# Vermont Monitoring Cooperative
# Fall 2007 Newsletter

## *Director's Notes : Joining VMC*

August 2007

What do you like to do outdoors in the summer? Paddle a canoe, hike in the mountains, ride your bicycle through Vermont's beautiful landscape? Whatever it is, I hope your summer has been fun-filled and fulfilling. I've been enjoying long bike rides and outdoor concerts, though I must admit that I'm already looking forward to ski season.

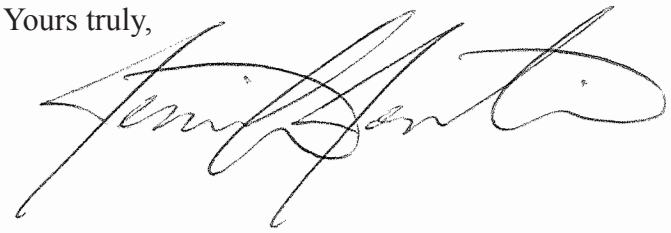
I joined the VMC as Program Director on July 1, 2007. I'm learning quickly, though I'm sure I don't know all there is to know about the Vermont Monitoring Cooperative (that will take months, if not years!). What I do know is that all of the great things I have heard about the VMC and its talented staff are absolutely true. We are all fortunate to be part VMC, with its long history, its important mission and its dedicated staff. We as staff are, in turn, fortunate to be associated with you, VMC's cooperators, who are doing important monitoring and research work on behalf of Vermont's forests and ecosystems. I look forward to getting to know each of you personally.

Special thanks are due to outgoing Acting Director Sean Lawson, who has worked tirelessly on behalf of the VMC for many months in his dual capacity as Monitoring Coordinator and Acting Program Director. Sean will continue with VMC as Monitoring Coordinator, and he has been instrumental in helping me to understand my new role as Program Director. Thank you, Sean!

A few words to introduce myself: I graduated with a Ph.D. in Ecosystem Ecology from the University of New Hampshire in 1998. I have a background in forest inventory and forest health monitoring through a long association with the USDA Forest Service Forest Inventory and Analysis (FIA) Program, and my primary research interests currently relate to the dynamics of carbon sequestration and storage in forested and suburban landscapes. If you'd like more details, please see my website at http://www.uvm.edu/~jcjenkin. Of course you are also quite welcome to contact me directly.

Our Annual Meeting will take place on October 29 this year. Please watch our website for details, and be sure to register. I'll see you there!

Yours truly,



Jen Jenkins
Program Director, Vermont Monitoring Cooperative

Vermont Monitoring Cooperative

**VMC Newsletter**
VMC Staff Contributors & Layout



For more information about the VMC, please visit our website at : http://www.uvm.edu/vmc.

# *Monitoring Update*

**Sean Lawson**

This summer's field season has brought a number of busy months into an already full schedule of research and monitoring activities for both the VMC staff and our many cooperators. Here are a few highlights of ongoing and new projects.

**• Mercury (Hg) Monitoring**
VMC received unfortunate news this spring that the EPA has decided not to fund the fifth year of our five-year research grant which has been the core of our exhaustive mercury program. With the EPA grant ending this August, several other research projects will also conclude. The forest canopy Hg flux study led by ERG, Inc. and Dr. Eric Miller will end, as well as the VMC funded studies of Hg in birds and insects at higher elevations on Mt. Mansfield and Stratton. The field work for our three-way study of different precipitation collectors is almost complete, with inter-lab comparisons underway. VMC now has two full years of vital data about the relative strengths and weakness of these collector types. Several publications by the team led by Dr. Miller are forthcoming. VMC has elected to keep the Underhill, VT (PMRC) site in the national Mercury Deposition Network (MDN) with an upgraded event-based sampling protocol, and to continue to maintain the world's longest record of continuous event-based wet sampling of Hg. We are especially thankful for the continued funding from NOAA that makes this work possible, and the diligence of Rick Artz and Mike McCormick to ensure our site remains funded through the current grant cycle.

**• Long-Term (200 Year) Soil Monitoring Project**
Field work for Year 5 of the VMC LT Soil Monitoring Project will be completed in August 2007. This field season marks the second iteration of sampling for five different sampling locations – three at Mt. Mansfield, and two in the Lye Brook Wilderness Area. The project aims to detect change in basic soil chemistry and characteristics over time by re-sampling each site at intervals for 200 years. A large team of cooperators from a wide variety of institutions are collaborating on this project, thanks to vision provided by early contributors Sandy Wilmot, Scott Bailey, Don Ross, Thom Villars, Jamie Shanley, Nancy Burt, Tim Scherbatskoy, and Deane Wang.

**• VMC Forest Health Plots**
Annual visits to VMC forest health plots are underway this summer on the east and west slopes of Mt. Mansfield and in the Lye Brook Wilderness Area. Our protocol is based on the National Forest FHM (Forest Health Monitoring)/FIA (Forest Inventory & Analysis) field manual, with some modifications. These forest health plots provide data to gauge tree growth, vigor, decline, and year-to-year changes in the status of several forest types. Thanks to Tom Simmons, Jay Lackey, Ron Wells, Lars Lund , Sandy Wilmot, and the other personnel that contribute to the field crews required to complete this work.

*See accompanying data report on opposite page.*

# *Cooperator Feature :*
## *Tim Perkins, Proctor Maple Reserach Center, UVM*

**Miriam Pendleton & Judy Rosovsky**

Dr. Timothy Perkins has been the director of UVM's Proctor Maple Research Center since 1996. The mission of PMRC is to provide research, demonstration and outreach (Extension) on sugar maples and related biological systems. The facility is set up to both demonstrate and experiment on maple production equipment, including sap collection systems and evaporators.

Recent projects by PMRC staff working with Tim include an analysis of the effects of air injection on maple syrup flavor, and comparisons of various tubing methodologies. Another project that involved more

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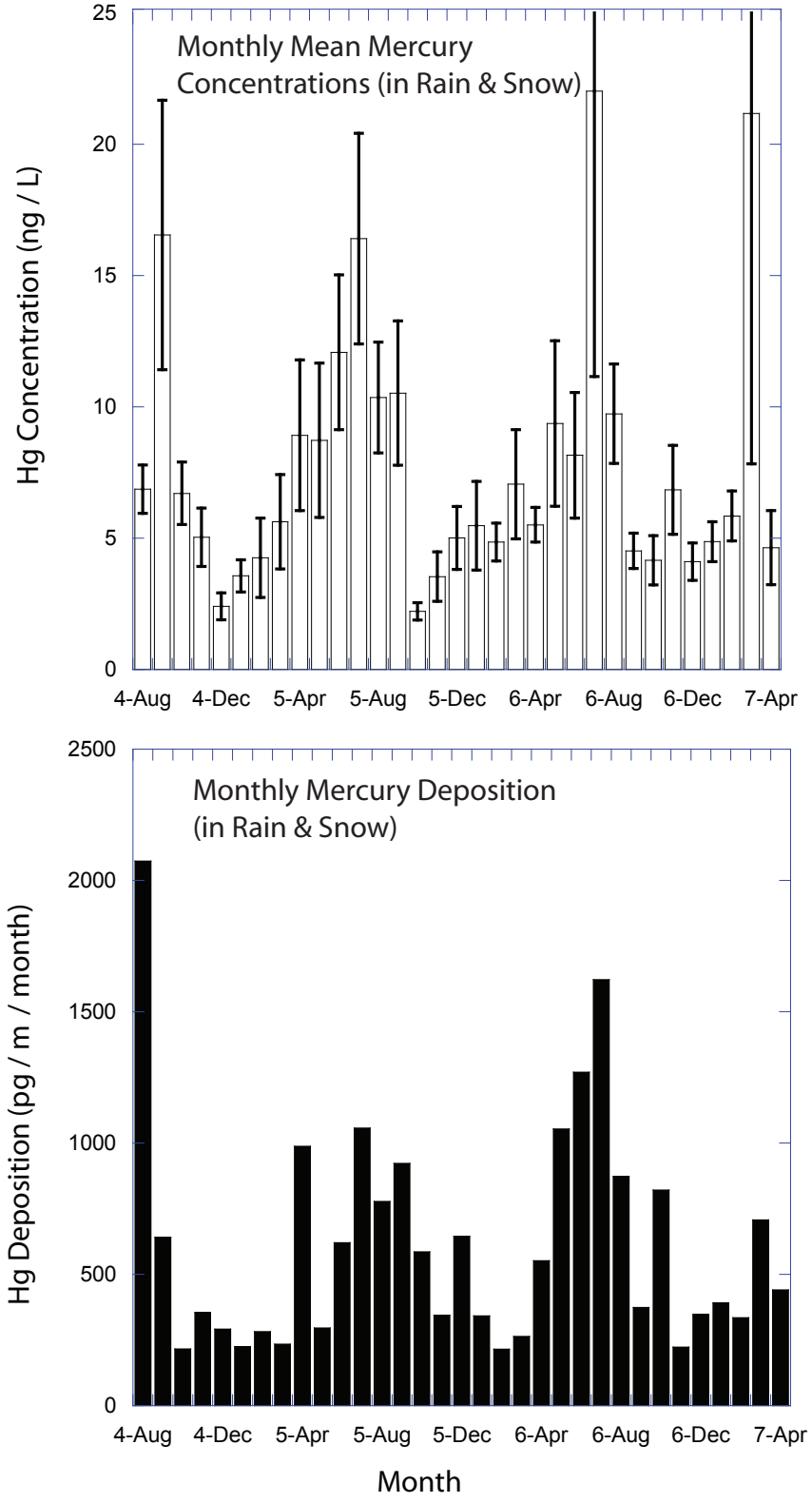
# *Data Report : Mercury at Underhill, Vermont, Mercury Deposition Network (MDN) site, August 2004 – April 2007*




*See accompanying article on opposite page.*

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botanical research was an investigation on the effects of forest fertilization in sugarbushes.

The Proctor Center hosts two VMC monitoring sites, the Air Quality site and the Forest Canopy Research Tower. Tim's support and encouragement of VMC activities is enormously valuable to our long-term forest health monitoring

Tim's background includes research on the Siccama Plots on Camels Hump starting in 1983. The plots describe a northern New England forest and also have long-term soil and climatic data across an elevational gradient. Tim emphasizes how important this basic long-term record is when doing forest health research on, for example, acid deposition. Without this long-term data set, it would be very difficult to pick out the impact of acid deposition from the "noise" of general forest variability. The plots continue to provide valuable baseline data for many other research projects and are one of the oldest forest monitoring projects in North America, having been established in the mid-nineteen-sixties. These plots are revisited every several years with the next characterization tentatively scheduled for next summer.

In January 1991, Tim received a PhD in Botany (now Plant Biology) from the University of Vermont. His advisors were Dr. Richard Klein and Dr. Hubert Vogelmann. The topic of his dissertation was the secondary impacts of forest decline on forest gap

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dynamics and regeneration. Through forest measurements and monitoring of microclimate in disturbed and undisturbed areas on Camels Hump, it was shown that spruce trees are initially impacted by a stressor, such as acid rain, but when they die, trees (especially balsam fir) around the gap edges are exposed to wind. Balsam fir is very shallow rooted and thus sway in the wind, breaking roots and needles, eventually killing the tree. As more trees die, the gaps get larger causing patches of dead trees in high elevations that move across the landscape, in a fashion similar to "fir waves".

Tim's later research focused on winter injury in spruce trees. It is now widely recognized that acid deposition-induced winter injury is a cause of spruce decline. Although the exact mechanism is still in question and is probably the interaction of several mechanisms, winter injury is most likely caused by freezing. Desiccation of needles has been eliminated as the cause of winter injury that leads to spruce decline. In recent years spruce decline seems to be reduced, not because of a a reduction in of acid deposition, but because the weather conditions that lead to winter injury have not occurred. It takes two or three consecutive years of moderate-to-severe winter kill to finally cause a spruce to die. Surviving spruce seedlings and saplings appear quite healthy because they are covered by snow or shaded by larger trees and not exposed to the conditions that cause injury.

Upon being appointed as Director of the Proctor Center, Tim's research focus shifted to maple. About eight years ago, the North East Regional Assessment (funded by EPA) team asked researchers to look at the potential impact of climate change on the forest sector. Through his participation in this project, Tim became interested in the specific impact climate change might have on maple sap flow and syrup production. His research found that over the past forty years, the start of sugaring season across New England and New York has shifted one week earlier in the year and ends ten days earlier, producing a net loss of three days to the season. With the average sugaring season lasting thirty days, this amounts to a ten percent loss.

*Tim Perkins (left) and Tim Wilmot (right) at Proctor Maple Reserach Center.*

Tim's work on forest health and climate change has gained some media exposure. Last fall he gave a talk at the ECHO center on global climate change and Vermont. This March he was featured on Vermont Public Radio's "Living On Earth" program, where he participated in a discussion about what effects rising temperatures might have on the sugaring industry in general and on sap sweetness in particular. He has been extensively interviewed on this work by both broadcast and print media.

The VMC Canopy Tower site at Proctor replicates much of the same instrumentation that Tim used on Camels Hump for his dissertation. His wiring and programming expertise were invaluable when the Canopy Tower meteorological arrays and data logger were installed. Tim emphasizes the value of organizations such as the VMC that focus on long term environmental monitoring. Having long term records on which to ground shorter term research makes complicated systems more easily understood. He believes that supporting the VMC is well worth the effort since records are continued without being swayed by what he calls "the pollutant of the month club" – the trendy research projects that come and go.

Tim and the entire staff of the Proctor Maple Research Center, have been an extraordinary asset to the VMC. They earn our heartfelt thanks for genuinely *cooperating*.

Vermont Monitoring Cooperative

111 West Street
Essex Junction, VT

# VMC Annual Meeting 2007

*Climate Change & Vermont's Forests: Past, Present, and Future*

Monday, October 29th, 2007

## Presentations will include:

Dr. Charles Cogbill "The Original Forests of Vermont: The Appropriate Baseline"

Randy Morin (USDA Forest Service, Forest Inventory and Analysis Unit) "Vermont's Forest in the Present"

Dr. Timothy Perkins (UVM Proctor Maple Research Center) "Impact of Global Climate Change on the Timing of Maple Sap Flow in the Northeast"

☐ Please Register Me for the Annual Meeting

- ○ I do not need parking arrangements made for me
- ○ I will be driving a government vehicle (meaning I don't need a permit to park)
- ○ Please send me a parking permit.

☐ I would like to participate in the lunch provided by VMC, free of charge

☐ I would like a vegetarian lunch

Name _____

Street Address _____

City _____ State _____

Email Address _____

Organization _____

☐ Please do *not* add me to the VMC mailing list

**Return to:**
**VMC, 111 West Street, Essex Junction, VT 05452**
***Or* visit our website and register online!**

# *Newsletter*
# Vermont Monitoring Cooperative

**Fall 2007 Volume 11 Issue 4**


## Reminder to Cooperators:

Researchers conducting work in 2007 on state or federal land or at VMC study sites must update their study site permit and project description with VMC. Any changes should be sent to Joanna Grossman at joanna.grossman@state.vt.us. In addition, if your research is located on the Green Mountain National Forest, please contact VMC and Brian Keel, Research and Monitoring Coordinator of the GMNF at (802) 362-2307 ext. 214 or bkeel@fs.fed.us.

If an existing project remains active and unchanged, please confirm your status with VMC to ensure your study site permit remains active. If you need a copy of your study site application on file, please let us know.

Thank you!

## In This Issue:



It's almost time for our Annual Meeting!
October 29th, 2007
Free lunch, interesting presentations, and networking with other natural resource professionals.
Sign up online or inside!


Vermont Monitoring Cooperative
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