



Ecological Focus Area - Uptake Analysis

Land Use Transformations

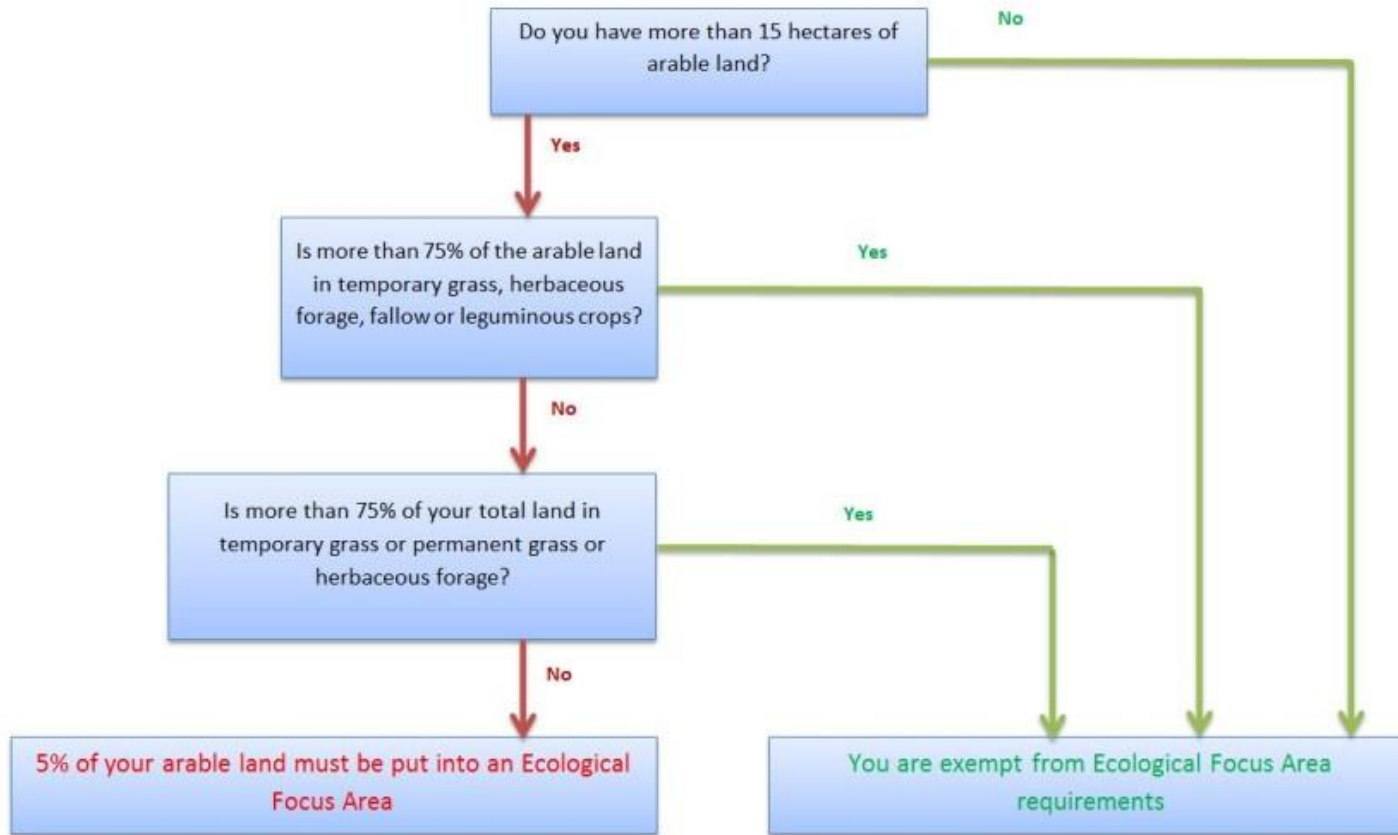
Quantitative Story Telling Phase 1

Keith Matthews, Doug Wardell-Johnson, Dave Miller, Mostafa Tavana
Presentation to QST Steering Group – RPID staff, 28th April 2023, Online.

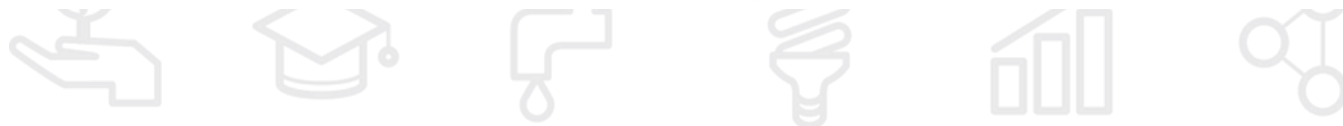


The James
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Institute

EFA Rules (2019)



| EFA | Location | EFA option code | EFA contribution |
|--|---|-----------------|-------------------|
| Fallow (area in hectares) | On arable land | EFAFAL | 1 |
| Margins (area in hectares) | On, adjacent to or within five metres of arable land or contiguous to a claimed EFA option | EFAM | 1.5 |
| Nitrogen-fixing crops (area in hectares) | On arable land | EFA-NFIX | 1 |
| Catch crop (area in hectares) | On arable land | EFACC | 0.3 |
| Green cover (area in hectares) | On arable land | EFAGC | 0.3 |
| Agro-forestry (area in hectares) | On BPS eligible land in 2015 | EFAAF | 1 |
| Hedges (length in metres) | On, adjacent to, or within five metres of arable land or contiguous to a claimed EFA option: | EFAH100 | 10 m ² |
| | Hedges (length in metres) If the producer has the right to claim the whole (eligible) hedge the EFA contribution to be applied is | | |
| | On, adjacent to, or within five metres of arable land or contiguous to a claimed EFA option: Hedges (length in metres) If the producer has the right to claim only half the hedge the EFA contribution to be applied is | EFAH50 | 5 m ² |



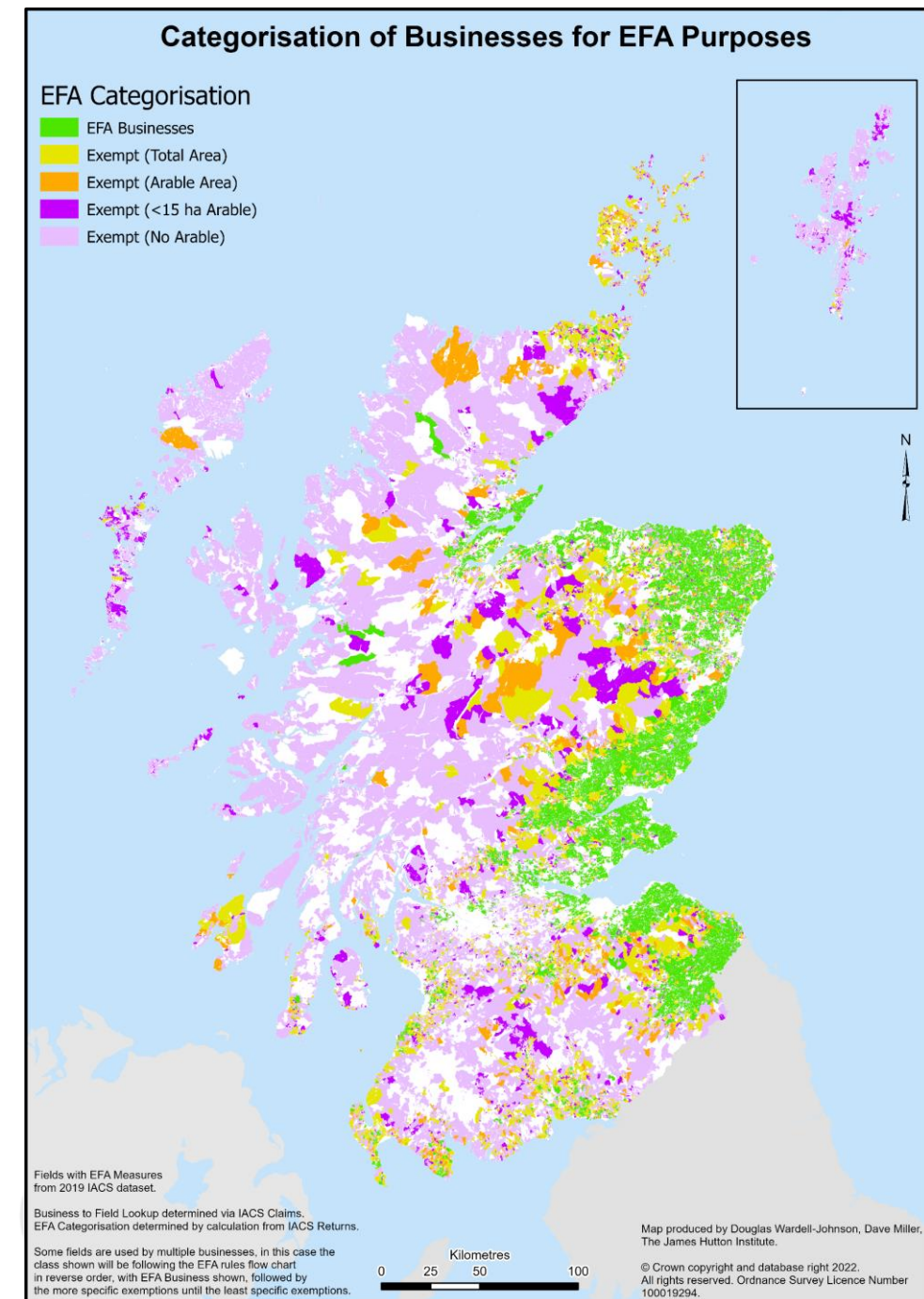
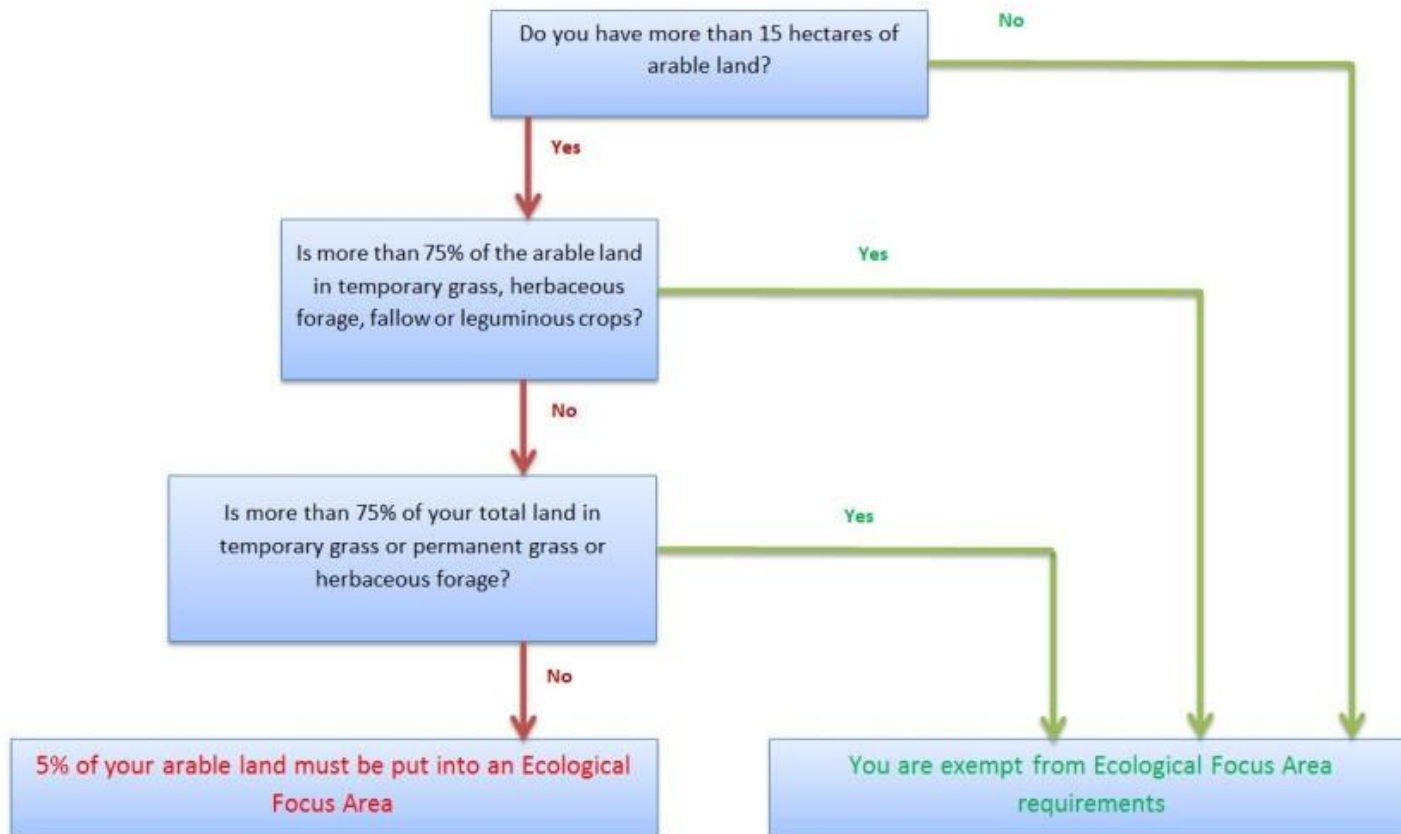
Key Findings

- **Field based measures**
 - Dominance of fallow – lessened over time – but not an option for Enhanced Conditionality (so what will replace these?)
 - Non-fallow, more limited uptake
- **Margin measures** – preferred, some regional specialisation to margins
- **Field and Margins** combined – small number of cases
- **Region** (stronger) and **Farm Type** (weaker) variations for mix of measures
 - NE (fallow), Borders/Lothian (margins)
 - Cereals/General cropping – margins (catch/cover secondary) - Livestock – not margins (practicality?)
 - Bigger deviations from areas expected for Regions and Farm Types with smaller EFA
- **Small numbers of measures per business** – simplicity?
 - Count = most are single measure, Area = most are primary and secondary+
- Implications for Enhanced Conditionality?



Business Categorisation by EFA Status

This map shows the whole extent of those businesses with an EFA requirement and other businesses with arable that are exempted (area or crop mix) and businesses with no arable.

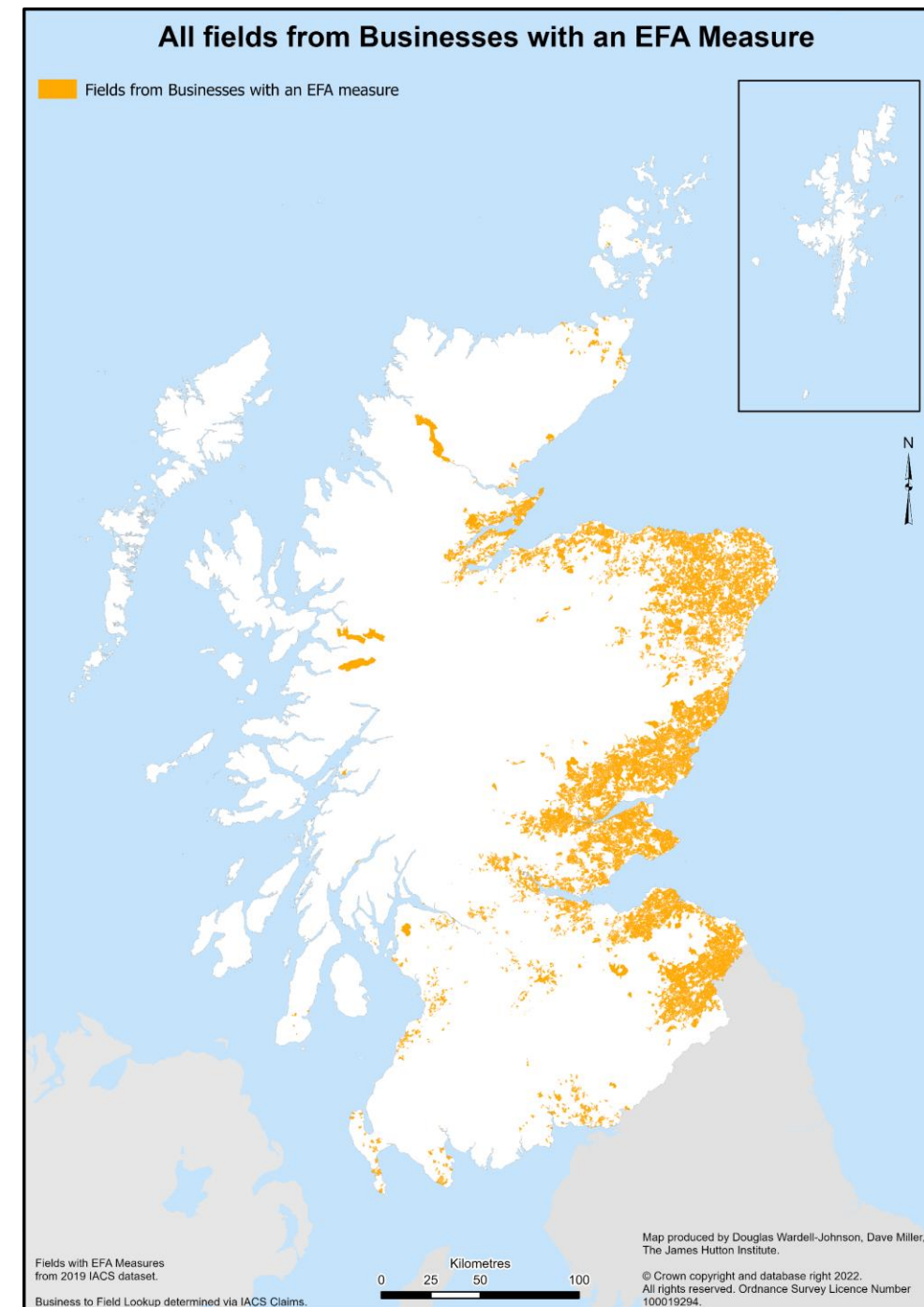


EFA Measures: Where are they being used?

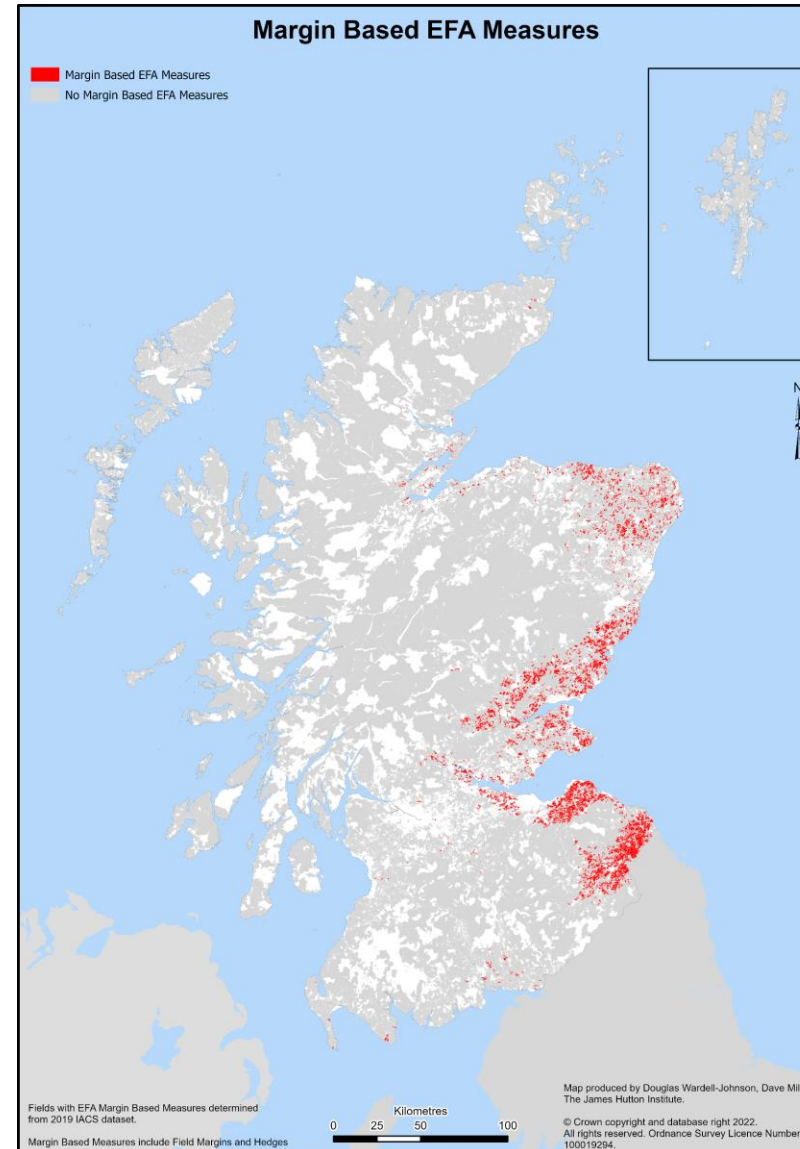
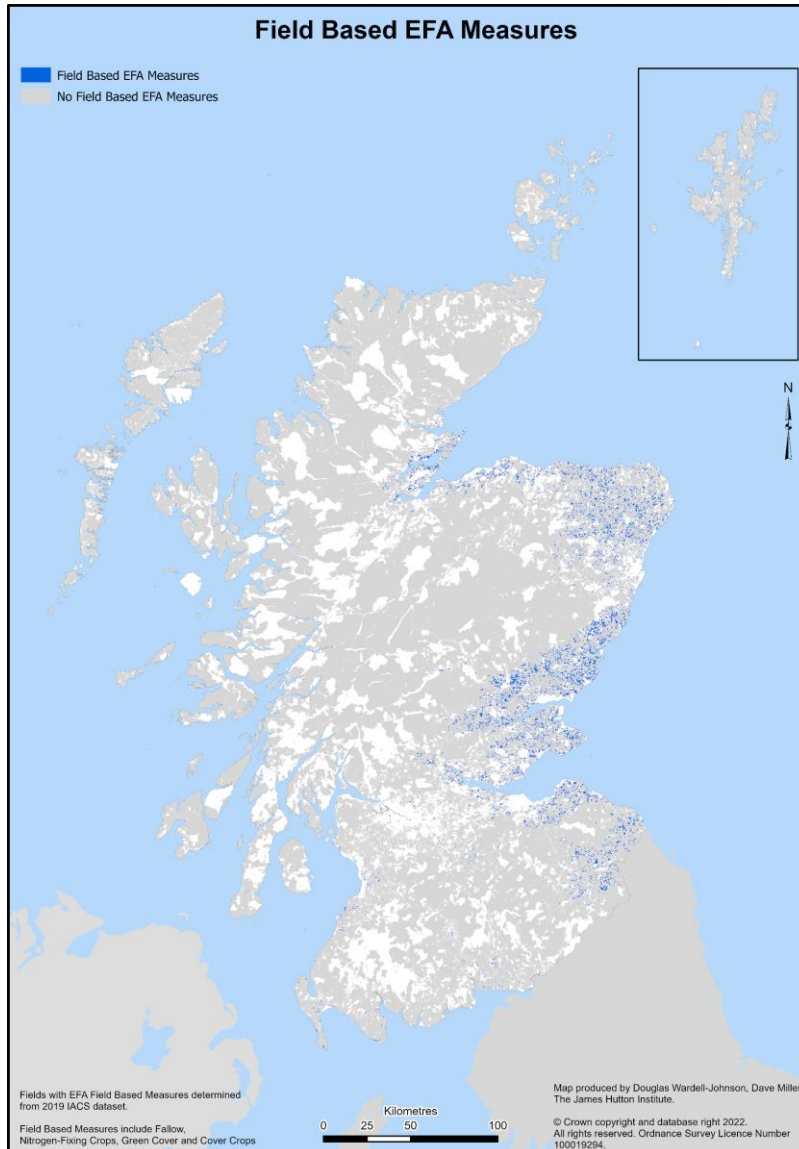
This map shows the whole extent of those businesses with an EFA measure.

Context

- Land area of Scotland - 7.8M ha
- All SAF population n= 19,292, polygon area - 6.49M ha
- Direct Payments population, n= 17,383, paid on area 3.9M ha
- EFA implementing population, n=3,470, paid on area 0.71 M ha
 - 90% of arable area
 - 25,685 land parcels with measures – field, margin, or both



EFA Measures: Margin based and Field based



The map on the left shows the use of field measures, such as fallow or nitrogen fixing crops.

The map on the right shows the fields with margin based measures, such as field margins or hedges.

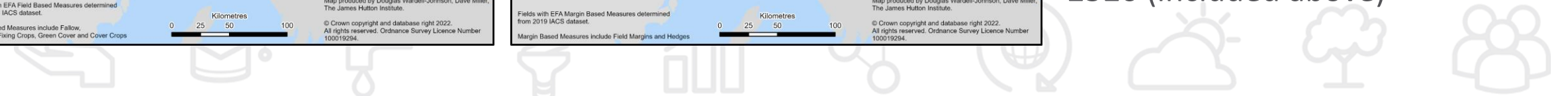
Counts

Field = 10,748

Field (not fallow) = 2,108

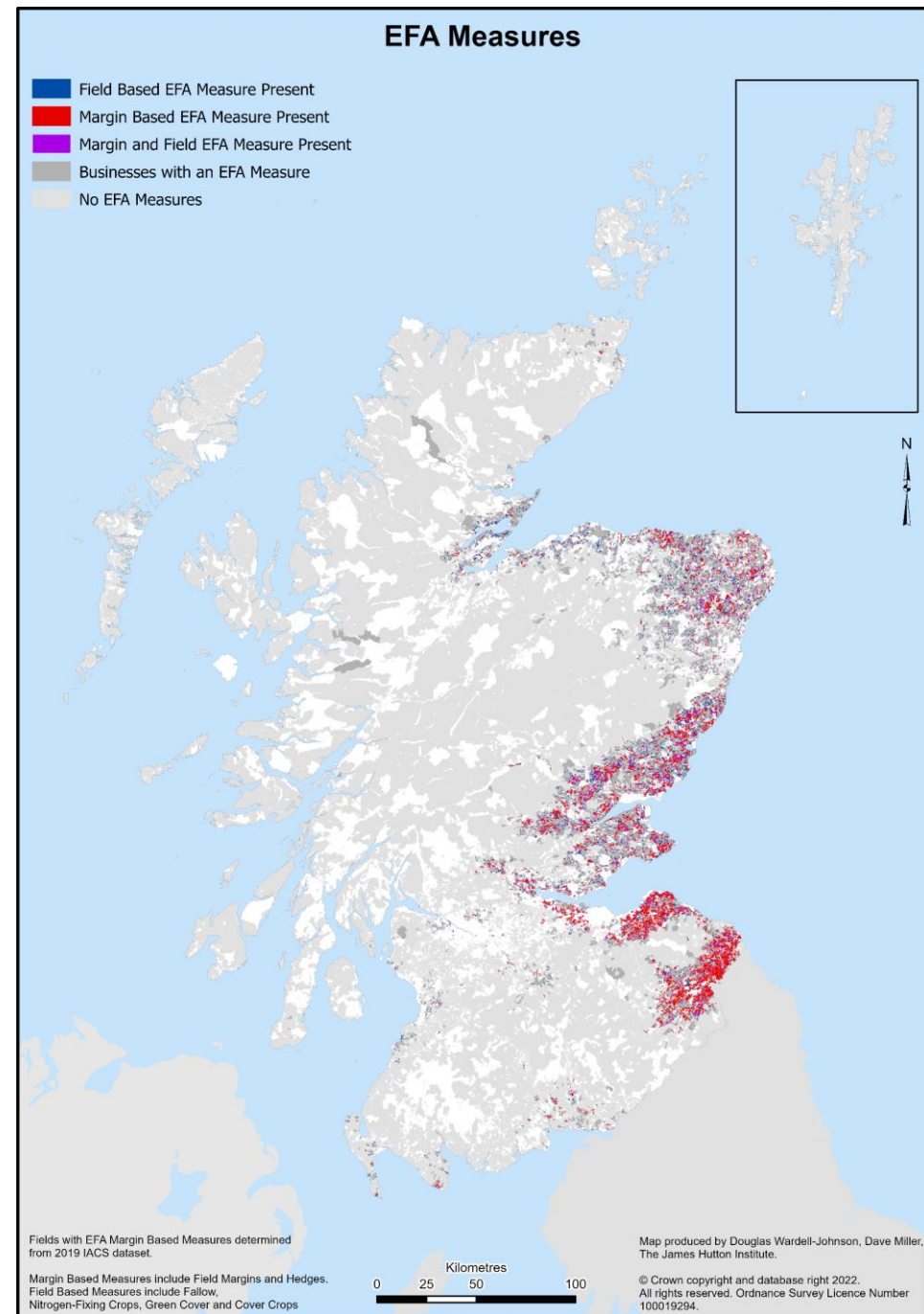
Margins = 17,457

Both field and margins = 2520 (included above)

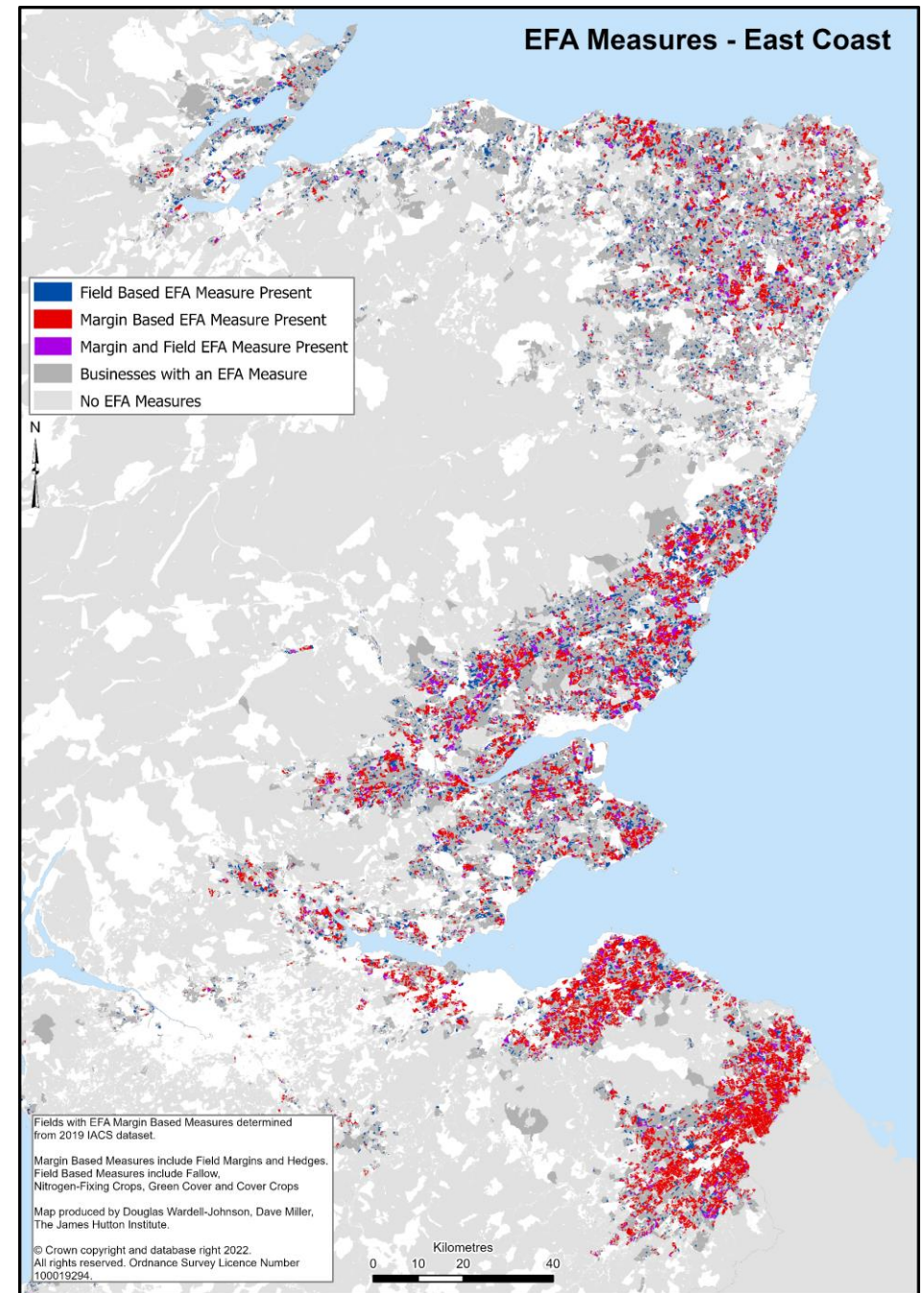
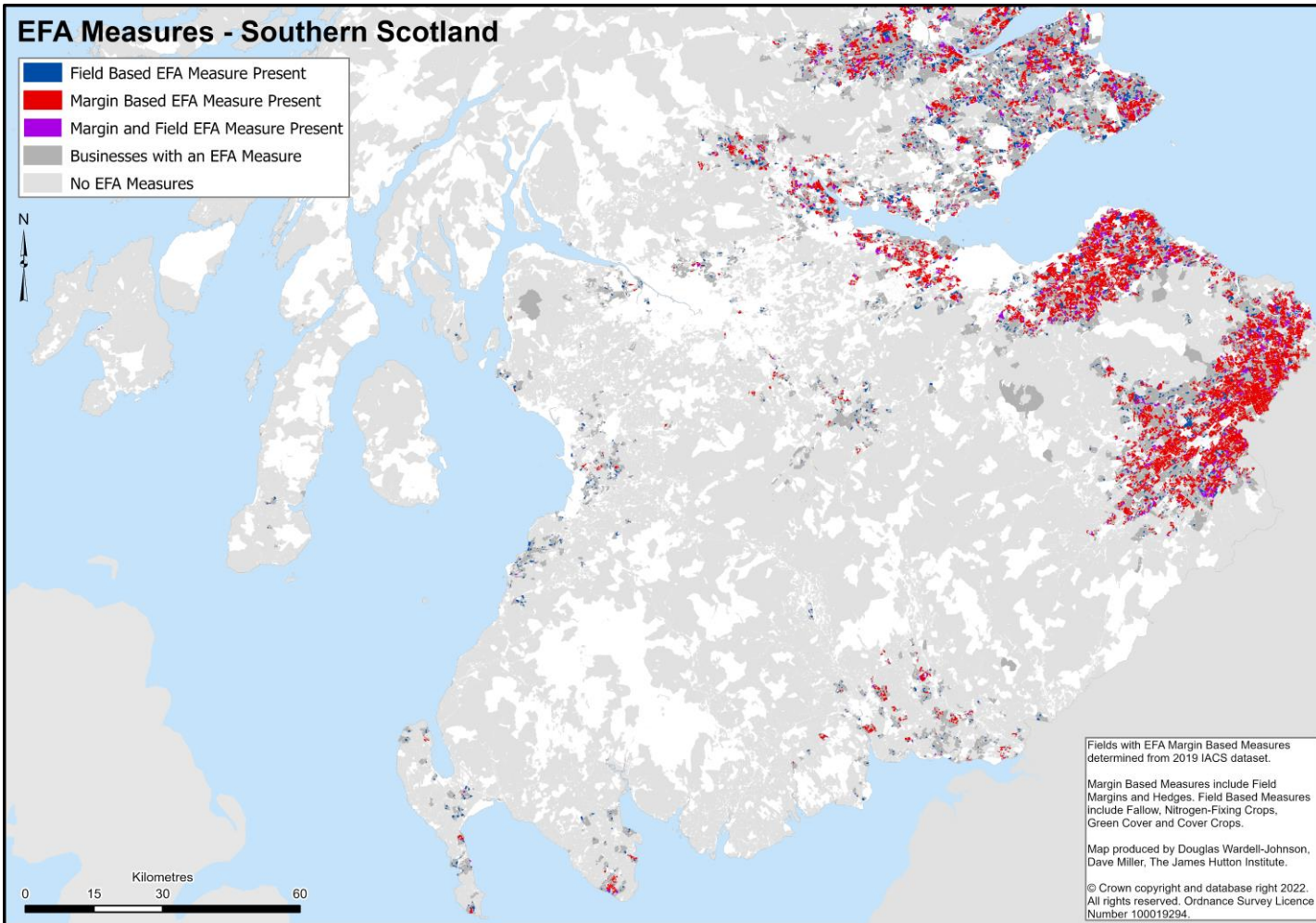


Combined map

- Map as previous – field and margin based measures.
- Distinguishing all the fields in businesses with EFA requirements (as shown in Slide 3) from all IACS fields.
- Trying to highlight the degree of concentration of EFA measures at two levels:
 - the proportion of all EFA business fields that see measures and
 - the mix of EFA and non-EFA businesses/fields.

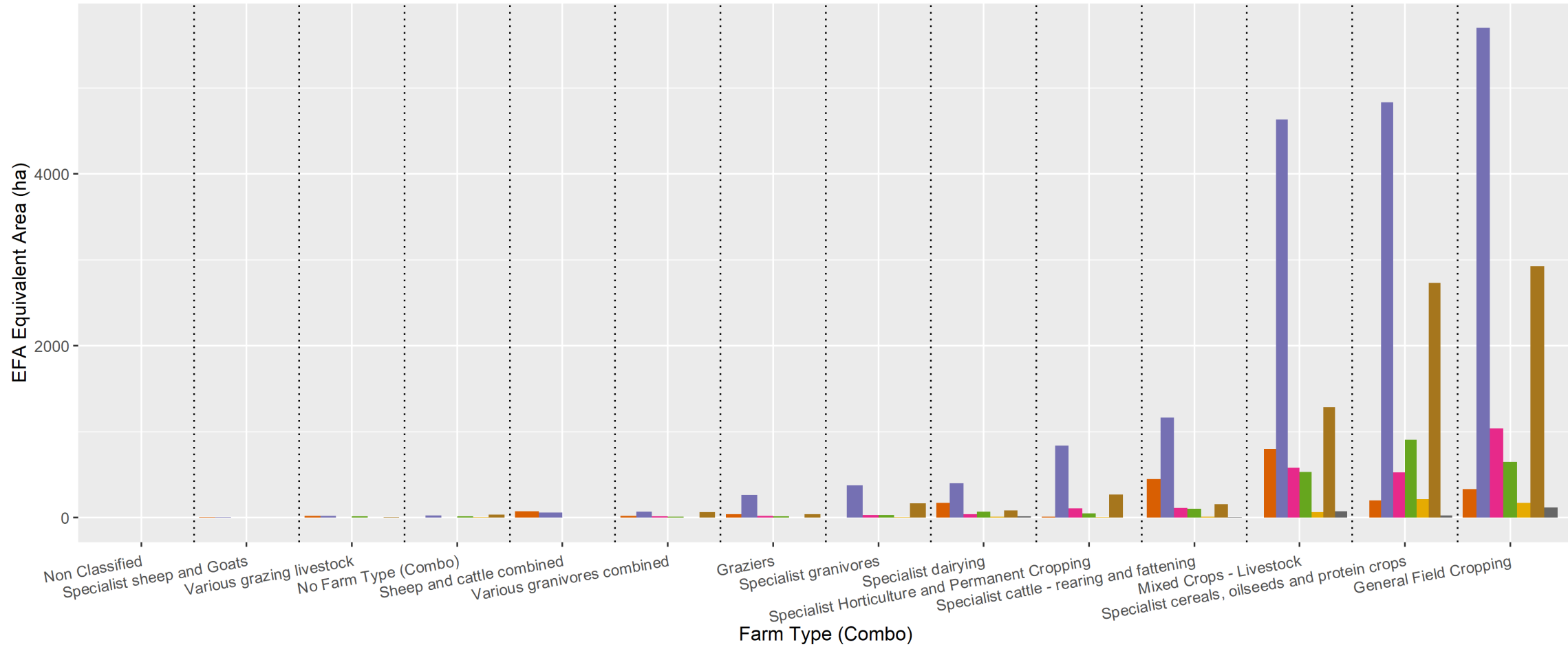


EFA Measures – Regional Scale



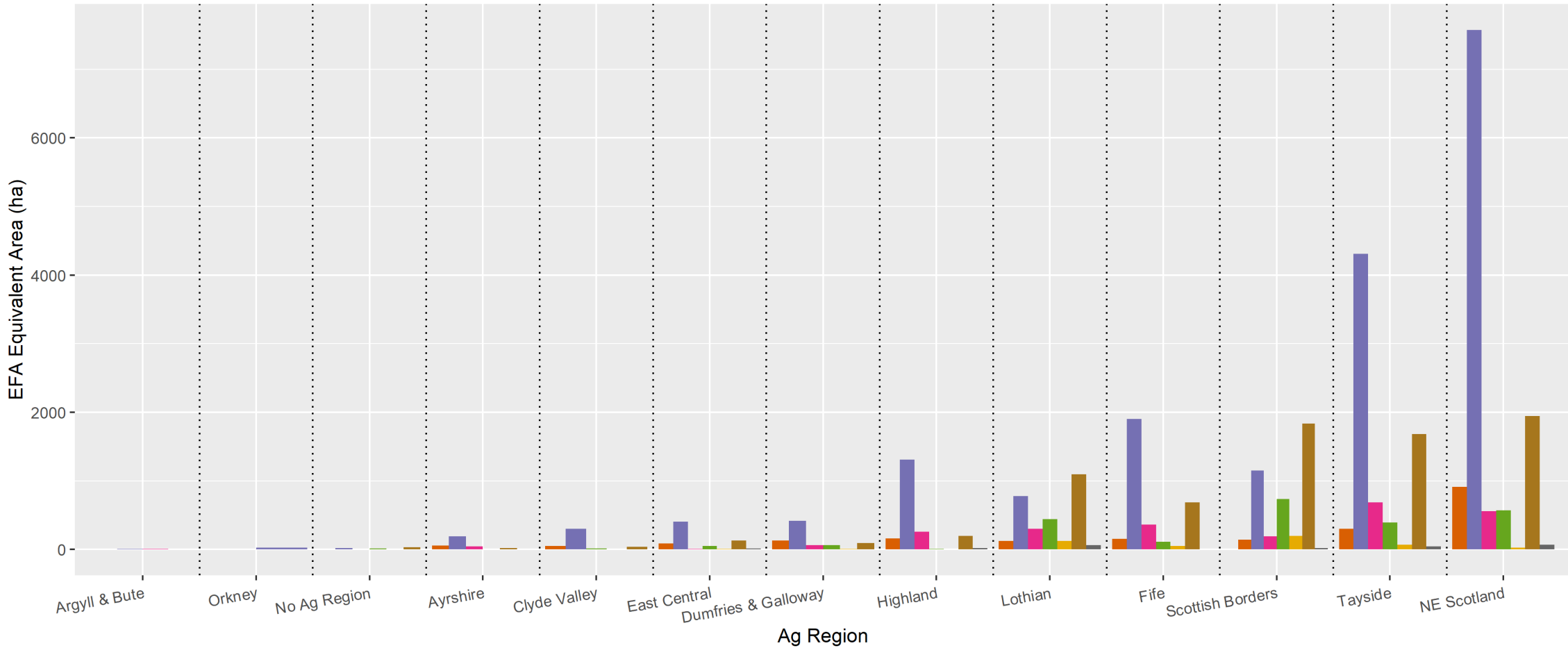
EFA Measures Area by Farm Type

Area of EFA Measures



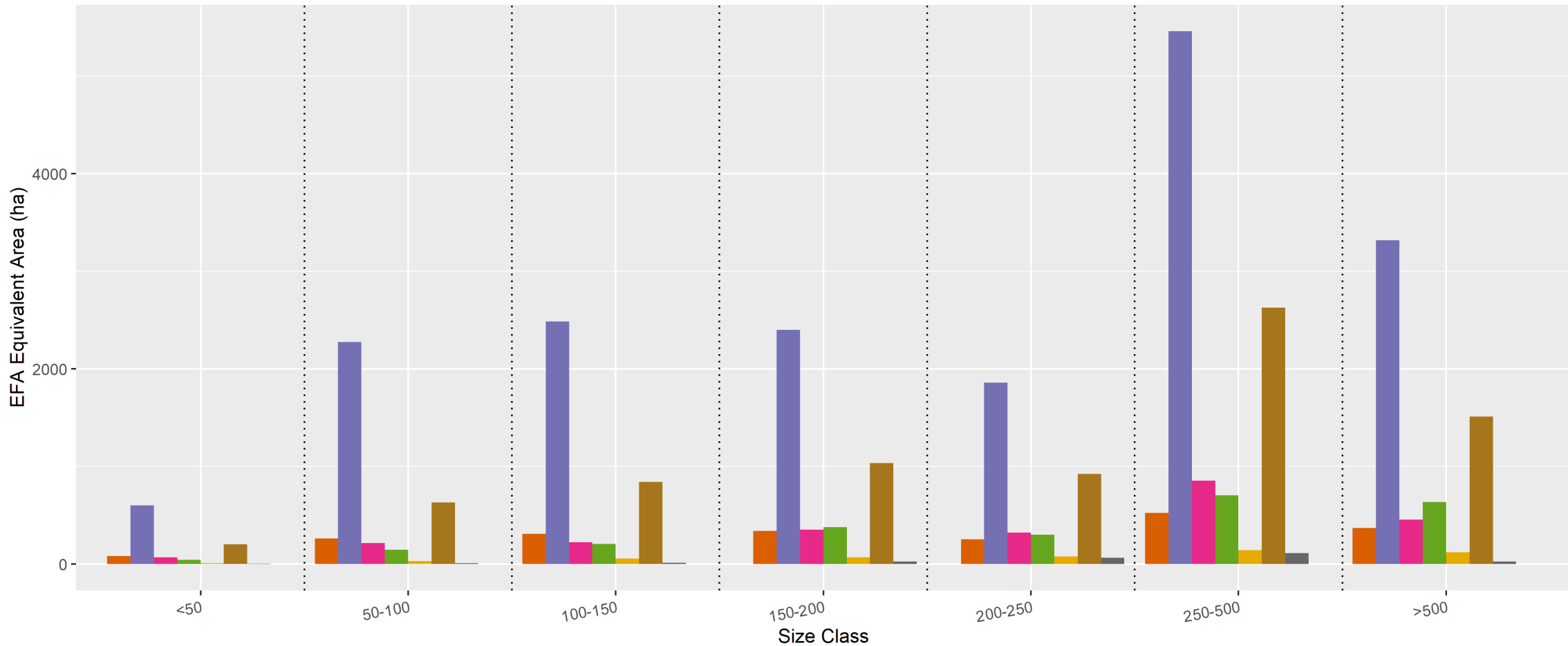
EFA Measures Area by Ag Region

Area of EFA Measures

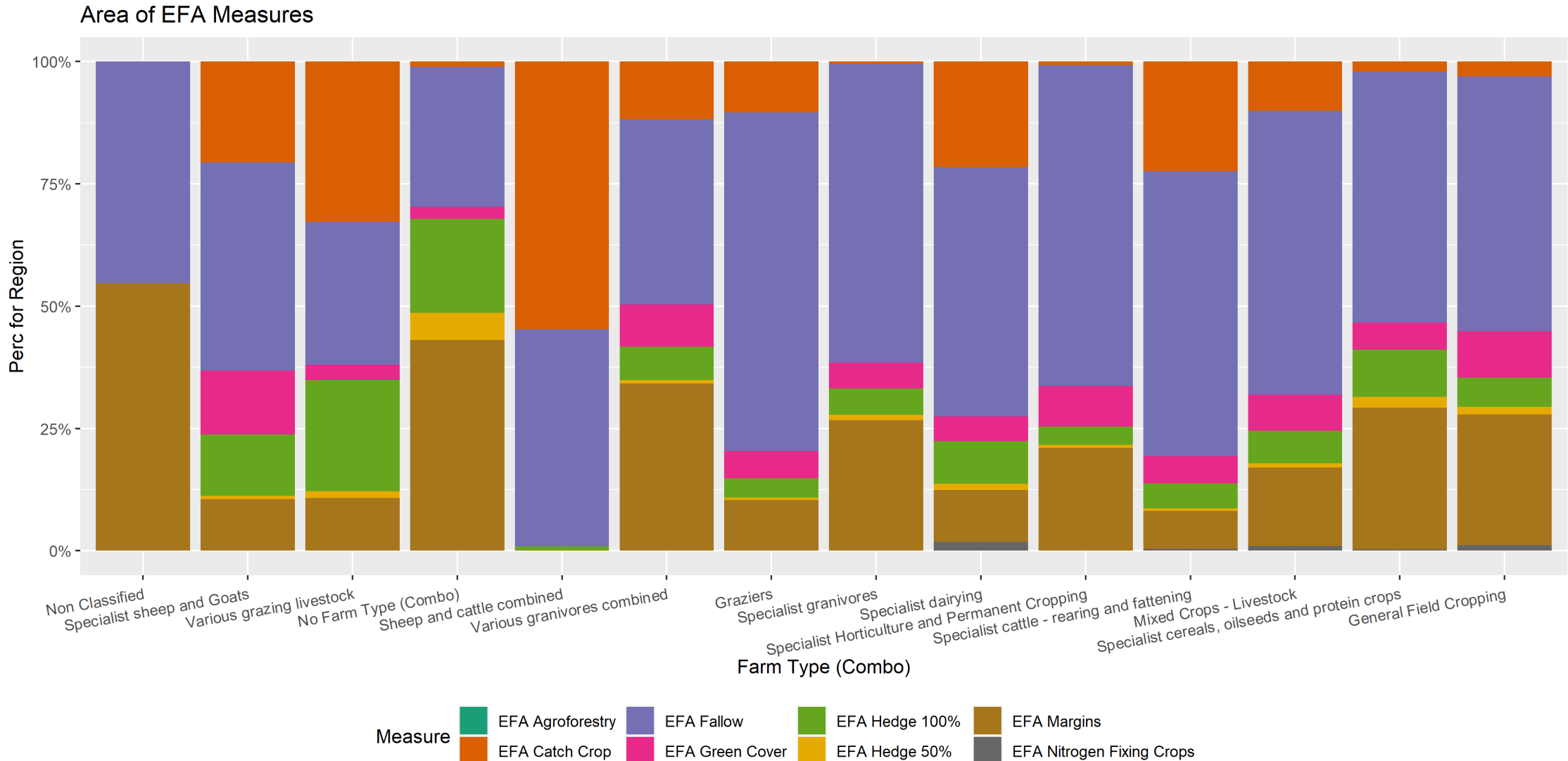


EFA Measures Area by Size Class

Area of EFA Measures

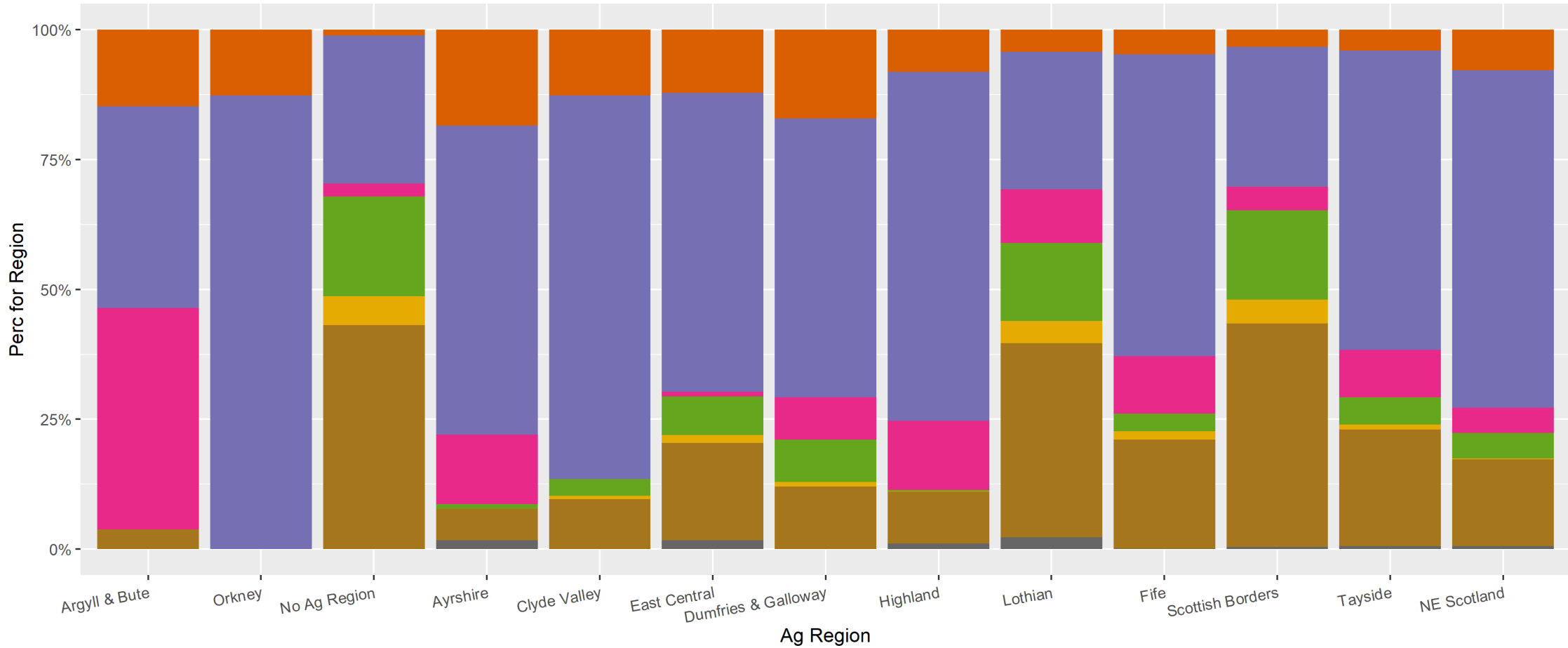


EFA Measures Area by Farm Type



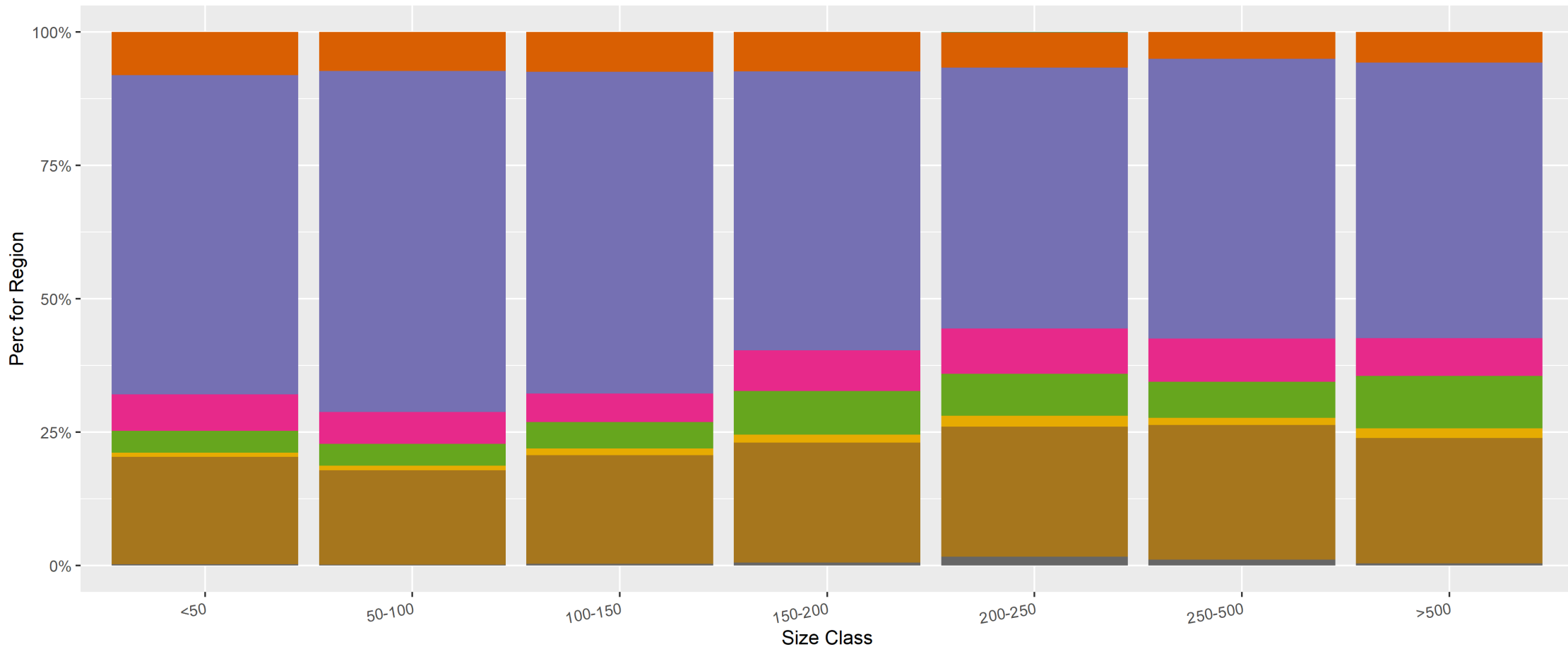
EFA Measures Area by Ag Region

Area of EFA Measures



EFA Measures Area by Size Class

Area of EFA Measures



Measure

- EFA Agroforestry
- EFA Catch Crop
- EFA Fallow
- EFA Green Cover
- EFA Hedge 100%
- EFA Hedge 50%
- EFA Margins
- EFA Nitrogen Fixing Crops

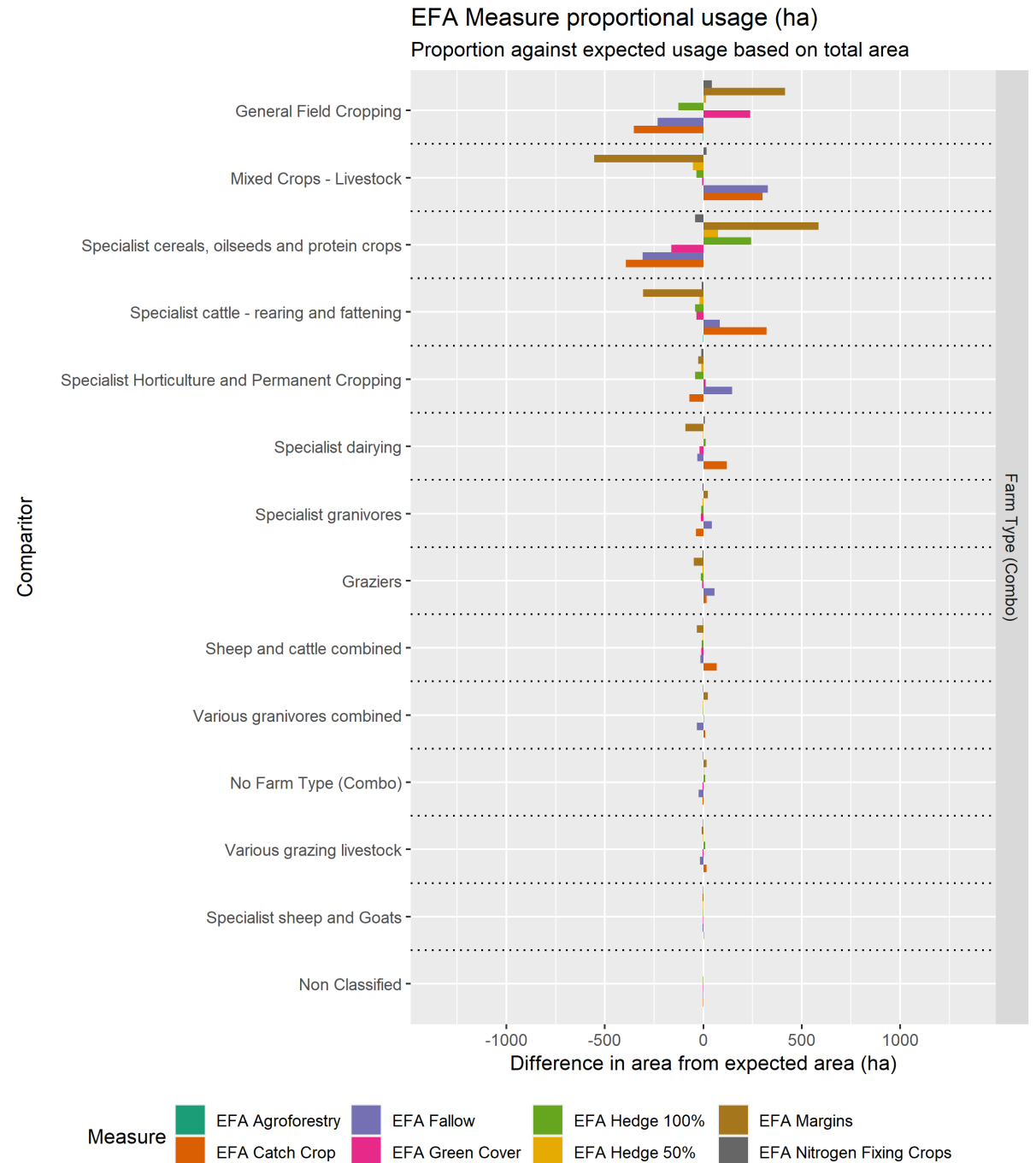


EFA Measure Usage by Farm Type (ha)

This graph shows what measures are used proportionally more often per farm type. The farm types closer the top of the graph have more BPS area.

General field cropping is the largest area on this graph.

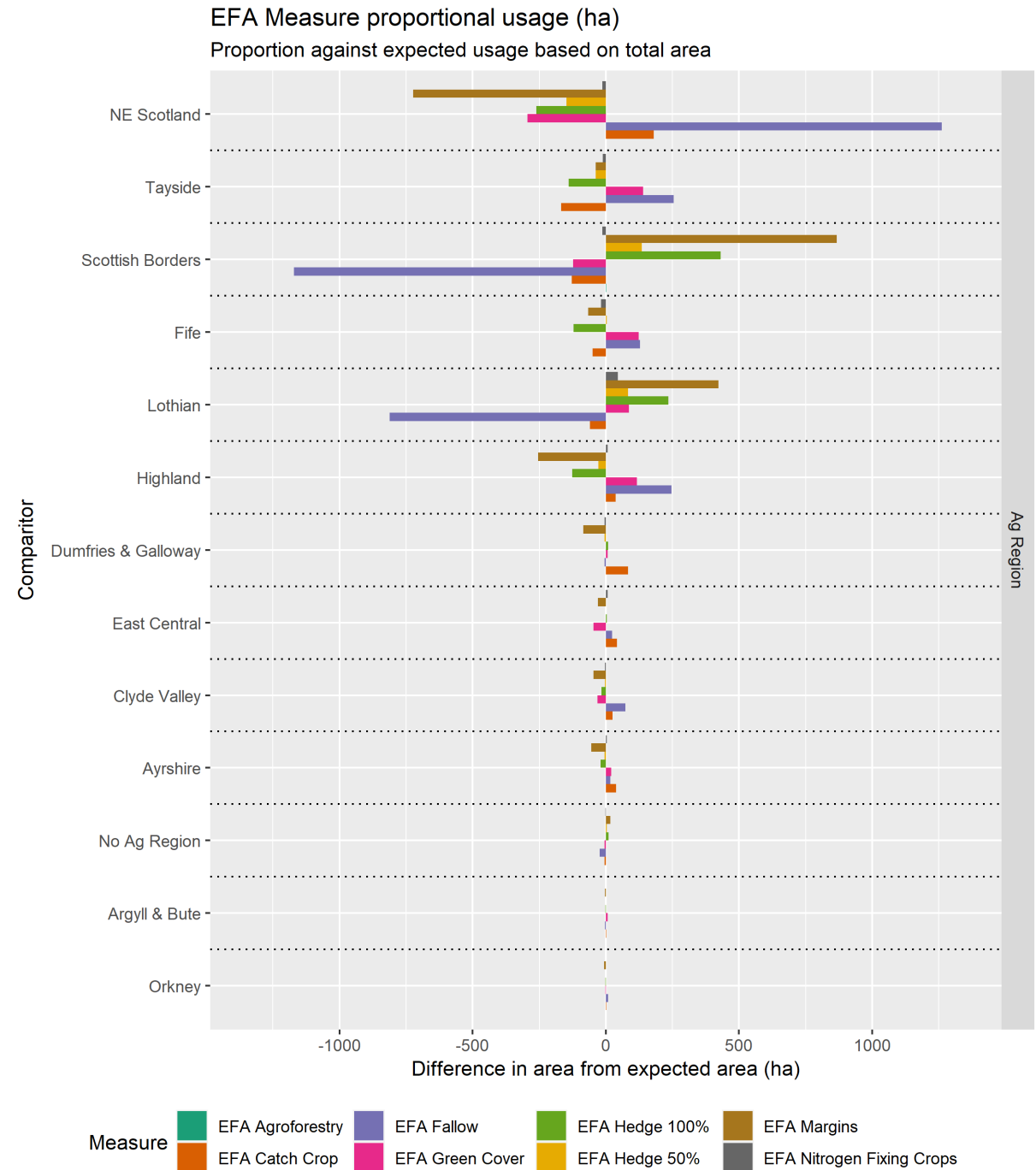
Note the contrast between mix of measures for cropping, cereals and livestock.



EFA Measure Usage by Ag Region (ha)

This graph shows what measures are used proportionally more often per agricultural region. The farm types closer the top of the graph have more BPS area.

Note these regions are based on the June Census returns, so are based on the location of the main location code, rather than the land.

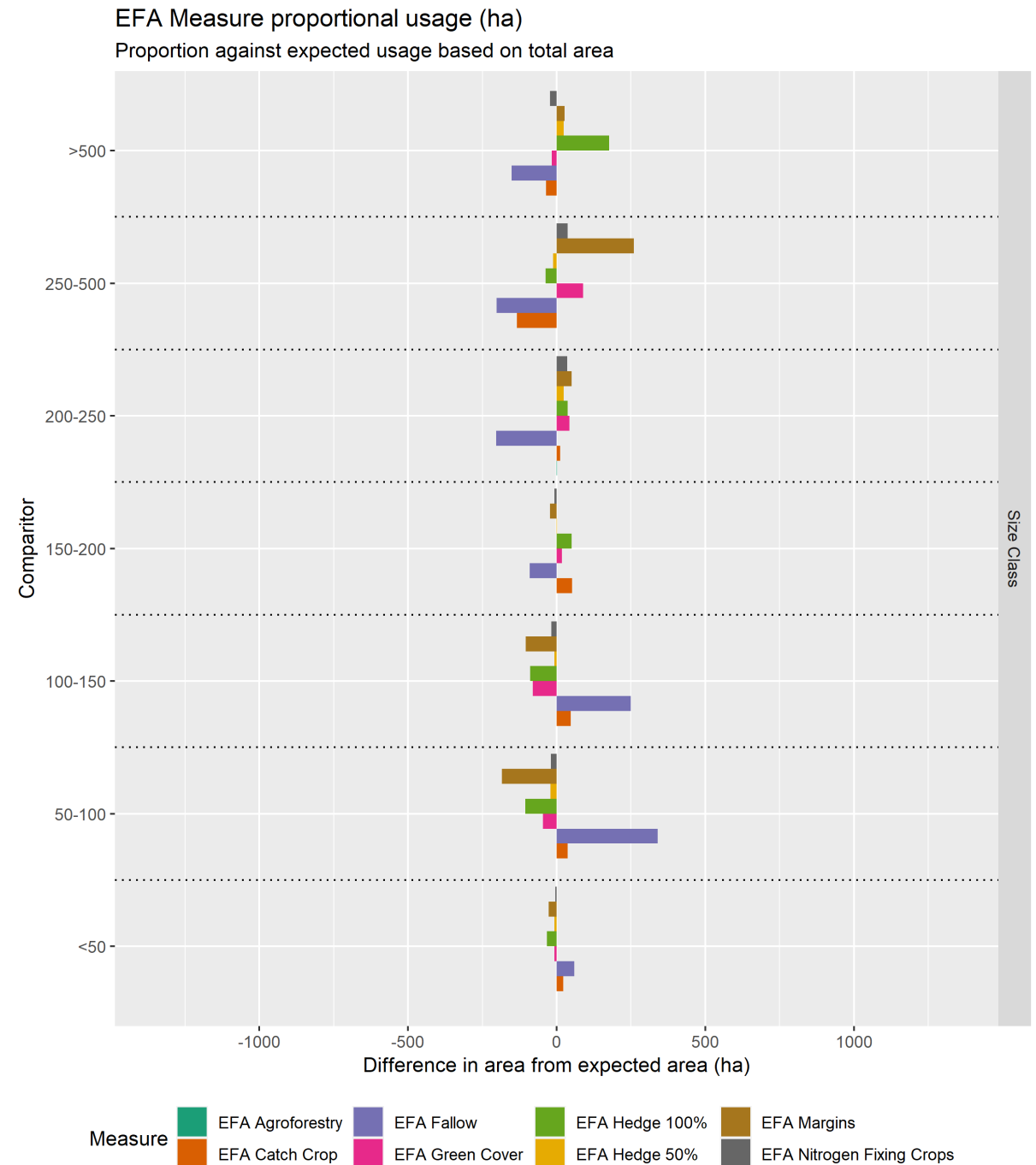


EFA Measure Usage by Size Class (ha)

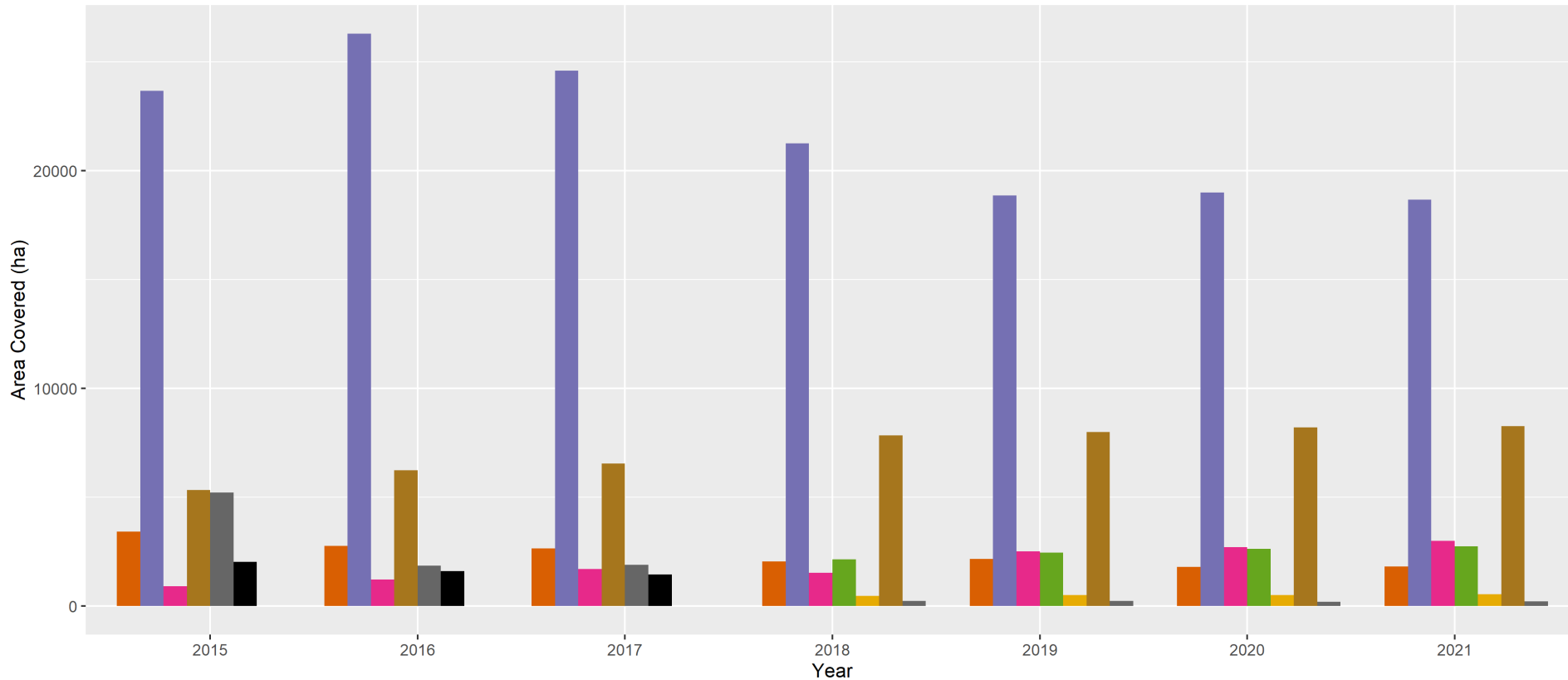
This graph shows what measures are used proportionally more often per agricultural region. The farm types closer the top of the graph have more BPS area.

Fallow appears to be preferred amongst smaller businesses, with other measures being preferred on larger ones.

The compact nature of the graph is to make it comparable to the previous graphs, all three in this series are on the same scale.



Use of EFA Measures over time



Note the Rules for exemption and the multipliers for each different EFA Type vary by year.

The numbers shown indicate the ha equivalent for that year.

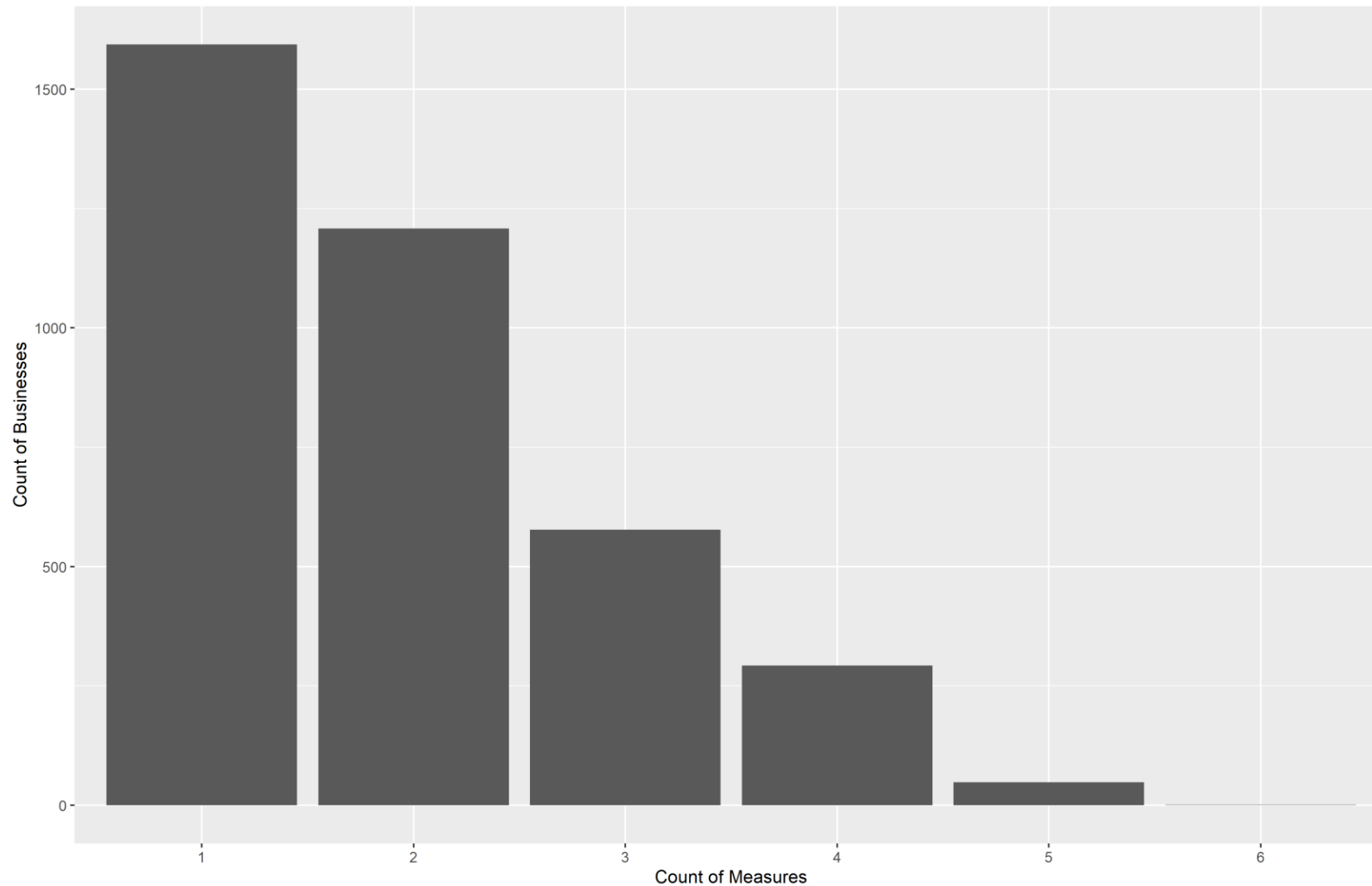
Measure

- EFA Agroforestry
- EFA Fallow
- EFA Hedge 100%
- EFA Margins
- EFA Buffer
- EFA Catch Crop
- EFA Green Cover
- EFA Hedge 50%
- EFA Nitrogen Fixing Crops



Count of Different EFA Measures by Business

Count of Businesses by Number of EFA Measures Used



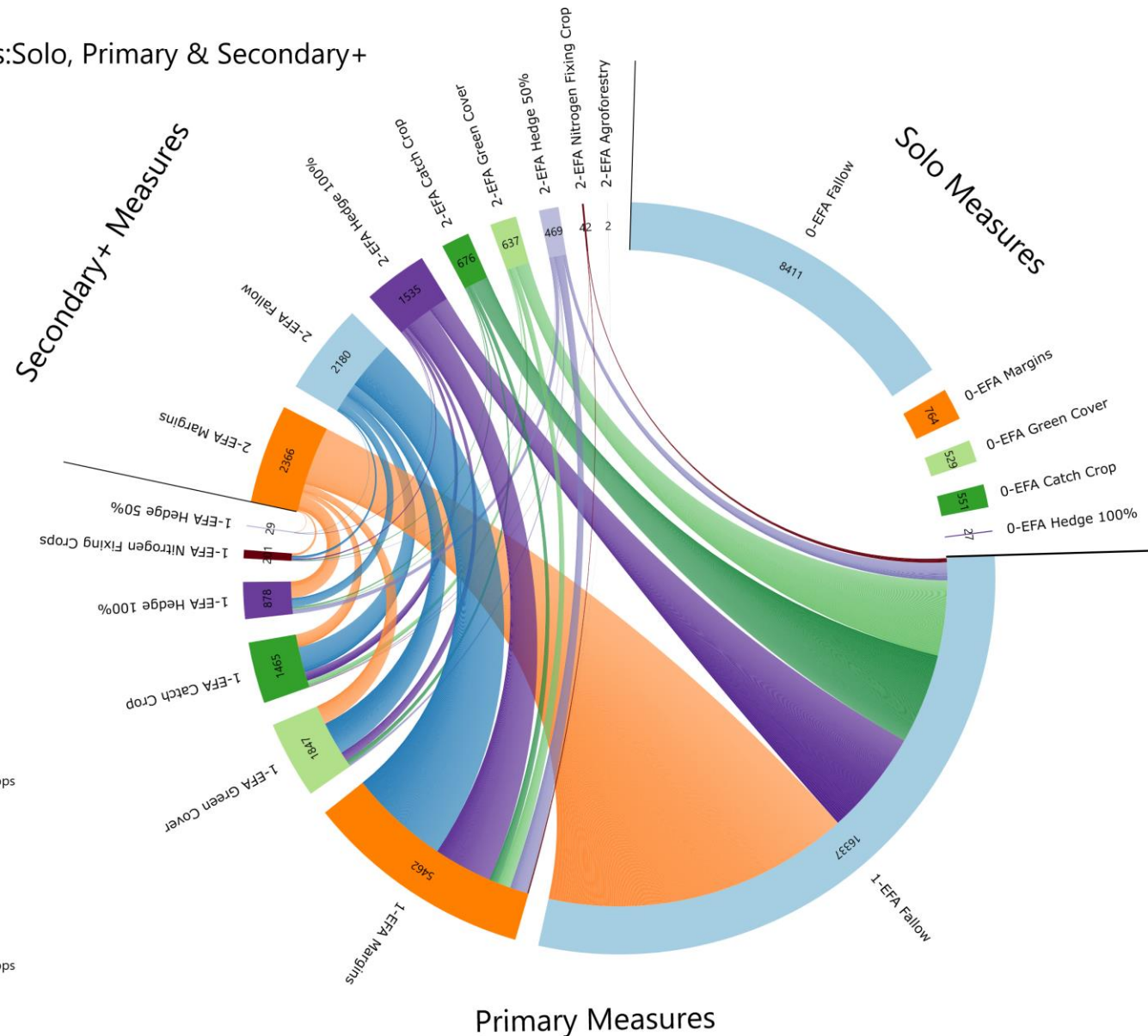
The number of measures used per business.

Generally, more businesses are using a smaller number of measures to meet their requirement.



Solo, Primary and Secondary+ Measures

EFA Measures: Solo, Primary & Secondary+



Visualising the mix of EFA measures present - where only one done alone (**Solo**), then the biggest when more than one present (**Primary**) and those done as second to sixth largest measures (**Secondary+**).

The chart shows the relative extents (ha) of each as the outer segments.

The links show the mix of Secondary EFAs associated with each of the Primaries.



Legend

- 0-EFA Fallow
- 0-EFA Margins
- 0-EFA Green Cover
- 0-EFA Catch Crop
- 0-EFA Hedge 100%
- 1-EFA Fallow
- 1-EFA Margins
- 1-EFA Green Cover
- 1-EFA Catch Crop
- 1-EFA Hedge 100%
- 1-EFA Nitrogen Fixing Crops
- 1-EFA Hedge 50%
- 2-EFA Margins
- 2-EFA Fallow
- 2-EFA Hedge 100%
- 2-EFA Catch Crop
- 2-EFA Green Cover
- 2-EFA Hedge 50%
- 2-EFA Nitrogen Fixing Crops
- 2-EFA Agroforestry

Options for Additional Work

- **Concentration** (i.e. Field level count of measures) – count of fields in which measures are done versus the total number of fields where measures could be done – “sacrifice” areas or spread them out to have small impacts in wide areas?
- **Change in mix of EFA measures over time** – using Scotland level totals.
- **Comparison with set aside** – which fields.
- **Transitions analysis** – equivalent of rotations at field level or activity mix per business.



Appendix – additional graphs

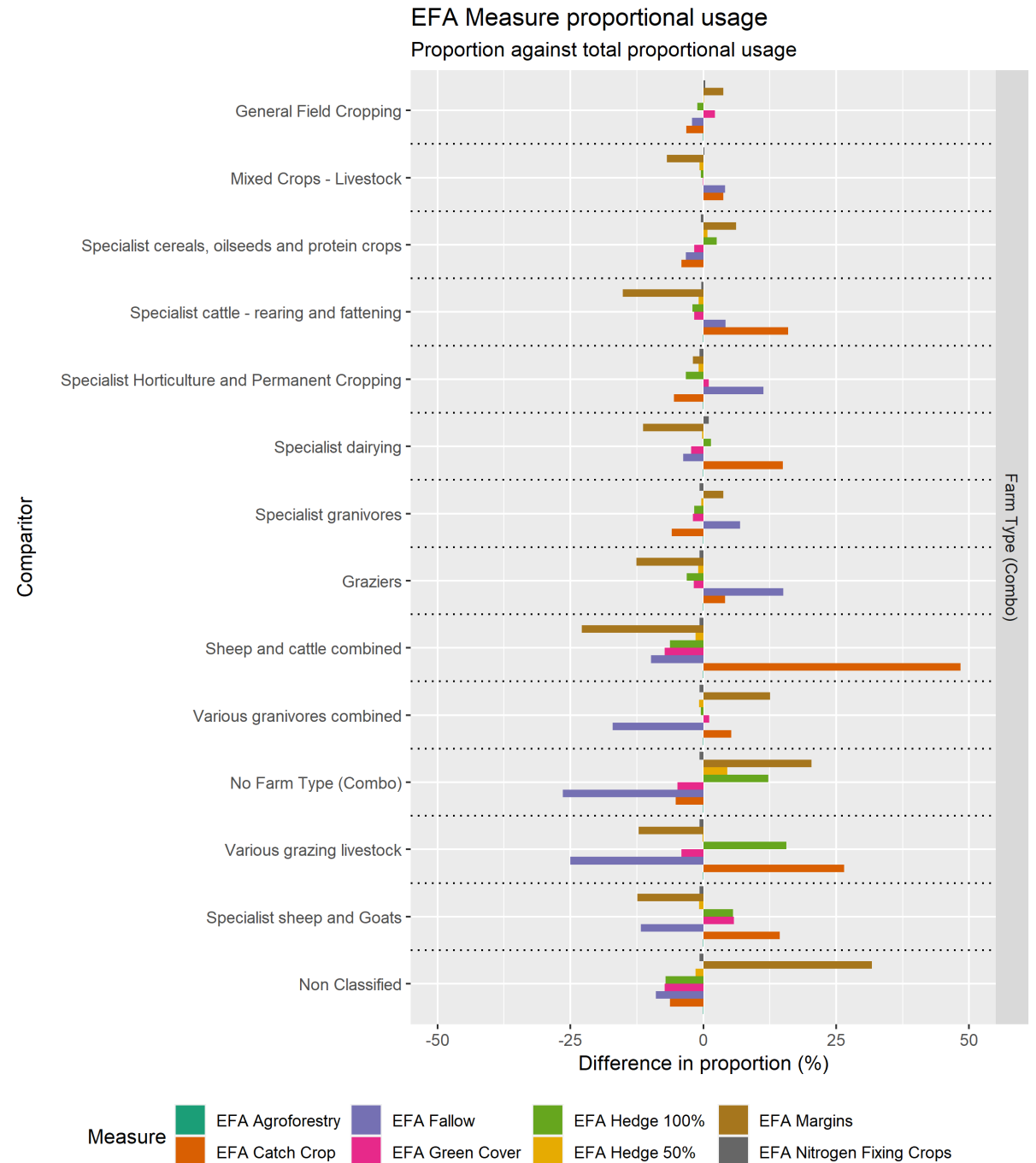
- EFA measure deviation from expected as percentage
 - Farm type
 - Region
 - Size class



EFA Measure Usage by Farm Type

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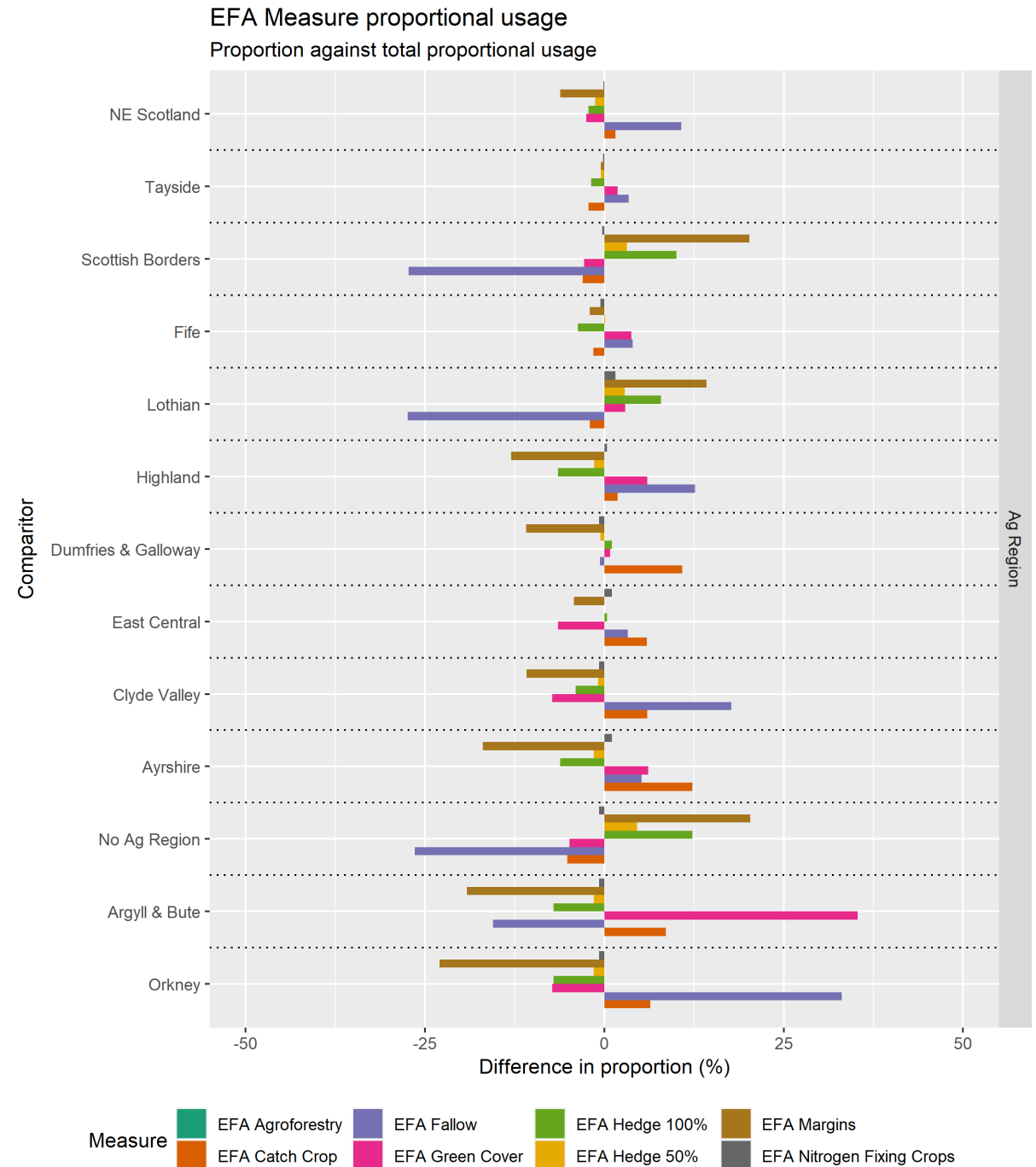
General field cropping is the largest area on this graph, and has a different makeup compared to the other classes.



EFA Measure Usage by Ag Region

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Note these regions are based on the June Census returns, so are based on the location of the main location code, rather than the land.

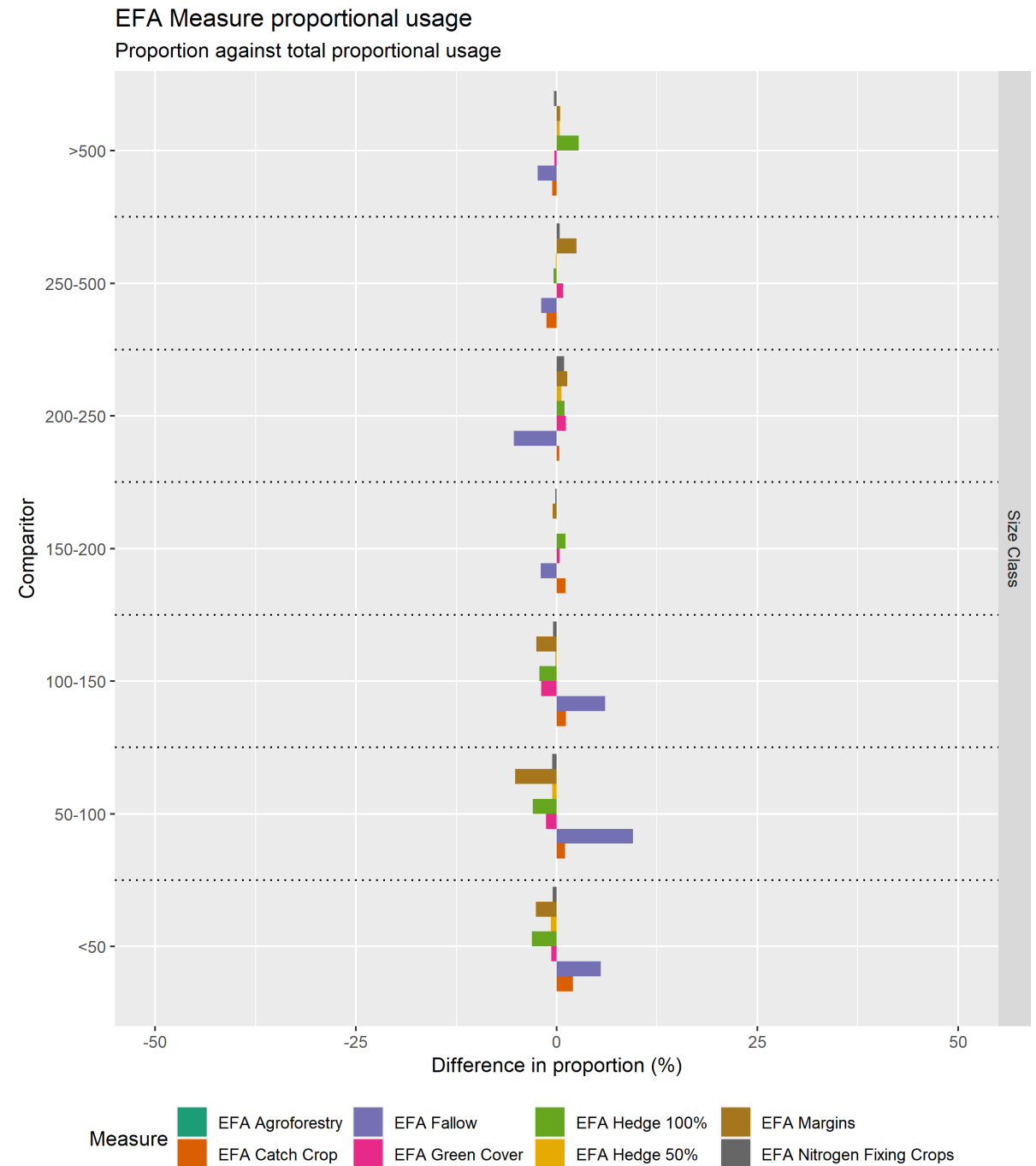


EFA Measure Usage by Size Class

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Previous related analyses are also available from the Hutton Land Systems Research Team website -
<https://ics.hutton.ac.uk/research/land-systems-research-team/>

The sets of slides and maps generated by the CAP 2014-19 analysis is available from -
<https://ics.hutton.ac.uk/research/land-systems-research-team/cap-analysis/>

For woodland expansion analysis see - [online mapping](#) and [paper](#).

Further research in the RESAS Strategic Research Programme 2022-27, in the [Land Use Transformations](#) (C3-JHI-1) and [Land Reform](#) (E3-JHI-1) projects in the SRP.

The James Hutton Institute is supported by the Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS)

