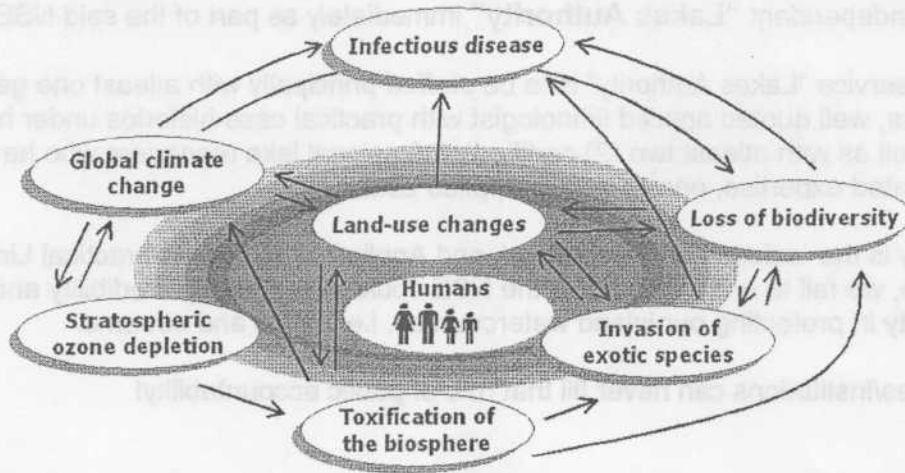


G. E. Likens, Providing limnological leadership



Soil & Water Conservation Society of Metro Halifax (SWCSMH)

310-4 Lakefront Road, Dartmouth, NS, Canada B2Y 3C4

Email: limnes@chebucto.ns.ca

Tel: (902) 463-7777

Master Homepage: <http://lakes.chebucto.org>

Ref.: GEA_Bill136.doc

To: The Law Amendments Committee, Nova Scotia Legislature

From: S. M. Mandaville Post-Grad Dip., Professional Lake Manage.
Chairman and Scientific Director

Date: November 21, 2012

Subject: Bill No. 136- **Green Economy Act**

Hon. Ross Landry and Members of the Law Amendments Committee (LAC):

We thank you for the opportunity in making this presentation to the LAC. We have six (6) primary recommendations marked as I to VI for the Nova Scotia Environment Dept. (NSE) to incorporate without any further delay so that the 'essence' of the *Green Economy Act* could be fully realized within a reasonable time span.

Incidentally, we had made similar recommendations, among numerous others, to almost every public consultation conducted by the NSE dating as long back as The Minister's Task Force on Clean Water (early 1991).

On page-4, we insert an honest and professional admission in year-1999 by the then Premier, the Rt. Hon. John Hamm MD to the effect that the NSE did not have any experts in limnology, i.e., lake/river science, on their staff. Unfortunately, that is the case even in present day.

...../2

Our six (6) recommendations are, in brief:-

- I. We herewith plead that the Nova Scotia Environment (NSE) set up a credible quasi-independent "**Lakes Authority**" immediately as part of the said NSE.

This civil service "Lakes Authority" is to be staffed principally with at least one genuine world class, well quoted applied limnologist with practical case histories under her/his belt, as well as with at least two (2) certified professional lake managers who have demonstrated expertise, once again in Applied Limnology.

Limnology is the 'science of freshwaters', and Applied Limnology is practical Limnology. Otherwise, we fail to understand how the NSE could ever develop credibility and authenticity in protecting our inland watercourses, i.e., lakes and streams.

Universities/institutions can never fill that role of public accountability!

- II. **Lake/River biodiversity** has to be imparted a top priority. A lead and preferred indicator of biodiversity is stream and lake benthic macroinvertebrates. The CCME has a document on same.

We have been studying the lake benthic macroinvertebrates over several years, subject to available time/resources. We had invited the NSE to participate several times but they declined.

In addition, we have commenced studying the chironomid menta and identifying any deformities. There is worldwide literature on this subspecialty. Unfortunately though, we are unaware of any previous investigations to compare with locally.

"Chemical measurements are like taking snapshots of the ecosystem, whereas biological measurements are like making a videotape."

- III. Aggressive provincial action with NSE as the lead agency should be taken to **control land development** with the use of internationally accepted predictive water quality models.

We have now completed predictive TP (total phosphorus)/Cha (chlorophyll a) modelling of approximately two thousand (2,000) lakes/ponds in four (4) counties of Nova Scotia, with the majority being within HRM. This may be one of the largest projects in Canada.

...../3

IV. NSE should be **selective in funding or partial funding of municipalities** for lake studies and must insist on total public involvement rather than just of 'alleged representatives', a process that could be easily achieved by placing media advertisements and/or direct invitations right from Day#1, even where special Government programs are available with sufficient surplus funds. It is insufficient to consult only unelected Advisory Boards. Each and every interested *homosapien* living in Nova Scotia **must** have an opportunity for regular proactive, rather than backseat, involvement.

V. NSE has always been blaming the development as well as the construction industry for faults. For example, NSE levies minor fines under it's 'summary conviction act' or so.

In reality, more often than not, it may be the inappropriate designs by professional consultants which may have led to cumulative problems; hence it is the consultants on whom the fines should be levied upon as a warning. Since the fines are in the range of only \$300-500, they will not unduly hurt any consultant but they may act as deterrents in future. Further, the name of the consulting professional together with his/her employer should be placed in regular adverts in the news media and a 'fines register' at NSE must be available to the public during the working hours.

In addition, a listing of all infractions, both minor as well as major, should be placed on the internet and preserved there in perpetuity. No delays should occur in this process and the internet register should be updated every second working Friday, at the minimum, throughout the year.

VI. And last but not least, a select number (not all) of the senior professionals at the 'Director' as well as at the 'Manager' levels should be replaced/filled with genuine scientists in Limnology as well as in Marine Biology. The scientists need not all have PhDs. Even an MSc, or a BSc (Hons) together with the related professional accreditations would be sufficient. Any genuine and dedicated professional presently employed as a Director or as a Manager may also upgrade his/her knowledge by undergoing the necessary training internationally in order to obtain the certification.

Many problems that have occurred variously over the last three (3) whole decades, especially relating to our inland lakes, could have been avoided if NSE had the proper professionals to **scrutinize** development plans submitted by the Engineering and other Consultants.

In other words, leadership has to be top down, not bottom up!

...../4



THE PREMIER
HALIFAX, NOVA SCOTIA
B2S 2T3

OCT 08 1999

04-91-0047
04-99-0002

Shalom M. Mandaville
Chairman & Exec. Director
Soil & Water Conservation Society of Metro Halifax
310-4 Lakefront Road, Dartmouth, NS
B2Y 3C4

Dear Mr. Mandaville:

Thank you for your electronic correspondence of August 3, 1999 and July 30, 1999, on the subject of Nova Scotia Department of the Environment's (NSDOE) capacity to properly manage the province's numerous lakes.

As far as the professional composition of NSDOE staff is concerned, this reflects the range of environmental management issues and problems that the department addresses. This includes everything from acid rain and particulate monitoring, to contaminated sites and agricultural practices. Lake water quality is an ongoing concern for the department, not just as it is affected by urban development, but in every way.

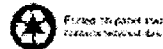
With respect to your request that a limnologist be added to the Environment staff, the department will undergo a full program re-assessment as part of the required legislative review. Following that review, there will be better direction on staffing priorities, and the need for a limnologist will be evaluated at this time.

Your personal interest in lake water quality management is indeed evidenced in your website, which I understand to be comprehensive. I very much appreciate the continuing interest of voluntary groups such as your own, and their contribution to our environment. In this regard, I would ask that you maintain contact with NSDOE through Mr. Darrell Taylor (424-2570). I would support collaborative efforts to improve our approaches to environmental management that incorporates the experience of organization's like yours. I have requested that Mr. Taylor follow up with you to discuss this further.

Sincerely,

A handwritten signature in black ink that reads "John Hamm".

John F. Hamm



Soil & Water Conservation Society of Metro Halifax (SWCSMH)

310-4 Lakefront Road, Dartmouth, NS, Canada B2Y 3C4
Email: limnes@chebucto.ns.ca Tel: (902) 463-7777
Master Homepage: <http://lakes.chebucto.org>

Ref.: GEA_Bill136_appendix.doc
To: The Law Amendments Committee, Nova Scotia Legislature
From: S. M. Mandaville Post-Grad Dip., Professional Lake Manage.
Chairman and Scientific Director
Date: November 22, 2012
Subject: Bill No. 136- *Green Economy Act (appendix)*

As a corollary to our submission dated Nov. 21, 2012, we herewith provide select pictorial representations as follows:-

Page-2: Resolution by the Nova Scotia Legislative Assembly during December, 2005 in acknowledgement of the scientific efforts of our scientific group.

Page-3: The Provincial Water Strategy commenced back in 1996/1997 and not in year-2007 contrary to claims made in the provincial environment dept.'s website.

Page-4: Representative macroinvertebrates (bottom biota) of lakes in beloved Nova Scotia.

"Among the limitations of relying solely on chemical and/or physical parameters to assess ecological health and sustainability is the fact that existing environmental quality guidelines (EQGs) only consider a toxic response to single chemicals, and therefore cannot account for the cumulative impacts from multiple chemical discharges (a "cocktail" of compounds) which may be coupled with physical changes in the environment. Furthermore, EQGs may not account for lower response thresholds in highly sensitive organisms or life-stages. Single-point-in-time samples can miss, cannot detect, or cannot re-construct periodic events that collectively may influence a biota." (CCME, 2006)

Page-5: Chironomid menta and representative deformities (after Elske).

Chironomid menta are used worldwide among advanced jurisdictions for ascertaining cumulative impacts of pollutants.

Page-6: Russell Lake, Dartmouth during year 2005 (prior to development), and year-2006 (during development).

Page-7: Russell Lake, Dartmouth during year-2007 (ongoing development).

Page-8: Top-down and bottom up controls in a hypothetical lake.

Resolution by the Nova Scotia Legislative Assembly, December,
2005



**HANSARD 03/04/05-107
DEBATES AND PROCEEDINGS
THURSDAY, DECEMBER 8, 2005
RESOLUTION NO. 5401**

MS. MARILYN MORE: Mr. Speaker, I hereby give notice that on a future day I shall move the adoption of the following resolution:

Whereas the Soil & Water Conservation Society of Metro Halifax is a non-profit organization of professionals dedicated to protecting land and water resources in Nova Scotia; and

Whereas the society has developed extensive data, modelling, analyses and scientific reports which it shares with environmental groups, universities, consultants and various levels of government; and

Whereas the society raises public awareness and action through watershed and construction monitoring, educational television shows, Web site, public presentations and lake cleanups;

Therefore be it resolved that the members of the Nova Scotia House of Assembly thank and congratulate the Soil & Water Conservation Society of Metro Halifax under the extraordinary leadership of Shalom Mandaville, Chair and Scientific Director, for its many contributions to environmental protection in this province.

Mr. Speaker, I request waiver of notice.

MR. SPEAKER: There has been a request for waiver.

Is it agreed?

It is agreed.

Would all those in favour of the motion please say Aye. Contrary minded, Nay.

The motion is carried.

A handwritten signature in cursive script that reads "Marilyn More".

Compliments of Marilyn More, MLA for Dartmouth South - Portland Valley

The Provincial Water Strategy commenced back in 1996/1997 and not in year-2007 contrary to claims in the NSE website



**Department of
the Environment**

Resource Management & Environmental Protection

Catrina Moir
Ecosystem & Risk Management

PO Box 2107
Halifax, Nova Scotia
B3J 3B7

Tel: 3617
Fax:

Our file no: 02-96-0091

August 14, 1997

Mr. Shalom Mandaville
Soil and Water Conservation
Society of Metro Halifax
PO Box 911
Dartmouth, NS
B2Y 3Z6

Dear Mr. Mandaville:

Attached for review and comment is a draft Water Resource Management Strategy for Nova Scotia. To this point, the strategy has been developed following discussion with provincial and federal agencies. Broader public review is now being requested prior to the release of the strategy for a formal 30-day review period, this fall.

The draft strategy is being circulated to municipalities, watershed groups, and others interested in water management. Comments on the draft will be received by Nova Scotia Department of the Environment until September 30, 1997.

Concurrently, an internal working group has been established to address departmental concerns. This committee will also review any comments received and make recommendations on changes to the draft, resulting from public or departmental concerns. The working group will develop the more detailed action plans as referenced in the draft Table of Contents to achieve the objectives of the strategy.

If you require further information or clarification please contact Dan Hemsworth or John Theakston at 424-5300.

Yours truly,

Kate Moir, Acting Manager
Ecosystem & Risk Management Branch

Enclosure

cc: D. Hemsworth
J. Theakston

Representative macroinvertebrates in lakes of beloved Nova Scotia



Chironomid menta and representative deformities (after Elske)

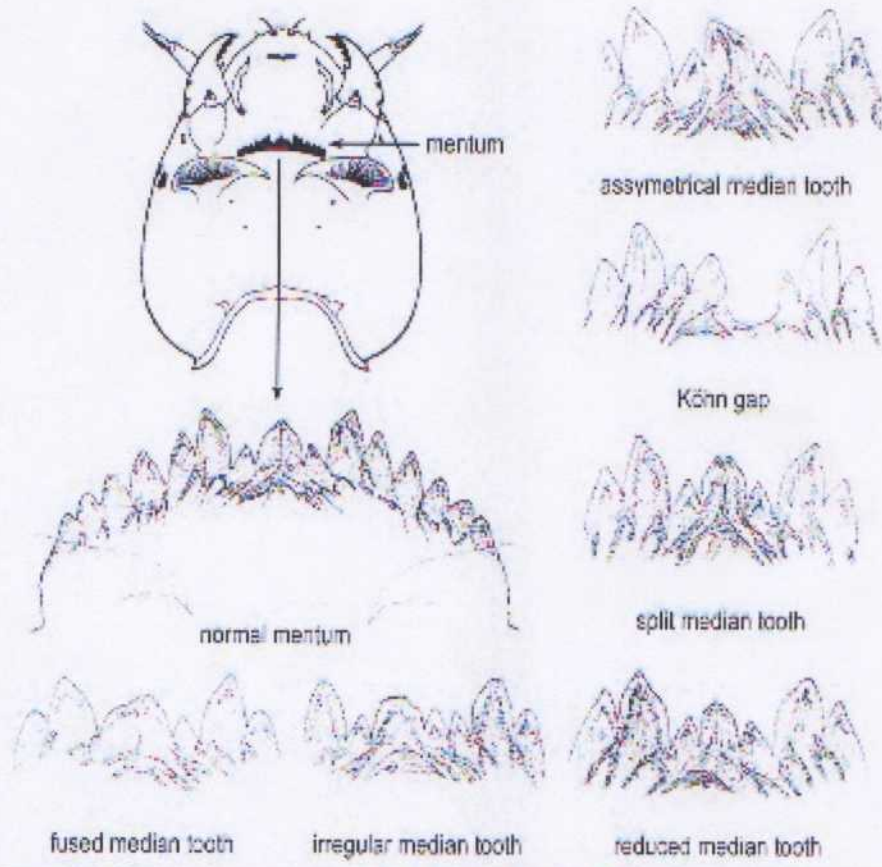


Figure 6.1. Schematic presentation of the ventral view of a *Chironomus* sp. head capsule (adapted from VERMELLEN 1995), with a detailed presentation of a normal mentum and some examples of deformed median teeth (adapted from WARWICK & TISDALE 1988).

Year-2005 (looking towards the west, Circumferential Highway)



Year-2006, same direction as the one in year-2005, a major degradation!



2 photographs from early Fall of 2007, different views



Following is a facsimile reproduction from Benndorf et al. (1984) and depicts a hypothetical scheme showing the connections involved in biomanipulation; shaded area=connections not yet clear (modified after Kossatz, 1982).

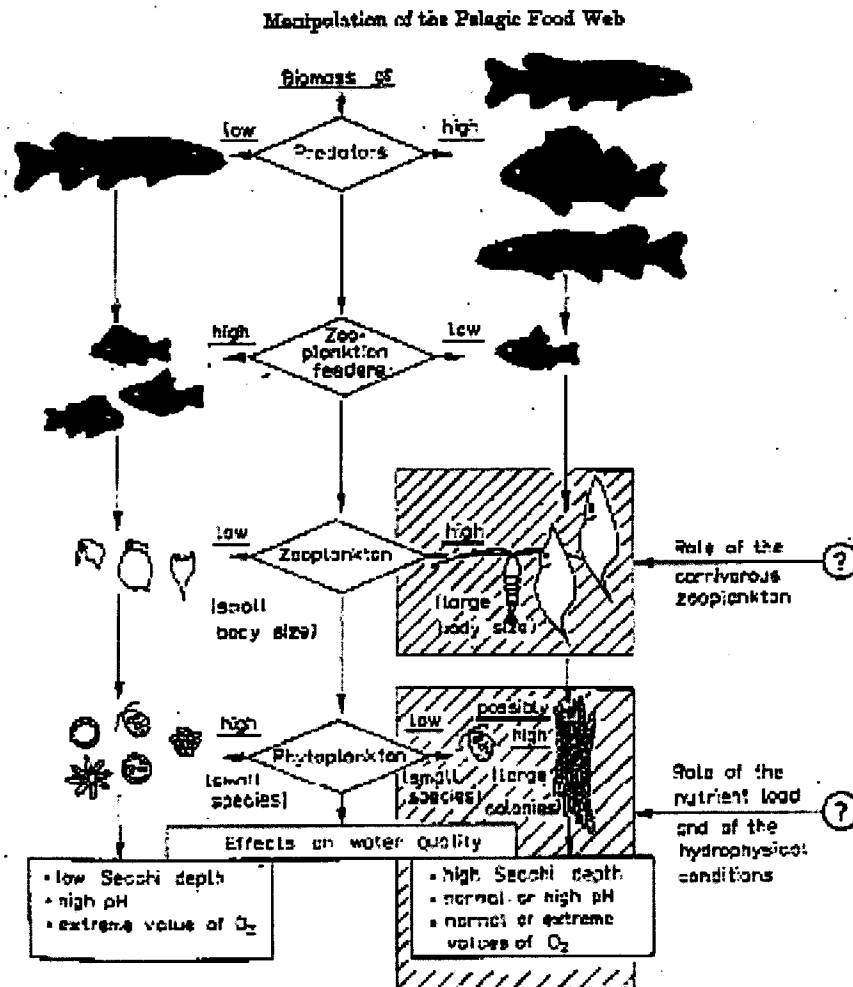


Figure 1: Hypothetical scheme showing the connections involved in biomanipulation; shaded area = connections as yet unsure (modified after Kossatz (1982)).