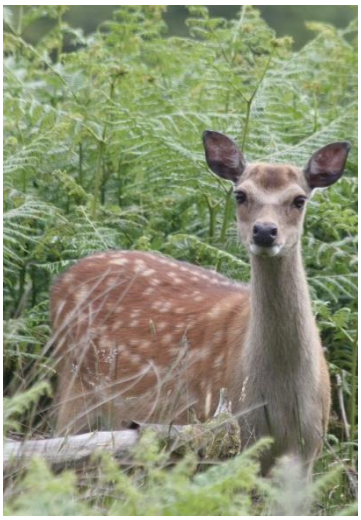
WicklowUplands COUNCIL

Wicklow Deer Management Project (2018 – 2022)

Final Report

March 2022



An initiative jointly funded by the Department of Agriculture, Food and the Marine and the Department of Housing Local Government and Heritage

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

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Department of Housing, Local Government and Heritage

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1. Executive Summary

Deer are a very important resource of significant heritage, economic and social value. However, there is ever growing public concern regarding the unsustainable growth of the wild deer population in Wicklow and the consequent environmental and economic impacts. The Wicklow Deer Management Project was initiated in 2018 with the principal aim of establishing at least three new Deer Management Units (DMU's) in the county and to put deer management on a more professional basis. The project successfully delivered on these outcomes and carried out a series of actions including; the establishment of five DMU's along with management plans; the capture of accurate data of activity within the DMU's, an increase in numbers of female deer culled and an increased uptake of out of season deer control under Section 42 licencing. The project also identified that landowners face significant agricultural and economic losses from the grazing of valuable grassland by deer through a series of grassland measurement. Furthermore, a TB testing pilot initiated by the Project determined a TB incidence rate of 16.6% in suspect deer samples sent for testing and identified 'hotspot' locations that merit further investigation for disease control.

A number of key recommendations were produced based on the findings of the project including:

- While more detailed deer population data is needed, the focus of deer management plans should be reducing the adverse impacts associated with deer
- Increased culling of female deer is required
- Deer management programmes need to make full use of the open season and out of season deer control under Section 42 licencing.
- Deer management plans require a collaborative approach and the involvement of all stakeholders
- Further detailed analysis of economic loss to grassland and forestry is required
- Further work is needed to identify the full impacts of deer on conservation habitats and biodiversity
- Successful Deer Management Unit's are driven from the bottom up. However, a suitably qualified coordinator is needed to provide oversight support and guidance, and to ensure a professional approach is followed.
- All landowners need to consider the leasing of hunting carefully as it is they, the landowner, who have ultimate responsibility for ensuring that hunters on their lands are operating effectively. The sharing of accurate data between landowners and hunters is an absolute necessity in this regard.
- New technologies should be fully embraced to assist in evidence based deer management and to streamline existing licencing systems.
- The TB testing pilot identified TB hotspots in West Wicklow and warrant much further detailed investigation. The model proved efficient and effective and can easily be rolled out to other TB blackspots.
- Venison needs to be promoted as a sustainable healthy product.
- The National Deer Management Forum should be reformed as a matter of urgency.

Within County Wicklow, the Wicklow Mountains Special Area of Conservation or SAC largely includes unenclosed land over 300m and is 32,946 hectares in total extent. The SAC includes the Wicklow Mountains National Park and adjacent upland areas in south Co. Dublin and Co. Wicklow and it supports several habitats (including Annex 1-listed wet heath, dry heath, blanket bog and species-rich *Nardus* grasslands along with old broadleaved oak woodlands). As a large proportion of the SAC is state owned (i.e. Coillte, the National Parks & Wildlife Service) or under private ownership (by the

forest and/or farming sector), providing effective deer management and control measures that will alleviate environmental and economic impacts by deer will deliver benefits for many stakeholders.

Given the successful delivery of the project, the current active level of engagement between landowners and hunters in the DMU's, and the findings regarding grazing impact and TB hotspots, the Project Steering Group is urgently seeking a new funding arrangement for the uninterrupted continuation of the project and its work. There is potential scope to expand the current DMU model to other areas of Wicklow and to expand the grassland and TB testing methodologies. There is also much further scope to implement research on damage to woodland and priority conservation habitats. This is especially important given the current biodiversity and climate crisis and the importance that biodiversity components of land holdings and land management are likely to have in new EU, DAFM, EIP, NPWS schemes etc. Furthermore, as recently developed deer population recording technologies come online, the information gathered will greatly assist in the delivery of an evidence based approach to deer management

2. Project Background

The Wicklow Deer Management Project was established in 2018 in response to a Request for Tenders (RFT) issued by the Department of Agriculture, Food and the Marine, for *'The Provision of Deer Management Services in the Co Wicklow Region'*. The tender sought for the establishment of at least three deer management units (DMU's) in the Wicklow region, and the development and implementation of management plans for each DMU over a three-year period.

The programme was jointly funded by the Department of Agriculture, Food and Marine and the Department Housing, Local Government and Heritage with a total contract value of €119,250. The project was originally due to operate from July 2018 to July 2021. However, due to a delayed start-up and the impact of Covid19 restrictions, a time extension was granted to the end of March 2022.

A project proposal was developed by Wicklow Deer Management Partnership (WDMP) in conjunction Wicklow Uplands Council (WUC). WUC is an independent voluntary organisation, supported by the Heritage Council, and currently represents over 30 diverse member groups and individuals in the Wicklow and Dublin uplands. WUC is also an active member of the WDMP, a common interest group and the only one its kind in Ireland. WDMP comprises of a number of key stakeholders, including landowners, land managers and hunters who share the common goal of achieving a collaborative solution to the responsible, sustainable, management of wild deer populations throughout Co Wicklow and adjoining areas at levels which are in balance with agriculture, forestry, hunting and environmental objectives. The WDMP has highlighted the impacts caused by deer for many years and has led several initiatives, including commissioning a Deer Management Template[1]. The Project was delivered under the auspices of a steering group comprised of key members of the WDMP and WUC who together brought key experience, local knowledge, and technical expertise to advise and guide the project manager.

[1] **Developing a Collaborative Strategy for the Management and Control of Invasive Deer Species for Co Wicklow (2010)**. A report commissioned by: The Wicklow Deer Management Group. Report prepared by: Paddy Purser M.Agr.Sc, Dr Ruth Carden B.Sc., Ph.D. & Faith Wilson B.Sc. CEnv MIEEM

Table 1. Project Steering Group	
Name	**Organisation**
Pat Dunne (Chair)	WUC/WDMP
Wesley Atkinson	NPWS
Barry Coad/Mary Clifford	Coillte
Sean Eustace	WDMP
Damian Clarke	NPWS
Joe Morrissey	WDMP/WUC/Wicklow IFA
Declan O'Neill	WDMP/WUC
John Flynn	WDMP/WUC
Tommy Healy	WDMP
Brian Dunne	WUC
Patrick Mellon	Project Manager

3. Introduction

Deer are a very important resource of significant heritage, economic and social value. However, without a natural predator and without management, deer populations can grow to unsustainable levels resulting in significant ecological damage and economic loss. The 'Framework for Action' report published in 2015 highlighted the need for wild deer populations in Ireland to be managed within sustainable limits in balance with the ecological, social and economic environment which they exist[2]. This ecosystem approach is about using natural resources sustainably and integrating this use with social and economic needs without damaging the health of the ecosystem these needs depend on.

Wild deer numbers have increased dramatically in Co Wicklow[1]. There are three main species of Deer in Co Wicklow:

- European Red Deer (*Cervus elaphus*)
- Japanese Sika (*Cervus nippon*)
- European Fallow Deer (*Dama dama*)

Reeves' muntjac deer (*Muntiacus reevesi*) have also been reported infrequently since the mid-2000s however the distribution of the species remains unknown with occasional verified sightings.

Sika are the most numerous deer species in Ireland accounting for almost 50% of the total deer population. Sika deer have a natural capacity to expand and to adapt to habitat change aided by land management practices that have combined to create a habitat matrix ideal for colonisation by the species[3]. Furthermore, red deer and sika can interbreed to produce fertile offspring[4]. At present there are unknown numbers of red/sika hybrid deer present within the county[1]. Sika deer present a major challenge to sustainable land management and, given their adaptability to new habitats and ability to

[2] Deer Management in Ireland, a Framework for Action (2015). Report prepared by Judith A. Annett
[3] Distribution and range expansion of deer in Ireland (2011). Carden, R.F. et al. Mammal Review 2011, 41(4):313-325
[4] A survey of the hybridisation status of Cervus deer species on the island of Ireland (2014) Smith, SL. et al. (Conservation Genetics, 15(4), 823 - 835.

hybridize with red deer, it is expected that Sika deer will continue to expand their range and population for the foreseeable future[2].

3.1. Deer Population and Densities

Despite much speculation about the population of deer, to date, no national census of the deer population has been carried. While there is currently no verifiable data recording of the deer population in Co Wicklow, there are constant reports from stakeholders on the ground about increasing deer numbers and the damage they are causing. There seems little doubt that the deer population in Wicklow has reached unsustainable levels with resultant ecological and economic damage. However much further work is needed on precise population data.

The best available estimates of deer population are derived from the number of deer hunting licences issued each year along with the annual cull returns as held by the National Parks and Wildlife Service. Wicklow is consistently above the national average. Over the past three years, Wicklow has represented over 10% of the licenced deer hunters in the country, the highest number of licences held in any county (Figure 1). Declared cull returns by those licenced deer hunters over the same period represented over 35% of the national return in 2019 and 2020 and over 33% in 2021 (Figure 2).

It is very important to note that at the time of publication, the 2021 cull data was not fully complete for Wicklow and therefore this figure is certain to increase. However, reduced hunting activities and cull returns would be expected during this period due the impacts of Covid19 restrictions.

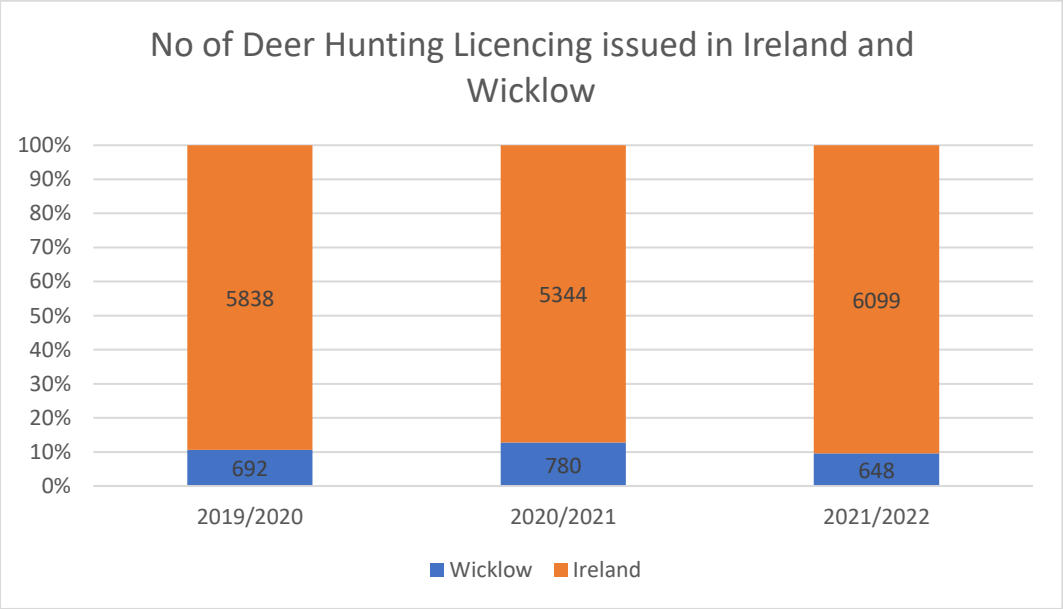

Figure 1: No of licenced deer hunters in Wicklow 2019 -2021

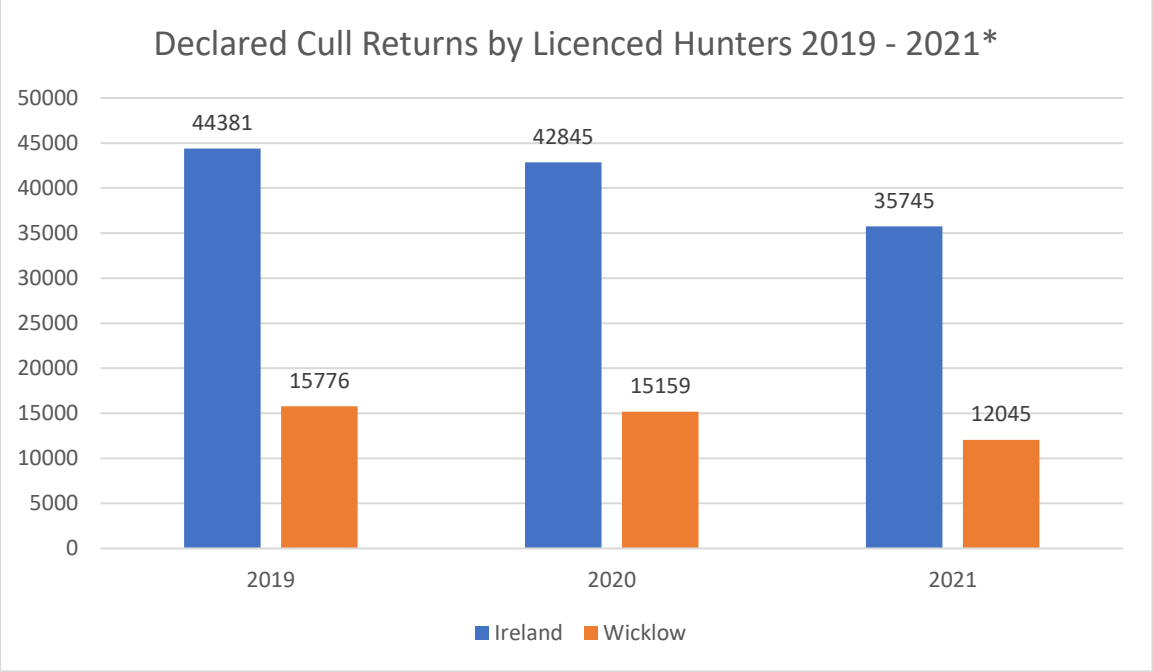

Figure 2: Declared cull returns 2019-2021. *Note 2021 cull returns not complete

3.2. Emerging Technology

The lack of a verifiable or consistent system for recording deer distribution in Ireland creates a significant challenge for any deer management programme. Neither the up-to-date precise distribution nor the population density of any of the four species of deer is currently known, and no national coordination for the collection of deer data exists. Recent advancements in technology such as smartphone and desktop geospatial capabilities are underused in Ireland for wildlife, especially for deer.

SMARTDEER Ireland[5] is a recent initiative and the first nationally coordinated project to collect deer related data through the use of smartphone apps and digital mapping surveys that will allow national deer monitoring in real-time. The Project aims to collect and analyse empirical data across the country and will help managers to make evidence-based decisions. The project is led by Dr Simone Ciuti, UCD assistant professor of Wildlife Biology, and is funded by the Department of Agriculture, Food and the Marine. As the SMARTDEER Project is only recently established, at present it could not provide any data to the Wicklow Deer Management Project. However, landowners, hunters and stakeholders involved in the Wicklow Project were actively encouraged to submit all relevant data and records into the SMARTDEER survey by the Project Manager.

Coillte has recently introduced the HAMS (Habitat Area Management System) System[6], an integrated online platform, to allow for the streamlined management of administration systems. HAMS is becoming standard across many EU countries and also provides for observation recordings which could assist in gaining valuable population data.

[5] https://www.sites.google.com/ucd.ie/smartdeer-ireland
[6] https://hams.online/en/

Successful engagement and implementation of these new technologies will present a significant opportunity to monitor the national deer population in real time. However, a single integrated system for all stakeholders would be most efficient.

3.3. Consequences of a Large Deer Population

While the exact deer population is not certain, it is known that deer overpopulation has a wide range of negative consequences. It is clear that in certain geographic areas, the current deer population is negatively impacting on environmental, economic and societal interests including damage to priority habitats, agricultural and forestry losses, disease transmission, animal welfare issues, and road traffic accidents. Being proactive in addressing this risk is an essential part of any conservation efforts to maintain a healthy deer population in balance with the ecological and socioeconomic environment they exist. They are far-reaching consequences from the growth of wild deer numbers in Wicklow and surrounding counties including:

- **Nature Conservation and Biodiversity Impacts**
    - Deer must be managed as an important component of our natural heritage and biodiversity while also allowing other species to flourish simultaneously. Unmanaged deer populations can have significant adverse impacts on Annex I habitats and Annex II species of conservation concern as defined under the EU Habitats Directive. Within Co Wicklow, the Wicklow Mountains SAC extends to cover 32,946ha and supports several priority habitats and species. These upland habitats represent some our most important natural heritage sites and support unique plant and animal species. They also store significant quantities of carbon and deliver a range of ecosystem services.
    - Deer have been recorded as a having a grazing and trampling impact on a number these priority upland sites across the Wicklow and Dublin uplands[7]. The consequences include overgrazing, loss of plant diversity, and the potential conversion of Annex heathland towards grassland. In the worst case scenarios eroding peat can be a feature as the vegetative layer is lost due to ongoing browsing and trampling.
    - The impact of deer grazing on natural regeneration of native woodland is long recognised[8]. Native and broadleaf trees are particularly vulnerable to deer damage through grazing, ring-barking, fraying and bole scoring. The preference of deer for broadleaf and some conifer species (e.g. Douglas Fir) has led foresters to avoid planting these species in vulnerable areas resulting in less diverse planting schemes and an overall reduction in forest composition[9]. Excessive grazing pressure on the herbaceous layer can have a cascading effect on other woodland species and invertebrates[10], impacting on the richness on the entire biological community. These impacts have obvious implications for broadleaf planting targets and biodiversity concerns.

[7] Wilson, F (2019). Ecological Baseline Reports prepared as part of Commonage Management Plans for sites participating in SUAS Project. (https://wicklowuplands.ie/suas-reports/)
[8] Deer and Forestry in Ireland: A Review Of Current Status And Management Requirements (2009)
[9] Casey, J (2019) Teagasc Daily. (https://www.teagasc.ie/news--events/daily/forestry/if-you-go-down-the-woods-todayyou-shouldnt-see-deer-every-time.php)
[10] Fuller, R.J. and Gill R.M.A. (2001). Ecological impacts of increasing numbers of deer in British woodland. Fuller R.J. and Gill, R.M.A. (Eds) Special Issue, Forestry 74 193-199.

- Given that we are currently living in a Climate and Biodiversity Emergency, the impacts of deer on these priority conservation habitats should be of utmost concern to all stakeholders. Peatlands and trees, particularly broad-leafed trees, play a crucial role in carbon sequestrations, climate mitigation strategies, and Biodiversity Action Plans and therefore effective deer management is essential.

- **Economic Impacts e.g. Commercial Forestry (State and Private)**
  - As above, deer can cause considerable damage to young and semi-mature trees and crops by fraying, browsing, bark-stripping and bole-scoring[11] with consequent economic loss. While there are no recent figures on actual economic losses in state forestry, a 2009 study commissioned by Coillte found that bark stripping in young Sitka spruce tree plantations would result in income loss of between 7% and 22% depending on end use and time price scenarios[8].The potential for loss has led some foresters to avoid planting broadleaf in vulnerable areas.
  - All newly planted broadleaf trees are required to be encased in plastic tubes, these range in price from €2 to €3.50 depending on type and result in additional costs for all planting schemes. Even with these tubes, deer fencing is a necessity in Wicklow for all large areas of native woodland plantation. Deer fencing costs can be substantial ranging from €12/m to €16/m depending on the site.

- **Economic Impacts on farmers through damage to agricultural lands (e.g. grassland, crops)**
  - There is considerable evidence that this is an issue across farmland in Co Wicklow e.g. damage to fences, grazing etc. In order to establish a baseline of grazing impact on grassland, the project initiated grass measurement trials in all DMU's. The trials involved the deployment of deer exclusion cages and determined a grazing impact.
  - Given that future agri-environmental schemes are shifting towards habitat scored based payments, farmers may find themselves at further financial losses if their farmed habitats are found to be in poor condition due to overgrazing or browsing damage.

- **Private Gardens**
  - As deer range expands there are increasingly reports of deer damaging domestic and commercial gardens. A landowner in a South Wicklow DMU reported the destruction of a number of valuable ornamental trees in their garden due to bark stripping.

- **Vehicle Collisions**
  - There are ever increasing reports of road traffic incidents involving deer in Wicklow. Conservative estimates suggest anywhere between 400 and 1000 collisions between motorists and deer around the country each year. However, it is widely accepted that only a small percentage of incidents are officially reported and there are also no formal statistics maintained in Ireland. In the UK, the RSPCA estimates that between 10 and 20 people are killed and over 700 injured every year as a result of accidents involving deer, either through direct collisions or swerving to avoid deer[12].

[11] **Deer in Irish commercial forests Murphy, Vincent & Carden et al. (2013).** Irish Forestry. 70. 91-103..
[12] **Road Traffic Accidents Involving Deer (2015).** RSPCA

Furthermore they estimate that over 10,000 deer are severely injured but not killed instantly when hit by vehicles, which indicates towards a serious animal welfare issue.
    - The costs to a motorist from a collision with a deer can range anywhere from €250 for a bumper respray, to a complete write off.
    - A recent report from Iarnród Éireann highlighted a significant recent increase in incidents of trains striking deer with media reports suggesting this is due to a rise in the deer population[13].
    - The simplest way to encourage the collection of road traffic accidents would be the utilisation of technology such as the SMARTDEER App. A database could be instantly updated and collected. The NRA and RSA along with Local Authorities and An Garda Síochána would also need to publicise and adapt to use of the App to ensure successful reporting.

- **Deer welfare issues.**
    - High population density can have a negative on the health of the deer. It is reported that body condition is better when there is reduced competition with other animals for forage. The overall development of juvenile deer can be affected in high density herds[14].

- **Vectors for disease**
    - As with most mammal species, when deer densities are high it can increase the transmission of disease to livestock and humans. Prime examples include: Lyme Disease[8] and Bovine Tuberculosis (TB).

3.4. Bovine Tuberculosis (TB)

Bovine Tuberculosis (TB) is a chronic, infectious disease of cattle caused by the bacterium *Mycobacterium bovis*. TB is a zoonotic disease affecting humans and multiple animal species and is recognised as a major health risk. The disease has the potential to result in substantial economic losses at farm level and despite a long-standing eradication programme, TB is reported to continue to affect ~0.5% of the national cattle herd[15]. Wicklow is long considered a 'TB Hotspot'.

A growing body of evidence, including that of the 2014 - 2015 Calary Deer Project, has identified TB in Sika deer in Wicklow. Recent studies have provided evidence that there are several unique strains of *Mycobacterium bovis* found in Sika deer in Wicklow and suggested that Sika deer act as wildlife reservoirs of TB. Furthermore, that higher levels of TB in cattle are associated with higher local densities of Sika deer[15].

While deer numbers have been an issue for some landowners for a long time, the level of engagement (vocalised) jumps to extreme where landowners are affected by high levels of TB. The Project found that, out of all of impacts outlined above (3.3.), TB concern was the greatest driver to form a DMU.

[13] **'Deer blamed as train collisions trebled last year'** https://www.irishexaminer.com/news/arid-40359659.html

[14] **The effects of population density on juvenile growth rate in white-tailed deer (2014).** Barr B, Wolverton S. Environ Manage Oct;54(4):897-907.

[15] **Bovine Tuberculosis: The Emergence of a New Wildlife Maintenance Host in Ireland (2021).** Kelly DJ, Mullen E, Good M. Front Vet Sci. Mar 25;8:632525.

The Project initiated a TB testing methodology to determine the usefulness of hunter level surveillance to identify hot spots of TB in deer while covering as wide an area as possible.

3.5. Deer Management

The principal aim of deer management is to maintain a healthy deer population in a natural balance with their environment[1]. Deer are a very important resource of significant economic, heritage and social value. However, without a natural predator and without sustainable management, deer populations can grow to unsustainable levels resulting in ecological and economic damage.

Wicklow is at the forefront of deer management issues in Ireland. As stated previously, the number of deer culled in Wicklow is consistently over 30% of the national deer cull and the number of licences issued for deer shooting is significantly greater than any other county (Figure 1 & Figure 2). While this data gives an indication towards a high deer population in Wicklow, it is accepted that much works need to be undertaken to get more precise population data.

Action plans are required for known deer conflict areas. The Irish Deer Management Forum highlighted the need for sika deer numbers in County Wicklow to be reduced to sustainable level and for a series of measures to be put in place to enact this as a matter of urgency. The Wicklow Deer Management Project considers sustainable to mean deer management that is acceptable to stakeholders and refers to the existing Scottish Natural Heritage Guidelines[16]. These guidelines indicate sustainable deer management as:

- Delivering the best combination of benefits for the economy, environment, people and communities on any area of land
- Takes other land users into account
- Is able to adapt to changing circumstances
- Safeguards deer welfare and
- Ensures future generation will also be able to enjoy the benefits of deer and deer management

To date, culling regimes aimed at reducing the sika population density have fallen short of the requirements for the species. As outlined previously, management challenges include the negative impacts on conservation habitats and species, forestry and agriculture, and animal welfare issues. The lack of available data on deer population presents significant challenges for the development of management plans which are in balance with agriculture, forestry, hunting and environmental objectives. Deer management and overpopulation is an emotive issue which has led to a range of suggested solutions from various interest groups ranging from:

- Culling on a large scale
- Deer Fencing
- Contraceptive control
- Predator introduction

[16] **Code of Practice on Deer Management. (2011)**. Scottish Natural Heritage

Devising a strategy to manage deer must take into account accepted international principles and standards of sustainable deer management while recognising the role of deer as a valuable component of biodiversity[2].

The guiding principles of good deer management include:

- Setting of clear deer management objectives (required to develop the correct management plan and what monitoring techniques will be used for each deer species
- Reporting of relevant data to the appropriate authorities
- Collection of data on abundance and impact assessment
- Review, planning and implementation and monitoring of deer management measures such as appropriate culling, fencing, tree guards, high seats, road warning signage etc.
- Distribution of venison and disposal of carcasses
- Co-operation/collaborative approach between stakeholders

3.6. Best Practice in Deer Management

One of the most important measures in any deer management programme is to ensure that it follows best practice elsewhere. By 'sustainable' deer management, the project refers to a level that is 'acceptable to stakeholders' and refers to the existing Scottish Natural Heritage Guidelines[16]. The main points include:

- **Culling reproducing adult females**. This is clearly more effective in achieving population management i.e. fewer reproducing females results in fewer fawns / calves

- **Collaboration of all parties and stakeholders** to include the coordination of hunting, and the grouping of lands by landowners and improving communications is essential.

- **The effectiveness of deer fencing** is limited and usually offers just a short-term solution to the issue of deer management. Deer fencing does not reduce population size and therefore can result in increased grazing pressure on adjacent lands. However, well designed, constructed and maintained deer fencing remains an important means to exclude deer from small areas and to demonstrate the effect that deer have on regenerative function associated function of woodland and other habitats of ecological importance – see plate 1.

Effective deer management should also consider the natural order of predator vs prey. Humans need to mimic natural predatory methods. In natural selection the weakest are first to fall i.e. the sick, weakly and females, while those that remain are the strongest fittest and healthiest. Solely hunting the biggest animals is not a sustainable solution for effective deer management.

Another inconsistency that stands out in our present methods is that in nature the predators of deer do not decide to cease hunting on either the last day of December or February. A properly engaged deer management plan should allow culling as necessary as defined by guidelines and the requirements of a balanced ecological and food production systems.

Plate 1 - A fenced deer exclosure in a mature woodland highlighting the impact of grazing pressure

3.7. Deer Management Units

The sustainable management of deer requires a collaborative approach. For this reason, Deer Management Units (DMUs) have long been suggested and previously established in Wicklow under the auspices of the WDMP e.g. Manor Kilbride, Calary and Ballinastoe deer projects. A DMU is a defined area of land where landowners, hunters and other interested parties come together to manage deer with agreed objectives.

The diversity of landownership and management objectives is a feature of most DMUs and as a result, delivering effective management of deer across a group area requires positive, proactive engagement with all parties. DMU's need to function effectively and have an effective deer management planning process in place. Effective planning is a dynamic process based on setting objectives and targets, carrying out actions, monitoring and reviewing. DMUs should be open, transparent, inclusive and publicly accountable.

DMU Actions to demonstrate delivery include:

- Establishing a baseline by collating information on current activity/ extent / or actions. This can be used to establish the current DMU contribution and also provide the basis to measure the effectiveness of future actions. Suggested actions include:
    - Grassland loss/damage assessment and measurement.
    - Woodland loss/damage assessment
    - Monitoring TB outbreaks in areas of high deer population
    - Cull / Sightings monitoring
- Identifying and planning actions which will contribute to the delivering the outcome. These should be contained or be annexed to the Deer Management Plan.

- Implementing the agreed actions – this is likely to be done at the individual land holding basis but should seek to use collaborative approaches where possible.
- Monitoring the effectiveness of the actions through comparing progress against the established baseline.
- Reviewing actions and decide to continue /amend /change these in light of new information.

3.8. Venison

Wild venison is considered one of the healthiest red meats available providing an excellent source of protein while being low in fat and high in nutrients. Despite the benefits, venison is a niche product with a market heavily reliant on the hotel and restaurant trade. The market was greatly impacted by Covid19 restrictions with venison prices plummeting during the lockdown period and has yet to recover to pre-pandemic levels. Effective deer management requires a supply chain for venison. This is a proven model in creating financial incentives and offers long term viability in addressing population management.

The Wicklow Deer Management Project engaged with 'Wicklow Naturally', Wicklow's Food and Drinks Network. The network's team of chefs and hospitality experts have been working very hard to establish a Wicklow Venison Signature Dish. Venison was chosen for its relevance to Wicklow's food culture, and as it resonates with tourists keen to experience Wicklow through its food. It is essential therefore that there is a reliable, sustainable and responsibly sourced supply of venison available to consumers and restauranteurs within the county. As restaurants reopen fully it is hoped this vision will be pursued fully.

In addition to high end promotion, increased efforts are required to promote venison as a nutritious and staple good value product to generate a more consistent domestic market that is resilient to seasonal fluctuations. Venison is a highly nutrient rich, indigenous and traceable meat in abundant supply and with very low inputs. It has the added benefit of a low carbon footprint and food miles. The link needs to be made that by eating venison consumers are supporting a local product and contributing to better habitats and biodiversity.

Furthermore with global food prices at an all-time high due the Ukraine war, it is a critical time for food security. Now is the perfect opportunity for retailers, butchers and suppliers to celebrate and promote venison as a local and sustainably sourced product and for consumers to embrace lower value cuts.

4. Project Methodology and Operational Programme

A detailed management plan was drafted by the Project Steering Group as set out in Appendix 1. The plan outlines 11 actions with additional sub-actions. The methodology submitted acknowledged that some actions may need to be amended accordingly as the project progressed.

5. Deliverables

5.1. Appointment of a Project Coordinator

The appointment of a Project Coordinator/Manager was a key task for the coordination and successful delivery of the project. Following an open process, Patrick Mellon, was engaged to lead on the delivery of the day to day tasks of the Project Management Plan in November 2021.

5.2. Establishment of Deer Management Units

The selection of the DMU's was critical in the successful establishment of the project. The Project Steering Group initially identified candidate areas across the county. Local meetings were held throughout the county in consultation with stakeholders in those areas. While the original RFT sought the establishment of three DMU's, significant local interest resulted in the establishment of a five DMU's, including two in West Wicklow, one in East Wicklow and two in South Wicklow. A profile of each DMU is set out in Tables 2 – Table 6 below. While deer numbers have been a vocalised issue for some landowners for a long time, the level of engagement jumps to extreme where landowners are affected by high levels of TB.

The cooperation and engagement between all parties was essential in establishing the units. Upon engagement with the Project Manager, a Memorandum of Understanding (MoU) was developed between the interested parties to set out the requirements and operations of the DMU and a management plan drafted – see Appendix 2.

The plan encouraged hunters to mimic natural methods and to actively target weaker/smaller animals. It was also encouraged to target more female vs male deer in order to reduce reproductive capacity in the population. A data collection regime was developed between landowner, hunter and project manager in each DMU. All cull records were recorded by photo and sent securely to the Project Manager who kept an accurate log of all data. This system allowed the accurate capture of cull data and provided a certain level of oversight of what animals were being culled e.g. female vs male. Plate 2 demonstrates a map complied from the west Wicklow DMU.

The approach taken by the project has proven a successful model. The template developed has now been taken up by groups in Waterford and Tipperary through the Wild Deer Association.

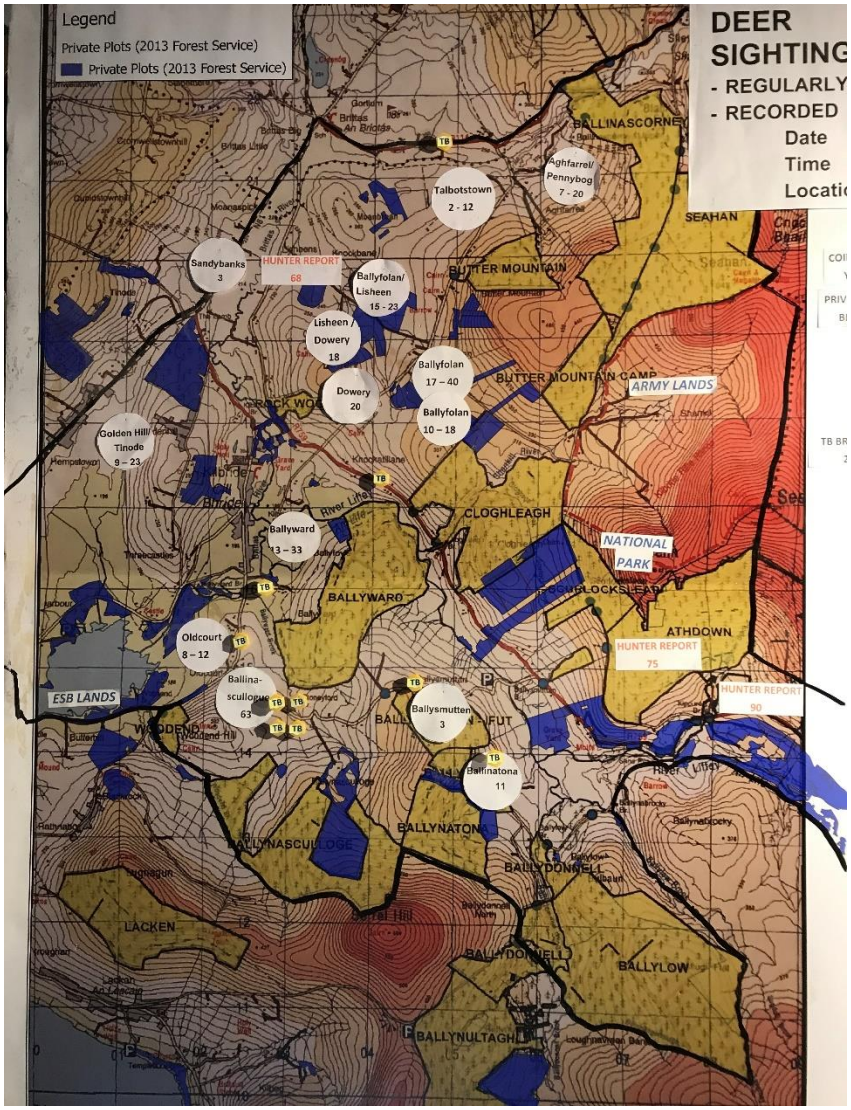

Plate 2 – A map complied from West Wicklow 1

Table 2 - West Wicklow 1 - DMU Outline	
Name	West Wicklow1 – A DMU emerging from Manor Kilbride Deer Project.
Area (ha)	550ha (330ha Grassland, 70ha Forestry, 150ha Open Hill Land)
No of landowners	12
Farming systems	Dairy, Beef, Sheep
Forestry	Yes – Public and Private
Deer species recorded present	Predominantly Sika
Impacts reported	Grassland damage, Concern as a potential vector for TB. Also potential grazing pressure on the woodland areas, damage to fences and vehicle collisions
Issues	Initial reluctance of some hunters to provide details of the numbers of deer culled. Engagement with the landowners resolves this

Table 3 - West Wicklow 2 - DMU Outline	
Name	West Wicklow2 – A DMU emerging from Manor Kilbride Deer Project.
Area (ha)	400ha (300ha Grassland, 50ha Forestry, 50ha Open Hill Land)
No of landowners	8
Farming systems	Sheep and Beef with small dairy operation
Forestry	Yes – Public and Private
Deer species recorded present	Predominantly sika with some hybrids
Impacts reported	Grassland damage, Concern as a potential vector for TB. Also potential grazing pressure on the woodland areas, damage to fences and vehicle collisions
Issues	Sporting Right concerns. It was highlighted that deer causing damage can be culled by the landowner/or nominated hunter even where 'sporting rights' exist and that Section 42's can only be sought be the landowner.

Table 4 – East Wicklow - DMU Outline	
Name	East Wicklow
Area (ha)	400ha (130ha Grassland, 100ha Forestry, 110ha Woodland Nature Reserve
No of landowners	8
Farming systems	Sheep, Beef, Dairy
Forestry	Yes – Public (100ha Coillte) and Private (60ha)
Deer species recorded present	Predominantly sika with some fallow
Impacts reported	Grassland damage, Concern as a potential vector for TB. Also potential grazing pressure on the woodland areas, damage to fences and vehicle collisions
Issues	The DMU was varied in landownership and management. It included farmers, public (Coillte) and private forestry and NPWS. The varied arrangement required some amendments to the template Memorandum of Understanding (MoU).

Table 5 – South Wicklow1 - DMU Outline	
Name	South Wicklow 1
Area (ha)	720ha (550ha Grassland, 60ha Forestry, 110ha Hill lands
No of landowners	10
Farming systems	Dairy, Beef, Sheep, Tillage
Forestry	Yes – Public and Private
Deer species recorded present	Sika

Impacts reported	Grassland damage, Concern as a potential vector for TB. Also potential grazing pressure on the woodland areas, damage to fences and vehicle collisions
Issues	This was initially a very small area but expanded quickly as information became available. The DMU was mainly managed by one single professional hunter/game dealer. This resulted in a very engaged DMU and excellent coordination between the Project Manager, Landowners and the Hunter.

Table 6 – South Wicklow 2- DMU Outline	
Name	South Wicklow 2
Area (ha)	440ha (380ha Grassland, 60ha Private Forestry/Christmas Trees)
No of landowners	9
Farming systems	Dairy
Forestry	Yes – Public and Private (Christmas Trees)
Deer species recorded present	Sika
Impacts reported	Grassland damage, Concern as a potential vector for TB. Also potential grazing pressure on the woodland areas, damage to fences and vehicle collisions
Issues	The DMU was established after the initial four due to great interest from local landowners. Concerns about growing deer population, based on increasing sighting, and a large TB outbreak was key driver for the landowners in the area. There was excellent engagement with the landowner and hunters in the DMU.

5.3. Cull Data

Since the establishment of the project in 2018, a combined total of 1520 deer were culled across the five DMU's – see Table 2. The largest number of deer were culled in the South Wicklow 1 DMU and the least in the East Wicklow DMU with 429 and 150 deer respectively. All deer culled were photographed, with a geotagged location, and submitted to the project manager. This allowed all records to be verified and created and element of accountability and determined accurate levels of hunting effort in each DMU.

Table 2 Project Cull data				
DMU Location	**2019**	**2020**	**2021**	**Total**
East Wicklow	65	36	49	150
West Wicklow 1	123	97	186	406
West Wicklow 2	118	83	152	353
South Wicklow 1	148	135	146	429
South Wicklow 2		68	114	182
Total	**454**	**419**	**647**	**1520**

After culling, deer carcasses were sold by the hunters into food supply chains based in counties Wicklow and Kildare. The Covid19 pandemic restrictions resulted in greatly reduced demand for venison and as restaurants remained closed, venison prices plummeted. The combined effects of this can be seen in the 2020 cull data where there was up to a 30% drop in culls in some DMU's. This occurred despite the engagement of all parties who remained committed to the project. It was a valuable lesson that effective deer management requires a supply chain for venison. This supply chain is a proven model in creating financial incentives and offers long term viability in addressing population management.

In 2021, after Covid restrictions eased, the cull numbers for the majority of DMU's increased significantly to a level higher than pre-Covid. Sightings provided by participating hunters and landowners suggest that deer numbers had notably increased in 2021. This would be expected following the reduced hunting activities in 2020. In order to maintain deer population at its current level, and to reduce adverse impacts of a growing population, a regular cull must be maintained each year. The project cull data shows a steady recovery in cull numbers in 2021 and is expected to return to a more normal situation in 2022.

It is worth noting that the cull numbers for the South Wicklow1 DMU remained at a relatively constant level over the entire duration of the project. This can be attributed to the engagement of the single semi-professional hunter/game dealer and highlighted the importance of a professional approach in the delivery of effective deer management.

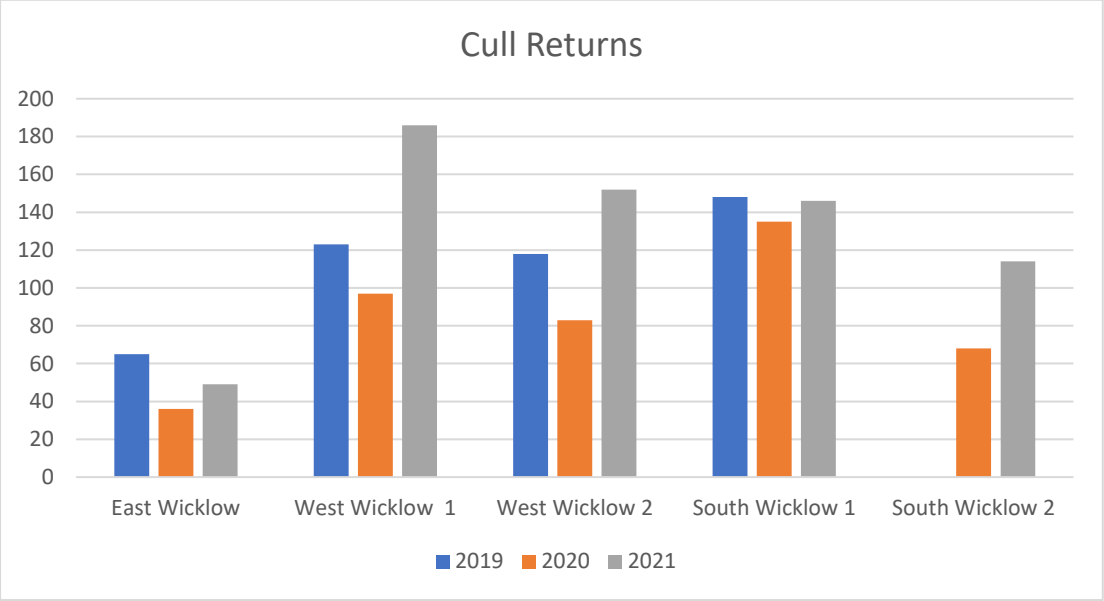

Figure 3 - Cull returns over the duration of the project

An aim of the project was to increase the amount of adult female deer culled vs male deer. Culling reproducing females is a more effective to management populations as few reproducing females will results in fewer fawns / calves. As the project progressed the ratio of female vs male deer culled increased to 2:1 in favour of females. This was a positive outcome of the project and demonstrated the acceptance of all parties that sustainable management needs to focus on reproducing females and not on the larger males.

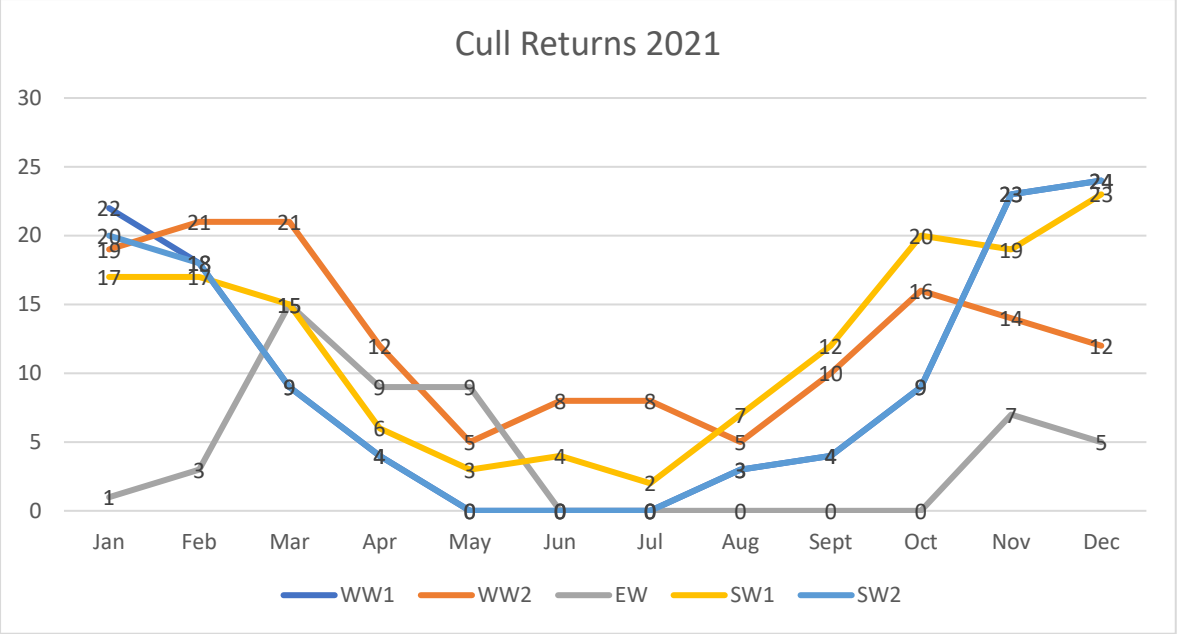

Figure 4 - Cull Returns in 2021

Figure 4 illustrates the cull returns in each DMU in 2021. As expected, the data clearly shows that the majority of hunting activity is carried out during the open hunting season with reduced activities during the summer months during the height of the calving season.

An output of the project was to increase the uptake of out of season deer control where necessary, under Section 42 of the Wildlife Act, 1976. Section 42 of the Act is quite prescriptive and provides that where protected wild animals are causing serious damage to: food, livestock, agricultural crops, other fauna, flora and woodland etc., the landowner or occupier may on application to the Minister of Housing, Local Government and Heritage, seek permission to take appropriate steps to stop the damage.

The landowners in each DMU successful applied for Section 42's each year having proved that deer numbers where having an adverse impact on their lands e.g. grazing impact, fence damage, damage to trees etc. In 2021, there were a total of 145 deer culled under a Section 42, representing 20% of the annual cull.

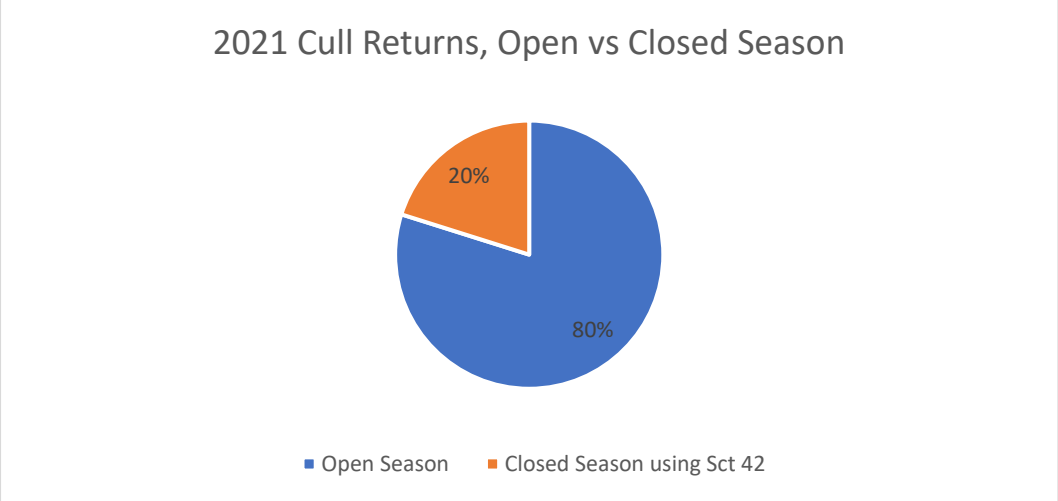

Figure 5 – 2021 Cull returns, Open vs Closed Season

5.4. Grass Measurement

In order to determine the grazing impact deer were having on grassland areas in the DMU's, the project initiated a grass measurement trial. Baseline data was captured through the temporary deployment of metal mesh cages on grassland across multiple locations (Plate 3 & 4). The bespoke 1m x 1m metal cages were purchased by the project and supplied to each DMU.

The methodology was discussed and approved by Teagasc, and followed an approach taken previously in the Manor Kilbride Deer Project and in international studies[17]. The cages serve to exclude grazing deer access to the grass growing within the cage. Measurements are then carried out to compare the loss of yield of grass due to consumption by deer in the areas outside of the cage. The cages were deployed over a period of 10 -12 weeks in fields of spring saved grass for silage production.

In 2020, the results found a difference of between 30% - 36% more grass growing inside the cage than outside the cage. In 2021, the difference between grass growth inside and outside the cages ranged from 10% - 19%. These results indicate towards the grazing impact of deer, towards a loss of Dry Matter and agricultural productivity.

In order to try determine the economic loss of silage yield due to deer grazing, there are a number of simple facts that give an indication. The total production cost of the silage can be calculated and used to place a value on that loss of silage. For simplicity we just looked at land value, fertiliser and harvesting charges – these can vary from year to year and farm to farm. We looked simply at the land value as the rental value assigned to a 1st cut of silage where we estimate that the 1st cut produces approximately 45% of yearly production. For example:

- If we assign a rental value of	€ 280 / acre (€690 / ha)
- Value the cost of land for 1st cut @ 45% of total fertiliser for 1st cut	€126 / acre (€311 / ha)
- 0:7:30 3x (50kg), CAN 4x (50kg)	€280 / Acre (€690 / ha)
- Contractor harvesting	€140 / acre (€345 / ha)
- We get a total basic cost (approx.) of	€546 / acre (€751 / ha)

At a 30% loss of yield due to deer grazing, we see potential production costs (loss) of €180 / acre or €445 / ha.

This loss is a very modest estimate towards potential losses as a result of grazing impact. Previous studies have reported a grass dry matter loss of up to 2600kgs per hectare in March[1]. In practical terms, this could equate to one month extra housing. Spring grass in particular is a vital quality feed source for farmers. Teagasc has highlighted that every effort should be made to graze springtime grass as every additional day at pasture is worth €2.00 per livestock unit and estimated a live weight gain in store cattle of close to 1kg/day on good quality spring grass[18]. €2.00 per day by 20 animals by 30 days would equal a loss of €1200.

[17] Marchiori, Elisa & Sturaro, Enrico & Ramanzin, Maurizio. (2012). Wild red deer (Cervus elaphus L.) grazing may seriously reduce forage production in mountain meadows. Italian Journal of Animal Science. 11. 10.4081/ijas.2012.e9.

[18] https://www.agriland.ie/farming-news/spring-grass-is-higher-in-protein-and-energy-and-four-times-cheaper-than-meal/

Plate 3 & 4 – The grass cages used for grass measurement methodology

Table 7 Grass Measurement Results 2020								
DMU	**Date**	**Sample**	**Description**	**Weight (g)**	**Kg/ Ha**	**Dm %**	**Dm / Ha**	**Difference %**
Plot 1	23/05/20	Cage	Silage	466	18640	19	3541.6	
		Open		296	11840	19	2249.6	36.48
Plot 2	23/05/20	Cage	Silage	610	24400	19	4636	
		Open		422	16880	19	3207.2	30.82
Plot 3	23/05/20	Cage	Paddock	160	6400	19	1216	
		Open		110	4400	19	836	31.25

Table 8 Grass Measurements 2021								
D.M.U.	**Date**	**Sample**	**Description**	**Weight (g)**	**Kg/ Ha**	**Dm %**	**Dm / Ha**	**Difference %**
Plot 1	25/05/21	Cage	Silage	398	15920	19	3024.8	
		Open		330	13200	19	2508	17.09
Plot 2	25/05/21	Cage	Silage	558	22320	19	4240.8	
		Open		502	20080	19	3815.2	10.04
Plot 3	25/05/21	Cage	Silage	600	24000	19	4560	
		Open		512	20480	19	3891.2	14.67
plot 4	25/05/21	Cage	Silage	480	19200	19	3648	
		Open		387	15480	19	2941.2	19.38
Plot 5	25/05/21	Cage	Silage	221	8840	22	1944.8	
		Open		198	7920	22	1742.4	10.41
Plot 6	25/05/21	Cage	Silage	340	13600	22	2992	
		Open		290	11600	22	2552	14.71

5.5. TB Testing Methodology

In early 2020 following a number of meetings with the Department of Agriculture Veterinary Section, two DMU's reached an agreement to supply a freezer at a central location to allow for the collection of suspected TB infected (as identified by the hunter) deer plucks and heads from hunters. This provided a facility to log, store and deliver suspicious samples for TB testing. The project arranged two public workshops to help hunters identify the signs of TB in a deer carcass and it is hoped that further technical training will be provided by relevant agencies.

The objective of this hunter level surveillance was to determine usefulness to identify hot spots of TB in deer while covering as wide an area as possible. These hotspots can be identified through normal hunting practices by hunters trained in recognition of tuberculosis in a deer. Such an animal, with lesions of TB, is considered infectious and is indicative of a potential cluster composed of at least one sika deer family group. Hunters submitted submit heads and plucks from deer that they considered potentially to have lesions consistent with TB. The location of cull, age, sex and species information would also be gathered. Where hunters do not identify lesions consistent with TB, the location and animal data would also be collected. Such an approach would allow as wide a surveillance area as possible. This was only possible because of a well-structured DMU which included buy in from all stakeholders (herdowners, hunters etc.). This new awareness is of particular interest to the farming sector and it is hoped that it will contribute to a better understanding to the spread of TB in the area, which in some locations has remained stubbornly high.

Unfortunately, COVID severely hampered this study however it did demonstrate hunter level surveillance as a useful surveillance tool to allow identification of high TB prevalence locations in deer.

The results of the TB testing carried out under the auspices of the Wicklow Deer Management.
A total of 58 samples were submitted as suspect TB as adjudicated by the hunter. *Fifty four* samples were examined and cultured for *Mycobacterium bovis*. Nine of these tested positive. The project found a TB positive incidence rate of 16.6% of all the samples sent for testing (Table 9). This is not unexpected as the samples were hunter identified suspect TB in animals, and therefore do not represent a prevalence of TB, rather is indicative of a diagnostic rate at hunter level. Nevertheless these findings do identify hotspot locations that merit further follow up for disease control. The positive samples were all taken from the West Wicklow area, which is currently identified as a TB blackspot in cattle. Further analysis of hunter data will assist determining hunter level prevalence.

These results differ from the joint WDMP and Department of Agriculture 2014-2015 Calary Deer. That Project in East Wicklow found that of the 130 shot, 16.5% were found to be carrying TB. Whereas the West Wicklow project identified clusters of TB in deer and seeks to define hunter level prevalence.

The pilot project, as developed by the project, proved a successful and efficient model for the collection and testing of TB suspicious samples and was subsequently expanded for use across all DMU's. The pilot could be further rolled out across the county where TB black spots arise.

In order to facilitate farmer engagement where TB blackspots occur, a partnership approach involving the DMU, land owners and State agencies could be adopted. The Department of Agriculture could offer to test plucks of deer culled in these problem areas. A requirement for this approach is for training of hunters in recognition of TB in deer, a reasonable number of deer to be culled and for

samples to be collected from hunter determined suspect TB cases, samples submitted and tested in a timely manner and support (training, logistics etc.) by the dependent agencies. Where a local hunter is unable to provide this in a short time frame, the project identified a number of very proficient deer managers who can cull for the landowner on a one-off basis so not to interfere with the landowner / hunter relationship. This is an option for the landowner to decide and hopefully will take a lot of the emotion out of the issue and build a collective approach to deer management challenges.

The definition of a "TB blackspot" or hot spot in deer would need to be clearly outlined by District Veterinary Officers. In the interest of engagement, where these TB blackspots occur on farmlands adjoining NPWS and Coillte lands, engagement of both the NPWS and Coillte benefits management of these blackspots. This would not only allow DVO's to develop a full picture but would also demonstrate a collective approach to deer management challenges and demonstrate commitment by all parties concerned. This type of plan would require development and cooperation at management level of District Veterinary Offices, Senior Research Officer, NPWS and Coillte.

Table 9 – Overview of TB Testing Results

	Date submitted	Landowner	Gross	*M. bovis* culture	Species
WW	10/03/2020		NVL	NTM	Sika
WW	10/03/2020		Inc	neg	Sika
WW	03/03/2020		NSF	NTM	Sika
WW	03/03/2020		NSF	NTM	Sika
WW	03/03/2020		NSL	NTM	Sika
WW	03/03/2020		NVL	neg	Sika
WW	18/03/2020		NVL	neg	Sika
WW	18/03/2020		NSL	neg	Sika
WW	10/03/2020		NVL	neg	Sika
WW	10/03/2020		NVL	neg	Sika
WW	12/03/2020		NVL	neg	Sika
WW	13/03/2020		NVL	neg	Sika
WW	29/01/2020		NVL	neg	Sika
WW	30/01/2020		NSL	R.equi	SIKA
WW	14/12/2020		NSF	neg	SIKA
WW	14/12/2020		NSF	neg	SIKA
WW	08/02/2021		NSF	neg	SIKA
WW	08/02/2021		NSF	neg	SIKA
WW	12/02/2021		NVL	neg	SIKA
WW	12/02/2021		NVL	neg	SIKA
SW	12/02/2021		NSF	neg	Fallow
SW	19/02/2021		NVL	neg	Fallow
SW	19/03/2021		NVL	neg	Fallow
SW	23/03/2021		NVL	neg	Fallow

SW	23/03/2021		NVL	neg	Fallow
EW	07/05/2021		inc	neg	Sika
SW	24/04/2021		nvl	neg	?
SW	24/04/2021		nvl	neg	?
SW	24/04/2021		nvl	neg	?
SW	24/04/2021		nvl	neg	sika
SW	24/04/2021		nvl	neg	?
SW	26/04/2021		nvl	NTM	?
SW	26/04/2021		nvl	neg	?
WW	07/05/2021		TB	m.bovis	?
WW	21/05/2021		NVL	neg	sika
SW	21/05/2021		NVL	neg	sika
WW	25/05/2021		TB	m.bovis	sika
WW	26/05/2021		Inc	NTM	?
WW	26/05/2021		Inc	neg	?
WW	31/05/2021		TB	m.bovis	sika
WW	03/06/2021		TB	m.bovis	sika
WW	03/06/2021		NVL	neg	sika
WW	03/06/2021		NVL	m.bovis	sika
WW	03/06/2021		NVL	neg	sika
WW	16/06/2021		TB	m.bovis	sika
WW	23/06/2021		inc (bronchials enlarged)	neg	sika
WW	23/06/2021		NVL	neg	sika
WW	14/07/2021		TB	m.bovis	sika
WW	20/09/2021		TB	m.bovis	sika
WW	06/10/2021		nvl	neg	sika
WW	06/10/2021		TB	m.bovis	sika
WW	05/11/2021		nvl	neg	sika
WW	05/11/2021		nvl	neg	sika
WW	05/11/2021		nvl	neg	sika
WW	30/11/2021		nvl	awaiting	sika
WW	31/01/2022		nvl	awaiting	sika
WW	09/02/2022		TB	awaiting	sika
WW	10/02/2022		NVL	awaiting	sika

NTM means non-tuberculous mycobacteria (negative)
NSL = No significant lesions
NVL = No visible lesions
WW = West Wicklow
EW = East Wicklow
SW = South Wicklow

6. Dissemination & Outreach Events

In January of 2020, the project held its first public event. The combined training and social gathering held in west Wicklow attracted 62 attendees. Centred around a BBQ serving venison the event was attended by landowners, hunters, NPWS rangers, specialist butchers and other interested parties. It was an opportunity for a detailed exchange of information and views between the representatives of the various roles within the project, and it marked an important occasion for the collaborative model of learning and knowledge sharing that any management forum requires.

In June 2021, the Project was featured on RTE's, Prime Time. The piece featured contributions from the Project Manager, a farmer participating in a DMU, and other key stakeholders. The feature highlighted the impact of the large deer in population Wicklow and the need for a sustainable management plan to reduce these impacts.

On the 30th October 2021 an Open Evening was held in association with the Irish Wild Deer Association at Belmont Demesne, Kilruddery, Bray. 150 socially distanced landowners, deer managers, and stakeholder representatives attended. Presentations and contributions were provided by local NPWS staff, Simone Cutti – UCD SMARTDEER, John Moriarty - Senior Research Officer, Veterinary Laboratory Service, DAFM, and the Wild Deer Association – Professional butcher.

In addition to these events, education and training continues to be an important feature of the project, with HCAP training and certification for firearms and food handling training offered through a partnership approach with other organisations.

7. Finance

The total contract value was €119,250. The project came in on budget. Due to Covid impacts and a delayed start, a no cost time extension of nine months granted to see the project completed in March 2022.

The engagement of an effective project manager was essential to the delivery of the project. The Project Manager took responsibility for engaging landowners, developing relationships between stakeholders, taking accurate records of all project activities and instigating the methodologies as described in the previous sections. Therefore, the majority of the total project budget was allocated towards their fee and associated costs.

A breakdown of the project finance is included in table 10 below.

Table 10 – Project Expenditure	
Item	**Total**
Project Manager Fee	€106640
Project Phone	€2230
Insurance Costs	€1523
WUC Admin Support Fee	€3200
Implementation Costs i.e. Set Up Costs, Laptop, Grass Cages, Dissemination Events etc.	€5610
Total Project Cost	**€119203**

8. Discussion

One of the prime influences on any eco system is the dominant species which exist with that system. In Ireland the dominant wildlife species are deer which exist and thrive with no natural predator. There are far-reaching consequences from the growth of wild deer numbers in Wicklow and surrounding counties, and while there is currently no accurate data on deer population in Ireland, deer overpopulation has a wide range of negative consequences. Being proactive in addressing this threat is an essential part of any eco system preservation

Recommendation 1: While more detailed deer population data is needed, the focus of deer management plans should be reducing the adverse impacts associated with deer

The lack of available data on deer population is an issue, and one that lends to questions around deer management. However, it cannot be denied that the current deer population in Wicklow is having a significant impact on a range of landholdings, habitats and stakeholders. While a census would be a very valuable resource, it also presents a number of considerations. Yes, a census will provide a snapshot of population at particular time but it will require considerable resource input and without repeated effort it doesn't provide a means to track changes in population trends. A very simple means to give an indication of population trends is the analysis of culled animal data as provided by hunter returns. Furthermore, the emergence of new digital recording technologies presents great opportunities to gather population data in a cost efficient manner.

In the absence of detailed population data, the impact of deer management programmes should be considered in terms of the reduction of adverse impacts associated with deer rather than solely on the number of animals culled. As the total number of deer decreases then so should the impacts.

Recommendation 2: Increased culling efforts towards female deer is required

Of recent times we hear suggestions for wolves etc. to be reintroduced as a method of deer management and the success achieved in areas like Yellowstone Natural Park. While this idea may sound idyllic, the facts remain that this is an unrealistic solution for Wicklow. Without any natural predators to control the deer population, it falls to humans to do the job. If we want to achieve the same results, humans need to mimic the natural predatory methods which occur in the wild. In natural selection the weakest are first to fall i.e. the sick, weakly and females, while those that remain are the strongest fittest and healthiest. Solely hunting the largest male animals for trophy heads is not a long term solution for effective deer management. Increased culling efforts are needed on female animals in a regular and professional manner.

Recommendation 3: Deer management programmes need to make full use of the open season and out of season deer control under Section 42 licencing.

Deer management can be an emotive issue, however it is a necessity to maintain populations in balance with ecological and socioeconomic environment they exist. What will work is a fully integrated management plan where the emotive issues are replaced with a pragmatic understanding of the role deer play in an ecosystem. In nature the predators of deer do not decide to cease hunting on either the last day of December or February. Therefore properly engaged deer management plans should make full use of both the open season and out of season deer control under Section 42 licencing. The NPWS facilitated this in the DMU's and validated the stalker as an essential service to manage deer

during the Covid restrictions by issuing permits. This recognition of Deer Management as an essential service is in itself very significant.

Perhaps it is time to view the culling of deer for recreation as no longer a sustainable management solution but rather consider the culling of deer for sustainability as recreational and necessary.

Recommendation 4: **Deer management plans require a collaborative approach and the involvement of all stakeholders**

Effective deer management planning requires the involvements of all stakeholders including individuals, entities, statutory and non-statutory bodies, NGO's etc. We must also consider flora and fauna as key stakeholder in order to ensure a healthy thriving eco system. Much like baking a cake, the Project Manager outlines that a good DMU and management plan is comprised a multiple ingredients i.e. Landowners, NPWS, Coillte, Deer Stalkers, Local Authorities, Processors, Wildlife Advocates, Government Departments (DAFM and DHPLG) etc. If any of the vital ingredients are left out, we end up wasting time and resources on an unpalatable creation.

The ingredients of a good DMU	
Landowners	Wildlife Advocates
NPWS	DHPLG
Coillte	DAFM
Deer Stalkers	Local Authorities
Processors	Interest Groups

Figure 6 - The Composition of a Deer Management Programme

- **Recommendation 5: Further detailed analysis of economic loss to grassland and forestry is required**

Landowners who experience damages and associated economic loss from deer encroachment are increasingly vocal about deer numbers. They cannot be blamed in this regard. The fact is that individual landowners cannot be left without a solution as the issue goes well beyond the physical boundaries of any holding. Farming organisations, and more recently political representatives, are increasingly vocal on grass damage, loss of income, tree damage, disease issues, road traffic accidents etc. These are very real issues causing serious economic and ecological harm. A simple calculation estimated potential significant economic losses due to deer grazing grass of up to €180 per acre. There are currently no up to date figures on damage to trees.

Recommendation 6: Further work is needed to identify the full impacts of deer on conservation habitats and biodiversity

Deer must be managed as an important component of our natural heritage and biodiversity while also allowing other species to flourish simultaneously. While the current project identified potential economic loss associated with the grazing of pasture, similar work needs to be carried out for woodland, conservation habitats and biodiversity. As we are facing with a Climate and Biodiversity crisis a sustained effort is required by all landowners, both public and private, to do their part.

As per the grassland calculations, similar valuations need to be put on other land management losses, be that forestry, conservation habitat, loss of biodiversity etc. An example of this is that of the 'Natural Capital Approach'. This involves placing a value on natural capital assets e.g. soil, water, air woodland, biodiversity etc.[19]. The point of this is not to put a price on nature but rather to present this value in a way that people can identify. Similar efforts should be considered in terms of the impact that deer are having on important habitats and biodiversity.

- **Recommendation 7: Successful Deer Management Units are driven from the bottom up. However, a suitably qualified coordinator is needed to provide oversight support and guidance, and to ensure a professional approach is followed.**

In general, people tend to look to someone else to shoulder the blame, and to provide the solution. While it is accepted that the onus falls heavily on the landowner as they are the people that own the land, own the deer, and manage access, they alone cannot solve the problem. A solution needs not only their agreement but their engagement. What worked best in the DMU's was where there was a local champion who liaised closely with the Project Manager. Someone who coordinated local input and carried credibility. This role need not be overly administrative, more an oversight and communicating role. In the long term, a rotating local coordinator would ensure understanding, openness and buy in. The coordinator need not be a landowner or from a statutory agency. One of the best coordinators in the project was a hunter who brought a level of professionalism that was unmatched. Indeed, the most successful results came from deer stalkers/hunters who engaged in a professional manner. These stalkers took photos of any culls on DMU lands and immediately sent them to the Project Manager. This provided instant information on the species, the age and the sex of culls. This engagement helped increase the ratio of female to male culls to approximately 2:1.

[19] https://www.naturalcapitalireland.com/

The simple MOU designed for the project along with the confidentiality agreements can be easily adapted to suit any area and indeed has now also been taken up by groups in Waterford and Tipperary through the Wild Deer Association.

- **Recommendation 8: All landowners need to consider the leasing of hunting carefully as it is they, the landowner, who have ultimate responsibility for ensuring that hunters on their lands are operating effectively. The sharing of accurate data between landowners and hunters is an absolute necessity in this regard.**

It is a firm learning from this project that for the sustainable management of deer, all cull information must be made readily available to the landowner. Landowners affected by deer damage/encroachment need to be more proactively engaged with the hunter and realise that a well engaged hunter is an asset and a necessary part of successful land management. Any landowner who finds their hunter is not prepared to fully engage with the sharing of information needs to be aware that there is a huge pool of train and insured hunters available who more than willing to engage and actively lead in the management of deer.

Where deer numbers are a problem a commitment from all parties is needed, especially from NPWS and Coillte. NPWS because they are the body responsible for wildlife, and Coillte as the largest landowner of lands that are the natural habitat for deer. The most levelled criticism during the project was at Coillte who seem not to have an accurate if any data on deer damage. Their selling of hunting rights to the highest bidder plays no part in sustainable management and needs to be revaluated in areas of increasing deer numbers.

- **Recommendation 9: New technologies should be fully embraced to assist in evidence based deer management and to streamline existing licencing systems.**

As outlined previously, producing accurate deer population data on an ongoing basis is a challenge. However recently developed technologies present an opportunity to do just this without the enormous resource burden. The SMARTDEER App aims to develop national monitoring of the deer population in real-time. To be successful the app needs to have data uploaded on a regular basis and therefore it is suggested that all licenced hunters be encouraged to use it.

Coillte has introduced the HAM's. HAMS is an integrated online platform, which allows for much more streamlined management of a currently administration-heavy process for both the hunter and Coillte. It is a system which is becoming standard across many EU countries.

These Apps offer future potential for development to log other records e.g. road traffic collisions or other adverse impacts, and could greatly assist in the formation of a more rounded picture of deer population and adverse impacts in the region.

It is recommended that all licences for deer hunting firearms, Section 42's etc. be issued on the basis of traceable technology like the SMARTDEER, HAM's or similar. Every applicant should have to have the App open and on their person when culling or carrying a firearm. All culls should be photographed and geo located automatically at the moment of culling. Full traceability on breed, age, sex etc. would then be available and enable a truer picture of what is actually happening on the ground. This would also be a serious aid in the prevention of poaching as any person found with deer carcass or firearm without the App could be deemed to be engaged in illegal activity.

As technology continually develops there may be competing recording App's on the market. As part of any new project the most suitable App or technology for the needs of a particular DMU should be evaluated with tweaks or amendments if possible to best fit the operational needs of the DMU. Therefore at a DMU level all cull info and data is collected but beyond the DMU it could be anonymised to allay the concerns of those who are reluctant to share data.

- **Recommendation 10: The TB testing pilot identified TB hotspots in West Wicklow and warrant much further detailed investigation. The model proved efficient and effective and can easily be rolled out to other TB blackspots.**

The TB testing pilot initiated by the project has proven a very successful model to efficiently to test TB suspicious samples and could be rolled on a much wider basis. The training provided by the project was an integral part in training hunters to better identify TB suspicious animals. This system has shown to be efficient and cost effective and could greatly assist in the TB eradication programme. The engagement of Backweston Laboratory and DVO's and their desire to continue the very successful collaboration has been a breakthrough achievement and every effort should be made to continue on this process rather than fall back to the negative us and them scenario that pre-existed the project.

- **Recommendation 11: Venison needs to be promoted as a sustainable healthy product**

Increased efforts are required to promote venison as a nutritious and staple good value product to generate a more consistent domestic market that is resilient to seasonal fluctuations. Venison is a highly nutrient rich, indigenous and traceable meat in abundant supply and with very low inputs. It has the added benefit of a low carbon footprint and food miles. The link needs to be made that by eating venison consumers are supporting a local product and contributing to better habitats and biodiversity.

Furthermore with global food prices at an all-time high due the Ukraine war, it is a critical time for food security. Now is the perfect opportunity for retailers, butchers and suppliers to celebrate and promote venison as a local and sustainably sourced product.

- **Recommendation 12: The National Deer Management Forum should be reformed as a matter of urgency.**

Finally, given the widespread reports of the an ever increasing deer populations and the associated adverse impacts, the Wicklow Deer Management Project recommends that the National Deer Management Forum should be reformed as matter of urgency.

Wicklow continues to be at the forefront of deer management issues in Ireland and given the longstanding experience of the Wicklow Deer Management Partnership in working towards a collaborative solution to address those issues and the practical experience gained through this and other projects in the county, the Partnership feel it important that the Forum is re-established and that they have a seat on the National Forum.

9. Conclusion

The primary purpose of the Wicklow Deer Management Project was to establish at least three DMU's in the Wicklow region and to put deer management on a more professional basis. The project did this and separated the tradition of deer hunting for recreation from actual deer management. Increased culling of female deer in the DMU's was achieved on a regular and professional manner. The recognition of deer management as an essential service by NPWS during the Covid restrictions was also a significant outcome for the project.

In summary, the project successfully achieved the following deliverables

- The establishment of five DMU's and management plans
- Accurate collection of cull data and what is actually happening within each DMU
- An increase in the number of female vs male deer culled each year and increased uptake of out of season hunting licences under Section 42 of the Wildlife Act
- A grass measuring methodology which determined grazing impact of deer
- A TB testing pilot which identified TB hotspots in deer in the West Wicklow area and an approach that can be used in other TB hotspot areas.

The following key recommendations were produced based on the findings of the Wicklow Deer Management Project

1. While more detailed deer population data is needed, the focus of deer management plans should be reducing the adverse impacts associated with deer
2. Increased culling of female deer is required
3. Deer management programmes need to make full use of the open season and out of season deer control under Section 42 licencing.
4. Deer management plans require a collaborative approach and the involvement of all stakeholders
5. Further detailed analysis of economic loss to grassland and forestry is required
6. Further work is needed to identify the full impacts of deer on conservation habitats and biodiversity
7. Successful Deer Management Units are driven from the bottom up. However, a suitably qualified coordinator is needed to provide oversight support and guidance, and to ensure a professional approach is followed.
8. All landowners need to consider the leasing of hunting carefully as it is they, the landowner, who have ultimate responsibility for ensuring that hunters on their lands are operating effectively. The sharing of accurate data between landowners and hunters is an absolute necessity in this regard.
9. New technologies should be fully embraced to assist in evidence based deer management and to streamline existing licencing systems.
10. The TB testing pilot identified TB hotspots in West Wicklow and warrant much further detailed investigation. The model proved efficient and effective and can easily be rolled out to other TB blackspots.
11. Venison needs to be promoted as a sustainable healthy product
12. The National Deer Management Forum should be reformed as a matter of urgency.

Within County Wicklow, the Wicklow Mountains Special Area of Conservation or SAC largely includes unenclosed land over 300m and is 32,946 hectares in total extent. The SAC includes the Wicklow Mountains National Park and adjacent upland areas in south Co. Dublin and Co. Wicklow and it supports several habitats (including Annex 1-listed wet heath, dry heath, blanket bog and species-rich

Nardus grasslands along with old broadleaved oak woodlands). Given a large proportion of the SAC is state owned (i.e. Coillte, the National Parks & Wildlife Service) or under private ownership (by the forest and/or farming sector), providing effective deer management and control measures that will alleviate environmental and economic impacts by deer will deliver benefits for many stakeholders.

In conclusion, there is ever growing public concern regarding the unsustainable growth of the wild deer population in Wicklow and the consequent environmental and economic impacts.

Given the successful delivery of the project, the current active level of engagement between landowners and hunters in the DMU's, and the findings regarding grazing impact and TB hotspots, the Project Steering Group is urgently seeking a new funding arrangement for the uninterrupted continuation of the project and its work. There is much potential to expand the current DMU model to other areas of Wicklow and to expand the grassland and TB testing methodologies. There is also much further scope to implement research on damage to woodland and priority conservation habitats. This is especially important given the current biodiversity and climate crisis and the importance that biodiversity components of land holdings and land management are likely to have in new EU, DAFM, EIP, NPWS schemes etc. Furthermore, as recently developed deer recording technologies become main stream, the information gathered will greatly assist in the delivery of an evidence based approach to deer management.

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Appendix 1

Table 2. Outline of Project Work Plan, Timescales and Time Allocation (no. of days) per Work Package/Action

A total of 450 days were estimated for project delivery including c. 390 days of project co-ordinator time and additional days from professional technical expertise and from steering group members

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
1	**Resources**															
Action 1.1	Project Set-up phase including Appointment of a Project Co-Ordinator	WUC	5													
2	**Incorporation of existing systems, structures and relationships**															
Action 2.1	Establishment of PSG and wider communications with input from the Project Steering Group .	Project Coord. & PSG	5													
3	**Regular liaison and updates with DAFM. and DCHG, other relevant agencies and stakeholders**															
Action 3.1	Establishment of Reporting forum/cycle to Depts and ongoing implementation etc. Regular updating of members of the group with progress with regard the completion of tasks and achievement (or otherwise) of objectives set out and agreed in the plan. Update the	Project Coord.	20													

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	2010 report "Developing a collaborative strategy for the management and control of invasive deer species in Co. Wicklow" to form a working strategy for the County.															
Action 3.2	Project Steering Group Meeting to Review Progress. Likely quarterly for Year 1 and subsequently bi-annually. The group will conduct an annual review of progress against agreed actions for that year and use this review as a basis for setting out its targets for the incoming year. The project co-ordinator will present a report at this meeting and to agree a detailed work-list for the incoming year.	Project Coord. & WDMP	20													
4	**Drafting & Circulation of project updates**															
Action 4.1	Annual reporting to Depts. post deer culling season on management sites and on implementation of the work plan.	Project Coord.	10													
Action 4.2	Quarterly updates to Project Steering Group in Year 1 and at agreed timelines thereafter in Year 2 and Year 3	Project Coord.	10													
5	**Establishing Deer Management Units**															
Action 5.1	Selection of Candidate Deer Management Areas in consultation	Project Coord. &	50													

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	with key stakeholders including Depts.. May include holding meetings to discuss deer management in the area and to engage with interested partie, drawing up MOUs etc.	PSG & Local Stakeholders														
Action 5.2	Establish Data Collection Regime to support scientific assessment of the effects of deer on various land uses and ensuring all necessary data as outlined in the Project Plan and in Annex A of the RFT is collected including where applicable grass measurement methodology.	Outsourced - Project Coord. & PSG oversight	25													
Action 5.3	Ongoing assessment of deer management including assessment of impact of deer	Local Stakeholders & Project Coordinator	30													
Action 5.4	Joint field sessions for members of the group on deer management and management tools	Project Coord. & PSG	20													
Action 5.5	Ongoing review of Best Practice Deer Management and these can act as flagship sites providing examples of best practice methods to other projects and updates to IDMF as required.	Project Coord. & PSG	15													
Action 5.6	Co-ordination of Deer Management Plans, Implementation, Returns and Progress Reporting.	Project Coord. & PSG	15													

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
6	**Existing Deer Management Units (Wicklow)**															
Action 6.1	Co-ordination of Review of existing Deer Management Units in Co. Wicklow and any Re-Drafting of Plans required	Project Coord.	40													
7	**Data Collection, data management, security and reporting**															
Action 7.1	Agree Data Sharing Agreements, Data Protection Policies – using external expertise as required. Insofar as practical provide deer management related data in the County including logging deer sightings, locations, deer kills, deer traffic accidents, and damage to grass, crops, trees and gardens. Liaise with key stakeholders on data managements and online records capture.	Project Coord. & PSG	20													
Action 7.2	Standardised methods of out-of-season counts that will lead to more effective deer management planning over time to be promoted by project Coordinator	Project Coord.	8													
Action 7.3	Delivery of final report (on project completion)	Project Coord. & PSG	8													

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
8	**Knowledge transfer & Information Sharing**															
Action 8.1 a	Increase awareness and understanding of issues associated with deer management at local and National level. Firstly through the effective utilisation of the Open Season and where necessary outside this within the Section 42 (Wildlife Act 1976) process. Where necessary co-ordinate the application and use of Section 42 and assist landowners with this process. Vehicles to increase awareness include leaflets,workshops/seminars, reports etc.	Project Coord. & PSG	30													
Action 8.1 b	Design & Print Leaflet	Outsourced	4													
Action 8.2	Provision of advice and technical support to landowners, hunters and other stakeholders. openly engage with advise and support the development of similar partnerships elsewhere. Improve where the need arises, in consultation with existing providers, the availability of training in the county e.g. Hunter Competence Assessment Programme (HCAP) or equivalent. Promote the importance of training and identify training gaps. Co-ordinate and liaise with training	Project Coord.	20													

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	providers to make best use of these training opportunities.															
Action 8.3	The Project Coordinator will lead on preparing agreed texts and/or presentations at workshops, public seminars, meetings etc.	Project Coord.	5													
Action 8.4	Aim to develop an agreed Public Relations Protocol for the partnership and to seek funding to appoint a PRO officer. In accordance with this protocol to engage with appropriate media to promote the endeavours of the partnership,	Project Coord.	5													
9	**Deer welfare safeguards**															
Action 9.1	Ensure Best Practice in terms of Deer management is adhered to with clear guidelines given to all those involved in carrying out management measures to ensure deer welfare is paramount with the principal aim of any deer management to maintain healthy deer populations in a natural balance with their environment.	Project Coord. & PSG	15													
Action 9.2	Progress the issue of deer as a potential vector for the transmission of disease such as Tuberculosis.	Project Coord. & PSG	20													
10	**Applying support and advice from applied research**															

	Project Work Packages	Role	Est. days	2018			2019				2020				2021	
		WP Lead		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Action 10.1	Incorporating advice and recommendations from applied research to help inform decision-making regarding project planning and deer management	Project Coord. & PSG	10													
11	**Establish a long-term funding strategy**															
Action 11.1	The PSG will examine the potential structural models that would best apply to make deer management sustainable in the long-term.	Project Coord. & PSG	25													
Action 11.2	The PSG will seek additional funding as required for specific outputs beyond the life of this project	Project Coord. & PSG	15													

Appendix 2

Deer Management

Plan

for

.....XXX.....

Background

Wicklow Uplands Council submitted a tender in partnership with the Wicklow Deer Management Partnership for the provision of Deer Management Services in Co Wicklow. This project which is funded by the Forest Service, NPWS and DCHG will put sustainable deer management within the county on a more professional basis and facilitate and promote knowledge transfer within the county and wider. The long-term vision for this project is for it to be replicated outside of Wicklow in other conflict areas and allow for sharing of knowledge and best practice beyond Co. Wicklow

- The project will identify candidate DMUs for the purposes of carrying out management measures and will scope any additional opportunities for additional sites.
- Establishment of three deer management units (DMU's) in the County Wicklow region and neighbouring counties as a minimum
- Preparation and implementation of structured deer management plans for each of these deer management units (a single management plan can cover all DMU's). This document will represent a collaborative action plan between landowners, hunters and key stakeholders and will be an active document insofar as records are logged and used throughout the management period for key decision making
-

Establish DMUs engaging the various stakeholders – landowners, private forest owners, Coillte, NPWS, hunter

Deer Management Unit (D.M.U)

Operation

The sustainable management of deer requires a collaborative approach. For this reason, Deer Management Units (DMUs) have been suggested and established in Wicklow.

The diversity of ownership and management objectives is now a feature of most DMUs and as a result, delivering effective management of the deer across a group area also requires positive, proactive engagement.

Deer management currently delivers probably unknowingly, a range of benefits which should be referred to as the "Public Interest.

DMUs should be open, transparent, inclusive and publicly accountable.

Deer managers already deliver a level of Public Interest as a result of their private management objectives. DMUs are being tasked with seeking 'additional' Public Interest through modification of the management of some private interests

To deliver these Public Interest Actions DMUs need to function effectively and have an effective deer management planning process in place. Effective planning is a dynamic process based on setting objectives and targets, carrying out actions, monitoring and reviewing.

DMU Actions to demonstrate delivery

• Establish a baseline by collating information on current activity/ extent / or actions. This can be used to establish the current DMU contribution and also provide the basis to measure the effectiveness of future actions. Suggested actions

- Grassland loss/damage assessment and measurement.
- Woodland loss/damage assessment
- Monitor TB outbreaks in areas of high deer population
- Cull / Sightings monitoring

• Identify and plan actions which will contribute to the delivering the outcome. These should be contained or be annexed to the Deer Management Plan.

• Implement the agreed actions – Likely to be done at the individual land holding basis but should seek to use collaborative approaches where possible.

• Monitor effectiveness of the actions through comparing progress against the established baseline.

• Review actions and decide to continue /amend /change these in light of new information.

Deer Management Groups - delivering public interest.

identify a number of areas of that upland Deer Management Groups (DMUs) can be expected to contribute towards delivering in managing populations of deer at a landscape scale.

DMUs will need to demonstrate how they contribute to this delivery through reporting on a series of actions which can be prioritised and agreed on a local basis. Deer managers will be delivering a level of public benefit as a result of their private management interests. DMUs are being tasked with acknowledging existing and identifying where 'additional' public benefits may be delivered through some modification of the management of private interests.

Public interests may be grouped into but not limited to

- Environment,
- Economy,
- Social Well-being
- Deer Welfare.

Facilitating the reduction of deer impacts where this is contributing to habitat degradation.

DMU will manage deer impacts to deliver and sustain favourable condition to improving biodiversity. DMUs may also be able to directly influence non-deer issues for designated sites due to the land management role of their members

Contribute to Government forestry expansion targets through identifying areas for further woodland creation and managing deer impacts to allow for successful establishment of new woodland.

Priority should be given to expansion opportunities where this improves habitat networks.

Manage deer to retain existing native woodland cover and improve woodland condition in the medium to long term.

The Native Woodland Survey. This maps non-designated native woodland cover, reports condition and highlights herbivore impacts which threaten medium to long term condition of these important woodlands. It is expected that the DMUs will implement management to reduce the proportion of native woodland area identified within the 'High' and 'Very High' categories of herbivore impact.

Monitor and manage deer impacts in the wider countryside (not improved agricultural land) by establishing monitoring throughout wider countryside habitats assessing herbivore impacts and manage those impacts within acceptable ranges

Optimise economic benefits of Deer Management by establishing and quantifying current benefits within DMU areas, determining opportunities for increasing economic benefit, particularly where collaborative opportunities exist, and through seeking and promoting investment opportunities

Minimise the economic cost of deer through identifying issues and implementing management to reduce or mitigate deer impacts where this results in an economic cost.

DMUs will be active in understanding where deer are having an economic cost particularly with regard to forestry and agricultural impacts, deer vehicle collisions, and seek to plan and work collaboratively to reduce these costs

Contribute to delivering higher standards of competence in deer management through promoting and offering opportunities for members to take up formal training opportunities, continuous professional development and ensure Best Practice guidance is adopted in deer management activities throughout the DMU.

Public health and wellbeing benefits associated with deer and deer management.

DMU should raise awareness of road safety issues associated with deer to reduce the risks of road traffic accidents, co-ordinate action to minimise deer-related human disease risks

Ensure effective communication on deer management issues within the DMU, within the wider community and promote better awareness and education of deer and deer management. Ensure DMUs are inclusive, open and transparent, and can articulate and communicate public benefits being delivered through deer management activity

Welfare

Ensure deer welfare is taken fully into account at individual animal and population level through effective planning and delivery of deer management activities. DMUs should carry out an assessment of the state of deer health and promote positive welfare.

Develop effective mechanisms to manage deer.

DMUs should improve representation and membership of DMUs to ensure there is greater integration of different land-uses at a local level. DMUs should also ensure that the deer management planning process is consultative, transparent and open.

..... Deer Management

The overall objective of The ..... Deer Management Unit is to bring together all those landowners who have and wish to have **some <u>part to play in the management and conservation of deer</u>** , whilst recognising the objectives and constraints of the various landowners and agencies.

A collaborative approach to the management of wild deer is most appropriate

The main losers from deer damage are landowners, the onus is on them to take control

It is therefore proposed that landowners collaborate, coordinate and control deer hunting and lay down terms for hunter practises, performance and reporting

The choice of hunter (Deer management teams) remains with each individual land-owner. Information on sightings and culls will be collected by the project co-ordinator. Who is responsible for the secure storage of this information. It is envisaged that individual land/owners will be entitled to data relating to their holdings only. In all other cases the data will only be see as total for the D.M.U.

As it would be expected that from **a safety/requirement issue all** hunters/deer management teams will have a mobile phone when on la nds within the D.M.U., the simplest method of information on sightings /culls etc would be (as used by many professional hunters) a photo sent to the co-ordinators secure phone of the culled deer, this would enable the breed, sex and location of the cull to be determined. This will give each landowner proof of cull and fully traceability.

The co-ordinator will act as an **independent depositary for data** collected in the form of counts, cull data, impact assessments and other observations. The co-ordinator will document protocols for the establishment of new deer management areas which can be used in replicating such areas elsewhere in Wicklow and Ireland. The co-ordinator will also conduct assessments on data collated which will provide guidance for the ongoing development of the deer management plan from year to year.

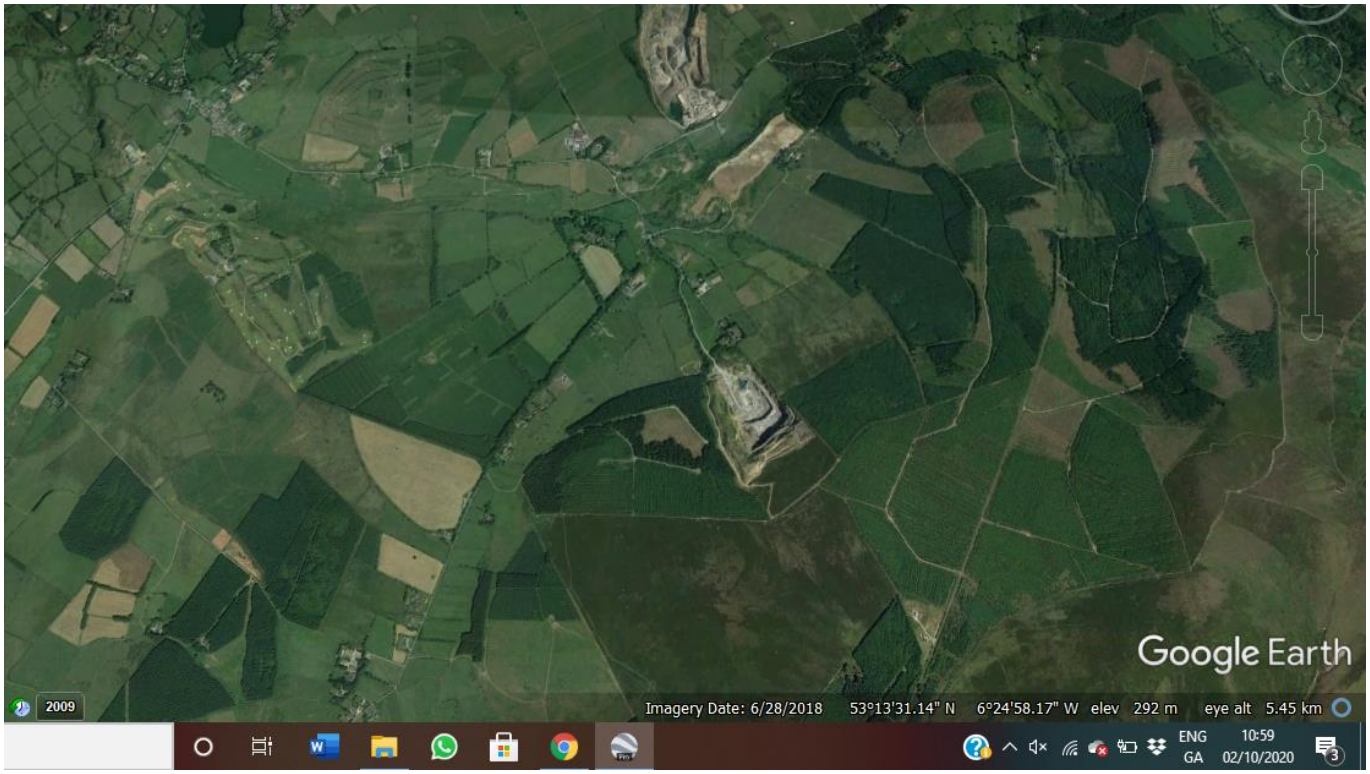
The project coordinator will facilitate a greater degree of input from stakeholders in management units and greater levels of communication between those involved in implementing the plan, particularly land owners and hunters.

Liaise with and assist each group to establish a Memo of Understanding which will

1. Develop liaisons between landowners and hunters and improve co-operation and co-ordination
2. Increase awareness for landowners around the mechanisms for control and management of deer. Firstly through the effective utilisation of the Open

Season and where necessary outside this within the Section 42 (Wildlife Act 1976) process. Where necessary co-ordinate the application and use of Section 42 and assist landowners with this process.

3. Collate deer management related data in the county including logging deer sightings locations, deer kills, deer traffic accidents, and measure damage to grass, crops, trees and gardens
4. As resources allow **promotion information and knowledge transfer outside of Wicklow to other areas that may have current or emerging deer management issues.**



Contacts

Id	Phone	Map	DMU Sign	Sct 42
Data Clear		X	X	X
		X	X	X
		X	X	X
		X	X	X
		X	X	X
		X	X	X
				X
		X	X	X
			X	X
		x	X	X
#				

Location

Estimated area	450 ha
Grass	330

Forest	70
Hill	50

Deer

Species	**Est. Density**	**Trend**	**Likely to appear in next 3 years ?**	**Estimated numbers**	**Census method**
	High, Mod, Low	→ ↑ ↓			
Red					
Sika	High	↓	↑		
Fallow					

Current impacts

	Tick as appropriate			**Deer species most responsible**	**Comments**
	low	**mo d**	**hi**		
Grassland					
Woodland					

Fence					
Deer Vehicle Collisions					
Biodiversity					
Garden					
Disease					

Current deer management

Deer Management	Yes	No	Estimated number of man/days	Comments
Individual Stalker				
Sct 42 culling				
Night shooting Sct 42				
Deer Mgt. Group meetings				
High seats				
Protection			Est area	Comments
Deer fencing				
Tree guards				
Chemical Protection				
Other				

Obstacles to achieving effective deer control

Obstacles to effective deer management	How does this affect deer management?	How could obstacle be addressed?
Unpredictability of deer movements		
Lack of collaboration with neighbours		
Insufficient time or man power available		
Hunter training or experience		
Lack of High seats Logistics of carcass handling e.g. extraction, larder facilities		
Other (state)		

Future Management

Land Management Objectives and Monitoring

	Targets	By when	Method of monitoring	Monitoring period and frequency	Who is responsible
Agricultural Crop Damage					
Fence Damage					
Road Traffic Accidents					
Other					

2.2 Deer Management Objectives

	Targets	By when	Method of monitoring	Monitoring period and frequency	Who is responsible
Deer Cull					
Deer Health					
Venison production					
Other					

Deer Management Action

Deer Management	Est. Annual number of man/days	Comments
Individual Stalker		
Collaborative culls with neighbours		
Night shooting Under Licence only Sct 42		
Out of season culling. Under licence or Sect 42 only		
Deer Mgt. Group meetings		

Protection	Comments
Deer fencing	
Tree guards	
High seats	

Health & Safety issues

(The list below is a guide only)

Complete/delete as applicable	Risk assessments in place (tick)		Actions required	Comments
	Yes	No		
Access				
Stalking				
High seats				
Use of firearms				
Meat hygiene				
Lone working				

Other (state)				

Costs/Income

(Summary of items required, actual values may be omitted)

"One off" or capital costs

E.g. Deer Fencing, high seats, deer larder

Ongoing costs

E.g. Contract stalking, Ride maintenance

Income sources

Cull Summary

Id			
Data Clear			