OUR LAND AND WATER:

NEGOTIATING A FAIR PRICE FOR WATER, ECOSYSTEM SERVICES, AND HUMAN WELL-BEING.
You don’t have to be a rocket scientist to know our planet has entered a new epoch of human impacts (dubbed the Anthropocene). If you face the evidence, you might also feel a sense of urgency when it comes to current choices on resource use and conservation. Take water. Water rightfully resides near the top of most lists of precious resources. Water is life itself, whether we’re talking fish, fowl, flora, fauna—or us. Sadly, we too often ignore the enormous intrinsic value of water—to life, nature, culture—in our rush to commodify and profit from it. Whether we bottle and export it, divert it for power, or extract it for some other industrial gain, its short-term returns can be seductive. But all too short-sighted and short-changing. Leaving sufficient water in the ground or in rivers and wetlands, while not as immediately profitable, often provides the most enduring return.

Our land and water deserve more from us. Isn’t it time to take a broader view of ecosystem and human well-being? We might start simply by recognizing and bearing witness to the inordinate and irreplaceable value of
Unfortunately, the evidence suggests we face a big challenge. Since the onset of large-scale industrialization, human practice and laws have tended to direct us to the belief that nature has little value, and few rights. Take early water legislation in British Columbia, aimed at reducing conflicts over gold extraction and other activities, through the creation of the Gold Fields Act (1859). In other words, B.C.’s first water laws are rooted in promoting economic development and resource extraction—not in sustaining fisheries resources, ecosystem health, or cultural and spiritual values.

Despite the adoption of more recent and progressive environmental laws and regulations, we’re reminded on an almost daily basis that we are failing to protect nature: • A World Bank study predicts that, without further action to reduce greenhouse gases, the world’s temperature will likely increase by 3°C, with a 20 percent likelihood of it exceeding 4°C by 2100 if mitigation commitments aren’t fully implemented.

It’s really not rocket science. But science and experience do inform us, so it may be helpful to run through a few examples to build our case: that nature has value; that healthier ecosystems provide more benefits than unhealthy ones; that nature’s values—including to human well-being—should be properly considered in land and water use decisions; and that we could and should be doing more to support this thinking and practice.


First Nations spiritual and cultural values need to be given more consideration in law

• The rate of species extinction is now 1,000 times the background rate, with dozens of species going extinct every day; and

• The recent die-off of scallops and oysters in B.C. likely due to climate change and ocean acidification.

So why are our environmental laws and resource management policies failing us so badly? And can we do anything to right the ship? Part of the answer lies in how those laws and regulations were created. Most environmental legislation in the U.S. originated in the 1970s in response to specific incidents such as polluted rivers catching fire (e.g., 1969 Cuyahoga River fire), and oil spills. These environmental laws were intended to make polluters of natural resources more accountable. But while pollution might be better monitored and restricted, it’s still a part of doing business. As long as environmental protection is viewed myopically as an impediment to economic growth, nature’s degradation will continue (as manifested in climate change, habitat loss, species extinction, etc.).

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Why not? Positive steps towards recognizing value in nature are slowly emerging:

• In 2004, the Supreme Court of Canada confirmed that ecosystem services have an economic value in law. The decision in British Columbia v. Canadian Forest Products Ltd. (also known as the Stone Fire case) was the first time the court explicitly recognized environmental damages as recoverable losses within the common law;

• In 2008, Ecuador was the first country to attribute rights to nature in its constitution;

• In 2011, Bolivia enacted a law that grants the Earth a series of specific rights that include rights to life;

• In 2012, an agreement was signed in New Zealand giving the Whanganui River a legal entity with a legal voice in a manner similar to companies.

These and other examples show that we can and should attribute value to ecosystem goods and services. We should identify the values that matter and insist on this approach in resource decision-making. Whether done through negotiating or watershed governance tables, or through the assertion of aboriginal Rights and Title claims, much more needs to be done to advance the concept and consideration of ecosystem services—including cultural and spiritual services.


Communities are constantly facing decisions about what will be done with the land and water around them, mostly without the benefit of careful consideration of the appropriate values of the land, water and other resources. Do we build a small industrial plant, or approve some other development to grow the local economy? How important is it to consider the effect on the environment? To fully understand the suite of potential impacts and your hopes of mitigating them? Suppose you already have a new development in place? How about adding a large port? As long as you minimize the negative impacts to the extent possible, is it okay?

What if the decisions on development and resource extraction are even larger in scope, for instance, filling in marshes to develop a mall, damming and diverting a river for hydropower, extracting and transporting subsurface minerals and oil?

We’ve all heard narrow arguments about economic benefits offered to sway private land owners, First Nations, and the general public towards supporting projects that may compromise their land and water. Too often the benefits are short-term and fall short in terms of providing lasting prosperity. Where do we draw the line between meeting the immediate needs of people, and sustaining healthy environments and future well-being? These sorts of decisions can be extremely challenging, especially when access to land offers opportunities for legitimate economic prosperity and self-determination.

One question that might be asked by people choosing to allow resource extraction or development on their land is: “What value do we currently attach to our water and land?” Or, slightly more refined: “What value do we place on the separate and distinct attributes of our land?”

START BY INSERTING ECOSYSTEM GOODS AND SERVICES INTO THE DIALOGUE.
Not surprisingly, these can be extremely challenging questions. First Nations usually consider their land’s value in light of their traditional use and special rights associated with their territory (e.g., fishing, hunting, medicines, etc.)—rights and use usually connected to a specific place, often to a specific family or house group, and not enjoyed the same way constitutionally by non-aboriginals. In a real sense this elevates the value of these lands and their ecological goods and services (e.g., fish, and water purification) to First Nations, especially where these goods and services are already diminished. This special relationship to the land also elevates the clout of First Nations when they assert their rights to protect these resources.

Our first task might be to push back on the typical scenario in which a project proponent touts the economic value of development or resource extraction projects, while attempting to mute the dialogue on cultural, social value of development or resource extraction projects, where the true potential costs were initially under-estimated. Thankfully, the limits of the more Western approach were recognized by the Haisla Nation Council, which contracted a study estimating potential economic costs due to lost ecological services at US $3 to 200 billion over a 30-year period of pipeline operation. This action by the Haisla spurred the project proponent, Enbridge, to conduct its own study, forcing them to join the ecological goods and services conversation, illustrating the enormous but often overlooked importance of highlighting the value of nature in everyday project assessments and approval processes. Yet, there’s still a long way to go before governments willingly and meaningfully integrate the value of ecological goods and services in its decision making.

Looking forward—Linking nature to human well-being

We need clean, fresh water to drink. Most of us also enjoy camping, swimming, fishing and hiking in or near lakes and rivers—activities that have important value in our daily lives. Many of us also simply enjoy spending time in nature. Whatever benefit, spending time in nature can actually promote human happiness and well-being. Organizations like the United Nations have begun issuing regular reports ranking the happiness or well-being of people living in various countries, and have shown well-being is more than just about wealth. Indeed, well-being is also highly dependent on cultural and spiritual values, and human health benefits derived directly from healthy ecosystems.

Recently, Japanese scientists have begun discovering a surprisingly large number of health benefits linked to forests. They extol the benefits of “nature therapy,” or in Japanese, “shinkinroku,” which means literally, forest bathing, or bathing in the sights and smells of forests. Simply spending time in parks and forests can reduce physiological stress and enhance immune function and resistance to cancer.8, 9 But in order to sustain nature therapy in today’s world, we need to value nature accordingly and include all the ecological services it provides—especially the human well-being contributions to our lives.

Ecosystem goods and services can affect human well-being, or quality of life. Well-being includes human health and wealth, but also the capacity for society to meet its own needs, and a sense of self determination.

Scientists specializing in “resilience stewardship” show that ecosystem goods and services can promote various forms of well-being—like human health, freedom of choice, and self determination—resulting in “positive feedback loops” in the form of enhanced protection of ecosystems (Figure 1).

More integration of this type of thinking in policy and practice—such as promoting the value of clean water to our ecosystems, to our cultures and to our well-being—is increasingly important to the necessary inclusion of the values and rights and services derived from nature. Even using these concepts and terms in everyday life can help prompt the change towards a system that places an appropriate value on nature and the benefits it delivers to everyone.

Putting a price on nature—some examples of ecosystem service pricing

Though it may be difficult to accept placing a value on something as irreplaceable as healthy ecosystems or nature, our very future may depend on us doing so. Too often massive forests are clear cut without consideration of their carbon sequestering value—or human health benefits. Wetlands are drained with little consideration of their water filtering or ecosystem-sustaining properties.
Fortunately, many academics have begun to estimate the value of ecosystem goods and services, in an attempt to help humans recognize the legitimate worth of natural systems and processes.

Putting a monetary value on ecosystem services can be a useful and powerful conservation tool, and a potential game-changer with respect to our collective decision-making around the costs and benefits of proposed resource developments. Non-monetary values also need to be part of the conversation. Why shouldn’t we consider the value of the memory of swimming in a pristine lake, or passing the time at a treasured fishing hole with your grandparent or best friend? Or, simply, the value of a special relationship with a place? Such memories linked to a healthy resource, and relationships to places, elevate our well-being. We can similarly acknowledge and assert that fish and thus the water that fish require have great value to healthy ecosystems—and to our well-being, by extension.

All attributes and benefits of the ecosystem should be considered carefully and included in the total valuation process, even if the measuring process is challenging. The ecosystem goods and services, health and well-being benefits, special inherent values to First Nations, and other contributions of the territory need to be considered as a package deal.

As a starting point, we might consider a few real-life examples of where others have placed monetary value on ecosystem goods and services.

• Putting value to freshwater salmon habitat in the Thompson River watershed, British Columbia. Duncan Knowler and researchers from Simon Fraser University estimated the value of ecosystem services that benefit the commercial coho fishery at C $1,322 to $7,010 per kilometer of salmon stream length. They did this


TECHNIQUES AND TERMINOLOGY—DIFFERENT METHODS TO VALUE NATURE

There are multiple methods to price nature and its parts. Here are a few of the more common types of valuation:

1) MARKET PRICE METHOD
This technique estimates economic values for ecosystem goods that are bought and sold in commercial markets such as salmon or lumber. For example, a dollar value could be estimated for a 100 hectare forest based on the amount of lumber that can be extracted from it and processed at the current market price.

One challenge with using this method is that there is no value subscribed to the social importance of the forest (e.g., hiking trails – altered versus un-altered), or ecosystem services such as nutrient cycling.

2) PRODUCTIVITY METHOD
This method estimates economic values for ecosystem products or services that contribute to the production of commercially marketed goods. For example, the water quality of a river can affect the production of local agricultural crops that are irrigated. If the water quality declines due to a pollutant, an estimate of the value of the water can be derived by knowing how much it costs to filter out the pollutant to achieve the same amount of crop production when the water was clean. This method is typically applied when the products or services of an ecosystem are used, along with other things, to produce a marketed good.

One requirement of this method is that information on the relationship between actions to improve quality or quantity of the resource and the actual outcomes of these actions are needed. Sometimes, these relationships may not be completely known.

3) HEDONIC PRICING METHOD
This method estimates value for ecosystem goods or services that directly affect the market price of another market good. The value of a pristine lake might be derived by comparing market prices of two similar homes, one with a lake nearby and one without. All other factors being equal, if you were to compare the two property values, the difference in price would give you an estimate of the value of the lake.

This method can take significant statistical expertise and large amounts of data on how a particular ecosystem good affects a market good (like a home).

4) TRAVEL COST METHOD
This method estimates value associated with ecosystems or sites that are used for recreation and assumes the value of a particular environment is reflected in how much people are willing to pay to travel to visit the location. For a specific wetland, the recreational benefits of hunting, fishing or hiking in the area could be estimated by knowing how many people use the area, how often they use it and the time and money spent to travel to the area.

5) CONTINGENT VALUATION METHOD
This method is based on a person’s willingness to pay to preserve or enhance a specific ecosystem good or service based on a hypothetical scenario often assessed by a survey. For example, a lake that supplies a small town with water is also important for nesting and migratory birds. The town is considering improving it for fish and wildlife, but conducting a study at the site just to get an estimate of the value of ecosystem services to be gained is too costly. Instead, they take estimates from another study that calculates value of riparian habitat from another river 300 kilometers away.

Although this method can be applied to a wide variety of goods and services, there is controversy over whether it adequately measures people’s willingness to pay for the environmental services at hand.

6) BENEFIT TRANSFER METHOD
In some situations, conducting an original valuation may be too costly or gathering some information for an area may be too difficult. In such cases, another option is to use available information from studies already completed in another location that prices the same types of ecosystem services. For example, a community is considering restoring riparian habitat to a local river to improve it for fish and wildlife, but conducting a study at the site just to get an estimate of the value of ecosystems services to be gained is too costly. Instead, they take estimates from another study that calculates value of riparian habitat from another river 300 kilometers away.

This method is relatively easy if comparable studies exist, but sometimes that isn’t the case.
by assessing the net economic benefit from the fishery assuming it was optimally managed, then looked at how the economic benefits change when the habitat quality is altered. It’s important to note they didn’t include the value of the recreational coho fishery, any other salmon or ecosystem goods and services; hence, the total value of the habitat is probably much higher.

- Assigning value to various habitats in British Columbia’s lower mainland area.¹¹

Sara Wilson and others from National Capital Research calculated the dollar value of various ecosystem services around the Vancouver, B.C. area and summarized them by land cover type. Forest habitat in the region is valued at C$7,432 per hectare, and grassland at C$2,262. Their assessment also estimates the average value of land in different watersheds. According to the ecosystem services they provide, the average value of land in the lower Fraser River valley is $2,833 per hectare, and in the Squamish River watershed it is $4,324.

- Estimating the economic value of 17 major ecosystem services in the world.¹²

This ground-breaking study estimated the economic value of 17 ecosystem services such as climate regulation, water supply and nutrient cycling for 16 ecosystem types like open-ocean, forest, and wetland. Lakes and rivers are valued at US$5,445 per hectare per year for their water regulation function and US$2,117 for their water supply function, totaling US$8,562. The upper estimate of value for ecosystem services for the entire world is US$54 trillion per year.

FRESHWATER BODIES AND THEIR ECONOMIC VALUE

Freshwater bodies and their ecosystem services have been valued as one of British Columbia’s most prized forms of natural capital.¹⁰ Although B.C. is blessed with approximately 25% of Canada’s precious freshwater, a growing population, the expansion of agriculture and industry, and changing climate all place increasing pressure on our waters. Despite these threats, several opportunities exist to protect our aquatic ecosystems.

At the time of this publication, British Columbia’s new Water Sustainability Act (WSA) had just been introduced for First Reading.¹³ The proposed Bill 18 opens up a huge opportunity for citizens to bring forward the importance and value of water. At the time this bill was introduced, we were one of the few jurisdictions in North America that didn’t regulate groundwater use, despite recent shortages on some Gulf Islands and parts of southwestern B.C. Proper flows in rivers are also critical for healthy ecosystems,¹⁴ which in turn are inextricably linked to human well-being. The WSA is the first legislation in British Columbia’s history to consider mandating environmental flows, and also has substantial language around the development of local water sustainability plans. To guarantee these beneficial changes, the provincial government needs support from citizens, and particularly First Nations—a potential opportunity for us all to engage.

Should First Nations become officially involved in local governance of watersheds under the new Water Sustainability Act, it is to their benefit to request formal and fully-financed valuation studies that incorporate all their perspectives and interests. The examples above suggest it can and is being done elsewhere, so why not here? As part of these studies, the full value of water can be better defined to the benefit of local watersheds and watershed inhabitants, and for the advancement of effective water governance in British Columbia.

LOCAL GOVERNANCE OF WATERSHEDS

There are many examples of watershed councils employing innovative thinking around watershed governance, and ecological, cultural and spiritual services. Though B.C. may be playing catch-up to the U.S., a number of forward-thinking governance structures are now operating in the Okanagan, Cowichan Valley and the Salmon River, to name a few.¹⁵ Still another example is the Coquitlam River
Watershed Roundtable16, which is integrating ecosystem services and associated measures of human well-being into its official watershed plan—a process the Kwikwetlem First Nation has endorsed and contributed to.

Such watershed councils, even if not perfect governance options, offer a venue for the exchange of common values—and considerable expertise to help make better land and water use decisions. In the Coquitlam and Okanagan watersheds, First Nations are also garnering overwhelming community support for plans to re-introduce sockeye salmon. First Nations and others are further bolstering resource management capacity and valuation expertise by partnering with environmental non-profits and academics on several fisheries and environmental issues in BC.

Examples abound. Nisga’a fisheries experts gathered abundant and scientifically-defensible information on their fisheries in an historic and successful effort to bolster their Treaty claims. The Tsilhqot’in Nation employed numerous resource experts to highlight the value of natural resources (other than metals) and cultural and spiritual values to the Nation, winning favourable rulings for their Rights in two federal environmental reviews. First Nation values around water and fish also received considerable prominence in B.C.’s Water Use Planning process, thanks to the considerable efforts of the First Nations Water Use Planning Committee.

The above efforts also showcase the inordinate value of self-determination (Figure 1) in increasing resource capacity and stewardship. Certainly in many cases decisions will favour resource development, and this document is not meant to limit truly sustainable development. Rather, it makes a case to broaden our collective thinking and understanding of how ecosystem services influence human well-being17, and urges us to support a new way of doing business, especially one in which we assert more control of our own well-being.

16 http://www.coquitlamriverwatershed.ca/roundtable

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