

# **Salamanders vs. the Simpsons: Community-based ecosystem monitoring**

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## **Abstract**

Public concern for the environment and endangered species is growing. Canadian society has a more involved relationship with nature and natural resources than we did 50, or even 25 years ago. Ironically, this explosion of ecological awareness comes precisely at a time when governments at all levels are scaling back on their involvement in monitoring the environment. Monitoring programs funded through incremental or non-base budgets, combined with the steady pace of government ministry reorganizations, often result in short-term, fragmented, and ineffective government ecological monitoring. In a new phenomenon known as community-based ecosystem monitoring (CBEM), citizen groups, non-government organizations (NGOs), and individual citizens monitor a local species, ecosystem, or ecosystem process. CBEM can be viewed as government downloading of costs or as an historic taking-back of social responsibility. Benefits of CBEM include data acquisition, increased public awareness of nature and ecosystems, and opportunities for environmentalists to see decision-making first-hand. British Columbia is fertile ground for CBEM in that it has a well-developed NGO community, a stunning variety of ecological and natural resource issues, and a government that is currently downsizing its “dirt ministries.” CBEM has a long-established precedent in the First Nations tradition of close and daily observation of nature.

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## Introduction

Public concern for the environment and endangered species is growing. Canadian society has a more robust, more involved relationship with nature and natural resources than we did 50, or even 25 years ago. People are now taking an interest in levels of pollution, ways and means of natural resource extraction, and the condition of species and their habitats. Ironically, this explosion of ecological awareness comes precisely at a time when governments at all levels are beginning to scale back on their involvement in monitoring the environment.

There is a seemingly inexorable decline in the budgets of federal and provincial ministries charged with long-term monitoring of ecosystems and natural resources (Figure 1). The three fiscal goliaths of health, education, and welfare impose tremendous downward pressure on

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the budgets of every environment and natural resource jurisdiction (the “dirt ministries”) in the country. I see nothing on the horizon that is likely to change that inverse fiscal relationship.

Senior bureaucrats and politicians generally do not consider baseline and long-term ecological monitoring as core duties, so these programs and the staff that go with

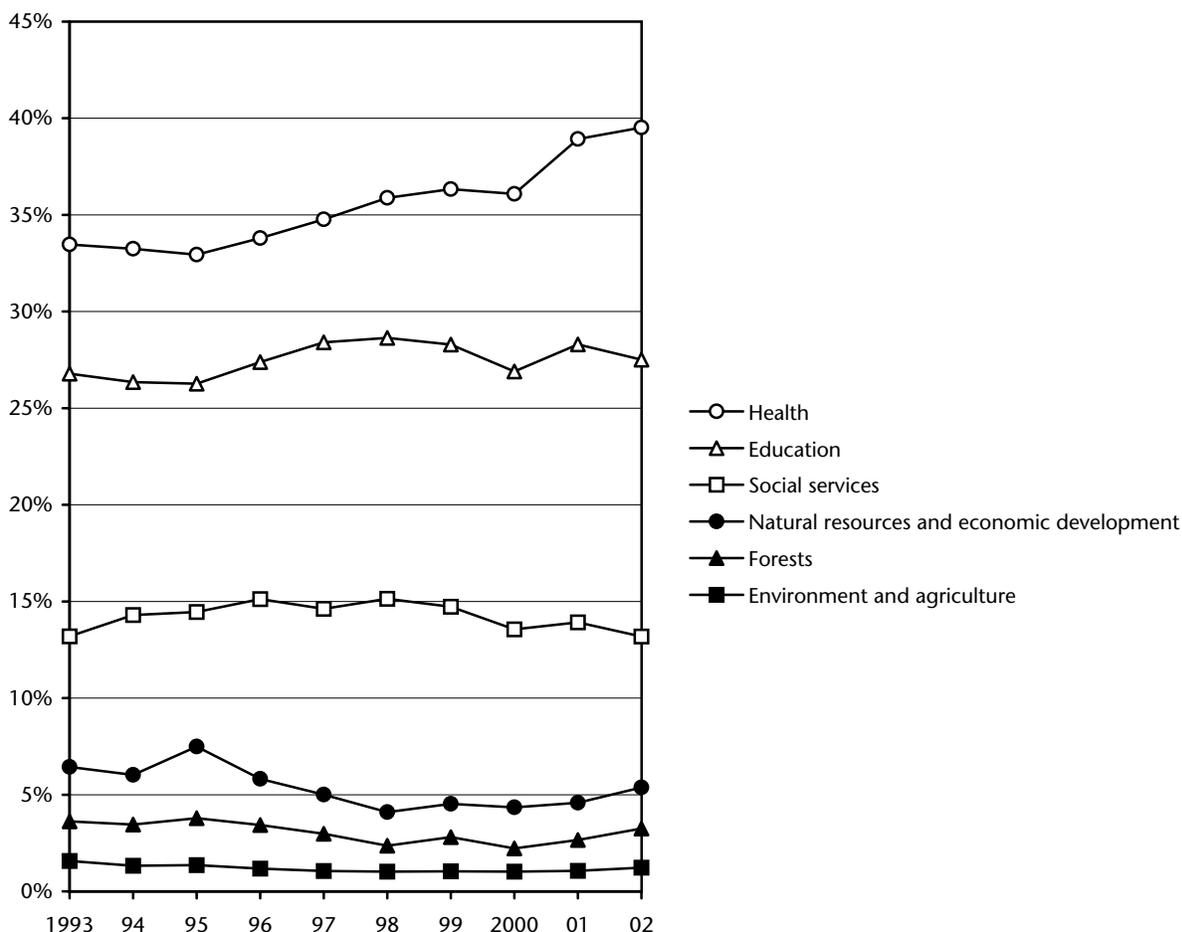


FIGURE 1. Breakdown of selected B.C. government annual expenditures (as a percentage of the total budget). Source: BC Ministry of Finance.



them are typically among the first targets when a ministry or department is told to cut back. In addition, monitoring programs are often funded through incremental or non-base budget moneys, resulting in a typical program lifespan ranging from 18 months to three years. This, combined with the steady pace of government ministry reorganizations, often results in short-term, fragmented, and ineffective government ecological monitoring efforts.

At a time when the public is demanding more scrutiny of environments and ecosystems, when there is a growing realization that many of our species are in trouble and some are facing extinction, we have the phenomenon of governments gradually downgrading or abandoning some of the fundamental tasks of ecological monitoring. Indeed, authors Rosenau and Angelo (2001), in reference to coastal salmon spawning habitat, take the position that “government institutions, frameworks and agencies at all levels in British Columbia are no longer capable of protecting and restoring freshwater environments on their own.”

## Community-based Ecosystem Monitoring

While I decry this inexorable decline, I am also a realist. Government investments in health, education, and welfare produce immediate and tangible benefits; long-term ecosystem monitoring does not. The loss of a hospital will always generate more critical public concern than the loss of a species or habitat. This, then, is the context for the consideration of a new phenomenon, known as community-based ecosystem monitoring (CBEM), where citizen groups, non-government organizations (NGOs), and individual citizens monitor a local species, ecosystem, or ecosystem process.

In conjunction with Vancouver-based consultant Patrick Yarnell, FORREX—Forest Research Extension Partnership recently completed a survey of CBEM in British Columbia, looking at the existing situation, future possibilities, advantages, and disadvantages (Yarnell and Gayton in press). In this survey, we determined a range of origins and motives for CBEM projects:

1. An NGO or citizen group begins a monitoring program for its own internal use, not in collaboration with government.
2. An NGO wishes to begin its own program of monitoring government or industry compliance to natural resource management criteria or standards.

3. An NGO comes to a government ministry asking to either assist in an existing monitoring program, or develop a new one.
4. A government ministry seeks out an NGO or volunteer organization for assistance with a new or existing monitoring program.

Examples of the first category are fairly common; one only has to think of the various bird surveys that have been operated for decades by local naturalist clubs, or long-term weather monitoring done by volunteers. Some examples are the Coastal Waterbird Survey of Bird Studies Canada, the Alouette River Management Project, the Burnaby Lake System Project, and Streamkeepers. Examples of the second category are found primarily in the United States at this time. The third and fourth categories are on the horizon for British Columbia. These latter options also contain a safe middle ground for governments; instead of fully delegating monitoring authority, they can assist with the development, testing, and extension of scientifically rigorous, standardized, and user-friendly monitoring methodologies for external use. The Federal Ecological Monitoring and Assessment Network (EMAN), the developer of FrogWatch, is actively engaged in this work. British Columbia’s own Conservation Data Centre could have an expanded role in the development of monitoring methodologies as well as in the storage of collected data.

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One way of looking at CBEM is as classical downloading—governments shifting problematic mandates with no short-term payoff (like ecosystem monitoring) over to the voluntary sector. If a citizen group takes over a government function and does it at a fraction of the cost—or does it for nothing—are our taxes reduced accordingly? Not likely. When governments accept tax money from citizens in exchange for executing a certain mandate and then get citizens to perform that mandate on their behalf voluntarily and taxes are not reduced accordingly, then we are simply facilitating inequitable downloading.



Another way of looking at CBEM is to see it as an historic taking-back of social responsibility, an acknowledgement that we as a society delegated far too much responsibility to government. We told those governments, *you* go out and look after nature and ecosystems, because *we* want to stay home and watch the Simpsons or whatever. CBEM may actually represent a re-assumption of those ecological responsibilities that we never should have delegated to governments in the first place.

I think we are on the horns of a profound dilemma here, one that pits classical government downloading on one hand, and citizen ecological responsibility on the other. I suspect that we will live with this dilemma for some time.

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## Benefits and Drawbacks of CBEM

Advocates of CBEM are quick to point out that one of its greatest benefits, beyond data acquisition, is an increased public awareness of nature and ecosystems. But this poses another dilemma, one that pits science's need for hard, objective data on one hand against the desperate need to raise the public's ecological awareness on the other. Some scientists I have polled want no part in inviting hordes of the vast unwashed into their domains, corrupting their data and contaminating their objectivity. On the other hand, many members of the environmental and natural resource public have no desire to be seen in the company of the stereotypical Gary Larson-style scientists, who wear lab coats and nerdy glasses, and who employ logarithmic scales as they record the removals of wings from flies. Those who practice science and those who are committed to the environment represent two separate cultures, and the range of overlap is fairly narrow.

I think there is a way out of this particular dilemma. I did my undergraduate work in the United States in the early 1970s, when the notion of affirmative action was being born. I remember well the anguished debates: Should American universities risk their standards of scholarship

by lowering entrance requirements for disadvantaged black students? Or, alternatively, should those universities continue to functionally exclude more than 10 percent of the American public from academia and from all the material benefits of a university education?

Well, the universities did a bit of both, temporarily. They did prime the pump, so to speak, by creating special programs and temporarily lowering admission standards. Now, 30 years later, university affirmative action occasionally stirs up minor controversy, but it is no longer a big issue, American universities are no longer the lily-white bastions they once were, and scholarship appears to be alive and well. I think science can approach CBEM in much the same spirit of affirmative action. If we have good, solid ecological science to begin with, just like a good, solid university, we can easily survive a 30-year integrative blip and emerge as a stronger, more relevant force.

There are also multiple benefits to immersing the interested public in scientific monitoring, beyond the obvious ones of collecting data and building a broader base of concern for the environment. There is value in giving environmentalists the opportunity to get their hands dirty, both literally and metaphorically. In allowing them to understand the joys of thoughtfully manipulating nature as well as simply protecting it. In letting them experience the often agonizing daily trade-offs that operational people have to make. There is value in letting the public see first-hand why scientists take so long to arrive at conclusions, and why they are so tentative about them. There is also value in letting the public see the buzzing complexity of nature, and to see how damnably hard it is to measure it well.

## Conclusions

British Columbia is fertile ground for CBEM, in that it has a well-developed NGO community, a stunning variety of ecological and natural resource issues, and a government that is currently downsizing its dirt ministries. However, the fertile ground of British Columbia is also risky and dangerous. We are a society famously polarized between the tree huggers and the loggers, living on a landbase that is over 90% owned by the Crown. And we have a fundamental geopolitical split between the densely populated Lower Mainland/southern Vancouver Island axis and the vast, thinly populated Interior/North Coast regions.

Few ideas are truly new and CBEM, as trendy as it seems, has a long-established precedent in the First Nations tradition of close and daily observation of nature. CBEM advocates would do well to learn and adopt from that proud tradition.



The phenomenon of the aging “baby-boomer” demographic is nearly always seen negatively, but I see it working in a positive way with CBEM. If membership in naturalist groups is taken as a measure, people begin to take a more active interest in ecosystems as they approach retirement age. Ideally, CBEM should cut across all age groups, but the upcoming wave of post-war baby boom retirees represents an historic opportunity for CBEM, should we choose to seize it. As a tail-end member of that generation, and one who occasionally contemplates retirement, I think I would much prefer monitoring salamanders to watching the Simpsons.

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