CRAIGENS FARM BIODIVERSITY BASELINES & AUDITS


Regulatory & Legal
Land-use regulations
Environmental compliance
Certifications (organic, specialty)
Livestock health regulations
Labor laws
Recordkeeping for audits
Financial Resources
Capital (startup + working)
Access to credit
Grants & subsidies
Cash flow management
Insurance (crop, livestock, property)
Budgeting & projections
Input Supply Chain
Fertilizer providers
Feed suppliers
Fuel suppliers
Veterinary supplies
Packaging materials
Spare parts
Human Resources
Owner/manager skills
Farm labor (seasonal + permanent)
Training & skill development
Consultants (agronomists, vets)
Partnerships/family labour
Safety training & compliance
Biological Resources
Crops & Seeds - genetics and suitability
Livestock - genetics & suitability
Soil biodiversity,
Polinator species
Utilities
Electricity, hydro, solar, generators
Waste management
Land & Natural Resources
Land availability
Soil type & fertility
Water
Climate
Biodiversity
Growing degree days
Topography
Crop land, pastures & hill ground
THE FARM
Knowledge & Support Networks
Farmer cooperatives
Research institutions
Partnerships
Workshops & training
Mentorship
Online communities
Physical Assets
Machinery
Roads, tracks and paths
Irrigation & Drainage
Tools & implements
Storage
Buildings
Transport vehicles
Market & Sales Resources
Target markets
Buyers
Branding & marketing
E-commerce platforms
Market research
Pricing strategies
Ecosytem Services
Pollination services
Natural pest control
Nutrient cycling
Water filtration & retention
Carbon storage
Shade & microclimate regulation
Technology & Data
Farm management software
GPS/GIS mapping
Sensors (soil moisture, climate)
Drones
Precision ag tools
Data analytics

Does biodiversity matter?

Regulatory and Policy Compliance (examples)

Species & habitat regulations – protected areas & species

Planning legislation – biodiversity enhancement

Environmental Protection Act – waste management

Net Zero Strategy – reducing greenhouse emissions

Resource Resilience & Efficiency

Soil conservation practices - healthier, more productive soils

Biodiverse buffer strips - protecting both soil quality and local water resources

Wetlands and riparian protection areas - enhances water quality, temperature and flow

Hedges, shelterbelts and tree planting - reducing soil erosion and providing shade and protection for livestock

Public support and product reputation

Certification and market benefits - core requirement for many certifications, enabling premium pricing and access to high-value markets

Enhanced market reputation - Demonstrating biodiversity efforts strengthens traceability, environmental responsibility, and customer trust

Diversification opportunities – tourism, events and venues with a wildlife focus

Access to funding

Subsidies & Grants - Strong biodiversity and conservation practices open opportunities for grants and subsidies

Carbon sequestration financing - Restoring peatlands and planting trees can turn farmland into valuable carbon-sequestration assets.

Private financing – compliance and marketing opportunities for corporate funding

Biodiversity Audits

Habitat Data
- Types
- Where
- Size
- Condition & Structure
- Management & Grazing

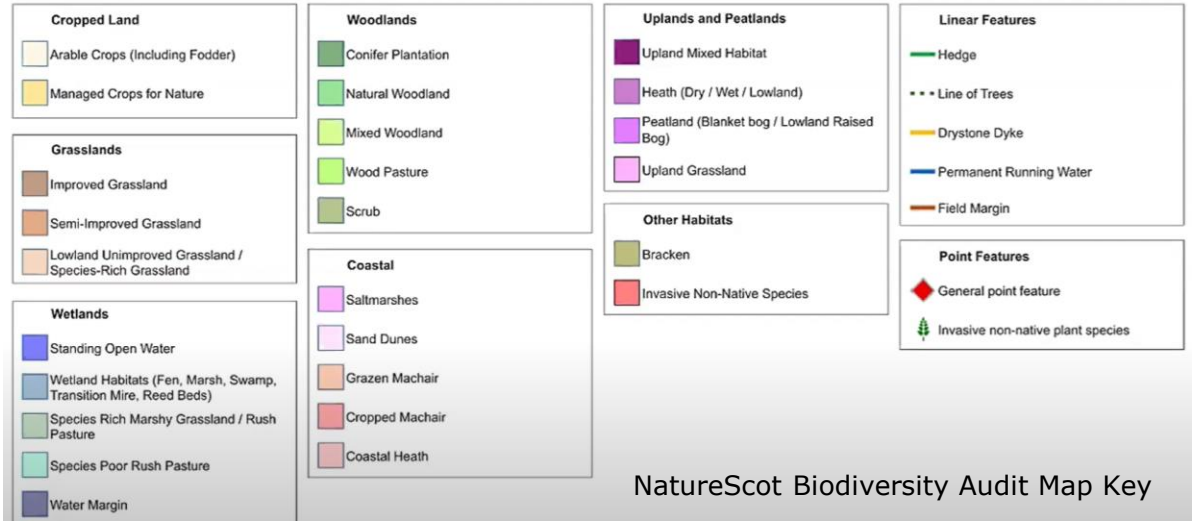
Species Data
- What
- Where
- Numbers
- Productivity

Soils & Water

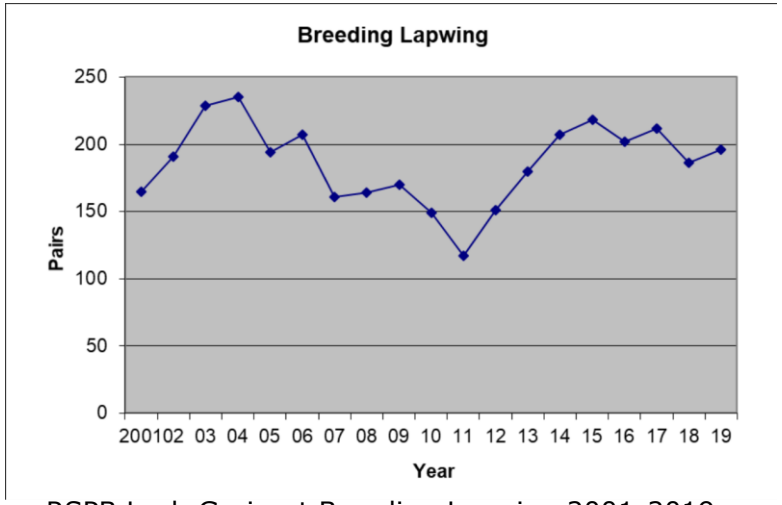
Connectivity

Risks & Pressure

Tools

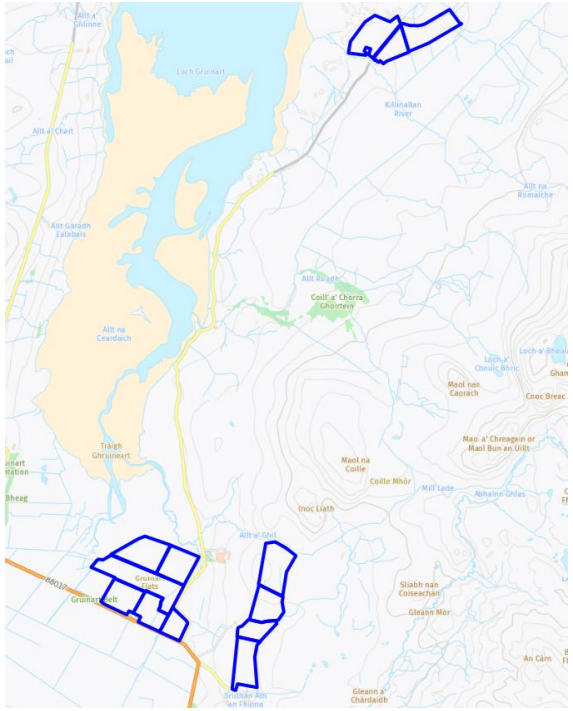


NatureScot Biodiversity Audit Map Key



RSPB Loch Gruinart Breeding Lapwing 2001-2019

Craigens wader survey areas 2024

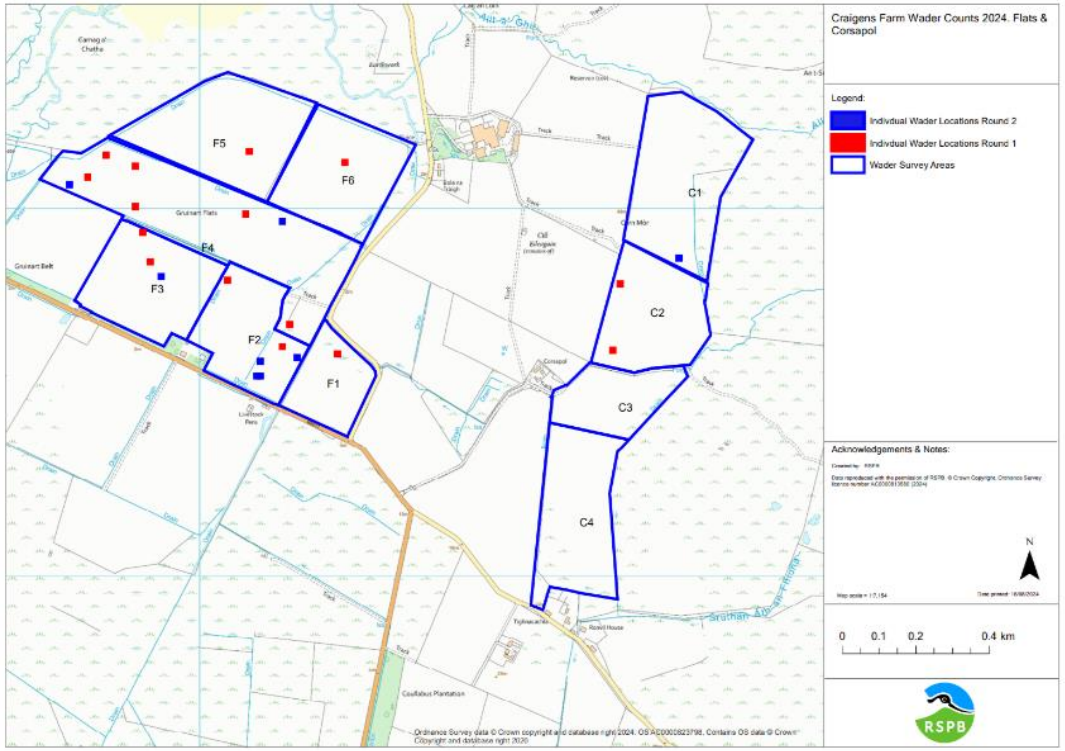


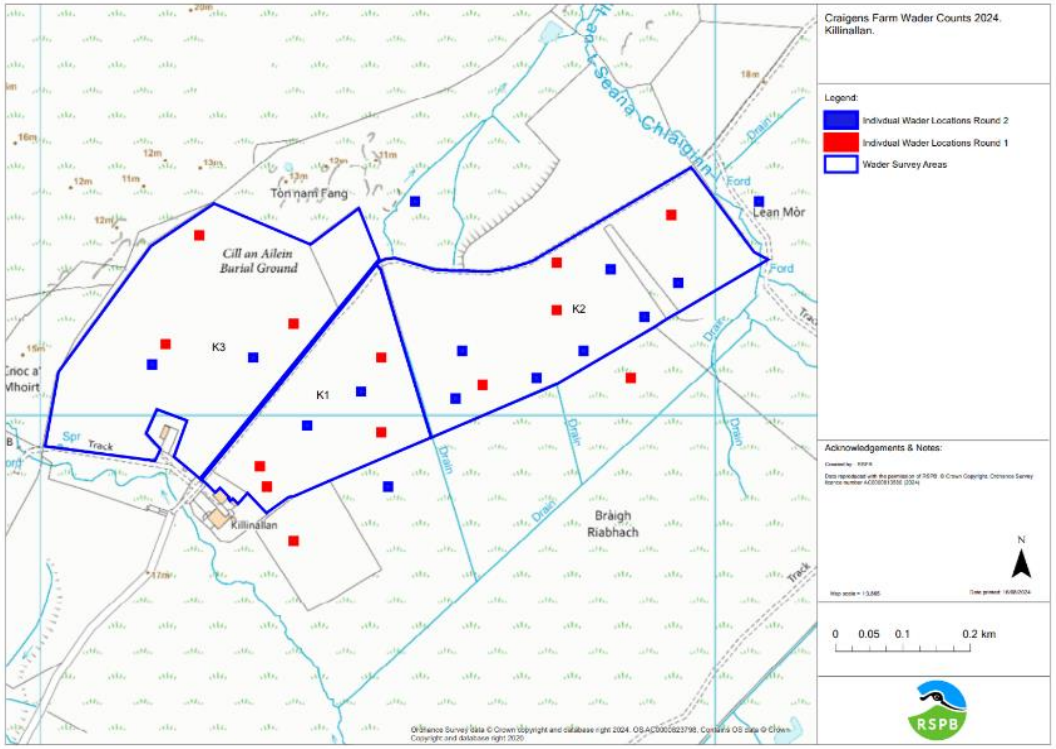
Vegetation Metrics
- Vegetation type
- Stock presence
- Vegetation height
- Field wetness
- Standing water
- Rush height
- Rush density
- Predator presence

Craigens Farm Waders Counts - Species on the Edge						
Round 1 24/4/24	Pairs					
Field #	Lapwing	Redshank	Oystercatcher	Snipe	Curlew	Golden Plover
F1						
F2	3					
F3	3	1				
F4	10					
F5	1					
F6						2
C1						
C2			4			20
C3					1	
C4						
K1	4			2		
K2	3		1		1	
K3	4	1				

Round 2 18/5/24	Pairs					
Field #	Lapwing	Redshank	Oystercatcher	Snipe	Curlew	Golden Plover
F1						
F2						
F3	2					
F4	3	1				
F5						
F6						
C1						
C2			3			
C3						
C4					1	
K1	2					
K2	11		1	2		
K3	4	1				

Craigens wader survey areas 2024





Wader Pairs				
Lapwing	Redshank	Oystercatcher	Snipe	Curlew
12	1			
		3.5		1
14	1	1	2	1

- Presence of stock in most fields between April and May
- Very short vegetation or dense tall rush
- Little standing shallow water

Future Opportunities

Focus:

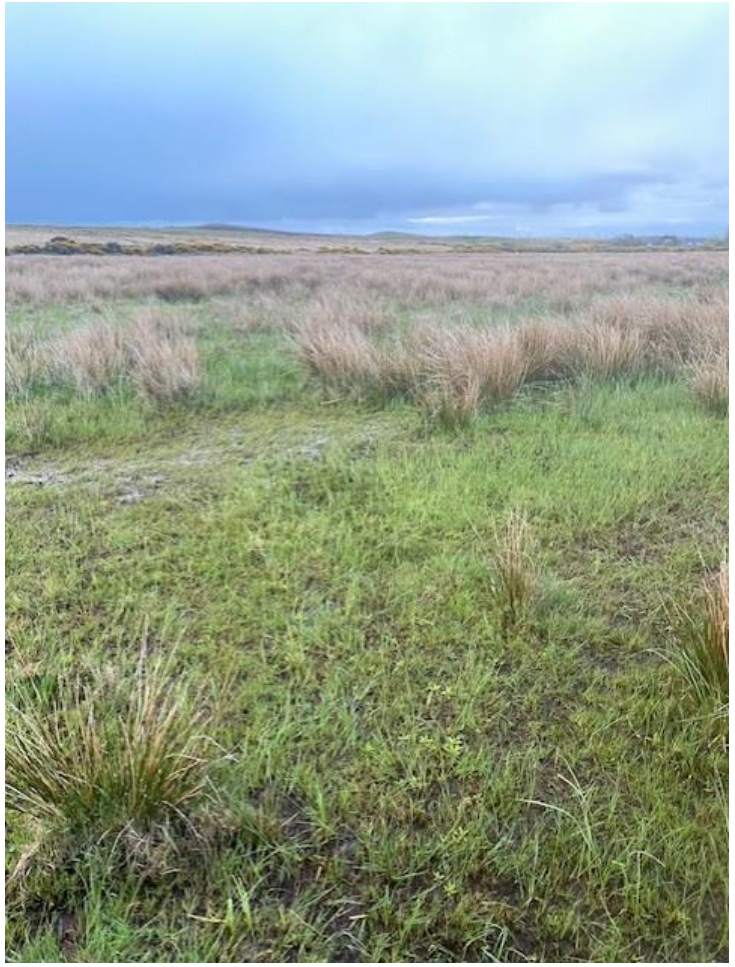
1. Creating 'transitional' land
2. Removal of grazing during peak wader nesting period

AEC Scheme Options

1. Stock exclusions
2. Stocking density reductions during nesting
3. Wetland creation
4. Creation of species rich grassland
5. Rush management

Future Opportunities

No ‘transitional’ land



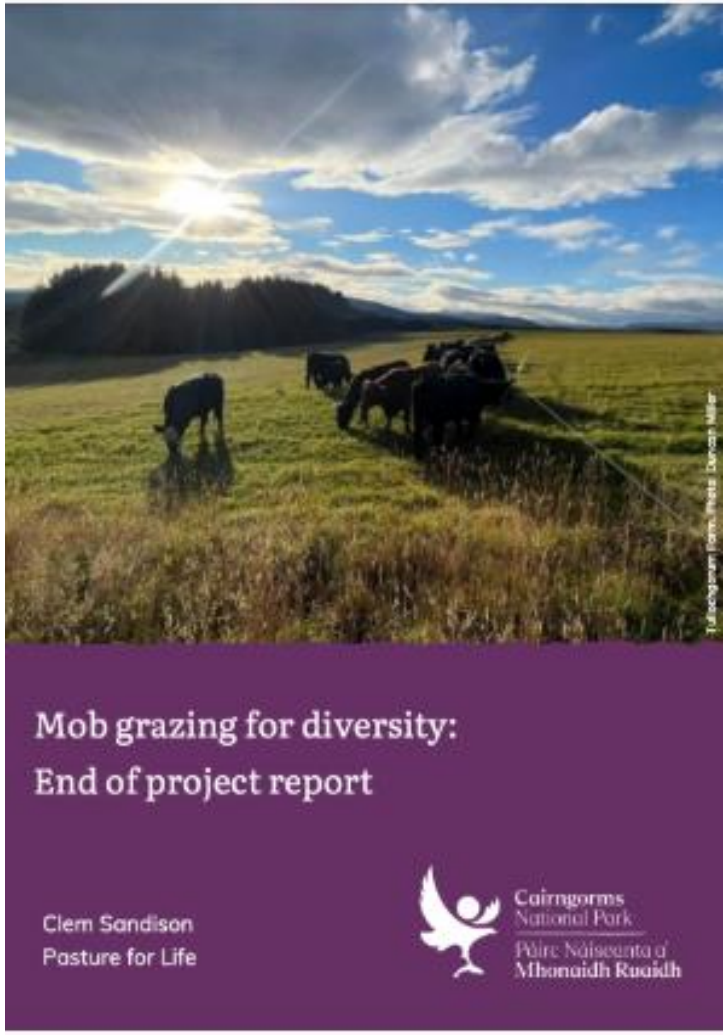
Wet but dense tall rushes

Future Opportunities

Large scale hill management – Working for Waders - Ayrshire

Open short rush adjacent to water – RSPB Smaull Farm, Islay

Mob grazing for botanical diversity



Project Aims

- To utilise mob grazing methods to:
  - Manage grasslands better
  - Increase sward species diversity
  - Create biodiverse pastures

5 farms across the Cairngorms national park

- Grazing management plan
- Implement adaptive grazing management
- Optimise sward productivity through rotational grazing systems
- Maintain permanent habitats in good biodiversity condition

Mob grazing for botanical diversity

- Initial joint planning meeting and training to develop a mob-grazing approach.
- Training for farmers in plant ID and survey skills to support monitoring.
- Financial support for essential equipment (e.g., electric fencing, energisers, mobile water).
- Each farm paired with an experienced mob-grazing mentor for ongoing guidance.
- Citizen scientists trained by Plantlife to complete baseline plant surveys.

First plant ID training day with volunteers and participating farmers. Aug 2021. Photo: Clem Sandison

Vegetation Surveys

List of National Vegetation Classification (NVC) community codes and names

The names of the National Vegetation Classification (NVC) communities mentioned in this document are listed below:

CG10 *Festuca ovina-Agrostis capillaris-Thymus polytrichus* grassland
CG11 *Festuca ovina-Agrostis capillaris-Alchemilla alpina* grassland
CG12 *Festuca ovina-Alchemilla alpina-Silene acaulis* community
CG14 *Dryas octopetala-Silene acaulis* community

H9 *Calluna vulgaris-Deschampsia flexuosa* heath
H10 *Calluna vulgaris-Erica cinerea* heath
H12 *Calluna vulgaris-Vaccinium myrtillus* heath
H16 *Calluna vulgaris-Arctostaphylos uva-ursi* heath
H18 *Vaccinium myrtillus-Deschampsia flexuosa* heath
H21 *Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium* heath

M6 *Carex echinata-Sphagnum fallax/denticulatum* mire
M15 *Trichophorum germanicum-Erica tetralix* wet heath
M16 *Erica tetralix-Sphagnum compactum* wet heath
M23 *Juncus effusus/acutiflorus-Galium palustre* rush-pasture
M25 *Molinia caerulea-Potentilla erecta* mire
M26 *Molinia caerulea-Crepis paludosa* fen

MG1 *Arrhenatherum elatius* coarse grassland
MG2 *Filipendula ulmaria-Arrhenatherum elatius* grassland
MG3 *Anthoxanthum odoratum-Geranium sylvaticum* meadow
MG5 *Cynosurus cristatus-Centaurea nigra* meadow and pasture
MG6 *Lolium perenne-Cynosurus cristatus* pasture
MG7 *Lolium perenne* leys and related grasslands
MG8 *Cynosurus cristatus-Caltha palustris* flood-pasture
MG9 *Holcus lanatus-Deschampsia cespitosa* grassland
MG10 *Holcus lanatus-Juncus effusus* rush-pasture
MG13 *Agrostis stolonifera-Alopecurus geniculatus* grassland

U1 *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland
U2 *Deschampsia flexuosa* grassland
U4 *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland
U5 *Nardus stricta-Galium saxatile* grassland
U6 *Juncus squarrosus-Festuca ovina* grassland
U7 *Nardus stricta-Carex bigelowii* grass heath
U13 *Deschampsia cespitosa-Galium saxatile* grassland

Pre Survey

- Identified grassland types in project area
- Identify sites
- Develop monitoring forms for each type

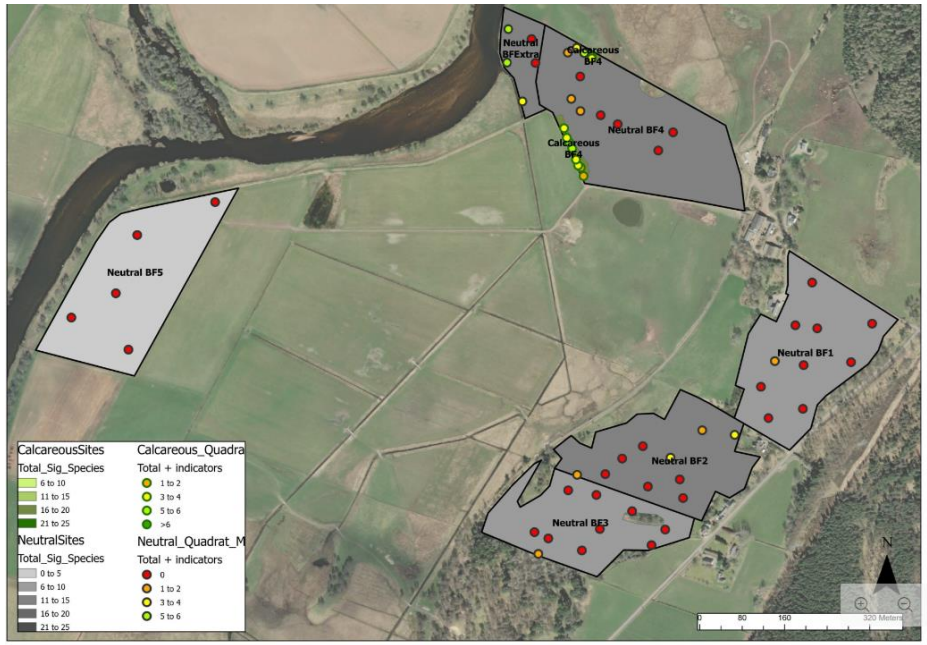
Survey Method

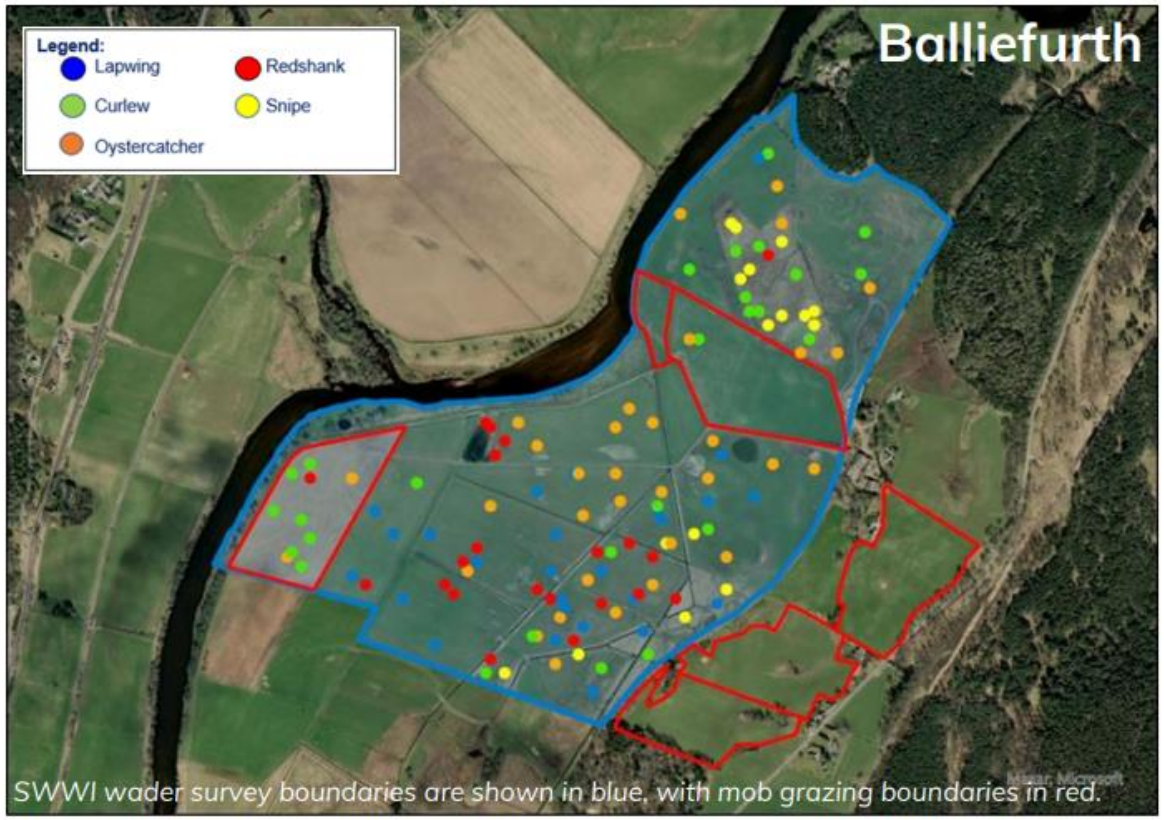
- 10 – 20 1m2 quadrats scattered throughout each grassland type at each site
- Sample points should be spaced evenly throughout the site
- Record presence/absence of the species. 1 = present 0 = absent

Analysis

- Estimate abundance of species across each site
- DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare)

Balliefurth site





Balliefurth

1. Reduced both cattle and sheep numbers. The project made us look at our grazing and silage production requirements to provide good carcase weights efficiently that prompted us to:
2. Buy in silage which allowed us to graze fields which would previously have been shut off for second cut silage. This resulted in us selling lambs earlier than what we would have done previously and our stirks had better daily liveweight gains.
3. Reduced paddock size.
4. Move stock more frequently, previously we were on a three to five day shift now more like two or three day shift but leaving longer residuals.
5. Group different ages of stirks.
6. Co graze sheep and cattle.
7. Run sheep in front of cattle in the rotation, so for example run sheep in paddock for one to two days and then cows for a day. Always ensuring a good residual.

Vegetation Baseline Data

How to set up a rapid assessment survey

- Identify aim / use of grassland
- Identify the positive and negative indicator species
- Create a recording form
- Carry out the survey
- Analyse the results
- Set targets to reflect these aims (thresholds / levels of positive and negative)
- Revise and finalise thresholds (ambitious / realistic)

Vegetation Baseline - Craigens – Rough Grazing & Rotational Pastures

ROUGH GRAZING - Botanical Diversity

Site: Date: Surveyors:

Field Code: Time of survey:

Sample number	Grid reference	Date when last grazed with cattle	Ecological variables						Positive indicators																Negative indicator						PMG			Scabious				
			Overall site		Per quadrat																																	
			Is there less than 5% scrub?	Is there less than 30% rushes?	Is sward height less than 30cm in June/July?	Is the cover of bare ground <10%?	Is the cover of neg indicators <5%	Is there less than 5% scrub seedlings?	Common lousewort	Cotton-grass	Greater bird's-foot trefoil	Heath milkwort	Lesser skullcap	Marsh bedstraw	Ragged robin	Sneezewort	Sweet vernal grass	Tormentil	Whorled caraway	Cross-leaved heath	Heather / ling	Western gorse	Western gorse	**TOTAL (n. of species per stop)**	Any European gorse >20cm in height?	Creeping thistle / spear thistle	Docks (excluding common sorrel)	Ragwort	Soft rush / hard rush	**TOTAL (n. of species per stop)**	0-25% Purple moor grass cover	26-80% Purple moor grass cover	>80% Purple moor grass cover	No Devil's-bit scabious	0-5% Devil's-bit scabious cover	6-10% Devil's-bit scabious cover	>10% Devil's-bit scabious cover	Scoring
1																																					

ROTATIONAL PASTURES - Chough & Botanical Diversity

Site: Date: Surveyors:

Field Code: Time of survey:

Sample number	Grid reference	Ecological Variables							Positive indicators																							Negative indicators						**Scoring**	Notes
		No. of cowpats	Sward height <10cm	Sward height 10-20cm	Sward height >20cm	Is there any bare soil?	Is the cover of herbs great than 40%?	Is there less than 5% scrub?	Bulbous buttercup	Common bird's-foot trefoil	Common cat's-ear	Common / black knapweed	Devil's-bit scabious	Field scabious	Hawkbits	Lady's bedstraw	Lady's-mantle spp.	Meadow buttercup	Meadow vetchling	Meadowsweet	Melancholy thistle	Orchid spp.	Oxeye daisy	Self-heal	Yellow rattle	Crested dog's-tail	Quaking-grass	Wood crane's-bill	Sweet vernal grass	**TOTAL (n. of species per stop)**	Common nettle	Creeping thistle / spear thistle	Docks (excluding common sorrel)	Ragwort	**TOTAL (n. of species per stop)**		
1																																					
2																																					

Vegetation Baseline - Craigens – Rush Pastures & Inbye/Cereals

RUSH PASTURES - Waders

Site:						Date:			Visit No.				Surveyors:		Cloud cover (to nearest	Wind (Beaufort	Rain (y/n)	Visibility (good/poor)
						Time for survey:												
Field	Grid reference	Ornithological Data								Land Use								
		CU (No. of birds)	L. (No. of birds)	OC (No. Of pairs)	OC (Total birds)	RK (No. Of birds)	SN (Birds drumming and chipping)	SN (Total birds)	Other species	Land Use Code	If grazed (C, S, H)	Veg height (St, M, L)	Field Wetness (D, So, W, SW)	Vegetation structure (Uniform, Fine patchy, Coarse patchy)	% of standing water	Rush Code (DU, SU, MR,MN)	Presence of scrub >2m/trees within 30m	Is the cover of herbs great than 40%?
1																		
2																		

IN-BYE & CEREALS - Corncrakes

Site:											Date:			Field Treatments:											
											Time for survey:			Grazing/Mowing Dates:											
Field	Field Info							Early Cover Assessment - April/May*											Late Grazed/Mown Pasture Assessment - July**					TOTAL POINTS	NOTES
	Field ID	1st/Main Crop	2nd Crop	Currently Grazed?*	Margin Crop	No. of margins/ banks >4	Avg margin width >4m	Margin Sward Height >15cm	Negative Sward <25%	Beneficial Corncrake Early Cover Species Present (>75%)						Cover Species Present >75%	Thatch <25%	Total Points	Sward Height (>20cm)	Sward Density Weak/Balanced/Heavy	Positive Corncrake Indicators None/Some/ Many	Negative Corncrake Indicators None/Some/ Many	Rating 1-4		
										N	I	CP	HW	CG	Other										
1																									

Next Steps

- Identify priority habitats and species
- Complete baseline audits - vegetation and breeding wader surveys
- Explore management options
- Explore funding opportunities

Conclusion

- Biodiversity audits = baseline for improvement
- Habitat & species data drive better management
- Future opportunities: AEC schemes, wetland creation, adaptive grazing, soil conservation, carbon sequestration
- Biodiversity = compliance, resilience, funding, and market advantage

Islay's Biodiversity

References

Sheard, E, J. et al (2021) **Investigating Conservation Management Interventions for the Benefit of Farmland Breeding Waders of Marginal Agricultural Grasslands in the UK**

Barton, M. G., et al (2025). **Meta-analysis of predator identity in nest-camera studies in the British Islands.**

Malm, L. E., et al. (2020). **Livestock grazing impacts components of the breeding cycle in upland passerines/waders.**

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