

**Plains Island Forest Workshop
March 20, 2003
Meeting Minutes and Summary**

Comments and questions raised following the keynote presentation on Plains Island Forests by Norman Henderson:

What have been the messages from management in response to the options suggested by this study?

- Management is not unified in their response. They are more focused on current concerns such as ranching, cottages, and mature forests – issues that are “here and now”. Concern with climate change will grow as long it directly helps the management in some way; otherwise these people are very cautious and uncertain on the topic of climate change.

Does the modeling in this study take into account genetic adaptation and tolerance of species? What is the limit of this tolerance?

- The model doesn't look in-depth at genetic adaptation and tolerance. Perhaps we should look for species that could grow on drier sites and have more resistance to dry conditions. Looking beyond island forests to find these drought-resistant species may be necessary.

According to figure 6 in the summary document, it seems this warming and drying trend will never cease and forests will be lost altogether. By 2120, the window of tolerance for new species most likely will be very small. Therefore, should management decisions be based on a long-term time frame that may never stabilize?

- We don't know because we aren't capable of hypothesizing that far into the future. We have much more certainty for the short-term and that is why 2050 was picked as the study time frame. It is difficult to know how far ahead to jump because if you look south to the United States, you can see that they have some very drought-tolerant species of trees. So even if it gets worse into the 2080s, there may still be some adequately drought tolerant species.

Parks are faced with many issues (fire and insects for example) and climate change is only one, not immediate, issue. We try to look at forest renewal and incorporate all the issues into an adaptive management plan. However, there are numerous pressures in planning and we need to be flexible which means some issues take precedence over others. Perhaps the recommendations made in this study actually should not be made because additional time and discussion is definitely needed.

- We thought this study would be a good way of forcing discussion. It is very true some climate change related decisions can and should wait for more information and greater certainty. Some things do need to be done now – things like monitoring and test planting – because catastrophic change is a real possibility. (We do need to be careful when saying that natural processes are catastrophic however).

Could we look in the recent past to determine what trees will look like in the future? Could this study be put in the context of past-vegetation change so as to understand the present and future dynamics of landscapes? Would this also change the views of stakeholders?

- Yes, using historical data would be beneficial and may be more useful than climate scenarios which some people will always have legitimate skepticism about. Whether stakeholder views would be altered is uncertain.

Leadership is very important, such as a “bite-the-bullet” attitude. Compromises are needed to make this work.

- We need to know what people are thinking about the issues in order to do this.

What about the consideration of fire as an alternative to addressing climate change?

- Controlled fire may be useful. If the tree species do well and naturally regenerate following the fire, this is a positive outcome. We should be doing this now to see the success rate.
- Using fire is a management tool. The forest system is most vulnerable at the time of regeneration, and with climate change causing increasing drought, there is the possibility that regeneration will not occur and the system becomes increasingly vulnerable. The system could ultimately fail. Do we want to take this risk?

With the risk of poor post-fire regeneration, could dendrochronological records be used to reveal which tree species have regenerated the best in the past?

- When we look back in time, only the good is seen. We need local particulars, topography, and other details aside from the dendrochronological records to see the life of a tree. It is a different scale of analysis.

Is there a threshold of regeneration for different tree species?

- Yes, regeneration success can be based on climatic conditions. We should inventory what we have before testing.
- We actually know very little and should not tinker with these forests! We should rather help nature take its course.

Is the value of the park going to change if ecosystems go from forest to grassland?

- Parks are always in a state of flux so we shouldn't contemplate big changes.
- Ultimately, visitors and investors will not let nature take its course because the park needs to reflect what the people want and this will always be done.

Comments and questions following Mark Johnston's presentation on Climate Change and Fire Hazard and Forest Volume Production, and Rory McIntosh's presentation on Climate Change and Forest Pest Scenarios:

- Values on the landscapes will change, so should these changes be prevented or promoted? For example, timber versus recreational uses. What are the possible target landscapes?
- The spruce pine beetle in Alaska and BC has a one-year cycle now rather than a two-year cycle because of the warmer winters and reduced snow pack.

Key climate change/island forest questions:

1. Do scenarios of future climate have sufficient scientific credibility such that they should already influence current management of Plains island forests? From a forest manager's perspective, what are the key knowledge gaps that remain to be addressed with respect to climate change impacts?
2. What vegetation monitoring is required to let us know if hypothesized climate change impacts are actually occurring?
3. What changes to current management of Plains island forests are advisable or necessary in light of climate change? What types of future landscapes are possible, and which should we target?
4. Some possible management techniques to adapt to climate change are relatively radical and intrusive, such as aggressive fire and pathogen control or the introduction of exotic tree species. What social and political preconditions would have to be met before such radical measures could be undertaken? Do current government policies encourage or inhibit adaptation in the island forests?

5. How should stakeholders and the public be informed of probable climate change impacts to the island forests, and how should their input into management responses be encouraged and incorporated?
6. How useful would a climate change impacts study of the entire Great Plains island forest archipelago be?

Comments on Key Questions:

- Not necessarily ready to answer these questions.
- People need to be informed – what about a survey as to the public's valuation of parks? Find out what park users' needs and wants are, for example, do they want treeless parks?
- Stakeholders do have opinions – economic benefits, resource extraction, preservation and protection. It seems everyone wants something different.
- What will people pay to visit? It is essentially all about marketing.
- People want to get away from the flat prairie when they go on a trip, and this is often to a forested park.
- Communication and monitoring are essential right at the moment.

Individual Group Recommendations:

Group One

Key Question #1:

- Focusing on Cypress Hills.
- People are reluctant to accept something new (climate change), especially ranchers because they are very knowledgeable about the landscape and historical variability. They just don't want to know what climate change is doing to the land. The experience of climate variability makes them skeptical of forecasts of drier conditions.
- Ongoing monitoring is needed. In the Cypress Hills, could there be aspen health monitoring? Monitoring marginal populations is very important.
- Studies of grassland productivity could be linked to precipitation. A credible, long-term record may be more convincing.
- The human impact must be emphasized.
- Site-specific precipitation and temperature (and other extreme cold events, as well as fire and disease history) could be presented. Historical, factual data may help to prove points.
- The new visitor centre at Cypress Hills is an advantage and allows for this data to be presented to the public.
- Monitoring and funding are difficult and expensive, both in the short and long-term.
- Grazing is monitored for the effects of grasslands.

Key Question #3:

- A big, sudden change is discouraged for future landscapes. Intensive management is necessary in some areas but we should be cautious about introducing new species. (Jack pine was cut and burnt, need to be cautious about genetic drift and hybridizing, North American exotics are not equivalent to Siberian elm, Scots pine)
- In the Cypress Hills, economically and culturally, they want native grass and timber.
- Cypress Hills could do more radical forest harvest renewal on safety grounds rather than climate change grounds. It would be difficult to use fire.
- Some type of climate change display at Cypress would be helpful – help to disseminate the information to the public and stakeholders.

Group Two

- You can't manage for climate change; rather you must incorporate it into the management of other values. A window of opportunity is required to do this. For example, vegetation management plans might allow for a chance to bring climate change values in.
- Focusing on Moose Mountain.

Key Question #1:

- No, scenarios of future climate don't provide enough credibility to influence management. A better local understanding of what causes drought, genetic control on drought, and resistance is needed.

Key Question #2:

- Plots for forest management plan in Moose Mountain, forest health survey in parks' core areas, acid rain monitoring plots (as a model for climate change impacts, such plots existed at Cypress Hills).
- Existing monitoring plots could incorporate climate change monitoring.
- Moose Mountain Provincial Park monitoring plots will be included in Moose Mountain vegetation management plans.

Key Question #3:

- An adaptive management approach should be adopted to keep options open and flexible.
- The vegetation management plan at Moose Mountain provides an opportunity for adaptive management.

Key Question #4:

- Through park vegetation management programs, could a provincial biodiversity action plan be developed?
- Some adaptations may conflict with biodiversity plans (for example, the Saskatchewan Biodiversity Plan)

Key Question #5:

- Interpretive centers, surveys, and stakeholder advisory groups are very important for informing people about climate change.

Group Three

Key Question #1 and #2:

- There seems to be a credibility gap in going from models to specifics. We need to use more practical applications of data to make current decisions. For example, given soil types and climate, which stands should be cut first?
- There are a number of concerns that indicate we need to develop and identify further options.
- What are indicator species that will illustrate what is happening? We need to find and identify indicator species and show the public that change is beginning and where it will lead.
- Monitoring programs of management techniques that emulate natural processes – what should be changed?
- There are gaps in information respecting socio-economic data and the impact from climate change. This may mean different management depending on the types of use each forest has. Perhaps different mandates will effect management decisions. For example, the National Park mandate versus the Provincial Park mandate.
- We need to establish a communication strategy that accurately but simply illustrates the impact of climate change and what it will mean to specific areas.
- Presentations to upper management are necessary so as to help them understand climate change and influence decisions.
- We should try and work with nature to encourage natural processes (fire), promote re-juvenation, and sustain growth by such things as not clear-cutting.

- Examples of change may be identified by comparing grasslands from the northern prairies to those in the southern areas (Northern United States) to get a feeling for change. This could provide some baseline data.
- PARC serves an important and strategic role in bringing specialists together and focusing study on climate change. It could serve as a coordinating body so all data is collected in some way and then placed in a central repository to promote sharing in all jurisdictions.
- We need to decide on where it is important to monitor (areas that are culturally, economically, or particularly susceptible to climate change).
- Historical management practices such as plantings and survival rates can provide important data for future practices.
- We should approach with proper testing (i.e. plots) and determine suitable approaches before jumping out in one direction, for example, harvesting and then replenishing with exotics.

Key Question #3:

- Change is needed to current management given some historic project problems, but specific study data is not available.
- Biodiversity and ecosystem-based management are sometimes in direct opposition to climate change.
- We should perhaps identify areas that are most critical and subject to climatic change so that different management decisions can be made. We should attempt to bring vulnerability down to the site level.

Key Question #4:

- Current policies of biodiversity and ecosystem management are dependent on the land's mandate. For example, National Parks look only at indigenous species and natural processes. Should natural processes be allowed to occur?
- There is not enough data to confirm the direction, and therefore the risk is too great to make certain decisions. For example, introducing exotic species.
- It is necessary to have experts on site to monitor and see "change". For example, when a new species moves into the park area, it can lead to monitoring and providing data for decisions

General Comments following Presentations:

- A common data gathering system is needed.
- Lack of common data management is a weakness to being collaborative.
- This potential data lab could be linked through the PARC website.

The following comments were made in response to the workshop and the meeting minutes.

**Wybo Vanderschuit
Ecosystem Scientist – Vegetation
Riding Mountain National Park**

I just thought I'd pass on some thoughts that came out of our workshop last week. During the day, which was quite informative and fruitful from my point of view, I was wondering what roles PARC and the rest of us could take in ensuring that people in the "prairie" provinces can prepare effectively for the influences of climate change in the region. These things were discussed in our break-out session, but I'm not sure they were clearly communicated when we got back together. Needless to say, since I'm writing them down here, you can treat them as my personal comments even though others seemed to agree.

Although one or two people wanted to take some kind of immediate action, most of us felt it would be premature to make decisions based on short-term droughts and incomplete data and

insufficient option analyses at our particular sites. We need more information, and more time, in order to assess potential impacts and management responses.

Along that line, we felt that it should not be PARC's role to recommend "broad-brush" management actions to a diverse range of land management agencies across the region, especially not at this early stage. Rather, we were hoping that PARC would continue to consult with all our agencies to determine OUR needs and develop PARC's capability and capacity to assist us with moving forward.

We particularly felt that PARC could likely help us in the following areas:

A) Communication: We need solid data and other information to help us illustrate the scope, the seriousness, the timing and the likely impacts of climate change in our region. Our target audiences would include our agency managers, our stakeholders in and around our land base, local schools, the general public, the media and politicians.

B) Monitoring: We need help in identifying ecosystem parameters (soil moisture? length of season?) and indicators (bur oak?) and methods for efficient and effective monitoring programs that also have scientific credibility.

Some type of coordination role for PARC might also be useful, both in monitoring protocols and in data-base design and maintenance. The CDC option was also discussed, and we all agreed that multi-agency cooperation was essential.

C) Help to establish criteria for identifying and classifying pieces of land that might be particularly susceptible to defined impacts of climate change. For example, sandy soils would be affected by reduced soil moisture in a "net" drier scenario.

Generally, we felt that the initiatives identified above would be a valuable start to dealing with climate change in "prairie" Canada, and that this (communicating and monitoring climate change) could keep us busy for the first 5 to 10 years of the century.

Finally, many of us felt that regular meetings would be useful in order to discuss and implement any of the above initiatives in the region. If PARC has the mandate, and the capability, to take a leadership role in these areas, we would be glad to work together for the betterment of all.

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Les Weekes
Cypress Hills InterProvincial Park, Alberta

I had prepared some notes from many speakers at the workshop noting what I determined were key messages, please excuse my biases. I thank all the participants and Dr. Henderson for hosting a very interesting workshop. I somehow feel the climate change discussions are more pronounced and widespread across government circles east of Alberta so I invite PARC to address this factor.

The workshop included items as follows:

Address and Overview by Dr. Norman Henderson

The questions posed could suggest a broad management strategy defined by alternative landscape models; namely 1) wilderness area, 2) frozen landscape, and 3) frozen retreat.

Some ideas for the climate change study at this time include developing communication plans that include interpretive displays, photo mintage, management displays, and social interviews/questionnaires.

A problem in long term management of the island forests was recognized during the study, that most managers are mostly involved in “the here and now”, that there is no focus on long range issues impacting the plains island forests.

Mark Johnston and Rory McIntosh

There were presentations on climate change and fire hazard by Mark Johnston of Saskatchewan Research Council and climate change and forest pest scenarios by Rory McIntosh of Saskatchewan Environment. Each message suggested that with climate changes, forest hazards and pest hazards will increase owing to changes in moisture (and evapo-transpiration) regimes, higher mean temperatures sustaining higher fire hazards and increasing intensity and frequency of disturbance regimes in the ecosystem whether it be fire or insects.

Group and Individual Discussion

Groups and individuals discussed the issues, limitations and plausible information in the study. Official meeting minutes will be sent out but I have provided my list of some major points as follows:

- 1) There should be concerted study with other stakeholders regarding social economic impacts of climate change. There are social-economic barriers that need to be identified. All managers felt there are information gaps in the climate change study.
- 2) Island Forests should plan and prepare for the worse case scenario. Vegetation managers should try to identify which areas/species, etc that may be most vulnerable. Managers should maintain a degree of flexibility in vegetation management plans. Suggestions were made that island forests could establish zones of different management to deal with climate change. Grassland ecosystem can be used for a climate change study as well as forests and may draw more interest from prairie communities. Monitoring is needed. Knowledge gaps must be identified. Vegetation indicator species may be useful aside from trees. There may be opportunities at some sites for monitoring i.e. Environment Canada’s acid rain plots in Cypress Hills. Some obstacles include information gaps, budget or funding difficulties. Managers will need to convince government departments and public that there are public safety concerns involved
- 3) Ecosystem management and biodiversity may not yield to climate change; we need to identify critical areas for action, to bring vulnerability down to site by site basis and avoid a broad brush approach
- 4) We cannot manage exclusively for climate change, rather future climate scenarios should be incorporated with other resource issues (windows). Suggestions were made that if we recognize a landscape problem or a management concern, we try to incorporate climate change in solving those problems and go forward in programs, i.e. forest renewal. To avoid shock values, we don’t have to call it climate change but it can be a process of integrating climate change into any vegetation management plan. Severe intrusive management to vegetation patterns/species is not acceptable. Having a vegetation management plan and going forward on the plans was seen to be an advantage and opportunity to implement adaptive management strategies.

- 5) Communications and inter-department cooperation are keys to successfully working on these types of issues. Saskatchewan Environment has adopted a "Conservation In Action" group and it appears to be working very well.
- 6) A visitor centre as in Cypress Hills has huge capabilities and opportunity in disseminating climate change information. It was noted that the (a) visitor centre provides a focal point that other island forests do not have.
- 7) Education on climate changes involving stakeholders were strongly suggested
- 8) Numerous individuals suggested that PARC could fill an important role in climate change information;
 - include site evaluations, baseline data, and incorporating all data toward recognizing multiple impacts.
 - PARC could co-ordinate all types of climate change data
 - Potentially a Education and dissemination role
 - Establish present role plus role for 5 to 10 years time
 - Co-ordinate future meetings
- 9) Island Forests should try to get policy and procedures in place to tackle issues and problems from climate change, perhaps seek assistance/expertise by other agencies i.e. seek experience in prescribed burning
- 10) Seek inter-department input on goal and objective setting, each branch would have input, allow cross-over (integrated) objectives setting
- 11) Private industry may provide some role i.e. forest companies with interest in wood fibre

One other note I would like to add from the workshop as follows:

- 1) Water shortages affecting stakeholders, interprovincial and international watershed in Cypress Hills may become a larger issue before forest changes due to climate change. Water is and will be a major geo-political issue across all provinces and states.
- 2) The socio-economic issues surrounding climate change are paramount to the PARC study, felt that minutes did not portray those concerns.
- 3) I look forward to PARC taking a broad coordinating role with climate change issues affecting the island forests. Additionally, I hope PARC can develop or work toward a strategy for spawning research and monitoring in the various island forests but also initiating intergovernmental and interdepartmental action plans within our own organizations and our own backyards.

Thanks and I welcome any comments.