

Spring

2013

Duress Gazette

The headlines!

The leaf-litter decomposition mega-experiment survived one of the most eventful ever winters! All samples are now safely in the lab, but our super-resilient team is already nostalgic for snowstorms, floods, stuck vehicles...

All the water-quality monitoring kit was installed and commissioned in readiness for the experiments through stunning work by Lancaster over Christmas and above the call of duty. Meanwhile, the Cardiff-Imperial folk braved not one but TWO centennial floods within a few weeks to load the experimental streams with a mammoth 12 tons of oak leaves. Quite literally the weight of a mammoth...

In January, Havard Prosser and Tim Pagella led a hugely insightful workshop on potential future land use scenarios for upland Wales.

On May 1st, we're delighted to be welcoming world-renowned biogeochemical modeller Prof. Jack Cosby as the Senior CEH scientist for Duress.



Imperial and Cardiff teams adding leaf litter (Photo Marian Pye).

What's the forecast...?

- Havard and Tim's scenario development workshop on January 14th brought together 22 experts and stakeholders to support WP1 by envisioning possible storylines for upland Wales's future over the next 50 years.
- Preliminary results – involving permutations of market vs regulatory economies under changing climate – were presented at the BESS launch held in London on the 25th March and can be viewed on the Duress website at nerc-duress.org. Further details of the workshops outputs will shortly be posted.

Designed by experiment...

- Water-quality stations are now fully functional, recording data every 10 minutes from our 6 experimental streams in Brianne and Plynlimon.
- Supplementary samples are also being collected by Tim (Lancaster), Kat (CEH) and Hugh (Cardiff) to calibrate the stations and to capture other important chemical variations that are beyond remote sensing
- Flumes (4), weather stations (2) and raingauges (3) are running smoothly and recording key variables such as temperature, rainfall, discharge at the Brianne & Plynlimon sites.
- The leaf litter input and decomposition is now complete after an incredible effort by the field team (Cardiff, Lancaster, Imperial), adding over a ton of leaf litter to each of our 8 sites (4 moorland catchments and 4 conifer catchments) under freezing conditions. Despite two centennial floods late December and mid January, the experimental units stayed in place while the 600 artificial leaf packs (a.k.a our onion bags filled with leaves) withstood the deluge.

When it rains...

- On modelling, preliminary discharge analysis from the flumes in Brianne and Plynlimon is very promising: the first continuous time-transfer function models relating rainfall to discharge show high simulation efficiency ($r^2 = 0.93$) without being over-parameterised (YIC = - 7.3). In other words, we can model runoff from rainfall very effectively.
- This has positive consequences on our ability to hindcast water quality and water quantity dynamics over the 30 years historical period of Duress, but also on our ability to forecast water quality and quantity dynamics under changing climate and land-use.

Scales, feathers and all things small...

- We're now processing data from over 50 sites across Wales from last summer and autumn to assess the relationship between fish ecosystem services and river biodiversity. More than 800 fish were identified, weighed and sized and the salmonid data are now quality assured ready to be transferred to the Duress data store.
- Meanwhile, work is already underway in April 2013 to census river bird distribution at Welsh locations last surveyed in 1984 and 1995.
- The food web team have identified and sized over 18000 diatom samples, also processing 1500 stable isotopic samples: more massive effort.
- Molecular analysis of epilithon samples from the 50 upland streams is now complete. Five significant clusters suggest that epilithic bacterial communities are patterned spatially, and preliminary maps were presented at the BESS launch (the power point presentation is available on our web site). We're now probing the possible processes responsible.
- More detailed DNA sequence based assessment of bacterial and archaeal diversity and abundance is also in progress and showing exciting results.

Talking the talk...

- Duress now has almost 600 followers on [#Twitter](#) and there have been 5000 visits to the website. Our video looks set to reach 1000 views, and is currently at over 930. New videos are on their way – so check the website or follow us [@Duress_HQ](#)
- We now have a sister website for the Llyn Brianne Stream Observatory – including historic videos from John Stoner and Ron Edwards from the 1980s. Check it out at [llynbrianne-lter.org](#)
- We are about to launch a blog/profile page, and Jenny will be contacting team members (researchers and stakeholders) for brief interviews.
- Duress continues to attract interest and invitations, for example being debated at the Cardiff Philosophy Café in March, discussed in NERC 'Planet Earth' in January and figuring strongly in 30 minute 'Science Cafe' for BBC Radio Wales.
- There have given presentations on Duress to the Linnean Society, NowPas, Diversitas and the Welsh Government, and we've convened a symposium at the international IALE Europe congress on Manchester
- Thanks to Nick Chappell and the support of NERC's Data center, EIDC, the Duress data store is now ready to harbour all the quality assured Duress data. Data managers for each research unit have been set, the data Management Plan is available on our website.

And our big hugs to...

Anne-Laure Sauvadet (Cardiff) and family on the birth of their beautiful daughter, Ellie, on the 17th December.

Jon Grey (QMUL) and family who – on Jon's own words - 'landed an 8lb 4oz 'Greyling' on Jan 1st and decided she was a keeper!' (In case you're wondering, the 'Greyling' is a beautiful girl named Natalie Megan).