## Section A: Project details:

Technical Progress Report No.: 4  
Reporting Period: **1 Jan 2007 - 30 June 2007**  
Project Reference Number: **2044-CD-P1-M2**  
Project Title: **BOGLAND: A Protocol for Sustainable Peatland Management**  
Start Date: **May 2005**  
Projected Completion Date: **Dec 2008**  
Lead Organisation: **University College Dublin**  
Project Co-ordinator: **Prof. Jim Curry**  
Project website: [www.ucd.ie/bogland](http://www.ucd.ie/bogland)

## Section B: Research team details for the reporting period

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Section C: Technical Report

1. General outline description of progress and results to date

- During the reported period, the project was promoted through publications, presentations at conferences, workshops and the maintenance and extension of the website (over 2000 hits in June 2007).
- A third ‘sampling season’ was carried out within the ‘Biodiversity’ sub-project work-packages. A large quantity of terrestrial and aquatic invertebrates has been sampled and is being identified.
- Sampling was also on-going in different work-packages belonging to the ‘Physical peat resource’ sub-project. This included field work focusing on sampling depth in the Wicklow Mountains to acquire data to inform peat depth and carbon model. Sampling in Co. Limerick was also carried out for the development of apparatus to study the deformation of peat during shearing.
- In the ‘Cultural, socio-economic and policy issues’ sub-project, survey questionnaires have been prepared and piloted and are ready for distribution. A policy document has also been drafted.
- Progress over the third six months of the study has been good and was in line with the overall time frame.

2. Detailed description of progress and results for period under review

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<th>Sub-project 1: Management</th>
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<tr>
<td>Leaders: Jim Curry and Florence Renou-Wilson</td>
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A series of seminars was organised by the project manager in order to assess progress within each sub-project (see website for details [www.ucd.ie/bogland/news.html](http://www.ucd.ie/bogland/news.html)). This was done in order to prepare a mid-term report to be given to the members of the steering committee in advance of the next meeting in September 2007. A document containing powerpoint presentation together with a short explanatory report will be available for viewing under the ‘member only’ website.

The project manager discussed issues revolving around the ‘sustainability’ of peatland management at different fora including a peatland and carbon conference in Wageningen in April 2007, a peatland symposium organised in Manchester in June 2007. The Bogland project also discussed during the annual ESAI field visit which took place at the Teagasc hill sheep farm, Leenaun, on Friday 25 May.

Much time has been spent with regards to financial management due to difficulties with partners and budget issues.

Meetings dealing with individual work packages have been organised in order to facilitate decision-making process for sampling and analysis protocol.

Milestones for next six months

- A third steering committee meeting will be held 6-7 September 2007 in Co. Mayo with visits to local peatlands.
Sub-project 2: Biodiversity  
Leaders: Tom Bolger and Florence Renou-Wilson

WP2.1 Biodiversity database  
Florence Renou-Wilson  
**Main objectives and outputs/deliverables**  
➢ To gather relevant information on all aspects of peatland biodiversity in Ireland  
**Description of progress and results to date**  
Soil peat samples from the 12 biodiversity sites have been analysed for macro and micro-nutrients. This data complement data gathered within other work packages as well as literature. A database has been initiated.

*Milestones for next six months*  
- Database to be up-dated and analysis carried out with information from other work-packages

WP2.2 Vegetation studies  
Catherine Farrell, Florence Renou-Wilson  
**Main objectives and outputs/deliverables:**  
➢ To examine the vegetation on the twelve core sites and integrate the data with existing information in order to identify appropriate vegetation indicators of sustainability  
**Description of progress and results to date**  
The original project proposal outlined that each of the peatland sites chosen under the biodiversity work package would be surveyed using the Braun-Blanquet method, to describe in detail the plant communities of each site.  
Given the vegetation descriptions that have already been published for number of the sites and also time and budget constraints within the BOGLAND project, the vegetative component of the work package will comprise a ‘walkover survey’ of each site by a qualified vegetation scientist to identify the main plant communities present and using aerial photographs, to indicate the extent and distribution of plant communities within each of the twelve sites.  
Using the 1840s series OSI 6 inch maps with recent aerial photography, the sites will also be considered in terms of the past, present and proposed future management. This information, combined with a review of existing literature and datasets will provide the baseline information to put each site within its Irish and international context for the other biodiversity components.

The study will provide the following:  
- A vegetative description of each site: detailing the range of plant communities occurring within the site complex  
- To indicate the distribution and extent of plant communities within each site using aerial photography  
- To place the site vegetation/condition within the context of previous vegetation descriptions from actual sites and similar peatlands in Ireland (literature review and direct comparisons of vegetation descriptions)  
- To provide a comparison between reference (most intact/pristine) areas with degraded areas within each site

*Milestones for next six months*
• Continue visits to sites in order to carry out accurate site description, mapping (vegetation) and assessment of site condition (threats, land uses etc.)

**WP2.3 Soil microbial diversity**
Louise Deering (supervisors: Nick Clipson, Fiona Doohan)

*Main objectives and outputs/deliverables*
- Analysis of methanogen and methanotrophic communities via molecular methods in order to produce a fingerprint of the microbial communities present in Irish peatlands
- Compare and contrast different characteristics of individual peatland types
- Compare and contrast individual microbial populations in peatlands
- PhD thesis and peer-reviewed articles

*Description of progress and results to date:*
Statistical analysis using statistical packages CCA, ANOVA and Genstat are now being carried out on general bacterial samples from year 1. This will allow any significant visual comparisons and contrasts of bacterial communities between peatlands to be seen. In addition the effects and interactions between these communities and environmental and artificial parameters (e.g. depth, water table and anthropogenic activities) on these communities will also be shown.

The ABI sequencer in main science block has been shutdown as a requirement for the last number of weeks but it will be restarted in July. Hence statistical progress regarding general archael communities has been hindered.

Louise attended the following conferences/courses:
- Completed statistics for postgraduates course in addition to sitting an exam at the end of this course in June 2007.
- SBES postgraduate seminar day 10th May 2007.

*Milestones for next six months:*
- Complete all statistical analysis on year 1 samples. Complete DNA extractions from year 2 samples.

**WP2.4 Terrestrial invertebrates**
Rachel Wisdom (supervisor: Tom Bolger)

*Main objectives and outputs/deliverables*
- Study surface dwelling and soil dwelling invertebrates on Irish peatlands
- Compare and contrast different characteristics of individual peatland types
- Quantify and assess the significance of peatlands for the conservation of invertebrate biodiversity and identify possible indicator species that will aid the overall sustainability of peatlands
- PhD thesis and peer-reviewed articles

*Description of progress and results to date*
Since the last progress report in December 2006, a large quantity of fauna has been identified, mainly to species level, the preliminary results have been used to design a new sampling protocol for this year. This new sampling protocol has added additional sites to the original twelve sites. The preliminary results have been used to design a new sampling protocol for this year. It has been decided that this study will be on four taxa, mites (acari), spiders (arachnida), beetles (coleoptera) and enchytraeids. It is already apparent that there is a large diversity of Orabatid mites in the peatland soil samples, the arachnida are widely varied also, the coleopteran found being quite typical for the habitats in question. The new sites to sample...
habitat mosaics were not decided upon until late June, this delayed sampling somewhat and may have a direct effect on the carabid fauna that may caught in the pitfall traps. A preliminary list of these sites is given below; these sites are all located in the Midlands.

- Natural wetland recolonisation (edge of Clongawney)
- Wooded mineral islands in Clongawney
- Newly exposed cutaway bog
- Newly recolonised cutaway (various stages at Clongawney and elsewhere)
- Drained lake and wood on site of Lough Boora
- Dry heath on cutaway bog at Boora or Turraun
- Old turbary (e.g. Killaun bog)
- Uncut bog between Clongawney and Galros
- Newly established on cutaway: Boora
- Older grassland established on cutaway: Boora (Clongawney and other sites)
- Afforested cutaway

This project is progressing well but there is already a very large amount of data gathered and thus identification of all specimens will require many hours in the laboratory.

Rachel attended the following conferences/courses:

- Environ 2007 on the 26th-28th of January in Carlow IT (see website for abstract: www.ucd.ie/bogland/news.html)
- PEF (Postgraduate Ecology Forum) hosted by UCD on March 12th-13th, the PEF included the attendance of a number of workshops, one of which was on climate change the other on the use of Endnote
- UCD postgraduate seminar day on the 10th of May.

**Milestones for next six months**

- Pitfall trapping on the newly selected sites will begin in early July and collected at monthly intervals for a period of three months. The data gathered will be used to identify possible indicator species present in these habitat mosaics. The samples gathered from the two sampling period in 2006 will continue to be analysed with CANOCO, binary discriminate analysis and species indicator analysis.
- Specialised training for the study and identification of enchytraeids is required; this will take place in early September. After this training, enchytraeid sampling of the original twelve sites along with the new sites will be undertaken.

**WP2.5 Bird diversity**
Fintan Bracken and John Whelan

*Main objectives and outputs/deliverables*

- To fill the knowledge gap in regards to the bird communities of the main peatland habitat types in Ireland
- Peer-reviewed paper

*Description of progress and results to date*

The final report is currently being edited by the project manager. A paper has been accepted for publication in ‘Bird Diversity’ and corrections are underway.

**Milestones for next six months**

- Paper published and report completed

**WP2.6 Aquatic invertebrates**
Edel Hannigan (supervisor: Mary Kelly-Quinn)
Main objectives and outputs/deliverables

- Identify the open water habitats that may be present in peatlands
- Describe the macro-invertebrate and micro-crustacean communities of the open water bodies identified
- Examine the relationships between invertebrate community composition and habitat characteristics and identify potential indicator species
- PhD thesis and peer-reviewed papers

Description of progress and results to date

Further sampling was carried out in April 2007. All eight sites have been sampled three times, spring and autumn 2006 and spring 2007. Five sweeps from each pool have been sorted and all sweep samples from spring 2006 have now been sorted. The macroinvertebrates from this period are in the process of being identified to the lowest taxonomic level. To date all macroinvertebrates from two sites, Clara and Owenirragh, have been identified. Dipteran larvae appear to be the most abundant macroinvertebrates present in these sites. The water samples for spring and summer 2006 have been tested for nutrients (nitrate, phosphate and ammonia), alkalinity, conductivity, cations (calcium, magnesium, potassium and sodium), and anions (chloride, nitrate, fluoride and phosphate). To date the results indicate that Scragh bog has higher species richness than the other study sites. This may be related to the fact that it has a near neutral pH, high conductivity and the alkalinity in the range of 105mg CaCO$_3$/L to 162.5mg CaCO$_3$/L. This site also displayed much higher levels of calcium than any of the other sites studied. Both the raised and blanket bogs have a pH of between 4 and 5 as well as low alkalinity (-0.403mg CaCO$_3$/L to 0.079mg CaCO$_3$/L). The conductivity values obtained were slightly higher in the Atlantic blanket bogs (71$s^{-1}$/cm to 137$s^{-1}$/cm) than those collected in the raised bogs (55$s^{-1}$/cm to 76$s^{-1}$/cm). The ionic composition suggests that these bogs are mainly fed by rainwater. Nutrient levels were, as expected, low at all sites.

Edel attended the following conferences/courses:
- Presentation made at the Environ 2007 in Carlow IT in January 2007, based on the chemical characteristics of the water found in the peatlands.
- Attended a beetle identification workshop run by Dr Gareth Foster in Co. Waterford in May 2007.
- Attended the Postgraduate Ecology forum on the 12th and 13th of February in UCD.

Milestones for next six months

- To complete the identification of the specimens collected in spring 2006, while continuously sorting samples from summer 2006. It is envisaged that sorting and identification of the macroinvertebrates from the two sampling seasons in 2006 will be completed by December 2007. All water analyses will also be completed by October 07.

Sub-project 3: The peatland resource

Leaders: Shane Ward and Florence Renou-Wilson

WP3.1 Peatland mapping and WP3.2 Climate change scenario
John Connolly and Nick Holden

Main objectives and outputs/deliverables

- Produce a mapping base of the peatland resource (3-D) including peat depth, carbon content
- Map results from other work packages
Examine the impact of climate change scenarios on the stability of the peatland carbon resource, using medium (< 50 years) and long (>100 years) timescales

Integrate the outputs of the others WPs into climate change scenarios analyses

Identify physical aspects of peatlands that will be susceptible to anthropogenic and climate change over the next 100 years

Description of progress and results to date

The Derived Irish Peat Map has been updated using newer data sources such as CORINE 2000 and Teagasc’s indicative soils map. These methodology used to produce the newer map was the same as that used for the earlier map except that the above data sources replaced CORINE 1990 and the General Soil Map. The new version also includes industrial peatlands. There has been ongoing work on the development of a peat depth model for blanket bogs. Several parameters have been taken into account including: topography, landcover and height. Field work is also ongoing in order to acquire accurate spatially reference depth data. Early in 2007 an opportunity arose within the School of Agriculture, Food Science and Veterinary Medicine to apply for funding for equipment. Prof. Holden and Dr. Connolly successfully applied for funding (~€35,000) for the acquisition of a Skalar Carbon Analyser. This equipment has been ordered and delivery and installation is expected during July. This equipment will allow for the rapid and accurate analysis of carbon content in peat samples. The literature review for this project is ongoing, up until the present emphasis has been on acquiring literature on the methods of sampling the different attributes of peat including depth, carbon content and bulk density. Measurements of bulk density have been collected from the literature in order to inform the peat depth and carbon content model.

Dr Connolly presented at the “Carbon in Peatlands” conference in Wageningen, the Netherlands in April 2007 (see website for abstract: www.ucd.ie/bogland/news.html)

Milestones for next six months

- Initiate a field campaign to collect data, including depth, carbon content and if possible bulk density from several peatland and non-peatland sites located in Raised and blanket bogs.
- Use this data in the ongoing development of the peat depth and carbon content model
- Carbon analyser: Installation, Training and Use.
- Produce first estimates of volume and carbon content of different peat types and different sites.

WP3.3 Use and after-use of peatlands
Sub-task 1: Enda Kennedy (supervisors: Kevin McDonnell and Shane Ward)

Main objectives and outputs/deliverables

- Present a framework for a national bioenergy strategy based on peatlands as the base area for biomass growth
- Energy input versus energy output and the economics of energy crops on cutaway peatlands in Ireland
- Master’s thesis

Description of progress and results to date

Master’s thesis submitted. Final report is being finalised.

Enda gave a presentation at the Environ 2007 in Carlow IT in January 2007, based on the scenarios for use of cutaway peatlands for biomass.

Milestones for next six months

- Submit final report

Sub-task 2: Shane Ryan (supervisors: Kevin McDonnell and Shane Ward)
**Main objectives and outputs/deliverables**
- Document peat industry worldwide and in Ireland
- Environmental impact of peat harvesting and implications of future development
- Master’s thesis

**Description of progress and results to date**

Master’s thesis has been submitted. It includes a report detailing the peat mining industry in Ireland, its outputs and effects. A database was created for fuel peat producing countries. It was found that peat mining has a direct energy ratio of 19:1 and an indirect energy ratio of 7:1. Direct energy inputs covered the energy taken to harvest the crop e.g. Milling, Harrowing, Harvesting and Transport plus the energy used in bog preparations and annual maintenance. The indirect energy inputs covered the energy used in Power Station and machine manufacture. The Environmental Impact of peat mining has been studied it was found that the major environmental impact is the release of carbon through drainage and combustion there are also lesser problems with siltation, dust and noise.

**Milestones for next six months**
- Submit final report

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**WP3.4 Slope stability and slippage**

Noel Boylan (supervisor: Mike Long)

**Main objectives and outputs/deliverables**
- Geotechnical assessment of landslide susceptibility
- Identification and basic characterisation of a number of landslides in Ireland to define parameters for further research.
- Assessment of innovative full flow penetrometers to characterise the humification and strength properties of peat.
- PhD thesis and peer-reviewed papers

**Description of progress and results to date**

In order to work towards the overall objective of this project to be in a position to assess the susceptibility of peat to landsliding, it has been necessary to focus significantly on the fundamental behaviour of peat. Soil models which are typically applied to peat were developed for sands and clays which are quite different to peat. This project will study the fundamental stress strain behaviour in an innovatively designed test apparatus in order to understand the strength properties of peat, how they vary with material changes and understand why some areas are more susceptible to landsliding.

During the period under review, laboratory testing of samples from the Limerick test site has been the main focus. This has consisted of triaxial compression testing and direct simple shear testing using the apparatus developed during this project. Special measures have been adopted to replicate the extremely low stresses which the peat would have been subjected to in situ. The objective of these tests is firstly to subject the peat mass to a mode of deformation close to that of a landslide and record its strength and how it responds to the applied deformation. Secondly, the laboratory results will be correlated to in situ testing (Tbar & Ball penetrometers) to allow these strength parameters to be obtained without the need for laboratory testing.

Noel presented at the 18th European Young Geotechnical Engineering Conference, Ancona – Italy (see website for abstract: [www.ucd.ie/bogland/news.html](http://www.ucd.ie/bogland/news.html)).

**Milestones for next six months**
- Analysis of the testing conducted between January and July 2007 will continue.
Sampling at second test bed site (Loughrea)
Laboratory testing of Loughrea samples
Further comments: full scale field tests would enhance research significantly but this is not possible with the current funding.

WP3.5 Carbon gas fluxes in Irish peatlands
Dr David Wilson

Main objectives and outputs/deliverables
- To provide baseline data of C gas exchange for a range of peatlands through either published sources (where available) and/or field measurements
- To investigate the effect of small-scale peat harvesting on C gas exchange
- To investigate whether restoration of a peatland formerly harvested results in C gas exchange dynamics similar to those of an intact peatland

Description of progress and results to date
Weekly to bi-weekly measurements of C gas fluxes were carried out using the static chamber method between March 2006 and April 2007. The results have been analysed and multiple regression models are currently being constructed to provide annual estimates of the C gas balance at all the study sites.

Milestones for next six months
The regression models will be completed in the next couple of weeks. The completion of a report on the results of Work Package 3.5 will be achieved shortly afterwards.

WP3.6 Sheep grazing
Sub-task 1: Briony Williams, Michael Walsh, Mike Gormally [Teagasc contribution to WP3].

Main objectives and outputs/deliverables
- Monitoring the use of hill and mountain resource by Scottish Blackface hill sheep using satellite geo-referencing and behavioural assessment under free-range grazing

Description of progress and results to date
The review of literature, experimental design and data collection, entry, post-processing and many analyses, have been completed. A draft scientific paper has been written on habitat selection by tracked sheep and will be submitted for publication after minor amendments. Sample results are presented in the corresponding presentation entitled; ‘WP3.6.1 Sustainable management of upland and peatland: sheep ecology’, including habitat selection by sheep fitted with GPS tracking collars. Sheep exhibited habitat selection with wet heath most selected at the second-order selection level, comparing habitats within ewe ranges with those available across the study area. Dry-humid acid grassland was most selected at the third-order selection level, comparing habitats available within ewe ranges with those used at location. Ewe range sizes of 34 ranges tracked seasonally between 2004 and 2006 were calculated using two range estimator methods. Minimum-area convex polygons (MCP) have been widely used and may be most appropriate with few locations but typically include large areas unvisited by animals with larger numbers of locations. Concave polygon analysis using the outlier exclusion distance as the edge restriction fits the data more closely, which is more suitable in this instance. The minimum number of locations post a 3-d settling period after release from the yard was applied to all. Range sizes were between 1.6 and 100.6 ha with a median of 13.0 ha for MCPs and between 0.9 and 4.9 ha with a median of 3.1 ha for concave polygons. This is representative of approximately three days but is surprisingly low compared with the 216.9 ha accessible to sheep.
Flock and focal area observations are yet to be analysed but preliminary analyses suggest that sheep distribution was clearly uneven. Sheep densities ranged between 0.0 and 8.91 ewe/ha over 50 flock observation transects when the annual average stocking rate was 0.75 ewe/ha.

Bryony attended the following conferences/workshops:

Bryony attended the following courses:
- Using PC-ORD for Multivariate Data Analysis: 2-day training course, National University of Ireland, Galway. May 2007.

Milestones for next six months:
- Completion of PhD study and submission of scientific papers. Range size, etc. results will constitute the second paper and the third paper will present findings from flock and focal area observations of sheep locations and behaviour. The thesis will be papers-based.

Sub-task 2: A.N.Other, Michael Walsh, Rogier Schulte and Tamara Hochstrasser

Main objectives and outputs/deliverables
- Mechanism underlying preferential grazing areas and development of sustainable grazing management strategies

Description of progress and results to date
Interviews were held on 11 May 2007 when a Walsh Fellowship was offered to one of the applicants but it was declined. Sampling has been initiated by a training student based in Teagasc. Sampling will be carried out by Teagasc technician and analysis by Michael Walsh and Tamara Hochstrasser. The literature review will be carried out by a research assistant.

Milestones for next six months
- Carry out sampling, analyses of forage and literature review.

Subtask 3: Ger Lynch, Michael Walsh, Rogier Schulte and Richard Moles

Main objectives and outputs/deliverables
- Physical and ecological impact of preferential grazing areas

Description of progress and results to date
An extensive review of the relevant literature on the processes that cause soil erosion and the best practices available to quantify micro soil erosion, nutrient content of the soil and to measure the nutrient content of the runoff has been undertaken. This review focused on methods available to measure micro soil erosion. This review is ongoing and will be incorporated into the literature review of the thesis.

Three Farms with different intensities of grazing but similar environmental conditions, lightly / ungrazed - in Connemara National Park, Moderately grazed - Teagasc Hill Sheep Farm at Leenaun, intensively grazed site on the commonage farm adjacent to the Leenaun farm.
Sampling area selection where selected for use in this project. Within these farms four different sheep activities to be studied were identified. These are PGA – Preferential grazing area, RA – Rest area, MC – Movement corridor and ALA – Area of low activity.

In the Teagasc hill sheep farm, Leenaun: 6 sampling areas for each of the 4 categories – PGA, RA, MC and ALA were selected. The selection was random based on cumulative sheep flock observations and stratified by upper steep and lower gentle slope (3 areas in each) using available databases. In the adjoining Commonage and Connemara National Park: the areas were selected based on occurrence of categories on line transects that contain both slope categories.

The methods that will be used to quantify the micro erosion status of the hill soils and to measure the nutrient content of runoff and the soil have been selected and have been installed in Leenaun:

Gerlach troughs – nutrient content of the runoff
Splash cups – soil detachability of the soil
Erosion pins- surface lowering of the soil
Micro pin profiler – soil surface deformation
Soil runoff – runoff trays
Plant frequency – point quadrat

Installation in the Commonage and National Park is proceeding.

Results to date: All the sites have had the soil tested for P, K, Mg and pH for winter and spring readings. Winter results have been analysed using SAS PROC MEANS and GLM. The spring samples are being analysed. Base line measurements have been taken from all the erosion pins in Leenaun. Base line measurements have also been taken of the lower slope movement corridors using the Micro pin profiler in Leenaun.

Water samples have been collected from all the Gerlach Troughs in Leenaun and have been sent for analysis pH, P, K, Mg and suspended solids. Soil samples have been collected from the splash cups and are awaiting analysis to ascertain the soil detachability.

-Ger Lynch attended a 5-day COFORD conference and workshop in July that was held in NUIG on the erosive process that occur in soils and the different methods used to quantify them.

-Ger also presented a poster at the Environ 07 in Carlow and attended the agriculture research forum in Tullamore in March 07.

Milestones for next six months
Complete installation in Commonage and National Park, establish procedure for collection of samples and the taking of readings from the erosion pins.

WP3.7 Study of peatland hydrology in the context
Paul Johnston, Con Cunnane, Shane Regan and Aisling Molloy

Main objectives and outputs/deliverables
- Water balance measurement and calculation for a raised bog in the Shannon basin and integration with the outcomes of other known studies
- Identify key hydrological indicators and mitigation measures to enable ecological regeneration and sustainable development of peatlands
- Develop guidelines for hydrological studies of other peatland areas and guidelines for their future conservation

Description of progress and results to date
Progress from NUIG (Con Cunnane)
The literature review of water balance of bogs is underway. Progress in this has been slow, mainly in the writing up component. Professor Cunnane is now more actively involved in this and it is hoped that an interim report can be issued in the autumn. Fieldwork at Garryduff Bog was delayed due to an injury suffered by a key technician in another field location. In February water level recorders were removed, serviced and re-installed at two locations. Current meter measurements of flows at the two sites were undertaken over a four week period to test the applicability of theoretical formulae for the weir and flumes installed. These tests were reasonably successful but not perfect. Flow measurement devices have to installed at a further site in order to capture all of the pumped outflows from the bog. Electricity usage at the pumping stations is being monitored as a further approximate check on volumes being pumped. Detailed results are not available yet from the above work. It has to be admitted that this project is behind schedule. Ms Aisling Molloy B.Sc. is due to finish work on the project at end of August 2007

Milestones for next six months
Complete the literature review and prepare a draft of the final report.

Sub-project 4: Cultural, socio-economic and policy issues
Leader: Frank Convery

WP 4.1 Analysis of socio-cultural aspects
Marcus Collier, Mark Scott, John Feehan
Main objectives and outputs/deliverables
- Subtask 1: Case study to produce a blueprint for cutaway network
- Subtask 2: Socio-cultural analysis through local and national surveys; stakeholder meetings and focus groups
- Subtask 3: Forum for cutaway peatlands: to address issues facing communities living in peatland areas
- Subtask 4: International workshop
- PhD thesis and peer-reviewed papers

Description of progress and results to date
The focus of this period of study was to complete and analyse data from ethnographic research and focus group research. A secondary questionnaire targeted for specific areas in Longford, Roscommon and Offaly has been designed and is being piloted. Full stakeholder mapping and stakeholder interviewing has been completed. Local stakeholder research is ongoing.

Much of the last six months has involved ongoing data acquisition and analysis as well as developing and piloting two surveys – one nationwide and one localised. Progress on stakeholder analysis has been very slow but is nearing completion. Internal assessment of progress has been extremely favourable and positive.

Marcus attended the following conferences/workshops:
- Presented at the global conference on ecological sustainability (EcoSummit) in Beijing, China in May 2007, where Marcus was the sole Irish representative. A paper has also been submitted for publication. (see website for abstracts: [www.ucd.ie/bogland/news.html](http://www.ucd.ie/bogland/news.html).
- Attended the Peatland symposium – Manchester.
Milestones for the next six months
- Presentations of data at conferences in Amsterdam and Belgrade.
- Meeting with international stakeholders – Canada (BC), US (Arizona) and Australia.
- Paper submission
- Analysing nationwide and local survey data.

WP4.3 Socio-economic aspects
Craig Bullock, Peter Clinch, Frank Convery

Main objectives and outputs/deliverables

- Subtask 1: Analysis of socio-economic issues including economic valuation of resources uses, future management options, market and non-market valuation values using local and national surveys
- Subtask 2: analysis of socio-economic issues using scientific indicators
- Subtask 3: Policy review: examination of particular relevant government policies – energy, conservation, biodiversity

Description of progress and results to date

During the past six months, the design for the two questionnaires have been finalised following consultation with relevant interests, including members of the Steering Group. Two surveys are being undertaken, one of which deals with the topic of raised bogs, cut-away and the potential for a National Wetlands Park. This survey is being undertaken in the Midlands, Leinster (including Dublin) regions which are presumed to be geographically relevant to this particular topic. In addition, a concentrated survey is being undertaken in the Longford/Roscommon area which has the best potential for a wetland park. A further concentration will focus on rural residents. A variety of questions are being asked to determine people’s attitudes towards peatlands and the questionnaire contains both a dichotomous (with follow-up) contingent valuation and four choice experiment questions.

The second questionnaire is dealing with the protection of all peatlands, including both blanket bogs and raised bogs. The second questionnaire is being provided in response to comments from the last Steering Group meeting in which the importance of both types of bogs was pointed out. This questionnaire will be used at a national level, but with some concentration in two or more counties with both types of bogs, again with a further weighted concentration on rural residents. The ‘all peatland’ questionnaire will not contain a choice experiment question, but only the contingent valuation question.

A pilot survey was undertaken by post in June. Due to recent government restrictions on access to the electoral register, it was necessary to fall back on the telephone directory for the purpose of drawing up a sample. The initial response was quite low and appeared to be explained by a combination of the national election and the use of the phone directory (many questionnaires were returned due to incomplete addresses or the addressee having moved away). However, eventually the response built up to a respectable level of 19%. We have no doubt that had it been possible to use the electoral register the response would have been over 25%, a quite reasonable figure for Ireland.

The main purpose of the pilot survey was to determine whether the questionnaire made sense to people and could be completed. Some one to one interviews had already been undertaken to this end, but the pilot survey helped to confirm that the questionnaire was reasonable straightforward with few respondents having evident problems and the great majority having completed the more taxing choice experiment. The pilot helped to identify one of two questions that needed slight rephrasing. It also helped to set the upper bounds for values to be presented in the choice contingent valuation survey, although, almost inevitably most of the
respondents returning the questionnaire had a positive inclination towards the topic of peatlands. The main face-to-face survey should provide a more representative sample. A survey company has been appointed to undertake both surveys simultaneously. This will proceed in mid to late September. It will be necessary to convert the postal questionnaire to a face-to-face version, including the use of information cards and a summary text for the interviewer to read. One challenge with this particular topic is the quantity of information that must be communicated to interviewees. This is being achieved through a mixture of simple text, graphics and illustrated scenarios of alternative peatlands futures. In addition, it will be necessary for us to prepare around 30 separate versions of the choice experiment, four of which will accompany each ‘raised bog/wetlands park’ questionnaire. The choice experiment will not include a price attribute, as the interviewee’s perception of the value of peatlands is being supplied by the preceding choice experiment. To our knowledge, this combination has not been used in environmental economics before. A choice experiment is not being attempted in the ‘all peatland’ version as no obvious trade-offs between peatland attributes could be identified that were relevant to both types of peatland.

In addition to the survey, the last meeting of the Steering Group indicated its preference for the policy document to be advanced. Consequently, some effort has been directed at providing a complete working policy document to accompany and inform the project. Various members of the Steering Group, including National Parks and Wildlife have provided much valuable input into the document. Although now a stand-alone document, it does nevertheless represent an on-going working document that will develop as the project progresses. It is expected that various outputs from the project can be included within the document as it develops.

Dr Craig Bullock gave a presentation on ‘Wetland Park’ at the 12th Sustainable Living Festival 'Powering Down Our Communities', 17th to 22nd April 2007, Dublin, Ireland (see website for abstract www.ucd.ie/bogland/news.html).

Milestones for the next six months

WP4.4 Synthesis report and policy document
Marcus Collier, Craig Bullock, Mark Scott, John Feehan, Frank Convery
Main objectives and outputs/deliverables
➢ Guidelines for a holistic approach to sustainable peatland development, including an evidence-based approach to policy development

Description of progress and results to date
This work-package is due to start at a later stage of the project.

3. Project management issues including staffing and equipment
- 7 PhD students, 4 Masters students and 4 Post-Docs were working full time on this project during the reported period
- It was not possible to appoint a Masters student for WP3.6 (sheep grazing) due to lack of interest.

4. Milestones for next six months
- During the next six months, field sampling and measurements will be conducted under many work packages
- See specific milestones under each work-package
There will be a field trip organised around the 3rd Steering Committee meeting which will take place in Mayo, 6-7 September 2007

5. Overall statement regarding progress vis-à-vis project aims and timeframe
Progress over the third six-month period of the project has been good and is in line with the overall time frame of the project except for one sub-task within work-package 3.6. Timeframe for this entire work package will be exceeded due to unforeseen delays from a number of sources. Equipment took longer than expected to be made up and delivered. It didn’t arrive out to Leenaun till February 07 instead of November 06. Sub-task 2 will be carried out without a Master’s student.

Section D (Report on Physical Indicators):

1. Number of peer reviewed publications:

<table>
<thead>
<tr>
<th>Authors</th>
<th>Title of Paper and publication details</th>
<th>Journal</th>
<th>Status (in press or published)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connolly et al.</td>
<td>Mapping Peatlands in Ireland using a Rule-Based Methodology and Digital Data</td>
<td>Soil Science Society of America Journal</td>
<td>Published March 2007</td>
</tr>
<tr>
<td>Boylan, Jennings &amp; Long</td>
<td>Peat Failures in Ireland</td>
<td>Quarterly Journal of Engineering Geology and Hydrogeology</td>
<td>Reviewers comments have been addressed and paper sent for second review.</td>
</tr>
</tbody>
</table>

2. Number of other scientific/technical articles/reports published

3. List of Conferences/Workshops presentations


4. **Other Publicity Events (e.g. open days, launches etc.)**

Michael Walsh, Ger Lynch and Bryony Williams co-ordinated and addressed a visit by the members of the ESI to the Teagasc hill sheep farm, Leenaun, on Friday 25 May. 2007 (see website for details [www.ucd.ie/bogland/news.html](http://www.ucd.ie/bogland/news.html)).

Dr Craig Bullock gave a presentation on ‘Wetland Park’ at the 12th Sustainable Living Festival 'Powering Down Our Communities', 17th to 22nd April 2007, Dublin, Ireland.

Marcus Collier made a presentation to classes at the Lanesborough Summer School.

5. **Number of research products (e.g. models, data-sets, methodologies, innovations):**

None

6. **Number of Reports to policy and decision makers on urgent environmental issues**

None

7. **Number of examples / case studies illustrate the principle of sustainable development in action:**

None
8. Number of new eco-audit methodologies developed:  
None

9. Number of firms/organisations adopting new processes and products for sustainable development developed as a result of funded research:  
None

10. Reports on integrated assessments of sectoral development impacts with particular reference to agriculture, forestry, industry, tourism and transport  
None