

River Dee: conservation measures for the freshwater pearl mussel

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La rivière Dee: mesures de conservation pour la moule perlière

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- 1. A journey down the River Dee**
- 2. Dee Catchment Partnership**
- 3. Dee 'Pearls in Peril' project**
 - riparian tree planting



- 1. Un voyage sur la rivière Dee**
- 2. Dee Catchment Partnership**
- 3. Le projet de la rivière Dee 'Perles en Péril'**
 - La plantation d'arbres riverains



1. A journey down the River Dee

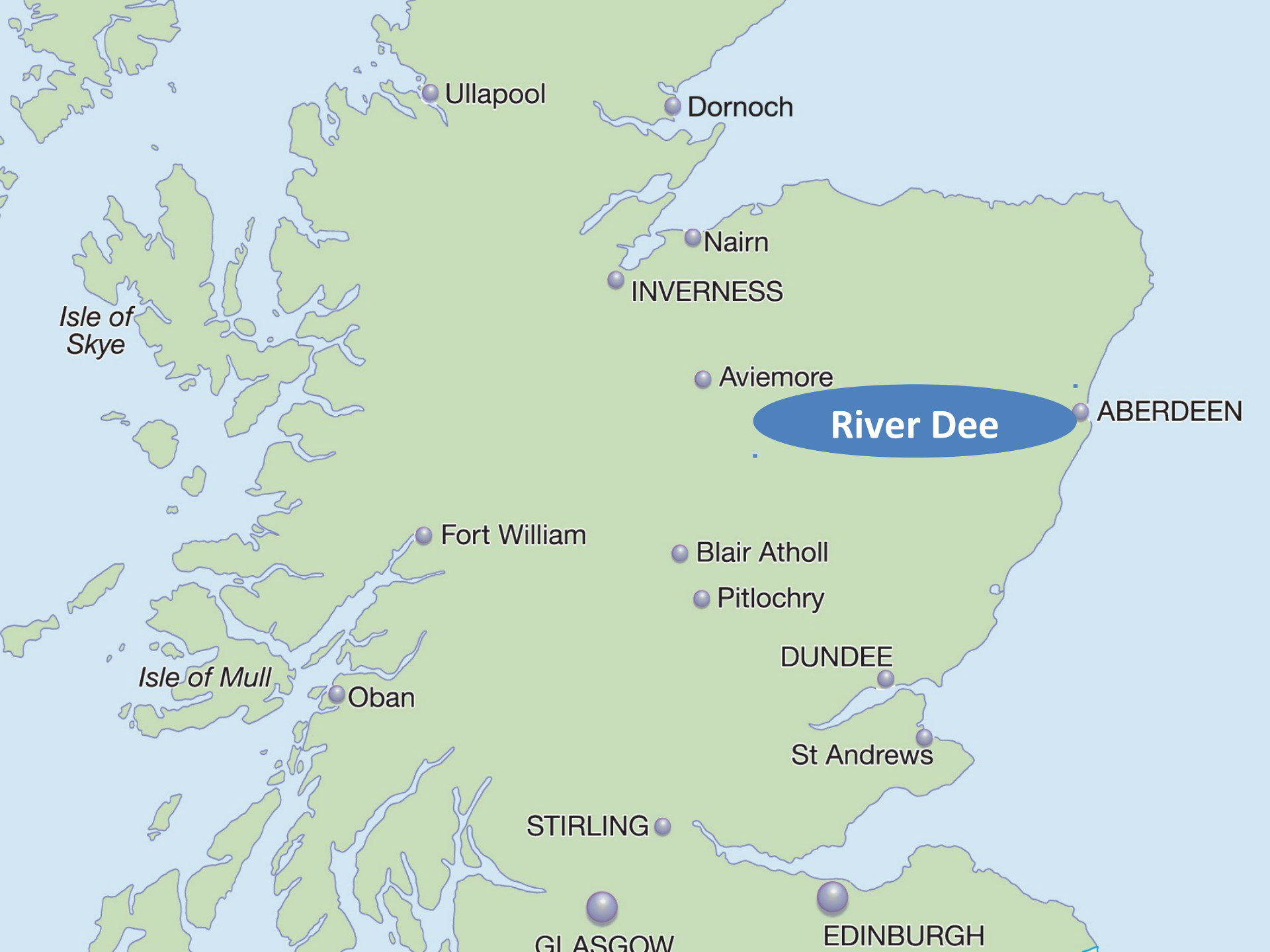
Un voyage sur la rivière Dee



UK freshwater pearl mussel population

- Serious declines.
- Functional populations are mainly in Scotland (~50).
- Highlands and large rivers.





Ullapool

Dornoch

Nairn

INVERNESS

Aviemore

River Dees

ABERDEEN

Fort William

Blair Atholl

Pitlochry

DUNDEE

St Andrews

STIRLING

GLASGOW

EDINBURGH

Isle of Skye

Isle of Mull

Oban



Moorland
La lande



Forestry
La silviculture



Farming
L'agriculture



Water supply
L'approvisionnement en eau



Harbour
Le port



Leisure
Le loisir



Fishing
La pêche



Wildlife
La faune



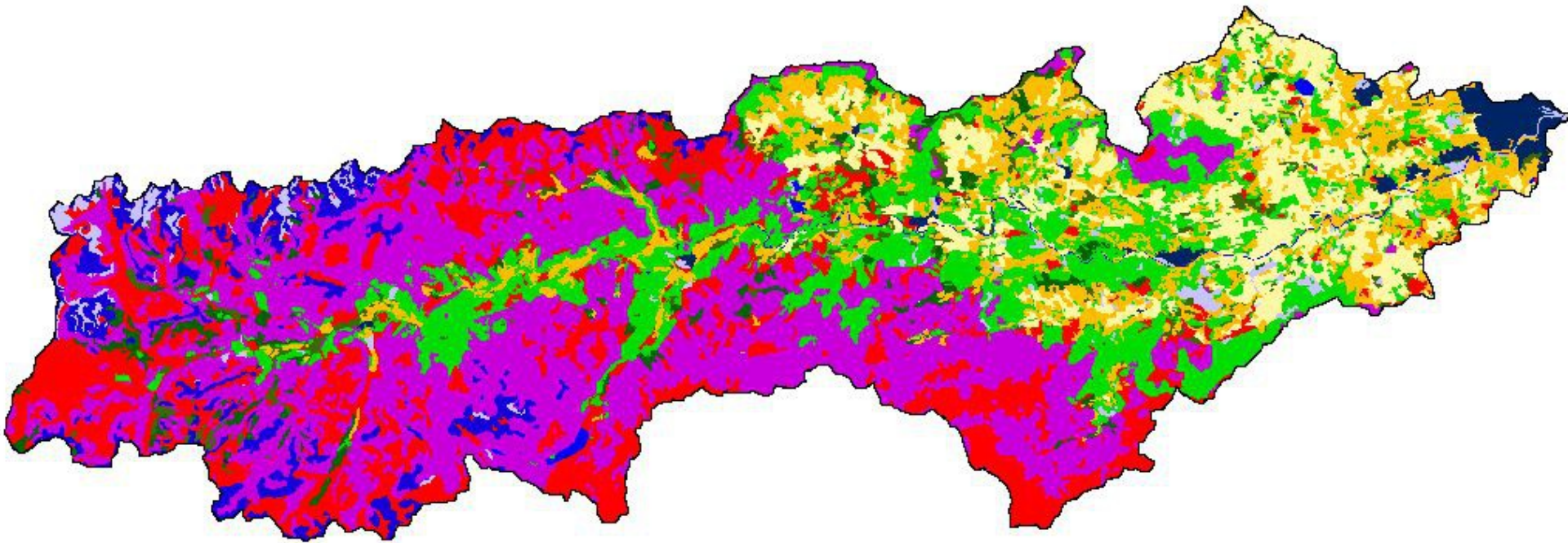
Effluent
Le effluent



Housing
Le logement

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Land cover



0 10 20 Kilometers



Purple - heather moor

Green - woodland/forest

Yellow - improved Grass

Beige- arable



UPPER DEE

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Braeriach (1309m) : la source

140km, 17 principaux affluents, 2100km²









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No. 92 at Banchory Station.







LOWER DEE

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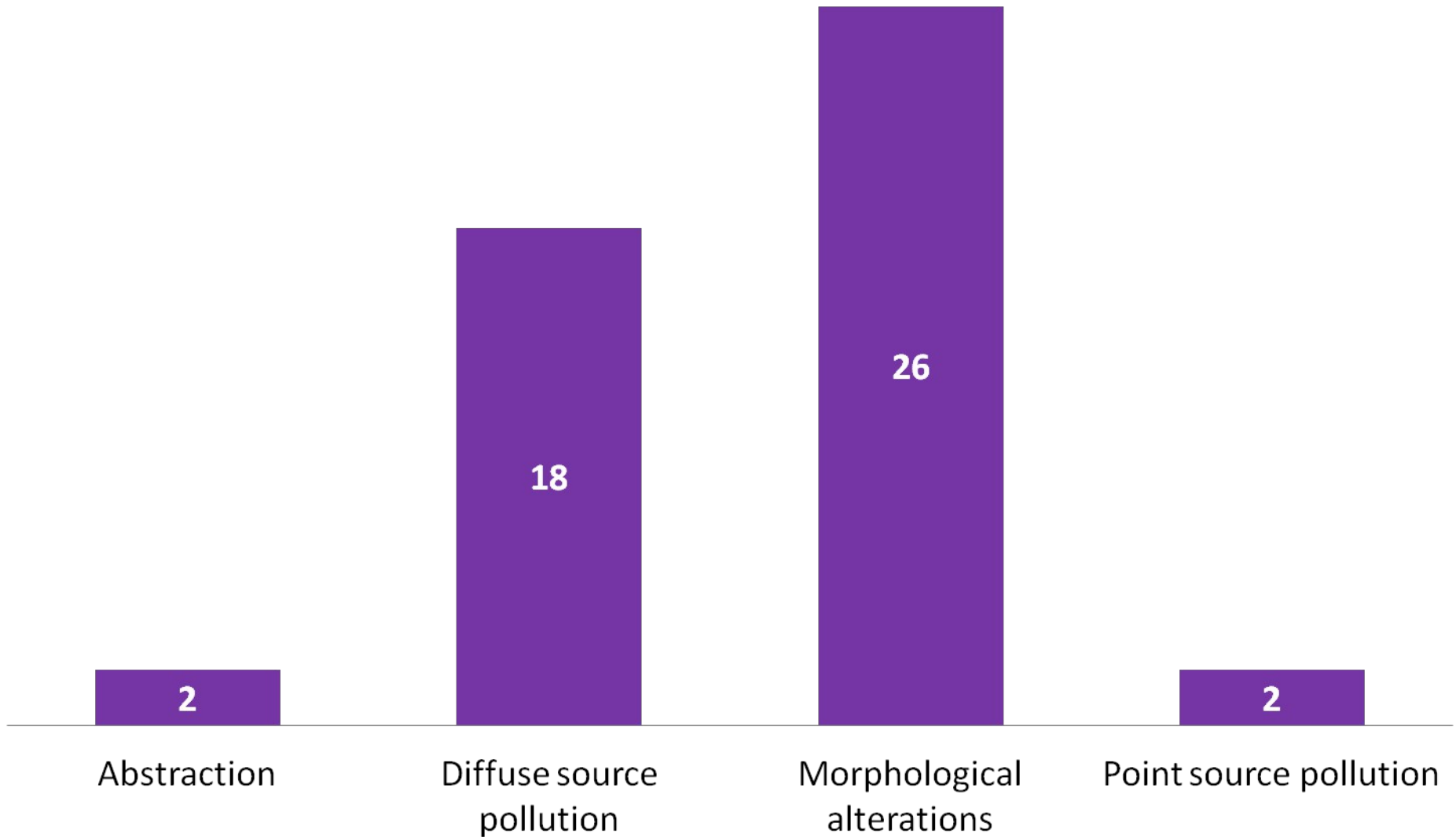






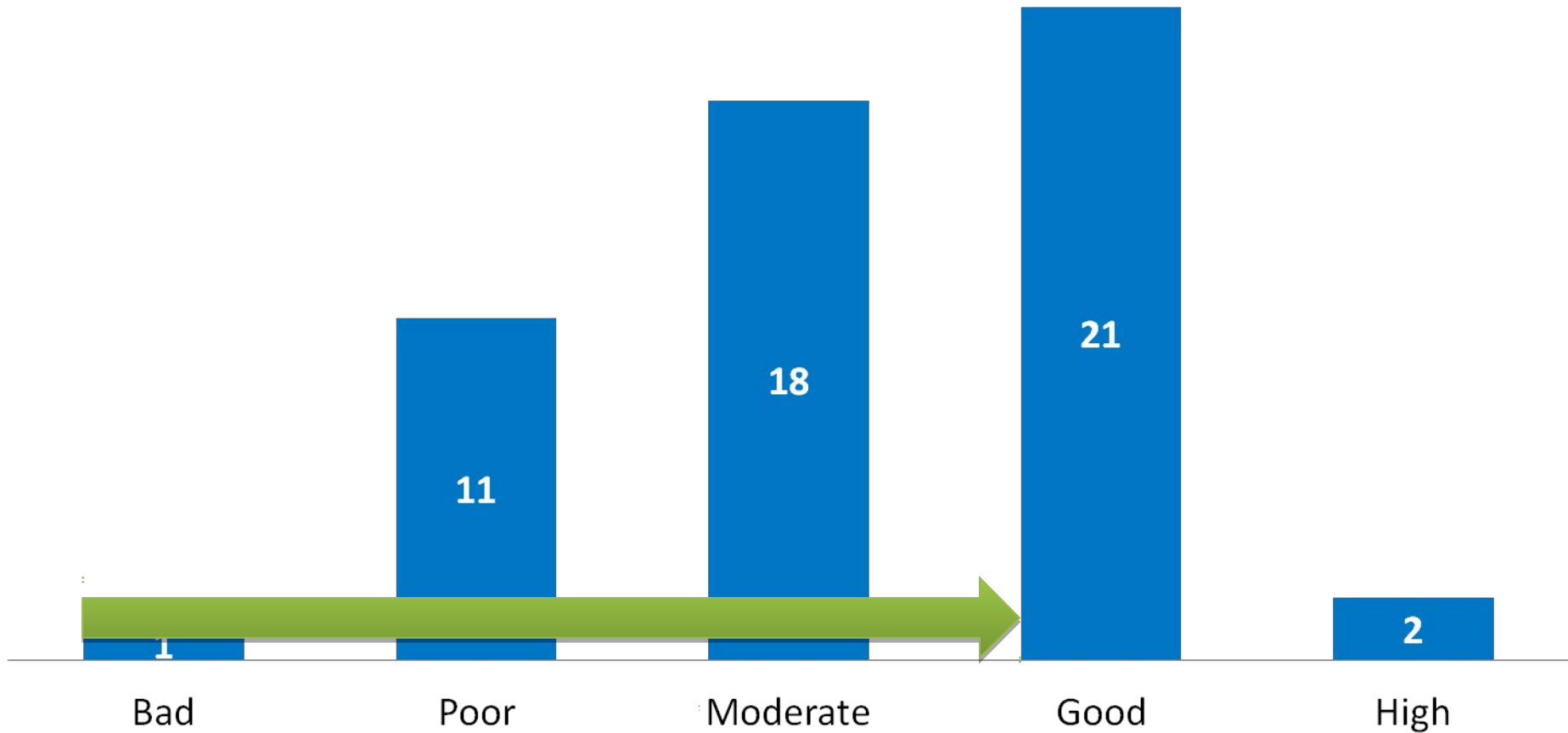
Number of times pressure counted

SEPA data



WFD status of Dee waterbodies

SEPA data

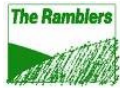


2. Dee Catchment Partnership

Le partenariat versant Dee



NORTH EAST SCOTLAND
 BIODIVERSITY

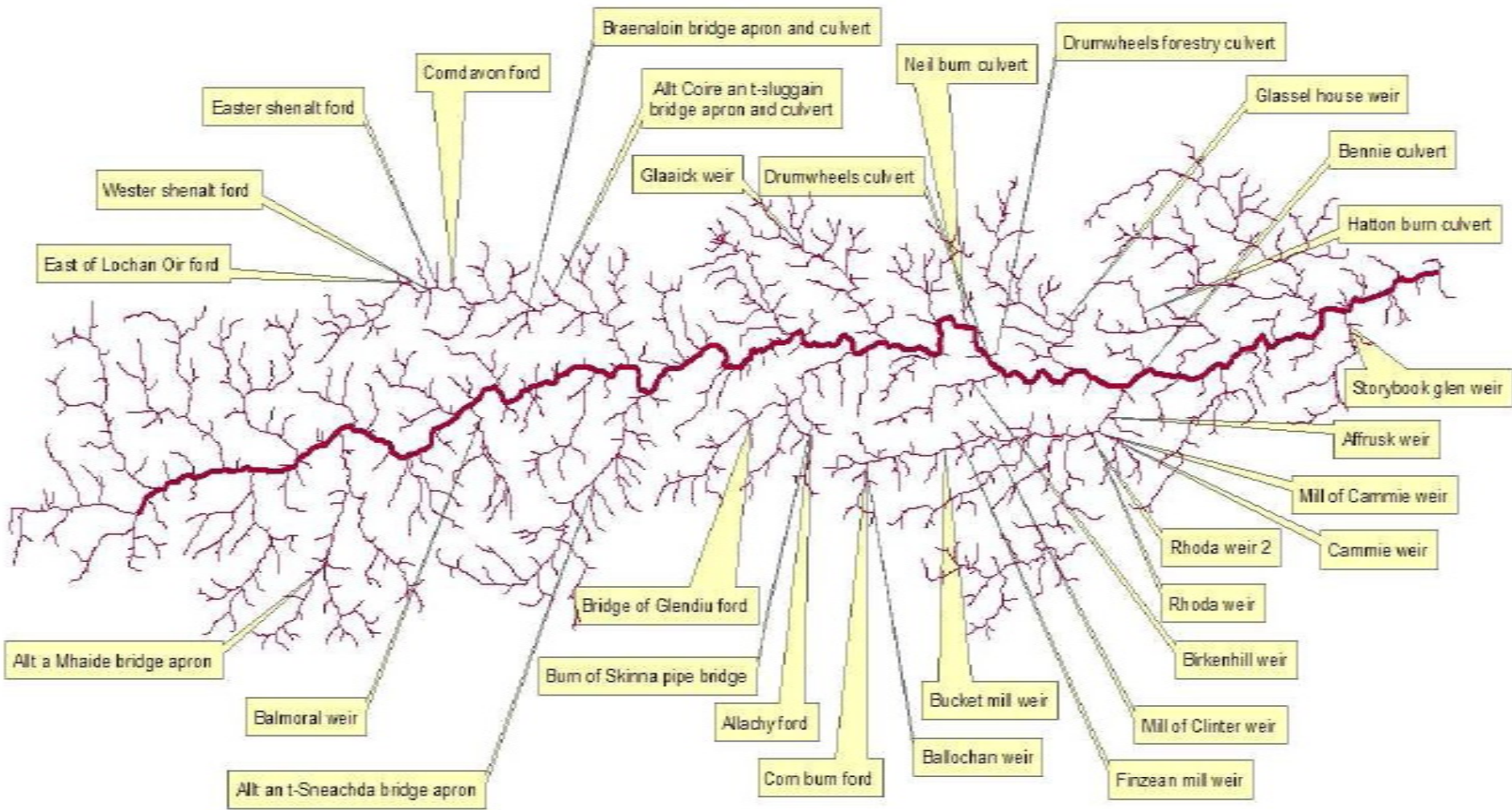


Reducing diffuse pollution





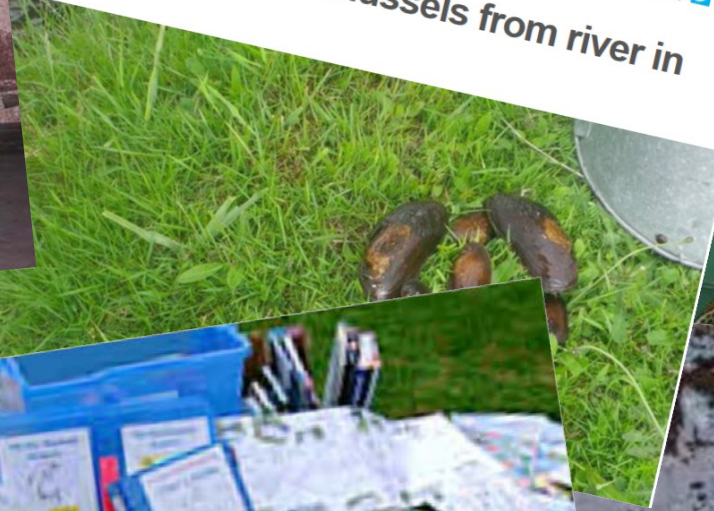
Barriers to migrating fish



Meander reconnection



Education and awareness



3. River Dee 'Pearls in Peril' project

Le projet de la rivière Dee
'Perles en Péril'





1.3 million mussels

Low densities, $< 1\text{m}^{-2}$

Low abundance

Little recruitment

Unfavourable, no change

PiP overview

- 1. Tree planting (70 km)**
- 2. Buffer strips (40 km)**
- 3. Remove engineered structures (8)**
- 4. School visits (120)**
- 5. River Watcher**



Riparian tree planting

La plantation d'arbres riverains



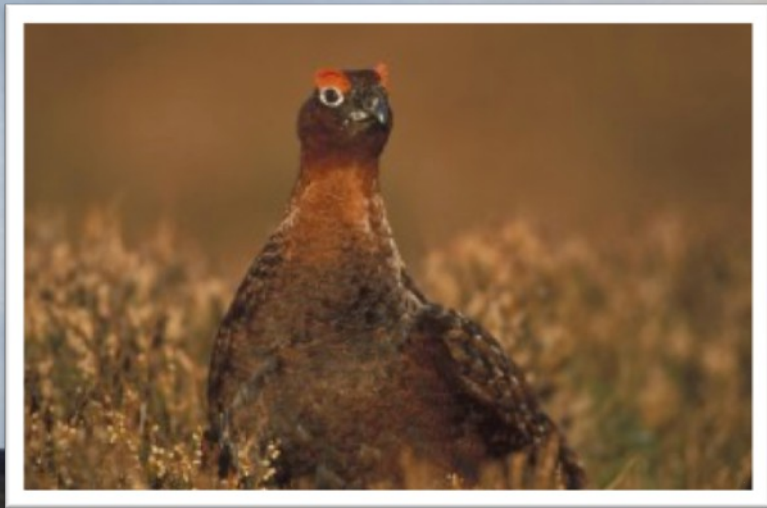


Deer grazing





Sheep grazing



Muir burn

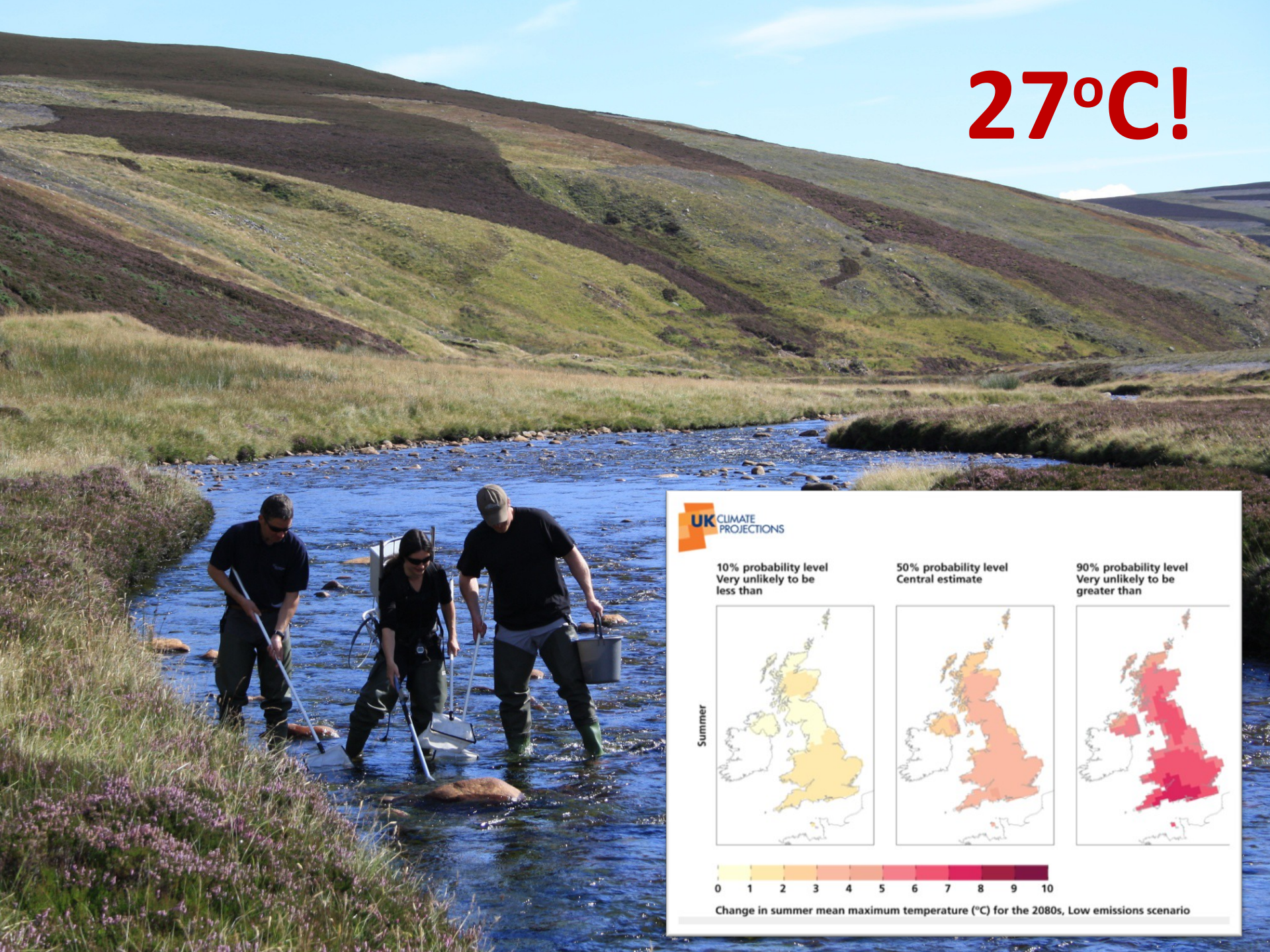


Where are the trees?

Wide and shallow channel
Bank erosion
Degraded habitat



27°C!



UK CLIMATE PROJECTIONS

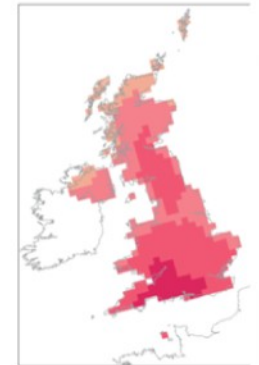
10% probability level
Very unlikely to be less than



50% probability level
Central estimate



90% probability level
Very unlikely to be greater than



Summer



Change in summer mean maximum temperature (°C) for the 2080s, Low emissions scenario

- Reduce water temperatures
- Stabilise banks
- Improve riparian habitat
- Improve aquatic habitat
- Restore river processes
- Add organic matter



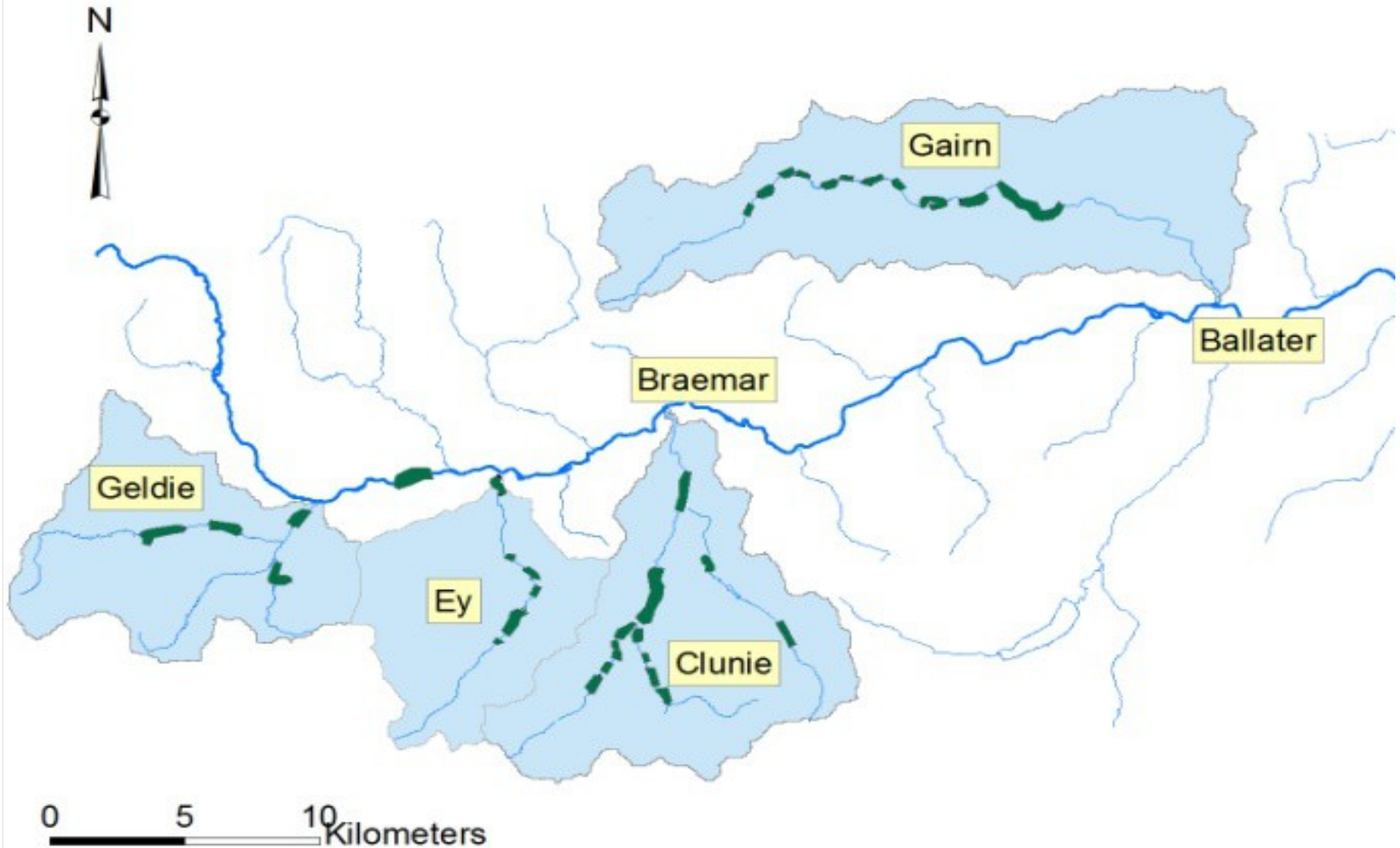
Changing the landscape



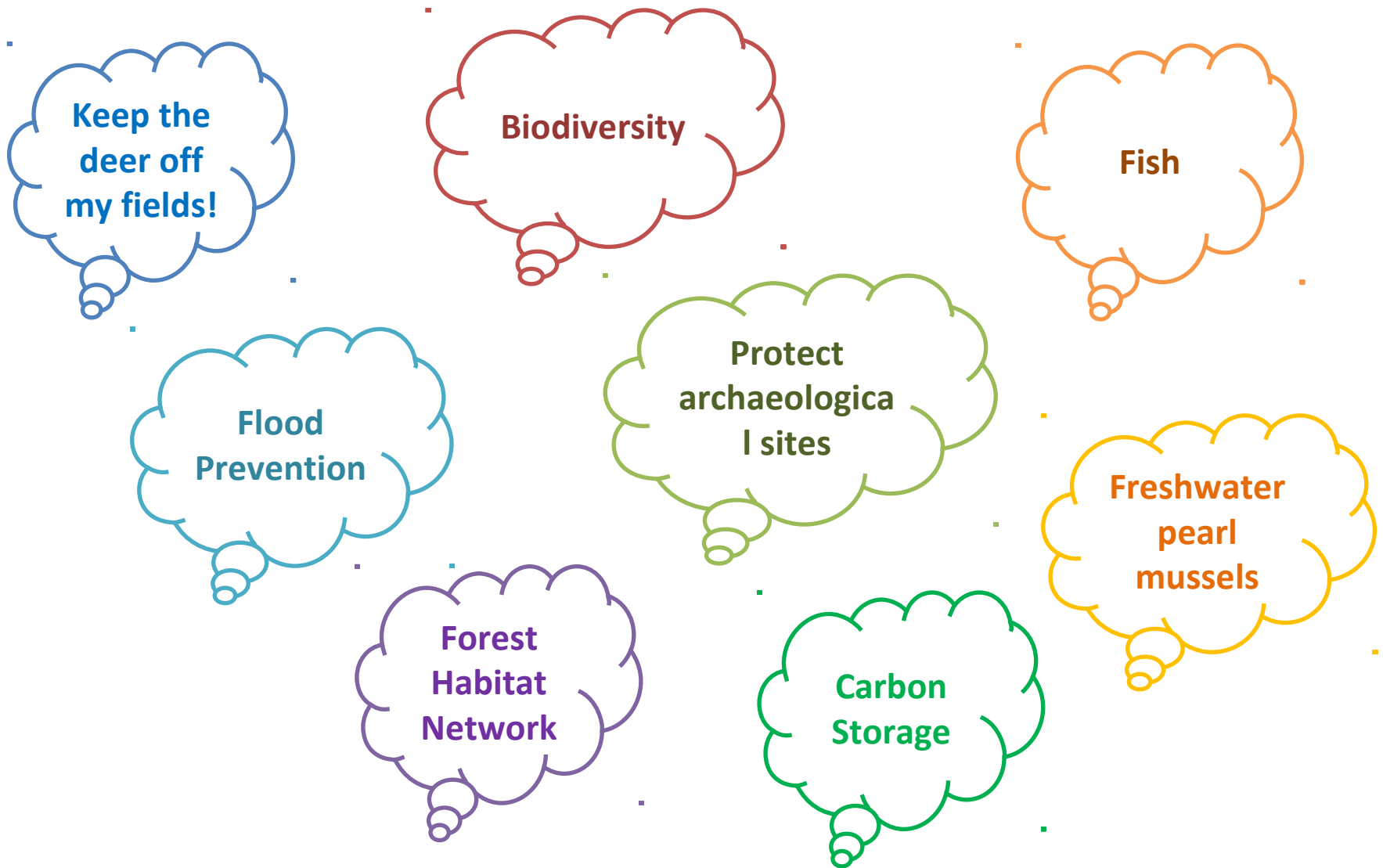


**Aim: plant 40-50% of
the riparian zone**

70 km of improved riparian habitat: tree planting, fencing, infrastructure







We had to involve all stakeholders to achieve agreement

Les cerfs!

Biodiversité!

Saumon!

Les inondations!

L'archiologie!

Les moulettes!

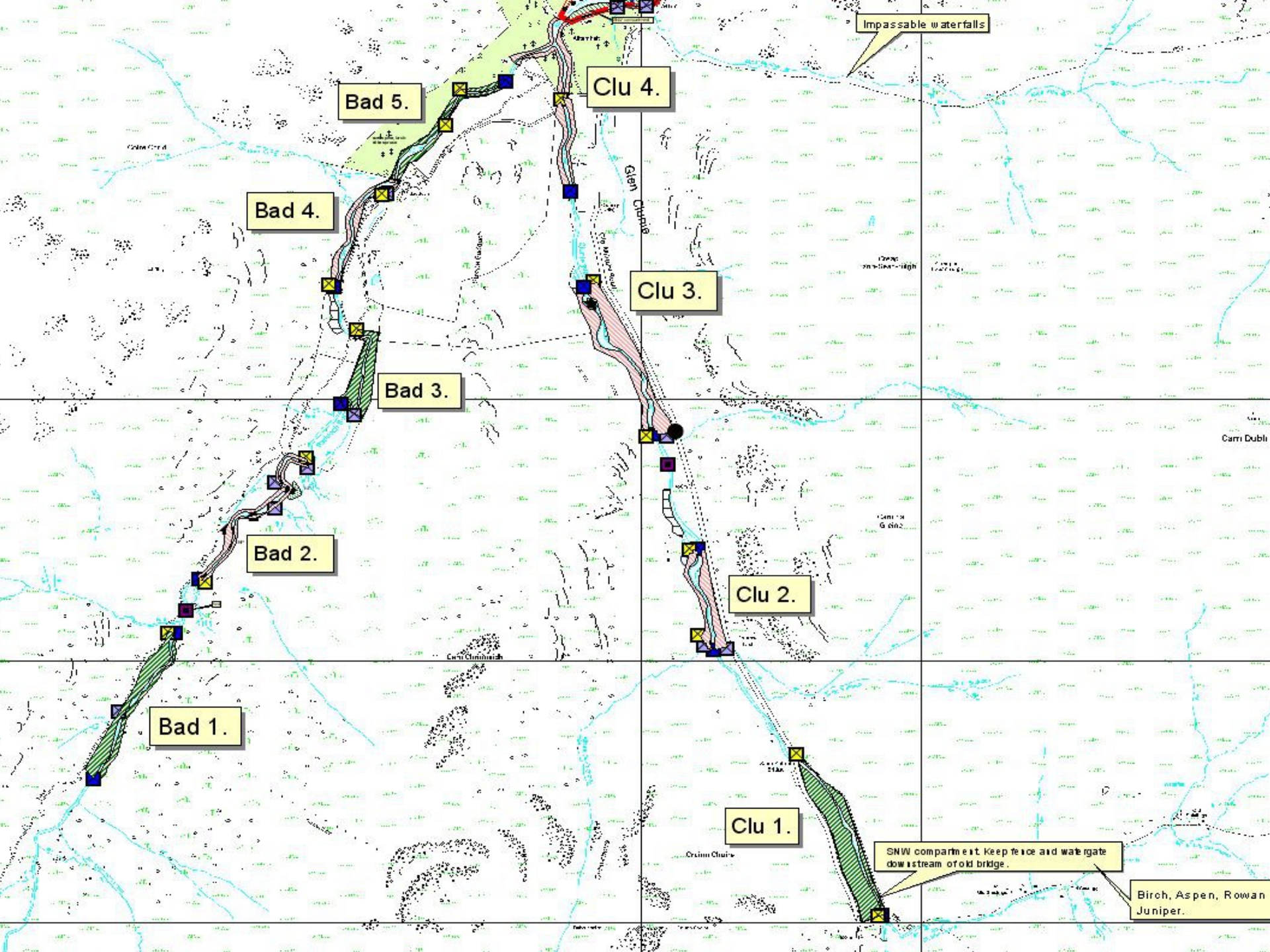
Les forets!

Carbon!

Beaucoup de points de vue differents

- Close liaison with land managers
- Recognise requirements
 - avoid certain areas for planting
 - build appropriate infrastructure
 - plant appropriately for landscape
- Use the skills and knowledge available







Collecting the evidence



1. Is vegetation structure improving and shade created?

Riparian vegetation growth monitoring using hemispheric photography.

2. Is the water being cooled by shade from trees?

Continuous temperature recording using 38 data loggers.

3. Is this helping the fish?

Electrofishing at 38 sites.

PiP: Reducing diffuse pollution



PiP: Removing engineered structures



Before



After





theriverdee.org

[@DeeCatchment](#)

pearlsinperil.org.uk

[@MoTheMussel](#)



**SCOTTISH
NATURAL
HERITAGE**



Forestry Commission
Scotland



Scottish Environment
Protection Agency



RIVERS & FISHERIES TRUSTS OF SCOTLAND
Safeguarding Scotland's Rivers & Lochs



CAIRNGORMS
NATIONAL PARK AUTHORITY

marine scotland
science

