

**Eel Passage Research Centre
Presentation to:
St. Lawrence River Institute Conference
May 2017**

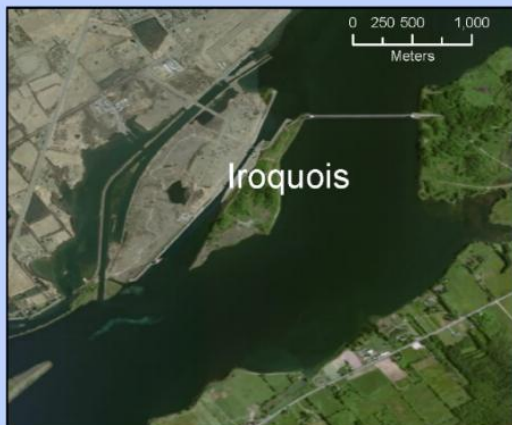
**David Stanley
Ontario Power Generation**

An EPRI-led, Bi-National Collaboration to Address Downstream Passage of Eels at Large Hydroelectric Power Stations



Eel Passage Research Center

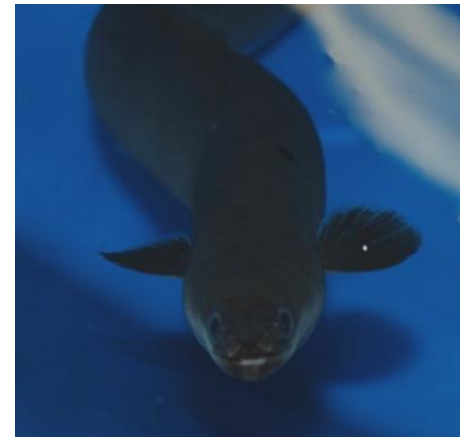
Upper St. Lawrence River and Selected Hydropower Project Facilities



Scope and Purpose of the Eel Passage Research Center

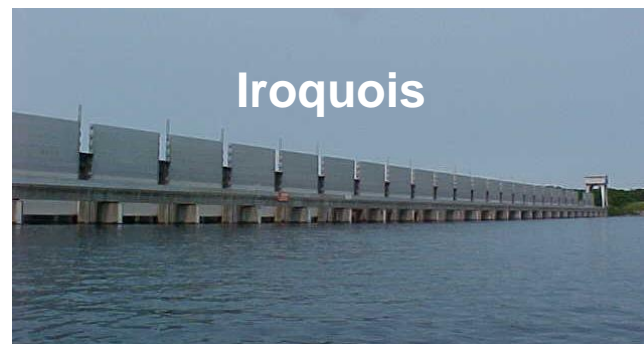
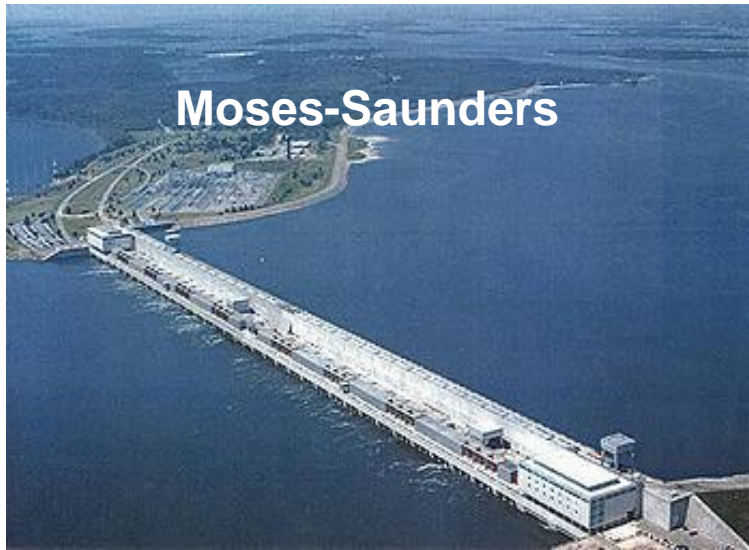
- Identify and develop economical means that are biologically- and operationally-effective in passing downstream migrating adult eels at large- and medium-sized hydroelectric facilities
- Conduct research in St. Lawrence River and elsewhere if it advances the primary purpose of providing safe passage on the St. Lawrence River
 - Other rivers
 - Laboratory studies
- Initial Term: 2013-2017

A Virtual Center



Eel Passage Research Centre

Goal: Maximize survival rate of eels that would otherwise pass through turbines at Moses-Saunders and Beauharnois without significantly reducing power production



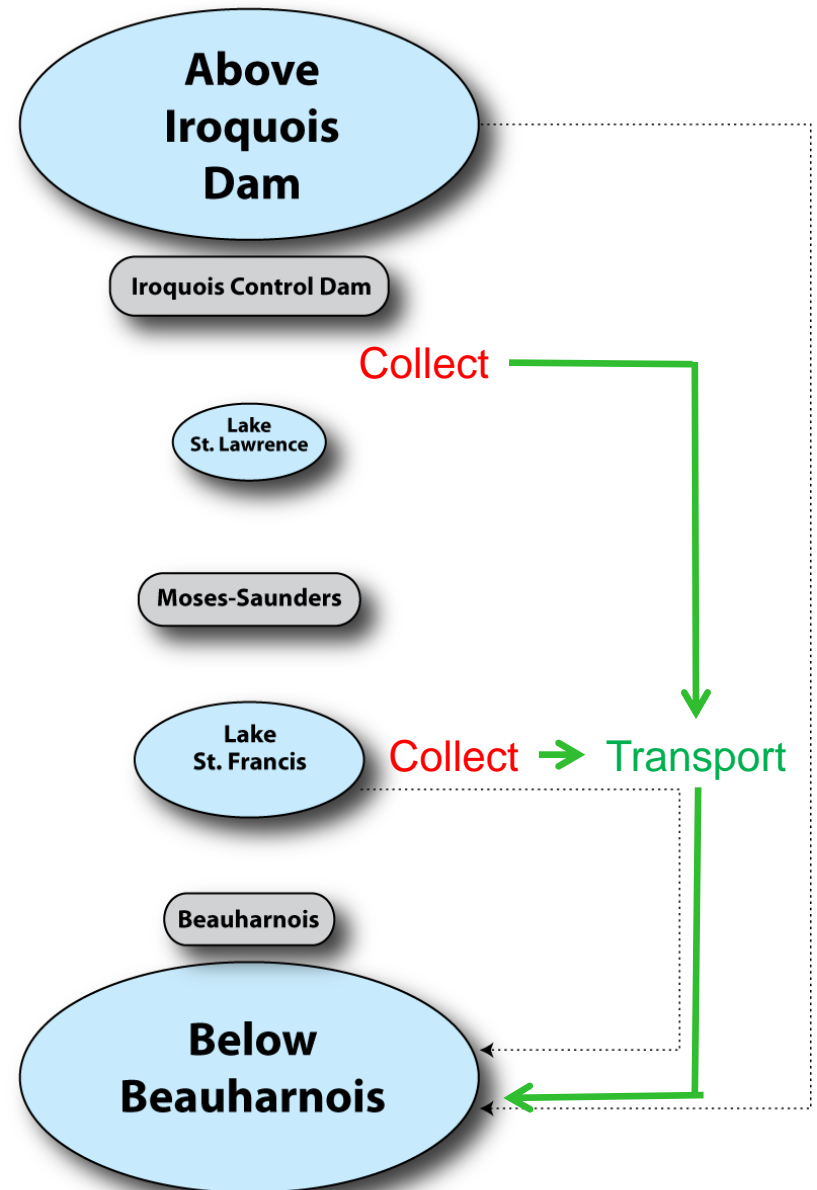
Technical Committee – Member Affiliations

- Electric Power Research Institute
- Ontario Power Generation
- Hydro-Québec
- USFWS
- New York Power Authority
- Duke Power
- Ontario Ministry of Natural Resources and Forestry
- Fisheries and Oceans Canada
- Québec Ministry of Sustainable Development, Environment Wildlife and Parks
- NYS Department of Environmental Conservation



Where We Are

- Screening infeasible
- Behavioral guidance (e.g. light, electricity) to collection points
 - Above M-S (Iroquois)
 - Above Beauharnois
- Transport Below Beauharnois

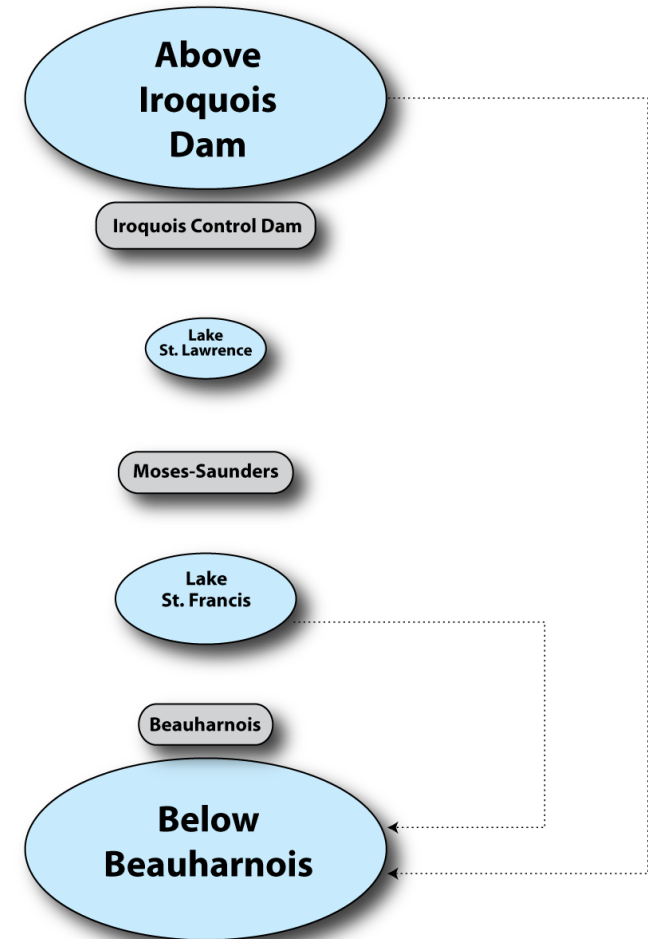


Where We Are

Four projects completed:

- Evaluation of four guidance stimuli in laboratory flumes
- White paper on advances in science and technology for light as a guidance stimulus
- CFD modeling of the project areas
- Evaluation of hydroacoustic technologies for observing eel behavior in situ

Two projects in progress



Where We Are

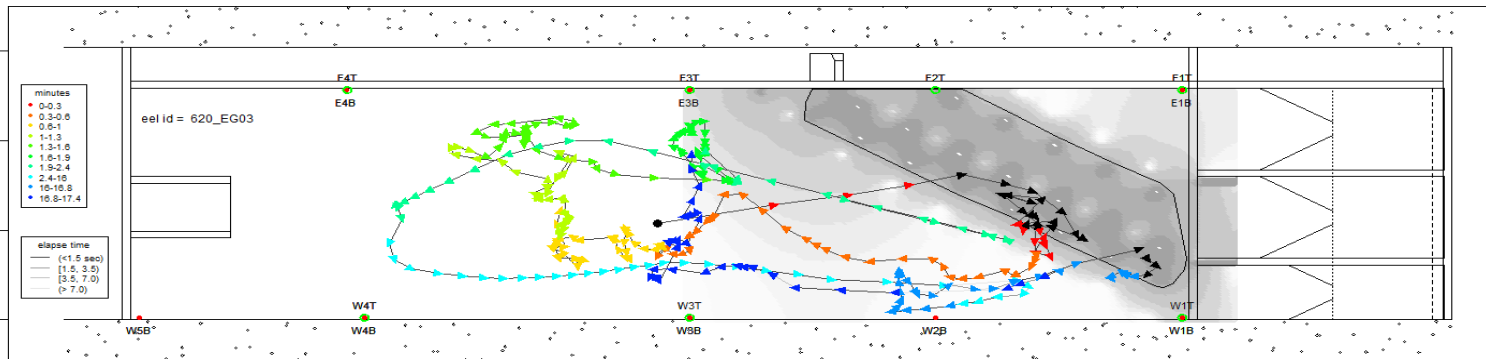
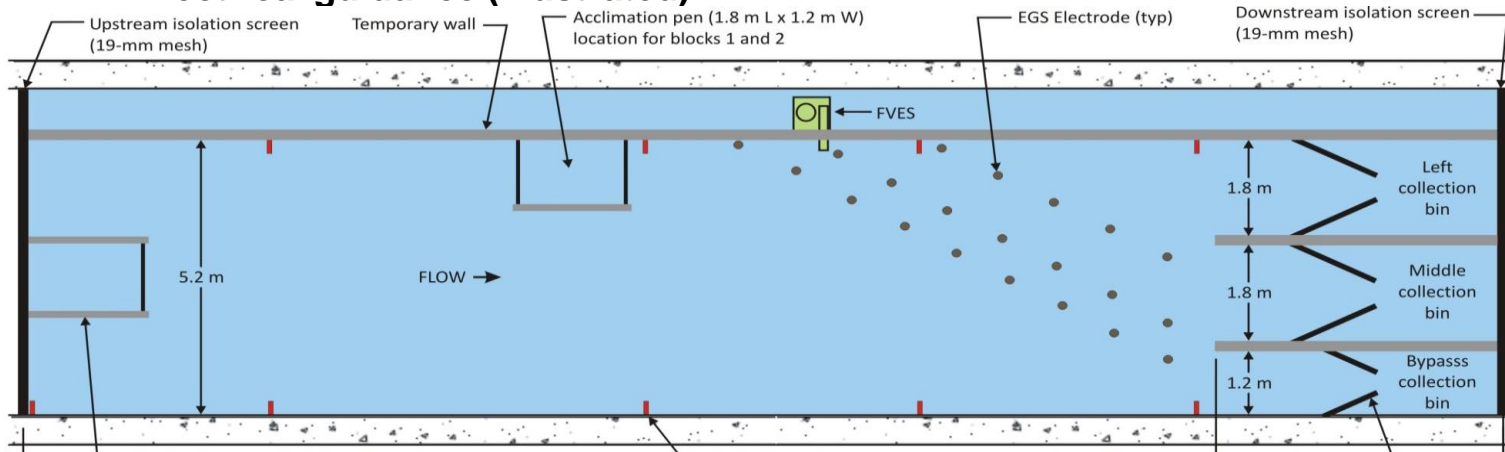
Evaluation of four guidance stimuli in laboratory flumes

Sound

Flow

EMF

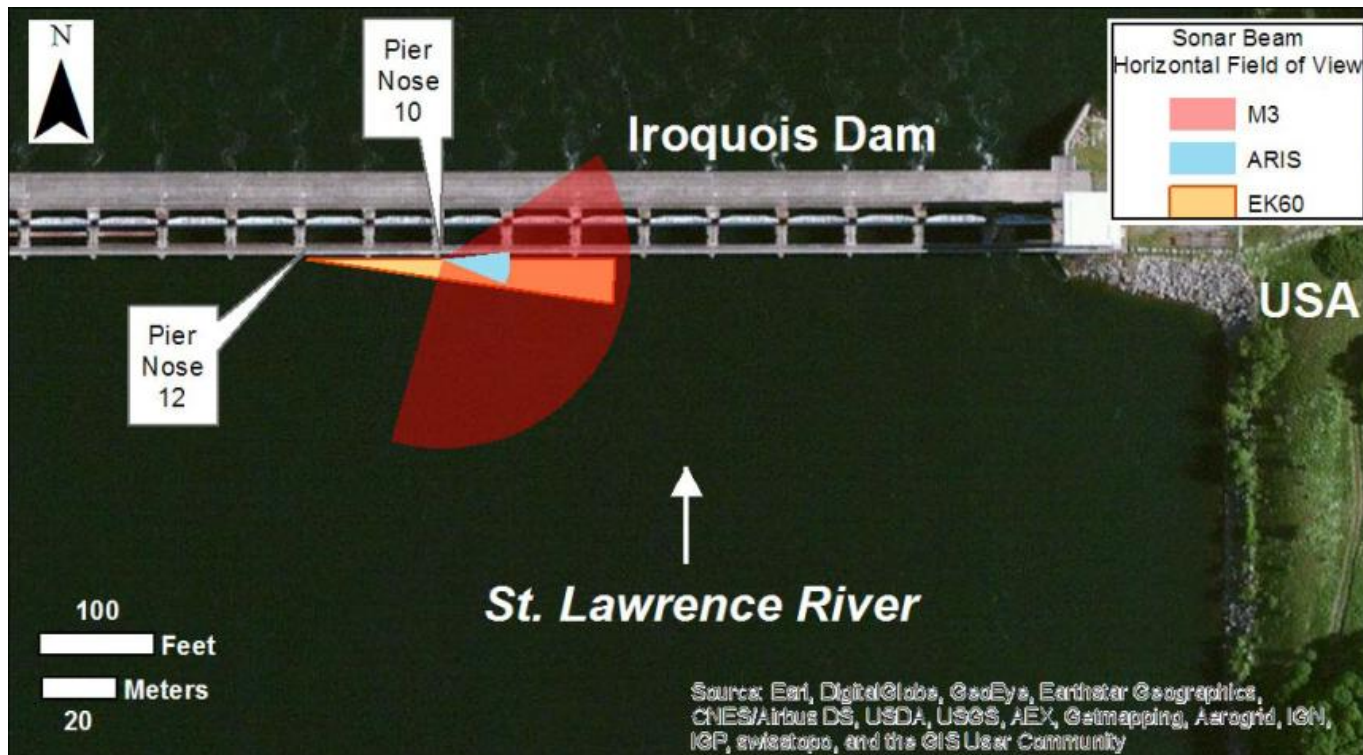
Electrical guidance (illustrated)



Where We Are

Evaluation of hydroacoustic technologies for observing eel behavior in situ

- 3 acoustic technologies from Iroquois Control Dam, the sonars included a split beam 120 kHz echosounder (200m range) , medium range multibeam 500 kHz sonar (70m range), shorter range multibeam sonar (20m range)



Where We Are

Two projects in progress in 2017:

- White Paper Investigation of the Use of Sound and/or Vibration to Guide Outmigrating Eels Near Iroquois Dam and the Beauharnois Power Canal
- Lab study - Investigation of the Use of Electricity to Guide Outmigrating Eels
 - 2015 study demonstrated that we need fine scale information on the reaction of eels to electricity

