The FEDERATION OF NOVA SCOTIA NATURALISTS

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Federation of Nova Scotia Naturalists

NEWS

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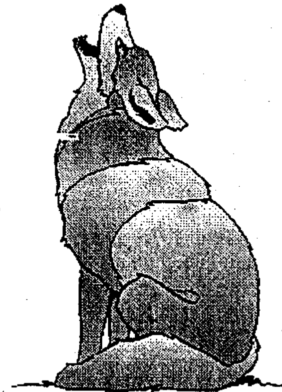
hunter, you have to be careful what you do with the animal. Every part of the animal has to be cleaned.

"Like with the caribou head I'm boiling," he said, returning his gaze to the boiling pot, "the meat will come off the bone and we will eat it, and then we will bury the bones.

"If you respect the animal, any animal, whenever you look for that animal again, you will find him very easily, but if you waste an animal, that means you will have a hard time finding him."

Hunting for the Cree is a religious occupation. Animals that are hunted successfully are seen as gifts; therefore, the animal is given to the hunter. In part, Cree believe, the animals give themselves to the hunter. There exists between human beings and animals a spiritual relationship.

Such mutual respect for each other's souls, for lack of a better word, might be dismissed as so much superstition. But the result of this relationship is a very practical and sustainable system of resource management. One does not kill an animal lightly, for sport or pleasure, or just because it is there. Gilbert had demonstrated such restraint. For the first time, moose had moved onto Gilbert's trapline, driven north by the flooding of the La Grande, but Gilbert had refused to hunt it. He was waiting for it to reproduce and the population to increase before instituting a hunt. Traditionally, the boss of a trapline would manage the resources with a view to providing for seven generations in the future. This is in striking contrast to our own short-sightedness, which is exhausting the capital of future generations at an alarming rate.



To the Cree the land itself is sacred. It is, in the words of Grand-Chief Matthew Coon-come, "A land of remembrance." It is here their ancestors lie buried; the landscape is also the repository of their stories and the manifestation of their very creation. They call their land, which seems barren and inhospitable to us, "The Garden."

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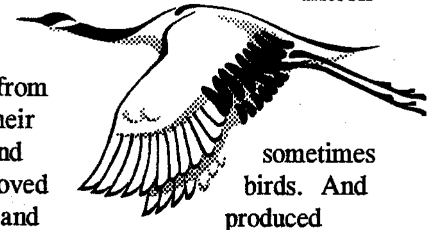
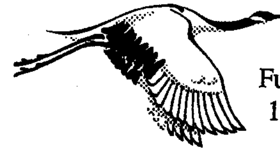
International Crane Federation Director George Archibald to Visit Nova Scotia

In the world of cranes, George Archibald is one of the most important people in the world. Born in Sherbrooke, NS, and a graduate of Acadia University, Archibald was completing his PhD at Cornell University, New York, when he teamed up with the late Ron Sauey to start one of the most important research foundations in the ornithological scheme of things. The two developed the International Crane Foundation and set out to ensure the survival of the cranes of the world - fifteen species of which half are endangered.



Borrowing scarce breeding stock from zoos and far flung habitats, the team and their staff and volunteers created some unique and sometimes amusing breeding situations for the much loved birds. And they were successful: the birds cooperated and produced young!

We have heard that George Archibald is coming to Nova Scotia for a visit. The Nova Scotia Bird Society, the Halifax Field Naturalists, the Blomidon Naturalists Society, and the Nova Scotia Museum of Natural History hope to host a special fundraising event for the International Crane Foundation sometime while he is here, and hear about ICF's unique work.

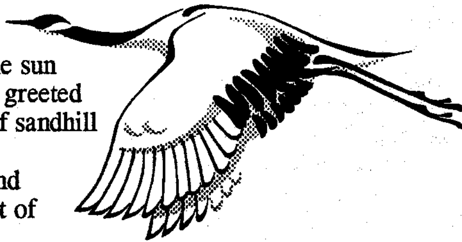


Further information will be available as follows:

1. At regular monthly meetings of the various organizations, and
2. On the Internet at the Halifax Field Naturalists' web site:

http://ccn.cs.dal.ca/Recreation/Field Naturalists/fieldnat.html

That morning I hunched in the pre-dawn cold, on the edge of the Leopold Marsh, with fellow Nova Scotian, George Archibald, founder of the International Crane Foundation. Archibald, who never saw a crane in his childhood, has single-handedly rescued a number of crane species from the brink of extinction. As the sun rose over Leopold marsh, we were greeted with the hoarse repartee of a pair of sandhill cranes. It was a hopeful sound for conservationists everywhere, a sound that would have gladdened the heart of Aldo Leopold.



Leopold has left us such a rich legacy of ideas that I can give no better advice than to say, 'read him,' an experience that satisfies both the emotions and the intellect. A half century ago, he was arguing for a fundamental change in our attitudes as the necessary prerequisite to effective conservation: "An ethic ecologically, is a limitation on freedom of action in the struggle for existence. An ethic, philosophically, is a differentiation of social from anti-social conduct. These are two definitions of one thing... there is as yet no ethic dealing with man's relation to land and to the animals and plants which grow on it... the land-relation is still strictly economic, entailing privilege but not obligations..."

Leopold argued that we needed ethics not only to govern relations between individuals (the golden rule), and individuals and society (the Ten Commandments) but between humans and the land. He saw the integration of this third element as both "an evolutionary possibility and an ecological necessity."

What is the land ethic? In Leopold's words: "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."

He went on to say: "A land ethic of course cannot prevent the alteration, management, and use of these 'resources' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

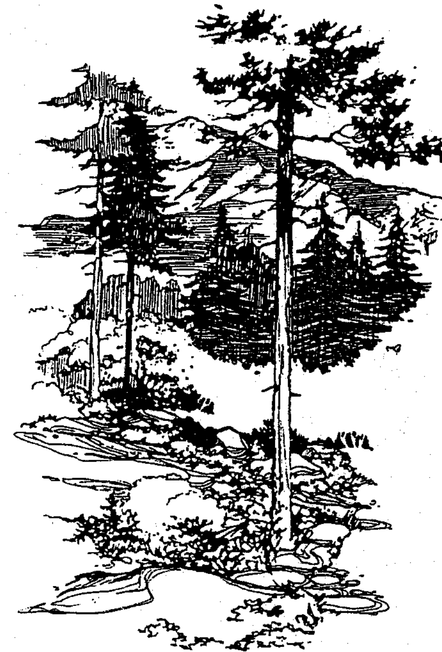
"In short, a land ethic changes the role of *homo sapiens* from the conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow members, and also respect for the community as such."

Such an ethic, if fully adopted, would put man in his proper place, to use Leopold's phrase, as "a biotic citizen"-- nothing more or less. Fundamentally, he was arguing for humankind to put limits on his actions, a concept far from being accepted by a society addicted to consumption and the totally unrealistic goal of continuous growth.

that earth--its plants and animals, its waters and minerals-- were created for the sustenance of human beings. In Christian tradition, man is given dominance over the rest of creation: "... over the fish of the sea and over the birds of the air and over every living thing that moves upon the Earth." The renaissance and its accompanying scientific revolution revived the belief -- this time based on reason rather than faith-- that everything in nature was intended for the benefit of humankind. The rise of empirical science also reduced the world to a material system, in the process removing the spiritual values from nature. Nature now could be studied and ultimately manipulated without moral consequences.

Nature was viewed as a machine, something whose parts could be described and ultimately controlled. This is the foundation of modern science: the control of nature. Though this is a ridiculously condensed version of western thought on the world, I think that we can all recognize the seeds of our current environmental crisis in these generalizations.

This brings us to the question you have put before us: who's at the helm? Are we, humankind, in control of nature's ark? I think the answer to this question is a resounding "no." Despite the exponential growth of scientific knowledge (the ability to describe nature) and technological means of altering elements of nature, we do not yet control it, nor should we, though the illusion persists that we could and should do both.



Arnae Naess, the Norwegian philosopher and founder of the deep ecology movement, claims that one hundred and fifty years ago, more information was available in proportion to the amount needed than is available today. As an example, Naess points out that today we are using thousands of chemicals, without knowing their combined long-range effects. (The actual figure is more than 70 000 synthetic chemicals. We have partially tested fewer than 2 per cent of these in isolation and know practically nothing about how they interact in the environment.) He goes on to say, "We interfere a million times more deeply in nature than we did one hundred years ago." The net effect, in Naess's opinion, is "our ignorance is increasing in proportion to the information that is required."

Take the automobile. Modern life would hardly seem possible without it. Ignoring the cumulative effects of the automobile on the environment-- i.e., pollution and despoiling of the landscape-- let's look at its benefits to the individual. The assumption is that automobiles get us to where we want to go faster and more efficiently than other means of transportation. Ivan Illych, the philosopher, has applied a so-called end-product analysis to this hypothesis. His results are both amusing and horrifying depending upon your sense of irony. The average American male, he finds, spends approximately four of his sixteen waking hours either driving his car, parking, or searching for it-- he must be an urban dweller-- or earning the money to make payments on it, maintain it, and keep it running. The 1600 hours spent annually in service of the car enable the owner to drive on average 7500 miles per year. When you do the simple arithmetic therefore, time invested in the car divided into distance travelled, the conclusion is that the person is travelling at an average speed of 4.7 miles per hour-- barely a trot for a horse. What this tells us is that the car only furnishes us with the illusion of efficiency and an effortless lifestyle.

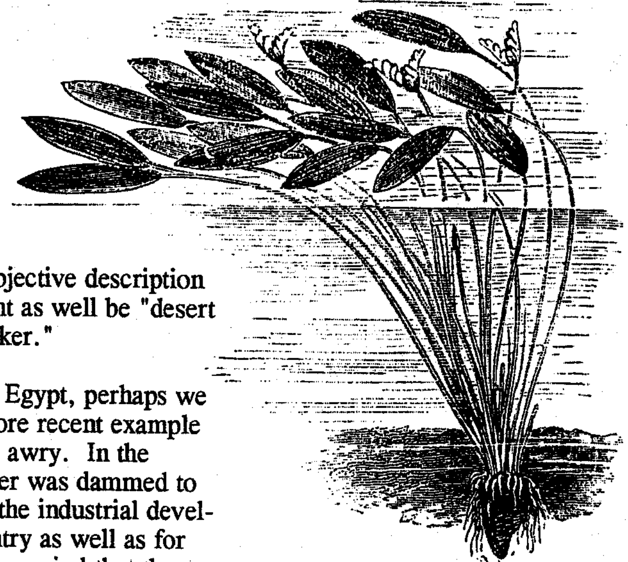
The car, you say, belongs to the Industrial Age. What about the information highway? Let me speak about the rapidly increasing speed of communications from my own experience. When I began to write magazine articles in the late 1970s, I generally submitted articles by regular mail well in advance of a deadline. Then, I switched to special delivery and finally a courier. People in the editorial offices replied likewise. Eventually we were sending stories back and forth by fax, hours before a deadline and the words were committed to hard type. Now of course it's possible to convey copy instantaneously by modem. Has this improved my quality of life? In one important way it has not. Now there is greater stress associated with the short lead times. Even though the technology has changed there is no apparent greater efficiency. Why? People, on both sides of this communication highway, have not adjusted their basic behaviour, which is to leave things to the last moment to finish. In the interim, we take on more work, or perhaps waste more time.

One day we travelled to the western edge of the oasis. We explored the ruins of a temple dedicated to Titus, the Roman emperor and disciple of the apostle Paul. As we stood outside the temple surveying the undulating dunes of sand stretching into the distance, I thought of the early description of the Sahara as an "infinite space of mystery and terror." Between us and the Atlantic, some 2000 miles away, there was nothing but sand. The archaeologist who was my guide pointed to the west, drawing my attention to a manmade structure which until then I had been blind to. It arched over the top of a large dune then disappeared into the trough of one of these immense waves of sand. It was as improbable an artifact as one could expect to find in the middle of the Sahara desert: a Roman aqueduct. Nearby was another curious object, a Roman villa, replete with a second storey dovecote poking through the enfolding sands.

With the Roman conquest of Egypt, three decades before the birth of Christ, the Dakleh oasis entered an unprecedented period of prosperity. Population boomed and the inhabitants began to push back the edges of the desert. This newfound prosperity was made possible by the introduction of a new technology, the Roman water wheel. The ox-driven water-lifting device was able to tap much deeper sources of water making irrigation of previously arid regions possible. There was now enough water to justify the building of aqueducts. The future must have indeed seemed bright.

But within three centuries-- not much longer than the span of the current Industrial Age-- the oasis went into decline. The probable cause, according to archaeologists, is that their new technology overtaxed the surface water supplies. The vineyards and villas were abandoned. The desert reclaimed its former dominion. Dakleh, though still inhabited, has never recovered its former grandeur.

The story of Dakleh recalls the epithet for our species coined by Rene Dubois, the microbiologist and thinker. He observed that an objective description of humankind might as well be "desert maker" as "toolmaker."



Before leaving Egypt, perhaps we should look at a more recent example of technology gone awry. In the 1950s, the Nile river was dammed to provide power for the industrial development of the country as well as for flood-control. Never mind that the

flooding of the Nile had been the very basis of the ancient culture that grew up along the Nile and had survived longer than any other cradle of civilization in the history of humankind. Flooding had brought with it an annual supply of natural fertilizer from the source of the Nile deep within Africa. Now farmers along the Nile must import large quantities of synthetic fertilizers. Irrigation canals are now needed to carry water from the river to fields distant from it. Because water delivery is poorly controlled, water often stands in the fields leading to widespread salinization, or salting, of the land and rendering them wastelands. These still-water canals also have become breeding grounds for the snail that carries the parasitic disease schistosomiasis so that it is now considered normal for adult Egyptians to pass blood in their urine. The decreased flow of the Nile into the Mediterranean has robbed that area of land-based fertility and devastated the Egyptian sardine fishery.

> As hoped, the dam has brought industrial development to the country, but with it a terrible irony....

As hoped, the dam has brought industrial development to the country, but with it a terrible irony, the immigration of the population from the country to the city of Cairo. As a result, there are now more than one million people living in tombs in the heart of Cairo, in the so-called City of the Dead. Meanwhile, Lake Nassar is rapidly filling with silt.

Let me take another example, closer to home, of our large scale experiments to control nature for the benefit of industrial society. In the 1970s, Hydro-Quebec undertook the alteration of a watershed the size of France in northern Quebec for the provision of hydro-power to the south, principally to New York and the New England states. They diverted some northern flowing rivers southward and dried up other rivers, creating a massive reservoir at the headwaters of the La Grande River. The development was tauted by then premier Robert Bourassa as "the project of the century" and, in scale, it is a truly an impressive undertaking.

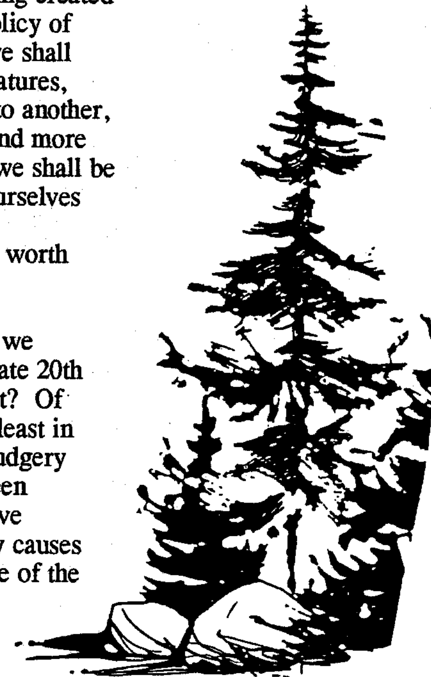
Leaving aside for the moment whether Quebec had the moral right to drown thousands of square kilometres of land where the native Cree population had made their living for some 5000 years-- a lifestyle as old as the pyramids-- the most devastating effect of the project was totally unexpected. The drowning of vegetation fuelled bacterial growth resulting in the production of great amounts of methane, or swamp gas, a greenhouse gas thought to contribute to global warming. Furthermore, this methylation process has released vast amounts of mercury from the rocks in the region, in the form of methyl mercury, a potent nervous system poison, notorious for its devastating effects on the Japanese population of Minamata. The staple of the Cree diet is fish. The fish of the region now harbour unacceptably high levels of mercury, and as a result half of the native population harbour mercury levels in their blood higher than World Health Organization standards. This has had negative effects not only on the health of the individuals but also on the society as a

whole. Communities have abandoned communal fishing practices on the La Grande River. According to one Cree leader, mercury poisoning, known as nimass aksiwin, or fish disease to the Cree, is "like an Armageddon" which has devastated his culture.

Ehrenfeld maintains, "In no important instance have we been able to demonstrate comprehensive, successful management of our world, nor do we understand it well enough to be able to manage it in theory. Only in those few cases in which small, remote systems could, in effect, be treated as if they were isolated, have management and control worked at all; but one cannot run an entire world this way."

Most of us now accept that large-scale projects, *ipso facto*, have large effects. In Canada, however, this has not brought about any significant changes to our environmental legislation. Large effects, even those that are anticipated, are not sufficient to stop projects. We merely accept responsibility for mitigating them once the project is built. In other words, all we are willing to do is practise a degree of damage control.

This is a mug's game, as Rene Dubois has pointed out in his book, Reason Awake: "Developing counter technologies to correct the new kinds of damage constantly being created by technological innovations is a policy of despair. If we follow this course we shall increasingly behave like hunted creatures, fleeing from one protective device to another, each more costly, more complex, and more undependable than the one before; we shall be concerned chiefly with sheltering ourselves from environmental dangers while sacrificing the values that make life worth living."



This begs another question: Do we enjoy a better quality of life in the late 20th century than was the case in the past? Of course, in many respects we do, at least in the western world. Much of the drudgery of providing food and shelter has been eliminated and medical advances have removed, at least temporarily, many causes of premature death. However, some of the amenities that we enjoy and believe contribute to a better life when examined closely cause some second guessing.

This is certainly not a commonly held belief in society that our relative knowledge base is declining. Most people believe that, in fact, we are becoming smarter. Naess's claim flies in the face of the dogma that humans' superior intellectual powers will shield them from the forces of nature and their own imprudent actions.

The biologist David Ehrenfeld has attacked this confidence in our control of nature in his book, The Arrogance of Humanism. Ehrenfeld holds that humanism with its faith in science and technology is the modern religion. We have merely replaced faith with reason in upholding humankind's position of superiority in the scheme of things.

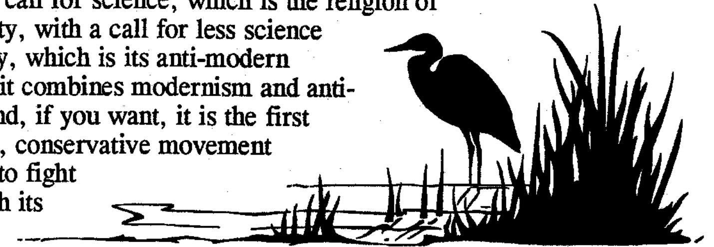
Ehrenfeld points out that many of our principal humanist assumptions are wrong: first and foremost, that all problems are soluble. We believe that most problems are soluble by technology and those that can't be solved by technology alone have solutions in politics or economics. Another article of faith is that when the chips are down, we will apply ourselves and work together for a solution before it is too late. Though humanists accept that some resources are finite, they believe that substitutes can be found for all finite or limited resources. Finally, they believe that human civilization, especially as we know it in the West, will survive.

Several years ago, I saw, graphically illustrated, that highly developed civilizations can and do collapse under their own weight. I travelled to Egypt to write a story about a Canadian archaeological dig in the Western, or Libyan, Desert. The story, "Everlasting Oasis", chronicled nearly 200 000 years of continuous habitation of the Dakleh Oasis, from the Old Stone Age through to the modern Islamic Period.

The Dakleh Oasis is a small island of watered greenery (100 by 25 kilometres) in the immense ocean of the Sahara sands. It is a striking symbol of the earth, itself an oasis in the barrenness of space.

So, there are trade-offs with any technology. Generally speaking, there is a great deal of confusion over what course of action to take to protect the environment and at the same time make our lives more worthwhile, if not materially then spiritually.

This confusion goes to the heart of the environmental movement and its current model for a better world, sustainable development (to some an oxymoron). Wolfgang Sachs, one of the founders of Germany's green movement and a leading intellectual on the question of development, pointed out the contradictions within the environmental community in an interview on CBC's ideas, collected in a book called The Age of Ecology: "The term ecology implies ambivalence... ecology combines two tendencies: it combines a call for science, which is the religion of modern society, with a call for less science and rationality, which is its anti-modern heritage. So it combines modernism and anti-modernism and, if you want, it is the first antimodernist, conservative movement that attempts to fight its enemy with its own means."



This is the horn of the dilemma upon which we are caught as environmentalists. I am decidedly in favour of more science that is ecologically-based, that is, science that proceeds from the assumption that we belong, inseparably, to a community and strives to tease out the connections within that web of beings. Ecology *de facto* is science that is holistic in its outlook. It rejects the notion that we can look at parts of the environment in isolation. It rejects, ultimately, the Cartesian notion that nature is some kind of machine.

At the same time, my own feeling is that the greatest benefits to the environment and our quality of life will not come from advances in science nor its child, technology, but from fundamental changes in our attitudes-- in our ethics.

Several years ago, I had the rare privilege to visit one of the shrines of the modern environmental movement. I travelled to Aldo Leopold's shack on his 'sand-farm' near Madison, Wisconsin. Leopold wrote the first textbook on wildlife management but he is best remembered for his lyrical, insightful essays collected posthumously in A Sand County Almanac. He wrote them on weekends when he repaired to his shack. They stand as one of the primary documents of conservation, alongside the writings of John Muir and Henry David Thoreau. When Leopold was writing in the 1940s, sandhill cranes were almost extirpated from his native Wisconsin. "The sadness discernible in some marshes arises, perhaps, from their once having harboured cranes. Now they stand humbled, adrift in history."

NATURES ARK -- WHO'S AT THE HELM?

Harry Thurston

In shaping a culture which is compatible with nature we must begin by asking ourselves a number of fundamental questions. The theme of your annual conference poses one of these: "Who is at the Helm of Nature's Ark?" I will endeavour to address this question and some of its implications based on my own experience as a writer, on both nature and culture, and the insights of a number of other observers of the man-in-nature dilemma.

We live in the twilight of the Industrial Age. Our technical accomplishments during this short-lived era of human history have been so dazzling as to make us question whether we are a part of nature at all. Underlying this question, and perhaps fertilizing it, is a huge mound of human pride-- of hubris.

Not only are we in nature-- the green world all around us-- but nature is within us. I want to read you a poem which addresses this false duality of us and the rest of nature. It's called "Greenself," and takes its epigraph from the nature writer Lewis Thomas, in his book The Lives of a Cell:

GREENSELF

Man is embedded in nature
A good case can be made for
our nonexistence as entities...
We are shared, rented, occupied.

The little powerhouses inside our own cells, the mitochondria, more than likely got there as separate individuals-- bacteria that strayed into our ancestors' cells and set up shop. They've been there ever since. It's proved a mutually beneficial relationship. "Without them," says Thomas, "we would not move a muscle, drum a finger, think a thought."

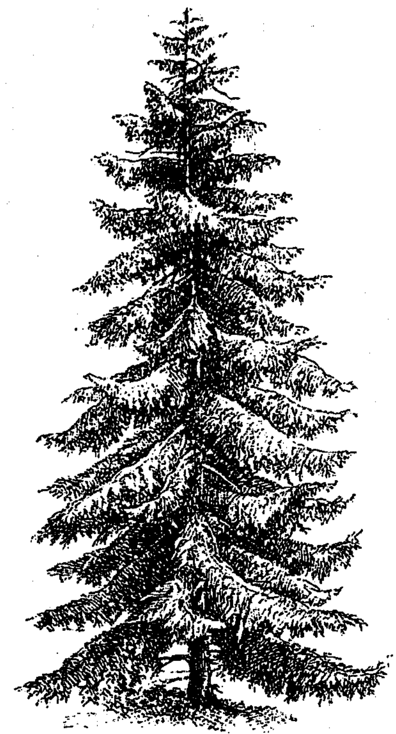
For some it is perhaps a humbling, and slightly creepy, notion that our accomplishments are not exclusively our own. They have resulted from the complex, co-operative relationships at work in nature, a process that has been ongoing some billions of years. In my opinion, however, humility is what we most need at this juncture in the short, precarious history of humankind.

We cannot really be blamed for our acceptance of the idea of humans' special status within nature. It is deeply embedded in the philosophy of western civilization. From the Greeks forward, the dominant belief has been

Where else might we look for a model of man's rightful place in the community, in the land?

Increasingly, industrialized society is looking to indigenous peoples for answers to its addictive, self-destructive behaviour. In the last few years, I have had the privilege of spending time with the Cree of James and Hudson Bay. They have been involved in a life-and-death cultural struggle with southern, consumer-society values in trying to stop the second phase of the James Bay project, which would drown the rest of their productive lands. I have camped out on the land with them, at a fall fishing camp and a spring goose-hunting camp. I have done so in an effort to understand how they view the land and the animals and plants that sustain them.

One of the hunters I stayed with was Gilbert Dick, a 45-year-old hunter and trapper. Gilbert is unusual for his generation in that he is a traditionalist. He follows many of the hunting practices of his ancestors. Paramount among these is that the hunter show a proper respect for the animals. The foremost reason for this ethic is that Crees consider man and animals to be related (which, of course, they are in the evolutionary sense), and therefore one should show respect to them as one would to a person.



One means of showing respect is to ensure that there is no wastage of killed animals. I became aware of Gilbert's adherence to this strict rule one day when I found him tending a boiling pot of bones. Among the disarticulated jumble of bones sticking out of a large aluminum pot was a caribou skull whose fleshless grin made me think of Picasso's cubist paintings, in particular, "Guernica".

"Only part of the animal we don't eat is the bones," Gilbert explained, catching my gaze lingering over the pot. Even the bone marrow is mixed with dried fish chips to make a kind of pemmican, or *bimihkaan.*

"That's what the Indian people used to do in the old days. They would burn every bone. They didn't let them hang around the campsite so the animals could eat them.

"If you leave a lot of bones around and the animals start eating them, that means that the bones of the animals won't come back to you. When you're a

The FEDERATION OF NOVA SCOTIA NATURALISTS

The purpose of the Federation of Nova Scotia Naturalists is to further communication and co-operation among naturalists and natural history societies in Nova Scotia. We also work towards a co-ordinated effort on the provincial level to protect the natural state of our environment. Our activities include:

- Promoting the enjoyment & understanding of nature by our members and the general public by:
  - educating through publications, lectures, symposia, field trips, and other activities;
  - fostering the creation of nature centers and nature education programs, and defending the integrity of existing facilities and programs.
- Encouraging the establishment of protected natural areas, as represented in parks, nature reserves, wilderness areas, heritage rivers, and other such protected areas.
- Defending the integrity of existing sanctuaries by exercising constant vigilance against pollution and habitat destruction.
- Promoting and engaging in funding and research needed for protecting the integrity of all natural ecosystems.
- Encouraging and engaging in the protection and restoration of threatened and endangered species, with special attention to the preservation of essential habitats, by:
  - working for the inclusion of all major habitats in a system of protected areas;
  - encouraging and facilitating the reintroduction of extirpated flora and fauna to their former ranges in the province;
  - encouraging and facilitating the restoration and enhancement of essential habitats.

FNSN is affiliated with the Canadian Nature Federation and is a member of both the Nature Conservancy of Canada and the Canadian Parks and Wilderness Society.

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To them it is a bountiful place. For the Cree the creation is perfect, and they simply cannot understand why anyone would want to desecrate the land with great dams. To the Cree it is simply inconceivable that a human being should act in that manner, with a total disregard for the land, the animals, and his fellow human beings.

Of course, it is not possible for the population in the south to become hunter-gatherers. The wild resource base no longer exists to support the population, and even if it could I am not suggesting that as a desirable course of action. We can, however, curb our own consumptive patterns to make it possible for indigenous people to keep alive not only themselves but their inherent cultural values. We can take from them not their lands, as we so often have done in the past, but their land ethic--an innate respect for the land as something of spiritual as well as economic value.

As Leopold urges, we can learn to place limits on our actions, through a respect of the biotic rights of other species. We can also find direction from our own predominately Judeo-Christian traditions. Ehrenfeld has pointed out that the traditional Sabbath provides guidelines for, and limits to, our actions. There are prohibitions against destroying and creating, so, Ehrenfeld points out, you can be neither a manager nor a steward. "You've got to leave nature alone, and it will continue all by itself," Ehrenfeld says. "It's a wonderful lesson. You also have to learn how to enjoy it, and that's the other part of the lesson."

"To feel and speak the astonishing beauty of things... that is the sole business of poetry," wrote Robinson Jeffers. Well, it is the business of all of us who share a love of living things and the land. As long as we speak and feel the astonishing beauty of the natural world there will be some hope of preserving it. That is why we have gathered here: to pass along this love of nature-- a nature that is intact and bountiful-- to another generation.

The above is a transcript of his address to the FNSN AGM conference held this past summer in Wolfville. Harry Thurston studied biology at Acadia University. A full-time writer, his magazine articles have appeared widely in leading North American magazines. In 1994, he received a Visionary Award from the Gulf of Maine Council on the Marine Environment, for "increasing public awareness on environmental issues." His newest book, NOMADS OF THE WETLANDS. The Nature of Shorebirds, *will appear in 1996.*