

Needs For and Alternatives To

**APPENDIX 2.1**

**Lake Sturgeon - Mitigation and Enhancement**

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## Lake Sturgeon – Mitigation and Enhancement

As a provincial crown corporation providing electric energy and natural gas service, Manitoba Hydro's mission is to provide for the continuance of a supply of power adequate for the needs of Manitoba and to promote economy and efficiency in the generation, distribution, supply and use of power. One of Manitoba Hydro's goals is to be proactive in protecting the environment and be recognized as a leader in environmental protection. Towards this goal, Manitoba Hydro is committed to planning, designing, constructing, operating and decommissioning its facilities in a manner that protects essential ecological processes and biological diversity. Manitoba Hydro's commitment to Lake Sturgeon stewardship began in the 1980s with the Limestone Project. At that time, there were substantial gaps in the scientific knowledge about the impacts of hydroelectric development on the species and no Aboriginal traditional knowledge studies had been done. Since then, Manitoba Hydro's efforts have expanded and diversified into a multi-faceted and coordinated approach, which continues to expand, that involves collaboration with provincial and federal regulators, as well as affected First Nations, Aboriginal communities and researchers. The stewardship activities that are being undertaken by Manitoba Hydro support the provincial Lake Sturgeon Management Strategy released in 2012 by Manitoba Conservation and Water Stewardship, which is the fisheries regulator in Manitoba.

The Lake Sturgeon is Canada's largest freshwater fish, reaching lengths of over two m and weights of up to 140 kg. Its Canadian range extends from the St. Lawrence River in the east to the headwaters of the Nelson River in the west (i.e. the North Saskatchewan and South Saskatchewan rivers) and north to the Churchill River. In addition to its large size, Lake Sturgeon has a number of biological traits that distinguish the species from other freshwater fish, including longevity (greater than 100 years), old age at maturity (up to 25 years), and extended spawning periodicity (up to seven years). Lake Sturgeon were once abundant in Manitoba, but historical commercial harvesting, habitat changes due to hydroelectric development, and domestic harvesting have all contributed to the depleted populations that currently exist.

## Historical Overview

Initially, Lake Sturgeon were considered a nuisance fish that destroyed gear set for “valuable species” (Scott and Crossman 1973); however, by the late 1880s the value of Lake Sturgeon began to rise as the desire for caviar (sturgeon eggs), isinglass (gelatin extracted from the swim bladder, used as a clarifying agent and glue) and smoked Lake Sturgeon meat increased. Commercial fisheries grew rapidly and by the mid 1900s most North American sturgeon populations had become depleted. Historically in Manitoba, Lake Sturgeon were found in the Red-Assiniboine River drainage basin, the Winnipeg River, Lake Winnipeg, tributaries on the east side of Lake Winnipeg, the Saskatchewan River, the Churchill River, the Nelson River, and the Hayes/Gods river systems. Lake Sturgeon populations in Manitoba suffered the same fate as elsewhere. Populations in the province were subjected to a similar period of high exploitation from commercial fishing in the early 1900s, which was subsequently followed by rapid population declines, and ultimately the collapse and closure of the fisheries. As fisheries in southern locations became depleted, more northern and remote locations were targeted, including the Nelson River in Manitoba. Although some commercial harvests continued until the 1990s, most fisheries were already severely depleted by 1920. More recently, the ability of some populations to recover have been affected by habitat alterations from industrial developments and, to a lesser extent, domestic harvest by some First Nations. The decline of Lake Sturgeon populations has been described as a ‘synergistic product of life history factors, exploitation, and environmental change’ (Houston 1987).

In November 2006, as part of the *Species At Risk Act (SARA)* process, the scientific Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed Lake Sturgeon as “endangered” in most rivers in Manitoba, triggering a Department of Fisheries and Oceans Canada (DFO) review process to consider Lake Sturgeon for listing under the *SARA*. In 2010, DFO conducted more thorough assessments of population status and trends during the *SARA* Recovery Potential Assessment process. The results of these assessments indicated that more

recent population trends were notably different from those in the COSEWIC assessment and point to initial signs of population recovery.

DFO is now developing a recommendation package on Lake Sturgeon listing that will include a recommendation on whether or not to list Lake Sturgeon as endangered based on current scientific data, as well as associated materials including the results of consultations, socio economic assessment, and a regulatory impact analysis statement. The Minister of Fisheries and Oceans will forward a formal recommendation to the Governor in Council (federal Cabinet), which has up to nine months to review the recommendation and decide whether to accept it, reject it and provide reasons for doing so, or send it back to COSEWIC to complete an updated assessment of the species. Based on recent experience, the internal DFO review could take more than a year before it is sent to the Minister.

In the meantime, Manitoba Hydro is proactively engaging in discussion with both provincial and federal regulators on its Lake Sturgeon stewardship plans. This includes coordinating with the Manitoba Department of Conservation and Water Stewardship (Fisheries Branch) to ensure that stewardship activities are consistent with the provincial Lake Sturgeon Management Strategy. Manitoba Hydro is also communicating with staff from the federal DFO to keep them informed about its approach to Lake Sturgeon stewardship, current activities, progress and outcomes.

### **Commitment and Coordination**

Manitoba Hydro is committed to conserving and enhancing Lake Sturgeon populations in Manitoba, and is undertaking a number of initiatives directed at this commitment. To ensure efficient and effective implementation of Lake Sturgeon programs, Manitoba Hydro has organized its internal stewardship initiatives into a formal Lake Sturgeon Stewardship and Enhancement Program (LSSEP), which focuses on filling information gaps on population status, habitat availability, biology and ecology in the Nelson, Churchill, Saskatchewan and Winnipeg

rivers. LSSEP activities also include: rearing and stocking Lake Sturgeon from Manitoba Hydro's Grand Rapids Fish Hatchery in areas where the population status and needs are well understood; educational programs about the needs and vulnerability of Lake Sturgeon; and the development of measures to mitigate the impacts of hydroelectric development, for example constructed spawning shoal trials with annual monitoring.

The vision of the LSSEP is “to maintain and enhance Lake Sturgeon populations in areas affected by Manitoba Hydro's operations, now and in the future” and the stated long term objectives are to:

- Ensure that the net effect of Manitoba Hydro's current activities does not contribute to a decrease in existing Lake Sturgeon abundance in Manitoba;
- Operate and develop Manitoba Hydro's facilities in a manner that will not jeopardize the sustainability of Lake Sturgeon populations in Manitoba; and
- Promote recovery of Lake Sturgeon populations in Manitoba.

These objectives and the program activities supporting them are designed to meet performance measures identified for periods ranging from five to 30 years in the future.

Manitoba Hydro also works collaboratively on stewardship activities with regulators, academic institutions, First Nations and stakeholder organizations such as the Nelson River Sturgeon Board and the Saskatchewan River Sturgeon Management Board. The Nelson River Sturgeon Board and the Saskatchewan River Sturgeon Management Board actively engage in population studies and educational initiatives to stabilize and recover local Lake Sturgeon populations in those areas and include representation from local First Nations and the provincial government(s).

As well as working with existing stakeholder organizations, Manitoba Hydro is expanding its long-term commitment to the recovery of the species through the development of a legally

binding Lake Sturgeon Stewardship Agreement for the lower Nelson River with the First Nations in-the-vicinity, along with the Fisheries Branch of Manitoba Conservation and Water Stewardship. The stewardship agreement has a term of 20 years and includes a provision for renewal if the health and sustainability of populations at the time deem it to be warranted. The agreement established the Lower Nelson River Sturgeon Stewardship Committee, which provides a forum for the parties to work collaboratively to protect and enhance sturgeon populations in the lower Nelson River from the Kelsey Generating Station (G.S.) to Hudson Bay. The first implementation meeting of the committee was held on May 23, 2013 with the election of the Chair and Vice-Chair, both from the member First Nations. Examples of the core activities of the committee include: the development of a stewardship plan complete with detailed measures, objectives and strategies; establishing research and monitoring priorities; undertaking research and monitoring activities based on both Western science and Aboriginal Traditional Knowledge to gain a better understanding of sturgeon populations in the Lower Nelson River; undertaking protection and enhancement projects in the Lower Nelson River area; creating a forum for the sharing of expertise, resources and capacity, including consultation and/or coordination, with relevant Resource Management Boards and the Nelson River Sturgeon Board (which operates on the upper Nelson River between Lake Winnipeg and the Kelsey G.S.); working to create a comprehensive repository of available information on Lake Sturgeon; carrying out public education activities; and undertaking consultations regarding decisions about voluntary sturgeon harvest levels for member communities.

Manitoba Hydro is also working to establish a comparable stewardship agreement and committee for the lower Churchill River. Formal negotiations will resume next year to allow time for the lower Nelson River committee to get up and running. In the meantime, however, Manitoba Hydro is working with the Tataskweyak Cree Nation to expand a research program regarding Lake Sturgeon populations on the lower Churchill River.

### **Keeyask Mitigation and Enhancement**

The collaborative approach with local First Nations that is being utilized for the stewardship agreements is similar to the partnership approach being taken by the four Keeyask Cree Nations and Manitoba Hydro, who are working together as the Keeyask Hydropower Limited Partnership, for the development of the Keeyask Generation Project. Protecting and enhancing Lake Sturgeon populations has been a high priority in the planning of that project.

Keeyask is designed to avoid and minimize impacts on individual sturgeon and habitat. Measures include turbines that have high survival rates for any fish that swim downstream through the powerhouse, barriers that prevent larger fish from passing through the powerhouse, and selective transportation of fish upstream past the powerhouse, as required. New habitat, including spawning habitat, will be constructed to compensate for that lost to the project to ensure that habitat for all life stages will be available above and below the generating station. Comprehensive monitoring will also be undertaken so mitigation measures may be adjusted or added as required.

In addition, a new program will stock fry, fingerlings and yearlings to enhance Lake Sturgeon populations in the area directly affected by the Keeyask, as well as in the broader region. The stocking program will begin during project construction and will continue for an extended period after the project goes into operation and until populations are sustainable. For Lake Sturgeon, stocking is a proven method for increasing population numbers, and has been an important feature of other recovery programs. As well, stocking has been proposed in DFO's Recovery Potential Assessment of Lake Sturgeon as an enhancement tool for the Nelson River.

### **Long –term Promise and Results**

Because of the late age of maturity and long-lived characteristics of Lake Sturgeon, recovery actions take a long time to show results, which makes stewardship a long term commitment. A recent population inventory on the upper Nelson River caught 90 unique juveniles and one



adult sturgeon in the reach between Sea Falls and Sugar Falls, downstream of Playgreen Lake. Local fishermen have also reported juveniles increasing in their catches. The Nelson River Sturgeon Board has been stocking fingerlings in this reach since 1994, as well as stocking yearlings in 2008, 2009, 2011 and 2012. The fish were reared in the Grand Rapids hatchery, which is owned and operated by Manitoba Hydro. Both of these findings support the role that stocking has to play in the recovery of Lake Sturgeon populations and is an example of one of the many aspects of Manitoba Hydro's collaborative Lake Sturgeon stewardship activities. Manitoba Hydro is applying the principles of adaptive management to ensure that recovery actions are effective, take the results of monitoring studies into account and are relevant to the conditions of local sturgeon populations and their habitats. By coordinating with provincial and federal regulators, engaging with local First Nations and their extensive Aboriginal traditional knowledge and pursuing relevant research, Manitoba Hydro is working to achieve the objective of maintaining and enhancing Lake Sturgeon populations in areas affected by its operations, and to play its part in the recovery of the species now and in the future.