Genetic Conservation TAC Meeting Minutes

Meeting held at the Provincial Tree Seed Center

November 21, 2013

Attendees in person: Dave Kolotelo (chair),Sally Aitken, Tongli Wang, Charlie Cartwright, Tory Stevens, Jun-Jun Lui, Alan Vyse, Marie Vance, Patrick von Aderkas, Don Piggot, Jack Woods, Pia Smets

Attendees by phone: Jodie Krakowski, Michael Murray, Randy Moody
Regrets: Andreas Hamann, Lee Charleson, Alvin Yanchuk

Dave welcomed people to the meeting.

Announcement of resignation as chair:

Dave advised that after nearly 9 years chairing the GCTAC he will be stepping down effective April 1, 2013. Dave asked current members to consider taking on this role or to provide ideas on who might be a suitable person. He pointed out that this position is primarily about organizing and providing leadership and less about having a strong technical background in conservation genetics. Dave's pending resignation and the issue of finding a new chair will be discussed at the December 5, 2013 FGC meeting.

Genetic Conservation Strategic Plan review and update:

Jack provided an overview of the expected FGC process for renewing the 5-year Strategic Plan. An update of the Genetic Conservation Strategic Plan (the Strategic Plan) will be part of this process. Dave would like people to consider needs and ideas. The current Strategic Plan is considered largely relevant, but some adjustments are needed. This plan will need to be updated over the next year.

Species of concern:

Whitebark pine (Pa)

SARA update: Randy Moody provided an update on work undertaken as part of Species at Risk Act obligations. Pa is a high priority for conservation work. Habitat is not considered limiting. There are questions pertaining to action plans and funding.

Field testing: Charlie presented progress on field testing. Seed sources from northern BC to northern California and east to Colorado are currently being stratified and will be sown in the spring of 2014 in the first of two test series. Skimikin Nursery Ltd. will grow the seedlings. The question about whether there is any expectation whether we will go back to the original ortets for seed collection was asked. Possibly. Most parent trees cannot be located, so a future seed orchard option may be more effective. Sally suggested collecting 1 or 2 needles from selected parents and putting them into long-term cold storage, as they may be useful in the future. This will be considered an **action item** for future seed collections in the field.

Rust screening at Kalamalka Forestry Center: Michael provided an overview of the blister rust inoculations that were performed on Pa seedling in the late summer of 2013. 50 seedlings from each of 10 parent trees were inoculated in both a greenhouse and inoculation chamber environment. Methods developed at the US Forest Service Dorena lab were used. The goal was to place 3,000 spores/cm^2 on seedling needles. This was achieved in the greenhouse, but not the inoculation chamber. Methods were tested and adjustment will be made for

future inoculation efforts. Seedlings from the same 10 parents were also inoculated at Dorena. Seedlings from another 30 parents will be inoculated in July of 2014.

Genotypic selection for whitebark pine blister rust resistance in Pa, white pine, and limber pine**:** Jun-Jun provided an overview of molecular genetics work to identify markers for resistance. Some success has been achieved.

Whitebark Pine Ecosystem Foundation of Canada: Don and Randy provided an overview of this Foundation and encouraged people to join. It is associated with the US Foundation.

Action: Jack will get the WBEFC link posted on the FGC website.

In further discussions, Sally suggested that the Pa field seeding trials put out by Sierra Curtis-Mclean should be assessed, and that she would like to get a MSc student to work on this.

Garry oak:

Sally announced that the Garry oak trial at the Cowichan Lake Research Station was brushed in 2013. There is some elk damage. The UBC trial was measured in 2013 and data are being analyzed by Jon Degner. He is also looking at leaf morphology. A genotyping-by-sequencing protocol will be used to see if this provides genotype information that correlates with phenotypic data and if the method is reliable.

Sub-alpine Larch:

Marie Vance described the field work she undertook in the summer of 2013. Sub-alpine larch (La) has a limited range that is threatened by climate change. The objective of this work was to collect foliage samples from as many sites as possible throughout the natural range prior to genotyping. A total of 44 sites were visited and 1293 individual trees were sampled, including populations in the gene archives at Kalamalka Forestry Center. The next step will be to complete the genotyping and to look for genetic markers that correlate with climatic variables. The 2013 field work was extremely successful.

Climate modelling:

Tongli provided an update on Climate modelling improvements to the ClimateWNA model and for developments on a climate-based seed transfer system. He is currently working on a next generation of modelling that will allow better projections of BC ecosystems and expected shifts due to climate change. This work continues to be a foundation for many types of climate-change work going on the BC and it is being adopted in other parts of the world.

UBC Center for Forest Conservation Genetics update:

Sally provided an update on CFCG activities. The CFCG has agreed to develop and maintain a web-based provincial Big Tree Registry. This is being done in conjunction with the current group organizing this initiative. An updated literature search on the genetic diversity of BC native tree species is also nearing completion. The AdapTree genomics project is well underway and is beginning to provide some very interesting results that will be relevant to conservation efforts. Also, the methods being developed will likely be useful for conservation projects.

MFLNRO Tree Improvement Branch Forest Genetics Section update:

Charlie provided an update. The non-commercial tree species conservation catalogue has not advanced much this year. There were discussions about the role for the catalogue. It was stated that the catalogue is a

foundation piece for setting priorities, informing this committee and other where the conservation priorities lie, and for quantifying performance indicators for conservation. The catalogue method needs some development to fully provide these services.

Genotyping work with aspen was completed and a paper prepared by Xie and Stoehr. The analysis is being expanded based on comments provided by Sally. Having some standardized statistics and analysis methods for this type of genotyping work would be useful. Tongli would like to see future predicted climate mis-match as part of these standard statistics.

> **Action:** Sally will prepare a draft protocol and list of informative statistics that can be used as a standard for molecular analyses.

Grand fir genotyping has not progressed and it is expected that an additional $24,000 will be needed to complete this work.

The meeting was adjourned at 4:00 PM

Minutes prepared by Jack Woods and Dave Kolotelo