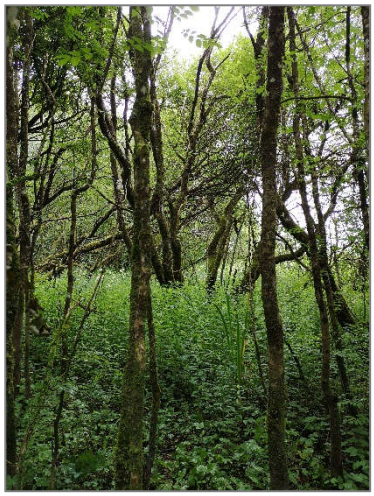

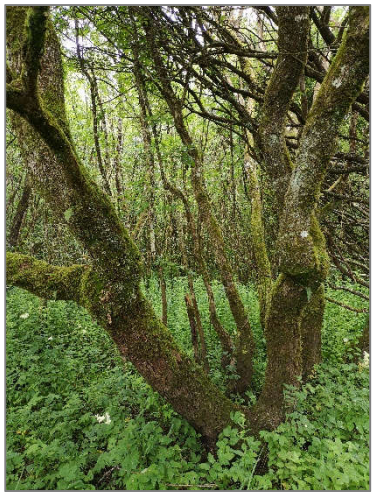

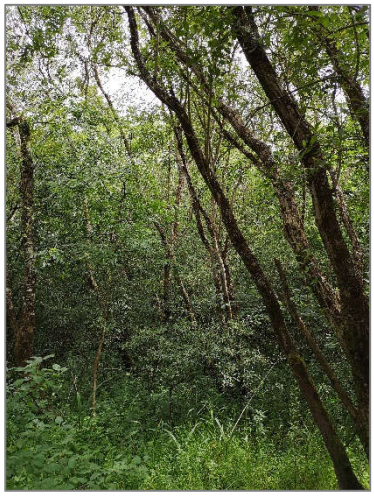

National Parks and Wildlife Service

Survey of Annex I Alluvial Woodland in Lough Ree cSAC

19th November 2019

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1 INTRODUCTION

1.1 Rationale for the Survey

A recent review of available data from the Lough Ree cSAC concluded that a survey of the Annex I priority habitat *91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) is required. Survey work was needed to confirm the presence of *91E0 Alluvial forests within the cSAC and, if present, to ascertain the conservation status of the habitat with a view to designating it as a qualifying interest of the cSAC. These data are required to complete the Natura Standard Data Form and to update the site synopsis and site-specific conservation objectives of the cSAC. These data will also inform a Native Woodland Conservation Scheme application and management plan for St John's Wood.

Annex I habitats are habitats of European importance that are listed under Annex I of the EU Habitats Directive (92/43/EEC). Under Article 17 of the Habitats Directive, all EU Member States which are signatories of the Directive have a legal obligation to report on the conservation status of the Annex I habitats that occur within their territories. These reports are produced every six years. The latest round of reporting, covering the period 2013-2018, has recently been completed. In this report, the overall conservation status assessment for *91E0 alluvial forests nationally is Unfavourable-Bad and there is a Deteriorating trend (National Parks and Wildlife Service, 2019).

1.2 *91E0 Alluvial Forest

The following summary of Annex I *91E0 alluvial forests is adapted from O'Neill and Barron (2013):

The Annex I habitat *91E0 corresponds to four vegetation types described by Perrin *et al.* (2008b). Three are in the *Alnus glutinosa – Filipendula ulmaria* group: *Fraxinus excelsior – Carex remota* type; *Alnus glutinosa – Rubus fruticosus* type; and *Salix cinerea – Equisetum fluviatile* type. The fourth type is in the *Fraxinus excelsior – Hedera helix* group: the *Salix-triandra – Urtica dioica* type. In the more recently developed Irish Vegetation Classification (National Parks and Wildlife Service et al., 2018), 91E0 has a greater or lesser affinity to the six woodland types in the WL3 *Alnus glutinosa – Filipendula ulmaria* group, as well as minor correspondences to some woodland types in other groups, such as WL4E *Betula pubescens – Salix cinerea* woodland.

*91E0 is a priority Annex I habitat. A number of variants of this woodland habitat exist, of which riparian forests of *Fraxinus excelsior* and *Alnus glutinosa* of temperate and Boreal Europe lowland and hill watercourses (habitat 44.3 Alno-Padion of the Palaearctic habitat classification of Devillers & Devillers-Terschuren (1993), cited by the European Commission (2013)) are the most common type to be found in Ireland. The European Commission (2013) states that all types occur on heavy soils that are periodically inundated by the annual rise of river levels, but

that are otherwise well drained and aerated during low water. The herbaceous layer includes many large species such as *Filipendula ulmaria, Angelica sylvestris* and *Carex acutiformis*, vernal species such as *Ficaria verna* and *Anemone nemorosa*, and other indicative species such as *Carex remota, Lycopus europaeus, Urtica dioica* and *Geum rivale*.

A functioning alluvial forest with a good structure is a multilayered system, although the individual layers may be less distinct than in other woodland types. Non-native species should be no more than occasional, with a cover not exceeding 10%, and preferably absent, although an exception is made for gallery woodlands in which non-native species of *Salix*, such as *S. fragilis* or *S. alba*, may be frequent. Typical canopy species include *Salix* spp., *Fraxinus excelsior* and *Alnus glutinosa*, one or more of which should make up the greater proportion of the canopy. *Betula* spp. and *Crataegus monogyna* are frequently found, with other tree species such as *Quercus robur* and *Ulmus glabra* occurring in drier examples of the habitat. Alluvial woodlands should have a good complement of dead wood, including coarse and fine, standing and fallen dead wood, to accommodate the greatest possible range of invertebrates and other saproxylic organisms.

1.3 Scope of the Project

The main aim of the project was to conduct a survey of *91E0 alluvial forests within Lough Ree cSAC. The objectives were to:

- Identify from field surveys the extent of *91E0, if present, within the cSAC,
- Map *91E0 habitat present, and
- Assess its conservation status following the monitoring methodology for *91E0 used for Article 17 reporting (O'Neill and Barron, 2013).

2 METHODOLOGY

2.1 Site Selection

Two study sites in Lough Ree cSAC were originally selected based on the results of the National Survey of Native Woodland (NSNW) (Perrin et al., 2008a) that indicated *91E0 may be present there, but were not conclusive. The two sites originally selected were St John's Wood, Co. Roscommon, widely regarded as one of the best native woodlands in the country, and Clearaun, Co. Longford.

The NSNW found that St John's Wood is dominated by *oak-ash-hazel woodland* (WN2), according to the Heritage Council classification (Fossitt, 2000). Six relevés were recorded in *Fraxinus excelsior – Hedera helix* group, *Corylus avellana – Oxalis acetosella* woodland, according to Perrin *et al.* (2008b). Under the IVC, this corresponds to WL2E *Corylus avellana – Potentilla sterilis* woodland (National Parks and Wildlife Service et al., 2018). One relevé close to the lakeshore, however, was classified as *wet willow-alder-ash* woodland (Fossitt, 2000) in the *Alnus glutinosa – Filipendula ulmaria* group, *Betula pubescens – Mentha aquatica* type (Perrin et al., 2008b) (uncertain correspondence to the IVC). This was not considered by the field surveyors at the time to be referable to Annex I *91E0 alluvial forest.

The woodland at Cleraun contains two small lakes. Most (56%) of the woodland is *mixed broadleaved/conifer woodland* (WD2) with a large proportion (44%) of *wet pedunculate oak-ash woodland* (WN4) (Fossitt, 2000). The surveyors noted small pockets of wet woodland dominated by *Alnus glutinosa* and *Salix* spp., but did not determine the Annex I status of these areas.

In the event, there were insufficient project resources to survey both sites, as *91E0 was confirmed to be present but widely dispersed around the lakeshore at St John's Wood. The decision was made to focus on comprehensively surveying *91E0 at St John's Wood, given the importance of the site for native woodland conservation.

2.2 Mapping

2.2.1 Evaluating *91E0

The shore of Lough Ree at St John's Wood was walked on 23rd-26th July 2019 by the surveyors, Dr George F Smith (consultant ecologist) and Dr Jenni Roche (NPWS). During the walkover survey, lakeshore woodland was assessed for its conformity to the *91E0 alluvial forest Annex I habitat type. The key criteria used to evaluate *91E0 were vegetation composition, soil type, and evidence of periodic inundation.

Vegetation composition was assessed with reference to positive indicator species used in the previous (2007-2012) monitoring period (O'Neill and Barron, 2013). These are listed in Table 1 below. In St John's Wood, *91E0 supported a mixture of the target species *Alnus glutinosa,*

Fraxinus excelsior and *Salix cinerea*. The inland extent was typically marked by an increase in the abundance of *Corylus avellana* and to a lesser extent *Betula pubescens* in the canopy.

The *Interpretation Manual* (European Commission, 2013) specifies that all *91E0 subtypes occur on heavy soils generally rich in alluvial deposits. Much of the exposed lakeshore at St John's Wood is rocky as a result of wave action during high water and windy conditions. Heavy soils and alluvial deposits were typically associated with sheltered bays. Stands of *Salix cinerea* on rocky shores were frequent, but these were not considered to qualify as *91E0.

Evidence of periodic inundation was almost always present in the form of a strand line of reeds, other plant detritus and litter. Water levels in Lough Ree are controlled by the weir at Athlone. Lake levels are drawn down in autumn and then rise over the winter and early spring in a regular seasonal pattern of flooding. The strand line in combination with changes in vegetation was used to help identify the internal extent of *91E0. In a few cases, low-lying channels extended a significant distance into the woodland interior, marked by flood detritus deposits.

2.2.2 Mapping Methods

Due to equipment malfunctions, the extent of *91E0 at St John's Wood was marked in the field on hard copy aerial photos over which a 100 m x 100 m grid in the Irish Grid coordinate reference system had been printed. This was supplemented with the use of a Garmin eTrex handheld GPS unit. Waypoints were marked at important points along the boundary of *91E0 polygons, such as the beginning and end along the shoreline, maximum woodland interior extent and bends in the habitat boundary. GPS accuracy was maximised by ensuring the unit was on for enough time for a stable signal to be received from satellites. The location of the study area alongside a large, open lake also appeared to help GPS accuracy, especially when compared to performance in most woodlands. Error reported by the GPS unit typically ranged from 4-7 m.

Hand-drawn maps and GPS waypoints were then used in the office to digitise *91E0 polygons over 1:5000 OSI vector mapping and aerial photography provided by NPWS. Digitising was carried out using QGIS 3.4 (QGIS Development Team, 2019).

2.3 Monitoring Plots

Four monitoring plots were recorded during the field survey on 23rd-26th July 2019. Data were collected in each monitoring plot on woodland composition, structure and function following Article 17 monitoring methods (O'Neill and Barron, 2013). Plots were placed to capture the full range of 91E0 on site. The main constraint was that the size and shape of many *91E0 pockets were too small to accommodate a 400 m^2 monitoring plot. A handheld Garmin eTrex was used to record the location of each monitoring plot.

2.3.1 Structure and Functions Data Collection

Within each plot, the following structure and functions data were recorded:

Species

- Presence of positive indicator species (Table 1)
- Presence of negative indicator species (i.e. any non-native species)

In addition, percent cover of *Rubus fruticosus* agg. and *Urtica dioica* was recorded, as the 2012-2018 monitoring period surveys of 91E0 were trialling these indicators as new assessment criteria.

Table 1. List of positive indicator species for 91E0 woodlands from O'Neill and Barron (2013)

Positive Indicator Species	
Target Species	
Alnus glutinosa	*Salix cinerea*
Fraxinus excelsior	*Salix spp.*
Other Woody Species	
Betula pubescens	*Solanum dulcamara*
Crataegus monogyna	*Viburnum opulus*
Herbs & Ferns	
Agrostis stolonifera	*Lycopus europaeus*
Angelica sylvestris	*Mentha aquatica*
Carex remota	*Phalaris arundinacea*
Filipendula ulmaria	*Ranunculus repens*
Galium palustre	*Rumex sanguineus*
Iris pseudacorus	*Urtica dioica*
Mosses & Liverworts	
Calliergonella cuspidata	*Thamnobryum alopecurum*
Climacium dendroides	

Woodland structure

- Median canopy height in metres estimated by eye
- Total canopy cover as a percentage of plot
- Total percentage of target species in canopy
- Total cover of negative species as percentage of plot
- Total native shrub layer cover as percentage of plot. Shrub layer was defined as shrub vegetation occurring 2-4 m above ground.
- Total native field layer cover as percentage of plot.
- Median height in cm of native field layer

- Total bryophyte layer cover as percentage of plot

Cover scores were recorded as a percentage of the plot area to the nearest 5%, or to the nearest 1% if less than 5%. A cover score of <1% was also permitted.

Grazing pressure

- Grazing pressure (i.e. overgrazing) was recorded based on the presence of the following indicators: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, recent bark stripping, and trampling

Free regeneration

- Number of saplings[1] of each negative tree species.
- Number of seedlings[2] of each negative tree species.
- Occurrence of free regeneration of negative shrub species such as *Rhododendron ponticum* and herbaceous invasive species such as *Impatiens glandulifera*, regardless of height.
- Number of saplings of each target species.
- Number of saplings of each non-target native tree species.

Free regeneration refers to regeneration that appears to have originated from seed. When counting free regeneration, only separate regenerating units were counted, i.e. several shoots arising from a single root were regarded as a single regenerating unit.

Basal regeneration

- Basal shoots ≥2 m tall arising from a larger trunk with a dbh of ≥7 cm were not counted unless the tree was completely dead at breast height (1.3 m above the ground), in which case the whole unit was counted as a single regenerating unit
- Basal regeneration from *Salix* spp. was recorded if it was ≥2 m tall and arose from a totally collapsed/prostrate *Salix* trunk of ≥7 cm diameter within 1.3 m of the root plate. Two size classes were used to record this regeneration: <7 cm dbh and ≥7 cm dbh. Such basal regeneration was recorded to get an indication of the occurrence of vegetative spread of *Salix* spp.

Size class

Diameter at breast height (dbh) of target trees was tallied within three size classes as follows:

- Size class 1: 7-19 cm
- Size class 2: 20-29 cm
- Size class 3: ≥30 cm

[1] Young regenerating trees with a dbh (diameter at breast height, 1.3 m above ground) less than 7 cm and 2 m or more in height.

[2] Young regenerating trees with a dbh less than 7 cm and less than 2 m in height.

For multi-stemmed trees, only the largest trunk was counted and assigned to the appropriate dbh size class. The occurrence of large numbers of multi-stemmed trees or trees with very numerous stems was noted. Trees with forked trunks were measured below the fork if forking occurred more than 1 m up the trunk.

Deadwood

Dead wood with a diameter of 20 cm or greater was recorded in four categories: old senescent trees (some dead limbs or other signs of damage present), standing dead, fallen dead (including large, fallen tree branches) and rotten stumps (cut/broken trunks of 1 m or less, not counting stumps with basal resprouts). Dead wood was recorded regardless of whether the tree was a target, non-target native or non-native species.

2.3.2 Structure and Functions Assessment

Assessments were made at the individual-plot and four-plot levels, and these were combined to give an assessment at the site level. The criteria assessed for each woodland type are shown in Table 2 (individual-plot level criteria) and Table 3 (four-plot level criteria). These criteria were used by O'Neill and Barron (2013) for the 2007-2012 assessment period. An additional individual plot level criterion was added in the 2013-2018 period, *Urtica dioica* cover (J. Roche, pers. comm.), as shown in Table 2.

Of the ten criteria assessed at the individual-plot level, eight had to reach their target to achieve a pass. Of the four criteria assessed at the four-plot level, three had to reach their target to achieve a pass. For the overall site level assessment, a green (favourable) assessment result could be achieved only if all plots passed at the individual-plot level and at the four-plot level (i.e. five passes achieved). One failure out of the five was allowed for a site to receive an amber (unfavourable – inadequate) assessment. More than one failure resulted in a red (unfavourable – bad) assessment. This process is summarised in Table 4.

Table 2. Assessment criteria at the individual plot level

Assessment Criterion	Target for Pass
Positive indicator species	At least 1 target species ≥6 positive species
Negative species cover	≤10% cover of plot
Negative species regeneration	Absent
Median canopy height	≥7 m
Total canopy cover	≥30% of plot
Proportion of target species in canopy	≥50% of canopy
Native shrub layer cover	10-75% of plot
Native field layer	≥20% of plot, height ≥20 cm
Bryophyte cover	≥4% of plot
Grazing pressure	All 5 indicators absent
Urtica dioica cover	<75% of plot

Table 3. Assessment criteria at the four plot level

Assessment Criterion	Target for Pass
Target species size class distribution	At least 1 of each size class present over all 4 plots
Target species regeneration	At least 1 sapling ≥2 m tall over all 4 plots
Other native tree regeneration	At least 1 sapling ≥2 m tall in 2 or more plots
Old trees & deadwood	At least 3 from any category ≥20 cm dbh over all 4 plots

Table 4. Summary of conditions required for structure and functions assessment results at the individual plot, four plot and site levels

Level	No. of Criteria Assessed	Required for Pass	Best Result	Worst Result
1-plot	10	Passes in ≥8 criteria	4 passes	4 fails
4-plot	4	Passes in ≥3 criteria	Pass	Fail
Site	Four 1-plot results + One 4-plot result	See below	Green	Red

No. of 1-plot passes	4-plot result	Site S&F assessment result
4	Pass	Green
3	Pass	Amber
4	Fail	Amber
<3	Pass	Red
<4	Fail	Red

2.3.3 Future Prospects

Data

The future prospects assessment relates to the likely development and maintenance of the Annex I woodland habitat in favourable condition for the foreseeable future. The "foreseeable future" period is taken to be 20-50 years, in line with other Article 17 woodland habitat assessments (O'Neill and Barron, 2013, Cross and Lynn, 2013). In order to assess future prospects, pressures, threats and impacts throughout the site were recorded according to the list given by Ssymank (2011). The following details were recorded for each impact: the effect of the impact (positive, negative or neutral) and the source of the impact (from inside or outside the site).

Assessment

The assessment of the woodland's future prospects was given according to the following guidelines:

- Green = excellent/good prospects; no significant impact from pressures/threats expected; long-term viability assured.
- Red = bad prospects; severe impact from pressures/threats expected; long-term viability not assured.
- Amber = between these two extremes.

2.3.4 Overall Site Assessment

If either structure and functions or future prospects were assessed as red, the overall assessment result for the site was Red. Both attributes had to be Green for the site to receive a Green assessment. Any other combination resulted in an amber assessment.

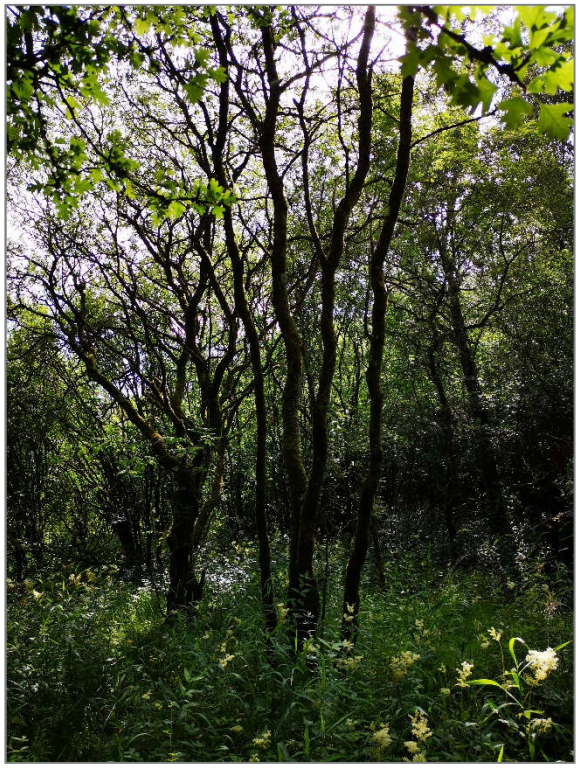
3 RESULTS

3.1 Site Description

3.1.1 Distribution

*91E0 alluvial forest was present in St John's Wood, Lough Ree cSAC. Within the site, it was distributed over a number of small pockets along the shoreline that totalled 2.65 ha (Figure 1). The smallest patch of *91E0 mapped was less than 75 m^2, whereas the largest was just over 0.5 ha. *91E0 occurred in coves sheltered from the west and north-west all along the lakeshore of St John's Wood, with the exception of the western shore. In most places it has developed in small bays near the shore where sheltered conditions permit the deposition of alluvial soils. In a few locations, the lakeshore topography permits seasonal flooding and development of *91E0 to extend a longer distance into the woodland interior.

3.1.2 Composition



*91E0 at St John's Wood

At St John's Wood, *91E0 was typically separated from the lakeshore by a fringe of rocky marsh vegetation and seasonally inundated grassland. *Salix cinerea* and *Alnus glutinosa* were usually the canopy dominant species. *Fraxinus excelsior* was also frequent, although trees were typically smaller in diameter, and increased in abundance in drier examples of the habitat. A well-developed understory was usually present, consisting of *Fraxinus excelsior* saplings, *Crataegus monogyna, Rhamnus cathartica* and *Viburnum opulus*. Patches of dense *Prunus spinosa* scrub were also characteristic.

The field layer was typically tall and dense, with the most frequently occurring species including *Phalaris arundinacea, Filipendula ulmaria, Mentha aquatica, Lysimachia vulgaris, Agrostis stolonifera, Lythrum salicaria, Equisetum palustre* and *Epilobium palustre*. The moss *Thamnobryum alopecurum* was also abundant in rockier areas. Also characteristic of the habitat, but less frequent, were *Iris pseudacorus, Lycopus europaeus, Angelica sylvestris, Galium palustre, Catha palustris, Ranunculus repens, Hydrocotyle vulgaris* and *Vicia cracca.*


3
4
2
1
0
500
1000 m
Ordnance Survey Ireland License No. EN 0074219
© Ordnance Survey Ireland / Government of Ireland
Legend
91E0 areas
Monitoring stops
NSNW releves
Figure 1. Alluvial forests (91E0) in St John's Wood, Co. Roscommon
Lough Ree SAC
Scale 1:10,000
18-08-2019
Rev 0
Blackthorn Ecology

Where alluvial channels extended into the woodland interior, *Fraxinus excelsior* was more abundant in the canopy, and the woodland was heavily shaded with a poorly developed field layer. *Iris pseudacorus*, *Filipendula ulmaria* and *Thamnobryum alopecurum* patches were present amongst deadwood, flood detritus and bare mud. Fallen deadwood was frequent.

3.2 Condition Assessment

Detailed information on each of the monitoring stops is presented in Appendix A.

3.2.1 Structure and Functions

The results of the individual plot level assessments are presented in Table 5. Based on these criteria, *91E0 at St John's Wood is in excellent condition. Monitoring stops 1 and 2 met the assessment targets for all criteria. Stop 3 failed one criterion. This was related to the cover of the bryophyte layer, which was poorly developed in the plot due to a combination of field layer density, density of *Prunus spinosa* scrub cover, and thickness of flood-borne detritus in different parts of the plot. Stop 4 failed one criterion. This was related to the low cover of the shrub layer and appeared to be mainly the result of a young, dense sub-canopy layer of *Fraxinus excelsior* that is preventing development of a shrub layer. Of the eleven criteria assessed at the individual plot level, nine had to reach their target for the monitoring stop to achieve a pass. As stops 3 and 4 failed only one criterion each, both stops passed the individual plot level assessment.

Table 5. Individual plot level assessment results

Assessment Criteria	Stop 1	Stop 2	Stop 3	Stop 4
Positive indicator species	Pass	Pass	Pass	Pass
Negative species cover	Pass	Pass	Pass	Pass
Negative species regeneration	Pass	Pass	Pass	Pass
Median canopy height	Pass	Pass	Pass	Pass
Total canopy cover	Pass	Pass	Pass	Pass
Proportion target spp in canopy	Pass	Pass	Pass	Pass
Native shrub layer cover	Pass	Pass	Pass	Fail
Native field layer	Pass	Pass	Pass	Pass
Bryophyte cover	Pass	Pass	Fail	Pass
Grazing pressure	Pass	Pass	Pass	Pass
Urtica dioica cover	Pass	Pass	Pass	Pass
Plot level assessment	**Pass**	**Pass**	**Pass**	**Pass**

The results of the four-plot level assessment are presented in Table 6. St John's Wood passed all of the four-plot level assessment criteria.

Table 6. Four-plot level assessment results

Assessment Criteria	Results
Target species size class distribution	Pass
Target species regeneration	Pass
Other native tree regeneration	Pass
Old trees & deadwood	Pass
4-plot level assessment	**Pass**

Therefore, the structure and functions assessment for *91E0 at St John's Wood is **Green**.

3.2.2 Future Prospects

There were few significant negative impacts noted in *91E0 alluvial woodlands at St John's Wood (Table 7). Perhaps the most notable impact arises from flood-borne rubbish brought in by high winter lake water levels. Plastic debris in particular changes the substrate and can affect plant establishment and growth; however, the extent of the impact is limited.

Informal campsites were occasionally noted along the lakeshore, and most were probably established by duck hunters. The campsites were in adjoining hazel woodland rather than alluvial woodlands, but trampling, tree clearance for firewood and littering impacts did rarely spread into *91E0 habitat.

St John's Wood overall is relatively free of invasive exotic species. A few mature *Acer pseudoplatanus* trees were recorded near *91E0 with some regeneration of saplings within the habitat.

"Flooding modifications" in Table 7 refers to the fact that lake levels in Lough Ree are controlled by the weir downstream at Athlone. Levels are drawn down in the autumn time to provide storage capacity for winter flooding. Minimum levels are maintained in the summer for navigation and to regulate water supply to the hydroelectric dam at Ardnacrusha. If this regime were to be altered, there could be implications for *91E0 alluvial forest conservation.

Some areas of *91E0 alluvial forest appear to be undergoing succession. Trees in most places were small, which is likely to be the result of past tree felling. The abundance of *Prunus spinosa* scrub may also be due in part to release following the removal of cattle grazing (or occasional incursions) along the lakeshore.

As negative effects are limited in extent and/or severity, the overall future prospects for *91E0 at St John's Wood were assessed as **Green**.

Table 7. Summary of impacts recorded

Impact Code	Description	Intensity	Effect	% Habitat	Source	Notes
D01.01	Paths, tracks, cycling tracks	Low	Neutral	<1%	Inside	Footpaths at edge of *91E0
G01.08	Other outdoor sports and leisure activities	Medium	Negative	<1%	Inside	Camping along lakeshore
H05.01	Garbage and solid waste	Medium	Negative	<1%	Inside	Camping rubbish
H05.01	Garbage and solid waste	Medium	Negative	5%	Outside	Flood-borne rubbish
I01	Invasive non-native species	Low	Negative	<1%	Inside	Very occasional *Acer pseudoplatanus* regeneration
J02.04	Flooding modifications	High	Neutral	100%	Outside	Flooding regime controlled by downstream weir
K02.01	Species composition change (succession)	Low	Positive	25%	Inside	Succession following past forestry activities and grazing

4 DISCUSSION

4.1 Distribution in Site and SAC

Annex I *91E0 alluvial forest has been confirmed as present at St John's Wood and within Lough Ree cSAC. The area of *91E0 is small (2.65 ha) relative to the area of woodland overall. The composition, structure and function of *91E0, however, is characteristic of the habitat type and is in good conservation condition. It would be appropriate to include *91E0 as a qualifying interest of Lough Ree cSAC, based on the results of this survey.

The distribution of *91E0 in St John's Wood occurs as several pockets in suitably sheltered lakeshore locations. This makes the habitat easy to overlook, unless it is the subject of a targeted field survey. Cleraun was not able to be surveyed under the current project, and so the existence of *91E0 there is as yet unknown. Given the results of this survey, however, *91E0 is likely to be present as small pockets of woodland in other parts of the SAC, in Cleraun or elsewhere.

4.2 Condition Assessment

*91E0 alluvial woodlands at St John's Wood are in favourable conservation status.

4.2.1 Structure and Functions

The structure and functions of *91E0 at St John's Wood are excellent. Only two different criteria were failed, once each in separate plots: bryophyte cover and native shrub cover. In each case, the reason for the failure appeared to be competition from other vegetation layers: field and shrub layers in the case of bryophytes, and a young canopy layer in the case of native shrub cover.

O'Neill and Barron (2013) noted other alluvial woodland sites where the bryophyte layer cover criterion had failed due to a vigorous field layer. They note that a sparse bryophyte layer may also be caused by dry conditions, which could indicate an alluvial forest in decline, but this does not appear to be the case here.

Low shrub layer cover in the one monitoring stop at St John's Wood appeared to be the result of a dense sub-canopy of young *Fraxinus excelsior*. This is clearly the result of a phase of woodland development, where the *Fraxinus* stand has emerged following flood disturbance or a canopy gap. Shrub layer expansion is expected as stand structure matures over time, as is the case for other alluvial woodland sites (O'Neill and Barron, 2013).

With respect to the four-plot level criteria, all were passed, but the low number of trees in the largest size class (Appendix A), which were all *Salix cinerea*, suggests that there has been a barrier in the past to the growth of large trees. This may be the result of flooding events that have caused tree mortality before large size is reached. It is more likely, however, to be the result of historical tree felling. Until recently, most of St John's Wood was regularly exploited

for timber (Kelly and Kirby, 1982). The same reason may be the cause of the low density of large diameter deadwood: this criterion was barely passed (Appendix A).

4.2.2 Future Prospects

The future prospects for *91E0 at St John's Wood are excellent. As noted above, negative impacts are minor, but monitoring is still warranted to ensure that this remains the case. *Acer pseudoplatanus* regeneration in particular may become an issue in the future, and proactive management would help prevent this. Otherwise, no management measures are required other than non-intervention.

5 REFERENCES

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APPENDIX A MONITORING STOP DATA

Table A.1. Raw monitoring stop data

	Monitoring Stop	1	2	3	4
Site Data	**Site**	St John's Wood	St John's Wood	St John's Wood	St John's Wood
	Grid Ref	N 00320 55741	N 00561 55916	M 98671 57075	M 99213 56913
	Error	4	7	6	7
	Date	23/07/2019	23/07/2019	24/07/2019	25/07/2019
	Recorders	JR, GS	JR, GS	JR, GS	JR, GS
	Photos	stjn1a & stjn1b	stjn2a & stjn2b	stjn3a & stjn3b	stjn4a-c
	Slope	0	0	1	0
	Aspect	-	-	W	-
	Altitude	40	40	40	40
Positive Indicator Species	***Alnus glutinosa***	0	0	1	1
	Fraxinus excelsior	1	1	1	1
	Salix cinerea	1	1	1	1
	Other *Salix* spp	0	0	0	0
	Betula pubescens	1	1	0	0
	Crataegus monogyna	1	1	1	1
	Solanum dulcamara	0	0	0	0
	Viburnum opulus	1	1	1	1
	Agrostis stolonifera	1	1	1	1
	Angelica sylvestris	0	1	0	1
	Carex remota	1	0	0	0
	Filipendula ulmaria	1	1	1	1
	Galium palustre	1	1	1	1
	Iris pseudacorus	1	1	1	1
	Lycopus europaeus	0	1	1	1
	Mentha aquatica	0	1	1	1
	Phalaris arundinacea	0	1	1	1
	Ranunculus repens	1	1	1	1
	Rumex sanguineus	1	1	1	0
	Urtica dioica	0	1	0	0
	Calliergonella cuspidata	0	0	1	1
	Climacium dendroides	0	1	0	0

	Monitoring Stop	1	2	3	4
	Thamnobryum alopecurum	1	1	1	1
Negative indicator species	***Acer pseudoplatanus***	0	0	0	0
	Fagus sylvatica	0	0	0	0
	Picea sitchensis	0	0	0	0
	Larix decidua	0	0	0	0
	Cotoneaster sp.	0	0	0	0
	Prunus laurocerasus	0	0	0	0
	Rhododendron ponticum	0	0	0	0
	Symphoricarpos albus	0	0	0	0
	Cornus sericea	0	0	0	0
	***Rubus fruticosus* cover**	5	1	5	0
	***Rubus fruticosus* height**	-	-	-	-
	***Urtica dioica* cover**	0	<1	0	0
Structure	**Median canopy ht (m)**	7	10	13	10
	Total canopy cover	70	80	75	80
	Total cover target species	50	60	75	80
	Total cover negative species	0	0	0	0
	Total native shrub layer	20	20	55	3
	Total native field layer cover	40	85	80	80
	Median ht field layer (cm)	130	70	70	100
	Total bryophyte cover	15	10	2	20
Non-native tree	**Species < 2m**	0	0	0	0
	Species >=2m	0	0	0	0
	Shrub regeneration	0	0	0	0
Basal regeneration *Salix*	**<7cm dbh**	0	0	1	0
	>7cm dbh	0	0	0	0
Grazing	**Topiary effect**	0	0	0	0
	Browse line	0	0	0	0
	Abundant dung	0	0	0	0
	Bark stripping	0	0	0	0

	Monitoring Stop	1	2	3	4
	Trampling	0	0	0	0
Target saplings >2m tall	***Alnus glutinosa***	0	0	4	2
	Fraxinus excelsior	7	25	32	122
	Salix cinerea	3	2	10	6
Target native saplings >2m	***Corylus avellana***	0	5	0	2
	Crataegus monogyna	7	7	1	1
	Euonymus europaeus	0	2	0	0
	Prunus spinosa	13	1	67	0
	Rhamnus cathartica	4	30	4	0
	Viburnum opulus	1	2	5	0
Target tally in dbh size classes	***Alnus* 7-19cm**	0	0	3	2
	***Alnus* 20-29cm**	0	0	0	0
	***Alnus* >=30cm**	0	0	0	0
	***Fraxinus* 7-19cm**	4	18	6	29
	***Fraxinus* 20-29cm**	0	1	0	0
	***Fraxinus* >=30cm**	0	0	0	0
	***Salix cinerea* 7-19cm**	2	6	28	15
	***Salix cinerea* 20-29cm**	1	3	4	3
	***Salix cinerea* >=30cm**	1	4	1	1
Deadwood >=20cm	**Old/senescent**	0	0	0	0
	Standing dead	3	0	0	0
	Fallen dead	0	0	0	0
	Rotten stump	0	0	0	0

Table A.2. Monitoring assessment results – individual plot level

Assessment Criteria	1		2		3		4	
	Result	P/F	Result	P/F	Result	P/F	Result	P/F
Positive indicator species: >6 spp	13	P	18	P	16	P	16	P
Positive indicator species: target spp	Y		Y		Y		Y	
Negative species cover	0	P	0	P	0	P	0	P
Negative species regeneration	Absent	P	Absent	P	Absent	P	Absent	P
Median canopy height	7	P	10	P	13	P	10	P
Total canopy cover	70	P	80	P	75	P	80	P
Proportion target spp in canopy	71	P	75	P	100	P	100	P
Native shrub layer cover	20	P	20	P	55	P	3	F
Native field layer: cover	40	P	85	P	80	P	80	P
Native field layer: height	130		70		70		100	
Bryophyte cover	15	P	10	P	2	F	20	P
Grazing pressure	None	P	None	P	None	P	None	P
Urtica dioica cover	0	P	<1	P	0	P	0	P
Plot level assessment	**Pass**		**Pass**		**Pass**		**Pass**	

Table A.3. Monitoring assessment results – four plot level

Assessment Criteria	Result	P/F
Target spp size class distribution: 7-19cm	113	P
Target spp size class distribution: 20-29cm	12	
Target spp size class distribution: >=30cm	7	
Target spp regen	213	P
Other native regen	4 plots	P
Deadwood: old/senescent	0	P
Deadwood: standing	3	
Deadwood: fallen	0	
Deadwood: stumps	0	
4-plot level assessment	**Pass**	

Table A.4. Monitoring plot notes and photos

Plot 1	
	Signs of flooding present, including mushroom stone. Floodline apparent from floodborne detritus. *Corylus avellana* and *Rhamnus cathartica* are locally characteristic. Narrow nature of wet woodland means that the plot includes some adjacent drier habitat. *Equisetum fluviatile* present. Canopy gap present at centre with dense field layer. Luxuriant growth of *Thamnobryum alopecurum* in places. Plot centre is a low bowl with the ground rising on all sides.
Plot 2	
	*Acer pseudoplatanus* present in canopy and regenerating c. 10 m inland from plot in transitional 91E0 habitat. Shotgun cartridges present. Floodborne debris present. *Rhamnus cathartica* and *Corylus avellana* are locally characteristic. Luxuriant growth of *Thamnobryum alopecurum* on rocks. *Lathyrus palustris* present. Two gaps present along southern boundary of plot. Due to small habitat area, drier transitional habitat included in plot.

Plot 3	
	Due to small extent of 91E0 habitat, plot includes edge and marginal 91E0 habitat. Floodborne debris present throughout with dense patches of washed-up reeds. *Prunus spinosa* locally abundant and characteristic of the lakeshore. *Sorbus hibernica* <2m tall present. Lakeside of plot is herb-rich, behind this is a band of *Prunus* scrub. Inland side of plot with abundant reed litter. *Prunus spinosa* abundance locally probably due to succession after tree mortality (flooding caused?) and in places grazing cessation. Bryophyte poverty is due to field layer abundance, scrub density and detritus thickness in different parts of the plot. Good conservation condition overall; no need for management apart from time.
Plot 4	
	Rather uniform, even-aged *Fraxinus excelsior* poles dominate the inland side. Gap present where *Salix cinerea* has fallen. Very large multi-stemmed *S. cinerea* present towards lake side of plot. Occasional *Rhamnus cathartica* <2m tall present.

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