

The role of time and riparian land- use in reaching WFD goals

Response from Roger Owen

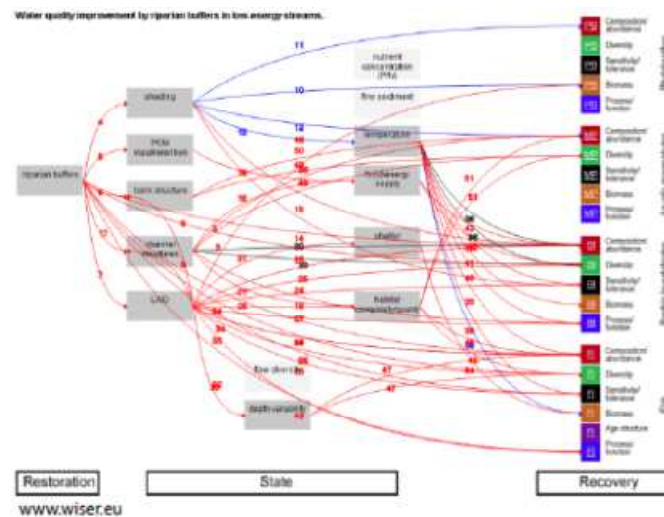
Head of Ecology
Scottish Environment
Protection Agency

Summary Points

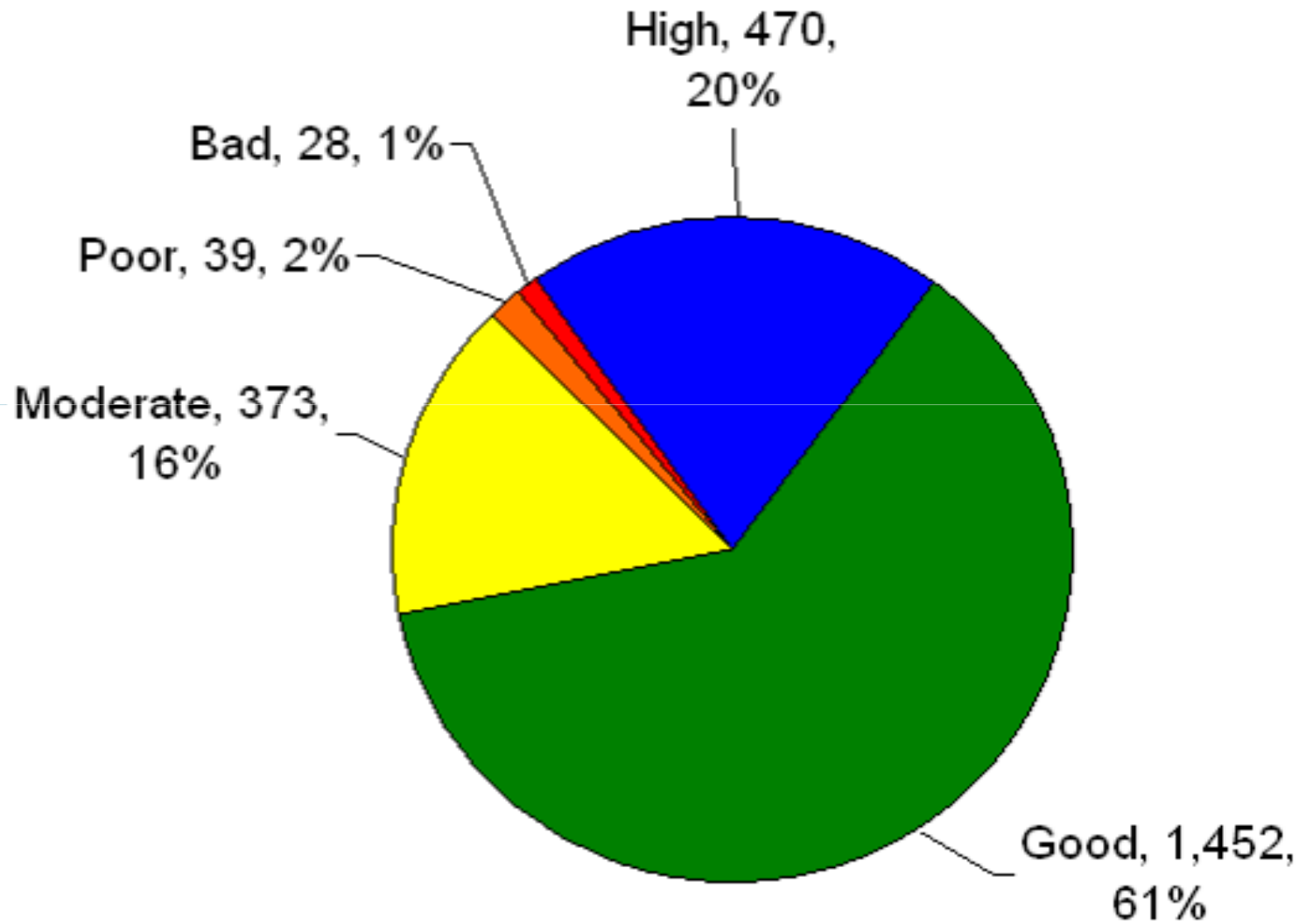
- Measuring the ecological success of restoration is often difficult – especially for physical modifications
- Progress towards 2027 objectives by EU countries is slow and maybe unachievable
- Local scale interventions have little impact on overall ecological objectives
- Catchment scale measures are required and suggests riparian buffer zones as being most achievable

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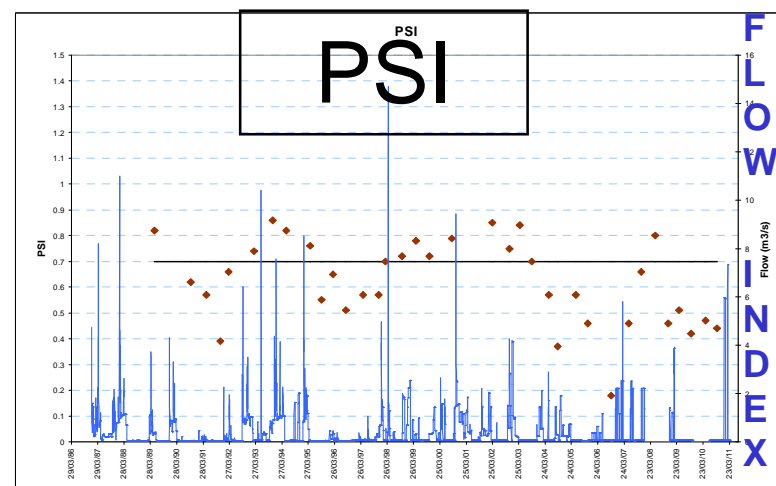
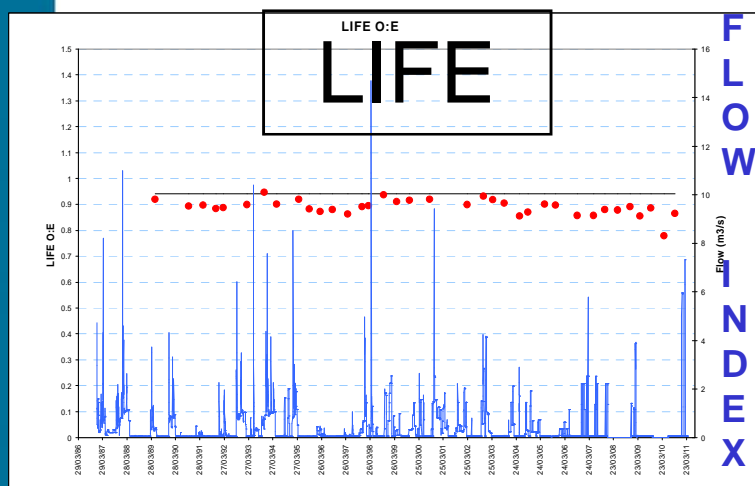
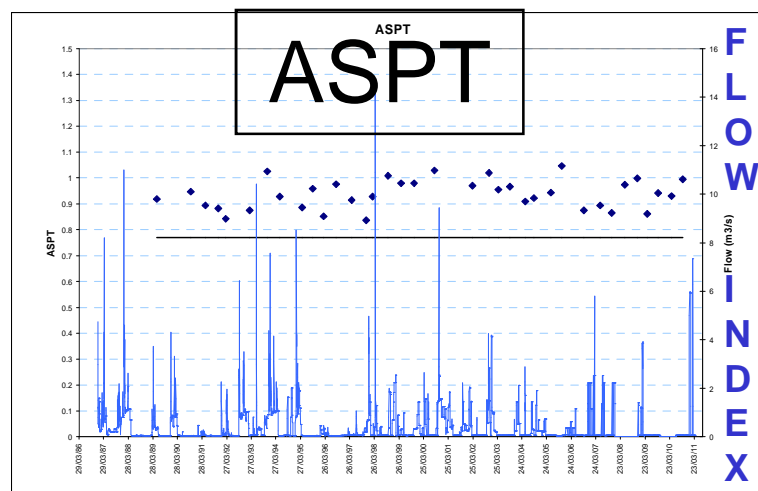
- Measuring the ecological success of restoration is often difficult – especially for physical modifications



Morphology classification results - Scotland (number of water bodies)



Flow (LIFE) and Sediment (PSI) Invertebrate Metrics



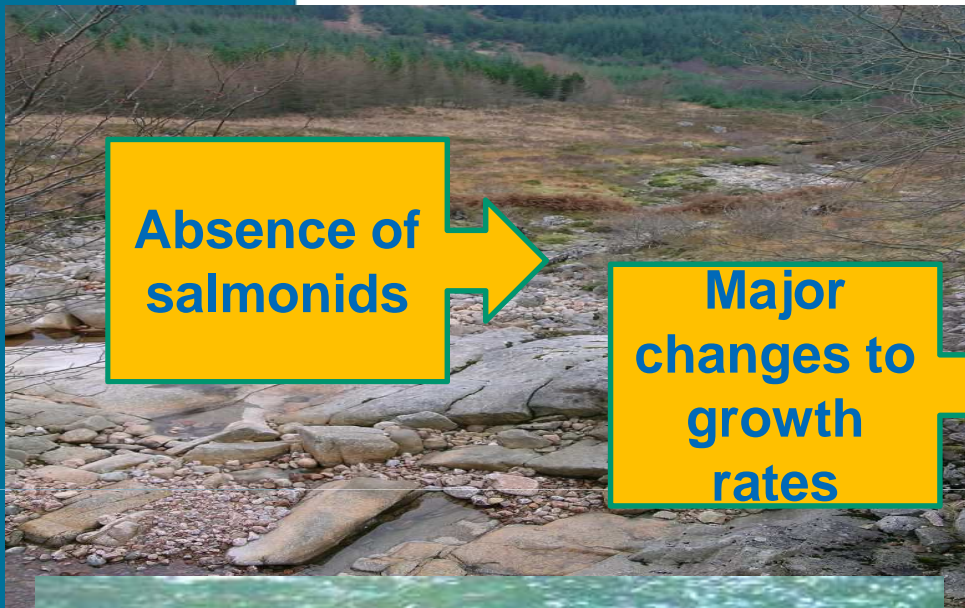
Ecological indicators of physical modification – Fish metrics

**Absence of
salmonids**

**Major
changes to
growth
rates**

**Changes in
fish guild
presence**

**Poor survival and recruitment
rates**



Environmental standards - physical alteration

MImAS: Morphological Impact Assessment System

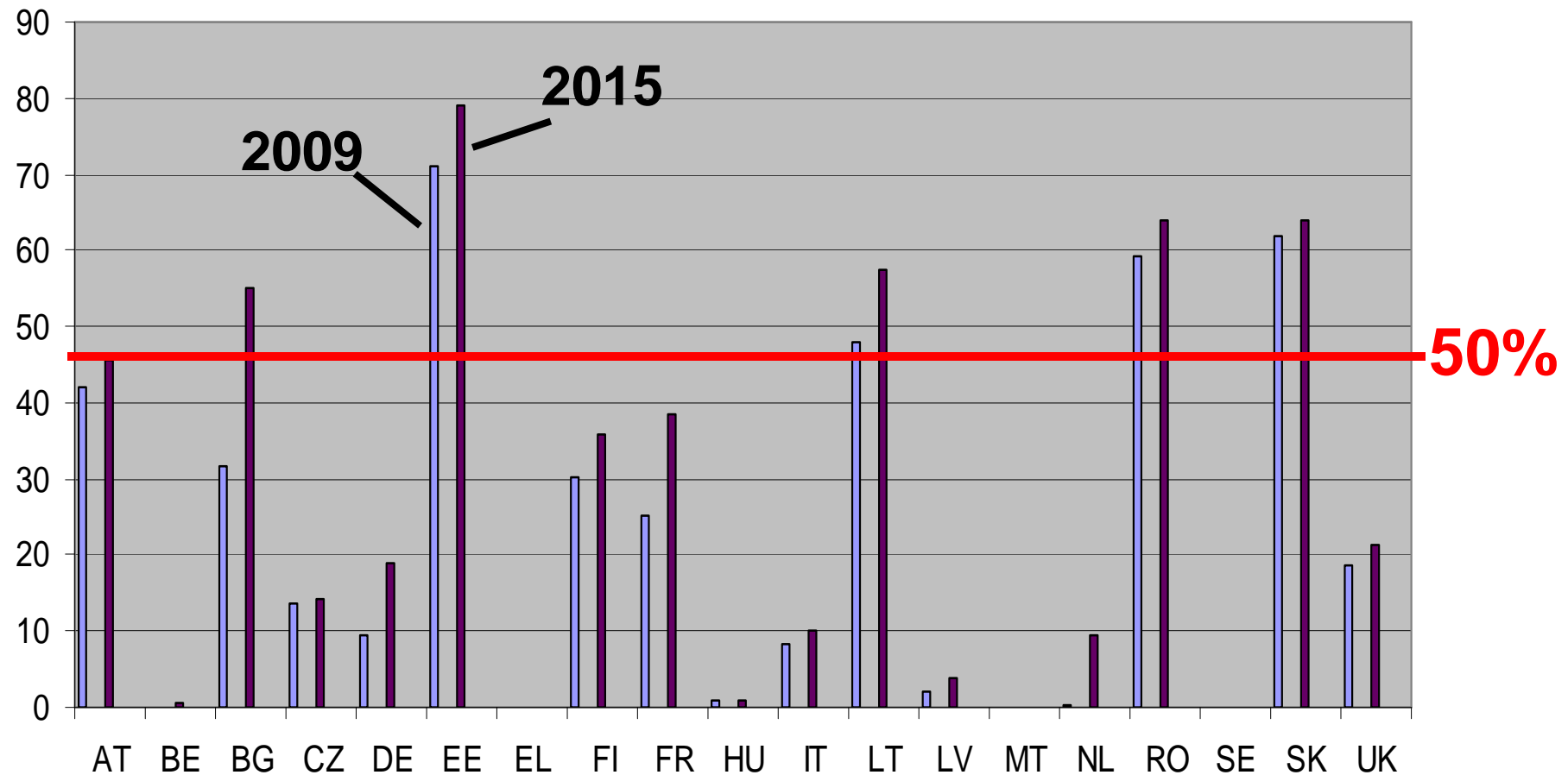
Zone	Morphological Condition Limit			
	High/Good	Good/Mod	Mod/Poor	Poor/bad
Channel	5%	25%	50%	75%
Banks & Riparian Zone	5%	25%	50%	75%

Summary Points

- Progress towards 2027 objectives by EU countries is slow and maybe unachievable

Achievement of GES 2009-15

% of all Water Bodies by Country



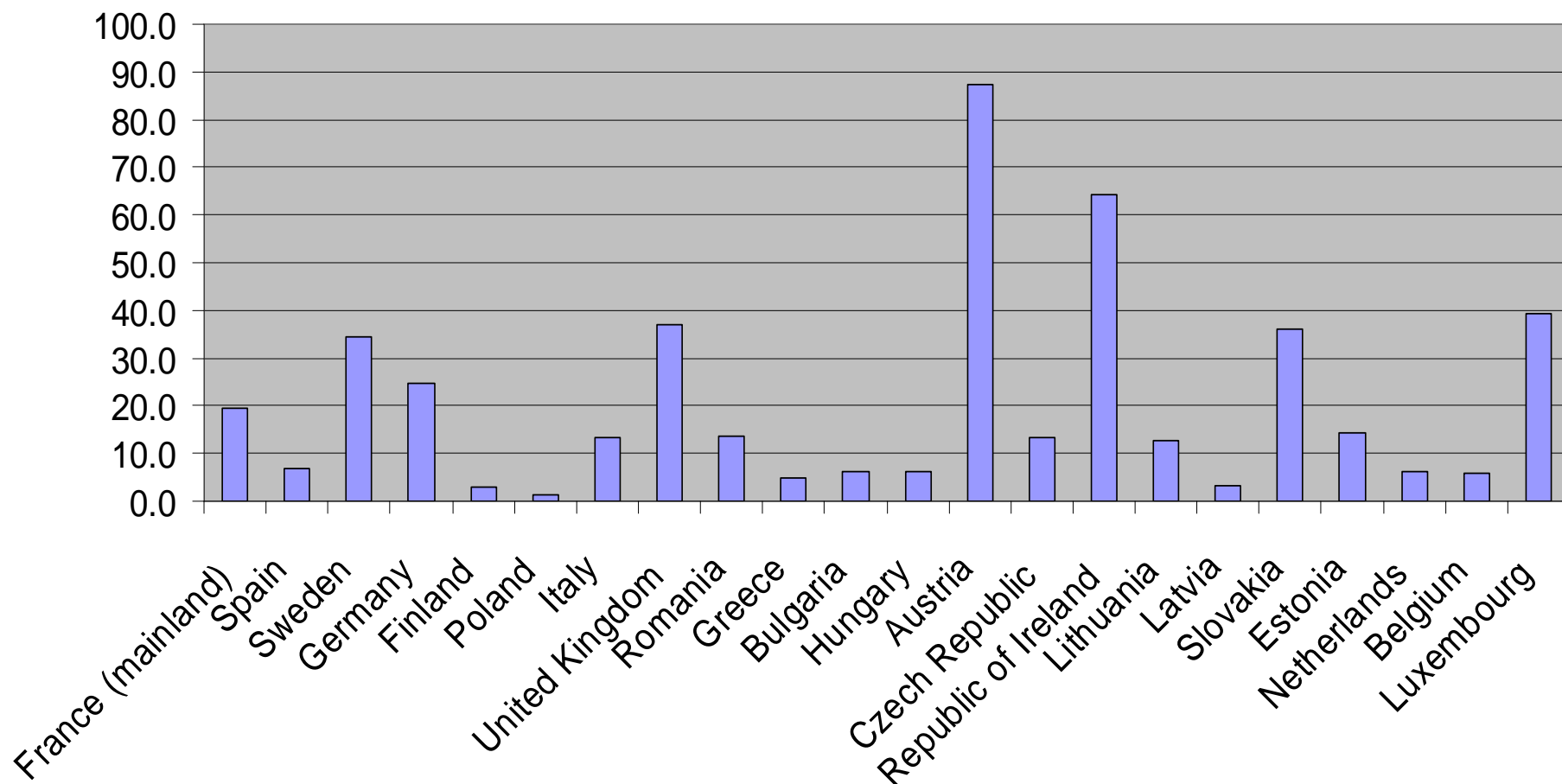
Data from Water Information System for Europe

Achievement of water body objectives by RBMP cycle – Scotland.

Objectives	2015	2021	2027
High	431	431	431
Good	1741	1975	2691
Moderate	605	496	75
Poor	297	203	25
Bad	159	123	11
Total	3233	3233	3233
% good or better	67	74	97

EU Member States: Density of WBs per 1000km²

Range: 1.4 – 87.3



Ecological status v. improvement measures (the message)

Tier 10	Tier 9	Tier 8	Tier 7
OVERALL CLASSIFICATION BAD	Overall chemistry Pass	Priority Substances Pass	Parameter 1 Pass Parameter 2 Pass Parameter 3 Pass etc..
	Overall ecology BAD	Physico-Chemical High	Temperature High Soluble reactive Phosphorus High pH High Dissolved oxygen High
			Hydromorphology Status Hydrology High Morphology High
		Biological Status BAD	Phytobenthos High Macrophytes Good Macroinvertebrates BAD Fish barrier assessment High Alien species assessment High
			Specific Pollution Parameter 1 High Parameter 2 High Parameter 3 High etc..

Reporting GES progress:
1.0% or 250 km?

Summary Points

- Local scale interventions have little impact on overall classification

Cairngorm National Park

Ecological Status due to Fish Barriers

River Water Bodies - Overall Classification

- Pre-HMNS test overall status - High
- Pre-HMNS test overall status - Good
- Pre-HMNS test overall status - Moderate
- Pre-HMNS test overall status - Poor
- Pre-HMNS test overall status - Bad
- Unclassified

- Artificial
- Heavily Modified

Loch Water Bodies - Overall Classification

- Pre-HMNS test overall status - High
- Pre-HMNS test overall status - Good
- Pre-HMNS test overall status - Moderate
- Pre-HMNS test overall status - Poor
- Pre-HMNS test overall status - Bad

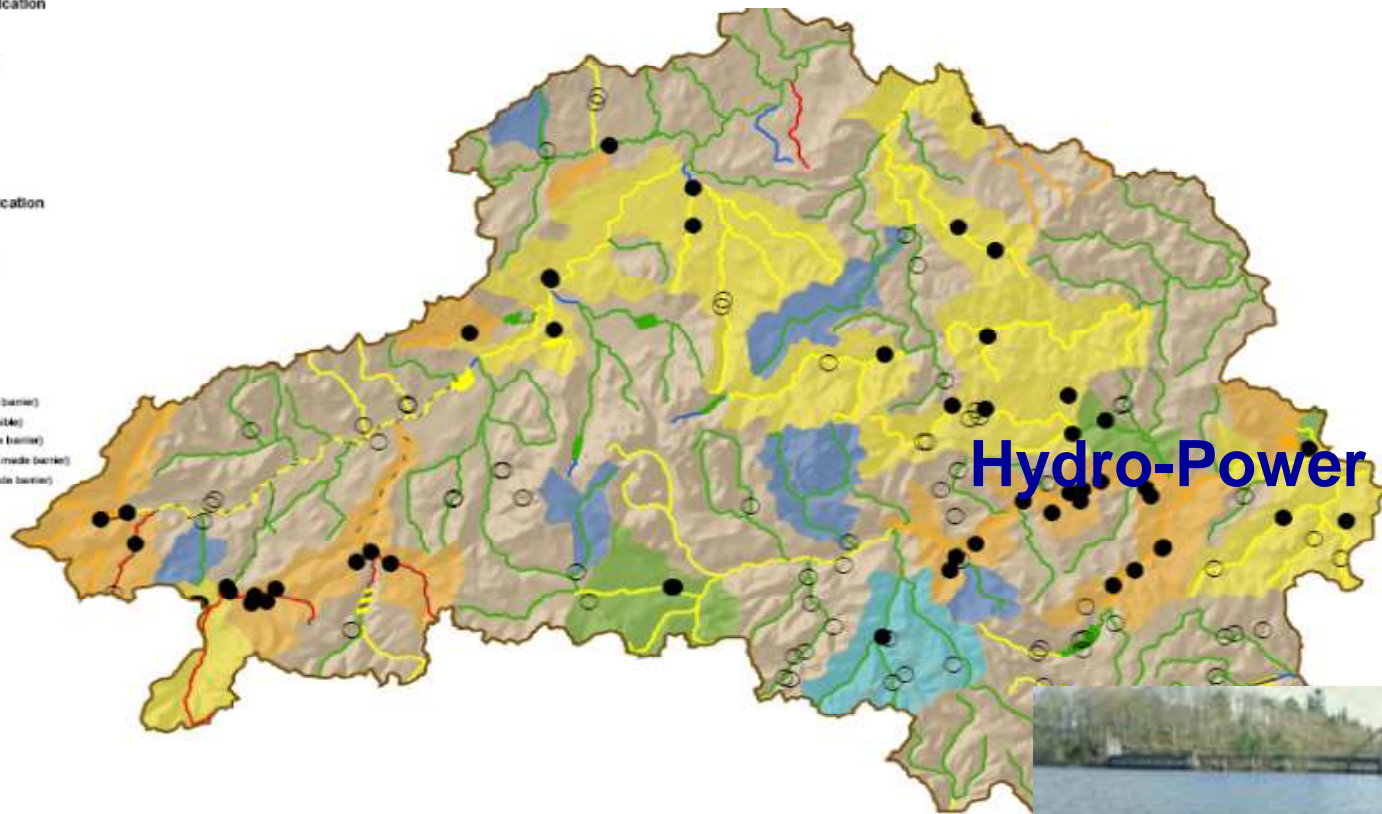
- Artificial
- Heavily Modified

Fish Barrier Classification 2008

- High (< 1% inaccessible due to man made barrier)
- High - excluded (>= 95% naturally inaccessible)
- Good (< 5% inaccessible due to man made barrier)
- Moderate (< 20% inaccessible due to man made barrier)
- Poor (>= 20% inaccessible due to man made barrier)

Obstacles to Fish Migration

- Impossible - Natural
- Impossible - Constructed



Hydro-Power Dams



Cairngorm National Park
Water Body Status / Fish Barrier Classification

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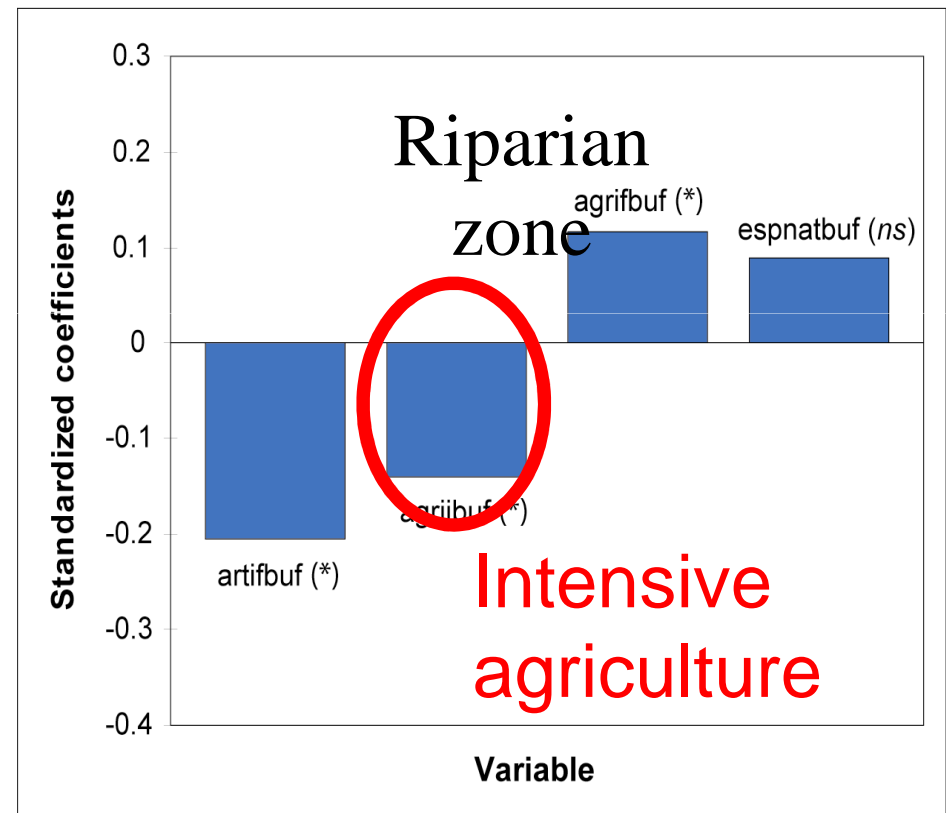
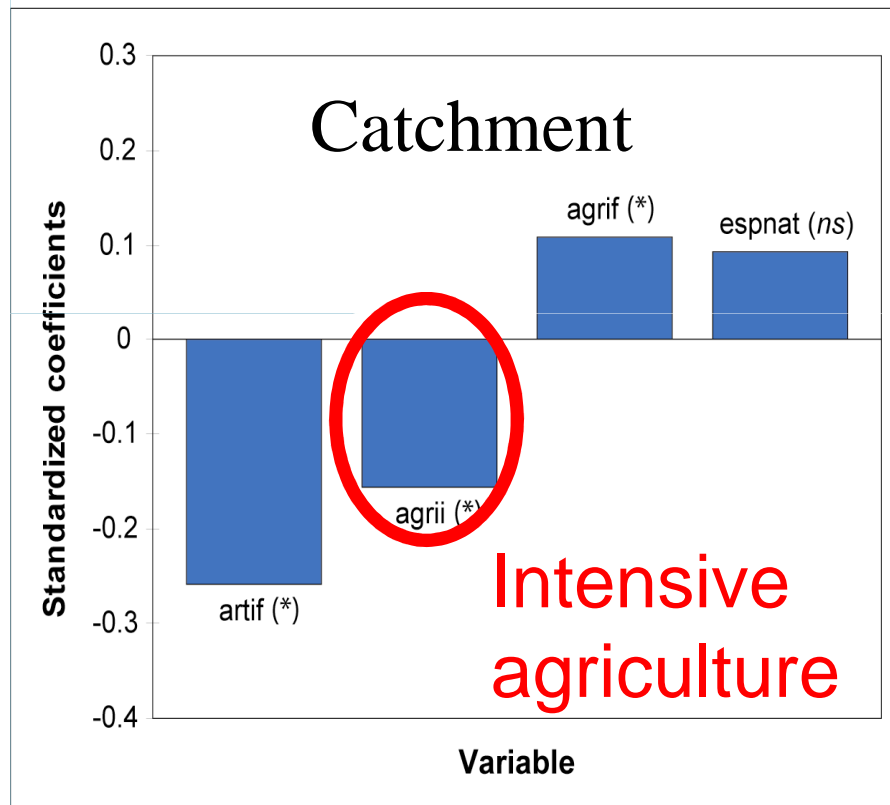
Management at Water Body Scale



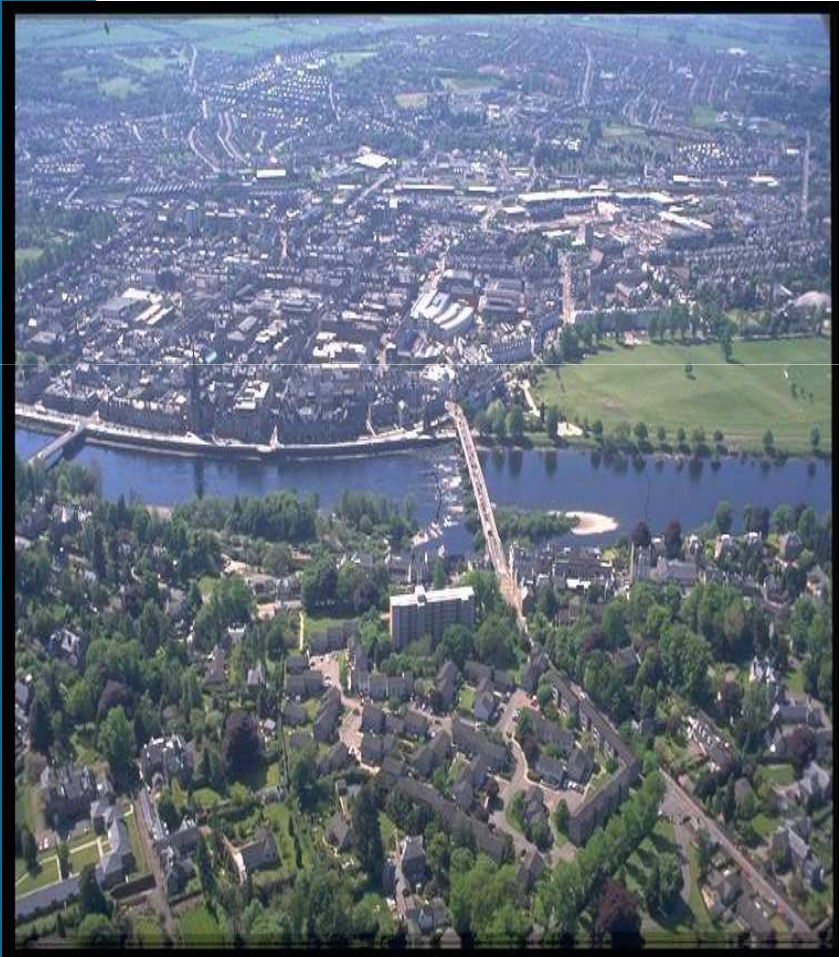
Summary Points

- Catchment scale measures - riparian buffer zones?

Influence of catchment and riparian land-use on in-stream ecological quality

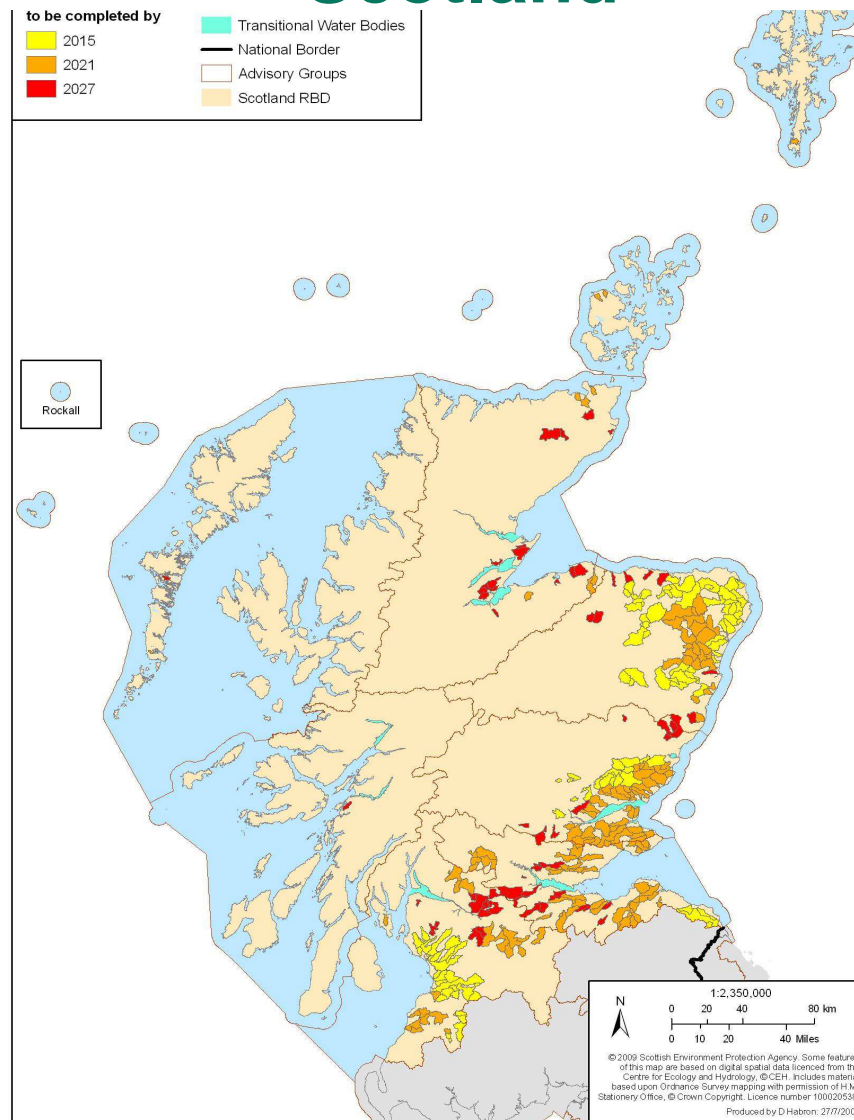


Management of the riparian corridor to achieve WFD objectives



- More achievable than entire catchments?
- More cost-effective?
- More practical restoration?
- Multiple benefits?

Diffuse pollution priority catchments in Scotland



2015

2021

2027

Regulatory approach to agricultural diffuse pollution in Scotland

Mandatory General Binding Rules

Mind the Gap Minimum legal working distances from watercourses

Within 2m of watercourse

2_m

- No application of inorganic fertiliser
- No cultivation (2m from top of bank)

Within 5m of a watercourse

5_m

- Prevent significant poaching

Within 5m of spring, well or borehole*

5_m

- No fertiliser application
- No cultivation
- No livestock

Within 10m of a watercourse

10_m

- No slurry or manure application
- No storage of fertilisers (including temporary field middens)
- No livestock feeders

Within 50m of a spring, well or borehole*

50_m

- No storage of fertilisers (including temporary field middens)
- No slurry or manure application

* refers to any spring which supplies water for human consumption or any well or borehole that is not capped to prevent water ingress

In the event of a pollution incident,
contact the SEPA Pollution Helpline on **0800 80 70 60**

For more information on diffuse pollution and how
you can reduce risks and benefit the farm business,
see www.farmingandwaterscotland.org



Funded by the Scottish Government as part of its Pollution Prevention Advisory Activity.



Diffuse Pollution Priority Catchments – success factors

- GBRs – regulatory underpinning
- Engagement – catchment walking
- Liaison with agricultural bodies (eg NFUS)
- Re-visits (79% uptake)
- Linkage to funding of measures (CAP; WEF)

Effectiveness of riparian corridors for WFD

- Good climate change adaptation measure!
- Measures ahead of scientific evidence?
- Likely to be a slow process unless whole catchment targeted in each RBMP cycle
- Funding of extensive measures – CAP
- Funding for morphological restoration – WEF
- Retro-fitting to urban water bodies

Summary Points

- Measuring the ecological success of restoration is often difficult – especially for physical modifications ✓
- Progress towards 2027 objectives by EU countries is slow and maybe unachievable? ✓
- Local scale interventions have little impact on overall classification? ✓
- Catchment scale measures are required and suggests riparian buffer zones as being most achievable ✓