

# Notes from the Thursday October 20, 2005 Meeting of the Scientific Advisory Panel

## Burns Bog Ecological Conservancy Area

### Attendance

SAP members: Richard Hebda (by phone), Allan Dakin, Geoff Scudder, Hamish Kimmins and Bob Peart

Planning Team Members: Greg Paris, Verne Kucy, Tom Bell, Ken Brock, Mitch Sokalski

Guests: Hugh Fraser, Sarah Howie, Mike Brotherstone, Paul Whitfield, Loger Aure

1. Notes from the September 15, 2005 Meeting Accepted.
2. The agenda was approved as distributed.
3. General Update and Status
  - a. Bob updated SAP members on the status of the Future Options Document and told them that it will be circulated prior to the next meeting and as an agenda topic next meeting would like their feedback.
  - b. Hugh Fraser updated SAP members on a few matters related to drainage: the beaver dam at 64<sup>th</sup>/104<sup>th</sup> is being inspected and kept at an elevation so not to risk neighbours; the peat installation adjacent to the 80<sup>th</sup> Street 'road raising' is complete; and that some dams were raised along the 96<sup>th</sup> St corridor to assist with fire fighting and they will be lowered in anticipation of the coming rainfall.
4. Wildfire Strategy for Burns Bog: Field Trip Summary and Next Steps

All agreed that the field trip was a great success and staff were thanked for the effort. Members agreed that their comments related to the fire from their September 15 meeting remain relevant, so they have been appended to these notes. In addition the following comments were made:

- Going on site was invaluable.
- The recent fire will lead to a 'glorious forest' in the future unless a strategy for proactive management is established. All the present conditions are good for forest, not bog where the fire occurred.
- The fire must be monitored overtime with a set of relevant indicators related to water chemistry and vegetation change. Most important is vegetation monitoring.
- Can any comparisons be established with the fire site from 10 years ago?

- The effects of the fire reinforce our strategy of raising the water table --- higher water is good for raised bog species and bad for the trees.
- Do we need to actively cut trees and take them out of the Bog?
- This was a light fire and not very hot except in a few spots. Can some sort of comparison between the two effects be monitored?
- Can fire staff be more thoughtful about the type of water used to fight the fire?
- We need to
  - Restore Sphagnum
  - Remove trees
  - Have the Bog wetter in treed areas.

Can we do this with firebreaks and partitions that assist bog restoration, fire management and provide access?

**QUESTION** In areas of the Bog prone to fire --- can we intervene with a plot system that has some flooded regions and some not (like a checkerboard) as this will assist with fire protection and help to save the Bog. Is there a longer term proactive strategy to contain the water in smaller areas or compartments of forest, with adjacent areas that are wet and boggy that can serve as fire breaks? Would 150-hectare plots be about right? Contain the fire by managing partitions of the bog that are wetter and drier and provide tracks/paths into the Bog to assist with fire fighting?

**AGREED** that **Verne** arrange to have the Fire Chief and/or his staff attend the November 17 meeting to discuss aspects of a wildfire strategy. It was suggested that the Fire Chief be provided these notes so that he has a flavour of SAP's thinking prior to attending. Our conversation would be formulated around these notes/thoughts.

**AGREED** that the proposal **Mitch** Sokalski presented to SAP regarding a photo record of the Bog be accepted with the condition that the photos be taken according to a scientific protocol that is systematic and can be repeated. Of particular interest is a photo record of early stages of re-sprouting, Sphagnum re-growth and wet vs. dry sites. The volunteers were thanked for their initiative.

**AGREED AND THANKED** Delta staff was thanked for their proactive work related to the Burns Bog Water Quality Sampling that was undertaken. It is and will prove to be very useful work. **Delta** was requested to undertake the following:

- Add Sample Site 6 that would serve as a baseline for Bog-type Type I water. This plot would logically be associated with an already established transect plot as established by Munson.
- Redo the original 6 plots to include conductivity analysis.
- Conduct these tests monthly for next few months so that change can be recorded.

## 5. Proposed Workshop on Lagg/Ditch-draining

It was agreed that a Lagg Workshop should proceed. Hamish's offer to host it at UBC during the week of February 13-17 (reading break) was accepted. A format of a day of workshops with a quick field trip to Camosun Bog, and a field trip the next morning to Burns Bog was discussed. We would finalize this format at the next meeting and discuss who should attend/be invited.

Might John Jeglum have a role? It was agreed that the workshop needed to focus on the following:

- What is a lagg --- what is/was the lagg area for Burns Bog
- Just how does a lagg work
- Agriculture, neighbours and flooding. Do we need a protocol?
- What are particular Burns Bog lagg matters
- How do you/can you make a new lagg --- are there ecological or engineering solutions that can 'mimic' a lagg?
- Connection of Burns Bog with the Fraser Lowland dynamics --- example salmon.

As a reminder key points from the September 15 SAP discussions follow:

- Can something be done 'all the way around the Bog'
- Prioritize key areas first --- the SE?
- Develop a conceptual idea and then have grad students pursue it
- How can we utilize the beavers to help us?
- Part of a larger research strategy for the Bog so not a one-shot effort.
- Can a lagg assist with fire management?

**AGREED** that true elevations are required for the entire surface of Burns Bog. Once these are obtained we can do measurements over time and see how the Bog surface moves up and down. The Lidar system was recommended. 1/2 metre and 1/10 metre contours were discussed, with 1/10 preferable. **Hugh** was requested to bring an estimate of cost to the next meeting and/or whether there are other alternatives that would provide the same data.

#### 6. Review/discuss Munson's monitoring report

Greg distributed Thomas Munson's monitoring report and explained about the parallel 'how to' manual. SAP members were requested to read the document and if they had any questions/comments to contact Greg.

It was confirmed that the foliar sampling is important, it was a question of a funding source to do it. Also there was a question about whether it would be valuable to conduct a foliar comparison with the area burnt 10 years ago?

#### 7. Research Strategy --- Overall Approach and Vision

It was agreed that a framework that 'shaped our research' would be valuable. It would be based on the previously agreed on statement (see below) as it begins to outline our desired outcome. This framework would also provide a mechanism for evaluating proposed research projects, applying some scientific rigour and assisting with funding to conduct the research. We need to know about the Bog so we can begin to understand it better and then even begin to establish some predictions. Some specific questions and strategies that require research are:

- The lagg system
- Sphagnum re-growth and restoration (It was noted that there wasn't a lot of Sphagnum in the fire area. Is there any value in seeding Sphagnum --- should we be encouraging Sphagnum through experimental seeding? How 'airborne' is Sphagnum as there are

- large areas of the Bog that have no Sphagnum source near by. Should we be digging holes (say 30cm x 40cm) to seed certain species of Sphagnum? We need advice on this?
- Biota/Water interplay --- interdisciplinary
  - Hydrology/restoration
  - Wildfire
    - Compare with previous burns
    - Regeneration
  - Exotics

*Return Burns Bog to an ecological condition shaped by raised bog processes, buffered from disruptive or disturbing adjacent processes on the landscape. Achieve this ecological condition by maintaining characteristic ecological processes, structure and biota interacting over time, while recognizing the directional forces of urbanization, adjacent land uses and climate change.*

*Measure and analyze the ecological condition using the following indicators:*

- i) *Characteristic ecological processes: hydrological systems and water chemistry, peat accumulation, trophic interactions, connection with adjacent ecosystems and landscapes.*
- ii) *Structure: the set of plant species or communities that define the bryophyte dominated shrubby structure and function of the bog habitat.*
- ii) *Biota: the set of key, rare and/or critical acidophilic species (plants, vertebrates and invertebrates) that is capable of natural or progressive evolution into another related bog ecosystem(s) with ecological integrity.*
- iii) *Timeframe: 100 years.*

**AGREED** A monitoring strategy for vegetation changes linked with raised bog ecosystems needs to be developed related to the research strategy. Monitoring is the critical base but it is difficult to raise money to do this and to get grad students involved, as it isn't seen as research. But it is the monitoring that will establish the baseline that will assist so much in research. Monitoring hydrology is the long-term key to it all and the detail from here will be the base to show success. Monitoring must be done every year and all the time.

Once we have a general sense of our research framework we can then begin to rough out the cost of conducting this research and where there may be some funding sources.

**AGREED** that our March meeting will focus on the topic of research framework, questions, strategy and funding. We need to better understand the condition of the Bog, see how it will play out over time with the flooding changes and how/if that will get to our desired future. What are the questions that we need to know now to get us to where we want to be in 5, 25 and 50 years.

Establish a system that is more predictive. Is it possible for us to establish a formal process that will help set research priorities and establish guidelines for that research? We must ensure that any research in the Bog is helping us to get to where we want to go. Might there be criteria that we put in place (link with vision, raised bogs, interventions) to ensure all this.

**AGREED** that GVRD would continue to turn down all research requests and /or refer them to the SAP for advice until this research strategy is in place. **Mitch** has existing criteria that he uses as guidelines and he would forward them to Bob for distribution to SAP members. It seems that it would be valuable to have a body something like SAP continue so there is an independent body that GVRD/Delta can go to related to decision making.

SAP members acknowledged that this was one big experiment and the hypothesis is related to raised bog restoration in an effort to implement the upcoming management plan for Burns Bog. We need to focus on ditch blocking and raising water. The research and monitoring strategy are directly related and must work together to achieve our long-term goals.

VERY IMPORTANT Conducting research is an option...monitoring is not an option. It is fundamental.

#### 8. Invasive Species Strategy

All members agreed that an invasives strategy is needed, particularly related to plants. We need to develop some concepts/principles that would provide a research framework. Some of this was addressed in reports for Hebda's review. First we need a sound baseline and then need to profile those species that will be problematic in raised bog systems (as some invasives won't be able to adapt to the water regime and chemistry)

**AGREED** that additional funding is required if we are to pursue this. **Ken and Paul** each agreed to examine federal sources to see if there was some money to get this research underway.

#### 9. Update on DFO and Salmon Information

**Ken** has been unable to gather the information that he wants on this matter yet so it will be carried forward to the November meeting.

#### 10. Next Meeting Date and Agenda

November 17 430-730.

The agenda will focus on the lagg workshop and the attendance of the Fire Chief.

#### 11. Future Meeting Dates (the third Thursday of the month)

December 8 **NOTE DATE CHANGE TO AVOID CHRISTMAS**

January 19

February 16

March 16

April 20  
May 18  
June 15

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Appended Notes related to the wildfire from September 15 2005 SAP meeting.

Fire in Burns Bog

Following are other SAP member comments:

- The key point is what can we learn from this.
- There is a place for fire in the management of the Bog. Fire in the Bog has quite a history.
- This reinforces that we need to keep the water table up.
- Yes it was an emergency, and the sensitive nature of the Bog must be honoured somehow.
- Fortunate this fire wasn't in the sensitive SW corner, nor did it affect the monitoring and control sites that have been established.
- Amphibians, reptiles, insects and small mammals have likely been harmed.
- Delta and GVRD need to clarify their fire management procedures, in particular
  - Salt water should only be used as a last resort. It is very harmful to the pH.
  - Likewise for fire retardant, although it isn't as harmful as salt water.
  - We need an overall fire management plan or guidelines that outlines a first response that isn't invasive and honours ecological integrity as much as possible, especially in the key SW Bog area.
  - Establish a process that doesn't demand emergency roads, as that would be very hard on the hydrology, especially near the dome.
  - Can a two-step process be put in place --- the first step being more sensitive and the second more intrusive as required?
  - Establishing a series of partitions (width to be determined) in a thoughtful way by removing trees/Labrador tea and squishing down the peat, thus lowering the ability for any fire to spread and encouraging herbaceous/wet species not woody plants. This partitioning is most important in the SW corner because of the monitoring plots.

RECOMMEND that SAP members get an opportunity to go on-site and discuss what future guidelines might or should be with key Delta and GVRD fire personnel as soon as possible. As part of this briefing SAP members requested a final map showing where the fire started, how it expanded overtime and what if any roads/incursions were established. Also it is important to understand the factors that limited the fire from being even bigger.

It is important to have a conversation with the fire experts about how you can balance the need to meet the public concern for air quality with the protection of key ecological elements of the Bog --- i.e. do both.

RECOMMEND that a fire-monitoring plan be put in place NOW. Be brought to SAP for review at the next meeting by Delta/GVRD.

- Water samples should be collected as soon as possible at the surface in the fire area and in ditches around the edges. In particular pH monitoring should be done immediately so that a base can be established. Also monitor the change in water quality over time --- burned vs. non-burned. Relate these changes to the established water flow/drainage.
- Other key factors that should be monitored are:
  - Invasive vegetation especially in the disturbed areas
  - The potential need for restoration.
  - Determine where the salt water was dropped if possible and determine effects on vegetation, water, etc.
  - Mapping the area that was burned and whether there were any areas within that that didn't burn, and how the burned areas re-colonize as related to ecosystem types.
  - How the burned area configures with pools of water and water levels.
  - A series of photographs in the spring 'to capture' the progress and sequencing of sprouting and greening.