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AWA



A WILD LANDS ADVOCATE

THE ALBERTA WILDERNESS ASSOCIATION JOURNAL



Athabasca River, Rocky Mountain Natural Region PHOTO: C. WEARMOUTH

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COVER PHOTO

Chris Wearmouth's photo of a bull elk slaking his thirst in the Athabasca River reminds us of nature's need for water, a point that Bob Sandford so eloquently and powerfully brings home in "Converging Global Trade-offs – Water, Agriculture and Cities" (p. 8).

FEATURED ARTIST

Brian Zheng immigrated to Canada in 1989 from China, where he was trained and inspired by some of the best artists in the country. After receiving a BFA from the Capital Normal University in Beijing in 1986, he worked with a group of artists to create murals and interior decorations for the famous Mutianyu Great Wall Hotel. Brian is a member of the Alberta Society of Artists and the Canadian Institute of Portrait Artists. He lives in Edmonton, and his work is shown at Webster Galleries in Calgary.

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PHOTO: D. OLSON

PLAN FOR PARKS HOLDS NOTHING FOR WILD SPACES

As I write, autumn has arrived and the iridescent glow of leaves turning colour and beginning to fall is captured in the glowing warmth of the sun. It has been a good summer. Much has happened – we have been to our wild spaces and shared our experiences: the chance sighting of a grizzly and her cubs, a ferruginous hawk watching overhead, moose up to their knees in mud, mouth-watering boreal blueberries, fresh clean air, delicious mountain water, and time to reflect with you and so many others.

Last year, we participated in the Alberta government’s “Plan for Parks,” taking the opportunity to comment on the principles that would formulate a new planning framework for parks and protected areas in the province. We have waited patiently to see this plan for parks and protected areas in Alberta, and this month we received a draft. Having moved through the process with optimism, we were bitterly disappointed that the document bore no resemblance to what we discussed and read about last year.

Since receiving the draft plan, a series of technical briefings and forums have unfolded. Conservation groups requested and held a meeting with Minister Ady on September 18, and a week later the Minister held an all-day forum with representatives from First Nations, conservation groups, recreational groups, and government staff.

Our colleagues from the First Nations, recreation, and conservation sectors joined AWA in sending a loud and clear message about protection and what many Albertans want. First Nations told the minister they are seeking protection for 30 percent of the boreal. Everyone spoke emphatically and agreed that this document is entirely missing a mandate for protected areas. Yes, we agree about the need to facilitate recreation in some areas, but this document must also address protected areas.

AWA believes that this draft planning framework is flawed at its very core. How could a planning document from the ministry responsible not include the vision and fundamental mission of the Parks and Protected Areas Department? As it stands, the document is simply a recreation framework. Woefully missing is the emphasis on the important role that Parks should play in protecting a network of interconnected landscapes that represent the diversity of natural subregions in the province.

We know protected areas are key to protecting biodiversity, and thereby our health and our wealth. The Ministry of Tourism, Parks and Recreation is about more than recreation and parks – it is about protected areas, and we remain disappointed that this plan does not address the business plan targets for protecting our six natural regions. We believe the process for developing the draft has not been transparent and has not benefitted from the expertise of Parks and Protected areas staff who could offer significant knowledge.

Resolution will only come from revamping the draft policy, with clear direction from Minister Ady that wilderness conservation must be a pillar of the policy. We know she heard the message: she knows she must listen to us and to all Albertans, the majority of whom – poll after poll – say protected areas are important. We are, however, skeptical that she can deliver. The bottom line given by Minister Ady at the forum was that there is not really any room to change the document.

As the leaves fall, we will stay the course as we have done so many times before. Alberta’s wild spaces are worth it. We must speak out, write letters, phone our MLAs, and make our voices heard once more. The plan *must* be changed *significantly* to incorporate the protection of Alberta’s remaining wilderness.

– Christyann Olson



HEWERS OF WOOD OR PROTECTORS OF WATER – MAKING CHOICES WHILE WE CAN

By Nigel Douglas, AWA Conservation Specialist

Planet Earth: the Blue Planet. From space, it hangs suspended like a sapphire in the blackness, sunlight reflecting back from the more than 70 percent of the planet’s surface that is covered with water: some 1,460,000,000 km³ of it! When we see images of Earth from space, perhaps it’s not surprising that we sometimes fail to appreciate just how precious and fragile our water supply is.

Once we begin to break down the numbers, though, this fragility becomes apparent. Roughly 97 percent of Earth’s water is salty; another 2 percent is frozen. Of the remaining 1 percent that is both fresh and liquid, nearly all – 99 percent – is underground. A mere 0.01 percent of Earth’s water is fresh, liquid surface water.*

Water, Water, Everywhere?

We tend to think of Canada as a relatively wet country, but that’s not the case. “Canada has 7 percent of the world’s land mass, and produces 7 percent of the world’s terrestrial runoff,” points out Dr. David Schindler, Canada’s premier freshwater scientist. “In other words, we have just an average supply of sustainable freshwater by global standards.”

Alberta itself is a relatively dry province. It makes up 7.2 percent of Canada’s land mass, but according to the Canadian Water Network, it holds just 2.2 percent of Canada’s freshwater supply. Significantly, most of the water in our rivers flows north and east, to the Arctic Ocean or Hudson’s Bay, whereas most of our demand for water – municipal and agricultural – is in the south (see map).

Thus the importance of the *source* of most of Alberta’s precious water – the mountains and foothills – begins to take shape. For example, in the whole of the Saskatchewan River basin – which



Annual Natural River Discharges (Alberta Environment). Blue shading represents volume of water.

stretches across southern Alberta and Saskatchewan, and into Manitoba – 87 percent of the water comes from Alberta’s mountains and foothills. Only 13 percent is added to the river’s volume between the foothills and Lake Winnipeg. Three of Canada’s great rivers – the Saskatchewan, Peace, and Athabasca – originate on Alberta’s Eastern Slopes. It follows then, that what we do in the watersheds of rivers like the North and South Saskatchewan has implications far beyond the boundaries of Alberta itself.

Calgary receives roughly half of its water from the Bow River, which begins in Banff National Park, and half from the Elbow River, which has its source in Kananaskis Country. Only about 56 percent of Kananaskis Country is protected; the remainder is managed for “multiple use,” including industrial activity. Similarly, the City of Edmonton receives most of its water from the North

Saskatchewan River, whose headwaters are partially in Banff and Jasper National Parks, but also in the unprotected Bighorn Wildland.

Other cities are less fortunate: Red Deer receives most of its water from the Red Deer River, which also has its source in the Bighorn; Medicine Hat receives water from the South Saskatchewan via its tributaries such as the Oldman, Castle, and Crowsnest rivers, whose headwaters are also unprotected. This is a large part of the reason why Alberta Wilderness Association has worked so hard for so many years to see increased protection of land in areas such as the Castle, the Oldman, and the Bighorn.

The Protection Pendulum

The recognition of this need to protect our headwaters is nothing new. As long ago as 1600 B.C., Emperor Yu of China wrote, “To protect your rivers, protect your mountains.” And Alberta has its own history of recognizing the vital role of protected headwaters. In 1896 J. S. Dennis, Chief Inspector of Surveys in the Government of Canada’s Department of the Interior, wrote to the Secretary of the Department (Cabinet ministers were typically called Secretaries then) to emphasize “the important part which the preservation of the forests on the eastern slope of the Rocky Mountains and the foothills plays in the permanence of the water supply.” Dennis stressed that “the permanency of our water supply is largely dependent upon the preservation of the forests at present covering the watershed, and this protection can only be secured by prohibiting the cutting of the timber.”

A 1927 Dominion of Canada brochure makes the same point: “It has been said that one of the primary aims of all National Forests is the production, in perpetuity, of a supply of timber. In mountainous regions this use of the forest may, by necessity, be subservient to another use – that of watershed protection.”

*All figures quoted are from the U.S. Geological Society. Published figures vary among different sources.

This emphasis was reiterated in Alberta's 1977 *Eastern Slopes Policy*: "The highest priority is placed on watershed management to ensure a reliable supply of clean water for aquatic habitat and downstream users." Although the publicly debated policy was unilaterally revised by the government in 1984, the theoretical emphasis on source water protection remained, and to this day the policy remains Alberta's official guiding document for the Eastern Slopes.

Perhaps more surprising than this continued early recognition of the importance of source water protection is just how far Alberta moved away from this in the latter part of the twentieth century. "A century ago, we had a better understanding of this than we do today," says Bob Sandford, Canadian Chair of the United Nations "Water for Life" Decade. "When Jasper Forest was set aside and protected [as Jasper National Park], it was principally as an upland watershed. We appeared to know more then about the role of logging of upland watersheds in the hydrological cycles." On a more optimistic note, he adds, "We are finally coming around now to see water as more important than wood."

Indeed, a series of droughts in the province in the early years of the twenty-first century served to focus attention on just how much we had been taking our water supply for granted. The 2003 *Water for Life* strategy marked an official recognition of this growing appreciation. But although the strategy states that "our quality of life, and life itself, depends on having a healthy and sustainable water supply for the environment, for our communities and for our economic well-being," its focus on headwaters is weak.

The Alberta government's current Land-Use Framework (LUF) process has also helped to profile the importance of protecting water supplies and reflects the growing recognition that we need to



The Bighorn Wildland contains the headwaters of rivers that provide drinking water to communities like Rocky Mountain House and the city of Edmonton. PHOTO: V. PHARIS

make better choices about priorities for watershed management. The results of a broad survey of Albertans' attitudes to land management issues are published in the 2007 *Land-Use Framework Workbook Summary Report*. Findings include the following:

- 74.3 percent of participants believed that "at present, the balance between developing and using our land versus conservation of our land is too focused on economic development and growth."
- 73.1 percent of participants would be "willing to accept limits to Energy Development to provide for more Watershed Protection."
- 95 percent of respondents were "very concerned" or "somewhat concerned" about the "failure to consider the impacts upon the water supply during land-use planning."

The draft LUF reflects Albertans' concern: "Historically, watershed and recreation were deemed the priority uses of the Eastern Slopes. These priorities should be confirmed, and sooner rather

than later." But the LUF is Alberta's great unknown. Will the encouraging words and sentiments ever be translated into concrete action, or will they just be more paper in the stack of documents that become subverted to facilitate the business-as-usual mentality that led to the land-use problems we face today?

Multiple Use: Anything, Anywhere, Anytime

As with so many issues in Alberta, many of the problems associated with the state of our watersheds and headwaters have their roots in the "multiple use" philosophy, which has been pervasive for the past few decades. Watersheds have been the source of our water, but they have also been the source of so many other things. Watershed forests became the source of a burgeoning forestry industry, and cattle grazing replaced the long-gone bison herds but without the natural constraints on landscape impact. Coal development in the 1940s and 1950s was followed by oil and gas development. A growing provincial population – with more money in its pocket and more free time to spend it – increasingly sought out the mountains and foothills as recreation playgrounds. The province's exploding population of off-highway vehicle users followed the profusion of industrial roads, seismic lines, and pipelines into previously inaccessible areas, adding to the impact. And, of course, urban and rural sprawl continues to eat up valuable watershed land.

Individually, each of these activities

AWA'S VISION



For the well-being of all living things, Alberta has healthy, natural ecosystems in its river headwaters. There is plentiful clean water for all Albertans; province-wide awareness and stewardship of water as a precious, life-giving resource; and effective, ecosystem-based management of Alberta's watersheds, groundwater, river valleys, lakes, and wetlands.



“Those who would gamble with our natural resources believe that man’s needs for tap water are in competition with nature’s needs. I reject this notion. These needs are one and the same and should never be considered mutually exclusive.”
 (Outdoor writer David Sikes, 2003) PHOTO: N. DOUGLAS

has its impact on water quality and quantity: cumulatively, this effect becomes multiplied. And for many years, Alberta has had no planning authority with the mandate to decide exactly what our priorities are in our watersheds. Alberta Energy and the Energy Utilities Board have decided where oil and gas leases will be sold; the Forests Division of Sustainable Resource Development has decided where forestry activities will take place; and for many years, by default, off-highway vehicle users were allowed to go virtually anywhere.

The casualties of this unbridled development have been wilderness, water quality and quantity, and wildlife populations. Increasingly, wildlife and fish populations have had to squeeze into the space left over from our activities. Native fish populations have declined with increasing disturbance of rivers and waterways, and sensitive species such as grizzly bear continue to struggle. As Bob Sandford stated in an August 2008 interview with the *Rocky Mountain Outlook*, “Over large parts of the world we have begun to deny nature the water it needs to perpetuate biodiversity-based ecosystem processes that are every bit as important to our survival in the long-term as our immediate needs are in the short term.”

Clearcut forestry operations in particular have had a detrimental effect on water quality and quantity. Sandford points to the “crucial importance of protecting upland watersheds, which store and capture water for slow release.” Healthy forests act like a gigantic sponge. Rain falls onto trees and trickles down through the leaves and the branches. It lands on the ground vegetation and is filtered by mosses and soil microorganisms as it percolates into the ground. It can take this forest “sponge” days, weeks, or even months to filter water through the ground and slowly release it into creeks and rivers.

This is in notable contrast to recently clearcut areas of forest, where the rain hits the denuded ground and runs straight down toward the nearest creek, carrying debris and sediment with it. The water does not get the natural filtering of plants and soils, and it hits the rivers much more quickly. The upshot is that in wet periods, stream flow levels rise quickly, with an increased risk of flooding. Conversely, in dry periods, there is no forest “sponge” to release its water, so downstream water shortages become more likely. When the Detailed Forest Management Plan for Spray Lakes Sawmill’s Forest Management Agreement in Kananaskis Country and the Ghost was released in

2006, it included a study which found that clearcutting operations would have a minimal effect on total stream flow volumes. But it received much criticism for failing to mention what the effects would be on seasonal peaks and troughs of water flow.

Protecting Headwaters

The arrival of Ted Morton as Minister of Sustainable Resource Development (SRD) in 2007 seemed to signal a new appreciation of the value of Alberta’s forests for production of clean water. As incoming minister, Morton inherited a draft Management Plan for the C5 Forest Management Area, which runs from Waterton Lakes National Park north to Kananaskis Country. Unlike his predecessors, Morton appeared to take seriously the concerns about the plan’s emphasis on logging – concerns expressed by many, including CROWPAC. In a May 2006 letter to the *Pincher Creek Echo*, this multi-stakeholder advisory group, set up specifically to provide input on the plan, wrote: “Important issues such as fragmentation, connectivity and habitat patches have not been addressed in the Forest Management Plan or in some form of environmental assessment, nor have the cumulative effects been considered in the planning process.”

Morton decided to delay implementation of the draft plan until the completion of a report by the Oldman Watershed Council on the state of the Oldman Basin and asked his staff to revisit the plan “with an eye to shifting priorities to better consider environmental protection” (*Calgary Herald*, March 13, 2007). In a 2007 speech to the Alberta Fish and Game Association, he stated, “In the next several years, as long as I’m the Minister here, we’re going to be moving to a new approach where our Forest Management Plans don’t just allow for other uses, but that will be specifically designed to promote and protect the other uses.” As of October 2008, the draft Forest Management Plan has still not been approved, although the down side of this is that the forest continues to be managed under the old outdated logging-centred management regime.

Protecting headwater areas for production of clean water goes well beyond forested land. Scientists are just beginning to understand the importance



PHOTO: N. DOUGLAS

of native wildflower meadows in supplying clean water. In a September 2008 article in the *Casper Star-Tribune*, Rebecca Huntington writes, “When functioning properly, [meadows] capture moisture from rain and snowmelt and filter out sediment, thus preventing soil from washing down slope and, ultimately, downstream to cutthroat trout spawning beds. When too much sediment settles in the spawning gravel where native trout lay their eggs, the sediment suffocates the eggs and young fish fry.” Huntington quotes retired Forest Service ecologist Alma Winward: “Increasing organic matter by 5 percent on the ground can allow the meadows to hold seven times as much water per square foot.”

Less clear is the role that Alberta’s Eastern Slopes play in the recharge of groundwater, Alberta’s hidden but critical resource. If water is rushing off the land and into the rivers more quickly, then how is this affecting the rate at which groundwater supplies are recharging? We have a good idea in Alberta of how much water there is in our rivers; we have a relatively good sense of how much groundwater is being extracted. But our knowledge of groundwater supplies – how much water there is, where it comes from and where it goes, and how quickly it recharges – is still shockingly poor.

As Brad Stelfox, landscape planner with Forem Technologies, describes it, “We have a pretty good idea how many straws are in the milkshake, and how much they are sucking up. But we have no idea how big the milkshake is.” We can add to this the fact that we also have no idea how fast the milkshake is refilling, if at all.

What Can We Do?

According to Alberta Environment, Canadians use about 1,600 m³ of water per person per year. This is more than twice the average individual use in France, about three times that of Germany, four times that of Sweden, and almost eight times as much as the average Dane. We can certainly take steps as individuals to reduce our water consumption, but are individual water conservation actions enough?

At least as critical as personal initiatives is the need to protect Alberta’s headwaters: the source of our water. “We need to protect the most important headwater and terrestrial ecosystems that allow water to be captured and held,” says Sandford. More than just protecting the creeks and rivers themselves, this

also means protecting the land that is so intricately linked to the production of clean water. In the words of hydrologists Kevin Bladons and Uldis Silins, “In a sense, land, watershed and habitat are synonymous terms; you cannot manage one without simultaneously managing the others.”

For this reason, AWA continues to work toward full legislated protection of land throughout the Eastern Slopes. Ten of AWA’s Areas of Concern fall within the Eastern Slopes, and increased protection in these areas will serve a number of purposes, not least of which is the protection of the source of a supply of clean, abundant water.

“There is nothing more valuable than an intact, healthy watershed ecosystem,” says Mark Bennett of the Bow River Basin Council. “If we can’t address water issues in a place as wealthy as Alberta, where in the world can we?” 🍷

For details on AWA’s upcoming headwaters workshop, “Our Place in the Headwaters: Managing the Commons,” see p. 28.

Case History: New York City

Protecting forests around headwaters makes financial sense. In its 2004 report, *Conserving Forests to Protect Water*, the American Water Works Association states, “Protecting forests – which reduces erosion and sediment, improves water purity, and in some cases captures and stores water – is a cost-effective way to provide clean drinking water.” Increased forest cover in the watersheds actually results in decreased water treatment costs for communities: “For every 10 percent increase in forest cover in the source area (up to 60 percent forest cover) treatment and chemical costs decreased approximately 20 percent.”

The City of New York has taken this message seriously. New York receives its drinking water supply from surrounding watersheds, including those of the Catskill, Delaware, and Croton rivers. These watersheds supply 1.3 billion gallons of water per day to New York City (WWF/World Bank, *Running Pure: The Importance of Forest Protected Areas to Drinking Water*, 2003).

In the late 1990s, the City of New York was faced with enormous projected costs for constructing a new filtration plant: the proposed operating cost was US\$3-5 billion over 10 years, on top of a construction cost of US\$6-8 billion.

To their credit, city staff decided to look at alternatives. Rather than treating the dirty water that entered the city, they researched the financial costs of preventing that water from becoming dirty in the first place. They decided on a range of measures, including protecting the city’s watershed, acquiring the necessary land, designing and implementing management programs, and compensating forestry companies and dairy operators for any lost earnings.

The total projected costs for this preventive approach were US\$1-1.5 billion over 10 years – a fraction of the cost of the conventional, default approach.

The WWF/World Bank report cited above concludes: “Well managed natural forests almost always provide higher quality water, with less sediment and fewer pollutants, than water from other catchments.”



CONVERGING GLOBAL TRADE-OFFS – WATER, AGRICULTURE AND CITIES

By Bob Sandford

Our understanding of how water functions in natural and agricultural ecosystems is changing. Law makers and public policy scholars around the world are beginning to react to ground-breaking new scientific research that indicates that natural ecosystems may be far more important to our global economy than many of us may have appreciated. It has become increasingly clear that Canada's future economic success may well be defined by how well and productively it manages its water resources.

So much of what is important about where and how we live is defined by water. Research indicates that the world's remaining healthy, intact aquatic ecosystems very often function in seamless synergy with neighbouring terrestrial complexes to provide regulating services such as those that control rainwater capture, the storage of water in ecosystems, and the gradual release of the water that perpetuates stream flow throughout the year. New research also indicates that healthy aquatic ecosystems contribute far more than we ever understood to the production of water through the hydrological cycle and to the self-purifying power of healthy wetlands, lakes, and rivers. These functions are in turn the foundation of the primary production of the organisms that make life on Earth possible.

Nature Needs Water, Humanity Needs Nature

Together, primary production and soil formation are the basis of the biodiversity that is the foundation of the relative ecosystem stability that has defined our planet's atmospheric composition. Our atmospheric composition is in turn the foundation of the climate stability upon which our civilization has relied to sustain population growth and increasing economic prosperity. Natural ecosystem function is also the foundation of the

ecological diversity that makes both natural and agricultural food production for our growing populations possible. As we come to realize the importance of water's role in the stabilization of natural ecosystems, we begin to see the ways in which our numbers may be altering the very systems upon which we depend to sustain planetary conditions as we know them.

Currently, global human population growth is the highest in places where there is the least water. About 40 percent of the surface of the solid Earth receives so little precipitation that natural ecosystem function is limited by water availability. Thus we find that globally a third of humanity is now competing directly with nature for water. More water resource development, especially in semi-arid and arid regions of the globe, will lead to great damage to both freshwater and non-aquatic ecosystems, which will lead directly to the decline of our global life-support capacity and ultimately to diminishment of human well-being. That, however, is the direction in which we appear to be headed.

It is estimated that to meet the food demands that are projected to exist in the world in 2025, we will need to put an additional 2,000 km³ of water into irrigation. This amount is roughly equivalent to 24 times the average flow of the Nile. Given current water-use patterns, the population that is projected to exist on the planet in 2050 will require 3,800 km³ of water per year, which is close to all the freshwater that can presently be withdrawn on Earth. This would mean that the world would lose most of the important environmental services that aquatic ecosystems presently provide on our behalf. Clearly, that is just not going to happen. Something has to give.

We are also beginning to observe that rapidly expanding urban centres have begun to compete with agriculture for both land and water on a global basis. Agriculture has, in turn, begun to

compete with nature for land and water. We are increasingly concerned that we cannot meet both agricultural and urban needs while at the same time providing enough water to ensure the perpetuation of natural ecosystem function.

As a consequence of growing populations and increased competition for land and water, humanity is converging upon the need to make uncommonly difficult public policy trade-offs that have never had to be made on a global scale before. If we provide to nature the water it needs to perpetuate our planetary life-support system, then much of that water will have to come at the expense of agriculture, which means that many people will have to starve to meet ecosystem protection goals. If, on the other hand, we provide agriculture all the water it needs to have any hope of feeding the populations that are projected to exist even in 2025, then we must expect ongoing deterioration of the biodiversity-based ecosystem function that has generated Earth's conditions upon which our society depends both for its stability and sustainability. In any event, water in Canada will become more important to us and to the world.



"All the water that ever has been or ever will be is here now. It sits, it runs, it rises as mist. It evaporates and falls again as rain or snow. You cannot pollute a drop of water anywhere without eventually poisoning some distant place."
(Michael Furtman) PHOTO: J. HILDEBRAND

Canadians in Wonderland

To be useful to others, however, we have to get our own house in order. There are at least three major problem areas that need to be addressed in Canada if we are to achieve anything close to a level of sustainable water resource management that will allow us to help the world.

The first challenge we need to address relates to self-perception. We have to dispel the myth of limitless water abundance in Canada or we will continue to make public policy choices based on false assumptions that will have undesirable ecological, social, and political consequences in the future. Canada presently diverts more water per capita than any other nation in the world. We spend far too much time in this country worrying about water exports and not nearly enough time thinking about the damage caused by our own diversions. Before we even consider new approaches such as continental water markets, Canada should solve its own very serious problems associated with jurisdictional fragmentation, weak regulatory strictures, the absence of proper monitoring, and widespread aquatic ecosystem decline.

Then there is the matter of recognizing the actual extent of our water resources. We may have 20 percent of the world's freshwater resources, but much of that is water in the bank left after the last ice age. We have only 6.5 percent of the world's *renewable* water resources and most of that is found in the north. If the Americans want our water, or if we want more in the south, that is where we are going to have to go to get it, and that will be very, very expensive. The lesson here is that we have to be careful not to make ourselves vulnerable by making political decisions based on false assumptions about how much water we actually have. We have to solve our own problems first, before we satisfy the thirsts of others.

The second challenge we face relates to our own agricultural practices. Agricultural water use is becoming an issue globally because contemporary industrial-scale food production practices inevitably result in reduced return flows to nature, and much of the returned water is of poor quality, which diminished and often water-starved natural systems no longer have the capacity to purify. Without improving our agricultural practices, we will not be able to supply



PHOTO: R.V. RASMUSSEN – RAYSWEB.NET

water-scarce areas in the world with virtual water in the form of food.

The hard lesson we should learn from this is that modern agriculture is not sustainable on the scale or in the manner in which it is currently practiced. Until agriculture becomes sustainable and we find ways to release enough water to ensure the maintenance of the other important processes of ecosystem productivity upon which our survival equally depends, our civilization will not be sustainable either.

But it is not just the fact that agriculture takes water away from nature that should concern us. We cannot ignore the impact of our cities. Water resources management in the twenty-first century must consider what it takes to feed the millions crowded into urban centres like Toronto, Montreal, Calgary, and Vancouver.

Despite record cereal production globally, there is less food available and it costs more because a greater percentage of our annual cereal crop goes to feed livestock so that more people in the world can enjoy meat in their diet. There is also less food available because a disproportionate amount of some food crops such as corn are utilized not for food, but to make ethanol to power obscenely inefficient North American cars.

Whenever we look at the amount of water cities actually must have to perpetuate their overall function rather

than just what they use for drinking, cooking, bathing, sanitation, and lawn and garden needs, then the city assumes a completely different character in terms of real water use. To generate the concentrated wealth necessary for urban prosperity, cities often tear the guts out of surrounding natural environments.

Think of how we have been disciplined in our thinking to exempt cities from serious consideration in water management and matters of sustainability because they use only 8 or 10 or 12 percent of their total water allocations because so much of the water people use in cities is returned to the natural cycle after use. Clearly this is a very narrow way in which to view the profound influence cities have on regional, national, and continental water supply systems and on the ecosystems that ensure the reliable function of those systems.

It is impossible to think of what is happening to this country without thinking of the huge areas that have been converted to agriculture to feed our cities. But it is not just food that we take from rural areas. When I think of the city of Calgary, I cannot separate my image of it from what I have witnessed in central and northern B.C. and in the Fort McMurray area of Alberta, the areas where the energy, minerals, wood, and water come from that make spectacular urban consumption possible. What I am saying is that cities utilize and degrade



“Sunwapta Falls” 30x40 inches, acrylic ©B. ZHENG

a hell of a lot of water long before the rivers, lakes, or aquifers that supply them are squeezed out into the little streams that flow out of our taps. About the impacts of cities on their surroundings, contemporary public policy has little to say.

One of the reasons we do not connect the needs and appetites of our cities with larger environmental decline is that we think that because we can afford to engineer our way out of short-term water availability and quality issues, we are creating a sustainable water management future. There is no guarantee that this is so. We are not the world leaders in water resource management that we tell ourselves we are. We are not world leaders because we widely fail to accept the role that aquatic ecosystem health must ultimately play in sustainability. We have, over the last century, destroyed a great deal of our country’s natural aquatic ecosystem function and replaced it wherever possible or necessary with technology. Artificial technological replacements for natural and passively managed ecosystem function, however, invariably turn out to be expensive and inferior to ecosystem-provided goods and services.

We are in the process, nationally, of turning a Taj Mahal of diverse and highly productive natural ecosystem function into a tool shed of singular engineering purpose and function. We have yet to learn that there are things nature does

on our behalf that we don’t know how and can’t afford to do for ourselves. By destroying the Taj Mahal that is nature and moving our society into the tool shed of engineering solutions to water quality concerns, we fail to see that in the end there won’t be clean water anywhere except where we commit to water treatment. What we are effectively doing is putting nature and all of humanity on dialysis. This is something to which the next generation ought to strenuously object.

The third big challenge we face relates to governance. Every time I return to Canada from abroad I feel as though I have fallen back through a rabbit hole into a land of such utter market and money obsession as to make the people who live in it seem mad as hatters. In trying to confront well-identified future challenges such as sectoral and regional conflicts over shrinking water supplies, increased demand related to growth and development, climate change, and demands for water from new energy

“Water is a more important resource to the people of Alberta than oil or gas, and it’s becoming more crucial all the time.”

(Former Alberta Premier Peter Lougheed, July 21, 2004)

developments such as biofuels, we need to aim for far more than just market efficiency.

The Road Ahead

Before we embark on any significant water policy reform, we must ask ourselves some fundamental questions. What is our water policy really about? Is it about market efficiency? Is it about decentralization and local participation in water resource decision-making? Or is it about sustainability? Or should it be about all of these things together?

Global example warns us that achieving part of the goal is not enough. Creating markets and efficiency without achieving equity and sustainability changes the circumstances of water governance but does not solve the whole problem. It only creates new problems that are even more complicated to address.

What we need is a new Canadian water ethic that harmonizes federal and provincial water resource management aspirations. Under the aegis of that ethic we need to change our economic system to make true long-term sustainability possible.

Unlike so many other places in the world, we still have room to move in Canada in terms of how we manage our water resources. If we can balance the global water availability and quality needs of nature, agriculture, and our cities, everything else we need to do, including addressing climate change, may very well fall into line. Only then will we have something new and useful to share with the rest of the world. 🍷

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THE KAKWA, STILL WILD AND FREE

By Chris Wearmouth, AWA Conservation Specialist

Here in Calgary the word “wilderness” usually brings to mind the great peaks to the west – the wildflower meadows and thick forests, the chance encounter with a grizzly, and the sheer rock faces where only the hardiest survive.

But turn your gaze to the bottom of those mountains, to the valleys, canyons, and descending contours, and you find a subtler kind of wilderness – wild rivers. Ribbons of blue that plunge and weave through the landscape, giving life to myriad species and supplying water to the human inhabitants downstream from the rivers’ source waters.

One such wild river is the Kakwa, which emerges from the northern Rocky Mountains. Named after the Cree word for “porcupine,” the Kakwa runs more than 200 km from its source of Lake Kakwa in B.C. to where it joins the Smoky River in Alberta, just east of Highway 40. Along the way it drains an area of 3,475 km². Several waterfalls interrupt the steady flow of the Kakwa and its tributaries, the most impressive being Kakwa Falls near the provincial border, where the river plunges 30 metres over a large cave carved out by the constant spray.

The Kakwa River valley and adjacent uplands are recognized as being provincially significant under Alberta’s Environmental Significant Areas designation for containing critical habitat for grizzly bear and the mountain ecotype of woodland caribou. The river itself is home to bull trout, a species listed as “sensitive” in Alberta. As the river passes through four Natural Subregions – Subalpine, Upper and Lower Foothills, and Central Mixedwood – its uplands support a mixture of southerly species at the northern limit of their range and northern species at the southern limits of their range.

A satellite image of the Kakwa River gives a remote sense of its untamed nature as it snakes east from



MAP: AWACHRIS WEARMOUTH

its headwaters through a blanket of forest and meadows. What is also quickly apparent from such an image is the potential for the loss of the river’s wildness. At the eastern end of the Kakwa, a patchwork of cutblocks and oilfield roads surrounds its confluence with the Smoky River, looking like massing armies ready to march west to invade the large swaths of relatively untouched lands cradling the river.

The fight for protection of this wild waterway and its surrounding basin began at least four decades ago. In 1969 members of the Grande Prairie-based Wild Kakwa Society began lobbying for protection of the Kakwa area. In 1972 they presented the provincial government with a petition signed by more than 10,000 Albertans asking for the Kakwa’s protection. Canadian Wolf Defenders’ president and local artist Robert Guest wrote to Grande Prairie’s *Daily Herald-Tribune*, declaring that the Kakwa Falls “must be one of nature’s most spectacular displays. So much power! So much unchained beauty – still wild and free!”

In 1985, a parcel of the Kakwa area

surrounding the falls was given special designation as a Forest Land-Use Zone. Three years later, B.C. committed to protecting the headwaters of the Kakwa, creating a provincial park that now encompasses more than 1,700 km².

It took the Government of Alberta almost 10 years to provide a counterpart, establishing Kakwa Wildland Park over just 649 km², less than half of the size proposed originally by the Wild Kakwa Society. Downstream, the river and surrounding foothills were left without protection, a serious misstep for a province that has protected a mere 1.29 percent of its Foothills Natural Region.

Over the years, various groups have tried to garner support and recognition for the whole of the Kakwa River. During the Special Places 2000 process, the river was nominated by both Rocky Notnes of Hinton and Alison Dinwoodie, then-President of the Northwest Voyager Canoe and Kayak Club. In her nomination, Dinwoodie made note of the area’s significant wildlife habitat and the value of the river as a wilderness canoe route. Alberta Wilderness Association

has consistently promoted a much larger protected area than the one that currently exists in Alberta and has worked for protection of the Kakwa's entire length.

In recent years, Greater Kakwa, a group based in Grande Prairie, has been working toward having the river designated under the Canadian Heritage River System (CHRS), a federal program that recognizes the best examples of Canada's river heritage and works to conserve, protect, and promote them.

Neil Dobson, co-chair of Greater Kakwa, described the catalyst behind the group's formation: "It was the sudden realization that an area, once considered a wilderness, was being changed as increased human enterprise began to dominate the scene. It was the realization that without action, the quiet serenity of nature which many have enjoyed was likely to disappear" (*WLA* December 2001).

Ironically, it may be the very wildness of the Kakwa that will keep it from making the CHRS list. Under the present criteria for Heritage River status, a river must show outstanding natural, cultural, and recreational values. While the Kakwa scored relatively high for its natural character, under the Human History theme, it scored only 3.3 out of 100. Its remoteness has prevented extensive human use of the river in the past as defined by CHRS; it scored points only under the Human History subcomponents of traditional land use by First Nations people and evidence of Métis habitation. Similarly, strong points were given for water quality and recreation values such as sportfishing, but the river scored poorly on access and recreation facilities.

At the time the CHRS was established in 1984 (and one sees evidence that this is still true today), the pervasive mindset was that wilderness had merit only if it accommodated human use. As we are gaining insight into the value of wilderness for the ecological goods and services it provides, as well as for its own sake, it may be time to adjust the CHRS criteria or to develop a different program to recognize rivers such as the Kakwa for what they are – wild rivers where we may occasionally visit but whose worth exists outside our footprints or paddle strokes.

A current issue that could potentially affect the Kakwa River is the outbreak of mountain pine beetle in the area over the last few years. According to a

map produced by Alberta Sustainable Resource Development of the reported impacts of mountain pine beetle in 2007, the Kakwa area has seen a concentration of the beetle within the Wildland Park and beetle damage has been reported throughout its watershed. The loss of live trees in the river's watershed could result in increased water level and flow rate, with resulting impacts to the aquatic ecosystem.



One of the main attractions in the Kakwa Wildland Provincial Park, the spectacular Kakwa Falls plunge 30 metres over the erosion-resistant Cadomin Formation.

PHOTO: C. BRUUN

However, the mountain pine beetle attacks almost exclusively species of pine, leaving other trees and the forest understorey healthy. In essence, the forest remains, although the red needles and the bony grey fingers of the dying and dead trees can be quite shocking. But even the dead pine contribute to the cycle of the forest, offering potential homes to woodland creatures and contributing organic matter back to the soil. In dealing with the mountain pine beetle, it is important that we do not act rashly and, in our attempts to stem the spread of the

beetle (which seem to be primarily for forestry interests), that we do not cause more harm to the forest as a whole than this native "pest" is causing to just one genus.

The effects motorized recreation could be having on the river are a concern. Currently, much of the river's length on the Alberta side is surrounded by unregulated public land open to access by off-highway vehicles (OHVs). Even within the wildland, there are trails for both snowmobiles and OHVs to waterfalls and along the river. AWA's concerns include the possibilities of erosion, siltation, and disturbance to wildlife.

And finally there is the threat that human use of the water itself might become a potential cause for reduction in the river's ability to function. This summer, Alberta Environment issued an approval to Terroco Industries Ltd. to divert up to 40,000 m³ of water for the purpose of oilfield drilling. While the approval states that no more than 10 percent of the instantaneous flow can be diverted, further approvals of this nature could hamper the aquatic ecosystem as water availability becomes more important to the area's expanding petroleum industry.

Many of our greatest rivers, the ones history calls wild, have been dealt serious blows. The Bow is overallocated, the Athabasca possibly poisoned, the Peace regulated. Yet portions of them and their valleys remain wild and there are still rivers that have escaped relatively unscathed as we march firmly on in the name of development. The Kakwa is one that seems to stand on a precipice.

"Rivers and streams are an unfailing source of delight," writes B.C. naturalist E. C. Pielou in her book *Fresh Water*. "But even for those with no specific interest in them, the mere existence of rivers makes the world a more attractive and more interesting place; without them, we should be spiritually as well as materially deprived."

It is time Alberta took a proactive approach to protecting its remaining wild rivers, for the sake of their simple existence as well as for the joy we derive from their untamed waters. 🍂



TIME TO REVISIT THE *WATER ACT*

By Jason Unger

Certainty in the law is a good thing. Clarity in a law's application translates into clarity in government's implementation of the law. Alberta's *Water Act* aimed to provide water users with certainty when it was passed in 1996. This certainty, however, has only evolved in terms of water allocations. Protection of the aquatic environment, as another central mandate of the *Water Act*, has lacked this level of certainty.

This is not surprising considering the history of water use and law in Alberta. Aimed at attracting settlement and promoting the development of an agricultural economy, the predecessor legislation to the *Water Act* focused on providing certainty regarding water supply for those seeking its use. This was achieved by creating a water licence allocation system that provided people with a set priority to divert water, a priority based on the date the licence was issued. This system, commonly referred to as "first in time, first in right" (FIT FIR), was part of the *Water Resources Act* that governed water use in Alberta through much of the twentieth century. FIT FIR was adopted by its successor, the *Water Act*.

The FIT FIR system is primarily user driven. Applications arrive at the desk of an Alberta Environment Director, and the subsequent allocation decision might come with conditions as to when and where water is removed. The government might intervene where a user's priority is negatively impacted by activities of licencees with a lower priority.

The *Water Act* also enables the Director to consider environmental factors when making an allocation decision. The Director can refuse to grant a licence and can cease accepting applications for water allocations in a region for environmental reasons. This is currently the situation in the South Saskatchewan River Basin (SSRB), but this only occurred following a lengthy

water management planning process and long after ecological flows were undermined by unconstrained allocations.

The question arises as to whether the Director should have proactively curtailed allocations long ago instead of deferring to the user-driven allocation processes, which in this case resulted in a further limitation of options to protect ecological flows.

This lack of proactive protection of the aquatic environment is not limited to the allocation decisions. The *Water Act* also gives the government the ability to set "water conservation objectives" (WCOs), defined in the *Act* as "the amount and quality of water...necessary for the:

- (i) protection of a natural water body or its aquatic environment, ...
- (ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or
- (iii) management of fish or wildlife, and may include water necessary for the rate of flow of water or water level requirements."

These provisions of the *Water Act* appear relatively straightforward, yet current decisions about WCOs in the SSRB indicate that a WCO may undermine the ecological sustainability of a region by being set too low. In many other areas WCOs have yet to be set.

Similarly, the *Water Act* permits the government to hold back 10 percent of an allocated water licence when it is transferred, to return that allocation back to the environment. Again, this provision has not been consistently used, even in the over-allocated SSRB.

The *Water Act* also contemplates planning initiatives for protection of the aquatic environment in prescribing the creation of a "strategy for the protection of the aquatic environment." The *Water Act* invites the government while creating this strategy to consider the following:

- identification of criteria to determine the order in which classes of water bodies are to be dealt with,

- guidelines for establishing water conservation objectives,
- matters relating to the protection of biological diversity, and
- guidelines and mechanisms for implementing the strategy.

Unfortunately, the resulting strategy consisted only of motherhood statements and an enumeration of existing legislation and policy. A strategy that provides some certainty and substantive action remains elusive.

A unifying feature of these legislative provisions and how they have been inadequately implemented to protect the aquatic environment is that they rely on the government to exercise its discretion: that is, they are government driven. Unfortunately, the user-driven allocation process has vastly outpaced the government-driven process to protect the aquatic environment.

Further, the FIT FIR system, upheld by the *Water Act*, makes addressing this disparity difficult to overcome. In the SSRB, this would require undertaking drastic measures to restore instream flows. Under the current system, this may entail paying significant amounts of money to compensate for cancelled licences or to purchase instream allocations.

As a piece of legislation, the *Water Act* is effective in dealing with water allocations. It has been far less effective in protecting the aquatic environment, as it is plagued by a lack of clear administrative direction and lack of certainty in legislative provisions. The situation in the SSRB has made the need for legislative reform apparent. 🐾

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BEHIND THE OIL CURTAIN – ATHABASCA RIVER MONITORING AND TAR SANDS DEVELOPMENT

By Kevin Timoney

Current production of oil from the Athabasca tar sands is estimated at 1.1 million barrels/day (bpd) and is anticipated to reach 3 million bpd by 2020, and perhaps 5 million by 2030 (“Alberta’s Oil Sands,” Alberta Energy website 2008). As a result of tar sands development, 65,040 ha of boreal ecosystems alongside the Athabasca River now lie under a tar sands industrial footprint; the only well-studied tailings pond leaks 5.7 million litres/day; current production of tailings from all facilities is 1.8 billion litres/day; and the nation’s top four emitters of volatile organic compounds (VOCs) are tar sands facilities north of Fort McMurray (unpublished data).

Against this background, I discuss the inadequacy of ecosystem monitoring in the Athabasca tar sands region.

Decline in Alberta Government River Monitoring

In the 1970s, the Alberta government had a world-class water monitoring system. Government cutbacks swept through the system in the 1980s and 1990s as provincial politicians slashed monitoring budgets, closed laboratories, and fired technical staff. After press releases trumpeted the fiscal savings of the new “lean” government, managers were forced to contract private laboratories for most monitoring and analyses. Savings initially realized were consumed in increased per unit costs, which necessitated a steep decline in monitoring effort – a decline exacerbated by decreases in both quality controls and the government’s ability to oversee, analyze, and interpret ecological data.

The impact of privatizing a public responsibility is illustrated with eight commonly measured metal analytes from the lower Athabasca River region. (An analyte is a substance or chemical constituent determined through an analytical procedure.) For all eight analytes, monitoring effort was high in

the 1970s, declined in the 1980s, crashed to minimal monitoring in the 1990s, and had virtually stopped by the present decade (see Table 1). The sampling effort is slightly better for the sum total of observations for all 365 metal water-quality analytes (Table 1, bottom row), but the decline remains precipitous – an 82 percent decline in observations during the present decade relative to sampling effort in the 1970s. For most analytes, there are too few observations in recent decades for meaningful time series analyses. The decline in provincial monitoring effort for assessment of water quality is pervasive.

Since the mid-1990s, government has devolved most of its water quality monitoring in the lower Athabasca River region to an industrially controlled

consortium known as the Regional Aquatics Monitoring Program (RAMP). Industry also does its own monitoring. In the former case, the data are unavailable to the public. In the latter case, industry releases data to the public at its discretion. The net result is greatly reduced data availability for the public and the scientific community at a time of unprecedented tar sands development. The collapse of public water quality monitoring means that trend analyses for changes in concentration of analytes has become difficult or impossible.

The Failure of RAMP

Most environmental data in the region are gathered by RAMP. Raw data are available only to members of the consortium while the public is allowed

Table 1. Number of Alberta government observations by decade of metal water quality analytes for stations in the lower Athabasca River region.¹

Analyte	Decade (N Observations)			
	1970	1980	1990	2000 ²
Aluminum	925	418	0	0
Arsenic	816	544	51	16
Copper	859	591	18	0
Iron	969	662	31	0
Mercury	998	672	39	0
Manganese	987	575	1	4
Lead	968	716	85	0
Zinc	821	579	18	0
Total N	7343	4757	243	20
Mean N	917.9	594.6	30.4	2.5
All Metals N³	16772	9131	6342	3096
All Metals Mean N³	45.9	25.0	17.4	8.5

¹Alberta government data, current to December 2007

²Number of observations adjusted to decade for 2000-2007 data by multiplying N by 1.25

³All Metals N is the sum of observations for 365 metal water quality analytes

access only to vetted reports. A small amount of data is available to the public, gathered by a provincial government agency whose responsibility for monitoring has been largely supplanted by RAMP. A small amount of data is gathered by researchers independent of government or industry. The result is that tar sands industrial developments are proceeding without adequate scientific scrutiny.

A recent scientific review of RAMP raised concerns about the integrity of the RAMP program. The review concludes that “RAMP is not in a position to measure and assess development-related change locally or in a cumulative way.” There were “serious problems related to scientific leadership and a lack of integration and consistency across components with respect to approach, design, implementation, and analysis” (G. B. Ayles, M. Dubé, and D. Rosenberg, ‘*Scientific Peer Review of the Five Year Report [1997-2001]*,’ 2004, RAMP).

Based on my study of RAMP and its reports, I conclude the following about RAMP.

1. It is analytically weak.

- The statistical power to detect change is not addressed.
- The temporal baseline proscribed for change detection is too short (5-10 years).
- No effort is made to analyze relevant water quality and biological data.
- No empirical justification is provided for delineation of “reference” sites and “potentially influenced-oil sands sites.”
- There is a paucity of comparisons with relevant study sites both within and outside the region.
- References to the scientific literature are sparse; there is little or no context provided for the data.
- The study design is flawed.
- Graphics are often presented in a manner that obscures real patterns.
- Failure to present meaningful analyses of results often leaves the reader guessing as to significance. Often data are presented without context, comparison, or statistical testing.

2. It is biased.

The steering committee, which acts as the funding source, is dominated by the oil industry and provincial government with a vested interest in oil sands development.



Tar sands operations just metres from the Athabasca River north of Fort McMurray
PHOTO: C. WEARMOUTH

3. It is overly conservative.

There is a tendency to dismiss exceedences of wildlife contaminant and water and sediment quality guidelines as anomalous or inconclusive. The tendency to dismiss or downplay the significance of data that show industrial pollution is a consistent theme in RAMP reports.

4. It is subject to errors of fact.

RAMP’s 2005 Technical Report, for example, states that water withdrawals for oil sands operations in 2005 were 98.8 million m³, when the actual withdrawal was more than four times that amount.

5. It is inconsistent.

The composition of the monitoring team varies over time: continuity in monitoring personnel is critical for change studies. Moreover, continual changes in methods and means of presentation render the reports of limited utility. Often there are unacceptable data gaps. In 2006, there was no sampling of sediment quality, benthic (bottom-dwelling) invertebrate community, and fish tissues on the Athabasca River mainstem, and no sampling whatsoever in its delta (see RAMP’s 2006 Technical Report).

Reports funded and controlled by vested interests such as the Alberta government or industry do not attain the standard of impartiality and peer review required in matters of public and ecosystem health. Similarly, boards charged with overseeing or managing public environmental concerns, such as the Energy Resources Conservation

Board and the Cumulative Environmental Management Association, are hampered in their mandates by restrictive terms of reference and bureaucratic structures. The result is the *appearance* of monitoring and management of environmental concerns in the public interest. The *reality* is a lack of timely, publicly available information and the perpetuation of business as usual.

The fact that only vetted reports rather than raw data are available to the public calls into question the failure of RAMP to find statistically significant effects from industry. Rather than a serious scientific endeavour, RAMP acts as a firewall between the public and government-industry in that it shifts attention and responsibility for environmental management away from government. RAMP demonstrates that a fiduciary responsibility cannot be privatized.

The Political and Economic Context

Alignment of government, politicians, and industry to facilitate rapid exploitation and financial gain under the banner of sustainability is common. Wealth or the prospect of wealth generates power that is used to promote exploitation (D. Ludwig, et al., “Uncertainty, resource exploitation, and conservation: lessons from history,” *Science* 260: 17, 36, 1993).

At the same time, scientific understanding of the exploitation is hampered by lack of controls and



Athabasca River near Fort McKay

PHOTO: J. HILDEBRAND

replicates in these real-world ecosystem-level experiments, especially in cases such as the tar sands where the majority of data is privately held and collected within a poor study design. Given a scientific consensus that tar sands impacts are serious and require attention, it might be impossible to prevent irreversible harm. Many practices, such as irrigation in arid lands, continue in spite of scientific evidence that they are destructive (Ludwig et al.).

As of 2006, investment in the Alberta tar sands reached about \$14 billion. A barrel of oil reached US\$140 in June 2008. At a conservative price of \$100 per barrel, current production revenue approximates \$112 million dollars per day or roughly \$41 billion dollars per year. In his former role as federal environment minister, Stéphane Dion stated: "There is no environmental minister on Earth who can stop the oil from coming out of the sand because the money is too big" (C. Krauss, "In Canada's wilderness, measuring the cost of oil profits," *New York Times*, October 9, 2005). Thirty-four years ago, two prescient biologists wrote: "Present political attitudes and energy demands indicate that full-scale development of the Alberta oil sands will proceed at a rapid pace" (C. D. Schick, & K. R. Ambrock, *Waterfowl Investigations in*

the Athabasca Tar Sands Area, Canadian Wildlife Service, 1974).

The fact that erosion of tar sands geological deposits is a source of contaminants has been used by the Alberta government to deflect criticism of its environmental management. While the question of tar sands pollution is essentially a scientific one, the question has been politicized and polarized. The position of the Stelmach government on pollution from the tar sands industry has been and continues to be that there is none: "Alberta has been monitoring water quality in the oil sands area since the early 1970s and there have been no detectable changes in water quality in the Athabasca River and regional lakes due to oil sands mining" (K. Capstick, pers. comm., June 12, 2008).

As part of its new \$25-million campaign to brand Alberta tar sands oil production as "green," the government has stated: "Industry is prohibited from discharging untreated process water from oil sands projects into the Athabasca River.... Extensive testing has shown no signs of elevated risks for people living downstream from oil sands projects.... [The government] ensures a healthy environment.... Stringent testing has consistently shown there has been no increase in concentrations of contaminants as oil sands development has progressed.... The contaminant sources in the area are natural" (Government of Alberta, "Alberta's Oil Sands: Opportunity, Balance," 2008).

At the federal level, the Government of Canada has conducted little meaningful scientific research, monitoring, and enforcement. On the topic of Athabasca River pollution from tar sands activities, federal Environment Minister Baird has written, "No evidence of an offence has been found" and "No evidence of any deposit by a person of a deleterious substance has been found." In regard to leaching from tailings ponds, he wrote, "No evidence has been found that groundwater contamination from the Tar Sands tailings ponds is leaching into the river" and "Environment Canada has found no evidence that groundwater contamination and leaching from tar sands tailings ponds is occurring in contravention of the Fisheries Act" (Letter and enclosure in response to Environmental Petition No. 238 pursuant to section 22 of the Auditor General

Act, Environment Canada. Fax from the Office of the Auditor General of Canada, May 28, 2008).

No monitoring of migratory bird deaths, a federal responsibility, is conducted. The Department of Fisheries and Oceans has limited its involvement to the issuance of permits for the harmful alteration, disruption, or destruction of fish habitat.

Organizations tend to distort information to meet organizational needs (D. M. Bella, "Organizations and systematic distortion of information," *Journal of Professional Issues in Engineering* 113, 1987). The distortion does not require malice but simply an acceptance on the part of each functionary that responsibility involves solely the completion of one's assignments. Based on a study of organizational disasters, such as the crash of the space shuttle Challenger and the Chernobyl explosions, Bella concluded that modern organizations display two troubling systemic properties: (1) they develop complex technological systems of immense power and (2) they sustain widespread self-deception concerning the catastrophic risks of their activities.

Conclusions

Government lacks the capacity to monitor ecosystem change with sufficient rigour to fulfill its mandate of environmental protection. While the Alberta government's view that contamination of the Athabasca River derives solely from natural sources is a distortion of reality, it is predictable given the immense profits at stake.

The Alberta government has promised that nothing will get in the way of tar sands development. Decline in monitoring capacity coincident with unprecedented ecosystem perturbations is, of course, no coincidence. This is the new reality of life behind the Oil Curtain. What better way to maximize profit with a minimum of fuss? 🐾

Kevin Timoney is an ecologist who has studied and reported on ecosystems and ecological change in western Canada for the past 25 years.



IN SITU TAR SANDS EXTRACTION RISKS CONTAMINATING MASSIVE AQUIFERS

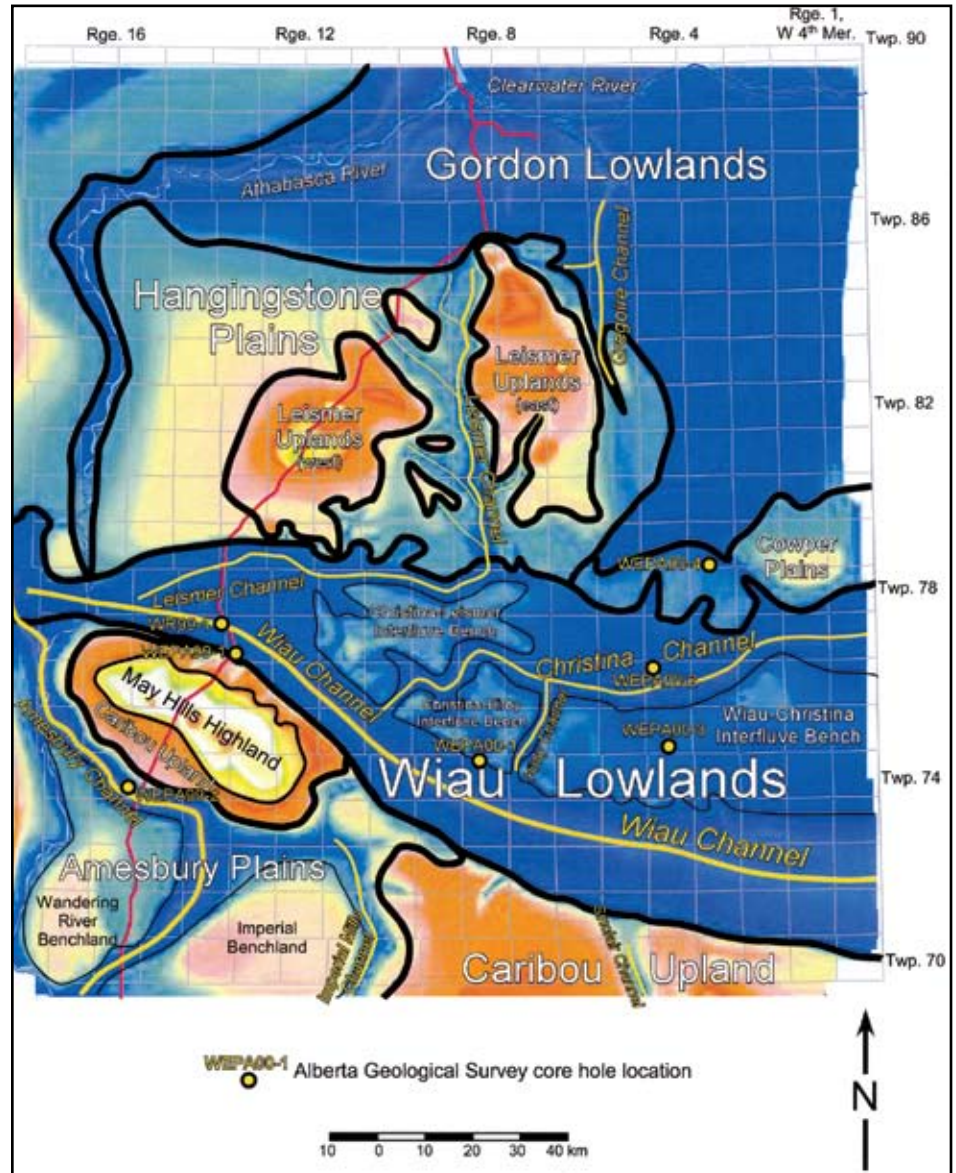
By Carolyn Campbell, AWA Conservation Specialist

Recent research has revealed significant risks to huge underground freshwater channels from tar sands activity north of Lac La Biche and Cold Lake. In this region, the bitumen resource is deep enough that underground extraction (in situ) techniques, often involving high-pressure steam, are used instead of surface strip mining. Given that accidental steam blowouts have already occurred in the region, the potential for pollution of Canada's largest freshwater aquifer is very real. Increased monitoring requirements are necessary now to manage these risks, and new oil sands project approvals in the region should be halted until these risks can be better understood.

Few Albertans are aware of the scale of this underground freshwater resource, located in a wide swath running 40 km north of Lac La Biche and 30 km north of Cold Lake. This aquifer network is generally 200 to 300 metres below the surface. It consists of thick sand and gravel layers, called the Empress Formation, through which groundwater slowly flows at rates of perhaps a hundred metres per year. The aquifer layers sit on shale bedrock valleys that predate the last glacial period.

In a 2003 report, Alberta Geological Survey (AGS) presented the most comprehensive information available on the Empress Formation, based on oil and gas well data, water well drilling data, and a few of its own core samples. However, the picture is still incomplete, particularly with respect to mapping the aquifer channels' connections to other shallower aquifers.

The largest single aquifer in the network is the Wiau Channel. While generally 200 or more metres underground, it connects directly to the Athabasca River where the river carves its way through the surrounding land about 60 km north of Wandering River. The volume of water discharging into



Key features 200 m below ground from the pre-glacial (pre-Quaternary) period. Yellow lines indicate aquifer channel bottoms. Fort McMurray is located at the confluence of the Clearwater and Athabasca rivers (top). The Saskatchewan border aligns with the right side of the diagram, and Cold Lake and Lac La Biche are just south of this region. SOURCE: ALBERTA GEOLOGICAL SURVEY, ESR 2002-03, FIG. 8 (MODIFIED)

the Athabasca River from the channel is on average 7,700 m³ per day, equivalent to 50,000 barrels per day. From the Wiau Channel's western limit at the Athabasca River, where it is 15 to 20 km wide, it has been mapped for 200 km east to the Saskatchewan border, where its width reaches 25 to 30 km.

Farther east, its limits, and connections to other Saskatchewan aquifers are completely unknown. The Wiau Channel is connected to smaller channels at the same depth: the Christina, Leismer, and Amesbury Channels.

Water chemistry analysis and core samples suggest that in this region



On a Steam Assisted Gravity Drainage (SAGD) project site, a single well pad has many well pairs to steam and pressurize the bitumen so that it may be pumped to the surface.

PHOTO: J. HILDEBRAND

there are likely many stacked layers of “younger” aquifers – shallower water-conveying sandy layers deposited by subsequent glacial activity – above the Empress Formation channels. According to the AGS report, “[H]ydraulic pathways and connections can conceivably extend from near surface to the bedrock.” As a result, human activity that affects shallower aquifer layers has the potential to affect the larger, deeper layers as well.

Based on analysis of the Wiau springs that flow from the Wiau Channel into the Athabasca River, as well as on groundwater monitoring wells at other points along the aquifer, the water quality in the underground channel is very good. Its pH is neutral compared to the somewhat more alkaline Athabasca River. The total dissolved solids (460 to 560 mg/L, depending on location) is only slightly higher than in the Athabasca River. Its temperature is about 6 degrees Celsius. One industry observer familiar with the aquifer has described it as “Perrier-quality water.”

Under the geological layer containing these aquifers lies the McMurray Formation of bitumen about 400 metres below the surface, the target of oil sands extraction activity. By far the most common bitumen extraction technique in the area is the Steam Assisted Gravity Drainage (SAGD) method. With SAGD, two parallel wells are drilled down to the bitumen zone and then curve to a

horizontal position one above the other. Quantities of steam are injected into the upper well, increasing both heat and pressure in that section of the bitumen formation. The McMurray formation is overlain with a layer of shale that will generally act as a cap to contain the pressure within the bitumen layer. The bitumen softens and flows, and is pumped to the surface via the lower production well.

Several SAGD projects overlap with the aquifers, each with hundreds of planned well pairs. CNRL’s Kirby Lake project is situated directly over the Wiau Channel, and parts of EnCana’s Christina Lake operation, Devon’s Jackfish project, and MEG Energy’s Christina Lake project overlie the Christina Channel. Petrobank (which uses a technique of fire combustion called Toe to Heel Air Injection, or THAI) and Statoil SAGD projects are in the vicinity of the Leismer Channel.

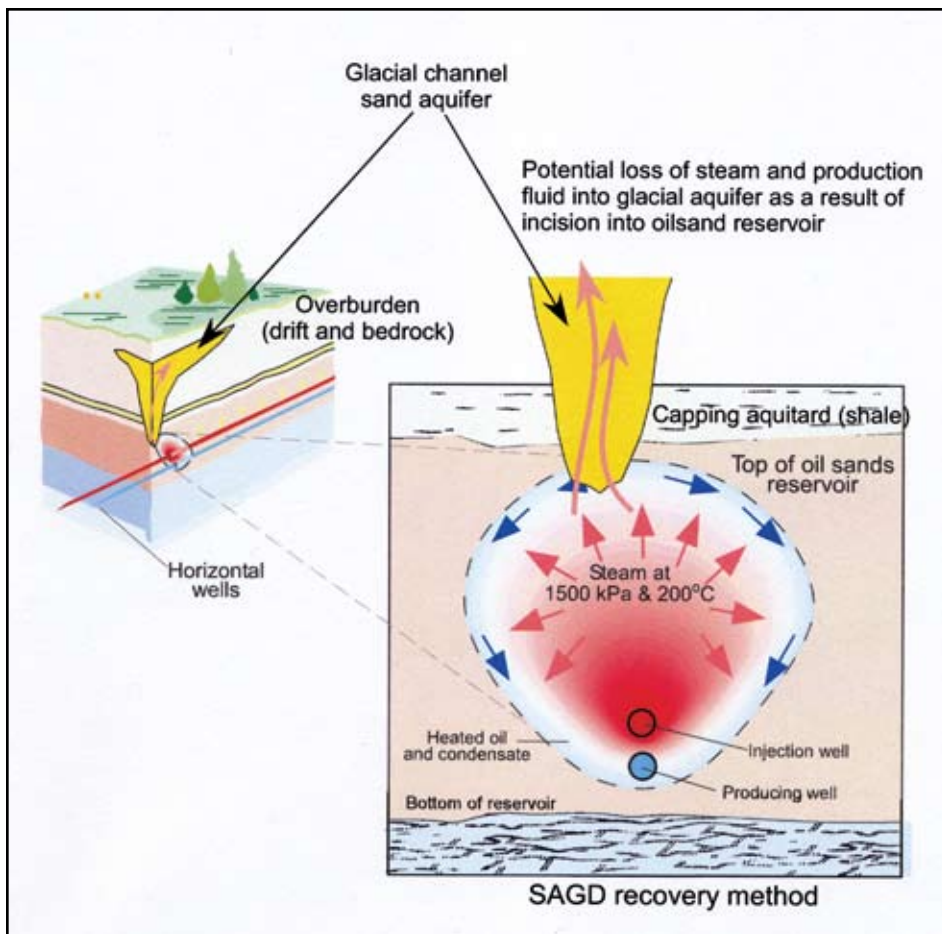
Rick Boucher is vice-president of the Métis Nation of Alberta Region One, whose territory lies above this aquifer network. He has become very concerned about potential risks to these freshwater aquifer channels from SAGD: “It’s just a matter of time before an accident causes injury or death, and pollution of this massive underground freshwater system.”

Boucher’s concern stems from research by Wallace King, the environmental advisor to the Métis

Nation of Alberta Region One. King is a career geologist in the oil patch and has identified several ways that the soft pressurized bitumen could contact the aquifer layers. The steam injection cycles cause recurring expansion and contraction in the bitumen layer, placing stress on the layers overhead. Any gaps or breaks in the shale cap will cause the pressurized bitumen to flow upwards into areas of lower pressure, including into the permeable aquifers. In the Christina Lake vicinity, the Christina Channel aquifer actually penetrates below the hard shale layer into a more permeable sandstone layer above the McMurray Formation. Thus there is potential for direct connection between bitumen and the fresh groundwater, as illustrated in the diagram shown from the AGS’s own report.

Another pathway that could connect the flowing bitumen to the aquifers is via the many abandoned wells in the area. Over the years, hundreds of exploratory and evaluation wells have been drilled through each of these aquifers and then through the shale cap layer into the McMurray Formation underneath. Regulatory requirements are for wells to be cased below aquifer depth and for cement plugs to be placed in old wells to seal them. However, King has identified many wells in this region with insufficient casing depth. Moreover, studies of well closures have revealed that a surprisingly high percentage of the seals degenerate and no longer plug the wells. King followed up his concerns with one of the companies operating in the area, who assured him that they were checking and resealing old wells on their leases. But he is still concerned about the gaps in the shale cap layer from wells that are not resealed.

Another risk is due to a particular geological instability of this region. Below the McMurray Formation is a deeper salt formation known as the Devonian evaporate or Devonian salt formation. Deeper groundwater in contact with this formation is causing it gradually to dissolve and collapse; the “front” of the collapsing zone is right below the Christina Channel portion of this aquifer network. Like a multi-storey building whose ground floor slowly caves in, the dissolving salt level introduces shifts and instability to the upper layers, including the shale cap layer above the McMurray



Potential connection between the aquifers and steam-pressurized bitumen from SAGD operations SOURCE: ALBERTA GEOLOGICAL SURVEY, ESR 2002-03, FIG. 52 (MODIFIED)

Formation. So even though companies operating here thoroughly mapped and monitored the formations prior to production start up, shifts can occur that make bitumen penetration into the aquifer layer possible.

Proof of this possibility occurred in May 2006 when a steam explosion occurred through a capping layer at a SAGD operation. This was in a different region, 60 km north of Fort McMurray, where the top of the bitumen layer is 60 to 70 metres below surface. Total E&P Canada, at its Joslyn operation, blew steam right up to ground level, spewing rocks and dirt over a 300 metre-wide circular swath created in the forest. The eruption lasted five minutes, no one was injured, and an operator shut down the well. In an incident report to the Energy and Utilities Board, Total explained that injection pressure was too high, creating a fracture at the depth of the injector, and that this anomaly was detected before the steam release. In future, they pledged to stop injection in a well if any anomaly was detected and reduce injection and circulation maximum pressures.

An accidental steam release at EnCana's Christina Lake project was fortunately blocked by the surrounding bitumen and sand. According to a June 2008 *Oilsands Review* article profiling the challenges of monitoring steam chambers, the steam was passing through a plastic monitoring well, which melted. EnCana's technical personnel interviewed for the article also stated that extensive monitoring of the steam chamber in the preproduction phase is very expensive; therefore, only rudimentary monitoring is done during the operational life of the project.

These examples demonstrate the need for the Energy Resources Conservation Board to insist upon stronger in situ operational procedures. Increased monitoring of steam pressure chambers during production and more vigilance on well materials under steam pressure are necessary. The bigger issue is the presence of so much in situ activity when the extent of these aquifers, their connections to other formations, and the sealing quality of the many historic wells is unknown. AWA recommends that new in situ operations not be approved until these risks can be better defined and reduced. 🍷



"Red Rock Canyon" 30x40 inches, acrylic ©B. ZHENG

Alberta's "Serengeti" under Threat

AWA has called upon the provincial government to hold a public inquiry into resource development on Caw Ridge, 20 km northwest of Grande Cache. In August, AWA wrote to Premier Stelmach requesting that he reactivate a process begun in 1999 that was to allow for the views of all parties interested in this significant wildlife habitat to be heard. The previous inquiry was deferred when Smoky River Coal, the leaseholder for Caw Ridge, went bankrupt.

This summer, current leaseholder Grande Cache Coal began exploratory work on its No. 16 Mine, which includes the ridge. The summer drilling program involved 16 new holes on Eagle Ridge, with the full plan calling for a total of 80 new drill holes and five km of spur roads over the term of exploration – much of this to happen along the northern slope of Caw Ridge.

Caw Ridge is home to one of the largest herds of mountain goats in the province. The area also provides habitat for moose, deer, wolves, and grizzly bears. Caw Ridge also bisects the migration route of the Redrock–Prairie Creek herd of caribou, a species listed as "threatened" under Alberta's *Wildlife Act*. Although this herd is currently listed as "stable," further development could jeopardize its security by impeding travel between its seasonal ranges.

According to Steeve Côté of Laval University, who has studied the ridge's mountain goats for more than two decades, the impacts of coal mining not only jeopardize caribou migration routes, but will also affect mountain goat and grizzly bear habitat. "Many of these effects will be irreversible, so Caw Ridge should be protected from all forms of industrial activities," says Côté.

AWA has requested that no new approvals be issued for current or future exploration or development projects until the inquiry is completed. As we go to print, there has been no reply from the Government of Alberta.

– *Chris Wearmouth*

Wetlands and Healthy Aquatic Ecosystems

After meeting for three years, the multi-stakeholder Wetland Policy Project Team of the Alberta Water Council presented its recommended wetland policy and implementation plan to the Council in June 2008. The Council forwarded these in mid-September 2008 to Alberta's Environment Minister as non-consensus recommendations. On the positive side, 23 of 25 sectors on Council supported recommendations for a policy to protect and conserve wetlands that would apply for the first time to Alberta's Green Zone (non-settled public lands). Currently, only the White Zone (settled private land) has a "protect and conserve wetland" regulatory policy. Public consultation feedback showed strong support for an even more stringent policy than what was forwarded on by Council, so there is a strong case for the Government of Alberta to move quickly to implement this overdue province-wide policy.

On the negative side, the process resulting in non-consensus was very disappointing. The two sectors withholding consensus are the oil and gas sector and the oil sands mining sector. In letters to Council written in late July 2008, they renounced two key pillars of the policy on which the Team had reached consensus a year earlier, prior to widespread public consultation on a proposed policy: a "no net loss" wetland policy and an Avoid-Minimize-Compensate framework applying to *all* proponents of projects affecting wetlands.

The implication of "non-consensus" recommendations from the Alberta Water Council is that lack of consensus can be cited to justify further delays in implementing a provincial wetland policy. Such delay is not in the interest of sensitive boreal wetlands slated for destruction or damage by tar sands projects. AWA and five other member organizations of the Alberta Environmental Network have called on the Government of Alberta to make a public statement by November 1, 2008 on its plan to implement the Alberta Water Council's recommended wetland policy.

– *Carolyn Campbell*

AWA Consulted on Industry Performance

From time to time, financial managers researching responsible investment possibilities contact AWA to ask us about the companies we work with throughout the province. They are interested in knowing more about today's industry leaders in terms of their performance, standards of practice, approaches to implementing new technology and research, and willingness to work with and support AWA in addressing issues of concern for wilderness landscapes, water, and wildlife.

To create a benchmark against which institutional investors could measure the performance of socially screened portfolios, Jantzi Research Inc. launched the Jantzi Social Index in 2000. The index is a socially screened, market capitalization-weighted common stock index consisting of 60 Canadian companies that pass a set of broadly based environmental, social, and governance rating criteria. Recently, Nancy Palardy, a senior analyst with Jantzi Research, came to Alberta to consult with a number of environmental non-government organizations, including AWA, about oil and gas companies of interest to the investment research firm.

When asked if investors concerned about social and environmental issues are making an impact on the market, Palardy replied in the affirmative and pointed to the significant growth that the field of socially responsible investment has experienced in recent years. According to the Social Investment Organization, the amount of assets using socially responsible guidelines grew from about \$65.4 billion to \$503.6 billion between 2004 and 2006. Along with this increase is a corresponding move toward more shareholder activism and direct engagement with companies.

– *Christyann Olson*

Milk River Management Society

After 25 years of involvement, AWA continues to participate, as a member of the Milk River Management Society, in formal stewardship of the Milk River Natural Area. This rolling grassland in

extreme southeastern Alberta contains a wide variety of habitats supporting hundreds of native species, some of which are endangered. Cliff Wallis represents AWA on this committee, working alongside representatives from the local county, the ranching community, Southern Alberta Group for the Environment, and provincial government agencies.

The decision to form the society and take out a lease for the area came out of the management planning process in the 1980s. As part of its mandate, the society is responsible for administering the grazing contract and long-term research monitoring, which has been ongoing since the early 1990s. This region is perhaps the longest continuously monitored grassland site in the province, at least in terms of biodiversity. This year, the society hired researchers to assess the ecological impacts of fire after a recent burn. The arrival of endangered mountain plovers after the burn in an area in which they had not previously been recorded shows the potential role fire can play in mixed grass ecosystems.

Researchers from the U.S. have also been attracted to the ungrazed spring wetlands on the site, and in the summer of 2008, conducted detailed biodiversity research in those unique habitats.

The Management Society has also installed traffic counters to establish current levels of vehicle usage. An old wellsite road gives vehicles access to the edge of the Milk River Canyon, leaving 80 percent of the Natural Area upland free of vehicle traffic. However, EnCana Corporation has developed a number of wells right next door, with gravel track access almost to the corner of the Natural Area. The Natural Area is currently unregulated with respect to vehicle use. The society is concerned that this could open the area to increased and undesirable use. Formally monitoring vehicle use will provide baseline information so that concerns can be expressed promptly if increases are detected.

The society generally meets twice a year and will continue to manage this area with maintenance of ecological integrity as a priority. Over the years, the local representatives have taken ownership, responding appropriately to threats to the area. Along with the Hay-

Zama Committee in the far northwest of the province, the Milk River Management Society is an excellent example of collaborative management of a protected area.

– Joyce Hildebrand

National Fish Habitat Coordinating Committee

In November 2006, the Canadian Environmental Network selected four environmental non-government organizations (ENGOS), including AWA, to participate in the ENGO-DFO National Fish Habitat Coordinating Committee along with representatives from the Department of Fisheries and Oceans (DFO). The committee grew out of an October 2006 ENGO-DFO workshop in Ottawa on habitat protection. Cliff Wallis, who took over as committee co-chair from Martha Kostuch, represents AWA and speaks for inland water issues.

The purpose of the committee is to coordinate cooperative activities between ENGOS and DFO to improve fish habitat management in Canada. The priorities for 2007-08 were to share information and provide recommendations to improve implementation of DFO's Habitat Management Program. The group will be meeting with the DFO deputy minister in October 2008 to discuss recommendations that emerged from last year's work. These recommendations are meant to improve the collaborative relationship between DFO and ENGOS, and to achieve better protection of fish and fish habitat. The NGOs on the committee have also been reviewing proposed changes to the *Fisheries Act* and making recommendations for improvements.

The committee is now organizing regional workshops, which are intended to identify priorities for fish habitat management and to work toward addressing broader issues that affect fish habitat, issues that extend beyond the mandate of the Habitat Branch of DFO. The workshop being planned for Alberta this fall/winter will aim to improve federal involvement in a number of projects. Issues to be addressed include environmental reviews and the permitting system.

– Joyce Hildebrand

Decision Pending on Disturbing the Peace

By the time you read this, the fate of one of Alberta's mightiest rivers may be sealed. During the week of September 22, a joint review panel representing the Canadian Environmental Assessment Agency (CEAA), the Natural Resources Conservation Board, and the Alberta Utilities Commission held the public hearing for Glacier Power's run-of-the-river project on the Peace River. Located two km upstream of the Dunvegan Historic Site, the project would entail an 11.4-metre-high weir across the width of the Peace River and the inundation of 106 to 215 hectares of upstream land for headpond formation (see *WLA* August 2008).

With the help of funding received from CEAA, AWA, as part of a coalition of conservation groups, reviewed the project and participated in the hearing. The coalition comprises AWA, Canadian Parks and Wilderness Society (Northern Alberta Chapter), South Peace Environmental Association, and the Peace Parklands Naturalists. On behalf of the coalition, Dave Mayhood of FWR Freshwater Research Ltd. presented evidence showing the possibility of the proposed project's adverse effects on the local fish populations, as well as its contribution to the cumulative impacts of development on the Peace River system. Dr. Michael Church of the UBC prepared a critique of Glacier Power's Environmental Impact Assessment and acted as an expert witness for the coalition on issues related to geomorphology, hydrology, and the Peace River's ice regime.

As we go to press, a final decision has not been made on the project. The panel must deliver a report to the federal Minister of the Environment within 90 days of the hearing's close. It is our hope that the panel will have the wisdom and foresight to protect this wilderness corridor, which is already under extreme pressure from development on surrounding lands and from upstream dams in B.C.

– Chris Wearmouth

HANGING OUR HOPES ON THE LUF

By Nigel Douglas, AWA Conservation Specialist

With the final version of Alberta's Land-Use Framework (LUF) due out in fall 2008, there has been a recent flurry of activity as the Alberta government's flagship land-planning process moves forward.

Considerable work is already underway, even before the final version of the LUF has been approved. A new MLA committee chaired by Evan Berger, MLA for Livingstone-Macleod, has been working since July 2008 to "assist the Alberta government with implementation of key priorities of Alberta's Land-use Framework."

Formation of Regional Advisory Councils for the first two of the LUF's six regions – the northeastern and southern regions – has already begun. Each of the six Regional Advisory Councils will be given just one year to produce a Regional Plan, which will go a long way to determine what land-use planning will look like in that region for the foreseeable future.

A crucial piece of the LUF jigsaw – and a piece that seems very ill-defined at present – is the terms of reference (ToR) under which each Regional Plan will be produced. These ToR, which will be produced in draft form by a government Cabinet committee, will determine exactly what land-use issues the Regional Advisory Councils will discuss. It is at the ToR level, then, that some of the major land-use choices will be made. If the ToR for the northeastern council, for example, determines that the priority for a certain area should be endangered caribou, then future activities in that region will only be allowed if they do not negatively impact caribou.

At least that is the theory. But it will not be until spring 2009, when the detailed legislative framework for the LUF first appears, that the rubber will really hit the road. Only then will we finally be able to tell if the LUF will have the necessary substance to deal with effects of the long-term lack of land-use planning in the province.



"End of the Trail" 24x48 inches, oil ©B. ZHENG

The world of the LUF is a very flexible one. As Ted Morton, Minister of Sustainable Resource Development (SRD), said last year, "The status quo is not an option." But many sectors that have done extremely well from the status quo will be lobbying hard to see that things do not change too much. Until now, the LUF process has been led by SRD. Unless it broadens considerably across government departments, there is a danger that we will see individual ministries withdrawing back into their own individual "silos" – the exact situation that led to the current problems the LUF is intended to address.

Although stakeholder groups have been meeting for two years to allow various interests (industry, local government, scientists, environmentalists, etc.) to stake their territories when it comes to future planning, ultimately the government governs not on behalf these stakeholders, but on behalf of the people of Alberta.

To investigate Albertans' attitudes to land-use planning, the government conducted two public surveys. The results of the 2008 public survey remain unreleased. The 2007 survey results, published in the *Land-Use Framework Workbook Summary Report*, contained some surprisingly strong responses from the Alberta public. For example,

- 74.3% of participants believed that "at present, the balance between

developing and using our land versus conservation of our land is too focused on economic development and growth";

- 70.2% of participants would be "willing to accept limits to Energy Development to provide for more Protected Areas";
- 71.5% of participants would be "willing to accept limits to Energy Development to provide for more Habitat Protection"; and
- 95% of participants were "concerned" or "very concerned" about the "failure to consider the combined (i.e. cumulative) effects of land-use activities."

The next opportunity for public input is likely to be when the draft terms of reference are produced for each of the six regional plans. The public will get a chance to comment on exactly which issues they believe need to be addressed in each region, starting with the northeast oil sands region.

It remains to be seen, of course, how far the LUF plan and legislation will go to incorporate Albertans' opinions, which the government is so assiduously collecting. Albertans will have to wait a little longer to see whether the much-vaunted LUF process will have the strength to deliver on its promise to "address the unprecedented pressures on Alberta's landscapes." 🌲



SAVING SUFFIELD

By Joyce Hildebrand, AWA Conservation Specialist

Ly ing in museum drawers around the world are the dusty skins, fins, and feathers of hundreds, perhaps thousands, of species whose living presence is gone forever. Martha lies among them.

On September 1, 1914, Martha, the last known passenger pigeon, died in the Cincinnati Zoo. Contrary to popular opinion, which blames her species' demise exclusively on over-hunting, the causes of the extinction are now believed to be multiple, including loss of habitat.

The question that faces Albertans and Canadians again and again is this: do we want Canada's rare and endangered prairie species to join Martha in those drawers? Most of us, I believe, would be horrified by that prospect, as we have been by the sight of oil-soaked birds in Alberta twice this year. And yet if the Joint Review Panel now examining EnCana's application to drill in the Suffield National Wildlife Area (NWA) decides in favour of development, extinction of the burrowing owl, the Ord's kangaroo rat, and more than 90 other species at risk in this wildlife refuge may be one project closer to reality.

It is widely recognized today that loss of habitat is the prime reason for the extinction of species, and native prairie is one of the most endangered habitats in the world. The Suffield NWA is one of the only remaining large tracts of relatively undisturbed native prairie left in Canada – it's no surprise, then, that the density of endangered species here is among the highest in the country. Suffield is one of their last remaining refuges – a fact recognized by the federal government when the NWA was officially declared in 2003.

The EnCana hearing, which begins October 6, is being held within the context of serious knowledge gaps regarding species at risk and the effects of oil and gas development on those species. In its 2008 Status Report, the Office of the Commissioner of the Environment and Sustainable Development stated

that the federal government has made "unsatisfactory progress" in developing a comprehensive inventory of species at risk and creating strategies for the recovery of those species at risk that have been identified.

What comes through clearly in many of the Suffield Hearing documents (www.ceaa.gc.ca) is the urgent need for more baseline information about the Suffield NWA and for a management plan for this protected area. As expressed in the *Wildlife Review Report #2*, prepared for the Joint Review Panel by Whidden Environmental Ltd. (August 2008), "It is not clear how any industrial development would contribute to protecting, maintaining and improving habitats vital for wildlife [the objective of all NWAs] when no direction, in the form of a management plan with specific details, exists for the Suffield NWA."

Meanwhile, several related stories have developed as we move toward the hearing. In early September the news leaked out, along with the oil, of the spill in CFB Suffield that killed between 300 and 500 birds. The day after the story hit the media, EnCana announced a \$1 million donation "to conserve and restore key wetlands in Alberta and northeast British Columbia." This apparent concern for wetlands contradicts EnCana's behaviour in Suffield, the very region where they have applied to increase their operations. In October 2005 EnCana drilled a well in a known wetland in Suffield. It took numerous requests from the Base and an ultimatum from Department of National Defence officials before, on the eve of DND's deadline, the company complied and withdrew from the wetland.

Another scenario is unfolding, this one in court. On September 18, 2008, EnCana appeared in Medicine Hat Court for the ninth time on charges related to installing a section of pipeline in the Suffield NWA without a permit, a violation of the *Canada Wildlife Act*. The company has pled not guilty, and on September 18, 2008 a trial date was set for April 20-24, 2009.

Among the interveners at the upcoming hearing is the Suffield Coalition, a collection of six conservation groups opposing EnCana's application: Alberta Wilderness Association, Federation of Alberta Naturalists, Nature Canada, Southern Alberta Group for the Environment, World Wildlife Fund, and Grasslands Naturalists. The Coalition is asking that no additional industrial activity be approved in the Suffield NWA. The objectives for all NWAs must be upheld in Suffield: to protect from disturbance "natural features integral to the site" and to prohibit "specific activities considered harmful to species and/or their habitats" (Environment Canada website). 🐾

View our new three-minute video about the Suffield National Wildlife Area and EnCana's proposal at www.AlbertaWilderness.ca and on YouTube. We also invite you to join the Facebook group "Get Big Oil & Gas Out of Suffield": <http://www.new.facebook.com/group.php?gid=79891185172>.

Have Your Say

The Suffield Coalition urges concerned members of the public to attend the hearings and to present their concerns to the Joint Review Panel at the hearings, which will take place in Calgary at 640 – 5 Ave. SW October 6-10, 14-18, and 22-24 (and possibly longer) and in Medicine Hat at the Medicine Hat Lodge on October 20. If time allows, even those who have not preregistered will be accommodated.

See www.ceaa.gc.ca or call AWA at (403) 283-2025 for more details. In addition, please consider writing to the Joint Review Panel, the Prime Minister, and the Environment Minister asking them to uphold the original goals of the Suffield National Wildlife Area.



'TIL DEATH DO US PART

By David McIntyre

We all know what we love and hold most dear. And those of us for whom wild spaces and enchanting spaces provide a constant lure know where to go. We (collectively the hiker, the hunter, the fisherman, the equestrian, the Sunday-walk-in-the-park stroller, the dirt biker, the ATVer) know *exactly* what we seek. And just as we know what we love, we all – well, almost all – agree that the province’s off-road abuses have seriously degraded the land we love. For some of us, this means that we’re living in constant retreat from the places that once filled our hearts with wonder.

Everyone who is in retreat knows where the problem occurs. Here in the headwaters of the Castle, Crowsnest and Oldman rivers, the problem grows wherever anything with wheels is allowed to go. And on a go-anywhere-everywhere landscape, there are no constraints. None. Well, maybe a few, but precious few people who want to push the limits feel these constraints apply to them. That’s why the abuses crisscross the landscape, parallel countless miles of legitimate roads, churn up drainages, and spin through subalpine meadows where wildflowers once grew.

There’s another strange phenomenon. Whenever an off-road abuser gets stranded in the “wilderness,” flips an ATV in a creek, or dies tragically in an off-trail, no-one-should-have-driven-there landscape, the media, with society in tow, report the incident, *never* the infraction.

What is sacred on the land and heritage landscape we love and cherish? Nothing.

Earlier this year, I climbed up an avalanche chute on Mount Tecumseh (on the north side of Crowsnest River valley), and entered an area harbouring an exceptional number of rare-in-Alberta plant species. Tree species found here include the limber pine, whitebark pine, the much rarer (in Alberta) western redcedar, and the *incredibly* rare western



Mount Tecumseh, in the Crowsnest River valley, is home to one of only a few populations of the rare mountain lady's slipper. Dirt bike and ATV abuses in this area are actively threatening this orchid population. PHOTO: D. MCINTYRE

white pine – only a handful of known individuals occur in the province. This same landscape is also home to what may be the province’s greatest concentration of pointed mariposa lily, and the province’s greatest known concentration of one of its rarest orchids – the mountain lady’s slipper (*Cypripedium montanum*).

This same area features existing and “legitimate” so-called “trails.” Many of these trails are actually blatant, vehicle-rutted, erosional features that have been cut through the landscape’s extremely rare western redcedar forest (the easternmost in Canada). Quite a few of these rare trees have been sacrificed to create these trails. What else has been destroyed in the creation of these trails (actually roads) through a largely undocumented floral community? No one knows.

But that’s not all. New “trails” are constantly expanding upon this footprint of destruction. Earlier this year, I discovered that dirt bikers (primarily) and ATV riders (secondarily) have expanded their previous, up-slope high-marking and are now destroying the very core of the mountain flank’s population of mountain lady’s slipper. What other

rare plants are being destroyed? No one knows.

Despite wanton landscape abuses, this area harbours surprising populations of other threatened species. During this same described trip, I saw a grizzly bear and watched as male blue grouse (dusky grouse) displayed in the shadows of limber and whitebark pine. I watched, too, as a golden eagle soared along the cliffs that, overhead, define the Palliser Formation, and knew that an active aerie was nearby.

After climbing past dirt-bike-excavated mountain lady’s slippers, I stood at the base of this imposing wall of Paleozoic rock. There, I suddenly heard the inevitable – a screaming engine. It was the diagnostic shriek of a soil-churning dirt bike. I listened as its varying pitch conveyed the obvious – the down-slope landscape was again under siege.

My hike to the flanks of Tecumseh Mountain defines only a tiny microcosm of the surrounding landscape’s ongoing destruction. Logic would suggest that the documented threat to this diverse and threatened wealth of species would compel that action be taken. But logic blows away in the wind.

The most defeating and depressing aspect of society’s ongoing and willful destruction of public lands and resources is the fact that nothing – *nothing at all* – appears to be deemed valuable enough for the Government of Alberta to step in and take action. Instead, it seems that a small segment of society with the will to destroy will be allowed to continue to destroy anything and everything in its path. 🍄

David McIntyre writes and photographs the land that he loves, working from his home on Rock Creek, in the shadow of the Livingstone Range. David has led hiking tours throughout the Canadian Rockies and raft trips and treks elsewhere in North America.

Beaverhill Lake – DUC Responds

Dear Editor,

Please consider this letter in response to “Paying Paul, Robbing Peter” (*WLA* August 2008), in which Mr. Dick Dekker proposes that the continued low water levels at Beaverhill Lake are due to the diversion of water by the wetland conservation efforts of Ducks Unlimited Canada (DUC).

A science-based conservation organization, DUC makes decisions on the best available information. The geomorphology of the watershed sub-basin surrounding Beaverhill Lake suggests it exists in a zone of aquifer discharge (where groundwater emerges from underground aquifers). As such, its water level is for the most part sustained by underground discharge, with only marginal influence from typical inflows from tributaries.

After considerable research and evaluation of potential causes of low water levels at Beaverhill Lake, we contend that the current status of the lake reflects drought-induced changes in groundwater aquifers that discharge into this basin. Wetland drainage and increases in water use throughout the watershed have exacerbated this effect through further depletion of groundwater aquifers.

DUC was instrumental in designating Beaverhill as a Wetland for Tomorrow in recognition of its significant value to waterfowl and other waterbirds, and we care deeply about its viability. DUC’s wetland restoration projects in the Beaver Hills area are an attempt to partially compensate for the persistent loss of wetland basins due to drainage. These restored wetlands provide important wildlife habitat and contribute positively to the health of this watershed through recharging groundwater resources, reducing soil erosion, and attenuating floods. Working with the agricultural community to develop practical water management solutions also ensures that such restorations are sustainable, as they provide economic benefits through increased forage production. Without such incentives, these areas become

undervalued, resulting in their continued loss. However, it should be recognized that we do not restore wetlands for pocket gopher control as suggested by Mr. Dekker.

DUC’s conservation projects in the Beaverhills watershed amount to less than 10 percent of the wetland area lost through drainage and other impacts. To single out these projects as part of the problem undermines the value of wetland conservation as an important component of integrated watershed management.

Estimates from our wetland inventories indicate that approximately 70 to 75 percent of the natural wetlands in the Beaver Hills sub-basin have been permanently lost. In particular, the more ephemeral seasonal and temporary wetlands, which function to recharge groundwater by holding surface water and slowly releasing it into underground aquifers, have been the most heavily impacted.

Beaverhill Lake has experienced similar drying events before, and provided the groundwater aquifer that feeds it can withstand current development pressure and eventually recover, it will likely undergo the wet-dry cycle again (this is the third drought in the past 125 years that resulted in similar water conditions here). One thing is certain: DUC’s efforts toward securing the remaining wetlands and restoring hydrology to drained ones in the Beaver Hills sub-basin will only increase the likelihood of the groundwater recharge that will be critical for this internationally significant wetland to flourish once again.

DUC supports a long-term watershed approach to conservation in the Beaverhill Lake area and will continue to work with community and stakeholder groups, as well as local landowners to enhance the watershed as a whole.

– Dave Kay

*Manager Provincial Operations, Alberta
Ducks Unlimited Canada*

Erring on the Side of Caution

Dear Editor,

Thank you for the wonderful June 2008 issue of the *Wild Lands Advocate*.

Unfortunately, the three excellent articles on mitigation, reclamation, and the Land-Use Framework triggered frustration in me – frustration that stems from many years of trying to minimize human intrusions into the Castle watershed and of reading the scientific literature on ecosystem complexity.

How can the concepts of restoration, mitigation, conservation, reclamation, compensation, and protection be applied usefully in managing our ecosystems? The public, scientists, and government policy-makers all have different understandings – and therefore applications – of these concepts. I was first confronted with the mitigation concept during the Oldman River Dam environmental assessment (post-construction), and I wondered then what it implied, particularly as we did not have an understanding of the basic functioning of the river ecosystem. Twenty years later, my confusion was borne out by Lorne Fitch’s excellent update about digging deep holes in the streambed specifically for trout (“Mitigation – Cosmetics or Compensation”). Similarly, Joyce Hildebrand’s article (“Reclamation Illusions in Oil Sands Country”) and the July 2008 issue of *Canadian Geographic* helped expose the empty promises behind any corrective management term with respect to the exploitation of Alberta’s tar sands.

We are faced with huge challenges. The human population continues to increase and our machines are now massive enough to transform entire landscapes into wastelands. What type of land and how much of it will we protect from human intrusion? How much and what type of land will we use minimally, moderately, or extensively? How lucky we are to still have these choices in Canada.

Fortunately we have sufficient foresight to challenge ourselves with the new province-wide Land-Use Framework. While we have had these frameworks in Alberta before, they were only regional in scope. Consideration of biodiversity must be central to this Land-Use Framework. Our very survival

depends on the flourishing of other species, whether we consider them useful or not. The services of ecological systems, which depend on biodiversity, are critical to the functioning of the earth's life-support system (R. Costanza et al., *Nature*, May 1997). Conversion of natural habitats into agricultural and industrial landscapes poses an immense threat to biodiversity (A.P. Dobson et al., *Science*, July 1997).

How will we decide how to use, or not use, our land, and who will make those decisions? I hope the decisions will be based in knowledge founded on science, remembering that the outcome of any scientific process is characterized by uncertainty. Nevertheless, the scientific process is the best form of knowledge we have.

Unfortunately, even the best source of knowledge is not good enough. Science lacks a robust theoretical basis for linking ecological diversity to ecosystem dynamics and, in turn, to ecosystem services underlying human well-being (S. Carpenter et al., *Science*, October 2006). Today's scientists are finding that the evolution of the biosphere is radically and ceaselessly creative in a way that cannot be predicted (see ucalgary.ca/ibi/kauffman).

In the face of incomplete knowledge and the unknowable, how do decision-makers make decisions for the long-term common good? This requires seeking the best available information from many informed sources, communicating this knowledge to the public, and refusing to hide the truth behind words like restoration, mitigation, conservation, reclamation, or protection.

Applying this to the Castle River watershed, for example, we must acknowledge that human intrusion into the area hinders the creative processes in the area. Like other species, we have the right to be there, but how big is our footprint? How much intrusion can the watershed's natural systems tolerate before their creativity declines? If we cannot predict this, then let us acknowledge our limitations, explain them, and apply the precautionary principle, which reminds us to err on the side of caution for our own long-term benefit.

– Klaus Jericho, Lethbridge



“Lake with Iceberg” 30x40 inches, acrylic ©B. ZHENG

In Search of Long-term Vision

Dear Editor,

The August 2008 issue of the *Wild Lands Advocate* focused on some of the many impacts that we as humans have on non-human nature, directly or indirectly. What is most troubling is that we continue to ignore the long-term consequences of these impacts.

Forty-six years ago, Rachel Carson's *Silent Spring* brought to public attention the true impact of pesticides and other toxic chemicals on the environment and on public health. Environmental scientists were aware of the problem, but Carson put it into a book that everyone could read so that they could understand the dire consequences of continued use of toxic chemicals, including their long-term effects on all forms of life.

Today, in the rush to meet the global demand for oil, oil sands mining is transforming the landscape of the Athabasca region of northeastern Alberta. The boreal forest, including its many wetlands, is disposed of in quick order as the industry digs deep to get to the oil-bearing sands. Perhaps the most threatening product of this industry is the lakes of toxic liquid, which are being produced at the rate of 1.8 billion litres a day.

We should not fool ourselves into believing that like some magic wand, science and technology will bring back the boreal forest. We should not fool

ourselves that the lakes of toxic waste will become lakes of clean water. The reclamation efforts by the industry, after 41 years of development, have been certified to be one km² of land. This represents only about 0.2 percent of the land disturbed by oil sands mining (by the end of 2007, this was more than 470 km²). So far the industry has not proven that it can reclaim either the land it mines or the water it deposits into the toxic lakes (see Pembina Institute's *Fact or Fiction: Oil Sands Reclamation*, oilsandswatch.org). The long-term effects of this on all life forms in the area can only be catastrophic. This was demonstrated in April 2008 when 500 waterfowl died after landing on a tailings pond, an event reported around the world.

Forty-six years after *Silent Spring*, we find ourselves in the position of being aware of these problems, yet oil sands production continues, with the industry not being held accountable. It seems almost unthinkable that in the midst of an economic boom in Alberta, we would ask the Governments of Canada and Alberta to suspend further development of the oil sands until such time as the industry can prove itself capable of total reclamation. But we owe it not just to ourselves, but to future generations, to do just that.

– Michael McKee, Calgary

DIANE AND MIKE McIVOR – DOUBLE DEFENDERS OF WILDERNESS

By Andy Marshall

Active conservationists for four decades, Diane and Mike McIvor continue to perform their unwavering duet to protect the region around Banff and the Bow Corridor that they love so dearly.

On their first date skating on Vermilion Lake and even when they were married in 1969, they had little idea of the consuming commitment they were making to tackle the forces they believe undermine the area's values. "We were interested in nature. We never thought of ourselves as conservationists," says Diane.

But Parks Canada master plan hearings, growing pressure for major road construction and commercial development in the park, and, later, a Lake Louise ski resort proposal drew them into a process still absorbing the couple today. Since then, "it's been one big battle after another," says Mike, "but it's always been a joint effort." Now in their sixties, they speak enthusiastically of their campaigns, each sharing their views – Diane with her pleasant French-Canadian lilt and the white-bearded Mike with his clear, emphatic tones.

Inspired by Aileen Harmon from Banff, they've been dedicated members of the Bow Valley Naturalists since the late 1960s, with Mike serving several terms as president. Mike was also a Federation of Alberta Naturalists director for many years, including two terms as president, and an Alberta Wilderness Association director for 13 years.

Together they've conducted many bird and amphibian surveys in the Bow Valley. During the Banff Bow Valley Study in the mid-1990s, Mike chaired a community environmental committee and took a similar role with the provincial Bow Valley Special Places program. He also participated in several advisory committees for Banff National Park. To recognize their conservationist efforts, the Canadian Parks and Wilderness Association presented them in 2000 with the J. B. Harkin Conservation Award, named after Canada's first commissioner of national parks.



Diane and Mike McIvor

PHOTO: A. MARSHALL

While Mike has played the "front man," speaking with the media and making the public presentations, Diane has been at his side, prodding him on. "I'm a rabble-rouser," she says, smiling, "but standing up and expressing myself in front of many people, I don't like it." That hasn't stopped her from being French-language spokesperson for AWA, though. Because of their long-standing partnership in the conservation cause, it's fitting that they will be honoured jointly with a 2008 AWA Wilderness Defenders Award – the first time this has happened in the prestigious award's history.

The required combativeness may have come easier for Diane, born in La Sarre in northern Quebec, one of nine children. With her father the town's mayor and with so many siblings, she became used to heated debates around the supper table. Summer camps in Ontario taught her a love of the wilderness, and, right after graduation, she came out west to work at the park gates. A subsequent job at the Banff School of Fine Arts (now the Banff Centre) brought her into contact with Mike, who worked there for 30 years, many of them as grounds foreman.

Mike, born in Vancouver and raised and educated in Victoria, enjoyed a loving but more sedate upbringing. His

degree in English from the University of Victoria certainly reflected his interest in the power of language and likely helped in his subsequent writing and public speaking. But, he acknowledges, his role as an active conservation spokesman "was not something I did with comfort."

He credits Diane and her French-Canadian background for helping open his eyes and for prompting him to ask more questions on a whole range of topics. They made a conscious decision not to have children. "Our lives with the two of us have been very full," he says with understatement.

As those in conservationism know, success against powerful economic forces is hard to measure. Their consolation, says Diane, is their belief that things would have been a lot worse without their efforts. But there were some victories. Even though it took 24 years, protection of land around Mount Yamnuska is attributable to their unshakeable resolve.

"If you think something is going to happen overnight, you'd better do other things," says Mike, aware of the despair that can afflict those trying to make a difference. "We get pretty annoyed at losing some battles, but we somehow move on." Their target hasn't been so much the development interests, but rather Parks Canada, whenever it lacks the backbone to support its protection and preservation mandate. The Association for Mountain Parks Protection and Enjoyment, a tourism industry lobby group with a pristine-sounding name, has also been a thorn in their side.

Diane and Mike realize that they, and others following them, must stick to the conservationist mantra: "Endless pressure, endlessly applied." The McIvors have certainly done their part. 🍷

Mike McIvor will be AWA's annual lecturer at the Martha Kostuch Annual Wilderness and Wildlife Lecture on November 14. Please join us for "Return Trip: At Home and Away." Details on back cover.

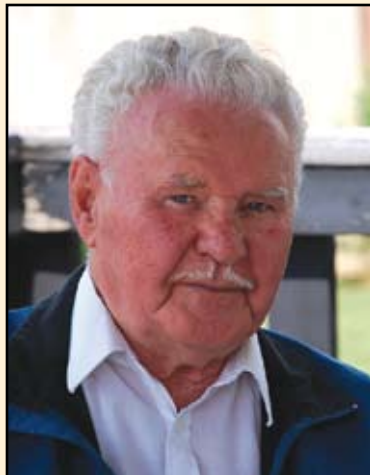


PHOTO: A. MORASCH

IN MEMORIAM

Melvin Percy Dunford (born February 13, 1924), beloved husband of Joanne Mary (MacQuarrie), died at home on August 14, 2008. Born in Creighton, Saskatchewan, Mel knew and loved the prairies, and the mountains of the Crowsnest Pass will always be his backyard. He had a passion for hiking, fishing, and huckleberries. His life was filled with the joys of family and his love for and devotion to Joanne, his wife of 64 years. Mel was a strong member of his community, generously volunteering and providing service to others. For years

a volunteer driver with the Canadian Cancer Society, in more recent years he regularly contributed time and energy to the work of Alberta Wilderness Association. AWA staff and volunteers enjoyed his weekly visits to the office – always cause for a break and a chat. Mel will be missed by all who knew him. His family chose to have friends make donations to AWA as a lasting tribute to a man who made a difference and leaves a legacy of tenacity, devotion, and a love for the wild.

HEADWATERS WORKSHOP

Alberta Wilderness Association, the Bow River Basin Council, and Water Matters are holding a workshop in Cochrane on November 5 and 6 entitled “Our Place in the Headwaters: Managing the Commons.” This event is targeted at decision makers and advisors on water and land use in the western reaches of the North and South Saskatchewan watersheds. The workshop will examine how human activity affects surface-groundwater interactions and flows in the headwaters, and will explore management options. A Legacy Committee will follow up on key ideas and actions arising from the workshop.

This event is by invitation only. For more information, contact Carolyn Campbell, AWA conservation specialist, at awa.cc@shaw.ca, 1-866-313-0713 or (403) 283-2025.



PHOTO: J. HILDEBRAND

TUESDAY TALKS

The fall 2008 Tuesday Talks series began with a focus on the Suffield National Wildlife Area, followed by an opportunity for Edmonton residents to learn about the potential impacts of in situ oil sands development on Alberta’s water and wilderness.

But if you missed our opening talks, don’t worry – there are many more opportunities before Christmas to join us for engaging evenings filled with images, discussion, and friends new and old.

Note: Because the 2007/08 season was so successful, AWA’s Tuesday Talks have spilled over onto other weeknights.

Pre-registration is advised for all talks.

Phone: (403) 283-2025

Toll-free: 1-866-313-0713

Online: www.AlbertaWilderness.ca

Monday, November 10

The Tar Sands – A North American Time Bomb

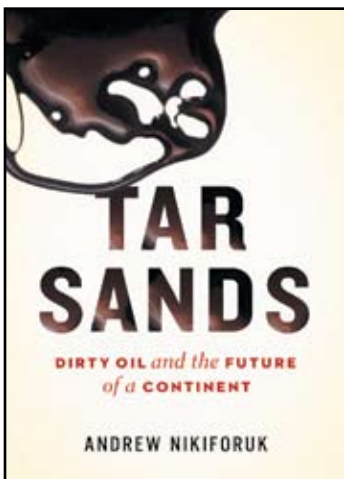
With Andrew Nikiforuk

AWA Office, 455 – 12 St. NW, Calgary

7:00 – 8:30 p.m.

\$5 adults; \$1 children

Join Andrew Nikiforuk for a discussion of his latest book, hot off the press. *Tar Sands: Dirty Oil and the Future of a Continent* will be available for sale and signing, just six weeks before Christmas!



Tuesday, November 25

How the Beaver Battled Drought – And Won!

With Dr. Glynnis Hood

AWA Office, 455 – 12 St. NW, Calgary

7:00 – 8:30 p.m.

\$5 adults; \$1 children

With the increased loss of Alberta's wetlands due to climate change and development, beavers might be helping our wetlands more than we think. Learn about recent research on the role of beavers in mitigating the effects of drought in Alberta.



PHOTO: G. HOOD



PHOTO: WAYNE LYNCH

“The Spruce Kingdom: Life in the Boreal Forest”

&

“The Beauty and Biology of the Prairie Grasslands”

Tuesday, October 28 • 7:00 – 9:30 p.m.

With Dr. Wayne Lynch

John Dutton Theatre, W.R. Castell Public Library, Calgary

AWA Members: \$15.00 • Non-members: \$20.00

Don't miss this opportunity to spend an evening with Canada's most published photographer and natural history writer. In this double-header presentation, Dr. Wayne Lynch will share images and stories from his two favourite Canadian landscapes, the boreal forest and the grasslands.

All proceeds will support AWA's work in Alberta's grassland and boreal landscapes.

Tuesday, December 2

Beautiful Bighorn – Still Unprotected

With Vivian Pharis & Chris Wearmouth

Red Deer Public Library, Red Deer

6:30 – 8:00 p.m.

\$5 adults; \$1 children

Vivian and Chris will take you on a visual journey through some of the most remote parts of this vast wilderness, the source of most of the city of Red Deer's water and still unprotected after 30 years of pressure.



PHOTO: C. WONG

Tuesday, December 9

Birds, Bears, Beetles & Blister Rust

With Cyndi Smith

AWA Office, 455 – 12 St. NW, Calgary

7:00 – 8:30 p.m.

\$5 adults; \$1 children

Discover the fascinating connections among the “Four Bs” and two of Alberta's endangered conifer species, the whitebark pine and limber pine.

HIKING WILD ALBERTA WITH AWA – 2008



PHOTO: C. WEARMOUTH

“Two things are by my door, always ready to go – my backpack and my camera,” says Michael McKee, the man behind the images in this year’s photographic review of AWA’s Hikes Program. McKee joined us on every day hike this summer, capturing the wild spaces of Alberta and those of us lucky enough to experience these landscapes and learn, alongside him, from our many knowledgeable and passionate leaders.

Through his photographs, McKee strives to share his passion for the beauty of wilderness places with others. “Every hike is an adventure, with the excitement of experiencing wilderness and learning more about it with others. Each hike brings home an awareness of just how fragile wilderness is, and the urgent need for us to do more to protect it.



Rob Barratt leads the charge as hikers and their canine companions traverse a sculpted ridge in Dry Island Buffalo Jump Provincial Park.



An impressive old snag stands sentinel over the trail that leads up the slopes of Beehive Mountain.



Having left the montane to climb Sheep Mountain in Ya Ha Tinda, William Davies explains where and why hikers will find different tree species along the hike.



The view from the top of Black Rock Mountain, looking east over the foothills of the Ghost area, makes the long climb worthwhile.



Potentilla adorns the slopes of Plateau Mountain in southwestern Alberta.



The upper portion of the two-part Bighorn Falls, which cascade to the bottom of a surprising rock cliff canyon cut into the mountain prairie of Ya Ha Tinda



The cycle of natural disturbance is easily apparent on the Beehive as fireweed grows up to surround a charred stump, possibly a remnant from the extensive wildfires of the 1930s along the Eastern Slopes.



While prickly pear cacti were abundant, this was the only one seen in bloom as we rambled through the badlands of Dry Island Buffalo Jump Provincial Park.



During an AWA field day, Reg Ernst (in white cap) points out the evidence of blister rust (inset) on a whitebark pine on Prairie Bluff in the Castle area.



WILD ALBERTA – A YEAR IN REVIEW

Every fall, Alberta Wilderness Association pauses to take a deep breath and to reflect on the past year.



PHOTO: C. OLSON

- We celebrate the enduring commitment of one or more wilderness champions in Alberta with the Wilderness Defenders Awards.
- We challenge ourselves with new ideas in our Martha Kostuch Annual Wilderness and Wildlife Lecture.
- We hold our Annual General Meeting and review the past year.

We invite you to join us this year for the
AWARDS PRESENTATION AND ANNUAL LECTURE
Friday, November 14, 2008

ALBERTA WILDERNESS DEFENDERS AWARDS

In recognition of their outstanding conservation achievements, AWA is pleased to present the 2008 Wilderness Defenders Awards to Dave Sheppard and Diane and Mike McIvor. Their love of Alberta's wild lands and their persistence in defending them have inspired countless Albertans to take an active role in conservation.

MARTHA KOSTUCH ANNUAL WILDERNESS AND WILDLIFE LECTURE

Return Trip: At Home and Away in Wilderness

Mike McIvor, who has dedicated many years of his life to advocating for wilderness in Alberta, will explore how we can connect with new generations of potential advocates for wilderness and how we can export lessons learned from being in wilderness to the larger society, which needs them desperately.

Location: 455 – 12 St. NW, Calgary

Wine & Cheese Reception: 6:00 p.m. • Lecture and Awards: 7:00 p.m. • Cost: \$25

Reservations: (403) 283-2025 or 1-866-313-0713 • Online: www.AlbertaWilderness.ca

AWA ANNUAL GENERAL MEETING

Saturday, November 15, 2008

Time: 10:30 a.m. • Location: 455 – 12 St. NW, Calgary

Registration: 1-866-313-0713 or (403) 283-2025

Return Undeliverable Canadian Addresses to:



Alberta Wilderness Association

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