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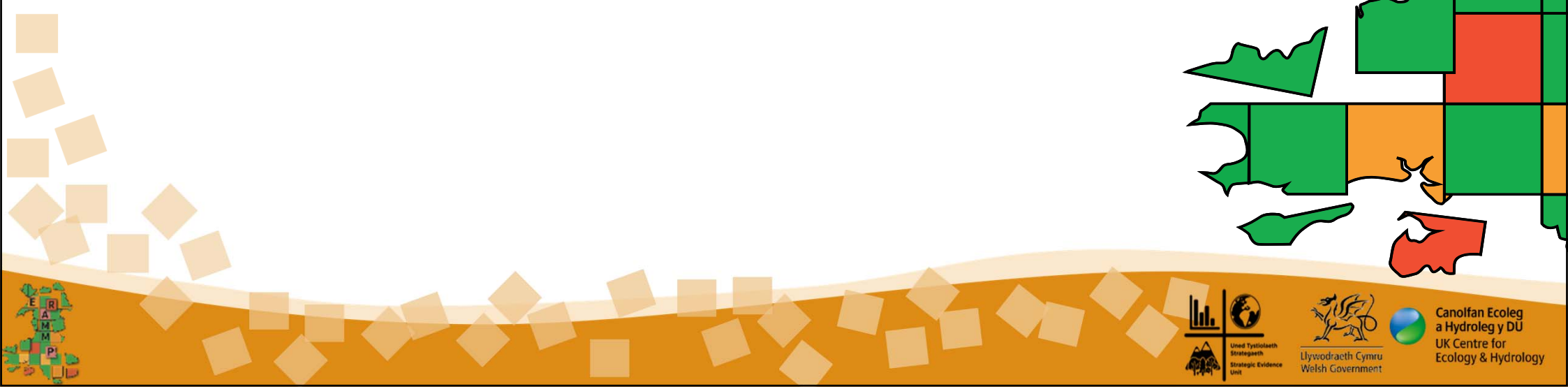
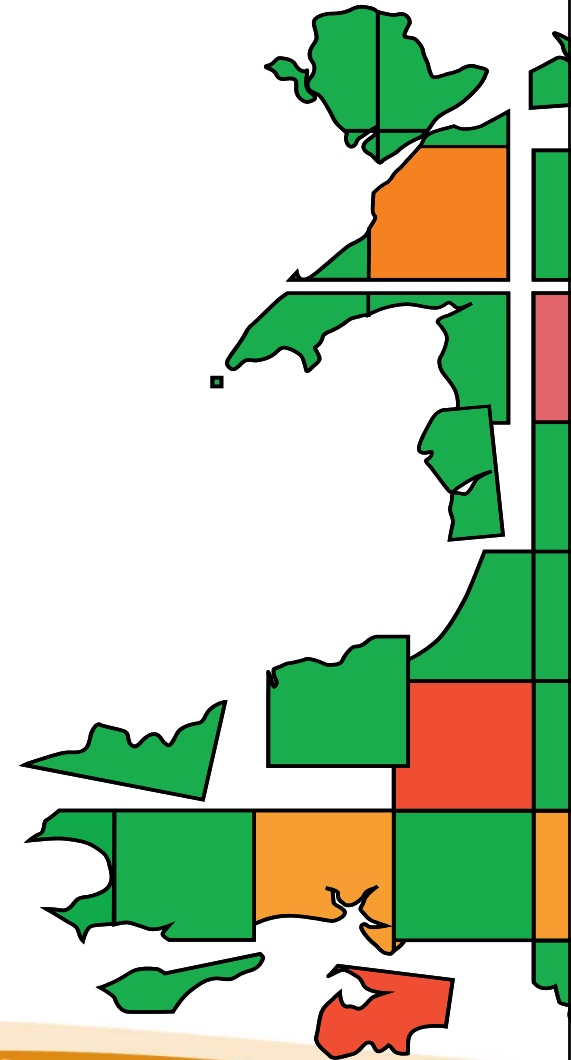
Title	ERAMMP Stakeholder webinar 13Oct21
Presenter(s)	James Skates, Bridget Emmett, Alan Radbourne
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Event	ERAMMP Stakeholders meeting
Event type	External stakeholder webinar
Audience [and approx. number if known]	External [non-project-team] stakeholders of the programme. 50
Supporting material	n/a
ERAMMP Document number	Document-83 [www.erammp.wales/83]
Language(s)	English, Welsh
Notes	

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ERAMMP Stakeholder Webinar

13 Hydref / October 2021

Croeso



Unit Tystiolaeth
Strategaeth
Strategic Evidence
Unit



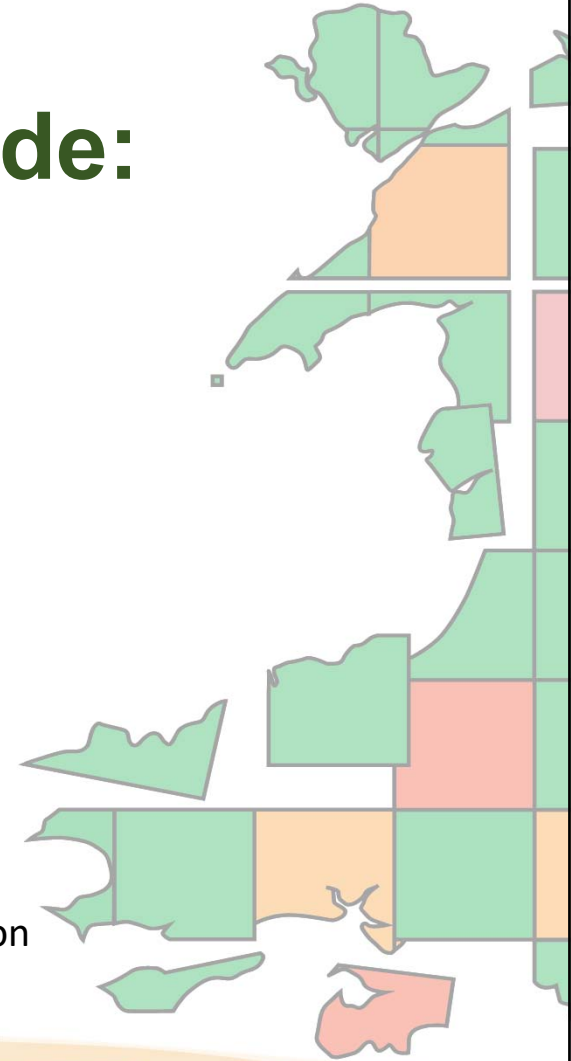
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Organisations attending today include:

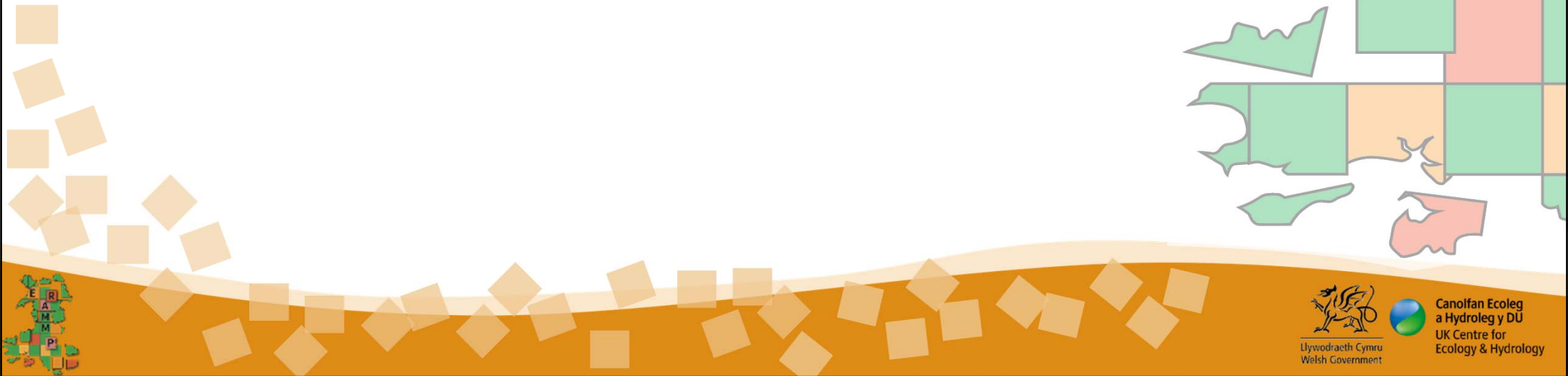
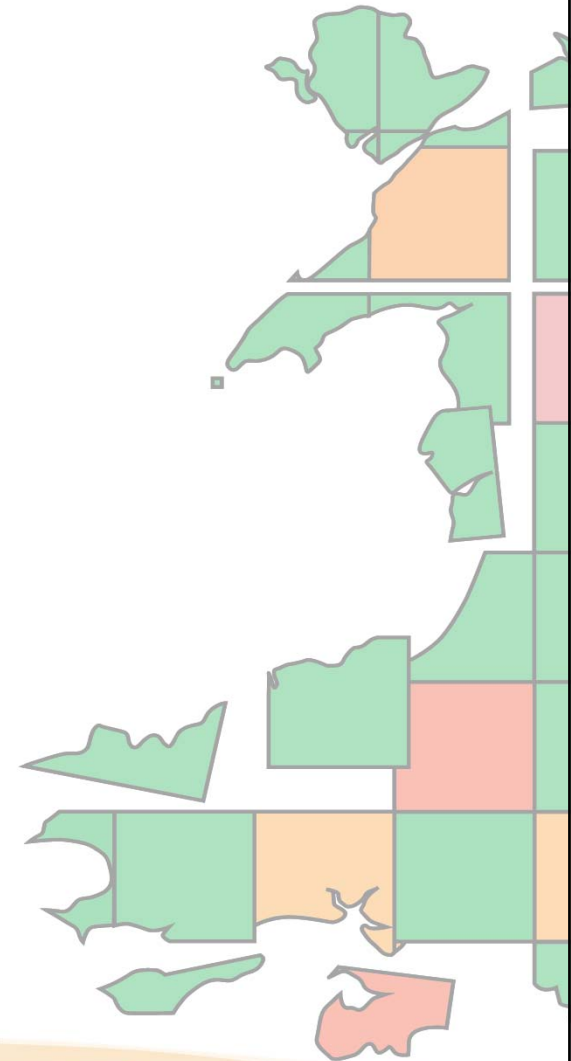
- Aberystwyth University
- ADAS
- Agriculture and Horticulture Development Board
- Animal and Plant Health Agency
- Bat Conservation Trust
- Brecon Beacons National Park Authority
- BTO
- Cofnod
- Countryside Landowners Association Cymru
- Denbighshire County Council
- Dwr Cymru
- Farmers' Union of Wales
- Gwent Wildlife Trust
- Hybu Cig Cymru Meat Promotion Wales
- JNCC
- National Botanic Garden of Wales
- NFU Cymru
- Pembrokeshire Coast National Park Authority
- Plantlife
- Public Health Wales
- RSPB
- Snowdonia National Park Authority
- Swansea University
- Welsh Local Government Association



Welcome / Croeso

Alan Radbourne

**ERAMMP Communications
UKCEH Soil & Water Scientist - Bangor**



ERAMMP Stakeholder Event
13th October 2021

11:00-13:00 on Microsoft Teams

Time	Session	Who	Notes
11:00	Welcome & admin	Alan Radbourne	Introduction to the morning session, agenda & timings
11:05	Overview of the programme	James Skates	Genesis, objectives, impacts and direction of ERAMMP
11:15	Three core elements (introduction)	Bridget Emmett	Monitoring, Modelling & Evidence within ERAMMP
11:20	Monitoring: What and how?	Bridget Emmett	<i>What</i> is monitored, the practicalities and the science behind it. Plus, short Q&A
11:35	Monitoring: Why and uses?	James Skates	<i>Why</i> we need this monitoring and what it can and will be used for. I.e. Indicators and reporting, <i>long-term trends</i> . Plus, short Q&A
11:50	<i>Break</i>		
12:00	Modelling: Modelling for policy design	James Skates	<i>How</i> WG is using modelling outputs to help policy design (including SFS). Plus, short Q&A
12:15	Evidence: What has been reviewed to date and what use is it	Bridget Emmett	What has been reviewed and how it is being used (Inc. AMR, Forests, SFS, Indicator-44, N2K). Plus, short Q&A
12:30	Bringing it together: What it all means & Q&A.	James Skates	Summary of programme and open to Q&A session.
12:55	Closing information	Alan Radbourne	Thanks and follow up actions.
13:00	<i>End</i>		



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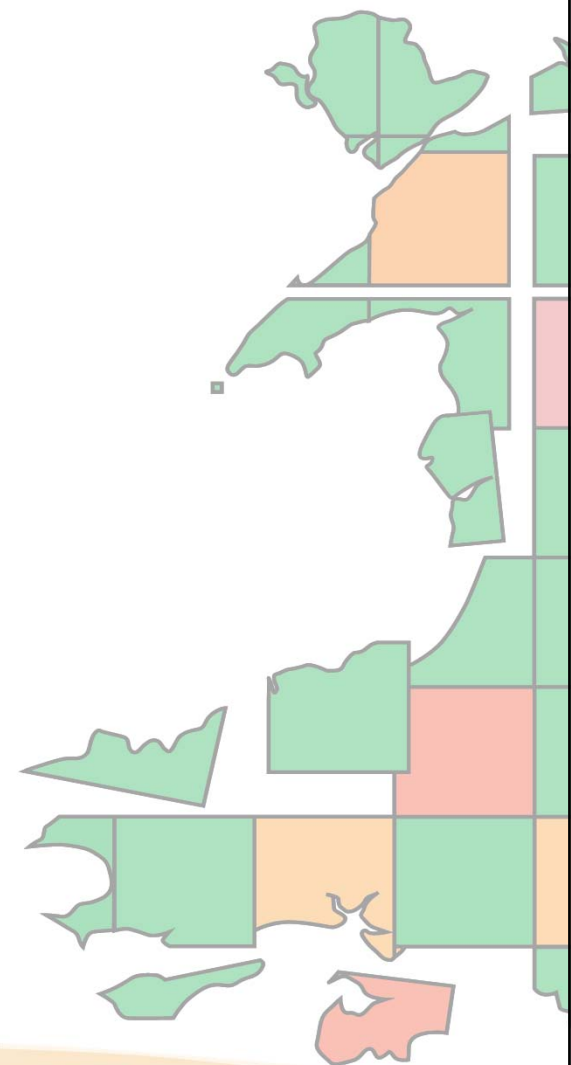
ERAMMP* Introduction

**Environment & Rural Affairs Monitoring and Modelling Programme*

James Skates

*Pennaeth Modelu, Geofofodol a Monitro/
Head of Modelling, Geospatial and Monitoring*

Uned Ymadael â'r UE a Strategaeth / EU Exit & Strategy Unit



ERAMMP Background

Genesis: Follow on from GMEP.

Objectives: To provide ongoing evidence and support for a wide range of evidence and modelling requirements for policy development.

Impact: Directly influencing WG policy and ministerial action.

Direction: A significant impact for evidence provision and future policy development



ERAMMP Team

Who: Over 20 partners to ensure capability to cover agriculture, forestry, tourism, air, soil, water, climate, biodiversity, public health and well-being, economics and more....

What: A 5-year programme.
Welsh Gov & UKCEH funded, £8m total.



Follows Policy Principles



**Thinking for
the long-term**



Prevention



Collaboration



Integration

Community approach for expert reviews and integrated assessments

Modelling for long-term, integrated thinking to avoid unintended consequences

Use and re-use of data

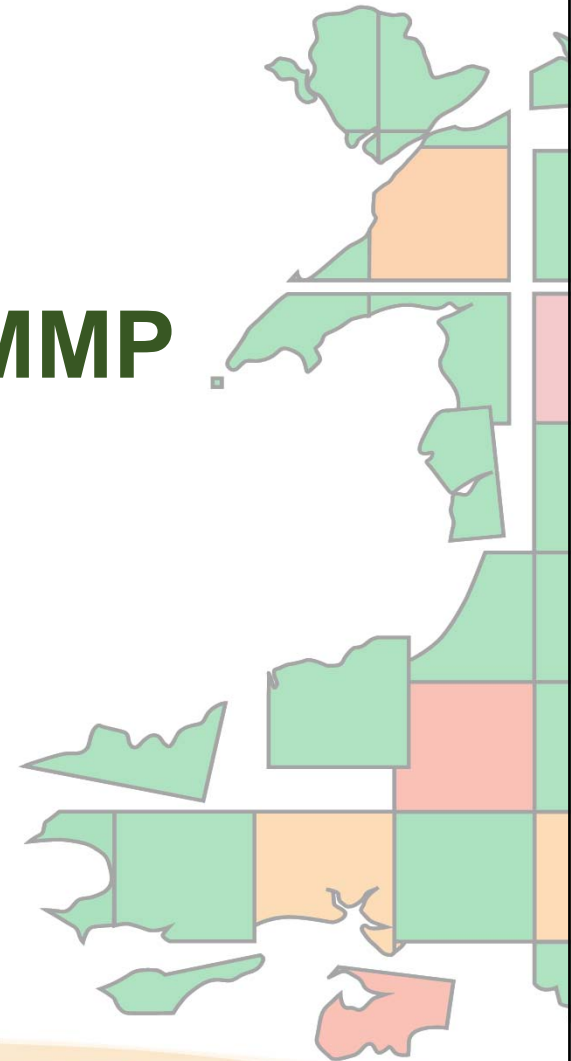
Rapid deployment



The Three Core Elements of ERAMMP

Bridget Emmett

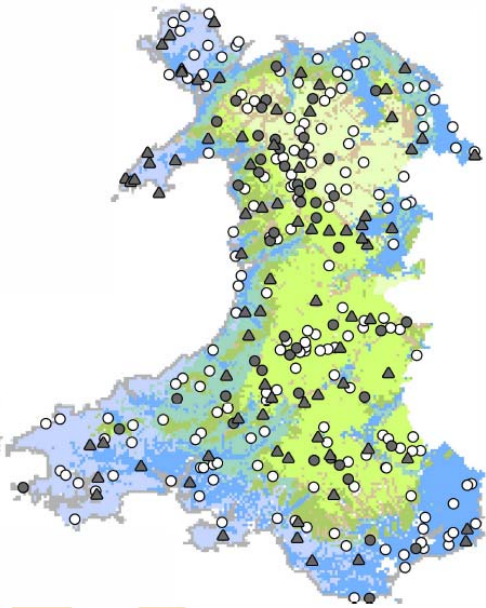
**ERAMMP Programme Lead
UKCEH Head of Soils and Land Use
& Head of Site - UKCEH Bangor**



ERAMMP Core Activities

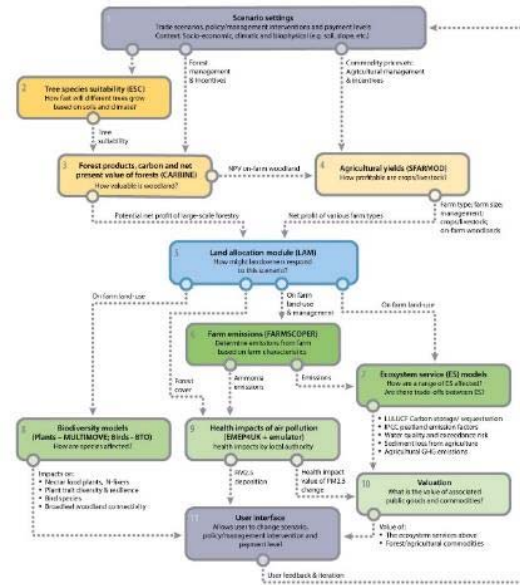
(1) Monitoring

The only integrated national monitoring programme in the UK



(2) Modelling

Exploring policy options and outcomes



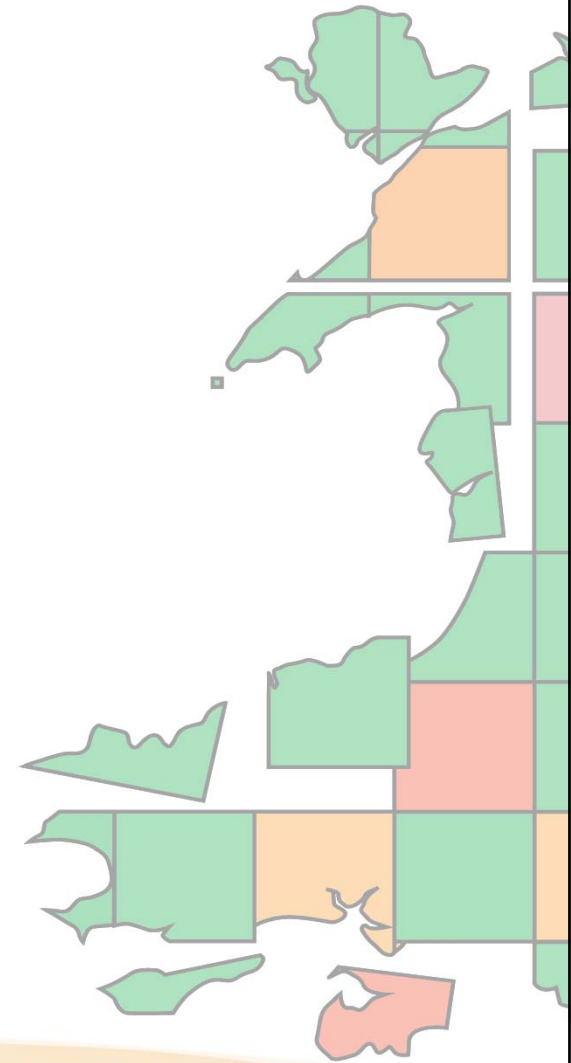
(3) Evidence Provision, Integrated Assessments & Analysis

What we do know; what we don't know; trade-offs and co-benefits



Monitoring: What & How?

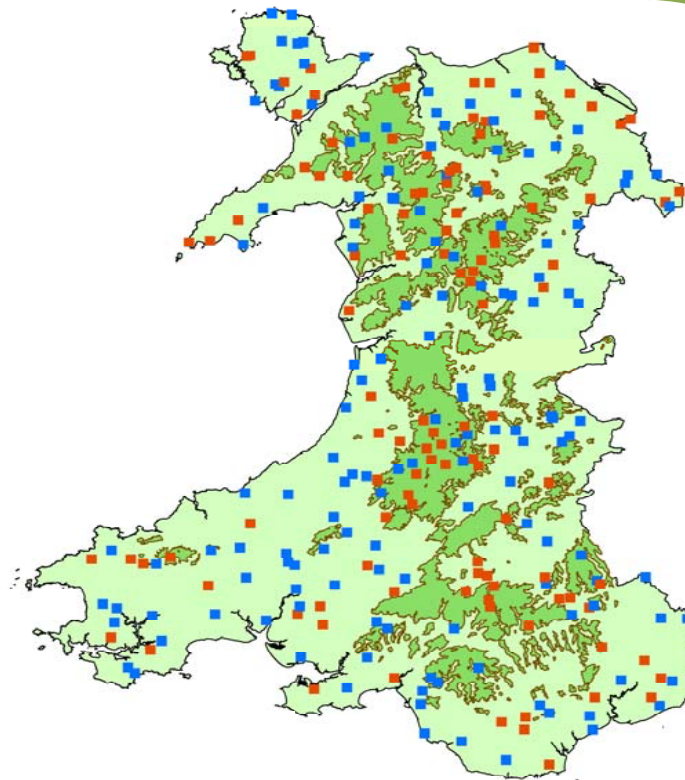
Bridget Emmett



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What We Measure

- Vegetation recording
- Soil sampling and peat depth
- Soil erosion
- Ponds
- Headwater streams
- Pollinator surveys
- Bird surveys
- Woodland, veteran trees and hedges
- Landscape photography
- Historic environment features
- Public footpaths



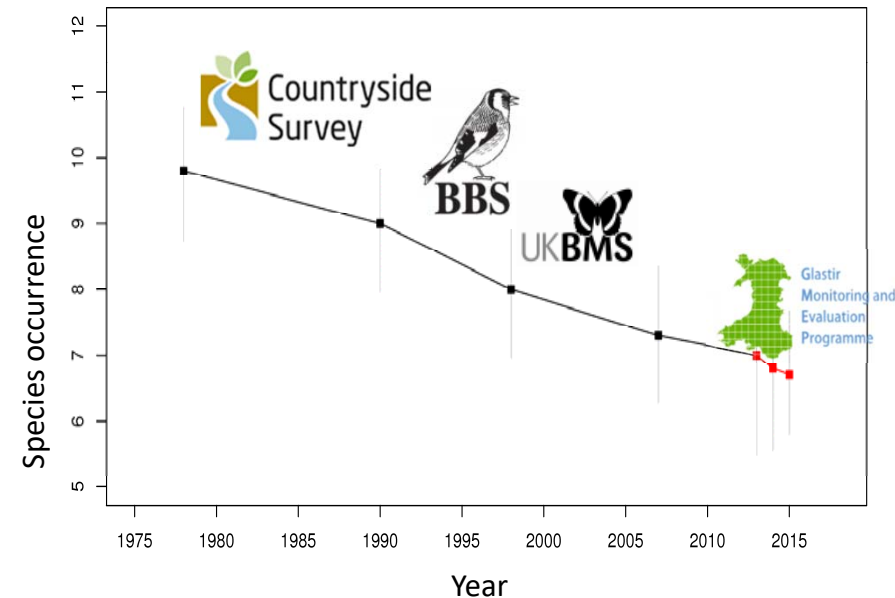
The approach builds on legacy methods and data from past monitoring programmes

Many data can be linked to trends reported since the 1970-1990s as methods are consistent with:

- UKCEH's Countryside Survey for soil, plants, woodlands, hedges and veteran trees, headwaters and ponds
- BTO/RSPB/JNCC Breeding Bird Survey for birds
- UK Butterfly Monitoring Scheme for pollinators
- New methods developed for Soil Erosion, Paths, Historic Environmental Features and Landscape Visual Quality

Baseline data collected data from 300 x 1 km squares between 2013-2016 (GMEP)

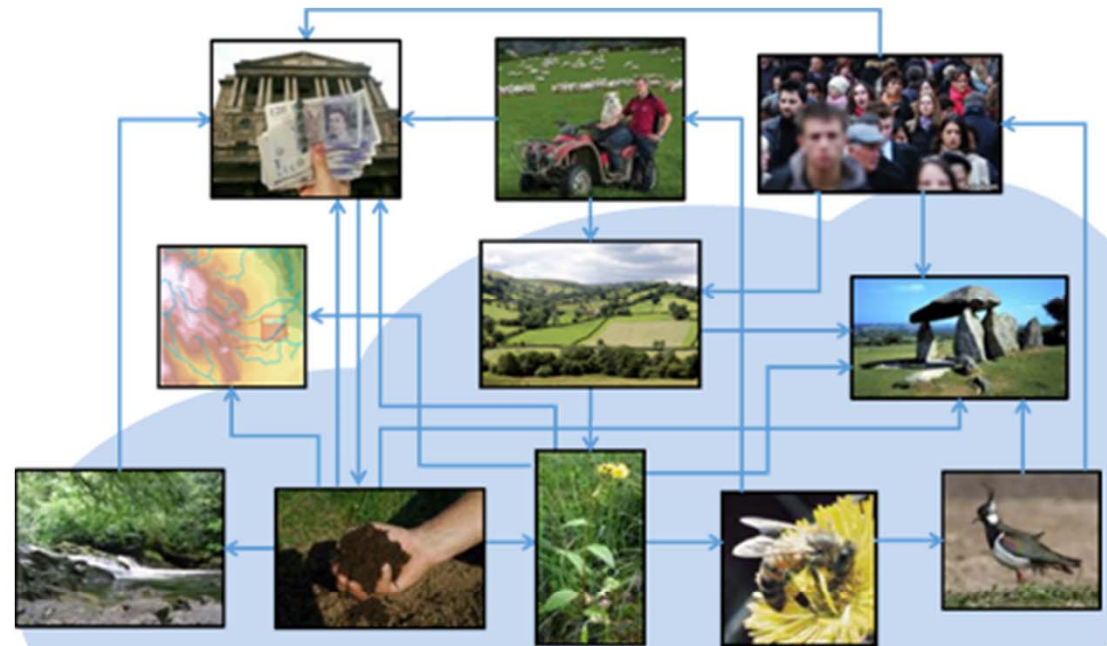
Re-survey of 130 of these 300 squares taking place in 2021 and 2022 targeting evidence for Glastir impact (ERAMMP)



Integrated Analysis

Co-location of measurements in 1km squares allow for inter-dependencies, trade-offs and lags over time to be identified e.g.

- How quickly can we pick up the impact of Glastir interventions for vegetation, soil, birds, pollinators and waters in the same location? Which one acts as the 'canary'?
- How does the underlying soil condition impact on outcomes for plants and animals?



Blue indicates - captured in field survey.
Other outcomes through farmer surveys, modelling and economic analysis use different approaches



Changes from GMEP Baseline to ERAMMP Re-survey 21/22



A move from field-based to a combined field/EO approach to capture change in habitat areas using UKCEH's aligned funding and EO expertise



Assessment of soil erosion and other degradation features now included

Some reductions:

130 squares of the baseline 300 squares are to be re-surveyed

Subset of these squares only for birds and pollinators

Dropped soil biodiversity but still collecting and freezing soil for our Biobank archive



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How?

37 field surveyors are required to survey 130 1 km² squares:

- 14 botanists with FISC level 4 skills
- 3 woodland surveyors
- 1 freshwater ecologist
- 11 pollinator surveyors
- 8 bird specialists



Covid precautions

- All surveyors adhere to UK and Welsh Government Covid-19 guidelines
- No face to face contact with landowners unless unavoidable
- Ensure compliance with social distancing guidelines
- Surveyors work within restricted geographic regions to limit travel
- Surveyors travel in separate vehicles to survey sites
- Surveyors sanitise hands thoroughly prior to and upon leaving site
- Surveyors minimise contact with surfaces e.g. gates, fences, styles etc.
- No local shopping or fuel fill-up when travelling to survey sites
- Guidelines are revised as appropriate following the latest UK & Welsh Government advice



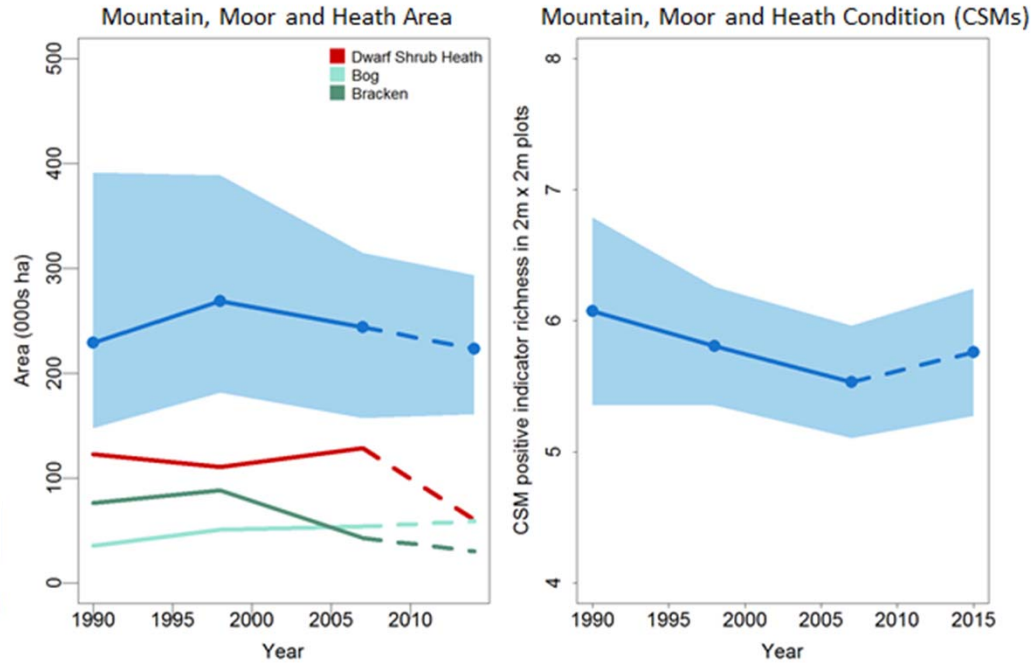
Field-Manuals Available Online:

ERAMMP-49: Vegetation	Coming soon [end-Oct21]
ERAMMP-50: Freshwater	ERAMMP Doc-50 Freshwater Field Handbook 2021 v1.0
ERAMMP-51: Soils	Coming soon [end-Oct21]
ERAMMP-52: Historic Features	ERAMMP Doc-52 HEF Field Handbook 2021 v1.0
ERAMMP-53: Biosecurity	ERAMMP Doc-53 Biosecurity Field Handbook v1.0
ERAMMP-71: Soil Erosion	ERAMMP Doc-71 Soil Erosion Field Handbook 2021 v1.0
ERAMMP-73: Woodland Mapping	ERAMMP Doc-73 Woody Features Mapping Field Handbook 2021 v1.0
ERAMMP-76: Pollinators	ERAMMP Doc-76 Pollinators Field Handbook 2021 v1.0

www.erammp.wales/r-field-handbooks



GMEP Outputs: An example from the uplands

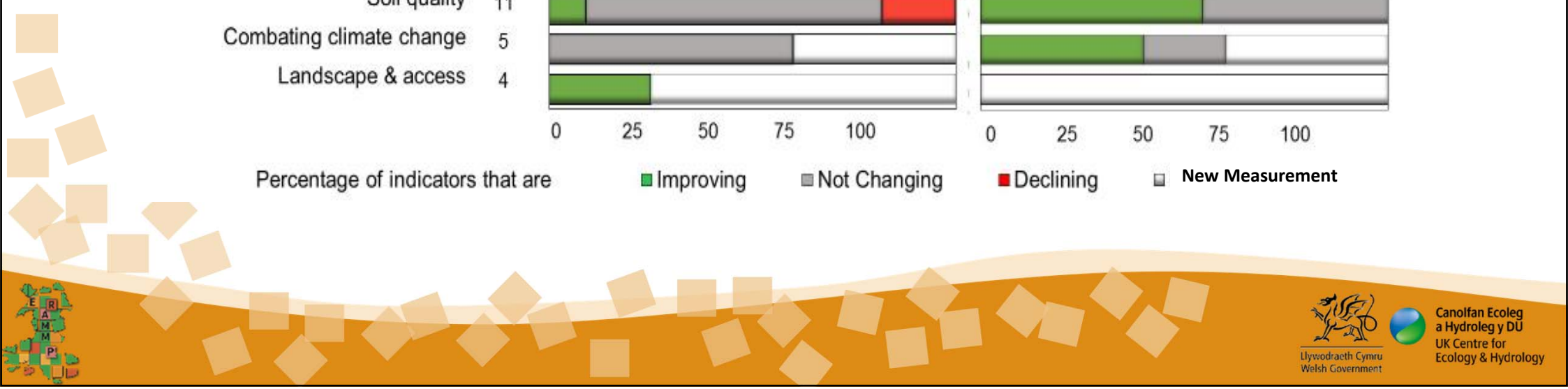
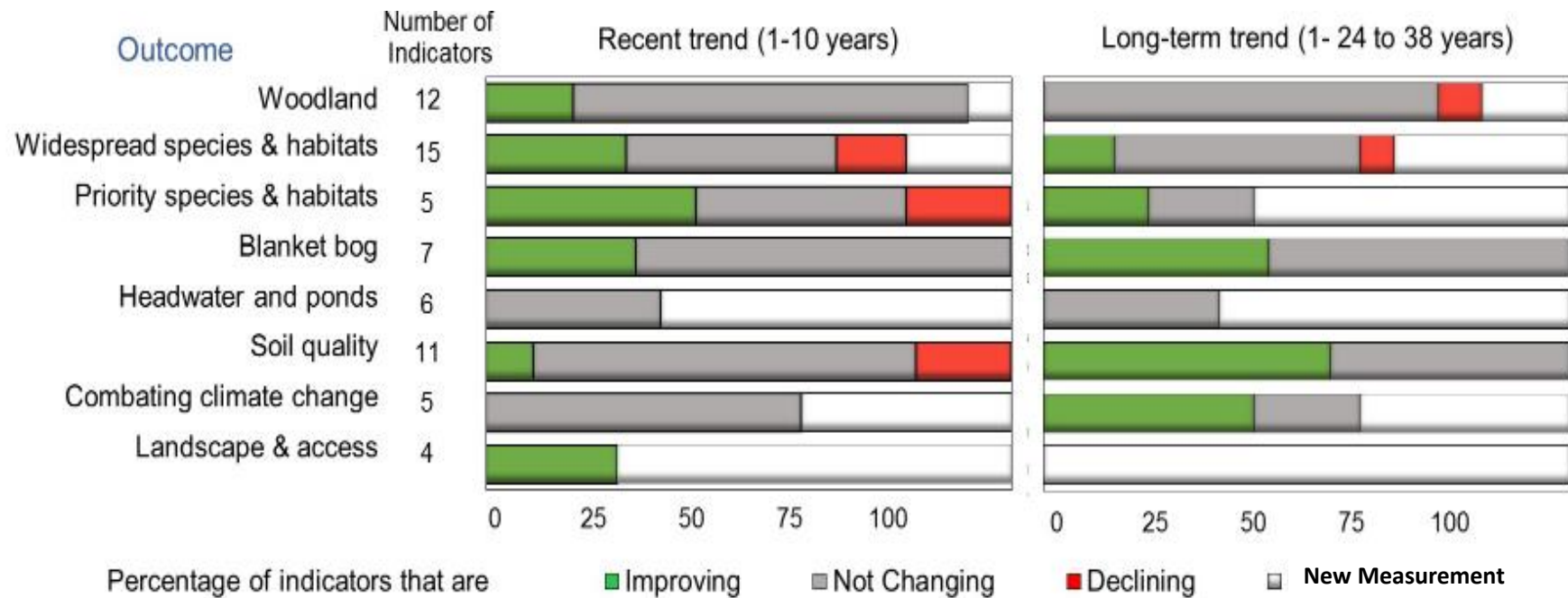


Broad Habitats	1990			1998			2007			GMEP 2013/14/15			Direction of significant changes 1998-2007
	Area Estimate	Lower est	Upper est	Area Estimate	Lower est	Upper est	Area Estimate	Lower est	Upper est	Area Estimate	Lower est	Upper est	
Total MMH	229.2	151.7	395.61	268.6	188.1	399.1	244.1	159.3	312.5	223	160.9	290.1	
Bracken	76.1	52.2	142.6	88.3	38.1	141.7	42.6	26.1	65.	30.2	17.51	46.7	
Dwarf Shrub Heath	122.6	47.9	262.4	110.7	55.6	185.9	128.3	65	181.4	60.1	26.3	105.2	↓ 2007-GMEP
Bog	35.2	5.9	39.1	50.6	21.5	87.9	53.8	23.4	81.1	58.7	29.5	95	↑ 1990-98
Montane	0	0	0	0.1	0.01	0.3	0.08	0.08	0.21	3.1	0	9.3	↑ 2007-GMEP
Inland rock	7.8	2.5	17	7.5	2.8	12.4	7.2	3.3	12.5	3.5	1.1	6.8	

TABLE-GMEP-BD065-A-1 National estimates of Broad Habitat extents from GMEP and CS '000 ha's.

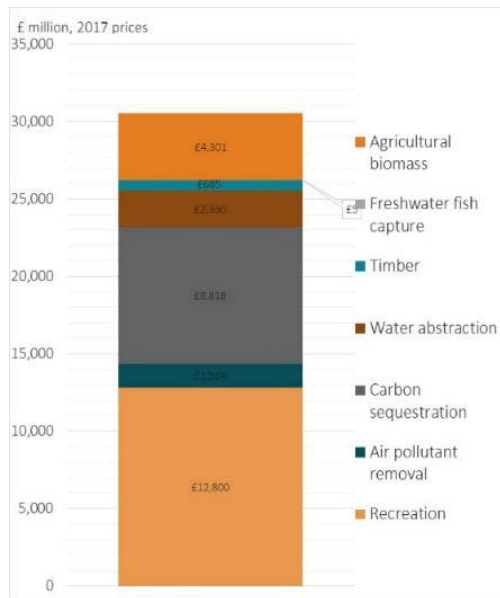


Being transparent about what is improving, stable or in decline using stakeholder selected indicators

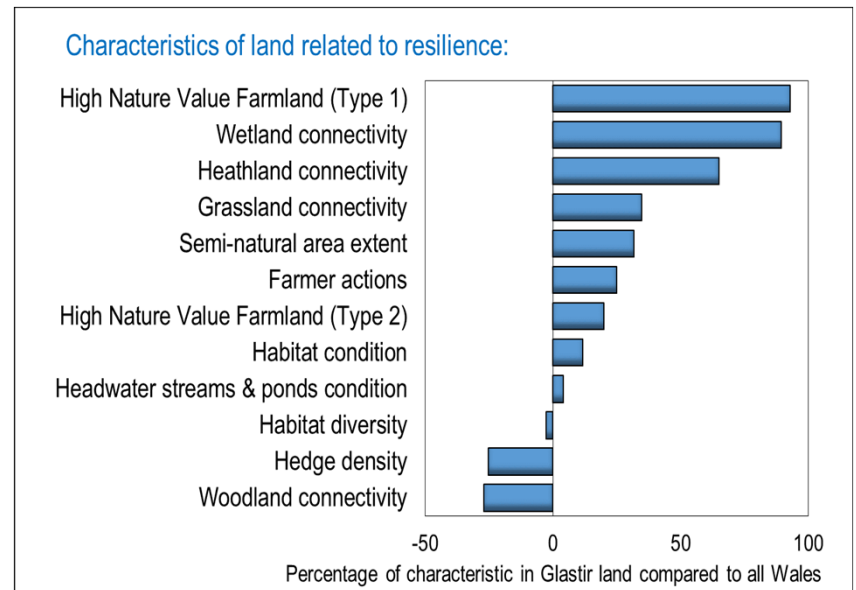


Examples of “Collect once – Reuse often”

Natural Capital Accounts for Wales for Farmland, Forestry and Freshwater are completed. Mountain, Moor and Heath in progress.



Data used to assess ‘resilience’ of land in and out of Glastir scheme



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Outreach and Communications

A small part of our Royal Welsh Show stand display presenting results to the wider public

Bioamrywiaeth Biodiversity

Sefydlogrwydd yng nghyflwr y rhan fwyaf o gynefinoedd a gwelliant yng nghyflwr rhai cynefinoedd â blaenoriaeth megis gorgors yn y 10 mlynedd diwethaf

Stability in condition of most habitats and improvement in condition of some priority habitats such as blanket bog in the last 10 years



Ond mae 35% o rywogaethau adar â blaenoriaeth yn parhau i leihau

But 35% of priority bird species continue to decline



Coetiroedd Woodlands

Gwelliant yng nghyflwr ein coetiroedd llydandail mawr yn ystod y 10 mlynedd diwethaf ac yng nghyflwr adar coetr

Improvement in condition of our large broadleaved woodlands in the last 10 years and in woodland birds



Ond dim cynnydd ym maint y coetr i helpu i wrthbwysu'r allyriadau carbon sy'n deillio o amaethyddiaeth

But no increase in woodland area to help offset carbon emissions from agriculture



Pridd Soil

Sefydlogrwydd cyflwr y pridd mewn llawer o gynefinoedd

Stability of soil condition in many habitats



Ond cynnydd mewn asidedd tir wedi wella a gostyngiad mewn carbon mewn tir cynefin yn ystod y 10 mlynedd diwethaf

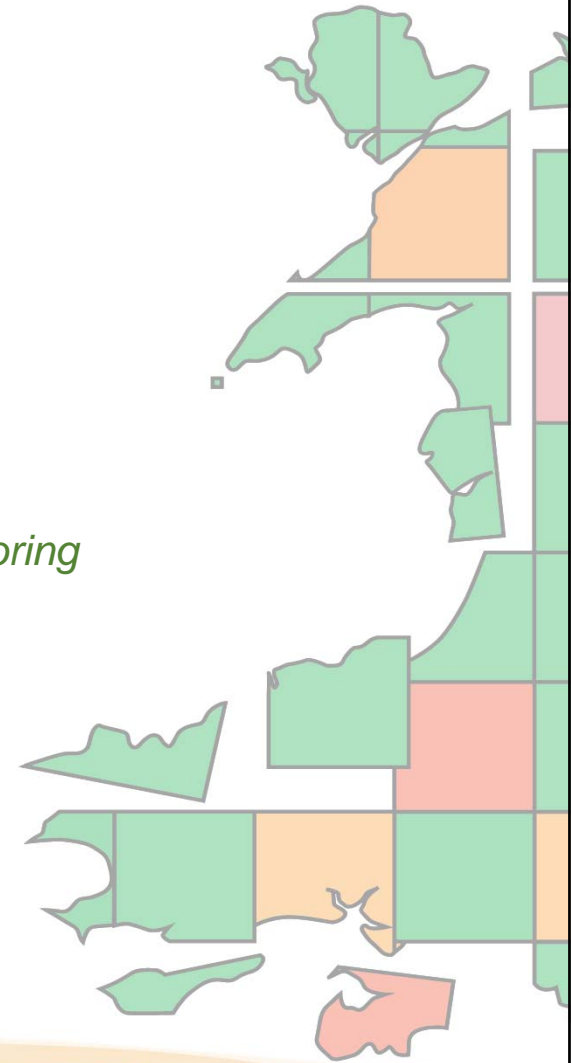
But an increase in acidity in improved land and a decline in carbon in habitat land in the last 10 years



Monitoring: Why & Uses?

James Skates

*Pennaeth Modelu, Geoofodol a Monitro/Head of Modelling, Geospatial and Monitoring
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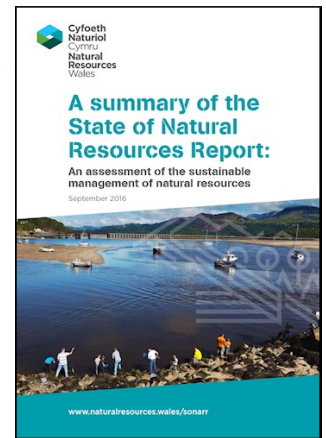
National Field Survey – Why?

To inform policy and track outcomes e.g. –

- Glastir evaluation - what has the scheme achieved?
- National Trends - strategic value & emerging issue's including:
 - WFG Indicators; SoNaRR; Resilience Metrics
- Natural Capital Accounts
- International reporting
- Support of policy design
- Baseline for future policy evaluation, SFS & National Forest
- Impact of New Trade deals

Data will also provide evidence base or response to climate and nature emergencies and 2021 Programme for Government

<https://gov.wales/sites/default/files/publications/2021-06/programme-for-government-2021-to-2026.pdf>



National Field Survey – Uses example

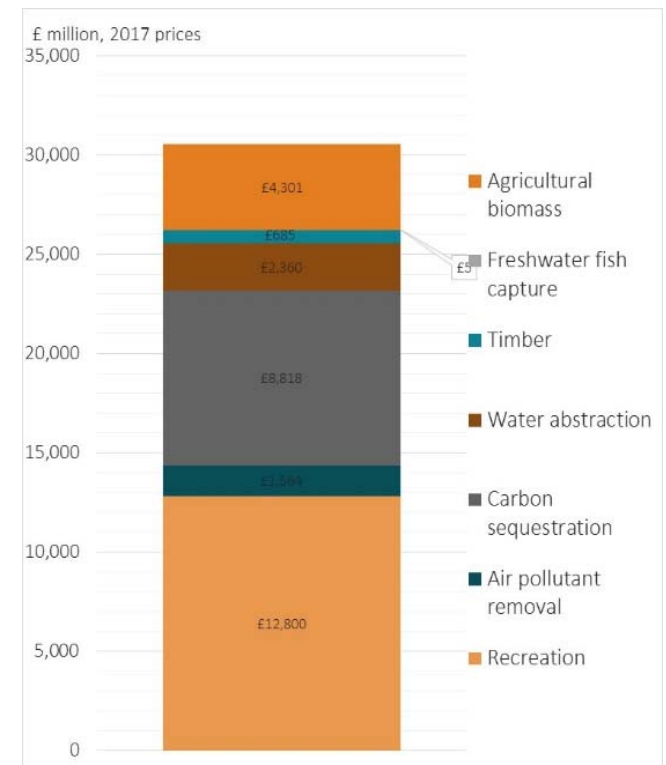
Natural Capital Accounts

Working with the Office of National Statistics (ONS), the data is being used to develop new approaches to include change in the condition of our natural assets on benefits realised.

Mountain, Moor and Heathland (MMH) Accounts for monetary *and* condition are in progress.

These accounts will enable WG to better mainstream actions set out the recent Dasgupta review

Natural Capital Accounts for Wales for Farmland, Forestry and Freshwater



The condition of Mountain, Moor and Heath (MMH) which will be impact on Natural Capital Accounts

Recreation:

85% of footpaths in MMH are in good condition compared to 67% national average

Air quality

Baseline data for the area of MMH which is > 3m in height which will contribute to removal of background levels of air pollutants i.e. 0% of acid grassland but up to 42% of dwarf shrub and heath

Water quality regulation:

35% of MMH headwater streams had evidence of poaching which impacts on pathogen & other bio-risks compared to 47% in national average

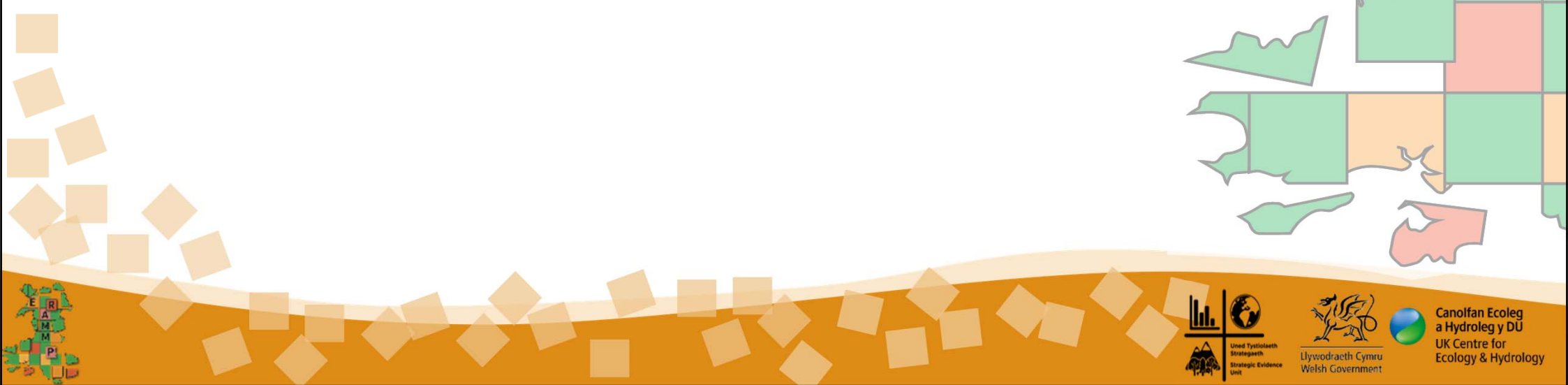
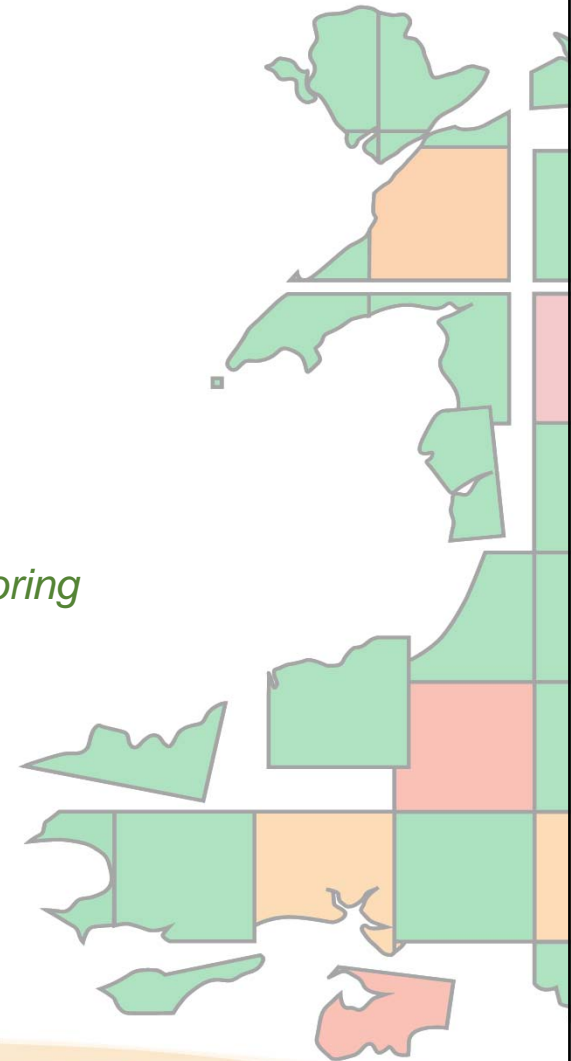
The range of MMH in Wales



Modelling for Policy Design

James Skates

*Pennaeth Modelu, Geofofodol a Monitro/Head of Modelling, Geospatial and Monitoring
Uned Ymadael â'r UE a Strategaeth / EU Exit & Strategy Unit*



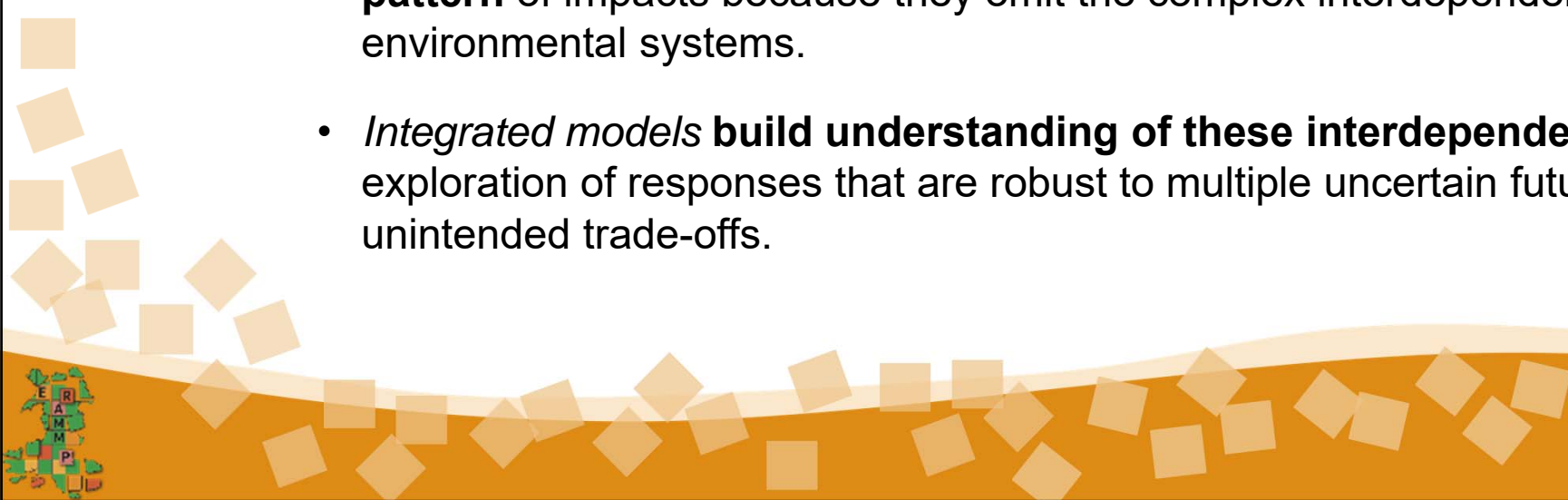
Scenario Modelling & Modelling Platforms

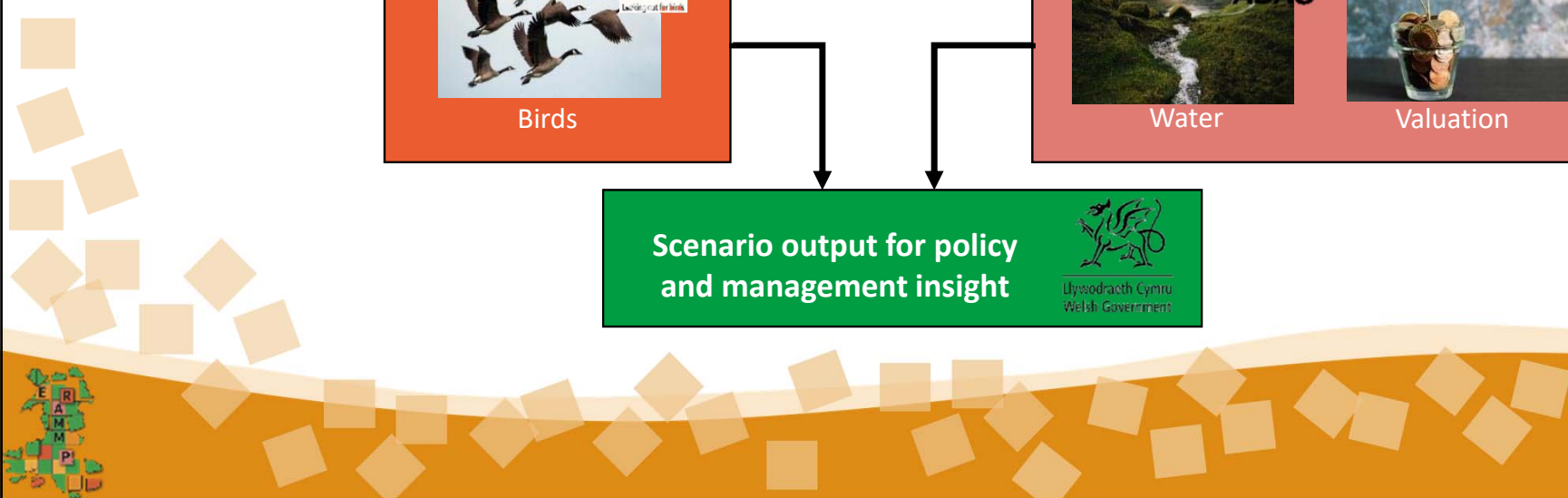
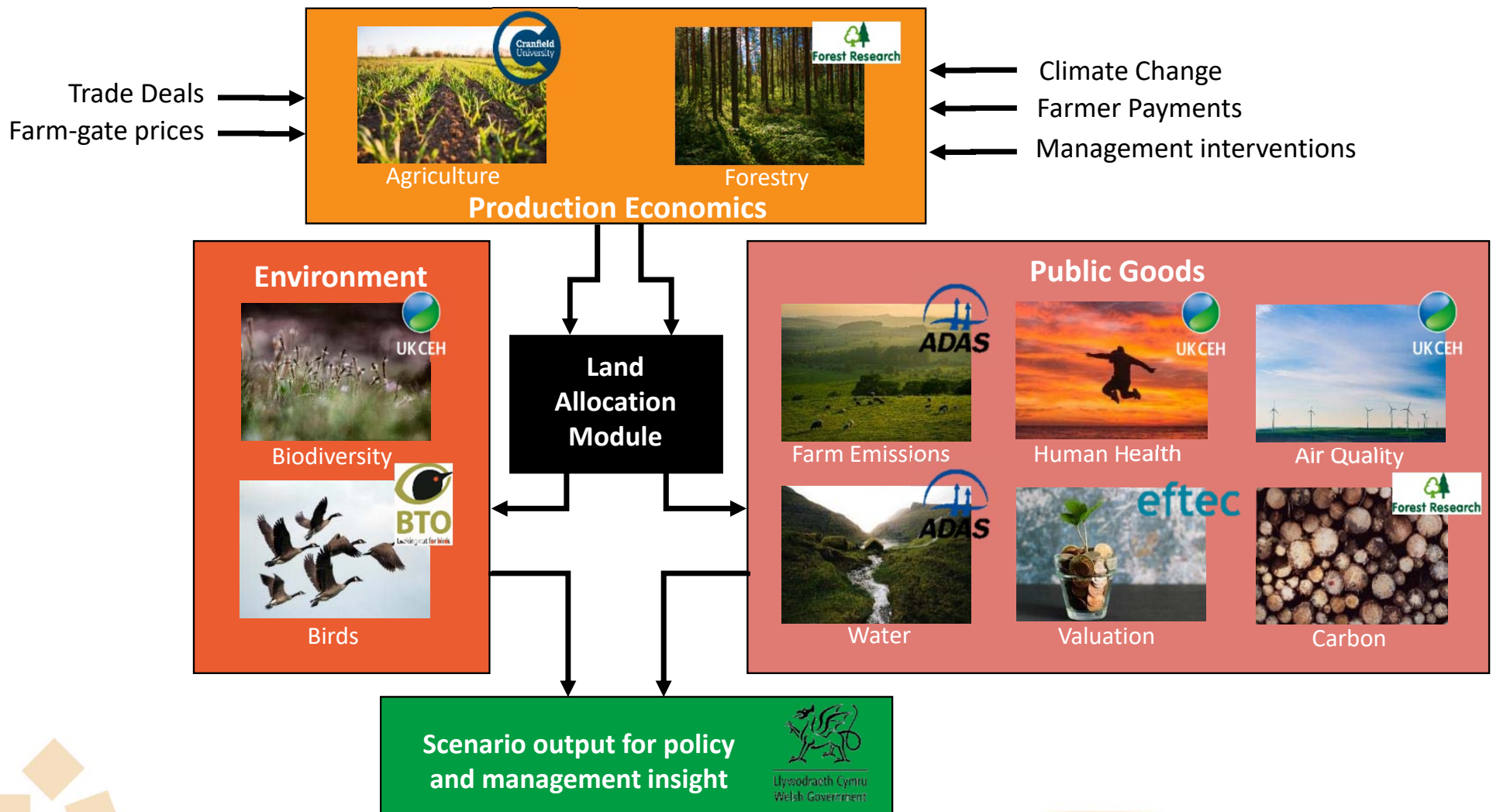
Scenarios: Combine consistent changes in multiple drivers to portray a range of plausible futures for a region.

Models: Simulate consequences of scenarios and enable exploration of the effectiveness of policy options and management strategies.

Integrated Modelling Approaches:

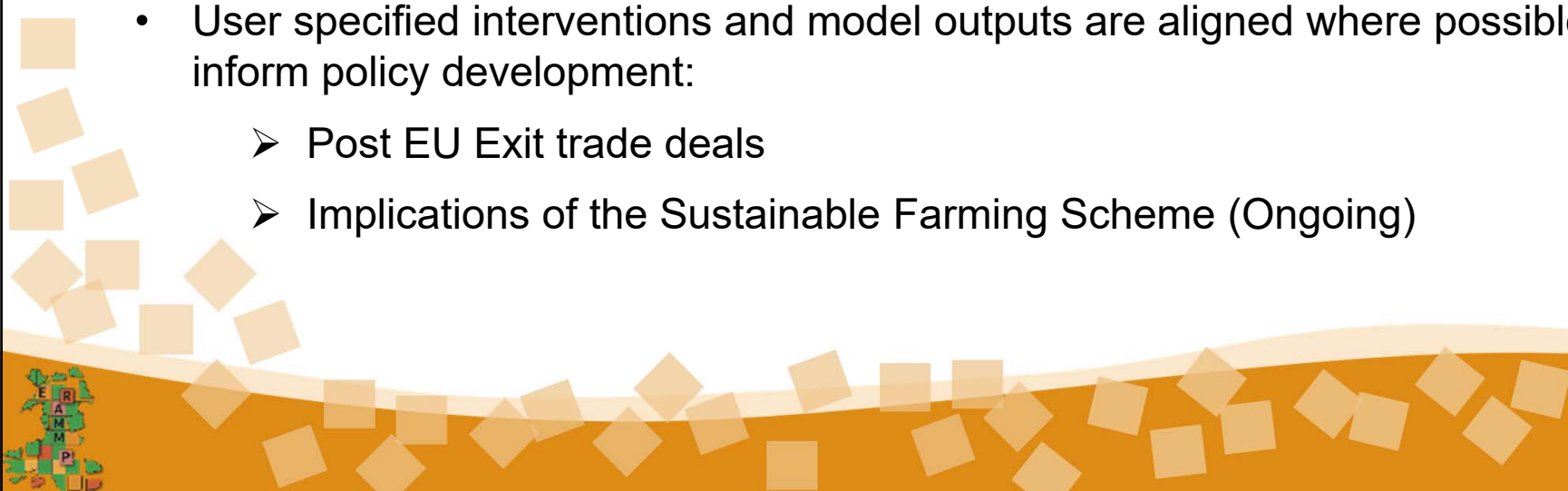
- *Single sector* models may misrepresent the **direction, magnitude and spatial pattern** of impacts because they omit the complex interdependencies within human-environmental systems.
- *Integrated models* **build understanding of these interdependencies** and allow exploration of responses that are robust to multiple uncertain futures and avoid unintended trade-offs.





What is the ERAMMP IMP?

- A tool for rapid exploration of the effects of policy and management interventions on farm viability, land use and public goods in Wales.
- It takes an integrated approach, recognising that policy effects in one sector have indirect effects in other sectors.
- It comprises a chain of specialised, state-of-the-art models covering agriculture, forestry, land use allocation decisions, water, air, soils, biodiversity, ecosystem services and valuation.
- User specified interventions and model outputs are aligned where possible to support and inform policy development:
 - Post EU Exit trade deals
 - Implications of the Sustainable Farming Scheme (Ongoing)



What is the IMP?

- **Is collaborative:** The WG/UKCEH approach requires the formation and continual support of the ERAMMP partnership approach.
- **Is iterative and policy responsive:** Rapid iterations to support immediate policy needs are required by WG.
- **Aqua-book compliant** with all assumptions signed-off by WG.
- Scenarios/Intervention **co-designed** with WG to support and inform policy development
 - IMP version 1 focuses on exploring the impacts of future trade scenarios;
 - IMP version 2 focuses on informing development of the Sustainable Farming Scheme.



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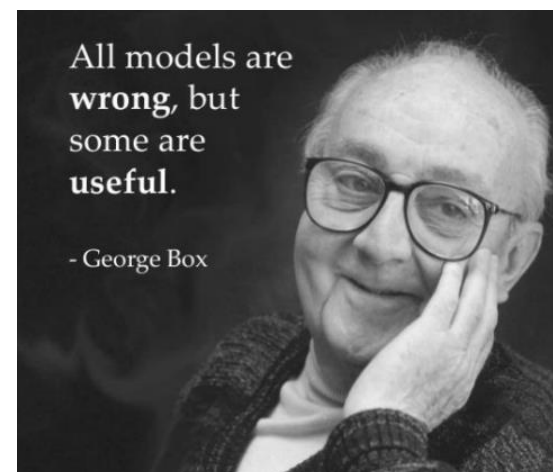


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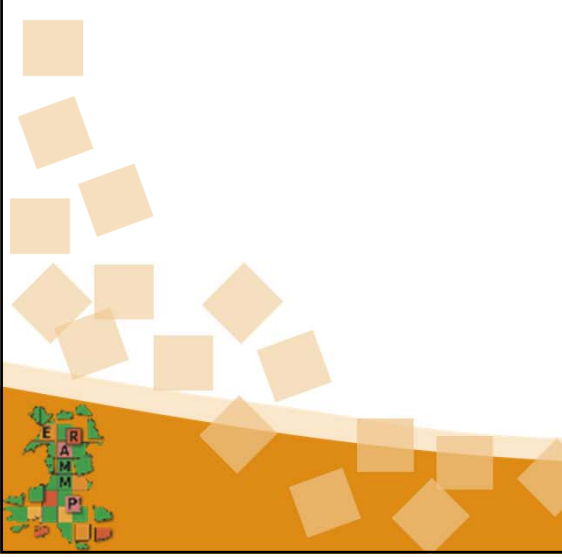
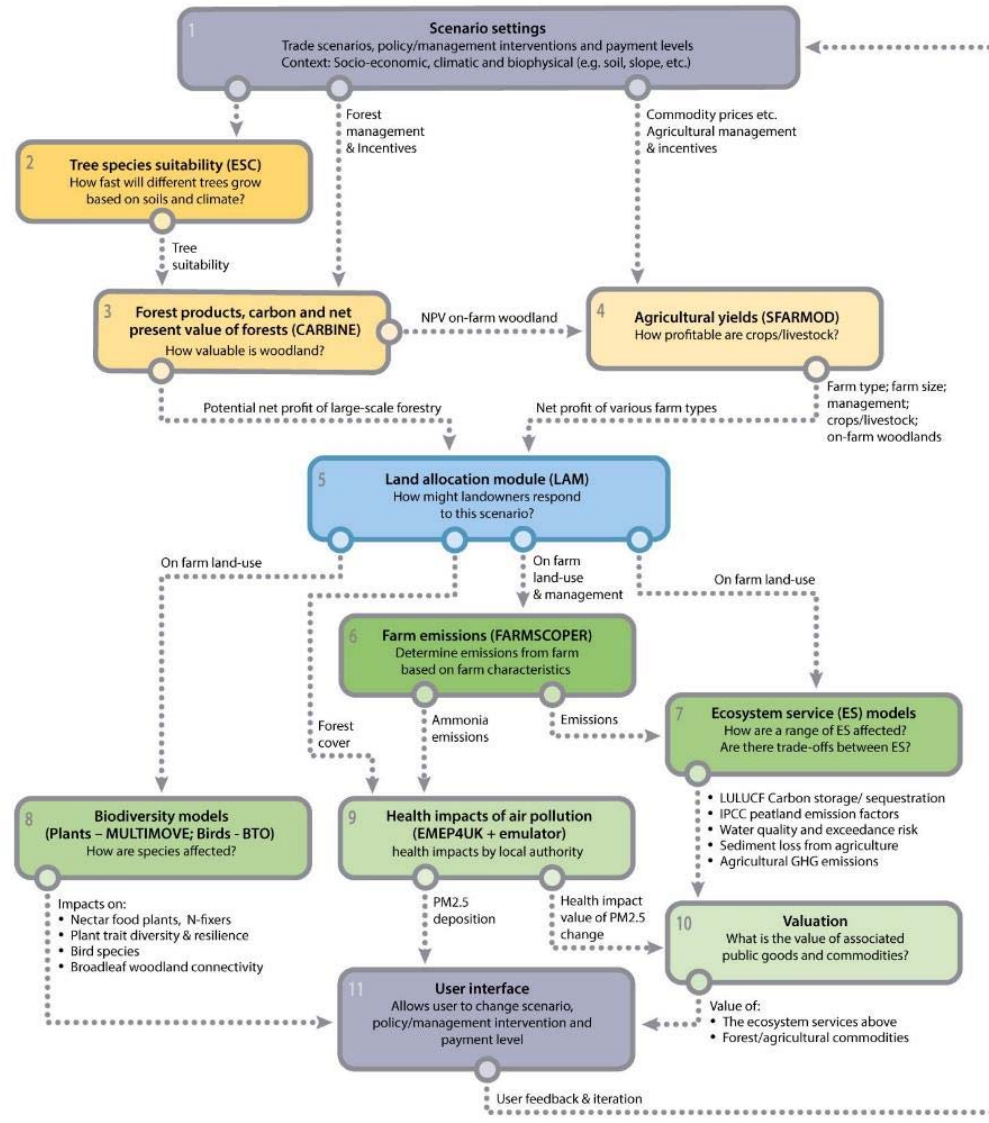
IMP limitations and assumptions (examples)

Models are a simplification of reality, but they can provide useful insight when used for a particular purpose ... all models have limitations and make simplifying assumptions, e.g.

- The IMP is applied to only 'full-time farms' (> 1 FTE labour).
- Changes in land use are driven by on-farm economics and land suitability. They do not take into account skills or cultural and behaviour responses.
- As a simplification, the biodiversity and ecosystem service models in the IMP assume that a farm that comes under economic pressure will leave agriculture in the short-term, with the land undergoing natural regeneration or being afforested.























IMP schematic



Modelling Trade Scenarios using the IMP

Six post-Brexit trade scenarios were provided by WG to the team based on a series of internal and external workshops as changes in farm gate (output) prices and input costs:

1. Trading on world prices – based on FAPRI MFTA
2. FTA EU only
3. FTA with EU, USA, Australia and NZ
4. FTAs with USA, Australia and NZ; No FTA with EU
5. FTAs with EU, Australia and NZ; No FTA with USA
6. FTAs with EU, USA and Australia ; No FTA with NZ.

	T1	T2	T3 and 6	T4	T5
EU					
USA					
AUS					
NZ					

All scenarios were applied to a baseline that includes CAP Pillar 1 payments.



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Iterative Exploration of SFS Bundles

- The IMP is being adapted to model some potential components of the SFS starting with:
 - Habitat management bundle
 - Woodland and hedgerow creation bundle
 - Land/nutrient management bundle
- Highly exploratory and iterative process -> learning from 1st phase will inform additional runs
- Inputs: range of payment levels associated with changes in management practices
- Outputs:
 - Cost and uptake of the scheme components for different payment levels
 - Environmental and economic outcomes for full-time farms, biodiversity and public goods, including public good values for carbon, water quality and air quality.



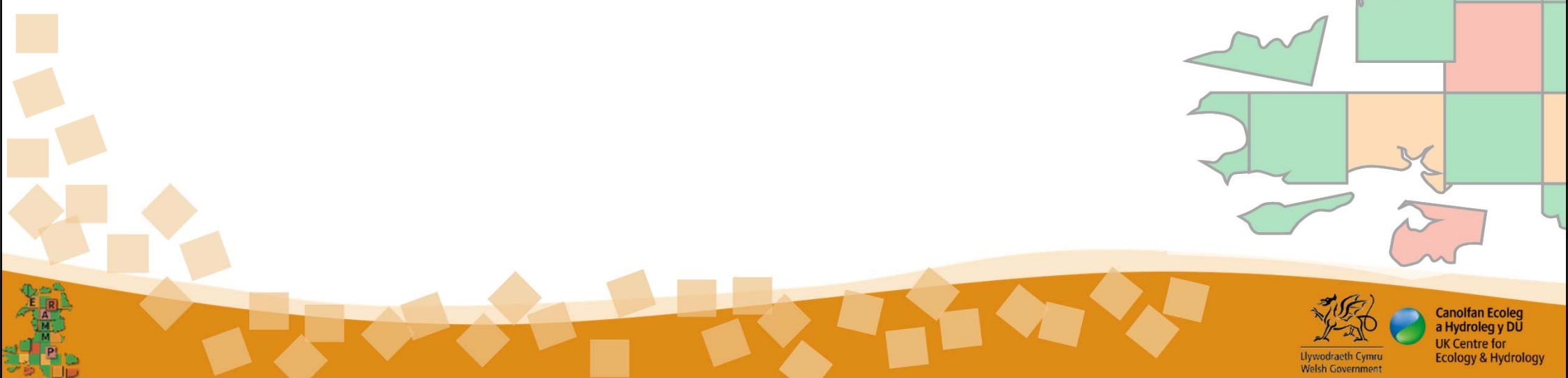
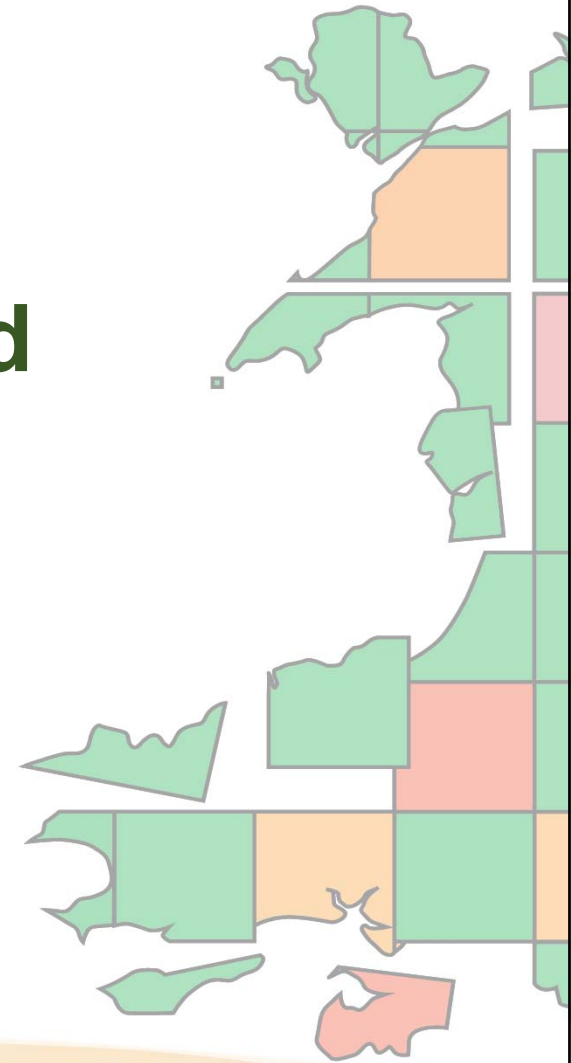
Next steps

- The IMP is a highly spatially resolved integrated modelling tool for exploration of the effects of policy and management interventions on farm viability, land use and public goods in Wales.
- Currently working with the Sustainable Farming Scheme policy team to represent the mandatory elements of the scheme within the IMP to explore the effects of different payment levels.
- *Future applications* include pathways to related policy goals, e.g. decarbonisation pathways, national forest, biodiversity, water, ...



Evidence: What has been reviewed to date and what use is it?

Bridget Emmett



Commissioning process

1. Request from different policy departments to ERAMMP WG team for rapid expert reviews
2. Discussions with ERAMMP UKCEH Project Management team
3. If agreed – ERAMMP organisations approached to contribute to build a team
4. If additional skills needed – new organisations invited in.
5. Commissioning document agreed
6. Work starts....



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SFS Evidence Pack Review

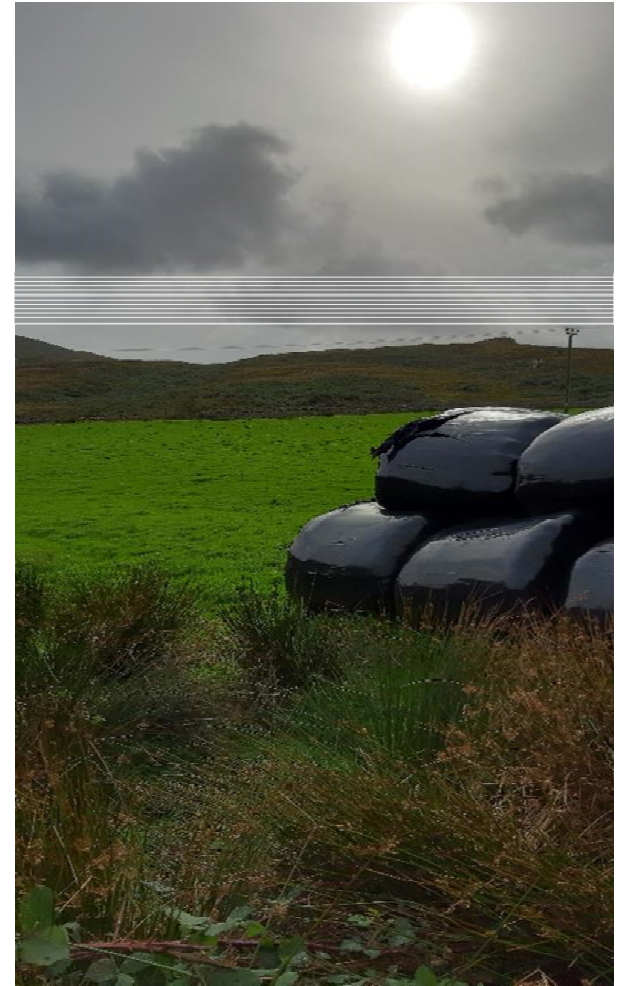
A series of 10 evidence reviews written to support the Sustainable Farm Scheme policy design process and consultations.
Fundamental evidence base for the SFS Logic Chain work

Topics covered: Soil Nutrients, Sward, Soil carbon, Ecosystem resilience, Farm system resilience, Public and private funding, GHG emission reduction, Air quality and well-being, flood mitigation,

Plus, an Integrated Assessment to identify trade-offs, co-benefits and contextual dependencies

Project partners: UKCEH, eftec, Bangor University, Forest Research, Institute for European Policy, ADAS, Ricardo, BTO, Cranfield University

www.erammp.wales/r-sfs-evidence-pack



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National Forest Evidence Review

An independent, community review of the scientific evidence to inform & support the business case for the **National Forest for Wales** programme.

- Huge effort (41 authors, 8 organisations + many reviewers)
- Set of 7 subject-specific reports and a summary report that pulls together key points and assessments
- Note the in-depth review on impact of woodland type and management on climate mitigation potential
- Very rapidly done and published in 2020.
- Adding a social benefits report in November 2021.

Project partners: UKCEH, Forest Research, eftec, Bangor University, BTO, Staffordshire University, BGS & Independents

www.erammp.wales/r-forest-evidence



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Antimicrobial Resistance (AMR)

A review and analysis of the evidence and expert opinion on how AMR enters and spreads via the rural water environment in Wales.

- Impacts on animal and human health
- How can this global problem can be tackled at the Welsh-level using an integrated policy approach?



Published in June 2021

www.erammp.wales/amr



WFG Indicator for Biodiversity (Indicator-44)

To produce a new trends indicator for priority section 7 species Wales and explore to extent the approach for WFG National Indicator reporting

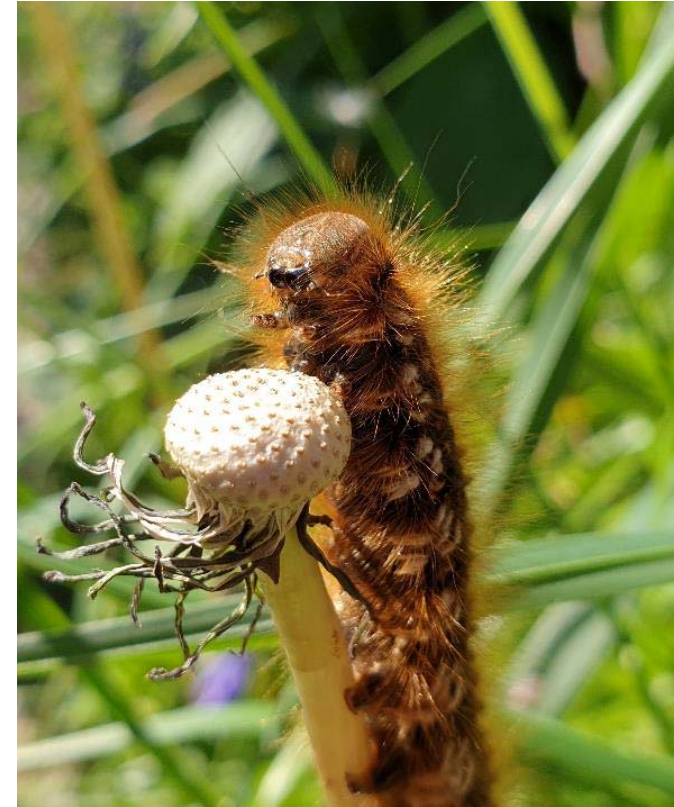
Activities:

1. Develop enhanced indicator by including records for the Welsh LERCs.
2. Scope a 'widespread species' indicator and options for extension to marine environment.

Project Partners: UKCEH, Wales Local Environmental Record Centres & a large group of stakeholders

Published an Interim Report in September 2021

www.erammp.wales/78



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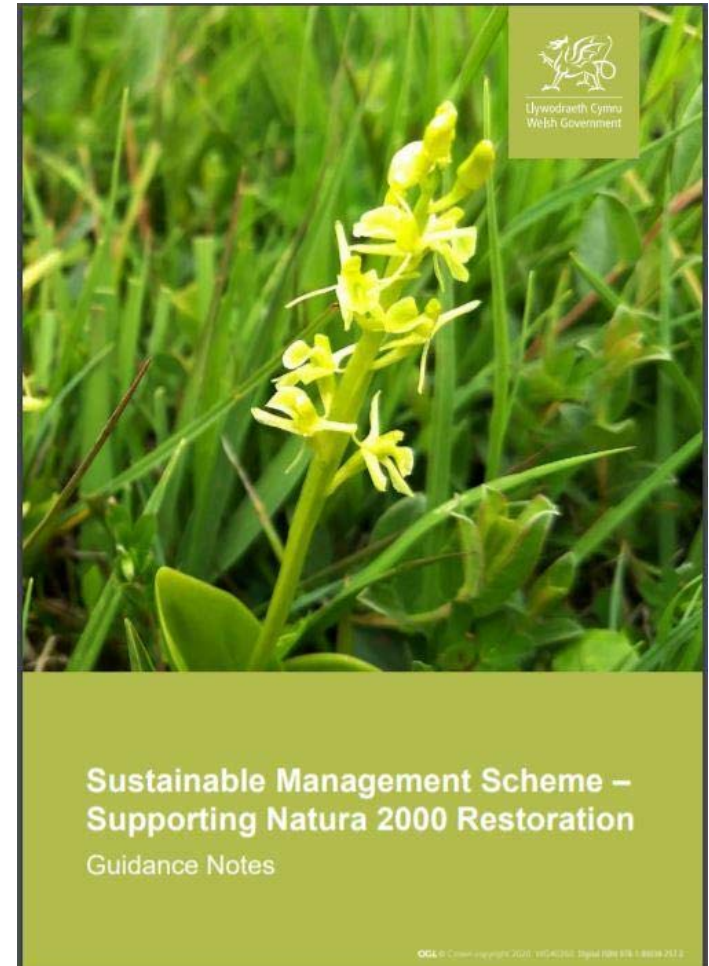
Natura 2000 (N2K) Restoration Award - Scheme Evaluation

Review and assessment of a sub-set of projects funded by the SMS N2K scheme to learn lessons and assess success.

Activities:

1. Evaluation of the proposed activities and interventions with likely impacts and benefits based on the existing evidence base and independent expert opinion.
2. Evaluate improvement against the N2K Life Programme which sets out the actions required on each N2K site
3. Identify projects where predictive analysis would aid evaluation.

Project Partners: IEEP, UKCEH, BTO
Aim to publish by end-Oct21



www.erammp.wales/NN

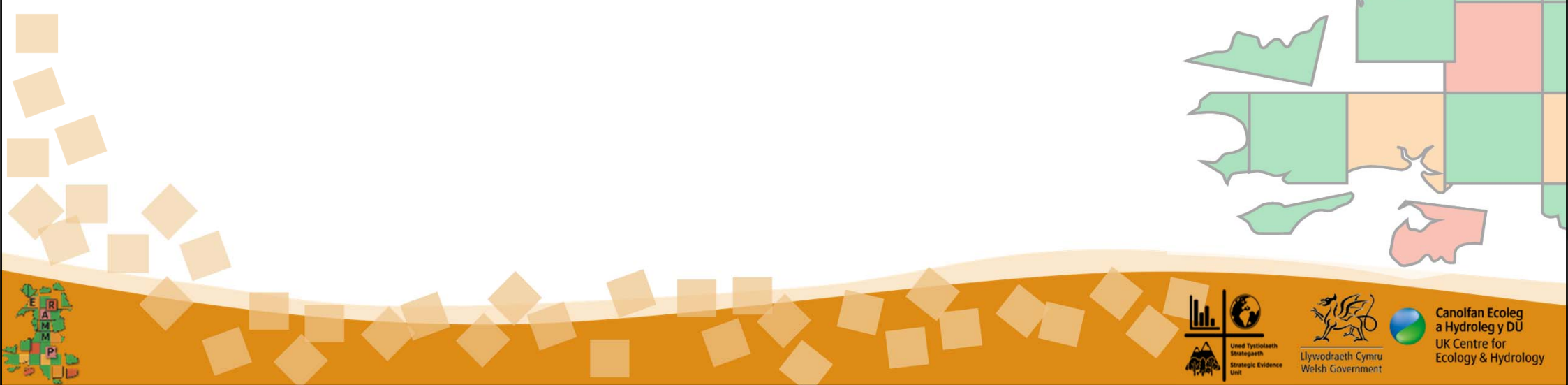
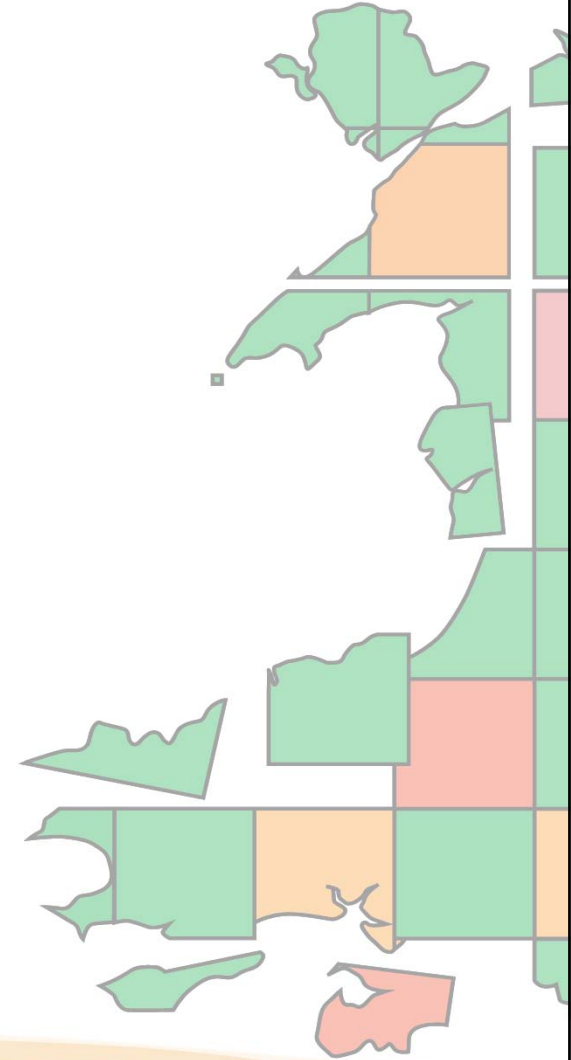


Any published ERAMMP report

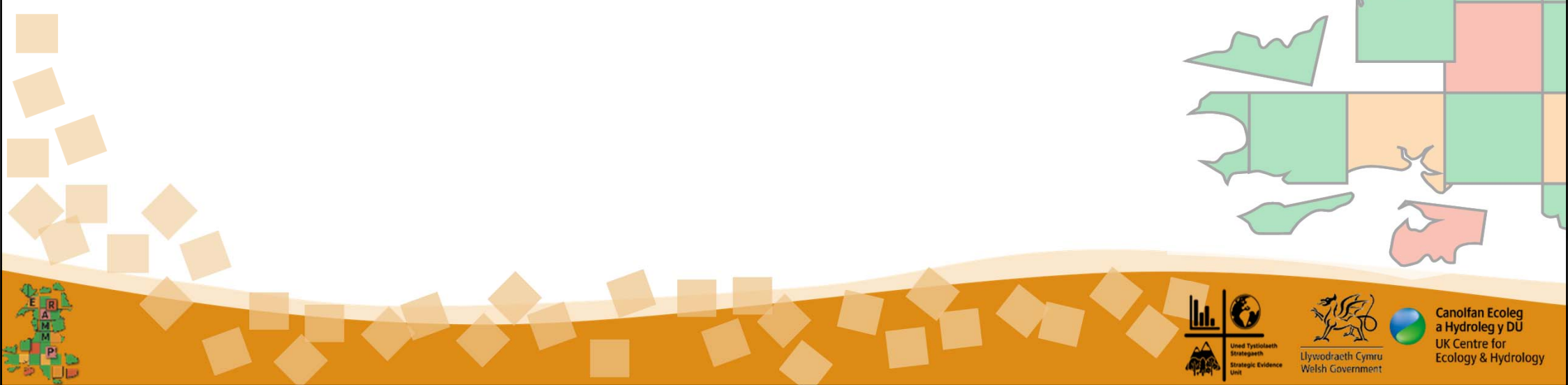
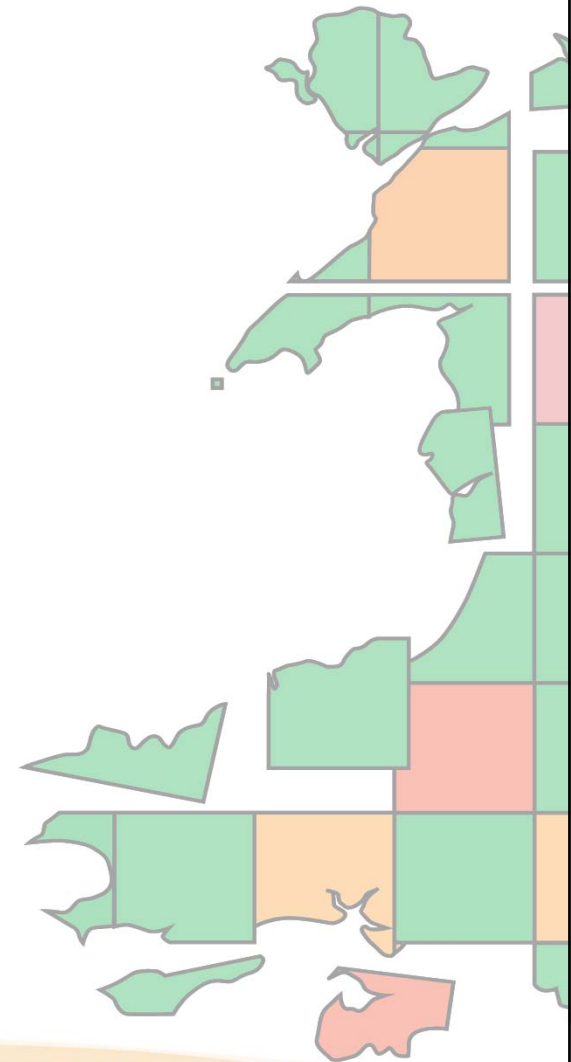
NNumber	Title	NNumber	Title	NNumber	Title
3	SFS Evidence Review Technical Annex 3 Soil Carbon Management v1.1	19	ERAMMP Year 1 Report: Review of Monitoring at the Land-Sea Interface	39	National Forest in Wales - Evidence Review Annex-7: Integrated Assessment
4	SFS Evidence Review Technical Annex 4 Building Ecosystem resilience v1.1	20	ERAMMP Year 1 Report: GMEP Outstanding Analysis Part 1 - Re-analysis of Data for SoNaRR	40	SFS Economic Valuation: Logic Chains
5	SFS Evidence Review Technical Annex 5 Building Resilience in Farm Systems v1.1	21	ERAMMP Year 1 Report: GMEP Outstanding Analysis Part 2 - Revisiting Trends in Topsoil Carbon from CS2007 to GMEP 2013-2016	42	IMP modelling - Overview paper
6	SFS Evidence Review Technical Annex 6 Public and Private Funding v1.1	22	ERAMMP Year 1 Report: A Review of the Contribution of Species Records Held by Local Environmental Record Centres in Wales to ERAMMP Evidence Needs	45	Soil Degradation: Erosion & Compaction Phase-1 Report
7	SFS Evidence Review Technical Annex 7 Systems Approach to GHG Emissions Reduction v1.1	23	ERAMMP Year 1 Report: Options for a Synthetic 'Well-being of Future Generations' Indicator 44 (Biodiversity)	50	Field-survey handbook (procedures) - Freshwater
8	SFS Evidence Review Technical Annex 8 Improving Air Quality & Wellbeing v1.1	24	ERAMMP Year 1 Report: Welsh National Natural Capital Accounts - Ecosystem Service Accounts for Woodland, Farmland and Freshwater Habitats	52	Field-survey handbook (procedures) - Historic Features
9	SFS Evidence Review Technical Annex 9 Flood Mitigation v1.1	25	SFS Evidence Review: Annex 4B: Building Ecosystem Resilience in Improved Farmland	53	Field-survey handbook (procedures) - Biosecurity
10a	SFS Evidence Review: Integrated Analysis (Including Improved Farmland)	26	Quick Start: Small Sector Agriculture Modelling	55	Evidence Review on the Entry and Spread of Antimicrobial Resistance (AMR) in the Rural Water Environment in Wales
10b	SFS Evidence Review: Considerations for the new scheme	27	Valuation Methodologies	58	ERAMMP Square Selection Protocol 2021/2022
11	ERAMMP Year 1 Report: Year 1 Summary	29	Reported Monitoring Activities in Designated Landscapes in Wales	71	Field-survey handbook (procedures) - Soil Erosion
12	ERAMMP Year 1 Report: 'Quick Start' Modelling (Phase 1)	30	Analysis of National Monitoring Data in Wales for the State of Natural Resources Report 2020	73	Field-survey handbook (procedures) - Woodland mapping
13	ERAMMP Year 1 Report: Integrated Modelling Platform (IMP) Progress	32	National Forest in Wales - Evidence Review Report	74	Presentation - Land use modelling in Wales
14	ERAMMP Year 1 Report: Responsive Monitoring Part 2 - Development of Reduced Habitat Mapping Methods	33	National Forest in Wales - Evidence Review Annex-1: Biodiversity	76	Field-survey handbook (procedures) - pollinators
15	ERAMMP Year 1 Report: Responsive Monitoring Part 1 - Selection of ERAMMP Field Survey Squares	34	National Forest in Wales - Evidence Review Annex-2: Managing Undermanaged Woodland	78	Interim Report on the Development of Indicator-44 (Status of Biological Diversity in Wales)
16	ERAMMP Year 1 Report: NRW & ERAMMP Monitoring Activities Review	35	National Forest in Wales - Evidence Review Annex-3: Future-proofing our Woodland	80	Rapid adaptive modelling for policy support towards achieving sustainable development goals: Brexit and the livestock sector in Wales
		36	National Forest in Wales - Evidence Review Annex-4: Climate Change Mitigation	81	Integrated ecological monitoring in Wales: the Glastir Monitoring and Evaluation Programme field survey

Bringing it together

James Skates



Questions...



Diolch!

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