Panel Commentary: An Approach for Monitoring in Ontario's Provincial Parks and Protected Areas

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Ecology is the area of biology that looks at changes in the abundance (how many?) and distribution (where are they?) of organisms and it aims to determine the underlying mechanisms that cause these changes (Begon *et al.* 1996). Compared to the amount of money spent on research into cell and molecular biology, because of perceived benefits to industry and medicine, relatively little is spent on ecology (See size of grants on the NSERC WebPages). This is despite, arguably, the biggest challenges facing humanity being environmental and ecological problems, such as the "biodiversity crisis" (Diamond, 1989). Yet within the arena of funding for ecological research, it is my experience that ecological monitoring receives relatively little funding. A university-based researcher who includes a monitoring component as part of a funding application, may be likely to jeopardize the success of the application! Ironically, though, it seems to be more and more the case that long-term datasets are required for publishing papers in top-tier ecology journals, and these datasets take years of careful "monitoring" to collect (e.g. anything by David Tilman such as Inouye & Tilman, 1995). Often the support for "monitoring" has to be squeezed out of funding for experimental research.

So, what to make of the move to develop a monitoring framework for Ontario's provincial parks and protected places (North-South 2001)? The monitoring of changes in abundance and distribution is vital, since it is the cornerstone of ecological research. And, like all research, in ecology, the quality of the research is only as good as the data. Counting organisms and tracking how their numbers change over time is such an astonishingly simple concept that I believe its importance to be often overlooked. Yet this concept is amazingly difficult to translate into reality to the point where useful data are generated.

Any successful move to establish a coordinated monitoring framework, must, in my view take account of and incorporate the following:

1. Drive home in the most emphatic way possible, that monitoring organisms is a fundamental core activity of ecology, not just adaptive management (North-South 2001, p. 6).
2. Similarly, make the point, in the strongest possible way, that there is a global and national context to ecological problems.
3. The ongoing research in many of the parks that has resulted in the existence of long-terms datasets.
4. The way in which existing or newly established databases are to be accessed.

With respect to the first two points, I believe that regardless of the specific profes-

sional market for monitoring, all communication goals and strategies (North-South, 2001, p. 32) must address ways and means of engaging the public (who I hope, will in turn, create appropriate political pressure). Another goal should also be to educate them about the inextricable link between monitoring and research and both the global and local context. As Professor Pat Bradshaw, earlier in this conference has stated, the way to engage people is to "tell them stories". There are lots of good stories that will generate support for these programmes. As identified in the report (North-South 2001), communication both within and outside of OMNR presents an ongoing challenge.

With respect to points three and four, I was disappointed to see relatively little reference made to existing research efforts (but see North-South 2001, p. 29). Database creation should take account of monitoring and research history in a site, as well as consider how the databases will be accessed and organized. I am well aware that many reports and data fall into "black" holes. This stems in large part from the huge cuts in ministry personnel. Even as we are swamped by data in the "information-age", the jobs of librarians and people who organize these data and make them accessible are being cut everywhere.

I would also like to make a strong case for making access to these databases free - perhaps as web-page archives, as long as users adequately reference sources. And here, I briefly digress to make the point that the report itself, is not adequately referenced. It would be very difficult for a reader to track down primary and secondary sources that give a context for statements and assumptions made in the report (e.g. the section on exotic species, North-South 2001, p. 19). Primary data on the impact of exotic plant species actually show that most introduced species have no measurable community and ecosystem impact and that there has never been a successful eradication of an exotic plant species in North America (multiple primary data sources are available on request)

Finally, I believe that the monitoring framework must emphasize the fact that not all data are appropriate for everything. There are different scales of approach that speak to different questions. In this, I am very much in agreement with the my colleague, Tom Nudds (Guelph University); in his opinion, monitoring must be driven by well-developed research questions.

References

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Prof. Patricia Bradshaw, Schulich School of Business. Statements at PRFO 2001 Conference.
Prof. Tom Nudds, Guelph University. Statements at PRFO 2001 Conference.
Natural Sciences and Engineering Research Council of Canada (NSERC). website. www.nserc.ca