

Memorable McClelland Lake Wetlands



By Carolyn Campbell, AWA Conservation Specialist

Growing up in Calgary, my sense of Alberta was mountains, foothills, and prairie. I knew there was a northern boreal area somewhere beyond Edmonton. Once, in Grade 10, I briefly visited northern Alberta in winter thanks to the good people from Chevron's Calgary office who had mentored me and other teens in a Junior Achievement company. That was during the boom-time era of the late 1970s when, as high school students, we were flown up on a company plane on a grey snowy day and shown an oil well drilling facility. It was eye-opening to see that side of the energy industry but I still hadn't any sense of northern forests, wetlands, wildlife, or long-term indigenous residents. As a third-generation Albertan, I had no concept of the two-thirds of Alberta that is boreal forest.

That soon changed when I began working for Alberta Wilderness Association on our northeast Alberta areas of concern. As I think now of all my memorable AWA boreal trips, a standout was in the late summer of 2008 when I went paddling and hiking with three other people in and around the magnificent McClelland Lake wetland complex.

McClelland Lake is situated just east of the Athabasca River, about 90 kilometres north of Fort McMurray. The Lake is an integral part of a unique system of wetlands, the McClelland Lake Wetland Complex. The area's ecological significance is due both to its important wildlife habitat and its biophysical features, which include rare sinkhole lakes and a large, spectac-

ular 'patterned fen' that makes up part of the wetland complex (a fen is a peat wetland fed by groundwater). Then, as now, the biggest threat to the McClelland Lake Wetland Complex is from the Fort Hills oil sands mine. The key difference though is what was a proposal then is a reality now. I needed to get to know this area.

Three of us, Chris, George, and I arrived in Fort McMurray in late August 2008. The forecast was for rain, and Saturday morning was indeed quite rainy, but we headed off optimistically. Our guide was a paddler from Fort McMurray who had previously explored the McClelland area.

He provided transport, two canoes, skillful navigation on land and water, and camp gear to supplement our own. I will be forever grateful to him for so generously sharing his time and resources with us.

We drove north on the highway following the route of the Athabasca River valley, past the mine pits and tailing ponds of the oldest tar sands operations. I hadn't realized how near the surface the bitumen could be. We stopped at an exposed deposit by the roadside, where I easily picked up a chunk of bitumen sands; it has since been inspected by a Texas climate change conference audience and Calgary elemen-



We set up camp beside one of the 12 lovely, rare circular sinkhole lakes in the McClelland watershed.
PHOTO: © C. CAMPBELL



We paddled into the edge of the McClelland patterned fen. Groundwater flows over the 8,000 years since the last glaciation created upland 'flark' ridges that support small trees, separated by 'string' pools rich in aquatic vegetation. PHOTO: © C. WEARMOUTH

tary school kids. The roads exposed fine sands beneath a fairly thin layer of vegetation and shallow soil. We continued north beyond the pavement on the sandy road that is the winter road to Fort Chipewyan. Each winter this road is traditionally iced to make a solid surface for vehicle travel. Then we turned off that road and headed through a myriad of exploration and forestry roads.

As the rain continued to fall, our guide jokingly told us he realized he had forgotten to bring "quadder currency." This was six packs of beer: very helpful if we got stuck on any trails in the rainy weather and needed help getting out. We actually met very few quadders on our way in or out. No currency was needed in any case since the rain soon stopped and the rest of our trip only saw occasional light showers.

We set up our tents and tarp at a site by a lovely sinkhole lake in the McClelland watershed, west of McClelland Lake itself. These circular sinkhole lakes are formed from 'karst' erosion: over time, surface water and groundwater wears into the Devonian-era limestone formation at or below ground level, causing collapses in

the limestone which are termed karst topography or geology. Karst lakes are rare in Alberta's boreal mixedwood forest, and the string of 12 karst lakes in the McClelland watershed earned these lakes a provincial Environmentally Significant Area (ESA) designation in both 1997 and 2009. In more recent years, karst and other erosion processes affecting the Devonian formation in the wider oilsands region have greatly interested the Alberta Geological Survey. Uneven erosion processes influence the thickness of the bitumen-bearing McMurray formation below the Devonian; they also affect the connectivity of saline and freshwater aquifers and the integrity of caprock overlying oil sands deposits that are subjected to high pressure steaming in the in-situ oilsands area.

After setting up camp we were ready for our first exploratory paddle on McClelland Lake and drove a short distance to the launch site our guide had scouted. On an overcast afternoon, we put our canoes into the Lake. Almost immediately, we passed near some tall aquatic grasses, which to my astonishment appeared to be bearing wild rice. I loosened the grains from a strand

or two to taste the crunchy grains. Later I read that wild rice was introduced into northern Saskatchewan lakes from water bodies in eastern Canada, initially to boost muskrat populations, then for commercial harvest. I do not know the source of these aquatic grasses in McClelland Lake, whether native or introduced, but I do know that, at the moment we discovered them, it seemed the lake was offering a most generous autumn greeting.

Paddling west along the lakeshore we saw abundant floating lily pads and grassy aquatic vegetation. McClelland is relatively shallow and fed by shallow groundwater and surface water that flows northeast through its large wetland complex. It doesn't support fish populations, but is rich in bird life. Its 1997 provincial ESA designation noted it as a hydrologically important lake, an important waterfowl staging area, and an important bald eagle nesting area.

The lake is the largest natural water body between Fort McMurray and the Athabasca River delta. It is strategically located on the Athabasca River Valley migratory bird flyway about 100 kilometres upstream



The jack pine forest is carpeted with reindeer lichen. PHOTO: © C. CAMPBELL

of the Peace Athabasca Delta, one of the world's largest inland freshwater deltas. Two hundred and five bird species have been recorded within or in the vicinity of McClelland Lake, of which about 115 stay to breed. That late August day we surprised several immature greater white-fronted geese into flight, paddled past a pair of cormorants, and encountered a group of ring-billed gulls, several of which were curious enough to briefly escort our canoes.

We paddled to the lake's western edge. Our goal was to enter as far as possible into the patterned fen known as the McClelland fen. Patterned fens form on gently sloped landscapes fed by groundwater: over thousands of years, complex water and possibly ice actions push up narrow ridges of peaty soil at right angles to the water flow. These ridges, called strings, can eventually support small trees. They are separated by long, narrow, shallow pools of water, called flarks.

The McClelland Lake fen has built up over 8,000 years since the last glacial retreat. In some areas its peat layers are five metres deep. It is intricately and beautifully patterned, with hundreds of flarks and

strings. The 1997 ESA called the McClelland fen one of the most significant and largest patterned fens in Alberta, citing its rare and significant plant species and a sandhill crane nesting area. Since then, endangered whooping cranes have been documented landing there on several occasions. The fen is also home to other species of concern, including the Canadian toad, yellow rail, black tern, and short-eared owl.

Leaving the lake's open water, we paddled into narrow water fingers but it wasn't long before the fen's dense aquatic vegetation blocked our way. We retreated back to open water and found an access point where we could stand on a string ridge. We walked a short distance, uncertain how much farther our weight could be supported on the delicate structure. We looked across what appeared to be a deceptively solid ground meadow, knowing it was all floating plants. We retreated again and paddled back to our launch site, satisfied with our exploration of this unusual water-land transition zone.

After our meal that evening, we walked in the beautiful jack pine forest near our

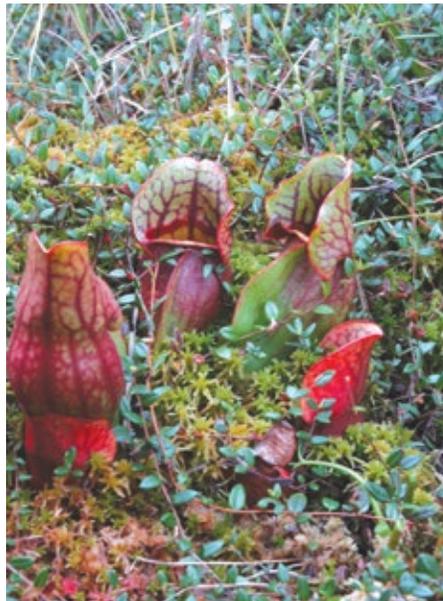
camp and discovered a patch of ripe blueberries. Soon we were tasting the excellent vintage of the year. In amongst the blueberries was the odd bog cranberry, deliciously tart. As we made plans for the next day back at camp, the tree trunks glowed reddish brown in the setting sun.

The next morning we set off for an exploratory hike farther south at an edge of the fen. We wondered how far we could walk from the solid upland forests towards the aquatic fen. We also wanted to see if we could find pitcher plants. The pitcher plant (*Sarracenia purpurea*) is a vulnerable species according to the Alberta Conservation Information and Management System. Pitcher plants are fascinating insectivorous plants that thrive in some nutrient-poor wetland areas by attracting insects into their bright red-veined pitcher-shaped leaves. The insects are trapped by the downward pointing hairs and slippery surface of the leaves and drown in the water that collects at the base of the leaves.

We saw what were likely wolf prints in the sandy road, and enjoyed the graceful shapes of the jack pine forest. The understory in this forest was sparser than what I

was used to. Sometimes there was shrubby ground cover, sometimes low green mosses, but most striking was the forest floor of white reindeer lichen, which resembled an early season snowfall from a distance. The drier jack pine areas gave way to black spruce, which tolerate much wetter soils. Closer to water-logged ground, we began picking our way carefully, letting the taller vegetation guide us to more solid footing. We could still stand for a time on the open moss-carpeted ground, but water would gradually penetrate into the area compressed by our bootprints, so we shifted weight, keeping our eyes on the ground. Suddenly Chris yelled out, “Pitcher plants!” We found several photogenic clusters. A few more steps, and the ground took on a wavy water mattress character, so we again retreated.

The next morning we went for a final exploratory paddle eastward along the lake. McClelland Lake is on the northern edge of the mineable oil sands area and for now it remains a safe stopover for birds, in contrast to nearby projects’ growing tailings ponds. The area is within an aboriginal trap line area and indigenous communities’ traditional land use territories. This extraordinarily beautiful, ecologically valuable and sensitive place should be protected for future generations to marvel at,



We found these colourful insectivorous pitcher plants near the edge of the McClelland fen. PHOTO: © C. WEARMOUTH

rather than be destroyed by the Fort Hills mine (see Inset).

We drove out of that beautiful forest with a small water bottle full of wild blueberries to share with the others in our Calgary office and the chunk of roadside bitumen. Those two souvenirs sum up the paradox and challenge of our industrial society – to learn to live within ecological limits so that all species can thrive. Alberta’s northeast boreal forest reveals itself in many ways through the seasons, but I will always cherish my first trip to the McClelland wetlands. 🍷



Blueberry picking. PHOTO: © C. WEARMOUTH

Fort Hills oilsands mine and McClelland Wetland Complex

AWA took part in a four-year sub-regional planning process that in 1994 resulted in protection of the McClelland wetland complex from oil sands surface access. However, in 2002 the sub-regional plan rules changed suddenly at the request of Koch Industries’ subsidiary True North Energy, which had acquired the leases in 1998, after the plan rules were clearly in place. The amended plan allowed mining in about half of the wetland complex, provided that “surface mining ... shall maintain the water table, water chemistry and water flow within limits as indicated by natural fluctuations to maintain ecosystem diversity and function of the McClelland Lake wetland complex where surface mining is not allowed.” A few months later during Fort Hills project application hearing, Alberta’s Energy Utilities Board accepted True North Energy’s request to withdraw the portion of its EIA describing impacts to the wetland complex. This EIA had stated that water table disruptions from mine dewatering and other lease disturbances would likely kill peat-forming mosses, ending peat production on the fen. Instead, the EUB granted True North Energy its request to develop a plan prepared by a company-led committee of regulators and stakeholders to mitigate the mine’s effects on the unmined portion of the wetland complex. AWA has not joined this committee, which we regard as a means to legitimize the wetland complex’s destruction. As of June 2016, with Suncor Energy now the lead operator at Fort Hills, there is still no approved plan to mine in the McClelland watershed.