

GCTAC June 4th Meeting

Attending: Alvin Yanchuk, Andreas Hamman, Brian Barber, Dave Kolotelo, Greg O'Neill, Jack Woods, Jodie Krakowski, Lee Charleson, Sally Aitken, Tongli Wang

Absent: Alex Woods, Scott Green

Guests: Diane Douglas, Keith Thomas, Pia Smets,

ACTION ITEMS

1. Sally to co-ordinate review of chapter 1 of the catalogue with the tree breeders and others, including, but not restricted to Tori Stevens, Jim Pojar, Ray Coupe, Andy McKinnon, and regional Ecologists.
2. To form a catalogue committee to investigate the logistics involved in maintaining and updating the in situ catalogue. The following individuals were thought to be important to the process: Sally, Pia, Matt, Lee, Leslie, Christine, Jodie and Tongli. Lee Charleson will lead this committee.
3. Sally will organize a committee to review and revise existing priorities for genecological research of "non-commercial" species.
4. GCTAC members to review and provide comments on the following if they have not already:
 - In situ Catalogue (Chapter 1) distributed via e-mail
 - In, Inter, Ex Commercial Catalogue (Chapter 2)
 - Whitebark pine work plan
5. Brian to lead the development of a whitebark pine strategy to provide strategic direction to ongoing and future activities with the species. Development will include MFR, MOE and other agencies interested in the genetic conservation and management of this species.

MOTION : Jack – seconded by Sally

GCTAC recommends to FGC that the unallocated \$100K be allocated to Research Branch to fund part of Jodie Krakowski's salary and operating funds and that the remaining funds are subject to further allocation by GCTAC.

1) GCTAC Membership – a couple of changes

- 1) Lee Charleson will replace Brian Barber on GCTAC – Thank you Brian for your participation and contribution to GCTAC.
- 2) Jodie Krakowski is a new addition to GCTAC

Everyone was welcome to contribute to the meeting.

2) FTE Request Update

Brian and Alvin provided an overview of the MFR decision to not currently allocate an FTE dedicated to genetic conservation. Here are the highlights:

- ♣ desire to wait until Research Branch Review is completed (currently stalled)
- ♣ concerns with optics of FTE consumption at this time
- ♣ no growth mode – need to re-adjust priorities
- ♣ change to salary envelopes (Base\$ + FIA\$ = BUDGET) whereas previously the base \$ received more scrutiny by MFR, now both

To deal the operational genetic conservation needs, it was determined that Jodie Krakowski would eventually move from her coastal revitalization commitments (which are many) to more responsibility for operational genetic conservation activities. The draft plan is for Jodie to spend 50% of her time on genetic conservation activities in 08/09; 66% in 09/10; and 100% in 10/11.

It was felt that at this time, this is the best we could do, but we have not given up on the idea of additional resources being required for genetic conservation. In the interim, from TIB, new hires Lee Charleson and Matt LeRoy may be available to assist with specific genetic conservation projects. Nowhere to go but up from zero people totally dedicated to genetic conservation activities in the MFR!

3) Cataloguing Efforts

A) In-Situ Report

A copy of this report was forwarded to GCTAC. If you have not already reviewed the document, please forward any comments to Sally. This is probably the 4th or 5th draft of the document and the plan is to have it go to press this fall. We had a lively discussion on the location of the document with the MFR Working Report series; FGC Extension Note series and a separate CFCG publication were options discussed. No resolution and it was left with the authors (Christine, Sally, Andreas and Alvin) to decide on the appropriate venue. The debate was primarily on how the cover page (banner) would look as the report would be linked to from a variety of sites.

ACTION ITEM – Sally to co-ordinate review of chapter 1 of the catalogue with the tree breeders and others, including, but not restricted to Tori Stevens, Jim Pojar, Ray Coupe, Andy McKinnon, and regional Ecologists.

This may simply be a review of the executive summary, but may require some additional time devoted to specific issues that may crop up. With Christine's ecological background it is not expected that many outstanding issues will arise.

We also discussed following publication of the catalogue, that a shorter extension piece would be worthwhile. One idea was to use the same format as that 'maroon' 6-page Tree Improvement in BC pamphlet as an appropriate format.

B) Inter situ activities

Alvin provided an overview of the inter situ spreadsheet that was prepared. The material consisted primarily of open-pollinated progeny tests, but some provenance tests are also included depending on what else is available for the particular species. The goal is to have an effective population size (N_e) of 100. The populations were discussed in terms of a Main site and backup sites. It was felt that the degree of redundancy should be more evident in presented tables.

C) Ex-situ Activities

Dave reviewed criteria for defining primary and secondary samples. Management of the seed bank consists of four basic activities:

- 1) Testing 'large' seed bank samples from expired seedlots
- 2) Adding grams to existing samples from active seedlots.
- 3) Adding new seedlot samples
- 4) Performing new collections.

We have already initiated #1 for a few high priority Bg and Cw seedlots. Running through the analysis it became clear that #2 (adding grams) is a more fruitful method of filling the gaps within the seed bank. This program will be initiated this fiscal year, although some priorities have already been established through the seed bank review and the in situ information.

A few data issues were brought up:

- 1) TIB is currently performing a Seed data Analysis to resolve some data discrepancies (mainly BEC, lat/long). This will likely result in some changes to the seed bank file.
- 2) Our current gap analysis includes seed orchard seed. It was decided that the orchard seed should be in a separate category and I will do this.

D) Chapter 2 - Commercial Species – putting in-, inter- and ex-together

Sally provided an overview of the progress of Chapter 2 and asked for feedback on the format. Pia described some of the limits of the data and the need for more GIS skills to be drawn in. This led into a discussion on updating the catalogue – namely when, how, who, and what.

The extent of the data analysis required was emphasized and that we should abandon any hope of having daily, monthly or yearly updates of the catalogue. It may be reasonable to update parts like the addition of new parks or to update specific species on an annual basis, but for a total re-analysis there was still comfort surrounding the 10-year timeline we have been discussing. This led into the need to further discuss the updating and maintenance of the catalogue and its eventual move from the CFCG to the MFR. Interesting discussion followed on what exactly is moving and what the various expectations are resulting in the need for further discussion with the involvement of additional people.

ACTION ITEM: To form a catalogue committee to investigate the logistics involved in maintaining and updating the in situ catalogue. The following individuals were thought to be important to the process: Sally, Pia, Matt, Lee, Leslie, Christine, Jodie and Tongli. Lee Charleson will lead this committee.

4) Ex Situ allocation

This discussion focused primarily on whitebark pine as we briefly reviewed “Whitebark pine seed collections for Genetic Conservation, Provenance Testing and Blister Rust Assessments: an overview of a work plan for 2008-2012” submitted by Michael Carlson, John King and Don Pigott. GCTAC members were asked to review the proposal and direct comments to me. Some general comments were the lack of objectives, lack of reference to existing information of genetic diversity and concerns with the practicality and feasibility of a blister-rust screening program.

We reviewed the existing collections of whitebark pine and established three priority areas:

#1 North Eastern BC - specifically Revelstoke to the Northern Rockies

#2 Okanagan Plateau

#3 North Coast - North of Bella Coola to South of Smithers

The focus is on whitebark pine, but we should also be aware of possible collection opportunities in other high priority species including limber pine, subalpine larch and jack pine.

5) Genecology Research Priorities

Jack provided an overview of the ongoing Genecology and Seed Transfer Committee which is developing a method for ranking genecology research priorities and seed transfer policy needs

(+administration, reporting and budget development responsibilities). This group is developing the ranking system for the commercial species and GCTAC is responsible for establishing the non-commercial species ranking for genealogical priorities.

We don't really like 'minor' species or "non-commercial" species, so if you have other suggestions as a term to capture these species, please forward that idea along. We didn't get very far in how this activity would work, but Sally has agreed to lead this initiative

ACTION ITEM: Sally will organize a committee to review and revise existing priorities for genealogical research of "non-commercial" species.

6) Random Forests Update (Thank you Tongli)

Use of Random Forest to predict future climate envelopes of BEC zones

The geographic distribution of plants is controlled primarily by climate, and BC forest ecosystems and their constituent plant species are expected to exhibit marked redistributions in response to climate change over the next century. Future climate envelopes of BEC zones have been predicted by Hamann and Wang (2006) using multivariate canonical discriminant analysis. However, a more accurate modelling approach called Random Forest has become available that will better predict future distributions of climatically defined habitats under a range of climate change scenarios. Random Forest is a machine-learning classifier that builds many decision trees and outputs classification of observations based on the mode of the many individual decision trees. It has recently been applied to model ecosystems and forest tree species and found to better predict their distribution zones than other commonly used approaches (Rehfeldt et al. 2006). Our preliminary results using this approach have demonstrated substantial improvement over previous methods as measured by the proportion of current mapped BEC units that are correctly predicted. In order to obtain the best predictions, the modeling process has been calibrated through 1) optimizing the combination of climate variables as predictors; 2) changing the level of BEC units as dependent variable; 3) tuning of the model; and 4) collaborating with ecologists. A robust Random Forest model has been built at the BEC variant level that can be used to predict climate envelopes for BEC Zone, Subzone and Variant at different resolution for current and future periods. Future work will focus on updating the model to the new BEC version (ver. 7) and selection of GCMs and CO2 emission scenarios.

7) MOE Conservation Framework Overview (Thank you Lee)

Lee provided an overview based on a meeting she had attended the previous day. Here are her notes:

Ministry of Environment Conservation Framework – Ecosystem Prioritization and Action

Grouping

- Several representatives from the FFEI (MFR) attended.
- Conservation Goals:
 1. To contribute to global efforts for **species** and ecosystem conservation
 2. To prevent **species** and ecosystems from becoming at risk
 3. To **maintain the diversity of native species** and ecosystems
- Two components: Species and Ecosystem
- Species component is completed.
- Goal of Ecosystem component:

To develop the methods and tools to set conservation priorities for ecosystems across the three conservation goals; and assign ecosystems to appropriate conservation actions.

- Mandate, expectations, milestones, timeframe and deliverables were discussed but not strongly resolved.
- Input from FFEI was welcomed and it was highly recommended that the framework be inclusive of the FFEI model and use common terminology.
- Two breakout groups were formed: Landscape and ecological communities/entities
- From the input of discussion and ideas, it was decided that a small subgroup would create a strawdog working document/plan to be circulated and provided to the remaining members of the group for further discussion and refinement. A plan for preparing methods and tools should be in place by mid-September.

8) 2008/09 FGC \$ Allocation plan

The plan was basically arrived at with Jodie becoming more involved with operational genetic conservation activities and filling some of the operational genetic conservation gaps. The plan is to allocate some of the \$100K to Jodie's salary, some to an operating budget and the remainder being unallocated until a plan is in place.

ACTION ITEM: For Jodie Krakowski to prepare an operational genetic conservation plan consistent with current gaps identified in the Genetic Conservation Plan.

The following is put forward as the motion to FGC

MOTION : Jack – seconded by Sally

GCTAC recommends to FGC that the unallocated \$100K be allocated to Research Branch to fund part of Jodie Krakowski's salary and operating funds and that the remaining funds are subject to further allocation by GCTAC.

We agreed that January 2009 would be an appropriate time for our next meeting, so I will begin organizing that in December. Thank you everyone.