

Wet Woodland Survey of the Waveney Valley 2006-2007

by Steve Piotrowski

**on behalf of Suffolk Wildlife Trust
for the Forestry Commission**



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Contents

Acknowledgements	1
Contents	2
Executive Summary.....	3
Introduction	3
Project aims.....	3
Scope	3
Waveney Valley habitats	4
<i>Aquatic habitats.....</i>	<i>4</i>
<i>Fenlands.....</i>	<i>6</i>
<i>Heathlands.....</i>	<i>6</i>
<i>Woodlands.....</i>	<i>7</i>
Wet woodland in the Waveney Valley	7
Interpretation	8
Methodology	9
Fieldwork	9
Desk-top studies	9
Survey Results.....	11
Discussion.....	11
Recommendations.....	15
References	17
Websites	17

Executive Summary

A total of 170 flood-plain woodlands were surveyed in the Waveney Valley of which 102 (580.9 ha) were classified as wet woodland. Opportunities for wet woodland creation were identified at a further 11 sites (92.06 ha) and restoration at seven sites (30.01 ha). Wet woodland in the valley was more extensive than was previously anticipated. However, many woods have been damaged by over draining, conversion to plantations, herbivore poaching, flood protection and game preservation.

Introduction

A 12-month study of flood-plain woodland within the Waveney Valley commenced during the winter of 2006-2007. This was a partnership project between FC and SWT. Its detailed conclusions will form the basis of a Habitat Action Plan (HAP) in the Suffolk Local Biodiversity Action Plan (LBAP). It will also serve as a guide to future activities relating to wet woodland conservation and expansion through restoration or creation.

Project aims

- Carry out desk-based research study, using aerial photographs, to determine the distribution and range of wet woodland in the Waveney Valley and map the existing resource.
- Carry out field-based survey to verify boundaries and to determine the general classification of woodland of each woodland block.
- Record the dominant tree species within wet woodland blocks and the fauna and flora associated with them.
- Provide guidelines to enable the populations of key Biodiversity Action Plan (BAP) species, associated with wet woodlands, to be maintained and strengthened, e.g. otter, water vole and a number of invertebrates.
- Create a computer-based Geographical Information System (GIS) wet woodland inventory.
- Liaise with landowners and partners to promote further wet woodland expansion and creation taking into account habitat compensation requirements resulting in coastal flooding.
- Identify areas of wet woodland where other habitats may compete for precedence
- Assess and survey wet woodland indicator species.
- Develop conservation guidance, strategic objectives, targets and actions relating to wet woodland for inclusion in an amended Wet Woodland LBAP.

Scope

Wet woodlands occur in a variety of situations where a high water table results from poorly drained or seasonally wet soils. Alder, grey willow and downy birch are the predominant tree species, but crack willow, ash and oak can be found in the riparian areas. The Waveney Valley was known to be one of Eastern England's wet woodland

strongholds, but there was a need to determine the extent and the resource mapped. This was achieved by using the following criteria:

- Survey all flood-plain woodlands in the Waveney Valley between Redgrave and Lopham Fen to Herringfleet on the Suffolk bank and to Haddiscoe on the Norfolk bank. Include all wet woodland across the flood-plain from the river to the glacial terraces.
- Exclude wet woodland along major tributaries such as the River Dove and Brome Beck.
- Include all alder carr, willow carr, mixed woodland in areas where water tables are high, derelict poplar plantations and dense stands of cricket bat willow, where there is an understory of wet, semi-natural vegetation.
- Exclude spacious cricket bat willow (CBW) plantations with under-grazing, regularly harvested osier beds and windblown and/or severely damaged poplar plantations. The latter could be listed as opportunities for wet woodland restoration.

Waveney Valley habitats

Aquatic habitats

The River Waveney

The River Waveney is a beautiful slow-moving river, which meanders from its source at Redgrave for about 60 km through some of East of England's most picturesque countryside. It meets the estuary at Breydon Water at the confluence of the River Yare. The banks along the lower reaches (or ronds as they are known) support linear blocks of common reed along with other marginal vegetation and these have long been favoured by breeding whitethroat and reed and sedge warbler. Water vole is recorded on the river and within the connecting wetland habitats. The depressed river mussel and Desmoulin's whorl snail, both scarce molluscs and BAP species, have also been recorded. The River Waveney is therefore an extremely important ecological feature supporting a variety of species, some of which are rare or endangered. In places, wet woodland grows right to the river's edge and there are a few areas of wash where the river overflows when at high level. There is scope for creating further wet woodland blocks along the ronds, although there may be a conflict with reedbed development.

Open water

Almost all areas of open water along the valley have been created by Man. Diggings vary from excavations for peat or minerals to those for enhancing sporting or nature conservation activities. With such an abundance of water in the valley, none have been dug for livestock. The early diggings have resulted in the formation of Broads, which hold eutrophic waters. These are highly-productive standing waters as plant nutrients are plentiful and they are a BAP habitat in their own right. They are of high biodiversity, with diverse submerged vegetation that host numerous species of invertebrate and fish. Bottom-dwelling invertebrates such as snails, dragonflies and water beetles are abundant. The edges of these Broads are surrounded by wet woodland communities and often link to other woodland blocks. Examples of eutrophic waters encountered during the survey include: Barnby Broad; Sprats Water; Flixton Decoy; Summerhouse Water and Wicker Well.

Photo: River Waveney at Beccles Marshes**Gravel pits**

There are numerous gravel workings dotted along the valley, e.g. at Burgh St Peter, Brome, Earsham, Flixton, Homersfield, Wortwell and Weybread. Some of these are still working and have been colonised by oystercatcher, little ringed plover and sand martin. Those that have been abandoned have become overgrown with fringe vegetation, willow and alder scrub. Exhausted gravel pits provide excellent opportunities for wet woodland creation, an option that requires further investigation in Phase 2 of this project.

Ponds

Many areas of wet woodland in the Waveney Valley contain ponds. Some of these originate from peat diggings from the Middle Ages, but others relate to pond creation for sporting activities such as fishing or wildfowling. Some excavations have effectively nullified seepage and water-logging and thus drained the woodland. Wildfowling flight ponds attract hundreds of teal during the winter months and moorhen nest on them in summer. However, as they are generally well shaded, they would appear to have minimal wildlife value, so further survey work is necessary to determine the diversity and populations of creatures that inhabit these murky waters. Examples of wet woodland lost to pond creation can be found at Aldeby Hall and Wild Carr, Beccles. Two large ponds, surrounded by wet woodland at Stuston and The Lay, Earsham, were included as part of the survey.

Photo: Flixton Quarry***Fenlands***

The UK is thought to host a large proportion of the fen surviving in the European Union. As in other parts of Europe, fen vegetation has declined dramatically in the past century.

Fens potentially pose the biggest conflict with wet woodland conservation and creation as they thrive under similar conditions. They are basically peatlands, which receive water and nutrients from the soil and ground water as well as from rainfall. Wet woodland and fens coexist in many parts of the valley and often form a mosaic of habitats. Natural regeneration of particularly alder carr onto adjoining fenland needs to be assessed and perhaps kept in check to avoid fens being lost at the expense of wet woodland. The Waveney Valley fenlands are flood-plain fen and are topogenous, where water movements in the peat or soil are generally vertical.

Rich fens occur at the upper reaches of the Waveney Valley from Redgrave down to Diss. They are fed by mineral-enriched calcareous waters (pH 5 or more) and support a diversity of plant and animal communities.

Heathlands**Wet heath**

The margins of wet woodlands are often raised by the sand and gravel that the glaciers left behind. A very thin layer of peat has developed over the sand when the area was wetter and capable of supporting peat-forming vegetation. The plants which grow are

more strongly influenced by the acidic nature of the sand than the alkaline spring water rising nearby. There are several areas along the valley where wet heath adjoins wet woodland including: Redgrave and Lopham Fen, Wortham Ling, Wild Carr and Herringfleet Hills. In most cases, the wet heath quickly reverts to dry heath as the land rises away from the river valley.

Woodlands

Scrub woodland

Scrub woodlands occur on a variety of habitats and tend to be the result of the successional processes. The majority of scrub woodlands are the result of a change in land management practices, whereby the grazing component has been substantially reduced or removed. Scrub woodlands often merge into mature and semi-mature woodland and separation and classification become meaningless. Scrub occurs in areas where woody species have invaded open water areas and the surface subsequently dries out. Typical wet woodland species such as alder, grey willow and downy birch predominate. Alder can be very invasive and large, dense stands can quickly develop over areas of marsh and fen. From a wet woodland point of view, the preferred term is "young wet woodland". Examples of regeneration of wet woodland through the scrub process can be seen at Redgrave and Lopham Fen, Bressingham Fen and Barnby Broad.

Carr woodland

Carr woodland is dominated by alder, grey willow and downy birch, with shrubs such as guelder rose, buckthorn, dog rose and brambles. The areas are damp and shady with an abundance of ferns, mosses and liverworts, while extensive lichen and fungi grow on branches and dead wood. Important communities of alder trees with characteristic swampy ground conditions and large tussock sedges can also be found, often at the edges of Broad. Apart from the many common woodland birds that inhabit carr, some more specialised species can also be found. In addition, a myriad of insects and other invertebrates inhabit these wet woodlands, contributing to their importance as a Broad habitat.

Mixed woodland

Mixed woodland is well established along the length of the Waveney Valley and is the final stage of succession. The shrub layer is usually elderberry and hazel.

Wet woodland in the Waveney Valley

Biological status

Wet woodland habitats may be identified as containing a range of National Vegetation Classification (NVC) stand types. Those that occur in the Waveney Valley are listed in the following table:

NVC Code	Habitat Name
W1	Grey willow - common marsh bedstraw woodland
W2	Grey willow - downy birch – common reed woodland
W5	Alder - greater tussock sedge woodland
W6	Alder - common nettle woodland

The wet woodlands in the Waveney Valley most frequently occur in mosaic with other woodland key habitat types and with open key habitats such as fens. The boundaries with drier woodland communities are often clearly defined and may have changed with time through succession, depending on the hydrological conditions and the treatment of the wood and its surrounding land. However, changes from wet woodland to dry woodland may also be gradual and the boundaries between the two habitat types are often difficult to determine.

Many alder woods along the Waveney are very old and their structure has been determined by a long history of coppice management. In some situations, it would appear that this practice has maintained alder as the dominant species and impeded succession to drier woodland communities. Alder is also impervious to grazing by larger herbivores and this would have also effected its distribution. The presence of tussock sedge in some wet woodland shows that the habitat would have developed through natural succession from open fenland, sometimes following cessation of active management. In many cases, the wet to waterlogged soils of the woodland floor have prevented natural succession from wet woodland to dry woodland.

There are no precise data on the total national resource of wet woodland but in the late 1980s the Nature Conservancy Council estimated the total extent of this type in ancient, semi-natural woodland to be about 25,000 - 30,000 ha. The area of recently colonised wet woodland may be at least as large again. Thus a crude estimate of the total wet woodland area in the UK is 50,000 - 70,000 ha.

Interpretation

The author/surveyor's interpretation of the classifications listed on page 7, and those used as part of this study, is as follows:

W1 – recently established grey willow blocks such as those found along rivers and streams, by headwaters and flushes. They are often the first colonisers of cleared open water areas. Any ground flora growth is limited due to lack of light penetration. Good examples of W1 can be found along the ronds on both sides of the River Waveney between Geldeston Dyke and the Old Bridge at Beccles.

W2 – areas recently colonised by grey willow-scrub on fens and mires and peaty hollows. Good examples of W2 are the scrub areas at Redgrave and Lopham Fen.

W5 – mature alder carr blocks on boggy ground, with a ground flora dominated by rushes and sedges. These are often seepage zones and ponding areas. A good example can be found at Bullocks Carr, Herringfleet.

W6 – this type of woodland can be found at the edges of flood-plains, in non-peat areas or in areas where wet woodland has been over drained. The ground flora is normally dominated by nettles. A good example can be found at Old Hall Woods at Barsham.

There has been an attempt to separate wet woodland blocks from drier woodland communities. The wet woodland is listed as a block by the dominant habitat type. However, there has been no attempt to break down the wet woodland blocks when present in mosaic of wet woodland types, e.g. W5 – 60% and W6 - 40%.

Each wet woodland block could be further assessed and broken down into wet woodland types as part of Phase 2 of this study.

Methodology

For consistency, the methodology followed by the Waveney Wet Woodland Project was similar to that used for the Peterborough Wet Woodland Project ([http://www.forestry.gov.uk/pdf/wetwoodland.pdf/\\$FILE/wetwoodland.pdf](http://www.forestry.gov.uk/pdf/wetwoodland.pdf/$FILE/wetwoodland.pdf)). The methodology used is detailed below.

Fieldwork

Locating Wet Woodland

Pockets of wet woodland exist all along the Waveney Valley and were pinpointed by the use of Ordnance Survey maps, complemented by aerial photographs downloaded from Google Earth. Areas of woodland, particularly young plantations, which are not shown on either the OS maps or aerial photographs, were located by scanning the landscape in the field.

Appointments were made with prominent landowners who confirmed the boundaries of their holdings and, in many cases, their neighbours. Arrangements for access were agreed during this visit.

Surveying

The woodlands were identified were surveyed and classified by using an edited version of the NVC. This was carried out by analysing the predominant tree species, the canopy and field layer composition within the woodlands and then relating this to NVC descriptions.

The boundaries of wet woodland blocks were determined while surveying the woodland in the field and were marked on aerial maps. Features noted at the boundaries, such as fencing, dykes, changes in gradient, streams and ponds, were marked on the maps to allow easy digitisation of the habitats. Where areas were featureless, the boundary was drawn at the nearest landline feature and this information was documented in the database information for each site. This method was employed to prevent situations where boundaries digitised across featureless areas were incorrect on the ground.

In most cases, two visits were made to each site to determine the diversity of species and any differentials in ground conditions between seasons.

Desk-top studies

Constraints

Wet woodland habitat can exist in mosaic with other habitats and the boundaries between habitats were not always possible to define. In such cases, the whole area was digitised and the presence of a mosaic of habitat was documented. The NVC classification for the dominant habitat was logged for the woodland block.

For some of the larger sites, there were a number of wet woodland pockets that could not be broken down into smaller polygons. In such cases, larger polygons were digitised and therefore may include areas of other habitats such as bare ground and open water. This also applied to sites where wet woodland existed along the margins of lakes and ponds. The wet woodland habitat tends to be fragmented around the fringe and difficult to define, so large areas were digitised.

Access to all areas within sites when surveying was not always physically possible due to areas of impenetrable habitat. In these situations, dense areas were viewed from as many surrounding points as possible and assessed for its wet woodland content.

In wet woodlands where game was being reared for shooting purposes, landowners and gamekeepers would not allow access during the rearing, releasing and shooting periods, so surveying opportunities were restricted.

GIS polygons

Polygons representing the boundaries of each wet woodland block were identified through field studies and analysis of each was digitised onto a “layer” within the Map Info GIS software package. The boundaries were digitised from the 1:10,000 Ordnance Survey map layer.

The boundary for each site is an indication of wet woodland only and may include areas of other habitats that were present in mosaic with wet woodland.

Database

Information (attributes) about each polygon was recorded within the database. Attributes included:

ID (Site ref. no.)	Unique identification number for each site
Site name	Name of site
Grid reference	Ordnance Survey grid reference
Landowner/tenant name:	Contact details of principal stakeholders
Priority habitat	Wet woodland
Site designation	County Wildlife Site (CWS), Site of Special Scientific Interest (SSSI).
NVC	Indication of National Vegetation Classification
Date of survey information	Date survey carried out
Adjacent land use	Current use of adjacent land
Source of survey information	Site visits, details of other surveys, information for site
Priority habitat comments	Comments regarding wet woodland habitat
Additional comments	Comments regarding additional information relevant to wet woodland habitat
Easting	Ordnance Survey easting at centre of site
Northing	Ordnance Survey northing at centre of site
Area in hectares	Area of GIS polygon in hectares

Criteria used to determine opportunities for habitat expansion and creation

Habitat expansion can be defined as increasing an area of existing wet woodland habitat, whereas habitat creation would involve planting or protecting an area for natural regeneration.

Once an inventory was created, each site was analysed individually to determine any potential for habitat expansion. This involved analysing land use of the surrounding area which was noted as part of the fieldwork. GIS Ordnance Survey data and aerial photographs were also analysed.

There are several areas that need investigation if expansion is being considered:

- Is there a water source present
- Water quality
- Are there potential conflicts which could prove detrimental to other species-rich habitats?
- Existing/proposed development within the vicinity
- Sporting and recreational pursuits
- Landscape
- Landowner aspirations

Particular attention was paid to linking wet woodland blocks through an Ecological Network as discussed on page 15.

As the Waveney Valley is classified as an Environmentally Sensitive Area (ESA), landowners are reluctant to commit to wet woodland expansion as they would lose entitlement to payment for maintaining grazing marsh. The number of grazing livestock within the Waveney Valley has decreased which has resulted in large areas of natural alder regeneration.

Survey Results

- From around 170 sites surveyed, 102 have been classified as wet woodland.
- A total of 580.9 ha of wet woodland has been identified and graded according to NVC classification.
- Opportunities for potential wet woodland creation have been identified at 11 sites covering 92.06 ha.
- Opportunities for potential wet woodland restoration have been identified at a further seven sites covering 30.01ha.
- Since 1980, only about 10 ha of wet woodland has been cleared for other land uses,
- Many wet woodlands have been severely degraded by over-draining, cattle poaching and planting for commercial opportunities (e.g. poplar and cricket bat willow plantations) and pheasant cover (e.g. leylandii, laurel and box).

Discussion

There has been a great deal of confusion concerning the value of wet woodland and, in the past, its true potential as a wildlife habitat had not been fully assessed. There have been a number of instances which have forced conservation bodies to return wet woodland habitats back to the more-threatened, species-rich fenland. However, with so much wet woodland lost, this unique habitat has rightfully been classified as a BAP habitat. This means that wet woodland must be protected and enhanced and the existing resource increased wherever possible. Species-rich fenland is also a BAP habitat and is undoubtedly of a higher priority than wet woodland. It is likely that future conflicts with wet woodland regeneration will recur as, by its nature, wet woodland is a natural succession from fen. If left unchecked, all species-rich fenland would be lost. Management objectives should be carefully considered and actions based on the grounds of habitat priority.

Photo: Grazing marshes adjacent to wet woodland at Barnby Broad

Wet woodland in the Waveney Valley has been affected by the following factors that may impact directly or indirectly upon its current condition and dynamics:

- There is little evidence that there has been wholesale wet woodland clearance and conversion to other land uses in recent years. Small wet woodland blocks have been lost to arable on the Wheatacre peninsula and near Moors Bridge at Hoxne, the combined total amounts to about less than 10 ha. Further blocks have been removed and managed to enhance important fenland communities at SWT's Oulton nature reserve.
- The lowering of water-tables through drainage is evident at many wet woodland sites, some of which are surrounded by deep dykes causing over-draining. Water abstraction, by the local water authority, was once a major issue in the upper reaches of the valley and, although this has now been stopped and the fenland is recovering, the wet woodland in the vicinity has changed to drier woodland types and may take much longer to adapt to this changing environment.
- There are several examples of conflicting management techniques in areas bordering wet woodland. Some landowners are looking to convert grassland to arable and draining fields adjoining wet woodland. The re-profiling of ditches and drains to create abrupt edges may result in subsequent over-drainage and damage to wet woodlands.

- Landowners are reluctant to commit to wet woodland expansion as they would lose ESA entitlement for maintaining grazing marsh?
- There are many examples of inappropriate grazing levels and poaching of the soil by sheep, cattle and deer. This leads to a change in the woodland structure, ground flora impoverishment and lack of natural regeneration. Most of the examples lie on the flood-plain where grazing marshes meet unfenced wet woodland, where large herbivores are allowed to wander unchecked.

Photo: unfenced flood-plain woodland at Flixton damaged by cattle poaching



- Flood prevention measures, river control and canalisation have been a major problem. The River Waveney has been straightened in a number of places and drainage improved for agricultural purposes. This has led to loss of dynamic disturbance-succession systems and invertebrate communities, as well as possible reductions in the extent of individual sites. The work currently being undertaken by The Broads Environmental Services Ltd (BESL), may help to alleviate flooding, but it may also minimise wash opportunities.
- There are some constraints on the natural regeneration of woodland onto adjacent ground due to agricultural use, the presence of an equally valuable BAP habitat, or industrial/residential development.
- There are few examples of invasion by non-native species by natural regeneration, although a number of evergreen species have been deliberately

planted in some woods as game cover. This alters vegetation composition and lowers conservation value.

- Although not obvious as yet, climate change, potentially resulting in changes in the vegetation communities, should be considered as part of the strategy for wet woodland creation and restoration.

The wet woodland gains far outweigh the losses and most have resulted from natural regeneration of neglected fens. Most are classified as W5 wet woodland and will be included in the tables. In recent years, over 33 ha of wet woodland has been gained in this way.

The study has highlighted some discrepancies with the Suffolk Wet Woodland LBAP. It states that there are less than 100 ha of wet woodland in the whole of the county. Although this appeared to be a vast underestimate, it is almost certainly due to differing interpretations. The LBAP states that wet woodlands on the Suffolk boulder clay areas were considered as part of the ash - field maple - dog's mercury woodland (W8 in the NVC) and were excluded. Parts of the woodland surveyed do host these species, so if the wet woodland blocks are further broken down in Phase 2 of the study, then this gap may be narrowed.

The habitat supports a number of important BAP species in Suffolk, but those listed: song thrush, spotted flycatcher and lesser horseshoe bat are not indicator species for the county's wet woodland. Although both avian species may breed in woodland, they show a preference for other habitat types and there has been only one record of lesser horseshoe bat for Suffolk. In addition, there is no evidence to support the LBAP statement that barbastelle and pipistrelle bats frequent wet woodland. Although otter are rarely seen, they are not uncommon on the River Waveney and will use wet woodland as a haven for their holts. Wet woodlands are of primary importance for a number of beetles including the weevil *Melanapion minimum*, a jumping weevil *Rhynchaenus testaceus* and a leaf-rolling weevil *Byctiscus populi*. Further studies are needed to determine other invertebrates that rely on wet woodland.

Choosing indicator species can be a difficult task as few depend on wet woodland *per se*. Many are relict species from the former open wetlands on the site, such as marsh fern which is particularly prevalent in the lower Waveney Valley in and around North Cove on the Suffolk side of the river. Woodcock and marsh tit are perhaps better avian indicators of wet woodland, although both will also inhabit drier woodland habitats.

BESL has recently completed extensive construction work along the navigable section of river and, although some scrub areas have been destroyed, new areas of open water running parallel to the river have culminated in an overall gain for wildlife. This work is nearing completion and although it may have been an opportunity missed at the planning stage, it may not be too late to instigate follow-up wet woodland creation work as part of the reinstatement and compensation arrangements.

Recommendations

The Waveney Valley is a prime site for creation and restoration of wet woodland and, if BAP targets are to be achieved, water tables may need to be raised to allow the valley floor to become wetter. This option has been proposed in reports on fen management strategies (e.g. Tolhurst 1997) and for reedbed creation. There will undoubtedly be conflicts with Internal Drainage Boards, as some landowners wish to farm a drier valley, so that more areas can be reverted to arable. This situation may be exacerbated once ESA Agreements expire. Discussions should take place with the Environment Agency and the Broads Authority to carry out feasibility studies on the provision of additional areas of wash and areas where water can be retained and drained more slowly following winter floods. Currently, the focus is on reedbed creation schemes, as compensation for those that could be lost on the coast as a result of erosion and rising sea levels. Similar criteria adopted for developing reedbeds and fen could be used for wet woodland creation.

The management of wet woodland needs to be more robust, with dyke systems alongside wet woodland blocks re-profiled to allow the existing woods to retain more water. Wherever possible, the wet woodland blocks should be waterlogged to discourage colonisation of tree species more associated with drier woodland communities. Discussion should take place with game preservationists to see whether woodlands under their control could be made wetter, more standing dead timber retained and deadwoods left to decay. It is also recommended that non-native evergreens are removed from wet woodland.

Many of the Waveney's wet woodlands are isolated and fragmented, leaving some communities confined to 'islands' from which it is difficult for them to disperse. In these situations, species are more vulnerable to the effects of wet woodland degrading, habitat loss and disturbance, so localised extinctions are more likely. The wildlife also needs to be able to respond to the challenges of climate change, so the ability to disperse and recolonise other areas becomes all the more important. Blocks of interconnected habitat help form an ecologically coherent network, allowing species to move between sites and leading to more robust populations. Stepping stone habitats, which are small, unconnected areas can also play a part in allowing more mobile species, such as insects and birds, to travel between the larger blocks. Woodland creation and restoration to strengthen the ecological network are also vital, as we cannot rely entirely on conservation within designated sites. Opportunities should therefore be sought to buffer and enlarge wet woodland blocks and increase their linkage, in order to provide robust and dynamic ecological systems.

It is recommended that the East of England Wet Woodland Task Group set up by the FC continue to meet on a regular basis. Current membership includes representatives from: the FC; Natural England; Environment Agency; Water Authorities, Local Authorities and local wildlife trusts. The main task of this group is to raise the profile of wet woodland, instigate feasibility studies on water levels and to re-examine wet woodland designations. Further meetings involving local internal drainage boards may be necessary in the future to discuss water levels. The latter may have to be undertaken at a more local level.

Photo: Needham Carr

Planting tree species associated with drier woodland communities within wet woodlands should be considered as bad practice and landowners should be advised accordingly.

Woodland creation or restoration opportunities listed in this report should be pursued with landowners involved who would be made aware of the financial benefits of the English Woodland Grant Scheme (EWGS) and/or Environmental Stewardship (ES).

It is recommended that all wet woodlands classified as W5 or W6 be designated CWS status. As part of Phase 2 of this project, the LBAP should be updated and a guidance fact sheet produced.

Opportunities for wet woodland creation at exhausted mineral works are included in the statistics. There will be difficulties as most abstraction licenses require the site managers to be reinstated for agricultural use. Opportunities for wet woodland creation should be highlighted at the planning permission stage; agriculture should not take precedent over BAP targets. Some licenses do allow reinstatement to benefit conservation, but the interpretation of this is varied and often open to question.

Little is known about the invertebrates that inhabit wet woodland habitats in the Waveney Valley. The Suffolk Biological Records Centre has confirmed that they have very few diptera records and, in consequence, cannot confirm whether the specialist crane flies mentioned in the national BAP are present in Suffolk woodlands. A full invertebrate survey should be undertaken at all W5 and W6 classified sites to determine the invertebrate communities using them.

Many wet woodland ponds are dark and murky and there have been few studies to determine the species that depend on them. It is recommended that a full study of the ponds be undertaken as part of Phase 2 of this project.

Further studies including quadrates to determine ground flora diversity and surveys to highlight and perhaps create seepage zones to benefit wet woodland quality, should be considered. A survey to determine depth and extent of peat in areas surrounding wet woodland would ensure that there is no conflict with the development of rich fen habitats.

References

Mendel, H. 1992. *The dragonflies of Suffolk*. Suffolk Naturalists Society. Ipswich.

Tolhurst, S. 1997. *Fen Management Strategy - a strategy for environmental sustainable management of the Broadland Fens*. Broads Authority and English Nature

Websites

<http://www.suffolkwildlife.co.uk/nr/sites/redg.htm>

<http://www.ukbap.org.uk/>

<http://www.forestry.gov.uk/ewgs>

<http://www.defra.gov.uk/erdp/schemes/hls/default.htm>

<http://www.users.globalnet.co.uk/~sbrc/>

<http://www.forestry.gov.uk/eastengland>

<http://www.woodlandforlife.net>