How Many Grizzly Bears Can Dance on the Head of a Pin? Thoughts on Imperiled Species and Spaces

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Try to imagine the spirited debates the theologians of old had about how many angels could dance on the head of a pin. The story goes that it was an important argument for them and I can visualize them, in gloomy monasteries, huddled around a flickering candle, holding forth on their great debate. Perhaps the discussion lightened when a clearer thinker asked if it mattered whether the angels were dancing the medieval equivalent of the jitterbug or dancing cheek to cheek.

Today we find biological theologians in brighter, computer-equipped rooms, engaged in analogous debates. Instead of angels they debate how many grizzly bears (or sage grouse, westslope cutthroat trout, caribou, bull trout, and so on) can, or do, exist on the pinhead of landscape left for them. If that is not complicated enough for this new breed of theologian, the debate is made more difficult because the pinheads of suitable habitat left are further eroded and fragmented by new roads, pipelines, cutblocks and the other trappings of an industrialized and prosperous Alberta.

A Picture of Serious Decline

One side of the modern debate about species and land use is presented at wildlife conferences. It can be very depressing to endure a wildlife conference these days in Alberta; there one is besieged by well-researched information from the brightest academic minds showing a dismal prognosis for healthy landscapes and wildlife. Consider the following:

- Recent research indicates that of the 34 known sage grouse dancing grounds in southeastern Alberta only seven are now visited in the spring by this magnificent prairie icon. The population may have declined by 92% in the past 30 years.
- Woodland caribou in the north are losing the predator/prey battle largely because of excessively fragmented habitats – too many roads, seismic lines and cutblocks.
- Counting grizzly bears is a pursuit fraught with difficulty but it appears that fewer than 500 bears remain in Alberta (and only 90 between Highways 1 and 3).
- Westslope cutthroat trout were once so numerous that two anglers in a single day, in 1903, caught 400 from Fish Creek which flows through Calgary. Today Fish Creek barely merits its name and many similar streams that once held a cornucopia of native trout are severely depleted

And, on it goes. These numbers worry biologists because they dip to the point of threatening the viability of species for the future. It is very unusual for the increase of any wildlife populations to be reported at a wildlife conference in Alberta these days.

"Don't Worry, Be Happy"

Alternatively, if you have patience and the ability to occasionally suppress your gag reflex, you can listen to the other side of the debate at the many regulatory hearings that ostensibly oversee the parceling out of Alberta's landscape and resources. During the hearings, the proponents of industrial development extol the virtue of their particular project for Albertans. Take the proponents at face value and you will be stunned at how good their ambitions are for us; how could we possibly say no?

Proponents usually play the stewardship card. Corporations pledge a deep commitment to the environment and all the living things their activities will touch. You can listen to thoughtful, comprehensive environmental impact assessments, each of which will have a maddening similarity to others. All EIAs have a frightening tendency to say: "Yes, there will be impacts but all can be mitigated. Any residual effect will be so small, so localized and so insignificant that the project most assuredly is harmless to the public interest. Trust us, we will monitor the situation and rectify any concerns immediately. There is no reason why the project should not proceed right now." These stewardship statements are key; they try hard to create the impression of completeness, commitment and competency.

But, if the projects are as benign as presented, if mitigation is so effective, and if monitoring is so conclusive then why are we not up to our armpits in grizzlies, caribou, sage-grouse or cutthroat trout? The answer may well be that today's biological theologians have as much impact on their real world as their religious counterparts, through their debates about angels, had centuries ago.

Vascular plants, such as the endangered small-flowered sand-verbena shown here, as well as mosses also should be included among Alberta's species at risk. PHOTO: C. WALLIS

The Answer is Space; What was the Question?

We humans consider ourselves to be an intelligent, caring, sharing species perhaps especially when we deal with our fellow *homo sapiens*. But, these same attitudes seldom guide our behaviour when it comes to allocating space to other creatures. We add another pipeline, more wellsites, pile cutblock on top of cutblock, and carve out more kilometres of road to somewhere. We build small starter castles on an isolated piece of heaven, dig a bigger hole in the earth with an imperfect plan to refill it, and divert just a few more litres of river water to grow potatoes, mine the tar sands, or flush a toilet. Too often these decisions about how we treat or value space are made without considering their effects on other species.

We may realize too late, as others have, that what our companion species as well as ourselves need is space itself. David Brower eloquently described the California condor, which is a significantly imperiled species, as five percent flesh, blood, bone and feather; the rest he said was place. Without that place of which he speaks, without the earth, the wind and the water we will effectively lose these and other creatures.

We will sentence them to death if we do not grasp the basic, essential context of species maintenance. That context is space – big space, appropriate space and unadulterated space; space without most of the sights, sounds, stench and footprint of us. Place without space is no place at all.

Wallace Stegner put his finger on this essence some time ago. He said, "Something will have gone out of us as a people if we permit the last virgin forests to be turned into comic books; if we drive the few remaining members of the wild species into zoos or to extinction; if we pollute the last clean air and dirty the last clean streams and push our paved roads through the last of the silence, so that never again will Canadians be free in their own country from the noise, the exhaust, the stinks of human and automotive waste, and so that never again can we have the chance to see ourselves single, separate, vertical and individual in the world, part of the environment of trees and rocks, brother to the other animals, part of the natural world and competent to belong in it." It seems clear that Stegner thought that who and what we are is, in part, based on space.

Proponents essentially ask us to ignore the importance of space to our heritage. Their argument is that we cannot eat memories and sustain ourselves on sentiments like Stegner's. Where, they ask will we find the food, fuel, fibre and then the jobs to create the cash to buy the first three. "How can we afford to lock resources away from a growing population with needs and expectations?" This well-worn canard fuels so much of our fast-paced, unplanned, reckless approach to resource and landscape liquidation. What should nag at our comfort and complacency is the reality of cumulative effects; too many things are happening at once on the same sliver of landscape. Some effects do not happily coexist; there is growing, inescapable evidence that their additive nature eats away at a landscape.

Meeting the genuine needs of Albertans is one thing but creating other wants to shore up relentless venal greed is immoral and unsustainable. Its costs, one of which is the loss of spaces and species, are huge. We have already parceled out and appropriated most of the province's asset base. Developing the small remaining "islands" of wilderness will not improve our quality of life in a measurable way. Economic benefits

become illusory when we externalize costs to the environment instead of calculating in honest, full cost accounting for our activities. Aldo Leopold spoke about the last desperate act of a homesteader to wring one more benefit out of a ruined farm when he wrote, "Girdling the old oak to squeeze one last crop out of the barnyard has the same finality as burning the furniture to keep warm." The increased fragmentation of the remaining islands of wilderness on the map is akin to "burning the furniture".

There are not many places on this earth where the wild is still as close at hand as it is in Alberta. I watched a grizzly sow and twin cubs dine on fresh green spring vegetation just eight kilometres from the town of Pincher Creek. Enough wildlife may be found within an easy day's drive from Calgary to make visitors to our country green with envy. Space is essential to preserving such opportunities. Several of our highways still have signs warning of no fuel or services for a considerable distance ahead, a dreaded measure of unoccupied space for some travelers and an attraction to others. There are still pieces of Alberta with enough space where you can walk yourself to death.

Much of the rest of the civilized world has been successively sculpted and shaped for hundreds, if not thousands of years, to meet our utilitarian vision of what a landscape should be or do. The emerald isle of Ireland, beautiful as it is, is the result of the progressive clearing, cultivation and grazing of its landscape for hundreds of years. Viewed through the lens of too much Guinness the landscape is green and appealing; however, the concept, and the vision of wild is long gone from that place, as is the memory of any wild space.

What is sad is that space and species can slip through our fingers in a geological heartbeat; what is unforgiveable is that our attention span is such that we do not seem to notice. A unique population of bull trout once occupied Crowsnest Lake. They now only exist as memories or in old black and white photographs. I have one of those pictures. It shows a smiling child clutching a trout nearly as large as he is. As lake dwellers the Crowsnest bull trout reached large sizes and they spawned in several of the tributaries to the Crowsnest River. Eighty years of angling took its toll but it was the transformation of the Crowsnest Pass watershed that proved too much for bull trout. Coal mining and logging affected virtually every portion of the watershed. Those land uses combined with residential development meant that by the late 1950s every spawning tributary except one had a dam or a barrier to upstream movement across it. The last hope for the bull trout was Allison Creek. Unfortunately highway construction led to the development of a gravel bar at the mouth of the creek that was impassible to bull trout for several years and the population disappeared shortly afterwards. With that last door slammed shut 10,000 years of bull trout prosperity in the upper Crowsnest watershed ended.

The Great Plains toad is a species of special concern that has benefited from the protection afforded it on the Suffield National Wildlife Area. PHOTO: C. WALLIS

There were no eulogies for the passing of bull trout in the upper Crowsnest, unlike for other species we have lost; the passenger pigeon, the bison, the Eskimo curlew have their mourners in print. I am not surprised. We have an imperfect understanding of the complexity of aquatic systems, of their connections to all living things and of the cumulative effects that insidiously erode the ability of a system to support some species. We do not feel the need to mourn that which we do not understand enough to miss.

If anything worse than losing something could be imagined it must be to forget that something has been lost. We are perilously close to that point with Alberta's imperiled species and their spaces. We are there because we have lost, or misplaced our temporal and spatial benchmarks, our navigational aids to charting changes.

A benchmark is a place in time and space where we have made a point of noticing and noting as many parameters as exactly as possible so we can say in the future, that is how things were then. It is a measure of landscape health, biodiversity and productivity and a mark against which we measure change. Unfortunately, unless a benchmark is very well documented and accepted the measures from it can wander and shift. This wandering, this shifting may be seen from one individual to another; it may be seen in our own memories; it may be seen from one generation to another. I was stunned by the observation of an elderly angler I once interviewed to help me understand the declines in bull trout populations in south-western Alberta. He said, "I would consider your best day of fishing today as one of my worst from my memory of past experiences". It reminded me that my memory may be limited and imperfect and that benchmarks may shift from one generation to the next.

The shift in benchmarks, the loss of spaces and species, sometimes occurs beyond our awareness and reckoning. We think, in our arrogance and ignorance, that the landscape and resources of today are the "full pie". The reality is today's pie is a mere slice of yesterday's pie. And

so it goes; without an appreciation of the progressive thinning of the remaining slice, it can, and will, eventually wink out of existence. Our landscape, like the Cheshire cat in Alice's Wonderland, "vanished quite slowly, beginning with the end of the tail, and ending with the grin, which remained some time after the rest of it had gone." Such is the cost of a failure to remember history and to be lulled into a false sense of security by shifting benchmarks.

Disconnects between Science and Ecological IQs

Our need for good navigational aids and benchmarks and higher ecological IQs is one that science can help us with. The path to higher ecological IQs is one that begins by instilling curiosity, interest and respect for the natural world, the same attributes that are essential to any pursuit in science. Those qualities have always been important and perhaps now are more crucial than ever to create a solid footing upon which the findings of science can find some traction in the minds of skeptics, non-believers, and decision-makers. Unless science can be turned into a guiding light and the keeper of valued, recognized benchmarks, we will remain trapped in a spiral of research that devises better and better ways to measure the activities of fewer and fewer creatures. As the old joke goes, we will know everything about nothing, fiddling as the creatures around us dance their last dance on earth.

An understanding of **how** species and spaces disappear begins with the application of various measuring devices of science. Those measurements can only take us so far however. The most effective device for understanding **why** species and spaces disappear may be a mirror. When we are forced to look into the mirror we will see ourselves. Too many of us support the politicians who promise us low taxes and a hot economy and deliver those goods by exploiting and liquidating Alberta's resource base. All of us – politicians, corporate executives, citizens too – are in some ways complicit. "The main problem," Norman Myers reminds us, "for declining wildlife is not the person with conscious intent to exploit or kill: it is the citizen who, by virtue of his consumerist lifestyle, stimulates economic processes that lead to disruption of natural environments."

Can we avoid being complicit in the disappearance of spaces and species? To travel down that different path we need to change our current mindset; we need to rethink how we approach the natural world and how we will share a common landscape with everything else that lives in, on, or above it.

If we want to increase our ecological IQ it seems to me we need to address the issue of imperiled species and spaces on two levels. First, we need to deal with the myths, misconceptions, untruths and half-truths about biodiversity. Second, we need a concerted effort to increase awareness about how to maintain systems and wild creatures. Fortunately, most of this information currently exists.

The problem, as Will Rogers thoughtfully observed, is not with what we know, but with "what we know that isn't so." Most people view the world through beliefs that are largely ill formed; they lack crucial information and may be irrational because of other circumstances in their lives. They lack the time, critical thinking skills, and the interest to sort through a complex ecological situation; so, it is not surprising we do not grasp the facts at hand and interpret them correctly. Appreciating our situation also is made more difficult by the corporate and political denial machinery. That machinery trains people to view skeptically the warning bells and to turn a blind eye to evident landscape changes and the loss of vital ecosystem pieces. We are conditioned to point our fingers at others. My actions are not a risk to biodiversity; the activities of others are.

Why do we need to improve our ecological literacy and IQ? Very simply, human decisions can have a disproportionately greater impact by changing, sometimes irreversibly, the playing field. The dynamic equilibrium of the ecosystem is disrupted by the additive, cumulative, effects of our actions (e.g. CO^2 emissions).

Ecological literacy is important, as a public servant once told me, "for those who live in the environment." That means all of us, doesn't it? Some ignore this fundamental truth; they think they are magically immune to the ecological changes affecting us. Creating awareness of ecosystem functions, processes and relevance to humans is the first step to attitudinal and behavioral shifts at the individual and community levels. Those shifts, in turn, may lead to more sympathetic and constructive policy creation at the political and corporate levels.

It's About Choices

If we do not increase our ecological IQ and functional literacy in environmental matters there are several other options we should be prepared to choose from.

You can see a grizzly in a zoo. I suppose we could keep a study skin of a sage grouse in a museum, much like that of Martha, the last passenger pigeon. Caribou, or at least their semi-domesticated version, reindeer, will exist elsewhere. A little snippet of the DNA of a westslope cutthroat trout could be held on ice–against a day we might be able to recreate it.

Fenceline Sunflowers 15"x24" Soft Pastel © JEAN SHEPPARD

We could memorialize the creatures and landscapes that slipped from our grasp. The last grizzly in California died in 1922, yet an image of the bear is still prominent on the state flag. This mute testimony to inaction, inability and intransigence is ironic for a state that is so often now in the vanguard of environmental change.

We could satisfy ourselves with the leavings. Most of the rest of the civilized, developed world contents itself with the fragments, dregs and second bests when it comes to spaces and species. They likely have developed a philosophy like one of my university friends. When confronted with failing grades he pointed out that it was not his poor grades that were at fault, it was the impossibly high standards of the school. If we cannot make the grade for species and space maintenance, we can always lower the standard.

We Can Learn, Can't We?

If we continue to lose spaces and species knowingly in the face of alternatives, then we will have committed an unforgivable, unpardonable act of complacency. There is an old bit of doggerel that goes; "when home and land are gone and spent, then the learning is most excellent." We need to share the same spaces as grizzlies, caribou, and bull trout, not because we live there but because the quality of their spaces contributes to the quality of where we live.

The theologians sitting long days and into the night debating how many angels could dance on the head of a pin never existed. The debate is a myth we have come to believe because we hear it repeatedly and never check the sources of the story. It is akin of the myths of sustainable development, corporate stewardship and accountable government.

We need to spend our days in positive discussion about the real things of this world. Watershed values, storing carbon, preserving possibilities, setting benchmarks and, retaining places rich in biodiversity where we can find joy, surprise and humility – they are of greater importance, arguably, than some of our current resource extraction endeavours.

Others have learned the lesson; let's not be blind to the possibilities of change while there are good options staring us in the face. A seemingly altruistic act of saving imperiled spaces and species may be viewed soon as a perfectly reasonable, selfish act to save ourselves.

You see, we also are up there, dancing the Macarena on that pinhead.