Minutes of the 5th (and Final) RECIPE progress meeting held on Sunday 28th – Wednesday 31th of May 2006 at the Macaulay Institute, Aberdeen, Scotland

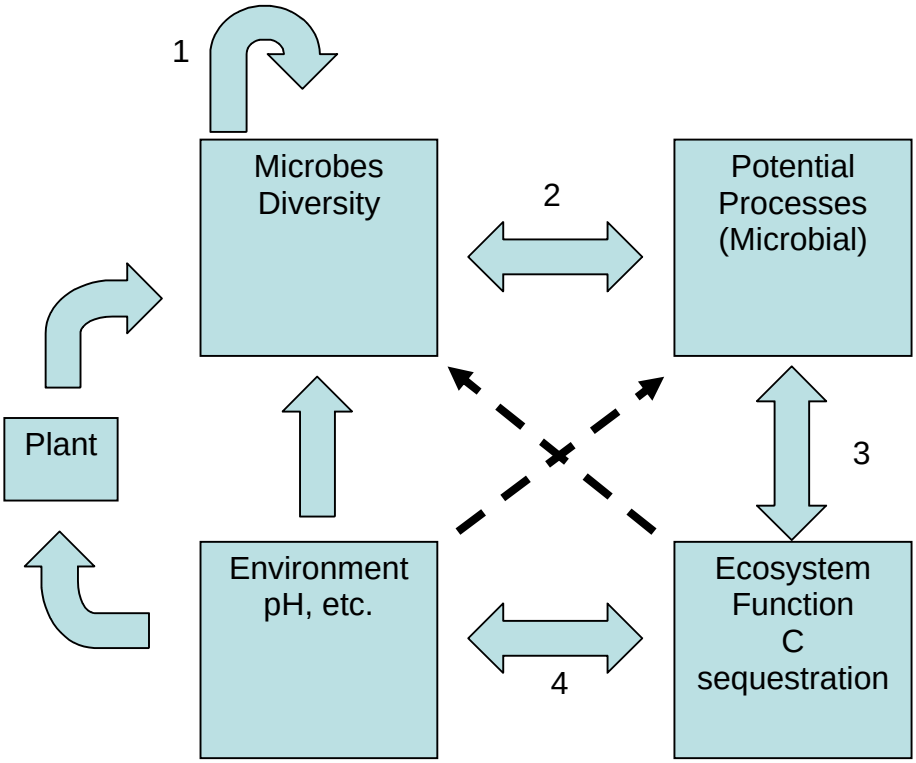
Present:
Steve Chapman (MLURI) (Project Co-ordinator and Chair)
Harri Vasander (UNHEL); Mika Yli-Petäys (UNHEL); Alexandre Buttler (UFC-CE, AR-WSL); Walter Rosselli (AR-WSL); Andy Siegenthaler (AR-WSL); Edward Mitchell (EPFL) ; Thierry Jean Heger (EPFL); Viviane Froidevaux (LINECO); Fatima Laggoun-Defarge (ISTO); Jean-Robert Disnar (ISTO); Laure Comont (ISTO); Sebastien Gogo (ISTO); André-Jean Francez (ECOBIO); Daniel Gilbert (UFC-LBE); Antonis Chatzinotas (UFZ); Michael Schloter (TUM-BO); Andreas Gattinger (TUM-BO); Brigitte Hai (TUM-BO); Daniel Epron (UHP EEF); Rebekka Artz (MLURI); Gerald Schwarz (MLURI); Clare Trinder (MLURI).

Date	Description	Action
Sunday (28th)	Arrival at Aberdeen 15:10–21:50	
Monday (29th)	Technical reports, giving RECIPE outcomes, specifically relating to deliverables (09:00–13:00): **WP 01** (Steve) This was completed and the socio-economic publication was being developed following on from the meeting in Frick. **WP 03** Alexandre presented a spreadsheet of the results showing the samples analysed, accumulated data and highlighting the gaps (see Inventorf work.xls). Some discussion was held on how to deal with the gaps or if some could still be filled. Thierry and Edward reported on progress in characterizing the molecular phylogeny of Arcellinida (see Arcellinida_Aberdeen_Thierry.ppt). Antonis gave a presentation on the genetic diversity of protistan groups using 18S rRNA-based methods. Ther was still a lot of development work to be done before application (see aberdeen 2006_Antonis.ppt). Rebekka presented on the fungal communities work. For Workprogram 1, one paper had been submitted and another paper was in preparation but Mantel tests had yet to be done. There had been problems in Workprogram 2 with samples not extracting due either to humic intereference and/or the low biomass (see MLURI_progress_Aberdeenfinal_WP03.ppt). **WP 04** Michael gave a review of the deliverables and milestones Brigitte gave a presentation on bacterial diversity determinations using t-RFLP, showing the influence of site, vegetation and regeneration stage. Site grouped very well, vegetation separated grass and moss (Finland), while sampling depth was more important than regeneration stage (Le Russey and Chaux d'Abel). Fragment analysis demonstrated the presence of Firmicutes (mainly Gram+) though nothing can be deduced about their function. The question was raised on how to deal with sites as these were essentially pseudoreplicates. (see RECIPE 290506_Brigette.ppt or RECIPEII 290506_Brigette2.pdf). Lunch 13:00–13:30 Continuation of reports 13:30–19:00	

	Rebekka summarised the CLPP results from both Workprograms 1 and 2. Carbon substrate utilization patterns for the former varied with site (location) and 'humification index' (based on FTIR bands). Together they explained over a third of the variance. Some trends based on regeneration stage were observed but they were not consistent across sites. For Workprogram 2, the dominant variable was site, vegetation had some influence on surface samples while water-table had no effect (see MLURI_progress_finalAberdeen_WP04.ppt). **WP 05** Fatima and Sebastienne gave an extended report on the results of micromorphology, the C:N ratio of peat fractions and sugar analysis. Significant changes with peat age/depth were seen, as well as between sites, particularly Baupte. Microremains analysis proved to be a useful approach (see ISTO Aberdeen.ppt). Rebekka continued with some data on FTIR analysis. Though country again had a major effect some change with regeneration stage was noted (see MLURI_progress_finalAberdeen_WP05.ppt). **WP 06** André-Jean reported on carbon turnover studies. For Microbial biomass C or N there were significant responses with plant community and regeneration age. Ratios such as Carbon Turnover also show along the gradient of regeneration stages but CH4/CO2 ratios (potential activity) were not enough sensitive as a regeneration index (see WP6 Aberdeen 28 May-1 June_Andre_Jean.ppt). Andy presented data on gaseous fluxes and estimates of methanotrophs at Le Russey in Workpackages 2 and 3. Peat depth had a major influence, followed by species and water table. There tended to be a reciprocal relationship between carbon dioxide and methane (see Final_Siegenthaler.ppt). Buffer dinner 19:00–22:00	
Tuesday (30th)	Technical reports continued 08:30–12:30 Andreas gave a detailed account of the PLEL/PLFA analysis for methanogens/methanotrophs. Methanogenic populations varied across countries and generally increased with depth. Methanotrophs varied even more between countries; they tended to decrease with depth though there was a reverse trend at Le Russey. Using advanced technology, the ^{13}C signal from litter residues was traced into Gram+ and Gram– bacteria, euryarcheaota, fungi and protozoa (see Aberdeen-May06_gattinger.ppt). **WP 02** Edward presented on behalf of Emanuela the results of her studies on vegetation and C cycling at Chaux d'Abel. Sphagnum increased along the regeneration gradient while graminoids decreased. Gross photosynthesis and NEE were greatest in the intermediate stage. Methane emissions were greatest for the advanced stage (see Vegetation&Cfluxes_Chaux_d'Abel_Ema.ppt). Mika reported on C flux studies in Finland. In the advanced regeneration stages, C balance was close to zero though GWP (global warming potential) may increase. Good vascular plant growth was achieved in Workprogram 2. For the CO_2 models, 90% of the variance could be explained by PAR and LAI. Water table depth was not significant. Methane emission depended upon LAI but not for bare peat and Sphagnum-dominated areas. (need presentation) Rebekka gave an account of the Scottish dataset. This was incomplete and lack of LAI information made modelling difficult. There was a relationship between CO_2	

	flux in Workprogram 1 and air or soil temperature. In Workprogram 2, CH_4 flux was variable but tended to be greatest where *Eriophorum* sp. was present (see MLURI_progress_finalAberdeen_WP02.ppt). Daniel Epron presented (on behalf of Estelle) on C balance at Le Russey. Dark respiration was satisfactorily modelled by a combination of air temperature, water table depth and dessication index. Photosynthesis under saturating conditions was modelled by air temperature and dessication index. Modelled carbon balance was negative for the bare site but positive for the recent and advanced plots. CH_4 emission was related to the LAI of vascular plants (see Prés. 0605 Aberdeen_DanielEpron.ppt). **WP07** Daniel Gilbert reported briefly on the socio-economic work for France carried out by Carine and Amardine. Interviews had been made by phone with producers. The number of exploitations had dropped to 16 (from 23 in 1995). Gerald had unfortunately fallen sick and was unable to give his report on WP07. A meeting was planned in Franche-Comté for September/October 2007. Philippe Grosvernier would preside over a session on RECIPE (co-organised by Line Rochefort). *Frontiers in Ecology and Environment* was suggested as a possible journal for an article on management options. An alternative was *Gaia Ecological Perspectives for Science*.	
	All PowerPoint presentations should be passed on to Rebekka who will compile these and include them on the RECIPE website. Lunch 13:15–14:00 Discussion session on outstanding deliverables/milestones.	Presenters/ Rebekka
	Rebekka reported on the status of the Workprogram 1 database (M10, M16) (See WPI_Environmental_Data.xls). A lot of data had been added but ther were still gaps.	Rebekka/ Everyone
	D16 was still in progress; ^{15}N results were expected by the end of June.	Fatima
	D20: some Keeling plots were still to be done but should be completed within two weeks.	André-Jean
	D9 Much of the work here was in the development of tools which would then be applied to one site (in CH). Will take at least until the end of July to complete this but relies on Antonis finding time. Looked into possibility of using some frozen samples to redo DNA extractions where data for testate amoebae missing.	Antonis/ Edward
	D18: some amino acid analysis still pending.	Sebastien/ Fatima
	D11: where indicators are specifically protistan, this has to be worked on. Edward will perform regressions with C turnover.	Edward
	D23 This has yet to be fully evaluated; some indicators of change have been shown but this needs a fuller analysis.	Steve *et al.*
	D22 In terms of guidelines for sustainable development, it was felt that to some	Steve

	extent the environmental and economic issues were tackled by the forthcoming socio-economic paper (see Table 1 developed in Frick). Social aspects were still pending. A solution to this was perhaps to review the guidelines from elsewhere and comment on their suitability.	
	A new draft handbook on restoration was available for comment on the IMCG website "A Global Peatland Restoration Manual" by Martin Schumann and Hans Joosten. Steve had begun the process and passed it on to Edward for further review and circulation.	Edward
	D24 The assessment of socio-economic benefits requires the derivation of specific management strategies which have not yet been identified from D22 and D23. This information needs to be fed through to the socio-economic group for consideration.	Steve
	Limited progress had been made on the proposed special issue of RECIPE publications. After an interminably time, finally a reply was forthcoming from *Global Change Biology* to the effect that they liked the topic but could not see it as being of general interest to GCB readers except in the form of a synthesis paper. Approaches had been made to *Journal of Applied Ecology* but a reply was still awaited. It was suggested that in the meantime other potential resting places should be investigated. Possibilities were: *Ecosystems* *Oecologia* *Soil Biology & Biochemistry* *Ecography* Other possibilities (*Restoration Ecology, Wetlands, European Journal of Soil Science*) returned rather low impact factors.	Steve
	A think-tank session was held to consider possible publications beyond those itemised for the special publication. These would seek to be synthesis papers which draw together the different strands of the RECIPE project. Publication would be in the longer term (6–12 months) once other papers had reached acceptance. It was considered that there were four levels of synthesis that could lead to four papers (see diagram below).	
	1. Structural microbial diversity. This would cover bacteria, fungi, protists, groups specified from lipid analysis. It would look at the complementarity of methods (e.g. clone libraries, FISH, DAPI), their relative discrimination, and whether they represented genotype or phenotype. There were perhaps data gaps that might be filled (e.g. testate amoebae molecular genetics for FR, SC and FI; DAPI analysis (D. Gilbert?)).	Michael/ Antonis
	2. The combination of structure and function. This would cover 13C-PLFA results, CLPP data and soil respiration results, in other words, "organismic function". Marker lipids enabled a direct link possible but relations between structure and function for other groupings might be by correlations only (shown by correlations, CANOCO, Mantel tests).	Rebekka/ Andreas
	3. This would relate "organismic function" to ecosystem function. It would address the question: Do we need biodiversity to restore function? How do we assess or quantify biodiversity (Shannon-Wiener index, evenness)? How do we relate potential function to actual function, e.g. CH_4 emission in vitro to CH_4 emission in vivo, or methanotrophs to methane emission? It would consider C flux but would also need to take account of environmental variables/vegetation/chemistry of the substrate. Some gaps in data on water level and chemistry that might be useful here were noted.	Alexandre/ André-Jean
	4. This level would cover vegetation and modelling with the aim to make predictions based upon certain scenarios. It would then come up with	Steve/ Alexandre

	appropriate management options.  Discussion was made on possible further funding opportunities to enable further collaboration following RECIPE. Michael suggested making a submission to the COST action program though it was noted that this closed 31st May so it would require immediate drafting. eTIP requirements: Steve outlined the need to fill out the eTIP and briefly went through the eTIP PowerPoint presentation. He presented a list of possible "results" based on an eTIP drawn up by a colleague from another EU project (see eTIP_results.ppt). Harri supplied file with indicative "results" for UNHEL (see eTIP_alustava.doc). Usernames and passwords had been issued to all participant leaders (partners). However, on accessing the website (http://cordis.europa.eu/etip/dc/index.cfm?fuseaction=vld.logout) it was discovered that only the coordinator could input the "results" for each partner. Hence the coordinator would need to action this before partners could proceed further. Dinner at the Rendevous at Nargyle, Aberdeen 20.30–22.30	Steve *et al.*
Wednes-day (31st)	Visit to Red Moss of Netherley, an example of a historically cutover raised bog which is now managed for biodiversity under designation as a Special Area of Conservation (SAC). 8:30–11.30 Lunch at the Lairhillock Inn, Netherley 12.00–13:00	

	Visit to Glen Garioch Distillery, Oldmeldrum 14:00–16:00 During the course of the day, while traveling, over lunch and before the evening meal, a COST action submission was drafted (largely by Alexandre) and submitted (in Steve's name). The title was "Network for European sustainable peatland management (NETPEAT)" and the full submission is given in PEATNET.pdf. Dinner at Ardoe House Hotel 19:30–22:00	
Thursday (1st)	Participants disperse	