

EDITORIAL

Living in a global environmental emergency ward – the need to address problems with science, action and speed

Welcome to the new Issue of the PNSIS. This piece is being written at the end of the summer, midway through another hurricane season in the Maritimes and this one purported to be noteworthy. So far, three storms have barreled up the Atlantic coast, with post-tropical storm Lee hitting us directly and with more predicted to come. This follows several months of unsettled weather, resulting in Nova Scotia being marred by wildfires, excessive rain, unusual and tragic flooding, and a slow recovery from last years, massive subtropical storm Fiona. Wildfires continue in Quebec and out west in Alberta, BC and the NWT, causing people to evacuate and resulting in enormous loss of forests, homes and other community infrastructure. It has made Canadians across the country, especially residents of Nova Scotia, much more aware of extreme weather events and the changing climate, and wondering what the future holds for their descendants.

During times of reflection about such issues, the environment in general, and with my head in an excellent autobiography penned by a distinguished environmental biologist (Ehrlich 2023), it appears as though we are currently living in an environmental emergency ward, the patients (forests, waters, coastal and ocean ecosystems, wildlife, our homes and communities, us!) coming in faster than they can be diagnosed, stabilized and treated. Although the gravity of these events may be accentuated by the 24 hour news cycle, it is clear that the problems we face are real, serious and a bit overwhelming.

Throughout much of my career as a marine environmental scientist, I have felt that based on the facts, humanity is in a dire environmental situation. This was predicted by some but until recently, not generally recognized. My first wake-up call to the challenges was as a young zoology graduate student involved in a global population conference in Fall, 1968 (Regier and Falls 1969). It alerted me to the population explosion that was occurring throughout the 20th century (3.45 billion in 1968, now 8 billion in 2022), with many implications for society. Soon afterwards, I read the literature on global issues of concern

(e.g. Ehrlich 1968, Meadows *et. al.* 1972, Dubos and Ward 1972), spurred on by *Silent Spring* (Carson 1962). Then, in my first job conducting fisheries research at sea, I saw firsthand the pollution, over fishing, and habitat damage in our Atlantic coastal waters. I continued studying and the rest is personal history, a career in the nascent Environment Canada and in academia. It was clear throughout that the list of environmental stressors is endless, against a back drop of greater numbers of people and global climate change.

Circa 2023 – on top of such problems, there is the continued and growing demand for resources (minerals, oil and gas, lumber, food, chemicals). We are clearly making huge demands of the planet, some saying that we have overshot that mark. What is our future with 8 billion people all requiring a place to live, food, essentials, health care, and security? As Paul Ehrlich and others have asked – are we at the point of continuing to extract more resources from the earth each year than we are returning to it? Will food famines, mass migrations and wars eventually overwhelm us, in addition to the current major environmental concerns of climate change, loss of biodiversity, over fishing, environmental contamination, etc.? Are we at a crucial tipping point for a livable planet? These are crucial questions that should engage us as citizens and scientists, be rigorously discussed, and foster an interdisciplinary approach to solutions with all haste.

I try to be optimistic. The good news is that many core problems are recognized, they are being well studied and considerable efforts are occurring to address them. There is much effort to optimize the science-information-policy – management interface. We should be especially thankful for the continued work of the United Nations and its many agencies and advisory groups; the UN is truly our Florence Nightingale in the efforts to care for people and the environment, and to respond to ongoing crises (wars, famines, earthquakes, floods, mass migration). Great strides have been made globally to increase food production and distribution. Advances in medicine continue, at times seemingly miraculous as shown by the rapid production of novel and effective vaccines in the recent (and still ongoing) Covid pandemic. Finally, diplomacy continues on many fronts to diffuse confrontations and increase understanding and cooperation in this rapidly changing world.

That said, there is an ongoing climate crisis, recognized now by most governments and influential groups. Climate change is here,

the globe is warming. This will be a primary concern for the rest of the century (see the references and the last IPCC report). As well, pandemics will likely recur as history repeats itself.

Solutions for many of the above mentioned problems have scientific, technological and social underpinnings. Reliable, salient and timely information is always needed, hence the continued role of science and the communications work of groups such as the NSIS. The NSIS should continue to be a hot bed of talks and actions on these important topics, utilizing the immense scientific resources of Nova Scotia and the Atlantic region. The problems that we face require discussion, collaboration, scientific and social understanding, and above all, timely decision making and action.

In support of this, it is crucial to have the engagement of NSIS members with those from other societies in NS and the region – working together, sharing reliable information, encouraging the engagement of young people, discussing key issues, and looking for solutions that work. That is the only way to look after our environment, ourselves and the future of the planet. Where we can, we must also engage the help, support and action of governments at all levels.

While you ponder this challenge, browse the content of this PNSIS issue. There are articles on a range of topics, from fungi to fish, developmental biology, climate change and science history, as well as remembrances to past distinguished NSIS members. For the first time, a report on the NSIS summer excursions of 2023 is included, and the book reviews remain popular with readers.

Please consider contributing to the varied NSIS program of activities. Encourage your colleagues and students to join the NSIS and attend our monthly talks. Our journal, the PNSIS, is one voice piece for science and science-based action on crucial information-based issues in Nova Scotia and throughout the Maritimes. Consider sending in a contribution to the next Issue. Perhaps offer an alternative view to this polemic, penned by a “despairing optimist” (Dubos 1970) in a year of much change and concern for our future.

Acknowledgements Many thanks are owed to the contributors, reviewers, and the Editorial Board for this Issue of the PNSIS. I also thank David Richardson (SMU), Jon Percy (SEAPEN and BoFEP), and Mike Butler (International Ocean Institute – Canada) for their comments on the draft of this article. It is dedicated to

the memories of Nova Scotia colleagues Meinhard Doelle, Alan Ruffman and Charles Schafer, who have recently passed away but have left long-lasting legacies in their fields of specialty – international law, geology, environmental activism, and oceanography.

REFERENCES

- Carson, R.** (1962). *Silent Spring*. Houghton Mifflin Company, Boston. 368 p.
- Casselman, A.S.** (2023). Canada in the Year 2060. *Maclean's* 136(7): 28-39. (September 2023).
- Dahl, K.** (2023). “Danger season” teaches lessons in climate resilience. *Catalyst* 23: 22. (Union of Concerned Scientists, Winter 2023)
- Dubos, R.J.** (1970). *Reason Awake. Science for Man*. Columbia University Press, New York, London. 280 p.
- Dubos, R.J. & Ward, B.E.** (1972). *Only One Earth. The Care and Maintenance of a Small Planet*. Norton. 308 p.
- Ehrlich, P.R.** (2023). *Life. A Journey Through Science and Politics*. Yale, University Press, New Haven and London. 374 p.
- Gifford, R.** (2015). The road to climate hell. *New Scientist*, July 11, 2015, p. 28-33.
- IPPC (Intergovernmental Panel on Climate Change).** (2023). *Sixth Assessment Reports, 2022 and 2023*. United Nations, New York.
- Meadows, D.H. et al.** (1972). *The Limits to Growth. A Report for the Club of Rome’s Project on the Predicament of Mankind*. Signet Book, New American Library, New York. 207 p.
- Regier, H. & Falls, J.B. (Eds.)**. 1969. *Exploding Humanity. The Crisis of Numbers*. Anansi, Toronto, ON. 188 p.
- Ripple, W.J. et al.** (2020). Viewpoint. World Scientists’ Warning of a Climate Emergency. *Bioscience* 70(1): 8-12. January 2020.
- Rockstrom, J. et al.** (2023). Safe and just Earth system boundaries. *Nature* 619, 6 July 2023.
<http://doi.org/10.1038/s41586-023-06083-8>
- Tortell, P. (Ed.)**. (2020). *Earth 2020. An Insider’s Guide to a Rapidly Changing Planet*. Open Book Publishers, Cambridge, UK. 273 p.
- Vallant, J.** (2023). *Fire Walker: A True Story from a Hotter World*. Knopf, New York. 432 p.

Peter G. Wells
Dalhousie University, and Editor, PNSIS.
Email: Oceans2@ns.sympatico.ca