NORFOLK BIODIVERSITY ACTION PLAN

PONDS

Ponds are permanent and seasonal standing water bodies between 1m^2 to 2ha and need to hold water for at least four months of the year. They are important features of the landscape, many having historical and cultural significance to the area. They are extremely variable in character depending on the size of the water body and the nature of the surrounding terrain. Ponds are invaluable habitats, supporting a variety of plants, invertebrates, mammals, amphibians and birds, many of which are becoming rare and endangered due to poor management of these often overlooked habitats.

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Plan Co-ordinator:	Waterbodies Topic Group
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1. CURRENT STATUS

National Status

- Ponds declined in both number and quality during much of the last century as their economic functions ceased. There is no longer any real place today for ponds for watering farm horses, for clay for house building or for marling poor soil. Consequently, ponds have been filled in, built on or just simply neglected, often then becoming filled with scrub and silt.

- Conversely, the number of ponds in Britain increased by approximately 11.1 per cent between 1998 and 2007, to an estimated total of 487,000 ponds in 2007; however, this was preceded by many decades of decline and at the same time, the quality of lowland ponds decreased (Countryside Survey 2007). The 1998 Lowland Pond Survey estimated that there were 228,900 ponds in lowland areas.

- Ponds are widespread throughout the UK, but high-quality examples are now highly localised, especially in the lowlands. In certain areas, high quality ponds form particularly significant elements of the landscape, e.g. Cheshire Plain marl pits, the New Forest ponds, pingos of East Anglia, mid-Wales mawn pools, the North East Wales pond landscape, the forest and moorland pools of Speyside, dune slack pools, the machair pools in the Western Isles of Scotland, and examples of Habitats Directive Annex I pond habitats across Northern Ireland.

- Ponds, for the purpose of UK BAP priority habitat classification, are defined as permanent and seasonal standing water bodies up to 2 ha in extent which meet one or more of the following criteria:

    - *Habitats of international importance*: Ponds that meet criteria under Annex I of the Habitats Directive.

- *Species of high conservation importance*: Ponds supporting Red Data Book species, UK BAP species, species fully protected under the Wildlife and Countryside Act Schedule 5 and 8, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species.

- *Exceptional assemblages of key biotic groups*: Ponds supporting exceptional populations or numbers of key species, based on: (i) criteria specified in guidelines for the selection of biological SSSIs (currently amphibians and dragonflies only); and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting ≥30 wetland plant species or ≥50 aquatic macro-invertebrate species).

- *Ponds of high ecological quality as classified by the PSYM (the Predictive SYstem for Multimetrics*): This is a method for assessing the biological quality of still waters in England and Wales. Plant species and / or invertebrate families are surveyed using a standard method; the PSYM model makes predictions for the site based on environmental data and using a minimally impaired pond dataset. Comparison of the predicted and observed data gives a percentage score for the pond's quality.

- *Other important ponds*: Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context e.g. pingos, duneslack ponds, machair ponds.

- Priority habitat ponds can be readily identified by standard survey techniques such as those developed for NVC, Common Standards Monitoring, the National Pond Survey or for specific species groups. It is recognised that most ponds will be well below the 2ha size.

- Ponds will need to be distinguished from other existing priority habitat types. The general principle is that, where the standing water element is functionally a component of another priority habitat and that priority habitat definition takes account of the standing water element, then it should be treated as part of that habitat. For example: small water bodies within blanket bog should be considered as part of the blanket bog priority habitat, but ponds in heathland (which are not dealt with through the heathland HAP) should be considered under the pond priority habitat. Agreement has been reached with the lake HAP group that the pond priority habitat will cover most water bodies up to 2 ha while the lake priority habitat will cover most water bodies greater than 2ha. As with other potentially overlapping priority habitat types, a small proportion of cases will need to be individually assessed to decide how they are best dealt with.

- Estimates, based on the relatively small pond data sets currently available, suggest that around 20 per cent of the c.400,000 ponds outside domestic curtilage in the UK might meet one or more of the above criteria.

Norfolk Status

- There is little information on the density, location or quality of ponds within Norfolk, and this needs to be collected and collated. (At the time of writing, the National Pond Monitoring network had only six ponds on file from Norfolk, all surveyed over a decade before).

- Nonetheless, Norfolk has one of the most diverse ranges of habitats in Britain (see below), and one of the greatest varieties of pond characteristics occurring within it. Norfolk also contains a great number of ponds, with South Norfolk historically being one of the most pond-rich landscapes in England (Rackham 1986). In this area, the soil type is predominantly clay and there is a long history of clay abstraction. Clay was the primary building material for houses and farm buildings in south Norfolk. Clay was sourced locally to the new building, and as a result, many farms and homesteads have a pond in the pit which was left behind.

- Across Norfolk, but primarily in the north and central parts, a great many ponds arise from former marl pits, where clay was dug for soil improvement.

- Other ponds may have originated more naturally as dune slacks, pingos (both temporary ponds), fluctuating meres and isolated coastal reedbed ponds. Ponds have also been created through quarrying, the creation of moats, as medieval fish ponds, ornamental ponds, for livestock watering and as stone or brick pits. Within the Norfolk Broads, a range of ponds occurs within wet woodland.

- Ponds provide habitats for a wide range of species, some of which are reliant on a series of ponds and associated habitat for survival; for example great crested newts. Species such as great crested newt and natterjack toad rely not just on ponds, but also on networks of ponds within suitable terrestrial habitats that are used for connectivity and hibernation.

- Ponds are features that occur in many BAP habitats that are common within the wider landscape of Norfolk. These include:

    - Fens
    - Coastal sand dunes
    - Wet woodlands
    - Lowland calcareous grasslands
    - Lowland heathlands and dry acid grasslands
    - Lowland meadows and pastures
    - Lowland mixed deciduous woodlands
    - Lowland wood-pasture and parkland

- UK and Norfolk BAP species associated with the Pond HAP include:

    - Pillwort *Pilularia globulifera*
    - Stonewort species e.g, *Tolypella intricata & T. glomerata*
    - Great crested newt *Triturus cristatus*
    - Water vole *Arvicola terrestris*,
    - Otter *Lutra lutra*
    - Natterjack toad *Bufo calamita*,
    - Shining ram's-horn snail *Segmentina nitida*
    - Crucian carp *Carassius carassius*

- Data on the extent, species and quality of ponds in Norfolk is currently incomplete, although excellent records of great crested newt, natterjack toads, dragonflies and molluscs, among other species, have been collected by naturalists in recent years. In-depth surveys of ponds at Manor Farm in North Norfolk have been carried out by Dr

Carl Sayer of University College London, colleagues from the University of East Anglia and others.

- Ponds currently of note in Norfolk in the top PSYM categories (high, very high) include How Hill Turf Pond (1990) and Thompson Common Pingo 2 (1992), according to the National Pond Monitoring Network.

- Of the ponds that do exist, many are in poor condition; as well as existing within BAP habitats, high numbers of ponds are isolated within arable fields and these are of variable quality. It should also be noted that some excellent ponds occur in improved pasture that is not of BAP quality. However, there are a great number of ponds that are of value to biodiversity in their present state and that value should be judged by assessments of all species, including plants, vertebrates and invertebrates utilising the pond; the value of ephemeral ponds, especially within clusters of ponds, should also be recognised. With this in mind, management advice should be largely site specific and rooted in survey work.

2. CURRENT FACTORS AFFECTING THE HABITAT

- Pond density across the country has reduced as a result of the infilling of ponds. Ponds are dynamic systems and this loss of a landscape network may lead to a lesser diversity of wildlife as ponds become more isolated from one another. The loss of terrestrial habitats and buffer zones associated with ponds in areas of intensive land use can have an impact on the biodiversity in the pond. The resulting increased isolation of ponds from other ponds may have important implications for biodiversity at the landscape scale, as several species may need a network of ponds for their long-term survival.

- Development is one major cause of the loss of pond sites. Historically, infilling has been one of the largest causes of pond loss in Norfolk, although this has probably slowed in recent years. In the latter half of the twentieth century, as ponds lost their economic value, they were often filled as part of farming practice. However, between 1990 and 1996, there was a high turnover of ponds, with an estimated 17,000 ponds lost but an estimated 15,000 new ponds made (*Lowland Pond Survey 1998*).

- Direct loss of ponds can occur through residential/industrial development and road improvement (widening of roads and junctions). With both Norwich and Thetford named as growth points, there will be a significant rise in development in Norfolk over the next 20-30 years, much of which will need to be situated on greenfield sites. It is therefore important, now more than ever, that domestic gardens, urban parks, allotments and ponds be managed sympathetically for wildlife and biodiversity, in order to try and ameliorate the effects of this development as much as possible.

- Ponds are vulnerable to pollution because their small size restricts their ability to dilute pollutants. Pollution, both chemical and organic, is known to critically damage pond wildlife and creates many management problems. Ponds can be detrimentally damaged in areas of intense arable land use, suffering from nutrient enrichment as a result of runoff from fertilised fields. Runoff from roads (including silt, salt and oil), septic tanks and industrial units will also have a deleterious influence on ponds

- Non - native species such as Australian swamp stonecrop *Crassula helmsii*, floating pennywort *Hydrocotyle ranunculoides* , goldfish *Carassius auratus,* least duckweed *Lemna minuta* and parrot's feather *Myriophyllum aquaticum* can displace native species and may bring about detrimental habitat change.

- Poor management of ponds has in many cases led to their decline. Today, ponds are viewed to be of little monetary value so are frequently neglected, often leading to succession and terrestrialisation. In other cases, a lack of knowledge about appropriate management can lead to ponds becoming damaged through detrimental actions such as over-deepening and the inappropriate stocking of plants or fauna. In arable settings, ponds may not only be isolated and lack a terrestrial buffer, but also, ploughing close to them can also cause over-steeping of the sides and siltation; many ponds in arable settings are also surrounded by scrub, often contributing to decline by causing shading and a build up of leaf matter. Neglect of banks, especially when grazing ceases, frequently leads to scrub development and willow growth within the pond. However, it should be noted that some apparently neglected ponds and many ephemeral ponds are of great interest for biodiversity and that survey work is vital to inform management decisions.

- Fishery management is often not wholly appropriate for wider biodiversity, as the ponds are managed for sport species rather than for native ones and such ponds may suffer high levels of disturbance.

- The loss of ponds from a natural habitat will have considerable effects on species diversity, and the populations of species within that habitat.

3. CURRENT ACTION IN NORFOLK

Legal

- Most ponds are only protected by virtue of their protected species, or in association with other BAP habitats. The legal status of the great crested newt, natterjack toad and water vole offers protection for ponds.

- Norfolk County Council's Ecologist comments on all Norfolk County Council highways improvement schemes, where the scheme has potential to impact directly or indirectly on a pond or watercourse.

- Ponds are a priority consideration when commenting on planning applications and restoration schemes for Minerals, Waste and Highway Planning.

Management, research and guidance

- Norfolk County Council provides pond management advice and its Countryside Conservation Grant Scheme provides some funding for the restoration of private ponds.

- The Norfolk Non-native Species Initiative was launched in 2008 to promote the prevention, control and eradication of invasive, alien species.

- The Norfolk County Wildlife Site (CWS) system takes into account the quality of ponds present within them when the designation is placed and encompasses criteria for the selection of ponds as CWS.

- Higher Level Stewardship (HLS) includes grant aid for pond creation and restoration as part of larger HLS schemes.

- Natural England's target for waterbodies within SSSIs states that ponds should be in good condition by 2010.

- The National Trust is using 'ecological restoration techniques' to restore shallow ponds (The National Trust, 2009).

- The Broads Authority's Lake Restoration Strategy includes waterbodies less than 5ha in size. Work to restore and manage ponds, including turf ponds, also takes place within the Broads; this includes mud pumping and fish removal, advice to landowners and awareness raising/training.

- Pond Conservation's Important Areas for Ponds (IAP) project aims to identify ponds of high biodiversity importance within geographical areas that support large numbers of high quality ponds. Conservation will be focused on the most valuable sites, either of National or European importance according to species assemblages. Pond Conservation's National Pond Monitoring Network assesses the ecological quality of ponds in Britain and monitors long term trends in pond numbers and biodiversity by collating existing pond survey data and co-ordinating future survey work. It also promotes the use of standardised survey techniques, particularly the PSYM method for assessing pond ecological quality and provides training in this method. Pond Conservation's *Million Ponds Project* aims to create an extensive network of new ponds across the UK. Ultimately, the aim is to reverse a century of pond loss, ensuring that once again the UK has over one million countryside ponds. For further information on all these initiatives, see www.pondconservation.org.uk.

- Norfolk Wildlife Trust's *Pingo Mapping Project* (*NWT, 2009*) mapped and assessed the condition of pingo sites across Norfolk. A similar NWT audit of parishes in South Norfolk in 2004 recorded ponds in selected parishes and also developed methods for mapping and identifying ponds.

- On behalf of the Norfolk Biodiversity Partnership, a study was carried out in 2008 of non-Broads lakes in Norfolk by the Environmental Change Research Centre (University College London). This sought to compile existing ecological knowledge for freshwater lakes (0.5 ha and greater) outside the Broads, and to identify sites that would be worthy of surveys to identify their conservation potential (Hughes, Sayer and Davidson, 2008).

- Research on ponds and crucian carp in North Norfolk has also recently been carried out by CEFAS and UCL (Sayer et al, in prep).

- Despite the positive action taking place, ponds and their associated biodiversity appear to be under-recorded in Norfolk. There remains an outstanding need for further research into the location and value of ponds, their biodiversity and the priorities for targeting advice, restoration/re-creation and habitat linkage.

4. ACTION PLAN OBJECTIVES AND TARGETS

National

- Identify where high quality pond sites are and what features characterise them using PSYM (the Predictive SYstem for Multimetrics) This system uses a number of aquatic plant and invertebrates measurements combined to give a value that represents the waterbody's overall quality.

- Maintain a net number of high quality pond sites as identified using the PSYM. There will inevitably be some turn-over in high quality sites (i.e. some will be lost, and some gained). In addressing this, and other targets, particular emphasis should be placed on maintaining functional pond networks, maintaining water quality and species meta-populations.

- Maintain the quality of flagship pond sites, a sub-set of approximately 1% of high quality ponds, ensuring they are monitored and that their quality is maintained ensuring these flagship sites do not degrade. These can also be used as 'example' ponds, demonstrating 'best practice' techniques for land owners.

- Restore pond sites that are below high quality status to deliver Species Action Plan targets.

- Targets for pond restoration are based on ultimately restoring c1,000 sites/year; however the target is staggered, starting at 50 sites/year, then rising progressively by 50 sites/year until the target of 1,000sites/year is reached in 2022.

- Create new pond sites of high quality potential thus creating a new network of ponds with clean water and high biodiversity potential. New ponds often have a high conservation value (Lowland Pond Survey 1998).Target ponds should be located in a wide range of landscape types to maximise regional biodiversity. Their creation should not damage the value of existing sites or areas. Creation of (a) pond mosaics/complexes, (b) new ponds that increase landscape connectivity or form protective networks, and c) new sites that are targeted to support pond SAP species is particularly encouraged. Ponds cannot be counted against this target if they are created as mitigation for destruction of existing high quality ponds.

- The definition of "high quality potential" has yet to be agreed at a national level. However, a provisional definition is "ponds located in areas where they drain a semi-natural surface-water catchment and are unlikely to be significantly impacted by man after use (e.g. in appropriately stocked with fish)".

Norfolk

Action Plan Objectives

- Establish a more accurate figure for the extent, location and condition of ponds in Norfolk.

- Maintain the existing resource of ponds in the county.

- Promote and support the appropriate restoration of existing ponds and the creation of new ponds in locations that will benefit biodiversity.

- Develop and extend provision of management advice and awareness of the biodiversity value of ponds.

Action Plan Targets

- ***Maintain the existing resource of ponds in the county*** through advisory work, protection under the land use planning system and increased promotion of the importance of ponds.

  Advisory work should include developing the concept of 'flagship' pond networks as examples of best practice and as education facilities. Advice should also include education/training for advisors and landowners, and should address the need to reduce the negative effects of fragmentation, by ensuring the buffering of existing sites, developing ecological networks and linking existing sites.

  Advice should also recognise the need for survey work into species utilising ponds, to ensure that management work is not detrimental to biodiversity and the development of any generic advice needs to stress the need for survey wherever possible. Advisors may require training in survey methods in order to better evaluate the biodiversity of ponds and discussion about the problems of balancing the needs of different taxa may need to be debated as part of this.

- ***Restore 30 ponds a year*** in order to improve their wildlife value. At least 50 per cent of the restored/re-established area should be adjacent to existing lowland meadow/pasture or other semi-natural habitat.

- ***Re-establish or create five ponds of high wildlife value a year***, avoiding damage to existing BAP habitats. New pond sites of high quality potential should be part of creating a new network of ponds with clean water and high biodiversity potential. Any new creation should not damage the value of existing sites or areas. Ponds cannot be counted against this target if they are created as mitigation for destruction of existing high quality ponds.

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(Priority actions for 2010 – 2015 shown in bold and italic)

NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
5.1	**Policy and Legislation**				
5.1.1	**European and national policy** Ensure that relevant European and national biodiversity and water management policy and legislation operates to protect priority ponds by ensuring that ponds are: (i) formally included in relevant sections of the Natural Environment and Rural Communities Act in England, and equivalent legislation in Wales, Scotland and Northern Ireland (ii) adequately represented in statutory networks of protected sites (e.g. Ramsar, SSSI, Natura 2000) and that species protection and management measures are properly enforced (e.g. by tighter restrictions on the sale of invasive non-native species) (iii) considered in Water Framework Directive River Basin Management Plans and other catchment planning processes (iv) protected by developing additional mechanisms (e.g. Pond Protection Orders) where other policy tools prove insufficient.	No action proposed.			
5.1.2	**Regional and local policy** (i) Work with partners to develop pond-focused regional and local strategies (e.g. Important Areas for Ponds, LBAPs for ponds) and ensure that ponds are fully represented in Regional Biodiversity Strategies and Regional Spatial Strategies.	***Use methodology developed by Pond Conservation & EA to identify Important Pond Areas in Norfolk***	NBIS	EA, BDS	2015

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
	(ii) Ensure that ponds are well-represented in local designation systems (e.g. County Wildlife Sites, Sites of Importance for Nature Conservation).	***Review CWS criteria for ponds according to HAP. Review condition and status of existing CWS ponds.***	NWT/CWS Partnership		2015
	(iii) Work with local / regional partners to ensure that ponds are well represented in the planning system by:	Ensure guidelines on ponds included in Biodiversity Supplementary Planning Documents for Norfolk when these are updated.	LAs	Planning Topic Group	2015
	a) including pond creation and protection in long-term plans (e.g. LDFs, landscape characterisation) b) requiring local planning authorities to protect HAP ponds by: (i) introducing mandatory assessment under PPS 9 of ponds affected by planning applications (ii) using S106 agreement mitigations to make high quality pond creation a common development condition (iii) streamlining the pond creation process by e.g. simplifying the planning permission process for new ponds.	Organise a seminar to inform Local Authorities about Important Pond Areas and the ways in which these can be incorporated into LDFs, development control and Supplementary Planning Documents.	BAP Coordinator	NBIS, Pond Conservation	2015
5.1.3	**Funding** Ensure that relevant funding bodies and grant schemes help to promote HAP targets and actions, including those providing funding for: (i) research, survey and policy development	***Proactively encourage the submission of pond survey, restoration and creation projects to appropriate funding bodies including HLS & Million Ponds Project.***	BAP Co-ordinator	BA, NWT, EA, FWAG, NE, PC, W'bodies Topic Group	Ongoing
	(ii) practical action (e.g. agri-environment schemes, pond creation grant schemes developed with LAs)	Continue the pond component of the NCC's Countryside Conservation Grants Scheme.	NCC		Ongoing
	(iii) water management, flood defence and other ecosystem services (e.g. achievement of PSAs and SSSI condition targets, flood defence schemes, climate change mitigation).	Continue – and if possible expand – the project funds operated by NBP and NBIS.	NCC		Ongoing

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
	(iv) public engagement and community orientated grant schemes (e.g. set up agreements with funding bodies to support work linked to HAP targets) Wherever possible, ensure grant funding for pond and wetland work is conditional on simple management/creation stipulations e.g. no inflows to new ponds in agricultural areas.	Ensure grant information is disseminated to landowners, communities and schools.	W'bodies Topic Group	Communities and Nature Topic Group, Farmland Topic Group	Ongoing
5.2	**Site Safeguard and Management**				
5.2.1	**Establish a national support network to protect high quality ponds** Establish formal and informal networks linking HAP, LBAP, SAP, Amphibian and Reptile Groups and other regional/local actors, in order to:	Ensure that the Waterbodies BAP Topic Group devotes at least one in-depth meeting a year to a discussion of ponds.	W'bodies Topic Group	Communities and Nature Topic Group, Farmland Topic Group	Ongoing
	(i) facilitate identification of high quality ponds (see research and monitoring) (ii) provide advice (see Advisory)	Consider establishing a pond forum/ sub-group/project to ensure links between organisations in Norfolk.	W'bodies Topic Group	Communities and Nature Topic Group, Farmland Topic Group	2011
	(iii) extend, where successful, on the ground approaches developed for flagship sites (see below), (iv) integrate local and national initiatives.	Continue to identify and protect ponds through the County Wildlife Site system	NWT	CWS Partnership	Ongoing
5.2.2	Set up a national project to identify and protect flagship ponds on the ground. This to include development of partnership agreements for all flagship pond sites to maximise protection (e.g. set up and support a pond guardian system, work to obtain local designation, minimise impacts from pollution, set up early warning monitoring systems to detect threats).	Identify and protect 'flagship' pond sites; consider how this fits with CWS system.	W'bodies Topic Group, CWS Partnership	Farmland Topic Group, Communities and Nature Topic Group	2015

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
5.2.3	**Restore ponds to high quality status to deliver priority species targets** Work with SAPs, LBAPs, environmental NGOs and others to (i) identify appropriate sites to restore for priority species (ii) develop and promote tool-kit materials and other advice on species-specific restoration techniques (see Advisory) and (iii) promote, support, undertake and monitor appropriate management on the ground.	Consider the potential for a county-wide pond restoration and creation project; ensure advice is site specific rather than generic and informed by biological information. Guidelines for good practice should be developed and promoted. Advice should be available for village ponds and to schools.	W'bodies Topic Group	Farmland Topic Group, Communities and Nature Topic Group, BA, WME	2012
5.2.4	**Create high quality ponds** Develop and implement projects to ensure widespread creation of ponds to achieve HAP and SAP targets. This to include:	Link proposals for countywide pond project (see above) to new ponds for SAP targets where relevant.	W'bodies Topic Group	Farmland Topic Group, Communities and Nature Topic Group	2012
	(i) provision of training, toolkit (see Advisory), funding and other resources for project partners.	Disseminate training toolkits and information about national training opportunities.	W'bodies Topic Group	Farmland Topic Group, Communities and Nature Topic Group	Ongoing
	(ii) establishing of a permanent network of up to 10 trained regional pond officers across the UK to lead the high quality pond creation programme. The pond officers' roles should be (a) to promote pond creation at regional policy level and on the ground, and (b) to train, develop, facilitate and co-ordinate a network of other workers including: local specialists, staff from statutory agencies, regional government and environmental NGOs, Community and other local action groups and volunteers e.g. Pond Champions.	Organise a dedicated session on pond management and creation as part of the next "Natural Neighbours" conference (if held).	Communities and Nature Topic Group	Pond Conservation	2015
		Organise a best practice seminar on pond creation and management for staff and volunteers providing land management advice.	W'bodies Topic Group	Pond Conservation	2012
		Promote the restoration and creation of high quality ponds for wildlife through the development of a county-wide pond project (see 5.2.3).	W'bodies Topic Group	Pond Conservation	2012

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
5.3	**Advisory**				
5.3.1	**Develop, promote and disseminate widely a toolkit of practical advisory resources**				
	A range of practical advisory resources should be developed and disseminated to support the HAP. These to include:	Disseminate information as it is produced.	W'bodies Topic Group	Farmland Topic Group	Ongoing
	(i) Creation of an Important Areas for Ponds (IAP) report and web tools to: (a) collate national data to make an inventory of known Pond HAP sites (b) use these data to further develop the Important Areas for Ponds (IAP) approach (currently Wales only) for other UK countries/regions so as to identify and target opportunities and priority locations for HAP activities.	Contribute to national database as it is produced.	EA, NBIS	W'bodies Topic Group	Ongoing
	(ii) Maintain dedicated phone and/or web-based advice lines for HAP enquires.	Ensure NWT Wildline continues to supply information about ponds.	NWT		Ongoing
	(iii) Develop and disseminate web and paper-based advice including a "Pond HAP Handbook" incorporating best practice examples and case studies. These should cover at least the following broad areas: (a) identification of high quality ponds, (b) techniques for creating new high quality ponds, (c) site protection mesures (e.g. catchment de-intensification, interceptor wetlands etc.), (d) dossier of management techniques, including for specific BAP species, (e) legal, technical and other practical issues, (f) survey and assessment techniques covering both 'quick' and scientifically-credible approaches, potentially including development of Habitat Suitability Indices for BAP species.	Disseminate national information.	W'bodies Topic Group		Ongoing
		Revise and re-print the NCC pond leaflet and the list of recommended native aquatic plants	NCC		2011
		Develop a "Pond Doctor" project along the lines of that in Cornwall, aimed at assessing the status of garden ponds and providing management advice to landowners. The project to be designed with a special focus on obtaining information about the occurrence of invasive non-native species and providing advice about their control and management.	NWT, NNNSI	BA, Cefas	2013

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
5.3.2	**On the ground support networks** Regionally based advice should be available to practitioners to promote on the ground actions for HAP targets (as stated in Site Safeguard 2.2-2.4). This to include (i) a permanent staff of regional pond officers, (ii) networks of trained advisors, (iii) experts in partner organisations and (iv) a volunteer network.	Establish linkages with regional pond officers & ensure information on regional advice etc disseminated as appropriate.	BAP Co-ordinator/ W'bodies Topic Group	Farmland Topic Group, Communities and Nature Topic Group	Ongoing
5.3.3	**Provide site based opportunities for seeing first hand high quality pond creation, management and survey techniques.** A network of demonstration sites should be established across the UK to provide examples of high quality pond creation and management for technical and non-technical stakeholders.	Develop "flagship ponds" as good examples and for training. Link to national network. Include good examples of pond management in farm walks.	W'bodies Topic Group NE, FWAG Farming and Biodiversity Practitioners' Group	Farmland Topic Group, Communities and Nature Topic Group, BA	2012 Ongoing
5.4	**International**				
5.4.1	**Use opportunities to interact at a European and International level** To share best practice from pond research and conservation activities across Europe and learn from the experiences of others. To influence EU policy and legislation development where this is relevant to pond HAP targets and actions.	Disseminate information as appropriate; circulate relevant information from European Pond Network (www.epcn.org).	W'bodies Topic Group		Ongoing

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
5.5	**Future Research and Monitoring**				
5.5.1	**Develop current National Pond Monitoring Network (NPMN) activities to meet the needs of the pond HAP** (i) Develop NPMN functionality to meet the needs of the pond HAP. In particular use and develop the NPMN pond inventory, Important Areas for Pond concept and targeted local survey approach to:	Apply findings as appropriate	NBIS	W'bodies Topic Group	Ongoing
	(a) identify HAP sites and flagship pond sites (b) record information on new ponds being created, and (c) monitor flagship pond sites and collect information to assess the value of the pond and surrounds for all ponds	***Develop database and GIS layer showing HAP ponds, CWS ponds, Important Areas for Ponds and flagship ponds; use to monitor these sites.***	NBIS	W'bodies Topic Group, CWS Partnership	2012
	(ii) Continue Countryside Survey monitoring of ponds, but extend its coverage to better address the monitoring requirements of targets 1 and 4 by increasing (a) the number of ponds included (b) the range of biotic groups monitored, particularly by gathering invertebrate data. (iii) Develop and instigate additional monitoring schemes and methods to support assessment of all HAP targets.	Remain aware of developments in pond monitoring and collect/collate data as appropriate.	NBIS		Ongoing
5.5.2	**Carry out research needed to inform the pond HAP**				
	Ensure that the research needed to effectively implement the pond HAP is carried out …Key areas of research are:	Draw on national pond research to inform actions in Norfolk. Maintain links to species research, including great crested newt, crucian carp and to other relevant species, such as dragonflies.	Cefas, BDS, UCL, UEA, W'bodies Topic Group		Ongoing

Ponds - Norfolk Biodiversity Action Plan

NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
	i) Research to inform pond management and creation e.g. where in the landscape to put new ponds, test advice, role of buffer zones, methods for improving ponds for BAP species. ii) Research to better understand pond ecosystems e.g. pond catchments, role of ponds in freshwater ecosystems, threats to ponds e.g. impacts of climate change, non-native species, waterbody isolation, pollution. iii) Creation of tools to identify and monitor HAP ponds e.g. develop PSYM for three seasons and for Scotland. Investigate value of methods suitable for non-specialist surveyors.	Consider developing or supporting a proposal to carry out research on the biodiversity effects of pond restoration. Apply findings of local and national research and disseminate to conservation advisors as appropriate.	W'bodies Topic Group, Cefas, BDS, UCL, UEA W'bodies Topic Group		2012 Ongoing
5.6	**Communications and Publicity**				
5.6.1	**Run publicity campaigns on key messages** Explain key topics for the Pond HAP using website, media, paper materials, newsletters, factsheets., These should include pond myths, publicity for flagship sites, awards, improved Health and Safety information, information for the public / fishermen about activities which can harm ponds e.g. adding fish / non-native species / dogs / feeding ducks, potential for garden ponds to contribute to freshwater biodiversity and the HAP.	***Raise awareness of the decline and biodiversity value of ponds by publishing an article in Tern, posting items on the Norfolk Biodiversity website and utilising other relevant publications.***	NWT, BAP Co-ordinator	FWAG, NE, BA, EA, BDS, NWT	2015

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NATIONAL ACTION		NORFOLK ACTION	LEAD	PARTNERS	TARGET DATE
5.6.2	**Work in partnership to agree and share messages** Encourage organisations to develop shared messages that can be promoted jointly e.g. materials that can be used by LBAPs or others, position statements with SAPs or HAPs.	Encourage organisations to develop shared messages that can be promoted jointly.	W'bodies Topic Group		Ongoing
5.6.3	**Enable trained staff to deliver key messages** Pond Officers / Pond Wardens / Pond Champions share key messages through giving talks, attending meetings, going on site visits, running events with audiences such as local communities, anglers or schools.	Identify key individuals outside of BAP process & share key messages through giving talks, attending meetings, going on site visits, running events.	W'bodies Topic Group		Ongoing
5.6.4	**Develop site based media** Ensure interpretation materials are available at pond sites, e.g. interpretation boards at sites, explanation of good and bad ponds at regional demonstration sites.	Ensure interpretation materials are available at restored, new & flagship ponds with public access.	NCC, NE, NWT, FWAG	BA	Ongoing
5.7	**Links with Other Action Plans**				
5.7.1	Habitat Action Plans (HAPs): Fen, coastal sand dunes, wet woodland, lowland calcareous grassland, lowland heathland and dry acid grassland, lowland meadow and pastures, lowland mixed deciduous woodland; and lowland wood-pasture and parkland	Ensure links are maintained through the BAP Topic Group structure, eg, by organising joint events focusing on ponds.	BAP Co-ordinator		Ongoing
5.7.2	Ensure HAP actions remain linked to Species Action Plans (SAPs), for example: pillwort, stonewort spp., great crested newt, water vole, otter, natterjack toad and shining ram's horn snail.	Ensure links maintained.	BAP Co-ordinator		Ongoing

Abbreviations

BA	Broads Authority
BDS	British Dragonfly Society
BFS	Bedwell Fisheries Services
BU	Bournemouth University (School of Conservation Science)
Cefas	Centre for Environment, Fisheries & Aquaculture Science (Salmon & Freshwater Team)
EA	Environment Agency
FWAG	Farming and Wildlife Advisory Group
NBIS	Norfolk Biodiversity Information Service
NCC	Norfolk County Council
NE	Natural England
NNNSI	Norfolk Non-native Species Initiative
NWT	Norfolk Wildlife Trust
PC	Pond Conservation
RSPB	Royal Society for the Protection of Birds
UCL	University College – London (Environmental Change Research Centre)
UEA	University of East Anglia
WMA	Water Management Alliance

MANAGEMENT GUIDANCE

Generic management advice for ponds is not given here, as those requiring advice are encouraged to seek site-specific advice from conservation agencies. Pond Conservation's publication *The Pond Book* is also an excellent source of advice (see below for contact details).

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http://www.pondnetwork.org.uk
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