

PPS Arctic meeting Québec 16-18 February 2006

Attending:

Annika Hofgaard, NINA, Trondheim, Norway
Nancy Doubleday, Carleton University, Ottawa, Ontario, Canada
Karen Harper, Département de Biologie, Université Laval, Québec, Canada
Gareth Rees, Scott Polar Research Institute, University of Cambridge, United Kingdom
Oddvar Skre, Norwegian Forestry Research Inst, Bergen, Norway
Stéphane Boudreau, Département de Biologie, Université Laval, Québec, Canada
Gavin Kernaghan, Département de Biologie, Université Laval, Québec, Canada
Rod Savidge, Forestry and Environmental Management, University of New Brunswick,
Fredericton, New Brunswick, Canada
Frank Berninger, Université du Québec à Montréal, Canada
Yves Bégin, Centre d'Etudes Nordiques, Université Laval, Québec, Canada
Greg Henry, University of British Columbia, Vancouver, Canada
David Cairns, Department of Geography, Texas A&M University, USA
Tatiana Vlassova, Institute of Geography, Russian Academy of Sciences, Moscow,
Russia
Anita Kushwana, Carleton University, Ottawa, Ontario, Canada
Louise Hermanutz, Memorial University, St John's, Newfoundland, Canada

In the chair: at various times, Annika Hofgaard, Karen Harper and Gareth Rees.

Taking minutes: Gareth Rees.

Thursday 16 February

1. Introductions and welcomes

Welcome by **Yves Bégin**, director of the Centre d'Etudes Nordiques, Laval.

Two points were emphasised in particular in regard to PPS Arctic: (1) the importance of involving indigenous inhabitants (the meeting was reminded of the history of this principle within IPY); (2) the importance of the project's legacy.

Welcome by **Annika Hofgaard**, to outline the structure and aims of the meeting (file 01 attached).

- presentation of individual projects and role in core project
- links to other IPY core projects
- national and international funding opportunities
- proposal structures
- restructuring of project modules, including new parts and better focus e.g. on feedback mechanisms and permafrost
- way forward for 2007-08 and beyond

Welcome by **Karen Harper** as local organiser, with practical details.

2. Presentation of projects

Presentation by **Annika Hofgaard** of the background to PPS Arctic (file 01 attached).

- began as the IASC project TTI (Tundra-Taiga Initiative) 2000-2005.
- TTI science plan was background to Arctic Border (IPY 360) which was developed into PPS Arctic (IPY 151)
- (Ad hoc meeting at ICARP II, Copenhagen, Nov 2005, identified possible continued funding of TTI from IASC)
- list of constituent projects has changed since PPS Arctic was formed, and some projects are still asking about the possibility of joining.

Presentation by **Gareth Rees** (file 02 attached) on the Arctic Border project and his particular interests within it, which are the definitions and structures of treelines/forest edges and the effects of spatial resolution. This led to some discussion of the availability, characteristics and general suitability of remote sensing data, including aerial photographs.

Presentation by **Tatiana Vlassova** on CASEAS (file 03 attached)

- main objective towards social sustainability
- main focus on the Russian Arctic
- intention to construct an Arctic Residents' Network and to identify Local Sustainable Development Assessment and Monitoring Sites (LOSDAMS) e.g. Izhma region, Komi Republic
- network of social indicators

Presentation by **Karen Harper** on SDCFTE (file 04 attached)

- ideas for spatial characterisation e.g. by abundance of forest-tundra edges
- importance of below-ground microbial communities which may limit change.

Question raised about species composition of treeline.

Question raised about involvement of local people, which is clearly a possibility in general although probably not in Canada since the ecotone is not generally inhabited.

Presentation by **Nancy Doubleday** on LUPOG (file 05 attached)

- climate change drives vegetation which drives human settlement
 - oral history reveals vegetation distribution in the past (to 3500 BP)
 - legacy of project can be establishment of monitoring networks
 - scenario-building using palaeoecological record and other approaches
- Question raised about the relationship between LUPOG and IPY timescales.

Presentation by **Annika Hofgaard** on FORWARD (file 06 attached)

- stresses the desirability of making a 'footprint' = a 'snapshot' for the IPY.
- In discussion, a theme emerged that perhaps PPS Arctic lacks an entomological component. Also, perhaps we could aim to do simple standard seeding or seedling experiments at all sites within PPS Arctic.

Presentation by **Frank Berninger** of TREEFEEDS (file 07 attached)

In discussion, the theme of limitation through feedbacks arose, for example the fact that the presence of trees changes snow depth. Snow fence experiments may be useful in this regard.

Presentation by **Stéphane Boudreau** of FATALITY (file 08 attached)

- tundra islands within the forest have floral diversity and are effectively ‘southern outposts’ of the arctic
- sensitive to climate change (invaded by trees on hilltops)
- lichen mat largely intact in NW Quebec but not on NE side.
- comparison with Finland and Finnmarksvidda would be useful.

Presentation by **David Cairns** on Reindeer & Treeline project (file 09 attached)

- study sites in Sweden
 - emphasises importance of herbivory in understanding vegetation response to climate
- Question raised about including climate effects on reindeer, with suggestion to identify common ground with BALANCE project.

Presentation by **Rod Savidge** of his white spruce project (file10 attached)

Presentation by **Luise Hermanutz** of her project on Climate change and treeline in the Labrador Highlands (file 11 attached).

3. Discussion

The rest of the day was spent in a discussion about how to ‘circumpolarise’ these projects. The discussion ranged over the ideas of common measurement protocols, of mapping projects on to the tasks and themes in the PPS Arctic proposal, of the legacy to be left by PPS Arctic, and of its potential role in empowering local inhabitants. As a way of focussing the discussion, everyone was asked to propose about two themes or measurements with the potential for circumarctic application and at least the possibility that they could be implemented by all groups participating in PPS Arctic. This list appears in an agreed modified form later.

Friday 17 February

4. Presentation of projects

Annika Hofgaard presented two projects of partners not attending the meeting: Kristin Rypdal’s work on Climate impact of increased forest volume (see attached file 12) and Rik van Bogaert & Terry Callaghan’s work on recent treeline dynamics in northernmost Sweden (attached file 13). She also described her contribution to ARCTIC BORDER (attached file 14).

Presentation by **Greg Henry** of the IPY ITEX project and its origins in ITEX (see attached file 15). This led to a long discussion of the desirability of introducing common protocols and standardized measurements wherever possible, which was recognised by

the group. Many interesting results from ITEX were noted, as was the fact that Russian participation in the project ceased from about 1991 so that the circumpolar aspect is in fact limited to North America and Scandinavia. IPY ITEX is a new project within IPY. Concerns about potential overlaps with PPS Arctic were felt not to be a problem because (i) provided there is common methodology where appropriate, the increased number of sites will benefit both projects, and (ii) the two projects have different research foci – tundra and trees – so they should remain largely complementary.

5. Discussion and refinement of principles from yesterday evening's discussion.

The list of topics proposed at Thursday's round-table discussion was organised into two lists, of broader themes and of more narrowly defined topics with the potential for measurement and the drawing up of suitable protocols:

Overarching themes

- Baseline (footprint) data
- Legacy
- Oceanic-continental gradient

Themes

- Origins of trees (palaeo)
- Effect of change in position & structure of ecotone on biodiversity
- Damage/disturbance & recovery (especially herbivore damage and anthropogenic disturbance)
- Reproductive capacity (seed quality, regenerative capacity, seedling establishment, below-ground, limitations to recruitment, early life-history of trees...)
- Change of land-use (inc. change of designation or management, e.g. disturbance, administrative/legal status...)
- Role of land use in wellbeing (happiness metric??)(access to resources etc.)
- Shrub cover

Measurements (possible protocols?)

- Spatial configuration of treeline at different scales. Transects perpendicular to forest edge
- Vegetation structure & composition
- Age structure of trees & shrubs
- Results of environmental manipulations
- Snow cover and other met. data
- Soil ecology
- Socioeconomic indicators (health, education, demographics...)
- Inhabitants' assessments on limitations to quality of life

Traditional indigenous knowledge
Plant physiology and phenology
Animals
Site characterisation

6. Strategy

Karen Harper presented the PPS Canada project – an ambitious proposal essentially representing the Canadian contribution to PPS Arctic (see attached file 16). The proposal deadline is 10 March. The funding mechanism expects foreign collaborators but only with their own funding and their inclusion needs to be justified. Some already have been but more are needed. Several mechanisms exist for ‘internationalising’ the Canadian project: Canadians working at foreign sites, foreign researchers working at Canadian sites, collaborations through workshops, common papers, meta-analyses etc. All fieldwork must take place during the IPY itself, but some other activities can continue afterwards. 80% of funding to end of 2009, remainder to end of 2012.

A rather widely-ranging discussion followed this presentation, including the scope for legacy through permanent plots, an observation network (funding unclear), non-technical books for local inhabitants and others; and the use of historical photographs.

Oddvar Skre described his understanding of the EU funding situation (no file currently available for this), and the history of EU funding of the HIBECO (human-birch interaction) project. HIBECO was funded under EU FPV (Framework Programme 5). FPVI was unsuitable as a funding mechanism (mainly marine and atmospheric mega-projects), but FPVII looks more promising and there is an intention to apply to it for support for a European project similar to PPS Arctic, with the hope of integrating or at least cooperating with PPS Arctic.

The background to FPVII is the Lisbon meeting which expressed the intention for Europe to become as economically competitive as the USA through a competitive knowledge-based economy. One requirement is to establish European centres of excellence to overcome fragmentation, unnecessary duplication etc., and one happy consequence is an increased science budget. The EU research effort is supposed to increase to 3% of GDP by 2013 (a considerable increase over present level although not clear whether national funding mechanisms such as the UK NERC and the Norwegian NFR are included). There are four main objectives: cooperation (which means ‘ordinary’ research projects), ideas (a European Research Council to stimulate ‘frontier research’), people (training, mobility, career development etc, called ‘Marie Curie actions’), and capacities (research infrastructures, based around broad research themes, with much continuity from previous FPs). The total budget is €72726 M over 7 years (2007-2013) and 7-year projects are possible. (The maximum previously has been three years). There are nine research themes in FPVII, of which environment is one (budget €2535 M), socioeconomic science and humanities (budget €700 M) is another. Climate change and development of earth observation methods (= remote sensing) are included in the environment theme. Environment gets 2535M€

FPVII will be launched at the end of 2006, with calls for proposals at the beginning 2007. If previous experience is reliable, the deadline will be 2-3 months after the call (which means that proposals need to be finished before the call announced!)

- Treeline is one possible indicator for climate change, hence relevance of our PPS Arctic.
- Oddvar's project is SIBICON (Scaling Information on Biodiversity conservation in sensitive vegetation types in Europe). It will consider two main biomes: tundra-forest and Mediterranean-coastal. Scaling issues (physical and biological scales) are key to the proposal. Areas considered: Scandes, Iceland, Scotland, Alps, Carpathians and Pyrenees. The project is split into 4 modules, with 1-2 teams each. Need more expertise than currently have.
- Timetable too late for IPY, probably. At least could think to support disseminating results from European parts of the PPS Arctic project.

Annika Hofgaard presented her view of strategies for the PPS Arctic circumpolar approach (see attached file 18).

There was a general discussion of possible funding mechanisms. Possible agencies that were identified included INTAS, EU, NSF (but outside the IPY call because that is not strong for terrestrial ecology), maybe some others that I didn't catch.

7. Links to other projects etc.

Tatiana Vlassova requested advice/input about the Integrated Arctic Social Observation System (paper document 19). Tatiana is the Social Sciences representative on the Subcommittee on observations (SC/OBS) of the IPY Joint Committee. It is rather difficult to understand what the SC/OBS actually wants to do and wants us to do. Its main focus appears to be space-based. Tatiana proposed a social science observation network, which was thought to be a good idea but not one that the group possessed enough expertise to advise on. This led to a general discussion of questions of education and outreach, and the desirability of translating research results etc. into the main indigenous languages (or at least into Russian for the parts of the project within Russia).

Saturday 18 February

8. Structure and function of the PPS Arctic group

The following were proposed as members of the **steering group**: Annika Hofgaard, Gareth Rees, Nancy Doubleday, Tatiana Vlassova, Karen Harper, David Cairns, Bjartmar Sveinbjörnsson (not present at the meeting)

PPS Canada has discussed the idea of having external members too, and this is an idea that could be considered for the overall project.

There will also be a larger, inclusive, list of PPS Arctic project members. This will be maintained by Annika if she receives the necessary input.

Contacts with other core projects:

- Greg Henry – ITEX
- Skip Walker – GOA
- Shari Fox – ELOKA
- Craig Tweedie – BTF
- Jerry Brown – CLIC
- Terry Callaghan – COMAAR
- Gary Kofinas – CARMA
- Fraser Taylor – Circumpolar cyber-atlas
- Karla Williamson – Arctic Resiliency

More structures may be needed in due course, to relate constituent projects to PPS Arctic, but these may arise naturally in the course of developing measurement protocols. Alternatively, the constituent projects may dissolve into the PPS Arctic programme. The meeting confirmed that it wished to remain open to the possibility of new projects joining the programme.

The first **project meeting** was provisionally proposed for March (+/- 1 month) 2007 in Tromsø, with annual meetings, alternating between Europe and North America, thereafter. It was suggested to invite Oddvar Skre to present another review of the EU funding situation at the 2007 meeting. Newfoundland was suggested as a venue for the 2008 meeting.

It was agreed that it will be important to have a PPS Arctic **web site**. This is likely to be hosted by NINA, at least in the first instance. A **logo** will also be developed. Stéphane Boudreau agreed to produce a draft design.

There was a brief discussion of the **long-term network** that it is hoped will outlive the IPY itself. This will at least in part be a way of fulfilling the requirements for outreach and education. Workshops will be planned for the later stages of the IPY, and it will be desirable to have a flow of people through this structure, e.g. by inviting new generations of students to such meetings, to provide continuity. At first, meetings will probably be coincident with those of the PPS Arctic project itself. A potentially suitable Canadian funding call is expected in April 2006. The name *Borderlife* was proposed for this network.

9. Site selection and characterisation

One of the first tasks of the PPS Arctic group, apart from seeking funding, will be to identify actual and possible research sites. Karen Harper will send to Annika a more or less complete list of Canadian sites in the second half of March 2006. Nancy Doubleday will draft a list of basic site descriptors, which will permit an assessment to be made of the completeness or otherwise of the coverage provided by the sites.

10. Measurement protocols.

Another early task is to begin to draw up measurement protocols. These will ultimately be compiled into a manual which will be introduced by a preamble discussing the overall aims of the project and the principles informing site selection and sampling design. Lead authors were identified for the following measurements, and although all members of the group will probably contribute to these protocols, some particularly indicated their wish to do so (and some people not at the meeting were 'volunteered'). *Note:* the lead authors are not expected to write the whole protocol themselves!

Measurement	Lead author	Interested contributors
Spatial configuration of treeline at different scales; transects	Karen Harper	Gareth Rees, David Cairns, Rod Savidge, Nancy Doubleday
Vegetation structure and composition	Luise Hermanutz	Karen Harper, Stéphane Boudreau, Annika Hofgaard
Age structure of trees and shrubs	Stéphane Boudreau, Annika Hofgaard	David Cairns, Rod Savidge
Plant physiology and phenology	Oddvar Skre	Rod Savidge, Frank Berninger
Seeds	Rod Savidge	Oddvar Skre
Soil ecology	Gavin Kernaghan	Greg Henry
Results of environmental manipulations	Greg Henry	Oddvar Skre, Frank Berninger, Scott Green
Snow cover and other meteorological data	Gareth Rees	Pete Kershaw, Annika Hofgaard, Greg Henry
Animals	Stéphane Boudreau	
Inhabitants' assessments on limits to quality of life	Tatiana Vlassova, Nancy Doubleday	Karen Harper
Socioeconomic indicators (health, education, demographics...)	Tatiana Vlassova, Nancy Doubleday	
Traditional indigenous knowledge (including as a way of sampling environmental variables)	Tatiana Vlassova, Nancy Doubleday	Greg Henry, Trevor ...
Site characterisation	Nancy Doubleday	