JOINT NATURE CONSERVATION COMMITTEE

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

Report and Recommendations from the Joint Nature Conservation Committee

December 2008

CONTENTS

Executive summary

1. This report by the Joint Nature Conservation Committee (the JNCC) contains advice to Government following the Fifth Quinquennial Review of Schedules 5 and 8 of the Wildlife and Countryside Act, 1981 (WCA), which list protected animals and plants respectively.

2. In its Fourth Quinquennial Review (September 2002), the JNCC recommended increased protection for one species (water vole) to become fully protected, partial protection for one species (Roman snail), and full protection for seven marine fish (two seahorses and five elasmobranchs) and two burnet moths (the narrow-bordered five-spot burnet (or Talisker burnet) and the slender Scotch burnet). The two burnet moths have only been recorded in Scotland, while the short snouted seahorse and Roman snail have only been recorded in England.

3. In 2008, the protection recommended was provided for the water vole, Roman snail, the two seahorses, and partial protection (to 6 nautical miles and in relation to Section 9(1) only) was provided for the angel shark in England and Wales. No protection has yet been afforded to any of the species recommended for increased protection under the Fourth Quinquennial Review in Scotland.

4. The JNCC has reconsidered its advice as regards all the species it recommended for protection at the Fourth Quinquennial Review where protection measures have not yet been taken. As regards the angel shark, the JNCC recommends full protection out to 12 nautical miles and for protection to be afforded in relation to Sections 9(2) and 9(5). As regards the water vole, the JNCC recommends increased protection in Scotland. As regards the short snouted seahorse, the JNCC recommends protection from sale in Scotland. As regards the spiny seahorse, the JNCC recommends full protection in Scotland. As regards the burnet moths, the JNCC recommends full protection in Scotland and protection from sale in England and Wales.

5. As regards the four species of skates recommended for protection in the Fourth Quinquennial Review, the JNCC recommends that two of these be afforded full protection, namely the common skate and the white skate, with further work to be undertaken in relation to the long-nosed skate between the current and the Sixth Quinquennial Reviews. The black skate is no longer being put forward for addition to Schedule 5, although the need to identify alternative protection measures is recognised.

6. Following the Fifth Quinquennial Review, the JNCC is proposing the addition of 11 animal species to Schedule 5 and 2 plant species to Schedule 8; and the removal of 3 animal species from Schedule 5 and 5 plant species from Schedule 8. In addition, we recommend increased protection for 6 animal species, and reduced protection for 2 animal species.

7. Following a submission recommending removal of six neophytes from Schedule 8, and in view of discussions with plant conservation groups and country agency specialists; the JNCC recommends that a consultation exercise be undertaken between the Fifth and Sixth Quinquennial Reviews. The purpose of this consultation is to consider the issue of modifying Schedule 8 in relation to neophytes in more detail. The Plant Conservation Working Group is well placed to coordinate this exercise.

8. A number of respondents raised concerns about perceived inconsistencies in the legislation, requesting amendments to bring Schedules 5 and 8 in line with one another. The effectiveness of the UK BAP in providing species protection was also raised, with the suggestion that an alignment of species conservation and protection measures is needed. These issues are outside the scope of the Fifth Quinquennial Review.

FIFTH 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 WCA list animals (other than birds) and plants which are specially protected. Under Section 22 of the Act, the Secretary of State 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 may remove any animal from Schedule 5 or any plant from Schedule 8, if, in his opinion, it is no longer endangered or likely to become so.

1.2 The protection afforded by the 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. The Secretary of State 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. The provisions relate to a range of activities as summarised in the following sections 1.1.3 to 1.1.6.

1.3 For animals the provisions under Section 9 of the Act are:

Section 9(1)

"If any person intentionally 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."

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(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,

he shall be guilty of an offence."

1.4 For plants the provisions under Section 13 of the Act are:

Section 13(1)

"If any person

a. intentionally picks, uproots or destroys any wild plant included in Schedule 8; or

b. not being an authorised person, intentionally 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."

1.5 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 WCA against deliberate uprooting by unauthorised persons, but additional protection is afforded through scheduling.

1.6 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.

1.7 Under Section 24 of the WCA, 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. Under Section 133 of the Environmental Protection Act, 1990 (which was superseded by Section 36 of the Natural Environment and Rural Communities Act 2006) the Joint Nature Conservation Committee (JNCC) became responsible for discharging these functions.

1.8 Following adoption of the EC Habitats and Species Directive, analogous protection was afforded to certain wild animals and plants through the Conservation (Natural Habitats, &c.) Regulations, 1994, and subsequent amendments.[1]

1.9 For Scotland, the Nature Conservation (Scotland) Act 2004 (asp 6) applies, specifically Schedule 6 - Protection of Wildlife.

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. The first of these Reviews was submitted in October 1986, the second in October 1991, the third in June 1996 and the fourth in September 2002.

2.2 In total, these Reviews have together recommended additional protection for 156[2] animals and 772 plants, lichens and fungi, and have recommended reduced protection for 7 species.

2.3 The recommendations submitted during the first four Quinquennial Reviews have all been implemented through Orders made under Section 22 of the 1981 Act, except for the following:

[1] 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.

[2] plus whales, dolphins and porpoises; marine turtles; and Rhopalocera (Section 9(5) only)

i. the proposed deletion of the sandbowl snail *Catinella arenaria* from Schedule 5 was rejected as there were doubts whether it was extinct;

ii. the proposed addition of the wildcat/domestic cat hybrid *Felis silvestris grampia X Felis catus* was rejected;

iii. the proposed addition of the pool frog *Pelophylax lessonae* was rejected due to the extinction of the single native population of this species.

iv. the proposed addition of the common skate *Dipturus batis*, black skate *Dipturus nidarosiensis*, long-nose skate *Dipturus oxyrhinchus* and white skate *Rostroraja alba* was rejected in England and Wales. Decisions on action relating to the other species recommended at the Fourth Quinquennial review are still awaited for Scotland.

2.4 In addition, a further 5 plant species were added to Schedule 8 on the recommendation of the Department of the Environment, because, although not endangered in Great Britain, they were listed on Appendix 1 of the Bern Convention.

3. Statutory changes since the Fourth Quinquennial Review

3.1 Statutory Instrument no.1843, made on 22 June 2007[3], amended section 9(c) (protection of certain wild animals), subsection 4, to introduce a specific offence of obstructing access to any structure or place which any animal listed under Schedule 5 uses for shelter or protection (hereafter referred to as 9(4)(c)). This applies only to England and Wales; obstruction of access does not exist as a separate offence under Scottish legislation. This SI also amended Schedules 5 and 8 to remove European protected species from the schedules insofar as such protection duplicated protection afforded by the Regulations.

3.2 Statutory Instrument no.2172, made on 12 August 2008[4], added three new species to the list of European protection species in Schedule 2 to the 1994 Regulations, and made consequential amendments to regulation 39(6) of the 1994 Regulations and Schedule 5 to the WCA.

3.3 Scottish Statutory Instrument no.80, made on 14 February 2007[5], amended both Schedules 5 and 8 to remove European protected species from the protection provided by sections 9 and 13, respectively, of the WCA.

[3] Statutory Instrument 2007 No. 1843 The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007

[4] Statutory Instrument 2008 No. 2172 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

3.4 The legislation requiring the GB conservation bodies to undertake the Quinquennial Review of Schedules 5 and 8 through the JNCC, and also the nature of that Review, remains unchanged.

4. Criteria for the selection of species for Schedules 5 and 8 of the Wildlife and Countryside Act, 1981

4.1 Rationale underlying scheduling

In compliance with the purpose and provisions of the relevant Sections of the WCA, the statutory nature conservation agencies will pursue scheduling when:

i. there is an international obligation to afford legal protection to the species;

ii. an animal or plant 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.

Scheduling is considered to be particularly appropriate where there is a need to:

iii. protect an animal or plant species from direct human pressure such as persecution, collection or trade;

iv. protect elements of habitat essential for the survival of an endangered species.

Scheduling also has the effect of raising awareness of the threats to species and thus the need for their protection.

4.2 Guidelines for recommending species for scheduling

Range of taxa under consideration

For Schedule 5 - vertebrates other than birds, invertebrates.

For Schedule 8 - vascular plants, bryophytes, lichens, fungi and algae.

All species of the groups listed above, including species at present on the schedules.

Taxa below species level under some circumstances (see 'Eligibility criteria').

Eligibility criteria

For a species to be recommended for scheduling one of the eligibility criteria in each of the Sections A to D below should be met:

A Generally, only native (including re-established) taxa are to be considered. Taxa introduced or thought to be introduced to Great Britain by man could be considered exceptionally, with the following provisos:

i. the organism is endangered or extinct in its native range, and

ii. preferably, the natural 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; for marine taxa, the distribution includes the north west Atlantic area), and provided that

iii. information suggests that the organism is unlikely to have an adverse impact on important native species or ecosystems.

B The taxon must be either:

i. established in the wild in Great Britain; or

ii. occur as a vagrant in Great Britain and require international protection; or

iii. be believed extinct in Great Britain as a breeding species, but be in the process of re-establishment; or

iv. be believed extinct in Great Britain, but with the possibility that it could become re-established naturally.

C The taxonomic status of the organism must be well authenticated. Taxa below the species level could be considered, providing they are:

i. clearly recognisable (i.e. morphologically distinct), and

ii. geographically or ecologically distinct.

D The taxon must be endangered in Great Britain, or likely to become so unless conservation measures are taken, and/or be subject to an international obligation for protection.

One or more of the following may indicate that a taxon is or may become endangered:

i. it is included in a JNCC-approved British Red Data Book as *Extinct*, *Endangered* or *Vulnerable* (or, in Red Lists drawn up using the recently revised IUCN criteria, as *Extinct in the Wild*, *Critically Endangered*, *Endangered* or *Vulnerable*);

ii. it has been well searched for but is known from only a single locality;

iii. it is confined to a particularly threatened habitat. The extent or quality of the habitat is being significantly reduced or is likely to become significantly reduced, thus threatening the survival of the organism;

iv. it is rapidly declining in population, number of localities occupied or range. Indicative would be at least 50% decline observed, estimated inferred or suspected in the last 20 years, or a decline of at least 50% projected, inferred or suspected to be likely in the near future. The decline must transcend normal fluctuations;

v. it is endangered, or likely to become endangered through being targeted for exploitation or killing for commercial reasons and/or through being particularly attractive to collectors.

International obligations apply to a taxon which is:

vi. naturally resident and listed on Appendices I, II or III of the Bern Convention; Annexes II, IV or V of the EC Habitats and Species Directive; Appendix I of the Bonn Convention (unless derogations are in force); and/or

vii. endemic to Great Britain and included in a JNCC-approved British Red List.

Decision criteria

An animal or plant taxon would be recommended for listing on the relevant Schedule if scheduling has the potential to afford significant benefit to it, thus helping to arrest a decline or to facilitate an increase in population size, number of localities occupied or range. Potential benefits to be gained from scheduling are:

i. protection of animals at risk from persecution or other intentional killing or injuring;

ii. protection of animals or plants from collecting, where this is a problem or is likely to become one;

iii. protection of structures or places which animals use for shelter or protection (including breeding sites or other essential elements of the habitat);

iv. protection of animals from intentional or reckless disturbance;

v. protection of plants from intentional damage or destruction;

vi. protection of animals or plants from currently or potentially damaging trade, or other forms of exploitation.

5. Conduct of the Fifth Quinquennial Review

5.1 Internal process

5.1.1 The JNCC, at its September 2005 meeting, adopted a process for conducting the Fifth Quinquennial Review and endorsed the rationale, range of taxa, eligibility criteria and decision criteria set out in Section 4 above.

5.1.2 The JNCC also agreed that the timetable for the Fifth Quinquennial Review should enable due account to be taken of the 'signposting' exercise undertaken following the review of the priority list of species under the UK Biodiversity Action Plan referred to in Section 5 above. When the outcome of that exercise was known in March 2008, the JNCC drew together initial conclusions by applying the criteria set out in Section 4 to the species identified as requiring legislative action under the 'signposting' exercise, as well as to other species suggested by the conservation bodies as meriting consideration under the Fifth Quinquennial Review.

5.1.3 Following on from this a consultation document was prepared which explained the rationale behind the Fifth Quinquennial Review, listed the species already protected, the species to which international obligations apply and identified species which might be candidates for scheduling. The documents also set out a proforma to take information for candidate species, to facilitate consideration for scheduling.

5.4 External process

5.4.1 Between March 2008 and June 2008 the JNCC carried out an external consultation, inviting comments on the proposals set out in the consultation document, and also proposals for other species where change might be needed, in compliance with the eligibility and decision criteria. The consultation was sent to a range of relevant bodies and also published on the JNCC website.

5.4.2 The comments and additional proposals received during the consultation period, together with additional evidence and views supplied by specialist staff of the country agencies, were reviewed against the agreed criteria proposals. Also, a special workshop was convened, involving staff of the JNCC Support Co. and country agencies and experts from the Shark Trust and the IUCN Shark Specialist Group, to consider specific issues relating to sharks, skates and rays.

5.4.3 The full recommendations from the Fifth Quinquennial Review were considered and approved by the JNCC at its September meeting.

6. Recommendations

Schedule 5

6.1 Addition of species to Schedule 5

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

Amphibian: pool frog (Northern clade only) *Pelophylax lessonae* (England)

Marine fish: common skate *Dipturus batis*
porbeagle shark *Lamna nasus*
spiny lobster (England and Wales) *Palinurus elaphus*
undulate ray *Raja undulata*
white skate *Rostroraja alba*
spiny dogfish *Squalus acanthias*

Invertebrates: pine hoverfly *Blera fallax* (Scotland)
aspen hoverfly *Hammerschmidtia ferruginea* (Scotland)
narrow-bordered five-spot burnet (or Talisker burnet) *Zygaena lonicerae* subspecies *jocelynae*
slender Scotch burnet *Zygaena loti* subspecies *scotica*

Table 1 Species recommended for addition to Schedule 5 (listed by country in which protection measures are required)

1a: ENGLAND

Species	Country presence	Protection required	Summary of reasons
Dipturus batis common skate	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally-caught specimens.
Lamna nasus porbeagle shark	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Palinurus elaphus spiny lobster	E, S, W	Schedule 5, Sections 9(1), 9(2), 9(4)(a) and 9(4)(b) and 9(5) in relation to England	Species subject to marked decline and likely to become endangered unless measures are taken. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Pelophylax lessonae pool frog (Northern clade)	E	Schedule 5, Section 9(4)(b) and (c), England only	Formerly extinct and now re-introduced to single site. Given certain protection under the Habitats Directive. Listing will provide full protection in England.
Raja undulata undulate ray	E, (S), W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Rostroraja alba white skate	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Squalus acanthias spiny dogfish	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically Endangered as a result of overfishing. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Zygaena lonicerae ssp. *jocelynae* narrow-bordered five-spot burnet	S	Section 9(5) in England	Vulnerable and highly localised. Protection against sale in England will support protection in Scotland.

Species	Country presence	Protection required	Summary of reasons
Zygaena loti ssp. *scotica* slender Scotch burnet	S	Section 9(5) in England	Vulnerable and highly localised. Protection against sale in England will support protection in Scotland.

1b: WALES

Species	Country presence	Protection required	Summary of reasons
Dipturus batis common skate	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally-caught specimens.
Lamna nasus porbeagle shark	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Palinurus elaphus spiny lobster	E, S, W	Schedule 5, Sections 9(1), 9(2), 9(4)(a) and 9(4)(b) and 9(5) in relation to Wales	Species subject to marked decline and likely to become endangered unless measures are taken. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Raja undulata undulate ray	E, (S), W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Rostroraja alba white skate	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Squalus acanthias spiny dogfish	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically Endangered as a result of overfishing. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Zygaena lonicerae ssp. *jocelynae* narrow-bordered five-spot burnet	S	Section 9(5) in Wales	Vulnerable and highly localised. Protection against sale in Wales will support protection in Scotland.

Species	Country presence	Protection required	Summary of reasons
Zygaena loti ssp. *scotica* slender Scotch burnet	S	Section 9(5) in Wales	Vulnerable and highly localised. Protection against sale in Wales will support protection in Scotland.

1c: SCOTLAND

Species	Country presence	Protection required	Summary of reasons
Blera fallax pine hoverfly	S	Schedule 5, Section 9(4)(a), in Scotland only	Endangered or critically endangered. Habitat highly vulnerable to damage.
Dipturus batis common skate	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally-caught specimens.
Hammerschmidtia ferruginea aspen hoverfly	S	Schedule 5, Section 9(4)(a), in Scotland only	Endangered or critically endangered. Habitat highly vulnerable to damage.
Lamna nasus porbeagle shark	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Raja undulata undulate ray	E, (S), W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Rostroraja alba white skate	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Squalus acanthias spiny dogfish	E, S, W	Schedule 5, Sections 9(1), 9(2) and 9(5)	Critically Endangered as a result of overfishing. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.
Zygaena lonicerae ssp. *jocelynae* narrow-bordered five-spot burnet	S	Full protection in Scotland	Vulnerable and highly localised. Listing will provide protection in Scotland.
Zygaena loti ssp. *scotica* slender Scotch burnet	S	Full protection in Scotland	Vulnerable and highly localised. Listing will provide protection in Scotland.

Through listing on Annex IV of the Habitats Directive, there is an international obligation to provide protection for the pool frog. The addition of the pool frog to Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994 provides the species with protection under regulation 39 from being killed, taken, injured, disturbed, owned or sold, or having its resting or breeding places destroyed. The Habitat Regulations (Amendment) 2008 also amend the WCA, so that European protected species are removed from the scope of *certain* WCA offences (for Schedule 5, these are Sections 9(1), 9(2), 9(4)(a) and 9(5)). To ensure full, effective protection, the JNCC recommends listing under the WCA only as indicated above**.**

In the light of the fact that no action has to date been taken by Government to provide protection for the four species of skate recommended for protection at the 4th Quinquennial Review, and in relation to other elasmobranch species considered for protection, the relevant issues were considered and are summarised in Appendix 6. The recommendations made at the 4th Quinquennial review as regards long-nosed skate have been withdrawn pending further investigation, and that relating to black skate has been withdrawn. In all cases for marine species, protection measures are sought out to 12nm. Protection between 6-12nmiles will require that notice be given to the European Commission in accordance with EC fisheries regulations.

6.2 Additional protection under Schedule 5

The JNCC recommends additional protection under Schedule 5 be provided for the following species:

Mammal: water vole *Arvicola terrestris*

Fish: allis shad *Alosa alosa*
twaite shad *Alosa fallax*
spiny seahorse *Hippocampus guttulatus*
short nosed seahorse *Hippocampus hippopcampus*
angel shark *Squatina squatina*

Table 2 Species recommended for additional protection under Schedule 5 (listed by country in which protection measures are required)

2a: ENGLAND

Species	Country presence	Protection required	Summary of reasons
Alosa alosa allis shad	E, S, W	Additional protection under Section 9(4)(c) in England	Endangered and vulnerable to obstruction of access to spawning sites.
Alosa fallax twaite shad	E, S, W	Additional protection under Sections 9(1) and 9(4)(c) in England	Vulnerable to obstruction of access to spawning sites. This species and allis shad would benefit from its 9(1) listing.
Squatina squatina angel shark	E, S, W	Extension of protection in England from 6 -12nm and to cover Sections 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.

2b: WALES

Species	Country presence	Protection required	Summary of reasons
Alosa alosa allis shad	E, S, W	Additional protection under Section 9(4)(c) in Wales	Endangered and vulnerable to obstruction of access to spawning sites.
Alosa fallax twaite shad	E, S, W	Additional protection under Sections 9(1) and 9(4)(c) in Wales	Vulnerable to obstruction of access to spawning sites. This species and allis shad would benefit from its 9(1) listing.
Squatina squatina angel shark	E, S, W	Extension of protection in Wales from 6-12nm and to cover Sections 9(2) and 9(5)	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.

2c: SCOTLAND

Species	Country presence	Protection required	Summary of reasons
Arvicola terrestris water vole	E, S, W	Increase from partial to full protection in Scotland	Vulnerable and declining. Species will benefit from full protection.
Alosa fallax twaite shad	E, S, W	Additional protection under Section 9(1) in Scotland	Vulnerable to obstruction of access to spawning sites. This species and allis shad would benefit from its 9(1) listing.
Hippocampus guttulatus spiny seahorse	E, S, W	Full protection in Scotland, to bring in line with England and Wales	Uncommon and vulnerable. Listing will provide protection in Scotland.
Hippocampus hippocampus short-snouted seahorse	E, W	Section 9 (5), in Scotland only	Uncommon and vulnerable. Protection against sale in Scotland will assist protection afforded in England and Wales.
Squatina squatina angel shark	E, S, W	Section 9(1) protection out to 12nm in Scotland, plus 9(2) and 9(5) protection	Critically endangered in Britain and North-east Atlantic. Listing will prevent targeted fishing and encourage release of accidentally caught specimens.

In relation to the angel shark, protection between 6-12nmiles will require that prior notice be given to the European Commission under the EC fisheries regulations. There is a precedent here, as the basking shark *Cetorhinus maximus* is protected out to 12nm.

6.3 Reduced protection under Schedule 5

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

Invertebrates: tentacled lagoon worm *Alkmaria romijni*
lagoon sand shrimp *Gammarus insensibilis*

Table 3 List of species recommended for reduced protection under Schedule 5

Species	Country presence	Protection required	Summary of reasons
Alkmaria romijni tentacled lagoon worm	E, W	Reduce to Sections 9(4)(a) only	More widespread than previously thought. Need for habitat protection only.
Gammarus insensibilis lagoon sand shrimp	E	Reduce to Sections 9(4)(a) only	More widespread than previously thought. Need for habitat protection only.

Note: Reduced protection measures apply to England, Wales and Scotland.

6.4 Removal from Schedule 5

The JNCC recommends that the following species are removed from Schedule 5:

Invertebrates: lagoon snail *Paludinella littorina*
Essex emerald moth *Thetidea smaragdaria*
northern hatchet shell *Thyasira gouldi*

Table 4 List of species recommended for removal from Schedule 5

Species	Country presence	Protection required	Summary of reasons
Paludinella littorina lagoon snail	E,W	Remove from Schedule 5	More widespread and common than previously believed.
Thetidea smaragdaria Essex emerald moth	Extinct	Remove from Schedule 5	Extinct.
Thyasira gouldi northern hatchet shell	S	Remove from Schedule 5	More widespread and common than previously believed.

Note: Removals apply to England, Wales and Scotland.

Schedule 8

6.5 Addition of species to Schedule 8

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

Lower plants: rock nail *Calicium corynellum*
lungwort *Lobaria pulmonaria*

Table 5 Species recommended for addition to Schedule 8 (listed by country in which protection measures are required)

5a: ENGLAND

Species	Country presence	Protection required	Summary of reasons
Calicium corynellum rock nail	E, S	Addition to Schedule 8	Critically endangered. The species will benefit from full protection.
Lobaria pulmonaria lungwort	E, S, W	Addition to Schedule 8, Section 13(2) only	Widespread though localised. Vulnerable to commercial exploitation and likely to become endangered unless proportionate action is taken. Protection from sale will provide the needed protection.

5b: WALES

Species	Country presence	Protection required	Summary of reasons
Lobaria pulmonaria lungwort	E, S, W	Addition to Schedule 8, Section 13(2) only	Widespread though localised. Vulnerable to commercial exploitation and likely to become endangered unless proportionate action is taken. Protection from sale will provide the needed protection.

5c: SCOTLAND

Species	Country presence	Protection required	Summary of reasons
Calicium corynellum rock nail	E, S	Addition to Schedule 8	Critically endangered. The species will benefit from full protection.
Lobaria pulmonaria lungwort	E, S, W	Addition to Schedule 8, Section 13(2) only	Widespread though localised. Vulnerable to commercial exploitation and likely to become endangered unless proportionate action is taken. Protection from sale will provide the needed protection.

6.6 Additional protection under Schedule 8

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

6.7 Reduced protection under Schedule 8

The JNCC is not proposing any plant species for reduced protection under Schedule 8.

6.8 Removal from Schedule 8

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

Lower plants:	dune thread-moss *Bryum mammillatum* long-leaved thread-moss *Bryum neodamense* churchyard lecanactis *Lecanactis hemisphaerica*
Higher plants:	Lapland marsh orchid *Dactylorhiza lapponica* Young's helleborine *Epipactis youngiana*

In all cases, the reason for removal is due to taxonomic revision (see datasheets for full information).

Table 6 List of species recommended for removal from Schedule 8

Species	Country presence	Protection required	Summary of reasons
Bryum mammillatum dune thread-moss	E	Removal from Schedule 8	Taxonomic revision. Protection not required.
Bryum neodamense long-leaved thread-moss	E, S, W	Removal from Schedule 8	Taxonomic revision. Protection not required.
Lecanactis hemisphaerica churchyard lecanactis	E	Removal from Schedule 8	Taxonomic revision. Protection not required.
Dactylorhiza lapponica Lapland marsh orchid	S	Removal from Schedule 8	Taxonomic revision. Protection not required.
Epipactis youngiana Young's helleborine	E, S	Removal from Schedule 8	Taxonomic revision. Protection not required.

Note: Removals apply to England, Wales and Scotland.

6.9 Neophytes

The JNCC received a submission during the public consultation which advocated the removal from Schedule 8 of six species of neophytes (plants introduced to Great Britain after *ca* 1500). This submission raised a number of conservation and legal issues which potentially also apply to other neophytes listed on Schedule 8.

The JNCC does not intend to make a recommendation as regards any neophyte as part of this Review but will investigate all aspects of this issue and will make any necessary recommendations at the 6th Quinquennial Review.

6.10 Legislative issues

A number of respondents to the public consultation used the opportunity to raise issues in relation to perceived inconsistencies in the legislation between Schedules 5 and 8, most notably a need for additional protection for plant habitats. In addition, concerns were raised over protection afforded through UK BAP listing, and the need for an alignment of species conservation and protection mechanisms. The need for protection of specific life stages, while excluding others, was also suggested as a needed measure.

Such issues are not within the remit of the Quinquennial Review process, and the JNCC will be notifying the respondents concerned that, should they wish

to enter into further discussion, they should take these matters up directly with the appropriate Government Department.

6.11 Scientific names and taxonomic changes

It is important that the scientific names of all species listed on Schedules 5 and 8 are correct. Appendix 8 is intended to notify Government of alternative scientific names, as well as pointing out taxonomic changes that have occurred. In addition, two lichen species on Schedule 8 - upright mountain-cladonia *Cladonia stricta* and oil-stain parmentaria *Parmentaria chilensis* - have both been re-determined, such that the currently listed names still exist as taxonomic entities, though neither exist in Great Britain.

Cladonia stricta has been re-determined as *Cladonia trassii. Cladonia stricta* is a European species not present in Great Britain. *Parmentaria chilensis* has been re-determined in Europe as *Pyrenula hibernica*. *Parmentaria chilensis* is only known from the Chilean island of Juan Fernandez.

7. Statement of reasons for recommendations

7.1 A summary of the current status of the species which the JNCC has recommended for additional listing on Schedule 5, or for increasing the protection of animals already listed on Schedule 5, is provided in Appendix 3, together with a statement of the reasons which led the Committee to arrive at their recommendations.

7.2 A summary of the current status of the species which the JNCC has recommended for additional listing on Schedule 8 is provided in Appendix 4, together with a statement of the reasons which led the Committee to arrive at their recommendations.

7.3 A summary of the reasons which led the JNCC to recommend species for removal under Schedules 5 and 8 is provided in Appendix 5.

7.4 A brief discussion of the issues in relation to protection for the four skates species originally put forward as part of the 4th QQR submission is included in Appendix 6.

7.5 The proposed steps to be taken in relation to the treatment of neophytes listed on Schedule 8 are outlined in Appendix 7.

7.6 Notification of alternative scientific names and taxonomic changes to species listed on Schedules 5 or 8 are given in Appendix 8.

8. List of appendices

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

Appendix 2 Species protected by the Conservation (Natural Habitats, &c.) Regulations, 1994

Appendix 3 Data sheets for the species proposed for addition, or increased protection, to Schedule 5

Appendix 4 Data sheets for the species proposed for addition, or increased protection, to Schedule 8

Appendix 5 Data sheets for the species proposed for removal, or reduced protection, from Schedule 5 or Schedule 8

Appendix 6 Summary of issues in relation to listing of skate species on Schedule 5

Appendix 7 The treatment of neophytes listed on Schedule 8

Appendix 8 Notification of alternative scientific names and taxonomic changes to species listed on Schedules 5 or 8

FIFTH QUINQUENNIAL REVIEW APPENDICES

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

Amateur Entomologists' Society
Anglers' Conservation Association
ARG UK (Amphibian and Reptile Groups UK)
Association for the Protection of Rural Scotland
Association of British Fungus Groups
Badger Trust
Balfour Browne Club
Bat Conservation Trust
Bees, Wasps, and Ants Recording Society
Biological Records Centre
Botanical Society of the British Isles
British Arachnological Society
British Association of Nature Conservationists (journal Ecos)
British Association for Shooting and Conservation
British Bryological Society
British Deer Society
British Divers Marine Life Rescue
British Dragonfly Society
British Ecological Society
British Entomological and Natural History Society
British Hedgehog Preservation Society
British Herpetological Society
British Horse Society
British Isles Bee Breeders Association
British Lichen Society
British Myriapod and Isopoda Group
British Mycological Society
British Naturalists' Association
British Phycological Society
British Pteridological Society
British Trust for Conservation Volunteers
British Trust for Ornithology
Butterfly Conservation
Buglife - The Invertebrate Conservation Trust
Byways and Bridleways Trust
CABI Bioscience UK Centre
Campaign for the Protection of Rural Wales
Care for the Wild
Conchological Society of Great Britain & Ireland
Council for National Parks
Council for the Protection of Rural England
Countryside Council for Wales
Countryside Management Association
Department for Environment, Food and Rural Affairs
Dipterists' Forum
Environment Agency
Investigation Agency

Fauna and Flora Preservation Society
Field Studies Council
Flora Locale
Forest Research, Alice Holt Research Station
Freshwater Biological Association
FreshwaterLife
Friends of the Earth
Friends of the Earth Scotland
Friends of the Earth Wales
Froglife
Game & Wildlife Conservation Trust
Green Alliance
Greenpeace UK
Herpetological Conservation Trust
Institute of Biology
International Fund for Animal Welfare
International Wildlife Coalition Trust
Invertebrate Link
John Muir Trust
Mammal Society
Mammals Trust UK
Marine Conservation Society (including MCS Scotland)
Mountaineering Council of Scotland
National Federation for Biological Recording
National Museum of Wales
National Museum of Scotland: Natural Sciences
National Trust (including NT for North and South Wales)
National Trust for Scotland
National Small Woods Association
Natural England
Natural Environment Research Council
Natural History Museum
Open Spaces Society
People's Trust for Endangered Species
Plantlife
Plant Link UK (including Plant Link Scotland and Plant Link Wales)
Pond Conservation: the Water Habitats Trust
Pondlife
Ramblers' Association
Ramblers' Association Scotland
Ramblers' Association Wales
Reforesting Scotland
Royal Botanic Garden Edinburgh
Royal Botanic Gardens Kew
Royal Entomological Society
Royal Society for the Protection of Birds
Royal Society for the Prevention of Cruelty to Animals
Scottish Council for National Parks
Scottish Countryside Rangers Association
Scottish Environment Protection Agency
Scottish Government

Scottish Natural Heritage
Scottish Ornithologists' Club
Scottish Wild Land Group
Seahorse Trust
Sea Shepherd
Sea Watch Foundation
Shark Trust
TRAFFIC International
Vincent Wildlife Trust
Welsh Assembly Government
Welsh Historic Gardens Trust
Whale and Dolphin Conservation Society
Wildflower Society
Wildfowl and Wetlands Trust
Wildlife and Countryside Links
The Wildlife Trusts (The Royal Society of Wildlife Trusts)
Woodland Trust
World Conservation Monitoring Centre
World Museum Liverpool
World Wide Fund for Nature - UK
Youth Hostels Association
Young People's Trust for the Environment and Nature Conservation
Zoological Society of London

Appendix 2 Species protected by the Conservation (Natural Habitats, &c.) Regulations, 1994

SCHEDULE 2 **Regulation 38**
EUROPEAN PROTECTED SPECIES OF ANIMALS

Common name	**Scientific name**
bats, horseshoe (all species)	Rhinolophidae
bats, typical (all species)	Vespertilionidae
butterfly, large blue	*Maculinea arion*
cat, wild	*Felix silvestris*
dolphins, porpoises and whales (all species)	Cetacea
dormouse	*Muscardinus avellanarius*
frog, pool	*Pelophylax lessonae*[1]
lizard, sand	*Lacerta agilis*
moth, Fisher's estuarine	*Gortyna borelii lunata*
newt, great crested (or warty)	*Triturus cristatus*
otter, common	*Lutra lutra*
snail, lesser whirlpool ram's-horn	*Anisus vorticulus*
snake, smooth	*Coronella austriaca*
sturgeon	*Acipenser sturio*
toad, natterjack	*Bufo calamita*
turtles, marine	*Caretta caretta*
	Chelonia mydas
	Lepidochelys kempii
	Eretmochelys imbricata
	Dermochelys coriacea

SCHEDULE 4 **Regulation 42**
EUROPEAN PROTECTED SPECIES OF PLANTS

Common name	**Scientific name**
dock, shore	*Rumex rupestris*
fern, Killarney	*Trichomanes speciosum*
gentian, early	*Gentianella anglica*
lady's-slipper	*Cypripedium calceolus*
marshwort, creeping	*Apium repens*
naiad, slender	*Najas flexilis*
orchid, fen	*Liparis loeselii*
plantain, floating-leaved water	*Luronium natans*
saxifrage, yellow marsh	*Saxifraga hirculus*

[1] Listed as *Rana lessonae*

Appendix 3 Data sheets for the species proposed for addition, or increased protection, to Schedule 5 of the Wildlife and Countryside Act, 1981 under the Fifth Quinquennial Review

Alosa alosa	allis shad
Alosa fallax	twaite shad
Arvicola terrestris	water vole
Blera fallax	pine hoverfly
Dipturus batis	common skate
Hammerschmidtia ferruginea	aspen hoverfly
Hippocampus guttulatus	spiny seahorse
Lamna nasus	porbeagle shark
Palinurus elaphus	spiny lobster
Pelophylax lessonae	pool frog (northern clade)
Raja undulata	undulate ray
Rostroraja alba	white skate
Squalus acanthias	spiny dogfish
Squatina squatina	angel shark
Zygaena lonicerae ssp. *jocelynae*	narrow-bordered five-spot burnet
Zygaena loti ssp. *scotica*	slender Scotch burnet

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: fish

Scientific name: *Alosa alosa*

English name: allis shad

Distribution in Great Britain
Allis shad *Alosa alosa* are rare in the UK. Although formerly known to spawn in several British river systems, the only recently-confirmed spawning site is in the Tamar Estuary (Plymouth Sound and Estuaries cSAC). There is probably a spawning population in the Solway Firth area (Maitland & Lyle 2001), but rivers in the Severn catchment may no longer support viable breeding populations (Carstairs 2000).

Distribution elsewhere
The allis shad is rare and declining throughout its range on the western coasts of Europe, from southern Norway to Spain, and in the Mediterranean eastwards to northern Italy. The most successful breeding populations are thought to be in a few rivers in western France and Portugal.

Status in Britain
There is only one recently-confirmed spawning population in the UK (Maitland and Lyle 2001), and the species is regarded as rare (http://www.jncc.gov.uk/ProtectedSites/SACselection/species.asp?FeatureIntCode=S1102).

It is a BAP priority species.

Habitat
Relatively little information is available on the habitat requirements of allis shad in freshwater. The species lives in coastal waters and estuaries but migrates into rivers to spawn, swimming up to 800 km upstream in continental Europe. However, allis shad do not readily traverse obstacles to migration such as dams or weirs, and this has been a major cause of their decline. Adults spawn at night with a great deal of noisy splashing; the eggs are released into the current where they settle among gaps in gravelly substrates. Spawning sites tend to be used year after year, and relatively shallow gravelly areas adjacent to deep pools are thought to represent optimal spawning habitat. Almost all adults die after spawning.

Threats
Obstacles to migration to spawning grounds, such as dams or weirs, are a major threat to this species. In certain river systems, hybridisation between allis shad and twaite shad *Alosa fallax* has been reported, and this hybridisation appears to be related to the presence of obstructions to their free passage upstream for spawning, resulting in both species using the same spawning grounds (Boisneau et al., 1992). The British population of the species is now so reduced that all human-induced mortality represents an additional pressure.

International obligations
Listed on Appendix II of the Bern Convention and Annexes II and V of the Habitats Directive.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9(1) and 9(4)(a) only.

Recommendation
Additional protection to be provided through Schedule 5, Section 9(4c) [preventing access to a place of shelter and protection], England and Wales only.

Justification for recommendation
9(4c): There is evidence that preventing access to spawning grounds not only reduces the reproductive capability of this species but can lead to hybridisation between allis shad and twaite shad. The UK BAP Species Action Plan seeks the protection and positive management of shad habitat (for both juvenile and adult life-stages) and to enable the adults to access spawning grounds.

Benefits which would accrue from acceptance of the recommendation
9(4c): Inhibition of erection (and maintenance) of weirs and other obstructions would permit upstream passage for spawning and reduce likelihood of hybridisation between allis shad and twaite shad.

References
BIOSNEAU, P., MENNESSON-BIOSNEAU, C., & GUYOMARD, R., 1992. Electrophoretic identity between allis shad *Alosa alosa* L. and twaite shad *Alosa Fallax* (Lacépède). *Journal of Fish Biology*, **40**, 731-738.

CARSTAIRS, M., 2000. The ecology and conservation of Allis and Twaite shad. *British Wildlife* **11**, 159-166.

MAITLAND, P.S. & LYLE, A.A., 2001. Shad and smelt in the Cree estuary, south west Scotland. Scottish Natural Heritage Research, Survey and Monitoring Report, No.6.

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: fish

Scientific name: *Alosa fallax*

English name: twaite shad

Distribution in Great Britain
In the UK, spawning stocks of twaite shad *Alosa fallax* are known to occur in only a few rivers in Wales and on the England/Wales border, flowing into the Severn estuary (Carstairs 2000); no spawning stocks are known north of this, although the species is present in south-west Scotland, in rivers flowing into the Solway Firth, where hybrids with allis shad have been reported (Maitland & Lyle 2001).

Distribution elsewhere
The twaite shad is found along the western coastline of Europe and north-east Africa, from southern Norway to Morocco and extending eastwards along the Mediterranean coast of Spain and France, and in the lower reaches of a few large rivers along these coasts. However, it has declined substantially throughout Europe.

Status in Britain
Within the Bristol Channel/Severn Estuary area, there are extensive areas suitable for spawning, with good prospects for conservation of habitat structure and function. However the current status of the species in Britain is vulnerable (Aprahamian, pers. comm.) and subject to monitoring. Prior to 1999, the annual catch of the species from the Severn was 5-6 metric tonnes, but was insignificant thereafter (Aprahamian et al., 2003)

It is a BAP priority species.

Habitat
The habitat requirements of twaite shad are not fully understood. On the River Usk and the River Wye, they are known to spawn at night in shallow areas near deeper pools, in which the fish congregate. The eggs are released into the water column, sinking into the interstices between coarse gravel/cobble substrates. The majority of adults die after spawning, though UK populations appear to have an unusually high proportion of repeat spawners – up to 25%. After hatching, the fry develop and slowly drift downstream. Recruitment seems to be highest in warm years, and high flows between May and August may result in fry being washed prematurely out to sea.

Threats
Obstacles to migration to spawning grounds, such as dams and weirs are a major threat to this species. In certain river systems, hybridisation between allis shad and twaite shad has been reported, and this hybridisation appears to be related to the presence of obstructions to their free passage upstream for spawning, resulting in both species using the same spawning grounds (Boisneau et al., 1992).

Records of allis shad and twaite shad catches are extremely poor at present, but it is likely that they will be caught on river whilst anglers are fishing for other species. While there is no

specific evidence that catches of twaite shad are harming allis shad populations, no suitable monitoring method exists (and the rarity of allis shad and its similarity to twaite shad means that any study would present a severe risk to populations).

International obligations
The species is listed on Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9(4)(a) only.

Recommendation
Additional protection to be provided through Schedule 5, Section 9(4c) [preventing access to a place of shelter and protection], England and Wales only.

Given that the data are insufficient to determine the current effect of fishing on the species and concern that this could be impacting the species detrimentally, and also due to the similarity with allis shad and the possibility that the take of twaite shad is affecting allis shad detrimentally, it is recommended that further protection is afforded to twaite shad through addition of Section 9(1) [killing, injuring, taking offence].

Justification for recommendation
9(4c): The prevention of access to spawning grounds is a threat to the species. Also, there is evidence that preventing access to spawning grounds leads to hybridisation between allis shad and twaite shad. The UK BAP Species Action Plan seeks the protection and positive management of shad habitat (for both juvenile and adult life-stages) and to enable the adults to access spawning grounds.

9(1): The current take of twaite shad by fishing is unknown but it could be affecting the species detrimentally. Because twaite shad and allis shad *can only be identified from each other by autopsy* there is potential for fishing of twaite shad to threaten allis shad.

Benefits which would accrue from acceptance of the recommendation
9(4c): Inhibition of erection (and maintenance) of weirs and other obstructions would permit upstream passage for spawning and reduce likelihood of hybridisation between twaite shad and allis shad.

9(1): To support the conservation of twaite shad the distinctions between the protection afforded to the two species need to be removed, leading to simpler law and conservation benefit.

References

APRAHAMIAN, M.W., BAGLINIÈRE, J.L., SABATIÉ, M.R., ALEXANDRINO, P., THIEL, R. AND APRHAMIAN,C.D., 2003. Biology, status, and conservation of the anadromous Atlantic twaite shad *Alosa fallax fallax. American Fisheries Society Symposium* **35**, 103-124.

BIOSNEAU, P., MENNESSON-BIOSNEAU, C. & GUYOMARD, R., 1992. Electrophoretic identity between allis shad *Alosa alosa* L. and twaite shad *Alosa Fallax* (Lacépède). *Journal of Fish Biology* **40**, 731-738.

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MAITLAND, P.S., AND LYLE, A.A., 2001. Shad and smelt in the Cree estuary, south- west Scotland. Scottish Natural Heritage Research, Survey and Monitoring Report, No.6.

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: mammal

Scientific name: *Arvicola terrestris*

English name: water vole

Distribution in Great Britain
Throughout England, Scotland and Wales except most Scottish islands. Now patchily distributed and sparse or absent from many areas. For example, the species is now only found at 7.1% of sites in Yorkshire, where it was once considered common, and 1.9% of sites in the south-west. In the Anglian region, the traditional stronghold of the species, water voles occurred at 72.4% of sites in 1989-90 but only 29.8% in 1996-98.

Distribution elsewhere
A Palaearctic species ranging from Great Britain to the Lena Basin in Siberia. Extends from the Arctic Circle to Lake Baikal, north of the Aral Sea, northern Iran and Near East.

Status in Britain
Long term decline since 1900. This accelerated during the 1980s and 1990s. A national survey in 1989-90 failed to find signs of water vole in 67% of the sites where they had been previously recorded. By 1996-98 the loss of known occupied sites had reached 89%. Populations are now fragmented due to habitat loss or mismanagement, leading to isolation of small populations. Mink predation is considered to further compound the problem.

Habitat
Largely confined to riparian habitats. More common in slow-flowing lowland rivers with extensive emergent vegetation, than upland areas. Also inhabits ponds and reedbeds.

Threats
Loss of suitable habitat is probably the underlying cause of the slow decline that has been continuing since the early part of the 20th century. This has been greatly exacerbated in the last 20-25 years by the spread of the introduced American mink, a riparian predator.

International obligations
Listed on the Bern Convention, Appendix II.

Existing legal protection in GB
Listed on Schedule 5 of the WCA, Section 9(1), 9(2), 9(4)(a)(b)(c), and 9(5), in England and Wales. Listed on Schedule 5, Section 9(4) in Scotland.

Recommendation
The water vole is currently on Schedule 5 in respect of Section 9(4) only in Scotland. We recommend that protection be extended to the whole of Section 9 in Scotland (to bring it in line with protection afforded in England and Wales). This would protect water voles against intentional killing, injuring or taking as well as protecting places used for shelter or protection from intentional or reckless damage or destruction.

Justification for recommendation
The evidence shows that partial protection of the water vole in Scotland[2] is not enough to save the species from further decline.

What follows in paragraphs 1-6 is the original evidence used to justify the protection that has been provided in England and Wales as part of the 4th QQR, and remains appropriate for the protection still sought in Scotland

1. The current legal status of the water vole, with partial protection under Section 9 in Scotland, has caused a great deal of confusion amongst those whose activities may affect them. In particular, many have found it difficult to understand the logic behind protecting the burrows of water voles whilst failing to protect the animals themselves. This apparent ambivalence in the legislation has weakened the message from the conservation agencies about the importance of conserving this species and preventing its complete extinction from some areas. Giving the water vole complete protection under Section 9 would considerably simplify the legal position and emphasise the commitment of the government to the conservation of this priority species. In practical terms, extending legal protection will encourage the major groups whose activities affect water voles, most notably developers and river engineers, to develop policies and working practices designed to avoid causing damage to water vole populations.

2. The most recent national survey for the water vole has confirmed that the rapid decline is continuing and that the situation may be more serious than was previously thought. Extending legal protection sends a clear message about the importance of preventing the extinction of this species. Full protection would place the water vole on the same legal footing as other threatened mammals, such as the otter *Lutra lutra*, red squirrel *Sciurus vulgaris*, common dormouse *Muscardinus avellanarius* and bats. The fact that the water vole does not share their legal 'status' means that its needs are often not taken into consideration or neglected through ignorance during routine maintenance or development.

3. While direct persecution has not been implicated as an important factor in the historical decline of this species, populations in many areas are now so low that any persecution could be of significant importance.

4. Deliberate persecution. Evidence for this comes from reports where the general public (usually youngsters) have shot water voles with air rifles, often seriously threatening local populations. This has been reported from at least five areas (Derbyshire, Northumberland, Nottinghamshire, Staffordshire and Yorkshire). There is also evidence of deliberate persecution from trapping and killing of water voles at fisheries, to prevent or reduce damage to banks. Even in cases where the police have intervened, persecution has continued as no prosecutions have been possible. There is also evidence of persecution at some water gardens and nurseries, fish farms and game fisheries, where there have been reports of shot or poisoned water voles in recent years, presumably to prevent or reduce the damage that resident water vole populations do to the banks of watercourses and holding ponds etc. In one case, approximately 100 water voles were killed on a single site in a single summer. In

[2] Note: this has been extended to full protection in England and Wales.

another case, an aquatic nursery dealt with a water vole "problem" by trapping the population and releasing them elsewhere.

5. Accidental persecution. Because awareness of the water vole is generally low, there is considerable potential for accidental persecution. This is likely to be a fairly widespread phenomenon as water voles are either shot or poisoned where they are mistaken for brown rats *Rattus norvegicus*, or occupy the same areas. Cases have been reported for example from Cambridgeshire, Sussex, Dorset, County Durham and Kent. Evidence for this comes from cases of poisoning for rat control, where poison has been spread indiscriminately, killing water voles. In one case, poisoning has led to the extinction of an entire population. Accidental trapping has also occurred; several cases are known where water voles have been accidentally trapped during underwater live-trapping operations targeted at other species. In most of those cases one or two water voles drowned in crayfish traps.

6. Other relevant issues. There have been many cases where water vole populations have been lost because developers have circumvented the current legislation. Examples of this are developers translocating populations to unsuitable habitat with little or no monitoring and subsequent death of individuals, and destruction of the original site.

Benefits which would accrue from acceptance of the recommendation

1. A greatly simplified legal position, thus clarifying the presentation of the legal position to those whose activities may affect water vole populations.

2. An enhanced status for this species, which is still in decline.

3. The law would become very clear in terms of protection afforded to the water vole. Developers, landowners etc would take their responsibilities much more seriously as they do with other species such as dormice or great crested newts *Triturus cristatus*, for example. This means that they would carry out the proper environmental assessment and any consequent mitigations and enhancements etc, rather than cutting corners or ignoring advice – both of which usually end in damage to or loss of water vole populations. The Crown Prosecution Service is more likely to take a case to court in the event of deliberate or reckless damage if the water vole has fully protected status.

4. Deliberate persecution would be minimised through awareness raising of the legal protection, and prosecutions could be taken where necessary.

5. Rat control and water vole conservation guidelines would help reduce accidental persecution consistently across the country, thus saving entire populations from potential extinction.

6. Full protection for the water vole would assist greatly with ensuring better routine ditch management by Internal Drainage Boards, encouraging habitat restoration on farmland and increasing the status of water voles amongst planners and developers. Full protection for the water vole would also clarify current confusion over licensing, particularly for trapping. This would help to regulate trapping which is a growing activity by both researchers and conservation groups.

References

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ALASTAIR DRIVER, VIVIEN GEEN, BRIAN LAVELLE, KATY DICKSON, PHILIP SMITH, CHRIS PARRY, SIMON CURRY, FRAN BAYLEY, PHILLIPA HARRISON, MIKE JORDAN, ROB STRACHAN (all pers. comm.).

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Blera fallax*

English name: pine hoverfly

Distribution in Great Britain
The pine hoverfly *Blera fallax* occurs at 2 pinewood sites in Strathspey, Scotland. This BAP species has been studied in detail by the Malloch Society and has been monitored by them continuously since 2002. Their work has shown that populations are confined to two localities in Strathspey where perhaps as few as twenty pine stumps support inhabited rot holes. The total population is likely to be in the low hundreds of larvae producing only a few tens of adults in any one year.

Distribution elsewhere
Only in forested areas in central and northern Europe; considered to be declining and under threat in Europe (UK BAP, 1998); decreasing and threatened in some European countries (Speight et al., 2000 *Syrph-the-Net* on CD)**.**

Status in Britain
The pine hoverfly is listed as a Category 1, Endangered species in the British *Red Data Book 2. Insects* (Shirt, 1987); and is regarded as provisionally Critically Endangered (draft of Species Status, No. x, A review of the scarce and threatened flies of Great Britain, Part x: Hoverflies, family Syrphidae (Stuart G. Ball and Roger K.A. Morris, in prep.). Furthermore, it is a BAP priority species (*UK Biodiversity Group Tranche 2 Action Plans - Volume IV: Invertebrates* (March 1999, Tranche 2, Vol IV, p145)). It has been included as a species for conservation action in the SNH *Species Action Framework: a five year species action framework: making a difference for Scotland's species* (SNH, 2007).

Habitat
The habitat of the pine hoverfly is mature or over-mature native Scots pines *Pinus sylvestris*, and possibly deciduous trees, in Caledonian forests (Shirt, 1987). The larval habitat is wet rot-holes associated with the secondary decay of Scots pine. They breed in wet pockets of decay in large pine stumps (minimum stump diameter circa 40 cm).

Threats
The main threat to this species is the lack of continuity of suitable larval sites due to: inappropriate timing of forestry rotation; damage to existing stumps; and chemical treatment of stumps

International obligations
None.

Existing legal protection in GB
None.

Recommendation

This species should be included in Schedule 5 of the WCA, Section 9, Part 4 (a) - damage to, destruction of any structure or place used by a scheduled animal for shelter or protection, in Scotland only.

Justification for recommendation
The maintenance of the very precise microhabitat requires careful site management, and restrictions to practices, that might otherwise be considered standard.

Benefits which would accrue from acceptance of the recommendation
This recommendation will provide protection of those stumps that are in use, preventing them from being searched for pine hoverfly larvae. As such it provides the basis for safeguarding the existing population. This safeguard can be capitalised upon, with a precautionary approach also likely to result in an increase of larval sites and therefore increase in size of known populations due to more appropriate management of commercial woodlands at and around known sites. Examples include continuous cover forestry rather than clear-felling; avoiding damage to existing stumps; halting chemical treatment of stumps; occasionally cutting trees 80cms above the ground to provide longer-lasting breeding sites. The creation of artificial breeding sites, i.e. rot holes at and around known sites by boring holes into pine stumps and initiating decay, may also be helpful. This technique has been shown to be successful by the Malloch Society, but needs to be used on further sites if this species is likely to persist.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of animal: elasmobranch fish

Scientific name: *Dipturus batis*

English name: common skate

Distribution in Great Britain
The common skate *Dipturus batis* was formerly widespread in coastal and continental shelf waters around the British Isles, including the Irish Sea, English Channel and territorial waters of Great Britain, including western and northern Scotland. The species has been greatly depleted by unregulated fisheries and is now very scarce in the North Sea. Sporadic catches are still reported in the north of the North Sea (ICES, 2008) and also in the Irish Sea (Brander 1981). The distribution extends into the west of Scotland and the Norwegian Sea (ICES, 2008).

The species occurs along parts of the west coast of Scotland (although the populations have been very much reduced), including in the Sound of Mull/Loch Aline area, and in the Celtic Sea. There are also recent records, including breeding records, from the Orkneys and adjacent mainland (A.Hood, pers. comm.).

Angler catches have been recorded in Belfast Lough and along the Antrim coast with at least 12 captures in and around Strangford Lough, after an extended absence. However, little targeted angling has been undertaken and as such the actual number could be higher. Over 300 individuals have been tagged by anglers off the Antrim coast over the last 6 years with a small number of tag returns from Scottish waters around the Sound of Mull (ca 150km away), demonstrating the mobility of individual skates. (A. Hood, pers. comm.).

Distribution elsewhere
The common skate is restricted to the north-eastern Atlantic and Mediterranean.

This species is thought to be locally extinct in the Mediterranean (Dulvy and Reynolds, 2002). The Medits 1998 benthic trawl survey of the Mediterranean failed to record any specimens of common skates, although this species was caught during a similar survey in 1948 (Jukic-Peladic *et al*., 2001).

Status in Britain
The common skate was formerly common around the British Isles. The decline was well documented by Brander (1981), Walker & Hislop (1998), Dulvy *et al*. (2000) and the UK Biodiversity Action Plan for this species. The species has declined in many inshore areas of England and Wales, although it is still present in the inshore areas of Scotland and Ireland (ICES, 2008). Refuge populations exist in Scotland, Northern Ireland and in the Western Approaches, possibly including the Scilly Isles (A. Hood, pers. comm.).

Detailed studies have been undertaken of skate and ray populations in the North Sea, utilising long-term data sets (Walker & Heessen 1996, Walker & Hislop 1998). These concluded that the common skate has disappeared from major parts of the North Sea (sporadic catches are still reported in the north). While skates over 100 cm long used to be common, those larger

than 80 cm are now very scarce. Most reproducing females of common skate have now been lost as a result of intensive fishing effort, which imposes a total mortality on populations well above its capacity for replacement.

Classified as Critically Endangered in Britain and the North-east Atlantic by the IUCN (http://www.iucnredlist.org/details/39397; Gibson et al., 2008).

A BAP priority species.

Habitat

The common skate is the largest European ray species. It can grow to over 2.5m in length, and well over 100kg in weight, though average length is 1-1.5m. It lives at depths of 30m to over 400m, with larger specimens being characteristic of deeper waters. It occurs over a mixture of substrates, including sand and gravel, feeding on a range of smaller fish species (both above the seabed or in mid-water), crustaceans and other invertebrates. It produces large egg capsules.

Threats

Once taken in directed fisheries until stocks collapsed, or as utilised bycatch in multi-species fisheries, it is now threatened as a result of bycatch in benthic fisheries. Common skate was reported to be formerly common, widespread and landed in large numbers by targeted and bycatch fisheries, but has been seriously depleted (some populations possibly to extinction) by unregulated fisheries. This pattern of depletion by fisheries is the result of the heavily 'K-selected' life history characteristics of common skate, which is slow growing, matures at a large size and produces only a few large young each year. Under current fishing pressures, very few of these large young survive long enough to reach maturity and breed, which ultimately leads to declining populations. The common skate would benefit from strict legal protection because it is large, robust, easily recognisable, and lacks an internal gas bladder and may, therefore, be expected to survive release from fishing gear relatively well.

Given the current high levels of mortality, it is unlikely that common skate will recover in the absence of legal protection. A halt to capture fisheries is unrealistic but, fortunately this is a large robust species which can survive being captured and returned to the sea if not too badly damaged and if there is a legal requirement to do this (S.L. Fowler, pers. comm.). Body size is a good predictor of extinction vulnerability because it is closely linked to key life history parameters, such as age at maturity and reproductive output[3], which directly determine the population dynamics, demography, resilience and vulnerability to exploitation of species (Charnov 1993; Jennings *et al*. 1998; Dulvy *et al*. 1999; Dulvy & Reynolds 2002; Reynolds *et al*. 2001).

International obligations

There is an EC TAC for skates and rays of 1,643 mt in ICES areas IIa and IV, and 12,776 mt in ICES areas VI and VII, but the common skate is excluded from a the proposed TAC in all of these areas. Catches of this species may not be retained on board and shall be promptly released unharmed to the extent practicable. Fishers shall be encouraged to develop and use

[3] Male common skate mature at an age of over 10 years old (125 cm long). Females are probably larger and older than this before they mature and begin to produce an estimated maximum of 40 large (14-25 cm long) eggs a year, from which young hatch at a length of 21-22 cm (Du Buit 1977).

techniques and equipment to facilitate the rapid and safe release of common skate (European Commission, 2008).

The common skate is listed by OSPAR as a threatened and/or declining species warranting conservation action.

Furthermore, the *The World Summit on Sustainable Development (WSSD*), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB
None specifically. There is a minimum landing size of 40cm for skates and rays caught in inshore waters of various parts of England and Wales under Sea Fisheries Committee bylaws. However, see comments above in relation to the EC proposal for exclusion of common skate from TAC for skates and rays.

Recommendation
Add to Schedule 5 of the WCA, for protection under sections;

i. 9(1) killing, injuring and taking offence;
ii. 9(2) possession offence; and
iii. 9 (5) sale offences.

Justification for recommendation
Common skate populations of shelf waters of the NE Atlantic and elsewhere throughout its range are listed as Critically Endangered on the IUCN Red List of Threatened Species (Dulvy *et al*, 2006; Gibson *et al*., 2008).

The decline of the common skate is well documented. This species was more widespread in inshore waters at the beginning of the 20th century (Brander, 1981; Dulvy et al 2000). Analysis of scientific survey data found that no individuals were recorded in inshore waters of England and Wales between 1967 and 2002 (Ellis et al, 2004), but inshore populations persist in some coastal areas of Northern Ireland and Scotland (see earlier section), and the mobility of the species suggests that some occurrence is likely also in adjacent, or other, coastal areas of England and Wales, and there is certainly potential for recolonisation of these areas if conservation action is taken.

The threatened status of the common skate was fully recognised by its UK Species Action Plan (UK Biodiversity Group 1999), and more recently by its retention on the revised list of priority Biodiversity Action Plan (BAP) species in 2007. The original Action Plan objectives for this species included legal protection for the species in at least five key centres of abundance (within 5 years, *i.e.* by 2002) and, in the longer term, facilitating the migration of skate from refuge populations to areas where they are scarce or have been fished out. Proposed action for achieving these objectives includes seeking protection for the species in UK waters, and protection in refuge areas under appropriate site-based legislation. Following

publication of this Action Plan, it has not been possible to identify more than one centre of abundance - a single refuge population on the west coast of Scotland. It is increasingly apparent that, for this and other similarly threatened species, it will be necessary to use all legislative tools available (including protection under the WCA) if populations of this and other similarly threatened species are to be stabilised and past declines reversed.

Benefits which would accrue from acceptance of the recommendation

Listing under Schedule 5 of the WCA would not only prevent targeted fisheries for this threatened species, but also result in the release, unharmed, of listed elasmobranchs caught as bycatch, supporting advice by ICES (2008) that target fisheries for this species "should not be permitted and measures should be taken to minimise bycatch". Protection of the common skate provided by inclusion in Schedule 5 of the WCA would assist recovery of this species directly. It could also complement proposed conservation action at the European level.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Hammerschmidtia ferruginea*

English name: aspen hoverfly

Distribution in Great Britain
The aspen hoverfly *Hammerschmidtia ferruginea* is a boreal species found only in the Highlands of Scotland, and is confined to 8 metapopulations[4] in larger aspen *Populus tremula* woodlands. The main stronghold is Strathspey between Newtonmore in the South and Grantown in the North. Other sites are in the valley of the Findhorn, Easter Ross, south-east Sutherland and Deeside. The estimated population size in 2000 was 300 individuals, based on surveys by the Malloch Society (MacGowan, 1993).

Distribution elsewhere
Rare and thought to be Endangered in Europe (UK BAP, 1998, Tranche 2 Action Plans vol. IV); decreasing and threatened in Europe (Speight et al., 2000, *Syrph-the-Net* on CD).

Status in Britain
The aspen hoverfly has always been a great rarity, and is listed as Category 1, Endangered in the *British Red Data Books: 2. Insects* (Shirt, 1987); and is classified provisionally as Critically Endangered (draft of Species Status, No. x, A review of the scarce and threatened flies of Great Britain, Part x: Hoverflies, family Syrphidae, (Stuart G. Ball and Roger K.A. Morris, in prep.). Furthermore, the aspen hoverfly is a BAP species (*UK Biodiversity Group Tranche 2 Action Plans - Volume IV: Invertebrates* (March 1999, Tranche 2, Vol IV, p173)).

Habitat
The aspen hoverfly is only found in larger aspen woodlands in the Highlands of Scotland where **t**he larvae are found in wet decaying cambium. The decaying cambium forms suitable habitat for circa four years under the bark of recently fallen or dead standing trunks and branches of aspen with a diameter of at least 30 cm. After four years the bark cracks and the cambium dries out and becomes unsuitable for the larvae. Almost all records are from aspen stands over 4.5 ha as only these are large enough to maintain the continuity of suitably sized fallen timber that is needed to support a population of aspen hoverfly. Only 14 aspen stands in Scotland extend over 4.5 ha; most aspen stands in Scotland are small with less than 1.5 ha extent. These small stands are too small to support populations of this species, hence it is virtually absent from these.

Threats
The main threat to this species is loss of larval habitat due to fragmentation of core aspen stands and lack of fallen aspen in suitable condition. Populations of the aspen hoverfly fluctuate with levels of naturally occurring dead wood, when such dead wood is scarce the populations are restricted to only a very few suitable dead trees across the entire country –

[4] A metapopulation is defined as a set of local populations within some larger area, where typically migration from one local population to at least some other patches is possible (Hanski and Simberloff, 1997).

protection of such key breeding sites is critical. Grazing by sheep, deer and rabbits prevents regeneration and the animals often strip the bark from fallen trees.

International obligations
None.

Existing legal protection in GB
None.

Recommendation
This species should be included in Schedule 5 of the WCA, Section 9, Part 4 (a) - damage to, destruction of, any structure or place used by a scheduled animal for shelter or protection, in Scotland only.

Justification for recommendation
The maintenance of the very precise microhabitat requires careful site management, and restrictions to practices that might otherwise be considered standard.

Benefits which would accrue from acceptance of the recommendation
This recommendation will provide protection of the dead wood resources that are in use, preventing them from being searched for pine hoverfly larvae. As such it provides the basis for safeguarding the existing population. This safeguard can be capitalised upon, with a precautionary approach also likely to result in an increase of larval sites and, therefore, increase of populations due to more appropriate management of woodlands at and around known sites. Conservation actions might include preserving fallen timber and dead standing timber; increasing quantities of breeding sites; reducing fragmentation of core aspen stands; excluding grazing animals to protect fallen timber from bark stripping and to encourage natural regeneration; and extending and linking existing stands by planting aspen. A wide range of other rare and endangered insects, lichens and fungi which depend on boreal aspen would also benefit.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: **f**ish

Scientific name: *Hippocampus guttulatus* (formerly *ramulosus*)

English name: spiny seahorse (also known as long-snouted seahorse, many branched seahorse).

Distribution in Great Britain
The spiny seahorse *Hippocampus guttulatus* is distributed from the eastern most point of Kent along the South coast, to Lands End up the West coast of England, Wales and Scotland as far as the Shetland Isles and all around the coast of Northern Ireland and the Irish Republic.

Distribution elsewhere
Along the continental coastline of France down into the Bay of Biscay. Along the northern coast of Spain and Portugal, into and around the whole of the Mediterranean, east as far as the Aegean Sea and into the Black Sea. This species is thought possibly to change in size and base coloration across its distribution. Whether these are subspecies or just area changes is not yet known. Further work will need to be done to determine the status of these colour forms.

Status in Britain
Not fully known, but they are thought to be uncommon. They are a very secretive fish, made inconspicuous by their camouflage ability of growing weed-like appendages on their bodies.

As a result of the British Seahorse Survey, run by The Seahorse Trust since 1994, the spiny seahorse is not thought to be common. Sightings are usually of individual animals and these sightings are infrequent. It was originally thought to be a transient species in our waters due to this infrequency of sightings, but work done by the survey has shown they are in fact indigenous and are found all through the year. There have been animals of all ages found during the period of the survey, from young juveniles to mature adults.

Habitat
Spiny seahorses are found predominantly in eel grass beds during the spring, summer and early autumn. During the winter they are known to migrate to deeper waters to overwinter in the relative stability of these deeper waters. The deep water areas tend to be of rock and silt, with little or no plant life.

They are quite often brought up from deeper water by crab and lobster fishermen where it is thought that they are attracted to the pots by the small crustacea that feed on bait laid down in the pots by fishermen.

Threats
Habitat disturbance and loss is a primary cause of concern particularly the eel grass beds in which they breed in during the spring, summer and early winter. This habitat is lost due to a number of factors, including silt deposits from land run-off and fishing practices such as

scalloping through the eel grass beds. Marina building and other developments are also damaging, and a naturally occurring wasting disease also results in additional mortality.

Seahorses in general are targeted around the world for the traditional medicine trade, which takes in excess of 30 million animals per year (Vincent 1995). There are more than 65 countries taking part in this trade and new locations are being sort all the time. It is believed likely that the British Isles will eventually be a target for this trade.

The second biggest trade threat to seahorses around the world is for keeping in aquaria, (public and private). It has been suggested that a figure of up to one million animals a year (the vast majority of which never reach the destination they were bound for due to death in transit) are gathered for this trade around the world and very few survive any period of time as they are notoriously difficult to sustain in captivity. The British Isles is now being targeted for collection for the aquarium trade, with a small but significant number of animals being taken in Weymouth Bay in Dorset commercially (price reported as £65 per fish) and a handful of animals are taken by divers and fishermen elsewhere. As stocks diminish in other countries, and as more unusual species of seahorse are sought , the trade may increase in UK waters. As the exact population status is not understood, any removal of animals from the national population could be detrimental.

International obligations
The species is listed on Annex B of the EC CITES Regulations.

Existing legal protection in GB
Listed on Schedule 5 of the WCA in England and Wales.

Recommendation
Full legal protection by addition of the spiny seahorse to Schedule 5 in Scotland, with respect to all parts of Section 9 as appropriate to prevent: taking and killing (Section 9 (1); damage or destruction of a place of shelter, or disturbance (Section 9 (4)(a) and (b); sale (Section 9 (5)).

Justification for recommendation
Knowledge of the native seahorses is incomplete but sufficient to indicate that their habitats are threatened and there is a risk from current or future collection. Therefore, a precautionary approach is justified for their conservation.

They are already listed as vulnerable by the IUCN (2000 list). In the TRAFFIC (June 1996) report they are the subject of major concern because of their use in the traditional medicine and curio trades.

Seahorses can suffer high levels of mortality when captured from the wild, so by reducing the number of animals taken from the wild (except possibly under licence for captive breeding purposes under approved breeding programmes) collectors will be forced to acquire captive bred animals only.

Benefits which would accrue from acceptance of the recommendation
Listing the spiny seahorse on Schedule 5 would prevent the potential loss of this species from around the British Isles before its biology and ecology is fully understood. Its habitat (eel grass beds) is also vulnerable to disturbance, so measures could be more easily considered to conserve these areas.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of animal: Fish

Scientific name: *Hippocampus hippocampus*

English name: short-snouted seahorse.

Distribution in Great Britain
The short-snouted seahorse *Hippocampus hippocampus* is distributed from the eastern most point of Kent along the South coast, up along the North Cornwall and Devon coastline. Substantial populations around the Channel Islands and Ireland (Garrick-Maidment & Jones, 2004), and occurring around the Isles of Scilly. Some historic sightings off the coast of Norfolk and up the River Thames.

Distribution elsewhere
Along the continental coastline of France down into the Bay of Biscay. Along the northern coast of Spain and Portugal, into and around the whole of the Mediterranean, East as far as the Aegean Sea and into the Black Sea. This species is thought to possibly change throughout its distribution in size and base colouration. There is possibly a population down the Atlantic seaboard side of Africa.

Status in Britain
Not fully known, but thought to be uncommon. They are a very secretive animal blending in well with rocky and weedy habitats. As a result of the British Seahorse Survey run by The Seahorse Trust since 1994 the short-snouted seahorse is not thought to be common. Sightings are usually of individual animals and these sightings are infrequent. It was originally thought to be a transient species to our waters due to this infrequency of sightings but work done by the survey has shown they are in fact indigenous being found all year around. There have been animals of all ages found during the period of the survey from young juveniles to mature adults, including on a couple of occasions a small shoal of new-born fry during the late Summer near Jersey in the Channel Islands.

Habitat
On the whole, the short-snouted seahorse is found below 5 m (N. Garrick-Maidment, pers. comm.). They occupy only certain parts of seemingly suitable habitats, for example sticking to the edge of seagrass beds, leaving large areas unoccupied. These microhabitats have not been investigated but is has been suggested that seahorses find more food in areas of good water exchange (Vincent, 1996). Habitat / substratum preferences may be seasonal and related to seasonal migration (N. Garrick-Maidment, pers. comm.).

The short-snouted seahorse is found in mixed habitats of macro-algae and rocky areas during the spring, summer and early autumn. During the winter they are known to migrate to deeper waters to overwinter in the relative stability of these deeper waters. These deep water areas tend to be of rock and silt, with little or no plant life.

They are quite often brought up from deeper water by crab and lobster fishermen where it is thought that they are attracted to the pots by the small Crustacea that feed on bait laid down in the pots by fishermen.

Threats
Seahorses in general are targeted around the world for the traditional medicine trade, which takes in excess of 30 million animals per year (Vincent 1995). There are more than 65 countries taking part in this trade and new locations are being sort all the time. It will not be long before the British Isles becomes a target for this trade.

The second biggest trade threat to seahorses around the world is for the live use in aquaria, (public and private). It has been suggested that a figure of up to one million animals a year (the vast majority of which never reach the destination they were bound for due to death in transit) are gathered for this trade around the world and very few survive any period of time as they are notoriously difficult to sustain in captivity. The British Isles is now being targeted for collection for the aquarium trade, with a small but significant number of animals being taken in Weymouth Bay in Dorset commercially (price reported as £65 per fish) and a handful of animals being taken by divers and fishermen particularly around the Channel Islands of Jersey and Guernsey. As stocks diminish in other countries and as more unusual species of seahorse are sort, then this lucrative trade is bound to increase in our waters, leading to a larger scale fishery. As the exact population status is not understood within our waters any removal of animals from the national population could have disastrous effects.

International obligations
The species is listed in Appendix II of the IUCN Red List; as well as being listed on Annex B of the EC CITES Regulations, and Appendix II of the Bern Convention.

Existing legal protection in GB
Full protection through listing on Schedule 5 of the WCA, England and Wales only.

Recommendation
Addition of the sale offence, Section 9(5), to Scotland only.

Justification for recommendation
Knowledge of the native seahorses is incomplete but sufficient to indicate that their habitats are threatened and there is a risk from current or future collection. Therefore, a precautionary approach is justified for their conservation

They are already listed as vulnerable by the IUCN (2000 list). In the TRAFFIC (June 1996) report compiled by Amanda Vincent they are the subject of major concern because of their use in the traditional medicine and curio trades.

Seahorses can suffer high levels of mortality when captured from the wild, so by reducing the number of animals taken from the wild (except possibly under licence for captive breeding purposes under approved breeding programmes) collectors will be forced to acquire captive bred animals only.

Benefits which would accrue from acceptance of the recommendation
Seahorses in general are targeted around the world for the Traditional Medicine Trade, which takes in excess of 30 million animals per year (Vincent 1995). There are more than 65 countries taking part in this trade and new locations are being sort all the time. It will not be long before the British Isles becomes a target for this trade.

The second biggest trade threat to Seahorses around the world is for the live use in aquaria,

(public and private). It has been suggested that a figure of up to one million animals a year (the vast majority of which never reach the destination they were bound for due to death in transit) are gathered for this trade around the world and very few survive any period of time as they are notoriously difficult to sustain in captivity.

The British Isles is now being targeted for collection for the private aquarium trade, with a small but significant number of animals being taken by divers and fishermen.

Although short-snouted seahorse distribution does not extend to waters off the coast of Scotland, the addition of the sale offence, Section 9(5) will provide much needed protection for this species.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of animal: Elasmobranch fish

Scientific name: *Lamna nasus*

English name: porbeagle shark

Distribution in Great Britain

The porbeagle shark *Lamna nasus* occurs throughout British territorial waters. Some areas support seasonal aggregations that, when located, may be targeted by commercial or sports fishers and yield valuable catches. Pregnant females and newborn porbeagles are occasionally caught within British territorial waters, indicating that birthing and nursery grounds occur. Large females outnumber male sharks in northern Scotland (Gauld, 1989), while juveniles and males are most common in the Bristol Channel (Ellis and Shackley, 1995). Gauld (1989) reported pregnant females in Scotland in early summer, suggesting that birthing occurs in summer or autumn, while females with fresh mating scars (bite marks on pectoral fins) occur in Shetland in December–January.

Distribution elsewhere

The porbeagle shark is a wide-ranging coastal and oceanic species found in temperate and cold-temperate waters (1^{o}–18^{o}C) in the North Atlantic and Southern Oceans (Compagno, 2001). It is more common on continental shelves. Porbeagle sharks in British waters are part of a single Northeastern Atlantic stock; trans-Atlantic movements are extremely rare (Stevens *et al*. 2005, Francis *et al*. 2008).

Status in Britain

The porbeagle shark is assessed by IUCN as Vulnerable globally, and Critically Endangered in the Northeast Atlantic on the basis of a greater than 90% stock depletion by unregulated target fisheries (Stevens *et al*. 2005; Gibson *et al*., 2008). The Northeast Atlantic stock collapsed in the late 1950s. Landings by various fisheries here have declined 85–99% since the 1930s, 50% in 50 years, and 70% in the past ten years. Reported landings from the historically most important fisheries, around the UK and in the North Sea and adjacent inshore waters, have declined strongly and have almost ceased in relation to Norwegian and Faroese fisheries (ICES, 2008).

It is listed as a BAP priority species.

Habitat

Coastal and oceanic (mainly on the continental shelf) in temperate and cold temperate waters, from the surface to a depth of 370m. Porbeagles feed mainly on pelagic and demersal teleost fish in shallow water, and pelagic fish and squid in deep water (Joyce *et al*. 2002). This species has a thermoregulatory capability and that maintains a relatively high body temperature even in waters of 2–3^{o}C. It produces live young.

Threats

The principal threat to the porbeagle shark is over-exploitation in target and bycatch fisheries. The meat and fins are very valuable. Gauld (1989) reported that porbeagle sharks are “one of the most valuable marine species landed in Scotland weight for weight.” Adult

fish are worth several hundred pounds each at first sale. Porbeagle sharks caught in Britain are often exported to France, while the fins enter international trade.

Porbeagle sharks have been targeted off the Scottish coast and in the North Sea by Norwegian and Danish vessels, and to the south and west of England by French vessels (Gauld 1989). There has been some opportunistic fishing of aggregations by British vessels off Scotland (Shetland), and in the English and Bristol Channels. Sea angling for porbeagle sharks occurs at many British locations, including southwest England, (English and Bristol Channels), Wales, Yorkshire, and north and northwest Scotland.

This species is intrinsically vulnerable to over-exploitation by fisheries because of its life history characteristics (very low biological productivity) and behaviour. Only fifty percent of females are mature at 13 years old (245 cm long). They give birth to litters of one to five young 65–80 cm long after a gestation of 8–9 months. The young are vulnerable to fisheries from birth. Longevity is an estimated 40–50 years, with a maximum reported length of over 335 cm (Francis *et al*., 2008), or 375 cm (Cortes, 2008). The average age of reproductive females in a stable population in the North Atlantic is calculated as 18 years, and the maximum annual population growth rate is 1.051 (if all females reproduce annually without a resting period between litters) (Cortes, 2008). The estimated population rebound rate (r) for southwest Pacific porbeagles fished at a theoretical maximum sustainable level of harvest is also low, at 0.026 (Au *et al*., 2008). Population rebound rate is defined as the maximum rate at which a population can grow, if it has been reduced to a theoretical Maximum Sustainable Yield. This figure means that the population will grow at 2.6% per annum. So, a population of 1000 sharks would increase to 1000 x 0.026 = 1026 sharks after one year, 1053 after two years and so on. Furthermore, all age classes are taken in fisheries, and aggregations (which may be segregated by age and sex) can be targeted even when the stock is seriously depleted. As noted above, Northeast Atlantic porbeagle stocks have been depleted to very low levels as a result.

International obligations

None specifically. However, the European Commission has proposed setting a zero TAC for porbeagles (European Commission, 2008).
http://ec.europa.eu/fisheries/legislation/proposals/conservation_en.htm (accessed 26/11/08).

ICES has, since 2005, recommended closing the porbeagle shark fishery in the NE Atlantic. After critically reviewing this advice, the European Scientific, Technical and Economic Committee on Fisheries (STECF 2006) recommended "that no directed fishing be allowed, while other measures be taken to prevent bycatch of porbeagles in other fisheries." Norway has adopted ICES' advice and prohibited target fisheries (bycaught fish must be landed). Sweden legally protects porbeagle.

The latest ICES advice recommends that "no targeted fishing for porbeagle should be permitted and bycatch should be limited. Landings of porbeagle should not be allowed (ICES, 2008).

Furthermore, the *The World Summit on Sustainable Development (WSSD*), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks

on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB

No specific protection. The European Commission set the first Total Allowable Catch for this species in 2008, for the 2009 fishery. EC Regulation 40/2008 gives a total TAC of 581t for the porbeagle stock in ICES areas I-XIV, of which 3 t is assigned to the UK/Britain. ICES WGEF (2008) remarked that it is unaware of the basis of the TAC or allocation of quotas between Member States. However, this may be superseded by a zero TAC, as proposed by the European Commission in (European Commission, 2008).

Recommendation

Add to Schedule 5 of the WCA, for protection under sections:

9(1) killing, injuring and taking offence;
9(2) possession offence; and
9 (5) sale offences.

Justification for recommendation

The porbeagle shark is listed as Critically Endangered in the Northeast Atlantic on the IUCN Red List of Threatened Species, taking into account past, ongoing and estimated future reductions in population size exceeding 90% (Stevens *et al.* 2005; Gibson *et al*., 2008). The species is intrinsically highly vulnerable to depletion by fisheries because of its life history characteristics (population productivity is low) and behaviour (the species has an aggregating behaviour). Consequently, the risk of depletion or reproductive potential is high (ICES, 2008). There is evidence within British territorial waters of nursery grounds, aggregations of pregnant females and mating areas, none of which are protected.

Benefits which would accrue from acceptance of the recommendation

Listing as proposed under Schedule 5 of the WCA would implement ICES and STECF advice by preventing targeted fisheries and minimising bycatch for this threatened species within the coastal waters that include some areas of critical habitat for the most seriously depleted northern stock of Northeast Atlantic porbeagle shark. It could also supplement proposed conservation action at European level.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: marine crustacean

Scientific name: *Palinurus elephas*

English name: spiny lobster, rock lobster, crawfish or crayfish

Distribution in Great Britain
Palinurus elephas is distributed along western coasts from Shetland in the north, southwards to the Isles of Scilly. There are also isolated records from the east coast of Scotland.

Distribution elsewhere
Eastern Atlantic from Norway to the Azores, and in the western Meditteranean.

Status in Britain
Until the late 1970s, species-specific landing data for spiny lobster was not collected in the UK, thus preventing an accurate historical documentation of the UK decline of this species. Although landings have recently increased as a result of tangle netting in remote areas, total landing figures for spiny lobster since the late 1970s indicate stock depletion (Hunter, 1999). Catch Per Unit Effort (CPUE) data available for Welsh pot-hauled spiny lobster fishery fell from 55,000kg in 1979 to less than 5000kg in 1995 i.e. before the Sea Empress oil spill occurred (Hunter, 1999). 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 of spiny lobster as 'residual' (ICES 2006).

A similar decline is documented for spiny lobster fisheries elsewhere along the European Atlantic coast. In Ireland, a shift from pots to netting has been followed by stock depletion. In Portugal, landings declined sharply from an average of 400t in 1990-1992 to an average of 6t in 2000-2002, and the species has virtually disappeared from depths shallower than 30m. Based on best available information, rough estimates of spiny lobster landing figures range between 150-300t/year in the Atlantic. These values are in striking contrast to landings of several thousand tones in the first half of the 20th century (e.g. French landings alone reached 3000t in the 1940s) (Goni & Latrouite, 2005). Sharp declines are also noted for Meditteranean, Italian, Croatian, Greek and Morrocan fisheries (Goni & Latrouite, 2005).

Although reports of overfishing of spiny lobster appear as early as the 1930s, the widespread decline of its fisheries may be traced back to the period of 1960-1980 depending on the area. During these years, fishing effort increased dramatically as pots and divers were replaced by trammel nets. However, lack of reliable historical catch and effort data allows only a circumstantial cause-and-effect relationship to be identified (Goni & Latrouite, 2005).

Scuba diving for spiny lobster is also identified as a cause of population decline. A fishery operating out of Pwllheli on the the south side of the Lleyn Peninsula using divers during the late 1970s, led to a rapid decline in numbers in that area, and within 2 years, diving for spiny lobster became economically unviable (Rowland Sharp, pers comm.). In Cornwall, the fishery employed over 30 full time divers during its peak toward the end of the 1960s, but this eliminated spiny lobster from shallow waters within a period of seven years (Hunter *et al*., 1996).

Habitat
The spiny lobster is found in the subtidal on exposed rocky seabeds where protective holes are numerous, in depths typically between 5-70m, but is also recorded as deep as 170m (Jackson & Marshall, 2008).

The species is thought to undertake a pre-reproductive spring onshore migration and a reverse post-reproductive offshore migration in late autumn.

Threats
Commercial Fishing: In the UK, targeted spiny lobster 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 is now the principal means of capture. The species 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.

International obligations
None.

The World Summit on Sustainable Development (WSSD), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB
None.

The species is on the UKBAP *UK List of Priority Species* (http://www.ukbap.org.uk/PrioritySpecies.aspx?group=5, accessed 02/12/08).

Recommendation
Full protection, by addition to Schedule 5 of the WCA in relation to England and Wales (Sections 9(1), 9(2), 9(4)(a) and 9(4)(b) and 9(5) in relation to England and Wales only). Although the current vulnerability of the species in Scotland is considered to be less than for England and Wales, the species should be kept under careful review in Scotland and appropriate conservation action taken.

Justification for recommendation
- Spiny lobster 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). The species is likely to become endangered in Great Britain unless

conservation action is taken. Such action is considered most urgent in England and Wales; but the issue needs to be kept under close review in Scotland.

- Survivability of this species after return to the sea following incidentally capture would be high.
- This species is distributed primarily within 12 nm of the coast.
- The spiny lobster has a 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.
- 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 which would accrue from acceptance of the recommendation

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 spiny lobster fishery.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: amphibian

Scientific name: *Pelophylax lessonae* (a.k.a. *Rana lessonae*)

English name: pool frog (northern clade only)

Distribution in Great Britain
Following extinction of presumed native population from East Anglia (Norfolk, Lincolnshire, Cambridgeshire) in 1990s, the species has been re-introduced to a single site in Norfolk. Future reintroductions are proposed for other areas of East Anglia.

Note: the species, and other closely related 'green frog' species have been introduced elsewhere in Britain, but it is only the 'northern clade' (of northern European origin [UK, Scandinavia]) that is proposed for scheduling.

Distribution elsewhere
The pool frog occurs throughout Europe. There are distinct forms of this species, and the 'northern form' is found only in Scandinavia (Sweden and Norway) and via re-introduction to the UK.

Status in Britain
Recently reintroduced to a single site. Proposals to re-introduce elsewhere are identified through the Species Action Plan.

Elsewhere, there are populations of non-native pool frogs (e.g. in Essex) and "green frog" complexes consisting of edible frogs, which are hybrids between marsh and pool frogs.

Habitat
Pools in one woodland/fenland. The most recently extant native population (and re-introduced population) has been found in 'pingo pools' created following the last glaciation.

Threats
Collection and habitat damage are the primary threat. There is also a possibility of malicious damage to both the species and its habitat. The current population is on an area managed as a nature reserve, but in the longer term protection to populations in other habitats may be needed.

International obligations
It is listed on Appendix III of the Bern Convention and on Annex IV of the EU Habitats Directive.

Existing legal protection in GB
Listed on Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations, 1994, England and Wales only.

Recommendation
Listing of the northern clade of *Pelophylax lessonae* on Schedule 5 of the WCA (alongside the protection afforded through addition to Schedule 2 of the Habitats Regulations, as of 01/10/08), to be limited to sections 9(4) b. & c, for England only.

Justification for recommendation
Provision of legislative protection is a recommendation of the Species Action Plan for the species.

The species needs to be protected as it occurs at a single site and will be vulnerable to persecution or habitat damage. Re-introduction to other localities may be undertaken in the future and legal protection will support this conservation action.

The species is listed on Annex IV of the EU Natural Habitats Directive. The re-introduction is in line with a National Action Plan and therefore consistent with the needs of Article 22 of the Habitats Directive.

The alternative to providing protection to the northern clade would be to recommend protection across a specified geographical range (e.g. Lincolnshire, Norfolk, Cambridgeshire). However, this would be problematic, in that it could confer protection to non-native pool frogs.

Benefits which would accrue from acceptance of the recommendation
Providing appropriate protection to the most endangered amphibian species in England, addressing the key threats of collecting and habitat damage.

It will provide a mechanism to help safeguard future re-introductions to other localities.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of animal: elasmobranch fish

Scientific name: *Raja undulata* Lacepède, 1802

English name: undulate ray

Distribution in Great Britain
The undulate ray *Raja undulata* occurs in shallow coastal waters in southern Britain: south Wales; southwest England; English Channel (where it was formerly relatively common); and southern North Sea to East Anglia. Possibly extends as far as North Wales and Humber. There are also recent reliable records from the Antrim coast of Northern Ireland, with occurrence off adjacent coasts of Scotland consequently being likely (A. Hood, pers. comm.). Not recorded deeper than 72 m in CEFAS fisheries surveys (Ellis *et al*., 2004).

Distribution elsewhere
The undulate ray has a patchy distribution in the Eastern Atlantic, from southern Britain and south-western Ireland to the Canary Islands and the Gulf of Guinea, and a few locations in the Mediterranean Sea. It is (or was) relatively common in only a few areas within this range, including very localised populations in south-western Ireland, the English Channel and southern Portugal (ICES WGEF, 2008). Different populations exhibit different life history characteristics (Coelho and Erzini 2002, 2006; Moura *et al.* 2007; Coelho *et al*. 2002). This indicates that there is limited exchange between these populations and a low potential for recolonisation should the species become extirpated from part of its range.

Status in Britain
This species is assessed as Endangered on the IUCN Red List of Threatened Species (Coelho *et al*. 2008; Gibson *et al*., 2008) because of the declines reported from several parts of its eastern Atlantic range due to capture in unregulated fisheries. There is no separate Red List assessment for British waters, but this species has not been reported by Cefas surveys from the eastern part of its British range in recent years demonstrating a very reduced status (ICES, 2008). Its status in Britain is, therefore, similar to, or worse than, the global assessment. The Shark Trust is aware of catches of undulate ray off Pembroke, a couple off Anglesey of less certain provenance and reliable records from the Antrim coast (A. Hood, pers. comm).

The status of undulate ray stocks is uncertain, and offers reason for concern. As a result of its patchy and localised distribution, the undulate ray is sensitive to local depletion (ICES, 2008).

It is a BAP priority species.

Habitat
The preferred habitat for this species is sand and mud seabed on the continental shelf. It is most common in shallow inshore waters, which may be used for egg deposition and as nursery grounds. It is rarely reported down to about 200 m depth.

Threats

The undulate ray is threatened by fisheries. It is taken in commercial demersal fisheries (particularly trawl and trammel nets) and by anglers. It is a utilised bycatch of mixed species fisheries and targeted with other species of skate and ray. There has been a single TAC for all species of skates and rays in the North Sea since 1999, but this quota has only recently been reduced to a level that now probably restricts total landings and is not species-specific. Skate and ray fisheries are unregulated in the English Channel and Celtic Seas. A voluntary closure of Tralee Bay, Ireland, to commercial fisheries was agreed in order to protect regionally important elasmobranchs, including undulate ray and angel shark *Squatina squatina.*

Because this is a moderately large bodied (maturing at 75-84 cm TL) and long-lived species with a delayed age at maturity (8-9 years), long generation time (average reproductive age is 14-15 years), likely low fecundity, and slow population growth, it is likely to have a low intrinsic rate of increase and low resilience to depletion by fisheries (Dulvy *et al.*, 2000).

Body size is a good predictor for vulnerability to fisheries exploitation and extinction risk in skates because it is closely linked to key life history parameters. These include age at maturity and reproductive output, which directly influence population resilience and hence vulnerability to depletion by exploitation (Dulvy *et al*., 2000; Dulvy and Reynolds, 2002; Reynolds *et al*., 2001). Large-bodied skates are, therefore, intrinsically vulnerable to depletion by fisheries because of their low rate of population increase. Additionally, they are unlikely to survive in unmanaged fisheries, or in mixed species fisheries that also target smaller and more fecund species, until they are old enough to reproduce.

Although undulate ray has regularly been recorded in CEFAS beam trawl surveys, particularly in the English Channel (Ellis *et al*., 2004), it has not been observed for the past two years in the eastern English Channel and southern North Sea (ICES WGEF, 2008), probably demonstrating a decline in status there. Catch per unit effort has fallen 60-80% in Tralee Bay, south-western Ireland since the 1980s. Reported landings of undulate ray in France fell from 10-12 tonnes/annum in the mid 1990s to zero in the early 2000s.

International obligations

There are no specific obligations associated with the species. ICES advice (2008) is for no target fishing in the North Sea, English Channel and Celtic Seas (ICES 2008), given this large-bodied species' patchy distribution in inshore waters; and measures should be taken to minimise bycatch.

There is an EC TAC for skates and rays of 1,643 mt in ICES areas IIa and IV, but the undulate ray is excluded from the proposed TAC in ICES areas VI and VII, and catches of this species may not be retained on board and shall be promptly released unharmed to the extent practicable. Furthermore, fishers shall be encouraged to develop and use techniques and equipment to facilitate the rapid and safe release of the species (European Commission, 2008).

Furthermore, the *The World Summit on Sustainable Development (WSSD*), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish

stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB

No specific protection. The UK TAC for skates and rays in ICES areas IIa and IV is 1,062 mt (European Commission, 2008). Although undulate ray is not one of the five species listed for specific collection of landings data under the TAC, the UK, as a matter of policy, requires data to be collected for all species of skates and rays. Undulate ray is excluded from the proposed TAC in ICES areas VI and VII, as described above. There is a minimum landing size of 40cm for skates and rays caught in inshore waters of various parts of England and Wales under Sea Fisheries Committee bylaws.

Recommendation

Add to Schedule 5 of the WCA, for protection under sections;

9(1) killing, injuring and taking offence;

9(2) possession offence; and

9 (5) sale offences.

Justification for recommendation

Undulate ray, an inshore Eastern Atlantic endemic, is listed as Endangered on the IUCN Red List of Threatened Species (Gibson *et al*., 2008). This assessment is based on the significant declines observed in some of its discontinuous isolated populations (including on the south coast of England) and its high vulnerability to depletion by fisheries because of its life history characteristics and its inshore range. It is largely unmanaged throughout its range.

While undulate ray is not known from Scottish waters, protection elsewhere in Great Britain could facilitate colonisation of Scottish waters in the light of anticipated future higher water temperatures (S.L. Fowler, pers. comm.). Also, protection from sale in Scotland would support protection measures in England and Wales.

ICES recommended for the first time in 2008 that target fisheries for this species should not be permitted (ICES, 2008). In ICES areas VI, VII, VIII, IX and X, the European Commission-proposed TAC does not apply to undulate ray, and any catches of this species "may not be retained on board and shall be promptly released unharmed to the extent practicable" (European Commission, 2008).

Benefits which would accrue from acceptance of the recommendation

Listing as proposed under Schedule 5 of the WCA would implement ICES advice by preventing targeted fisheries for this threatened species within the coastal waters where they are most abundant. It would also increase the protection for the depleted British population, which is unlikely to recolonise from other isolated populations in the northeast Atlantic, by requiring accidentally taken specimens to be released unharmed. It could help also to stimulate an extension of the proposed conservation action at European level.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of animal: elasmobranch fish

Scientific name: *Rostroraja alba*

English name: white skate

Distribution in Great Britain
The white skate *Rostroraja alba* was formerly distributed in southern coastal and continental shelf waters of Great Britain, including the English Channel (Clark, 1922). There have been no captures of white skate in CEFAS trawl surveys between 1988 – 1997 in either the autumn or spring surveys of the Irish Sea (Dulvy *et al*. 2000) indicating that white skate is likely to be not present or at low density over much of the Irish Sea. The current distribution of the species is uncertain but it is probable that it still occurs in the southern part of its former distribution, including parts of the English Channel and Celtic Sea, and perhaps elsewhere. It is likely that individuals occur within territorial waters, and the species certainly has the potential to recolonise southern coastal waters.

Distribution elsewhere
The white skate occurs in the north-eastern Atlantic and south-west Indian Ocean. In European waters, the species has been recorded from southern Britain to the Mediterranean.

The species is thought to be threatened in the Mediterranean. The recent Medits 1998 benthic trawl survey of the Mediterranean failed to record any specimens of white skate, although this species was caught during a similar survey in 1948 (Jukic-Peladic *et al*. 2001). It is now considered rare and is believed to have undergone a significant but currently unquantifiable decline in abundance and extent (Gibson *et al*., 2008).

There is a high potential for population decline in the Bay of Biscay, on the Iberian coast, and in the Celtic Sea. The collapse of a directed long-line targeted fishery in Brittany highlights the incapacity for this species to withstand fisheries exploitation (Gibson *et al.*, 2008).

Status in Britain
The white skate may never have been common in British waters but is now considered very uncommon. It is probable that specimens use southern coastal waters from time to time. Based on anecdotal and trawl survey data, this species has undergone dramatic declines in abundance and substantial reductions in geographic range within the Northeast Atlantic (Gibson *et al*., 2008).

Habitat
This is a large ray species which can reach 2m in length, and in excess of 60kg, but usual length is 1-1.5m. It is a benthic species of sandy and detrital substrates from coastal waters to the upper slope region between about 40 to 200 m and exceptionally down to 500 m (Capapé, 1976, Stehmann and Burkel, 1984, Serena, 2005). The larger specimens tend to live in deeper water.

The white skate feeds on all kinds of bottom dwelling animals (Stehmann and Burkel, 1984), especially fish, crustaceans and cephalopods. It produces egg capsules.

Threats
White skate was once taken in directed fisheries, until stocks collapsed, or as utilised bycatch in multi-species fisheries. It is now threatened as a result of bycatch in multispecies trawl fisheries which operate on much of the continental shelf and slope, coinciding with this species habitat (Gibson et al., 2008). The species is highly susceptible to trawling activities, by virtue of its heavily 'K-selected' life history characteristics.

Body size is known to be a good predictor of vulnerability to exploitation and extinction risk because it is closely linked to key life history parameters, such as age at maturity and reproductive output, which directly determine the population dynamics, demography, resilience and vulnerability to exploitation of species (Charnov 1993; Jennings *et al*. 1998; Dulvy *et al*. 1999; Dulvy & Reynolds 2002; Reynolds *et al*. 2001). The large size of white skates at birth, slow growth, late maturity and low fecundity of the species means that, under current fishing pressures, there is a high probability of capture before breeding.

Little is known of the life history of the white skate, but it is likely that they attain maturity at between 8-10 years of age and lay approximately 50 large eggs per year. Survival to the age of maturity appears to be the critical life stage determining population growth rate and vulnerability, and is likely to be low for this species. Indeed, very few of these large young survive long enough to reach maturity and breed, which ultimately leads to declining populations (Dulvy *et al*., 2000; Dulvy and Reynolds, 2002; Walker and Hislop, 1998). The species would benefit from strict legal protection because it is large, robust, and easily recognisable, lacking internal gas bladders, and may, therefore, be expected to survive release from fishing gear relatively well.

International obligations
There is a TAC for skates and rays in ICES areas II and IV, which includes white skate. As bycatch, these species shall not comprise more than 25% by live weight of the catch retained on board. White skate is excluded from the proposed TAC in ICES areas VI and VII, and catches of this species may not be retained on board and shall be promptly released unharmed to the extent practicable. Furthermore, fishers shall be encouraged to develop and use techniques and equipment to facilitate the rapid and safe release of the species (European Commission, 2008).

The species is listed on Annex III of the Barcelona Convention for the Protection of the Mediterranean Sea and Annex III of the Bern Convention on the Conservation of European Wildlife and Natural Habitats; and on the OSPAR List of threatened and/or declining species and habitats warranting conservation action.

Furthermore, the *The World Summit on Sustainable Development (WSSD*), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB
There is no specific protection in place for white skate. There is a minimum landing size of 40 cm for skates and rays caught in the inshore waters of various parts of England and Wales, as implemented by Sea Fishery Committee bylaws. However, see comments above in relation to the EC proposal for exclusion of white skate from TAC for skates and rays in ICES zones VI and VII.

Recommendation
Add to Schedule 5 of the WCA, for protection under sections:

9(1) killing, injuring and taking offence;
9(2) possession offence; and
9 (5) sale offences.

Justification for recommendation
The white skate is assessed as Critically Endangered in the NE Atlantic (Gibson *et al*., 2008), with a current global assessment of Endangered elsewhere throughout its global range (Dulvy *et al*, 2006).

The white skate was selected as a priority species for conservation action in the UK during a review in 2007 of Biodiversity Action Plan (BAP) priorities.

Benefits which would accrue from acceptance of the recommendation
Listing under Schedule 5 of the WCA would not only prevent targeted fisheries for white skate, but could also result in the release, unharmed, of specimens taken accidentally. Protection of the white skate provided by inclusion in Schedule 5 of the WCA would assist recovery of this species, and could help also to support proposed fisheries conservation action at the European level.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of animal: elasmobranch fish

Scientific name: *Squalus acanthias* Linnaeus 1758

English name: spiny dogfish, spurdog, piked dogfish

Distribution in Great Britain
The spiny dogfish *Squalus acanthias* occurs throughout British territorial waters, usually deeper than 10 metres. This migratory species moves around the British coast during its complex seasonal migrations (Hammond and Ellis, 2005) and into adjacent waters (e.g. from Scotland to Norway during the winter months). All age classes occur, including aggregations of pregnant females (which are targeted by commercial fisheries) and newborn animals.

Distribution elsewhere
The spiny dogfish is wide-ranging in boreal and temperate waters (7-15^{o}C) worldwide. It is primarily a coastal and shelf species, found from the intertidal zone to depths of 900 metres, but mostly 10–200 m. Usually coastal and demersal, this species migrates north and south, as well as nearshore and offshore (Compagno, 1984).

Status in Britain
The spiny dogfish is assessed by IUCN as Vulnerable globally and Critically Endangered in the Northeast Atlantic (Fordham *et al*., 2006), where fishery stock assessments have identified a decline in total biomass of ~95% as a result of unregulated target fisheries (e.g. Heessen *et al*., 2003; Hammond and Ellis, 2005; ICES WGEF, 2008). Catches of spiny dogfish are variable because of its aggregating habit, which enables large catches to be made when schools are located. However, the occurrence of this species in catches, the frequency of large catches, and catch rates are all declining. The Shark Trust has knowledge of documented records of repeated catches (over years) of pregnant females in the Severn Estuary (A. Hood, pers. comm.). The status of the species within the territorial waters of Great Britain can be described as a breeding species whose status has been greatly reduced due to unregulated fishing and is now Endangered.

Habitat
Demersal (swimming near the seabed) from the intertidal to the shelf edge in temperate waters, where they feed on a variety of small fish and invertebrates.

Threats
Spiny dogfish is a highly migratory and aggregating species with high market value and demand in Europe. It was, until very recently, the most important commercially-fished elasmobranch species in the OSPAR Area. Although the majority of large-scale target fisheries here have now collapsed, this species' aggregating habit makes it highly vulnerable to localised, seasonal fisheries (Fowler, 2007).

The principal threat to spiny dogfish has been over-exploitation in commercial fisheries, and intense fishing pressure on the species continues and is poorly restricted in the Northeast Atlantic region (Gibson *et al*., 2008). This species has valuable meat and has been targeted around the British Isles for well over 100 years. The commercial fishery has recently been restricted to bycatch only. At its peak, during the 1960s and 1970s, some 40,000 to 60,000 t

were taken annually in the northeast Atlantic, with British vessels dominating the fishery (much of the catch was exported). Landings had fallen to less than 10,000 t by the beginning of the 2000s. The target fishery has now been closed. The bycatch quota in 2008 is less than 3,000 t for the entire northeast Atlantic. It is also taken by anglers although frequently released.

This species is intrinsically vulnerable to over-exploitation by fisheries because of its life history characteristics (it has very low biological productivity) and its aggregating behaviour. Fifty percent of females are mature at a length of 74–83 cm, at about 15 years old. They give birth to litters of 1–15 young, 20–30 cm long (size of young increases with the size of the mother), after a gestation of 22–24 months (Hammond and Ellis, 2005). Maximum total length observed in markets is 124 cm, but they will achieve greater lengths than this. Growth is extremely slow and old animals are very difficult to age. Longevity is likely to at least 40 years. The estimated annual rate of population increase for spiny dogfish fished at a theoretical maximum sustainable level of harvest is about 1–2% (Fordham *et al*. 2005; Au *et al*., 2008). Furthermore, aggregations of large females, usually pregnant, are preferentially targeted in fisheries because these animals are in greatest demand in European markets. As noted above, northeast Atlantic spiny dogfish stocks have been depleted to very low levels as a result. Fisheries stock assessments report a decline in total biomass of >95% from baseline in the Northeast Atlantic (Gibson *et al*., 2008).

International obligations

There are no international instruments for the conservation of spiny dogfish; it is not listed on any international wildlife or fisheries agreement and has no international legal status.

Total Allowable Catches in EU waters, first established in 1998, have consistently exceeded recent landings and do not appear, therefore, to have had any constraint upon current unsustainable levels of fishing pressure. ICES advice (ICES, 2008) recommends closing the spring dogfish fishery in the northeast Atlantic, and the European Commission is now proposing a zero TAC for the species in EC waters of ICES areas IIa, III and IV, and in both EC and international waters of ICES areas I, V, VI, VII, VIII, XII and XIV (European Commission, 2008). Under these proposals, "catches of spiny dogfish may not be retained on board and shall be promptly released unharmed to the extent practicable. Fishers shall be encouraged to develop and use techniques and equipment to facilitate the rapid and safe release of the species" (European Commission, 2008).

Furthermore, the *The World Summit on Sustainable Development (WSSD*), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB

None specifically. However, see the earlier section in relation to proposed zero TAC for the United Kingdom (European Commission, 2008).

Recommendation

Add to Schedule 5 of the WCA, for protection under sections;

9(1) killing, injuring and taking offence;
9(2) possession offence; and
9 (5) sale offences.

Justification for recommendation

Spiny dogfish is listed as Critically Endangered in the Northeast Atlantic on the IUCN Red List of Threatened Species, taking into account past reductions in population size of 95% (Fordham *et al.*, 2006b). ICES advice records that the stock is depleted and may be in danger of collapse, and recommends that targeted fisheries should not be permitted to continue, with bycatch in mixed fisheries reduced to the lowest possible level (ICES, 2008).

There is evidence within British territorial waters of nursery grounds and aggregations of pregnant females, none of which are protected from bycatch. Simulation modelling has shown that there are strong potential benefits to the stock by protecting mature females (ICES, 2008)

Although the target fishery for spiny dogfish has now been closed, bycatch is still permitted under the current quota system. However, the ICES recommendation of a zero TAC for 2009 has been adopted as a proposal by the European Commission (see earlier sections; European Commission, 2008).

Benefits which would accrue from acceptance of the recommendation

Listing as proposed under Schedule 5 of the WCA would implement ICES advice by preventing targeted fisheries and minimising bycatch for this threatened species within the coastal waters that include some areas of critical habitat for the threatened Northeast Atlantic spiny dogfish stock.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: elasmobranch fish

Scientific name: *Squatina squatina*

English name: angel shark

Distribution in Great Britain
Formerly common, the angel shark *Squatina squatina* is now extremely rare in UK waters (Ellis 2001). CEFAS caught one small specimen in the Irish Sea a few years ago (J. Ellis pers. comm.) and one specimen taken there by a fisherman, also several years ago, was transferred to the Anglesey Sea Zoo as a rarity. Three other specimens are held in captivity in aquaria elsewhere. Very occasional records are made in other regions.

Distribution elsewhere
The distribution of the angel shark extends from the UK and southern North Sea as far south as coastal waters of North Africa and the Canary Islands. However, where it remains it is now
extremely uncommon, with the possible exception of some areas of the southern Mediterranean and Canary Islands, where its status should be confirmed and conservation measures introduced as a matter of urgency (Gibson *et al*., 2008).

Status in Britain
The angel shark was formerly common in British waters, and its decline is documented by Rogers and Ellis (2000) and Ellis (2001). It is considered to be Critically Endangered in the Northeast Atlantic and adjacent areas (Morey et al., 2006). It has been declared extinct in the North Sea and has been extirpated from large areas of its range (ICES WGEF, 2007; Morey et al., 2006).

Habitat
The angel shark is a temperate-water bottom-dweller of the European and North African continental shelves, occurring on or near the bottom from close inshore (5 m) in the intertidal or subtidal zone to at least 150 m depth. This shark prefers mud or sandy bottom, where it lies buried with little more than its eyes protruding. It may penetrate estuaries and brackish water. Larger individuals occur in deeper water.

Angel sharks feed primarily on bony fishes, especially flatfishes (Ellis *et al*., 1996) but also other demersal fishes and skates, crustaceans and molluscs.

Threats
Intense fishing pressure on angel sharks continues and is poorly restricted in the Northeast Atlantic region (Gibson et al., 2008). They are highly susceptible to bycatch in trawls as they lie on the bottom, and benthic trawl effort has increased in both intensity and efficiency on the shelf and slope area of the Northeast Atlantic and Mediterranean over the last 50 years. The species is also bycaught in trammel nets and bottom longlines throughout its range. Human disturbance by habitat degradation and tourism are also possible threats to its preferred sandy nearshore habitat.

They were once taken in directed fisheries, until stocks collapsed, or were utilised bycatch in multi-species fisheries. Angel sharks are now threatened as a result of bycatch in benthic fisheries. This depletion by fisheries is the result of the heavily 'K-selected' life history characteristics of this species. It is slow growing, matures at a large size and produces only a few large young each year. Under current fishing pressures, very few of these large young survive long enough to reach maturity and breed, which ultimately leads to declining populations. A low rate of exchange between angel shark populations may makes them especially prone to local depletion and means that recolonisation will be extremely low.

The angel shark can reach a maximum length of at least 183 cm and perhaps as much as 244 cm (although not a skate, it has a similar large, flat-bodied shape and bottom-dwelling character and is, therefore, similarly vulnerable to capture in fisheries, particularly bottom trawls). Female angel sharks mature at 126-167 cm long and give birth to 9-20 live young (the number of young in a litter is in proportion to the age and size of the mother). Survival to the age of maturity appears to be the critical life stage determining population growth rate and vulnerability, and is low in this species.

Angel sharks would benefit from strict legal protection because they are large, robust, easily recognisable animals, lacking internal gas bladders, and may therefore be expected to survive release from fishing gear relatively well. It is unlikely that the angel shark will recover in the absence of legal protection.

International obligations
The angel shark is listed on Annex III of the Barcelona Convention, and was recently (2008) listed on the OSPAR List of threatened and/or declining species and habitats where it occurs in the Northeast Atlantic.

Furthermore, the *The World Summit on Sustainable Development (WSSD*), which took place in Johannesburg from 26 August to 4 September 2002, generated an overarching commitment to develop sustainable fisheries. The summit agreed a number of fisheries commitments through actions at the domestic, EU and international level, a key objective is to maintain or restore stocks to levels that can produce the maximum sustainable yield: for depleted stocks on an urgent basis and where possible not later than 2015. The focus for the UK will be to work at the EU level to seek to agree policies that will deliver long term sustainability of fish stocks, including policies to reduce the impact of fishing on the marine environment (Defra, 2006).

Existing legal protection in GB
Currently added to Schedule 5 of the WCA in England and Wales only, up to 6nm and for Section 9(1) only.

Recommendation
Additional protection in England and Wales to include Schedule 5 of the WCA Sections 9(2) and 9(5).

Amendment of protection in England and Wales to extend Section 9(1) protection to 12nm.

Addition to Schedule 5 of the WCA, Sections 9(1) in Scotland, to 12nm; plus addition of Sections 9(2) and 9(5) in Scotland.

Justification for recommendation
The world population of the angel shark was listed as Vulnerable in 2000, but the latest IUCN Red Listing is Critically Endangered (Morey et al., 2006).

The angel shark was formerly a common and important demersal predator over large areas of its coastal and outer continental shelf sediment habitat in the Northeast Atlantic, Mediterranean and Black Seas. Most of this region is now subject to intense demersal fisheries, and the species is highly vulnerable from birth onwards to bycatch in the benthic trawls, set nets and bottom longlines operating through most of its range and habitat. As a result of its limiting life history characteristics and bycatch in fisheries with steadily increasing effort and capacity, its abundance has declined dramatically during the past 50 years to the point where it has been declared extinct in the North Sea and has apparently been extirpated from large areas of the northern Mediterranean (Morey et al., 2006).

ICES advice is that there should be no fisheries for angel shark, and that the species should receive the highest possible protection (ICES, 2008). It should not be landed and, as an inshore species, individuals are likely to have a reasonable discard survival (although this is dependent upon the capture method).

Benefits which would accrue from acceptance of the recommendation
Listing under Schedule 5 of the WCA would not only prevent targeted fisheries for this threatened species, but also result in the release, unharmed, of listed elasmobranchs caught as bycatch.

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Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Zygaena lonicerae* (Scheven) subspecies *jocelynae* Tremewan

English name: narrow-bordered five-spot burnet (or Talisker burnet)

Distribution in Great Britain
The narrow-bordered five-spot (or Talisker) burnet *Zygaena lonicerae* subspecies *jocelynae* is known from only four colonies on the Isle of Skye, Scotland. It was described as a new subspecies in 1962, but has not been found elsewhere in Scotland since.

Distribution elsewhere
This subspecies is not known from outside of the Isle of Skye, Scotland. It is represented by different subspecies elsewhere in the Palaearctic region.

Status in Britain
Surveying the species is difficult and counts are made infrequently. An SNH-funded survey undertaken in 2006 aimed to determine the current population size and distribution of the moths, for use as a future baseline. A total of 23 colonies were surveyed at four sites and almost 400 moths were recorded (SNH, 2006).

The Talisker burnet is not included in the insect Red Data Book (Shirt, 1987), but was considered as Red Data Book category 3, Rare in Bulletin 10 of the National Moth Conservation Project (Waring, 1999). The other British subspecies of the narrow-bordered five-spot burnet (*Zygaena lonicerae latomarginata*) is widely distributed and locally common in England and the east of South Wales; hence, unlike the Talisker burnet, it is not threatened and is not proposed for legal protection.

Habitat
Ungrazed grassland on steep cliffs by the sea, maintained in suitable ecological conditions by regular landslips and erosion on at least one site. Larvae feed on meadow-vetchling *Lathyrus pratensis* and adults fly in June-July.

Threats
Evidence has been obtained of commercial collecting of larvae, for sale as live stock, at such a large scale as to be a significant threat to this subspecies. Advertising in the *Entomological Livestock Group Newsletter*, *List 470* (published on 15 August 1999) offered larvae for sale at £4 per fifteen (http://www.guardian.co.uk/uk/2002/apr/30/highereducation.biologicalscience). Previously, there had been no indication of damaging collecting or trade in British burnet moths. Commercial collection of larvae is of major concern due to its potentially damaging effects on smaller populations of threatened burnet moths (JNCC, 2003).

International obligations
None.

Existing legal protection in GB

None.

The Talisker burnet is on the Scottish Biodiversity List, meaning that it is considered to be of principal importance for the purpose of biodiversity conservation in Scotland (http://www.biodiversityscotland.gov.uk/pageType2.php?id=35&type=2&navID=92).

Recommendation
Full protection, by addition to Schedule 5 of the WCA, in Scotland only; plus Section 9(5), sale offences, in England and Wales.

Justification for recommendation
The SSSI management statement notes that there should be no reduction in the populations of Talisker (and transparent) burnet moths (Wills, unpublished).

The small number of colonies, plus recent evidence of commercial collecting of this subspecies, indicates that the survival prospects of this subspecies will be improved by full legal protection in Scotland, supported by protection from sale in England and Wales.

Benefits which would accrue from acceptance of the recommendation
Collection of any life stage would only be allowed under licence, thus commercial collecting that threatens the small number of colonies of the Talisker burnet would cease, allowing the populations to remain at the carrying capacity of their sites. The related New Forest burnet (*Zygaena viciae argyllensis*), now only known from one site in western Scotland, is already a fully protected species.

References
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TREMEWAN, W.G., 1985. Zygaenidae *in*: The Moths and Butterflies of Great Britain and Ireland 2. pp. 112-113. Harley Books, Colchester.

WARING, P., 1999. The National Moth Conservation Project, Bulletin 10. The Joint Nature Conservation Committee / Butterfly Conservation.

WILLS, R. (unpublished). SSSI Management Statement: Talisker SSSI. Scottish Natural Heritage, Ref. 1515.

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Zygaena loti* (Denis & Schiffermüller) subspecies *scotica* Rowland-Brown

English name: slender Scotch burnet

Distribution in Great Britain
The slender Scotch burnet *Zygaena loti* subspecies *scotica* is known from only six or seven sites with inter-connected colonies, on the islands of Mull and Ulva, Scotland. It was described as a new subspecies in 1919, but has not been found elsewhere in Scotland. The species does not occur elsewhere in Britain.

The main colonies on Mull may function as one or two metapopulations, depending on the periodic creation of small patches of suitable habitat by grazing and natural erosion. Nonetheless, colonisation is limited because the adults are largely sedentary, and few individuals stray beyond the immediate boundaries of colonies.
(http://www.snh.org.uk/scottish/species/invertebrates/Mothsslender.asp).

Distribution elsewhere
This subspecies is not known from outside of the islands of Mull and Ulva, Scotland. It is represented by different subspecies elsewhere in the Palaearctic region.

Status in Britain
The slender Scotch burnet is listed as Red Data Book Category 3, Rare in the insect Red Data Book (Shirt, 1987).

It has shown a marked decline in the UK, where it is restricted to Scotland, occurring only in Argyll at eight sites within three 10-km squares, on the islands of Mull and Ulva.

Habitat
The colonies of the slender Scotch burnet are on steep south - or south-west - facing slopes, usually below coastal cliffs. The slopes have thin base-rich soils and short, early successional vegetation that is maintained by erosion and grazing. The larvae bask near the foodplant, common bird's-foot trefoil *Lotus corniculatus*, in areas open to the sun, for example on stones, bare soil or moss cushions. The adults fly in June-July. Larvae of the moth are absent from tall grass swards even though the foodplant may be present. Where grazing has been relaxed, bracken invasion has reduced the area available to some colonies.

Threats
There have been reports of commercial collecting of larvae, on a sufficient scale as to be a significant threat to this subspecies. In April 2002, two individuals were found to be in possession of slender Scotch burnet moth larvae, and were known to have been on Mull (http://www.guardian.co.uk/uk/2002/apr/30/highereducation.biologicalscience). The homes of the two were raided and the case was heard in an English court, but the defendants were found not guilty of any offence. Previously, there had been no indication of damaging collecting or trade in British burnet moths.

International obligations
None.

Existing legal protection in GB
None.

Slender Scotch burnet has been identified as a UKBAP Priority (sub) Species (http://www.ukbap.org.uk/UKPlans.aspx?ID=640#2), and is included on the Scottish Biodiversity List (http://www.snh.org.uk/speciesactionframework/saf-slender.asp).

Recommendation
Full protection, by addition to Schedule 5 of the WCA, in Scotland only; plus Section 9(5), sale offences, in England and Wales.

Justification for recommendation
The small number of colonies, plus recent evidence of commercial collecting of this subspecies, indicates that the survival prospects of this subspecies will be improved by full legal protection in Scotland, supported by protection from sale in England and Wales.

Benefits which would accrue from acceptance of the recommendation
Collection of any life stage would only be allowed under licence, thus commercial collecting that threatens the small number of colonies of the slender Scotch burnet would cease, allowing the populations to remain at the carrying capacity of their sites. The related New Forest burnet (*Zygaena viciae argyllensis*), now only known from one site in western Scotland, is already a fully protected species.

References
SHIRT, D.B., (ed.), 1987. *British Red Data Books: 2. Insects*. Nature Conservancy Council, Peterborough.

TREMEWAN, W.G., 1985. Zygaenidae *in*: The Moths and Butterflies of Great Britain and Ireland 2. p. 106. Harley Books, Colchester.

Appendix 4 Data sheets for the species proposed for addition, or increased protection, to Schedule 8 of the Wildlife and Countryside Act, 1981 under the Fifth Quinquennial Review

Calicium corynellum	rock nail
Lobaria pulmonaria	tree lungwort

Recommendation for amendment to Schedule 8 of the Wildlife and Countryside Act, 1981

Type of plant: lichenised fungus

Scientific name: *Calicium corynellum* (Ach.) Ach.

English name: rock nail

Distribution in Great Britain
In Britain, rock nail *Calicium corynellum* has a northern distribution restricted to the millstone grit and limestone areas of south Northumberland and Midlothian. At present it is known only from artificial habitats in churchyards, where it has been recorded from four sites (3 in northern England, 1 in southern Scotland), and survives in three of these.

Distribution elsewhere
Rock nail is widespread but rare throughout temperate and hemiboreal parts of Western Europe, from Fennoscandia to Italy, and in western North America. It is not known from Asia, Australasia or South America, although suitable habitats would seem to be available. This species is easily overlooked and may be under-recorded. Most of the European records are from Fennoscandia, where it is now rare and thought to be declining. Most of the known sites are in central and northern Sweden and in southern Finland; however some of these records are from the 19th century and have not been relocated. The species has also been recorded from temperate areas of France, Germany, Moravia, Portugal, Tenerife, Italy (including Sardinia) and Turkey.

Status in Britain
It is Critically Endangered in Great Britain due to population decline, very restricted distribution and small overall population level (Woods & Coppins, 2003). It is a Priority Species in the UK Biodiversity Action Plan.

Habitat
Rock nail is saxicolous, growing on siliceous rocks. No 'natural' habitats are known within Britain, but occur within Europe. All British sites are in the artificial situation of churchyards. The first recorded population was on the sheltered, north-facing wall of an ancient church tower, where it grew over the sandstone blocks on a part of the wall that was just above the splash zone from an overflowing gutter. This site is close to the River Tyne and often misty. When thriving, this colony is even reported to have spread over the mortar between blocks. The wall is now much drier and the colony has been lost. The other three sites all have populations on large sandstone gravestones that are slightly leaning. The lichen grows on the underside and in the carving, where the surface is protected from the impact of direct rainfall and is less subject to physical weathering and surface flaking.

Threats
Rock nail needs a humid and slightly shaded environment, and so is generally found under trees. Any significant increase or reduction in the shade provided by these trees would lead to competition from other species, and affect both its survival and, by changing the local invertebrate populations, its dispersal. The pinhead apothecia are easily broken off by contact and the thallus itself is powdery and loose, so that any handling or contact with machinery is likely to cause severe damage. This is an immediate threat as many church

authorities are now proposing to stabilize and repair any potentially dangerous gravestones. Even the handling or use of machinery to check their stability could be extremely damaging. In this area, headstones of the 19th and early 20th centuries generally have a broad plinth at the base which ensures that they can tilt by several degrees before the centre of gravity is no longer over the base and the stone becomes unstable. The process of setting them in the ground has often caused them to lean slightly since they were new, and such stones should only be a cause for concern if the angle of lean is extreme or increasing, or if the ground is being undermined by animals. Monuments constructed in two or more parts are vulnerable to dangerous deterioration and should be examined more carefully, but this does not apply to any of the known rock nail sites. Any action taken to relocate, reset or lay gravestones flat will change the microhabitat and be extremely damaging to the lichens on the stones, and can be expected to result in the loss of this species. Contamination by fertilisers, herbicides or pesticides used on the surrounding vegetation, or by chemicals used to clean gravestones to reveal the inscription, can be very damaging to lichens. The restriction of this species to undisturbed sites where chemicals are not used in site management suggests that it may be particularly sensitive. Known populations of rock nail are small and easily damaged. Collection should only be permitted when needed to verify identification, and then kept to a minimum. At present this is enforced by encouraging visiting lichenologists to be accompanied by the project officer when visiting the sites, but as the locations become better known this could become a problem.

International obligations
None.

Existing legal protection in GB
None.

Recommendation
Full protection by adding to Schedule 8 of the WCA. Although the species has not been recorded from Wales, the possibility of its occurrence there warrants listing throughout Great Britain.

Justification for recommendation
The species is severely threatened in Great Britain, and many of the threats are due to direct human pressure.

Benefits which would accrue from acceptance of the recommendation
Inclusion of this species on Schedule 8 would help prevent losses due to direct human pressures.

References
SIMKIN, J. (2003). *Calicium corynellum* (Ach.) Ach. Plantlife Species Dossier. http://www.plantlife.org.uk/uk/assets/saving-species/saving-species-dossier/Calicium_corynellum_dossier.pdf

WOODS, R.G. & COPPINS, B.J., 2003. *A Conservation Evaluation of British Lichens*. British Lichen Society.

Recommendation for amendment to Schedule 8 of the Wildlife and Countryside Act, 1981

Type of plant: lichenised fungus

Scientific name: *Lobaria pulmonaria* (L.) Hoffm.

English name: tree lungwort

Distribution in Great Britain
There have been records of tree lungwort *Lobaria pulmonaria* from 548 10-km squares within the UK since 1960, although some of these locations are known to be no longer extant. It is an oceanic species, and therefore the distribution is concentrated towards the west. It is particularly frequent in Scotland, from which records from 365 10-km squares are known since 1960 (Rose & Coppins 1998). The populations in SE England, Wales, the Lake District, southern and eastern Scotland are often very restricted, sometimes limited to one or two trees, and are not vigorous or indeed considered as viable in the long-term. It is only really vigorous or frequent, in Argyll, Westerness and Wester Ross (the western Highlands north of the Central Valley).

Distribution elsewhere
Tree lungwort is widely distributed in the northern hemisphere, but has suffered declines. It appears on the Red Lists of many European countries. Zoller *et al.* (1999) states: "The foliose epiphytic lichen *Lobaria pulmonaria* has suffered a significant decline in European lowlands during the last decades and therefore is considered as Endangered throughout Europe." It is now largely restricted to the Atlantic coastal zone of Europe.

Status in Britain
In Britain, the wide distribution means that it is currently classified as Least Concern, although declines in England have not been quantified (Woods & Coppins, 2003). It is noted that Britain has International Responsibility for the species, defined as 'it is likely that further research will demonstrate that Britain supports more than 10% of the European and/or world's population'.

Habitat
Tree lungwort is a large, leafy-lobed and easily recognisable lichen that grows on deciduous trees and rocks in western Britain, being locally frequent in western Scotland. The presence at any site of tree lungwort immediately suggests that there is a high potential lichen interest, therefore it is an important indicator species of habitat quality. It is the main species of the *Lobarion pulmonariae* community (generally referred to as the *Lobarion*), which is a species-rich assemblage of lichens and bryophytes. The *Lobarion* today is strongly associated with 'old woodlands' by virtue of the long regeneration times and inefficient dispersal methods of many of the constituent species (including tree lungwort), and so can survive only in habitats where there are low levels of disturbance and long periods of ecological continuity.

Threats
The species is very sensitive to air pollution. Intensive woodland management is also detrimental, since the low recruitment and colonisation rate requires continuity of growth. Habitat loss has also caused decline. Recently a new threat of commercial collection has emerged, with collectors wishing to harvest the species for use in Chinese Medicine. The recipe apparently requires 100 kg dry weight, which is an extremely substantial quantity.

This would equate to an enormous amount of live plant and it would probably not be possible to collect this quantity in many Welsh sites (where the species often occurs as only a few individual plants), whilst it would severely damage the more 'luxuriant' Scottish populations.

Furthermore, the *Lobarion* community contains a high diversity of lichens and bryophytes, many of which have their stronghold in Scottish west coast woodlands. There is great potential to damage these communities through harvesting of tree lungwort.

International obligations
None specifically. The UK resource of tree lungwort is important internationally because the species is declining and/or rare in other countries in Europe (see comment above, *Status in Britain* section).

Existing legal protection in GB
None.

Recommendation
It is recommended that tree lungwort should be added to Schedule 8 of the WCA, with respect to Section 13(2) only.

Justification for recommendation
It would be possible to recommend the inclusion in Schedule 8 with respect to both sections. However, this is considered disproportionate given that it is not currently considered threatened within Great Britain. However, there is a substantial risk of it becoming threatened within a short time period if commercial collection is permitted without any checks. Scheduling the species is necessary to protect an internationally important population from direct human pressure from collection.

Benefits which would accrue from acceptance of the recommendation
The ability to license commercial collection of the species would be of great conservation benefit, as it would permit collection following sustainability guidelines and prevent damage to important populations.

References
ROSE, F. & COPPINS, B.J., 1998. 857 *Lobaria pulmonaria* (L.) Hoffm. In: *Lichen Atlas of the British Isles* (ed. M.R.D. Seaward). British Lichen Society, London.

WOODS, R.G. & COPPINS, B.J., 2003. *A Conservation Evaluation of British Lichens*. British Lichen Society.

ZOLLER, S., LUTZONI, F. & SCHEIDEGGER, C., 1999. Genetic variation within and among populations of the threatened lichen *Lobaria pulmonaria* in Switzerland and implications for its conservation. *Molecular Ecology* **8**, 2049–2059.

Appendix 5 Data sheets for the species proposed for removal, or reduced protection, from Schedule 5 or Schedule 8 of the Wildlife and Countryside Act, 1981 under the Fifth Quinquennial Review

Schedule 5 (animals)

Alkmaria romijni	tentacled lagoon worm
Gammarus insensibilis	lagoon sand shrimp
Paludinella littorina	lagoon snail
Thetidea smaragdaria	Essex emerald moth
Thyasira gouldi	northern hatchet shell

Schedule 8 (plants)

Bryum mammillatum	dune thread-moss
Bryum neodamense	long-leaved thread-moss
Dactylorhiza lapponica	Lapland marsh-orchid
Epipactis youngiana	Young's helleborine
Lecanactis hemisphaerica	churchyard lecanactis

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Alkmaria romijni*

English name: tentacled lagoon worm

Distribution in Great Britain
The tentacled lagoon worm *Alkmaria romijni* occurs from the southern shores of the North Sea as far north as the Humber, along the English Channel and round into Pembrokeshire. The species has been recorded from 27 sites around the UK. The majority of these are estuaries and the remainder lagoons.

Distribution elsewhere
South from Baltic and North Sea coasts to Morocco.

Status in Britain
Nationally Scarce. It is also a UKBAP priority species.

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. The habitat is also under threat from pollution, drainage and other activities.

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9.

Recommendation
Refine from full protection to Sections 9(4)(a) and (b) only.

Justification for recommendation
Although scarce, the species is not considered at risk from direct exploitation, persecution or collecting. 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. While there is no evidence of risk of decline or extinction from commercial collection, 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 Sections 9(4)(a) and (b).

Benefits which would accrue from acceptance of the recommendation
Removing full protection from this species would facilitate very limited collection for recording and research purposes, and better recording could assist in the conservation of the

species, both at sites where it has already been recorded and, potentially, at new localities. Retention of this species on Schedule 5 in relation to Section 9(4)(a) and (b) will ensure that the habitat of the species remains protected.

Reference

WHITE, N., 2002. *Alkmaria romijni*. Tentacled lagoon worm. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme* [on-line]. Plymouth: Marine Biological Association of the United Kingdom.
http://www.marlin.ac.uk/species/Alkmariaromijni.htm

Recommendation for amendment to Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Gammarus insensibilis*

English name: lagoon sand shrimp

Distribution in Great Britain
The lagoon sand shrimp *Gammarus insensibilis* is 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 (recorded 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) and 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.

Distribution elsewhere
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 15 m 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.

Status in Britain
The lagoon sand shrimp is classified as Red Data Book Category 3, Rare (Bratton, 1991). The species is regarded as Nationally Scarce in a recent review of benthic marine species. It is also a UK BAP priority species.

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 obligations

None.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9.

Recommendation
Refine from full protection to Section 9(4)(a) only.

Justification for recommendation
Although scarce, the species is now known to be more widespread than frequently thought. It is not at threat from exploitation, persecution or collecting. 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, while there is no evidence of risk of decline or extinction from commercial collection of the 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 which would accrue from acceptance of the recommendation
A reduced level of protection will also encourage more recording and study of the species, thereby furthering its conservation, both at the known sites and, potentially, at other localities. Retention of this species on Schedule 5 with protection through Section 9(4)(a) will ensure that the habitat of this species remains protected.

References
BRATTON, J.H. (ed.), 1991. *British Red Data Books: 3. Invertebrates other than insects*. The Joint Nature Conservation Committee, Peterborough.

Gammarus insensibilis species statement
http://www.ukbap.org.uk/UKPlans.aspx?ID=321

Recommendation for removal from Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Paludinella littorina*

English name: lagoon snail

Distribution in Great Britain
Surveys over the last 15 years have revealed that the lagoon snail *Paludinella littorina* is much commoner in the British Isles than previously believed. It is currently known living at 40 sites ranging from the Isles of Scilly, eastwards along the Channel coast of England as far as the eastern end of the Isle of Wight. It extends as far North as the Bristol Channel with sites on the North coast of Devon and the coast of Pembrokeshire. The West coast of the Lizard peninsula, Cornwall and the Isles of Scilly support significant numbers of lagoon snail populations.

Distribution elsewhere
Primarily a Mediterranean species (absent from the Black Sea) which extends along eastern Atlantic coasts from Madeira, North to a limit on the South coast of England.

Status in Britain
The lagoon snail is classified as Red Data Book Category 3, Rare (Bratton, 1991).

Habitat
The two principal habitats in which this species has been found are caves, and shores with a supra-littoral zone comprising large stones and boulders with stable interstitial gravels beneath.

Threats
N/A

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9.

Recommendation
Removal from Schedule 5.

Justification for recommendation
Surveys over the last 15 years have shown that this species is much more common than previously thought, and is not likely to become endangered if species protection is removed. Retention on Schedule 5 is considered unnecessary and could lead to enforcement action being taken without conservation benefit.

Benefits which would accrue from acceptance of the recommendation
Removal of this species from Schedule 5 would allow better focus of legal enforcement measures where there will be real benefits to other species in greater need of the protection.

Reference
BRATTON, J. H., (ed.), 1991. *British Red Data Books*: 3. *Invertebrates other than insects.* The Joint Nature Conservation Committee, Peterborough.

KILLEEN, I.J. & LIGHT, J.M., 2002. The status, distribution and ecology of *Paludinella littorina* (Delle Chiaje, 1828) (Gastropoda: Assimineidae) in the British Isles. *Journal of Conchology*, **37** (5), 551.

LIGHT, J.M. & KILLEEN, I.J., 2001. Survey to elucidate the distribution of the 'lagoon snail' *Paludinella littorina* in England. *English Nature Research Report*, no. 436, 46 pp.

Recommendation for removal from Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Thetidia smaragdaria maritima*

English name: Essex emerald moth

Distribution in Great Britain
The British population was recognised as a distinct sub-species, Essex emerald moth *Thetidia smaragdaria maritima*, in 1935. This subspecies has been recorded only from the coastlines of Essex and Kent, where it is now believed extinct. It was formerly recorded from at least 10 ten km squares. The last populations died out in 1985 and 1990/91 in Essex and Kent respectively.

Distribution elsewhere
Thetidia smaragdaria occurs in Japan, Amur and northern China through Siberia and central Asia to Western Europe and from southern Scandinavia to the Mediterranean. It has a highly localised distribution in continental Europe.

Status in Britain
Extinct. It was a UKBAP Priority species but was delisted in the recent review due to global extinction.

Habitat
This species occurred on coastal salt marshes.

Threats
N/A

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9.

Recommendation
Removal from Schedule 5.

Justification for recommendation
This moth has not been seen in the wild since 1991 despite specific targeted searches of all known sites. Larval biology is well known, hence it is not likely to be overlooked. No captive British stock remains, the native subspecies is now globally extinct and because the species is very localised on the continent natural re-establishment in highly unlikely.

Benefits which would accrue from acceptance of the recommendation
Ensuring that species protection is applied only where necessary, and the avoidance of any unnecessary enforcement action.

Reference
Essex Emerald Species Statement
http://www.ukbap.org.uk/UKPlans.aspx?ID=602

Recommendation for removal from Schedule 5 of the Wildlife and Countryside Act, 1981

Type of organism: invertebrate

Scientific name: *Thyasira gouldi*

English name: northern hatchet shell

Distribution in Great Britain
The northern hatchet shell *Thyasira gouldi* has been 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.

Distribution elsewhere
A pan-Arctic distribution from Russian waters along the north coast of Norway, around the coast of Greenland. On American coasts as far South as Cape Cod on the East and California on the west coast.

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

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

Threats
N/A

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 5, Section 9.

Recommendation
Removal from Schedule 5.

Justification for recommendation
Surveys have shown that this species is much commoner than previously thought, and is not now considered to require legal protection

Benefits which would accrue from acceptance of the recommendation
Ensuring that legal protection is applied only to species which require it, and to avoid unnecessary public restriction and enforcement action.

Reference

KILLEEN, I.J. & OLIVER, P.G., 2002. The taxonomic and conservation status of *Thyasira gouldi* (Philippi, 1844), the northern hatchet shell, in British waters. *Journal of Conchology*, **37** (4), 391.

Recommendation for removal from Schedule 8 of the Wildlife and Countryside Act, 1981

Type of organism: bryophyte

Scientific name: *Bryum mammillatum*

English name: dune thread-moss

Distribution in Great Britain
Dune thread-moss *Bryum mammillatum* has been recorded from four sites in South Lancashire, North Lincolnshire and West Norfolk.

Distribution elsewhere
Scattered distribution around the Baltic and North Sea coasts and North to Svalbard and Greenland.

Status in Britain
Critically Endangered.

Habitat
Dune thread-moss grows on moist, calcareous, sandy soils near the coast, particularly in dune slacks.

Threats
Habitat loss or degradation, including reclamation for farmland, urban and leisure development, dune stabilisation, and inundation of dune slacks with eutrophic water.

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 8, Section 13.

Recommendation
Removal from Schedule 8.

Justification for recommendation
This species was classified as Critically Endangered in Britain due to its rarity and decline. It is now considered that it represents a wide-mouthed capsule variant within sea bryum *Bryum warneum*. Other *Bryum* species have also been shown to vary in their capsule mouth width. Sea bryum is itself considered to be Vulnerable in Britain, due to its rarity and decline. It is a current BAP species, but has not been proposed for Schedule 8 protection.

Benefits which would accrue from acceptance of the recommendation
Taxonomic clarity, and removal of an unnecessary public restriction and avoidance of unnecessary enforcement action.

References

CHURCH, J.M., HODGETTS, N.G., PRESTON, C.D. & STEWART, N.F., (eds.), 2001. British Red Data Books: mosses and liverworts. JNCC, Peterborough.

HOLYOAK, D.T., 2004. Taxonomic notes on some European species of Bryum (Bryospsida: Bryaceae). *Journal of Bryology* **26**, 247-265.

Recommendation for removal from Schedule 8 of the Wildlife and Countryside Act, 1981

Type of organism: bryophyte

Scientific name: *Bryum neodamense*

English name: long-leaved thread-moss

Distribution in Great Britain
Long-leaved thread-moss *Bryum neodamense* has been recorded from about eight widely scattered sites in Britain, with strong populations remaining on the South Lancashire coast. Other recent sites are in Gwynedd and Caithness. All three are within SSSIs, and one is also an NNR.

Distribution elsewhere
This species is considerably more frequent in Ireland. It is widespread in northern and central Europe, but rare in the South. It also occurs in northern Asia, North America and Greenland.

Status in Britain
Endangered.

Habitat
Long-leaved thread-moss occurs on wet calcareous soils in dune slacks, fens, swamps, ditches and lake edges.

Threats
Loss or degradation of habitat.

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 8, Section 13.

Recommendation
Removal from Schedule 8.

Justification for recommendation
This species has been regarded as a valid species in most recent European moss floras, with a wide range in Europe, Asia and North America. In Britain it has been classified as Endangered due to its rarity and decline. However, a recent morphological and genetic study concludes that it is best regarded as a morphologically distinctive phenotype (not even of form or varietal status) within marsh bryum *Bryum pseudotriquetrum*, associated with sites subject to periodic inundation by water poor in nutrients. Intermediate forms have been found at all sites, and individual plants have also been found with transitions between morphologies, possibly associated with inundation events. Marsh bryum is a common species throughout Britain, associated with damper areas.

Benefits which would accrue from acceptance of the recommendation
Taxonomic clarity, and removal of an unnecessary public restriction and avoidance of possible unnecessary enforcement action.

Reference
CHURCH, J.M., HODGETTS, N.G., PRESTON, C.D. & STEWART, N.F., (eds.), 2001. British Red Data Books: mosses and liverworts. JNCC, Peterborough.

HOLYOAK, D.T. & HEDENÄS, L., 2006. Morphological, ecological and molecular studies of the intergrading taxa *Bryum neodamense* and *B. pseudotriquetrum* (Bryopsida: Bryaceae). *Journal of Bryology* **28**, 299-311.

Recommendation for removal from Schedule 8 of the Wildlife and Countryside Act, 1981

Type of organism: vascular plant

Scientific name: *Dactylorhiza lapponica*

English name: Lapland marsh-orchid

Distribution in Great Britain
The Lapland marsh orchid *Dactylorhiza lapponica* is found only in the Western Islands and Highlands of Scotland, where it was first identified in 1986. It is found mainly at altitudes between 150 and 310 m, but descends to 30 m in south Harris.

Distribution elsewhere
Occurring sporadically throughout northern and central Scandinavia and into northern Russia. It is also found, particularly in limestone regions, in the Swiss, Austrian and Italian Alps.

Status in Britain
There are now more than 30 known populations, though most are very small, with fewer than 100 individuals. The few populations that have been monitored indicate relative stability, though population size may fluctuate considerably from year to year.

Habitat
Core habitat in the UK is relatively base-rich hill flushes with a pH up to 6.5, often associated with superficially acidic and peaty soils; although it appears to tolerate more acid conditions associated with adjacent wet heath. In central Europe, it occurs in calcareous open fens and wooded mires, wet meadows and streamside gravels.

Threats
The main threat to this species is from direct habitat destruction or change, and all populations are vulnerable to afforestation or drainage. In addition, most of its sites are moderately to heavily grazed by sheep or deer, which can remove a significant proportion of the flowers.

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 8, Section 13.

Recommendation
Removal from Schedule 8.

Justification for recommendation
Lapland marsh orchid is a tetraploid marsh-orchid, in a group that is renowned for its taxonomic difficulties. It is a Scandinavian species, and plants resembling it were discovered in Great Britain in 1986. Later, it was considered that they were not sufficiently distinct from the British plants then known as *D. traunsteineri*, and Sell & Murrell (1996) refer to it as *D.*

traunsteineri subsp. *lapponica*. It is also believed that the true Scandinavian Lapland marsh orchid is distinct from the British plants. Further work by Bateman (2006) has shown that there are no significant morphological or molecular differences between '*traunsteineri*' and '*lapponica*', and considers they should all be treated as a single variable species. However, '*traunsteineri*' itself has been shown to be distinct from the true Continental *D. traunsteineri*, and to have a separate genetic origin. The British plants have now all been named as narrow-leaved marsh orchid *Dactylorhiza traunsteinerioides*. This plant is Nationally Scarce in Great Britain (as is '*lapponica*') and is not under any particular threat. Foley & Clarke (2005) state: "On its discovery, when it was identified as *D. lapponica*, the plant was regarded as a rarity for which Schedule 8 protection was necessary, but this species-defined conservation category is likely to be downgraded when it is treated as a variant within the non-threatened *D. traunsteinerioides*."

Benefits which would accrue from acceptance of the recommendation
Taxonomic clarity, and removal of an unnecessary public restriction and avoidance of possible unnecessary enforcement action.

References
BATEMAN, R. M., 2006. How many orchid species are currently native to the British Isles? Pages 89-110 *in* J. P. Bailey and R. G. Ellis (eds.), *Current Taxonomic Research on the British and European Flora.* (BSBI Conference report 25). BSBI, London.

FOLEY, M.J.Y. & CLARKE, S., 2005. *Orchids of the British Isles*. Griffin Press, Cheltenham.

SELL, P.D. & MURRELL, G., 1996. *Flora of Great Britain and Ireland*. *Volume 5, Butomaceae - Orchidaceae*. Cambridge University Press, Cambridge, UK.

WIGGINTON, M.J., (ed.), 1999. British Red Data Books. 1: Vascular Plants. 3rd Edition. JNCC, Peterborough.

Recommendation for removal from Schedule 8 of the Wildlife and Countryside Act, 1981

Type of organism: vascular plant

Scientific name: *Epipactis youngiana*

English name: Young's helleborine

Distribution in Great Britain
Young's helleborine *Epipactis youngiana* occurs at three sites in Northumberland, and single sites near Glasgow, Linlithgow, and Edinburgh; with a further site in Yorkshire.

Distribution elsewhere
N/A.

Status in Britain
Endangered, endemic. At the main surviving site in England, 50-90 stems appear annually. The largest Scottish colony of Young's helleborine contains up to 150 plants annually; one other has 30-50, and one 10-20 plants.

Habitat
Surviving populations occur on coal-waste bings, under regenerating trees, chiefly birch, with sparse vegetation cover.

Threats
Two populations have been lost due to clearfelling of the oakwoods in which they occurred.

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 8, Section 13.

Recommendation
Removal from Schedule 8.

Justification for recommendation
Referred to in Foley & Clarke (2005) as a var. within the common broad-leaved helleborine *Epipactis helleborine*. This is on the basis of genetic work at RBGE which has shown that individual populations of '*youngiana*' are genetically closer to nearby plants of broad-leaved helleborine than they are to each other. This suggests that there is a portion of the broad-leaved helleborine genome that allows consistent morphological differentiation to occur under certain ecological conditions, such as where heavy-metal contamination of the soil is present or in man-made habitats (the habitat of '*youngiana*'). Typical broad-leaved helleborine is out-crossing, whilst var. *youngiana* is partially self-pollinating. This suggests that '*youngiana*' is an ecologically induced variant with partial (but certainly not complete) reproductive isolation from the typical species. It is sometimes referred to as a 'species in the process of evolving'. Hollingsworth *et al.* (2006) state that the genetic data and the extreme difficulties of identifying morphological discontinuities in the field all suggest that this does

not represent a cohesive, distinct, reproductively isolated species that has stabilised by autogamy. Instead, it is best considered as a series of complex populations that have not currently achieved separate evolutionary trajectories from the sympatric populations of broad-leaved helleborine.

Benefits which would accrue from acceptance of the recommendation

Taxonomic clarity and to avoid an unnecessary public restriction. Given the available evidence, it would in practice be exceedingly difficult to enforce the current legislative conservation protection of this 'species' under the WCA. It might be extremely difficult (impossible) to prove that var. *youngiana* had been destroyed as opposed to broad-leaved helleborine. The latter is not threatened.

References

FOLEY, M. & CLARKE, S., 2005. *Orchids of the British Isles*. Griffin Press, Cheltenham.

HOLLINGSWORTH, P. M., SQUIRRELL, J., HOLLINGSWORTH, M. L., RICHARDS, A. J., and BATEMAN, R. M., 2006. Taxonomic complexity, conservation and recurrent origins of self-pollination in *Epipactis* (Orchidaceae). Pages 27-44 *in* J. P. Bailey and R. G. Ellis (eds.), *Current Taxonomic Research on the British and European Flora*. (BSBI Conference report 25). BSBI, London.

WIGGINTON, M.J., (ed.), 1999. British Red Data Books. 1: Vascular Plants. 3rd Edition. JNCC, Peterborough.

Recommendation for removal from Schedule 8 of the Wildlife and Countryside Act, 1981

Type of organism: lichenised fungus

Scientific name: *Lecanactis hemisphaerica*

English name: churchyard lecanactis

Distribution in Great Britain

Churchyard lecanactis *Lecanactis hemisphaerica* is known from 44 locations in south-east England, including sites in Somerset, Sussex, Suffolk, Kent, Dorset and Norfolk.

Distribution elsewhere
Outside of the UK it only occurs in Italy

Status in Britain
A rare species classified as *Near Threatened* in Great Britain.

Habitat
Inhabits external church walls that face to the North or East, and are sheltered from both rain and light. It tends to occur in coastal areas and typically grows on plaster or mortar.

Threats
Possible threats include the deterioration of walls on which the species occurs and repair of the walls using unsuitable materials. This lichen is prevented from spreading as suitable external walls are in short supply.

International obligations
None.

Existing legal protection in GB
Listed on the WCA, Schedule 8, Section 13.

Recommendation
Removal from Schedule 8.

Justification for recommendation
Following more detailed studies on this taxon (Giavarini, 2002), it is concluded that it represents a phenotypic morphotype of *Lecanographa grumulosa*.

This lichenicolous fungus has undergone considerable study as an aspect of the work under BAP. It is now considered to be a morphotype of *Lecanographa grumulosa*, such that Great Britain is considered to have two formae: *L. grumulosa* f. *grumulosa* and *L. grumulosa* f. *hemisphaerica*. Forma *hemisphaerica* is associated with manmade structures with plaster render or decaying limestone where calcium is very readily available. This availability of calcium may induce the difference in apothecia characteristics, although this has not been

determined. It is possible that the formae also differ in parasitisation, although again this has not been determined. When the RDB was published *L. hemisphaerica* was classified as Near Near-threatened due to its Nationally Vulnerable status (at that time known from 15 hectads) (Church et al., 1996). It was also considered to be an endemic. *Lecanographa grumulosa* was not included in the RDB, and is not an endemic. Currently, forma *hemisphaerica* is known from 27 hectads, whilst forma *grumulosa* is rarer, being known from 17 hectads. Altogether, the more widely defined *Lecanographa grumulosa* is known from 44 hectads. Therefore, the formae separately or the species as a whole are all Nationally Scarce. *Lecanographa grumulosa* is not classified as threatened in the current Red List

Benefits which would accrue from acceptance of the recommendation
Taxonomic clarity, and to avoid an unnecessary public restriction and avoidance of possible unnecessary enforcement action.

References
CHURCH, J.M., COPPINS, B.J., GILBERT, O.L., JAMES, P.W. and STEWART, N.F., 1996. *Red Data Books of Britain and Ireland: lichens. Volume 1: Britain.* The Joint Nature Conservation Committee, Peterborough.

GIAVARINI, V.J., 2002. The current status of churchyard lecanactis (Lecanactis hemisphaerica) in Britain. Plantlife Back from the Brink Project no. 191. Plantlife, London.

WOODS, R.G. & COPPINS, B.J., 2003. *A Conservation Evaluation of British Lichens*. British Lichen Society, London.

Appendix 6 Summary of issues in relation to listing of skate and other elasmobranch species on Schedule 5 of the Wildlife and Countryside Act, 1981

The following four species were proposed for listing on Schedule 5 as part of the advice contained in the Fourth Quinquennial Review:

Common skate	*Dipturus batis*
Black skate	*Dipturus nidarosiensis*
Long-nose skate	*Dipturus oxyrhinchus*
White skate	*Rostroraja alba*

They were not taken forward, and Defra provided a detailed response which raised a number of issues including: i) occurrence of the species within the territorial waters of Great Britain, ii) whether protection under the WCA is an appropriate measure, iii) issues relating to sale.

Since the 4th Quinquennial Review, it has become clear that British elasmobranches (sharks, skates and rays) present a major conservation issue; almost certainly the most urgent conservation issue in relation to any group of British vertebrates. Conservation action at EU level is urgently needed, but there is no sign that it is forthcoming. Indeed lack of past action is seen as a major failure of the Common Fisheries Policy. The JNCC considers that urgent action is necessary at the national level, both to provide protection for endangered species of elasmobranches in territorial waters, and to stimulate and promote action at the EU level.

Following detailed consideration by representatives of the JNCC and Country Agencies, the Shark Trust and the IUCN Shark Specialist Group, the former recommendation in relation to the long-nose skate has been withdrawn pending further investigation of its present occurrence within territorial waters (between this Quinquennial Review and the next), the recommendation in relation to black (or Norwegian) skate has also been withdrawn as it is unlikely this species occurs within territorial waters except as a vagrant. However, both these species require improved protection at the EU level.

The release of the first ever IUCN Red List of Threatened Species™ assessment of northeast Atlantic sharks, rays and chimaeras reveals that 26 percent are threatened with extinction and another 20 percent are in the Near Threatened category. Specifically, seven percent of species in the northeast Atlantic are classified as Critically Endangered, seven percent as Endangered, and 12 percent as Vulnerable, primarily due to overfishing. This means 26 percent are threatened in the northeast Atlantic, compared with 18 percent globally. (Gibson *et al*., 2008)

Following this detailed re-examination of the status of elasmobranch species in the North-east Atlantic by the IUCN Shark Specialist Group, and also of the review of priority species listed under the UK BAP process, JNCC recommends that the following species be listed on Schedule 5 of the WCA:

common skate	*Dipturus batis*
porbeagle shark	*Lamna nasus*
undulate ray	*Raja undulata*
white skate	*Rostroraja alba*
spiny dogfish	*Squalus acanthias*

And that improved protection should be given for:

angel shark *Squatina squatina*

In addition, the European Commission has recently proposed setting total allowable catch (TAC) for spiny dogfish and porbeagle sharks at zero and prohibiting fishermen from keeping angel sharks, common skates, undulate rays or white skates. http://ec.europa.eu/fisheries/legislation/proposals/conservation_en.htm (accessed 26/11/08).

References

EUROPEAN COMMISSION, 2008. COM/2008/709Final: Proposal for a Council Regulation fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required. Commission of the European Communities, Brussels, 7.11.2008.

GIBSON, C., VALENTI, S.V., FOWLER, S.L. and FORDHAM, S.J., (eds.) 2008. *The Conservation Status of Northeast Atlantic Chondrichthyans*. Report of the IUCN Shark Specialist Group Northeast Atlantic Regional Red List Workshop. Peterborough, UK, 13-15 February 2006.

Appendix 7 The treatment of neophytes listed on Schedule 8 of the Wildlife and Countryside Act, 1981

The criteria for consideration of species for addition to the schedules (set out in section 4 of this report) include criteria stating that species should normally be native to Great Britain. However, Section 13 of the WCA does not confine itself to native species but to plants which are of a kind which 'ordinarily grows in Great Britain in a wild state'. The power to remove plants from Schedule is defined by Section 22 (3) and (4) of the Act and does not appear to include a power to remove species from the Schedule unless they meet those definitions (which summarised in section 1 of this Report). Some species of plants which were added to Schedule 8 in accordance with the review criteria (and in the belief that they were native species) have been reclassified as either neophytes (plants naturalised in Great Britain after 1500AD or archaeophytes (plants naturalised in Great Britain before 1500AD), and hence would no longer meet the criteria. The current Schedule 8 includes up to 12 neophytes and 6 archaeophytes. However, the reclassification of some of these species is controversial, and it is, therefore, not appropriate to propose removal of species from the schedule without further consultation. Furthermore, the majority of these species remain threatened within Great Britain, and hence further clarification regarding the legal aspects of removing such species from the Schedule is necessary. Several of the neophytes and all of the archaeophytes are considered to have cultural value, and the appropriateness of using Schedule 8 for the protection of species with cultural value needs to be assessed.

A three stage process is proposed for consideration of these points, which will conclude prior to the 6th Quinquennial Review:

- clarification of the legal aspects of removing species from the Schedule that remain threatened, and consideration of the most appropriate routes for the protection of cultural values for biodiversity;

- further scoping of the issue and identification of forward process by the Inter-Agency Plant Conservation Working Group, to be agreed by the Chief Scientists Group;

- provision of proposals for the 6th Quinquennial Review that are understood and agreed by a majority of stakeholders.

Appendix 8 Notification of alternative scientific names and taxonomic changes to species listed on Schedules 5 or 8 of the Wildlife and Countryside Act, 1981

Schedule 5 (Animals)

Scientific Name	English name	Change name to
[5]*Bufo calamita*	natterjack Toad	*Epidalea calamita*
[6]*Triturus cristatus*	warty (great crested) newt	*Lissotriton cristatus*
Triturus helveticus	palmate newt	*Lissotriton helveticus*
Triturus vulgaris	smooth newt	*Lissotriton vulgaris*
Lacerta vivipara	viviparous lizard	*Zootoca vivipara*

Schedule 8 (Plants)

Scientific Name	English name	Alternative name
Cotoneaster integerrimus	wild cotoneaster	*Cotoneaster cambricus*
Hericium erinaceum	hedgehog fungus	*Hericium erinaceus*
Lythrum hyssopifolia	grass-poly	*Lythrum hyssopifolium*
Orobanche loricata	oxtongue broomrape	*Orobanche picridis*, *Orobanche artemisiae-campestris*

Scientific Name	English Name	Change name to
Arabis stricta	Bristol rock-cress	*Arabis scabra*
Barbula cordata	cordate beard moss	*Didymodon cordatus*
Barbula glauca	glaucous beard moss	*Didymodon glaucus*
Buglossoporus pulvinus	oak polypore	*Piptoporus quercinus*
Calamintha sylvatica	wood calamint	*Clinopodium menthifolium*
Catellaria laureri	Laurer's catillaria	*Megalaria laureri*
Cladonia stricta	upright mountain-cladonia	*Cladonia trassii*
Desmatodon cernuus	flamingo moss	*Tortula cernua*
Drepanocladius vernicosus	moss	*Hamatocaulis vernicosus*
Fumaria martinii	martin's ramping-fumitory	*Fumaria reuteri*
Halimione pedunculata	stalked orache	*Atriplex pedunculata*
Heterodermia leucomelos	ciliate strap-lichen	*Heterodermia leucomela*
Lecanora archariana	tarn lecanora	*Lecanora achariana*
Mielichoferia mielichoferi	alpine copper-moss	*Mielichhoferia mielichhoferiana*
Pannaria ignobilis	Caledonian pannaria	*Fuscopannaria ignobilis*
Parmelia minarum	New Forest parmelia	*Parmelinopsis minarum*
Parmentaria chilensis	oil-stain parmentaria	*Pyrenula hibernica*

[5] As a European protected species, removed from Schedule 5 listing in Scotland, and from the scope of certain WCA offences in England and Wales.
[6] As a European protected species, removed from Schedule 5 listing in Scotland, and from the scope of certain WCA offences in England and Wales.

Petallophyllum ralfsi	liverwort	*Petalophyllum ralfsii*
Petroraghia nanteuilii	childling pink	*Petrorhagia nanteuilii*
Rhinanthus serotinus	greater yellow-rattle	*Rhinanthus angustifolius*
Rhynchosinapis wrightii	Lundy cabbage	*Coincya wrightii*
[7]*Saxifraga hirulus*	yellow marsh saxifrage	*Saxifraga hirculus*
Scirpus triquetrus	triangular club-rush	*Schoenoplectus triqueter*

[7] As a European protected species, removed from Schedule 8 listing in Scotland, and from the scope of certain WCA offences in England and Wales.

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