

Focus on

Biodiversity



Update 2002



ENVIRONMENT AGENCY

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CHAPTER 1 INTRODUCTION

Purpose of the report

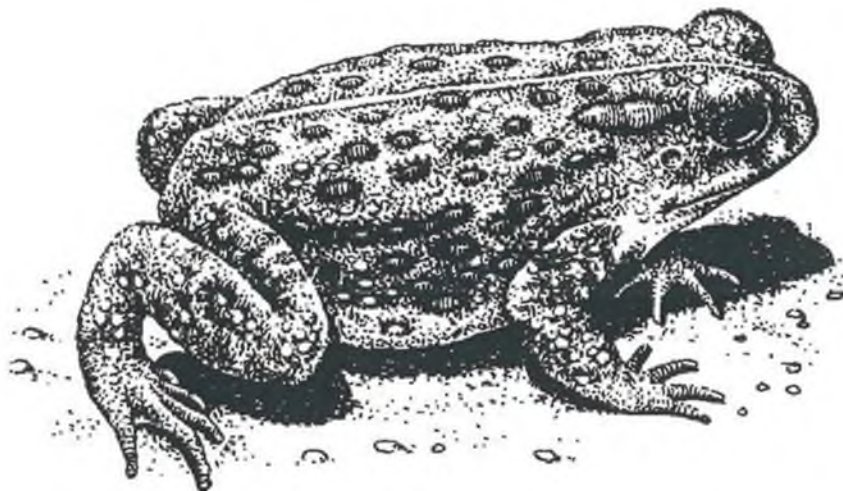
- 1.1 This report summarises progress made by the Environment Agency in carrying forward its principal obligations under the UK Biodiversity Action Plan (UK BAP), for the period 1 January – 31 December 2002.
- 1.2 It is primarily an internal report aimed at our own staff, although relevant government departments, statutory and voluntary wildlife organisations, local government and professional and academic institutions will also have an interest in the contents. An electronic version is available on our internal intranet and on our website, www.environment-agency.gov.uk.

Background

- 1.3 In July 2000 we published "*Focus on biodiversity: the Environment Agency's contribution to wildlife conservation*"¹. It 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 set the baseline reference document for tracking progress and that we would report annually to this effect, making more detailed appraisals every 5 years. This document is the third annual progress report, covering the year 2002.

Structure and content

- 1.4 Feedback on *Focus on Biodiversity* was extremely good, both in terms of its design and content and the 2000 edition was given a Communication in Business (CiB) award for excellence. We have tried to repeat the successful presentational style by using a simple format with a minimum amount detailed text and jargon. To make the 2002 edition even more attractive and informative we have included some case studies and photographs of project work.
- 1.5 The 2002 report concentrates mainly on the 39 species and 5 habitats for which we have a lead role under the UK BAP and we have identified progress on our actions for each species and habitat secured through promotional, project and research work. As before, we have also estimated, using broad categories, the amount of effort and resources used and provided a brief summary of intended action in 2003. Background technical information has been omitted because the ecology, distribution and main threats are all included in *Focus on Biodiversity*.
- 1.6 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.
- 1.7 An updated list of Agency co-ordinators is appended, and we also provide in subsequent appendices, lists of (i) partner organisations; (ii) abbreviations and acronyms; (iii) scientific names used in the text; and (iv) R&D project outputs.
- 1.8 Thanks again to English Nature for permission to use again some of the line drawings that made *Focus on Biodiversity* so attractive.



CHAPTER 2 AN OVERVIEW OF 2002

LEGISLATION AND NATIONAL POLICY

- 2.1 During the year we consolidated our implementation of the Habitats Directive and the Countryside and Rights of Way Act and continued preparatory work for the EC Water Framework Directive (WFD).

Habitats Directive

- 2.2 Progress with the Habitats Directive Review of Consents was good during 2002, with April 2002 marking the start of Stage 3 appropriate assessments at high priority sites. Close working with English Nature and CCW has been essential in managing the enormous complexities and major uncertainties involved with implementation.
- 2.3 Phase 2 of the Habitats Directive Database was released. The database provides Agency staff with a valuable tool for recording decisions made in the Review of Consents, assisting with the determination of new applications, sharing good practice and accessing site information.

CRoW Act

- 2.4 CRoW Act guidance to Agency staff on the implications of the SSSI provisions, and where to apply it, was agreed with EN and CCW in July 2002. This was disseminated to all staff, and the Formal Notice proformas have helped streamline the consultation process with EN and CCW. Work on joint dispute resolution guidance was started. This will help to resolve areas of misunderstanding, and clarifies roles and responsibilities following the Agency's BRITE reorganisation in October 2002.
- 2.5 Work commenced with EN and Regional Estates teams on identifying Agency-owned SSSI land in England to help the Agency meet Defra's PSA target to ensure that 95% of SSSIs are in favourable condition by 2010. This work will be ongoing throughout 2003.

Water Framework Directive

- 2.6 We continued the monumental task of preparing for the WFD. Efforts have concentrated on developing technical methods and sampling strategies required by the Directive, in particular those elements needed for (i) River Basin Characterisation and (ii) Environmental Monitoring Classification and Reporting. We also had a major input to developing the method for determining "heavily modified waterbodies". Our profile remains high on several technical groups in the UK and European arenas.

Defra PSA target for SSSIs

- 2.7 A major new policy driver for our work is the Defra Public Service Agreement (PSA) target to achieve favourable condition in 95% of SSSIs in England, by 2010. We own about 5000ha of SSSI land in England and we wait for EN to confirm what condition it is in and what remedial action is required to tackle damage within our control. We also have a major influence in helping maintain or enhance SSSIs elsewhere.

National Biodiversity Groups

- 2.8 We are members of the England Biodiversity Group, and when the England Biodiversity Strategy was published in October, we are tasked with co-ordinating implementation of the "Water and Wetlands" work programme. We continued active input to the Defra Review Group on Invasive Non-Native Species. We continued to play an active role in the National Biodiversity Network and continued to improve our conservation web-site, which highlights our activities, with links through to UK BAP partners.

Ramsar

- 2.9 The Ramsar Advisory Mission report on the Ouse Washes was published in summer 2002. It reviewed current management, and recommended future management options. The Agency reported on how its Habitats Directive Review of Consents work was contributing to maintaining and improving Ramsar sites with similar features to those designated under the Habitats Directive.



NATIONAL INITIATIVES

- 2.10 Our Regions and Areas have continued to help secure biodiversity benefits through implementation of the National Environment Programme of AMP3, Water Level Management Plans, flood and coastal defence works, the Habitats Directive Review of Consents and major external funding partnership projects. We are confident that implementation of these, good preparatory work for the fourth

quinquennial Review of Water Company Prices (PRO4), Catchment Flood Management Plans and implementation of the Water Framework Directive will secure long-term improvements for wildlife, particularly in protected sites. We can help improve habitat conditions in the wider countryside with rivers acting as a network of wildlife corridors. To support this we continued to develop our non-statutory river habitat objectives (RHOs), using information from the River Habitat Survey database (now containing 17,000 sites) and other datasets.

- 2.11 It was the second year of the Defra flood defence high-level target report for biodiversity, which is aimed at identifying the net efforts of flood and coastal management works on UK BAP habitats. We reported a net gain of 433ha of habitat, the vast majority of which was coastal grazing marsh, saltmarsh and mudflat associated with managed realignment schemes.

Board discussion

- 2.12 There was a lively Agency board discussion session on biodiversity in North Wales in May, followed by an excellent site visit to Malltraeth Marsh to see progress on the Wetlands for Wales project.

Otter Survey of England

- 2.13 This survey investigated the distribution of the otter throughout England during 2000-2002 and it was co-ordinated, analysed and written up by Andrew Crawford from our Midlands Region. Survey work was largely undertaken by conservation staff from the Environment Agency, The Wildlife Trusts' *Otters and Rivers Project* and the water companies. Sneak previews from the survey were encouraging because almost 35% (1137) of the 3327 river and wetland sites surveyed showing evidence of otters (foot prints and spraints), compared with just 5.8% nearly twenty-five years ago (1977-79).

LIFE in UK Rivers

- 2.14 The European-funded LIFE in UK Rivers Project draws to its conclusion at the end of 2003. Project Officers have developed conservation strategies for seven SAC rivers, and the experience gained has assisted with the production of guidance for use throughout the UK. A number of the conservation strategies are being used to prepare bids to LIFE-Nature and HLF for funding to implement the action plans. The Handbook on the Ecological Requirements of Species is being prepared and individual chapters are available as downloadable pdf files on the Project's web site (www.riverlife.org). Monitoring protocols for the 13 species will also be available on this site. Hard copies of the various documents will be circulated amongst the Project's partners.
- 2.15 Guidance is now available on the assessment of silt and suspended solids; the rehabilitation of rivers with *Ranunculus* plant communities; enhancing the conservation status of the freshwater pearl mussel; characterising and enhancing otter breeding habitat and a re-introduction protocol for the white-clawed crayfish.

Wetlands for Wales

- 2.16 2001 was the first operational year of the Project given that the Agreement between the Partners and Heritage Lottery Fund (HLF) was signed in November 2000.
- 2.17 In 2002, a further £400K was spent, primarily on land management. During the year it became apparent that some sites could not be acquired and an alternative acquisition strategy prepared for HLF. A second phase of the project was discussed with HLF and despite previous positive indications, it appears likely that further funding bids on an all-Wales basis are unlikely to be successful.

Living with the Sea

- 2.18 The production of seven pilot Coastal Habitat Management Plans (CHaMPs) was completed in 2002. They examined the scale and extent of potential habitat loss under the existing coastal defence policies and explored options for creating new habitat. Another important element of the project is the production of a good practice guide for habitat creation, this work has begun and is due to be completed by April 2003. For further information, see the website at www.english-nature.org.uk/livingwiththesea.

Marine

- 2.19 The Agency does not lead partner for most of the marine and coastal UK BAP species yet we have still made significant progress where the Agency are responsible for actions. For example 2002 saw the Agency working in partnership for the creation of saline lagoons; two in Teesside have been created on areas of Teesmouth known as the Brinefields, and a new saline lagoon Nature reserve at the Long Bank/Beacon Lagoons in East Yorkshire. We have also made progress on many of the actions as part of our wider integrated approach to species and habitat management.

Research and Development Programme

- 2.20 Our Conservation R&D programme continues to produce good quality outputs and several more were produced in 2002: (Appendix 5). Project W1-021 on the southern damselfly is worth a mention, producing four high quality outputs in the year.

Given our traditional propensity to use other people's money wisely we again mopped up underspends elsewhere to generate quick wins.

NATIONAL BIODIVERSITY NETWORK

- 2.21 We store a lot of historic information about fauna and flora across England and Wales. For example, we have biological results from surveys of over 20,000 river sites, some covering thirty years. We are keen that these historic data are used for purposes other than our own. The public can get this information from us already, but how much better it would be if it could be retrieved alongside that held by other individuals and organisations. The NBN provides us with an opportunity to free up these data for others to use.



- 2.22 Of course, the gain will not be one-sided. Every year, we spend time and money getting information to assess the environmental effects of processes so we can regulate them better. We need to undertake biological surveys to get this information. There is already a lot of biological information out there, but it is difficult to know exactly where to find it. The NBN can provide us with information to plug holes in our knowledge and help us protect the environment better.
- 2.23 To ensure everyone knows we are talking about the same animal or plant whenever we report our findings, we have incorporated the NBN, UK-standard taxon dictionary as a backbone to our biology data system.
- 2.24 Our biology database is always in development, and part of that development is to provide the link to the NBN gateway. We have investigated how we can make the link and we plan to push this forward to ensure we get those links in place as soon as resources permit.

REORGANISATION

- 2.25 This reorganisation of the Agency (aimed at better integration of its functions), was implemented in October 2002 and its key impact on the structure of teams who promote biodiversity work was threefold:
- (i) Operationally, it created separate Area teams of staff who screen and advise on biodiversity issues (Fisheries, Recreation and Biodiversity teams) and those who sample and analyse primarily aquatic biota (Ecological Appraisal teams). Both teams are essential for delivering the Agency's biodiversity work, but the key message that the Agency is seeking to promote is that every member of the Agency's staff has a role to play.
 - (ii) Nationally, it created an enlarged Conservation and Ecology section within Water Management. This contains specialist teams delivering Conservation Policy and Process, Ecology Policy and Process, Technical development and support, and Habitats Directive support work. The new national team is already having a significant impact on development of policy, procedures and supporting tools.
 - (iii) Regionally, biodiversity has an important profile in the external partnership and influencing role of the Regional Strategic Units.

OVERALL MESSAGE

- 2.26 It is clear from the individual reports in Chapter 3 that, in collaboration with our many partners, we made significant progress on habitat-related actions of the UK BAP during 2002. This is because much of the required work can be delivered by initiatives linked with the "day-job" of the Agency such as water resource management, water quality improvement and flood and coastal defence.
- 2.27 Species Action Plan work is often harder to associate with routine activities. As a result, only £450k of the estimated £4.1M spend by the Agency in delivering the UK BAP during 2002 was directed at species projects. Moreover, £355k of this was spent on high profile species, notably the otter, water vole and crayfish. Having said that, significant progress was made for several other species including shad, southern damselfly, little whirlpool ram's horn snail and vendace.
- 2.28 No significant progress was made on delivering actions for 10 species most of which are beetles, molluscs, bryophytes and aquatic macrophytes (Table 1). There are two main reasons for this. First, many of them have a very limited distribution and it is very difficult to link their conservation with "day-

job" activities such as flood defence and water resource management. Secondly, because they are relatively obscure and "uncharismatic" species, it is difficult to attract partnership funding to promote their conservation. We will continue to see how best to address this problem, but there is no doubt that we are currently limited by the lack of a costed biodiversity programme in most Regions and a shortfall in Grant-in Aid available to deliver the UK BAP.

- 2.29 Figure 1 indicates that overall, we did better in 2002 than in 2001 and that we compare well with the national performance of all Lead Partners. Nevertheless, we recognise that there are still significant shortfalls and that trends in those habitats and species for which we lead show disappointing results (see Table 2).

Figure 1

UK BAP ACTIONS IN PROGRESS (1995-2001): SPECIES AND HABITATS WITH ACTIONS UNDER WAY, SOME UNDERWAY AND NONE UNDERWAY

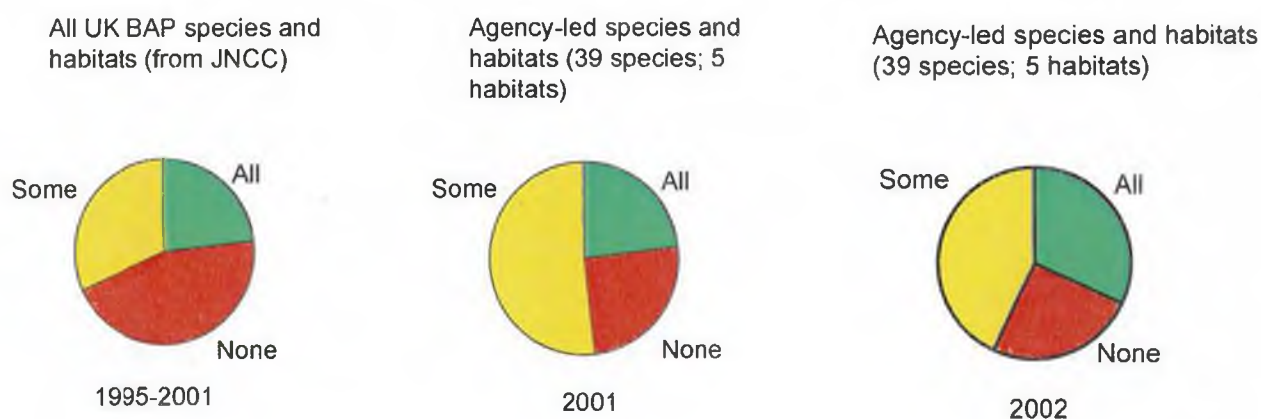


Table 1

All actions progressed since 1995	No actions since 1995
Marsh warbler Allis & twaite shad White-clawed crayfish Southern damselfly Shining ram's horn snail Little whirlpool ram's horn snail Depressed river mussel Water rock bristle Multi-fruited river moss Ribbon-leaved water plantain Chalk rivers Mudflats Salt marsh <i>Tolypella intricata</i> - stonewort	Burbot Violet crystalwort Freshwater bryozoan Tiny fern moss Beaked beardless moss 4 species of stonewort Cut grass

CHAPTER 3 PROGRESS IN 2002 – CATEGORY 1 & 2 SPECIES AND HABITATS

- 3.1 This chapter documents for each of the 39 species and 5 habitats for which we have the lead role, the UK BAP actions requiring Agency action and our contribution in 2002. This is summarised in broad categories: X represents no action; one, two or three ticks represent some, moderate and good progress respectively. Data for 1995-99, 2000 and 2001 are shown for comparison.
- 3.2 Some examples of project work in 2002 are listed along with estimates of resources invested. Where known, examples of activities planned for 2003 are included.
- 3.3 Table 2 gives an overview of the Agency's contribution to actions since 1995 and illustrates the trend (stable ☹, declining ☹, increasing ☺, unknown ?) of each species and habitat as assessed by the Joint Nature Conservation Committee (JNCC) for 2002. NB Given that most trends are based on qualitative data, there are many uncertainties regarding cause-effect relationships and there is often a time lag between action and response, the trends cannot be directly linked to the number of Agency actions undertaken.

Table 2

Species/habitat with trend as at the end of 2002		Actions required by Agency	1995-99	2000	2001	2002
Water vole	☹	15	13	13	12	13
European otter	☹	13	12	10	11	10
Marsh warbler	☹	3	3	3	3	2
Allis & twaite shad	☹	4	4	3	1	2
Vendace	?	7	6	5	3	3
Burbot	?	8	0	0	0	0
<i>Bidessus unistriatus</i>	☹	5	0	1	1	4
<i>Bidessus minutissimus</i>	☹	5	2	4	4	1
<i>Agabus brunneus</i>	☹	3	0	1	1	0
<i>Anisodactylus poeciloides</i>	?	2	0	0	1	0
Hairy click beetle	?	9	2	2	3	4
River shingle beetles	?	10	4	3	0	4
White-clawed crayfish	☹	10	10	10	9	10
Southern damselfly	☹	4	4	4	4	4
<i>Clorismia rustica</i>	☹	4	1	2	0	1
<i>Spiriverpa lunulata</i>	☹	9	3	2	0	5
Glutinous snail	☹	8	7	6	3	3
Shining ram's horn snail	☹	4	4	4	3	3
Little whirlpool ram's horn snail	?	8	8	7	7	6
Freshwater pearl mussel	☹	9	8	5	3	5
Depressed river mussel	☹	3	3	3	1	3
Fine-lined pea mussel	☹	11	3	4	3	3
River jelly lichen	?	8	5	5	4	1
Violet crystalwort	?	1	0	0	0	0
Freshwater bryozoan	?	6	0	0	0	3
Multi-fruited river moss	☹	2	0	0	2	0
Tiny fern moss	?	3	0	0	0	0
Beaked beardless moss	?	3	0	0	0	0
Water rock bristle	?	1	1	1	1	1
Stoneworts (5 species)	☹	7	0	0	0	1
Ribbon-leaved water plantain	☹	2	2	2	0	0
Cut grass	☹	5	0	0	0	0
Triangular club rush	?	9	7	7	2	2
Greater water-parsnip	?	4	0	1	3	1
Chalk rivers	☹	10	9	10	10	10
Fluctuating water bodies	☹	13	7	4	5	6
Eutrophic lakes	☹	27	23	18	22	20
Mudflats	?	8	5	8	8	8
Saltmarsh	☹	16	9	16	16	16
TOTALS		279	165	164	146	155

Water vole - *Arvicola terrestris*

Category: 1

Contact point: Environment Agency

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Agency co-ordinator: Alastair Driver

Lead partner: UK Water Vole Steering Group

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1	Ensure appropriate protection under the Wildlife & Countryside Act for the water vole and its habitat	✓✓✓	X	✓✓✓	✓
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	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	X	X

Examples of project work

- The Water Vole Introduction Project at the WWT Wetland Centre in Barnes continued to prove very successful, with an estimated sustainable maximum population of 200 animals established inside 2 years from the initial introduction and animals regularly seen at close quarters by thousands of visitors.
- The National Key Sites Project run by Royal Holloway University of London and co-funded by the Environment Agency, EN, RSPB and PTES made excellent progress. This included training volunteers and site managers in habitat management and monitoring at all 15 National Key Sites chosen for the project, establishing long term monitoring at those sites, assessing reasons for water vole absence around the sites and promoting recolonisation of surrounding areas.
- Multi-organisation Mink Control Projects were established in several more catchments, including the Lee (London), the Hull (Yorks), and the Avon (Wilts).
- The contract for the Agency's Technical Advisor on water vole issues, Rob Strachan, was renewed in collaboration with WildCRU. Rob and Contact Point, Alastair Driver, dealt with approximately 2000 specialist enquiries on water vole issues during 2002.

Agency contribution in 2002: £50-100K

Action planned for 2003

- Water Vole Slide Pack to be published in collaboration with EN and The Wildlife Trusts.
- Government announcement on full legal protection for water voles expected – major publicity opportunities anticipated.
- Game Conservancy Trust guidance on the very effective use of raft-mounted traps, to be incorporated into mink control projects.
- Further mink control projects to commence in several areas, including Norfolk and the Somerset Levels.

Otter - *Lutra lutra*

Category: 1

Contact Point: Environment Agency

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Agency co-ordinator: Graham Scholey

Lead Partner: Environment Agency/The Wildlife Trusts

Trend: ☺

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X	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.	X	✓	✓	✓
5.5.3	Investigate the effects of disturbance on otter populations.	X	X	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	✓	✓✓	✓	✓

*LEAPs replaced by Local Contributions

Examples of project work

- The Fourth National Otter Survey of England was completed in the early part of the year (funded by EA and EN) and significant progress made in the collation and analysis of results by the survey co-ordinator, Andrew Crawford. (The survey was published by the Agency in 2003 and confirmed that the recovery of the population has continued).
- Fieldwork for the Fourth Otter Survey of Wales was undertaken and successfully completed. The results are to be reported in 2003.
- The Agency has continued the research contracts for otter post-mortem work for England and Wales and staff continue to resource the collection and provision of corpses. Both contracts produced interim R&D reports in 2002, which demonstrated the value of this work in monitoring the health of the recovering population and as a good example of ecotoxicological monitoring.
- Welsh Region continues to work closely with NAW, CCW and the Wildlife Trusts on the Otters and Roads Steering Group and produced a road-deaths database for the whole of Wales.
- The Agency is represented on the Highways Agency's Otters and Roads project and staff contributed time and expertise to the Highway Agency/WildCRUs publication 'Nature Conservation and Roads: Advice in Relation to Otters'.
- Area staff continue to provide advice and in some cases funding for otter mitigation on road schemes as well as funding for holt creation and habitat restoration for otters, some of this through (a reduced level of) Otters and Rivers/Water for Wildlife Project support.
- In some regions Agency staff have put considerable resources into population monitoring, some of this in areas not covered by the recent England Survey (e.g. North-west Region undertook a West Cumbria survey and produced a report (20 man-days) showing considerable population spread).
- Otters continue to be considered and allowed for in a wide range of operational, regulatory and advisory activities. Considerable staff time is invested in the various R&D and other national projects (two national surveys, otter post-mortems, DNA research, LIFE Rivers Project, national roadkill initiatives etc).
- A national bye-law was established requiring the use of otter guards on fyke nets in England and Wales.

Agency contribution in 2002 = £200K

Action planned for 2003

- Continuation of otter post-mortem work for England and Wales and endeavours to consolidate p-m and tissue analysis into core environmental monitoring.
- Publication of the Otter Survey of England Report (successfully completed) and Otter Survey of Wales Report.
- Testing of the methodology for assessing otter breeding sites on cSAC rivers generated through the LIFE Rivers project, in Wales.
- Further surveys in key areas such as South Cumbria and the Afon Dwyrdd and Anglesey in North Wales.
- Collaboration with The Wildlife Trusts to produce guidance re. otters and stillwater fisheries.
- Continued support in some areas for Water for Wildlife/Otter Projects.

Marsh warbler - *Acrocephalus palustris*

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 40

Agency co-ordinator: Jeremy Burgess

Lead partner: RSPB/The Wildlife Trusts

Trend: ☺

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Incorporate riparian habitat management prescriptions into LEAPs to benefit the marsh warbler.	X	✓	✓	✓
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.	✓✓	✓✓	✓✓	✓

Examples of project work

- Species protection warden employed at main Kent sites to monitor populations, liaised with public and worked with local police and the Ghurkhas to carry out covert surveillance for egg collectors. The egg collectors were absent, probably due to the decline of the population here in previous years.
- No habitat management works were carried out this year, as work in previous years was deemed sufficient for the current population.
- 2002 was a very poor breeding year for the species.

Agency contribution in 2002 = £3K

Action planned for 2003

- Monitoring of existing, former and potential marsh warbler sites.
- Collation of data on populations outside of the main Kent population, including habitat preferences.
- Further habitat management works.
- Production of a habitat advice note to encourage habitat improvements in Agency plans and schemes in key areas (i.e. close to known or recent populations).

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

Category: 2

Contact point: Defra

Focus on biodiversity: page 40-41

Agency co-ordinator: Miran Aprahamian

Lead partner: Defra/Environment Agency

Trend: ☹

UK BAP Number	UK BAP action needed Agency contribution	Agency contribution			
		2002	2001	2000	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	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.	X	X	✓✓	✓
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.	X	X	✓✓	✓

Examples of project work

- Rearing work at Calverton Fish Farm
- Genetic population structure of shad in the UK - R&D project with English Nature and CCW
- Identification and general shad training courses run
- Survey work in the SW and south Wales

Agency contribution in 2002 = £14K

Action planned for 2003

- Genetic population structure of shad in UK - continuation of project.
- Talks at angling clubs
- Swimming speed of shad - R&D project
- Shad spawning distribution surveys
- SAC assessments for shad

Vendace – *Coregonus albula*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 42

Agency co-ordinator: Cameron Durie

Lead partner: Environment Agency

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	In waters of high biodiversity interest including those inhabited by vendace, stocking should be limited by legislation.	X	X	✓	✓
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	X	X
5.5.6	Assess the feasibility of establishing additional self-sustaining populations in other waters in Cumbria.	X	X	✓	✓
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.	X	X	✓	✓

Examples of project work

- It has been recognised for some time that Bassenthwaite Lake is suffering from a series of environmental pressures which it would take considerable effort to address. Nutrients, sediments and species introductions constitute the main problems within the lake itself. These issues not only concerned the Agency but also its partner organisations and it was recognised that no one organisation would be able to resolve all the relevant issues. In conjunction with a number of members of the Lake District Still Waters Partnership the Agency set up the Bassenthwaite Lake Restoration Programme. Its primary objective is to seek to restore the lake and its catchment. At key stages the work of the restoration programme will feature in future reports.
- The problems associated with species introduction including predation, competition and habitat modification have been reported elsewhere and will not be repeated here. In Bassenthwaite Lake and Derwentwater the fish population has been augmented in recent years by the regular introduction of additional species and the most likely source of these fish was identified as live bait brought to site by anglers fishing for pike. It was concluded that this constituted unacceptable risk to the vendace population. Byelaws were sought and obtained in July. These prohibit the use of dead or live salmonids, freshwater fish or eels as bait and the possession of live fish with the intention of using them as bait. The restrictions apply to the above lakes and to a further 12 stillwaters which contain rare fish. In total the byelaws benefit vendace, schelly and charr. Over 500 objections were received to the proposed byelaws and since their introduction the Pike Anglers Club and the Specialist Anglers Alliance have made a series of attempts to have them overturned.

Agency contribution in 2002 = £30K

Action planned for 2003

- The Bassenthwaite Lake Restoration Programme project will continue with its work.
- Monitoring of the fish populations of Bassenthwaite Lake and Derwentwater will be carried out.
- It is hoped that monitoring work will be carried out at the sites in Scotland which have recently benefited from translocation efforts.

Burbot – *Lota lota*

Category: 2

Contact point: English Nature

Focus on biodiversity page: 43

Agency co-ordinator: Keith Easton

Lead partner: Environment Agency

Trend: ? (Extinct in UK)

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Consider the conservation justification of re-establishing the burbot as a viable component of UK biodiversity.	X	X	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	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	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	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	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	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	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	X	X

Examples of project work

- None

Agency contribution in 2002 = £0

Action planned for 2003

- None

A diving beetle - *Agabus brunneus*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 44

Agency co-ordinator: Martin Rule

Lead partner: Action for Invertebrates

Trend: ☺

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.2	Undertake a review of water abstraction policies within areas where the species occurs.	X	X	X	X
5.1.3	Address the requirements of this species in the LEAP process and in relevant WLMPs.	X	X	X	X
5.2.1	Where possible, ensure that all occupied habitat is appropriately managed by 2008.	X	X	✓	X

Examples of project work

- Consultants working for the Highways Agency are developing survey proposals for site in West Cornwall close to a trunk road.

Agency contribution in 2002 = £0

Action planned for 2003

- Agency Ecological Appraisal Teams in Hampshire and Cornwall will carry out targeted site surveys to ascertain species' presence at former sites.
- Highways Agency project will monitor West Cornwall for period of five years. Specific management proposals will then be generated.
- In collaboration with University of Plymouth, consider some genetic research of the two populations.

A ground beetle - *Anisodactylus poeciloides*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 45

Agency co-ordinator: Phil Griffiths

Lead partner: Action for Invertebrates

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.2	Address the requirements of this species in the LEAP process and in relevant Shoreline Management Plans	X	X	X	X
5.2.3	Encourage the creation of suitable saltmarsh habitat by managed retreat where possible.	X	X	X	X

Examples of project work

No work carried out by the Environment Agency but experts on the beetle made some progress:

- Broad survey of Essex sites discovered populations at 6 sites.
- Continuation of survey in North Kent confirmed one further population.
- Survey in Sussex has been unsuccessful for the second year.

Agency contribution in 2002 = £0

Action planned for 2003

- Survey of Essex sites to be extended northwards.
- Survey of South Hampshire sites to be conducted.
- Steering Group to be set up - Agency input.

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

Trend: ☹️

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Address the requirements of this species in the LEAP process and in relevant WLMPs.	✓	X	X	X
5.1.2	Take account of the species' requirement in response to applications for water abstraction licenses.	✓	X	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	X	X
5.5.3	Establish a regular monitoring programme for the species.	✓	X	X	X

Examples of project work

- The Balfour Browne Club carried out monthly monitoring at two sites – at Catfield Fen, Norfolk and in the New Forest. Adults were found to peak in numbers in April, have disappeared by the following February but to then reappear in March. Efforts to learn more about the lifecycle were unsuccessful. Larvae were not found at either monitoring site and attempts to breed from captured adults in aquaria were unsuccessful as well.
- Other sites were surveyed in the New Forest in an attempt to determine a geographic boundary – but no *Bidessus* were found.
- With such a limited distribution habitat preferences are difficult to determine. However, from the available European and the UK evidence it maybe that the prime feature favouring *Bidessus unistriatus* is fluctuating water levels – particularly ponds that occasionally dry out as this kills off fish predators. With regard to WLMP, judicious water abstraction is therefore probably a good thing!

Agency contribution in 2002 = £2K

Action planned for 2003

- None planned.

Hairy click beetle – *Synaptis filiformis*

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 48

Agency co-ordinator: Francis Farr-Cox

Lead partner: Invertebrate Action

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X
5.5.1	Undertake surveys to determine the status of the species.	X	X	✓✓	✓
5.5.2	Conduct targeted autecological research to inform habitat management.	X	X	X	X
5.5.3	Establish a regular monitoring programme for populations along the River Parrett.	X	X	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	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	X	X

Examples of project work

- None other than day job.

Agency contribution in 2002 = £0

Action planned for 2003

- Surveys of the River Parrett banks to find larvae.
- Establish likely food source and life history of *Synaptus filiformis* to determine habitat requirements and advise Agency staff on management of the tidal river.

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: Mike Williams

Lead partner: Environment Agency/ERS Group

Trend: Ⓢ

Shingle beetles

Category: 2

Contact point: CCW

Focus on biodiversity page: 49-51

Agency co-ordinator: Mike Williams

Lead partner: Environment Agency/ERS Group

Trend: ?

A stiletto fly - *Spiriverpa lunulata*

Category: 2

Contact point: CCW

Focus on biodiversity page: 56

Agency co-ordinator: Mike Williams

Lead partner: Environment Agency/ERS Group

Trend: Ⓢ

A diving beetle - *Bidessus minutissimus*

Category: 2

Contact point: CCW

Focus on biodiversity page: 46

Agency co-ordinator: Mike Williams

Lead partner: Environment Agency/ERS Group

Trend: Ⓢ

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			
		2002	2001	2000	1995-99
5.1.2	Address the requirements of these species in the LEAP process, and in relevant catchment management plans.	X	X	✓	✓
5.1.3	Take account of the species' requirements in response to applications for water abstraction and discharge licenses.	X	X	✓	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	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.	✓	X	✓	✓
5.4.1	Advise landowners and managers of the presence of these species and the importance of beneficial management for their conservation.	X	X	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	X	X
5.5.1	Continue to undertake surveys to determine the UK status of these species.	✓	X	X	✓
5.5.3	Establish a regular monitoring programme for the species and their habitats.	X	X	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	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	✓	X	X	✓

	publicity campaign.				
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Stiletto fly – *Clorismia rustica*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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 requirements of this species in response to applications for water abstraction or sand extraction from rivers.	X	X	✓	X
5.2.1	Where possible, ensure that all occupied sites are appropriately managed by 2005, for example through site management agreements.	✓	X	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	X	X

Stiletto fly - *Spiriverpa lunulata*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Address the requirements of this species through the LEAP process and in relevant catchment management plans and WLMPs.	X	X	✓	✓
5.1.2	Take account of the requirements of this species in response to applications for water abstraction or sand extraction from rivers.	X	X	✓	X
5.2.1	Where possible, ensure that all occupied sites are appropriately managed by 2010.	✓	X	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	X
5.5.1	Undertake surveys to determine the status of this species.	✓	X	X	✓
5.5.2	Conduct targeted autecological research to inform habitat management.	X	X	X	X
5.5.3	Establish a regular monitoring programme for this species.	X	X	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	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	X	✓

A diving beetle – *Bidessus minutissimus*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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.	X	X	✓	✓
5.1.2	Take account of the species' requirements in response to applications for water abstraction and discharge licences.	X	X	✓	X
5.1.3	Address the requirements of this species in the LEAP process	X	X	✓	✓

	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	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	X	✓	X

Examples of project work

- R&D leaflet W1-034/L produced, providing background on value of ERS, impact of works and habitat creation for degraded rivers.
- Final report produced on third phase of R&D project.
- Surveys have continued, for example in Cornwall and Cumbria, of ERS habitats. While not specifically targeted at the BAP species, such surveys have generated some new records for these species.

Agency contribution in 2002= £7K

Action planned for 2003

- R&D project to commence on autecology of *Bembidion testaceum* in late 2003.
- Further survey work in key areas.
- Revitalisation of ERS group in order to generate more progress.

White-clawed crayfish - *Austropotamobius pallipes*

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 52-53

Agency co-ordinator: Julie Bywater

Lead partner: None

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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 threaten 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.	✓	X	✓	✓
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.	✓	✓	✓	✓

Examples of project work

- Organisation of conference 'Management and Conservation of Crayfish' in November 2002.
- Agency contribution to European CRAYNET programme.
- Paper concerning the distribution of crayfish in England and Wales published.
- Investigations into the various possibilities for a national database continued with a national meeting held between leading authorities.
- Research into the restriction of fish movements from areas with signal crayfish to SACs with native crayfish undertaken.
- National policy group looking at the control of harvesting alien crayfish from the wild.
- Habitat enhancement manual for native crayfish published through Environment Agency and English Nature jointly funded research.

Agency contribution in 2002 = £80K

Action planned for 2003

- Publication of proceedings from above conference in August 2003, including range of peer-reviewed scientific papers.
- Further investigation into the effects of harvesting crayfish from the wild, and the impacts that signal crayfish are having on other flora and fauna to facilitate management of commercial fisheries for conservation.
- Investigate the population dynamics of alien crayfish species, their migratory patterns etc. to facilitate the search for a method of control or eradication.
- Continue investigations in the potential for alternative means of eradicating alien crayfish species including the use of pheromones as attractants and repellents and investigate the possible use of male sterilisation techniques.
- Include the spiny cheek and red swamp crayfish in schedule 9 of the Wildlife and Countryside Act, 1981 as pest species.
- Continue to work towards the creation of a definitive crayfish distribution database and routes for sharing information on crayfish distribution for conservation purposes within the UK and Europe.

Southern damselfly - *Coenagrion mercuriale*

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 54

Agency co-ordinator: Tim Sykes

Lead partner: The Wildlife Trusts

Trend: ☺

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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.	✓✓	✓✓	✓✓	✓

Examples of project work

- Publication of R&D outputs – Land management Advisory Leaflet aimed at landowners – disseminated widely to relevant landowners and land managers (e.g. NT, RSPB, private landowners) and relevant bodies (e.g. LAs, FC National Park Authorities, Water Companies), land management advisory organisations (e.g. FWAG). Feedback has been very positive.
- Also published R&D Technical Report and results of UK Southern Damselfly Site Assessment Report - disseminated to relevant individuals and organisations.

Agency contribution in 2002 = £20K

Action planned for 2003

- Steering Group to contact LBAP Groups and key landowners (e.g. RSPB, National Trust) to prompt increased action at the local level against published actions :-

BAP action 5.1.1: Encourage the uptake of beneficial land management schemes on land adjacent to occupied sites, including design (or cessation) of drainage schemes and other agri-environmental measures;

BAP action 5.2.2: Encourage the sympathetic management of all occupied and nearby sites, especially appropriate grazing management.

- Steering Group to reconsider stance against reintroduction of this species.
- Environment Agency to make collaborative funding contributions to key landowning bodies (e.g. The Wildlife Trusts), to facilitate greater practical habitat management and monitoring of key sites.
- Steering Group to review and update published Work Programme to extend to 2006.
- Environment Agency to consider needs of the species in the AMP4 process and on-going Habitats Regulations review of consents process.
- On-going research into the ecological requirements and conservation management needs of the species in its chalkstream and fen habitats continues.

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

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 57

Agency co-ordinator: Juliette Hall

Lead partner: Environment Agency

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X	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.	X	✓	✓	✓

Examples of project work

- The R&D project 'The Ecology of two rare aquatic molluscs, *Anisus vorticulus* and *Segmentina nitida*' has been completed and published. The final document was retitled 'The Ecology of Four Scarce Wetland Molluscs' following the inclusion of another two RDB species in the work. The project has made progress towards setting management guidelines for *A. vorticulus* through an increased understanding of preferred water quality and favoured ditch macrophyte community type.

Agency contribution in 2002 = £2K

Action planned for 2003

- Where conflicting ecological requirements between protected species have been identified at key sites ensure that *A. vorticulus* is given the consideration it requires, through influencing the relevant organisations of the requirements of the BAP mollusc species.
- Establish baseline monitoring at key sites within Sussex and East Anglia.

Freshwater pearl mussel – *Margaritifera margaritifera*

Category: 2

Contact point: SNH

Focus on biodiversity page: 58

Agency co-ordinator: Anne Lewis

Lead partner: Environment Agency/SNH

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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.	X	X	✓	✓
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	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.	✓	X	✓	✓
5.5.3	Establish the current status of populations throughout the UK.	✓	X	✓✓	✓
5.5.4	Encourage regular monitoring of known populations and seek to identify further threats to the species.	X	X	✓✓	✓
5.6.1	Promote awareness of the threats to the species and publicise the legal protection afforded to it.	X	X	X	✓

Examples of project work

- Talked to police wildlife officers in Cumbria
- Work carried out in Midlands on glochideal infection of wild salmonids

Agency contribution in 2002 = £2.5K

Action planned for 2003

- Workshop for Agency and EN staff and other workers on current status of the species
- Detailed survey work of River Ehen
- Captive breeding feasibility project River North Tyne
- Land management project River Esk

Glutinous snail – *Myxas glutinosa*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 59

Agency co-ordinator: Vacant

Lead partner: Environment Agency

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.2.1	Encourage good water quality in the catchment area of the Kennington Pit site.	X	X	X	✓
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.	X	X	X	✓
5.5.2	Survey all sites where the species has been recorded in the previous 50 years by 2000.		Completed	✓✓✓	✓
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.	Completed	X	✓✓✓	✓
5.5.8	Assess risks to the population in Llyn Tegid.	X	X	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	X	X

Examples of project work

- Monitoring of Llyn Tegid population.

Agency contribution in 2002 = £0K

Action planned for 2003

- None planned

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

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	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	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.	✓✓	✓✓	✓✓	✓
5.5.11	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	X	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	X	X	✓

Examples of project work

- Work carried out on the identification guide.
- Survey work report written.

Agency contribution in 2002 = £5K

Action planned for 2003

- Publish identification guide. The identification guide is no longer short because the species in the genus are just not easy to identify. Even professional freshwater biologists are unable to identify the species with existing guides. We have included all other freshwater bivalves to make the guide worthwhile and because there is a need for a reliable and useable guide for freshwater biologists.
- No surveys planned, but results of previous surveys are to be published.

Depressed river mussel - *Pseudanodonta complanata*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 61

Agency co-ordinator: Francis Farr-Cox

Lead partner: Environment Agency

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Consider developing policy and legislation to ensure favourable biotic conditions are maintained at key sites	✓	X	✓	✓
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.	✓	X	✓✓	✓

Examples of project work

- Survey work to establish status in various key UK rivers.
- Analysis of microhabitat eg sediment.
- Work to assess the impact of Agency activities eg dredging and weed cutting

Agency contribution in 2002 = £3K

Action planned for 2003

- Work in Somerset in the Brue valley at two locations, a) looking at weed cutting with three different treatments and b) surveying to assess microhabitat requirements at a depressed river mussel population hot spot.

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

Trend: ☺

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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.	X	✓	✓✓	✓
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.		Completed	✓✓	✓

Examples of project work

- R&D project 'The Ecology of two rare aquatic molluscs, *Anisus vorticulus* and *Segmentina nitida*' completed and published. This included the publication of a Technical Summary. The final document was retitled 'The Ecology of Four Scarce Wetland Molluscs' following the inclusion of another two RDB species in the work. This project has contributed to the BAP requirement to produce management guidelines. It examined the ecology of the species in terms of water chemistry, physical characteristics of habitat, and general gastropod and bivalve assemblages. An important conclusion was that elevated concentrations of nitrogen were detrimental to the success of the species

Agency contribution in 2002 = £2K

Action planned for 2003

- Increased effort to educate the relevant organisations of the requirements of the BAP mollusc species, and to encourage their conservation. There are often conflicting ecological requirements between protected species, and space should be allowed for these less well known rarities.

A freshwater bryozoan – *Lophopus crystallinus*

Category: 1

Contact point: Environment Agency

Focus on biodiversity page: 63

Agency co-ordinator: Daryl Buck

Lead partner: Invertebrate Action

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Address the requirements of this species in the LEAP process and in relevant WLMPs.	X	X	X	X
5.1.2	Take account of the species' requirements in response to applications for water abstraction.	✓	X	X	X
5.2.1	By 2004, reduce water abstraction from Barton Blow Wells aquifer and Breck aquifers.	X	X	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	X	X
5.5.2	Conduct targeted autecological research to inform habitat management.	✓✓	X	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	X

Examples of project work

- A Ph.D began with Reading University, part funded by the Agency.
- Research began with autecological surveys and resurveys of known sites.

Agency contribution in 2002 =£2.5K

Action planned for 2003

- Through the Ph.D, carry out further autecological surveys, resurvey known sites and survey new sites.

Ribbon-leaved water plantain – *Alisma gramineum*

Category: 1

Agency co-ordinator: Gill Walters

Contact point: Environment Agency

Lead partner: Environment Agency/English Nature

Focus on biodiversity: page 64

Trend: ☹

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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.	X	X	✓✓	✓
5.5.1	Investigate the source of enrichment at the Worcestershire site and monitor water quality at all extant sites.	X	X	✓	✓

Examples of project work

- English Nature were prepared to fund the lowering of the outfall structure and installation of a sluice. The Agency provided technical advice on feasibility of the project and costings. This would have provided control over water levels on the site as water levels also appear to be a factor related to the presence and abundance of the plant. However landowner permission was refused.
- The plant was not recorded at Westwood Great Pool during 2002; this is a matter of considerable concern.

Agency contribution in 2002: no specific sums of money but staff time

Action planned for 2003

- Agency contribution to continuation of work being carried out under English Nature's Species Recovery Programme for the plant.

Cut grass – *Leersia oryzoides*

Category: 2

Contact point: English Nature

Focus on biodiversity: page 65

Agency co-ordinator: Vacant

Lead partner: Environment Agency

Trend: ☺

UK BAP Number	Action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.2.3	Ensure that land drainage work does not take place in the vicinity of extant wet grassland populations.	X	X	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	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	X	X
5.2.6	Prepare watercourse management plans for all SSSIs with extant populations of cut-grass.	X	X	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	X	X

Examples of project work

- None

Agency contribution in 2002 = £0

Action planned for 2003

- None

Triangular clubrush - *Schoenoplectus triqueter*

Category: 2

Contact point: English Nature

Focus on biodiversity page: 66

Agency co-ordinator: Paul Smith

Lead partner: Environment Agency

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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.	✓	X	✓	✓
5.2.2	Ensure that future habitat management within the River Tamas SAC is appropriate to the needs of this species.	X	X	✓	✓
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.	X	Complete	✓✓✓	✓
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.	N/A	N/A	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.	X	X	✓✓	✓
5.5.5	Investigate seed production in triangular club-rush.	X	X	✓	✓
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	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.	X	X	✓✓✓	✓

Examples of action

- Monitoring reintroduced populations on the Tamar.
- R&D project continued.

NB All other actions dependent on relevant conservation organisations understanding the scientific reports and agreeing future conservation action.

Agency contribution in 2002: staff time only

Action planned for 2003

- National R&D project will conclude.
- Conservation direction should be discussed and agreed after the R&D has been launched and its conclusions and recommendations have been fully considered.
- Cornwall Area staff will continue to monitor the population at the Tamar and respond to any substantial losses they experience.

NB this will be the only action (ie monitoring at the Tamar) we undertake annually until the conservation direction for this species i.e. should we reintroduce triangular clubrush to its former range is decided nationally.

Greater water parsnip - *Sium latifolium*

Category: 2

Contact point: English Nature

Focus on biodiversity page: 67

Agency co-ordinator: Lesley Saint

Lead partner: Environment Agency

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	✓	✓	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	X

Examples of project work

- Day job only

Agency contribution in 2002 = £0

Action planned for 2003

- A meeting is planned for July 2003 to establish a steering group, assess the progress to date and start the process of developing a work plan. Once the work plan is produced it should make it easier to target resources at the key areas and make bids for funding.

Multi-fruited river moss – *Cryphaea lamyana*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 68

Agency co-ordinator: Jonathan Burgess

Lead partner: Plantlife

Trend: ☺

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	X

Examples of project work

- Agency not involved in surveying and monitoring, this is carried out by Plantlife and CCW.

Agency contribution in 2002= £0

Action planned for 2003

- An awareness day is planned in Wales.
- Publication of a leaflet on identification and management needs (reliant on funding).
- Look into possible jointly funded MSc project.

Tiny fern-moss – *Fissidens exiguus*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 69

Agency co-ordinator: Edward Bradbrook

Lead partner: Plantlife

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	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	X	X

Examples of project work

- None

Agency contribution in 2002 = £0

Action planned for 2003

- There are doubts about the validity of tiny fern moss (*Fissidens exiguus*) as a species distinct from *Fissidens pusillus* and perhaps other small species of the *F. bryoides* group. Further investigation is required to ascertain whether it can be recognised as a separate species and warrants future conservation efforts.
- Plantlife are currently investigating the possibility of initiating a Ph.D research project with the aim of reviewing the status of the tiny fern moss. Talks are to be held this autumn.

Water rock bristle - *Seligeria carniolica*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 70

Agency co-ordinator: Jim Heslop

Lead partner: Plantlife

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.2.3	Ensure that water quality and natural seasonal flow rates are maintained at the known site where this species occurs.	✓	✓	✓	✓

Examples of project work

- Continued chemical and algal monitoring to progress site characterisation.

Agency contribution in 2002 = £1K

Action planned for 2003

- Continue to ensure that maintenance of existing site condition is the primary factor in determining any authorisations or activities that could affect the site.
- Further monitoring and site characterisation report to partners.

Beaked beardless-moss - *Weissia rostellata*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 71

Agency co-ordinator: Martin Christmas

Lead partner: Plantlife

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	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	X	X

Examples of project work

- None

Agency contribution in 2002 = £0

Action planned for 2003

- We will commission a consultant to survey likely habitats to check the "real" distribution of the moss. This will also verify whether the moss is actually thriving at sites where we think it is in Ridings Area.

Violet crystalwort – *Riccia huebeneriana*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 72

Agency co-ordinator: Debbie Cousins

Lead partner: Plantlife

Trend: ?

UK BAP Number	UK BAP Agency needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.2.4	Ensure that the habitat quality of extant sites is not adversely affected by land drainage activities	X	X	X	X

Examples of project work

- None, probably due to lack of knowledge of the species and lack of a national steering group.

Agency contribution in 2002 = £0

Action planned for 2003

- Nothing definite, but NE Region plan to progress things this year.

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: Debbie Cousins

Lead partner: Plantlife

Trend: ☺

Convergent stonewort - *Chara connivens*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	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	X	X

Slender stonewort - *Nitella gracilis*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X	X

Starry stonewort - *Nitellopsis obtusa*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	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	X	X

Tassel stonewort - *Tolypella intricata*

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X

Great tassel stonewort - *Tolypella prolifera*

No actions

Examples of project work

- R & D project funding was secured for a Ph.D studentship entitled "Identification of key parameters limiting stonewort (charophyte) survival". This is in partnership with Plantlife and the University of East Anglia.
- West Area of Thames Region continued liaising with the MoD who own part of Otmoor SSSI. This site supports populations of Tassel Stonewort (*Tolypella intricata*) and the Agency advises on appropriate management of this species here. During the last year Plantlife (Lead Partner) have carried out further surveys at Otmoor and found several new populations.
- Five ponds were created in the Sussex Area of Southern Region, four on Offham Marshes SSSI and one in Lancing. Although not specifically designed for stoneworts, all five ponds have been colonised by them.

Agency contribution in 2002 = £0

Action planned for 2003

- The PhD at UEA will start this year with the first Agency contribution of £12K.
- Anglian Region will continue to carry out water quality studies on ditches on the Ouse Washes, under their Habitats Directive programme. This includes ditches where Great Tassel Stonewort (*Tolypella prolifera*) was historically present, although in the last survey it was present in only one of the ditches. Future management recommendations as a result of these investigations may benefit this species.

River jelly lichen - *Collema dichotomum*

Category: 1

Contact point: Environment Agency

Focus on biodiversity: page 75

Agency co-ordinator: Marlynne Good

Lead Partner: Environment Agency

Trend: ?

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	1995-99
5.1.1	Seek to eliminate the risk of water pollution, eg through the provision of advise on farm management where this species occurs.	X	✓	✓	✓
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	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	X	X
5.5.1	Undertake survey of potential sites to establish the distribution of the species.	X	✓	✓	✓
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.	X	X	✓	✓
5.5.3	Investigate further the effects of eutrophication and acidification of streams on this species and seek to reverse the impacts.	X	X	X	X
5.5.4	Establish a protocol for regular monitoring of this species and the water quality in the vicinity of known sites.	X	✓✓	✓✓	✓

Examples of project work

- Purchase and trials of new equipment.
- Dive training completed for health and safety.

Agency contribution in 2002 = £4K

Action planned for 2003

- Establish a protocol for regular monitoring of this species and the water quality in the vicinity of known sites.

Aquifer-fed naturally fluctuating water bodies

Category: 1

Lead Agency: Environment Agency

Trend: ☺

Agency co-ordinator: Pat Sones

Focus on biodiversity: page 76

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X	X
5.1.3	Consider the designation of a Water Protection Zone to safeguard water quality in the Breckland Meres.	X	X	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	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	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	X	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	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	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	X	X

Examples of project work

- Many of the actions for the HAP in Norfolk, the Breckland Meres, will be delivered through a major groundwater investigation and modelling project for the Chalk aquifer in Norfolk and Suffolk (Ely Ouse Groundwater Project). The aim of the project is to understand and quantify the groundwater resources of the area, and provide guidance on the management of the groundwater, and the river that interact with groundwater, in an integrated and sustainable way.
- The project started in 1998. During 2002 topographic and ecological surveys were undertaken, and boreholes drilled to better define the geology and water level regime.
- Hydrological Impact Assessment reports have been produced for the SPA & SAC designations of the site to feed into the Habitats Directive Review of Consents.
- The project will deliver action 5.5.1, and contribute towards actions 5.1.1, 5.2.1, 5.5.2 & 5.5.4.

Agency contribution in 2002 = £529K - These are the costs for groundwater investigation & modelling for the chalk aquifer & the HD RoC work for SAC & SPA sites in West Norfolk, West Suffolk & South Cambridgeshire. The Breckland meres are just in a small part of this area.

Action planned for 2003

- Write Local HAP for the Breckland meres, as part of the suite of the Norfolk County BAPs & HAPs. (This was planned for 2002, but not completed due to internal reorganisation of the Agency.)
- Completion of Phase 2 of the Ely Ouse Groundwater Project, completion of the groundwater model.
- Commencement of Phase 3, which includes predictive simulations of the behaviour of the chalk aquifer under a range of rainfall & abstraction regimes.

Chalk rivers

Category: 1

Lead Agency: Environment Agency

Trend: ☹

Agency co-ordinator: Lawrence Talks

Focus on biodiversity: page 77

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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/cSAC 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.	✓	✓	✓✓✓	✓

Examples of project work

- A national Catchment Abstraction Management Strategy (CAMS) programme has been established to provide a framework for managing existing abstraction licences and designing a future licencing strategy on a catchment basis. Environmental, physical and socio-economic criteria are being used to determine resource availability. The timetable for the programme is 2001-2007. A number of CAMS have now been published or are near publication for chalk rivers these include: East Hampshire (includes River Meon in Hampshire (Southern)), the Stour (Includes the Great and Little Stour, Dour and Nailbourne Southern)), the Loddon (Thames), the Kennet and Pang (Thames) and the Dorset Stour (S. Wessex).
- Phosphate removal has been introduced to improve effluent quality at a major poultry processing factory operated by Bernard Matthews at Great Witchingham on the River Wensum SSSI/cSAC. The new treatment plant has a target P concentration of 1mg/l, and will significantly reduce phosphate loading and concentrations in the river. Through the water companies environmental programme known as AMP3, which runs from 2000-2005, a number of sewage treatment works are required to install phosphate stripping to meet the requirements of the Urban Wastewater Treatment Directive, an example is Romsey STW on the Test. Further water quality improvements are presently being sort under AMP4 (2005-2010).
- The Agency is required under the Habitats Regulations to review all licences and authorisations on all cSAC designated chalk rivers by 2004. Stage 3 of this process has now been completed. The cSAC designated chalk rivers in the UK are the River Itchen, Hampshire Avon, Lambourn and Wensum.
- The River Itchen Sustainability Study, which is supported by a partnership between the Agency and the Water Companies with funding from AMP3, is at the cutting edge of chalk river catchment management

alongside the River Avon LIFE Project. Its key objective is to provide the required information to review the impact of water company operations on the River Itchen candidate Special Area of Conservation (cSAC). Outputs include the status of the features of special interest, a ground water model, a hydrology model and a suite of ecology models. Preliminary findings will be discussed with a team of key stakeholders including water companies, defra and ofwat. For more information go to www.riveritchensustainability.org.uk.

- The River Avon candidate SAC Conservation Strategy which provides a framework for protecting and enhancing the interest features of the river was published in spring 2003. It aims to raise awareness of the candidate SAC, share knowledge, strengthen the links between existing initiatives and bodies promote an integrated approach to chalk river catchment management. The Environment Agency and English Nature have developed the strategy with representatives of the riparian owners, fisheries interests, The Wildlife Trusts, water companies and local authorities, amongst others. It was funded under the LIFE in UK Rivers Project. A £2 million LIFE-Nature and Heritage Lottery Fund bid to carry out strategic river restoration of the river Avon and its flood plain working closely with local communities has been put together. The project title is River Avon And Valley Initiative. (www.english-nature.org.uk/lifeinukrivers).
- The National Environmental Research Council's LOWland CATCHment Research (LOCAR) programme will undertake detailed and integrated research into the storage-discharge cycle of groundwater-dominated aquatic habitats in three chalk catchments – the Frome/Piddle in Dorset, and the Pang and Lambourn in Berkshire – and one sandstone catchment, the Tern in Shropshire. Hydrological monitoring networks will build on existing Environment Agency instrumentation, and run in parallel with an ecological monitoring programme from April 2002 until early 2006. The programme will improve understanding of geological, hydrological and ecological interactions within permeable catchment systems and their associated aquatic habitats, at different spatial and temporal scales and for different land uses. Improved modelling tools will be developed to support the integrated management of lowland catchment systems. The study sites are intended to form the basis of a long-term monitoring network to provide information on natural variability and responses to environmental change. The programme is a collaboration between universities, research institutes and user groups, such as regulators and water companies. The required instrumentation has now been installed (www.nerc.ac.uk/funding/thematics/locar).
- The Chilterns Chalk Rivers Project's aim is to conserve and enhance all major chalk streams in the Chilterns Area of Outstanding Natural Beauty, and to encourage enjoyment and understanding of them. The project provides advice to landowners and managers on riverside management, carries out practical work to enhance the streams for wildlife, undertakes surveys of rare species and provides educational material for schools. Events and projects have included working with the Environment Agency to re-establish brown trout stocks on the Hughenden Stream near High Wycombe, organising the Chilterns Water Festival, and opening walks such as the Alban Trail.
- The Wessex Chalk Rivers Project's focus is on river enhancement and the management of the River Avon and its tributaries, the Wylfe, Nadder, Bourne and Till. Works have included enhancing a previously dredged river reach by replacing the gravel from the banks and creating wildlife-friendly margins; narrowing an over-widened silted river bed; introducing dappled shade to a completely shaded channel; and restoring a severely eroded river meander on a community riverside walk, introducing fishing platforms and interpretation boards. The project partners include the Environment Agency, Wiltshire Wildlife Trust, English Nature, Wiltshire Fishery Association and Wessex Water. A periodic newsletter is produced.
- The Upper River Kennet Rehabilitation Project which was designed to rehabilitate 10km of chalk river between 1999 to 2003, following the Axford Inquiry, has now been completed. One of its key aims was to provide a demonstration project of what can be achieved through a variety of river engineering techniques, founded on the principle of enabling the river to improve itself at low and high flows. Work has included extensive narrowing, installation of deflectors to re-energise the flow, gravel reinstatement, the building of a faggot causeway and an island using sarsen stone, and the use of straw bales as in-fill for severely over-deepened reaches. Principle partners are Thames Water, Environment Agency and English Nature.
- A degraded stretch of the River Glaven, a chalk stream in north Norfolk, has been rehabilitated to provide increased diversity of flora and fauna by improving habitat variation and quality. A total of 252 tonnes of gravel was used to create 2 gravel riffles, and a long glide approximately 45m in length. The river was narrowed along the section of glide using brushwood faggots. The work will help ensure that the river supports self-sustaining populations of brown trout and bullhead, and will improve habitats for invertebrates and water vole.
- The Norfolk Flood Defence Operations Team have been involved in a project to reconnect a meander loop on the River Wensum SSSI/cSAC at Hempton, near Fakenham. The work forms part of mitigation for flood defence maintenance work on the River Wensum. The work has been carried out in collaboration with the

Norfolk Ornithologist's Association, who recently acquired the site and will be managing it in the future as a nature reserve. The restored meander will provide additional wetland habitat adjacent to the River Wensum SSSI/cSAC which it is hoped will benefit water voles, bullhead and brook lamprey as well as a range of other wildlife.

- Willow spilling has been used to enhance a stretch of the River Loddon at Sherfield (Thames). An extensive programme of habitat work has continued to be delivered across Hampshire as part of its Salmon Enhancement Programme on the Test and Itchen; and in South Wessex on the Wylfe, Avon and Frome. Habitat enhancement work through fencing and bank narrowing has been carried out on the headwaters of the river Hull.
- Anglian Region Eastern Area have begun a project to reduce the amount of silt entering the River Wensum SSSI/cSAC in Norfolk. The project plans to use a training package for agronomists and conservation advisors to demonstrate appropriate farming practices to reduce runoff and diffuse pollution. The training will take place during the winter of 2003/4 and should result in improved land management across the catchment.
- Highway sources are also being addressed and the advisor training will be followed up with further work on specific problem areas. A recently announced successful bid to the EA Challenge fund will enable this work to take place.
- Other land care projects working with chalk river catchments include: the Upper Kennet LandWise Project which is a partnership project between the Agency, English Nature and the Farming and Wildlife Advisory Group (FWAG); the Wey Valley Project; Avon and Frome LandCare Projects and the Test and Itchen LandCare Project.

Agency contribution in 2002 = >£1 million

Action planned for 2003

- Publication and launch of *State of England's Chalk Rivers* report
- £2million LIFE-Nature and Heritage Lottery Fund bid to carry out strategic river restoration of the River Avon and its flood plain working closely with local communities.

Coastal saltmarsh

Category: 1

Lead Agency: Environment Agency

Trend: ☹

Agency co-ordinator: Brian Empson

Focus on biodiversity: page 79

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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

Examples of project work

- Good progress has been made during 2002 on the estuary-wide Shoreline Management project for the Humber Estuary, which has identified nine potential setback sites. One such setback site at Alkborough is planned to create 400ha of habitat, the majority of which will convert from agricultural land to saltmarsh and mudflats. Most of the land at Alkborough has now been purchased but construction work is still someway off.
- Construction works are still ongoing at Paull Holme Stray, formerly known as Thorngumbald, on the north bank of the River Humber, which involves the realignment of some 80ha of arable land. A new bank is being built up to 500 metres behind the present line and the breach of the existing line is planned for August 2003, with formal opening of the site in October 2003.
- Work at Abbots Hall, situated within the upper reaches of Salcott Creek, north of the main Blackwater Estuary, is now largely completed. The work includes 5 breaches along a 3km length of sea wall and the first breach took place in October 2002 with the final breach planned for early 2003. The site will create 60ha of saltmarsh habitat and its development will be carefully monitored during 2003 and 2004.
- The Wash Banks site at Freiston Shore, situated in the Wash near Boston is creating some 78 ha of saltmarsh habitat. Following the bank raising work, the existing line was breached in September 2002.

Monitoring of the site is being undertaken by the Agency and through an EA/Defra Research Project. The aim being to chart the development of the site to help with future scheme designs.

- A 12ha site on the Croach Estuary in Essex was purchased as compensation habitat for a Capital Scheme in July 2002. The site is expected to create 7 ha of saltmarsh habitat and the breach is planned for early 2003.
- The Agency, English Nature and Defra have agreed guidance on taking capital and maintenance works through the Habitats Regulations over the next five years, before Coastal Habitat Management Plans are produced. The guidance requires the establishment of a Habitat Creation Programme (HCP) to address the habitat compensation requirements associated with both capital and maintenance schemes considered together for the five-year programme. Considerable progress on the HCP was made in 2002 on the Essex Estuaries and there will be a public launch of the land acquisition strategy associated with the HCP in August 2003. In the Strategy the Agency will seek to purchase land to create 250ha of saltmarsh habitat to offset the predicted losses over the next 5-years.
- The six pilot Coastal Habitat Management Plans are now completed and available on the English Nature Website. The *Living with the Seas* project that produced the pilot CHaMPs is due to complete in July 2003. Another useful output will be the web-based guidance on the creation and restoration of coastal habitats, including saltmarsh and mudflats. The Agency played an active role in its development and it will be available on the Living with the Sea website accessible via the English Nature website.
- A joint Defra/Agency flood defence research project, Futurecoast, costing some £1 million, was delivered in 2002. This project has predicted trends of future shoreline evolution for the entire coastline of England and Wales over the next 100 years and provides aerial photography of the whole coastline and the results will feed into the second generation Shoreline Management Plans for which guidance was issued in June 2001. Procedural guidance detailing methods for using Futurecoast and other R&D outputs is being developed in conjunction with EA/EN/CCW.
- A joint Agency/English Nature project is being undertaken by the Agency's National Centre for Environmental Data and Surveillance on the development of marine SAC monitoring which includes both saltmarshes and mudflats.
- The Agency has developed a regional coastal partnership framework between conservation bodies in Anglian Region to explore co-operation on potential managed realignment sites and research projects.
- A joint report between the Agency and RSPB is being produced on Regulated Tidal Exchange and should be available in early 2003. The report will be the culmination of 3 years of R&D and highlights the importance of this technique in creating saltmarsh and mudflats. Abbots Hall is an example of a site where tidal exchange has been used as a precursor to the managed breaches.

Estimated Agency Contribution in 2002: £2 million – both saltmarsh and mudflats

Action planned for 2003

- Dissemination of Futurecoast outputs.
- Production of revised guidance for SMPs.
- Preparation of a programme for Estuary Strategies, like the strategies developed for the Essex Estuaries.
- Development of regional coastal partnerships in Southern and South West regions.
- Severn Estuary South Bank ProtoCHaMP to be developed to quantify the historic losses of saltmarsh to help plan the Strategies within the Severn Estuary.
- Development of the Steart Peninsula Strategy, to explore the opportunities for managed realignment of coastal defences.
- A review of the historic losses of saltmarsh is planned in Southern Region for 2003.
- Further plans will be developed for Cuckmere to determine the improved management of the Lower Cuckmere Estuary, with the potential to create saltmarsh and mudflat habitat.
- There are plans to create habitat in Morcambe Bay in 2003 to offset the losses from some coastal defence works.

Eutrophic standing waters

Category: 1

Lead Agency: Environment Agency

Trend: ☺

Agency co-ordinator: Simon Leaf

Focus on biodiversity: page 80

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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	X	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 ✓	X ✓	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	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	✓	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	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.		Complete	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	X	X	✓
5.5.6	Promote research into the likely effects of climate change and sea level rise on eutrophic standing waters.	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 eutrophic standing waters.	✓	X	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.	✓	✓	✓	✓

Examples of project work

- The UK steering group, convened to jointly address work on the complementary Mesotrophic Lakes and Eutrophic Standing Waters HAPs has now met eight times since the HAP was published in December 1998. A combined work programme has been drafted and further work will develop priority actions required to promote progress towards the biological targets.
- An England group for the two HAPs was convened by the Agency in 2001 and now meets periodically. A related collaborative initiative with English Nature is also being progressed, aimed at progressing action plans for priority sites, using funding secured by EN from the Government's Capital Modernisation Fund.
- Through collaborative R&D by UK group members, led by the Agency, a risk/harm-based protocol for prioritising standing waters (regardless of trophic category) is being developed. The project will also create a national inventory of standing waters. The work is close to completion and the outcome should 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. It will also assist implementation of Water Framework Directive.
- The Agency, working with English Nature, is providing advice and data to Defra to support and influence the department's recent (2002) review of Diffuse Water Pollution from Agriculture (DWPA). Improving the framework and mechanisms for controlling diffuse nutrient pollution are an important element of this review and sites of high conservation status are likely to be priorities for action under the initiative.

Agency contribution in 2002: ca. £150K (but very difficult to assess costs solely attributable to the lake HAPs as much work is to meet the needs of various drivers).

Action planned for 2003

- The GB inventory of standing waters is now almost complete and will be useful for both BAP and Water Framework Directive purposes. The R&D recommendations for prioritising waters under UK BAP will be considered in determining how best to identify priority sites nationally. The UK lake HAP group intends to produce briefing/promotional material on these developments, aimed at LBAPs and other interested parties.

- Further R&D is in hand to develop the range of reference-based biological measures which are required for Water Framework Directive and which will also inform future assessment of the condition of HAP sites.
- The new England Country Group for the two HAPs, together with the joint EN/EA action plan initiative, will provide a focus for HAP implementation at national level and should help to establish links to LBAP groups.
- Work to influence to Defra DWPA, described above, will continue.

Mudflats

Category: 1

Lead Agency: Environment Agency

Trend: ?

Agency co-ordinator: Brian Empson

Focus on biodiversity: page 81

UK BAP Number	UK BAP action needing Agency contribution	Agency contribution			
		2002	2001	2000	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

CHAPTER 4 PROGRESS IN 2002 – CATEGORY 3 & 4 SPECIES AND HABITATS

- 4.1 A flavour of work undertaken for category 3 and 4 species and habitats is presented here. It emphasises that Agency action can benefit a whole range of UK BAP habitats and species, although this excerpt is by no means exhaustive.

Yellow marsh saxifrage (*Saxifraga hirculus*)

- 4.2 The two key pieces of work undertaken in 2002 were:

- Collation of research work by Caroline Hallam - Peter Kelly was employed by English Nature to undertake the majority of research work associated with this species in England. However, he sadly died and Caroline Hallam was employed in late 2002 to compile all of Peter's work into a paper. This work is ongoing to date and a draft paper has been produced. Due for publication in late 2003.
- Genetics work by Christina Oliver, Royal Botanic Garden Edinburgh - Genetics work for *Saxifraga hirculus* was commissioned because the plant has been suppressed from flowering and setting seed for many years due to overgrazing. This led to 'conservation concerns' that levels of gene flow (through pollination) both within and between isolated populations may be low and that perhaps a single dominant clone, that reproduces best vegetatively, may now dominate the British population.

Essentially the research work looked at whether the British population of *Saxifraga hirculus* was genetically diverse and compared the genetic variability within Britain with that found on Denmark, Spitzbergen (Arctic Norway) and Iceland. The results showed that British populations had a relatively diverse genetic make up compared to many of the foreign locations. However, these results may be skewed because many more samples were taken from British populations than from those from different countries abroad. The report also concludes that at least a low level of gene flow is occurring, or has occurred in the not too distant past within the isolated British populations.

Grass-wrack pondweed

- 4.3 A "Status in Britain in 2002" report, by Whild Associates, confirmed the species at 9 sites, of which the Montgomery Canal is much the most significant. At Shugborough Park, Staffordshire, the Agency has assisted with appropriate management of an ornamental watercourse which has secured its presence there, and is involved in discussions over securing the water supply.

Floating water-plantain

- 4.4 The "LIFE in UK Rivers" project has collated the information available on the ecology and management requirements of the species.

Craneflies *Lipsothrix nigristigma* (Telford cranefly) and *L. errans*

- 4.5 Surveys have revealed new sites in Cumbria for both species (NB 2003).

Cranefly *Lipsothrix nervosa*

- 4.6 Surveys at sites in Wales have revealed new information on larval requirements.

Wet woodland

- 4.7 The Agency has been involved with various creation/restoration projects: Great Fen Project (Anglian); Bishops Wood, Selby; Jubilee River; Oxfordshire Wet Woodland Project. The Agency has also supported research by Aston University on water budgets in wet woodland - the University is also working on aspects of creation and management of wet woodlands. The Habitats Directive project has collated information on the ecology of bog woodland and alluvial forest.

Marsh fritillary

- 4.8 The aftermath of the Foot and Mouth Disease restrictions of 2001 which affected the grazing patterns of the habitats resulted in less than ideal conditions in 2002. This together with a wet cool late spring throughout western Britain did not lead to an excellent breeding season. However the existing sites have been carefully monitored and overall numbers of marsh fritillary has held.

Houting

- 4.9 No action for 2002 but European status to be reviewed as part of ICES Working Group on Fish Ecology in 2003.

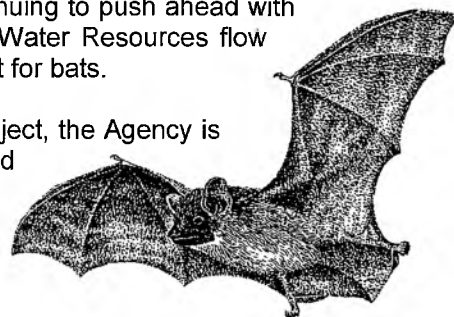
Bats

- 4.10 The Agency continues to play an active role as a member of the UK BAP Steering Group for Bats.

We are providing the Bat Conservation Trust with RHS data which is being used as part of the National Bat Monitoring Programme, and is especially useful for Daubenton's bat work.

A number of regions, including Southern and Thames are continuing to push ahead with projects to adapt the walls and roofs of Environment Agency Water Resources flow gauging stations huts to provide additional riverside roost habitat for bats.

In Yorkshire, as part of the Upper Wharfedale Best Practice Project, the Agency is taking account of the outstanding bat research work being carried out in Wharfedale by Professor John Altringham and his team at the University of Leeds, in the development of a long term management plan for the valley.



CHAPTER 5 CASE STUDIES

- 5.1 This chapter is a new addition for Update 2002. It outlines 7 projects that have benefited biodiversity and are taken from the Conservation, Access and Recreation (CAR) Report for 2002/3 that can be viewed in full on our website from the end of November 2003.
- 5.2 For further illustrated examples look out for our 2004 biodiversity calendar.

OPERATION RIVERSIDE LINK - PROVIDING A HABITAT LIFELINE FOR BARN OWLS - NORTH EAST REGION

Type of activity that the project represents	Conservation, biodiversity, survey work, habitat provision
Location	Rivers Hull, West Beck & Humber
Agency Area and Region	Ridings Area, North East Region.
Time taken to complete the project	Began 1992 and continuing
Partnerships	Led by Conservation in partnership with <i>Operation Riverside Link</i>
Total Expenditure	About £8,000 to date
Agency Functional Links	Head of Conservation, Area/Regional Biodiversity and Flood Defence Officers
Who manages the site?	Environment Agency/landowner with surveys being carried out by Colin Shawyer
Is there a site management plan?	Mowing regimes and box maintenance programme in place.
Biodiversity benefits	Barn owls

Since 1988 the Environment Agency in association with the Wildlife Conservation Partnership, working in support of The Hawk and Owl Trust, has been undertaking an active conservation and monitoring programme for barn owls on river networks throughout England and Wales.

The Barn Owl Survey of Britain and Ireland, that *Operation Riverside Link* undertook in the early 1980s, showed that this bird had declined by over 70 per cent in the previous fifty years and that the now fragile population had become fragmented, existing only in isolated pockets where rough grassland remained the dominant habitat. The survey also revealed that over three-quarters of barn owls in Britain were breeding close to a river or major watercourse where grassy banks provided prey rich foraging areas and perhaps more importantly where unbroken stretches of habitat corridor enabled the successful dispersal of young owls.

Based on detailed survey knowledge of the remaining strongholds of barn owls in Britain, Colin Shawyer published a conservation plan for the species seeking to consolidate these centres of population and then link them countrywide through the development of habitat 'highways'. The areas targeted as part of the conservation plan were called Priority Protection Areas (PPAs). These included over 20 lowland river systems and provided the basis for re-establishing the breeding population of this bird in England and Wales.

The habitat enhancement programmes that include changes to riverbank management and the installation of nestboxes have targeted and continue to target those rivers that fall within PPA's.

Known as *Operation Riverside Link*, habitat enhancement programmes were instigated in 1989 which involved moves towards less intensive river bank management and the installation of pole mounted nestboxes at 2 km intervals on these newly restored rough-grassland corridors.

Projects have now been accomplished with the Environment Agency in seven of their eight regions. These have been undertaken in partnership with both Area and Regional conservation teams and local landowners

to provide an important contribution to the successful delivery of the actions detailed in the Agency's Local Environment Action Plans (LEAPs) and more recently in the Catchment Abstractions Management Strategies (CAMs).

- In Yorkshire, the River Hull was one of the first projects to be instigated in 1992. This was closely followed, on the West Beck in 1993 and the Humber in 1997. These three projects were initiated and strongly supported by John Pygott, Caroline Essery and their team. All three projects have yielded major conservation successes with over three quarters of nest boxes being used by barn owls.
- Colin Shawyer has, each year, undertaken nestbox maintenance and careful monitoring of the success of these projects. This has revealed that to date over 150 young barn owls have fledged from the boxes together with over 100 young kestrels, a species which along with many other farmland birds is now Amber listed as a species of conservation concern. Through the use of leg rings we have been able to show the process by which barn owls have recovered in East Yorkshire, and how they are actually utilising river corridors to achieve this recovery.
- Through the use of sound research and practical application we are successfully meeting the conservation challenges detailed in the UK Species Action Plan for barn owls. The Wildlife Conservation Partnership, working in support of The Hawk and Owl Trust, is proud of its long association with the Environment Agency who through the careful management of river banks is providing a major contribution to the conservation of the threatened barn owl in England and Wales.



BOSTON WASHBANKS - ANGLIAN REGION

Type of activity that the project represents	Disabled access, biodiversity, social inclusion, flood defence, heritage, art appreciation, sustainable tourism.
Location	Freiston, Nr Boston, Lincolnshire
Agency Area and Region	Northern Area Anglian Region
Time taken to complete the project	4 years (1999 – 2003)
Partnerships	Led by Fisheries Recreation & Biodiversity Team. Completed in partnership with Flood Defence, RSPB, Boston Borough Council & Lincolnshire County Council (also HM Prison North Sea Camp & English Nature)
Funding make up or the percentage of financial input	£790K EAGGF – (Objective 5b) Match funded by Flood Defence project funds
Total Expenditure	£790K
Agency Functional Links	Flood Defence
Who manages the site?	RSPB (plus the Agency for Flood Defence)
Is there a site management plan?	Not from the Agency (could be an RSPB plan)
Biodiversity benefits	Saline lagoons, saltmarsh, wildfowl and waders

- The project involved:
 - Creation of 12ha of brackish & freshwater lagoons for the benefit of a variety of wildfowl & waders.
 - 80ha of saltmarsh creation for flood defence & nature conservation benefit.
 - Improvements to existing nature reserve at Frampton Marsh.
 - Access improvements including car parks disabled access paths & cycle routes.
 - Provision of bird hides & community art.
 - Interpretation boards, leaflets, education pack & a website (www.thebostonwashbanks.com).
 - Appointment of 2 RSPB officers to promote project & farmland bird conservation.

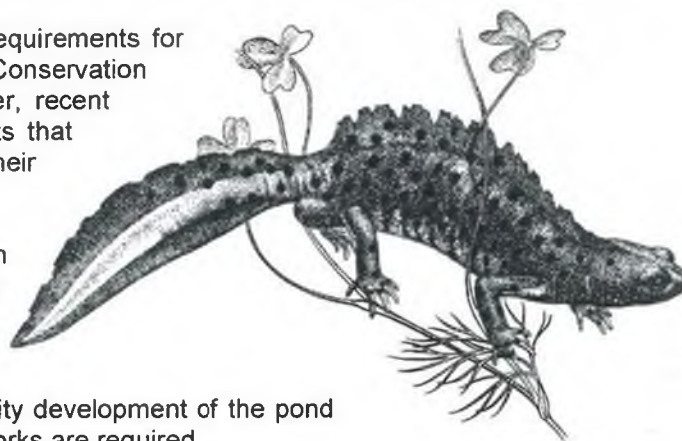


- The project evolved to provide environmentally sustainable flood defence to the surrounding area including the market town of Boston, by linking nature conservation & flood defence it has provided a catalyst for economic regeneration & rural tourism. Additionally 80,000ha of agricultural land was protected.
- The local community benefited by increased security from better flood defence & increased tourism. Visitor numbers increased to 76,311 in the first 12 months.
- Adjacent designations include The Wash SPA & cSAC.

CARNETOWN PONDS - ENVIRONMENT AGENCY WALES

Type of activity that the project represents	Biodiversity enhancement
Location	Carnetown, Rhondda Cynon Taff
Agency Area and Region	SE Area Wales
Time taken to complete the project	3 months
Partnerships	The project was in partnership with Rhondda Cynon Taff Countryside Department.
Funding make up or the percentage of financial input	Contributions: Environment Agency Wales £450 Rhondda Cynon Taff £600
Total Expenditure	£1050
Agency Functional Links	None
Who manages the site?	Rhondda Cynon Taff
Is there a site management plan?	No
Biodiversity benefits	Ponds, amphibians

- Carnetown, Abercynon lies north of Pontypridd on the River Taff in Rhondda Cynon Taff County Borough Council.
- Created in mitigation for the loss of locally valued wetland habitat during the extension of the playing fields in the early 1990s, two small ponds on a feeder stream were constructed with the assistance of the National Rivers Authority. The ponds became quickly popular with local people and over the last decade they have continued to develop into species-rich, diverse waterbodies. This includes good submerged and emergent floras, bankside (including the uncommon wood club-rush) vegetation and associated fauna (which is likely to include good invertebrate and amphibian populations as well as kingfisher and moorhen).
- Today the ponds easily satisfy the minimum requirements for designating as Site of Importance for Nature Conservation (SINC) using adopted Council criteria. However, recent concern has been expressed by local residents that the ponds may be over-growing and losing their community value.
- The ponds are undoubtedly silting-up through natural process, but given their high biodiversity value it is considered prudent at this stage in the ponds natural succession to undertake limited remedial pond management works. Sensitive work should ensure that the biodiversity development of the pond is maintained before more drastic remediation works are required.
- The maintenance of the ponds (both as habitats and for their amphibian value) is supported by the Rhondda Cynon Taff Local Biodiversity Action Plan which includes an action to 'continue to manage Council owned and controlled waterbodies, and their surroundings, sensitively'. The project also contributes to Local Contribution objectives.



CHINBROOK MEADOWS - THAMES REGION

Type of activity that the project represents	Recreation, conservation, access, disabled access, biodiversity, social inclusion, river restoration and re-engineering.
Location	River Ravensbourne, London Borough of Lewisham.
Agency Area and Region	Thames Region, South East Area.
Time taken to complete the project	2000 to 2002. Feasibility Study completed February 2001, final scheme opened October.
Partnerships	London Borough of Lewisham, Groundwork Thames Gateway London South, Quaggy Waterways Action Group, Glendale Ground Maintenance.
Funding make up or the percentage of financial input	Flood Defence expenditure: £227K
Total Expenditure	£1.1m
Agency Functional Links	A multidisciplinary team was set
Who manages the site?	London Borough of Lewisham
Is there a site management plan?	Yes
Biodiversity benefits	Bullhead, kingfisher

- The project entailed the replacement of 300m of concrete channel with 350m of sinuous naturalised channel with associated wetland, improving the biodiversity within the park and reducing flood risk to adjacent properties.
- Although the cornerstone of the project was the naturalisation of the river, the project sought to take a holistic view of the park and the needs of local people. As a result, the entire park was redesigned and upgraded to include new footpaths, planting, gates, lighting, bridges, sports facilities, educational resources and art features. It also involved an extensive educational programme with local schools to promote environmental awareness and consulted widely with local residents to enable their hopes and concerns to feed into the project.



COSTERS BROOK HABITAT ENHANCEMENTS - SOUTHERN REGION

Type of activity that the project represents	Fisheries, biodiversity, habitat enhancement.
Location	The Costers Brook is a tributary of the Western Rother in West Sussex.
Agency Area and Region	Sussex Area, Southern Region.
Time taken to complete the project	3 months including design, consenting etc. Took 4 weeks to construct. (March 2003)
Partnerships	This was one of the first projects to be carried out by the new integrated Fisheries, Recreation and Biodiversity team in collaboration with the Environment Management Team in West Sussex, the YMCA and a local landowner. The Rother Valley Project Officer (another partnership project) was also involved.
Funding make up or the percentage of financial input	Funding of £7K came from the Fisheries Action Plan budget. In addition to this money, Tarmac donated the 35 tonnes of clean gravel.
Total Expenditure	£7,000
Agency Functional Links	Emergency Work Force, Environment Management, Fisheries Recreation and Biodiversity, Ecological Appraisal, Development Control
Who manages the site?	YMCA
Is there a site management plan?	No
Biodiversity benefits	Chalk rivers, sea trout, brown trout, bullhead, invertebrates.

- The Costers Brook is a brilliant example of the problems being faced by rivers in the area from change in land use and associated siltation. It is a tributary of the River Rother that rises from clean chalk fed springs at the foot of the South Downs near Midhurst. Historically the Costers Brook supported a diverse range of fish species such as trout and bullheads and these species are heavily reliant on clean water and loose gravel to provide necessary feeding and spawning areas.
- The geology of the area is sandy and due to changes in agriculture in the area huge quantities of silt are running off the land in winter and ending up in watercourses. This silt is smothering the bed of rivers threatening local wildlife that rely on and thrive in such habitats.
- With the kind permission of both landowners (YMCA at Dunford House and the Cowdray Estate) seven locations were chosen. Large logs were used to tighten the river to help speed the flow and clear silt and 35 tonnes of clean gravel was kindly donated by Tarmac from their Chichester gravel pit to construct of a series of 7 riffles to provide quality habitats for fish and wildlife.



INNER THAMES MARSHES WATER DISTRIBUTION SYSTEM - THAMES REGION

Type of activity that the project represents	Conservation and biodiversity benefits through grazing marsh restoration and appropriate access.
Location	Inner Thames Marshes, near Rainham, South Essex
Agency Area and Region	North East Area, Thames Region
Time taken to complete the project	The project took 4 months to complete including the design time, finishing in March 2003.
Partnerships	The project was completed in partnership with the RSPB, Rail Link Engineering (RLE - Channel Tunnel Rail-link) and the Environment Agency's Conservation and Flood Defence Departments.
Funding make up or the percentage of financial input	£12K was provided by the Environment Agency and £25K by RLE as compensation for destroyed ditches through construction works.
Total Expenditure	£37K
Agency Functional Links	None
Who manages the site?	The RSPB
Is there a site management plan?	Yes, written by the RSPB through the Pathfinder method.
Biodiversity benefits	Grazing marsh, reedbed, water vole, water birds

- The project is an initial stage of an ongoing scheme to create a London Riverside Conservation Park, which will become one of the largest environmental parks in the country.
- This particular project involved the creation of a ditch, 3km in length, 8m wide and up to 2m deep which runs along the southern edge of the site adjacent to the River Thames. The ditch carries water at a slightly elevated level (0.8m AOD) to the natural water table, which aids control of the water over approximately 200 hectares of grazing marsh of the Aveley and Wennington Marshes (part of the Inner Thames Marshes SSSI). This enables more appropriate management of the site with regards to species requirements (e.g. breeding water birds and water voles), grazing regime and access.

Inner Thames Marshes Water Distribution System. Photo taken from the east of the site looking west. Aveley Marsh can be seen to the right hand side of the ditch.



OTTER ROAD MORTALITY SYSTEM (ORMS) DATABASE - ENVIRONMENT AGENCY WALES

Type of activity that the project represents	Setting up of a database to record and report otter road deaths in Wales
Location	N/A though set up in EAW Cardiff
Agency Area and Region	All of Wales though prepared and managed by Supra Area Biodiversity team, managed via SW Area
Time taken to complete the project	12 months
Partnerships	Welsh Assembly Government, CCW, The Wildlife Trusts, Local Authorities, Police , Cardiff University
Funding make up or the percentage of financial input	N/A
Total Expenditure	N/A
Agency Functional Links	N/A
Who manages the site now	N/A
Is there a site management plan?	No
Biodiversity benefits	Otters

The Roads and Otters Steering Group (ROSG) Wales, made up of the partners described above, is set up to translate information gained from reports of otter road deaths into mitigation works to reduce mortalities.

This followed studies, funded by EAW, in 2000 and 2001, which identified blackspots and methods of mitigation. In addition to re-launching the procedures to report and collect carcasses, the Group has supported the setting up of an Access database, which holds information on all records reported to EAW, CCW, The Wildlife Trusts and others, in a standard form. This database is managed by the EAW Supra Area Biodiversity Team for SW and SE Areas.

One of the prime aims of the system has been the accurate mapping of the location of incidents in order to identify the reason for them and to identify new blackspots, particularly important in view of the expanding population.



The database will be used to generate 6 monthly reports to the Welsh Assembly Government Transport Directorate and Local Authorities in order to both stimulate proactive mitigation works at priority sites and to identify links with maintenance and upgrading programmes.

Although the bulk of the work was undertaken in 2002/3, the first full test run of the reporting system will be in the summer of 2003.

Policy and process

- 6.1 We will be including biodiversity elements in the Agency's corporate scorecard measures for assessing progress on the 'enhanced environment for wildlife' theme. Specifically we will be assessing how we are performing against our principal obligations for the Habitats Directive and UK BAP. This will raise our profile significantly at Board and Director level, whilst increasing the chances of successful delivery of actions in Regions and Areas. The Board will also be discussing our performance in delivering biodiversity across the business at its open session in London on 26 November 2003.
- 6.2 With the new national team settling down, we are hoping to make significant progress on policy and position statement production which will help to apply consistency to our delivery of biodiversity action on the ground. Subject areas include wetlands, gravel removal from rivers, instream structures, invasive species and tidal foreshore encroachment.



- 6.3 Our process management work mainly involves engagement with other Agency colleagues to ensure that they have the necessary biodiversity checks and prompts to serve to deliver protection and enhancement of biodiversity in line with our statutory duties. For example we will have a biodiversity check as part of policy appraisal procedures.

Promoting biodiversity

- 6.4 We will be repeating the very successful annual biodiversity seminar this time in November 2003. It will include not only our biodiversity staff, but also representatives from Ecological Appraisal teams and external partners. This will allow Barbara Young and others to reflect on progress in the 16 months since the first event and to set out the national agenda for the future in the context of our new corporate strategy.
- 6.5 Our conservation web page will be developed significantly in 2003 and we will be repeating the production of an Agency biodiversity calendar for 2004 featuring some of our best habitat creation projects.
- 6.6 The Otter Survey reports for both England and Wales will be published as will a new Water Vole Slide Pack and CD ROM, and an expanded and updated version of the popular Invasive Plants booklet.
- 6.7 Greater efforts will be made to promote the biodiversity work of the Agency through the national and regional media. We are conscious that the vast majority of our successful conservation work goes largely unpublicised and we will be collaborating with our marketing and press office colleagues to achieve a better balance between doing the job and telling the public what we are doing.

Regional Biodiversity Strategies

- 6.8 We hope to make significant progress on the production of Regional Biodiversity Strategies and Action Plans, following the Thames Region model produced in 2000. The documents will illustrate the distribution of species and habitats for which we have actions under the UK BAP and they will itemise the relevant actions on an area-by-Area basis. Actions will also be costed and attributed to key functions. The idea is to bring biodiversity centrally into the business planning arena, because we will only be able to influence work programmers 'from the inside'.

Habitats Directive

- 6.9 The focus for 2003 will continue to be the completion of appropriate assessments at high priority sites, supported by national research and local investigations work. The huge amount of effort made to develop procedures and technical guidance for all our activities has paid dividends and we are particularly pleased about the way the joint EA/EN/CCW technical advisory groups on water quality, air quality, water resources, flood defence, fisheries and waste have contributed to help resolve some complicated casework problems.

Databases

- 6.10 Our *Habitats Directive* database will be developed further, enabling our conservation and other staff easy access to relevant information and sharing best practice.
- 6.11 We will be developing links with BARS (Biodiversity Action Reporting System), being developed by JNCC, allowing our BAP contacts access to a wealth of information from other organisations and also to speed up reporting progress as requested by the UK BAP.

6.12 Our *River Habitat Survey* database will also be improved. With over 17,000 RHS sites now included, this will provide a powerful source of information for a variety of purposes, including research, environmental appraisal and catchment reports. This is particularly timely in relation to the Water Framework Directive. The 2003 version of the survey together with a new manual and structured training course is planned to be implemented in April/May 2003.

6.13 Our *Biology for Windows* database is also being upgraded in preparation for the wider requirements of the Water Framework Directive. We have brought in the NBN taxon dictionary data model, extensive data validation rules and a new reporting system.

WFD

6.14 We expect an even heavier workload in 2003 as the deadline for completing work on river basin characterisation looms large. We will need to concentrate our efforts on areas of work (eg lakes) where we have major knowledge gaps, whilst consolidating existing work and good progress made on geomorphological and ecological aspects of running freshwaters which represent our traditional strengths. We will continue to develop close working relationships with EN, CCW and SEPA in taking forward biodiversity-related issues. This is particularly important in establishing a register of protected areas for each river basin district.

Marine

6.15 January 2003 sees a new focus for Marine Conservation and Ecology with the creation of the new team in the National Conservation and Ecology Team. For the first time we'll be able to provide a national focus for marine biodiversity and coastal habitats and estuaries. This will raise the profile of marine issues within Agency, promote and better integration of marine work across Agency and help development of marine conservation policy and best practice. One of the first things we will be doing is producing a six-monthly Marine and Coastal Newsletter which should inform an eager internal and external audience about what is going on in this increasingly busy area.



6.16 We will also be making significant input to the expected plethora of Government consultations on the marine environment and anticipate the development of a marine bill at some stage.

Skills and training

6.17 We will be focusing on the competencies and skills requirements needed to ensure that ecological knowledge underpins all our decision-making. New requirements for the WFD and higher expectation in relation to Habitats Directive, Ramsar and SSSI-related actions mean that we need to formalise our continuing professional development and training programmes. This initiative will begin in 2003 and we will also run a specially-tailored Conservation training course for new staff.

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	Jeremy Burgess	01732 223155	jeremy.burgess@environment-agency.gov.uk
Fish				
Vendace	1	Cameron Durie	01768 866636	N/A
Invertebrates				
<i>Agabus brunneus</i> – a diving beetle	1	Martin Rule	01208 78301	martin.rule@environment-agency.gov.uk
<i>Anisodactylus poeciloides</i> – a ground beetle	1	Phil Griffiths	01903 832257	phil.griffiths@environment-agency.gov.uk
<i>Bidessus unistriatus</i> – a diving beetle	1	Terry Clough	01480 414531	terry.clough@environment-agency.gov.uk
Hairy click beetle	1	Francis Farr-Cox	01278 457333	francis.farr-cox@environment-agency.gov.uk
White-clawed crayfish	1	Julie Bywater	01491 828336	julie.bywater@environment-agency.gov.uk
Southern damselfly	1	Tim Sykes	01962 713257	tim.sykes@environment-agency.gov.uk
<i>Clorismlia rustica</i> – a stiletto fly	1	Mike Williams	01392 316033	mike.williams@environment-agency.gov.uk
Little whirlpool ram's-horn snail	1	Juliett Hall	01903 703928	juliett.hall@environment-agency.gov.uk
Glutinous snail	1	Huw Jones	01248 670770	huw.jones@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	Francis Farr-Cox	01278 457333	francis.farr-cox@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	Jonathon Burgess	01208 265038	jonathon.burgess@environment-agency.gov.uk
Tiny fern moss	1	Edward Bradbrook	01732 223103	edward.bradbrook@environment-agency.gov.uk
Water rock bristle	1	Jim Heslop	0191 203 4668	jim.heslop@environment-agency.gov.uk
Beaked beardless-moss	1	Martin Christmas	0113 213 4672	martin.christmas@environment-agency.gov.uk
Violet crystalwort	1	Debbie Cousins	0118 953 5568	debbie.cousins@environment-agency.gov.uk
Five stoneworts	1	Debbie Cousins	0118 953 5568	debbie.cousins@environment-agency.gov.uk
River jelly lichen	1	Marlynne Good	02920 770088	marlynne.good@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	Mike Williams	01392 316033	mike.williams@environment-agency.gov.uk
Six river shingle beetles	2	Mike Williams	01392 316033	mike.williams@environment-agency.gov.uk
<i>Spiriverpa lunulata</i> – a stiletto fly	2	Mike Williams	01392 316033	mike.williams@environment-agency.gov.uk
Freshwater pearl mussel	2	Anne Lewis	0191 203 4120	anne.lewis@environment-agency.gov.uk
Plants				
Cut-grass	2	Vacant		
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	nicole.price@environment-agency.gov.uk
Barbastelle bat	3	Joe Stevens	01962 713267	joe.stevens@environment-agency.gov.uk
Bechstein's bat	3	Joe Stevens	01962 713267	joe.stevens@environment-agency.gov.uk
Harbour porpoise	3	Nicole price	01258 483411	nicole.price@environment-agency.gov.uk
Pipistrelle bat	3	Joe Stevens	01962 713267	joe.stevens@environment-agency.gov.uk
Lesser horseshoe bat	3	Joe Stevens	01962 713267	joe.stevens@environment-agency.gov.uk
Toothed whales (not small Dolphins)	3	Nicole Price	01258 483411	nicole.price@environment-agency.gov.uk
Birds				
Bittern	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	dermot.smith@environment-agency.gov.uk
Amphibians and reptiles				
Pool frog	3	Vacant		
Great-crested newt	3	Mark Elliott	01903 703850	mark.elliott@environment-agency.gov.uk
Marine turtles	3	Nicole Price	01258 483411	nicole.price@environment-agency.gov.uk
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	Vacant		
Cliff Tiger beetle	3	Phil Griffiths	01903 832267	phil.griffiths@environment-agency.gov.uk

Species/habitat	Category	Agency Co-ordinator	Phone	Email
<i>C.exiguus</i> – a leaf beetle	3	Vacant		
Mire pill beetle	3	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk
<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	francis.farr-cox@environment-agency.gov.uk
<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 atermus</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	Vacant		
Mole cricket	3	Francis Farr-Cox	01278 457333	francis.farr-cox@environment-agency.gov.uk
Large marsh grasshopper	3	Francis Farr-Cox	01278 457333	francis.farr-cox@environment-agency.gov.uk
<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	francis.farr-cox@environment-agency.gov.uk
<i>Lipsothrix nervosa</i> – a crane fly	3	Cathy Beeching	01684 850951	cathy.beeching@environment-agency.gov.uk
<i>Lipsothrix nigrisigna</i> - a crane fly	3	Andrew Heaton	0121 711 5834	andrew.heaton@environment-agency.gov.uk
<i>Odontomyia hydraleon</i> – a soldier fly	3	Sue Pacey	01904 822515	sue.pacey@environment-agency.gov.uk
Sandbowl snail	3	Vacant		
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 366666	brian.ingersent@environment-agency.gov.uk
Starlet sea anemone	3	Nicole Price	01258 483411	nicole.price@environment-agency.gov.uk
Rosers sac spider	3	Francis Farr-Cox	01278 457333	francis.farr-cox@environment-agency.gov.uk
Fen raft spider	3	Alan Hull	01473 727712	alan.hull@environment-agency.gov.uk
Medicinal leech	3	David Thorpe	01286 871982	david.thorpe@environment-agency.gov.uk
Fungi				
<i>Armillaria ectypa</i> – an agaric fungus	3	Vacant		
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	Paul St Pierre	01491 828456	paul.stpierre@environment-agency.gov.uk
True fox sedge	3	Phil Griffiths	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	Vacant		
Holly-leaved naiad	3	Jo-Anne Pitt	01493 488515	jo-anne.pitt@environment-agency.gov.uk
Pillwort	3	Vacant		
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	Vacant		
Derbyshire feather moss	3	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk
Yorkshire feather moss	3	Vacant		
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	Vacant		
Petalwort	3	Bryan Jones	01248 670770	bryan.jones@environment-agency.gov.uk
Lesser bearded stonewort	3	Debbie Cousins	0118 953 5568	debbie.cousins@environment-agency.gov.uk
Habitats				
Blanket bog	3H	Paul Thomas	01772 339882	paul.thomas@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	Vacant		
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	Vacant		
Lowland hay meadow	3H	Cathy Beeching	01684 850951	cathy.beeching@environment-agency.gov.uk
Lowland raised bog	3H	Mike Harrison	01768 856666	michael.harrison@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

Species/habitat	Category	Agency Co-ordinator	Phone	Email
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
Sabellaria alv reefs	3H	Sarah Peaty	0191 203 4140	sarah.peaty@environment-agency.gov.uk
Saline lagoons	3H	Nicole Price	01258 483411	nicole.price@environment-agency.gov.uk
Seagrass beds	3H	Nicole Price	01258 483411	nicole.price@environment-agency.gov.uk
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	Roger Martin	01904 692296	roger.martin@environment-agency.gov.uk
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.gamer@environment-agency.gov.uk
Sand lizard	4	Neil Guthrie	01772 339882	neil.guthrie@environment-agency.gov.uk
Invertebrates				
<i>Armara stenua</i> - a ground beetle	4	Vacant		
<i>Badister collaris</i> - a ground beetle	4	Vacant		
<i>Badister peltatus</i> - a ground beetle	4	Vacant		
<i>Bembidion humerale</i> - a ground beetle	4	Pete Sibley	0115 945 5722	peter.sibley@environment-agency.gov.uk
Dune tiger beetle	4	Vacant		
<i>Dromius sigma</i> - a ground beetle	4	Vacant		
<i>Dyschirius angustatus</i> - a ground beetle	4	Helen Orme	01768 866666	helen.orme@environment-agency.gov.uk
<i>Hydrophorus cantabricus</i> - a diving beetle	4	Vacant		
<i>Octhebius poweri</i> - a beetle	4	Francis Farr Cox	01278 457333	francis.farr-cox@environment-agency.gov.uk
Marsh fritillary	4	David Thorpe	01286 871932	david.thorpe@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	Vacant		
<i>Heptagenia longicauda</i> - a mayfly	4	Vacant		
Native oyster	4	Vacant		
<i>Euophrys browni</i> - a jumping spider	4	Francis Farr-Cox	01278 457333	francis.farr-cox@environment-agency.gov.uk
<i>Aphrodes duffieldi</i> - a leafhopper	4	Vacant		
Lesser water measurer	4	Vacant		
<i>Orthotylus rubidus</i> - a plant bug	4	Vacant		
<i>Prostoma jenningsi</i> - a freshwater nemertean	4	Vacant		
Fungi				
Devil's bolete	4	Vacant		
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	Vacant		
Glaucous beard moss	4	Vacant		
Clustered earth moss	4	Vacant		
Millimetre moss	4	Vacant		
Spruce's bristle moss	4	Vacant		
Spreading-leaved beardless moss	4	Vacant		
<i>Anotrichium barbatum</i>	4	Vacant		
Starry Breck-lichen	4	Vacant		
Orange-fruited elm-lichen	4	Vacant		
<i>Pseudocyphellaria norvegica</i> - a lichen	4	Vacant		

APPENDIX 2

LIST OF PARTNER ORGANISATIONS 1996-2002

Aberdeen University	British Herpetological Society
Acorn Trust	British Telecom
Action for the River Kennet	British Trust for Conservation Volunteers
ADAS	British Trust for Ornithology
Albrighton Moat Project	British Waterways
Aln Environmental Management Project	Broads Authority
Anglian Water	Buckinghamshire County Council
Aqua vitae 21	Burton Mutual Anglers Association
Ashford Borough Council	Butterfly Conservation
Aston University	Camborne School of Mines
Association of British Ports	Cambridge University
Auto Turned Products (Northants Ltd)	Cambridgeshire Biodiversity Steering Committee
Avon Wildlife Trust	Cambridgeshire County Council
Aylesford Newsprint	Cambridgeshire Wildlife Trust
Bakewell Biodiversity Partnership	Camel Trail Partnership
Bala Anglers	Canterbury City Council
Balfour Browne Club	Caradon District Council
Barford and Burcombe Angling Club	Cardiff City Council
Barn Owl Trust	Carrick District Council
Barnsley Council	Carstairs Countryside Trust
Barrow County Council	Central Rivers Project
Basingstoke and Deane Borough Council	Centre for Aquatic Plant Management
Basingstoke Canal Society	Ceredigion County Council
Bat Conservation Trust	Charmouth Interpretation Centre
Bath and North East Somerset Unitary Authority	Cheltenham Borough Council
BBC Wildlife Magazine	Cherwell District Council
Beaulieu Estates	Cheshire County Council
Bedfordshire & River Ivel Internal Drainage Board	Cheshire Wildlife Trust
Bedfordshire and Luton Wildlife Working group	Chesil Bank & Fleet Nature Reserve
Bedfordshire County Council	Chilterns Chalk Stream Project
Bedfordshire Natural History Society	Chilterns District Council
Bedfordshire Wildlife Trust	Christchurch Borough Council
Beechcroft Trust	City of Rochester upon Medway City Council
Bees and Trees	City of York Council
Bentley Wood Trust	Cleveland Community Forest
Berks, Bucks & Oxon Naturalists Trust	Cliffe and Cliffe Woods Parish Council
Berkshire Nature Conservation Forum	Coal Authority
Biffa	Colchester Borough Council
Birmingham Groundwork	Colchester Natural History Society
Birmingham/Black Country Wildlife Trust	Collier Street Residents Society
Bishops Stortford Town Council	Colne Countryside Project
Blackburn and Darwin Council	Community Forest
Blackburn Groundwork	Conwy County Borough Council
Blackpool Zoo	Coquet Environmental Management Project
Blackwater Valley Countryside Management Service	Cornwall Bird Watching and Preservation Society
Blenheim Park Estate	Cornwall College
Blue Circle Industries	Cornwall County Council
Boston Borough Council	Cornwall Rural Community Council
Bournemouth and West Hampshire Water	Cornwall Wildlife Trust
Bournemouth University	Corporation of London
Brampton Valley Project	Cotswold Fly Fishers
Breckland District Council	Cotswold Water Park Society
Brecknock Bat Group	Council for the Protection of Rural England
Brecks Countryside Project	Country Landowners Association
Bridgnorth District Council	Countryside Agency
Brighton Sea Life Centre	Countryside Council for Wales
Bristol City Council	Cove Brook Greenway Group
Bristol Water	Coventry City Council
British Butterfly Conservation Society	Crawley Borough Council
British Dragonfly Society	Creekside Ecology Group
British Gas	Creekside Education Trust
	Crown Estate

Cumbria Biodiversity Partnership	Fenland District Council
Cumbria County Council	Field Studies Council
Cumbria Wildlife Trust	Fish Conservation Centre
Dacorum Council	Flamstead Parish Council
Darent River Preservation Society	Fleet Pond Society
Darlington Borough Council	Flintshire County Council
Dartford Borough Council	Folkstone and Dover Water Services
Dartford Rotary Club	Forest Enterprise
Dartmoor National Park	Forestry Commission
Dee Estuary Conservation Group	Forton Parish Council
Defra	Foster Wheeler
Derbyshire County Council	Fowey Harbour Office
Derbyshire Wildlife Trust	Framlingham College
Derwent Anglers Association	Freshwater Biological Association
Derwent Owners Association	Friends of Rawcliffe Meadows
Derwentside District Council	Froglife
Devon Birdwatching and Preservation Society	Fuji-Hunt
Devon County Council	Gaia Trust
Devon Wildlife Trust	Game Conservancy Trust
Dickens Country Protection Society	Gillingham Action for Nature Group
Dorchester Heritage Committee	Gillingham Civic Society
Dorset County Council	Glamorgan Wildlife Trust
Dorset Seasearch	Glaxo Wellcome
Dorset Wildlife Trust	Glendale Ground Maintenance
Dover District Council	Gloucester City Council
Duchy of Cornwall	Gloucestershire County Council
Dudley Metropolitan Borough Council	Gloucestershire Wildlife Trust
Durham Biodiversity Partnership	Godalming Town Council
Durham Wildlife Trust	Gorhambury Estate
East Cambridgeshire District Council	Gosport Borough Council
East Devon District Council	Government Offices
East Dorset District Council	Grantham Angling Association
East Hants District Council	Great Aycliffe Town Council
East Herts District Council	Greater London Authority
East Malling Parish Council	Greenwood Community Forest
East Sussex County Council	Groundwork Thames Gateway
East Sussex Fire Brigade	Groundwork Trust
Eastleigh Borough Council	Guildford Borough Council
ECON	Gwent Wildlife Trust
Ecoschools- Tidy Britain Group	Gwynedd Council
ECUS	Hadlow College
Eden Rivers Trust	Hambleton District Council
Elmbridge Borough Council	Hampshire & Isle of Wight Wildlife Trust
Ely Ouse Groundwater Project	Hampshire Bat Group
Energis	Hampshire Constabulary
English Heritage	Hampshire County Council
English Nature	Hampshire Gardens Trust
English Partnerships	Hampshire Ornithological Society
Environmental Trust for Berkshire	Harnham Water Meadow Trust
Epping Forest District Council	Harrogate Borough Council
Epsom and Ewell District Council	Hart District Council
Esk Fisheries Association	Hartfield Parish Council
Esmee Fairbairn Foundation	Hartlepool Borough Council
Essex and Suffolk Water	Havant District Council
Essex County Council	Havering Borough Council
Essex Field Club	Hawk and Owl Trust
Essex Wildlife Trust	Hepworth Minerals and Chemicals
European Commission	Herefordshire Nature Trust
European Regional Development Fund	Heritage Coast Forum
Exeter City Council	Heritage Lottery Fund
Exmoor National Park	Heritage Ponds Project
Fareham Borough Council	Herpetological Conservation Trust
Farming & Rural Conservation Agency	Hertfordshire & Middlesex Wildlife Trust
Farming & Wildlife Advisory Group	Hertfordshire Countryside Management Service

Hertfordshire County Council	London Borough of Hillingdon
Hertfordshire County Council	London Borough of Hounslow
Highways Agency	London Borough of Lambeth
Horsham District Council	London Borough of Lewisham
HM Prison - Probation Service	London Borough of Merton
HM Prison Service	London Borough of Redbridge
Huntingdonshire District Council	London Borough of Richmond
Icklesham Parish Council	London Borough of Sutton
IMYRIS (formerly English China Clays International)	London Borough of Wandsworth
Industry Nature Conservation Association, Teeside	London Development Agency
Institute of Freshwater Ecology	London Ecology Unit
Institute of Terrestrial Ecology	London Waterways Project
Ipswich Borough Council	London Wildlife Trust
Ipswich River Action Group	Loughborough Naturalists' Club
Island 2000 Trust	Lower Medway Internal Drainage Board
Isle of Wight County Council	Lower Mole Project
Itchen Valley Country Park	Ludlow Millennium Green Project
Ivel Valley Countryside Project	Lune Habitat Group
J. T. Baylis & Co	Lymington and Pennington Town Council
John Simonds Trust	Macdonalds
Joint Nature Conservation Committee	Maidenhead Greenway Group
Kemmerton Estate, Gloucestershire	Maidstone Canoe Group
Kennet Valley Countryside Project	Maidstone Chamber of Commerce
Kent County Council	Mammal Society
Kent District Council	Marine Forum for Environmental Issues
Kent High Weald Project	Marks and Spencer Ltd
Kent Wildlife Trust	Medlock / Tame River Valley Initiative
Kentish Stour Countryside Project	Medway City Council
Kerrier District Council	Medway River Project
Keymer Parish Council	Mendip District Council
Kimberley Clark	Mersey Basin Campaign
King's College, London	Mersey Valley Countryside Warden Service
Knowsley Borough Council	Middlesborough Borough Council
Knowsley Metropolitan Borough Council	Midlands Environmental Business Club
Lake District National Park	Mid-Suffolk District Council
Lake District Still Waters Partnership	Milldown Middle School
Lancashire County Council	Millennium Commission
Lancashire Wildlife Trust	Milton Keynes Parks Trust
Lancaster City Council	Ministry of Defence
Landowners (several hundred)	Mole Valley District Council
Leatherhead Society	Monmouthshire County Council
Lee Valley Regional Park	Montgomeryshire Barn Owl Group
Leeds City Council	Montgomeryshire Bird Group
Leicestershire and Rutland Wildlife Trust	Montgomeryshire Wildlife Trust
Leicestershire Wildfowling Association	Morecambe Bay Partnership
Lewes District Council	Morley Research Centre
Lichfield District Council	Morpeth Town Council
Lincolnshire County Council	Moss Valley Wildlife Group
Lincolnshire Wildlife Trust	Museum of London
Liverpool City Council	Nadder Meadow Conservation Group
Liverpool County Council	National Dragonfly Museum
Liverpool John Moores University	National Farmers Union
Llanidloes Town Council	National Forest Company
Llanover and Coldbrook Estates	National Marine Aquarium, Plymouth
Local biological records centres	National Museum and Galleries of Wales
London Borough of Barking and Dagenham	National Pond Life Centre
London Borough of Barnet	National Trust
London Borough of Bexley	Natural History Museum
London Borough of Brent	Nature Conservation Bureau
London Borough of Bromley	Nene Valley Project
London Borough of Ealing	New Forest District Council
London Borough of Greenwich	Newbury District Council
London Borough of Hammersmith and Fulham	Newcastle City Council
London Borough of Havering	Newcastle-under-Lyne Countryside Project

Newent Town Council	Pond Action
Nidderdale Angling Club	Pond Life
Nidderdale Parish Councils	Ponds Conservation Trust
Norfolk Arable Land Management Initiative	Poole Agenda 21
Norfolk Coast Project	Poole Borough Council
Norfolk County Council	Port of Heysham
Norfolk Ornithologist's Association	Port of London Authority
Norfolk Wildlife Trust	Portsmouth City Council
North Cornwall District Council	Powys County Council
North Dorset District Council	Priestlands School
North Kent Marshes Initiative	Purbeck District Council
North Lincolnshire Council	Quaggy Waterways action Group
North Shropshire District Council	Rail-link Engineering
North Somerset Council	Railtrack
North Tyneside MBC	Ramblers' Association
North Wales Wildlife Trust	Reading Borough Council
North Warwickshire District Council	Redcard & Cleveland Borough Council
North West and North Wales Sea Fisheries Committees	Redditch Borough Council
North West Kent Countryside Project	Restormel Borough Council
North West Water	Rexam UK
North York Moors National Park	Rhondda Cynon Taff Countryside Department
North Yorkshire County Council	Ribble Catchment Conservation Trust
Northern Rivers Group	Richmondshire District Council
Northmoor Trust	RIVA 2000 (Wirral RVI)
Northumberland National Park	River Restoration Centre
Northumberland Wildlife Trust	River Restoration Project
Northumbria Tourist Board	River Severn Otter Project
Northumbrian Water	River Stour Trust
Norwich Fringe Project	River Tarrant Protection Society
Nottingham City Council	River Tyne Riparian Owners and Occupiers Association
Nottinghamshire County Council	Rivers Agency (Northern Ireland)
Nottinghamshire Wildlife Trust	Robert Stebbings Consultancy
Nuneaton and Bedworth District Council	Rochester Upon Medway City Council
Onyx Environmental Trust	Romney Marsh Countryside Project
Ordnance Survey	Rother District Council
Otters in Wales	Rother Environmental Group
Oundle Town Council	Rother Millennium Green Trust
Ouse Valley Link Project	Rother Parish Council
Oxford City Council	Royal and Ancient Golf Club of St Andrews
Oxford Local Agenda 21 Group	Royal Birkdale Golf Club
Oxford University	Royal Borough of Windsor and Maidenhead
Oxfordshire County Council	Royal Borough of Kingston-upon-Thames
Oxfordshire Nature Conservation Forum	Royal Botanical Gardens, Kew
Oxfordshire Woodland Project	Royal Holloway University of London
Oxon Bat Group	Royal Horticultural Society
Pang Valley Countryside Project	Royal Parks Agency
Peak District National Park	Royal Society for the Prevention of Cruelty to Animals
Pennon Group (formerly South West Water)	Royal Society for the Protection of Birds
Penrhyn Angling Club	Rugby Borough Council
Penrhyn Estate	Runnymede Borough Council
Pentex Oil and Gas	Rural Development Commission
Penwith District Council	Rushmoor Borough Council
People, Landscape and Cultural Environment.	Rye Bay Countryside Project
People's Trust for Endangered Species	Rye Conservation Society
Peterborough City Council	Rye Harbour Nature Reserve
Pfizer	Rye Town Council
Pike Anglers Club	Ryedale District Council
Phillimore Farms	Salisbury & District Soroptomists International
Piscatorial Society	Salisbury and District Angling Club
Plantlife	Salisbury District Council
Plymouth County Council	Salmon and Trout Association
Plymouth Marine Aquarium	Sandwell Metropolitan Borough Council
Police	

Scarborough Borough Council
 Scottish Environmental Protection Agency
 Scottish Natural Heritage
 Sedgemoor District Council
 Sefton Coastal Life Project
 Severn and Avon Vales Wetlands Partnership
 Severn Otter Project
 Severn-Trent Water
 Shared Earth Trust
 Sheep Dippers Association
 Sheffield Borough Council
 Sheffield Wildlife Action Partnership
 Shepway District Council
 Shere Parish Council
 Sherwood Forest Trust
 Shrewsbury and Atcham District Council
 Shropshire Amphibian Group
 Shropshire County Council
 Shropshire Ornithological Society
 Shropshire Wildlife Trust
 Silsoe College
 Slade Green Community Forum
 Smith's Aggregates
 Snowdonia National Park
 Soap and Detergent Industry Association's
 Environmental Trust
 Solihull Borough Council
 Somerset County Council
 Somerset Levels and Moors Partnership
 Somerset Otter Group
 Somerset Wildlife Trust
 South Cambridgeshire District Council
 South Devon Seabird Trust
 South Downs Conservation Board
 South East Water
 South Gloucestershire Council
 South Gloucestershire District Council
 South Hams Environment Service
 South Holderness Countryside Society
 South Lakeland District Council
 South Lakes District Council
 South Somerset District Council
 South Staffordshire Water
 South Tyneside Metropolitan Borough Council
 South West Electricity Board
 South West Investment Group
 South West Regional Biodiversity Partnership
 South Wiltshire Agenda 21
 Southampton City Council
 Southern Sea Fisheries Committee
 Southern Water
 Sowley Estates
 Sparsholt College (Winchester)
 Specialist Anglers' Conservation Group
 Spelthorne Borough Council
 Sports Council for England
 Sports Council for Wales
 St Albans Sand and Gravel
 St Margaret's Parish Council
 Staffordshire County Council
 Staffordshire Wildlife Trust
 Stockport Metropolitan Borough Council
 Stoke-on-Trent City Council
 Stour Valley Canoe Club
 Stratford on Avon District Council
 Suffolk Coastal District Council
 Suffolk Coasts and Heaths Partnership
 Suffolk County Council
 Suffolk Wildlife Trust
 Surrey Amphibian and Reptile Group
 Surrey Biodiversity Partnership
 Surrey County Council
 Surrey Mammal Project
 Surrey Otter Project
 Surrey Water Vole Project
 Surrey Wildlife Trust
 Sussex Botanical Recording Society
 Sussex Downs Conservation Board
 Sussex Ornithological Society
 Sussex Rural Committees Council
 Sussex Wildlife Trust
 Swale Borough Council
 Swan Reserve
 Swansea Council
 Tamar Estuary Consultative Forum
 Tames Chase
 Tarka Project
 Tarmac Ltd
 Taunton Deane Borough Council
 Tees Valley Wildlife Trust
 Teesdale Wildlife Trust
 Teignbridge District Council
 Telford and Wrekin Council
 TEN Project
 Test & Itchen Association
 Test Valley Borough Council
 Thames 21
 Thames Landscape Strategy
 Thames Water
 Thamesclean
 Thamesmead Town Council
 Thanet District Council
 The Otter Trust
 The Silvanus Trust
 Three Valleys Water
 Thurrock Unitary Authority
 Tilhill Economic Forestry
 Tonbridge & Malling Borough Council
 Torridge District Council
 Tower of London
 Transco Ltd
 Trent Otter Project
 Trewithen Estates
 Trgothnan estate
 Tring Angling Club
 Tunbridge Wells Common Conservators
 Tusk Force
 Tweed Forum
 Twyford Parish Council
 Tyne Riparian Owners and Occupiers Association
 UK Atomic Energy Authority
 University College London
 University of Aberdeen
 University of Birmingham
 University of Bristol
 University of Cambridge
 University of Cardiff
 University of Durham

University of East Anglia	West Sussex County Council
University of East London	Western Riverside Environment Trust
University of Essex	Wey Valley Project
University of Exeter	Whale and Dolphin Conservation Society
University of Greenwich	White Cliffs Countryside Project
University of Kent	White Peak Crayfish Action Group
University of Leeds	Wigan Metropolitan Borough Council
University of Leicester	WildCRU
University of Liverpool	Wild Trout Trust
University of Loughborough	Wildfowl and Wetlands Trust
University of Newcastle	Wildlife Conservation Research Unit
University of Northumbria	Wildlife Trust West Wales
University of Nottingham	Wildwood
University of Oxford	Wilton Estate
University of Plymouth	Wilton Fishing Club
University of Reading	Wiltshire Fishery Association
University of Sheffield	Wiltshire Wildlife Trust
University of Southampton	Wimborne Town Council
University of Swansea	Winchester Angling Club
University of Wales	Winchester City Council
University of York	Windrush Aquatic Environmental Consultancy
Upper Waveney Countryside Project	Woking Borough Council
Urban Wildlife Group	Wokingham District Council
Vale of White Horse District Council	Wolverhampton Metropolitan Borough Council
Wansbeck Environmental Management Project	Woodford Conservation Group
Warrington Borough Council	Woodland Trust
Warwick District Council	Woodstock Town Council
Warwickshire County Council	Worcester City Council
Warwickshire Wildlife Trust	Worcestershire County Council
Water Research Centre	Worcestershire Wildlife Trust
Water UK	Worldwide Fund for Nature
Watford Borough Council	Worthing Borough Council
Waveney Valley Project	Writtle College
Waverley Borough Council	Wycombe District Council
Wealdon District Council	Wyre Borough Council
Weaver River Valley Initiative	Wyre Forest District Council
Welsh Assembly Government	Yamanouchi Ltd
Welsh Canoe Association	YMCA
Welsh Water	Yorkshire Dales Millennium Trust
Wensum Valley project	Yorkshire Dales National Park Authority
Wessex Water	Yorkshire Otters and Rivers Project
West Berkshire Council	Yorkshire Rural Community Council
West Cornwall Leader Project	Yorkshire Water
West Country Rivers Trust	Yorkshire Wildlife Trust
West London Rivers Group	Zeneca Chemicals
West Midland Bird Club	

APPENDIX 3 ABBREVIATIONS AND ACRONYMS USED IN THE TEXT

AMP	-	Asset Management Plan, Periodic Review of Water Company Prices
AOD	-	Above Ordnance Datum
ASSI	-	Area of Special Scientific Interest
BAP	-	Biodiversity Action Plan
BARS	-	Biodiversity Action Plan Reporting System
BRC	-	Biological Records Centre
BRITE	-	Better Regulation Improving The Environment
CAMS	-	Catchment Abstraction Management Strategy
CAR	-	Conservation, Access and Recreation
CCW	-	Countryside Council for Wales
CHaMP	-	Coastal Habitat Management Plan
CiB	-	Communication in Business
CRoW	-	Countryside and Rights of Way
DNA	-	Deoxy-ribose Nucleic Acid
DWPA	-	Diffuse Water Pollution from Agriculture
EA	-	Environment Agency
EAGGF	-	European Agricultural Guidance and Guarantee Fund
EAW	-	Environment Agency Wales
EC	-	European Commission
EIA	-	Environmental Impact Assessment
EN	-	English Nature
ERS	-	Exposed Riverine Sediments
EU	-	European Union
EWf	-	Emergency Work Force
FC	-	Forestry Commission
FRB	-	Fisheries, Recreation and Biodiversity
FWAG	-	Farming and Wildlife Advisory Group
GB	-	Great Britain
HA	-	Highways Agency
HAP	-	Habitat Action Plan
HCP	-	Habitat Creation Programme
HD	-	Habitats Directive
HLF	-	Heritage Lottery Fund
ICES	-	International Convention on Endangered Species
JNCC	-	Joint Nature Conservation Committee
LA	-	Local Authority
LBAP	-	Local Biodiversity Action Plan
LEAP	-	Local Environment Agency Plan
LIFE	-	Financial Instrument for the Environment
LOCAR	-	Lowland Catchment Research
LRC	-	Local Records Centre
NAW	-	National Assembly Wales
NBN	-	National Biodiversity Network
NGO	-	Non-Governmental Organisation
NT	-	National Trust
Ph.D	-	Doctor of Philosophy
PPA	-	Priority Protection Area
PR	-	Price Review
PSA	-	Public Service Agreement
PTES	-	Peoples Trust for Endangered Species
R&D	-	Research & Development
RDB	-	Red Data Book
RHO	-	River Habitat Objective
RHS	-	River Habitat Survey
RLE	-	Rail Link Engineering
RoC	-	Review of Consents
ROSG	-	Roads and Otters Steering Group
RSPB	-	Royal Society for the Protection of Birds
SAC	-	Special Area of Conservation
SAP	-	Species Action Plan
SEPA	-	Scottish Environmental Protection Agency
SINC	-	Site of Importance for Nature Conservation

SMP	-	Site Management Plan
SNH	-	Scottish Natural Heritage
SPA	-	Special Protection Area
SSSI	-	Site of Special Scientific Interest
UK	-	United Kingdom
WFD	-	Water Framework Directive
WLMP	-	Water Level Management Plan
WWT	-	Wildfowl and Wetlands Trust
YMCA	-	Young Men's Christian Association

APPENDIX 4

A LIST OF SPECIES MENTIONED IN THE TEXT

<i>Agabus brunneus</i>	A diving beetle	<i>Lophopus crystallinus</i>	A freshwater bryozoan
Allis shad		Marsh fritillary	
<i>Anisodactylus poeciloides</i>	A ground beetle	Marsh warbler	
Barn owl		<i>Meotica anglica</i>	A river shingle beetle
Beaked beardless moss		Mink	
<i>Bembidion testaceum</i>	A river shingle beetle	Moorhen	
<i>Bidessus minutissimus</i>	A diving beetle	Multi-fruited river moss	
<i>Bidessus unistratus</i>	A diving beetle	<i>Perileptus areolatus</i>	A river shingle beetle
Brook lamprey		Pike	
Brown trout		Ranunculus	Common reed
Bullhead		Red swamp crayfish	
Burbot		Ribbon-leaved water plantain	
Charr		River jelly lichen	
<i>Clorismia rustica</i>	A stiletto fly	Salmon	
Convergent stonewort		Schelly	
Cut grass		Sea trout	
Daubenton's bat		Shining ram's horn snail	
Depressed river mussel		Signal crayfish	
Eel		Slender stonewort	
European otter		Southern damselfly	
Fine-lined pea mussel		Spiny cheek crayfish	
<i>Fissidens pusillus</i>	A fern moss	<i>Spiriverpa lunulata</i>	A stiletto fly
Floating water plantain		Starry stonewort	
Freshwater pearl mussel		Tassel stonewort	
Glutinous snail		Telford crane fly	
Grass wrack pondweed		<i>Thinobius newberyi</i>	A river shingle beetle
Great tassel stonewort		Tiny fern moss	
Greater water-parsnip		Triangular club rush	
Hairy click beetle		Twaite shad	
Houting		Vendace	
<i>Hydrochus nitidicollis</i>	A river shingle beetle	Violet crystalwort	
Kestrel		Water rock bristle	
Kingfisher		Water vole	
<i>Lionychus quadrillum</i>	A river shingle beetle	White-clawed crayfish	
<i>Lipsothrix errans</i>	A crane fly	Wood clubrush	
<i>Lipsothrix nervosa</i>	A crane fly	Yellow marsh saxifrage	
Little whirlpool ram's horn snail			

Proj. no.	Output Ref. No.	Title of R&D Output	Agency Project Manager
W1-019	W1-019/TR	Dead Otters - Post Mortem and Tissue Analysis - Phase 2	Andrew Crawford
W1-021	W1-021/TR	The Ecology and Conservation of the Southern Damselfly (<i>Coenagrion Mercuriale</i> Charpentier) in Britain	Tim Sykes
	W1-021/SA	Southern Damselfly <i>Coenagrion Mercuriale</i> GB Site Assessment Project	
	W1-021/PR	The Ecology and Conservation of the Southern Damselfly <i>Coenagrion Mercuriale</i>	
	W1-021/L	Conservation of the Southern Damselfly in Britain	
W1-022	W1-022/TR	Native Black Poplars Phase 2	Marianne LeRay
W1-033	W1-033/TR	<i>Phytophthora</i> Disease of Alder Phase 3 Final Report	Teg Jones
W1-043	W1-043	River Habitat Survey and Waterways Breeding Bird Survey 1998-2000: Final Report	Geraldine Daly
W1-045	W1-045/TS	Re-introduction of Triangular Clubrush	Paul Smith
W1-051	W1-051/TR	The Impact of Lost and Discarded Fishing Line and Tackle on Mute Swans	Adrian Taylor
W1-052	E2-024/TR	Biodiversity Key Resources Inventory	Graeme Storey
W1-060	W1-060/TR	Wise Use of Floodplains	Richard Horrocks
W1-068/1	Surveyors Pack	Great Crested Newt <i>Triturus Cristatus</i> Pilot Monitoring Project 2002	Mark Elliott
W1-074	W1-074/TR	Dispersal and Distribution of Signal Crayfish <i>Pacifastacus Leniusculus</i> in the River Ure West Tanfield	Clare Johnson
W1-079	Leaflet/Poster	Warning Invasive Alien Pond Plants Advice and Information on How to Control Nuisance Aquatic Plants	Carri Lane