade (the corollary is that the small specialist suppliers will lose out to the large non-specialist suppliers whose bulk trade consists of ornamental and garden varieties that are highly unsuitable for conservation purposes or wildlife gardening).

An example is provided by Emorsgate Seeds, where the company lost a pre-arranged contract to collect and supply Scottish Bluebell seed for a Scottish community woodland scheme which could have resulted in 5 ha of new bluebell woodland originating from locally collected seed. The failure of the licensing process resulted in the loss of most of this order, with the shortfall made up within the general seed trade with existing stock held by other companies of dubious or unknown origin.

Species recommended for removal from Schedule 8

Althaea hirsuta Rough marsh-mallow
Alyssum alyssoides Small alison
Bupleurum falcatum Sickle-leaved hare's -ear
Gnaphalium luteoalbum Jersey cudweed
Limosella australis Welsh mudwort
Teucrium botrys Cut-leaved germander

Submitted by: GB species Status Assessment Group

Type of organism: Vascular plant

Working group summary

Accept the expert findings that conclude that these species are neophytes. Neophytes are excluded from Schedule 8.

Removal from Schedule	8
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Justification for the recommendation

Following publication of year 1, year 2 & years 3-5 amendments (Leach 2007, 2010; Leach & Walker 2011) to the current GB Red Data List (Cheffings & Farrell 2005), the Species Status Assessment Group has agreed further amendments to the Red Data List covering years 6 & 7 of the annual amendment process (Leach & Walker 2013). These amendments include changes to the native status of some taxa following publication of evidence to suggest that a taxon has been intentionally introduced to GB after 1500AD, subsequently qualifying the taxon for neophyte status. Neophytes are excluded from the GB Red List, and consequently the 6 species considered in this document no longer have an IUCN threatened status. The status of all six species (*Althaea hirsuta*, *Alyssum alyssoides*, *Bupleurum falcatum*, *Gnaphalium luteoalbum*, *Limosella australis*, *Teucrium botrys*) have now been amended based on available evidence. *Althaea hirsuta* is an arable weed that was first recorded in 1792, a late date for a conspicuous plant if it were presumed an archaeophyte. It is well-established on summer-droughted soils, but the ecology and European range support a neophyte listing. *Alyssum alyssoides* was first recorded in GB in 1829, and often introduced as a wool alien with other foreign seed (Karran & Rich 2003). It is probably native through-out much of its European range, but is introduced in the north (Jalas *et al* 1996), and GB habitats contrast strongly with its natural habitats in Europe. *Bupleurum falcatum* is known to be grown in gardens, and hence is potentially a garden escape. First recorded in 1831, a late date for a presumed native plant. *Gnaphalium luteoalbum* is included in the New Atlas (Preston *et al* 2002) as 'native or alien'. Evidence for native status comes partly from the early date of discovery (1690). However this was on the Channel Islands, not in Great Britain. The first record in Norfolk was in 1882, suggesting that it should have a neophyte status. The seeds of *G. luteoalbum* are widely dispersed on the feet or feathers of birds and by wind, and is considered an invasive pest species across much of its known range. *Limosella australis* is considered a recent introduction, as so is recommended to be removed from Schedule 8. Pearman (2007) assessed *L. australis* as 'Native or Alien', and it is considered 'native' in Stace 2010, but a recent assessment by Jones (2011) includes compelling evidence to convince the SSAG that it is almost certainly a neophyte. *Teucrium botrys* is an invasive weedy species in cultivation that was only recorded in the wild in 1844.

Benefits to accrue from acceptance of the recommendation

All six species considered for recommendation to be removed from Schedule 8 remain protected under the WCA 1981 13 (b). Removal from Schedule 8 will reflect the current

view on native/alien status agreed upon by the SSAG and incorporated into the master GB Red Data List on the JNCC website.

Species recommended for removal from Schedule 8

Arabis alpina L. Alpine rock-cress

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

Not threatened and not endangered by collection.

Removal from Schedule, Scotland	8
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Justification for removal

Within the United Kingdom, *Arabis alpina* has only been recorded growing in the wild, as a native plant, from Scotland. Records from England are considered to be alien.

The populations on the island of Skye are relatively inaccessible. Endangerment is not considered to be due to any direct human pressures listed in the 6th Quinquennial Review QQR Information Pack.

¹Preston CD, Pearman DA, Dines TD. 2002. *New Atlas of the British and Irish Flora*. Oxford University Press.

Existing legal protection in GB

Scottish Biodiversity List of species of principal importance for biodiversity conservation – From 01/11/2005

IUCN (2001) Endangered – From 09/05/2005

Species recommended for removal from Schedule 8

Arenaria norvegica norvegica Gunnerus Arctic or Scottish sandwort

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

The Scottish subspecies *Arenaria norvegica* subsp. *norvegica* is confined to Scotland and is not under pressure from collecting in Scotland.

Removal from Schedule	8
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Justification for removal

Endangerment is not considered to be due to any direct human pressures listed in the 6th Quinquennial Review QQR Information Pack.

Arenaria norvegica was added to Schedule 8 of the Wildlife and Countryside Act 1981 in 1981. There are two subspecies recorded in the wild in the UK, *Arenaria norvegica* subsp. *norvegica* and *Arenaria norvegica* subsp. *anglica*. In the United Kingdom the distribution of *Arenaria norvegica* subsp. *norvegica* is confined to Scotland.

Existing legal protection in GB (all taxa)

Arenaria norvegica norvegica Gunnerus:

Scottish Biodiversity List of species of principal importance for biodiversity conservation –
From 01/11/2005

IUCN (2001) Vulnerable – From 09/05/2005

Arenaria norvegica Gunnerus:

Scottish Biodiversity List of species of principal importance for biodiversity conservation –
From 01/11/2005

Source: NBN <https://data.nbn.org.uk/Taxa/NBNSYS0000034114>

Species recommended for removal from Schedule 8

Calicium corynellum (Ach.) Ach (1803) Rock nail

Submitted by: GB species Status Assessment Group

Type of organism: Vascular plant

Working group summary

Now classified as the same species as a more common species.

Removal from Schedule	8
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Justification for removal

Based on sequence data it is shown that individual samples of *C. corynellum* in Britain may be more closely related to *C. viride* than they are to other *C. corynellum* specimens, with no sequence cluster corresponding to either *C. viride* or *C. corynellum*. Neither morphological nor molecular studies provide evidence that the British material of putative *C. corynellum* is taxonomically distinct from its common congener *C. viride*. This supports the hypothesis that *C. corynellum* in Britain is likely to be a rock-inhabiting form of the commoner epiphyte *C. viride*. This study cannot rule out the possibility that these two species are recently-diverged, with only weakly differentiated morphology (not apparent in the British material) and non-differentiated ITS sequences. Nevertheless, this scenario is much less frequently reported than the opposite case, in which sequence divergence without obvious morphological differentiation is found (e.g. Leavitt *et al* 2011, 2013; Lumbsch and Leavitt 2011.). It is most plausible that putative *C. corynellum* in Britain is likely to be *C. viride* which has colonized onto stonework from nearby epiphytic populations.

Species recommended for removal from Schedule 8

Cystopteris dickieana R. Sim Dickie's bladder-fern

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

Only occurs in Scotland. Collection pressures have eased and not threatened by collection.

Removal from Schedule	8
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Justification for removal

Within the UK, *Cystopteris dickieana* has only been reported from sites within Scotland. Heavily collected from its original site, to the extent that the sporophytes were reputedly all removed. Since then sporophytes have reappeared there and the plant does not appear to be targeted for collection at that site. Most visitors appear to go to an alternative location on the same section of coast and where populations of bladder fern exhibiting different spore characteristics can be found. Reported at several inland sites. Identification of the species is difficult and it is possible that it has been under recorded. Reduction in apparent collecting at coastal sites is due to a number of possible factors. New sites reducing the species "rarity", there is some disagreement regarding the validity of the species, the species is apparently available from cultivated sources and lastly, but importantly in terms of listing on Schedule 8, there appears to have been a reduction in the habitual collection of vascular plant species in general, directly from the wild. Endangerment is not considered to be due to any direct human pressures listed in the 6th Quinquennial Review QQR Information Pack.

Existing legal protection in GB

Scottish Biodiversity List of species of principal importance for biodiversity conservation – From 01/11/2005 IUCN (2001)

IUCN (2001) Vulnerable – From 09/05/2005

Wildlife and Countryside Act 1981 (Schedule 8) – From 01/01/1981

Species recommended for removal from Schedule 8

Epipactis youngiana Stace, C.A. 2010. Young's helleborine

Submitted by: S Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

This is considered a neophyte in Scotland.

Removal from Schedule, Scotland	8
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Justification for removal

Epipactis youngiana has been shown to represent a distinct morphological variant of *Epipactis helleborine*. Genetically this variant is nested within the broader species and the case for its recognition at any taxonomic level is highly doubtful. The Kew World Checklist, for example, regards the named entity as synonymous with *Epipactis helleborine* ssp. *helleborine*. Stace (2010), however, continues to recognise it as *Epipactis helleborine* var. *youngiana* (A.J.Richards & A.F.Porter) Kreutz. Recommended for removal from Schedule 8 as it is no longer accepted as being taxonomically distinct entities in GB.

Existing legal protection in GB

Currently protected under Schedule 8 and the WCA 1981 13 (b).

Species recommended for removal from Schedule 8

Gentiana verna L. Spring gentian

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

This is considered a neophyte in Scotland.

Removal from Schedule, Scotland	8
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Justification for removal

Gentiana verna has native populations in England and the Republic of Ireland. *G. verna* is considered to be outwith its native range within Scotland¹. The sole naturalised population in Scotland is at Inchnadamph, Sutherland. The Inchnadamph population is a considerable distance from the nearest native population in northern England.

¹Preston CD, Pearman DA, Dines TD. 2002. *New Atlas of the British & Irish Flora*. Oxford University Press.

Existing legal protection in GB

Wildlife and Countryside Act 1981 (Schedule 8) – From 01/01/1981

Species recommended for removal from Schedule 8

Gentianella uliginosa (Willd.) Börner Dune gentian

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

Protected in two SSSIs and threats are not from collecting.

Removal from Schedule, Scotland	8
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Justification for removal

On the island of Colonsay and its adjacent smaller islands, the entire Scottish population of *Gentianella uliginosa* would appear to be located within two SSSIs. On one of the two SSSIs *G. uliginosa* is protected as part of a vascular plant assemblage. On the other SSSI the supporting habitats of *G. uliginosa* are notified features. Changes in land use which might have an impact upon *G. uliginosa* are likely to be assessed by Scottish Natural Heritage in advance of their taking place. When assessed during Site Condition Monitoring in 2007, on North Colonsay SSSI, the population of *G. uliginosa* was in excess of 10,000 plants. In Scotland, endangerment is not considered to be due to any direct human pressures listed in the 6th Quinquennial Review QQR. Continued listing on Schedule 8 in Scotland would not appear to be necessary.

Existing legal protection in GB (all taxa)

Provide details of legislation relating to the conservation of the species, including its habitat.

Scottish Biodiversity List of species of principal importance for biodiversity conservation –
From 01/11/2005

IUCN (2001) Vulnerable – From 09/05/2005

Wildlife and Countryside Act 1981 (Schedule 8) – From 01/01/1992

Species recommended for removal from Schedule 8

Microthlaspi perfoliatum (L.) F.K. Mey. Perfoliate penny-cress

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

Not considered to be native in Scotland. Endangerment is not due to direct human pressures.

Removal from Schedule, Scotland	8
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Justification for removal

Thlaspi perfoliatum has native populations in England and is considered to be outwith its native range in Scotland¹. In Scotland there are confirmed records for the species from the vicinity of Forres, Moray. There is an additional report from west Sutherland. Both general locations are a long distance from the nearest populations which are considered native in England. In Scotland Endangerment is not considered to be due to any direct human pressures listed in the 6th Quinquennial Review QQR Information Pack. There has been a classification revision regarding *T. perfoliatum*. A change in the genus has been proposed within *Thlaspi*². The revised classification has been used in a recent flora³ – *Microthlaspi perfoliatum* (L.) F.K. Mey. It is recommended that further guidance is sought regarding the most appropriate name to use for Schedule 8. It is recommended that *Thlaspi perfoliatum* is removed from Schedule 8 with regards to Scotland and it is recommended that if the classification revision is incorporated into Schedule 8, that *Microthlaspi perfoliatum* is not added to Schedule 8 with regards to Scotland.

¹Preston CD, Pearman DA, Dines TD. 2002. *New Atlas of the British & Irish Flora*. Oxford University Press.

²Koch M, Mummenhoff K, Hurka H. 1998. Molecular biogeography and evolution of the *Microthlaspi perfoliatum* s.l. polyploid complex (Brassicaceae): chloroplast DNA and nuclear ribosomal DNA restriction site variation. *Canadian Journal of Botany*, 76(3), 382-396.

³Stace CA. 2010. *New Flora of the British Isles*. Third edition. Cambridge University Press.

Existing legal protection in GB (all taxa)

IUCN (2001) Vulnerable – From 09/05/2005

Wildlife and Countryside Act 1981 (Schedule 8) – From 01/01/1992

Species recommended for removal from Schedule 8

Chenopodium vulvaria Stinking goosefoot

Crepis foetida Stinking hawk's-beard

Fumaria reuteri*= *martini Martin's ramping-fumitory

Submitted by: GB species Status Assessment Group

Type of organism: Vascular plant

Working group summary

None of these taxa is considered to be at risk from collection or persecution and the experts are not aware of any instances when populations of any of these species have been threatened by collection.

Removal from Schedule	8
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Justification for the recommendation

None of these taxa is considered to be at risk from collection or persecution and we are not aware of any instances when populations of any of these species have been threatened in this way. Importantly, none of the taxa is attractive to gardeners or specimen collectors and the risk of unlawful gathering from the wild is considered very low.

Chenopodium vulvaria is a Nationally Rare archaeophyte, Red Listed as Endangered. A number of new sites for the species have recently been found around the Thames estuary. It satisfies eligibility criteria for Schedule 8 under 3(i), but is not declining or at risk due to collecting pressures or intentional damage or destruction - so it fails to qualify under decision criteria 4(ii) or 4(v). It is an unattractive species unlikely to be threatened by persecution or collection pressures.

Crepis foetida is an archaeophyte and was for a time considered Extinct in the Wild in Great Britain. It was successfully reintroduced at Dungeness in Kent in 1992 and was spreading in the immediate area by 1995. It occupied a shingle ridge community comprising patches of *Cytisus scoparius* in a mosaic with 'shingle heath'. Recently another population was found nearby, which is considered independent of the reintroduced plants (Ferry, B. et al British Wildlife **21**(4), 255-260 (2010)). It satisfies eligibility criteria for Schedule 8 under 3(i), but is no longer declining or at risk due to collecting pressures or intentional damage or destruction - so fails to qualify under decision criteria 4(ii) or 4(v). As an unremarkable-looking yellow composite it is unlikely to be threatened by persecution or collection pressures. There remains however, a small risk that part of the recently discovered population which lies outwith the existing SSSI could be destroyed.

Fumaria reuteri, is problematic with regard to status. It is the only one of the ramping-fumitories not presently considered to be native in GB, and the only one of the 'arable' fumitories not to be listed as either a native or an archaeophyte. Its late discovery (1904) suggests a neophyte, but its rarity, and the ease with which such 'difficult' taxa can be overlooked, may have contributed to this. The widespread *F. muralis* ssp. *boraei* (Common Ramping-fumitory) also has a late first date in the wild (1860), yet this taxon is accepted as a native, partly because it has a niche not only in arable fields, but also in scrub-edge, hedges and vegetated cliffs. *F. reuteri* is restricted to disturbed/cultivated ground, but the possibility of it being an archaeophyte cannot be excluded, and SSAG recently recommended it be re-categorised as 'Neophyte or Archaeophyte'. While it is undeniably Nationally Rare, it is not thought to be under threat nationally (in fact there have been several new records of it in recent years), and so it is currently considered as Least Concern (Leach & Walker 2013).

Benefits to accrue from acceptance of the recommendation

All three species considered for recommendation to be removed from Schedule 8 remain protected under the WCA 1981 13 (b). Removal from Schedule 8 will reflect the current view of the SSAG that collection/persecution presents little threat to these species.

Species recommended for removal from Schedule 8

Dactylorhiza lapponica Lapland marsh-orchid

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

After taxonomic work this species is now considered not to occur in the UK.

Justification for the recommendation

Taxonomic status has changed. Scottish plants are no longer considered to belong to this taxon. Now a form of a more widespread species. The subspecies *Dactylorhiza traunsteinerioides lapponica* whilst formerly recognised is a restricted range orchid it is not currently believed to represent a distinct taxonomic unit in Great Britain. Plants previously believed to belong to this taxon are now generally regarded as anthocyanin-rich variants of *D. traunsteinerioides* s.s. *D. t. lapponica* itself (usually now regarded as a distinct species - *D. lapponica* (Laest. ex Hartm.) Soó) is confined to Northern & Central continental Europe. Endangerment is not considered to be applicable as plants formerly identified as *Dactylorhiza lapponica* are now considered to belong to *D. traunsteinerioides* (Narrow-leaved Marsh-orchid)¹. *D. lapponica* sensu stricto has not been confirmed as occurring in Scotland.

All the plants formerly identified as *D. lapponica* had only been recorded in the United Kingdom from Scotland. *D. traunsteinerioides* which now includes plants formerly identified as *D. lapponica* is recorded from England, Wales, Scotland, Northern Ireland and the Republic of Ireland. *D. traunsteinerioides* is not considered to be endangered as a consequence of any direct human pressures listed in the 6th Quinquennial Review QQR Information Pack.

¹Bateman, R M & Denholm, I 2012, ' Taxonomic reassessment of the British and Irish tetraploid marsh-orchids ' New Journal of Botany , vol 2 , no. 1 , pp. 37-55.

Benefits to accrue from acceptance of the recommendation

No longer accepted as being taxonomically distinct entity in GB

Species recommended for removal from Schedule 8

Gymnomitrium apiculatum Pointed frostwort

Submitted by: British Bryological Society

Type of organism: Bryophyte, Liverwort

Working group summary

Not threatened by collection and at a remote site.

Justification

Confined to remote late-lying snow patches in the Cairngorms. Vulnerable habitat and not significantly threatened except by climate change. Not threatened by collection.

Species recommended for removal from Schedule 8

Hypnum vaucheri Vaucher's feather moss

Submitted by: British Bryological Society

Type of organism: Bryophyte, Liverwort

Working group summary

Not threatened by collection and at a remote site.

Justification

Rare but sites relatively remote and secure. Not threatened by collection.

Species recommended for removal from Schedule 8

Mielichhoferia mielichhoferiana (Funk) Loeske Alpine copper moss

Submitted by: British Bryological Society, Scottish Natural Heritage

Type of organism: Bryophyte

Working group summary

As the species has been misidentified and is common it should be removed from Schedule 8.

Justification

All specimens of this moss have been found to be other species of *Mielichhoferia*. Therefore the moss should be removed because there are no confirmed records in GB.

Species recommended for removal from Schedule 8

Orthotrichum obtusifolium Blunt-leaved bristle moss

Submitted by: British Bryological Society

Type of organism: Bryophyte

Working group summary

This species is increasing and therefore does not meet the eligibility criteria.

Justification

Increasing therefore no longer appropriate for Schedule 8.

Species recommended for removal from Schedule 8

Plagiothecium piliferum Hair silk moss

Submitted by: British Bryological Society

Type of organism: Bryophyte

Working group summary

The species has not been seen for many years despite searches.

Justification

Recommended removal. Not been seen for years and no evidence of collection. Needs to be refound

Species recommended for removal from Schedule 8

Lythrum hyssopifolia Grass poly

Submitted by: Species Status Assessment Group

Type of organism: Vascular plant

Working group summary

This species is a neophyte in Scotland. Neophytes are excluded from Schedule 8.

Justification

Recommend deletion from Scotland. Neophyte in Scotland.

Species recommended for removal from Schedule 8

Mentha pulegium Pennyroyal

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

This species is a neophyte in Scotland. Neophytes are excluded from Schedule 8.

Justification

Remove from Scotland as it is a neophyte. BSBI and NE recommend retention.

Species recommended for removal from Schedule 8

Physcia tribacioides Southern grey physica

Submitted by: Scottish Natural Heritage

Type of organism: Lichen

Working group summary

This species does not occur in Scotland and should be removed from Schedule 8 in Scotland.

Justification

Remove from Scotland. Not native to Scotland.

Species recommended for removal from Schedule 8

Pulicaria vulgaris Small fleabane

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

This species is a neophyte in Scotland. Neophytes are excluded from Schedule 8.

Justification

Remove from Scotland. Neophyte in Scotland.

Species recommended for removal from Schedule 8

Rhinanthus angustifolius C.C. Gmel. Greater yellow-rattle

Submitted by: Scottish Natural Heritage

Type of organism: Vascular plant

Working group summary

This taxon is now considered to be a neophyte in Scotland.

Justification

Rhinanthus angustifolius is considered to be out-with its native range in Scotland² where it is recorded as naturalised (in the “wild”) at a single site where it is the sole notified feature of Easthaven SSSI. The location of Easthaven SSSI, to the east of Dundee, is a long distance from the nearest English populations. *R. angustifolius* has the capacity to colonise both arable and grassland habitats and there is currently debate as to its status in England, either as a native species, a neophyte or an archaeophyte.

The distribution in Scotland is complicated by additional populations becoming established in areas of amenity grassland. At one site in Perthshire it has been successfully established from seed collected at Easthaven SSSI. Within grassland *Rhinanthus* species can reduce the competitive ability of grass species, thereby aid the establishment of species rich grassland for conservation or amenity purposes. A number of recorded sites in Scotland are historical and the species distribution in Scotland has declined².

A desk study of the population at Easthaven SSSI was commissioned by SNH in 2002 and provides a summary of the ecological status of the species and the history of the SSSI³. Since then the population has been monitored for Site Condition Monitoring. The population at Easthaven SSSI fluctuates between a few hundred and several thousand plants.

Removal from Schedule 8 could result in the commercial collection of seed at Easthaven SSSI as collection would no longer require a licence. The risk to the Easthaven SSSI population as a consequence possible seed collection is indeterminate. *R. angustifolius* is not listed on an Order made by Scottish Government identifying those non-native species which do not require a licence to cause to grow in the wild. As a non-native species, causing it to grow in the wild would require a licence permitting control over the establishment of the species in the wild, but not control regarding the collection of seed at Easthaven SSSI.

As a species, assessed as being non-native to Scotland, and which has a wide global range not considered to be under particular threat, continued special protection of *R. angustifolius* under Schedule 8 would appear incongruous in context with the “Non-Native Species Code of Practice”. The Code is applicable in the UK only to Scotland:

<http://www.scotland.gov.uk/Publications/2012/08/7367>. Notwithstanding its non-native status, in Scotland endangerment is not due to any direct human pressures listed in Part 3.5. of the 6th Quinquennial Review QQR Information Pack: <http://jncc.defra.gov.uk/page-6194>

Should *R. angustifolius* be removed from Schedule 8, *R. angustifolius* may be re-assessed as a notified feature at Easthaven SSSI.

¹Hultén E, Fries M. 1986. Atlas of north European vascular plants, north of the tropic of cancer I-III. Koeltz, Koenigstein.

- ²Preston CD, Pearman DA, Dines TD. 2002. *New Atlas of the British & Irish Flora*. Oxford University Press.
- ³Loizou T. 2002. The Ecology, Monitoring and Management of *Rhinanthus angustifolius* (Greater Yellow Rattle). Scottish Natural Heritage Commissioned Report. <http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1386>

APPENDIX 5 List of species on Schedules 5 & 8 if all recommendations in the current report were to be accepted (note that European Protected Species (EPS) are not listed in Schedules 5 or 8 in Scotland).

Table 2 A. Schedule 5

Group	Common name	Scientific name	E & W	Scotland	EPS
Amphibian	Common toad	<i>Bufo bufo</i>	E & W	S	
Amphibian	Natterjack toad	<i>Bufo calamita</i> = <i>Epidalea calamita</i>	E & W		EPS
Amphibian	Pool frog	<i>Pelophylax lessonae</i>	E		EPS
Amphibian	Common frog	<i>Rana temporaria</i>	E & W	S	
Amphibian	Great crested newt	<i>Triturus cristatus</i>	E & W		EPS
Amphibian	Palmate newt	<i>Triturus helveticus</i> = <i>Lissotriton helveticus</i>	E & W	S	
Amphibian	Smooth newt	<i>Triturus vulgaris</i> = <i>Lissotriton vulgaris</i>	E & W	S	
Anemone	Ivell's sea anemone	<i>Edwardsia ivelli</i>	E & W		
Anemone	Pink sea fan	<i>Eunicella verrucosa</i>	E & W		
Anemone	Starlet sea anemone	<i>Nematosella vectensis</i>	E & W		
Annelid	Medicinal leech	<i>Hirudo medicinalis</i>	E & W	S	
Beetle	streaked bombardier beetle	<i>Brachinus sclopeta</i>	E & W		
Beetle	Rainbow leaf beetle	<i>Chrysolina cerealis</i>	E & W		
Beetle	New Forest cicada	<i>Cicadetta montana</i>	E & W		
Beetle	Mire pill beetle	<i>Curimopsis nigrita</i>	E & W		
Beetle	Spangled diving beetle	<i>Graphoderus zonatus</i>	E & W		
Beetle	Lesser silver water beetle	<i>Hydrochara caraboides</i>	E & W		
Beetle	Moccas beetle	<i>Hypebaeus flavipes</i>	E & W		
Beetle	Violet click beetle	<i>Limoniscus violaceus</i>	E & W		
Beetle	Stag beetle	<i>Lucanus cervus</i>	E & W		
Beetle	Bembridge beetle	<i>Paracymus aeneus</i>	E & W		
Butterfly	Purple emperor	<i>Apatura iris</i>			
Butterfly	High brown fritillary	<i>Argynnis adippe</i>	E & W		
Butterfly	Northern brown argus	<i>Aricia artaxerxes</i>	E & W	S	
Butterfly	Pearl-bordered fritillary	<i>Boloria euphrosyne</i>	E & W	S	

Group	Common name	Scientific name	E & W	Scotland	EPS
Butterfly	Chequered skipper	<i>Carterocephalus palaemon</i>	E & W	S	
Butterfly	Large heath	<i>Coenonympha tullia</i>	E & W	S	
Butterfly	Small blue butterfly	<i>Cupido minimus</i>	E & W	S	
Butterfly	Mountain ringlet	<i>Erebia epiphron</i>	E & W	S	
Butterfly	Marsh fritillary	<i>Eurodryas aurinia</i>	E & W	S	
Butterfly	Duke of Burgundy fritillary	<i>Hamearis lucina</i>	E & W	S	
Butterfly	Silver spotted skipper	<i>Hesperia comma</i>	E & W		
Butterfly	Wood white	<i>Leptidea sinapis</i>	E & W		
Butterfly	Large copper	<i>Lycaena dispar</i>	E & W		
Butterfly	Adonis blue	<i>Lysandra bellargus = Polyommatus bellargus</i>	E & W		
Butterfly	Chalkhill blue	<i>Lysandra coridon = Polyommatus coridon</i>	E & W		
Butterfly	Large blue	<i>Maculinea arion = Phengaris arion</i>	E & W		
Butterfly	Glanville fritillary	<i>Melitaea cinxia</i>	E & W		
Butterfly	Heath fritillary	<i>Mellicta athalia = Melitaea athalia</i>	E & W		
Butterfly	Large tortoiseshell	<i>Nymphalis polychloros</i>	E & W		
Butterfly	Swallowtail	<i>Papilio machaon</i>	E & W		
Butterfly	Silver-studded blue	<i>Plebejus argus</i>	E & W		
Butterfly	Black hairstreak	<i>Strymonidia pruni = Satyrium pruni</i>	E & W		
Butterfly	White letter hairstreak	<i>Stymonida w-album = Satyrium w-album</i>	E & W		
Butterfly	Brown hairstreak	<i>Thecla betulae</i>	E & W		
Butterfly	Lulworth skipper	<i>Thymelicus acteon</i>	E & W		
Cricket	Mole cricket	<i>Gryllotalpa gryllotalpa</i>	E & W		
Cricket	Field cricket	<i>Gryllus campestris</i>	E & W		
Crustacean	Atlantic stream crayfish	<i>Austropotamobius pallipes</i>	E & W	S	
Crustacean	Fairy shrimp	<i>Chirocephalus diaphanus</i>	E & W		
Crustacean	Lagoon sand shrimp	<i>Gammarus insensibilis</i>	E & W		
Crustacean	Spiny lobster	<i>Palinurus elephas</i>	E & W		
Crustacean	Tadpole shrimp	<i>Triops cancriformis</i>	E & W		
Damselfly	Southern damselfly	<i>Coenagrion mercuriale</i>	E & W		

Group	Common name	Scientific name	E & W	Scotland	EPS
Dragonfly	Norfolk aeshna dragonfly	<i>Aeshna isosceles</i>	E & W		
Fish	Sturgeon	<i>Acipenser sturio</i>	E & W		
Fish	Allis shad	<i>Alosa alosa</i>	E & W	S	
Fish	Twaite shad	<i>Alosa Fallax</i>	E & W	S	
Fish	Basking shark	<i>Cetorhinus maximus</i>	E & W	S	
Fish	Vendace	<i>Coregonus albula</i>	E & W	S	
Fish	Whitefish	<i>Coregonus lavaretus</i>	E & W	S	
Fish	Giant goby	<i>Gobius cobitis</i>	E & W		
Fish	Couch's goby	<i>Gobius couchii</i>	E & W		
Fish	Spiny seahorse	<i>Hippocampus guttulatus</i>	E & W		
Fish	Short snouted seahorse	<i>Hippocampus hippocampus</i>	E & W		
Fish	Burbot	<i>Lota lota</i>	E & W		
Fish	Sparling	<i>Osmerus eperlanus</i>	E & W		
Fish	White skate	<i>Rostroraja alba</i>	E & W		
Fish	Angel shark	<i>Squatina squatina</i>	E & W		
Grasshopper	Wart-biter grasshopper	<i>Decticus verrucivorus</i>	E & W		
Hyoid	Marine hydroid	<i>Clavopsella navis = Pachycordyle navis</i>	E & W		
Mammal	Water vole	<i>Arvicola terrestris = Arvicola amphibius</i>	E & W	S	
Mammal	Dolphins – all species	Cetacea	E & W		EPS
Mammal	Porpoises – all species	Cetacea	E & W		EPS
Mammal	Whales – all species	Cetacea	E & W		EPS
Mammal	Wild cat	<i>Felis silvestris</i>	E & W		EPS
Mammal	Otter	<i>Lutra lutra</i>	E & W		EPS
Mammal	Pine marten	<i>Martes martes</i>	E & W	S	
Mammal	Dormouse	<i>Muscardinus avellanarius</i>	E & W		EPS
Mammal	Walrus	<i>Odobenus rosmarus</i>	E & W		
Mammal	Bats – all species	Rhinolophidae / Vespertilionidae	E & W		EPS
Mammal	Red squirrel	<i>Sciurus vulgaris</i>	E & W	S	
Mollusc	Lesser whirlpool ram's horn snail	<i>Anisus vorticulus</i>			

Group	Common name	Scientific name	E & W	Scotland	EPS
Mollusc	Fan mussel	<i>Atrina fragilis</i>	E & W	S	
Mollusc	De Folin's lagoon snail	<i>Caecum armoricum</i>			
Mollusc	Sandbowl snail	<i>Catinella arenaria</i>	E & W		
Mollusc	Roman snail	<i>Helix pomatia</i>	E & W		
Mollusc	Freshwater pearl mussel	<i>Margaritifera margaritifera</i>	E & W	S	
Mollusc	Glutinous snail	<i>Myxas glutinosa</i>	E & W		
Mollusc	Lagoon sea slug	<i>Tenellia adspersa</i>	E & W		
Mollusc	Northern hatchet-shell	<i>Thyasira gouldi</i>		S	
Moth	Reddish buff moth	<i>Acosmetia caliginosa</i>	E & W		
Moth	Fiery clearwing moth	<i>Bembecia chrysidiformis = Pyropteron chrysidiformis</i>	E & W		
Moth	Fisher's estuarine moth	<i>Gortyna borellii</i>	E & W		
Moth	Bedstraw hawk-moth	<i>Hyles gallii</i>	E & W		
Moth	Barberry carpet moth	<i>Pareulype berberata</i>	E & W		
Moth	Black-veined moth	<i>Siona lineata =Idaea lineata</i>	E & W		
Moth	Sussex emerald moth	<i>Thalera fimbrialis</i>	E & W		
Moth	Talisker burnet moth	<i>Zygaena lonicerae jocelynae</i>	E & W	S	
Moth	Slender Scotch burnet moth	<i>Zygaena loti scotica</i>	E & W	S	
Moth	New Forest burnet moth	<i>Zygaena viciae</i>			
Reptile	Slow-worm	<i>Anguis fragilis</i>	E & W	S	
Reptile	Loggerhead turtle	<i>Caretta caretta</i>	E & W		EPS
Reptile	Green turtle	<i>Chelonia mydas</i>	E & W		EPS
Reptile	Smooth snake	<i>Coronella austriaca</i>	E & W		EPS
Reptile	Leatherback turtle	<i>Dermodochelys coriacea</i>	E & W		EPS
Reptile	Hawksbill turtle	<i>Eretmodochelys imbricata</i>	E & W		EPS
Reptile	Sand lizard	<i>Lacerta agilis</i>	E & W		EPS
Reptile	Viviparous lizard	<i>Lacerta vivipara=Zootoca vivipara</i>	E & W	S	
Reptile	Kemp's Ridley turtle	<i>Lepidochelys kempii</i>	E & W		EPS
Reptile	Olive Ridley turtle	<i>Lepidochelys olivaceae</i>	E & W		
Reptile	Grass snake	<i>Natrix helvetica</i>	E & W		

Group	Common name	Scientific name	E & W	Scotland	EPS
Reptile	Adder	<i>Vipera berus</i>	E & W	S	
Sea mat	Trembling sea mat	<i>Victorella pavida</i>	E & W		
Spider	Fen raft spider	<i>Dolomedes plantarius</i>	E & W		
Spider	Ladybird spider	<i>Eresus niger</i>	E & W		
Worm	Tentacled lagoon worm	<i>Alkmaria romijni</i>			
Worm	Lagoon sandworm	<i>Armandia cirrhosa</i>	E & W		

Table 2 B. Schedule 8

Group	Common name	Scientific name	E & W	Scotland	EPS
Alga	Bearded stonewort	<i>Chara canescens</i>	E & W		
Alga	Foxtail stonewort	<i>Lamprothamnium papulosum</i>	E & W	S	
Bryophyte	Triangular pygmy moss	<i>Acaulon triquetrum</i>	E & W		
Bryophyte	Lindenberg's leafy liverwort	<i>Adelanthus lindenbergianus</i>	E & W	S	
Bryophyte	Long-leaved anomodon	<i>Anomodon longifolius</i>	E & W	S	
Bryophyte	Cordate beard moss	<i>Barbula cordata</i>	E & W		
Bryophyte	Glaucous beard moss	<i>Barbula glauca</i>	E & W		
Bryophyte	Rigid apple moss	<i>Bartramia stricta</i>	E & W		
Bryophyte	Schleicher's thread moss	<i>Bryum schleicheri</i>	E & W	S	
Bryophyte	Green shield moss	<i>Buxbaumia viridis</i>	E & W	S	
Bryophyte	Multifruited river moss	<i>Cryphaea lamyana</i>	E & W		
Bryophyte	Bright green cave moss	<i>Cyclodictyon laetevirens</i>	E & W	S	
Bryophyte	Flamingo moss	<i>Desmatodon cernuus</i>	E & W		
Bryophyte	Cornish path moss	<i>Ditrichum cornubicum</i>	E & W		
Bryophyte	Blunt-leaved grimmia	<i>Grimmia unicolor</i>	E & W	S	
Bryophyte	Slender green feather-moss	<i>Hamatocaulis vernicosus = Drepanocladus vernicosus</i>	E & W	S	
Bryophyte	Polar feather-moss	<i>Hygrohypnum polare</i>	E & W	S	
Bryophyte	Marsh earwort	<i>Jamesoniella undulifolia</i>	E & W	S	
Bryophyte	Norfolk flapwort	<i>Leiocolea rutheana</i>	E & W	S	
Bryophyte	Western rustwort	<i>Marsupella profunda</i>	E & W		

Group	Common name	Scientific name	E & W	Scotland	EPS
Bryophyte	Millimetre moss	<i>Micromitrium tenerum</i>	E & W		
Bryophyte	Petalwort	<i>Petallophyllum ralfsi</i>	E & W	S	
Bryophyte	Round-leaved feather moss	<i>Rhynchostegium rotundifolium</i>	E & W		
Bryophyte	Lizard crystalwort	<i>Riccia bifurca</i>	E & W		
Bryophyte	Blue dew moss	<i>Saelania glaucescens</i>	E & W	S	
Bryophyte	Large yellow feather moss	<i>Scorpidium turgescens</i>	E & W	S	
Bryophyte	Baltic bog moss	<i>Sphagnum balticum</i>	E & W	S	
Bryophyte	Derbyshire feather moss	<i>Thamnobryum angustifolium</i>	E & W		
Bryophyte	Knothole moss	<i>Zygodon forsteri</i>	E & W		
Bryophyte	Nowell's limestone moss	<i>Zygodon gracilis</i>	E & W		
Fungi	Sandy stilt puffball	<i>Battarraea phalloides</i>	E & W		
Fungi	Pretender	<i>Boletus pseudoregius</i>	E & W		
Fungi	Oak polypore	<i>Buglossoporus pulvinus = Piptoporus quercinus</i>	E & W	S	
Fungi	Laurer's catillaria	<i>Catellaria laureri = Megalaria laureri</i>	E & W		
Fungi	Hedgehog fungus	<i>Hericium erinaceus</i>	E & W		
Fungi	Pepper pot	<i>Myriostoma coliforme</i>	E & W		
Lichen	Alpine sulphur-tresses	<i>Alectoria ochroleuca</i>	E & W	S	
Lichen	Forked hair lichen	<i>Bryoria furcellata</i>	E & W	S	
Lichen	Stary breck lichen	<i>Buellia asterella</i>	E & W		
Lichen	Orange fruited elm lichen	<i>Caloplaca luteoalba</i>	E & W	S	
Lichen	Snow caloplaca	<i>Caloplaca nivalis</i>	E & W	S	
Lichen	Tree catapyrenium	<i>Catapyrenium psoromoides</i>	E & W	S	
Lichen	Goblin lights	<i>Catolechia wahlenbergii</i>	E & W	S	
Lichen	Convolutated cladonia	<i>Cladonia convoluta</i>	E & W		
Lichen	Upright mountain cladonia	<i>Cladonia stricta = Cladonia trassii</i>	E & W	S	
Lichen	River jelly lichen	<i>Collema dichotomum</i>	E & W	S	
Lichen	New Forest beech-lichen	<i>Enterographa elaborata</i>	E & W		
Lichen	Elm gyalecta	<i>Gyalecta ulmi</i>	E & W	S	
Lichen	Coralloid rosette lichen	<i>Heterodermia japonica =Heterodermia propagulifera</i>	E & W	S	

Group	Common name	Scientific name	E & W	Scotland	EPS
Lichen	Ciliate strap lichen	<i>Heterodermia leucomelos</i>	E & W		
Lichen	Tarn lecanora	<i>Lecanora archariana</i>	E & W	S	
Lichen	Copper lecidea	<i>Lecidea inops</i>	E & W		
Lichen	Tree lungwort	<i>Lobaria pulmonaria</i>	E & W		
Lichen	Arctic kidney lichen	<i>Nephroma arcticum</i>	E & W	S	
Lichen	Caledonia pannaria	<i>Pannaria ignobilis = Fuscopannaria ignobilis</i>	E & W	S	
Lichen	New Forest parmelia	<i>Parmelia minarum</i>	E & W		
Lichen	Oil stain parmentaria	<i>Parmentaria chilensis = Pyrenula hibernica</i>	E & W	S	
Lichen	Ear-lobed dog lichen	<i>Peltigera lepidophora</i>	E & W	S	
Lichen	Alpine moss pertusaria	<i>Pertusaria bryontha</i>	E & W	S	
Lichen	Ragged pseudocyphellaria	<i>Pseudocyphellaria lacerata</i>	E & W	S	
Lichen	Rusty alpine psora	<i>Psora rubiformis</i>	E & W	S	
Lichen	Serpentine solenopsora	<i>Solenopsora liparina</i>	E & W		
Lichen	Scaly breck lichen	<i>Squamarina lentigera</i>	E & W		
Lichen	Golden hair lichen	<i>Teloschistes flavicans</i>	E & W	S	
Vascular plant	Ground pine	<i>Ajuga chamaepitys</i>	E & W		
Vascular plant	Ribbon leaved water-plantain	<i>Alisma gramineum</i>	E & W		
Vascular plant	Round-headed leek	<i>Allium sphaerocephalon</i>	E & W		
Vascular plant	Creeping marshwort	<i>Apium repens</i>	E & W		EPS
Vascular plant	Bristol rock-cress	<i>Arabis stricta</i>	E & W		
Vascular plant	Norwegian sandwort	<i>Arenaria norvegica anglica</i>	England	S	
Vascular plant	Field wormwood	<i>Artemisia campestris</i>	E & W		
Vascular plant	Goldilocks aster	<i>Aster linosyris</i>	E		
Vascular plant	Small hare's-ear	<i>Bupleurum baldense</i>	E & W		
Vascular plant	Wood calamint	<i>Calamintha sylvatica = Clinopodium menthifolium</i>	E & W		
Vascular plant	Starved wood-sedge	<i>Carex depauperata</i>	E & W		
Vascular plant	Slender centaury	<i>Centaurium tenuiflorum</i>	E & W		
Vascular plant	Narrow-leaved helleborine	<i>Cephalanthera longifolia</i>	E & W		
Vascular plant	Red helleborine	<i>Cephalanthera rubra</i>	E & W		

Group	Common name	Scientific name	E & W	Scotland	EPS
Vascular plant	Alpine sow-thistle	<i>Cicerbita alpina</i>	E & W	S	
Vascular plant	Trapwort	<i>Corrigiola litoralis</i>	E & W		
Vascular plant	Wild cotoneaster	<i>Cotoneaster integerrimus</i>	E & W		
Vascular plant	Pigmy weed	<i>Crassula aquatica</i>	E & W	S	
Vascular plant	Green hound's-tongue	<i>Cynoglossum germanicum</i>	E & W		
Vascular plant	Brown galingale	<i>Cyperus fuscus</i>	E & W		
Vascular plant	Lady's-slipper	<i>Cypripedium calceolus</i>	E & W		EPS
Vascular plant	Early marsh-orchid	<i>Dactylorhiza incarnata ochroleuca</i>	E & W		
Vascular plant	Starfruit	<i>Damasonium alisma</i>	E & W		
Vascular plant	Deptford pink	<i>Dianthus armeria</i>	E & W		
Vascular plant	Cheddar pink	<i>Dianthus gratianopolitanus</i>	E & W		
Vascular plant	Lapland diapensia	<i>Diapensia lapponica</i>	E & W	S	
Vascular plant	Yellow whitlowgrass	<i>Draba aizoides</i>	E & W		
Vascular plant	Crested buckler-fern	<i>Dryopteris cristata</i>	E & W		
Vascular plant	Dwarf spike-rush	<i>Eleocharis parvula</i>	E & W	S	
Vascular plant	Lindisfarne helleborine	<i>Epipactis sancta</i>	E & W		
Vascular plant	Ghost orchid	<i>Epipogium aphyllum</i>	E & W		
Vascular plant	Branched horsetail	<i>Equisetum ramosissimum</i>	E & W		
Vascular plant	Alpine fleabane	<i>Erigeron borealis</i>	E & W	S	
Vascular plant	Slender cottongrass	<i>Eriophorum gracile</i>	E & W		
Vascular plant	Field eryngo	<i>Eryngium campestre</i>	E & W		
Vascular plant	Red-tipped cudweed	<i>Filago lutescens</i>	E & W		
Vascular plant	Broad-leaved cudweed	<i>Filago pyramidata</i>	E & W		
Vascular plant	Early star-of-Bethlehem	<i>Gagea bohemica</i>	E & W		
Vascular plant	Alpine gentian	<i>Gentiana nivalis</i>	E & W	S	
Vascular plant	Early gentian	<i>Gentianella anglica</i>	E & W		EPS
Vascular plant	Fringed water gentian	<i>Gentianella ciliata =Gentianopsis ciliata</i>	E & W		
Vascular plant	Dune gentian	<i>Gentianella uliginosa</i>	E & W		
Vascular plant	Wild gladiolus	<i>Gladiolus illyricus</i>	E & W		

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Vascular plant	Stalked orache	<i>Halimione pedunculata</i> = <i>Atriplex pedunculata</i>	E & W		
Vascular plant	Weak-leaved hawkweed	<i>Hieracium attenuatifolium</i>	E & W	S	
Vascular plant	Northroe hawkweed	<i>Hieracium northroense</i>	E & W	S	
Vascular plant	Shetland hawkweed	<i>Hieracium zetlandicum</i>	E & W	S	
Vascular plant	Lizard orchid	<i>Himantoglossum hircinum</i>	E & W		
Vascular plant	Purple colt's-foot	<i>Homogyne alpina</i>	E & W	S	
Vascular plant	Bluebell	<i>Hyacinthoides non-scripta</i>	E & W	S	
Vascular plant	Least lettuce	<i>Lactuca saligna</i>	E & W		
Vascular plant	Rice cut-grass	<i>Leersia oryzoides</i>	E & W		
Vascular plant	Fen orchid	<i>Liparis loeselii</i>	E & W		EPS
Vascular plant	Snowdon lily	<i>Lloydia serotina</i>	E & W		
Vascular plant	Floating-leaved plantain	<i>Luronium natans</i>	E & W		EPS
Vascular plant	Alpine catchfly	<i>Lychnis alpine</i> = <i>Silene suecica</i>	E & W	S	
Vascular plant	Field cow-wheat	<i>Melampyrum arvense</i>	E & W	S	
Vascular plant	Teesdale sandwort	<i>Minuartia stricta</i>	E & W		
Vascular plant	Slender naiad	<i>Najas flexilis</i>	E & W		EPS
Vascular plant	Holly-leaved naiad	<i>Najas marina</i>	E & W		
Vascular plant	Small restharrow	<i>Ononis reclinata</i>	E & W	S	
Vascular plant	Least adder's-tongue	<i>Ophioglossum lusitanicum</i>	E & W		
Vascular plant	Late spider orchid	<i>Ophrys fuciflora</i>	E & W		
Vascular plant	Early spider orchid	<i>Ophrys sphegodes</i>	E & W		
Vascular plant	Man orchid	<i>Orchis anthropophora</i>	E & W		
Vascular plant	Military orchid	<i>Orchis militaris</i>	E & W		
Vascular plant	Lady orchid	<i>Orchis purpurea</i>	E & W		
Vascular plant	Monkey orchid	<i>Orchis simia</i>	E & W		
Vascular plant	Bedstraw broomrape	<i>Orobanche caryophyllacea</i>	E & W		
Vascular plant	Oxtongue broomrape	<i>Orobanche loricata</i>	E & W		
Vascular plant	Oxtongue Broomrape	<i>Orobanche picridis</i>	E & W		
Vascular plant	Thistle broomrape	<i>Orobanche reticulata</i>	E & W		

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Vascular plant	Childling pink	<i>Petroraghia nanteuillii</i>	E & W		
Vascular plant	Blue heath	<i>Phyllodoce caerulea</i>	E & W	S	
Vascular plant	Spiked rampion	<i>Phyteuma spicatum</i>	E & W		
Vascular plant	Whorled Solomon's-seal	<i>Polygonatum verticillatum</i>	E & W	S	
Vascular plant	Sea knotgrass	<i>Polygonum maritimum</i>	E & W		
Vascular plant	Holly-fern	<i>Polystichum lonchitis</i>	E & W		
Vascular plant	Rock cinquefoil	<i>Potentilla rupestris</i>	E & W	S	
Vascular plant	Pasque flower	<i>Pulsatilla vulgaris</i>	E & W		
Vascular plant	Plymouth pear	<i>Pyrus cordata</i>	E & W		
Vascular plant	Adder's-tongue spearwort	<i>Ranunculus ophioglossifolius</i>	E & W		
Vascular plant	Greater yellow-rattle	<i>Rhinanthus seroti</i> = <i>Rhinanthus angustifolius</i>	E & W		
Vascular plant	Lundy cabbage	<i>Rhynchosinapis wrightii</i>	E & W		
Vascular plant	Sand crocus	<i>Romulea columnae</i>	E & W		
Vascular plant	Shore dock	<i>Rumex rupestris</i>	E & W		EPS
Vascular plant	Meadow clary	<i>Salvia pratensis</i>	E & W		
Vascular plant	Drooping saxifrage	<i>Saxifraga cernua</i>	E & W	S	
Vascular plant	Tufted saxifrage	<i>Saxifraga cespitosa</i>	E & W	S	
Vascular plant	Yellow marsh saxifrage	<i>Saxifraga hirculus</i>	E & W		EPS
Vascular plant	Triangular club-rush	<i>Scirpus triquetrus</i> = <i>Schoenoplectus triqueter</i>	E & W		
Vascular plant	Perennial knawel	<i>Scleranthus perennis</i>	E & W		
Vascular plant	Viper's-grass	<i>Scorzonera humilis</i>	E & W		
Vascular plant	Cambridge milk-parsley	<i>Selinum carvifolia</i>	E & W		
Vascular plant	Fen ragwort	<i>Senecio paludosus</i>	E & W		
Vascular plant	Blackwort	<i>Southbya nigrella</i>	E & W		
Vascular plant	Limestone woundwort	<i>Stachys alpina</i>	E & W		
Vascular plant	Downy woundwort	<i>Stachys germanica</i>	E & W		
Vascular plant	South stack fleawort	<i>Tephrosia integrifolia maritima</i>	E & W		
Vascular plant	Water germander	<i>Teucrium scordium</i>	E & W		

Group	Common name	Scientific name	E & W	Scotland	EPS
Vascular plant	Killarney fern	<i>Trichomanes speciosum</i>	E & W		EPS
Vascular plant	Spiked speedwell	<i>Veronica spicata</i>	E & W		
Vascular plant	Fingered speedwell	<i>Veronica triphyllos</i>	E & W		
Vascular plant	Fen violet	<i>Viola persicifolia</i>	E & W		
Vascular plant	Alpine woodsia	<i>Woodsia alpine</i>	E & W	S	
Vascular plant	Oblong woodsia	<i>Woodsia ilvensis</i>	E & W	S	