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Dr. Faisal Moola, PhD

Director General, Ontario and Canada's Northern Regions

David Suzuki Foundation

fmoola@davidsuzuki.org

647-993-5788

One of Canada's biggest banks advertises its financial services with the slogan, "You're richer than you think." While many Canadians would find this well-recognized tag-line somewhat "peculiar" given the fact that many experts believe that we're teetering on the brink of another painful economic downturn, I couldn't agree more:

We're loaded.

But I'd argue that our true wealth isn't found in our pocket-books, on our corporate balance sheets or in government coffers, but rather in the natural assets that our nation is blessed with – and which provide billions of dollars in non-market benefits.

Although we don't often give it much thought, peatlands and bogs, forests, heathlands, even arctic sea-ice and other northern ecosystems provide an astonishing suite of ecological benefits – that as David Suzuki tells us – are literally the life-support systems of our communities - , providing clean air, pure drinking water and healthy food to eat. Boreal forests clean our air and bogs and wetlands filter our water. Tundra vegetation, peat and

soils remove excess carbon dioxide from the atmosphere, thereby acting as a "hedge" against run-away climate change. Our northern boreal forest alone stores an estimated 208 billion tonnes of carbon, the equivalent of 26 years worth of global greenhouse gas emissions from the burning of fossil fuels. And this doesn't even account for the health, psychological and for some - spiritual benefits people receive from time spent on the land hunting, fishing and trapping, or even in the nature closer to home – like city parks, treed school yards and urban green corridors.

The ecosystems that provide these benefits are often referred to as natural capital. And many experts believe, including some of our top economists, that natural capital is a critical national asset.

As biological creatures, we depend on natural capital and ecosystem services, like pollination or water regulation, to sustain the health and well-being of our families and communities. But these benefits are often taken for granted by decision-makers on land-use and resource development issues, because we have such a poor understanding of what they are and what they're truly worth.

Nevertheless, research by the David Suzuki Foundation and others has shown that the benefits we receive from nature are extremely valuable in monetary terms, and in some cases are truly priceless. For example, land cover analyses of boreal and arctic ecosystems of the Mackenzie Region reveal that aboriginal communities and their non-indigenous neighbors are literally sitting on a Fort Knox of natural assets – that provide billions of

dollars of natural services - beyond the market commodities that have garnered so much of our political attention (like oil, gas and minerals). This includes intact forests, carbon-rich wetlands and bogs, and some of the most productive wildlife populations in all of the country. Ecological economists Mark Anielski and Sara Wilson conservatively estimated in a study commissioned by the Canadian Boreal Initiative, that the region provides a staggering \$570 billion a year, an average of \$3,400 per hectare, in ecological benefits, such as climate regulation, flood protection, water regulation, waste treatment and pollination. Ecosystem types with the highest values included wetlands, bogs, (\$6,000/ha) and tundra (\$5,000 /ha) – largely due to the enormous amount of carbon stored in vegetation, peat and soil -

Of particular note, was that the economists found that the ecological goods and services provided by nature (such as carbon storage, water filtration and water supply) in the Mackenzie contribute over 13.5 times more societal economic value than the GDP generated by natural capital extraction industries such as mineral, oil and gas and forestry (which was estimated to equal \$41.9 billion per year, an average of \$245 per hectare.)

In a more recent natural capital review done by the David Suzuki Foundation in settled landscapes in southern Ontario, ecological economist Sara Wilson, has even referred whimsically to the bumblebees and other pollinators that she tracked on her financial spreadsheets as "flying 50-dollar bills" because of their enormous economic importance in maintaining bountiful yields of berries and other country foods – that are so important to

the traditional diet of indigenous communities. She estimated that pollination services alone are worth about \$250 million a year in sustaining agricultural production in the region.

The authors of the study were careful to stress that that their attempt to value, in dollar terms, the natural capital assets of the Mackenzie was not intended to undervalue the resource potential of exploiting the region, but rather to temper the economic significance of industrial development in a broader sustainability context.

Though it receives far less attention from the public and government leaders than other environmental issues, such as climate change, the precipitous decline and extinction of biodiversity threatens the very life-support systems of the planet – clean air, clean water, and productive soil. In fact, scientists warn us that we are in the midst of a catastrophic biodiversity crisis on par with earlier mass extinction events in the earth's history. Of the species we know, some 17,000 species are threatened with extinction, including 13 percent of all known birds, nearly a quarter of all known mammals and a 20 % of all known reptiles. Climate change is predicted to sharply increase the risk of species extinction within our own children's lifetime. Indeed, according to the Intergovernmental Panel on Climate Change, around 20 to 30 percent of all plant and animal species assessed are likely to be at increased risk of extinction if global average temperature rise more than 1.5° C to 2.5 ° C over late 20th-century levels.

The key thing for me – it that these statistics are not just an abstract tally. Many of the plants and animals that are most vulnerable to human impacts in Canada are iconic and well known and well loved by the public -- they of course include the flagship animals of the arctic region, such as the polar bear and caribou. But even elsewhere in the settled regions of southern Canada (which are far more disconnected from nature), many residents - have personally experienced these sensitive plants and animals in nature – perhaps seen a blue heron rookery in a local park (like Stanley Park found in downtown Vancouver), or a snapping turtle at the cottage, or been lucky enough – to witness the annual migration of monarch butterflies or salmon returning to their natal streams. Fact is - you don't even have to go far from populated areas to see the remaining patches of

Canada's most endangered ecosystem - the Carolinian Forest is found within a half hour drive of downtown Toronto !

Scientists know what is causing this environmental crisis – indeed conferences like this one, have drawn attention to the threat of resource development in sensitive ecosystems, such as caribou habitat, air pollution and other toxins, global warming and other human impacts that are impacting the homes and habitat of wildlife at an unprecedented rate throughout much of Canada – including in the north.

But here's the rub. Without healthy ecosystems and species diversity, we can't hope to have healthy economies and healthy human societies. Indeed, the loss of species and ecosystems affects not just the production of economic commodities like the food we eat, the timber we use to build our homes, and the medicines we use to heal ourselves, but many non-market eco-services that sustain the health and wellbeing of our communities. These services regulate the climate, disease outbreaks, and wastes; they include cultural services that provide aesthetic, recreational and spiritual value to Indigenous Peoples and others; and supporting services, such as nutrient cycling and water purification.

We don't pay directly for the services that biodiversity provides, thus they are undervalued in our market economy. They are not monitored in any comprehensive fashion by governments or industry, measured or accounted for in decision-making and land use planning.

Nevertheless, as I mentioned earlier, research by the David Suzuki Foundation and others have shown that the ecosystem benefits of nature are extremely valuable in monetary terms, and in some cases are truly priceless.

Noted green business guru Paul Hawken has remarked that while there is no truly right way to fully value a forest or river, there is a wrong way, which is to give it no value at all when making development decisions. Unfortunately, most ecosystem services are ignored or are treated as externalities in the development decisions we make, with the assumption that their degradation or loss will have little or no consequence to our economy or society.

This is short-sighted. Simon Fraser University economist Dr. Nancy Olewiler has argued that protecting nature results in cost savings for local cash-strapped governments, because replacing the natural services we receive from nature with built substitutes such as water treatment plants, dykes, and retention walls can cost hundreds of millions of dollars, often for a lesser level of service than nature is able to provide. And these estimates of replacement costs are only one portion of the true value of nature in sustaining life on our planet – you can't put a price on some of the services we receive from nature: like the health, psychological, and for some people spiritual benefits they enjoy by spending time outdoors.

For example, a couple of winters ago, as our Canadian federal government was preparing to spend billions of dollars to stimulate the economy in the face of a global economic meltdown, the David Suzuki Foundation offered its ideas on how to spend the stimulus money.

We recommended increased and sustained funding for public transit, subsidies for renewable energy and cash for research and development - to green Canada's auto sector. But - we also suggested the government take a closer look at the economic benefits of protecting and restoring our terrestrial, freshwater and marine ecosystems, including in the arctic, as the core components of a living green infrastructure strategy for the nation.

Protecting nature results in cost savings for governments, because natural areas provide many ecological benefits that sustain the health and well-being of our communities at little or no cost. As I've argued - these include services like clean air, clean water, wildlife habitat and flood control. All are costly to replace if they are degraded or lost due to mismanagement, assuming they can be replaced at all.

The fiscal rationale for protecting nature is not new. Many ambitious policy solutions have come about not because leaders were motivated to protect wildlife habitat, but rather because they were looking for ways to save a buck. For example, in the mid 1990s, New York City chose to protect its drinking watershed through land purchase, pollution control and conservation easements at a cost of 1.5 billion, rather than build further gray infrastructure to filter its water that was estimated would cost 5 times that amount initially, plus \$300 - \$500 million annually to maintain.

The protected Catskill watershed is a natural filtration system that provides over 9 million New York City residents with 1.1 billion gallons of clean drinking water at a fraction of the cost - if the city had not protected it, and it had been otherwise developed.

Providing clean water at an affordable cost is a challenge in many Canadian cities, especially in many northern communities as you know, because so few draw their drinking water from pristine or protected watersheds. They must rely on expensive treatment systems because the ecosystems from which the water is drawn are degraded or otherwise tainted by pollution.

In comparison, drinking water for communities in Victoria and Vancouver come from protected watersheds in the Sooke Hills and north-shore mountains, respectfully. These mature forests filter, store and regulate the region's drinking water at no cost to the taxpayer, providing a beneficial natural service that complements engineered solutions like expensive water filtration.

Studies suggest a strong fiscal incentive exists to grow the living green infrastructure in our communities. For example, a recent joint study by municipal, provincial and federal agencies in B.C. estimated Vancouver and surrounding communities could avoid about \$1.1 million annually in avoided stormwater infrastructure costs if they modestly increased urban forest cover by planting more trees and taking better care of the ones they have now.

Recognition of the irreplaceable value of ecosystem services and the impact of human development on them is emerging globally. The United Nations 2005 Millenium Assessment concluded that two-thirds of the world's ecosystems services are being degraded or otherwise used at a unsustainable rate. As a consequence the UN has devote considerable resources to educate policy-makers on their importance. For example the economic benefits of nature conservation were recently profiled in a United Nations report called the Economics of Ecosystems and Biodiversity – or TEEB. It found that protecting

natural ecosystems and biodiversity is worth trillions of dollars in annual economic benefits globally. The lead author, banker Pavan Sukhdev, told the media that investments to protect ecosystems can return 25 to 100 times more in benefits from the natural services they provide, such as pollination, climate regulation and water filtration.

The economic benefits of nature conservation have even received the attention of the World Bank, which plans to begin assisting countries in tracking their natural capital assets and including these values in national development plans, in the same way we track other wealth using the GDP index.

Speaking from a major UN meeting on biodiversity conservation last year, World Bank president Robert Zoellick told the media that *"for economic ministries in particular, it's important to have an accounting measure than they can use to evaluate not only the economic value but the natural wealth of nations."*

But one unsettling fact is that while we are now starting to quantify and price the services our forests provide to the world, such as the Amazon or Boreal, - the economic services provided by Arctic ecosystems – such the now fast-disappearing Arctic sea ice are still entirely unquantified.

For example, the Polar explorer Pen Hadow has argued : “that we’re just starting to understand the role of the sea ice in providing, a ‘reflective heat shield’ for the planet, yet the rapid pace of its summertime ice melt means this globally-significant ecosystem service may be irreversibly reduced or lost before its full function and value is understood.”

For this reason, Pen Hadow and many others are now urging polar governments, including Canada, to support research that will attempt to inventory and value the ecosystem services that sustain the health of the Arctic and its communities.

I, and many economists (including at Stats Canada) believe that we need this type of natural capital accounts for the Arctic in order to help decision makers — federal, territorial, provincial and First Nations governments — make informed stewardship decisions that balance broader ecosystem and cultural values with sustainable economic growth.

The benefits of nature, is nothing new to most people – especially northerners. Just being on the land (hunting, trapping or fishing), at the camp with the family, or even having access to the natural world within a larger community – in form of naturalized neighborhoods such as city parks, treed school-grounds, and green corridors, has been proven to have physical and mental health benefits – especially for children.

People gravitate to urban parks, like the Gatineau Hills here in Ottawa - they usually say, because they are beautiful, peaceful, or relaxing. Sometimes park visitors will venture as far as calling experiences with these urban ecosystems uplifting, moving - even spiritual. For others, it's a feeling that's difficult to describe in words, but have easy access to nature in our busy lives, just somehow makes us feel better. Although many people may not realize it, there's actual biological value in having experiences with nature, value that is measurable and quantifiable – as a beneficial ecosystem service.

It's long been established that general health, mental fatigue and physical injury all recover faster when patients have access to natural areas. Studies have shown, for example, that surgery patients recover more quickly even if they simply have a view of a natural landscape outside their hospital room window, rather than views of bricks and concrete.

Some people attribute this connection with nature to the perceived benefits of having access to fresh air and fewer distractions. But it actually goes much deeper. Famed Harvard ecologist E. O. Wilson calls this connection to the natural world biophilia. It's a term he

coined and it simply means that he believes humans have an innate kinship with other living things.

As it turns out, when it comes to our own health and mental well-being, not all parks are created equal. Simply providing a grass field, for example, is far less beneficial than a natural area with a greater diversity of plant and animal life. We know from a number of studies, that humans are able to consciously, or otherwise, judge the overall diversity and vibrancy of green spaces. What's more the more the more diverse and vibrant those ecosystems are, the greater their value to a person in terms of our own personal health and well being (saw more sites, smelled more smells, heard more sounds).

Shortly before Christmas, the well-known environmentalist, broadcaster and co-founder of the David Suzuki Foundation, Dr. David Suzuki, went down to the tent city that had emerged in the center of Vancouver to speak to the protestors that had gathered there as part of the Occupy Movement.

In his speech to the protestors, David Suzuki argued that as biological creatures, we depend on the ecosystem services that I've talked about today for our own survival. Thus, surely protecting these fundamental services should be a top priority for our politicians and should dominate our thinking and the way we live.

To quote David Suzuki:

"The economy is a human construct, not a force of nature like gravity, or the speed of light or our biological makeup. It makes no sense to elevate the economy above the things that keep us alive – the very ecosystem services that sustain the health and well being of our communities."

As he so eloquently explained at the Occupy Vancouver rally: *"We draw lines around property, cities, provinces and states, and countries. We take these so seriously that we are willing to fight and die to protect those borders. But nature pays no attention to human boundaries. Air, water, soil that blows across continents and oceans, migrating fish, birds and mammals - and windblown seeds cannot be managed within human structures – and that includes the economy. "*

I couldn't agree more.

Nature is our home. Nature provides our most fundamental needs. And Nature dictates limits to growth. Thus, if we are striving to create a truly sustainable future for Canada's north, we must ensure that development proceeds in a sensitive manner and doesn't undermine the natural capital riches that the region is blessed with and that not only sustain non-human biodiversity, like polar bears, beluga whales and caribou - but are the very life-support systems of the communities that live there: providing clean air, pure drinking water, and healthy food to eat.

The environmental challenges facing Canada are daunting – the lack of a credible plan to address climate change, our over-reliance on dirty sources of fossil fuels – like the tar sands to fuel or energy needs and economy, and the snail's pace at which we work to protect endangered species and their habitat, such as caribou.

But in the midst of painful foot-dragging, partisan bickering and PR spin, there have been a number of bright spots in resource and environmental policy in this country – and much of this has happened in the north led by Canada's First Peoples in partnership with territorial, provincial and our federal government. And I'd like to end on this positive note.

Indeed indigenous people have been at the forefront of the some of the greatest conservation achievements here at home and around the world. In the last few years, more

than half of the rainforests of Haida Gwaii have now been protected, thanks to the leadership of the Haida First Nation. In the western arctic, the Dehcho First Nation and the government of Canada have developed joint land use plans that will protect over 30,000 km² of boreal habitat for woodland caribou. And in the eastern arctic, Labrador's Mealy Mountains area is slated to become Atlantic Canada's largest national park, protecting the land - but also the culture. The federal park will set aside close to 11,000 km², while the provincial government has promised to set aside an additional 3,000 km² on the adjacent Eagle River. But what will set Mealy Mountains National Park apart from other parks, beside its massive size, is that local Inuit, Innu, Metis, and the modern descendants of European settlers will be able to continue to use the area as they have for generations – including hunting, fishing, trapping and other traditional activities.

Finally, in central Canada, five Anishinaabeg First Nations communities in eastern Manitoba and northern Ontario are working to create a massive 43,000-square-kilometre UNESCO World Heritage Site called Pimachiowin Aki (Pim-MATCH-cho-win Ahh-KEY). In English, it means the "the land that gives life".

Home to such threatened species as woodland caribou, and dotted with freshwater lakes, wild rivers, and biodiversity-rich wetlands, Pimachiowin Aki has remained more or less unchanged for some 5,000 years, roughly as long as recorded human history. It is the very absence of clear-cuts, mines, hydroelectric dams, transmission lines, and other industrial infrastructure, along with the region's rich cultural landscape, that makes Pimachiowin Aki

so exceptional, and it is for this reason that First Nations communities want to protect it as a UNESCO World Heritage Site.

As Sophia Rabliauskas, a Pimachiowin Aki spokesperson and leader from the community of Poplar River, told the media: *"As First Nations, we already know the value of this land — because we live on it, and live with it every day. Now we want our neighbours, people who live in cities and people around the world, to understand just how important it is."*

Fortunately, the Manitoba government has listened and is working with First Nations to protect the area for its unparalleled ecological and cultural richness. A formal application for World Heritage Status was submitted to UNESCO earlier this month in Paris. If the First Nations and their government and NGO partners succeed, Pimachiowin Aki, “the Land that Gives Life” would join other world-renowned UNESCO World Heritage Sites, including the Pyramids at Giza in Egypt, the Great Barrier Reef of Australia, and the 7.7 million-hectare Ténéré Nature Reserve in the Sahara Desert region of Niger.

But these earlier victories, achieved by working with Aboriginal governments and other levels of government as partners offer examples of how we need to move ahead with a cautious approach to land use planning and development in the north.

At the David Suzuki Foundation, we believe that industrial development and the jobs and wealth it brings should expand in the north, but we also believe that such development

must occur within a wider sustainability context that recognizes the true value of the ecosystems of the region – we can no longer treat clean air, fresh water, abundant wildlife as simple economic externalities. Rather, we must employ a prudent approach to how we manage the natural capital assets of the region, so that valuable ecosystem services, like wildlife habitat, and the provision of safe, nutritious and abundant local food (like wild game and fish) can be maintained while meeting economic development objectives.

We believe that regions, like the Mealy Mountains and other majestic and landscapes in Canada's north must be protected as special places where rivers run wild, caribou roam unfettered by industrial development, and the centuries-old traditional values of northern communities are honoured and respected.

Thank You