

# CAFF FLORA GROUP (CFG) REPORT

## Conservation of Arctic Flora and Fauna XI

May 2006

Submitted by

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### 1. Summary of accomplishments for the Work Plan 2004-2006

#### **Item 1.5. Complete checklists of Arctic lichens and bryophytes.**

##### **Lead: Iceland and Canada**

Dr. Hörður Kristinsson, Iceland, reports that the work on the Panarctic Lichen checklist is proceeding. It is our intent to place the draft checklist on the CAFF Web Page. He managed to get a copy of a rather new, Russian list of lichens within protected areas of Siberia from the IUCN: “The present-day state of biological diversity within protected areas. Lichens and Bryophytes” published by the Ministry of Natural Resources of the Russian Federation, Moscow. Dr. Kristinsson incorporated this information into the database. He also sent a copy of the database to Dr. Ted Ahti in Helsinki, and he is checking it and making notes and suggestions to it. Dr. Kristinsson is continuing to be in contact with Dr. Irwin Brodo, Canada, for more information on the lichens of Canadian Arctic. Dr. Kristinsson looks forward to making the list available on the CAFF webpage, as soon as considerations about the Arctic Portal are resolved.

Dr. René Belland, Canada, is working on the bryophyte list. He has: 1) collated the most important contributions/literature for major arctic areas; it is almost complete for North America (Canada/Alaska), Iceland, Greenland; 2) started to develop a master list of bryophytes, using a standard taxonomy; has entered list of bryophytes for Canada, Alaska, Iceland and Greenland into a digital database; currently working a developing a taxonomic standard; 3) compiled species occurrences in each arctic zone (final product); develop a database to hold the data, mostly completed; enter the data from the lists included in the bibliographic references – yet to start.

A master list of mosses will be completed by early March at latest. It will merge checklists for Canada, Iceland, Russia, and Alaska. No progress on getting species lists by region as per the regions on the CAFF map. He is mulling over how to do this, or if it is even possible to do this, given the resources at his disposal. It is a huge job, and he does not have access to the information needed to do a decent job.

**Item 1.6. Complete a project on "Traditional Use and Conservation of Plants from the Aleutian, Pribilof, and Commander Islands by 2006.**

**Lead: Aleut International Association** The document was completed and will be available for the next Ministerial meeting.

**Item 1.7. Publish results of the "Second International Workshop on Circumpolar Vegetation Classification and Mapping" by 2006. Lead: Norway, Greenland and US**

This action item is complete. The proceedings of the Tromsø workshop are now published in a special issue on Arctic vegetation *Phytocoenologia*, vol. 35, no. 4. This is a landmark volume and will serve in the conservation of Arctic ecosystems. The title of the special volume is "**Classification and Mapping of Arctic Vegetation**" (Editors: Daniels, F. J. A., Elvebakk, A., Talbot, S. S. and Walker, D. A.). The table of contents follows:

**The Second International Workshop on Circumpolar Vegetation Classification and Mapping: a tribute to Boris A. Yurtsev**

pp. 715-725(11)

**Authors:** Walker, Donald A.; Elvebakk, Arve; Talbot, Stephen S.; Daniëls, Fred J.A.

**Comparative phytosociological investigation of subalpine alder thickets in southwestern Alaska and the North Pacific**

pp. 727-759(33)

**Authors:** Talbot, Stephen S.; Talbot, Sandra Looman; Daniëls, Fred J.A.

**Plant communities and soils in cryoturbated tundra along a bioclimate gradient in the Low Arctic, Alaska**

pp. 761-820(60)

**Authors:** Kade, Anja; Walker, Donald A.; Reynolds, Martha K.

**Plant community-level mapping of arctic Alaska based on the Circumpolar Arctic Vegetation Map**

pp. 821-848(28)

**Authors:** Reynolds, Martha K.; Walker, Donald A.; Maier, Hilmar A.

**Studies on the vegetation of fens, springs and snow fields in West Greenland**

pp. 849-885(37)

**Authors:** Dierssen, Klaus; Dierssen, Barbara

**Altitudinal zonation of vegetation in continental West Greenland with special reference to snowbeds**

pp. 887-908(22)  
**Authors:** *Sieg, Birgit; Daniëls, Fred J.A.*



**Syntaxonomy of arctic terricolous lichen vegetation, including a case study from Southeast Greenland**

pp. 909-949(41)  
**Authors:** *Bültmann, Helga*



**A vegetation map of Svalbard on the scale 1:3.5 mill.**

pp. 951-967(17)  
**Author:** *Elvebakk, Arve*



**Monitoring vegetation changes on Finnmarksvidda, Northern Norway, using Landsat MSS and Landsat TM/ETM+ satellite images**

pp. 969-984(16)  
**Authors:** *Johansen, Bernt; Karlsen, Stein Rune*



**Oligotrophic and mesotrophic vegetation in southern Scandinavian mountains. Gradients in species and community distribution extracted by numerical analyses of earlier published vegetation descriptions**

pp. 985-1018(34)  
**Author:** *Odland, Arvid*



**Vegetation of the classes Carici-Kobresietea and Cleistogenetea squarrosae in Central Chukotka**

pp. 1019-1066(48)  
**Authors:** *Kucherov, Ilya B.; Daniëls, Fred J.A.*



**'Arctic hotspot complexes' – proposed priority sites for studying and monitoring effects of climatic change on arctic biodiversity**

pp. 1067-1079(13)  
**Author:** *Elvebakk, Arve*

### **III. Assessing and Monitoring Arctic Biodiversity**

***Item 3.3. Complete an evaluation of monitoring of local flora in Russia, and determining its application in a circumpolar context by 2006. Lead: Russia and US***

Comment from the Chair, CFG: The death of Dr. Boris Yurtsev brought about a period of uncertainty with the status of the paper. Dr. Sergey Balandin, Moscow State University, has agreed to prepare a manuscript. This will involve not only editing but expanding the manuscript because of Dr. Yurtsev's property rights to the information

## **2. Discussions you have had on various projects or issues including**

**IPY:** Scientists from each country appear to have submitted their own

proposals for IPY. Each scientist appears to be protective of his or her own area.

The Alaska Region, U.S. Fish and Wildlife Service, submitted an IPY proposal that includes some items of interest to CAFF including an initiative for a boreal vegetation map.

The Chair of the CAFF Flora Group agreed to serve as a collaborator on a proposed IPY-Canada project "Flora of the Canadian Arctic: diversity and change". The project was initiated by Dr. Lynn Gillespie, Research Scientist, Vascular Plants, Canadian Museum of Nature, Ottawa, Ontario, Canada K1P 6P4

### **3. New Members of the CAFF Flora Group: Canada & Russian Federation**

The death of Boris Yurtsev, Russia, and the retirement of Dr. Susan Aiken, Canada, required the selection of replacement members to the CFG. For Russia I am pleased to report the following new members:

Dr. Sergei Balandin  
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For Canada there are two new members:

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**4. Cooperation with the IUCN.** The CAFF Flora Group sought cooperative ties with the IUCN. We are now designated as the Arctic Plant Specialist Group of the IUCN SSC. One of our first duties was to develop a list of Arctic species whose threat was “Vulnerable” or higher. We prepared a list of 15 species:

**List of Rare Arctic Plants Under Consideration for Protection with IUCN**  
**Updated List of CAFF Flora Group (CFG)**  
**3<sup>rd</sup> International CFG Meeting Helsinki**

- 1 *Artemisia aleutica* Hultén – US - VU
- 2 *Astragalus gorodkovii* Jurtz.– Russia - VU
- 3 *Cardamine sphenophylla* Jurtz.– Russia – VU
- 4 *Douglasia beringensis* S. Kelso, B. A. Jurtsev, & D. F. Murray – US – VU
- 5 *Hedinia czukotica* (Botsch. & Petrovsky) Jurtz., Korobk., & Balandin – Russia – VU
- 6 *Polystichum aleuticum* C. Christensen – US – EN
- 7 *Puccinellia jenissenjensis* (Roshev.) Tzvel. - Russia – VU ?
- 8 *Puccinellia rosenkranzii* Th. Sør. - Greenland – VU ?
- 9 *Puccinellia svalbardensis* Rønning - Norway – VU ?
- 10 *Ranunculus wilanderi* (Nath.) Å. Löve & D. Löve - Norway – VU ?
- 11 *Salicornia borealis* Wolff & Jeffries - Canada – VU ?

12 *Salix stolonifera* Covil. subsp. *carbonicola* Petrovsky – Russia - VU ?

13 *Taraxacum leucocarpum* Jurtz. & Tzvel. - Russia – VU

14 *Taraxacum nanauui* Jurtz. – Russia – VU

15 *Taraxacum tolmaczewii* Jurtz. – Russia – VU

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The CFG Chair drafted letters to group members for them to review the status of each species within their respective countries. The list of species is now under review. The following individuals agreed to serve as IUCN SSC members and are listed by country:

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\*Chair

**5. New Roots for the 21<sup>st</sup> Century:** The CFG Chair attended a bilateral conference “New Roots for the 21st Century: U.S.-Russia Botanical Conference”, September 19-23, 2005, at Wilson College, Chambersburg, PA. Action items for the CAFF Flora Group were stressed to the group. The final proceedings are being prepared. In the interim it can be mentioned that the US proposed the following items:

- Encourage the use of rare arctic plants in botanical gardens.
- Promote U.S.-Russia bilateral ethnobotanical studies of the amphi-Beringian region.
- Translate and publish a series of key phytosociological and floristic papers on the vegetation and flora of the amphi-Beringian region from Russian to English and vice versa.
- Establish floristic regions of arctic and boreal zones within Russia and Alaska based on the Russian concept of ‘local floras’ using multivariate techniques.
- Conduct a circumpolar workshop to develop a strategy to identify, map, and analyze bioclimatically-defined “Arctic hotspots” based on the ideas put forth in a paper by in the journal *Phytocoenologia* 35(4).

- Convene a circumpolar workshop to develop a strategy to map the vegetation of the circumpolar boreal zone, related to global change and modeling vegetation change, expanding the region covered by the Circumpolar Arctic Vegetation Map (CAVM) into boreal regions to the south.
- Communicate the needs of botanical gardens for plant materials from northern regions to the Conservation of Arctic Flora and Fauna (CAFF) Flora Group [stephen\\_talbot@fws.gov](mailto:stephen_talbot@fws.gov) as potential action items for CAFF XI which will be held in Finland, June 2006.
- Encourage the completion of the Panarctic Flora (PAF) and prepare an initiative to investigate the taxonomic status of critical northern taxa as identified by PAF through the study of their molecular genetics and morphology.
- Initiate a Panboreal Flora (PBF) expanding the region covered by the Panarctic Flora into boreal regions to the south.
- Encourage a U.S.-Russia bilateral exchange agreement between botanists of the national wildlife refuge system in Alaska with similar protected areas in the Russian Far East to initiate integrated databases, botanical exploration and phytosociological inventory. Protected areas such as the Alaska Maritime National Wildlife Refuge (Aleutian Islands Unit) and the Commander Islands and Kamchatka might be used as a test case.

**6. Projects Under Consideration** — Develop a strategy to identify, map and analyze bioclimatically defined ‘Arctic hot spots’ as a research project, based on the ideas put forth in a discussion paper submitted by Norway.  
*Lead: Norway*

Dr. Elvebakk published his ideas in a paper that appeared in *Phytocoenologia* 35(4): 1067-1079: ‘Arctic-hotspot complexes — proposed priority sites for studying and monitoring effects of climatic change on arctic biodiversity’. At the bilateral conference “New Roots for the 21st Century: U.S.-Russia Botanical Conference”, this idea was heartily endorsed by the members from both the U.S. and Russia.

## **7. Vegetation of Arctic Alaska. CAFF Map No. 2.**

This new project is complete. The work expands the work of the CAVM with a more detailed map of the vegetation of Arctic Alaska. It will appear as CAFF Map No. 2 published by the U.S. Fish and Wildlife Service, Anchorage, Alaska.

**8. CAFF and Ministerial Endorsements:** Circumpolar Boreal Vegetation Map, related to global change and modeling vegetation change, expanding

the region covered by the Circumpolar Arctic Vegetation Map (CAVM) into CAFF boreal regions to the south, and endorses the preparation of a progress report prior to CAFF XI.

The CAFF Chair will meet on 14 March 2006 at the University of Alaska Fairbanks with a four others to discuss how to get the mapping effort started. The initial group will be Drs. Donald "Skip" Walker, Teresa Nettleton Hollingsworth, and Terry Chapin, University of Alaska Fairbanks, and Dr. William Gould, U.S. Forest Service. The purpose of the meeting will be to 1) discuss the concept of a circumboreal map, 2) the possibility of forming an organizing committee for the first workshop, 3) funds for a first workshop (other than the one between the group), or the need to write a proposal for a Workshop.

A pre-proposal was submitted to the National Fish and Wildlife Foundation for funding a strategy workshop to support an international, circumboreal vegetation mapping (CBVM) effort. Unfortunately, the Foundation rejected the pre-proposal in May 2006. The CFG requests input from the members at the CAFF Board on funding suggestions for circumpolar map. With the Ministerial support for the mapping project, it would be most encouraging if the CAFF Board would agree to some level of funding to make this a success. The CAVM clearly demonstrated that it could be accomplished. Funding support from CAFF itself would be most encouraging. The map is a tremendous effort – greater than the CAVM. Financial encouragement is essential to get the project moving forward.

A copy of the pre-proposal follows:

### **National Fish and Wildlife Foundation – Pre-Proposal**

**Project Name:** Workshop to Develop Circumboreal Vegetation Map (CBVM)

**Organization:** U.S. Fish and Wildlife Service, Region 7

**Primary Contact:** Dr. Stephen S. Talbot

**Street Address:** 1011 East Tudor Road, MS 221

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**Organization's Internet Address:** <http://alaska.fws.gov/>

**Foundation Funds Requested:****Other:** \$60,200.00**Total Matching Funds:** \$231,000.00

Other costs: Travel expenses (\$50,000.00); salary for administrative support (\$5,200.00); and miscellaneous workshop expenses (\$5,000.00).

**Add Another Source:**

Source: U.S. Department of State

Amount: \$15,000

Status: To be applied for

**Project Summary:** Conduct workshop to develop a map of the circumpolar boreal vegetation and watershed emptying into the arctic basin. A major goal is to identify and conserve critical habitats in the boreal region.

**Project Site:** Finnish Environment Institute, Mechelininkatu 34a, P.O. Box 140, FIN-00251 Helsinki, Finland

**Conservation Need:** During the next few decades the boreal forest will be strongly affected by many forces from within and outside the region, including global climate change, cumulative impacts of resource development, human populations and tourism. The relative simple and fragile ecosystems could be dramatically altered through changes to the vegetation, wetland destruction and thawing of ice-rich permafrost. This could have important consequences to the wildlife resources and to the Native people within the boreal forest. A new vegetation map would provide a common legend and language for ecosystems of the boreal region. Such a map is needed for a wide variety of purposes related to land use planning, education, and anticipated global changes. Some of the key conservation/management issues in the boreal forest region include effects of fire disturbance, timber harvesting, and exotic species management. A key objective of the map will be to identify and map regions of diversity/rareness/value and their vulnerability to global and local climate change and anthropogenic impacts, i.e. "boreal hotspots". Currently, vegetation maps of the circumboreal region exist at a wide variety of scales using many legend approaches, and have been developed by numerous authors for a wide variety of disparate applications. To fully address the consequences of these conservation and management issues, a circumboreal vegetation map is needed with a unified legend approach. A major goal is to make the map compatible with the Circumpolar Arctic Vegetation Map (CAVM), which was also partially supported at its inception workshop by the National Fish and Wildlife Foundation. Because of the circumpolar nature of the boreal forest region, many plant and animal species occur across national borders and co-occur in the United States and Canada or the United States and Russia, therefore the vegetation map can be best understood at an international level. A circumboreal vegetation map will have numerous application uses for boreal scientists and managers such as impact studies on wildlife and feedback mechanisms in models such as increased emission of greenhouse gases. Circumboreal vegetation mapping will also contribute to global efforts on improving understanding and communication to policymakers of what the potential risks are to humanity and our environment with continued development, exploitation and pollution. The proposed Circumboreal Vegetation Mapping (CBVM) project received the endorsement of the "New Roots for the 21st Century" US-Russia Botanical Conference (September 20-23, 2005, Wilson College, Chambersburg, PA), the Conservation Arctic Flora and Fauna

(CAFF), and the Senior Arctic Officials representing the eight Arctic States, convened in Reykjavík, Iceland, have all endorsed the development of a circumpolar boreal vegetation map by Ministerial Declaration at the 4th meeting of the Arctic Council, November 24, 2004.

**Objectives:**

Objectives of the Workshop:

1. Identify international collaborators for the Circumboreal Vegetation Mapping (CBVM) project
2. Summarize the status of circumboreal vegetation mapping (product being regional review papers)
3. Establish a floristic and hierarchical legend approach
4. Define the region of the CBVM
5. Explicitly define the goals of the CBVM
6. Set a schedule for making the CBVM
7. Identify the applications for which the map will be used (i.e. global models, education, resource management, land-use planning, conservation)

**Logic Framework:**

Activities	Project Outputs	Post-Project Outcomes
International workshop	1. Review papers of circumboreal classification and mapping 2. Define scope, boundaries, approach and schedule 3. Identify key mappers 4. Establish set of goals, protocols, and international organization	1. Complete CBVM in 5 years 2. Provide decision-making data to users for planning, management, global models and outreach 3. Identify key conservation sites 4. Apply for major grant for making map
Publication of workshop papers	Series of published papers in an international journal	1. Information dissemination for education of policy makers and public 2. Improved future collaborations, ecological assessments and more effective coordination of research and managerial activities

**Methodology:**

Schedule of activities:

Jan 2007: Workshop announcement, invitations, and web-site to publicize the workshop for 25 invited participants supported by this grant and 25 supported by other funds.

March 2007: Deadline for abstracts for workshop presentations. Preparation of abstract volume.

May 2007: Workshop at Finnish Environment Institute, Helsinki. Finland would serve as host for the workshop.

Aug 2007: Final papers due for publication.

Dec 2007: Publication of workshop papers in international journal. Possible journals include Canadian Journal of Forestry, Canadian Journal of Forest Research, and Phytocoenologia.

Collaboration with international partners:

Key partners in the making the map will be identified in each of the circumboreal countries, including the Canada, Russia, Sweden, Finland, Norway, Iceland, Greenland/Denmark, Japan, China, Korea, and U.S.

A preliminary list of invitees includes the following:

Canada:

Dr. Paul Trietz, Queens University

Dr. Charles Tarnocai, Agri and Agri-Foods Canada, Ottawa

Dr. Merritt Turetsky, Mich. State University

United States:

Torre Jorgenson, Alaska Biological Research, Inc.

Dr. Donald Walker, University of Alaska Fairbanks

Dr. Teresa Hollingsworth, Boreal Ecology Cooperative Research Unit, PNW Research Station, USDA Forest Service

Dr. David McGuire, University of Alaska Fairbanks

Dr. Catharine Thompson, Olympic National Park (NPS)

Dr. Stephen Talbot, U.S. Fish and Wildlife Service

Dr. Bill Gould, Institute of Tropical Forestry, USDA Forest Service

Finland:

Dr. Pekka Harma, Finnish Environment Institute

Greenland:

Dr. John Feilberg

Iceland:

Dr. Guomundur Gudjonsson, Icelandic Institute of Natural History

Japan:

Dr. Kazue Fujiwara, Yokohama National University

Norway:

Dr. Bernt Johanson, Norut Information Technology

Dr. Arve Elvebakk, University of Tromso

Dr. Asbjorn Moen, University of Trondheim

Dr. Christian Nellemann, GLOBIO

Czech Republic:

Dr. Milan Chytry, Masaryk University

Spain:

Dr. Daniel Sanchez-Mata, Universidad Complutense

Russia:

Dr. Pavel Krestov, Institute of Biology and Soil Science

Dr. Natalja Moskalenko, Cryosphere Institute SB RAS

Dr. Galina Obureeva, Moscow State University

Dr. Irina Safronova, Komarov Botanical Institute

Dr. Trofim Maximov, Siberian Division of Russian Academy of Sciences

Sections of the workshop:

1. Regional review of existing maps
2. Applications of mapping to education, resource management, modeling and conservation
3. Map-making methods and legend approaches

#### 4. Boreal forest classification

##### **Organizational Qualifications:**

The main organization responsible for this project is the U.S. Fish and Wildlife Service (Dr. Stephen Talbot), with the collaboration of 3 main partners. The University of Alaska Fairbanks (Dr. Donald (Skip) Walker), PNW Research Station (Dr. Teresa Hollingsworth) and CAFF. Dr. Stephen Talbot was a primary contributor and editor of the CAVM and obtained much of the initial for the CAVM workshops. Dr. Skip Walker was project director for the CAVM, Dr. Teresa Hollingsworth developed a Braun-Blanquet classification for the boreal forest of interior Alaska as part of her PhD project, and will coordinate the CBVM within the USDA Forest Service. Other expertise will be selected from the circumboreal region (see methodology for list of collaborators).

#### **8. CAFF Flora Group Workshop, Helsinki, Finland.**

My sincere thanks to Mr. Esko Jaakkola, CAFF Chair, for hosting our meeting. He was an extremely gracious host and contributed markedly to the success of the meeting.

#### **9. CAFF Flora Group Workshop 2007: Request.**

The CAFF Flora Group (CFG) will meet in the spring 2007 for their biennial meeting. The CFG unanimously supported the concept of having the next CFG meeting in the Faroe Islands. Discussions with Dr. Anna Maria Fosaa are currently underway.

#### **10. Proposed Action Items for Next Two Years:**

- a. Continue to seek funding to conduct workshop to develop a map of the circumpolar boreal vegetation and watershed emptying into the arctic basin.
- b. Submit documentation to the IUCN in support of a proposed Red List of arctic plant species.
- c. Encourage the use of the GLORIA (Global Observation Research Initiative in Alpine Environments), a worldwide monitoring network for climate change impacts on the ecology of high mountain systems.
- d. Develop a collaboration within CAFF to delimit floristic regions within the circumpolar Arctic responsive to environmental variables such as climate using some of the principles developed by the CFG.