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AQUATIC ENVIRONMENT

Mista-Shipu or, translated into English, Grand River is the largest river in Labrador and one of the 10 largest, by flow volume, in Canada.

She has a large influence on the natural history of central Labrador and beyond. This includes the micro climate of the valley, which has a moderating effect on the cold winter weather allowing the presence of some plant and animal species that extend further north than the surrounding areas. She has served as a highway for the Innu of Labrador and Quebec and probably their predecessors for thousands of years and later European and Canadian explorers. Other hunters and trappers of Labrador have also been using this river for many generations. Some of them went into the interior to the "Height of Land" and beyond and indeed, helped establish the border between Labrador and Canada.

This river has had a direct influence on my Father's family as well. When the family moved here they had to live in a tent until "Uncle" Bob Michelin heard about it and invited them to live in a shed at his home in Traverspine, on the other side of the river. Some time later they had a new house in what is now Happy Valley which had a back yard that extended to the river bank. My mother lost a first cousin who, on a trip from his home on the coast to the interior trapping grounds, was swept away in an accident while ascending Mininipi Rapids. More recently two of my older brothers spent some time trapping in the Mouni Rapids vicinity. I could take you there and show you where they camped as some their tent poles are still up. Three generations of tilts had preceded them to this site. They told me of a bottle of loose black tea that a trapper of a previous generation had left for future travelers who may have run short. I looked for it but could not find it . There had been researchers in the area just previous.

There have been a lot of changes since the river was dammed and diverted by Churchill Falls (Labrador) corp. Most obvious is the elimination of the Grand Falls, once listed in older versions of *The Encyclopedia Britannica* as one of the greatest falls in the world. At approximately 6 km. downstream of the hydroelectric generation system tailrace, there is what is locally called North Rapids. It did not exist when trappers from the Lake Melville area trapped in this area This was most likely created by a sudden large release or escape of water from the Hydro project. It appears that the gates of the East Forebay spillway had been opened, either by accident or perhaps as a final test before the project was commissioned. The resulting flood carried sufficient materials (trees, rocks, gravel and sand or anything else that was in its path) out into the river to form a permanent rapid. This may have been the incident

that drew the attention and wonder of local people who traveled the river at that time. There was a sudden and very large flood of the winters ice and snow on the river that had never been experienced before. Before retreating, ice formed in large sheets and slowly settled onto the original ice level in a new cover. As it settled, the newly-formed ice broke off many of the lower branches of the trees growing on islands and the shoreline. I was told that one could look between tree trunks clear across Muskrat Island where branches had been removed, the whole length of the island. Muskrat Island is about 18 km upstream of Happy Valley. With the lack of ice in much of the river that traditionally had solid ice cover, these major incidents impact far beyond their origins and cause even more harm to the aquatic environment. Small slumps and slides are common along the river, especially downstream of Gull Island Rapids as most of the north side and much of the south side riverbanks are all sand. Things have stabilized somewhat because the very large events are less common but they still happen. A recent slide located across the river from Edwards Island was reported as having occurred between Feb 27 and Mar 03, 2010. The amount of material that slid is estimated to have been between 2.2 and 3.5 million cubic meters and a wave of approximately 5 meters was generated.

There have been many incidences like this since the CFL(Co) project has been operating but how many more have occurred on stretches of the river that are not seen on a regular basis? How many can we expect if the proposed dams are built?

Large sand banks, newly-saturated as a result of rising water levels after impoundment would be even more susceptible to slumping if subject to wave action or ice scouring.

Slumping could be problematic in several locations chosen for possible fish habitat compensation. These include parts of Elizabeth River and Edwards Brook. Other sites where artificial "enhancements" will be attempted will prove to have serious faults. Pena's River and Edwards Brook sites are very close to the Trans Labrador Road and would be open to overfishing, etc. North Rapids is a favorite angling spot and would attract too many fishing enthusiasts if there was any early success. Nearly all of the flooded tributary confluences at the main river stem, if flooded would lose, in some cases, nearly all of the good habitat that has been developed over millennia. Artificially deepened water would drown out preferred spawning areas and create sheltered "coves" of slow-moving water that would attract pike, which would prey upon the young of any species that would attempt to spawn there. A near total elimination of fast water downstream of Gull Island Rapids would remove the favorite habitat of main sports fishing species such as Brook Trout. Fish of this waterway seem to have adapted to prefer faster water than is usual for the species. When angling for Brook Trout or Ouananiche there is a far greater chance of success in fast water as compared with slow water.

Other species that spawn along littoral shoreline may not find adequate habitat should the flooding occur. The proponent says that a new shoreline will be created, soon after flooding, that will be as good as what the Creator provided for the fish, birds, animals that prey on fish and animals that utilize shorelines. This is not possible in most cases. The present shoreline is more than a point of transition between above and below water on a surface that extends from a hillside to the river bottom. Other than in an area of solid rock with no vegetation, there will be a clearly distinguishable area of modest slope even though there is a steep bank so far away from the water and likewise, a steep slope beneath the surface of the water extending to the river bottom. This "beach" for instance has a habitat totally different from the underwater slope and very different from the hillside rising from it. This transition zone is the result of centuries of interaction with the elements, flora and fauna. Ice prevents material from the hillside from rolling to the river bottom, shoreline vegetation collects other debris flowing or blowing by, fallen trees create their own little organic subsystem and in time a shoreline is established. The promoter would

have us believe that clearing trees so far up the hillside and raising the water level to the middle of the cutover results in a new shoreline that would be almost immediately as productive as the real shoreline, now submerged at this point, was before flooding. The time it would take to be productive as spawning habitat could be too long to prevent some species from successfully spawning at all and there could be a resultant drop in numbers that may make recovery very uncertain.

The "Gull Island Plateau " is featured in the promoter/ proponent plans as a potential site of substitute spawning habitat. Again it is speculative that several species would have success if spawning were to be attempted at this site. Plans are to make it a shoal extending from the hills on the south side of the river with very deep water surrounding it. (The location is a few kilometers upstream of the proposed Gull Island dam and would be in the area of maximum flood depth.) The flooded plateau would likely be subject to ice scour, wave erosion, freezing to the bottom in places, overheating during warm, sunny days and if any fish actually produce young there, predation from all sides. Predator fish would patrol the steep drop-off to the river bottom, Ospreys and Kingfishers would collect above and fish eating mammals would hunt from shore. Any fry that would try to escape downstream risk the danger of being drawn into the proposed dams intakes and ending up as part of the food that draw other fish to the tailrace.

The river downstream of Muskrat Falls would undergo several damaging changes if a dam were placed there. The change in water flows during reservoir filling would be the first. The promoter/proponent states that a constant but reduced flow of water from the dams while filling the reservoirs would be sufficient to prevent salt water incursion from Goose Bay. It appears that the models have determined the required flow rate. This is not a sure thing. The deeper sections of the river bottom downstream of Muskrat Falls in some places are below sea level. Intermingling with fresh river water in the mouth of the river is salt water from Goose Bay. This salt water generally stays below the fresh top layer and could possibly flow upstream even as the fresh water above it flows downstream as expected, disguising the salt water. This could adversely affect some fish species if continued long enough. Not visible but more deadly is the fresh influx of methyl mercury that would be a by-product of a new round of flooding of land. Fish gravitate to the tailrace of dams to feed off the pieces of fish (already contaminated with the toxin) that get drawn into and through the turbines. Other fish, gulls, diving ducks and seals, etc. bio accumulate the toxin up the food chain and eventually the fish or seal, for example, is too contaminated for human consumption. Food harvesters out in Goose Bay or Lake Melville would not be able to distinguish between a seal that is edible or one that is laced with methyl mercury. This would certainly make traditional food a risky choice.

The ice formation timeframe is predicted to be changed with a later freeze-up. This year ice was not sufficient for safe snowmobile travel to Mud Lake until much later than normal. With heated water from a hydroelectric generator adding to the temperature of the river water, it is not too long a stretch to expect that during a warmer than normal winter, there might be a time when travel across the river is not possible.

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