

**Notes from the February 17, 2005 Meeting of
Scientific Advisory Panel
Burns Bog Ecological Conservancy Area**

In Attendance

SAP Members: Richard Hebda, Geoff Scudder, Bert Brink, Bob Peart
Planning Team Members: Paul Skydt, Verne Kucy, Greg Paris, Tom Bell, Ken Brock
Guests: Hugh Fraser, Sarah Howie
Observers: Three people observed the meeting.

Agenda Items

- Notes from the January 13, 2005 meeting were approved as previously circulated.
- The modified Terms of Reference were approved as circulated.
- The notes from the January 28, 2005 meeting and field trip were discussed.
- Action Points from the January 13 and 28 meeting were moved forward for discussion as the major portion of the agenda for this meeting.
- As a point of urgency it was stressed that any major outflow needs to be blocked as soon as possible. Longer term there will be an examination of ditching structures, etc but in the meantime we must cut off all major outflows.

Ecological Integrity

The approach to ecosystem sustainability adopted for Burns Bog should identify what is required to maintain essential ecosystem elements and critical processes, while accommodating change.

It was generally agreed that for the purposes of this project the following working definition of Ecological Integrity will apply.

Ecological Integrity in Burns Bog: *the maintenance of characteristic ecological processes, structure and biota interacting over time; recognizing the directional forces of urbanization, adjacent land uses and climate change.*

Whatever definition of integrity is chosen, indicators must be adopted to assess that integrity. For the purposes of Burns Bog the following indicator framework was suggested as a means for measurement and analysis:

Characteristic ecological processes: *hydrological systems and water chemistry, peat accumulation, trophic interactions, connection with adjacent ecosystems and landscapes.*

Structure: *the set of plant species or communities that define the bryophyte dominated shrubby structure and function of the bog habitat.*

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 ecosystem(s) with ecological integrity.*

Time: *circa 100 years.*

This definition and indicator framework will be confirmed at the next meeting.

Discussion Points

- What is our goal? (What is the scientific question?)

(To ensure the present ecological situation doesn't remain and) To put Burns Bog back on the right ecological path, run by natural processes that are dominant over human intrusions.

- What is required to preserve the ecological viability of Burns Bog?
 - A growing water mound (i.e. net increase in water storage)
 - A functioning acrotelm layer which in turn will promote the peat accumulation process
 - The re-establishment of peat-forming and associated communities widely throughout the Bog
 - The promotion of conditions that encourage the persistence of key wildlife, including rare and endangered species.
 - Maintaining bog-related biodiversity and habitat complexity within the Bog and adjacent ecosystems
 - Maintaining connections to adjacent habitats
 - The examination of specific threats to viability: such as human use and agents such as fire and drought.
- Will there always be a Bog?
 - With climate change there will be the same amount or more water, and warmer summers. "Will the line be crossed for survival, remembering we are at the southern limit of raised bogs?"
 - If the climate is severe it will be tough as the summer time drought will be too long.
 - If the acrotelm dries out and seals the bog, it will be difficult to preserve the Bog.
 - Sensitive monitoring for change is therefore critical --- with severe, moderate and minimal potential effects.
 - Initially we will therefore need to encourage restoration trajectories.
 - This means that there will have to be some level of human interference, of which hydrology will be the major forcing agent.
- Short Term/Urgent Research
 - The three maps and email that Allan circulated on February 16 were discussed. It was agreed that an overall Burns Bog monitoring framework needs to be established. However being realistic it was also agreed to focus initially on urgent short term matters and to address the longer term at a later date.
 - It was agreed to focus the short term research:
 - i) On the SW corner initially (F4, F5 from Table 4.11 in the EAO report) as it is generally accessible and there are portions of the Bog here that are both intact and disturbed.
 - ii) And that an increase in Sphagnum and decrease in trees were the critical monitoring points.
 - To this end the ability to take both water flow and level measurements needs to put in place as soon as possible, by mid-April at the latest. These need to be established in a location that is easily accessible so that collecting the necessary observations is simplified.
 - Initial baseline measurements/benchmarks can then be established. This is crucial so that over time comparative data can be analyzed.

- An established methodological procedure needs to be put in place. This procedure would ensure that the water measurement data can be connected meaningfully to vegetation changes: the increase in Sphagnum and decrease in trees.
- To this end it needs to be determined where it is best to put the Sphagnum and Tree plots, and then they need to be put in place by mid-June at the latest.
- Monitoring
 - Panel members stressed that for monitoring to be effective it must be paid. We can't rely on volunteers or an *ad hoc* process to do this.
 - Also monitoring is not research, it is the gathering of data.
 - A monitoring protocol needs to be established.
 - The federal government has a 'surplus weather station' that might assist with monitoring. SAP was interested in securing.
- Longer Term Research
 - Any long term research must link directly to the definition of ecological integrity as outlined earlier in these notes.
 - This research must be bog-wide (dome, rand and lagg) and examine adjacent issues. We need to get a better understanding of how this Bog works.
 - SAP needs to have a longer conversation about invasives. It is important to realize that invasives involve more than just plants.
 - One member stressed the need for ecological modeling as a framework to help the Panel think about the future. Decades from now the context of the Bog will be a green space surrounded by intensive urban use. It is necessary that any modeling spell out the value of Burns Bog to the region, province and country. Also needs to emphasize why public access needs to be restricted. Such modeling would assist in the future application for World Heritage Site status. This value statement could become an overarching vision for the Bog, as reflected by the covenants. It was agreed that this was an important conversation and would be put on the next agenda.
 - Linked to ecological modeling is climate change --- we need the latest modeling on the winter rain/drier summers question. This information will assist us in the fundamental question about how to keep/manage the water. We need the data on how much precipitation falls, minus the evaporation and runoff, which will then let us know the amount of water 'kept available' for the Bog. We can then determine if this amount of 'kept' water is sufficient if various ditches are managed to hold the water in the bog system. It was also agreed that a obtaining a satellite series of the Bog over the last 30 years would be useful to try to determine the 'shape' of the Bog over time.
 - There are a number of concerns regarding drainage and water regime management that are of concern, however it was agreed that the priority is to address the short term urgent issues first. (example eastern perimeter bluff run-off, foot of 96th)
- Budgeting/Funding
 - Short Term funds need to be located to start collecting the water regime data once the monitoring system has been put in place.
 - Delta may require some financial assistance related to establishing the short term monitoring stations.
 - Long Term it will be necessary to hire someone on contract to define the methodology related to what long term monitoring data is needed, the standards required to collect that data and where the repository will be for the collected data.

- The partners need to be aware the ditching structures to solve some of the longer term drainage problems will be capital intensive.
- Sometime we need to work out the required budget to implement both the short term and long term strategy.

ACTION ITEMS

A. Delta was requested to block any major outflow drainage as soon as possible.

B. Focusing on the SW corner of the Bog:

1. We need to determine 'what we have'. Hugh and Allan are to meet as soon as possible, attempt to locate as many of the old piezometers as possible and see if they are functioning. (They should be 'mapped' so they are easy to locate in the future). This information will help us decide where other piezometers and staff gauges are required.
2. Hugh Fraser is to take the lead, with Richard Hebda's and Allan's assistance to put a water flow and water level measurement monitoring system in place as soon as possible, by mid-April at the latest.
3. Geoff, Richard and Hamish are to establish a scientific methodology and protocol that ensures that the water flow and level data that is collected can be connected meaningfully to vegetation changes: particularly the increase in Sphagnum and decrease in trees.
4. Therefore, Sphagnum and tree plots need to be in place by mid-June at the latest with guidance from the Panel.

C. Other Items

5. Paul Whitfield and Bob to discuss ecological modeling and determine what information might be brought to the next meeting to assist that conversation. We need to determine the modeling parameters that would be most relevant as a predictive tool: i.e. link hydrology and biomass/acrotelm development, and drought sensitivity to climate change.
6. Hugh Fraser, Paul Whitfield and Allan Dakin to work together to get the surplus weather station relocated to Burns Bog. Advice is to be obtained from Richard Hebda regarding its potential best location.

Next Meeting Thursday April 21 430-730pm, GVRD 2nd Floor.

Future agenda items.

- John Jeglum's role.
- May field trip to discuss monitoring and invasives.
- Ecological Modeling
- Review critical lands as recommended by Hebda/McDade
- Review all EAO recommendations to ensure nothing missed
- Fisheries/Fraser River concern of BBCS
- Discuss Gateway in preparation for a May/June presentation.
- Longer term perimeter drainage issues.
- What advice/documentation is there about the effect of the Vancouver landfill on the Bog --- as related to drainage, chemicals and invasive plants?
- How can we connect with universities and colleges about research products by students and faculty that could help achieve our goals?
- Is there interest in the idea of developing a visualization of a 3D model of Burns Bog and its dynamics over time under different management scenarios?