

Species and Habitat Action Plan Assessment Form

Field 1: Action Plan details

Species/Habitat Action Plan	Floating Water-plantain (<i>Luronium natans</i>)
Lead Partner/Agency	British Waterways (Lead Partner) Countryside Council for Wales (Lead Agency)
Steering Group/Other organisations	<i>Steering group in existence?</i> Yes Biological Records Centre Botanical Society of the British Isles British Waterways Countryside Council for Wales English Nature Environment Agency National Museum of Wales Plantlife Scottish Natural Heritage University of Hertfordshire University of Liverpool University of Stirling University of Wales
Work programme in existence?	No formal work programme agreed by Steering Group. Proposals set out in Table B.

Field 2: Objectives and targets overview

Number and text	E	NI	S	W
4.1 Maintain the present range.	Yes	-	Yes	Yes
4.2 Where the potential exists, increase the size of individual populations	Yes	-	Yes	Yes
4.3 Develop a strategy to safeguard the species, wherever possible, in its canal habitats.	Yes	-	-	Yes
4.4 Ascertain the importance of the UK population in a European context.	Yes	Yes	Yes	Yes
4.5 Restore populations in former sites and extend the range by creation and re-creation of suitable habitat.	Yes	Yes	-	Yes

Field 3: Proposed actions overview

Number and text	UK	E	NI	S	W	Action significant?	Action complete or ongoing?
5.1 Policy and legislation							
5.1.1 Seek to develop and implement a Code of Practice to protect and enhance populations of floating water-plantain in canals, to include management of disused and navigable sections of canal, and the amelioration of the effects of canal restoration. (ACTION: British Waterways, CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.1.2 Seek to minimise the effects of acidification on waters containing the plantain in acid-sensitive areas. (ACTION: British Waterways, CCW, EN, FE, NRA)		-	-	-	Yes	Yes	Ongoing
5.2 Site safeguard and management							
5.2.1 Ensure the needs of the species are taken into account in management plans for any SAC, National Park, NNR or SSSI where it occurs, including prevention of encroaching emergent vegetation likely out-compete this plant. (ACTION: CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.2.2 Seek to develop management agreements with the owners of disused and little used canals to include a programme of dredging and other maintenance work to produce the open habitat necessary for this plant. (ACTION: British Waterways, CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.3 Species management and protection							
5.3.1 Where high volumes of boat traffic may damage beds of this species, seek to develop 'refuges' near the banks protected by barriers such as piling. (ACTION: British Waterways, CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.3.2 Where canals containing this plant are subject to unavoidable restoration schemes, consider creating reserves and manage them to maintain healthy colonies of the species. (ACTION: British Waterways, CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.3.3 Seek to dissuade planting of coniferous forests in sensitive lake catchments and around river headwaters important for this species. Where such forests already exist, encourage the creation of buffer zones around lake shores and river margins to allow deciduous woodland to develop. For proposed new plantings in areas containing the water plantain, carry out catchment assessments to determine the potential threat and any ameliorative treatment which would be necessary. (ACTION: CCW, FA, NRA, Snowdonia NPC)		Yes	-	-	Yes	Yes	Ongoing
5.3.4 In nature reserves with records of the species, but where it is no longer apparently present, experiment with dredging small areas of water bodies to give any remaining seed a chance to germinate. (ACTION: CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.4 Advisory							
5.4.1 No action proposed		-	-	-	-		
5.5 Future research and monitoring							
5.5.1 In England and Wales complete the baseline survey of known sites for floating water plantain and develop a method of quantitative assessment for colonies of the plant. (ACTION: CCW, EN)		Yes	-	-	Yes	Yes	Ongoing
5.5.2 Encourage ecological studies of this species to support site management and translocation programmes. (ACTION: CCW, EN, JNCC)		Yes	-	-	Yes	Yes	Ongoing
5.5.3 Encourage research into the effects of acidification of water bodies on the survival of this species in acid sensitive areas. (ACTION: CCW, EN, JNCC)		Yes	-	-	Yes	Yes	Ongoing

5.5.4 Encourage research on the ecology and distribution of this species on a European level and use the information and expertise gained towards its conservation in the UK. (ACTION: CCW, EN, JNCC)	Yes	Yes	-	-	Yes	Yes	Ongoing
5.5.5 Pass information gathered during survey and monitoring of this species to JNCC or BRC so that it can be incorporated in national databases. (ACTION: CCW, EN)		Yes	-	Yes	Yes	Yes	Ongoing
5.5.6 Provide information annually to the World Conservation Monitoring Centre on the UK status of the species to contribute to maintenance of an up-to date global Red Data List. (ACTION: JNCC)	Yes	-	-	-	-	Yes	Ongoing
5.6 Communication and publicity							
5.6.1 Ensure that any published guidelines for canal management take account of the conservation of this species. (ACTION: British Waterways, CCW, EN)	Yes	-	-	-	-	Yes	Ongoing

Field 4: Assessment of status

	Not appropriate	Recovered	Signs of recovery	No change	Declining	Lost	Insufficient information
<i>UK</i>					Yes		
<i>England</i>					Yes		
<i>Northern Ireland</i>						-	
<i>Scotland</i>							Yes
<i>Wales</i>					Yes		

England: some canal sites and meres now believed, as a result of recent survey, to have lost it entirely in recent years (since 1990).

Northern Ireland: no records for NI.

Scotland: information insufficient, but new sites have been found and its status there, previously thought not to be native, is under review.

Wales: some recent decline in canals, lowland lakes and also possibly upland lakes. New sites also found/re-found, but these are not thought to have been recently colonised.

Field 5: Summary statement

Whilst *Luronium* has undergone a decline across its range in Britain, recent survey work has revealed previously unknown (or disbelieved) sites for it in Scotland, the Lake District and Ireland, and genetic and ecological studies are helping to improve our understanding of its ecology. *Luronium* is still being lost from canals in England & Wales as a result of restoration followed by increases in boat traffic, but protection for the existing sites is being strengthened. Improved guidelines are being developed by British Waterways for the canal restorations that do take place; experimentation with reserves has so far proven to be of limited success in conserving this species. Losses from lowland pools continue. No successful reintroductions are known, although restoration of habitat at Dowrog Common restored a population that was thought to have been lost. Work in the immediate future will focus on increasing our knowledge of the ecology and distribution of *Luronium*, restoring lowland (heathland) sites and increasing the protection for the remaining canal sites.

Field 6: Signing off

Contact details	Lead Partner	Contact Point
Name		R.A. Jones
Organisation		Countryside Council for Wales
Assessment date (dd/mm/yy)		29/9/99

Completed forms should be submitted to JNCC

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Table A: Action Plan objectives and targets

Objective/target	4.1 Maintain the present range.				
Country	Not appropriate	Target achieved	Some progress	No progress	Insufficient information
<i>UK</i>					Yes
<i>England</i>			Yes		
<i>Northern Ireland</i>	Yes				
<i>Scotland</i>					Yes
<i>Wales</i>			Yes		
<p>UK: the natural distribution of <i>Luronium</i> within Scotland, Northern Ireland and East Anglia requires clarification. Recent survey work indicates that the range may be increasing, or this species may have been under-recorded in the past, especially where populations are entirely of the submersed form in deeper parts of lakes.</p> <p>England: recent surveys have provided evidence to support the belief that <i>Luronium</i> is still being lost from lowland sites in England, but increased statutory protection is being proposed for the remaining sites.</p> <p>Northern Ireland: <i>Luronium</i> is believed to be extinct in Northern Ireland.</p> <p>Scotland: in the Species Action Plan <i>Luronium</i> is not listed as native in Scotland. Its range appears to be expanding there, but its status is uncertain.</p> <p>Wales: Wales: populations in canals and some lowland lakes seem threatened but those in upland lakes and rivers are apparently secure</p>					

Table A: Action Plan objectives and targets

Objective/target	4.2 Where the potential exists, increase the size of individual populations				
Country	Not appropriate	Target achieved	Some progress	No progress	Insufficient information
<i>UK</i>					
<i>England</i>				Yes	
<i>Northern Ireland</i>	Yes				
<i>Scotland</i>					Yes
<i>Wales</i>			Yes		
<p>England: there is no proposed action at the present time to increase populations at any English sites.</p> <p>Northern Ireland: there are no known sites for <i>Luronium</i> in Northern Ireland.</p> <p>Scotland: <i>Luronium</i> is not currently regarded as native in Scotland and no proposals have been made for management of the sites where it does occur.</p> <p>Wales: the population at Dowrog Common has been enhanced by suitable management and there are planned additions to the shallow pools on Ramsey Island</p>					

Table A: Action Plan objectives and targets

Objective/target	4.3 Develop a strategy to safeguard the species, wherever possible, in its canal habitats.				
Country	Not appropriate	Target achieved	Some progress	No progress	Insufficient information
<i>UK</i>					
<i>England</i>			Yes		
<i>Northern Ireland</i>	Yes				
<i>Scotland</i>	Yes				
<i>Wales</i>			Yes		
<p>England: proposed designation of one site as a SAC, surveying undertaken of some known canal sites to help clarify its status and conservation needs.</p> <p>Northern Ireland: there are no canal populations in Northern Ireland.</p> <p>Wales: survey undertaken to ascertain status in both the Montgomery and Llangollen canals, but it has not been recently recorded from the latter. There are proposals for the conservation of <i>Lurionium natans</i> (and other notable macrophytes) in the Montgomery Canal.</p> <p>Scotland: there are no known canal populations in Scotland.</p>					

Table A: Action Plan objectives and targets

Objective/target	4.4 Ascertain the importance of the UK population in a European context.				
Country	Not appropriate	Target achieved	Some progress	No progress	Insufficient information
<i>UK</i>			Yes		
<i>England</i>			Yes		
<i>Northern Ireland</i>			Yes		
<i>Scotland</i>			Yes		
<i>Wales</i>			Yes		
<p>UK: information has been gathered on this species in Europe by Max Wade, Richard Lansdown and Nigel Willby. Results will be published in the next year. It is now believed that France is at least as important for this species as the UK.</p> <p>England: continued survey in several areas to establish the distribution and population size. Genetic studies of populations have been started but are still far from comprehensive. The origins of the canal populations have not been elucidated.</p> <p>Northern Ireland: <i>Luronium</i> is believed to be extinct in Northern Ireland, but whether or not it was native there is not yet ascertained.</p> <p>Scotland: survey work undertaken by SNH and BSBI to establish distribution and status. Results not yet available.</p> <p>Wales: continued survey in several areas to establish the distribution and population size. Recent studies have described the genetic diversity of <i>L. natans</i> in Wales and its relationship to certain other populations (eg. those in southern Ireland).</p>					

Table A: Action Plan objectives and targets

Objective/target	4.5 Restore populations in former sites and extend the range by creation and re-creation of suitable habitat.				
Country	Not appropriate	Target achieved	Some progress	No progress	Insufficient information
<i>UK</i>					
<i>England</i>			Yes		
<i>Northern Ireland</i>				Yes	
<i>Scotland</i>				Yes	
<i>Wales</i>			Yes		
<p>England: work undertaken to improve the habitat at one site (Brown Moss) but results are not yet sufficient to warrant re-introduction. Management plans are being written for numerous other Meres in the west Midlands which are intended to enhance water quality and habitat and may eventually lead to recovery or re-introduction.</p> <p>Northern Ireland: no action has been taken.</p> <p>Scotland: there are currently no proposals to restore former sites in Scotland.</p> <p>Wales: following the successful restoration of the population at Dowrog Common there are proposals by CCW to restore two more sites within the next 5 years and the possibility of action on a further 10 sites in future.</p>					

Table B: Proposed actions

Published action/organisation(s) responsible	5.1.1 Seek to develop and implement a Code of Practice to protect and enhance populations of floating water-plantain in canals, to include management of disused and navigable sections of canal, and the amelioration of the effects of canal restoration. (ACTION: British Waterways, CCW, EN)	
Work plan/organisation(s) responsible	No work plan: British Waterways largely responsible.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	A Joint Statement on Floating Water-plantain in Canals has been written in draft, and will be published shortly. BW, EN & CCW.	
Output and timescale	Statement to be completed during 2000.	Action by BW, EN & CCW
Constraints to action	None.	
Action complete or ongoing?	Ongoing.	
Next steps	Publication and distribution of the Statement.	
Output and timescale	Within the next 2 years.	Action by BW, EN, CCW

Table B: Proposed actions

Published action/organisation(s) responsible	5.1.2 Seek to minimise the effects of acidification on waters containing the plantain in acid-sensitive areas. (ACTION: British Waterways, CCW, EN, FE, NRA)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	One lake in Wales (Llyn Hir) is being regularly limed, and CCW are reviewing the effectiveness of this in 1999-2000, after which a decision will be taken on whether or not to treat other lakes. Acidification has not been identified as a threat in any site in England, so no action has been taken there.	
Output and timescale	Action under way and to be reviewed in 1999-2000. Further action will be dependent upon results.	<i>Action by CCW</i>
Constraints to action	<p>It is a very complex matter to attribute results to actions, with any confidence, in this area, and it is difficult to determine precise populations of <i>Luronium</i>. Time and empirical data are needed.</p> <p>Some members of the steering group feel that the action point is poorly phrased: we should not be seeking to minimise the <u>effects</u> of acidification; we should seek to reduce the sources of acidification.</p>	
Action complete or ongoing?	Ongoing	
Next steps	Continued liming at Llyn Hir, if it is shown to be effective, and possibly extension to other upland lakes is appropriate.	
Output and timescale	No timescale can be given yet.	<i>Action by CCW</i>

Table B: Proposed actions

Published action/organisation(s) responsible	5.2.1 Ensure the needs of the species are taken into account in management plans for any SAC, National Park, NNR or SSSI where it occurs, including prevention of encroaching emergent vegetation likely out-compete this plant. (ACTION: CCW, EN)	
Work plan/organisation(s) responsible	No work plan. All steering group partners are involved in this process.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	25 SSSIs contain <i>Luronium natans</i> : Afon Glaslyn, Afon Teifi, Calthorpe Broad, Cannock Extension Canal, Dowrog Common, Huddersfield Narrow Canal, Llyn Bugeilyn, Llyn Cerrig-llwydion Isaf, Llyn Cerrig-llwydion Uchaf, Llyn Cwellyn, Llyn Cwm Bychan, Llyn Cwmffynon, Llyn Dinam, Llyn Eiddwen, Llyn Egnant, Llyn Fanod, Llyn Glasfryn, Llyn Gynon, Llyn Hir, Llyn Padarn, Llyn Tegid, Llyn Teifi, Llyn y Gorlan, Montgomery Canal, Ramsey Island. Some of these sites have management plans that take into account the presence of <i>Luronium</i> and tackle such issues as encroaching vegetation.	
Output and timescale	Action completed but under constant revision.	Action by All
Constraints to action	On-site management cannot always address issues such as eutrophication and acidification which arise off-site. It can also have only a limited effect on recreational uses or inappropriate site use.	
Action complete or ongoing?	Ongoing	
Next steps	As experience of successful site management grows, plans will be continuously revised.	
Output and timescale	No specific timescale has been identified at present.	Action by All

Table B: Proposed actions

Published action/organisation(s) responsible	5.2.2 Seek to develop management agreements with the owners of disused and little used canals to include a programme of dredging and other maintenance work to produce the open habitat necessary for this plant. (ACTION: British Waterways, CCW, EN)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	Management plans have been written for disused canals, but are rarely implemented fully owing to lack of resources. Restoration activities have taken place, but not sufficient to restore <i>Luronium</i> or warrant its re-introduction.	
Output and timescale	Ongoing, but progress is very slow.	<i>Action by</i>
Constraints to action	There are no known disused canals that are being actively managed to a sufficient level, owing to the lack of resources. To enable this action to occur, we would need to find a source of funding to manage canals for conservation, rather than for restoration.	
Action complete or ongoing?	Ongoing.	
Next steps	British Waterways is currently addressing the issue of the use of canals for a variety of purposes, with public consultation and a structural re-organisation. Within the next 2 years the situation should be clearer. Action from all partners is required to promote the conservation aspects of canal use.	
Output and timescale	No specific timescale has been identified at present.	<i>Action by</i> All

Table B: Proposed actions

Published action/organisation(s) responsible	5.3.1 Where high volumes of boat traffic may damage beds of this species, seek to develop 'refuges' near the banks protected by barriers such as piling. (ACTION: British Waterways, CCW, EN)	
Work plan/organisation(s) responsible	Work plan not yet written.	
Action/work plan undertaken?	No	
Description of work taken and organisation responsible	None. British Waterways. There are proposals for refuge designs	
Output and timescale	N/A	<i>Action by</i>
Constraints to action	Action can only take place when there is an opportunity, and if it is deemed appropriate.	
Action complete or ongoing?	Ongoing.	
Next steps	Await decisions on restoration proposals.	
Output and timescale	As required. Since boat traffic has been shown to have damaged populations in the Llangollen and Montgomery Canal, this action will have to be taken forward there as soon as possible.	<i>Action by</i> BW

Table B: Proposed actions

Published action/organisation(s) responsible	5.3.2 Where canals containing this plant are subject to unavoidable restoration schemes, consider creating reserves and manage them to maintain healthy colonies of the species. (ACTION: British Waterways, CCW, EN)	
Work plan/organisation(s) responsible	No work plan. British Waterways and other canal owners are primarily responsible for this action.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	BW has constructed a number of off-line reserves along the Montgomery Canal, with mixed success. They have not succeeded in conserving <i>Luronium</i> without continued management. Plans are being made to create off-line reserves along the Huddersfield Narrow Canal, but these have been considered only as a last resort.	
Output and timescale	The Montgomery Canal reserves have been constructed, and their success is under review.	<i>Action by</i> BW
Constraints to action	This can only be done when restoration is taking place and requires funding.	
Action complete or ongoing?	Ongoing.	
Next steps	Work will be undertaken on the remaining stretches of the Montgomery Canal and on the Huddersfield Narrow Canal if restoration plans go ahead.	
Output and timescale	The timescale will be determined by funding decisions.	<i>Action by</i> BW

Table B: Proposed actions

Published action/organisation(s) responsible	5.3.3 Seek to dissuade planting of coniferous forests in sensitive lake catchments and around river headwaters important for this species. Where such forests already exist, encourage the creation of buffer zones around lake shores and river margins to allow deciduous woodland to develop. For proposed new plantings in areas containing the water plantain, carry out catchment assessments to determine the potential threat and any ameliorative treatment which would be necessary. (ACTION: CCW, FA, NRA, Snowdonia NPC)	
Work plan/organisation(s) responsible	EA to prepare HLF bid to remove conifers from areas surrounding Llyn Coch-hwyd in 1999. Seek to remove conifers from near Llyn Cwellyn, Llyn y Gadair and Afon Eden at a future date.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	Lottery bid prepared – EA. Areas for future action defined by CCW.	
Output and timescale	If funding is secured, to remove conifers and restore grassland within a few years. Date to depend on funding.	<i>Action by</i> EA
Constraints to action	It is an expensive process to remove forestry and restore grassland, and further funding is required to maintain low-intensity agriculture in the buffer zones. The forestry issue is largely resolved but requires time and money, and CAP reform is still needed to implement alternative agricultural practices. Despite a few minor achievements, the losses are still outweighing the gains in catchment management.	
Action complete or ongoing?	Ongoing	
Next steps	Continued lobbying for agricultural and forestry reform, combined with specific proposals where opportunities are identified.	
Output and timescale	CCW has a number of proposals, but no firm timescale yet.	<i>Action by</i> CCW EA FC

Table B: Proposed actions

Published action/organisation(s) responsible	5.3.4 In nature reserves with records of the species, but where it is no longer apparently present, experiment with dredging small areas of water bodies to give any remaining seed a chance to germinate. (ACTION: CCW, EN)	
Work plan/organisation(s) responsible	No work plan, but action has been taken by CCW and EN.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	English Nature is supporting the restoration of Brown Moss in Shropshire and numerous other former <i>Luronium</i> sites. A strategy has been written to identify the potential for restoration and a methodology by which to do this, and currently (1999) survey work is being undertaken and site specific management plans are being written. CCW has supported the successful restoration at Dowrog Common and has plans to undertake similar action at Porthmelgan, Trefeiddan Moor, Crymlyn Bog, Llyn Glasfryn, and Penlan Farm, ideally after results from the recent and well-localised Brown Moss site are understood.	
Output and timescale	More determined action should be taken at Brown Moss within 2 years; the other sites may take 5-10 years before serious improvements can be made.	Action by CCW EN
Constraints to action	Some of these sites are privately owned, or managed by public bodies which do not always recognise the importance of <i>Luronium</i> – for example, North Shropshire District Council considers Brown Moss to be primarily a leisure facility. Action is generally feasible, but it takes time and diplomacy to get results. The sites with farming issues to be resolved require co-operation from MAFF.	
Action complete or ongoing?	Ongoing.	
Next steps	A determined effort at Brown Moss is required during the next two years, and there are no reasons why that should not be completed. Action at other sites should be initiated after that period and detailed plans should be made.	
Output and timescale	No specific timescale has been identified at present.	Action by EN CCW

Table B: Proposed actions

Published action/organisation(s) responsible	5.5.1 In England and Wales complete the baseline survey of known sites for floating water plantain and develop a method of quantitative assessment for colonies of the plant. (ACTION: CCW, EN)	
Work plan/organisation(s) responsible	No work plan written but action has been undertaken.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	<p>British Waterways has commissioned and completed surveys of the Montgomery Canal (1997-98), Huddersfield Narrow Canal (1997-98), Huddersfield Broad Canal (1997) and Islington Arm of the Ashton Canal (1999).</p> <p>English Nature has commissioned surveys of known <i>Luronium</i> sites in the west Midlands meres and canals in 1999.</p> <p>CCW has completed a baseline survey (1997-1999) of all known sites and many possible sites in Wales.</p> <p>RSPB continue to monitor sites on Ramsey Island.</p> <p>SNH completed a survey of several thousand Scottish Lochs in 1998.</p> <p>BSBI continues to monitor sites and identify former sites through the TPDB project and fieldwork for Atlas 2000.</p>	
Output and timescale	Ongoing	Action by All
Constraints to action	<i>Luronium</i> is not always easily found, and skilled surveyors are required. Sites can also change quite rapidly, so repeated surveying is needed.	
Action complete or ongoing?	Ongoing.	
Next steps	<p>British Waterways to continue survey work, with the following priorities: Ashton Canal; Bridgewater Canal; Hollinwood Branch Canal; Huddersfield Broad Canal; Llangollen Canal; Macclesfield Canal and Bosley & Sutton Reservoirs; Manchester, Bolton & Bury Canal and Elton Reservoir; Peak Forest Canal and Combs & Toddbrook Reservoirs; Rochdale Canal; Wyrley & Essington Canal;</p> <p>Black Moss, Brunclough, Diggle, March Haigh, Red Brook, Slaithwaite, Sparth, Swellands, Tunnel End Reservoirs for the Huddersfield Broad Canal.</p> <p>CCW will undertake diving surveys of all lake and river sites where <i>L. natans</i> reported and not found in the first survey (Afon Glaslyn, Afon Rhythallt, Afon y Bala, Llyn Idwal, Llyn Ebyr, Llyn Glasfryn)</p>	
Output and timescale	No specific timescale has been identified at present.	Action by BW & CCW (primarily) but also All.

Table B: Proposed actions

Published action/organisation(s) responsible	5.5.2 Encourage ecological studies of this species to support site management and translocation programmes. (ACTION: CCW, EN, JNCC)	
Work plan/organisation(s) responsible	No formal work plan.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	CCW, with the University of Wales, has researched the ecology and genetics of populations in Wales (published 1999). Detailed surveys by BW and BSBI add to the knowledge of the ecology of individual sites (e.g. Montgomery Canal, Brown Moss, Dowrog Common). EN has commissioned studies into the ecology and hydrology of the west Midlands meres and canal sites in 1997-2000.	
Output and timescale	Ongoing.	<i>Action by All</i>
Constraints to action	No constraints except funding, which is currently available at a satisfactory level. Continued studies are required, however.	
Action complete or ongoing?	Ongoing.	
Next steps	Continued studies are anticipated by BW: isozyme analysis of canal populations CCW: continued ecological monitoring. EN: complete work in the meres & mosses. BSBI: continued surveying for TPDB Universities: several projects with students at undergraduate and PhD level.	
Output and timescale	No specific timescale has been identified at present.	<i>Action by All.</i>

Table B: Proposed actions

Published action/organisation(s) responsible	5.5.3 Encourage research into the effects of acidification of water bodies on the survival of this species in acid sensitive areas. (ACTION: CCW, EN, JNCC)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	Dr Carrie Rimes has reviewed the effects of acidification on SSSIs in Wales, and an assessment of liming in lake management is underway.	
Output and timescale	Continuing.	<i>Action by CCW</i>
Constraints to action	Studies are complex and relatively expensive.	
Action complete or ongoing?	Ongoing.	
Next steps	CCW is drawing up a list of lakes where acidification is believed to have caused damage and assessing management techniques.	
Output and timescale	Results expected in 2001.	<i>Action by CCW</i>

Table B: Proposed actions

Published action/organisation(s) responsible	5.5.4 Encourage research on the ecology and distribution of this species on a European level and use the information and expertise gained towards its conservation in the UK. (ACTION: CCW, EN, JNCC)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	Yes.	
Description of work taken and organisation responsible	CCW has undertaken some research into the international status of <i>Luronium</i> and a detailed review is currently under way at the University of Hertfordshire.	
Output and timescale	Results to be conveyed to Steering Group in 2000.	<i>Action by</i> CCW
Constraints to action	None.	
Action complete or ongoing?	Ongoing.	
Next steps	An international workshop on <i>Luronium</i> is planned by the University of Hertfordshire.	
Output and timescale	No specific timescale has been identified at present.	<i>Action by</i> Max Wade

Table B: Proposed actions

Published action/organisation(s) responsible	5.5.5 Pass information gathered during survey and monitoring of this species to JNCC or BRC so that it can be incorporated in national databases. (ACTION: CCW, EN)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	No	
Description of work taken and organisation responsible	Definitive information about all sites for <i>Luronium</i> has been compiled by the BSBI Threatened Plants Database Project under contract to the JNCC, and updates are distributed to the country agencies on a regular basis. All new monitoring information is assimilated into the TPDB.	
Output and timescale	Database constructed 1999.	Action by BSBI
Constraints to action	The identification of <i>Luronium</i> in the field is difficult, and it is impossible to ascertain its status definitively. However, the database helps to overcome these difficulties by storing detailed information.	
Action complete or ongoing?	Ongoing.	
Next steps	Continued accumulation of data is anticipated.	
Output and timescale	Ongoing.	Action by All steering group members.

Table B: Proposed actions

Published action/organisation(s) responsible	5.5.6 Provide information annually to the World Conservation Monitoring Centre on the UK status of the species to contribute to maintenance of an up-to date global Red Data List. (ACTION: JNCC)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	JNCC maintains a web site with this information, which is known to WCMC.	
Output and timescale	Updated whenever status is revised.	<i>Action by</i> JNCC
Constraints to action	None	
Action complete or ongoing?	Ongoing	
Next steps	Web site revised as appropriate.	
Output and timescale	Ongoing.	<i>Action by</i> JNCC

Table B: Proposed actions

Published action/organisation(s) responsible	5.6.1 Ensure that any published guidelines for canal management take account of the conservation of this species. (ACTION: British Waterways, CCW, EN)	
Work plan/organisation(s) responsible	No work plan.	
Action/work plan undertaken?	Yes	
Description of work taken and organisation responsible	British Waterways are publishing a Biodiversity Action Plan in late 1999 which will address the issue of conservation of <i>Lurionium</i> . Environment Agency guidelines are already published. Guidelines produced by other organisations (e.g. Shropshire Wildlife Trust) include appropriate recommendations for the conservation of <i>Lurionium</i> following consultation with BW. Through the Steering Group, BW is planning to produce an explanatory leaflet about <i>Lurionium</i> .	
Output and timescale	Continuous.	Action by BW primarily.
Constraints to action	Numerous organisations are involved in the use and management of canals, and some of these uses are incompatible with the conservation of <i>Lurionium natans</i> . A large number of meetings and much correspondence has taken place in an attempt to convey the importance of suitable management, but increased legal protection for sites and habitats may be required for a complete resolution of this issue. Some restoration projects are the subject of Acts of Parliament and will take some time to amend.	
Action complete or ongoing?	Ongoing.	
Next steps	BW to revise guidelines for canal restoration within specific projects (e.g. Montgomery Canal).	
Output and timescale	Timescale to be determined by progress within individual projects.	Action by BW, EN, CCW