Rocks, trees and honeybees have rights?

By Jim Mosher

Do rocks have rights? This rather odd question was the focus of an essay we considered during a course in 'eco-philosophy' at the University of Winnipeg in the late-70s.

There was a lively discussion, mediated by our professor. In the early going, most of us fresh-faced undergraduates agreed that the question was more a sprat to catch a mackerel than a legitimate line of inquiry. In what sense, after all, could we assert that rocks do have rights? We don't, after all, confer rights on inanimate objects. (A shag carpet does not have rights, notwithstanding its sixties appeal.)

In the context of eco-philosophy, the opening question becomes, if nothing else, a powerful metaphor. The ecosphere involves complex interactions 'animated' by forces and energy flows; while this is reasonably well understood, sensitivity to these intertwined interactions has been slow to take hold. Geological and climatological processes, for instance, while not driven by humans, have significant impacts on our planet's ecology.

We have, as the industrious and resource-hungry species we are, re-engineered the world to supply our needs or enhance our human environments. We have, for instance, built huge hydroelectric dams without a care for what effect they may have on the natural environment, though effects there are.

If we take this single case, we find that the ecological effects of a hydro dam can be significant downstream and upstream, as well as farther afield.

Consider a Canadian case. Lake Winnipeg, smack dab in the middle of the country and near the geographic center of North America, is the world's tenth largest freshwater lake, by surface area. The lake is plagued by a surfeit of plant nutrients nitrogen and phosphorus.

The two nutrients are essential to terrestial life. However, in excess, a cascade of ecological consequences ensue. That's what's happened in Lake Winnipeg which is now — as it has been for at least a decade — locked in a process called cultural eutrophication.

Leaving aside the nature of this process, the take-home lesson is that reducing nutrient inputs is key to returning the lake to ecological balance.

Enter Netley-Libau Marsh. It's an inland marsh formed in the transition between the inflowing Red River and the lake.

Marshes and other less well defined wetlands are nutrient sinks in which native vegetation captures nutrients, thus providing an ecological service to the waterways into which they flow.

However, Netley-Libau Marsh no longer functions as a healthy coastal wetland. Its salutary ability to remove nutrients has been significantly undermined because it's lost a significant amount of its vegetation, both to surging spring flood waters from the Red River and the reversal of natural flushing patterns caused by the hydro dam at the northern tip of Lake Winnipeg. (Endnote 1.)

Both causes can be traced to human forces: the tens of thousands of culverts and other drainages that discharge water into the Red River and the neglect of engineers who did not take account of the ecological impacts of the regulation of Lake Winnipeg water levels.

Manitoba Hydro regulates lake levels between 711 ft. above sea level (ASL) and 716 ft. ASL. Below this range — usually in a time of drought — the provincial government steps in; any draw-down is prohibited. Above the range, maximum draw-down is required, according to the Crown utility's lake regulation licence. Within the range, the utility uses the lake — effectively the third largest hydroelectric reservoir in the world — to optimize hydroelectric generation.

Human intervention in lake level regulation changes the hydrodynamics of the lake system. Before lake regulation began in 1976, there were dry periods when vegetation in Netley-Libau Marsh was able to reestablish itself but that rarely happens post-regulation.

Lake Winnipeg regulation and the other factors that affect Netley-Libau were not properly assessed or quantified when Manitoba Hydro received its interim licence to control lake levels in the 1970s.

There are significant, costly effects that are not routinely anticipated. That is changing, as engineers realize that ecosystems have not only an intrinsic but an extrinsic value. It's a notion that's been percolating through the engineering community for at least the last decade. It's an approach that was anticipated, if rarely articulated, in the 1960s as a nascent environmental movement emerged.

A wetland has a 'value'. A honeybee has a 'value'. Forests, waterways, oceans, volcanoes each have values because they provide ecological services.

The vegetation in a wetland captures nutrients, reducing their loading into nearby waterways — an important ecological service because nutrient loading has proved to be a significant problem in waterways burdened by an excess of nutrients.

Honeybees are prodigious pollinators. According to a United Nations report, cross-pollination by honeybees accounts for one-third of global food production. (Endnote 2.) Of course, the 'value' also accrues to the plants that have evolved to take advantage of the insects that visit them. (Endnote 3.)

Governments have been slow to recognize the importance of ecological services; most are inclined to pay lip service. Environmental assessments of major projects do not usually require a thorough assessment of the value of ecological services. Mitigation of adverse ecological effects is often 'recommended' but projects are usually assessed on the basis of economic benefit, with ecological benefit a poor sister, if considered at all.

It is imprudent to ignore the larger ecological picture — the dynamics of which can and do affect the net benefit of any activity that impinges on the natural environment. As we are seeing in the sad case of Lake Winnipeg/Netley-Libau, ignoring the 'value' of non-human habitats and the natural components of those habitats can have unforeseen costs down the road. Those costs are 'unforeseen' precisely because they are not assessed in the first place.

Framed in this way, the opening question becomes less esoteric, not so much a philosophical exercise as a practical, more ecologically inclusive analytical tool.

The ecosphere is a highly convergent and intricately co-dependent system. It is hypersensitive to change. Even so, a handful of bio- and geo-engineers want to change our ecosphere to soften the impacts of climate change, among other things. If our past engineering missteps are an indication, we may face worse consequences if this type of tinkering becomes commonplace.

Rocks — as every other player in the terrestrial ecosphere — do indeed have rights. Eagles, tortoises, amoeba, trees, waterways have rights. These rights are as real and as important as the human rights we seek and assiduously defend.

Endnotes

1.) Grosshans, R. E., D. A. Wrubleski and L. G. Goldsborough 2004. "Changes in the Emergent Plant Community of Netley-Libau Marsh Between 1979 and 2001". Delta Marsh Field Station (University of Manitoba), Occasional Publication No. 4, Winnipeg, Canada. 52 pp.

2.) "TEEB (2010) The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB". Synthesis report prepared by Pavan Sukhdev, Heidi Wittmer, Christoph Schröter-Schlaack, Carsten Nesshöver, Joshua Bishop, Patrick ten Brink, Haripriya Gundimeda, Pushpam Kumar and Ben Simmons.

3.) In the late-1800s, after he'd published his seminal *The Origin of Species* (1859), Charles Darwin turned his research to flowering plants and the evolutionary advantage conferred upon them by pollinating insects. Darwin found that plants and their insect pollinators co-evolved, each developing a host of strategies to maximize pollination. See Darwin's *The Various Contrivances by which Orchids are Fertilized by Insects*, John Murray, London, 1862.

See also *Darwin: A Life in Science*, Michael White and John Gribbin, Penguin Books, 1997.