

## Peatland development, hydrological setting, and restoration management of the Anglesey fens

Supervisors: [Professor Andy Baird](#) & [Dr Ian Lawson](#)

Recent advances have been made in understanding the development of bogs, in particular through the use of models such as the Holocene Peat Model (HPM; Frohling et al., 2010) and DigiBog (Baird et al., 2011; Morris et al., 2011). Despite these advances, little is known about the development of fen peats generally, but particularly those in calcareous basins. Fens are important carbon stores and are often sites of very high conservation value, and better understanding of the factors that control their development and rates of peat accumulation will prove invaluable to ecosystem managers. This PhD project will address this lack of knowledge and understanding by investigating a number of fens on Anglesey. Key project questions include:

- (i) What factors are involved in the initiation of peat accumulation in calcareous basins?;
- (ii) How does the balance between rainfall and ground-water seepage affect plant assemblages and rates of peat accumulation in calcareous fens?
- (iii) How do various management practices, in particular those that affect ground-water supply and successional processes (mowing), affect fen plant assemblages and peat accumulation?

These and other questions will be answered using a combined palaeoecological and ecohydrological approach. Study sites will include those that are part of the EU LIFE project on the Anglesey Fens. As well as using the peat archive to reconstruct past environmental changes at the study sites, this project will involve manipulative experiments to investigate how restoration measures affect plant assemblages and water supply. Some modelling work on water-supply mechanisms to the study sites will also be undertaken. The project will be submitted to NERC as a CASE award, with the **Countryside Council for Wales (CCW)** and the **EU LIFE project** the CASE partners. Dr Peter Jones (CCW) will act as the CASE supervisor, with the supervisory team at the University of Leeds including Dr Ian Lawson and Professor Andy Baird.

### Funding

Funding can be applied for through one of the School's 3 NERC quota studentships <http://www.geog.leeds.ac.uk/study/phd/funding/nerc.html>. These studentships provide 3 years fees and an annual tax free maintenance stipend of £13,590 (subject to satisfactory progress). These awards are open to UK citizens or students having a "relevant connection with the UK" as outlined in the NERC student handbook <http://www.nerc.ac.uk/funding/application/studentships/>. EU students who have been resident in the UK for at least 3 years may also be eligible for a full award (ie. fees

and maintenance). UK/ EU students may also be able to apply for a University Research Scholarship <http://www.geog.leeds.ac.uk/study/phd/funding.html>.

### **Eligibility and Application Procedures**

Applications are invited from candidates holding a minimum 2(i) degree in Geography or a related discipline. A Masters degree/relevant work experience would also be advantageous. Applicants should complete an application for Research Degree Study to the School of Geography and supply the additional supporting documents as outlined on our website <http://www.geog.leeds.ac.uk/study/phd/apply.html> . Please indicate under “Finance” which sources of funding you wish to be considered for. There are no additional application forms for NERC funding however a separate application for University Research Scholarship funding should be made by 25<sup>th</sup> March 2011.

### **References**

Baird AJ, Morris PJ, Belyea LR 2011 in press. The DigiBog peatland development model 1: Rationale, conceptual model, and hydrological basis. *Ecohydrology*.  
Morris PJ, Baird AJ, Belyea LR 2011 in press. The DigiBog peatland development model 2: Ecohydrological simulations in 2-D. *Ecohydrology*.  
Frolking S, Roulet NT, Tuittila E, Bubier JL, Quillet A, Talbot J, Richard PJH 2010. A new model of Holocene peatland net primary production, decomposition, water balance, and peat accumulation. *Earth System Dynamics* 1: 1-21, doi:10.5194/esd-1-1-2010.