

Native Council of Nova Scotia
Maritime Aboriginal Peoples Council
IKANAWTIKET

Biodiversity, Ecosystems, and Sustainable Use and Protection Act

Comments for the 2011 Review of the Nova Scotia Environment Act

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INTRODUCTION

Defiant against adopting the principle of "Sustainable Use", Canadian jurisdictions, nested within the vast richness of the traditional ancestral homeland territories of over seventy-three nations of Aboriginal Peoples from sea to sea to sea, choose "Sustainable Development" as a principle.

Sadly, even with the qualifying word "development", governments leave out the intent or ignore the word "sustainable", and make decisions based solely on economic development. This could be a carryover, drawing from an age old mind-set still lurking in the memory recesses from first arrivals to these lands. Frontier lands, ripe with bounty, ready for the taking or plunder for a new start - progress for the once destitute and oppressed.

And so begins. Chop, cut, burn, dig, blast, cover, fill, level, ditch, dump, spray, pollute, drain, redirect, berm up, cut through, create smog, disperse pollutants, dispense mercury, and that much more, twenty-four/seven, year after year, decade after decade. Then loss of biodiversity, loss of resources, loss of fair or equitable sharing of benefits - social disparity, economic disparity, cultural disparity, regional disparity, and each Thursday morning recanting "...forgive us our trespasses...".

That does not shield anyone from the stark truth. We cannot drink, swim or eat the fish from that stream or river. We cannot find a worm in that area of toxic tailings. We cannot afford to clean up the mountains or lagoons or bays or ponds of toxic effluents and tailings dumps. The present generation has more incidences of environmental sickness and ailments than any before and the numbers are growing, as are the costs to the citizens and their governments, taxing citizens for funds for the health and well-being of society.

Will our children and our children's children, our future generations, have a Nova Scotia capable of sustaining their being, their progress and their quality of life? No; if we continue to deplete biodiversity and their habitats, destroy ecosystems, and plunder resources as this rate. No; if we continue to ignore the causes for the loss of biodiversity and loss of resources, or if we refuse to have the fair access and equitable sharing of benefits. No; if decision makers can't see the economic value for employment, progress, and revenue from "sustainable resources use". No; if we lack the capacity, fortitude, or knowledge to respect our environment or refuse to live in harmony with nature - our environment.

Peace, order and good government for the well-being of people requires governments to lead society away from the personal selfish traits of greed, pillage, plunder, destruction, and dominion over nature, under the cause of "sustainable development" or "wealth creation". Can governments lead us onto a path where society learns and understands the life-giving and life-saving value of an environment with diverse biodiversity, an environment with functioning and evolving ecosystems, and an environment with "sustainable use" of resources? An environment able to support progress and the promise that is Nova Scotia? Supporting a quality and healthy life for all Nova Scotians throughout Nova Scotia, where everyone can *Live in Harmony with Nature*, now and for future generation yet to come?

Protecting an environment does not start with governments counting the coins from environmental penalties in its coffers. The mindset of counting or imposing environmental penalties fuels a perverse incentive. Paying for environmental sins becomes a cost of doing business. That does not instill or create an ethic to respect or protect the environment. Just as each blade of grass serves a purpose, so does each and every person who respects and protects the environment.

No one can buy their way out of environmental sins – harm affects all of us.

Humanity – society as a whole, with governments – has to learn a new way to live within their natural environment. The status quo is life terminal.

We must all look at our natural environment with clear eyes. We must tear off the veil through which we have been looking, thinking, and acting about our living environment.

We all know that humans cannot stop the awesome power of a hurricane, or that of a cyclone, or of a tornado. Humans cannot stop the surge of waves causing seacoast erosion. Humans cannot stop earthquakes, floods, landslides, volcanic eruptions, and that much more. These are the natural functions of a living planet Earth. There is so much more which humans cannot stop. On the other hand, humans can learn to understand the causes and human activities that contribute to destroying our environment.

While some natural catastrophes are outside our control, we still keep acquiring the knowledge to prepare ourselves or to place ourselves outside harm's way. Shouldn't we apply that same rational and acquire knowledge for human activities that we know contribute to natural disasters?

We can take actions to reduce the gross levels of CO₂ emissions fuelling the ever growing climate change canopy. We can take action to raise the alarms about the effects of acid rain falling onto Nova Scotia's rivers, lakes, and lands and that the acid clouds travel from the polluting industries and governments in Central Canada and the USA. We can hold them responsible for contempt of our lives and our natural environment.

We can introduce into our Acts 'respect for our natural environment'. We can introduce into our Acts, identification of activities and sources of destruction coming from afar from other jurisdictions.

We can write an enlightened and mature Environment Act to guide society and governments, with: a vision, a mission, principles, environmental rights definitions, prohibitions, mainstreaming, education, an environmental court, and an annual "State of the Environment with Nova Scotians Living in Harmony with Nature Report".

- Nova Scotians can reverse the levels of mercury poisoning on our lands, waters, and seacoast by creating hard caps on production processes which release mercury.
- Nova Scotians can reduce the massive choking volume of CO₂ in the atmosphere by converting coal burning generators to renewable resources for electricity production.

- Nova Scotians can reverse the destruction of the natural productivity of streams, brooks, rivers, lakes, bays, and harbours by prohibiting the dumping of anything into these waters.
- Nova Scotian can stop the poisoning of the Earth's blood by outlawing the dumping of toxic or contaminated effluent into waters.
- Nova Scotians can stop perverse incentives, such as designating harbours and lakes as metal mining effluent or acid rock dumps sites.
- Nova Scotians can reduce sicknesses among people, animals, and plants by stopping pesticide spraying campaigns on natural woodlands and forests.
- Nova Scotians can safeguard sensitive ecosystems, like fens, bogs, marshes, ponds, streams, and lakes, by stopping and outlawing industrial discharges of chemical effluents.
- Nova Scotians can stop the introduction of unknown, unnatural chemicals and chemical mixtures into land sites, mine shafts, caverns, or rock fissures, and the practice of fracking.
- Nova Scotians can stop the social ambivalence or feigned ignorance about activities and practices which harm, effect, or destroy biodiversity and functioning ecosystems or which abuse sustainable use of resources.
- Nova Scotians can start to teach at home and at school, and put into practice each and every day, knowledge, understanding, and respect for our environment and how to *Live in Harmony with Nature*.
- Nova Scotians can embrace the worldview of Aboriginal Peoples, where we are all interconnected and interdependent in one environment, as one with all biodiversity.

Nova Scotians can learn how to teach their children at home and at school and also their colleagues at work, friends, and others about living with nature and our human frailty. We can teach children to teach their children and future generations how to live in a Nova Scotia which values a vibrant biodiversity, evolving and healthy functioning ecosystems, sustainable use of resources, the fair and equitable access to resources, and the sharing of benefits thereof. We can adopt a social cultural ethic to *Live in Harmony with Nature*.

The announcement of a review of the Environmental Act of 1994-1995 is timely. 2011 marks the first year of the International Decade of Biodiversity proclaimed by the General Assembly of the United Nations.

2011 is an opportune time for the Government of Nova Scotia to take the lead, as the second most densely populated province in Canada, to amend the 1994-1995 consolidated Environment Act, effectively structured to include:

- * A Vision
- * A Mission
- * Principles
- * Declaration of Environmental Rights
- * Definitions
- * Prohibitions
- * Mainstreaming
- * Education
- * An Environmental Court
- * A State of the Environment and Nova Scotians Living in Harmony with Nature Report

In the world of "Rights", environmental acts are evolving worldwide in response to a planet dying from human greed and disrespect for life and life-giving sources. The Rights of both "Mother Earth" and "Humanity" are intertwined for human's brief stay on Earth. These "Rights for Life" are in the broad scheme of rights evolution referred to as the "The Crystal Rights". Humankind is just waning itself past the forty years of "The Rainbow Rights", acceptance of all cultures, religions, human ideologies, and characteristics. Now humanity stands on the edge of the next revolution.

Can Nova Scotians trust fifty-two elected legislators to embrace love of life and nature, hope for a better future, and the opportunity to talk, work, and move together into the next three decades, within a society and with an Act that forefront declares a universally accepted vision:

"By 2050, biodiversity is valued , conserved, restored, and wisely used, maintaining ecosystem services, with the sustainable use of resources for a healthy Nova Scotia, and delivering benefits essential for all Nova Scotians, now and into the future."

- Can Nova Scotians relate with this description of our future, "on the patter of little, feet marches forward our civilization"? This statement was made by a distinguished superintendent of education in Nova Scotia in the 1930s.
- Can Nova Scotians and their Government seize this opportunity during Act renewal, in this international biodiversity decade, to be the first province of the Federation of the Peoples of Canada to have a "Biodiversity, Ecosystems, and Sustainable Resources Use and Protection Act", written in clear concise language, which every Nova Scotian can use as a guide to *Live in Harmony with Nature*?
- Can Nova Scotia build on its leadership role of "firsts", including most recently in 2010 to be the first jurisdiction in Canada to implement hard caps on greenhouse gas emissions from electricity production, and in 2011 become the first jurisdiction in

Canada to amend an environmental act to, in short, become a guide to preserve biodiversity, maintain functioning ecosystems, sustainably use resources, equitably access resources, and share the benefits among all Nova Scotians?

- Can Nova Scotians adopt into their daily lives the ethic, worldview, and behavioural culture of *Living in Harmony with Nature*?

For Indigenous Peoples throughout the globe, including the Mi'kmaq/Aboriginal Peoples nested within the several Atlantic Provinces, the worldview of *Living in Harmony with Nature*, where all forms of life are equal in value, interconnected, and interdependent, is deeply embedded as a core value and ethic. Living in harmony, respect for nature, and celebrating Mother Earth are distinctive characteristics or cultural traits of Indigenous Peoples continuing to live on their Traditional Ancestral Homeland Territories, as do the Native Council of Nova Scotia Community of Mi'kmaq/Aboriginal Peoples throughout Nova Scotia. We know some Nova Scotians already have and many other Nova Scotians want to embrace *Living in Harmony with Nature* as an ethic and cultural value, defining Nova Scotians and nature.

Sadly, during this round of review of the 1994-1995 consolidated Act, review announcements and calls for comment on improvements to the existing Act tend to focus on administrative demands of time, money, personnel, and recurring requests. Very little is mentioned in the invitation to: propose amendments to create a proactive citizen's and government's guide for "living in harmony with nature now and into the future".

The Maritime Aboriginal Peoples Council and IKANAWTIKET will provide comments on vital aspects that should be included in the Act and suggest language and meanings to definitions.

In the event that readers of this commentary are not familiar with the genesis of the 1994-1995 Environment Act of Nova Scotia, we prefix our comments with a short overview.

OVERVIEW

The intent of the Environmental Act of 1994-1995 was to consolidate into a single statute the replacement of sixteen pre-existing Acts, with numerous regulations, including the *Environmental Protection Act*, *Water Act*, and *Environmental Assessment Act*. The purpose of consolidation was to make the administration and enforcement of provincial environmental laws less cumbersome and easier to understand their complimentary purposes of "promoting, protecting, conserving, and making prudent use of the resources of our environment".

The purposes within the consolidation referenced the overarching goal of maintaining the principles of sustainable development, which includes maintaining ecological value, applying the precautionary principle, taking measures for pollution prevention, sharing responsibility, promoting stewardship, taking an ecosystem-based approach to management, and educating citizens about the links between the environment, natural life, the economy, and the progress of social well-being.

However, the preoccupation and time demands associated with consolidating sixteen Acts left those noble purposes, referenced as the Consolidated Act's overarching goals, without connecting focus. To the credit of the consolidators, they left us with a door to walk in and expand the principles with these connections. In our view, that is our task in this amending review period of 2011.

We maintain that without a vision or mission, the interpretation and application of principles and definitions are up for grabs, applied at will, ignored, or misunderstood.

Without reference and understanding of the Act's vision, mission, principles, and definitions, the Act's prohibitions, mainstreaming, education, and citizen's ownership of the Act (the functional elements to protect the environment), become lost or secondary issues to government's regulation and the imposing of administrative fines on activities, works, projects, and undertakings – which can have adverse effects, environmental effects, environmental impacts, or produce perverse incentives for misuse or misconduct towards the environment.

Many actions cumulatively contribute to the loss of biodiversity, loss of functioning ecosystems and services, violation of sustainable use of resources, derogation and abrogation of Aboriginal and Treaty Rights, denial of fair and equitable access to resources, and sharing of benefits arising therefrom, and the distancing of Nova Scotians from *Living in Harmony with Nature*.

Environmental Protection Failed. The administration for environmental protection frustrated and compromised. Public evidence of environmental protection shrouded. Public confidence or understanding about the vital importance of protecting biodiversity, maintaining functioning ecosystems, sustainable use of resources, and the fair and equitable access of resources and sharing of benefits misunderstood and thwarted.

A disappointing environmental legacy for “the patter of little feet marching as our future civilization”.

Over the years, the Act's regulations were tinkered with several times in an effort to help government regulate more effectively. However, without clear vision, mission, principles, and definitions, the prohibitions became disconnected and the administration became frustrating.

Purported to be a solution to proposals for “activities, works, projects, and undertakings”, which seem “trivial” or “repetitive” or “only incremental”, is that the issue is probably best handled by a civil servant and proponent in the office, and that it is not necessary to have concise knowledge about the particular environmental site. To the contrary, the thinking that a civil servant and a proponent, alone in an office, can approve an activity, work, project, or undertaking, even one that is an extension, is a dangerous transgression and undermines the Act to protect the environment, now and for future generations.

No paper transaction in an office between a public servant and a project proponent can ignore or hide the fact that an activity, works, project, or undertaking will eventually have to come out in the open and be conducted in the living environment – in full view of Nova Scotians, who want to *Live in Harmony with Nature*. Who will protect the civil servant or proponent from

“awards for damages” to the environment, which belongs to Nova Scotians, because no one visited the site or did not have current up-to-date information about the functioning environment and changes that occur daily to a site.

Cumulative effects are a reality. A responsible proponent, keen on creating opportunity and development, should have no problem or any cause not to disclose in an initial filing any other contemplated stages of development and the anticipated or calculated cumulative environmental effects. It makes good business sense to see how long and how large an impact may be from an activity, works, project, or undertaking, whether it is five, ten, twenty, thirty, forty, or fifty years forward.

All actions carry a "RISK". To think in “degrees of risk” is a wrong corporate culture to nurture or allow within the Nova Scotia Department of Environment. The belief that there are degrees of risk does not apply to nature, rather it is the degrees or levels of mitigation which a proponent and Environment Nova Scotia are prepared to acknowledge or implement, based on their imperfect understanding of the functioning of a specific site within a living environment, which is the “degree of risk” or “permitted destruction to the environment”. Does one stick of dynamite have a “lower effect” than a thousand sticks of dynamite exploded on your yard? If there is a gas line in proximity or if your home is filled with glass panels, the answer of risk is obvious.

Qualified Environmental Officers have to first identify and understand the environment and measure the effects within that environment. That requires knowledge about the environment, the duration of an activity, and so on, including the cumulative effects in or around the area. Does that project effect Nova Scotians *Living in Harmony with Nature* – how, why, and for how long, and at what cost to Nova Scotians’ future and enjoyment of the environment? What are the mitigating restoration obligations required of the proponent now and forever?

Surely, the current proposed call and review for Act amendments cannot be a ruse or attempt to circumvent the Auditor General's Report: that ‘the Department of the Environment is understaffed and it is not functioning as it was meant to be’.

In this International Decade of Biodiversity, the universal environmental mission is: *humanity living with nature.*

In the Federation of the Peoples of Canada, the jurisdiction of Nova Scotia can adopt this mission:

"Nova Scotia shall take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of resources are accessed and shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values are mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary principle."

The 1994-1995 Environment Act of Nova Scotia well-served Nova Scotia in the 1990s and 2000s. Humanity and States now better understand the significance and interconnected functioning between biodiversity, ecosystems, sustainable use of resources, and the value of fair access to resources and benefit-sharing, as fundamental concepts and vital language to introduce into an inclusive, and forward thinking Act aimed to maintain the living environment.

A Nova Scotia "Biodiversity, Ecosystem, and Sustainable Resources Use and Protection Act" places Nova Scotia in line with other global jurisdictions who are responding to incorporate the fifth generation of environmental human rights - the human right to clean air, the human right to potable water, the human right to safe food, the human right to a quality life through the equitable access and sharing of benefits arising from the sustainable use of resources, and the human right to preserve and protect a living, nurturing environment through participatory and accountable governance for the well-being of the global citizen - *Living in Harmony with Nature*.

Based on the work that 192 signatory nations to the Convention on Biological Diversity (CBD) are undertaking, there is agreement about including a universal vision, a universal mission, and a declaration for recognizing the bond between the global citizen and a global natural environment. Every citizen has both a right and a commensurate duty to defend the conservation of biodiversity, protect functioning ecosystems, promote sustainable use, and access and equitably share in the benefits from resources, for progress and human well-being, always - *Living in Harmony with Nature*.

Nova Scotia is clearly poised to incorporate into an Environmental Act the vision, the mission, and a declaration of Environmental Rights, with universally accepted principles, definitions, and prohibitions, and with objectives for mainstreaming, educating, and promoting an ethic and culture of Nova Scotians *Living in Harmony with Nature*.

Nova Scotia can amend, in 2011, the Environmental Act and be the first jurisdiction in the Federation to include in an act the internationally accepted principles of: promoting biodiversity, protecting resilient functioning ecosystems, requiring sustainable use of resources, and ensuring that benefits arising out of the utilization of resources are shared in a fair and equitable manner.

Nova Scotia can have a responsible forward looking Act, owned by the citizenship, which will show leadership and be among the more progressive Acts addressing the three fundamental aspects of: biological diversity, functioning ecosystems, and sustainable resource uses. An Act which will support progress, development, well-being, and a quality of life of a Nova Scotian, a global citizen *Living in Harmony with Nature*.

We suggest the following be considered:

VISION

"By 2050, biodiversity is valued , conserved, restored, and wisely used, maintaining ecosystem services, with the sustainable use of resources for a healthy Nova Scotia, and delivering benefits essential for all Nova Scotians, now and into the future."

Notably we suggest that consideration be given to the title of the Act. We respectfully suggest that a "Biodiversity, Ecosystems, and Sustainable Use and Protection Act" begins to incorporate the focus of Nova Scotians *Living in Harmony with Nature*.

Fundamental to meeting this shared vision and to fully meet the intent of progressive environmental law, Nova Scotia should publicly recognize that a point has been reached in our history where citizens possess powerful technology, have increased general awareness, and have collectively developed our society where people recognize and affirm fundamental truths and human rights. A Nova Scotia Biodiversity, Ecosystems, and Sustainable Use and Protection Act can and should take a leap forward to be the leading environmental legislation in Canada, on par with progressive States around the world.

Nova Scotia can proclaim that:

The natural environment with all forms of biodiversity and ecosystems is a foundational part of Nova Scotia's shared heritage, identity, and history and also a part of the world's heritage and a common concern of humankind. Furthermore, every Nova Scotian is a trustee of the province's natural resources and environment for the benefit of present and future generations, and with that trusteeship comes both a fundamental right to a safe and healthy environment and an equal corresponding duty to protect and promote the environmental well-being of the province.

Nature provides capital, that natural capital is for the good of the public, existing as an interconnected and interdependent component of the natural world, and that natural capital has immense quantifiable economic value, as well as incalculable value for evolution, aesthetics, culture, spirituality, recreation, education, history, medicine, science, and a myriad of ecological functions that support a rich and diverse life, including unknown values which may benefit future generations and including values which may not be recognized as directly beneficial to humans, but which are nonetheless beneficial or integral to other components of the natural world, of which humans are an interconnected and interdependent part.

It is vital to anticipate, prevent, and attack the causes of biodiversity and ecosystem degradation and loss at the source, which requires careful study, full and effective participation of citizens, and a precautionary principle towards activities.

The role of all Nova Scotians to meet the objectives of conservation, sustainable use, and equitable access and benefit sharing and to achieve the shared vision of Living in Harmony with Nature, including the full and effective implementation of all aspects of environmental law, is vital. Furthermore, Aboriginal Peoples, local communities, elders and seniors, and women have a vital and special role in sharing knowledge and nurturing progress. It is also important for youth to question, learn, and challenge unsustainable practices, inequalities, and weaknesses. Thereby,

collectively and incrementally, all Nova Scotians will advance closer to the shared vision of Living in Harmony with Nature.

It is of vital importance for Nova Scotia's businesses, industries, and public to seize the opportunity to advance Nova Scotia's green economy under the shared vision of Living in Harmony with Nature. Particularly it is important to advance cooperation and collaboration among Nova Scotia's municipalities, businesses, industries, Aboriginal Peoples, intergovernmental bodies, non-governmental organizations, and citizens for conservation, sustainable use, and equitable access to resources and benefit-sharing and to cooperate with others across Canada and abroad to achieve a green economy in harmony with nature.

MISSION

"Nova Scotia shall take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of resources are accessed and shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values are mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary principle."

PRINCIPLES

Further to stating the vision and mission of the Act, we suggest that the implementation of the Act be guided by a set of fundamental principles identified in the Act. Notably we suggest that the Act identify five overarching principles with twelve additional principles.

Overarching Principles

- 1. Nature shall be respected and its essential processes shall not be impaired.*
- 2. The genetic viability in Nova Scotia shall not be compromised; the population levels of all life forms, wild and domesticated, must be at least sufficient for their survival, and to this end necessary habitat shall be safeguarded.*
- 3. All areas of Nova Scotia, both land and sea, shall be subject to these principles of conservation; special protection shall be given to unique areas, to representative samples of all the different types of ecosystems, and to the habitat of rare or endangered species.*
- 4. Ecosystems and organisms, as well as the land, marine, and atmospheric resources that are utilized by humans, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger their integrity, or the integrity of other ecosystems or biodiversity with which they coexist.*

5. *Nature shall be secured against degradation caused by warfare or other hostile activities.*

Additional Principles

1. Principle of Environmental Quality

In Canada the Principle of Environmental Quality is becoming more common in environmental law, though Canada has not fully defined the principle. The Canadian Council of Ministers of the Environment (CCME) in the Environmental Quality Guidelines states the “National Goal” for environmental quality to be: *“no observable adverse effects on atmospheric, aquatic, and terrestrial ecosystems over the long term”*.

Further, the CCME has developed a set of guidelines (e.g. air, water, and soil), which in theory if fully implemented would “improve or preserve” environmental quality.

The US National Environmental Policy Act (NEPA), 1969 in its Congressional Declaration describes a quality environment to be one that:

- (a) *fulfills the responsibilities of each generation as trustee of the environment for succeeding generations;*
- (b) *assures for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;*
- (c) *attains the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;*
- (d) *preserves important historic, cultural, and natural aspects of our national heritage, and maintains, wherever possible, an environment which supports diversity, and variety of individual choice;*
- (e) *achieves a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and*
- (f) *enhances the quality of renewable resources and approaches the maximum attainable recycling of depletable resources.*

The Canadian Environmental Protection Act (CEPA) provides the definition:

“environmental quality includes the health of ecosystems”.

By using “ecological health”, CEPA extends the understanding of environmental quality to be the conditions necessary for an ecosystem to sustain a certain level of ecosystem services or “carrying capacity”. In addition, the term “health” carries with it an understanding that, like the human body, an ecosystem is alive and that it functions as a living unit. Thus in the Canadian context, environmental quality can be understood to be beyond only that which is necessary for human well-being.

2. Principle of Environmental Protection

Though no precise definition of “environmental protection” exists, it is understood to be an underlying principle or intrinsic, necessary for modern prudent management of natural resources. One who understands and uses the Principle of Environmental Protection has a base-line understanding that the current environmental conditions are already degraded from “natural conditions” and that it is everyone’s responsibility to foremost protect what is left and from that work toward restoration and sustainable use.

The US National Environmental Policy Act may have one of the best understandings in statute of the Principle of Environmental Protection:

The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

3. Principle of Sustainable Use

The Brundtland Commission in 1987 defined “sustainable development” to mean: *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.* It contains within four key concepts:

- 1) the concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given;
- 2) the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs;
- 3) that the term “sustainable” implies that development must be studied and guided through a broad strategic framework (though implementation may take many forms from market-oriented to centrally planned); and
- 4) that the term “development” implies a progressive transformation of economy and society.

Brundtland noted that sustainable development in the physical sense cannot be secured unless development policies pay attention to changes in access to resources and in the distribution of costs and benefits. Even a narrow interpretation of sustainable development implies a concern for the social equity between generations, which by necessity requires equity within each generation.

For many though, who may not fully appreciate the Brundtland definition, the concept of “development” implies further environmental degradation. Proponents for the term “sustainable” (without the term “development”) note that there is a certain hard and fast “carrying capacity” for the Earth that cannot be exceeded. Development of any kind, which continues forever, no matter how incremental, would eventually exceed this limit and thus not be “sustainable” over the long-term. Proponents also show that, in fact, humans have probably already exceeded the Earth’s carrying capacity, as evidence by modern famine and war, and thus they advocate for a great reduction or halt in “development”.

They consider the continued use of the term “sustainable development” to be a hindrance to raising awareness about sustainability. To further complicate matters, governments and industry often use the term “sustainable development” in a variety of different ways with different meanings, even as defined as: “prioritized access to capital and resources to continue economic growth”; a definition clearly opposite of the Brundtland definition.

Brundtland adopted a broad interpretation of “development”. The Commission specifically looked at sustainable development in terms of redefining “growth” to be based on quality not quantity and the attainment of “essential” human needs. According to Brundtland, this necessitates population control, conservation, enhancement of resources, reorientation of technology to meet the essential needs of all peoples, managing risk, and the full and equal integration of environment, social, and economic factors in decision-making. For Brundtland, “development” did not narrowly infer further extraction of resources or degradation of the environment.

“Development” in the Brundtland definition means the progressive transformation of societies and economies to be environmentally sustainable. “Development” could in fact mean a return to past practices.

Nevertheless, for many the concept of “sustainable development” is an oxymoron. Two contemporary terms preferred are “sustainable use” and “sustainability”. One concern with removing the term “development” is that “sustainable” then could be construed to reflect only the maintenance of the political, social, and economic status quo. This misses the vital element of “developing” equity within and between generations.

The CBD defines “sustainable use” to mean:

the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

The CBD drafters took special care in the definition of “sustainable use” to still imply political, social, and economic development (to meet the needs and aspirations of present and future generations). Also, in its preamble, the CBD recognizes the “overriding development needs of the poor and least developed countries”. Also, the inclusion of ABS as equal with sustainable use in the objectives of the CBD further underpins the importance of “sustainable development”.

The Earth Charter (proposed for adoption at the 2012 World Summit on Sustainable Development), advances the concept to recognize that “we are one human family on one Earth community with a common destiny”. The Earth Charter seeks “sustainability”, i.e., *a global society founded on respect for nature, universal human rights, economic justice, and a culture of peace and that the Peoples of Earth must declare our responsibility to one another, to the greater community of life, and to future generations.*

4. Precautionary Principle

Modern manifestations of “precaution” in western society seem to originate from three sources:

- the English Common Law concept of “Duty of Care” and the German social-legal concept of *Vorsorgeprinzip* (Good Household Management), both of which centered on the responsibility of the person, to apply precaution and
- the ancient medical principle of *Primum non nocere* (First, Do No Harm), holds institutions responsible to apply precaution.

Later the need for precaution-based decision-making became more evident in fisheries management and pollution control. The Precautionary Principle has become increasingly accepted in courts of law as necessary for prudent industries to follow.

There are four broad categories of the precautionary principle used in statutes around the world:

1. **Non-Preclusion:** Scientific uncertainty should not automatically preclude enacting regulations for activities that pose a potential risk of significant harm.
2. **Margin of Safety:** Regulatory controls should incorporate a margin of safety; activities should be limited below the level at which no adverse effect has been observed or predicted.
3. **Best Available Technology:** Activities that present an uncertain potential for significant harm should be subject to best technology available requirements to minimize the risk of harm, unless the proponent of the activity shows that they present no appreciable risk of harm.
4. **Prohibitive:** Activities that present an uncertain potential for significant harm should be prohibited unless the proponent of the activity shows that it presents no appreciable risk of harm.

The four categories show that the level of precaution required can be either strong or weak.

Under strong precaution (or ‘no-regrets’ precaution) prohibition is the default. If proponents can prove ‘no harm’, only then may prohibitions be incrementally lifted. Strong precaution requires project disapproval or strong regulation whenever there are possible risks to health, safety, or the environment, even if the risks are speculative or the economic costs from lost economic opportunity or from increased regulation would be high. The World Charter, passed by UN Resolution in 1982 gives one of the best examples for strong precaution:

Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used; in particular:

- 1. activities which are likely to cause irreversible damage to nature shall be avoided;*
- 2. activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed;*
- 3. activities which may disturb nature shall be preceded by assessment of their consequences, and environmental impact studies of development projects shall be conducted sufficiently in advance, and if they are to be undertaken, such activities shall be planned and carried out so as to minimize potential adverse effects;*
- 4. agriculture, grazing, forestry and fisheries practices shall be adapted to the natural characteristics and constraints of given areas; and*
- 5. areas degraded by human activities shall be rehabilitated for purposes in accord with their natural potential and compatible with the well-being of affected populations.*

Weak precaution, however, requires that only in cases where potential damage could be serious or irreversible, then action shall not be delayed, solely because of a lack of scientific experience. The most commonly used example is the Rio Declaration:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

This weakened version is the most widely accepted outcome of political negotiations, because it is much less restrictive. Weak precaution still calls for preventive measures in the face of uncertainty, but does not explicitly require them to be taken as prerequisites or conditions, and no mention is made of assigning liability for environmental harm. In addition, weak versions do not apply to instances of ‘potential but unknown risks’. Instead, under weak formulas, the application of precaution is often postponed pending results from a ‘threshold of harm’ test, whereby evidence must be presented on both the likelihood of occurrence and the severity of consequences. If the known evidence is below a certain threshold value, then precaution is either not applied or requirements are reduced. Unknown factors are normally not included or considered *de minimis*.

Many weak definitions, such as the Rio definition, require equal consideration be giving to the potential economic costs of taking precautionary measures, as a counterbalance to “full and complete” precautionary action, and none preclude the weighing of benefits against the costs. In addition, factors other than scientific uncertainty, such as political considerations, may still be allowed to provide ‘legitimate grounds’ or backdoors for postponing action. Most obstructive

for the application of precaution under weak formulations is that the requirement to justify the need for action (i.e., the burden of proof) generally falls on those advocating for precautionary action, not the proponent of an activity which may do environmental harm.

Regardless of political wordsmithing, most definitions have two implicit key elements:

1. An expression by the public, directed at decision-makers, to anticipate and address harm before it occurs. Within this element lies an implicit reversal of the onus of proof, whether or not a particular term's definition attempts to avoid that reality.
2. The establishment of an obligation, if the level of harm is 'significant', for action to prevent or minimise such harm, even if it is difficult or impossible to predict the likelihood or magnitude of harm. Furthermore, the need for control measures increases with both the level of possible harm and the degree of uncertainty.

Though many advocate for the use of precaution as a "principle" for decision-making, the United States and other States object to the use of the term "principle", because in US law (and presumably true for other countries) a "principle" is a "source of law", not just a simple idea or desire. However, recently the European Union specifically adopted the Precautionary Principle as a legal statute because it is, and has been for several decades, universally accepted as a source of law. Thus, the EU has affirmed and made clear that a court can quash or confirm a decision through the application of the Precautionary Principle.

Canada, the United States, and several other States, to avoid the creation of a legal status for precaution, prefer to instead refer to the term "precautionary approach", though there has been no explicit move to adjudicate its precise meaning and reach in law. [Even though the "precautionary principle" is sometimes still used, such as in Canada's Species at Risk Act, the legal status of such is still questioned.]

The term "approach" is generally seen as a weakening of precaution. Governments are the biggest advocates for the "precautionary approach", stating that the term "approach" allows for more effective implementation of precaution-based decision-making, because it recognizes regional political differences and allows for consideration of economic and social needs. Generally, "approach" is understood to indicate that a 'lens of precaution' will be used to identify risks for prudent decision-making.

Regardless of the legal status of precaution-based decision-making (i.e., principle or approach), "precaution" is widely recognized as carrying both a legal and ethical norm. The United Nations Education, Scientific and Cultural Organization (UNESCO) points out that precaution "is an appeal to prudence, addressed to policy makers who must make decisions about products or activities that could be seriously harmful to public health and the environment".

Though States may refuse to recognize and use the term "principle" with a precise definition, it is understood by the public to be an "indefinite principle", i.e., a principle that through usage in courts of law can be given more concrete form. Therefore, precaution does take on a legal identity as a source of law, to be further refined.

More importantly, precaution also carries the notion of ethical responsibility, which is well established in law, particularly:

1. Culpable Ignorance – ignorance is no defence,
2. Actions and Omissions – a person can also be held accountable for failing to act, as well as for their actions,
3. Co-Responsibility – a person may be held accountable, even if the wrong was not directly caused by them, because they share responsibilities with the person or organization committing the wrong, and
4. Special Responsibility – a person holding a position of greater responsibility can be held more accountable.

The concept of precaution is also directly linked with equality issues (especially the Principle of Sustainable Development), the valuation and protection of the environment, and the ethical principles of democracy and the moral right to have a say. Although the “precautionary principle” may not be well entrenched in Canadian law, its interrelatedness to the above necessitates its use as a “source of law”, regardless of the term “principle” or “approach”.

A Principled Framework

In fact, the four principles just discussed (environmental quality, environmental protection, sustainable use, and precaution), combined with the five overarching principles discussed earlier, form a bedrock or principled framework from which the Act can make sense and be effectively implemented, within the government, in courts of law, by industry, and through citizens. All of these principles are interrelated and must be understood and implemented as a whole. Adoption of several other principles, in Nova Scotia’s principled approach to achieving the vision of *Living in Harmony with Nature*, can help pave the way:

5. Pollution Prevention Principle – that pollutants and waste should be reduced or eliminated at their source to reduce or eliminate the costs for pollution management, treatment, disposal, or clean-up;

6. Principle of Shared Responsibility – that all Nova Scotians, individuals, companies, and organizations share a responsibility to meet the shared vision of *Living in Harmony with Nature*, but that governments are ultimately responsible to lead through example and political will and to implement the shared vision across all sector and cross-sectorial plans, policies, and programs;

7. Product Stewardship – that manufactures, importers, retailers, consumers, and recyclers are responsible for the whole of the life-cycle of a product from cradle-to-grave or cradle-to-cradle, and in particular that manufactures, importers, and retailers are responsible for the end-life of a product;

8. Polluter-Pays Principle – that any person, corporation, or organization which creates an adverse effect on the environment, that is not *de minimis*, is liable to take remedial action and/or pay for the costs of that action, in addition to any legal or administrative actions;

9. Principle of Engendering Direct Action – that to meet the shared vision of *Living in Harmony with Nature* depends on changing human behaviours and governance to allow biodiversity and ecosystems to be self-sustaining and that a primary measure of progress toward the shared vision will be the level of direct action taken, and also the support in policies, plans, and programs of direct action, to meet the shared vision;

10. Principle of Adaptive Eco-System Based Management – that Nova Scotians should continually strive to manage activities based on continued learning about the connections and relationships within the environment, especially humankind’s interconnectedness and interdependency, identifying the cumulative impacts from past, current, and proposed activities, and recognizing the diverse benefits from the environment, and embracing adaptability to changing social, environmental, and economic situations, which is preferable to rigorous control;

11. Principle of Democracy with Active Citizenship – that to meet the shared vision of *Living in Harmony with Nature*, the right to free association, free expression, and advocacy must be upheld and that these are welcome and vital elements by which our society is shaped and which the government bears the responsibility to provide equal access to timely information and to facilitate full and effective public participation in the formulation and review of decisions effecting the environment, including legislation, regulations, policies, plans, and programs; and

12. Principle of Green Innovation – that the development and use of technologies, innovations, practices, and industries which help protect, restore, or sustainably use our environment will be encouraged and promoted.

DECLARATION FOR THE NOVA SCOTIA ENVIRONMENT

Long overdue in Nova Scotia, following on some states to declare environmental rights within their constitutions, such as Bhutan, Kenya, and the “Rights of Mother Earth” declared in Cochabamba, Bolivia at the World Peoples’ Conference on Climate Change and the Rights of Mother Earth on April 22, 2010, we propose that serious consideration be given to announcing in this Act, a declaration on environmental rights for Mother Earth and citizens residing in Nova Scotia.

Three key elements are: the rights of Mother Earth, environmental human rights, and the recognition that citizens are trustees of the environment.

1. *Mother Earth concentrates all energy to give life to everything, without asking for anything else in return. Our world view, as Aboriginal Peoples, requires us to respect Mother Earth and to conduct ourselves in a manner that does not violate our interconnected and interdependent relationship with minerals, waters, air, ice, tides, soils, mountains, forests, valleys, and all natural life (biodiversity) on Mother Earth.*
2. *Every Nova Scotian is a trustee of the province's natural resources and environment for the benefit of present and future generations; and with that trusteeship comes both a fundamental right to a safe and healthy environment and an equal corresponding duty to protect and promote the environmental well-being of the province.*
3. *The human right to clean air, the human right to potable water, the human right to safe food, the human right to a quality of life through the equitable access and sharing of benefits arising from the sustainable use of resources, and the human right to preserve and protect a living, nurturing environment through participatory, accountable governance is essential for the well-being of Nova Scotia's citizens – Living in Harmony with Nature – and that these rights are crystal.*

DEFINITIONS (INTERPRETATION)

Aboriginal Peoples

We note in the current 'interpretations' that there is no reference to the Aboriginal Peoples of Canada. We suggest that the Province of Nova Scotia use the Constitutional language and accordingly in the Definitions/Interpretation section include "*Aboriginal Peoples – the Aboriginal Peoples of Nova Scotia include the Indian, Inuit, and Métis Peoples.*" The term "First Nation" is not recognized to include all Aboriginal Peoples and should not be used.

For an understanding of the term "Aboriginal Peoples" (or "Indigenous Peoples, as used internationally), we provide a brief review.

Martin Ennals probably best described the term "peoples" and their vital relationship with self-determination. Ennals advocated for a universally accepted definition of the "right to self-determination", from which he believed would flow and be guaranteed all other rights of peoples declared under the Universal Declaration on Human Rights and the covenant chain of human rights declarations. Ennals believed that this one right, upon which all other rights hinged, was based in the concept of "peoples", also another term which lacked a universal definition.

The problem as Ennals had seen firsthand was that to negotiate a widely accepted definition of "peoples" would almost certainly guarantee the exclusion of some groups from the Declaration, but the absence of any definition of "peoples" causes numerous political and legal problems as to which groups are and which groups are not "peoples" and thus included or excluded from the Declaration. Though it further complicates matters, Ennals was also adamant that no majority group has the right to define a minority group.

Ennals' logical thesis of "peoples", therefore, are those who self-identify as peoples. Though not a definition *per se*, because the term "self-identification" is neither standard nor testable, nor

would all self-identifying groups be accepted by the majority (common requirements for the definition of any term), Ennals' concept does provide a basis for establishing human rights to a group of people. In essence, those who self-identify as a people have the right to self-determination.

The application of Ennals' definition for "peoples" and the extension of the right to self-determination is easiest applied, and in-deed stands up to most challenges, in the case of identifying peoples who form modern nation-States or dominate a society, because they possess numerous institutions to express their self-identification. However, a lack of institutions or political power to express self-identification in no way precludes a group from the right to identify themselves as a "people", though it does make practical identification more difficult.

To bridge ideas and to avoid a minimalist or maximalist view, Ennals' colleagues, in the 1993 Martin Ennals Memorial Symposium on Self-Determination, elaborated on his concept of "self-identifying and self-determining peoples", that although the exact definition of any one group claiming the status of a people rests solely with that group, there are a set of common features that "the others" can use to aid in the identification of the people in question. These may include ethnicity, language, culture, and religion.

The panel used a set of four tests, developed by the UNESCO meeting of Experts on the Further Study of the Rights of Peoples (Paris, Feb. 1990), as the "universal rigorous criteria by which the defining characteristics of the claimants to self-determination would be accepted as widely as possible". In other words, the below is the "minimum universal standard" for assessing a people.

1. *A group of individual human beings who enjoy some or all of the following common features:*
 - a. *a common historical tradition,*
 - b. *racial or ethnic identity,*
 - c. *cultural homogeneity,*
 - d. *linguistic unity,*
 - e. *religious or ideological affinity,*
 - f. *territorial connection, or*
 - g. *common economic life;*
2. *The group must be of a certain number who need not be large (e.g., the people of micro states) but must be more than a mere association of individuals within a state;*
3. *The group as a whole must have the will to be identified as a people or the consciousness of being a people – allowing that groups or some members of such groups, though sharing the foregoing characteristics, may not have the will or consciousness; and*
4. *Possibly, the group may have institutions or other means of expressing its common characteristics and will for identity.*

However, the Ennals Symposium panel cautioned that, because of the vast diversity of peoples across the globe, and in particular the amount of subjugation experienced by some, the absence or weakness of one or more of these bonds does not invalidate a group's status as a people.

Any subjective test or measure of a group's "peopleness" ultimately lies in the extent to which the members of the group perceive the group's identity as being distinct from other groups. In other words, the "people test" does not supersede Ennals' concept of a "self-identifying, self-determining people".

UN ECOSOC Special Rapporteur Erica-Irene Daes, in her paper on the "concept of 'indigenous peoples'" (E/CN.4/Sub.2/AC.4/1996/2, 10 June 1996), could not find a single definition to capture the diversity of Indigenous Peoples worldwide and that a precise universal definition would not contribute perceptibly to the practical aspects of defending groups from abuse. Also the Rapporteur could not find any satisfactory reasoning for distinguishing between "Indigenous" and "Tribal" Peoples, nor is there any distinction between "Indigenous" Peoples and "Peoples" generally, other than the fact that groups typically identified as "Indigenous" have been unable to exercise the right of self-determination by participating in the construction of a contemporary nation-State.

Following on the work of Ennals' definition of "peoples", the Rapporteur added three tests, in addition to "self-identification", to identify Indigenous Peoples as distinct from other peoples.

1. **Priority in Time**, with respect to the occupation and use of a specific territory;
2. **The Voluntary Perpetuation of Cultural Distinctiveness**, which may include the aspects of language, social organization, religion and spiritual values, modes of production, laws, and institutions;
3. **An Experience of Subjugation, Marginalization, Dispossession, Exclusion, or Discrimination**, whether or not these conditions persist.

On the concept of self-identification, Daes also added that because of subjugation, marginalization, dispossession, exclusion, and discrimination of Indigenous persons, some Indigenous groups may not "self" identify as an Indigenous People; therefore, Daes included in the definition of "self-identification":

"the recognition by other groups, or by State authorities, as a distinct collective".

Thus, by singling out a particular group for assimilation into the main body of society, a State, by virtue of its policies and actions alone, may cause to be identified "an Indigenous People".

Similar to Ennals, Daes also stressed that the applicability or threshold for each test varies by region, history, and especially by level of colonization or decolonization, and in fact, in many cases all four tests do not have to be met.

UN Special Rapporteur James Anaya further showed the vital importance of the addition of the term "peoples" in "The Rights of Indigenous Peoples to Self-Determination in the Post-Declaration Era" (in the Charters and Stavenhagen book "Making the Declaration Work, 2009"). The International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, and General Assembly resolutions on decolonization apply to "peoples". Thus by the UN's adoption of the term "Indigenous Peoples" in 2007 in the

Declaration on the Rights of Indigenous Peoples, the UN first guarantees to Indigenous Peoples the right to self-determination, which is the right of all Peoples, and then further guarantees additional rights specified in the Declaration.

Environment

The current Act defines “environment” for the purposes of interpreting clauses, especially prohibitions, in the Act; however, a specific definition for “environment” creates misunderstanding and is a hindrance to understanding the vision and mission of a new Act for Nova Scotian’s *Living in Harmony with Nature* – their environment.

The general term “environment” refers to: *the physical, biological, and social things on Earth*. Generally accepted is that “environment” includes Environment Systems, which transfer mass, energy, and other properties; the Natural Environment, which are complete ecological systems that function without human intervention; and the Built Environment, which are the human constructed surroundings.

A more refined definition of environment has never been widely accepted or scientifically supported, because of the incomprehensible amount of interdependent links and feed-back loops within and between the three main environment types. For example, in the 21st century the built environment has directly or indirectly touched all locations on Earth (especially via human contributions to climate change). This begs the question about whether there is such a thing as a “natural environment” left, or can an environment remain “natural” if it is only moderately affected by humans and, if so, what is the threshold for delineating a “natural environment” from a “built environment”.

The problem with refining the definition of “environment” is that it perpetuates a belief that humans, in their “built environment”, are somehow separate from the “natural environment” and “environmental systems”.

In the Stockholm Declaration on the Human Environment, 1972, although it did not define “human environment”, the UN did attempt to increase understanding about the environment and humankind’s relationship with it by stating: *“Man is both creature and moulder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth. In the long and tortuous evolution of the human race on this planet a stage has been reached when, through the rapid acceleration of science and technology, man has acquired the power to transform his environment in countless ways and on an unprecedented scale. Both aspects of man’s environment, the natural and man-made, are essential to his well-being and to the enjoyment of basic human rights – even the right to life itself.”*

We suggest that careful consideration be given to the term “environment”. The broader concept of *Living in Harmony with Nature* should not be lost, because of a legal necessity to clearly define the applicability of a regulation or prohibition. In these cases, “natural environment”, “built environment”, “environmental system”, or another more specific term should be used and defined in the Act.

Biodiversity

To begin to understand the vision and mission of the Act – *Living in Harmony with Nature* – it is vital to first understand the concept of biodiversity – that is, life in all its forms. An Environment Act that does not focus on life, i.e. biodiversity, is crippled by a narrow interpretation of humanities’ desire to progress with environmental law.

In the new Act, it is critical that the term “biodiversity” be clearly understood. The Convention on Biological Diversity is a good starting point for this understanding.

The variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.

It is important to note that biodiversity is a concept, not a tangible thing. It defines the total variability found throughout life. For ease of understanding, biodiversity is usually thought of as three components acting simultaneously: genetics, taxonomic groupings of species, and ecosystems; however, it includes other sources or expressions of diversity, such as relative abundance of species, age structure of populations, pattern of communities in a region, changes in community composition and structure over time, and ecological processes, such as predation, parasitism, and mutualism. Furthermore, because humankind is part of biodiversity, human cultural diversity is also a part of biodiversity, because cultural diversity has adapted humans to changing environmental conditions and allowed expansion across the globe.

To better understand biodiversity, species, genes, and ecosystems should also be defined in the Act.

Species

Over two dozen definitions are used for the term species, depending on the grouping of organisms being studied and the purpose for studying them. In general, the Mayr definition is used:

groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other such groups.

However this excludes many species, such as bacteria, which predominantly reproduce asexually, and hybrids, which are organisms originating from two distinctive species, but which are not species themselves. However, for most “megafauna” and for most purposes, the Mayr definition works.

Otherwise, a more precise definition is usually used: *a group of organism which resemble each other genetically or phenotypically* (i.e. physically). However, this definition does not take into account the continuing changes in biodiversity and excludes groups undergoing speciation.

A more precise, but virtually untestable definition is: *a group of organisms which share the same evolutionary lineage.*

The problem in refining the definition to include all possibilities (such as with the evolutionary definition of a species) is that genes and gene flow are not discrete. Species exist within a

continuum of diversity. Theoretically, under the evolutionary definition, every organism could be a species as no two organisms share the exact same genetic lineage. Therefore, a proper definition of a species would be some mathematical average of what a group or organisms should be, based on our understanding of biodiversity at this particular point in time. Obviously that definition has huge problems, not only in the arbitrary lines drawn between species, but also in the practical aspects of public understanding, management, and conservation.

For conservation purposes, the definition often used is the evolutionary significant unit (ESU), which is:

a group that fits one of the three criteria: current geographic separation, genetically different (using standardized genetic markers for testing), or locally adapted phenotypic traits caused by natural selection (i.e., not different yet, but becoming different because of current natural selection pressures).

Genes

Genes are the molecular units of heredity in a living organism. More specifically: genes are locatable regions of a genomic sequence that corresponds to a unit of inheritance, and which is associated with either cellular regulation, transcription of information, or the functioning of other sequence regions. In other words, genes are the physical functional areas of DNA and RNA.

When the lay person normally describes their “genes” for a certain trait (such as eye colour), they are actually describing an allele, which is the expression of a certain gene or combination of genes in a specific environmental circumstance. For the example of eye colour, both persons with blue eyes and persons with brown eyes may carry genes (specific sections of DNA) for both blue and brown eyes. The expression of their particular eye colour (allele) comes from the predominance of one set of genes over another, the interaction of those genes with other eye colour genes in the cellular environment, or the reaction of the expressed gene (allele) to the outside environment. In many cases, both sets of genes are expressed so that each person has varying amounts of different eye colours in their ‘final eye colour’.

The common definition of genes does have the problem that it excludes heritable components which are not part of DNA or RNA. Science has recently found that some proteins self-replicate and there is also the mystery of certain cellular heritable components which are only passed down from mother to child through the first cell (egg).

To avoid the complicated definition of genes or genetics, the Convention on Biological Diversity uses the term “genetic material”, which is defined as: *any material of plant, animal, microbial, or other origin containing functional units of heredity.*

The CBD, through its Nagoya Protocol, has also adopted the term “genetic resources”, meaning:

any material of plant, animal, microbial, or other origin containing functional units of heredity of actual or potential value.

Ecosystem (biome)

The CBD defines the third component of biodiversity – ecosystem – to be:

A dynamic complex of plant, animal, and micro-organism communities and their non-living environment interacting as a functional unit.

An ecosystem is the smallest functional unit containing within it all aspects of the biotic and abiotic environment in an area. The problem with using this definition is that ecosystems do not correspond to current finite political boundaries, but instead exist as a continuum across a region with no clear line where one ecosystem ends and another begins. In some instances it is more practical for management reasons to lump similar ecosystems together into ecoregions (bioregions) or into larger ecozones.

Ecosystem Functioning

To avoid the problem of arbitrarily delineating ecosystems (which are often influenced by political borders and management capabilities), experts prefer to work with “ecosystem functioning” instead, which is:

the interspecies and intraspecies interactions of biota (e.g. predation and mutualistic relationships) and the interactions of biota with the physical environment (e.g. nutrient cycling, water cycling, and energy cycling).

In this manner ecosystems can be conserved and sustainably used, as required by the CBD, without jurisdictional fighting over the borders or definition of a particular ecosystem.

Ecosystem Services

Given that the current economic model used around the world is wrong, experts have shifted the focus of ecosystem conservation and sustainable use to identify “ecosystem services”, which are:

the benefits to humans derived from ecosystem functions and which are broadly categorized into four groups:

- 1) *provisioning services (e.g., food, water, minerals, pharmaceuticals, and energy),*
- 2) *regulating services (e.g., carbon sequestering, climate regulation, waste decomposition, detoxification, water and air purification, crop pollination, and pest and disease control),*
- 3) *supporting services (e.g., nutrient dispersal and cycling, seed dispersal, and primary plant production), and*
- 4) *cultural services (e.g., cultural, intellectual, and spiritual inspiration, recreation, and science).*

The conservation and sustainable use of ecosystem services addresses the pressing need to understand the true value of ecosystems and present the case that “the conservation and sustainable use of biodiversity is one that makes economic sense”.

Environmental Effect, Environmental Impact, and Adverse Effect

The current Act uses the term “environmental effect” to mean both effects and impacts from those effects. Though “environmental effect” and “environmental impact” are often used interchangeably in provincial and national legislation, they are, in fact, separate (though interrelated) terms. It is important to recognize the human cause and effect relationship with the environment by articulating both.

The Organization for Economic Co-operation and Development (OECD) defines:

Environmental Effect – the result of environmental impacts on human health and welfare.

Environmental Impact – the direct effect of socio-economic activities and natural events on the components of the environment.

Together, these two definitions provide a loop of cause and effect: natural and human induced events impact the environment (environmental impact), the result of which effects human health and welfare (environmental effect).

In both Canada and the United State, Environmental Impact Assessments (EIAs in the US; EAs in Canada) are undertaken to discover potential environmental impacts of a project or activity prior to its commencement. This information is then used to mitigate environmental effects.

CEAA lumps the two definitions together under one term “Environmental Effect”:

- (a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act,*
- (b) any effect of any change referred to in paragraph (a) on*
 - i. health and socio-economic conditions,*
 - ii. physical and cultural heritage,*
 - iii. the current use of lands and resources for traditional purposes by aboriginal persons, or*
 - iv. any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, or*
- (c) any change to the project that may be caused by the environment,*

whether any such change or effect occurs within or outside Canada.

The Canadian Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals, 2004 extends the definition to include government policies, plans, and programs:

- (a) any change that the policy, plan or program may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by Aboriginal persons, or on any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, and*

(b) any change to the policy, plan or program that may be caused by the environment, whether any such change occurs within or outside Canada.

Again we strongly suggest that the Nova Scotia Act clearly takes into account the current use or changes to lands and resources used by Aboriginal persons, according to their rights, as well as, any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to Aboriginal Peoples.

The United States narrows the definition to its "significance". "Significantly", as used in the National Environmental Policy Act, requires considerations of both context and intensity:

- (a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.*
- (b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:*
- i. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*
 - ii. The degree to which the proposed action affects public health or safety.*
 - iii. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*
 - iv. The degree to which the effects on the quality of the human environment are likely to be highly controversial.*
 - v. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*
 - vi. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*
 - vii. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.*
 - viii. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*
 - ix. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*
 - x. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

What is clear is that environmental effects and impacts must be studied and understood to the best abilities of decision-makers and the public. Like Nova Scotia, other jurisdictions have also attempted to interpret the intent of studying environmental effects and impacts by stating the need to reduce or mitigate “adverse effects”. Unfortunately, most jurisdictions’ environmental laws lack a meaningful definition. “Adverse effect” is usually interpreted as referring to ‘any negative impact’. This loose definition misses the who, how, and why the ‘negative impact’ occurred.

The term “adverse effect” has long been used by medical professionals to describe harmful undesirable effects resulting from medical intervention, including medication and surgery. Adverse effects are also called “iatrogenic effects”, which are inadvertent effects ‘caused by the physician’. Adverse effects differ from “medical error”, which are effects which could have been prevented with additional knowledge or level of care, “misconduct”, which are effects produced by gross negligence to apply expertise and the highest standards of care, and a “complication”, which is an evolution of the disease beyond the control of the current treatment. Thus in the medical profession, adverse effects are what could occur despite high levels of knowledge and diligence.

The medical profession’s primary focus to reduce adverse effects guarantees a continuing evolution of a higher quality of care – in the medical profession, the positions and seriousness of complications, medical error, and misconduct are clearly understood.

The World Bank has adopted a similar approach to adverse effects in regard to development aid. The World Bank recognizes that development aid, which is not carefully planned and executed in the best interests of the public by all parties concerned (donor, recipient, and intermediaries) has a high probability of causing “adverse effects”, economically, politically, and socially, beyond what is overtly misconduct, errors, and complications.

Furthermore, the World Bank recognizes in its Directive on Indigenous Peoples that “issues related to Indigenous Peoples are commonly identified through the environmental assessment or social impact assessment processes, and appropriate measures should be taken under environmental mitigation actions” to avoid adverse environmental, social, economic, and political effects.

However, in many national jurisdictions, such as Canada and the United States, the term has been adopted without a precise definition or clear understanding. The term is usually used as an antonym for “positive effect”. Thus, the term may include all negative effects, whether they are intentional, incidental, unintended, poorly understood, a result of misconduct, etc.

In Canada, the Ontario Environment Act, 1990 provides a more detailed definition of an “adverse effect” on the environment, to mean one or more of:

- (a) impairment of the quality of the natural environment for any use that can be made of it,
- (b) injury or damage to property or to plant or animal life,
- (c) harm or material discomfort to any person,
- (d) an adverse effect on the health of any person,
- (e) impairment of the safety of any person,

- (f) rendering any property or plant or animal life unfit for human use,
- (g) loss of enjoyment of normal use of property, and
- (h) interference with the normal conduct of business; (“conséquence préjudiciable”)

We suggest that “adverse effect” refer to unintended situations, despite the application of the best available knowledge and diligence; and that a more appropriate term, such as misconduct, be used for cases of neglect, not searching out current knowledge, or an unwillingness to make decisions based on a precautionary principle.

PROHIBITIONS

Impacts on Aboriginal Peoples

The Province does not have a “non-abrogation/non-derogation clause”. Post-1982, legislation which may have an impact on the Aboriginal or Treaty Rights of the Aboriginal Peoples of Canada should affirm that the legislation will not abrogate or derogate those rights. We suggest that the Act include the statement:

“For greater certainty, nothing in this Act shall be construed so as to abrogate or derogate from any existing aboriginal or treaty rights of the aboriginal peoples of Canada under section 35 of the Constitution Act, 1982.”

Advisory Bodies and Consultation with Aboriginal Peoples

We also suggest for inclusion in the Act, since there are clearly two groups of Aboriginal Peoples in Nova Scotia, those residing on Indian Act Reserves, as represented by Indian Act Band Councils, and those continuing on their Traditional Ancestral Homelands Territories, as represented by the Native Council of Nova Scotia, that any main advisory committee established pursuant to Section 9 of the current Act, to advise the Minister on the administration of the Act, policies, programs, standards, guidelines, approvals, sustainable development, etc., consist of two Aboriginal advisors, one from each group (Indian Act Bands and the Native Council of Nova Scotia). This same rationale of an equal voice should also be used when composing the Minister’s Round Table or any other subsidiary body which provides advice or recommendations.

In the articles about delegation and consultation, the Act must make provisions for consultation with the two distinct groups of Aboriginal Peoples (Indian Act Bands and the Native Council of Nova Scotia) and that should be clearly written in the Act.

MAINSTREAMING, EDUCATION, AND RESEARCH

In Part III of the current Act (Education and Research), we suggest a Part A and B. Part IIIA should begin to approach the whole subject of “mainstreaming”. We believe that it is important for all Nova Scotians to begin to understand and adopt the Act’s vision, mission, principles,

rights to a clean and healthy environment, and how each and every Nova Scotian is a trustee of the environment. Nine hundred eighty thousand Nova Scotians can, each day, carry the ethic of *Living in Harmony with Nature* by saying 'good morning to Mother Earth, the sky, the animals, the plants, and our fellow human beings.'

With mainstreaming underway, 'Education and Research' more clearly falls within the Act and we believe would be more widely supported. We suggest that Part IIIB (Education and Research) should focus on the Nova Scotia school system, from primary to post-secondary and doctorate, to require each and every student to recite the vision for Nova Scotia's biodiversity, functioning ecosystems, sustainable use, and equitable access and sharing of benefits thereof.

ENVIRONMENTAL COURT

We also propose that a Nova Scotia Environmental Court be established. This would serve two purposes, to:

1. profile environmental issues, especially regulatory and legal issues, within municipalities and counties, and also
2. develop human capacity to understand and adjudicate on the fundamentals of Nova Scotian environmental law and those principles codified in the Act.

REPORT ON THE STATE OF THE ENVIRONMENT AND NOVA SCOTIANS LIVING IN HARMONY WITH NATURE

Our last suggestion is that the Premier of the Province, with the Ministers, municipal leaders, industry, and citizens, annually meet at the legislature to participate in an annual address to all Nova Scotians and other jurisdictions on the state of Nova Scotia's environment and to celebrate Mother Earth and our place within -

Living in Harmony with Nature.