Coillte Forest Birds Report

July 2024

COILLTE

Contents

1 Executive Summary

This report concerns two birds of prey – hen harrier (*Circus cyaneus*) and merlin (*Falco columbarius*) – that breed and forage in habitats that are widespread on the Coillte estate, primarily conifer forests and open bog/heath.

Both hen harrier and merlin are listed under Annex I of the EU Birds Directive (2009/147/EC), which requires that measures be implemented to ensure their protection, including the designation of SPAs (Special Protection Areas). Both bird species are rated as being of conservation concern in Ireland[1,2], while recent surveys have shown that the breeding population of hen harrier in SPAs in Ireland has dwindled significantly in recent decades[3]. A national threat response plan[4] to address this issue is being prepared and was recently the subject of a public consultation process, in which Coillte participated and made a detailed submission.

Coillte recognises that, through our activities, we have a strong interaction with these species. There are many aspects of forests and forestry activities that affect these two bird species, for example the location and growth stages of forests in the landscape[5]. This report is concerned solely with the protection of breeding sites (nests) during forestry activities. It does not address the wider topic of how these bird species interact with forests in the landscape. Coillte is committed to continued engagement with the relevant bodies to address those wider aspects, but they are beyond the scope of this report.

Our objective is to improve our knowledge and understanding of these species, their ecology and how we can protect them. We believe that improvements are needed in the way breeding hen harrier and merlin are protected during forest operations and we are committed to continue pursuing these developments. We believe that the improvements should and can benefit both the forestry sector and the wellbeing of birds that live and breed in our forests.

Protection measures in forestry are defined by the regulator, the Forest Service of the Department of Agriculture, Food and the Marine (DAFM), and Coillte in all cases adheres to the specified measures. To ensure protection of breeding hen harrier in forestry, DAFM introduced in c. 2012 an approach whereby data on the location of nest sites is used to define "red areas" (circular areas of 1.2km radius each), within which forest operations cannot proceed during the breeding season (1st March to 15th August, inclusive[6]). After the introduction of the "red areas" approach, national and other large-scale surveys were conducted, and new red areas were added to maps each year on the basis of those survey results. For merlin, the DAFM procedure operates by applying timing restrictions on felling licences where the planned felling coupe is adjacent to potentially suitable foraging habitat for merlin (Appendix 1).

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1 BirdWatch Ireland (2020). Birds of Conservation Concern in Ireland. 2020-2026. BirdWatch Ireland, Co. Wicklow. https://birdwatchireland.ie/app/uploads/2021/04/BOCCI4-leaflet-2-1.pdf

2 Gilbert, G. Stanbury, A. & Lewis, L. (2021). Birds of Conservation Concern in Ireland. *Irish Birds*, 43, 1-22. https://birdwatchireland.ie/app/uploads/2021/04/BOCCI-2020-2026.pdf

3 Ruddock, M., Wilson-Parr, R., Lusby, J., Connolly, F., J. Bailey, & O'Toole, L. (2024). *The 2022 National Survey of breeding Hen Harrier in Ireland.* Report prepared by Irish Raptor Study Group (IRSG), BirdWatch Ireland (BWI), Golden Eagle Trust (GET) for National Parks & Wildlife Service (NPWS). Irish Wildlife Manuals, No. 147. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland. https://www.npws.ie/sites/default/files/publications/pdf/IWM147.pdf

4 NPWS (2024). Threat Response Plan for the Hen Harrier: Draft for Public Consultation. https://www.gov.ie/pdf/?file=https://assets.gov.ie/280564/9d8def6b-05da-406d-a7d7-2bfdbf28891c.pdf#page=null

5 NPWS (2015). *Hen Harrier Conservation and the Forestry Sector in Ireland.* National Parks and Wildlife Service, Dublin; Version 3.2 https://www.npws.ie/sites/default/files/publications/pdf/HHTRP%20-%20Forestry%20-%20V3.2.pdf

6 The restricted season was extended from 1st April to 1st March in 2022.

Over the years, it became apparent that the number of red areas and the overall extent of timing restrictions was increasing significantly, but the underlying rationale for this was not clear. For both hen harrier and merlin, the current procedures appear to operate by applying timing restrictions on forestry activities based on historic presence of nesting birds, or their potential presence based on habitat suitability, which means that timing restrictions can apply over large areas where the birds are not actually nesting. Timing restrictions are now applied across more than 70,000ha of Coillte land (approx. 15% of the forest estate), in at least seven large, landscape-scale SPAs. For example, in the six SPAs designated for hen harrier, by 2019, between 35% and 81% of the Coillte lands in each SPA were within a red area, with a timing restriction applied. These are forests in upland locations, i.e., locations where traditional best practice dictates that forest operations should take place during the summer months, because this reduces the potential for impacts on soil and water. The effect of applying broadscale timing restrictions is that forestry operations are conducted in the winter months in the uplands, which increases the risk of other environmental impacts.

A further difficulty is that Coillte does not have access to the existing survey data on the location of breeding hen harrier or merlin on the estate, making it difficult to plan operations in a way that ensures protection of the bird. We wish to improve our operational planning and effectiveness in this regard.

These observations have led Coillte to explore what improvements can be made to the current protection measures in forestry, to make them more effective in protecting hen harrier and merlin. We also wish to improve our understanding of the way in which hen harrier and merlin interact with Coillte's habitats and forestry activities.

In 2020, we commissioned a review and evaluation of the red areas procedure, plus the forestry measures for the protection of merlin (Appendix 1). Following a procurement competition, the contract for this work was awarded to BirdWatch Ireland (BWI), because the team demonstrated strong technical capability in the ecology of both hen harrier and merlin, and the analysis of population metrics.

The appointed consultant team conducted an in-depth review, modelling the effectiveness of the red areas approach using available bird survey data. Unfortunately, the team were only given limited access to national survey data for the purpose of this research, but despite this, we are satisfied that their findings are robust and based on a sound, science-based, research approach.

The outcome of this work is a comprehensive evaluation of the current forestry protection measures and a set of recommendations for change[7]. Among the many findings, this review confirmed that:

- The current procedures have successfully contributed to the protection of nesting hen harrier and merlin, but they would benefit from being more focused on nest sites in the current season;
- Sharing data and maximising the use of existing data would be a significant positive development;
- Many red areas are historic and do not reflect the presence of breeding hen harrier in the current nesting season;
- The hen harrier red areas procedure can result in staff being unaware of the location of new nest sites.

The report produced by the consultant team[8], hereafter referred to as the BirdWatch report or BWI report, makes a series of detailed recommendations for improvements to the protection measures for hen harrier and merlin in forestry. It confirms the central importance of data-sharing and collaboration for the effective protection of breeding birds. There is also a recommendation to test the use of drones and thermal imagery to detect merlin nests which, the report acknowledges, are extremely difficult to locate through conventional surveys, even by experienced ornithologists.

In 2022, a Coillte team visited Forestry and Land Scotland (FLS), to explore their approach to protecting wildlife during forest operations. The approach in Scottish forestry is different to the DAFM procedures for Irish forestry and relies on gathering data and sharing data between the forestry sector and relevant agencies, including NatureScot. Information on nest locations is provided directly to forest planners and operations staff, to inform their work, and timing restrictions are applied only where nesting birds are known to be present.

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7 Lusby, J., Fernandez-Bellon, D. & Kavanagh, L. (2024). *Review of mitigation measures for the protection of Hen Harrier and Merlin from forest management disturbances and recommendations for improvements.* Report to Coillte CGA, Newtownmountkennedy, Co. Wicklow

8 Lusby, J., Fernandez-Bellon, D. & Kavanagh, L. (2024). *Review of mitigation measures for the protection of Hen Harrier and Merlin from forest management disturbances and recommendations for improvements.* Report to Coillte CGA, Newtownmountkennedy, Co. Wicklow

In 2023, Coillte embarked on a pilot to test the implementation of elements of both the BirdWatch recommended approach and that adopted by FLS, and to test the use of drones to detect nests.

Through these initiatives, Coillte's objectives were to:

- Increase dialogue and trust with regulators, to work towards data-sharing and collaboration;
- Understand the resources that would be needed to implement alternative approaches for the protection of hen harrier and merlin;
- Pilot and understand the uses of new technologies and how these might inform or improve the current procedures;
- Improve our own operational planning and effectiveness regarding the protection of breeding hen harrier and merlin on the estate.

We favour a focused approach that is:

- Evidence-based, in which timing restrictions are applied where real-time data indicate that nesting birds are present;
- Collaborative, where data are shared with and by forestry practitioners;
- Balanced and holistic, where the potential impacts on other environmental receptors are also taken into account.

A focused approach requires real-time data on the location of breeding birds, and this in turn will require closer co-operation with key knowledge-holders and regulators, to implement effective surveys and determine the application of restrictions. An inter-agency working group structure is proposed, to drive and manage this process. The implementation of breeding bird surveys at scale is challenging, and so we need open, transparent data-sharing, to prevent unnecessary duplication of survey effort and to maximise effectiveness.

Coillte cannot act alone but needs to be an active participant with regulators, other landowners and key knowledge-holders to improve current procedures, share data and develop clear guidance for forestry practitioners, enabling better planning of forestry activities while avoiding disturbance of breeding birds. Coillte have throughout this project engaged with NPWS and DAFM and shared the initial drafts of the BWI report and encouraged more data sharing with interested parties.

We note the recent evidence that the national hen harrier population is in decline[9]. We are committed to continuing this work and we invite positive co-operation from regulators and other bodies that can help drive the improvements that we believe are necessary and would benefit both forestry practice and the birds that interact with the habitats present on the Coillte estate.

9 Ruddock, M., Wilson-Parr, R., Lusby, J., Connolly, F., J. Bailey, & O'Toole, L. (2024). *The 2022 National Survey of breeding Hen Harrier in Ireland.* Report prepared by Irish Raptor Study Group (IRSG), BirdWatch Ireland (BWI), Golden Eagle Trust (GET) for National Parks & Wildlife Service (NPWS). Irish Wildlife Manuals, No. 147. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland. https://www.npws.ie/sites/default/files/publications/pdf/IWM147.pdf

2 Background

2.1 Legal Context

The "Birds Directive" (2009/147/EC) specifies protection measures that must be implemented for bird species listed on Annex I of the Directive. The objective of this Directive is to protect rare or vulnerable bird species listed in Annex I of the Directive as well as regularly occurring migratory species and wetlands.

The Birds Directive interacts with the "Habitats Directive", or Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora. One of the objectives of these directives is to create a network across EU member states of core breeding and resting sites for rare and threatened bird species (in Special Protection Areas or SPAs), and rare natural habitat types and other species (in Special Areas of Conservation or SACs) which are protected in their own right. This network of protected sites is referred to as Natura2000 and the aim of the network is to ensure the long-term survival of Europe's most valuable habitats and threatened or vulnerable species. In Ireland, the requirements of the Birds and Habitats Directives have been broadly transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011).

Implementation of these Directives in the forestry sector is the responsibility of the Forest Service of the Department of Agriculture, Food and the Marine (hereafter referred to as the Forest Service or DAFM). Coillte and the wider forest industry relies on the regulatory measures set out by the Forest Service to comply with legislation, including the Birds and Habitats Directives.

Coillte is listed as a "Public Authority" in Regulation 2 of the 2011 Regulations, which means that Coillte has additional obligations in relation to protecting habitats and species. Fulfilling these additional obligations require us to have knowledge and understanding of the ecology of protected species and habitats, where they occur and how they interact with our estate and our activities.

This report concerns two Annex I bird species – hen harrier (*Circus cyaneus*) and merlin (*Falco columbarius*) – which breed and forage in habitats that are widespread on the Coillte estate, primarily conifer forests and open bog/heath. Coillte recognises that, through our activities, we have a strong interaction with these species. Our objective is to improve our knowledge and understanding of these species, their ecology and how we can protect them.

This report focusses on the current regulation regarding the protection of breeding sites for these two bird species in forestry, as mandated by the Forest Service. Currently, the procedure specified by DAFM for protection of hen harrier in forestry is commonly referred to as the "red areas" procedure[10]. For merlin, the DAFM procedure operates by applying timing restrictions on felling licences where the planned felling coupe is adjacent to potentially suitable foraging habitat for merlin (Appendix 1). Both procedures operate primarily within the SPAs designated for hen harrier and/or merlin but are sometimes also applied to areas outside the SPAs.

10 DAFM (2015). Forestry Standards Manual. November 2015: Appendix 21 AAP and Hen Harrier. The Department of Agriculture, Food and the Marine, Wexford.

2.2 Coillte Strategy

In 2022, Coillte launched a new strategic vision for its estate[11], with the objective of bringing more focus to climate action, setting ambitious new targets on biodiversity and recreation, and continuing to deliver for the forest and wood products industry.

The strategy specifies actions that Coillte will take to manage its estate and deliver benefits for climate, for wood, for nature and for people[12]. The work undertaken to develop the strategy identified actions that would maximise the contribution to each of these four "pillars". These actions were then brought together, so that the contribution of each was recognised, and a balanced set of ambitions agreed.

Hen harrier and merlin breed and forage in upland habitat that have extensive coverage of conifer forests managed primarily for timber production. These forests are important to Ireland's timber industry, which in turn has an important role to play in our climate targets. Increasing forest cover and producing homegrown timber for the construction industry is a key element of Coillte's strategy.

The challenge for Coillte is to balance the needs of timber production with the ecological requirements of hen harrier and merlin. Coillte is committed to finding this balance and delivering forest management that also protects and benefits the birds.

2.3 Why did Coillte commission this work?

The BirdWatch Ireland study was commissioned by Coillte in early 2020. Coillte implements fully the procedures specified by DAFM for the protection of hen harrier and merlin, but we wanted to explore whether there are ways of improving the procedures as currently implemented, to better protect the birds while also increasing efficiencies in forest planning and management.

The protection of these two birds of prey is very significant for Coillte because both species nest in conifer forests and the area of potentially suitable foraging and nesting habitat for both species across the estate is extensive. This is reflected in the fact that SPAs designated for hen harrier and merlin include large areas of Coillte lands, including both conifer-dominated forests and open bog/heath, mostly in the uplands. The total area of Coillte land in SPAs designated for hen harrier is approx. 69,000ha, and in SPAs designated for merlin is approx. 30,000ha (Table 1). The SPAs also include forests that are not part of the Coillte estate.

The forestry procedures being discussed in this report are outlined below, with comments on the challenges experienced by Coillte and the questions that prompted the current piece of work.

11 https://www.coillte.ie/coillte-launches-new-forestry-strategic-vision-to-optimise-its-contribution-to-irelands-climate-targets/

12 https://www.coillte.ie/wp-content/uploads/2022/07/Coillte-Future-Forest-Estate-Strategic-Vision-Consultation-Booklet.pdf

Table 1. Area of Coillte land within sites designated for protection of hen harrier and merlin in hectares and as percent of the entire Coillte estate. (NOTE: Figures are approximate.)

Area of Coillte estate within designated SPAs	Hectares (% of Coillte estate)
Total Area of Coillte land within designated SPAs (2023)	72,000 [13] (~17%)
Total Area of Coillte land within SPAs designated for breeding hen harrier	69,000 (~16%)
Total Area of Coillte land within hen harrier red areas (2019) [14]	30,000 [15] (~7%)
Total Area of Coillte land within SPAs designated for breeding merlin	30,000 [16] (~7%)

a) Hen harrier

The procedure for the protection of hen harrier in forestry is defined by the Forest Service[17]. The procedure is referred to in this report as "the red areas procedure".

The red areas procedure operates by defining and mapping a series of protection zones ("red areas") within SPAs designated for the protection of hen harrier. The radius of each red area is 1.2km and a broad range of forest operations are prohibited in these areas during the breeding season (1st March to 15th August inclusive). The procedure is implemented by DAFM, who consult with the National Parks and Wildlife Service (NPWS) on the location of red areas.

Red areas are mapped based on data gathered by NPWS, who produce maps of High Likelihood Nesting Areas (HLNAs). The data originated from breeding bird surveys conducted either by NPWS in 5-yearly national surveys, or by the former Hen Harrier Project, which was managed by DAFM and operated until 2022 and provided to NPWS for the purpose of updating the maps of HLNAs.

From Coillte's perspective, the red areas procedure has proved problematic for several reasons.

First, neither the red areas spatial layer nor the underlying nest location data are currently shared with Coillte. The potential or possible presence of breeding birds is communicated to Coillte through felling licence conditions attached to felling licences issued by DAFM, and Coillte adheres to the conditions received.

Second, many red areas do not support breeding hen harrier but are still subject to timing restrictions. Given that maturation of the forest estate affects the availability of suitable breeding habitat, it follows that many historical red areas will no longer support breeding hen harrier. The application of timing restrictions should be based on annual national surveys and focused on locations where the bird is breeding in the current season.

Third, the red areas procedure prohibits forest operations during the breeding season (March-August) across large swathes of upland forests, which means that operations must be conducted in autumn/winter months. However, traditional best practice dictates that forest operations are best conducted when ground conditions are dry and firm, because this limits the potential for impacts on other environmental receptors, mainly water quality. All sites are different, and heavy rainfall events can occur at any time of year, so operations staff need flexibility to be able to plan operations and respond appropriately to weather and site conditions. A consequence of the red areas procedure is that the summer timing restrictions are applied at scale across large areas where there are no breeding birds present. This in turn significantly reduces flexibility and limits the scope for operations staff to respond to changing weather conditions. Our concern is that applying timing restrictions at scale increases the risk of poor timing of forest

13 This is the cumulative total of all Coillte land that occurs within SPAs designated for any bird species.

14 The most recent red areas layer shared with Coillte was in 2019. After that date, Coillte does not have information about the area of estate within red areas.

15 Almost all red areas lie wholly within SPAs designated for breeding hen harrier, but some extend beyond SPA boundaries. Consequently, the degree of overlap between red areas and SPAs is high but is not 100%.

16 There is a good deal of overlap between this figure and the area of Coillte land within SPAs designated for hen harrier, because some SPAs (e.g. Slieve Aughty Mountains SPA) are designated for both merlin and hen harrier.

17 DAFM (2015). Forestry Standards Manual. November 2015; Appendix 21. AAP [Appropriate Assessment Procedure] and Hen Harrier. The Forest Service of the Department of Agriculture, Food & the Marine, Wexford.

operations from the perspective of protecting soils and water, without delivering the benefit of protecting breeding hen harrier.

Fourth, the procedures for notifying Coillte of red area locations are very complex. Coillte is informed of a project site's location within a red area only through felling licence conditions issued by the Forest Service. When a new nest location is recorded, the information is first communicated centrally to the Forest Service. Where a Coillte project site lies within or partially within 1.2 km of this location, the Forest Service will amend the terms of the felling licence and notify Coillte that the project now lies within a red area. Only then can Coillte communicate this information to local operations staff. In addition, Coillte has often received mid-season reports from various 3rd parties of potential new nest locations and sightings outside red areas. These notifications are often communicated directly to staff or contractors during operations, with a request to cease operations but without specific information on where the bird was sighted. This approach can be *ad hoc* and would benefit from a robust procedure that minimises the risk of impacts on nesting birds while also avoiding unnecessary disruption to operations.

Finally, a 1.2km disturbance-free zone is too restrictive and is applied equally to all forest operations. In contrast, NatureScot recommends a 300-750m buffer zone for forestry activities during the hen harrier breeding season[18]. Disturbance-free zones should be appropriate to each forestry activity and proportionate to the level of risk.

b) Merlin

The forestry procedure for protection of merlin is defined by the Forest Service (Appendix 1). This entails applying a timing restriction on forest operations within/adjacent to SPAs designated for merlin. The measures apply wherever there is potentially suitable nesting habitat present and foraging habitat adjacent. Due to the nature of the Coillte estate, this definition applies to very large areas of Coillte land.

While there is no red areas procedure for merlin, the difficulties experienced by Coillte mirror those described above for hen harrier. The result is that forest operations are confined to the winter months within the SPAs designated for merlin (Table 1, Table 2), which are large areas of upland forests, going against established best practice for forest operations.

In summary, the main difficulty with the current procedures is that mitigation measures are applied across large areas, based on the potential presence of nesting birds rather than on actual presence, or even likely presence. The introduction of the merlin procedure in 2019 confirmed our view that this approach is applied as standard for all protected bird species that interact with forest habitats. As with hen harrier, above, Coillte believes that a more focused, holistic approach would be beneficial.

2.4 What actions were taken?

In February 2020, Coillte issued to its procurement framework an invitation to tender to conduct an independent ecological review of the current procedures, as they are described in the DAFM documents referred to above. Three proposals were received and, following an evaluation process, the contract was awarded to a team led by BirdWatch Ireland.

Work commenced in March 2020 and, despite considerable delays due to the Covid pandemic, the work was completed, with a report drafted by BirdWatch Ireland in July 2022. We engaged with NPWS and DAFM and welcomed comments from both regulators on drafts of the report. Following consultation with regulators, the report was updated and finalised in May 2024.

In tandem with the BirdWatch work, we wished to explore how the protection of birds operates in the forestry sector in other jurisdictions. In 2022, a team of Coillte staff visited Forestry and Lands Scotland (FLS), to gain a perspective on how the protection of birds of prey and other wildlife in forestry is approached and managed in Scotland. A summary of the learnings from that trip are presented in Section 2.5.

Coillte recognises that both the BirdWatch and the Scottish approaches have merit and decided to test elements of both approaches during a pilot project in 2023 (see Section 4).

Table 2. Area of Coillte land in SPAs designated for hen harrier and for merlin, and the percentage of Coillte land within each SPA that also lies within a hen harrier red area, as of 2019. For hen harrier, SPAs are designated for the protection of either breeding populations (B) or wintering populations (W). The area of Coillte land in SPA includes land that is either owned or managed by Coillte and includes both forest and open (unforested) land on the Coillte estate. (NOTE: Figures are approximate.)

SPA Name	Designated for merlin (M) or hen harrier (HH)		Total Area of SPA (ha)	Coillte Land in SPA (ha)	Coillte Land in HH Red Areas (ha)
	Merlin	Hen Harrier (Life-cycle)			
Owenduff/Nephin Complex SPA	M		25,700	350	
Lough Nillan Bog SPA	M		4,000	60	
Derryveagh And Glendowan Mountains SPA	M		31,500	40	
Slieve Aughty Mountains SPA	M	HH (B)	59,500	26,700	9,300 (35%)
Lough Corrib SPA		HH (W)	18,000	70	
Connemara Bog Complex SPA	M		19,000	730	
Slieve Bloom Mountains SPA		HH (B)	22,000	11,700	4,600 (40%)
Slieve Beagh SPA		HH (B)	3,500	1,500	1,200 (81%)
Wexford Harbour and Slobs SPA		HH (W)	6,000	10	
Wicklow Mountains SPA	M		28,500	2,300	
Slievefelim to Silvermines Mountains SPA		HH (B)	20,900	9,000	3,900 (44%)
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA		HH (B)	56,600	18,000	10,600 (60%)
Mullaghanish to Musheramore Mountains SPA		HH (B)	5,000	1,300	600 (45%)
Killarney National Park SPA	M		10,300	140	

2.5 Protection of birds in Scottish forestry

In 2022, a Coillte team visited Forestry and Land Scotland (FLS), to explore their approach to protecting wildlife during forest operations. FLS is Coillte's equivalent organisation in Scotland. The approach to protecting wildlife in Scottish forestry is regulated by Scottish Forestry (formerly the Forestry Commission Scotland or FCS), and is outlined in guidance notes[19,20,21].

The Scottish approach focuses on the main key wildlife species that occur on FLS lands, for example goshawk, Scottish crossbill and capercaillie[22]. Hen harrier and merlin in Scotland do not utilise conifer forests in the same way as they do in Ireland, so these species do not feature as strongly as they do in Irish forestry. Nonetheless, the same principles apply, in that there is a focus on protecting breeding locations for key bird species.

In Scotland, the approach taken to protecting wildlife during forestry operations, including raptors such as hen harrier and merlin, is different to both the DAFM procedures and the recommended BWI approach. The differences may be linked to the manner in which the various agencies interact, and in the history of data-sharing, both of which contrast with the current situation in Ireland. The engagement with FLS also demonstrated how the requirement to protect birds in forestry can be balanced with protection of other environmental values.

Our engagement with FLS found that the approach to protecting birds is very practical. FLS staff conduct pre-operational surveys in locations where the evidence shows that particular species have been recently present. There does not appear to be a requirement for detailed vantage point surveys to be conducted across extensive upland areas. Pre-operational surveys are focussed where the shared data indicate that the birds are active or have been active in recent years. Survey data for raptors (birds of prey) are shared across agencies – regulators, the Scottish Raptor Study Group and FLS – so that the forest planners and operations staff in FLS have access to real-time information that informs their work.

The practice of gathering and sharing data over many years has built a strong evidence base for decision-making and has consolidated trust and a positive working relationship between the regulator, the eNGOs and FLS. Information is shared locally and any issues arising are addressed through collaboration with the relevant agencies at local level.

The benefit of this evidenced-based approach is that the procedure is targeted rather than broadscale. Timing restrictions are applied where nesting birds are recorded in the current season and the survey effort is shared between the forestry sector, regulators and eNGOs. Decisions about protection measures can be agreed locally with the surveyors who have been observing the behaviour of the breeding birds.

FLS have demonstrated that raptors such as goshawks are thriving in their forests[23], which they feel strongly is a result of how they plan and conduct their work. The foundation of their approach is a good relationship between regulators and stakeholders, strong biodiversity policies and effective management of biological records and environmental data (data sharing and data management).

19 Forestry Commission Scotland (2006). Forest operations and wildlife in Scottish forests – the law and good practice. FCS Guidance Note 31. Forest operations and wildlife protection (forestry.gov.scot)

20 Forestry Commission Scotland (2006). Forest operations and birds in Scottish forests – the law and good practice. FCS Guidance Note 32. Forest operations and birds in Scottish forests (forestry.gov.scot)

21 Kortland, K., Evans, R., Douse, A., and Patterson, G. (2011). Managing forests for white-tailed eagles - Practice note. Forestry Commission Scotland

22 Top five species of the working forest https://forestryandland.gov.scot/what-we-do/biodiversity-and-conservation/wildlife-conservation/goshawks (scroll down the page)

23 Goshawks and the working forest https://forestryandland.gov.scot/what-we-do/biodiversity-and-conservation/wildlife-conservation/goshawks

3 Coillte's Response to Recommendations made in the BirdWatch Ireland Report

Coillte recognises that the approach taken by the BirdWatch team, in their review of current forestry procedures for protection of hen harrier and merlin, is expert and science-based, and we value the information gleaned from this exercise. The content of the report is comprehensive and highly detailed[24].

The BirdWatch report presents a series of recommendations, which are complex and far-reaching. Several of these recommendations depend on actions by key stakeholders such as DAFM and NPWS, and/or require their input or guidance. Some of the more complex recommendations specify measures that need to be tested to see if they would work in practice and prove beneficial to the bird species.

We are committed to explore the recommendations and to move forward, with the dual objectives of both improving the protection of the birds and improving the procedures for forest planning and operations, making them more efficient and effective.

Recommendations are presented in detail in Section 6 of the BirdWatch report, in three sub-sections:

6.1 *Recommendations for mitigation measures for the protection of hen harrier and merlin*
Section 6.1 in the BirdWatch report presents recommendations on the data used to inform protection measures, spatial application of protection measures, potential risks associated with forestry activities, size of disturbance-free zones and timing of protection measures.

6.2 *A proposed new approach for the protection of hen harrier and merlin during forest operations*
Section 6.2 in the BirdWatch report presents a detailed description of a new approach, with additional recommended measures required to support the new approach, a summary of the benefits of the new procedure, and a summary of the challenges it presents.

6.3 *General recommendations*
Section 6.3 in the BirdWatch report presents ten additional recommendations that would support the change to a new procedure.

The following tables present Coillte's response to each of the recommendations presented in the BirdWatch report. In the following tables, each recommendation is listed in a brief, summarised format. The full text of each recommendation can be obtained in the BirdWatch report.

24 Lusby, J., Fernandez-Bellon, D. & Kavanagh, L. (2024). Review of mitigation measures for the protection of Hen Harrier and Merlin from forest management disturbances and recommendations for improvements. Report to Coillte CGA, Newtownmountkennedy, Co. Wicklow

6.1 Recommendations for mitigation measures for the protection of hen harrier and merlin

BIRDWATCH REPORT RECOMMENDATION	COILLTE COMMENTARY
Data used to inform protection measures	
Use current information on breeding hen harrier to inform protection measures	Coillte welcomes the recommendation to use "real-time" or current information on breeding birds to inform protection measures during forestry operations. The analysis conducted by BirdWatch Ireland demonstrated that the red areas indeed afford protection to breeding birds but should be supplemented by surveys in the current season. Due to the large extent of potentially suitable breeding habitat on the Coillte estate, consideration must be given to the way in which the real-time data are gathered. Breeding bird surveys can only be conducted by suitably qualified ornithologists and are resource-intensive. Coillte is interested in exploring whether data gathered across the forestry sector and in other sectors, can be shared to maximise the efficiency of resource utilisation.
Develop a standard methodology for conducting and reporting on habitat suitability for hen harrier and for merlin	Coillte welcomes this recommendation. Development of a standard methodology would promote consistency in the approach to assessing habitat suitability for both hen harrier and merlin and would enable a broad cohort of ecologists to conduct these preliminary assessments, which are an important foundation for determining whether more detailed surveys are required. It would be particularly beneficial if the methodology is aligned to national habitat classification systems.
Develop a robust and reliable system for surveys (or pre-operational surveys) to determine the presence of merlin	As stated in the report: "merlin are a challenging species to monitor… due to their low population density, widespread distribution in remote upland areas and discrete breeding behaviour… This is reflected in the limited information on merlin populations in the Irish context". Merlin breed in standard conifer forests of felling age and so Coillte clearly has a role in conserving merlin and ensuring that forestry activities do not cause negative impacts on breeding birds. The challenge with detecting merlin is reflected in the fact that, during this work for Coillte, approx. 330 survey hours were conducted by the BirdWatch team. Presence of merlin was confirmed at one location, but evidence of breeding birds was not confirmed. Coillte recognises that merlin is indeed a challenging species to survey, and more research is needed to develop a procedure for detecting and monitoring merlin that is practical, applicable at scale and acceptable to regulators.

6.1, continued Recommendations for mitigation measures for the protection of hen harrier and merlin

BIRDWATCH REPORT RECOMMENDATION	COILLTE COMMENTARY
Spatial application of protection measures	
Use robust and contemporary data on hen harrier distribution and nest locations to inform forest operations in areas where hen harrier have the potential to nest	The report identifies that the red areas procedure is effective in protecting most hen harrier nest sites but is inherently flawed because the red areas are based on survey data gathered in previous years. Consequently, there is a risk that the approach does not secure protection for new nest locations, which can mean that hen harrier populations that are expanding or moving to new locations may be vulnerable to disturbance. Coillte's view is that the current protection measures (red areas) should be supported by targeted bird surveys to confirm presence or absence of breeding pairs, and that this information should be communicated directly to forestry staff, to inform their activities. If a real-time survey approach is to become a practical reality, it will need to be informed and underpinned by better utilisation of existing data and sharing survey data across agencies. It is at present unclear how effective the current surveys are for the purpose of informing forest operations on Coillte sites. We believe that targeted surveys should inform protection zones and allow for more accurate definition and mapping of red areas.
Apply protection measures to important non-designated areas for hen harrier and merlin	Coillte is committed to applying protection measures where breeding hen harrier and merlin are present. If breeding pairs are present outside SPAs, we protect those locations. We agree that protection measures should be applied outside SPAs, but these should be supported by robust procedures for identifying breeding sites, and these procedures must be practical and achievable. We would not support the extension of broadscale timing restrictions to areas where the bird may be present outside SPAs, because this approach in upland forests makes for poor forestry practice and increases the risk of impact on other environmental receptors, notably water and soils. Application of protection measures both inside and outside SPAs must be balanced with protection of other environmental values and efforts must be made to target protection measures on the locations where nesting birds are present.

6.1, continued Recommendations for mitigation measures for the protection of hen harrier and merlin

BIRDWATCH REPORT RECOMMENDATION	COILLTE COMMENTARY
Potential risks posed by forestry activities	
Review all forestry activities and define the potential risks they present to breeding hen harrier and/or merlin	Coillte welcomes the recommendation to build an evidence-base for testing and evaluating potential impacts of the broad range of different forestry operations on breeding hen harrier and merlin.
Clarify the specific forestry activities that are permitted and those that are not	As above, we welcome the recommendation to base protection measures on practical field evidence. While clear guidance is of course required and helpful to operators, we believe that protection measures should be flexible according to the site and project specific conditions. The forestry activities requiring protection measures, as well as the scale and type of protection measures, should be appropriate based on the advice of a suitably qualified ecologist with specific reasoning based on the site-specific conditions (e.g., based on the particular behaviour and sensitivities of a breeding pair, topography etc.).
Size of protected area (disturbance-free zone)	
Increase the disturbance-free zone (or nest protection buffer) for hen harrier from the current 500m to 750m Remove the 700m buffer for interannual movements of territorial pairs of hen harrier	These two recommendations are taken together, since they collectively refer to a reduction in the radius of the disturbance-free zone, or nest protection buffer, for hen harrier from the current 1.2km (=500+700m) to 750m. This recommendation is made in the context of an improved procedure that establishes the location of nests in the current breeding season. Coillte welcomes an approach that targets and focuses timing restrictions and other protection measures on the actual locations where birds are nesting in real time. We would also favour the compiling of an evidence base to test disturbance distances associated with the broad range of forestry activities. If this evidence base is in place, there is a much more solid foundation for reviewing the distances required to prevent disturbance of breeding birds.
Increase the disturbance-free zone (or nest protection buffer) for merlin from the current 100m to 500m	Coillte recognises that this recommendation is based on available scientific evidence. However, we are concerned that if the 500m buffer is applied to every forest operations site rather than to each nest location, this would compound significantly the already negative effect of applying blanket measures across large swathes of forests in uplands and would increase the risk of impacts on other environmental variables, notably soil and water. The 500m disturbance-free zone should be applied only around known merlin nests. Every effort needs to be made to improve the ability to locate merlin nests in real time. The 500m disturbance-free zone is then applied to protect those nests. The real difficulty with protection measures for merlin is locating the nests. Coillte is committed to exploring methods that improve the detection rate for merlin on the estate.
Apply the appropriate disturbance-free zone to each forest activity which is proportionate to the level of risk and scale of potential disturbance to hen harrier and/or merlin	Coillte welcomes this recommendation, which recognises that the potential impact associated with forestry operations varies depending on the type or nature of the operation. This recommendation should be implemented over time through close co-operation between the forestry sector (specifically practicing foresters and contractors) and ecologists.

6.1, continued Recommendations for mitigation measures for the protection of hen harrier and merlin

BIRDWATCH REPORT RECOMMENDATION	COILLTE COMMENTARY
Timing of protection measures	
Maintain the current period that protection measures are implemented (from 1st March to 15th August) for hen harrier	Coillte accepts this recommendation, which is based on the available science. This recommendation has already been implemented by the Forest Service. Timing restrictions should be effective, so it makes sense to apply them at a time when the breeding birds are sensitive to disturbance. Equally, forest operations should be allowed to proceed during this time if surveys demonstrate that breeding birds are not present. It is our view that broad application of a timing restriction conflicts with best practice for protection of soil and water during forest operations, and it does not contribute to protection of the bird is breeding pairs are not present.
Maintain the current period that protection measures are implemented (1st March to 31st August) for merlin	Coillte accepts this recommendation, which is based on the available science. This recommendation has already been implemented by the Forest Service. Timing restrictions should be effective, so it makes sense to apply them at a time when the breeding birds are sensitive to disturbance. Equally, forest operations should be allowed to proceed during this time if surveys demonstrate that breeding birds are not present. It is our view that broad application of a timing restriction conflicts with best practice for protection of soil and water during forest operations, and it does not contribute to protection of the bird is breeding pairs are not present.

6.2 A proposed new approach for the protection of hen harrier and merlin during forest operations

BIRDWATCH REPORT RECOMMENDATION	COILLTE COMMENTARY
Recommended new procedure	
Step 1: Forest planning to avoid disturbance	Coillte notes the description of a new procedure recommended by BirdWatch. We accept the assertion by BirdWatch that the recommended changes would provide for better protection of hen harrier and merlin in forestry, and we would add our view that more focused protection measures would work better from a practical forestry perspective too. We welcome the recognition that the recommended procedure represents a significant change from the existing measures and acknowledgement of the challenges associated with such a change. For instance, there is recognition that the resources required to deliver the recommended procedure at scale would need to be scoped and quantified and will be dependent on the ability to access and utilise existing data on the distribution and nest locations of hen harrier. There is also recognition of the regulatory challenges that will need to be addressed, to ensure that a procedure based on the use of real-time data can be enacted. Coillte agrees with the statement that the new procedure "will have to be progressed on a step-by-step basis to build trust among stakeholders and ensure confidence in the approach." We remain committed to promoting and pursuing progress towards developing a new approach, but we also recognise that the success of this initiative will depend on a willingness among multiple stakeholder groups to actively collaborate, foster trust and change current procedures.
Step 2: Surveys to inform mitigation to minimise risk of disturbance	

6.3 General recommendations

BWI REPORT RECOMMENDATION		COILLTE COMMENTARY
#	Communication and stakeholder engagement	
1	Establish a formal Working Group with representation from all relevant stakeholders	Coillte welcomes the recommendation to establish a Working Group that has responsibility for driving the development of a new approach to the protection of hen harrier and merlin in forestry. We support the stated ambition to develop "an effective conservation strategy [that is] transparent, inclusive, clearly communicated and based on the best available data." We note that the main function of this Working Group is to maintain that open, transparent approach, while also being "tasked with overseeing and ensuring the delivery" of the new approach.
	Data-sharing	
2	Improve the application of data to inform forest planning for the protection of priority species	Coillte welcomes the statement that "effective conservation strategies are based on the best available data", used to "appropriately target mitigations that protect hen harrier and merlin during forest operations". The fact that Coillte currently has no access to the existing survey data on hen harrier and merlin "limits the ability and effectiveness of forest planning to avoid disturbance". We welcome the recommendation that "improved systems for data-sharing are established with robust data-sharing agreements in place to provide confidence to data collectors in relation to the sensitivities, ownership and use of the data, while allowing the data to be specifically used to: (i) inform forest planning to avoid areas where priority bird species are present or are likely to be present, and (ii) ensure that protection measures are appropriately targeted and that hen harrier breeding attempts are protected.
	Knowledge gaps	
3	Design and implement a system for collating data on disturbance events and effects on hen harrier and merlin	This recommendation elaborates further on the fact that the evidence base for disturbance-free zone, or nest protection buffer, is often lacking. Coillte supports the recommendation to build an evidence base. This will require co-operation and trust between forestry practitioners and ecologists, and Coillte is committed to continue working with ecologists and building trust.
4	Conduct a review to provide information on the timing of breeding of hen harrier and merlin in the Irish context	As above, this recommendation is about building an evidence base for timing restrictions. This will require co-operation and trust between forestry practitioners and ecologists, and Coillte is committed to continue working with ecologists and building trust.
5	Assess the merits of aerial thermal imaging surveys to detect forest-nesting merlin	As stated in the BirdWatch report, "merlin are a challenging species to monitor". Coillte fully supports research into the use of drones to detect merlin on the estate. This knowledge will be used to inform forest planning and management and to reduce the risk of negative impacts on nesting birds.

6.3 General recommendations, continued

BWI REPORT RECOMMENDATION		COILLTE COMMENTARY
#	Conservation Tools	
6	Integrate the conservation of hen harrier and merlin in forest planning and management	This recommendation extends beyond the protection of nests during forestry operations and addresses the wider landscape-scale measures required to improve habitat suitability for both hen harrier and merlin. Coillte recognises that this is an important aspect of bird conservation and is committed to engaging on this with the relevant bodies and knowledge-holders.
7	Develop standard protocol for assessing the habitat suitability for breeding merlin and hen harrier	See comments above, Section 6.1: Data used to inform protection measures, recommendation number 2.
8	Establish a formal procedure for reviewing information on possible disturbance events to hen harrier and merlin outside the SPA network	Coillte is aware of the data that indicates hen harrier are nesting outside SPAs, and we are committed to collaborating and improving procedures for protecting nest locations during forestry operations.
9	Provide detail on the specific forestry activities and associated conditions which are permitted or restricted	See comments above, Section 6.1: Potential risks posed by forestry activities.
10	Provide clear and comprehensive guidance on minimising the disturbance to breeding birds through forestry operations and the legislative requirements for same	Coillte welcomes this recommendation to review the current forestry guidance on protection of breeding birds and update where necessary. We are committed to participating in a process that reflects the concerns of all stakeholders.

4 2023 Pilot Implementation

In 2023, Coillte undertook a project to pilot elements of two different approaches for the protection of hen harrier and merlin in forestry: procedures recommended by BirdWatch Ireland (Section 3), and elements of the approach observed in Scotland (Section 2.5).

Coillte is committed to exploring the recommendations within the BirdWatch report[25]. However, some of the recommendations rely on co-operation with other stakeholders, for example, measures regarding research and engagement. As a first step, the 2023 pilot focussed on implementing practical elements of the procedures recommended by BirdWatch Ireland that are within Coillte's remit:

1. Test the implementation of the "*proposed approach for the protection of hen harrier and merlin from forest management related disturbances*", where the recommended approach is vantage point surveys (VPs); and
2. "*Assess the merits of aerial thermal imaging surveys to detect forest-nesting merlin*", where the recommendation is to test the use of drone with a thermal sensor to detect breeding merlin. (Note: Coillte extended this scope in 2023 to also include breeding hen harrier)

The pilot tested pre-operational surveys with the objective of collecting real-time information on breeding hen harrier and merlin. Two survey methods were tested independently in order to compare the results. Further details on the pilot of procedures recommended by BirdWatch Ireland are provided in the following sections.

In tandem with this, elements of the Scottish approach to protecting birds in forestry (Section 2.5) were trialled, primarily: increased engagement with regulators and knowledge-holders, upskilling our staff and increasing the interaction between Coillte's ecology team and operations staff.

4.1 Pilot Implementation of Procedures Recommended by BirdWatch Ireland

Two survey methods were employed in 2023 to trial pre-operational surveys to collect real-time information on breeding hen harrier and merlin: vantage point (VP) surveys and surveys using a drone with a thermal sensor. The objective of both survey methods was to determine the presence and nest locations of breeding hen harrier and merlin with respect to 2023 harvest units (i.e. Coillte sites where forest operations were planned for 2023). The two survey methods were carried out independently of each other within the same survey areas. Survey results were not used to inform forest management activities in 2023 and operations observed all timing restrictions specified in felling licence conditions issued by DAFM.

25 Lusby, J., Fernandez-Bellon, D. & Kavanagh, L. (2024). *Review of mitigation measures for the protection of Hen Harrier and Merlin from forest management disturbances and recommendations for improvements.* Report to Coillte CGA, Newtownmountkennedy, Co. Wicklow

The purpose of conducting this pilot was to enable Coillte to:

- Compare the effectiveness and operability of both methods (VPs and drones) in protecting birds during forest operations.
- Quantify the resources that would be required to scale up both approaches across the estate.
- Gather data on implementation of the recommended new procedures to share with other stakeholders.

4.1.1 Methods

Site Selection

The pilot focussed on 2023 harvest units within the Slieve Bloom Mountains SPA (selected for hen harrier) and the Wicklow Mountains SPA (selected for merlin). Six harvest units were selected in the Slieve Blooms and six harvest units were selected in the Wicklow Mountains.

All the selected harvest units had a felling licence granted by DAFM and felling licence conditions requiring timing restrictions. Timing restrictions were required due to the potential presence of breeding hen harrier/merlin and prevented forest operations occurring during the breeding season. All the selected harvest units also had other environmental sensitivities (e.g., water sensitive, soft ground, etc.) that would otherwise prioritise these sites for summertime operations.

To define the survey area for hen harrier, a 750m buffer was created around each of the selected harvest units in the Slieve Blooms. To define the survey area for merlin, a 500m buffer was created around each of the selected harvest units in the Wicklow Mountains. These buffers were informed by Lusby *et al*.[26] and are based on the best evidence of disturbance distances for hen harrier and merlin.

Habitat Suitability Assessments

Habitat assessments, comprising desktop and field habitat surveys, were undertaken by Coillte ecologists trained in hen harrier and merlin habitat assessment methods. A habitat assessment of each survey area was undertaken to identify and map potentially suitable breeding habitat for hen harrier and merlin. Suitable vantage points were also selected for further targeted surveys to ensure that all areas of potentially suitable breeding habitat within each survey area could be effectively watched. Where no potentially suitable breeding habitat was identified, no further survey was undertaken.

Vantage Point Surveys

Vantage Point surveys were undertaken by ALC*nature* and followed best practice survey techniques for hen harrier and merlin surveys in Ireland. Vantage point watches were carried out over three survey visits to each survey area between May and July 2023. Watches focused on all areas of potentially suitable breeding habitat within the defined survey area, to determine the presence and nest locations of the target species.

Drone Surveys

Surveys using the drone with thermal sensor were undertaken by BirdWatch Ireland (under licence from NPWS). Drone surveys were carried out over one to three survey visits to each survey area between May and July 2023. The drone was manually flown over all areas of potentially suitable breeding habitat within each survey area. Using the thermal sensor, the area was searched for heat signatures suspected to be a bird or a nest. All such heat signatures were inspected using the optical zoom camera to determine the presence and nest locations of target species.

26 Lusby, J., Fernandez-Bellon, D. & Kavanagh, L. (2024). *Review of mitigation measures for the protection of Hen Harrier and Merlin from forest management disturbances and recommendations for improvements.* Report to Coillte CGA, Newtownmountkennedy, Co. Wicklow

4.1.2 Results

Results of habitat assessments, VP surveys and drone surveys are presented in Table 3, including the number of sightings of target species (i.e. hen harrier/merlin) and the number of confirmed nests located for target species using each method. Table 3 also provides a comparison of the resource requirements for each survey method including the survey time, number of vantage point locations required per survey area, and the number of drone flights per survey area.

Habitat suitability assessments identified areas of potentially suitable habitat for breeding hen harrier at four harvest units in the Slieve Blooms Mountains SPA. Hen harrier presence was recorded within all survey areas and breeding evidence was recorded at one of the harvest units surveyed but outside the defined survey area. At the remaining two harvest units in the Slieve Blooms Mountains SPA, no suitable breeding habitat was identified for hen harrier and no further survey work was undertaken.

Habitat suitability assessments identified areas of potentially suitable habitat for breeding merlin at all six harvest units in the Wicklow Mountains SPA. No evidence of breeding and no observations of merlin were recorded in the survey areas using either survey method.

Comparison of Results

VP surveys and drone surveys produced similar findings with respect to hen harrier. However, drone surveys provided greater accuracy. Both survey approaches confirmed the presence of hen harrier in two survey areas in the Slieve Blooms. The vantage point surveys identified breeding evidence for hen harrier and suspected a nest location just outside one of these survey areas, whereas the drone survey identified the exact nest location in this same area (165 m from the boundary of the survey area). The drone survey also located a second nest location 400m from the boundary of the same survey area that was not detected during VP surveys.

The drone survey detected hen harrier in one survey area in which hen harrier was not recorded by the vantage point surveys, and similarly, hen harrier was recorded in one survey area by the vantage point surveys whereas the drone survey did not detect hen harrier in this survey area. However, both survey approaches determined that hen harrier were not nesting within these survey areas and all detections corresponded to observations of individual birds without any evidence of breeding. It is expected that such sightings will occur given that birds are present in the wider area and explains the difference in detections between survey approaches in these two survey areas.

The VP surveys, and drone surveys produced the same results with respect to merlin. Comparisons between survey approaches for the detection of merlin are compromised by the fact that merlin were not detected by either survey approach.

Comparison of Resource Requirements

The vantage point surveys required significantly greater time and resource investment compared to the drone surveys (Table 3). The total survey time was 162 hours for vantage point surveys for hen harrier and merlin surveys combined. This compares to a total survey time of 15.95 hours for drone surveys for hen harrier and merlin surveys combined. Therefore, drone survey effort equated to approximately 10% of the VP survey effort to survey the same areas of potentially suitable habitat to produce similar results with greater accuracy.

Challenges and Limitations

Several challenges were encountered with both survey methods. Most notably, VP surveys require significant resources and there were difficulties in acquiring suitably qualified and experienced consultants. Although drone surveys require significantly less resources, there were challenges in acquiring consultants with the necessary bird expertise and drone flying skills.

In addition, drone surveys were affected by weather conditions that did not affect VP surveys. It was not possible to safely fly the drone during some adverse weather conditions (wind, rain, etc.). Furthermore, high temperatures affected the effectiveness of the drone where bird heat signatures could not be identified against similar warm background heat.

4.1.3 Potential for Scaling Up – 2024 Estimates

A high-level assessment was undertaken to estimate the resources required to scale up the survey work piloted in 2023 to include harvest units within all hen harrier and merlin SPAs. Tables 4 and 5 present calculations for hen harrier and merlin SPAs respectively:

- The search for harvest units (HUs) around each SPA included a buffer based on suitable disturbance distances for hen harrier and for merlin[27].
- The number of planned 2024 harvest units was a best estimate and is subject to change as forestry production plans shift.
- The number of survey areas relates to the number of planned 2024 harvest units with suitable breeding habitat, either for hen harrier or for merlin, as well as other environmental sensitivities that would otherwise prioritise operations to be undertaken during the breeding season (e.g., sensitive water, soils, etc.).
    - » The number of harvest units with other environmental sensitivities is estimated based on the results of a 2022 Coillte review of planned harvest units within the Slieve Blooms Mountains SPA.
    - » The number of harvest units with suitable habitat is estimated based on the results of habitat suitability work carried out at Coillte sites within the hen harrier and merlin SPA network by Lusby et al. (2023).
- The estimated survey time required is calculated based on the average vantage point survey time and drone survey time, for hen harrier and for merlin, during the 2023 pilot.
- The number of survey visits required includes three visits for VPs surveys and two visits for drone surveys, in accordance with 2023 pilot.
- The estimated other time includes conservative estimates for habitat assessments and mapping (4 hours per survey area), travel time (2 hours per survey visit per survey area) as well as survey prep, data management and write up (4 hours day per survey area).
- The estimate of resources does not include the potential for surveying hen harrier and merlin at the same time in the Slieve Aughty Mountains SPA. The number of survey areas required for each species differs due to differences in applicable buffer zones and the proportion of potentially suitable habitats for merlin compared to hen harrier. In addition, differences in bird ecology and habitat preferences would mean the potential to survey both birds at once is not straightforward and would need to be reviewed on a site-by-site basis.

27 Lusby, J., Fernandez-Bellon, D. & Kavanagh, L. (2024). *Review of mitigation measures for the protection of Hen Harrier and Merlin from forest management disturbances and recommendations for improvements.* Report to Coillte CGA, Newtownmountkennedy, Co. Wicklow

Table 3: A comparison of results and resource requirements for vantage point surveys and drone surveys carried out at 2023 harvest units in the Slieve Blooms Mountains SPA and the Wicklow Mountains SPA. "Target" refers to either hen harrier or merlin, depending on survey location.

			Habitat Survey	Vantage Point Survey				Drone Survey			
Survey Area	**SPA**	**Target sp.**	**Potentially suitable breeding habitat present?**	**No. VPs**	**Survey time (hrs)**	**No. sightings target sp.**	**Target nest sites**	**No. survey flights**	**Survey time (hrs)**	**No. sightings target sp.**	**Target nest sites**
SB1	Slieve Blooms	HH	Yes	1	9	2	0	4	1.7	1	0
SB2	Slieve Blooms	HH	Yes	1	9	1	0	7	3.25	0	0
SB3	Slieve Blooms	HH	Yes	3	27	10	1	8	2.2	>10	2
SB4	Slieve Blooms	HH	Yes	1	9	0	0	7	2.5	3	0
SB5	Slieve Blooms	HH	No	0	0	0	0	0	0	0	0
SB6	Slieve Blooms	HH	No	0	0	0	0	0	0	0	0
WW1	Wicklow Mts	ML	Yes	2	18	0	0	3	1	0	0
WW2	Wicklow Mts	ML	Yes	2	18	0	0	5	1.6	0	0
WW3	Wicklow Mts	ML	Yes	3	27	0	0	4	1.8	0	0
WW4	Wicklow Mts	ML	Yes								
WW5	Wicklow Mts	ML	Yes	2	18	0	0	3	1.1	0	0
WW6	Wicklow Mts	ML	Yes	3	27	0	0	3	0.8	0	0
Total				**18**	**162**	**13**	**1**	**44**	**15.95**	**>14**	**2**

Table 4: Hen harrier – A comparison of the estimated resources required to implement vantage point surveys and drone surveys at 2024 harvest units located within the six hen harrier SPAs.

			Vantage Point Survey			Drone Survey		
SPA + 750m	**No. of Planned 2024 HUs**	**No. of Survey Areas**	**Estimated Survey Time (hrs)**	**Estimated Other Time (hrs)**	**Estimated Total Time (hrs)**	**Estimated Survey Time (hrs)**	**Estimated Other Time (hrs)**	**Estimated Total Time (hrs)**
Slieve Bloom Mountains	53	36	491	509	999	87.2	436	523
Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle	67	46	620	643	1,263	110.3	551	662
Mullaghanish to Musheramore Mountains	7	5	65	67	132	11.5	58	69
Slievefelim to Silvermine Mountains	35	24	324	336	660	57.6	288	346
Slieve Beagh	5	3	46	48	94	8.2	41	49
Slieve Aughty Mountains	148	101	1370	1421	2,791	243.6	1,218	1,461
TOTAL	**315**	**216**	**2,916**	**3,024**	**5,940**	**518.4**	**2,592**	**3,110**

Table 5: Merlin – A comparison of the estimated resources required to implement vantage point surveys and drone surveys at 2024 harvest units located within the seven merlin SPAs.

			Vantage Point Survey			Drone Survey		
SPA + 500m	**No. of Planned 2024 HUs**	**No. of Survey Areas**	**Estimated Survey Time (hrs)**	**Estimated Other Time (hrs)**	**Estimated Total Time (hrs)**	**Estimated Survey Time (hrs)**	**Estimated Other Time (hrs)**	**Estimated Total Time (hrs)**
Derryveagh and Glendowan Mountains SPA	4	3	68	44	112	4.0	38	42
Lough Nillan Bog SPA	5	4	85	55	140	5.0	47	52
Owenduff/Nephin Complex SPA	2	2	34	22	56	2.0	16	21
Slieve Aughty Mountains SPA	148	117	2,521	1,634	4,155	147.1	1,400	1,548
Wicklow Mountains SPA	50	39	852	552	1,404	49.7	473	523
Connemara Bog Complex SPA	2	2	34	22	56	2.0	19	21
Killarney National Park SPA	2	2	34	22	56	2.0	19	21
TOTAL	**213**	**168**	**3,628**	**2,352**	**5,980**	**211.6**	**2,016**	**2,227**

5 Coillte Recommendations

Coillte values the review conducted by the BirdWatch Ireland team. We recognise both the achievements of this work and the challenges it reveals.

We believe that the current procedures for protection of hen harrier and merlin during forest operations could be made more effective and we are committed to continue pursuing improvements. We believe that pursuing improvements would benefit both the forestry sector and the wellbeing of birds that live and breed in our forests.

Having examined closely the Birdwatch report, having explored the approach to protection of birds in Scotland and, above all, having tested aspects of both approaches in a pilot project, the following are our conclusions:

1. We take many positives from the BirdWatch Ireland approach and equally, the operational and broader learnings from Scotland.
2. Piloting two techniques for detecting breeding birds (i.e. bird surveys and the use of a drone fitted with a thermal sensor) in 2023 has provided us with both data and knowledge.
3. It is not possible for Coillte to implement in full the approach recommended by BirdWatch Ireland because some of the measures depend on actions and inputs by key stakeholders such as DAFM and NPWS.
4. We believe that sharing data on the distribution and nest locations of hen harrier and merlin would improve the protection of birds in forestry and should form the basis for improvements to the current procedures.
5. The 2023 pilot reaffirms our belief that the development of new procedures should take into account broader environmental protection (e.g. soils and water), as well as the resources needed to deliver them.

The following are Coillte's recommendations for next steps:

1. The establishment of a Forest Birds Working Group, chaired by an independent representative and including as core members the Forest Service, NPWS, Coillte and private forest owners or their representatives. The Working Group should also involve key knowledge-holders (BirdWatch Ireland and the Irish Raptor Study Group). The Working Group would be tasked with ensuring the protection of the protected birds and the continued operation of forestry activities and would oversee the following recommendations.
2. The Working Group to commission and co-ordinate forest bird surveys on at least an annual basis, to support forest management and operations. The question of funding and resources will need to be addressed.
3. National efforts to improve the protection of birds in forestry must be underpinned by open and transparent data-sharing between regulators, knowledge-holders and forestry practitioners. It is recommended that an approach be developed without delay, overseen by the Working Group.
4. Continue to explore new technologies and new approaches, such as drones and thermal-imagery, and Coillte habitat assessments, to improve the effectiveness of surveys for protected birds.
5. The Working Group should promote in-practice information-gathering, to explore the interaction between the birds and the different forestry activities, build the evidence-base and inform the development of appropriate mitigation measures.
6. Over time, as improvements are developed, the Working Group should review the current procedures and develop new processes and policies for the protection of hen harrier and merlin in forest operations.
7. The causes underlying the observed decline in the national population of hen harrier should be explored, covering the broad range of factors that may be involved.
8. Approach DAFM to accept use of real-time data and have a dual approach of red area or real-time data where available.

6 Appendix 1

DAFM protocol for protection of merlin during forestry operations

MITIGATION MEASURE FOR MERLIN, for relevant AA Report & Determination ref. Coillte felling in Slieve Aughties SPA

Wording to be included in all AA Reports & Determinations and included as a condition in all licences issued in this SPA.

(18Dec19)

Merlin *Falco columbarius*

The potential for the project to results in displacement of breeding Merlin was identified on a precautionary basis.

Heathlands are vital hunting habitats for the species (Fernandez-Bellon & Lusby, 2011). Merlin traditionally nest on-the-ground on heath, mountain and blanket bog, but now predominantly nest in trees with a strong preference for conifer plantations (favouring older trees and often nesting within 10 m of forest edge). Breeding success is positively related to the proportion of suitable foraging habitat (heath, extensive grassland, bog, other open and semi-open habitats) within the breeding territory (Lusby *et al.*, 2017).

In light of the bird's ecology regarding nesting and the requirement to avoid disruption that might interfere with breeding, the following mitigation, presented in the form of a licence condition, is identified to avoid impact. Furthermore, given the area of forest cover within the SPA (insert area of forest cover in ha), the emergence of new edge trees elsewhere within the forest estate within the Natura site, and Merlin's lack of faithfulness regarding nest sites, any edge tree felling associated with this project and undertaken outside of the breeding season will not impact future nesting opportunities within the SPA.

Wording for condition:

Where the project area:

- contains mature conifer forest of at least 10 years of age; and
- is within or adjacent to a Special Protection Area for which the Merlin is a special conservation interest; and
- adjoins or is immediately adjacent to the following habitats: moors, heathland, peat bogs or natural grassland; then

1. No felling, thinning or other forestry operations associated with this licence shall take place during the period 1st March to 31st August inclusive, within 100 metres of the forest edge, where such forest edge is immediately adjacent to moors, heathland, peat bogs or natural grassland; or within 100 metres of a clearing in the forest of larger than one hectare.
2. Such operations can commence in sections of the project area furthest away from the 100 metre exclusion zone. Such operations can progress towards this exclusion zone but can only enter it during the period 1st September to 29th February inclusive.

COILLTE