

Hydro-Québec and protecting the American eel



A champion migrator

The American eel has one of the largest freshwater ranges of any fish species in North America, in addition to be found in salt water

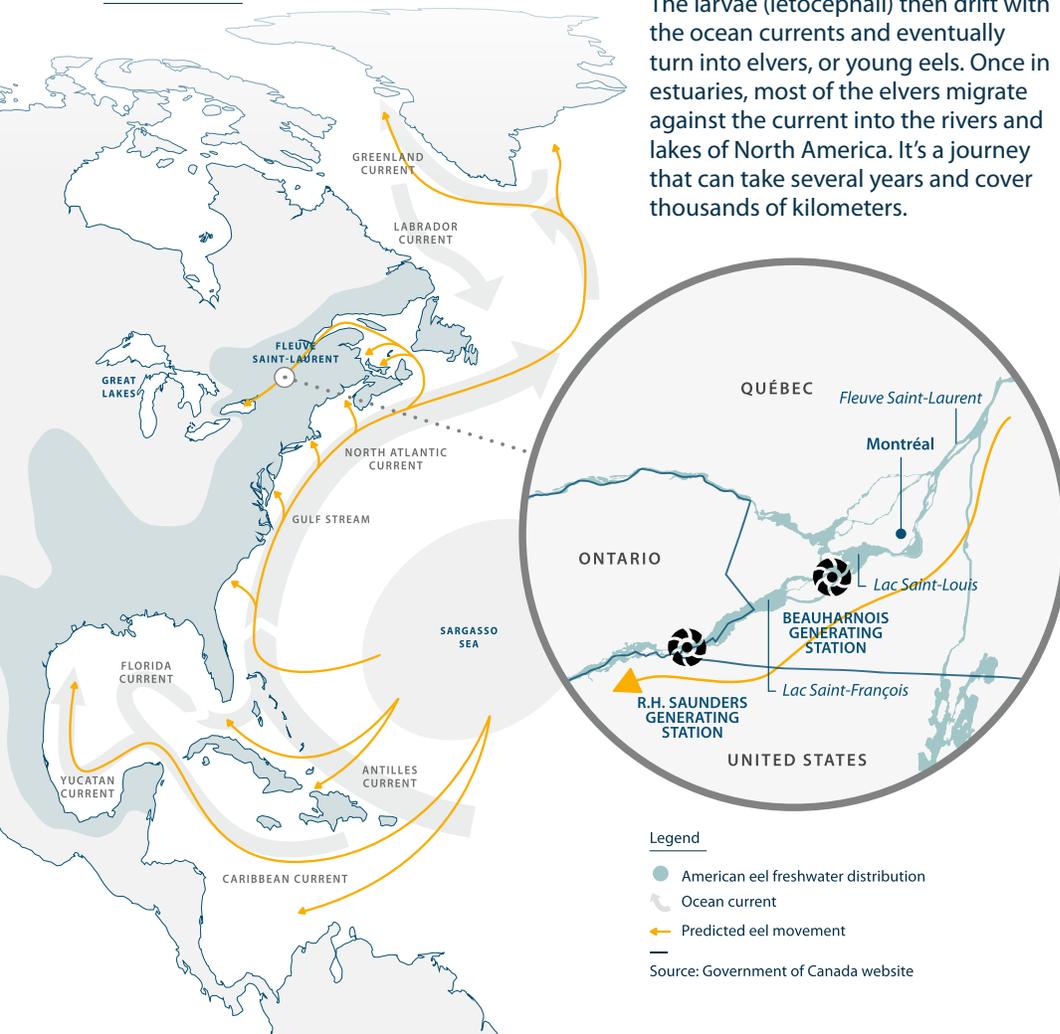
These eels spawn and lay eggs in the waters of the Sargasso Sea, in the North Atlantic Ocean, and then die. The larvae (leptocephali) then drift with the ocean currents and eventually turn into elvers, or young eels. Once in estuaries, most of the elvers migrate against the current into the rivers and lakes of North America. It's a journey that can take several years and cover thousands of kilometers.

The eels spend from 10 to 25 years in fresh water, feeding and growing and gradually transforming into yellow eels. In the last stage of maturation, the yellow eels become silver eels and return to the Sargasso Sea to spawn.

The decline of the American eel

The American eel population declined dramatically in the mid-1990s, particularly in Québec as elsewhere. The decline was mainly due to human activity—fishing, contaminants, deterioration of eel habitat due to coastal and offshore projects, climate change and the presence of dams and hydroelectric projects, which can interfere with migration.

The American eel migration route



Legend

- American eel freshwater distribution
- Ocean current
- Predicted eel movement

Source: Government of Canada website

Hydro-Québec has been working for more than 25 years to protect the American eel.



A multifaceted approach to protection

Eel ladders

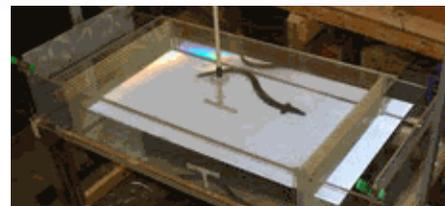
Hydroelectric dams can be obstructions to eel swimming against the current, blocking their migration upstream to reach the lakes and rivers where they grow and mature. The steep slopes created by the dams can prevent the eels from reaching their destination.

To help them on their way, Hydro-Québec built three eel ladders: one in 1997 at the Chambly dam along the Rivière Richelieu, to facilitate migration to Lake Champlain, and two at the Beauharnois generating station,

in 2002 and 2004, to facilitate the passage to Lake Ontario. Annual monitoring, documented and available to the public, demonstrates the effectiveness of these passes.¹

Hydro-Québec also takes advantage of the use of these passes to count, measure and tag the eels, so we can learn more about the species, which researchers still know very little about.

¹ Annual monitoring of eel passes at the Beauharnois generating station and Chambly dam, prepared for Hydro-Québec by Milieu inc.



Research

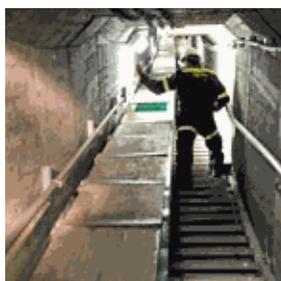
Hydroelectric turbines are also an obstacle to eel travelling downstream when leaving the continent's lakes and rivers to return to the Sargasso Sea to reproduce. Though the vast majority of eels pass through the turbines without difficulty, there is currently no satisfactory way of completely eliminating the risk of turbine mortality in major waterways such as the St. Lawrence River.

Hydro-Québec has been conducting research in this field since the mid-1990s. To optimize its research efforts, the utility partnered with Ontario Power Generation (OPG) and the New York Power Authority (NYPA) in 2013 to co-found the Eel Passage Research Center, coordinated by the Electric Power Research Institute (EPRI). This has made it possible to test and evaluate different technologies for guiding eels downstream and keeping them out of turbines. Annual reports of the Research Center's work are available to the public.²

There is good reason to expect promising results from this research in the coming years.

² Eel Passage Research Center – Year-End Updates, at www.epri.com.

Photo: Alex Haro, USGS Leetown Science Center, Conte Anadromous Fish Research Laboratory.



Trap-and-transfer

It is not always possible to build an effective eel ladder. At the Carillon dam on the Rivière des Outaouais (Ottawa River), for example, Hydro-Québec has solved the problem by trapping the eels (about 400 a year) and transporting them by truck upstream of the dam, where they are tagged and then released to continue their journey.



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