GCTAC meeting June 11, The Catalogue.

Attending: Andreas Hamann, Tongli Wang , Meaghan Duke, Dave Kolotelo, Alvin Yanchuk, Pia Smets, Charlie Cartwright, Sally Aitken, Jack Woods, Annette Van Niejenhuis, Barrie Phillips, and (remotely) Christine Chourmouzis and Tory Stevens.

Regrets: Michael Murray, Deb McKillop, Alan Vyse, Don Pigott, Nick Ukrainetz, Greg O'Neill, Andy McKinnon, Jun-Jun-Liu, Lee Charleson, Leslie McAuley.

Agenda:

1 GCTAC mandate and objectives (Jack)
2 Background of the in-situ conservation report: process and assumptions (Pia)
3 Changes in Protected Area coverage since 2001 (Tory)
4 Impact of climate change on BEC zones and species ranges based on consensus projections (Tongli)
5 Limitations of the first catalogue and potential use of velocity calculations (Andreas)
6 Results of Jodie's ground-truthing work (Pia)
7 Update on inter-situ protection of non-commercial species (Charlie)
8 Ex-situ collections update (Dave K)
9 Discussion: next steps for in-, ex-, and inter-situ conservation
10 Discussion: research needs, actions re. catalog and on-the-ground activities

Minutes:

Below, "the Table" refers to Table 1 of report TR053, a table of species*BECzones combinations which shows where species occur (with reasonable frequency) and where there are concerns or issues. "The catalog" refers to previous in-situ conservation evaluation work, including document TR053 and its most dense output, the Table.

1. JW: The current strategic plan ends in 2014. We need to provide an update to FGC before the end of December 2014. We desperately need a measurable progress indicator, something to plot our progress on a graph.

2. PS: The current catalog is outdated and also had some known shortcomings.

3. TS: The largest changes in protected area coverage since 2002 are for coastal zones: CWH, MH, and for marine areas.
JW would like to see a table of % increase by zone rather than absolute changes by zone.
DK reminds that risks due to diseases are not properly captured in the Table.

4. TW: re. Future updates, conversion of the catalog to BEC version 9 or 10 is not straightforward. However, changes at the zone level may not be all that large, and we may not need an entirely new table.
AH: we previously used 1995 plot data. We can now use 2010 plot data,
ChCh: Can terrestrial ecosystem mapping (TEM) add site series information?
TS: 30% of BC is mapped with site series. Could be useful in specific zones or areas.
SA: we could do a case study of one area and look at changes resulting from such new information. Who would be using this type of information that would make its creation worth while?

5. AH: still has a project running evaluating in-situ protection in BC and AB (delayed due to staffing issues) using climate-based Species Distribution Modelling (SDM) and high resolution remote sensing data (landsat 6) as a filter, to evaluate in-situ protection. While the report is BEC based, the SDM component is not. Has not yet been published due to the need for verification.
His new approach is evaluating vulnerability based on climate alone (velocity calculations), which has been done for a much larger area (WNA), although the protected area data (IUCN) may be outdated.
JW expresses interest in developing AHs 'bubble graphs' into a progress indicator where bubbles represent species.

6. PS: Jodie's ground truthing exercise revealed that our census predictions are often wildly off, as expected, but also often consistently overestimating numbers. No trends could be identified that would help us improve our cataloguing methods, but with the verification data, some cells in the Table can now definitely be ticked off as 'adequately protected' (as per the criterion of 3 viable populations in a zone), and others are definitely of concern (again according to said criterion)
JW and AVN: the current catalogue does not take into account valuable trees outside of parks (Garry oak, choke cherry).
DK: 'stable' is not an accurate description of populations meeting in-situ thresholds. 'Habitat adequately conserved' is more accurate. The Table should describe what it means to convey.
ChCa: Jodie started to list threats, abundance, resilience etc. information for addition to the Table.

7. ChCa: Provenance tests for 9 minor timber species can count as inter-situ protection (report TR054?). There is also an auxiliary seed collection in Cowichan Lake.
SA: such provenance trials may have large value in revealing changes over time, but at what threshold do they constitute inter-situ conservation?
AY: provenance trials can only serve as rescue populations, not as a method to conserve low frequency genes. This inter-situ layer in the Table need not be completed for all cells.

8. DK: The Tree Seed Centre has funded much of the ex-situ work of maintaining old seedlots of potential conservation value. DK is doing a Gap analysis. What should the minimum size of a donation be?
SA: The Centre for Plant Conservation (Mexico?) states 2000 seeds per plant minimum. Our target should be 50 trees per population.
DK : is there value in keeping old samples from seed orchards?
SA: Yes, periodic samples of seed orchards, while not of immediate relevance to gene conservation per se, have been used for very interesting studies regarding impacts of climate change.
JW: what should our guidelines be as to when to remove an ex-situ conservation lot from storage and how to use it for conservation purposes? How would that impact how we set up our collection? Should we target certain populations?
SA: if our primary purpose for ex-situ collections is to restore populations, seed from ten individuals is not enough, but 50 individuals would be enough. We also need min. 50 m between sampled trees. (where feasible).
SA: Some research indicates leading edge populations may accumulate deleterious alleles due to surfing. Priority should go to 'rear edge' populations, but we don't want to waste time on fringe populations which are an artefact of sampling by BEC zone. Practically, if there are

enough trees to obtain a good sample for the population, we can consider the population useful (edge) rather than just a fringe population.
AH: ancient populations contain valuable genetic information. The velocity approach has also been used to look at this.
DK: several old research collections have poor quality seeds. Proper storage is vital.Some retesting is going on and will provide information on the value of this seed, if any.
JW : prefers storage of research lots at TSC except for actively used lots.

Action items:

AH

- will wrap up his previous project (in-situ conservation, 28 species, BC+AB) using VRI data for validation to make it publishable, as soon as he finds a suitable student to carry out the work (position has been advertised).
- suggests that any catalog updates in the next five years focus on minor species, using an updated parks layer, updated sample plot data, and updated BEC coverage (version 9 or 10).
- suggests using climate-based species distribution modelling (SDM) to derive species ranges and frequencies independently of BEC designation, which would render any future updates easier. (for those species where suffient plot data allow for SDM).
- commits to support Tongli/CFCG with data, code, and advice.
- suggests using small scale (provincial) climate modelling with the intent of obtaining velocities to add a risk layer to the Table.

TW

- will reconstruct species ranges from scratch with the help of Andreas, using SDM and updated sample plot data, beginning with certain minor species in an attempt to address cells of concern in the Table.
- is interested in assessing the importance of leading and lagging edge populations and vulnerable areas with regard to climate change.

MD

- will assist DK in the Tree Seed Centre with moisture testing of seedlots of interest for ex-situ conservation.

DK

- will continue to process older ex-situ seed collections by moisture testing, drying and moving lots from cooler to freezer until the backlog has disappeared.
- will draft some flexible ex-situ collection guidelines with the aim of encouraging contractors to collect seed from more than ten individuals per population where feasible. Some goals are >10 and upto 50 parents, ideally equal contributions per parent, and 2000 seeds per tree, but species biology and feasibility have to be taken into account.
- will continue to argue for clarity in the definitions used in the Strategic Plan and the addition of Populus balsamifera and Juniperus maritima to the species list in the Plan.

AY

- will work on draft collection guidelines with DK,
- will work with Charlie on how to insert inter-situ collections into a layer for the Table.
- is interested in individualizing conservation prescriptions for individual cells in the Table.
- is also interested in discussing the relevance of ex-situ seedlots for gene conservation in the context of climate change.

PS

- will obtain an updated Parks layer from Tory.
- will help Tongli screen all databases for potential problems before all the layers are joined, based on past experience with such issues.
- will ask Andy McKinnon on where and how to obtain updated sample plot data.
- will continue to look for and discuss meaningful progress indicators.

CharlieC

- will finish the third document on in-situ conservation.
- will also change the classification of trials in the field.

SA

- will support Tongli in his efforts, and will request financial aid to provide him with P/T assistance.
- will continue to discuss the role of ex-situ gene conservation with AY and AH.
- will report to GCTAC whether present genomics research indicates that BEC zones constitute the best management units/framework when these results become available.
- supports the inclusion of genotyping information (where available) and population genecology information in the catalog as one of the layers in the Table.

JW

- will support development and discussion of a progress indicator.
- supports the inclusion of leading/trailing edge population information a layer in the Table.
- will circulate the criteria previously developed for what constitutes 'adequate' protection and will support further discussion of this issue.
- will help re-write the Strategic Plan and support relevant discussions. He requests all GCTAC members to read this plan and provide feedback specifically about #4 'Objectives' and the terms 'representative' and 'adequate', though he feels those terms may be defined outside the Strategic Plan.
- proposes the Table with its several layers be made available online.

AVN

- Encourages GCTAC to focus on the feasible
- Will try help leverage resources and investigate ways of providing in-kind support, such as exchanging GIS work for modelling work with Tongli.
- Suggests an approach of 'adopt-a-park' for in-situ verification of infrequent minor species, enlisting the help of professional foresters, similar to the Big Tree registry.

BP

- Is pleased to stay informed about progress

ChristineC

- Is pleased to stay informed about cataloguing efforts

Tory

- Will provide updated parks information

All GCTAC members

- Read the Strategic Plan and provide feedback specifically about #4 'Objectives' and the terms 'representative' and 'adequate'

Some of these items are substantial in scope and in that case there is no intention that these items are finished by a specific time, such as the next meeting. Progress will, of course, be evaluated.

Minutes by Pia Smets.