

Final
Report of the Independent Review Team
On the
Operations and Program of the
Vermont Monitoring Cooperative

May 1, 2002

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Introduction

On April 16 and 17, 2002, the Vermont Monitoring Cooperative (VMC) convened an independent review of its program and operations. The review team was composed of John Kabrick, a research forest ecologist with the Missouri Department of Conservation, Michael McHale, a hydrologist with the United States Geologic Survey, and Susan Stout, a research forester with the United States Forest Service. Prior to the April 16-17 meeting, the VMC provided reviewers the 2002 Program Description and the 2002 Operations Guide of the VMC, and the opportunity to visit its web site. In addition, the VMC posed five questions about its program and operations to reviewers. During the course of the review, reviewers met and heard from members of the VMC Steering Committee, Advisory Committee, staff, and cooperators. John Kabrick and Mike McHale also visited some of the field sites of the VMC Mt. Mansfield site. This review reflects our overall impressions of VMC programs and operations, our strategic recommendations, and our answers to the questions that were posed to us prior to the review.

As a group, we would like to express our deep appreciation of both the long-term efforts of the Vermont Monitoring Committee, its staff, supporters, and cooperators for the efforts that they have made to enhance understanding of Vermont's forested environment and its management. We would also like to thank the VMC for their gracious hospitality during the review.

Commendations

During the course of the review, we observed many attributes of the VMC program and operations that merit praise; we begin with those.

Overall

Throughout the review, our own observations and the comments of many cooperators made it very apparent that the dedication, commitment, and investment of the VMC staff are the keystone of VMC's success. This observation applies across the organization. It is apparent in everything from the commitment of the technicians to the calibration and efficient operation of the monitoring equipment to the breadth and depth of Sandy Wilmot's knowledge of Vermont's environment.

The Program Guide, the presentations during our review, and the comments of some staffers made it apparent that the VMC has done an unusually good job of documenting its own history and operations. This is both rare and valuable.

The VMC has built important relationships with a variety of supporters. We specifically commend the strength of your relationships with Senator Leahy and his staff, with the Attorney General's office, and with other partners who will work to ensure your survival in the future.

We commend your growing success in leveraging outside funding.

Monitoring and Research

The environmental monitoring database that the VMC has amassed is invaluable. The database is the heart of the success that the VMC has built. The VMC is uniquely capable of collecting and facilitating the collection of a broad range of long-term environmental data that can be used by many researchers, agencies, interest groups, policy makers, and the public.

Information Management

The presentations and the 2002 Program Guide made it very clear that you have invested substantial energy and resources to fulfilling a vision of public access to the monitoring and research data that you collect and to the synthesis and integration of data from different disciplines, different locations, and different scales. We were impressed that the VMC has already demonstrated synthesis and integration of VMC monitoring data and that this integration has public benefits. We also commend you for successfully making databases available to cooperators and to the public.

Coordination and Facilitation

As the VMC has accumulated monitoring data and research results, its role as the coordinator, facilitator, and convener of interdisciplinary forest ecosystem research, policy development, and management has grown. The VMC has succeeded in its objectives of coordinating research and thoughtful interaction among diverse cooperators. Participating in the various forums that VMC provides stimulates integrated ecosystem thinking. In addition, and perhaps beyond even your own expectations, the VMC has

become recognized as a place to which policy makers can turn when they want to discuss environmental issues with an interdisciplinary scientific community with a credible and unified voice.

Opportunities

During our review, we observed some opportunities for the VMC to improve, sharpen its focus, and assume a stronger leadership role in the stewardship of Vermont's environment. Our suggestions reinforce directions that we think you have already identified and towards which you are already headed.

Overall

Step into leadership, building on the strengths that the VMC has already developed. The VMC is already headed in the right direction. During your first ten years you have struggled so much with funding that you may not recognize that beside remaining financially solvent during those years you have also become leaders in ecosystem research in Vermont.

Focus and re-prioritize. The two main goals of the VMC, while admirable, are too broad to measure attainment or to help the VMC identify its niche. Yet the VMC objectives are too narrowly tied to current functions. We suggest setting some measurable objectives (i.e., establish a 200 year soil monitoring study) beneath the broad goals to help prioritize among competing activities.

The core niche for the VMC that came through loud and clear from everyone during the course of the review is that you collect long-term data that no one else can collect sustainably and manage that data in a way that is accessible. The second VMC niche is bringing people together—specifically researchers from different disciplines to discuss ways of integrating data and also researchers and policy makers to discuss how results from research can help shape public policy. We recommend that you

- Update the research and monitoring implementation plan with those niches in mind and
- Identify the core activities that you have to accomplish to fulfill those niches, and then
- Review your budget and staffing levels accordingly. For example, you might decide that analysis of two year's worth of samples is more important than some grant-making, or that your grant-making could become much more focused on such things as data integration and questions that you identify.

The VMC has an opportunity to take some leadership in directing interdisciplinary and multidisciplinary work in Vermont's forested ecosystems. This would represent a maturation of the program beyond simply collecting long-term environmental data. The origins of VMC were in a specific environmental crisis based on the need for environmental monitoring data. Now that the VMC has 12 years of data and has built valuable relationships with many researchers you can step back and play a role as a think-tank for identifying key environmental questions and stimulating research and adaptations of the monitoring program to answer those questions. The plans that you

have to switch to technical reports rather than summary annual reports and to use issue themes for annual meetings are examples of the kinds of activities that we have in mind.

One way to help the VMC achieve a transition from reacting to problems to taking a leadership role is to add to your advisory committee a small group of supporters who see you already as leaders and will help with the transition and identification of key research questions. We recommend looking for people with sufficient technical expertise to contribute to the selection of key research questions, ideally representing or associated with organizations, agencies, or communities who would actively support VMC in the event of another funding crisis, such as representatives of environmental organizations, landowners, or watershed and community associations.

We recommend that VMC strengthen its investment in staff training. The payoffs are many, ranging from morale improvements through increased productivity. VMC's people are among its core strengths.

We heard, throughout our personal interaction with the VMC, many stories that illustrate vividly the successes of the VMC and the contributions that the VMC has made to the quality of the lives of Vermonters. We strongly recommend that you focus your general communication strategy on telling those stories. They have important potential to engage the general public in learning some of your scientific results. Equally important, the more people who understand the way that your work has made a difference, the more people will stand up and shout (or better yet, sit down and write a letter) if your funding is cut again. The Lye Brook-NY power plant permit story is certainly an example, although the work that you are doing on indicators for a township forest plan is also

important, and matched wonderfully with one of the points that Bob Paquin made about the needs of Vermonters.

There are a number of ways to tell stories of your successes to the public. For example, develop short articles, brochures, web videos, etc., that explain what the VMC is, what it does, and what it has accomplished, so that Vermonters will recognize your name and know what you do. Consider writing or having someone prepare an article for the *Northern Woodlands Magazine* or a similar publication. Consider adding a module to your own website that is geared for the public. Create a link from the Vermont Forest and Parks website to your own. Also, consider including feature articles in the University of Vermont alumni newsletter or in major Vermont newspapers.

Monitoring and Research

Many of the overall suggestions are also reported in this section.

We believe that it is very important for the VMC staff to develop a distinction between monitoring and research and be consistent about the use of these terms in internal communications. We understand that you may have to tailor some messages to certain audiences, but being clear internally will help even in those cases. To us, research reflects having specific hypotheses and using research designs to test those hypotheses, which may involve specific statistical methods for planning replication and tests of difference. Monitoring reflects a long-term commitment to amass data about specific variables at known quality levels with consistent protocols. We think that the relationship that emerged on the second day of the review—monitoring data can be critical to addressing research questions—may help the VMC to focus its own grants

program and to seek external funding that could provide support for your long-term monitoring efforts. We recommend that you consider asking people who seek competitive funding (from other funders than yourselves) for projects based in large part on VMC data to include support for on-going monitoring data collection during the existence of their study. VMC staff could also use VMC data to identify interesting research questions and seek funding yourselves to do that research.

We believe that the VMC is at the point where you can begin to raise your expectations of grantees—for a simple quality assurance/quality control (QA/QC) plan in the proposal, for timely data submission, for preparation of publications (popular or refereed), for translating research results into management guidelines, for transferring results to managers

We believe that the VMC needs to strengthen its relationships with not just land management agencies, but with the folks that are on the ground making management decisions. We suggest working hard to ensure that these people are at your annual meetings, and paying careful attention to the kinds of questions that they ask the cooperators. It sounded like your paired watershed workshop last year was very effective at linking managers and scientists – maybe there’s an opportunity to have another workshop for public and private forest managers. We understand that the review team may have underestimated the level of interaction between the VMC and forest managers, but in conjunction with increased development of land management guidelines, these relationships may need to evolve more from presentations to workshops.

Information management

We believe that the VMC has identified two full time data manager jobs. One is providing regional leadership for environmental databases and their public accessibility. The other is providing leadership for the VMC Data Integration Project Plan. We suggest that you need to choose one of these for Phil to do, and figure out ways to leverage making the other one happen. We would prefer to see you focus Phil's skills on *leading* rather than *doing* all of the data integration efforts.

As part of the regional leadership for environmental databases, we think you need to get some help soliciting data from cooperators and formatting that data for inclusion in the VMC database. There may be new ways to cooperate with UVM to get this work done.

VMC should consider imposing some QA/QC standards for cooperators and participants. We think you will know better than we can what balance to strike here.

Your information and education outreach program should focus on telling the stories of your successes. We commend Jennifer Supple for her efforts to find a unique niche for VMC in the apparently rich and diverse world of school resources for environmental education in Vermont. We liked Jen's idea of querying researchers from the point of view of putting together "success stories" and/or educational resources. We have suggested a few ways to tell these success stories to the general public. We wonder too, if environmental organizations should be explicitly listed as targets or partners in VMC's information management and education and outreach efforts.

Coordination and Facilitation

We encourage VMC to follow through with current plans to review the research load at Mt. Mansfield and facilitate more research and monitoring at Lye Brook.

We encourage VMC to pursue plans to switch from annual reports to issue-focused technical reports. This is a great tool for moving into the role of leadership in setting the research agenda.

We support the idea of making a critical review of VMC's administrative structures and procedures, based on lessons learned from 11 years and on the notion of assuming the leadership you have earned.

Capitalizing and relying more on graduate student participation is acceptable as long as you are sure that the students who participate are getting the mentoring that they need without increasing the burden on your staff.

Review Questions

Prior to the April 16-17 meeting, the VMC staff and steering committee provided the Review Team with five questions for us to address. We believe that we have addressed most of these questions in the overview, commendations, and opportunities above, but we believe that the questions provide a useful framework for reviewing and summarizing our observations.

1. Are the VMC goals realistic, serving an important niche in Vermont and the region, and is sufficient progress being made towards accomplishing them?
 - Broad research ideas
 - Annual priorities
 - Partnerships

Broadly, we believe that there is evidence that the answers to each subpart of this question are, “Yes.” However, we believe that the strongest yes goes to partnerships, and that focusing both the goals and the broad research ideas and annual priorities more narrowly, as well as identifying specific objectives within your goals that have measurable criteria for success, will help you become better able to determine whether these goals are being reached.

2. Are VMC products and services meeting the VMC goals and are they appropriate and beneficial to the user groups being addressed (based on the resources available)?

- Written materials
- Web site
- Data use, storage, and retrieval

Generally, yes. We believe that the written materials could be better focused on selling your successes. We find that the web site is excellent as is and encourage you to keep up with advances in web-based technology. We believe, as you do, that there are some opportunities for improvement on the data archiving end from the point of view of cooperator participation and data submission.

Another opportunity for improvement is with products and services focused on changing management practice. This includes continuing to encourage scientists to translate their results into management guidelines, but probably also includes planning and implementing some focused workshops to help people understand why they should care and what they can do differently to better manage Vermont's natural environment.

3. Is the VMC operating in an efficient and effective way to administer the program and accomplish its goals?

- Organizational structure
- Staffing levels
- Responsibilities

There is no question but that the dedication and commitment of the PEOPLE who are the VMC have made a real and substantial contribution to achieving your broad goals of improving understanding of Vermont ecosystems—and to lots of other wonderful outcomes as well.

It might be time to bring some people without all the history but with some real appreciation for your accomplishments on to the Advisory Committee.

We encourage review of organization, staffing and funding allocations, specifically reviewing the allocation between the grant programs and staffing.

You now really have a marketable product and with more staff time, you could cultivate a broader base of support for continued development of that product.

We encourage the recognition of the need to liberate Phil from day to day data clean-up type work.

4. Are there ways that the VMC could improve long-term funding security?

- Funding sources
- Budget administration
- Grants program

Focus on telling your success stories – identify audiences that will write to Vermont state and federal politicians if your funding is threatened, or who will work behind the scenes to help Senator Leahy achieve his objective of making VMC a line item in the Federal budget. In addition, helping those audiences understand how they benefit from your work needs to be part of this strategy.

You have ideas about this that we support – grantsmanship based on data integration opportunities, pooling resources for managing environmental data, Lakes States Sea Grant resources, strengthening partnerships, especially with university resources that can make your funding go further

We think that strengthening the partnership with the GMNF could certainly result in enhanced in-kind support and has the potential to improve actual funding. This may involve some work together to identify questions beyond the issues of wilderness management to other questions of importance to the Forest, and working on those questions. This may involve on-going continued outreach to other colleges and universities.

We believe that it's critically important for you to identify your "core" program and specifically seek supporters for that program. We recognize and congratulate the University and the State of Vermont for the formal and informal support that they provide to the program. We suggest that your supporters might seek a specific line item in the State ANR budget to support the VMC program, for example, or in the State University budget, or both. This might not be the right time to ask for such a thing, but you could be developing the partnerships to support it the next time the State has the money to support such an initiative.

Finally, we discussed the possibility of "named endowments" for some of your long-term monitoring activities – the canopy tower, the meteorological stations, etc. If VMC is comfortable with this idea, we suggest approaching Dr. DeHayes and then the UVM research foundation. Once you have a clear idea of what the annual costs of some of these items are, they will be able to translate that quickly into an endowment amount. We would certainly think that there might well be more than one wealthy Vermonter who would like to endow the sustainable operation of the longest continuous monitoring record for mercury in the world!

Summary

The Vermont Monitoring Cooperative has achieved substantial success towards its goals of collecting baseline data about Vermont's forested environments and stimulating interdisciplinary thinking, understanding, and research. The present is an ideal time to refocus and reprioritize the objectives to meet these goals. We recommend development of specific and measurable objectives that focus on your niche strengths of collecting long-term monitoring data and providing leadership in the use, integration, and synthesis of that data to identify key research questions and provide guidelines for improved management. We recommend that your outreach efforts focus on telling your success stories to audiences who will provide critical support for the future, both when hard times threaten the continuity of your data and when good times provide openings for increasing the proportion of your funding that is stable.