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1. Introduction

Forestry in Europe has served a range of different functions in terms of use and management over the last four hundred years. European forests were traditionally multi-functional, being used for grazing, hunting, as well as the production of construction timber, while fodder, fuel-wood, and products such as nuts and mushrooms were collected in them (Mather, 2001; Niemelä et al., 2005). However, as the human population expanded in Europe in the late 18th century there was increasing demand placed on forests particularly for wood (Niemelä et al., 2005). This led to a paradigm shift from “preindustrial forests (agricultural forests of sustenance) to industrial forests where the emphasis was on timber production and mono-functionality, and forests were increasingly composed of even-aged monocultures” (Mather, 2001, p. 251). More recently another shift has occurred driven by both societal and political developments. A (re)appreciation of the range of products and services that forests provide to society has evolved. Forests now are expected to produce timber and non-timber products, contribute to biodiversity conservation and climate change mitigation as well as have protective functions and contribute to cleaner air and recreation (Wolfslehner et al., 2013). Additionally, forests are expected to become increasingly important in the bioeconomy. Thus the current vision of forests has returned to that of multi-functionality, with the list of ecosystem products and services that forests are expected to deliver expanding, together with the range of stakeholders involved or interested in forests (Young et al., 2018a; White et al., 2018).

The increasing demands being placed on forests have given rise to conflicts (Niemelä et al., 2005). The shift to increased industrialisation in the 1960s was accompanied by an intensification of forestry operations, with the planting of monocultures, the use of chemical herbicides, the expansion of logging roads and the use of large scale clearfelling. This drew criticism across Europe and the US from the public and latterly environmentalists (Hellström and Reunala, 1995). The economic growth that drove the intensification of forestry in the 1960s was accompanied by social and cultural development resulting in greater urbanisation and an increase in living standards. An increased demand on forests for recreational use ensued leading to conflicts with the production focus of forestry (Hellström and Reunala, 1995). Conflicts between conservation and forestry also emerged in Europe in the 1990s (Niemelä et al., 2005). Where existing forests have been assigned a protection status due to their (potentially) high conservation value conflict has emerged when forestry activities were curtailed. The conflicts that arose during the implementation of Natura 2000 in forests were documented by Winkel et al. (2015) including those arising from the challenges of (1) balancing of biodiversity conservation and timber production; (2) the integration of conservation and local stakeholders’ demands and (3) conflicts related to other sectoral policies (e.g. climate, energy, agriculture and rural development). Conflicts can also occur if afforestation (usually of a plantation forest) occurs in an area where the existing biodiversity is considered more valuable than the new forest (Niemelä et al., 2005).

An example of a forestry and biodiversity conservation conflict is explored in this paper. In Ireland six sites (both privately and publicly owned) have been designated as Special Protection Areas

(SPAs) for the Hen Harrier (*Circus cyaneus*) under the European Birds Directive (Directive 2009/147/EC). The Hen Harrier breeds predominantly in forested landscapes in Ireland (Wilson et al., 2009; Wilson et al., 2012), in particular in young plantations. It does not use forest habitat extensively following canopy closure and may require substantial areas of open habitat if it is to persist in extensively afforested landscapes (Wilson et al., 2009). A protocol was agreed in 2007 between the Forest Service and the National Parks and Wildlife Service (NPWS) which required each SPA to contain a minimum percentage of suitable habitat; this effectively set thresholds for the annual level of afforestation within them. In addition, restrictions were placed on forestry activities, including harvesting within parts of the SPAs known as red zones, during the Hen Harrier nesting season (Dunne and Collins, 2014). This protocol was suspended in 2011 by the Forest Service and in 2015 the Forest Service halted the issuing of afforestation licences within the six Hen Harrier SPAs. At this time the NPWS initiated the development of a Threat Response Plan (TRP) the purpose of which was to “cease, avoid, reduce or prevent threats, pressures or hazards that may be having an adverse effect on the conservation status of a species of bird” (NPWS, 2015, p.5). A steering committee was appointed as well as a consultative committee to develop the TRP. The Hen Harrier TRP has yet to be published.

The combination of the moratorium on afforestation in the SPAs and the restrictions on forestry activities has generated much debate and conflict in Ireland. The moratorium has attracted particular attention as reflected in some of the discourses on the topic – “the designation of land for the protection of the Hen Harrier is turning many rural areas across nine Irish counties into a wilderness” (The Irish Examiner, 2015); “farmers fear being forced to abandon their land” (ibid); “farmers are very badly impacted... by the Hen Harrier designation” (Irish Independent, 2015); “the ban on afforestation and restrictions on forest operations are not delivering Hen Harrier conservation and must be removed” (The Farmers’ Journal, 2015). Incidences of the Hen Harrier being shot have also been recorded (BirdWatch Ireland, 2015).

In this paper we aim to:

- i)* Examine the causes of the Hen Harrier–forestry conflict and obtain a better understanding of how different stakeholders perceive the conflict;
- ii)* Identify what stakeholders believe are the policy instruments and management strategies that may be useful in managing the conflict;
- iii)* Highlight the processes that have occurred in this conflict and identify plausible solutions that may be relevant to similar conflicts around multi-functional forests.

1.1 Theoretical framework

Walker and Daniels (1997) described that any conflict comprises three interrelated dimensions: substance, procedure, and relations (i.e. *the conflict triangle*), and that a conflict can be addressed through any of the three dimensions. The substance dimension addresses “how things are” i.e. the issues that comprise the conflict. The procedural dimension helps understand how things are done or how things are managed including policy and legislation implementation, enforcement, and

planning. It can also include the nature of stakeholder engagement (Niemelä et al., 2005). The relationship dimension explores “how people behave” and helps construe the disputants and their differences (*ibid*). It also deals with how people interact with each other. Walker and Daniels’ (1997) framework has been widely applied within forest science for understanding the nature of a conflict situation (e.g. Hellström, 2001; Niemelä et al., 2005; Vuletić et al., 2010; Edwards and Kleinschmit, 2103; Makkonen et al., 2014). Winkel et al. (2015) used a similar framework in their study of the “substantive and procedural conflicts” that arose during the implementation of Natura 2000 in forests and identified four conflict types: procedural, interest-based/material, public-institutional and idea and knowledge-based.

We used Walker and Daniels’ (1997) framework because of its successful application to forestry conflicts in other studies as outlined above and particularly because it allows a conflict to be unpacked into its individual components - a necessary step if the drivers to the conflict are to be identified. We used the framework in a previous study to explore forestry conflicts in two case study areas in Ireland (Bonsu et al., 2019). In that study forestry and the Hen Harrier was one of eight conflicts identified and Walker and Daniels’ (1997) framework proved useful in identifying some of the drivers of the conflict. In this paper we expand on this previous study by engaging with a broad range of stakeholders that are associated with the Hen Harrier and forestry. Through semi-structured interviews with these stakeholders the aims of the study were addressed.

2. Materials and Methods

2.1 The Study System

The Hen Harrier is a ground nesting bird species found in Europe and Asia. It is listed as a Species of European Conservation Concern and on Annex I of the EU Birds Directive (Directive 2009/147/EC, Fielding et al., 2011; Staneva and Burfield, 2017) while the International Union for the Conservation of Nature (IUCN) classifies the species as Near Threatened in its European range (BirdLife International, 2016). Historically, this raptor adapted to relatively open habitats such as open or scrub-dominated habitats and data indicate Hen Harriers prefer to nest in tall Heather (*Calluna vulgaris*) (Cramp, 1980; Redpath et al., 1998). In recent years Hen Harriers in Ireland have nested in forestry in certain circumstances (Wilson et al., 2009, Wilson et al., 2012; Ruddock et al., 2016). Hen Harrier exhibit site fidelity (Geary et al., 2018) which could plausibly explain why the species selects afforested landscapes, a process that has occurred in Ireland in recent decades, although this habitat type would not ordinarily be the preference.

2.2 Stakeholder Selection

Purposive sampling was used when selecting stakeholders to interview. This form of strategic sampling focusses on stakeholders who are relevant to the research question (Bryman, 2004), but also helps maximize the variation and representative coverage of variables likely to be important

in understanding how diverse factors configure as a whole (Sandelowski, 1995). The aim was to select a broad range of stakeholders from different interest groups that were either directly or indirectly involved in the conflict. First, stakeholders were contacted following a desk-based study and using a priori knowledge of those involved in forestry and Hen Harrier debates at the local, regional and national levels. Actors who were part of the steering and consultative committee for the Hen Harrier Threat Response Plan were also identified.

Snowball sampling was also used to identify stakeholders to interview. Snowball sampling is used when a researcher accesses informants through contact information that is provided by other informants; such an approach is useful in assisting researchers in obtaining and accessing information from ‘hidden populations’ (Noy, 2008). Thus in this study the initial group of respondents were asked which stakeholders they believed would be valuable to interview, and their suggestions were then contacted and interviewed. Interviews and sampling stopped when no new information or insights were being revealed from the different stakeholder groups. This follows Glaser and Strauss’ (1967) recommendation that theoretical sampling in qualitative studies should generally follow the concept of saturation. This process resulted in different numbers of stakeholders being interviewed in each of the stakeholder groups. The final sample size was 30 stakeholders. The number and details of the stakeholders interviewed are given in Table 1.

Table 1: Description of the various stakeholders interviewed from both the national and local level. The number in brackets represents the number of stakeholders interviewed in each stakeholder group.

Stakeholder Group	Stakeholder name	Background of Stakeholders and number interviewed
Government Authorities	The National Parks and Wildlife Service (NPWS)	The authority responsible for coordinating the conservation of natural habitats and species and the protection of biological diversity in Ireland and implementing the Natura 2000 network (<i>NPWS is responsible for the TRP work</i>) (3)
	Department of Agriculture, Food and the Marine (DAFM)	The section within the Department responsible for promoting sustainable and productive agriculture and maintaining the viability of farmers by providing support and agri-environmental schemes for Hen Harrier and other species (<i>DAFM is a member of the steering committee for the TRP</i>) (1)

		Forest Service	The authority responsible for regulating key forestry activities (e.g. afforestation, forest road constriction, thinning and felling/replanting) under the 2014 Forestry Act (<i>The Forest Service is a member of the steering committee for the TRP</i>) (1)
Environmental Organisations (ENGOs)		Irish Raptors Study Group	The group specialises in the deployment of volunteer fieldworkers with highly specialised skills in the identification and survey of raptors (birds of prey) such as the Hen Harrier (<i>The raptors study group is a member of the consultative committee for the TRP</i>) (1)
		Golden Eagle Trust	The Trust is dedicated to the restoration and conservation of Ireland's native birds and their habitats, in particular declining and extinct species (1)
		An Taisce/The National Trust for Ireland	An organisation with the aim of preserving and protecting Ireland's natural and built heritage. (<i>An Taisce is a member of the consultative committee for the TRP</i>) (1)
		Irish Wildlife Trust	The Trust aims to conserve wildlife and the habitats they depend on throughout Ireland (1)
		Birdwatch Ireland	The objective of this organisation is the protection of wild birds and their habitats in Ireland (1)
		Woodland League	This organisation aims to restore the relationship between people and their native woodlands (1)
Forestry groups	interest	Coillte/State Forestry Company	The State forestry company (<i>Coillte is a member of the Hen Harrier Consultative Committee of the TRP</i>) (3)
		Private Forestry Companies	Companies specialising in the fields of farm forestry, encouraging the planting of forests and involved in private forestry investment (2).

	Irish Farmers Association (IFA)	The main organisation representing the interests of farmers/ private forest owners at both National and European levels (<i>The IFA is a member of the consultative committee for the TRP</i>) (2)
	Irish Timber Growers Association (ITGA)	An association that supports the development and expansion of private sector forestry in Ireland which represents and informs woodland owners (<i>The ITGA is a member of the consultative committee for the TRP</i>) (1)
Farm Forestry Organisation(s)	Teagasc	The national agriculture and food development authority providing advice, training and research on farm forestry and related matters (1)
Landowners	Private landowners/farmers	Farmers/private landowners mainly affected by the implementation of Hen Harrier SPAs and afforestation moratorium (6)
	Irish Farmers with Designated Land (IFDL)	An organisation uniting farmers and landowners in regaining the value of designated land and ensuring that farmers can generate a reasonable income from their designated lands (1)
Other	Researcher	Academic researcher previously involved in scientific peer-reviewed research and publications on Hen Harrier ecology and forestry in Ireland (1)
	LEADER Group	Rural Development Company involved in Natura 2000 sites, EU LIFE projects and supporting local/ farm families (1)
	Media	A journalist with a track record of reporting on conservation (Natura 2000), farming issues and other issues affecting farmers and small rural communities (1)

2.3 Qualitative thematic text analysis

One-to-one in-depth semi-structured interviews were held with the stakeholders. Semi-structured interviews use an interview guide (see supplementary material) that includes standard questions

asked in each interview, allowing comparison between interviews; but also allows the interviewer to ask additional questions if new issues arise in the interview (see Young et al., 2018b for a full methodological overview of such interviews).

The interview guide was developed as follows: To stimulate an initial discussion on forestry versus Hen Harrier conservation issues, the interviewees were asked to describe the ‘conflict’ between forestry and Hen Harrier conservation including identifying which elements they perceived to be particularly problematic. Regarding views on relationships and structural issues, participants were asked to identify the stakeholders involved in the conflict and what they perceived as the interests and values of the others. Follow up questions regarding participants’ involvement in any decision-making processes were also explored (see Appendix for questionnaire). We also asked interviewees to identify policy instruments and management strategies that may be useful in managing the conflict.

The duration of the interviews varied from 30 to 90 minutes. The time was mainly influenced by stakeholders, their time available to be interviewed and sometimes their motivation in wanting to discuss the conflict in further detail. Two of the authors conducted all of the interviews together. All interviews were audio recorded with the consent of the stakeholders and transcribed verbatim. A database of coding was established and the data were analysed qualitatively with the aid of Nvivo software, version 9 (Richards, 2005).

Qualitative thematic text analysis was used (Aronson, 1995). The data analysis was deductive, as the data categorisation was carried out by applying a specific theoretical framework instead of establishing categories from the data itself (Kuckartz, 2014). Each interview/individual participant text was coded by one of the authors for emergent key themes that best described the framework attributes by Walker and Daniels (1997) (See Table 2). A second co-author cross-checked the coding. Participant narratives have been used to illustrate meaning in the themes and summaries.

Table 2: Dimensions and associated coding

<i>Dimensions</i>	<i>Coding (parent and child nodes using Nvivo 9 software)</i>
Substance	<i>Substantive issues, incompatible interests and overlaps</i>
	<ul style="list-style-type: none"> • Interest in the protection of Hen Harrier/endangered species • Interest in forestry and right to farm, plant or harvest • Nuanced approach managing SPAs for both land-use and Hen Harrier protection
	<i>Procedural issues & misinterpretation of existing science/data</i>
Procedure	<ul style="list-style-type: none"> • Misperception of nesting sites and impact made by the moratorium • Forestry good but bad for Hen Harrier • Forestry good for Hen Harrier • More science and research needed • Negative media reporting • Ineffective schemes
	<i>Relationship issues and poor communication</i>
Relationship	<ul style="list-style-type: none"> • Perception of trust and respect • Lack of engagement and communication with stakeholders
Identified Policy Instruments and Strategies	<i>Policy instruments & strategies managing the conflict situation</i>
	<ul style="list-style-type: none"> • Approaches describing compensation and agri-environmental schemes • Approaches describing more science • Approaches describing managing forests and Hen Harrier conservation within landscapes • Participatory conflict management process for Hen Harrier SPAs

3. Results

The analysis of the interview transcripts revealed the substance, procedural and relationship dimensions of the conflict (Table 3).

3.1 Substance dimension

The substance of the conflict had a number of dimensions. The NPWS and the ENGOs perceive the Hen Harrier to be an endangered species whose population is decreasing, thus, it must be protected with greater restrictions within the SPAs. As the NPWS stakeholder noted: *“We are charged to maintain the population and establish SPAs to ensure that the SPAs are appropriately implemented and managed within the Birds and Habitats Directives”*. The ENGOs also believe the restrictions are necessary considering the current extent of forests within the SPAs. They also believe that even a very “responsible” afforestation is not compatible with Hen Harrier conservation within the SPAs, since forests currently account for around 52% of the Hen Harrier SPAs. This is because the ENGOs and the NPWS consider forests to be a potential ecological trap for the birds when the forest canopy closes in (i.e. since the Hen Harrier is a ground-nesting bird) and any further afforestation within the SPAs will cause the Hen Harrier population to decline, as the birds do not nest and forage anymore in such forests.

In contrast, the Forest Service, the farm forestry organisation and the forestry interest groups sees compatibility between forestry and Hen Harrier conservation, arguing that *“forests provide loads of habitat for Hen Harriers”* with many indicating that the scientific research has shown that *“the Hen Harrier prefers to nest in young forests”*. They perceive that first and second generation young plantations are now the primary nesting habitat for Hen Harriers in Ireland following the degradation of traditional habitats such as the moorland. Although the forestry interest groups acknowledge the scientific argument that forestry within the landscape has to be capped to a certain percentage, they still believe, *“forestry is an important landscape for the Hen Harrier as scientific peer-reviewed studies showed no negative impact from forestry and Hen Harriers”*.

Interviewees from a range of stakeholder groups (i.e. the private and public landowners; ENGOs, “Other”, Forestry) question the relevance of the blanket restrictions. They believe that the blanket restrictions within the SPAs are *“not working”*; they are neither conserving the bird nor increasing the bird population. An ENGO stated that *“there was an assumption that you get a designation and the upland biodiversity and habitat conservation condition would improve, but I don’t think it has”*. The forestry stakeholders noted that the restrictions had not led to an increase in Hen Harrier numbers but have remained stable suggested *“that the blanket restrictions are not making any positive impact on the Hen Harrier population”*.

Table 3: Forestry versus Hen Harrier conservation conflict dimensions, including proposed policy instruments and management strategies to address the conflict.

Walker & Daniels (1997) Analytical Framework	Dimensions of the conflict	Identified Policy Instruments and Strategies
Substance	The reduction in Hen Harrier numbers within the SPAs. The moratorium on afforestation within Hen Harrier SPAs since 2015. The restrictions on forest management activity including harvesting in existing forests in Hen Harrier SPAs.	Livelihood incentives via agri-environmental schemes and compensation for farmers. Provision of training and advisory services for farmers, in managing and protecting Hen Harrier nesting habitats.
Procedure	Lack of stakeholder consultation and information following the initial designation of SPAs. Discourses over scientific data and information warranting the Natura 2000 implementation. Inadequate and failure in earlier schemes.	A locally-led multi-stakeholder participatory approach to identify management approaches. Better engagement with landowners, farmers and relevant stakeholder groups. More data and research on Hen Harrier populations e.g. changing to annual red zone bird survey. Surveys influencing changes to restrictions within SPAs. Implementation of landscape ecology and ecosystem management models
Relationship	Lack of trust and fairness, as well as equity and justice Power imbalance and urban versus rural inequity of power considering past and current methods in which authorities use to handle issues impacting landowners, rural Ireland and wildlife conservation Lack of participatory approaches and top-down approach from authorities in implementing EU Natura 2000 policies.	Better communication amongst stakeholders including authorities' e.g. adopting bottom-up decision-making approaches in dealing with landowners, farmers and other relevant stakeholder groups.

Landowners consider the moratorium and restrictions, without any accompanying proper incentives or compensation, as infringements on their constitutional rights to achieve optimal returns on their assets by either choosing to afforest, farm, or install wind turbines on their land. They also believe that the placing of restrictions on them afforesting or utilising their land has rendered their land worthless and unsellable and is having a negative impact on their livelihoods and on those of others living in the rural areas or countryside. One of the “Other” stakeholders stated: *“If these areas are rich in wildlife then farmers and the people that live there should not be deprived of a livelihood because they happen to be the last bastions of the wildlife. They have looked after wildlife whether deliberately or passively, so they shouldn’t be punished for it”*. Landowners argue that they must either be *“fairly incentivised or properly compensated for the loss of value on their assets”*, which they consider to be their ‘right’ under the provisions of the EU Birds and Habitats Directives. They described how the restrictions within the SPAs were causing *“financial difficulties, psychological and mental effects and widespread depression amongst farmers and their families”*.

Interestingly, although afforestation is not the main land-use for some landowners, they are still upset about not having the option to afforest their land, if they so desire. Such a value system and 'rights' were best described as: *"the vast majority of farmers won't go for the forestry option but they don't like the idea that they are denied the forestry option either. It's like the opera, you are all in favour of it but you might never go to it"*.

Almost all stakeholders made reference to farmers' value systems, acknowledging that many do use a form of ecological land-use management, dispelling the belief that farmers dislike or are against Hen Harrier conservation. Farmers highlighted this as: *"we all share the survival of the Hen Harrier, that's common to all of us. We are all for this bird and don't condone what went on with the shooting of that bird. Wildlife is indigenous to the country, the bird was there before us, we have minded this bird, and we have been very good to this bird"*.

Thus there appears to be common ground among stakeholders regarding the need to take steps to protect the species. Hence, the substance of the conflict is not about protecting the bird and its survival but is instead about how much forest will put the Hen Harrier in danger, whether the blanket restrictions work, and the right of landowners to do what they want on their land.

3.2 Procedural dimension

The procedural dimension to the conflict was primarily related to how the designation of SPAs was initially conducted, both from the perspective of the basis for the designation and how stakeholders were (or not) informed of the designation.

Forestry interest groups and even researchers questioned how the designation of SPAs was conducted, i.e. how the data that were used to inform it were arrived at: *"We understand policy makers have to make decisions, but what are the criteria and data used and how did the authorities arrive at these SPAs designation? Was the data used of high quality; was it subject to peer review or has it been reviewed? Were the data fit for purpose and do we know enough about the biology of the birds at that stage, probably not"*? In contrast ENGOS and the NPWS believe the scientific data and information underlying the blanket restrictions to be adequate and merited the designation of the areas as the Hen Harrier SPAs: *"the sites were designated largely on foot of two national surveys, one of which occurred in and around 2000, the second one occurred in 2005, so the six most suitable breeding sites were identified and included into the network"*.

Landowners and some ENGOS believe that the designation of the SPAs was *"rushed through"* because the Irish government was facing fines and pressure due to their delay in implementing the EU Birds and Habitats Directives. An ENGO stakeholder outlined: *"The first time that a lot of the landowners heard about the Hen Harrier, was when a protection area was designated, and they got a letter in the post saying: you are now in a protection area and these are the things that you need to get permission to do"*. The aforementioned stakeholder questioned how a conservation project could ever work with *"landowners as the stewards of the landscape not being a party to the management plan"*. Many share the view that the actual designation of the SPAs could have been done better, with greater collaboration and communication with the landowners.

Almost all stakeholder groups accept that previous schemes did not address the conflict. Some ENGOs and landowners especially also believe that the latest scheme (Department of Agriculture's Green, Low-Carbon and Agri-Environment Scheme (GLAS)) "*has not been well thought out and it is neither going to conserve the Hen Harrier nor meet farmers' interests, whilst it is too basic to deliver any meaningful benefits*". Landowners from IFDL and forest companies perceive the new GLAS to be a "*joke*". These landowners feel that the GLAS scheme is "*disingenuous*", that the payments available are inadequate and some have decided not to participate in it. However, the DAFM, responsible for implementing the GLAS scheme, believe that the payments are relatively generous to farmers.

3.3 Relationship dimension

The relationship dimension of the conflict relates to a lack of closely interlinked dimensions of trust and fairness – complemented with issues related to equity and justice within the recent conservation literature (e.g. Hanich et al., 2015; Martin et al., 2015). Landowners and forestry interest groups considered that the withdrawal of the Forest Management Protocol and the compensation scheme for landowners without notification was not fair and constituted a breach of trust. The issue of trust and impact on conservation was expressed as: "*Trust and honesty and how you deal with people are really important. This is not good for the protection of the bird either. It puts the bird at risk*". Additionally, there are some issues of mistrust and differing opinions between the farmer groups, which has led to the inception of a specific organisation, the Irish Farmers with Designated Land (IFDL), to represent this particular group of landowners – potentially addressing perceived issues of equity and justice.

Farmers also identified problems with how various state bodies interact when conservation policy and agricultural policies are implemented at local level. They highlighted that farmers will have their agricultural subsidies restricted if they refuse to cut scrub or maintain their lands for 'agricultural use'. On the other hand farmers will face fines or prosecution if they cut or remove the scrub (since scrub cutting is considered as a damage and loss to Hen Harrier habitat). While the incoherencies between policies are in themselves not a relationship dimension, the interaction between the bodies that are responsible for implementing them is. When such incoherencies manifest themselves, usually at a local level, the willingness and capacity of these bodies to work together to identify mechanisms to overcome these incoherencies is a relationship dimension.

An urban versus rural imbalance of power was a relationship dimension that was raised. In particular the manner in which past and current authorities have dealt, and are currently dealing, with issues impacting landowners, rural Ireland and wildlife, was highlighted. Landowners believe authorities who are typically based in urban areas and in particular in Dublin, are defending the 'status quo' of the EU's biodiversity policy without taking into account the impact of the moratorium and restrictions on farmers and rural communities' livelihoods. A landowner described this as: "*the NPWS are getting paid salaries to preserve the bird. Everyone else is paying the price here locally, that is the biggest conflict. They have no idea of the harm they are causing*". An ENGO highlighted that the top-down decision-making approach at the national level played a

key role in the cause of the conflict: *“People came into their area and told the farmers and landowners this is what they are going to do. Europe tells us to do this and you are told to be a good boy. That has been a really bad game plan from the conservationist side”*. Some landowners, ENGOs and some forestry interest groups perceive the *“stick rather than the carrot approach”* (restrictions rather than proper incentivising of farmers/landowners to conserve the Hen Harrier) and the *“silo thinking”* from authorities (implementing EU Natura 2000 policies with a *“top-down”* approach without taking into account the local/rural implications), could become a disservice to Hen Harrier conservation.

3.4 Identified Policy Instruments and Strategies to address the conflict

A number of policy instruments and strategies to address the conflicts were proposed by stakeholders. These included: the introduction of incentives or a compensation scheme; better stakeholder engagement; changes to restrictions; more data and research on Hen Harrier bird surveys; implementation of landscape management models; and better communication (Table 3).

Incentives and Compensation scheme

Many of the stakeholders identified that an agri-environmental scheme that specifically targets marginal and designated landowners should be introduced. Despite holding opposing views in some instances, almost all stakeholders share a common interest/goal when it comes to the conservation of the Hen Harrier and livelihood incentives for farmers. Farmers especially expressed an interest and willingness to engage in agri-environmental schemes that, with the appropriate training and advice, would result in the provision of habitat for the Hen Harrier and would also meet their livelihood demands.

Stakeholder engagement and collaboration

All stakeholder groups recommended that a meaningful stakeholder participatory approach is required to address the conflict. Specifically it was suggested that the NPWS and the Forest Service should effectively engage and communicate with landowners through a locally-led multi-stakeholder participatory approach to identify management approaches that would simultaneously result in the conservation of the Hen Harrier while addressing the livelihood concerns of landowners.

Changes to restrictions

Some stakeholders such as the Forest Service, Teagasc, forestry interest groups, including Coillte, and the “Other” group would prefer a more nuanced approach to restrictions than currently applies. Coillte’s perspective is that rather than imposing blanket restrictions, best management practices should instead be encouraged. They also believe that forestry and Hen Harrier conservation management practices should return to pre-2011 procedures within the SPAs, where there was a limited afforestation programme and restrictions on forest operations were targeted on actual nest locations. In this case, *“no need for red zones, no need for restrictions, you put the red zone around where the nests and bird generally are”*.

More data and research on Hen Harrier populations

Some stakeholders including Coillte, the Forest Service and the IFA believe an annual red zone bird survey should be encouraged in existing forest plantations instead of the current five year bird survey coordinated by NPWS and other conservationist interest groups. Coillte and the IFA believe that such an annual Hen Harrier survey will help to “*identify the true red zones*” and together with “*a natura impact statement free up the constraints to operate within the red zones during the summer months*”.

Almost all stakeholders highlighted the need for more research to provide a better understanding of the ecology and biology of Hen Harrier to inform decisions. Examples of future research areas mentioned include: “*Hen Harrier flying patterns and range, as well as, their new habitats after the forest canopy closes-in; the breeding productivity of the bird in certain types of forest; and predation of the Hen Harriers in different habitat types such as afforestation*”.

Landscape management models

Given that the Hen Harrier is a species which forages well in the early thicket stage of forestry (Barton et al., 2006), most stakeholder groups recommended a landscape ecology and ecosystem management concept which could involve managing both the Hen Harrier red zones areas and having forest patches at the same time on a landscape scale. In this model the forest landscape structure and management would include a mosaic of young forests and habitat patches, providing corridors and a landscape matrix management type in which the Hen Harrier could forage and improve its productivity. The implementation of such a landscape ecology model was described by the stakeholder groups as involving stakeholder collaboration and training which would capacitate farmers/landowners. Additionally through an agri-environmental scheme optimal patches of young forests would be managed and ultimately a landscape would be created for the Hen Harrier to forage, which would have a continuous cover of a suitable tree species and flora, with different age mosaics in conjunction with open natural habitats area.

4. Discussion

The Hen Harrier conflict in Ireland is an example of a conservation conflict, the incidence of which is increasing (Redpath et al., 2013). While such conflicts have been described as inevitable there is nevertheless a need to manage them to ensure that they do not become destructive (*ibid*). The results of this study suggest that the Hen Harrier conflict in Ireland could potentially become destructive and there is an urgent need for steps to be taken to manage it. In this regard, we take the view that conflicts such as this complex and multi-faceted one, will probably never be ‘resolved’ but that measures and processes can be put in place to minimise the negative impacts of the conflict on both people and wildlife (Young et al., 2016 a, b).

The first step in managing a conflict is to understand its causes (Madden and McQuinn, 2014; Redpath et al., 2015). This study revealed that the conflict between Hen Harrier conservation and forestry in Ireland has a number of deep-rooted dimensions including those relating to the substance of the conflict as well as procedural and relationship dimensions. Concerns about a

reduction in Hen Harrier numbers in areas that have been designated for their protection have led to a curtailment of forestry activities including harvesting in the case of existing forests and restrictions on the establishment of new forests. Thus one of the substance dimensions of the Hen Harrier and forestry entails the “classic trade-offs between nature conservation and timber production” witnessed in other conflicts (Winkel et al., 2015, p.26). The shortcomings of compensation payments for landowners was also raised as a substance element. Indeed, issues of fairness and effectiveness of compensation schemes have been debated in the literature (e.g. Ohl et al., 2008; Narloch et al., 2013). The issue of compensation for landowners who experience monetary loss was also identified as one of the challenges to the implementation of Natura 2000 by Ferranti et al. (2010).

An additional substance element to the conflict are the polarised views as to how forestry practices impact on the conservation of Hen Harrier. While polarised views are not uncommon in conservation and forestry conflicts (de Koning et al., 2014), the substance underlying the polarised views in this conflict are unusual. On the one hand, the ENGOs and the NPWS firmly believe that forestry is not compatible with the conservation of the bird; whilst on the other hand the Forest Service, forestry interest groups and the farm forestry organisation hold the opposite view, claiming that young forests are the preferred nesting site. What has contributed to these polarised views has been varying interpretation of studies that have been conducted on Hen Harrier ecology in Ireland. The forestry interest groups have interpreted these results to be that this ground nesting bird selects sites in first and second generation plantations which suggest that this type of habitat is suitable for it; in contrast the ENGOs believe that the forests are suitable until the canopy closes, thereafter, their breeding success declines. However, the ecological complexities and nuances appear to be lost in this conflict. The current peer-reviewed research findings state that the breeding productivity of the species is not influenced by closed canopy cover in the landscape despite the fact that in a subset of sites high levels of second rotation forestry in the surrounding areas was associated with low breeding success (Wilson et al. 2012). Although the early indications were that Hen Harrier benefited from the initial stages of rotation forestry (Wilson et al., 2009) the long-term implications for the species in forested landscapes in Ireland is less promising (O’Donoghue et al., 2011). Historically, the species adapted to relatively open habitats such as open or scrub-dominated habitats (Cramp, 1980; Redpath et al., 1998). The data indicate that relationship between Hen Harrier and forested landscapes in Ireland is not clear and further complicated by the fact afforestation in previously open landscapes has only occurred in recent decades.

Conflicts regarding the interpretation of data have also been encountered in other natural resource conflicts (Moore, 2003; Hodgson et al., 2019). The conflicting interpretation of the scientific data available to various stakeholders in the current study exemplifies this type of conflict. It is critically important that the ecological context of any study in terms of landscape configuration and composition be considered. The way in which Hen Harriers interact in the landscape in regions of Ireland (Wilson et al., 2012) appears to be different to other geographical ranges e.g. in Scotland (Geary et al., 2018) based upon the peer-reviewed literature. This can lead to misinterpretation and selective inference that further creates deep-rooted positions from various stakeholders. The deep-

rooted positioning of stakeholders, as witnessed in other Hen Harrier study systems (Thirgood and Redpath, 2008), could plausibly lead to misinterpretation of data and therefore produce a barrier to progress.

The procedural dimension of this conflict related to how the designation of SPAs was initially conducted. The basis of the designation as well as the speed at which it was implemented were issues highlighted by stakeholders involved in this conflict. Discourses over the scientific basis to Natura 2000 implementation are not unusual (Bryan, 2012), however, the fact that lessons are still not being learned from other conflicts around the designation of SPAs is worrying in terms of future implementation of the Habitats and Birds Directive – especially around species and habitats that are known to engender conflicts elsewhere. As shown in the results, there were doubts and mistrust issues regarding the criteria and data used in the designation process. Opponents of the designation were sceptical of the SPA selection and designation procedure; because no definitive scientific data could be produced to warrant designation. Bryan (2012) similarly found that the boundaries of some Natura 2000 sites in Ireland were determined on the basis of “uncertain” or “incomplete” science. Another key issue under the procedural dimension is the lack of consistency in policies - an issue common in many conservation conflicts. The silos of different policy instruments (e.g. forestry, conservation, agriculture) can contribute to the complexity of a conflict - whereby policies affecting a specific issue may be multiple and in direct contradiction with each other. This lack of mainstreaming can exacerbate the conflict (Young et al., 2014).

The relationship dimension was related to the designation of the SPAs with the absence of engagement or communication with stakeholders in the designation process being highlighted by many of those interviewed as a cause of the conflict – highlighting the need to address justice and equity in conservation (e.g. Sikor et al., 2014). Geutzenauer et al. (2016) noted that where a “non-participatory, top-down” mode of implementation was adopted in Natura 2000, it was met with a high level of opposition from landowners leading to conflict. Cent et al. (2013) similarly noted that the absence of landowners in the designation processes contributed to conflicts during the implementation of Natura 2000 and has raised concerns about the legitimacy of Natura 2000 policy (Paavola, 2004). More recently participatory approaches have been used, often in response to conflicts and engagement with landowners has increased (Young et al., 2012; Butler et al., 2015; Winkel et al., 2015). Increasing the involvement of local actors has been shown to have substantive and instrumental benefits including improving the quality of decisions, as well as creating a greater chance of policies being better socially and politically accepted (Beierle and Konisky, 2001; Primmer and Kyllonen, 2006). A wealth of research now exists on developing more effective stakeholder processes with the instrumental aim of reducing conflicts (e.g. Young et al., 2016a; Bonsu et al., 2017). While it has been noted that participatory approaches can lead to an increase in the acceptance of the conservation policy and increased trust between stakeholders involved in the conflict it can also involve trade-offs, including delays in implementation and can be costly in terms of time and other resources (Young et al., 2012). In addition, engaging with stakeholders does require a clear process and goal and political will (Young et al., 2016a).

To summarise on this first step of understanding the Hen Harrier conflict, this study highlighted a number of similarities in terms of causes of conflict with other SPA conflicts in Europe, but also some contextual aspects, specific to this conflict. An important aspect raised in this conservation conflict, reflecting similar deep-rooted conflicts linked to differences in fundamental needs and values, was the issue of perceived fairness, trust, justice and equity. Better understanding of these root causes of conflict is essential before they can be addressed and the negative impacts of conflicts on people and wildlife minimised (Madden and McQuinn, 2014). In future studies aiming to understand conflicts, we would suggest a similar approach where similarities can be identified in order to build an evidence base that could help build capacity across EU Member States for statutory and government agencies and other stakeholders to better manage conflicts in protected areas. Indeed, whilst the implementation of protected areas (SACs and SPAs) under the EU's Habitats and Birds Directive has arguably been successful in terms of coverage and conservation success of certain species, conservation conflicts in many of these areas persist due to the multi-functional nature of these areas, but also due to repeated mistakes in terms of lack of capacity in engaging with local stakeholders. Future capacity-building could focus on all stages of the potential conflict: starting with a clear identification of what may be the root causes of conflict. Whilst we acknowledge that each conflict is contextual, there remain many insights that can be learned from other similar conflicts and that can then be tailored to the specific conflict. Capacity-building can also be implemented at other stages of the conflict, including to increase the opportunities for successful stakeholder engagement, from site selection to site management (including compensation).

This leads us to the second step in managing conservation conflicts, which can only occur when stakeholders are willing to discuss with other parties, and negotiate on their positions (Redpath et al., 2013). Only then can the conflict move from stalemate to a situation in which alternative solutions can be explored. In the current Hen Harrier conflict, there are encouraging signs, with stakeholders sharing a common interest and goal in terms of conservation and incentives, and the agreement on the need for more engagement. A European Innovation Partnership (EIP) concerning the Hen Harrier was initiated in 2017 in Ireland (<http://www.henharrierproject.ie>), EIPs are an enabling mechanism for stakeholders including farmers, scientists, advisors, NGOs and others to work to implement innovative projects that contribute to rural development priorities. They allow local communities to cooperate in a way that respects local economies, land usage and the management of biological heritage. In conjunction with this, local complexities can be catered for that enables the development of prescriptions that deal specifically with the local context, both biologically and sociologically.

4.1. Conclusion

Whilst the success of the Hen Harrier Project will be determined with time, the initial signs are promising. The current study reminds us, however, that the polarisation of views in conflicts is a testimony to how entrenched stakeholders can become through lack of communication and trust. As such, this study highlights the need to recognise that sustained conflict management efforts

require a continued willingness from all stakeholders to engage, and if needed compromise, that can only be achieved through efforts to (re)build trust amongst stakeholders.

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Appendix

Section A: *This section aims to assess/better understand stakeholders' groups' views and their relationships, regarding the forestry and Hen Harrier habitat protection issues/debates.*

1. Can you describe the issue(s) relating to forestry and the conservation of the hen harrier? Are there any specific elements that are particularly problematic from your point of view?
2. How is your work related to the forestry and hen harrier conservation issues and debates?
3. What are the key objectives of the organisation you work for? What is the interest of the organisation in regards to forestry and hen harrier conservation?
4. How do the interests of the organisation fit with your personal values?
5. Who are the stakeholders that are involved in the conflict? What do you think are the interests and values of the other stakeholder(s) regarding forestry and hen harrier conservation? How are these similar to or different from your interests and values in relation to forestry and the conservation of the hen harrier?

Section B: *This section aims to identify the strategies in managing the situation/issues surrounding forestry and Hen Harrier habitat protection*

1. What type of mechanisms or approaches do you think are most appropriate for managing the forestry and the conservation of the hen harrier issue(s) or conflict situation?
2. Have you been involved in any decision-making processes in relation to hen harrier conservation areas, or compensation schemes? Would you like to be involved in these processes? If so, how would you like to be involved? If not, why not?

3. Are you aware of any strategy or decision that has been used in the past to manage the conflict situation, do you think it worked? If so, why do you think it worked? If not, why did it not work?