

Mountains of our Future Earth

**Perth Concert Hall
Perth, Scotland, UK, 4-8 October 2015**

| | |
|---|-----------|
| Monday 5 October 2015 | 4 |
| Opening session | 4 |
| Plenary: Julia Klein | 4 |
| Parallel session 1 - Monday 5 October 10.30-12.30 | 4 |
| Linking past land use legacies and future land use trajectories in mountain regions | 4 |
| Protected areas as model regions for sustainable development..... | 5 |
| Round Table - Challenges and advances in cross-scale research of governance in mountain systems..... | 6 |
| Advances in observatories of mountain social-ecological systems (1)..... | 7 |
| Round Table – Maximising the profile of mountains in Horizon 2020 | 7 |
| How can mountain communities adapt to increased extreme weather events? | 8 |
| Working lunches | 8 |
| Meet and greet for African mountain research | 8 |
| Meeting for Mountain Sentinels | 8 |
| 'Mountain Research and Development' journal - lunchtime session for authors | 8 |
| Meet and greet around research in Southeast Asia | 8 |
| Parallel session 2 - Monday 5 October 13.45 - 15.45 | 9 |
| Science-driven community-based approaches for enhanced climate change adaptation capacity..... | 9 |
| Palaeo perspectives for guiding future scenarios | 9 |
| Urbanization in mountain areas in the frame of metropolitisation & global change | 10 |
| Invasive species in mountain regions..... | 11 |
| Round Table - Transdisciplinary approaches to sustainability of mountain social-ecological systems under global change..... | 11 |
| Round Table - LTSER sites in European mountain areas | 12 |
| Poster Session - 16.15 - 18.00 | 12 |
| Civic Reception | 12 |
| Ceilidh (Scottish Dancing) | 12 |
| Tuesday 6 October 2015 | 13 |
| Plenary: Ray Bradley | 13 |
| Plenary: Christian Körner | 13 |
| Parallel session 3 - Tuesday 6 October 10.30 - 12.30 | 13 |
| Mountain ecosystem services, adaptive management and global change (1) | 13 |
| African mountains and their challenges..... | 14 |

| | |
|---|-----------|
| Arctic and alpine: how do alpine regions differ from arctic regions | 14 |
| Farming in mountain regions (1) | 15 |
| Mountain treeline ecotones; threshold dynamics and climatic relationships (1) | 16 |
| Round Table - What are the key policy venues for mountain regions? | 16 |
| Disaster risk reduction (1) | 17 |
| Working lunches | 17 |
| Presentation of the book ‘The Mountain: A Political History from the Enlightenment to the Present’ | 17 |
| Working group meeting - ‘Mountain treeline ecotones; threshold dynamics and climatic relationships’ | 17 |
| Meeting for the project partners of ‘Sustainable Mountain Development for Global Change’ | 18 |
| Parallel session 4 - Tuesday 6 October 13.45 - 15.45 | 18 |
| Mountain ecosystem services, adaptive management and global change (2) | 18 |
| Insights and challenges on modelling future LUCC in mountainous regions | 18 |
| Local development initiatives and institutions/governance (1) | 19 |
| Farming in mountain areas (2) | 20 |
| Mountain treeline ecotones; threshold dynamics and climatic relationships (2) | 20 |
| Challenges of land use decision-making in an increasingly nested and networked world.... | 21 |
| Disaster risk reduction (2) | 22 |
| Parallel session 5 – Tuesday 6 October 16.15-18.15 | 22 |
| Mountain ecosystem services, adaptive management and global change (3) | 22 |
| Mountain regions in the vicinity of cities and urban agglomerations | 23 |
| Local development initiatives and institutions/governance (2) | 24 |
| Farming in mountain areas (3) | 24 |
| Mountain treeline ecotones; threshold dynamics and climatic relationships (3) | 25 |
| Round Table - Advances in observatories of mountain social-ecological systems (2) | 26 |
| Public Lecture by Leo Houlding | 26 |
| Wednesday 7 October 2015 | 27 |
| Plenary: Courtney Flint | 27 |
| Plenary: Monique Fort | 27 |
| Parallel session 6 - Wednesday 7 October 10.30-12.30 | 27 |
| Mountain forests: stresses, disturbances and ecosystem services (1) | 27 |
| Sacred mountain landscapes and biocultural diversity | 28 |
| The impacts of the commodification of landscapes, new social actors & uses on the territorial capital of mountain regions (from multilocal dwelling to extraction of raw materials) | 28 |
| Mountain social-ecological system dynamics and resilience to global change (1) | 29 |
| Current assessments of Sustainable Mountain Development | 30 |
| Global degradation of snow, glaciers, and permafrost | 30 |
| Sustainable tourism development (1) | 31 |
| Lunchtime sessions | 32 |

| | |
|---|-----------|
| Presentation on the Journal of Mountain Science..... | 32 |
| Presentation of the Huddleston update (Population, and vulnerability in mountain areas)..... | 32 |
| Lunchtime meeting for International Editorial Board, 'Mountain Research and Development'..... | 32 |
| Parallel session 7 - Wednesday 7 October 13.45 - 15.45..... | 32 |
| Mountain forests: stresses, disturbances and ecosystem services (2) | 32 |
| Transboundary water issues | 33 |
| Generating and managing data and knowledge in climate and water resources for climate adaptation..... | 33 |
| Mountain social-ecological system dynamics and resilience to global change (2) | 34 |
| Monitoring biota in mountaintop environments; a focus on GLORIA activities across different biomes (1)..... | 34 |
| High-elevation climate..... | 35 |
| Sustainable tourism development (2) | 36 |
| Parallel session 8 - Wednesday 7 October 16.15-18.15..... | 37 |
| Mountain forests: stresses, disturbances and ecosystem services (3) | 37 |
| The role of alpine cryosphere in endorheic basins of the world | 37 |
| Social change in mountain regions: How does it happen? | 38 |
| Mountain social-ecological system dynamics and resilience to global change (3) | 38 |
| Monitoring biota in mountaintop environments; a focus on GLORIA activities across different biomes (2)..... | 39 |
| Round Table - Guidelines for Future Assessments of Sustainable Mountain Development. | 40 |
| Conference Dinner..... | 40 |
| Thursday 8 October 2015..... | 41 |
| Plenary: Veerle Vanacker | 41 |
| Plenary: Hans Hurni..... | 41 |
| Conference synthesis..... | 41 |
| Round Table: Future Earth – An agenda for R&D from a mountain perspective..... | 41 |
| Closing remarks..... | 41 |
| Posters..... | 42 |
| Evening events..... | 48 |
| Mountains: Art in the Threshold artspace at Perth Concert Hall..... | 49 |
| Social Media at Mountains of our Future Earth | 50 |

Conference Timetable

Monday 5 October 2015

Conference opening

Gannochy Trust Auditorium, Perth Concert Hall

Robert Ross (student on the BA Applied Music course at Perth College, UHI) will play:
Mist Covered Mountains, The Hawk that Swoops on High and Kilworth Hills

Opening Session Monday 5 October, 9.00 – 9.30

Gannochy Trust Auditorium, Perth Concert Hall

Margaret Munckton, Principal, Perth College, University of the Highlands and Islands
Rolf Weingartner, Chair, Mountain Research Initiative
Christian Körner, Founding Chair, Global Mountain Biodiversity Assessment
Dennis Ojima, Acting Director, Colorado hub of the Future Earth Secretariat

9.30 – 10.00

**Gannochy Trust Auditorium,
Perth Concert Hall**

Chair: Martin Price, Director, Centre for Mountain Studies, Perth College UHI

Plenary: Julia Klein, Associate Professor, Department of Ecosystem Science & Sustainability, Colorado State University: Transdisciplinary approaches to mountain environment and livelihood sustainability from local to global scales

10.00 – 10.30 Tea and coffee - Foyer, Perth Concert Hall

Parallel session 1 - Monday 5 October 10.30-12.30

Linking past land use legacies and future land use trajectories in mountain regions

**Gannochy Trust Auditorium,
Perth Concert Hall**

**Chairs: Jacek Kozak (Jagiellonian University),
Urs Gimmi (WSL)**

- 1-1 Land-use change impacts on ecosystem services provision in the European Alps
Ulrike Tappeiner, Lukas Egarter Vigl, Uta Schirpke, Erich Tasser
- 1-2 Patterns and driving forces of forest dynamics in Switzerland (1850-2000)
Christin Loran, Matthias Bürgi
- 1-3 The influence of historical, current and future management on landscape patterns in mountain pasture-woodlands
Rebecca Snell, Harald Bugmann

- 1-4 Comparing long-term past forest cover change and its drivers in the Swiss Alps and the Polish Carpathians
Katarzyna Ostapowicz, Janine Bolliger, Achilleas Psomas, Niklaus E. Zimmermann, Matthias Bürgi, Bronwyn Price, Urs Gimmi, Monika Dobosz, Ewa Grabska, Krzysztof Ostafin, Marcin Szwagrzyk, Agnieszka Wypych, Zbigniew Ustrnul, Jacek Kozak
- 1-5 19th century land use legacies affect 21st century rates of forest loss and agricultural abandonment in the Carpathian Mountains
Catalina Munteanu, Tobias Kuemmerle, Nicholas Keuler, Daniel Müller, Pal Balázs, Martin Boltziar, Monika Dobosz, Patrick Griffiths, Lubos Halada, Dominik Kaim, Géza Király, Éva Konkoly-Gyuró, Jacek Kozak, Katarina Kysucka, Juraj Lieskovsky, Matej Mojses, Krzysztof Ostafin, Katarzyna Ostapowicz, Oleksandra Shandra, Volker Radeloff
- 1-6 Birch Re-growth in a Western Norwegian Treeline Ecotone
Kerstin Potthoff
- 1-7 Changes in the Relationship between Borders and Pastoral Mobility in Mountain Regions of Central Asia
Andrei Dörre
- 1-8 Exploring Landscape Change in Mountain Environments with the Mountain Legacy Explorer On-line Image Analysis Toolkit
Mary Sanseverino, Michael Whitney, Eric Higgs

Protected areas as model regions for sustainable development

**Norie-Miller 1, Chair: Axel Borsdorf (IGF, Austrian Academy of Sciences)
Perth Concert Hall**

- 2-1 Ecological Indicators for Monitoring Biodiversity in Nanda Devi Biosphere Reserve - World Heritage Site, Western Himalaya: Climate Change Perspective
VP Uniyal, Shazia Quasin, Pritha Dey
- 2-2 The elevation gradient as a natural-rural-urban transition in the La Campana-Peñuelas Biosphere Reserve, Central Chile
Andres Moreira-Muñoz, Alejandro Salazar-Burrows, Camilo del Rio
- 2-3 **Protected areas, local knowledge and regional development: are we able to move from theory to practice? A case study in Trás-os-Montes, Northeastern Portugal**
Ana Maria Carvalho, Silvia Nobre
- 2-4 Perceptions of Biosphere Reserves - Prospects of Innovation or Constraints for Farmers. Agricultural perceptions of farmers in biosphere reserves in Austria and Switzerland
Adelheid Humer-Gruber
- 2-5 The Fassa Valley Network of Nature Reserves (Trentino, I). Re-direct local development by strengthening protected areas in the Dolomite region
Cesare Micheletti, Loredana Ponticelli
- 2-6 Mountain protected areas in Southern Chile. Challenges and opportunities for local development
Benedikt Hora, Carla Marchant

Protected areas, local knowledge and regional development: are we able to move from theory to practice? A case study from Trás-os-Montes, Northeastern Portugal

Ana Maria Carvalho, Silvia Nobre

Mountain Research Centre, School of Agriculture, Polytechnic Institute of Bragança, Bragança, Portugal

Background

Trás-os-Montes, the northeastern Portuguese region, is a mountainous territory on the border between Portugal and Spain (Iberian Peninsula). Particular physiography, a long history of human occupation, as well as economic circumstances leading to a mostly rural socio-cultural system until recently, built up a rich local knowledge that shaped landscape and enabled certain species and habitats to remain relatively unchanging (Carvalho and Frazão-Moreira, 2011; Carvalho and Morales 2013).

Natural and semi-natural ecosystems, fauna and flora diversity, small human settlements spreading across an impressive and culturally significant multifunctional landscape are the main traits of this region.

Safeguarding these natural and cultural features was a key reason for creating two of the most important Portuguese natural protected areas: the Montesinho Natural Park (PNM) set up in 1979 and the Douro International Natural Park (PNDI) set in 1998.

PNM territory stretches across almost 750 km² along the Montesinho-Coroa massif and includes 91 small villages corresponding to two municipalities. The PNDI covers an area of about 860 km², comprising 35 villages along Douro and Águeda riverbanks, administratively involving four municipalities.

In 2002 the Spanish government created the Arribes del Duero Natural Park (Arribes). Douro River is the natural boundary between the two countries and these protected areas (PNDI and Arribes) constitute transfrontier landscapes, a high-quality connecting territory, declared Sites of Community Importance (Council Directive 92/43/EEC).

Issues being addressed in this presentation emerged from prior research conducted for about twenty years in Trás-os-Montes. Intensive fieldwork combined with people testimonies and authors own observation make possible to describe and discuss different approaches with local relevance in terms of regional development.

Ecological context

These territories (biogeographically in the limit of the Mediterranean and Eurosiberian areas) have singular geomorphological, climatic and ecological characteristics providing different habitats, floristically and faunistically highly diverse, and including many endemic and sub-endemic species, e.g. plants, fungi, mammals, reptiles, insects.

Socio-cultural context

Local economy was/is based on natural resources exploitation and on small farming systems, with high level of subsistence strategies and important crop diversity, avoiding productive risks. Centuries of interaction between people and nature enabled important biocultural legacy. Nowadays, sudden and faster social and economic changes promote rural exodus and a loss of cultural heritage. Those facts influence local knowledge transmission and the systems of plant-use, and have an impact on traditional landscapes, agro ecosystems biodiversity and flora and fauna habitats for whose conservation the parks were created (Carvalho and Frazão-Moreira 2011).

Legal, policies and management context

Different governmental laws and regulations along with nature and biodiversity EU policies (e.g. Natura 2000 sites) are powerful management tools that ensure the protection of ecological values. Integrated management plans were proposed, however most of the initiatives and measures focus primarily on biological resources and only a few concern people living in these protected areas and their activities.

Scenarios

The parks are symbols of regional biodiversity quality, reservoirs of diversity and of many species and crops in situ-conservation, providing an interesting pool of endogenous resources, inextricably linked with particular anthropogenic practices and cultural perceptions.

Low demographic densities, an aging population, the lacking of sustainable socio economic policies, consequently severe outmigration flows and abandonment of traditional farming systems and short-term agricultural activities are threatening these territories dynamics and conservation initiatives at different levels.

Factors involving landscape/habitat changes will have serious long-term repercussions and may influence the status of such protected areas.

The gap

Conceptually protected areas comprise predominantly natural or semi-natural ecosystems, where long-term biodiversity depends on human activity, ensuring a sustainable flow of natural resources and services. Therefore, the political and hegemonic decision to conserve nature in humanized areas also implies preserving economic systems and heritage; otherwise both ecological and cultural values will be lost. Policies avoiding migration and abandonment meet conservation purposes.

Habitats, agroecosystems and local knowledge may be the basis for promoting agricultural, ecological, educational and sociocultural activities (e.g. ecotourism, gastronomy, environmental education), supporting sustainable development, providing new job opportunities for younger, promoting income diversification and enhancing the quality of life.

Responsibilities and administration tasks shared between different municipalities and institutions do not work satisfactorily. Involvement of stakeholders and effective communication are fundamental. Participatory approaches and appropriated skills and strategies are needed for different target groups.

References

- Carvalho AM and Frazão-Moreira, A (2011). Importance of local knowledge in plant resources management and conservation in two protected areas from Trás-os-Montes, Portugal. *Journal of Ethnobiology and Ethnomedicine*, 7:36.
- Carvalho AM, Morales R (2013). Persistence of wild food and wild medicinal plant knowledge in a North-Eastern region of Portugal. In Pardo-de-Santayana et al. (2013). *Ethnobotany in the New Europe: People, health and wild plant resources*. Oxford: Berghahn Books: 147-171.