

Focus on

Biodiversity

Update 2000



ENVIRONMENT AGENCY

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1.1 Purpose of the report

This report summarises progress made by the Environment Agency in carrying forward its obligations under the UK Biodiversity Action Plan (UK BAP), for the period 1 January – 31 December 2000.

It is primarily an internal report aimed at our own staff. Relevant government departments, statutory and voluntary wildlife organisations, local government and professional and academic institutions will also have an interest in the contents. A summary version will be available on the Agency's Intranet and website, www.environment-agency.gov.uk

1.2 Background

In July 2000 we published "*Focus on Biodiversity: the Environment Agency's contribution to wildlife conservation*"¹. This set out comprehensively, our role, obligations and involvement in wildlife conservation, and in particular our actions under the UK BAP in the 5 year period 1995-99. We said that this would be the baseline reference document for tracking achievements and that we would report on progress annually, making more detailed appraisals every 5 years. This document is the first annual progress report.

1.3 Structure and content

Feedback on *Focus on Biodiversity* was extremely good, both in terms of design and content and won an Award for Excellence from Communications in Business (CiB). In this document, we have tried to keep to a simple format, using a minimum amount of jargon.

We concentrate largely on the 39 species and 5 habitats for which we have a lead role under the UK BAP. We then identify in summary form, progress on actions for each species and habitat secured through promotional, project and research work and compare this with activity during 1995-99. We also estimate, using broad categories, the amount of effort and resources used. A brief summary of intended action in 2001 is also included. Background technical information has been omitted because the ecology, distribution and main threats to individual species and habitats are included in *Focus on Biodiversity*.

We also highlight actions undertaken for a selection of those species where we are not the UK BAP lead, but where we have specific actions to help.

An updated list of Agency co-ordinators is appended, and we also provide in subsequent appendices, lists of (i) scientific names used in the text (ii) abbreviations and acronyms and (iii) partner organisations in 2000. We are grateful to English Nature, once again, for permission to use a selection of line drawings that made *Focus on Biodiversity* so attractive.

1.4 An overview of 2000

In a legislative context, the year 2000 was notable for wildlife conservation. The Countryside and Rights of Way (CROW) Act 2000 was given Royal Assent; and the EU Water Framework Directive (Directive 2000/60/EC) was ratified. The CROW Act substantially strengthens wildlife conservation legislation in England and Wales, including a statutory basis for the UK BAP and specific obligations on public bodies such as the Agency. Implementing CROW will feature large for the Agency in 2001. The Water Framework Directive transforms the basis for catchment and estuary management by requiring an integrated approach to pollution control and water management and an ecological basis for setting objectives and planning measures to achieve them. The timetable is longer-term (2015 for meeting objectives), but preparatory work will require major effort from 2001 onwards.

In November, we launched our *Environmental Vision* which represents the Agency's contribution to sustainable development². One of the nine themes and overall objectives is "an enhanced environment for wildlife". This reinforces our corporate commitment to biodiversity. A supporting 'framework for change' that supports this environmental theme was drafted in December, ready for consultation in 2001.

Focus on Biodiversity was published in July and we have subsequently produced a CD-ROM version including a Welsh language option.

We continued active involvement in the UK Biodiversity Group, England and Wales Country Groups, and Targets sub-group. We came a member of the National Biodiversity Network Trust and joined the newly-established 'umbrella groups' for coastal and wetland habitats.

We gave written and oral evidence to the House of Commons Environment, Transport and the Regions Select Committee into UK Biodiversity and continued to promote the profile of biodiversity at Agency Board level, using the

Advisory Group on Conservation as a sounding board.

Our Regions and Areas contributed to wildlife conservation through implementation actions in the National Environment Programme of AMP3³, further development of Water Level Management Plans, LEAPs and pilot Catchment Abstraction Management Strategies (CAMS). In addition to large flagship national and regional partnership projects, dozens of local collaborative projects were undertaken, and several research projects continued to help provide information on UK BAP species and habitats. Implementation of the Habitats and Birds Directives continued through further scoping and investigational work in our review of consents programme. This will be consolidated from 2001 through extra funding secured from DETR and NAW in response to the huge increase in number of candidate SACs and hence the workload on the Agency. Thumb-nail sketches of the impacts and risks from a wide range of environmental factors will help set priorities for 2001, through development of "Site Issues Briefings".

1.5 Overall message

The overall message on actions in 2000 is mixed – our generic regulatory and operational actions continue to contribute to wildlife conservation significantly, but we were unable to implement actions for 12 out of our 39 UK BAP species (Table 1). This is particularly true for several species (eg stoneworts, *Anisodactylus poeciloides*) for which survey and research effort is required to establish more precise distribution patterns and ecological requirements. Without this information there is still a risk that Agency regulation and operational practices are at best non-optimal and at worst unwittingly causing harm to several species.

In *Focus on Biodiversity* we highlighted the need for an extra £500k annually to fulfil the minimum requirements under the UK BAP and we will again be highlighting the case for extra resources, on the basis that (i) relatively little (0.1% of the Agency budget) will go a long way, but that (ii) nothing extra will mean jeopardising several UK BAP targets.

CHAPTER 2

PROGRESS IN 2000

This chapter documents for each of the 39 species and 5 habitats for which we have a lead role, the UK BAP actions requiring Agency action and our contribution in 2000. This is summarised in broad categories: X, no action; one, two or three ticks representing some, moderate and good progress respectively. A column for activity during 1995-99 is also shown for comparison.

Some examples of project work in 2000 are listed. Estimates of resources invested (including Agency staff time) are based on broad categories: £nil; <£5k; £5-10k; £10-50k; >£50k. Where more accurate estimates are available these are shown in brackets after the category.

Where known, examples of activities planned for 2001 are included. In many instances however, lack of funding means that no activities can be taken forward.

Table 1 An overview of the Agency's contribution to actions

Species/habitat	Actions required by Agency	✓ 2000	X 2000
Water Vole	15	13	2
European Otter	13	10	3
Marsh Warbler	3	3	0
Allis & Twaite Shad	4	3	1
Vendace	7	5	2
Burbot	8	8	0
<i>Bidessus unistratus</i>	5	1	4
<i>Bidessus minutissimus</i>	5	4	1
<i>Agabus brunneus</i>	3	1	2
<i>Anisodactylus poeciloides</i>	2	0	2
Hairy click beetle	9	2	7
River Shingle Beetles (6 species)	10	3	7
Freshwater White-Clawed Crayfish	10	10	0
Southern Damselfly	4	4	0
<i>Clorismia rustica</i>	4	2	2
<i>Spiriverpa lunulata</i>	9	2	7
Glutinous snail	8	6	2
Shining ram's horn snail	4	4	0
Little whirlpool ram's horn snail	8	7	1
Freshwater Pearl Mussel	9	5	4
Depressed river mussel	3	3	0
Freshwater pea mussel	11	4	7
River Jelly lichen	8	5	3
Violet crystalwort	1	0	1
Freshwater Bryozoan	6	0	6
Multi-fruited river moss	2	0	2
Tiny fern moss	3	0	3
Beaked Beardless moss	3	0	3
Water rock bristle	1	1	0
Stoneworts (5 species)	7	0	7
Ribbon-leaved water plantain	2	2	0
Cut grass	5	0	5
Triangular club rush	9	7	2
Greater water-parsnip	4	1	3
Chalk Rivers	10	10	0
Fluctuating Water Bodies	13	4	9
Eutrophic Lakes	27	18	9
Mudflats	8	8	0
Saltmarsh	16	16	0
TOTALS	279	172	107

Water vole - *Arvicola terrestris*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: pages 34-36

Agency co-ordinator: Alastair Driver

Lead partner: UK Water Vole Steering Group

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1	Ensure appropriate protection under the Wildlife & Countryside Act for the water vole and its habitat	✓✓✓	✓
5.2	Incorporate water vole conservation into relevant habitat policies and agri-environment schemes	✓✓✓	✓
5.3	Identify large, viable breeding populations of water vole and retain these with appropriate management and monitoring, from which a series of "key areas" should be designated.	✓✓✓	✓
5.4	Incorporate water vole conservation into integrated area management plans (eg local BAPs, Environment Agency LEAPs, integrated catchment management plans etc), initially targeting areas as identified in Action 3.	✓✓	✓
5.5	Ensure that development schemes do not affect the integrity of water vole populations.	✓✓	✓
5.6	Using survey information, identify sites which are suitable for re-establishing populations.	✓✓	✓
5.7	Where necessary employ appropriate mink control as a conservation tool to protect large breeding water vole populations.	✓	✓
5.8	Following relevant research, establish a co-ordinated programme of translocation and reintroductions of water voles with local provenance where it is deemed appropriate and effective.	✓	✓
5.9	Ensure information on water vole conservation requirements and appropriate habitat management are available to all riparian owners, managers and advisers (through guidelines and a practical handbook of water vole conservation).	✓✓✓	✓
5.10	Promote European co-operation in the study and conservation of threatened populations of water voles.	X	X
5.11	Ensure that the relative status and distribution of the water vole in Britain is monitored through repeats of the national baseline survey together with general catchment-based surveys in each region to determine the extent of the water vole populations and level of fragmentation of suitable habitat.	✓✓✓	✓
5.12	Continue existing and establish new national research initiatives on the ecology and conservation requirements of water voles.	✓✓	✓
5.13	Encourage the submission of data collated on a local level to LRC or BRC for incorporation into a national database, and to facilitate easier access to information.	✓✓	✓
5.14	Encourage the publication of research papers and features in popular press, magazines and the broadcast media to raise the profile of the species.	✓✓✓	✓
5.15	Prepare school education resource material for nation-wide distribution.	X	X

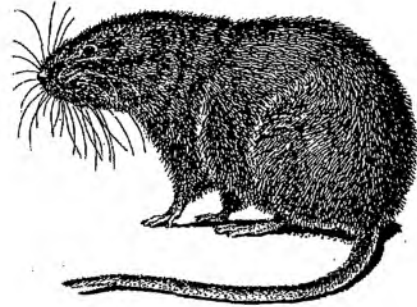
1. Examples of project work

- 1.1 Mammal Society booklet "The Water Vole" printed and distributed.
- 1.2 Anglesey Water Vole Project was set up using a graduate recruitment scheme.
- 1.3 Water vole mitigation techniques study carried out by EMEC.
- 1.4 Water vole re-introduction and translocation R&D project continued, with releases in Oxfordshire and on the Kennet and Avon canal with major national TV and newspaper coverage.
- 1.5 Water vole key sites research project commenced, thanks in part to EA funding.

- 1.6 Berks, Bucks and Oxon Water Vole Project continued, with commencement of a strategic mink control project on the Rivers Kennet and Pang.
- 7 Captive breeding programme commenced with introductions into The WWT Wetland Centre in Barnes, planned for May/June 2001.
- 1.8 100 mink traps purchased for future strategic mink control.
- 9 London Water Vole Project commenced with £30k p.a. funding from various organisations, secured for 3 years.

Estimated Agency contribution in 2000: >£50k (£100k)

- 3. **Action planned for 2001**
- 1 Large scale introductions into The WWT Wetland Centre in Barnes.
- 3.2 Strategic mink control to be promoted across the UK.



Otter - *Lutra lutra*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: pages 37-39

Agency co-ordinator: Graham Scholey

Lead partner: Environment Agency/The Wildlife Trusts

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.3	Seek to determine, by 2000, Statutory Water Quality objectives for standing and running in Britain which will sustain otters.	X	✓
5.1.5	Identify and resolve problems with existing legislation. Seek to clarify the definition of traps in WCA 1981 and resolve inconsistencies over the use of otter guards on fish traps.	✓	✓
5.2.1	Seek to include action for otters in LEAPs for all areas by 2005, including "otter havens" in relevant areas.	✓	✓
5.2.3	Produce catchment based local habitat management plans identifying key areas for restoration and enhancement.	X	✓
5.3.3	Attempt to limit accidental killing or injury (eg by provision of road underpasses and fyke net guards) particularly on key catchments.	✓✓	✓
5.4.1	Ensure the provision of information on otter requirements and conservation to key groups, to include landowners, through the publication of posters or guidelines.	✓	✓
5.5.1	Collate information on prey productivity biomass and pollutions in occupied and likely recolonisation areas.	✓	✓
5.5.2	Develop a standard methodology to analyse the level of pollution accumulation in otters.	✓	✓
5.5.3	Investigate the effects of disturbance on otter populations.	X	X
5.5.4	Develop and implement methods to estimate otter numbers and permit population modelling.	✓✓	✓
5.5.5	Monitor populations and distribution of otters throughout the UK, including local survey to monitor the expansion of fringe populations.	✓✓✓	✓
5.5.7	Develop a methodology for identifying otter breeding areas and produce guidelines for the protection and creation of breeding habitat.	✓	✓
5.6.1	Use this popular species to publicise the importance of water quality and riparian habitats to biodiversity	✓	✓

1. Examples of project work

- 1.1 Help in co-ordinating the Otter Survey of England. The survey is a collaboration between the Agency, English Nature and the Water UK and Wildlife Trusts Otter and Rivers Project and involves a repeat survey of over 3000 sites previously sampled in 1991-4.
- 1.2 The programme of otter post-mortems at Cardiff University and MAFF Exeter continued. An indication of the scale of road deaths is that 41 otters were examined from South West Region alone. Interestingly, an increasing number of otters are displaying signs of intra-specific fighting, possibly reflecting higher population densities and more territorial competition.
- 1.3 There was an increase in otter predation on stillwater fisheries and a fish farm in Thames Region following the release of a number of captive-bred otters. The release programme has now drawn to a close, but this issue is likely to increase as otters continue to re-colonise central and southern England. The Agency funded the training of Otter and Rivers Project officers to give advice to fishery owners and continued to distribute the leaflet "Otter Predation - is my fishery at risk".

- 1.4 Work on DNA fingerprinting of otter spraints continued. A commercial contract was let for the DNA typing of 400 spraints from rivers in southern England to increase understanding of the otter population in the region.
- 1.5 A "Guidance for Landowners" leaflet was produced in North West Region, in collaboration with OARP and a similar leaflet subsequently produced in Wales.
- 1.6 Increased interest in helping to reduce road mortalities followed the Highways Agency publication in 1999. Advice on otter presence and mitigation measures is now regularly given to local authorities and others. An analysis of over 280 mortalities in Wales identified accident "blackspots". This demonstrated that using short cuts and crossing watersheds were almost as important as culverts as causes of otter road deaths.
- 1.7 In addition to the above a number of local surveys, seminars and practical projects were undertaken across the Agency.

2. Estimated Agency contribution in 2000: >£50k

3. Action planned for 2001

- 3.1 Contribute to the publication of the Otter Survey of England
- 3.2 The completion of a protocol with RSPCA and relevant organisations and centres on the rehabilitation and release of orphaned otters.
- 3.3 Further involvement in road deaths including the development of a co-ordinating framework for all bodies involved.
- 3.4 Resolution of the matter of issuing otter guards to eel netsmen.
- 3.5 More training given to Agency staff to enable them to advise fishery owners on protection from otters.



Marsh warbler - *Acrocephalus palustris*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 40

Agency co-ordinator: Phillipa Harrison

Lead partner: RSPB/The Wildlife Trusts

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Incorporate riparian habitat management prescriptions into LEAPs to benefit the marsh warbler.	✓	✓
5.2.1	Safeguard existing or recently abandoned breeding sites by carrying out appropriate habitat management, particularly scrub removal and maintenance of high water tables.	✓✓	✓
5.4.1	Promote appropriate management of marsh warbler sites.	✓✓	✓

1. Examples of project work

- 1.1 Work continued to help the main breeding population at St Margaret's Bay in Kent. Habitat management has been carried out here annually since 1996, through a partnership of the Environment Agency, RSPB, White Cliffs Countryside Project and the Parish Council. Bracken has now been virtually eradicated; scrub clearance undertaken; experimental planting of willowherb has been carried out, and 4-wheel drive vehicle access has been halted.

2. Estimated Agency contribution in 2000: <£5k

3. Action planned for 2001

- 3.1 Tackling disturbance and egg collecting through employment of a species protection warden in May & June. The warden will also carry out local PR/liaison/education to further raise the profile of the species; liaise with other interested parties, primarily the local landowners; and collect breeding data.
- 3.2 Habitat management work will increase as the requirements of rosebay willowherb are now better understood; grazing management may be restored; and further development of links with the Parish Council and landowners

Allis and twaite shad - *Alosa alosa* & *Alosa fallax*

Category: 2

Agency co-ordinator: Miran Aprahamian

Contact point: DEFRA

Lead partner: DEFRA/Environment Agency

Focus on biodiversity: page 40-41

UK BAP Number	UK BAP action needed Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.1	Identify and characterise spawning sites for twaite shad and use this information to identify potential spawning sites for both species of shad.	✓✓	✓
5.4.1	Arrange workshops as necessary for conservation staff, non-Government organisations (NGOs) and land managers to explain the ecology, distribution and known requirements of shad.	X	✓
5.5.1	Obtain quantitative information on spawning and nursery sites and relate these to habitat models such as RHS to aid in the prediction of potential spawning areas within catchments.	✓✓	✓
5.5.4	Investigate the use of hydroacoustic fish counters with shad recognition systems in rivers with known spawning populations as well as incidental catches by anglers and fishermen.	✓✓	✓

1. Examples of project work

- 1.1 Sampling continued for the spawning habitat R&D project in 2000. A total of 19 sites on the River Wye, 8 sites on the River Usk, 4 sites on the River Tywi and 1 site on the River Temе have now been sampled. The spawning habitat of twaite shad comprises a fast-flowing shallow area of unconsolidated gravel/pebble and/or cobble substrate. The presence of eggs was significantly associated with the higher energy flow types and the absence of eggs was significantly associated with the lower energy flow.
- 1.2 Estuarine spawning of shad was investigated at Maisemore Weir, Gloucester. Shad have been seen, in the past, to spawn at this gravel site during low flow years where the weir can act as a partial barrier to migration. Plankton nets were positioned just downstream of the weir, no shad eggs were collected, either because the sampling was too late, or the exceptional flows on the River Severn had allowed easy upstream migration for shad.
- 1.3 Alan Henshaw, from the Agency's Calverton Fish Farm, visited shad production hatcheries in the USA. Adult shad from the rivers Wye and Usk were induced to spawn and juveniles reared for about 2 months at Calverton. This is the first time it has been done within the UK. Although it can be considered that the pilot study was successful, many lessons were learnt, particularly that of transport, feeding of the larval and juvenile stages and their water quality requirements.
- 1.4 Population monitoring continued on the River Severn estuary. Two sites were selected for draft netting of the estuary to locate juvenile shad to provide information on year-class size. These sites were sampled on a monthly basis from July through to October. Juvenile shad were caught on two occasions July and August. The high fresh water flows in the estuary for large parts of the year may be a contributing factor in the few shad caught, possibly moving fish downstream to a more saline environment. It is planned to continue the sampling programme in 2001.
- 1.5 As a direct result of South West project work allis shad have been added as a designated interest feature to the Tamar Estuary Special Area of Conservation (SAC), affording the species special protection and ensuring that favourable management plans for the Tamar catchment are produced and implemented.
- 1.6 In July, a single allis shad (43.4cm) was captured during a fish population survey on the River Ouse, the first ever record since monitoring began 20 years ago. The occurrence of this rare visitor, along with the ever increasing numbers of migratory salmonids, is a clear indication that the poor water quality of the tidal R.Ouse has improved in recent years, primarily as a result of a

reduction in effluent loads and increased freshwater flows.

1.7 The Agency presented four papers at the first conference on European shads which was held in Bordeaux in May 2000. A paper was also presented at the International Symposium on Freshwater Fish Conservation in Portugal in October 2000.

1.8 Many papers and reports were published.

2. Estimated Agency contribution in 2000: £10-50k

3. Action planned for 2001

3.1 Estuaries used by shad in the South West have been identified and can now be surveyed for spawning sites. The River Tamar in particular appears to be important for allis shad, and in 2001 surveys will be carried out to locate spawning sites and gather evidence of a spawning population. Surveys for eggs, larvae and juveniles will be carried out and video footage at the Gunnislake Fish Pass, and information about adult shad from salmon netmen and anglers will be collected, in an attempt to clarify the spawning status of allis shad in the Tamar. English Nature have been informed of the discovery of alosoid-type eggs at Gunnislake, and in 2001 the aim is to confirm the eggs as those of allis shad.

3.2 A joint project has been set up with English Nature, Countryside Council for Wales and ICETA University of Porto and the Environment Agency, starting in 2001 and continuing until 2004, the aims of which are to:

- To generate genetic markers that can be used for investigation of population structure in the UK and elsewhere. The scale of the investigation should primarily be concerned with markers that differentiate between shad at the catchment level. However, markers able to separate the different species should be regarded as a secondary goal.
- To describe the population genetic structure of British shad populations, with particular reference to the degree of population subdivision.
- To determine whether shad populations in Britain consist exclusively of *A.fallax*, or whether *A.alosa* or hybrids are also present.

Vendace - *Coregonus albula*

Category: 1

Contact point: Environment Agency

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Agency co-ordinator: Cameron Durie

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	In waters of high biodiversity interest including those inhabited by vendace, stocking should be limited by legislation.	✓	✓
5.2.1	In Bassenthwaite and Derwentwater ensure that water quality, physical habitat and spawning grounds are protected.	✓	✓
5.3.1	Promote local byelaws to prevent the use of livebait and associated translocation of fish into vendace waters and their catchments.	X	✓
5.5.1	Continue monitoring and research work on Bassenthwaite Lake and Derwentwater.	✓✓	✓
5.5.2	Encourage periodic monitoring of populations that become established at other locations.	X	X
5.5.6	Assess the feasibility of establishing additional self-sustaining populations in other waters in Cumbria.	✓	✓
5.6.1	Prepare and distribute information on vendace to interested parties in catchments of existing populations or where introduction is in progress or proposed.	✓	✓

1. Examples of project work

- 1.1 Vendace populations of Bassenthwaite Lake and Derwentwater were monitored in May, July and September as a component of Urban Waste Water Treatment Directive monitoring. Gill netting and quantitative echo sounding were carried out.
- 1.2 The status of the Bassenthwaite population is considered to be very poor. In May the population was estimated to be only 306 individuals. In Derwentwater the May population estimate was 21,000 and the September figure 22,000.
- 1.3 This was further emphasised in December when efforts were made to net vendace to run a captive breeding programme. Substantial netting effort over a prolonged period using fyke nets and gill nets failed to capture any vendace.

2. Estimated Agency contribution in 2000: 5-10k (£10k)

3. Action planned for 2001

- 3.1 Further attempts to establish a captive rearing programme.

Burbot - *Lota lota*

Category: 2

Contact point: English Nature

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Agency co-ordinator: Keith Easton

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 20000	Agency action 1995-99
5.1.1	Consider the conservation justification of re-establishing the burbot as a viable component of UK biodiversity.	X	X
5.1.2	Take note of, and feed into, the review of fisheries legislation currently being undertaken by MAFF, and the development of policies on species and habitat translocations being developed by the country conservation agencies.	X	X
5.1.3	Based on the outcomes of the above decide whether re-establishment of self-sustaining populations of the burbot to parts of the former range is desirable and feasible. If so indicate likely locations etc as precursors to the preparation of a detailed reintroduction plan.	X	X
5.5.1	Review theories expounded for the extinction of the species in the UK, and current expert opinion, to reach a consensus on the likely causes.	X	X
5.5.2	Assess the current relevance of the causes identified for extinction, to determine whether they would prevent successful re-establishment, or present any future threat.	X	X
5.5.3	Undertake reviews and further studies of the ecological requirements of burbot, and the nature of its niches in rivers.	X	X
5.5.4	Assess rivers within the historic range in England against the results of the above to ascertain whether the ecological requirements of the species can still be met in any of them.	X	X
5.6.1	Consider how to gain a broad constituency of views on the re-establishment of the burbot as a component of the UK biodiversity, and implement an appropriate strategy to that end.	X	X

1. Examples of project work

1.1 No action in 2000

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

3.1 Discussions with Severn Trent Water and Anglian Water over possible sites for trial re-introductions.

A diving beetle - *Agabus brunneus*

Category: 1

Contact point: Environment Agency

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Agency co-ordinator: Francis Farr-Cox

Lead partner: Action for Invertebrates

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.2	Undertake a review of water abstraction policies within areas where the species occurs.	X	X
5.1.3	Address the requirements of this species in the LEAP process and in relevant WLMPs.	X	X
5.2.1	Where possible, ensure that all occupied habitat is appropriately managed by 2008.	✓	X

1. Examples of project work

1.1 The Balfour Browne Club has stepped down as Lead Partner for this species. The role has been taken over by the new group "Action for Invertebrates" (Agency sits on this group).

1.2 Distribution maps and risk information has been sent to operational staff in relevant areas, so they are aware of the species when carrying out their work.

2. Estimated Agency contribution in 2000: <£5k

3. Action planned for 2001

3.1 Nothing planned to date.

A ground beetle - *Anisodactylus poeciloides*

Category: 1

Contact point: Environment Agency

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Agency co-ordinator: Robin Crawshaw

Lead partner: Action for Invertebrates

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.2	Address the requirements of this species in the LEAP process and in relevant Shoreline Management Plans	X	X
5.2.3	Encourage the creation of suitable saltmarsh habitat by managed retreat where possible.	X	X

1. Examples of project work

- 1.1 "Action For Invertebrates", a partnership project set up by Biodiversity Challenge, English Nature and the Joint Committee for the Conservation of Invertebrates, was appointed as Lead Partner for 9 species including the ground beetle *Anisodactylus poeciloides*.
- 1.2 An initial contact meeting was held with the Project Officer to identify the part the Agency can play in the work programme.
- 1.3 The species has been identified at Dibden Bay, Southampton which is the site of a proposed major new container port development. Information of this new record has been provided to Hampshire Area for inclusion in the Area's objection to this development.
- 1.4 One of the Kent locations for the species is threatened by a proposed road development: this information will be used in any representations made by the Agency.

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

- 3.1 Nothing planned at present

A diving beetle - *Bidessus unistriatus*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 47

Agency co-ordinator: Terry Clough

Lead partner: Balfour-Browne Club

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Address the requirements of this species in the LEAP process and in relevant WLMPs.	X	X
5.1.2	Take account of the species' requirement in response to applications for water abstraction licenses.	X	X
5.5.1	Undertake further surveys to determine the status of the species.	✓	X
5.5.2	Conduct targeted autecological research to inform habitat management.	X	X
5.5.3	Establish a regular monitoring programme for the species.	X	X

1. Examples of project work

- 1.1 Surveys by the Balfour Browne Club in the Stamford Battlefield area of Norfolk. This will contribute to a comprehensive review of the distribution and status of *B. unistriatus* in the UK that will include historic and current distribution, ecological requirements and a register of site records.

2. Estimated Agency contribution in 2000: <£5k

3. Action planned for 2001

- 3.1 Disseminate results from Balfour Browne Club survey within the Agency and to stakeholders.
- 3.2 Carry out a focused national survey including the Broads, New Forest and Breckland meres.

Hairy click beetle - *Synaptis filiformis*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 48

Agency co-ordinator: Francis Farr-Cox

Lead partner: Action for Invertebrates

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Address the requirements of the species in the LEAP process and in relevant WLMPs.	X	X
5.1.2	Ensure that the habitat requirements of the species are taken into account in flood defence and channel maintenance activities in areas where the species occurs.	X	X
5.2.1	Ensure that all occupied habitat is appropriately managed by 2008.	✓	✓
5.2.2	Ensure that the habitat requirements of the species are taken into account in any development policies, plans and proposals likely to affect the River Parrett corridor.	X	X
5.5.1	Undertake surveys to determine the status of the species.	✓✓	✓
5.5.2	Conduct targeted autecological research to inform habitat management.	X	X
5.5.3	Establish a regular monitoring programme for populations along the River Parrett.	X	X
5.5.4	Pass information gathered during survey and monitoring of this species to a central database for incorporation in to national and international databases.	X	X
5.6.1	Promote opportunities for the appreciation of the species and the conservation issues associated with its habitat. This should be achieved via articles within appropriate journals as well as by a publicity leaflet.	X	X

1. Examples of project work

- 1.1 Repeat surveys of previous sites were carried out. Known populations were stable and one new site was found.
- 1.2 200 m of stock proof fencing was put up on the banks of the tidal River Parrett. This was to prevent livestock grazing on the banks and destroying Phalaris - the hairy click beetle's chosen habitat.

2. Estimated Agency contribution in 2000: £5-10k (£5k)

3. Action planned for 2001

- 3.1 Nothing planned at present.

Various river shingle beetles and other invertebrates associated with ERS

A stiletto fly - *Clorismia rustica*

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 55

Agency co-ordinator: Viki Hirst

Lead partner: Environment Agency/ERS Group

River shingle beetles

Category: 2

Contact point: CCW

Focus on biodiversity page: 49-51

Agency co-ordinator: Vicki Hirst

Lead partner: Environment Agency/ERS Group

A stiletto fly - *Spiriverpa lunulata*

Category: 2

Contact point: CCW

Focus on biodiversity page: 56

Agency co-ordinator: Viki Hirst

Lead partner: Environment Agency/ERS Group

A diving beetle - *Bidessus minutissimus*

Category: 2

Contact point: CCW

Focus on biodiversity page: 46

Agency co-ordinator: Viki Hirst

Lead partner: Environment Agency/ERS Group

River shingle beetles - *Perileptus areolatus*, *Bembidion testaceum*, *Lionychus quadrillum*, *Hydrochus nitidicollis*, *Thinobius newberyi* and *Meotica anglica*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.2	Address the requirements of these species in the LEAP process, and in relevant catchment management plans.	✓	✓
5.1.3	Take account of the species' requirements in response to applications for water abstraction and discharge licenses.	✓	X
5.2.1	Where possible, ensure that all occupied sites are appropriately managed, including the maintenance or restoration of appropriate flow regimes.	X	X
5.2.2	Ensure that the habitat requirements of the species are taken into account in any development policies, plans and proposals, particularly in relation to river engineering.	✓	✓
5.4.1	Advise landowners and managers of the presence of these species and the importance of beneficial management for their conservation.	X	X
5.4.2	Ensure that all relevant agri-environment project officers, members of regional agri-environment consultation groups, relevant drainage engineers and waterways managers are advised of locations for these species, their importance, and the management needed for their conservation.	X	X
5.5.1	Continue to undertake surveys to determine the UK status of these species.	X	✓
5.5.3	Establish a regular monitoring programme for the species and their habitats.	X	X
5.5.4	Pass information gathered during survey and monitoring of these species to a central database for incorporation into national and international databases.	X	X
5.6.1	Promote opportunities for the appreciation of exposed riverine sediment species and of the conservation issues associated with their habitats. This may be achieved by articles in conservation-related wildlife, environmental, and user-group (eg anglers) journals, by posters and leaflets, and by involving the media in a publicity campaign.	X	✓

Stiletto fly - *Clorismia rustica*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Address the requirements of this species in the LEAP process and in relevant WLMPs.	✓	✓
5.1.2	Take account of the requirements of this species in response to applications for water abstraction or sand extraction from rivers.	✓	X
5.2.1	Where possible, ensure that all occupied sites are appropriately managed by 2005, for example through site management agreements.	X	X
5.4.1	Advise landowners and managers of the presence of this species and the importance of beneficial management for its conservation.	X	X

Stiletto fly - *Spiriverpa lunulata*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Address the requirements of this species through the LEAP process and in relevant catchment management plans and WLMPs.	✓	✓
5.1.2	Take account of the requirements of this species in response to applications for water abstraction or sand extraction from rivers.	✓	X
5.2.1	Where possible, ensure that all occupied sites are appropriately managed by 2010.	X	X
5.4.1	Advise landowners and managers of the presence of this species and the importance of beneficial management for its conservation.	X	X
5.5.1	Undertake surveys to determine the status of this species.	X	✓
5.5.2	Conduct targeted autecological research to inform habitat management.	X	X
5.5.3	Establish a regular monitoring programme for this species.	X	X
5.5.4	Pass information gathered during survey and monitoring of this species to a central database so that it can be incorporated in national databases.	X	X
5.6.1	Promote opportunities for the appreciation of this species and the conservation issues associated with its habitat. This should be achieved via articles within appropriate journals as well as by a publicity leaflet.	X	✓

A diving beetle - *Bidessus minutissimus*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Where appropriate, include the requirements of the species when preparing or revising prescriptions for agri-environment schemes and for river restoration schemes.	✓	✓
5.1.2	Take account of the species' requirements in response to applications for water abstraction and discharge licences.	✓	X
5.1.3	Address the requirements of this species in the LEAP process and in relevant catchment management plans and WLMPs.	✓	✓
5.2.1	Where possible, ensure that all occupied habitat is appropriately managed by 2010.	X	X
5.2.2	Ensure that the habitat requirements of this species are taken into account in relevant development policies, plans and proposals, particularly in relation to river engineering.	✓	X

1. Examples of project work

- 1.1 Analysis of the samples taken during 1998 has continued. Many other sites have been surveyed throughout the country to assess ERS communities and the results of these surveys are included in the final report. Included with the production of this report we are hoping to produce a leaflet that will be widely distributed to raise awareness further.
- 1.2 Carlisle Natural History Society produced a report of Cumbrian River Shingle Invertebrates. This identified 63 ERS specialist species and 42 nationally rare and scarce invertebrates. The stiletto fly *Spiriverpa lunulata* was recorded for the first time in Cumbria.
- 1.3 CCW are collaborating with the Institute of Geography and Earth Sciences at the University of Wales to digitise the channel changes in the major Welsh Rivers since the 1940's. Preliminary results of this work demonstrated that substantial changes have taken place with up to 80% of the ERS being lost from some river stretches. The main aim of the project is to provide information on the resource of ERS in Wales in order to assist with CCWs delivery of the UK BAP.
- 1.4 As a result of the raised awareness achieved by the previous seminar and training, various surveys have been carried out throughout the Agency to identify important ERS communities. Some river management schemes have also introduced ERS habitats to increase habitat variability within the river channel eg. The River Tame near Birmingham.

2. Estimated Agency contribution in 2000: <£5k

3. Action planned for 2001

- 3.1 In 2001 an R&D project will assess the distribution of *Bidessus unistriatus* (a diving beetle). As this species is closely related to one of the ERS species, *Bidessus minutissimus*, it is hoped that the survey work will locate new records of this species.

Information accidentally omitted from Focus on Biodiversity

As part of a National R&D Project a two-day seminar to raise the awareness of the conservation value of exposed riverine sediments was held early in December 1997. This convention, the first of its kind, was an attempt to draw together specialist knowledge about these important riverine habitats and had two main aims: to raise awareness of the (i) management, and (ii) the ecology of Exposed Riverine Sediments (ERS).

September 1999, A two-day training course was held at the University of Birmingham on exposed river sediment invertebrates. Around 45 people attended this from the Agency, English Nature and SEPA. The training included sampling methodologies, identification, distribution and river management.

White-clawed crayfish - *Austropotamobius pallipes*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 52-53

Agency co-ordinator: Jonathan Brickland

Lead partner: Vacant (Game Conservancy withdrew)

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.3	The use of byelaws to control baiting with crayfish by anglers should be reviewed.	✓	✓
5.2.2	Ensure appropriate habitat management is undertaken.	✓✓	✓
5.3.1	Establish the feasibility of eradicating non-native crayfish populations from the wild where they threatened sensitive sites or important populations of native crayfish.	✓	✓
5.3.2	If feasible, instigate and support re-introduction programmes to selected areas.	✓✓	✓
5.4.1	Provide advice for those involved in the conservation of this species and management of non-native crayfish populations.	✓	✓
5.4.2	Provide advice on disinfection procedures to prevent the transmission of crayfish plague.	✓✓	✓
5.5.1	Make inventories of SSSIs/ASSIs which contain native crayfish populations. Monitor populations in protected areas. Maintain the detailed databases on the distribution of the native and non-native crayfish.	✓	✓
5.5.2	Investigate the potential for recovery of native crayfish in areas affected by crayfish plague, and the feasibility of re-introducing the species to these areas.	✓	✓
5.6.1	Increase public awareness of the presence of this species and the threats to its existence. Publicise the need for conservation and how the public can help.	✓	✓
5.6.2	Ensure that anglers and visitors to nature reserves containing crayfish are made aware of the risks of spreading crayfish plague and of the legislative controls on the release of non-native species.	✓	✓

1. Examples of project work

- 1.1 International Crayfish Conference at Phoenix House in Leeds during April. Attended by 80 delegates, this collaborative venture between the Environment Agency, International Association of Astacology and English Nature hosted a range of posters and presentations on topics such as legislation, habitat protection and alien crayfish eradication.
- 1.2 The manual "Guidance on Works affecting White-clawed Crayfish" produced for English Nature and the Environment Agency as part of the Species Recovery Programme. Aimed at anyone planning to carry out works in watercourses which may have native crayfish present, the purpose is to promote best practice and protect crayfish habitat.
- 1.3 Work on the Eradication of Alien Crayfish Populations Phase 2 R & D Project continued with data received from a number of case studies across the country. The studies have served to illustrate the on-going threat to native crayfish populations from introduced species and the need to prevent deliberate or accidental introductions to new sites. Mechanical methods have so far failed to eradicate non-native crayfish but have yielded valuable information about the impact on population structure.
- 1.4 Draft guidance notes on the risk of crayfish plague transfer (to SACs) as a result of fish introductions have been developed. Once agreed, the guidance and any necessary supporting

information will be incorporated into the Fish Introductions Guidance.

- 1.5 Work has been started on the production of a Habitat Management Manual for white-clawed crayfish. This project is jointly funded by the Agency and English Nature and the project is expected to be completed in 2001.
- 1.6 Reintroduction schemes have progressed during 2000 in partnership with local and national conservation bodies. Eg, a small number of native crayfish were stocked into the headwaters of a stream in the Derbyshire Derwent catchment, the first release of its kind there since plague is thought to have eliminated crayfish from the whole upper Derwent catchment in the early 1990s.
- 1.7 The profile of issues concerning native crayfish have been raised in pilot fisheries action plans. It is likely that these will be taken up nationally in fisheries action plans.

2. Estimated Agency contribution in 2000: £10-50k

3. Action planned for 2001

- 3.1 Start of an R&D project, jointly funded with English Nature, designed to evaluate the potential use of pheromones in the control of non-native populations. Studies will investigate the chemicals involved in sexual attraction, predator detection, feeding stimulation and cannibalism and will report on the feasibility of using these compounds in the control of undesirable crayfish species.
- 3.2 Consolidation and further development of up-to-date distribution records (also see NBN).
- 3.3 Publication of the International conference proceedings.
- 3.4 Publication of the final report for the R&D project into Eradication of Alien Crayfish Populations Phase 2.
- 3.5 The creation of byelaws concerning the use of crayfish as bait is expected imminently.
- 3.6 Publication of Habitat Management Manual for white-clawed crayfish.

Southern damselfly - *Coenagrion mercuriale*

Category: 1

Agency co-ordinator: Tim Sykes

Contact point: Environment Agency

Lead partner: The Wildlife Trusts

Focus on biodiversity: page 54

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Encourage the uptake of beneficial land management schemes on land adjacent to occupied sites, including design of drainage schemes and other agri-environmental measures.	✓✓	✓
5.2.3	Ensure that, where possible, the hydrology of occupied sites remains favourable.	✓	✓
5.4.1	Ensure relevant landowners, managers and all others involved in the management of sites which support the species are aware of its presence and rarity, and appropriate methods of habitat management for its conservation.	✓✓	✓
5.5.2	Promote regular monitoring of extant sites, seeking to identify further threats to the species.	✓✓	✓

1. Examples of project work

- 1.1 Positive habitat management: examples include working with Dartmoor National Park Authority and implementing grazing control measures at a vulnerable site in Devon; work with the RSPB and National Trust in Dorset, and Eastleigh Borough Council in Hampshire to provide sympathetic management of key sites.
- 1.2 The Southern Damselfly has featured highly in local Water Level Management Plans in Hampshire; with the Habitats Regulations. The Agency has also advised EN and CCW in producing Favourable Condition Tables for this SAC feature.
- 1.3 The Agency and EN commissioned a survey of known and potential Southern Damselfly sites in Oxfordshire. This was the first such comprehensive survey and it found the extant site to be less strong than previously believed, but discovered a strong colony nearby.
- 1.4 Continuation of a PhD investigating ecological requirements of the species in its heathland habitats entered its final year.
- 1.5 A PhD investigating ecological requirements of the species in its chalkstream and fen habitats started in October. Both research projects based at Liverpool University. Collaborative partners are English Nature, Countryside Council for Wales, Liverpool University.
- 1.6 Development of a research project proposal investigating species' metapopulation biology and developing genetic DNA fingerprinting was put to NERC for funding in December 2000 (this bid was successful). This will help to clarify dispersal abilities of species within metapopulation context and hence underpin targeted conservation action.
- 1.7 Local research was carried out in Dorset and Hampshire, investigating larval development and impacts of abstraction and discharge on particular sites that will inform a management plan.
- 1.8 Other small areas of work included:
 - work with British Dragonfly Society to produce an up to date, validated UK Southern Damselfly database;
 - production of a page about the species which the British Dragonfly Society kindly agreed to host on its own Website;
 - contribution to the DETR research "Investigation the Actual Costs of Implementing UK Biodiversity Action Plans";
 - making representation to EN on the Natura 2000 Moderation Process regarding including the new Oxfordshire site as a new SAC for the species.

2. Estimated Agency contribution in 2000: £10-50K (£25K)

3. Action planned for 2001

- 3.1 Further habitat management works.
- 3.2 Completion of PhD (heathland habitats) thesis and R&D Technical Report ready for publication.
- 3.3 Publication of Southern Damselfly Habitat Management Guidelines.
- 3.4 Helping the UK Southern Damselfly BAP Steering Group devise a monitoring protocol for Southern Damselfly for use by volunteers, site managers and others. A short term measure, until the UK protocol for invertebrate monitoring within the context of the Common Standards approach has been agreed.
- 3.5 Work with EN, Wildlife Trusts and others planning a survey of potential southern damselfly sites in Dorset and Hampshire (e.g. Avon and Meon Valleys) where the species has never been recorded, but where suitable habitat suggests there is potential to find colonies, or at least to encourage the nearby populations to expand into these areas.
- 3.6 Help with a Southern Damselfly GB Site Assessment Project, that will mean an expert visiting all extant sites in the UK to: meet landowners/managers; to dispense advice as appropriate; to record and collate data on site characteristics, southern damselfly numbers population, site management history and adjacent landuse and, most importantly, to assess the condition of the sites. This information will be used for the UK database and draft site management statements.
- 3.7 Further work on the UK southern damselfly database.

Little whirlpool ram's-horn snail - *Anisus vorticulus*

Category: 1

Agency co-ordinator: Phil Griffiths

Contact point: Environment Agency

Lead partner: Environment Agency

Focus on biodiversity: page 57

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Identify water quality requirements and take account of these standards when setting standards in watercourses occupied by this species, seeking to restore clear, unpolluted water to ditches to provide opportunities for expansion or re-colonisation.	✓	✓
5.2.2	Establish and implement a ditch management cycle that allows the recolonisation of cleaned stretches from adjacent sections, taking into account the length of rotation necessary to avoid the ditch becoming choked with emergent vegetation.	✓	✓
5.2.3	Seek to ensure that WLMPs take into account the ecological requirements of this species, where appropriate.	✓	✓
5.3.1	Following further research and monitoring, prepare advice on habitat management to favour this species, by the year 2000.	✓	✓
5.4.1	Ensure that land managers are aware of the presence and vulnerability of this species, and appropriate methods of land and water management for its protection.	✓	✓
5.5.1	Within a single season, undertake a survey of all post-1965 live recorded sites to establish an accurate distributional baseline for the species. Then monitor using fixed point monitoring stations at each of the existing sites.	X	✓
5.5.2	Promote further study on the ecological requirements of this species, including the effects of changes in water quality on survival and current management of habitats containing healthy populations.	✓✓	✓
5.5.3	Survey poorly recorded areas to discover if further colonies exist.	✓	✓

See *Segmentina nitida* comments.

Freshwater pearl mussel - *Margaritifera margaritifera*

Category: 2

Contact point: SNH

Focus on biodiversity: page 58

Agency co-ordinator: Steve Garner

Lead partner: Environment Agency/SNH

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Identify water quality requirements for the species and seek to ensure that these form the basis for setting Statutory Quality Objectives, including Special Ecosystem Standards for sites occupied by the pearl mussel.	✓	✓
5.1.2	Seek to ensure that CAMs, flood defence activities, WLMPs and freshwater fisheries management take account of the requirements of this mussel, where populations still occur.	✓	✓
5.1.3	Encourage favourable land management within catchments, where the river supports major populations of the mussel, through appropriate land management and grant schemes.	X	✓
5.4.1	Provide advice to river land managers, water bailiffs and local police in relevant areas on the presence and legal status of this species, and appropriate methods of management for its conservation.	X	✓
5.5.1	Identify catchments where there is the best chance of re-establishing this species.	X	X
5.5.2	Carry out research to investigate key threats, fish hosts, life cycle and life history in different places, tolerance to variation in acidity, genetic variation, viability of re-seeding populations, and the effects of commercial exploitation.	✓	✓
5.5.3	Establish the current status of populations throughout the UK.	✓✓	✓
5.5.4	Encourage regular monitoring of known populations and seek to identify further threats to the species.	✓✓	✓
5.6.1	Promote awareness of the threats to the species and publicise the legal protection afforded to it.	X	✓

1. Examples of project work

- 1.1 Attendance at an international conference in Hoff, Bavaria entitled "The Freshwater Pearl Mussel in Europe: Population status and conservation strategies". Papers covered the current status of pearl mussel populations throughout Europe and updates on research programmes on breeding and protecting the species.
- 1.2 The River Clun in Mid Wales has been proposed as a SAC for freshwater pearl mussel. The Agency is carrying out detailed survey work of the river and the numbers and locations of mussels plotted.
- 1.3 In May 2000 over 200 dead mussels were found in Dubbs Beck, part of the River Kent Catchment, Cumbria. This was very worrying as this is one of only 2 sites in England which are currently known to be recruiting young mussels. Following investigations which identified no major water quality issues, it was discovered that silt was found to be running from a recently refurbished track to Dubbs Reservoir. Excessive erosion may have caused an imbalance in the water chemistry, which killed the mussels, although this was not confirmed.

2. Estimated Agency contribution in 2000: £5-10k (£5k)

3. Action planned for 2001

- 3.1 Further investigations into the biological and chemical water quality, flow and siltation rates in the Dubbs Beck. This will include 3 continuous monitoring gauging stations.

- 3.2 The survey on the River Clun will be completed in 2001 and also a survey on the River Redlake, a tributary where pearl mussels may be found.
- 3.3 Experimental work in Northumbria is planned to establish whether the glochidia from the North Tyne pearl mussel population are able to parasitise and mature on a host fish and if so which is the preferred species. Given funding this project will run as a collaborative project with Northumbrian Water plc who are willing for the site to be used free of charge.

Glutinous snail - *Myxas glutinosa*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 59

Agency co-ordinator: John Steel

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.1	Encourage good water quality in the catchment area of the Kennington Pit site.	✓	✓
5.2.2	Implement the management plan for Llyn Tegid.	✓	✓
5.5.1	Undertake ecological studies to provide a description of current and desired water quality and flow and the physical habitat.		✓
5.5.2	Survey all sites where the species has been recorded in the previous 50 years by 2000.	✓✓✓	✓
5.5.4	Continue monitoring existing populations.	✓✓	✓
5.5.7	Survey of lakes in the vicinity of Llyn Tegid to see if other populations exist locally.	✓✓✓	✓
5.5.8	Assess risks to the population in Llyn Tegid.	X	✓
5.5.9	Undertake ecological studies to provide a description of the current and desired water quality and flow regime and the physical habitat required by the species in the Llyn Tegid site.	X	X

1. Examples of project work

- 1.1 Surveying of lakes around Llyn Tegid for additional populations.
- 1.2 Gain information on the suitability of sites for reintroduction if that process is deemed relevant.

2. Estimated Agency contribution in 2000: <£5k (£2k)

3. Action planned for 2001

- 3.1 Further implementation of the Llyn Tegid Management plan.
- 3.2 Additional surveys to improve long-term data to clarify changes in population over time.
- 3.3 Initiate risk assessments.

Fine-lined pea mussel - *Pisidium tenuilineatum*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 60

Agency co-ordinator: John Murray-Bligh

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.3	When ecological understanding is improved, consider the development of specific site designation to safeguard selected sites where the species is present or likely to recolonise. Management of water quality is likely to be required.	X	X
5.4.2	When ecological understanding is improved, consider the development of a set of management guidelines to be made available to local site managers/land owners and appropriate local authorities.	X	X
5.4.3	Produce a short identification and background ecological leaflet for field workers and site managers to aid identification and help improve our knowledge of the species status and distribution.	✓✓	✓
5.5.8	Exchange research and management information with European partners.	X	X
5.5.9	Undertake surveys of all historical locations within a single season to discover whether populations still remain in any of them.	✓✓	✓
5.5.10	5.5.10: Survey new areas in locations where further populations may be present.	✓✓	
5.5.11	Plan and undertake periodic monitoring of populations, adopting standard practices, at selected sites in order to identify population trends and potential threats.	X	X
5.5.12	Undertake further ecological research which may be undertaken partly in co-operation with European partners.	X	X
5.5.13	Pass ecological and monitoring information to a central organisation to be incorporated in national databases.	✓	
5.5.14	Provide information to World Conservation and Monitoring Centre	X	
5.6.2	Consider promoting awareness of the situation regarding this species if early research suggests that a threat exists to the species.	X	✓

1. Examples of project work

- 1.1 Surveys sponsored by the Agency and English Nature to determine the distribution of the species in England and Wales started. Reaches of the Rivers Avon (Hampshire) Cherwell, Colne, Frome, Great Ouse, Glyme, Evenlode, Kennet, Ise, Lambourn, Loddon, Lugg, Lyde, Monnow, Nene, Piddle, Rother, Test, Thames and Windrush were surveyed. The species was found at 70 of the 177 sites investigated. The Kennet, Lambourn and Thames were found to be a major stronghold for the species. Records were made for an additional nineteen 10 km grid squares.
- 1.2 The production of an identification guide to British freshwater bivalve molluscs is underway (a partnership comprising the Environment Agency, The National Museum of Wales and the Field Studies Council). Photographic illustrations of every species using a new computerised photomontage are nearing completion. Text is being drafted (Ian Killeen and David Aldridge).

2. Estimated Agency Contribution in 2000: £10-50k (£15k)

3. Action planned for 2001

- 3.1 Further survey work to determine distribution at previous and potential sites. This will include investigation into the impact of the autumn 2000 floods.

Bivalve guide

- 3.2 Test version of identification guide.
- 3.3 Workshop for testing and refining keys.

Depressed river mussel - *Pseudanodonta complanata*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 61

Agency co-ordinator: Catrin Grimstead

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Consider developing policy and legislation to ensure favourable biotic conditions are maintained at key sites	✓	✓
5.5.1	Undertake studies to identify the ecological requirements of this species.	✓✓	✓
5.5.2	Carry out surveys to establish the distribution of the species and location of key populations by the year 2000.	✓✓	✓

1. Examples of project work

- 1.1 Survey work by Cambridge University on the River Arun, West Sussex and the Somerset Levels. The study was funded by Wessex Water and the Environment Agency.
- 1.2 Depressed river mussels were found for the first time in the River Adur representing a new catchment.
- 1.3 Population genetics work (MPhil project) continued. Work is being undertaken by Cambridge University and is funded by the Environment Agency. Results are expected in 2001.

2. Estimated Agency contribution in 2000: £5-10k (£5k)

3. Action planned for 2001

- 3.1 Transfer of depressed river mussel distribution data onto GIS.
- 3.2 Development of good practice river management techniques particularly with respect to dredging and weed-cutting.

Shining ram's-horn snail - *Segmentina nitida*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 62

Agency co-ordinator: Shelagh Wilson

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Seek to maintain favourable water quality at current occupied, and any newly discovered sites.	✓✓	✓
5.2.2	Develop a ditch management cycle that allows the re-colonisation of cleaned stretches from adjacent sections.	✓✓	✓
5.4.1	Produce land and water management guidelines for site managers and land owners by the year 2000.	✓	✓
5.5.1	Undertake a survey of all post- 1950 sites by the year 2000, to establish the current distribution of the species.	✓✓	✓

1. Examples of project work

- 1.1 Co-funding of a PhD continued. Work was undertaken on the microhabitat requirements to establish a link between the snail and light, depth, water chemistry and vegetation structure. A short paper was produced in June 2000, summarising the work to date.
- 1.2 Survey work of 1999 (funded by the Environment Agency and English Nature in the Ash Levels (SNCI) and Stodmarsh SSSI) published 'English Nature Research Report no 356'. Ditches surveyed in 1996 were revisited to determine any change in distribution, and to survey a wide-ranging series of potentially suitable ditches. Results showed that *S. nitida* still occurs widely in the East Kent Levels, at over 48% of ditches sampled. Little change was observed between the 1996 and 1999 surveys. Habitat requirements were confirmed as being similar to those previously assumed. Copies of the findings were given to local conservation teams.

2. Estimated Agency contribution in 2000: £5-10k (including *Anisus vorticulus*)

3. Action planned for 2001

- 3.1 PhD due for completion by end of 2001, the management plans should then be able to be drawn from the results of the research.

A freshwater bryozoan - *Lophopus crystallinus*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 63

Agency co-ordinator: To be appointed

Lead partner: Action for Invertebrates

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Address the requirements of this species in the LEAP process and in relevant WLMPs.	X	X
5.1.2	Take account of the species' requirements in response to applications for water abstraction.	X	X
5.2.1	By 2004, reduce water abstraction from Barton Blow Wells aquifer and Breck aquifers.	X	X
5.4.1	Advise landowners and managers of the presence of the species and the importance of beneficial management for its conservation.	X	X
5.5.2	Conduct targeted autecological research to inform habitat management.	X	X
5.5.3	By 2000 start long-term surveillance of one or more populations, possibly using artificial substrata to allow quantitative population studies, in order to study natural fluctuations in population size.	X	X

1. Examples of project work

1.1 There was no action in 2000.

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

3.1 No action is planned for 2001 unless additional funding can be found.

Ribbon-leaved water plantain - *Alisma gramineum*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 64

Agency co-ordinator: Gill Walters

Lead partner: Environment Agency/English Nature

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Identify water quality requirements which will maintain population levels at all known sites, and use these as a basis for setting standards.	✓✓	✓
5.2.2	Identify the habitat requirements of the species through research.	✓	✓

1. Examples of project work

- 1.1. Survey work carried out at Westwood Great Pool indicated that the plant was present early in the season but it was not possible to confirm this later in the season due to high water levels at the site.
- 1.2. Work continued on establishing similar characteristics between sites where it occurs.
- 1.3. Investigations into salinity as a factor affecting the occurrence of submerged and marginal plants.
- 1.4. Hydrological survey of Westwood Great Pool carried out.
- 1.5. Scrub and reed cleared to create suitable substrate and additional survey area.

2. Estimated Agency contribution in 2000: <£5k (£3k)

3. Action planned for 2001

- 3.1. Funding for a study to look at occurrence in Europe to enable a better understanding of the ecological requirements of the species.
- 3.2. Investigations into salinity.

Cut grass - *Leersia oryzoides*

Category: 2

Contact point: English Nature

Focus on biodiversity: page 65

Agency co-ordinator: Jason Lavender

Lead partner: Environment Agency

UK BAP Number	Action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.3	Ensure that land drainage work does not take place in the vicinity of extant wet grassland populations.	X	X
5.2.4	Ensure that watercourse management programmes at sites for cut-grass fully take into account the requirements of the species.	X	X
5.2.5	Ensure that Local Environment Agency Plans and Water Level Management Plans take full account of the requirements of this species.	X	X
5.2.6	Prepare watercourse management plans for all SSSIs with extant populations of cut-grass.	X	X
5.4.2	As far as possible, ensure that all relevant agri-environment project officers, relevant drainage engineers and waterways managers are advised of locations of this species and its management requirements.	X	X

1. Examples of project work

1.1 None due to lack of resources

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

3.1 None due to lack of resources

Triangular clubrush - *Schoenoplectus triqueter*

Category: 2

Contact point: English Nature

Focus on biodiversity: page 66

Agency co-ordinator: Paul Smith

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.1	Where possible, minimise hard engineering of river channels along which this plant has been recorded and continue to develop alternative river management techniques. Particularly for the Rivers Arun, Medway and Tamar.	✓	✓
5.2.2	Ensure that future habitat management within the River Tamar SAC is appropriate to the needs of this species.	✓	✓
5.5.1	Undertake a survey of the Rivers Tamar, Medway and Arun to look for any unrecorded clumps of triangular club-rush and to identify any suitable sites from re-introduction.	✓✓✓	✓
5.5.2	Undertake annual monitoring of the last remaining extant population and of any newly re-established populations.	✓✓	✓
5.5.3	Assess the feasibility and desirability of deflecting the eroding force of the river away from the single extant population on the River Tamar.	X	X
5.5.4	Carry out a full autecological assessment of this species with a view to refining conservation action. Including investigations into the reason for its decline and identifying any threats.	✓✓	✓
5.5.5	Investigate seed production in triangular club-rush.	✓	✓
5.5.6	Consider investigating the impacts of nutrient enrichment and pollution on populations of triangular club-rush and consider the value of buffer strips alongside water courses in the vicinity of key sites.	X	X
5.6.1	Develop links with botanists in Ireland and elsewhere in Europe in order to understand the species biology and preferred conditions.	✓✓✓	✓

1. Examples of project work

- 1.1 Monitoring the success of the large reintroduction programme on the Tamar estuary in 1999. Initial results were encouraging. Inevitably some plants had been lost but large areas appeared to be settling in well and had produced new shoots. Some were found in an area that hadn't been planted and therefore likely to have been transported from elsewhere in the estuary. This may be an important mechanism for the plant to naturally colonise new areas and we will keep an eye on this in the future. Monitoring at the Tamar will continue to ensure the population is self sustaining.
- 1.2 The Arun estuary in Sussex and the Medway estuary in Kent were surveyed for triangular clubrush and its hybrids. The aim was to identify whether there were any areas of undiscovered *S. triqueter* here and to discover the extent and distributions of its hybrids. Plant material was collected for genetic work by Kew Gardens to establish whether it might be appropriate to reintroduce *S. triqueter* from the Tamar &/or Shannon (Ireland) estuary to the Arun and Medway. The results revealed significant amounts of hybrid (*S. keukenthalianus*) in the Arun but none from samples taken from the Medway. A hybrid plant was also discovered in the Thames suggesting that this area should be studied further in the future. The results identified that, subject to further negotiation, reintroduction in the Arun estuary is a viable option in terms of genetic integrity and therefore may occur in 2001/02.
- 1.3 Links made with Limerick University and the Biodiversity partnership (through an Environment Agency R&D project) supported and contributed funds to a post graduate thesis studying the 'Ecology of triangular club-rush in the Shannon estuary'. There is a significant natural population of

pure *S.triqueter* on the Shannon, so the conclusions and recommendations of this thesis have significantly contributed to understanding the habitat requirements of this species.

2. Estimated Agency contribution in 2000: £5-10k (£8.5k)

3. Action planned for 2001

- 3.1 Seek agreement and action a reintroduction project on the Arun.
- 3.2 Further monitoring work on the Tamar.

Greater water parsnip - *Sium latifolium*

Category: 2

Contact point: English Nature

Focus on biodiversity: page 67

Agency co-ordinator: To be appointed

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Promote the restoration of more natural river dynamics on lowland rivers in Britain, including the restoration of alluvial floodplains, in order to create permanent or semi-permanent water habitats for this species.	X	X
5.2.2	Ensure that LEAPs and WLMPs take full account of the requirements of this species.	X	X
5.2.3	Where possible, seek beneficial management for this species at extant sites. Ditches should not be cleaned out too regularly and sites should not be heavily grazed.	✓	X
5.6.1	Use the conservation of greater water parsnip to help illustrate the need to develop natural river and flood dynamics for biodiversity.	X	X

1. Examples of project work

1.1 Steering group established.

1.2 Work continues at various stronghold sites throughout the country. The RSPB warden, Dave Suddaby, on the Ouse Washes in Cambridgeshire and Norfolk, undertakes an annual count of Greater-Water Parsnip plants on his site in late July-August when the plants are at their mature stage. *The 1997 count recorded 236 plants between the Cambs/Norfolk border and just south of the railway viaduct. In 1998 a repeat survey of that same area recorded 470 plants, and in 1999 a survey from the Welney wash road to the Mepal by-pass recorded 793 plants, 562 of which were recorded within the survey area carried out in the previous years.*

1.3 Seed collected from Greater-Water Parsnip on the Ouse Washes and sent them to the Millennium Seed Bank at the Royal Botanic Gardens - Kew, Wakehurst Place.

2. Estimated Agency contribution in 2000: <£5k

3. Action planned for 2001

3.1 Steering group approval of a work programme.

Multi-fruited river moss - *Cryphaea lamyana*

Category: 1

Agency co-ordinator: To be appointed

Contact point: Environment Agency

Lead partner: Plantlife

Focus on biodiversity: page 68

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Any action 1995-99
5.1.1	Ensure that the requirements of this species are considered when developing Water Catchment Management Plans/Local Environment Agency Plans (LEAPs) for rivers where this species occurs.	X	X
5.4.1	Advise all relevant Environment Agency staff and agri-environment scheme project officers working in south-west England and Wales of the locations of this species, its importance, and measures needed to ensure its conservation. They should be told of the need to avoid felling host trees and dumping dredgings on colonies of this species.	X	X

1. Examples of project work

1.1 There has been no action for this species in 2000.

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

3.1 No action is planned for 2001.

Tiny fern-moss - *Fissidens exiguus*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 69

Agency co-ordinator: Chris Formaggia

Lead partner: Plantlife

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.3	On streams with populations of tiny fern-moss, ensure that existing stream discharges and water quality are maintained.	X	X
5.2.5	Where possible, ensure that waterside trees are not removed from alongside those parts of streams with populations of tiny fern-moss.	X	X
5.4.2	Ensure that relevant waterway managers and agri-environment project officers are advised of locations for this species, its importance and the management needed for its conservation.	X	X

1. Examples of project work

1.1. There was no action in 2000.

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001 (*Subject to taxonomic classification of the species*)

3.1 Establish a steering group linked to an umbrella group for similar lower plants to take forward actions.

Water rock bristle - *Seligeria carniolica*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 70

Agency co-ordinator: Jim Heslop

Lead partner: Plantlife

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.3	Ensure that water quality and natural seasonal flow rates are maintained at the known site where this species occurs.	✓	✓

1. Examples of project work

- 1.1 During May a survey of the Northumberland site, carried out by English Nature, confirmed that water rock bristle is still present. Staff from partner organisations also attended and where able to view the moss (to facilitate future surveys) and a number of actions were agreed.
- 1.2 Filamentous algae and diatom samples from the site have been identified and a chemical sampling point has been established by the Agency. The data confirm that the site is oligotrophic. The underlying geology has also been checked, as there is an association between the moss and calcareous rock. The results will help to characterise the conditions most likely to support this species.
- 1.3 An adjacent burn has also been surveyed but no further colonies were found.

2. Estimated Agency contribution in 2000: >5k (£1.5k)

3. Action planned for 2001

- 3.1 More surveys of sites with similar characteristics to the known site are planned, using expert bryologists.
- 3.2 Further chemical and biological monitoring to better characterise the status of the watercourse supporting the colony.

Beaked beardless-moss - *Weissia rostellata*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 71

Agency co-ordinator: To be appointed

Lead partner: Plantlife

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.3	On sites where the moss is thriving, ensure that current management practices (especially water level management) are continued. On other sites where it has declined, undertake experimental management with the aim of enhancing the populations.	X	X
5.2.5	Where relevant, ensure that extant sites for the species are not threatened by land drainage activities or through increases in water abstraction. The requirements of this species should be considered when setting limits on water abstraction.	X	X
5.4.2	Ensure that all relevant people are advised of locations of this species, its importance and management needed for its conservation.	X	X

1. Examples of project work

1.1 There was no action in 2000.

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

3.1 No action is planned in 2001 unless additional funding can be found.

Violet crystalwort - *Riccia huebeneriana*

Category: 1

Agency co-ordinator: Deborah Dunsford

Contact point: Environment Agency

Lead partner: Plantlife

Focus on biodiversity: page 72

UK BAP Number	UK BAP Agency needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.4	Ensure that the habitat quality of extant sites is not adversely affected by land drainage activities	X	X

1. Examples of project work

1.1 No work carried out in 2000 due to lack of resources.

2. Estimated Agency contribution in 2000: £nil

3. Action planned for 2001

3.1 None planned.

Five stoneworts (*Chara connivens*, *Nitella gracilis*, *Nitellopsis obtusa*, *Tolypella intricata*, *Tolypella prolifera*)

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 73-74

Agency co-ordinator: Deborah Dunsford

Lead partner: Plantlife

Convergent stonewort - *Chara connivens*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Ensure that the LEAP process and Water Level Management Plans take full account of the requirements of this species. The findings of 5.5.3 should be used to set water quality objectives and nutrient standards within these plans.	X	X
5.2.4	Devise and implement measures to minimise the threats of boat traffic wash and, depending on the results of 5.5.3, phosphate pollution.	X	X
5.5.4	Commission research into the possibility of salinity levels rising in the Norfolk Broads as influxes of sea water become more frequent as a result of sea-level rise. The research should consider the need for measures to ensure that salinity levels do not increase further.	X	X

Slender stonewort - *Nitella gracilis*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.4	Promote schemes which facilitate the development of buffer strips along water-courses feeding into sites and around the edges of sites, where this will help to reduce pollution from agricultural run-off.	X	X

Starry stonewort - *Nitellopsis obtusa*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Review/establish water quality objectives and associated nutrient standards at all of the extant starry stonewort sites taking into account the requirements of this and other threatened aquatic species	X	X
5.2.3	Depending on the results of 5.5.3, devise and implement measures to minimise the threats of boat traffic wash and phosphate pollution.	X	X

Tassel stonewort - *Tolypella intricata*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.2.5	Ensure that Local Environment Agency Plans and Water Level Management Plans take full account of the requirements of this species. In particular, ensure that no further tassel stonewort sites are lost through increases in levels of water abstraction. This action should take account of the research outlined under 5.5.5.	X	X

Great tassel stonewort - *Tolypella prolifera*

1. Actions assigned to the Environment Agency

Examples of project work

1. No work carried out in 2000 due to lack of resources.

2. Agency contribution: £nil

3. Action planned for 2001

- 3.1 Publish leaflet to raise awareness of the species.

River jelly lichen - *Collema dichotomum*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 75

Agency co-ordinator: Chris Formaggia

Lead partner: Environment Agency

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Seek to eliminate the risk of water pollution, eg through the provision of advice on farm management where this species occurs.	✓	✓
5.2.2	Ensure that LEAPs adequately reflect the water quality and quantity requirements for the river jelly lichen.	✓	✓
5.3.1	Following feasibility studies and identification of appropriate sites, seek to restore 5 populations to unoccupied sites when suitable conditions have been provided.	X	X
5.4.1	Ensure land managers adjacent to extant sites, local planning authorities and water management authorities are aware of the presence, legal status and threats to the species and its community, and the importance of its conservation.	X	X
5.5.1	Undertake survey of potential sites to establish the distribution of the species.	✓	✓
5.5.2	Encourage research into the ecological requirements of the species to determine the optimum conditions for growth and the feasibility of re-introduction.	✓	✓
5.5.3	Investigate further the effects of eutrophication and acidification of streams on this species and seek to reverse the impacts.	X	X
5.5.4	Establish a protocol for regular monitoring of this species and the water quality in the vicinity of known sites.	✓✓	✓

1. Examples of project work

- 1.1 Further survey work has been undertaken in England and Wales. No new records have been confirmed. Work on long-term monitoring started.
- 1.2 Undergraduate study was completed: this included an initial assessment of the potential of using River Habitat Survey (RHS) as a predictive tool for species distribution.
- 1.3 Distribution data produced as a GIS layer.
- 1.4 Literature searches progressed determination of distribution beyond the UK.

2. Estimated Agency contribution in 2000: <£5k

3. Action planned for 2001

- 3.1 Production of a factsheet.
- 3.2 Further monitoring.

Aquifer-fed naturally fluctuating water bodies

Category: 1

Agency co-ordinator: Pat Sones

Lead agency: Environment Agency

Focus on biodiversity: page 76

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Ensure that water abstraction and groundwater protection policies take into account the specific requirements of aquifer fed naturally fluctuating water bodies and where necessary introduce new controls.	✓	✓
5.1.2	Ensure that fishery policy recognises the need to prevent introductions of fish to these water bodies.	X	X
5.1.3	Consider the designation of a Water Protection Zone to safeguard water quality in the Breckland Meres.	X	✓
5.2.1	Bearing in mind the possible effects of climate change, continue to review the use of water resources in the area affecting the hydrological balance of the Breckland meres. In the light of the monitoring programme (see 3.2) set consent levels and regimes for abstraction, which are compatible with maintaining the maximum nature conservation interest of the meres.	✓✓	✓
5.2.2	Establish water quality objectives and associated nutrient standards for turloughs and Breckland meres by 2002 and aim to meet these targets by 2010.	X	X
5.2.4	Ensure that all SSSI/ASSI water bodies in this category have site management plans implemented by 2004, bearing in mind that activities well outside the SSSI/ASSI boundaries may affect the water bodies. Where necessary, offer long-term management agreements to protect these sites.	X	X
5.2.8	Contribute to the implementation of relevant species action plans for rare and declining species associated with aquifer fed naturally fluctuating water bodies in conjunction with the relevant species steering group.	X	X
5.3.1	Continue to advise Government and landowners on measures to safeguard this fragile habitat.	✓	✓
5.4.1	Contribute to knowledge of the status and importance of naturally fluctuating water bodies and of their effective management, by exchanging information gained in the UK with colleagues in other countries that contain similar sites.	X	✓
5.5.1	Carry out research to clarify the impacts of water abstraction, forestry and climate change on the hydrological regime of the Breckland meres. In particular, undertake groundwater modelling to increase understanding of the hydrological mechanisms in the aquifer and meres. Report on this by 2003.	✓✓	✓
5.5.2	By 2000 characterise the quality of the groundwater supplying turloughs and the Breckland Meres.	X	X
5.5.4	Devise and initiate methods of biological and hydrological monitoring for all known aquifer fed naturally fluctuating water bodies by 2000. By 2015 consider whether, in the face of climate change, these sites are viable in the long term.	X	✓
5.5.7	Contribute information to a World Wide Web based catalogue of survey information as a means of improving access to information on aquifer fed naturally fluctuating water bodies.	X	X

1. Examples of project work

1.1 Ely Ouse groundwater investigation and model project in progress.

2. Estimated Agency contribution in 2000: <5k

3. Action planned for 2001

3.1 Issue of winter storage scheme abstraction licence to replace several groundwater abstraction licences that will reduce the risk of adverse impacts from abstraction on the Breckland Meres.

Chalk Rivers

Category: 1

Lead Agency: Environment Agency

Agency co-ordinator: Lawrence Talks

Focus on biodiversity: page 77

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Review abstraction licences during LEAP production. Where abstraction is found to be damaging the quality of the chalk river habitat, consider amending or revoking the licence.	✓	✓
5.1.3	Review licences for industrial/effluent discharge where these are found to damage the quality of chalk rivers.	✓	✓
5.1.4	Seek to ensure that the environmental impact of development adjacent to and/or directly impacting on chalk rivers is minimised, particularly for SSSI and SAC chalk rivers.	✓	✓
5.2.3	Develop conservation strategies for chalk rivers.	✓	✓
5.2.4	Schemes to encourage sympathetic management of catchments and river corridors should be reviewed by 2000 and extended where appropriate in order to reduce the run-off of silt and enhance wildlife habitats.	✓	✓
5.2.5	Water quality on SSSI rivers should be assessed against proposed Special Ecosystem Statutory Water Quality Objective targets and problem sources identified. Significant pollution on other rivers should be assessed. A plan for remedying water quality problems should be drawn up for each SSSI river by 1998 and the remaining chalk rivers by 2002. Where phosphate removal is required at sewage treatment works on SSSI rivers, it should be installed by 2000.	✓	✓
5.3.1	Promote advice on the best approaches to river corridor and catchment management.	✓	✓
5.5.1	Assess the nature conservation value and potential for restoration of chalk rivers other than those which are SSSI/pSAC by 2001.	✓	X
5.5.2	The feasibility of restoration on stretches of modified small chalk rivers should be established by 2001 using experimental approach to assess the wider applicability of physical restoration techniques.	✓	✓
5.5.3	Initiate a study investigating the beneficial impact of the management of chalk rivers and adjacent land use on the aquatic plants and animals.	✓✓✓	✓

1. Examples of project work

- 1.1. South West Region's LANDCARE programme has continued to develop. This was established as a partnership pilot project to work with landowners on the Hampshire Avon catchment to address diffuse pollution of silt, nutrients and pesticides. Significant successes and outputs include:
 - Collaboration with ADAS on rainfall related water quality issues on the Nadder.
 - Continuation of the Barford Field Trial site demonstrating the benefits of conservation tillage.
 - Draft Landcare baseline report.
 - Headwater monitoring in Western Avon to identify nutrient source(s).
 - Support to PhD.
- 1.2 The programme of river enhancements on the Test and Itchen to promote fishery interests continued. A particular objective is the restoration of spawning gravels to promote the production of wild trout and salmon fry. A total of 5,000-sq. m of gravel was cleaned and 600 tonnes of gravel placed. Several salmon were seen spawning on these enhanced areas.

- 1.3 The Agency contributed to preliminary work on a major water resource study of the River Itchen to be funded by Water Companies. This will focus on the ecological requirements and current status of key species within the river. A steering group has been set up to identify which species to focus on and agree the scope of the study.
 - 1.4 A partnership project has been established with Thames Water to restore degraded reaches of the River Kennet . Habitat enhancement works have been carried out on four stretches of the river.
 - 1.5 Long-term studies of the Kennet and Lambourne funded by the Agency continued. This involved macrophyte mapping and invertebrate sampling of stretches first studied during the 1970s, designed to identify long-term changes in river ecology which may be identified with changes in climate or catchment.
 - 1.6 The Chilterns chalk river project is a collaboration to protect and restore rivers that historically have been subject to over-abstraction and catchment degradation through development.
 - 1.7 Detailed design of rehabilitation schemes on the Wensum (Norfolk) was carried out following a river survey completed in 1998/9. Three separate schemes were implemented during the year. Similarly, proposals for river rehabilitation have been developed for the River Nar.
 - 1.8 Detailed studies on the ecology of several Lincolnshire rivers were carried out, following an earlier desk study to identify chalk river reaches. These concluded that although there are differences from the classic chalk rivers of Southern England, inclusion of these rivers in the Chalk River HAP is valid.
 - 1.9 Yorkshire hosts England's most northerly chalk rivers, notably the River Hull Headwaters. This SSSI has been subject to detailed multifunctional studies in recent years and recommendations from this are now being implemented. Generally the work carried out in 2000 has been to establish baselines of data to enable informed decisions to be made on the need to amend or revoke a large number of Agency consents, contributing to the HAP targets. Identification of changes to management practices, both by the Agency and riparian owners, will be possible, as will opportunities for habitat enhancement.
 - 1.10 A review of the draft national GIS map has been undertaken. The resultant amendments are to be completed and the final map should be available during 2001.
 - 1.11 Nationally several chalk rivers are subject to continuing Alleviation of Low Flow programmes. These involve a variety of projects, including negotiations with water companies to relocate abstraction points.
2. **Estimated Agency contribution in 2000: >£50k**
 3. **Action planned for 2001**
 - 3.1 Continuation of projects above.



Coastal saltmarsh

Category: 1

Lead agency: Environment Agency

Agency co-ordinator: Brian Empson

Focus on biodiversity: page 79

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.3	Promote awareness and uptake of agri-environment schemes which involve the management and creation of saltmarsh.	✓✓	✓
5.1.4	Take account of available mechanisms for the management and creation of saltmarsh when developing Shoreline Management Plans and strategies for the management of coastlines,	✓✓	✓
5.1.5	Initiate the preparation of strategic flood defence management plans in estuaries by 2003 which determine what could be achieved in terms of saltmarsh creation.	✓	X
5.1.6	Investigate opportunities to incorporate the non-use value of saltmarsh into flood defence schemes.	✓	X
5.2.2	Ensure that coastal defence or other construction works avoid any disruption of natural processes which might lead to the loss of saltmarsh.	✓✓	✓
5.3.1	Promote and develop demonstration sites for the management and creation of saltmarsh and disseminate results.	✓	✓
5.3.2	Encourage the appropriate management of saltmarsh through the production and dissemination of guidance material by 2005.	✓	X
5.3.3	Establish a technical expert group by 1999 to collate and disseminate information relating to the relationship between saltmarsh, nature conservation and flood defence.	✓✓✓	✓
5.3.4	Make use of the potential provided by existing estuary management partnerships in taking forward the actions of this plan.	✓✓	✓
5.3.6	Implementation groups for relevant HAPs should be advised on how to make appropriate provision for compensatory habitat creation.	✓✓	X
5.5.1	Put measures in place to clarify the current and future rates of saltmarsh loss enabling a review of the targets of this plan by 2004.	✓✓✓	X
5.5.3	Continue development of the use of remote sensing for monitoring soft coast habitats to determine the extent and rate of change, including the identification of the highest priority areas for saltmarsh creation.	✓✓	X
5.5.4	Investigate the beneficial use of fine dredged materials for promotion of saltmarsh accretion and disseminate the results.	✓✓	✓
5.5.5	Continue research in to the factors influencing the establishment of saltmarsh vegetation, and use this to develop 'best practice' methods for management.	✓✓	✓
5.5.6	Undertake research on estuary dynamics, including the effects of sediment removal in relation to its impact on saltmarsh.	✓✓	✓
5.6.1	Raise public awareness of the essential mobility of saltmarsh and its value for a variety of interests including coastal processes, flood defence, fisheries, nature conservation, amenity and recreation.	✓	X

1. Examples of project work

- 1.1 Draft work programme has been produced for approval.
- 1.2 English Nature has translated the national biodiversity targets into Natural Areas that correspond with the shoreline management plans cells.
- 1.3 Memoranda of Understanding have been signed with The Wildlife Trusts and WWF UK and RSPB to assist in the achievement of the biodiversity action plans.

- 1.4 Interim guidance has been issued by the Ministry of Agriculture, Fisheries and Food to assist the delivery of flood defence schemes in a manner that is compliant with the Habitats Directive through the development of Coastal Habitat Management Plans (CHaMPS). A 3-year partnership project between the Environment Agency, English Nature and NERC has been initiated to develop this process. It is intended to produce CHaMPS for 6 pilot sites.
- 1.5 Guidance has been given to operating authorities on how to achieve no net loss of habitats from flood defence capital schemes.
- 1.6 Workshop held on the Countryside Stewardship Scheme - Inter-Tidal Habitat option.
- 1.7 First phase of the Estuarine morphology and processes (EMPHYSIS) project completed. Best practice guidance proceeded on current models to enable improvements to the prediction and understanding of estuary morphology and processes.
2. **Estimated Agency contribution in 2000: >£50K (£400k - *both mudflats and saltmarsh*)**
3. **Action planned for 2001**
 - 3.1 Guidance for second generation Scheme Management Plans to include biodiversity targets.
 - 3.2 Produce a leaflet to improve better understanding of the use of saltmarsh and mudflats as a natural flood defence.
 - 3.3 Develop four demonstration sites for managed realignment.
 - 3.4 Further research changes to improve future prediction of mudflats and saltmarsh development.



Eutrophic standing waters

Category: 1

Lead agency: Environment Agency

Agency co-ordinator: Simon Leaf

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UK BAP Number	UK BAP action needing Agency contribution	Agency contribution In 2000	Agency action 1995-99
5.1.1	By 1999 establish agreed criteria to identify Tier 1, Tier 2 and Tier 3 eutrophic standing waters. By 2002 produce a list of sites comprising Tiers 1 and 2.	✓	✓
5.1.2	By 2005 establish site-specific plans to achieve appropriate water quality, water resource use, fishery management and biological status for all important (Tiers 1 and 2) eutrophic standing water bodies. Within these tiers, assign priorities to the sites according to threat, vulnerability, potential for restoration and nature conservation interest. Issues raised in England and Wales to be addressed principally through LEAPs.	✓	✓
5.1.3	Develop an integrated national approach to measuring environmental change in eutrophic waters and to solving problems affecting these habitats and resources.	✓✓	✓
5.1.4	Seek to ensure that phosphorus stripping is instituted on all sewage works serving population equivalents of over 10,000 within designated sensitive areas (as specified in the EC Urban Waste Water Treatment Directive), where this would contribute to the control of pollution in eutrophic standing waters. Carry out a review of the sensitive areas, make further appropriate designations and implement the required measures by 2004.	✓✓	✓
5.1.5	Consider modifying and expanding agri-environment measures further to protect eutrophic standing waters from agricultural contaminants. Produce any proposals by 2000.	✓	X
5.1.6	By 2005 complete a review of the effectiveness of existing measures to control diffuse-source pollution, and where necessary introduce new controls.	✓	✓
5.1.7	By 2005 complete a review of the effectiveness of existing measures to revoke existing damaging abstractions and if necessary introduce new controls.	✓	✓
5.1.10	Review the efficacy of legislation on fish introductions and fishery management, particularly in relation to bottom-feeding fish and high stocking densities.	X	✓
5.2.1	By 2005 embark upon a nationwide programme of nutrient control, targeting sites in priority order according to the strategy in Section 4. Aim to maintain the condition of all Tier 1 eutrophic standing waters and to improve by 2020 the condition of at least 50% of Tier 2 sites. Continue the programme beyond 2020, to complete coverage of all Tier 2 sites.	✓✓	✓
5.2.2	By 2004 complete the programme of notifying important eutrophic standing waters as SSSIs/ ASSIs. Prepare and where possible implement site management plans, taking special account of threats posed by pollution, water abstraction and recreational use.	X ✓	✓ ✓

5.2.3	Maintain or introduce appropriate fishery management. Where appropriate, institute restorative measures such as phosphorus control, biomanipulation and species reintroduction.	✓	✓
5.2.4	Prepare and by 2010 implement catchment management plans for Tier 2 eutrophic standing waters which are not SSSIs or ASSIs.	X	X
5.2.8	Ensure that local planning mechanisms (e.g. Local Authority Structure Plans) take account of the wildlife interest of all (Tiers 1, 2 and 3) eutrophic standing waters.	X	✓
5.2.9	Contribute to the implementation of relevant priority species action plans for rare and declining species associated with eutrophic standing waters, in conjunction with the relevant species steering group.	X	X
5.3.1	Provide advice for managers and users of eutrophic standing waters, to promote the conservation of biodiversity in this habitat.	X	✓
5.3.2	Promote best practice in farming and encourage farmers to prepare and implement farm waste management plans in catchments of vulnerable eutrophic standing waters.	✓	✓
5.3.3	Develop guidelines for best practice in fishery management.	X	✓
5.4.2	Promote the interchange of information between the UK and other countries on management techniques, conservation and research relevant to eutrophic waters.	✓	✓
5.5.1	By 1999 develop a rapid screening system to assess the biological quality of eutrophic standing waters, in order to classify them (see 5.1.1) as Tier 1, Tier 2 or Tier 3 and to determine priorities within these categories.	✓	✓
5.5.2	By 2000 complete current work on the development and testing of a water quality classification of lakes and produce systems for assessing the degree of past change and for monitoring lake water quality. Apply these schemes to all Tier 1 and Tier 2 eutrophic water bodies.	✓	✓
5.5.3	Continue to develop techniques of eutrophication risk assessment and to investigate means of controlling enrichment. Promote research into the role and transport of phosphorus and nitrogen in fresh waters and into the quantification of risks posed by diffuse-source pollution, including atmospheric nitrogen.	✓✓	✓
5.5.4	Continue experimental work on remedial action for nutrient-enriched standing waters and monitor the results of procedures already taken.	✓	✓
5.5.5	Investigate the impact of introduced species on eutrophic standing waters and develop strategies to mitigate their effects.	X	✓
5.5.6	Promote research into the likely effects of climate change and sea level rise on eutrophic standing waters.	✓	✓
5.5.7	Contribute information to a World Wide Web based catalogue of survey information as a means of improving access to information on eutrophic standing waters.	X	X
5.6.1	Ensure that information on well-studied eutrophic standing waters is made readily available and publish advice on good management practice, targeting site managers and policy makers.	X	✓
5.6.2	Continue to contribute to symposia on the conservation of fresh waters and to encourage the publication of papers on issues relating to eutrophic standing waters in peer-reviewed scientific literature.	✓	✓

1. Examples of project work

- 1.1 A UK steering group was convened jointly with the group co-ordinating work on the complementary Mesotrophic Lakes Habitat Action Plan. It has met four times since the HAP was published in December 1998.
- 1.2 The UK group has been working on criteria for identifying and prioritising eutrophic (and mesotrophic) standing waters and creating an inventory of sites, building on the work done for mesotrophic lakes. Progress has been affected by the technical difficulties in attempting to place waters into trophic categories, "eutrophic" and "mesotrophic". As a result the UK group is developing, through collaborative R&D, a risk/harm-based protocol for prioritising standing waters (regardless of trophic category). The project will also create an inventory of standing waters. The outcome of the work will provide a firm basis for the subsequent targeting of actions to protect and/or rehabilitate priority waters through a range of national and local measures.
- 1.3 The Agency's national strategy on aquatic eutrophication was published and placed on the website [www.environment-agency.gov.uk]. Initial stages of implementation are being co-ordinated by an internal business group. It is being progressed through a partnership approach and priority will be given to waters of high conservation status. A suite of 11 pilot eutrophication control action plans (ECAPs) was introduced during 2000/01 to test and refine methods of assessing and controlling eutrophication at a local level. Five of these sites are lakes/reservoirs.
- 1.4 A simple leaflet on eutrophication was also published in August.

2. Estimated Agency contribution in 2000: > £50k (£170k)

3. Action planned for 2001

- 3.1 The R&D project will produce an inventory of waters during 2001 and an initial set of priority waters for more detailed assessment.
- 3.2 The Agency and English Nature intend to convene an English Country Group to help co-ordinate HAP implementation at national level. The Agency also intends to undertake work to promote internal and external awareness of the HAPs, including links to LBAP groups.
- 3.3 Implementation of the eutrophication strategy will focus on the reduction of nutrient inputs to water (nationally) from the key sources (sewage effluents and agriculture), complemented by the local pilot ECAP initiative. Guidance for operational staff on the development of local eutrophication action plans, including computer models and other methods for assessing eutrophication problems, will be issued and refined. Methods for measuring eutrophication will be reviewed.

Mudflats

Category: 1

Lead agency: Environment agency

Agency co-ordinator: Brian Empson

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UK BAP Number	UK BAP action needing Agency contribution	Agency contribution in 2000	Agency action 1995-99
5.1.1	Provide a clear national policy by 2000 for SMPs, land use planning and development control policy which ensures that there is no net loss of tidal flats by development, from a 1992 baseline, and that provision is made for the restoration of natural losses over the longer term.	✓	X
5.2.2	Ensure that wherever practicable coastal defence or other construction works avoid disruption of coastal processes that might lead to a loss of, or damage to, mudflats.	✓✓	✓
5.2.3	Maintain and where possible improve estuarine and coastal water quality.	✓✓	✓
5.3.1	Ensure that good-practice guidance is available to shoreline management authorities on how to plan for the maintenance of mudflats in a period of rising sea level by 2000. Particular attention should be given to the use of dredged material and the creation of new mudflats.	✓✓	✓
5.5.1	Run field trials to refine and demonstrate techniques for habitat restoration and creation by 2002. Particular attention should be given to the use of dredged materials.	✓✓	✓
5.5.2	Continue to develop an understanding of the value of mudflats for flood and coastal defence and the holistic management of these habitats in conjunction with flood risk management.	✓✓	✓
5.5.4	Initiate research into sediment exchange processes between mudflats and other coastal habitats and on the dynamics of cohesive sediments in estuaries.	✓	X
5.6.1	Educate planning authorities and developers on the important functions of mudflats in estuarine and coastal systems by the preparation and dissemination of a pamphlet by 2001.	✓	X

See Coastal Saltmarsh for Actions.

3.1 Actions for Category 3 & 4 Species and Habitats

***Apium repens* - Creeping marshwort**

- The WLMP is complete for the site where the species has been recorded.
- Experiments on seed viability and longevity, pollination and tolerance of flooding set up and started.
- The Agency was represented at a meeting to consider what future work needs to be carried out to enhance knowledge on this species, particularly work on grazing regimes.
- Introduced/ natural restoration experiments in progress; with scrapes being created and grazing levels being monitored to assess when experimental area becomes suitable for *Apium*
- Further sites being looked at for further restoration work.

Aquatic Warbler

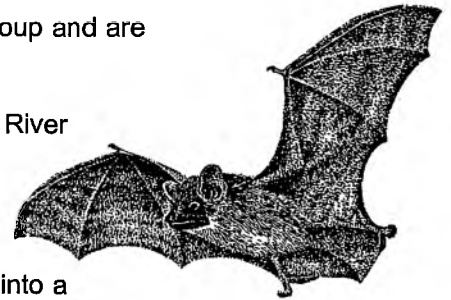
No specific actions were undertaken, as the species is covered by the Reedbeds Steering Group. The Agency's general protection for wetlands, and creation of new reedbeds, will have benefited this species.

Bats

The Agency continues to support the BCT/DETR National Bat Monitoring Programme by supplying River Habitat Survey and water quality data for the Daubenton's bat survey. The Agency is also involved in data analysis for this survey for the purpose of associating habitat variables with bat activity.

The Agency regularly attends the Pipistrelle Biodiversity Action Plan Steering Group and are currently developing our role in the plan with the Bat Conservation Trust.

The Agency continues to run bat box monitoring projects at Shifford Lock on the River Thames, River Usk and River Wye. The main focus is recording data from monitoring stations (bat boxes) within the catchments and mapping movements of ringed Daubenton's bats.



Creation of roosts included the conversion of a large Second World War pill box into a bat hibernaculum, near Wallingford on the River Thames. Also on the Upper Thames, water gauging stations have been modified for bat use. Nationally, other roosts have been created by developers as a condition of consents required from the Agency whilst building bridges, for example. Bat boxes continue to be put up at various locations.

Radio tracking of Daubenton's bats on the River Wharf continues in collaboration with Leeds University.

Derbyshire Feather Moss

The programme of water quality monitoring (chemical and biological) agreed with Lead partner (English Nature) has continued at the single UK site and results have been reported. Actions and objectives were reviewed by the Agency and EN during the preparation of a new Species Action Plan submitted in fulfilment of the Peak District Biodiversity Action Plan.

Desmoulin's whorl snail

The Agency is collaborating with English Nature in funding a project entitled 'Hydrological Requirements of *Vertigo moulinsiana*' - this is studying 3 Habitats Directive sites in Anglian and Thames Regions with view to providing some data which should enable us to make decisions regarding optimising water levels (especially with regard to Agency activities such as abstraction licences and flood defence. This should give us some firmer figures to use as conservation objectives for the sites. The project is due to report in 2001.

Diving Beetle *Hydroporus rufifrons*

Mire Pill-Beetle *Curimopsis nigrita*

Ground Beetle *Bembidion humerale*

There is a requirement to establish the current status of these species (highlighted in the appropriate LEAP documents) and build upon the most recently available distribution information. An agreement is currently being formulated with the local LEAPs team to make use of some temporary manpower in 2001, in order that links with the relevant partner organisations for the above species may be strengthened, and partnership projects developed.

Floating Water-Plantain

The Agency made an input to the Steering Group for this species, including the design of an information leaflet. Conservation requirements are being addressed at those SACs which have been designated for the species. A

workshop was held on the species in Shropshire, at which the Agency was represented.

Grass-wrack Pondweed

The Agency made an input to the Steering Group for this species.

***Gyraulus acronicus* - A snail**

Extra funds secured for surveys in 2001. These will include monitoring distribution, habitat preferences and ecology. Molecular work will also be carried out on some of the specimens collected in order to determine if *G.acronicus* in Britain is actually the same species as *G.acronicus* in Scandinavia and the Pyrenees. If they are different species this would make the population in the Thames catchment the only representative of this species in the world.

Marsh Fritillary Butterfly

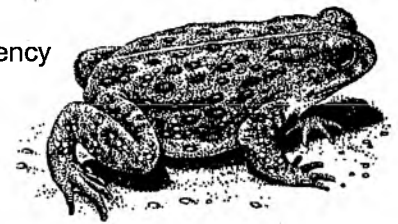
The year 2000 has been a good year for the Marsh Fritillary.

Five new sites in Cornwall have been found from surveys aided by funds from the Agency.

In Dorset and North Devon many sites have enjoyed a successful breeding season.

In Wales an established site with 16 years of records has produced its highest adult population numbers.

In Cumbria the existing sites had a steady recovery of adult numbers, mainly due to more favourable late Spring weather conditions. Again financial support from the Agency helped with survey work for existing and planned restoration sites.



Natterjack Toad

The Agency has an agreed remediation scheme for the Mawbray Banks population which is in trouble due to loss of grazing terrestrial habitat and colonisation of breeding pools by sea club rush and common reed.

English Nature and the Agency have agreed a plan to re-scape several of the affected pools during adjacent Flood Defence routine maintenance of coastal outfalls. Unfortunately the very heavy rainfall has kept the pools full throughout the autumn / winter period so preventing the dry working conditions necessary to carry out the job and prevent damage to the rest of the SSSI.

It is unlikely we will be able to carry out the works in time for the 2001 breeding season.

Netted Carpet Moth

A database of Netted Carpet Moth and Touch-me-not-Balsam sites in Cumbria and North Lancashire has now been produced. Comprehensive surveys undertaken revealed a healthier picture for both the plant and moth colonies than for the last few years (except the Derwent Water sites). New sites for plant and moth colonies were found. This apparent improvement is probably weather related rather than due to any management practice, although a reliance on disturbance (mainly by cattle grazing/poaching) remains important.

New Forest dung beetle - *Aphodius niger*

The UK actions are all about ensuring appropriate input to Water Level Management Plans, LEAPs etc. However, the species lives on the edge of ephemeral ponds - which are not greatly affected by WLMPs or any Agency remits that might be highlighted in LEAPs. English Nature, have undertaken surveys and have increased the number of known locations from 1 to 6. They believe that although it is quite a specialised species, and likely to be restricted to only a few areas in New Forest, it will turn up in more ponds if looked for. Key threats remain the unknown impacts of worming drugs used for New Forest live stock which may persist in the dung, and direct damage to the ephemeral pools - the latter of which should be controlled through existing consenting processes and appropriate protection of the SSSI by English Nature. On-going surveys by English Nature's species recovery programme will continue to monitor the status of this beetle

Norfolk flapwort

A Local Norfolk BAP has been written for this species. The Agency has recently let a project to better understand the hydrology of a number of sites including those that support or have supported Norfolk flapwort

***Odontomyia hydroleon* - a Soldier Fly**

There is one site in Wales and one in North Yorkshire. In 1999 Seive Dale (North Yorkshire) looked good, with several areas of grazed, open seepages where the larvae are most likely to be. However, a brief search for larvae failed to find any and their exact ecological requirements remain a mystery.

CCW has paid for searches (£6000) for larvae at the Welsh locality in 1999 and 2000 but unfortunately, these were unsuccessful. Adult numbers proved to be low, with only 2 in 1999 and 3 in 2000. A more considered approach to the work will be required in 2001, the Agency will be kept updated with progress.

Shore Dock

A number of new coastal sections of Cornwall and Devon south coasts have been designated SSSI and proposed as SAC, this will have a positive effect on shore dock. The Agency has bid from Habitats Directive funds to carry out a study of the coastal streams feeding these sites to ascertain pollution levels, which could cause an adverse impact on the species.

Telford crane fly

An English Nature survey failed to confirm the recent sites for this species, and will need to be repeated at a different time of year, but Area Conservation staff have been made aware of likely sites and habitat requirements.

***Thamnobryum catacactarum* - A feather moss**

Relevant staff notified of the presence of the species in their area so that it can be considered during planning/water quality/abstraction proposals upstream of the site.

Yellow Marsh Saxifrage - *Saxifraga hirculus*

The Agency had very little input to the Yellow Marsh Saxifrage BAP in 2000. The key piece of work that was co-ordinated by the national steering group for the species was the 'small sites project'. This involved employment of a researcher who visited all past known locations for the species in England in order to gain a good picture of its status nationally.

The results of the 'small sites project' will be collated by April 2001 and then forwarded to the BSBI Threatened Plants Database to allow wider access of the information.

Work suggested for 2001 is likely to include:

1. Research into the ecological requirements of the species - this is likely to include a variety of phytosociological work and an investigation into the water quality requirements of this species. The output will be a paper covering the above and management issues that affect the species. The Agency has committed 1K of its Conservation R&D Budget for 2001 towards this work.
2. Habitat Restoration work - an opportunity has arisen to restore a site where the species was once present but became extinct due to moorland gripping. The proposed works would involve grip blocking and fencing to keep stock out for at least part of the year. The site is Little Ay Gill (County Durham) which has been identified as the best potential reintroduction site for the species in England.

Wetlands

The Wetland HAP Steering Group was set up in March 2000 to co-ordinate work on four key habitats; coastal & floodplain grazing marshes, lowland raised bogs, reed beds and fens. The group is under English Nature's chairmanship since they remain the lead partner for all four habitats.

The aims of combining these habitats under one steering group are to eliminate duplication of effort, to co-ordinate bids for funding and resources and to ensure all these habitats receive equal and adequate attention.

The new group has plans to establish a number of topic based sub-groups to tackle issues such as funding, publicity, planning, research and development, water policy etc.

Achievements have included:

- the identification of which National Vegetation Classification community types relate to each habitat
- a "Framework Document" for a funding bid to the Heritage Lottery Fund (HLF), which outlines the case for funding this initiative, has been drafted and circulated
- a presentation to a working group concerned with the implementation of the EU Water Framework Directive.

The targeting of sites will need to be integrated with social and economic needs such as creating washlands for flood defence or biological filters for foul water treatment.

Funding mechanisms such as the HLF bid, Countryside Stewardship and other sources need to be co-ordinated in order to effectively target the available resources. This will require working with a number of very different organisations in order to influence their funding policies.

Finally there is a need to co-ordinate with the various Species Action Plan groups in order to ensure that the habitats that the species require are available and managed appropriately to sustain national (and global) biodiversity. This will be achieved as knowledge of the distribution range and requirements of these species becomes better understood.

Wet Woodland

An inventory of wet woodlands in Midlands Region was compiled during the year. The Agency's general protection for wetland habitats will have brought benefits for wet woodland sites.

3.2 National Biodiversity Network

What is the National Biodiversity Network?

The National Biodiversity Network aims to ‘..give the people of the United Kingdom universal knowledge of our natural heritage’. It is an initiative which builds on the work of the Coordinating Commission for Biological Recording, which found that 2000 organisations and societies and over 60,000 individuals, 70% of them volunteers, are actively engaged in wildlife record collection and storage.

In 1996 JNCC, NERC, the Natural History Museum, RSPB, the National Federation for Biological Recording, and Wildlife Trusts formed a group to establish a nationally agreed methodology for recording biological information. One result was the National Biodiversity Network, which gained charitable status in 2000. The NBN system has been under development through JNCC and a pilot project appears on the Web (HYPERLINK <http://www.nbn.org.uk>) www.nbn.org.uk). Government funding of £500k over two years from February 2001 underpins development.

How will this help the Environment Agency?

We have now joined the NBN Consortium allowing us to gain access to the wealth of information that the NBN will provide.

We need access to a wide range of biodiversity information to help us form an opinion on the general state of the environment, and more specifically in assessing applications for environmental licences. In return our large databases of information on fish, aquatic invertebrates, plants and algae will be made available through the NBN.

Specific biodiversity information will be needed to determine the outcomes of our “Environmental Vision”, helping to ensure that our activities, and those we authorise, do not threaten key species and habitats.

What are we doing to help develop the NBN?

We are now represented on the Board of Trustees for the NBN and the Policy and Project Advisory Group, and are contributing financially to the running of the NBN Trust. We are involved with individual NBN projects including the Accreditation, Species Dictionary and Local Record Centres’ projects and, through the Agency’s internal NBN Steering Group, are determining the range of information needed by the Agency to maximise our contribution to and benefit from the NBN. We are also scoping out the most efficient technical solutions to interface with the NBN web-site.



2001 promises to be an important year. We need to further consolidate wildlife conservation into the Agency through a biodiversity check on policies, programmes and projects - in a similar vein to the Green Ministers' checklist. We need to make substantial progress on our review of consents under the Habitats Directive to keep on track with the EU timetable and we need to ensure effective implementation of the CRoW Act provisions.

Assessing how effective our actions have been remains difficult because national population surveys of UK BAP species is not our responsibility and most are not carried out annually. Nevertheless, broad population trends are available and there are again mixed messages⁴. Signs of recovery or wider distribution than originally thought are shown by otter, ribbon-leaved water plantain, river jelly lichen. Species still in decline include water vole, great crested newt, marsh fritillary, netted carpet moth, white-clawed crayfish, little whirlpool ram's horn snail, freshwater pearl mussel, depressed river mussel, shining ram's horn snail, floating water plantain and grass-wrack pondweed. This underlines the need for more effort to be focused on the distribution and ecological requirements of the less well-studied species. This is going to be difficult in 2001 given the extent and duration of the foot and mouth outbreak with widespread restrictions in the countryside coinciding with the main biological survey seasons.



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¹ *Focus on Biodiversity*: the Environment Agency's contribution to wildlife conservation (2000). Environment Agency, Bristol.

² *An Environmental Vision*: the Environment Agency's contribution to sustainable development (2000). Environment Agency, Bristol.

³ *Achieving the Quality*: The Environment Agency's View of the Benefit to the Environment from Water Company Investment over the next five years (2000). Environment Agency, Bristol.

⁴ *Sustaining the variety of life*: 5 years of the UK Biodiversity Action Plan (2001). DETR, London 159 pp.

Appendix 1 Agency Co-ordinators for UK BAP species and habitats

Species/habitat	Category	Agency Co-ordinator	Phone	Email
Mammals				
Water vole	1	Alastair Driver	0118 953 5563	alastair.driver@environment-agency.gov.uk
European otter	1	Graham Scholey	01491 828346	graham.scholey@environment-agency.gov.uk
Birds				
Marsh warbler	1	Phillipa Harrison	01732 875587	phillipa.harrison@environment-agency.gov.uk
Fish				
Vendace	1	Cameron Durie	01768 866666	N/A
Invertebrates				
<i>Agabus brunneus</i> – a diving beetle	1	Francis Farr-Cox	01278 457333	N/A
<i>Anisodactylus poeciloides</i> - a ground beetle	1	Jason Lavender	01903 703851	jason.lavender@environment-agency.gov.uk
<i>Bidessus unistriatus</i> - a diving beetle	1	Terry Clough	01480 414581	terry.clough@environment-agency.gov.uk
Hairy click beetle	1	Francis Farr-Cox	01278 457333	N/A
White-clawed crayfish	1	Julie Bywater	01491 828386	julie.bywater@environment-agency.gov.uk
Southern damselfly	1	Tim Sykes	01962 713267	tim.sykes@environment-agency.gov.uk
<i>Clorisia rustica</i> – a stiletto fly	1	Viki Hirst	0113 213 4840	viki.hirst@environment-agency.gov.uk
Little whirlpool ram's-horn snail	1	Jason Lavender	01903 703851	jason.lavender@environment-agency.gov.uk
Glutinous snail	1	John Steel	01491 828360	john.steel@environment-agency.gov.uk
Fine-lined pea mussel	1	John Murray-Bligh	01392 352225	john.murray-bligh@environment-agency.gov.uk
Depressed river mussel	1	Catrin Grimstead	02920 770088	catrin.grimstead@environment-agency.gov.uk
Shining ram's-horn snail	1	Shelagh Wilson	01732 223285	shelagh.wilson@environment-agency.gov.uk
<i>Lophopus crystallinus</i> – a freshwater bryozoan	1	Daryl Buck	01491 828354	daryl.buck@environment-agency.gov.uk
Plants				
Ribbon-leaved water-plantain	1	Gill Walters	01743 272828	gill.walters@environment-agency.gov.uk
Multi-fruited river moss	1			
Tiny fern moss	1	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Water rock bristle	1	Jim Heslop	0191 203 4068	jim.heslop@environment-agency.gov.uk
Beaked beardless-moss	1			
Violet crystalwort	1	Deborah Dunsford	01392 444000	deborah.dunsford@environment-agency.gov.uk
Five stoneworts	1	Deborah Dunsford	01392 444000	deborah.dunsford@environment-agency.gov.uk
River jelly lichen	1	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Habitats				
Aquifer-fed naturally fluctuating water bodies	1H	Pat Sones	01480 483931	N/A
Chalk rivers	1H	Lawrence Talks	01962 713267	lawrence.talks@environment-agency.gov.uk
Coastal saltmarsh	1H	Brian Empson	01454 623500	brian.empson@environment-agency.gov.uk
Eutrophic standing waters	1H	Simon Leaf	01491 828545	simon.leaf@environment-agency.gov.uk
Mudflats	1H	Brian Empson	01454 623500	brian.empson@environment-agency.gov.uk
Fish				
Allis & twaite shad	2	Miran Aprahamian	01925 653999	miran.aprahamian@environment-agency.gov.uk
Burbot	2	Keith Easton	0115 945 5722	keith.easton@environment-agency.gov.uk
Invertebrates				
<i>Bidessus minutissimus</i> – a diving beetle	2	Viki Hirst	0113 213 4840	viki.hirst@environment-agency.gov.uk
Six river shingle beetles	2	Viki Hirst	0113 213 4840	viki.hirst@environment-agency.gov.uk
<i>Spiriverpa lunulata</i> - a stiletto fly	2	Viki Hirst	0113 213 4840	viki.hirst@environment-agency.gov.uk
Freshwater pearl mussel	2	Steve Gamer	01768 866666	steve.gamer@environment-agency.gov.uk
Plants				
Cut-grass	2	Jason Lavender	01903 703851	jason.lavender@environment-agency.gov.uk
Triangular club-rush	2	Paul Smith	01903 703950	paul.smith@environment-agency.gov.uk
Greater water parsnip	2	Lesley Saint	01480 414581	lesley.saint@environment-agency.gov.uk
Mammals				
Baleen whales	3	Nicole Price	01258 483411	
Barbastelle bat	3	Joe Stevens	01962 713267	
Bechstein's bat	3	Joe Stevens	01962 713267	
Harbour porpoise	3	Nicole Price	01258 483411	
Pipistrelle bat	3	Joe Stevens	01962 713267	
Lesser horseshoe bat	3	Joe Stevens	01962 713267	
Toothed whales (not small Dolphins)	3	Nicole Price	01258 483411	
Birds				
Blittern	3	Judith Bennett	01768 866666	judith.bennett@environment-agency.gov.uk
Reed bunting	3	Judith Bennett	01768 866666	judith.bennett@environment-agency.gov.uk
Common scoter	3	Dermot Smith	01925 653999	
Amphibians and reptiles				
Pool frog	3	Wendy Brooks	01733 464403	wendy.brooks@environment-agency.gov.uk
Great-crested newt	3	Mark Elliott	01903 703850	mark.elliott@environment-agency.gov.uk
Marine turtles	3	Sonia Thurley	01208 78301	N/A
Fish				
Commercial marine fish	3	Sarah Peaty	0191 203 4140	N/A
Invertebrates				
Black bog ant	3	Ben Wilson	01554 757031	ben.wilson@environment-agency.gov.uk
<i>Aphodius niger</i> – a scarab beetle	3	Tim Holzer	01962 713267	tim.holzer@environment-agency.gov.uk
<i>B. argenteolum</i> – a ground beetle	3	Rob Pilcher	01732 875587	robert.pilcher@environment-agency.gov.uk
Tiger beetle	3	Phil Griffiths	01903 832267	phill.griffiths@environment-agency.gov.uk
<i>C. exiguus</i> – a leaf beetle	3	Wendy Brooks	01733 464403	wendy.brooks@environment-agency.gov.uk
Mire pill beetle	3	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk

Species/habitat	Category	Agency Co-ordinator	Phone	Email
<i>Donacia aquatica</i> – a reed beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
<i>Donacia bicolora</i> – a reed beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
Spangled diving beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
<i>Helophorus laticollis</i> – a water beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
Lesser silver water beetle	3	Francis Farr-Cox	01278 457333	N/A
<i>Hydroporus rufifrons</i> – a diving beetle	3	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk
<i>Laccophilus poecilus</i> – a diving beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
<i>Melanotus punctolineatus</i> – a click beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
<i>O. oculata</i> – a longhorn beetle	3	Martin Slater	01480 483880	martin.slater@environment-agency.gov.uk
<i>Paracymus aeneus</i> – a water beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
<i>Pterostichus aterrimus</i> – a ground beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
<i>P. crux major</i> – a ground beetle	3	Ben Wilson	01554 757031	ben.wilson@environment-agency.gov.uk
<i>Rhynchaneas testaceus</i> – a jumping weevil	3	Wendy Brooks	01733 464403	wendy.brooks@environment-agency.gov.uk
Mole cricket	3	Francis Farr-Cox	01278 457333	N/A
Large marsh grasshopper	3	Francis Farr-Cox	01278 457333	N/A
<i>Brachyptera putata</i> – a stonefly	3	Vicky Ellis	02920 770088	vicky.ellis@environment-agency.gov.uk
<i>Eristalis cryptarum</i> – a hoverfly	3	Francis Farr-Cox	01278 457333	N/A
<i>Lipsothrix nervosa</i> – a crane fly	3	Cathy Beeching	01684 850951	cathy.beeching@environment-agency.gov.uk
<i>Lipsothrix nigrisigma</i> – a crane fly	3	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
<i>Odontomyia hydroleon</i> – a soldier fly	3	Eleanor Anderson	0113 231 2084	elly.anderson@environment-agency.gov.uk
Sandbowl snail	3	Paul Green	01925 840000	paul.green@environment-agency.gov.uk
Narrow-mouthed whorl snail	3	Daryl Buck	01491 828513	daryl.buck@environment-agency.gov.uk
Geyers whorl snail	3	Daryl Buck	01491 828513	daryl.buck@environment-agency.gov.uk
Round-mouthed whorl snail	3	Daryl Buck	01491 828513	daryl.buck@environment-agency.gov.uk
Desmoulin's whorl snail	3	Daryl Buck	01491 828513	daryl.buck@environment-agency.gov.uk
Netted carpet moth	3	Brian Ingersent	01768 866666	brian.ingersent@environment-agency.gov.uk
Starlet sea anemone	3	Nicole Price	01258 483411	
Rosers sac spider	3	Sue Hogarth	01480 483844	sue.hogarth@environment-agency.gov.uk
Fen raft spider	3	Alan Hull	01473 727712	alan.hull@environment-agency.gov.uk
Medicinal leech	3	Bryan Jones	01248 670770	bryan.jones@environment-agency.gov.uk
Fungi				
<i>Armillaria ectypa</i> – an agaric fungus	3	Paul Green	01925 840000	paul.green@environment-agency.gov.uk
Royal bolete	3	Fran Bayley	01276 454501	fran.bayley@environment-agency.gov.uk
Date coloured wax cap	3	Fran Bayley	01276 454501	fran.bayley@environment-agency.gov.uk
Hydnoid fungi	3	Fran Bayley	01276 454501	fran.bayley@environment-agency.gov.uk
Plants				
Creeping marshwort	3	Lesley Sproat	01491 828480	lesley.sproat@environment-agency.gov.uk
True fox sedge	3	Jason Lavender	01903 703851	jason.lavender@environment-agency.gov.uk
Starfruit	3	Chris Catling	01707 632370	N/A
Rock sea lavender	3	Mair Rees	01792 645300	N/A
Floating water-plantain	3	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
Slender naiad	3	Liz Oliver	01228 25151	liz.oliver@environment-agency.gov.uk
Holly-leaved naiad	3	Jo-Anne Pitt	01493 488515	jo-anne.pitt@environment-agency.gov.uk
Pillwort	3	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Grass wrack pondweed	3	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
Yellow marsh saxifrage	3	Roger Martin	01904 692296	roger.martin@environment-agency.gov.uk
Dune thread moss	3	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Long leaved thread moss	3	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Sea bryum	3	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Prostrate feather moss	3	Carri Lane	01248 670770	carri.lane@environment-agency.gov.uk
Baltic bog moss	3			
Derbyshire feather moss	3	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk
Yorkshire feather moss	3			
Marsh earwort	3	Trevor Renals	01208 78301	trevor.renals@environment-agency.gov.uk
Atlantic lejeuna	3	Trevor Renals	01208 78301	trevor.renals@environment-agency.gov.uk
Norfolk flapwort	3	Amanda Elliott	01473 706734	N/A
Veilwort	3	Deborah Dunsford	01392 444000	deborah.dunsford@environment-agency.gov.uk
Petalwort	3	Bryan Jones	01248 670770	bryan.jones@environment-agency.gov.uk
Lesser bearded stonewort	3	Deborah Dunsford	01392 444000	deborah.dunsford@environment-agency.gov.uk
Habitats				
Blanket bog	3H	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Coastal sand dunes	3H	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Coastal vegetated shingle	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Fens	3H	Wendy Brooks	01733 464033	wendy.brooks@environment-agency.gov.uk
Grazing marsh	3H	Martin Fuller	01904 692296	martin.fuller@environment-agency.gov.uk
Lit & sub lit chalk	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Lowland calcareous grass	3H	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk
Lowland dry acid grass	3H	-		
Lowland hay meadow	3H	Cathy Beeching	01684 850951	cathy.beeching@environment-agency.gov.uk
Lowland raised bog	3H	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Maerl beds	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Maritime cliffs & slopes	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Mesotrophic lakes	3H	Simon Leaf	01491 828545	simon.leaf@environment-agency.gov.uk
Modiolus modiolus beds	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Reedbeds	3H	Judith Bennett	01768 866666	judith.bennett@environment-agency.gov.uk

Species/Habitat	Category	Agency Co-ordinator	Phone	Email
Sabellaria alv reefs	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Saline lagoons	3H	Nicole Price	01258 483411	
Seagrass beds	3H	Nicole Price	01258 483411	
Sheltered muddy gravels	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Sublittoral sands & gravels	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Tidal rapids	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Upland hay meadow	3H	-		
Wet woodland	3H	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
Birds				
Aquatic warbler	4	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
Fish				
Houting	4	Miran Aprahamian	01925 653999	miran.aprahamian@environment-agency.gov.uk
Amphibians and reptiles				
Natterjack toad	4	Steve Garner	01768 866666	steve.garner@environment-agency.gov.uk
Sand lizard	4	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Invertebrates				
<i>Amara stenua</i> - a ground beetle	4	-		
<i>Badister collaris</i> - a ground beetle	4	-		
<i>Badister peltatus</i> - a ground beetle	4	-		
<i>Bembidion humerale</i> - a ground beetle	4	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk
Dune tiger beetle	4	-		
<i>Dromius sigma</i> - a ground beetle	4	-		
<i>Dyschirius angustatus</i> - a ground beetle	4	-		
<i>Hydrophorus cantabricus</i> - a diving beetle	4	-		
<i>Octhebius poweri</i> - a beetle	4	Francis Farr Cox	01278 457333	N/A
Marsh fritillary	4	Andy Fraser	01768 866666	andrew.fraser@environment-agency.gov.uk
<i>Lipsothrix errans</i> - a crane fly	4	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
<i>Rhabdomastix laeta</i> - a crane fly	4	-		
<i>Heptagenia longicauda</i> - a mayfly	4	-		
Native oyster	4	-		
<i>Euophrys browni</i> - a jumping spider	4	-		
<i>Aphrodes duffieldi</i> - a leafhopper	4	-		
Lesser water measurer	4	-		
<i>Orthotylus rubidus</i> - a plant bug	4	-		
<i>Prostoma jenningsi</i> - a freshwater nemertean	4	-		
Fungi				
Devil's bolete	4	-		
Plants				
Three lobed crowfoot	4	Mike Williams	01392 444000	mike.williams@environment-agency.gov.uk
Shore dock	4	Martin Rule	01208 78301	
Matted bryum	4	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Pear fruited bryum	4	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Cemous bryum	4	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Silky swan neck moss	4	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Glaucous beard moss	4	-		
Clustered earth moss	4	-		
Millimetre moss	4	-		
Spruce's bristle moss	4	-		
Spreading-leaved beardless moss	4	-		
<i>Anotrichum barbatum</i>	4	Chris Formaggia	02920 770088	chris.formaggia@environment-agency.gov.uk
Starry Breck-lichen	4	-		
Orange-fruited elm-lichen	4	-		
<i>Pseudocyphellaria norvegica</i> - a lichen	4	-		

Appendix 2 Partners in 2000: organisations that we supported or worked with

Action for the River Kennet
Basingstoke and Deane Borough Council
Basingstoke Canal Society
BBC Wildlife Magazine
Berks, Bucks & Oxon Naturalists Trust
Birmingham/Black Country Wildlife Trust
British Butterfly Conservation Society
British Dragonfly Society
British Trust for Ornithology
British Waterways
Centre for Aquatic Plant Management
Cheltenham Borough Council
Chilterns Chalk Stream Project
Countryside Council for Wales
Coventry City Council
Crown Estate
Dartford Borough Council
Derbyshire Wildlife Trust
Durham Biodiversity Partnership
Durham Wildlife Trust
East Hants District Council
Energis
English Heritage
English Nature
Farming & Rural Conservation Society
Farming & Wildlife Advisory Group
Fleet Pond Society
Forest Enterprise
Foster Wheeler
Froglife
FWAG
Glamorgan Wildlife Trust
Glaxo Wellcome
Gloucestershire Wildlife Trust
GONE
Groundwork Trust
Gwent Wildlife Trust
Hart District Council
Hawk and Owl Trust
Heritage Lottery Fund
Hertfordshire & Middlesex Wildlife Trust
Hertfordshire Countryside Management Service
Hertfordshire County Council
Kennet Valley Countryside Project
Kent County Council
Kew Gardens
Landowners
Leatherhead Society
Lee Valley Regional Park
Leicestershire and Rutland Wildlife Trust
Llanover and Coldbrook Estates
Local Authorities
London Borough of Bexley
London Borough of Bromley
London Borough of Havering
London Borough of Hounslow
London Borough of Richmond
London Borough of Wandsworth
London Development Agency
London Wildlife Trust
Lower Mole Project



Ludlow Millennium Green Project
Mammal Society
Ministry of Agriculture, Fisheries and Food
Ministry of Defence
Mole Valley District Council
Monmouthshire County Council
Montgomeryshire Barn Owl Group
Montgomeryshire Wildlife Trust
National Trust
North Lincolnshire Council
Northumberland National Park
Northumberland Wildlife Trust
Nottinghamshire Wildlife Trust
Onyx Environmental Trust
Oxon Bat Group
Pang Valley Countryside Project
Peak District National Park
Pentex Oil and Gas
People's Trust for Endangered Species
Rail-link Engineering
Reading Borough Council
Redditch Borough Council
Riparian owners
River Restoration Centre
River Severn Otter Project
Robert Stebbings Consultancy
Royal Society for the Protection of Birds
Severn-Trent Water
South Tyneside MBC
Staffordshire Wildlife Trust
Stratford on Avon District Council
Surrey County Council
Surrey Mammal Project
Surrey Otter Project
Surrey Water Vole Project
Surrey Wildlife Trust
Swansea Council
Teesdale Wildlife Trust
Telford and Wrekin Council
Thames 21
Thames Water
The Otter Trust
The Wildlife Trusts
Trent Otter Project
University of Wales
Warwickshire Wildlife Trust
Water UK
Watford Borough Council
Western Riverside Environment Trust
Whale and Dolphin Society
White Peak Crayfish Action Group
Wildfowl and Wetlands Trust
Wildlife Conservation Research Unit
Wiltshire Wildlife Trust
Woking Borough Council
Wokingham District Council
Woodland Trust
Worcester City Council
Worcestershire County Council
Worcestershire Wildlife Trust



Appendix 3 Abbreviations and acronyms used in the text

ADAS	-	Agricultural Development Advisory Service
AMP 3	-	Asset Management Plan, Periodic Review of Water Company Prices – Round 3
ASSI	-	Area of Special Scientific Interest
BAP		Biodiversity Action Plan
BCT	-	Bat Conservation Trust
BRC	-	Biological Records Centre
BSBI	-	Botanical Society for the British Isles
CAMS		Catchment Abstraction Management Strategy
CCW		Countryside Council for Wales
CD-ROM		Compact Disc Read Only Memory
CHaMP	-	Coastal Habitat Management Plan
CiB	-	Communication in Business
CIWEM	-	Chartered Institution of Water and Environmental Management
CRoW	-	Countryside and Rights of Way
DETR	-	Department for the Environment Transport and the Regions
DNA	-	Deoxy-ribose Nucleic Acid
EA	-	Environment Agency
EAW	-	Environment Agency Wales
EC	-	European Commission
EMEC	-	East Midlands Environmental Consultancy
EMPHASYS		Estuarine Morphology and Processes Holistic Assessment SYStem
EN	-	English Nature
EPO	-	Environmental Protection Officer
ERS	-	Exposed Riverine Sediment
EC	-	European Commission
ECAP	-	Eutrophication Control Action Plan
EU	-	European Union
GB	-	Great Britain
GIS	-	Geographic Information System
HAP	-	Habitat Action Plan
HLF	-	Heritage Lottery Fund
JNCC	-	Joint Nature Conservation Committee
LBAP	-	Local Biodiversity Action Plan
LEAP	-	Local Environment Agency Plan
LIFE	-	Financial Instrument for the Environment
LRC	-	Local Records Centre
MAFF	-	Ministry of Agriculture, Fisheries and Food
M.Phil	-	Master of Philosophy
M.Sc	-	Master of Science
NAW	-	National Assembly Wales
NBN	-	National Biodiversity Network
NERC	-	Natural Environment Research Council
NGO	-	Non-Governmental Organisation
OARP	-	Otters and Rivers Project
Ph.D	-	Doctor of Philosophy
PR	-	Public Relations
R&D	-	Research & Development
RHS	-	River Habitat Survey
RSPB	-	Royal Society for the Protection of Birds
RSPCA	-	Royal Society for the Prevention of Cruelty to Animals
SAC	-	Special Area of Conservation
SAP	-	Species Action Plan
SEPA	-	Scottish Environmental Protection Agency
SMPs	-	Shoreline Management Plans
SNH	-	Scottish Natural Heritage
SPA	-	Special Protection Area
SNCI	-	Site of Natural Conservation Interest
SSSI	-	Site of Special Scientific Interest

TV	-	Television
UK	-	United Kingdom
USA	-	United States of America
WCA	-	Wildlife and Countryside Act
WLMP	-	Water-Level Management Plan
WWT	-	Wildfowl and Wetlands Trust
WWW	-	World Wide Web

Appendix 4

A list of species mentioned in the main text

<i>Agabus brunneus</i>	A diving beetle	Tassel stonewort
Allis shad		Telford crane fly
<i>Anisodactylus poeciloides</i>	A ground beetle	<i>Thamnobryum catactarum</i>
<i>Apium repens</i>		Tiny fern moss
Aquatic warbler		Touch-me-not balsam
Beaked beardless moss		Triangular club rush
<i>Bembidion humerale</i>	A ground beetle	Trout
<i>Bidessus minutissimus</i>	A diving beetle	Twaite shad
<i>Bidessus unistratus</i>	A diving beetle	Vendace
Black poplar		Violet crystalwort
Bracken		Water rock bristle
Burbot		Water vole
<i>Clorismia rustica</i>	A stiletto fly	Willowherb
Common reed		Yellow marsh saxifrage
Convergent stonewort		
Cut grass		
Daubenton's bat		
Depressed river mussel		
Derbyshire feather-moss		
Desmoulin's whorl snail		
European otter		
Fine-lined pea mussel		
Floating water plantain		
Freshwater pearl mussel		
Freshwater white-clawed crayfish		
Glochidia		
Glutinous snail		
Grass-wrack pondweed		
Great tassel stonewort		
Greater water-parsnip		
<i>Gyraulus acronicus</i>		
Hairy click beetle		
<i>Hydroporus rufifrons</i>	A diving beetle	
Little whirlpool ram's horn snail		
<i>Lophopus crystallinus</i>	A freshwater bryozoan	
Marsh fritillary		
Marsh warbler		
Mire pill-beetle		
Multi-fruited river moss		
Natterjack toad		
Netted carpet moth		
New Forest dung beetle		
Norfolk flapwort		
<i>Odontomyia hydroieon</i>	A soldier fly	
<i>Bembidion testaceum</i>	A river shingle beetle	
<i>Hydrochus nitidicollis</i>	A river shingle beetle	
<i>Lionychus quadrillum</i>	A river shingle beetle	
<i>Meotica anglica</i>	A river shingle beetle	
<i>Perileptus areolatus</i>	A river shingle beetle	
<i>Thinobius newberyi</i>	A river shingle beetle	
<i>Phalaris</i>		
Pipistrelle bat		
Ribbon-leaved water plantain		
River jelly lichen		
Rosebay willowherb		
Salmon		
Sea club rush		
Shining ram's horn snail		
Slender stonewort		
Southern damselfly		
<i>Spiriverpa lunulata</i>	A stiletto fly	
Starry stonewort		