

Realising a Vision?:
Extensive forest experiments for
climate change research

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Learning from other initiatives: exemplars for discussion

- **INRA ORPHEE [part of TreeDivNet]**

ORPHEE

HOME

Experimental design

Research ▾

People

Job opportunities



ORPHEE IS A LARGE SCALE, LONG TERM TREE DIVERSITY EXPERIMENT

Large scale

because we planted 25 600 trees over 12ha.

Long term

well, it started in 2008 and we hope that we will maintain it for a couple of decades.

Tree diversity experiment

this is what this blog is about. Have a tour and learn more.

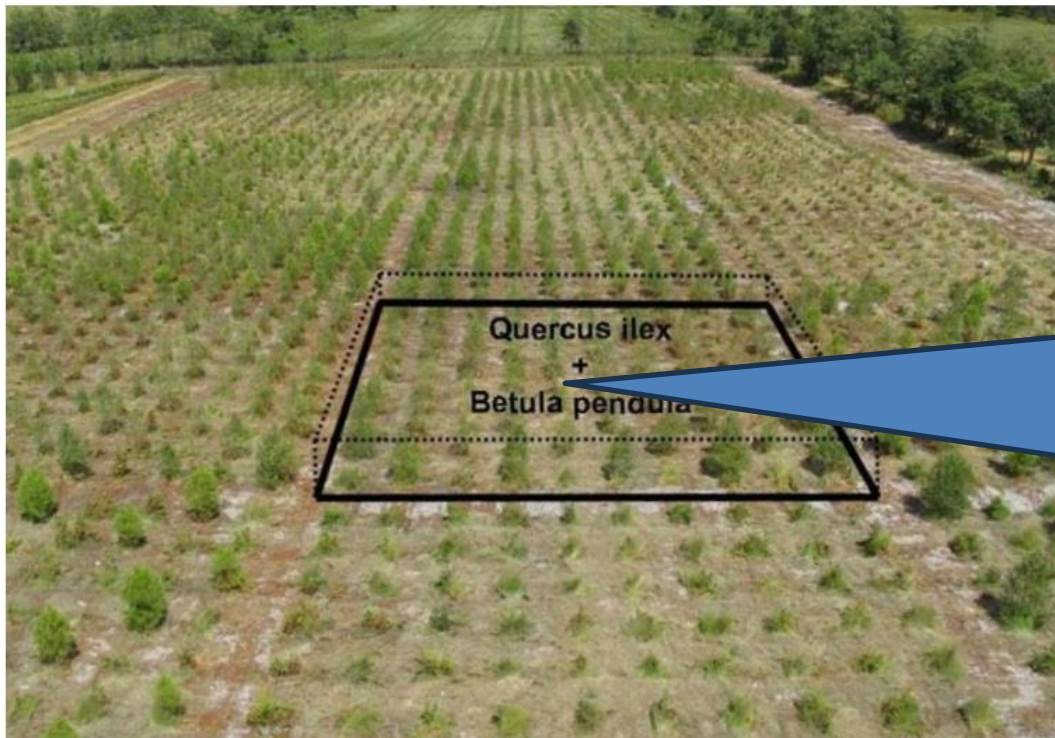
We are part of the international tree diversity experiment network

[TreeDivNet](#)



Learning from other initiatives: exemplars for discussion

- INRA ORPHEE [part of TreeDivNet]



Tree species mixtures
for resilience and risk
adaptation

Learning from other initiatives: exemplars for discussion

- **BangorDIVERSE [part of TreeDivNet]**

BangorDIVERSE (UK)

BangorDIVERSE, established in March 2004, is a forest diversity experimental infrastructure at the [Henfaes Research Centre](#) of Bangor University. The experiment aims to explore the relationship between tree diversity and forest ecological functioning and sustainability. The planted species represent a range of taxonomic, physiological and ecological types and were selected because of their contrasting shade tolerance and successional chronology.



Satellite view of the BangorDIVERSE experiment



Learning from other initiatives: exemplars for discussion

- **FR BACSTOP**



Wound inoculating oak trees with bacterial suspension

This research explored the combination of factors that leads to AOD

We studied disease development in trees weakened by environmental stress. Rain-exclusion shelters were constructed to mimic drought conditions and trees inoculated with beetle eggs and bacteria. Tree responses were monitored as the larvae hatched.

To determine if the beetles transmit the bacteria, they were fed oak leaves coated with bacteria. Beetles were then washed and dissected to find out if the bacteria survived.

To find out if the larvae affected the bacteria, larval chemicals were extracted by suspending beetle larvae in methanol. These chemicals were then added to bacterial growth media and the effects on growth and bacterial gene activity analysed.

Interviews, questionnaires and training days were used to find out people's attitudes to oak trees and options for the management of AOD.

Learning from other initiatives: exemplars for discussion

- **EU REINFFORCE**



Learning from other initiatives: exemplars for discussion

- **REINFFORCE 'SATELLITE SITE' (GLENTRESS)**



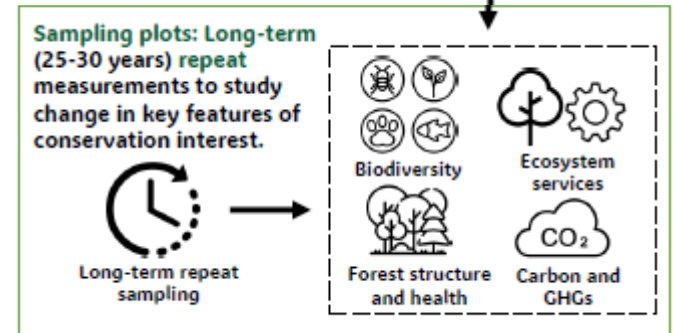
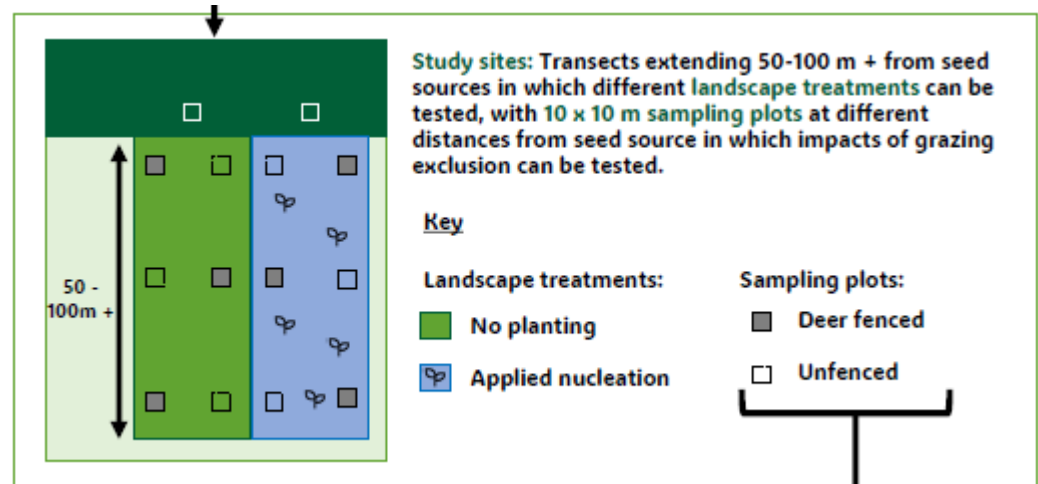
Learning from other initiatives: exemplars for discussion

- REINFFORCE 'SATELLITE SITE' (GLENTRESS)



Long-term experiments: natural colonisation

- Monitor natural colonisation & nature recovery though time
- Test factors influencing natural colonisation including effects of distance from seed sources, low density planting/applied nucleation, herbivory, former land use (improved grassland, arable) in factorial experiment
- Monitor the impact of natural colonisation on e.g. biodiversity, carbon and benefits to existing trees/woodland



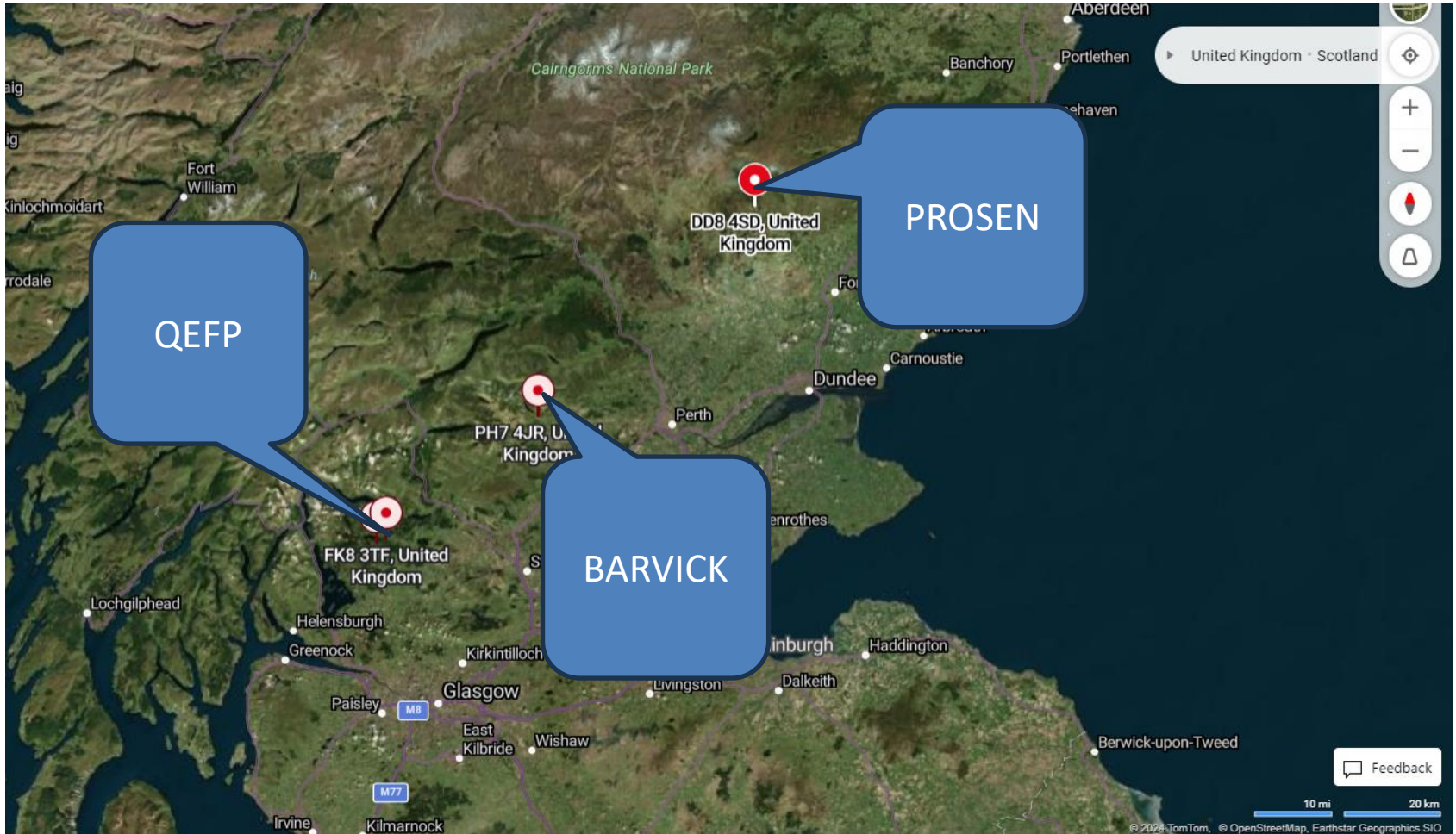
Learning from other initiatives: exemplars for discussion

- **FR trial**



**Hybrid Aspen
SRF Management**

POTENTIAL SITE SYNERGES



Learning from other initiatives: exemplars for discussion

- **TreeDivNet: outcomes (2024)**

Future research could focus on

- (i) filling the knowledge gaps related to underlying processes of tree diversity effects to better design plantation schemes,
- (ii) identifying optimal species mixtures, and
- (iii) developing practical approaches to make experimental mixed plantings more management oriented.