

Environment and Rural Affairs Monitoring & Modelling Programme

ERAMMP Year 1 Report 15: Responsive Monitoring Part 1 - Selection of ERAMMP Field Survey Squares

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This document is also available in Welsh / Mae'r ddogfen yma hefyd ar gael yn Gymraeg

Version History

Version	Updated By	Date	Changes
0.1	PMO	30/4/19	Initial draft.
0.11	PMO	8/5/19	Mainly formatting edits – draft for SG
0.12-0.13	PMO	17/9/19	Formatting edits
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1.0	PMO	30/9/2019	As published

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Abbreviations and some of the technical terms used in this report are expanded in the project glossary:
<https://erammp.wales/en/glossary> (English) and <https://erammp.cymru/geirfa> (Welsh)

1 Introduction

A reduction in the number of GMEP squares to be revisited in the ERAMMP field survey is required to meet budgetary constraints whilst ensuring the survey will deliver the most robust evidence base which is responsive to such issues as the actual uptake of different Glastir interventions by contract-holders/land-managers and the capture of those within the baseline GMEP survey.

An approach was needed which would maximise outputs matched to policy priorities for assessing national trends, provide evidence for the outcomes of Glastir interventions and optimise where changes were most likely to be detected.

The target is to reduce survey squares from 300 to 240 1km squares.

2 GMEP background

The GMEP monitoring sample comprised 300 1km squares across Wales: 150 wider Wales (WW) squares, representing a stratified random sample of Wales across different land classes, as well as a further 150 squares forming the targeted (TG) component. TG squares were mostly targeted based on probability of implementation of Glastir interventions, but in later years squares were targeted based on actual Glastir uptake. While WW squares are more or less representative of Wales as a whole, the TG squares are a biased sample of Wales (although this bias has been well quantified). See the GMEP final report¹ for a full description of the field survey approach.

¹ Emmett B.A. and the GMEP team (2017) Glastir Monitoring & Evaluation Programme. Final Report to Welsh Government - Executive Summary (Contract reference: C147/2010/11). NERC/Centre for Ecology & Hydrology (CEH Projects: NEC04780/NEC05371/NEC05782). www.gmep.wales

3 Approach

Square selection took four main stages, reflecting four key selection criteria established in various meetings about ERAMMP field survey priorities. Note that some of the discussed criteria could not be considered due to time and data restrictions. Key criteria were:

1. Capacity to represent stock and change across Wales (e.g. prioritizing WW squares)
2. Quantity of baseline data
3. Presence of peatland, including lowland peat
4. Presence of Glastir interventions, especially those affecting inputs/stocking on grazed land, but also streamside corridors, hedgerows, cover crops and habitat creation

Only 1km squares which were previously surveyed under the Glastir Monitoring and Evaluation Programme (GMEP) were considered. The aim is that 120 squares surveyed in 2013/2014 will be revisited in 2020, while 120 squares initially surveyed in 2015/2016 will be revisited in 2021. 10 of 60 unselected GMEP squares were also required to be marked as 'reserves' in case access is refused to any of the 240 selected squares.

Step 1: Capacity to represent stock and change across Wales

The WW squares represent a more or less unbiased sample of Wales, and were given priority for resurvey on that basis. Subject to step 2, **this entailed automatic selection of 150 WW squares.**

Step 2: Quantity of baseline data

In GMEP, squares were only visited if an adequate area of the square was available for environmental survey. The criteria were as follows:

Squares containing sea:

- The sea coverage must be less than 90%
- Of the remaining land available for survey, access permissions must be granted for at least 50% of that area
- Access permissions granted must not be less than 10% of the square area

Squares with urban land:

- Must have less than 75% urban land present
- Of the remaining land available for survey, access permissions must be granted for at least 50% of that area
- Access permissions granted must not be less than 25% of the square area

Squares without urban land or sea present:

- Access permissions must be granted for at least 25% of the square area
- Squares with 25-50% permission granted may also be rejected, following a case-by-case discussion

For ERAMMP, these criteria were slightly relaxed for coastal and urban squares, so as not to lose valuable information on urbanization or coastal habitats:

Under ERAMMP, a square was rejected if permission was granted for <25% of the surveyable area of that square (i.e. excluding sea).

This meant that if a square was 50% sea, yet 30% of *land* had permission granted, that square would not be rejected - despite the fact that only 15% of the total square area was accessible for survey (however, no squares had such a small accessible area as this). One WW square (non-coastal) did not meet this criterion (>75% was refused). An exception was made for this square on the grounds that WW squares are important for stock and change analysis. **Moving forward, permissions will be carefully monitored for squares such as this one.** Permissions granted are expected to be higher under ERAMMP than under GMEP, due to improved capacity to find and contact landowners (independent contractor liaising with landowners).

Step 3: Presence of peatland

Under GMEP a unified peat map was produced, combining peatland data from the British Geological Society, the Forestry Commission and Natural Resources Wales. This includes information on lowland peat, and not just e.g. blanket bog. To continue to effectively monitor peatland soils and vegetation, **we selected all squares with >50% overlap with the unified peat map. This added 17 squares to the selection.**

Step 4.1: Overlap between Glastir grazing interventions and vegetation/soil samples

Steps 4.1 and 4.2 used data on Glastir interventions obtained from Welsh Government in 2017. Throughout selection we only considered Glastir interventions that were in place in 2015 at the latest (the vast majority of which were also in place in 2013-2014). Step 4.1 focussed on a set of high-uptake Glastir interventions that aim to reduce inputs and stocking levels on grazed land. The schemes, codes and descriptions of these interventions are displayed in Table 1. **We selected all squares in which soil and vegetation samples had been taken within one of the listed Glastir interventions. This added 56 squares to the selection.**

Table 1. Schemes, codes and descriptions of Glastir interventions considered in selection step 4.1.

Scheme	Code	Description
Glastir entry	15	grazed pasture – no inputs
	15b	grazed pasture – low inputs
	15c	grazed pasture – no inputs & mixed grazing
	15d	grazed pasture – low inputs & mixed grazing
	40	fence around stock excluded woodland
Glastir advanced	15	grazed pasture – no inputs
	15b	grazed pasture – low inputs
	15c	grazed pasture – no inputs & mixed grazing
	15d	grazed pasture – low inputs & mixed grazing
	411	Additional Management Payment - Reduce stocking
	100	Woodland - stock exclusion
Glastir advanced - commons	411	Additional Management Payment - Reduce stocking

Step 4.2: Overlap between Glastir interventions and vegetation samples

Step 4.2 focussed on the interventions listed in 4.1 as well as some lower-uptake Glastir interventions that it was deemed possible or worthwhile to monitor. Furthermore, we looked for intersections with any vegetation sample under GMEP, and not just vegetation samples in which soil samples were taken. Note that intersections with these interventions were rare, and in many cases nil. The schemes, codes and descriptions of these interventions are displayed in Table 2. **We selected squares up to 240 by prioritizing squares with larger numbers of vegetation samples intersecting a broader list of Glastir interventions. This added 17 squares to the selection, and a further 10 squares were marked as reserves based on the same prioritisation.**

Table 2. Additional schemes, codes, Wales-wide feature counts and descriptions of Glastir interventions considered in selection step 4.2. Counts are simply the total number of incidences of that option across Wales, including double-counting of interventions which persisted across multiple years. They represent a crude measure of the abundance of interventions across Wales.

Grouping	Scheme	Code	Count	Description
Habitat creation	Glastir entry	24	465	woodland edge to develop out to adjoining (improved) fields
		23	1992	small areas in corners of field revert to rough grassland/scrub
		1	1290	3m wildlife corridor - include trees & shrubs
		1b	1267	2m wildlife corridor- tree & shrub planting
		26	992	fixed rough grass margins on arable land
		2	756	3m wildlife corridor include earth bank & tree/shrub planting
		3	704	wildlife corridor - wooded strip
		2b	672	2m wildlife corridor include earth bank & tree/shrub planting
	Glastir advanced	102	597	Trees and scrub - establishment by natural regeneration
		101	523	Trees and scrub - establishment by planting
		125	847	Lowland unimproved neutral grassland - reversion (pasture)
		121	779	Lowland unimproved acid grassland - reversion (pasture)
		126	548	Lowland unimproved neutral grassland - reversion (hay cutting)
		132	307	Conversion from improved grassland to semi- improved grassland (hay cutting)
		134	289	Lowland marshy grassland - reversion (pasture)
		119	170	Lowland heath habitat expansion - establishment on grassland
		403	158	Additional Management Payment - Re-wetting
		122	145	Lowland unimproved acid grassland - reversion (hay cutting)

Grouping	Scheme	Code	Count	Description
		131	110	Conversion from arable to grassland (no inputs)
		130	24	Lowland unimproved calcareous grassland - reversion (hay cutting)
		145	22	Lowland fen - reversion (pasture)
		129	14	Lowland unimproved calcareous grassland - reversion (pasture)
		150	12	Saltmarsh - creation
		147	10	Reed bed - creation
		151	3	Coastal vegetated shingle and sand dunes - creation
	Glastir woodland creation	All	523	All
Hedges & streams	Glastir entry	5	9635	enhanced hedgerow management - both sides
		7b	3507	streamside corridor both sides of watercourse
		9b	522	streamside corridor both sides with tree planting
	Glastir advanced	173	2475	Streamside corridor management
		5	1556	enhanced hedgerow management - both sides
Cereal cover crops, stubbles & headlands	Glastir entry	33	1056	wildlife cover crop on improved land
		28	829	retain winter stubbles
		31	768	unsprayed spring sown cereals retaining winter stubbles
		34b	33	unfertilised & unsprayed cereal headland
		34	15	unharvested cereal headland
	Glastir advanced	31	434	unsprayed spring sown cereals retaining winter stubbles
		33	211	wildlife cover crop on improved land
		28	90	retain winter stubbles
		34b	33	unfertilised & unsprayed cereal headland

Grouping	Scheme	Code	Count	Description
		169	7	Unsprayed spring sown cereals, oil seed rape, linseed or mustard crop for lapwing (nesting)
		34	7	unharvested cereal headland

4 Earmarking selected squares for survey in 2020/2021

Of the 240 selected squares, those surveyed in 2013/2014 under GMEP were earmarked for survey in 2020. This only accounted for 113 of 120 that needed to be surveyed in 2020. To make up the remainder, seven squares surveyed in 2015 under GMEP were taken at random. The remaining 120 squares were all earmarked for survey in 2021, having been surveyed in 2015/2016 under GMEP.

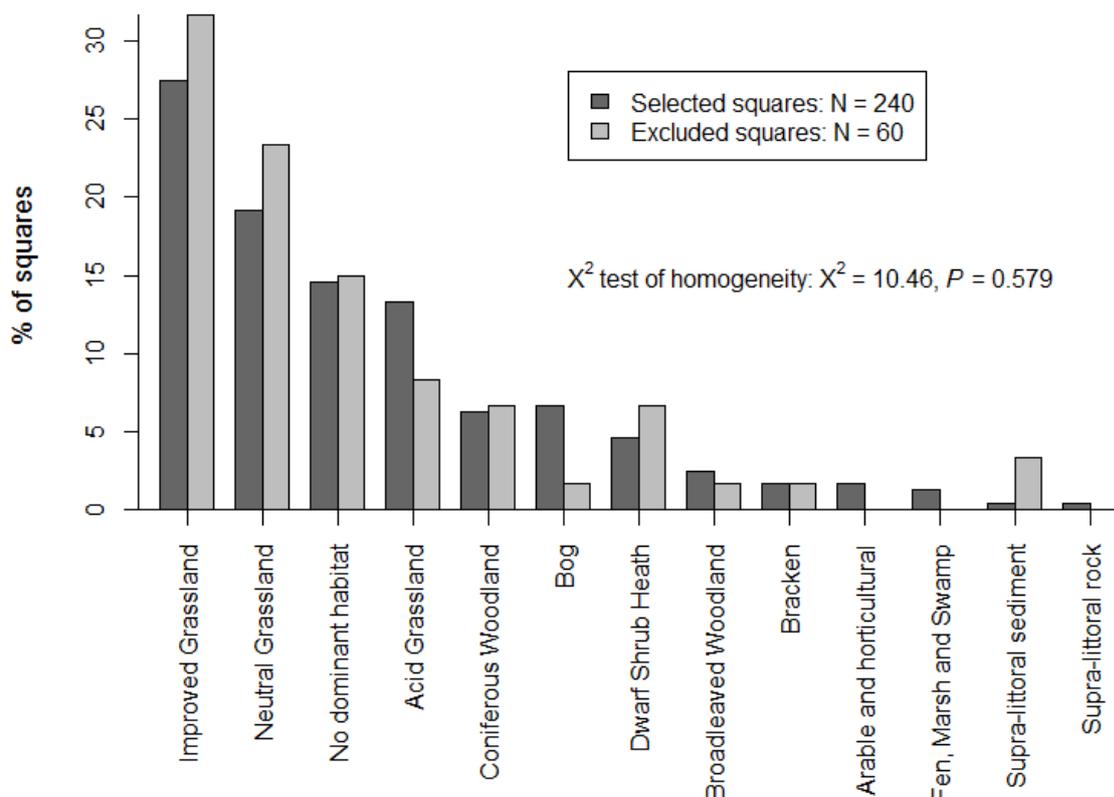


Figure 1. Percentage of selected squares (dark grey) and excluded squares (grey) falling into various broad habitat categories based on the allocation of the majority of X plots within that square (squares with ties for dominant habitat come under “No dominant habitat”). Improved and neutral grassland show a slight bias towards being excluded whilst acid grassland and bog show a slight bias towards being selected. However, a Chi-squared test of homogeneity suggests that the distribution of habitats did not differ significantly between selected and excluded squares ($P > 0.05$).

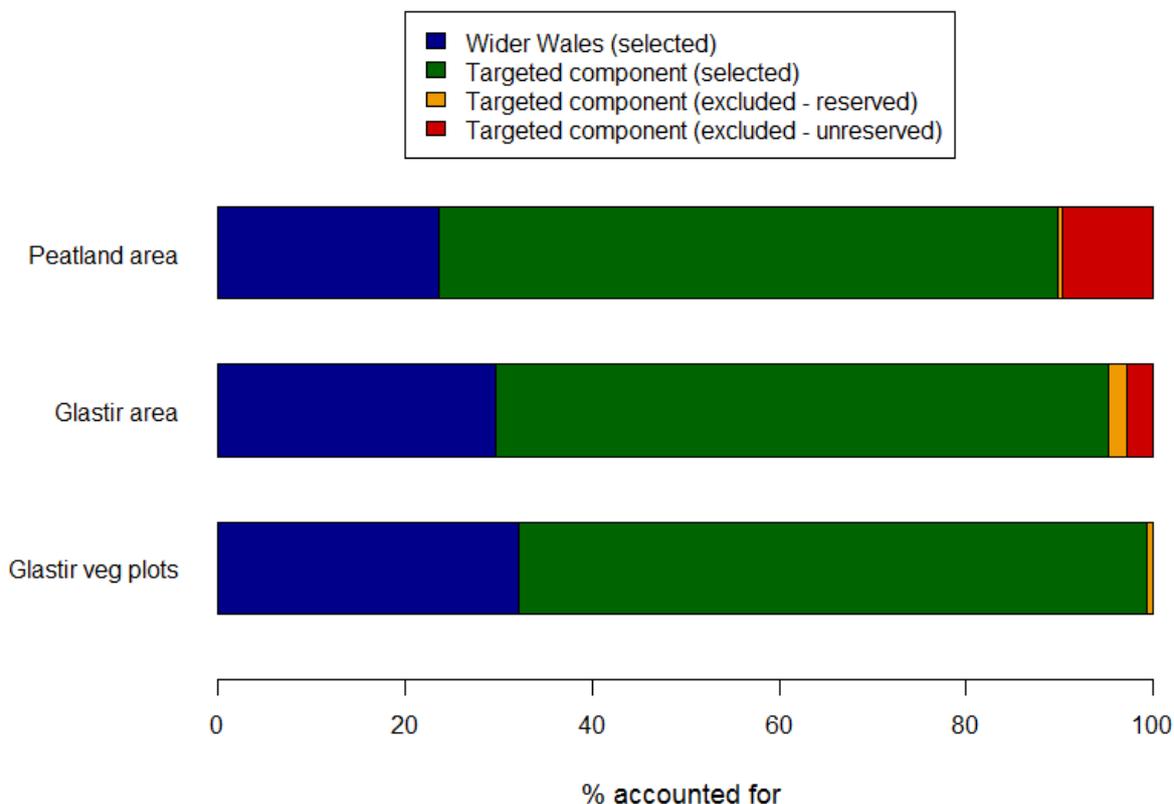


Figure 2. Percentage representation of peatland and Glastir options (listed in Tables 1 & 2) across selected, reserved and excluded squares in Wider Wales (blue) and the targeted component (green, orange and red). Representation of peatland and Glastir was much higher in the 150 targeted component squares than in 150 wider Wales squares. Within the targeted component, we excluded 60 squares (orange and red) but 90 selected squares captured the vast majority of peatland and relevant Glastir interventions (green).

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