NPWS

River Barrow and River Nore SAC (site code 2162)
Conservation objectives supporting document-
woodland habitats

Version 1

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Introduction

The Barrow/Nore river system contains a considerable amount of woodland, particularly in the lower reaches where the rivers leave the central limestone lowlands and cut through the uplands. The slates, shales and granites of these uplands produce relatively well-drained, poor, acidic soils which favour the development of sessile oak woodlands on the steep valley sides, although locally ash woodlands occur on more fertile soils. In many places conifer plantations have been planted. The valley floors are narrow and the floodplains are only poorly developed so that alluvial woodland is restricted and localised.

Upstream the rivers flow through fertile lowlands and both have been drained to some extent. In general there is very little native woodland, even in the headwater streams in the Slieve Bloom Mountains where extensive areas have been afforested with conifers. The exception is the stretch of the Barrow/Erkina between Durrow and Abbeyleix in Laois, where some of the most extensive and important alluvial woodlands in the country are to be found.

This SAC has been selected for two woodland types listed in Annex I of the Habitats Directive:
91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
91EO Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

The total area of native woodland within the SAC is unknown. However, of the 37 sites surveyed, old oak woodland covers c.85ha and alluvial woodland c.181ha in the SAC. It should be noted that some sites extend beyond the SAC boundary.

Information below is based largely on Perrin *et al*. (2008). 36 sites within the SAC have been surveyed. These are representative of the woodland types present, although they are only a fraction of the total area of woodland within the SAC. The sites identified as containing the Annex I habitats are listed in Appendix 1.

Woodland types

There are five principal woodland types present within the SAC: alluvial woodland; old oak woodland; ash woodland; mixed deciduous woodland usually with abundant beech and/or sycamore; and conifer plantations. Of the native woodlands, ash and alluvial woodland occur along the length of the river but oak woodland is largely confined to the lower reaches.

91EO Alluvial woodland

This is a generic term for a number of different woodlands, including the following:

- Gallery woodland dominated by tree willows, principally *Salix triandra, S. alba, S. fragilis* and *S. viminalis*. This community consists of small, narrow stands on the river banks and islands where the trees are subject to frequent flooding and/or have their roots permanently in water. It occurs principally in the lower reaches of the rivers where there is tidal influence. The vegetation is typically characterised by a tangle of fallen and sprawling trees and shrubs and a luxuriant tall herb layer, which includes nettle, canary reed-grass and bindweed.
- Ash-ivy woodland with wood avens and wood speedwell. This community occurs further back from the river where flooding is less frequent and the soils normally dry out in the summer. Typically it is species-rich with a rich shrub and field layer, often including abundant geophytes, e.g. celandine, bluebell, wild garlic.
- Alder-meadowsweet woodland. Communities of wet, gleyed soils which are either frequently inundated or have a permanently high water table. Three sub-types are recognised, depending on the hydrology. Typically they occur in depressions within the ash woodlands or are associated with seepage zones or springs.

Area

Many of the alluvial woodlands, especially the gallery woodlands, are relatively narrow stands but there are several sites of more than 10ha and one site, Castle Durrow, covers almost 95ha. Together with the woodlands at Park Hill, Abbeyleix, a few kilometres upstream, these represent some of the most extensive alluvial woodlands in the country. Non-annexed ash woodlands and conifer plantations often provided continuity of woodland cover. Objectives should be to increase native woodland size to 3ha for small woods and 25ha for large woods, based on the recommendations of Peterken (1993). However, the topography, land ownership and surrounding land use may mitigate against these targets

Ancient woodland

10 alluvial woodland sites within the SAC are recorded as having been present in part or full on the 1st edition OS maps (1840s). These may therefore be considered as potentially ancient or long-established woodlands.

Structure and function.

The structure varies between the different woodland types. Gallery woodland is typically rather low, c. 9m in height, and rather open. However, the trees tend to fall over forming a dense tangle of interwoven branches and this, together with a tall and luxuriant growth of herbs often bound together by bindweed, makes access difficult. Regeneration is principally vegetative.

Ash-ivy woodland by contrast forms high forest with ash and oak (*Quercus robur*) forming a canopy c.18m, a well-developed shrub layer of hazel and hawthorn and a well-developed and often species-rich but low growing herb

layer. Ash seldom exceeds 50cm dbh and there is a concentration of trees <12cm dbh. In contrast to oak, regeneration is sometimes prolific but relatively few seedlings reach pole size.

The alder woodlands vary in height and structure: in the wettest sites they may not be much taller than the gallery forests but on slightly drier sites exceed 14m. Regeneration is poor. The amount of grey willow (*Salix cinerea*) increases with wetness while conversely the amount of ash declines.

Dead wood
The amount of dead wood varies depending on age structure and management. Older woods naturally tend to have more coarse woody debris, although the amount will depend on management which will vary with the landowner and factors such as accessibility, theft. There are no exact figures for the amount of dead wood present within the woodland within the SAC. Guidelines as to the amount that is desirable vary according to sources (e.g. Cavalli and Mason (2003)) but a minimum of 30m^3/ha of fallen timber > 10cm diameter and 30 snags/ ha should be considered; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).

Species composition
Details of the characteristic species composition can be found in Perrin et al. (2008). The average number of species per woodland type are as follows:

- Gallery woodlands: vascular plants 21, bryophytes 8
- Ash-ivy: vascular plants 21, bryophytes 11
- Alder-meadowsweet: vascular plants 26, bryophytes 11

As these figures show, alder woodlands are the richest in species, although the figures do not take account of epiphytes. A few rare species occur within the woods. These include the red-data species *Campanula trachelium*, which occurs in alluvial woodlands in the lower reaches of the Nore.

Future Prospects

Hydrology
Periodic flooding is essential for the maintenance of alluvial woodland. Past drainage of the rivers has led to the decline of alluvial woodland and substitution with species more characteristic of drier sites. This is not seen as a major threat today, although clearance of fallen trees in some sites prevents natural impediments to the flow. Castledurrow wood (site 282) on the Erkina, a tributary of the Nore, has recently been cleared of conifers and drainage channels blocked to restore more natural conditions. A vigorous and very species-rich woodland is developing.

Invasive alien species
Invasive alien tree species include beech – mostly in drier sites, sycamore – mostly in moister sites, and the shrubs laurel, snowberry and Himalayan honeysuckle. Sycamore can be particularly invasive in some places. A

reduction in the area covered by non-native tree species is required with an increase in the area of native trees and shrubs.

Grazing
Grazing animals are a normal part of a woodland ecosystem and appropriate grazing pressure is beneficial, promoting biodiversity. Where grazing pressure is too high it can damage the herb layer and prevent regeneration; where too low it allows vigorous species to dominate the herb layer, reducing biodiversity and sometimes preventing regeneration. The most common grazers in alluvial woodlands are deer and cattle but the latter are largely confined to the drier sites.

Within the Barrow/Nore SAC grazing pressure is mostly light with the exception of a few woodlands where cattle grazing is excessive, leading to overgrazing and poaching. Deer do not currently appear to be a problem but with their every increasing population it is probably only a matter of time before overgrazing becomes a more general problem.

Forest Management
The woodland stands may be in private or State ownership. Of the latter most are managed by Coillte, although a few are in the care of the National Parks and Wildlife Service. Some sites would have potential for timber production but many sites have been neglected or are only occasionally 'picked over' for timber.

Conservation and timber production are not mutually exclusive. The principal constraint is that clear-felling is undesirable. Ideally, continuous canopy forestry should be practised but coupe felling or, if the tradition exists, coppicing, are acceptable and may be required for maintaining populations of certain species, e.g. the protected species *Campanula trachelium*. Timber production is more likely on drier soils, especially the ash woodlands but also locally in alder woods. However, very wet sites, e.g. gallery forests, may not be managed at all or subject only to occasional removal of firewood.

Impact of Agriculture
Threats from agriculture may be direct or indirect. The principal direct threat is clearance and uprooting resulting in destruction of the woodland, although alluvial woodlands subject to frequent flooding are probably not attractive for agricultural reclamation. Indirect threats include fertiliser drift, which may increase the trophic status of the wood leading to the stronger growth of nitrophilous species and loss of less vigorous species, and herbicide drift, which may kill vegetation on the woodland edge.

Urban development
This is a threat principally around towns. Alluvial woodland is more likely to be damaged by infilling, although new planning legislation will hopefully make this less of a threat. Infrastructural development is likely to be localised and restricted in its impact.

91 AO Oak woodland

Old Oak woodland within the SAC occurs on the steep slopes of the lower courses of the two rivers. The principal community is the bramble-hazel sub-type, which is associated with more fertile but still relatively nutrient poor, acidic soils. Locally, the bilberry sub-type occurs on very shallow soils.

Area

37 old oak woodland sites were surveyed, covering c.85ha The average area is c. 7ha, although this figure is somewhat distorted by one site of over 27ha. It should be noted that some sites extend beyond the SAC boundary.

In general the sites are narrow and fragmented, although non-annexed ash woodlands and conifer plantations often provided continuity of woodland cover. Objectives should be to increase native woodland size to 3ha for small woods and 25ha for large woods, based on the recommendations of Peterken (1993). However, the topography and surrounding land use may mitigate against these targets.

Ancient woodland

17 oak woodlands within the SAC are recorded as having been present in part or full on the 1st edition OS maps (1840s). These may therefore be considered as potentially ancient or long-established woodlands.

Structure and function

Typical oak woodland within the SAC consists of high forest with a canopy dominated by oak c. 18m tall, with a little ash, a sub-canopy of birch and a shrub layer of holly, rowan and hazel. On poorer sites the dwarf shrub bilberry is present but more typically there is a field layer of bramble, ivy, woodrush, ferns (e.g. hard fern, broad buckler-fern) and sometimes bluebell. Beech and sycamore are locally abundant. Oak trees tend to display a wide range of size classes with c.10% > 50cm dbh. Regeneration is poor within woodlands.

Dead wood

The amount of dead wood varies depending on age structure and management. Older woods naturally tend to have more coarse woody debris, although the amount will depend on management which will vary with the landowner and factors such as accessibility, theft. There are no exact figures for the amount of dead wood present within the woodland within the SAC. Guidelines as to the amount that is desirable vary according to sources (e.g. Cavalli and Mason (2003)) but a minimum of $30m^3$/ha of fallen timber > 10cm diameter and 30 snags/ ha should be considered; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder). ,

Species composition

Details of the characteristic species composition can be found in Perrin et al. (2008). The oak woodlands in this area tend to be rather poor in species, with an average of 18 vascular plants and 11 bryophytes. This latter figure does not take account of epiphytes but, while some oak woodlands are very rich in

epiphytes, within the Barrow/Nore SAC epiphytes are probably relatively poorly developed as the oak woodland sites tend to be in dry and sometimes exposed positions. A few rare species occur within the woods. These include Killarney fern (*Trichomanes speciosum*), listed in Annex II of the Habitats Directive (thus, covered by a separate conservation objective), and *Sorbus devoniensis*, an endemic to Ireland and UK and found only around the Barrow/Nore estuary.

Future Prospects

Invasive alien species
Invasive alien species include beech, sycamore and the shrubs laurel, rhododendron, snowberry and Himalayan honeysuckle. A reduction in the area covered by non-native tree species is required with an increase in the area of native trees and shrubs.

Grazing
Grazing animals are a normal part of a woodland ecosystem and appropriate grazing pressure is beneficial, promoting biodiversity. Where grazing pressure is too high it can damage the herb layer and prevent regeneration; where too low it allows vigorous species to dominate the herb layer, reducing biodiversity and sometimes preventing regeneration. The most common grazers are deer, sheep – principally on unenclosed uplands, and cattle – mostly on enclosed lowlands.

Within the Barrow/Nore SAC grazing pressure is mostly light with the exception of a few woodlands where cattle (and in one case horse) grazing is excessive, leading to overgrazing and poaching. Deer do not currently appear to be a problem but with their every increasing population it is probably only a matter of time before overgrazing becomes a more general problem.

Forest Management
The woodland stands may be in private or State ownership. Of the latter most are managed by Coillte, although a few are in the care of the National Parks and Wildlife Service. Most sites would have potential for timber production although some may have been neglected or are only occasionally ‘picked over’ for timber.

Conservation and timber production are not mutually exclusive. The principal constraint is that clear-felling is undesirable. Ideally, continuous canopy forestry should be practised but coupe felling or, if the tradition exists, coppicing, are acceptable. However, management should be careful not to damage the habitat of the protected or rare species.

Impact of Agriculture
Threats from agriculture may be direct or indirect. The principal direct threat is clearance and uprooting resulting in destruction of the woodland. Indirect threats include fertiliser drift, which may increase the trophic status of the wood leading to the stronger growth of nitrophilous species and loss of less

vigorous species, and herbicide drift, which may kill vegetation on the woodland edge.

Urban development

These are a threat principally around towns although at least in the lower reaches the topography is a major impediment to development, most of the woodland being on steep slopes. Infrastructural development is likely to be localised and restricted in its impact.

References

Cavalli, R. and Mason, F. (Eds) (2003) Techniques for re-establishment of dead wood for saproxylic fauna conservation. National Centre for the Study and Conservation of Forest Biodiversity. Verona - Bosco della Fontana

Peterken, G. (1993) Woodland conservation and management. Chapman and Hall. London.

Perrin, P., Martin, J., Barron, S., O'Neill, F., McNutt, K. & Delaney, A. (2008) National Survey of Native Woodlands 2003 – 2008. A report submitted to the National Parks & Wildlife Service. Botanical, Environmental & Conservation Consultants Ltd. Dublin.

Perrin and Daly. (2009). A provisional inventory of ancient and long-established woodland in Ireland.

John Cross
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Appendix 1

Sites included in the National Survey of Native Woodlands (Perrin et al., 2008), which contain Annex I woodland habitats and are entirely or partly within the River Barrow and River Nore SAC (2162)

91EO Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

NSNW Site Code	County	Area (ha) within SAC
10	Carlow	1.81
15	Carlow	2.90
17	Kilkenny	3.40
20	Kilkenny	1.11
126	Wexford	5.78
127	Kilkenny	4.06
262	Laois	10.79
282	Laois	94.67
287	Laois	5.60
511	Wexford	0.16
516	Kilkenny	0.72
517	Kilkenny	0.66
518	Kilkenny	0.47
520	Kilkenny	9.25
608	Laois	38.50
1021	Kildare	1.66
	Total	**181.54**

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in British Isles

NSNW Site Code	County	Area (ha) within SAC
14	Carlow	2.28
20	Kilkenny	21.09
49	Kilkenny	0.48
73	Carlow	2.82
125	Wexford	7.96
508	Wexford	4.90
509	Kilkenny	2.02
510	Wexford	0.74
514	Wexford	4.70
515	Kilkenny	27.54
518	Kilkenny	1.00
519	Kilkenny	2.36
521	Kilkenny	7.19
	Total	**85.08**