



CANADIAN WILDLIFE FEDERATION

Ottawa River American Eel Research
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Ottawa River American Eel

- Ontario eels are all female, and are the oldest, largest, and most fecund globally (COSEWIC 2006)
- Up to 42 years, 1.3 m (MacGregor et al. 2013)



Ottawa River American Eel

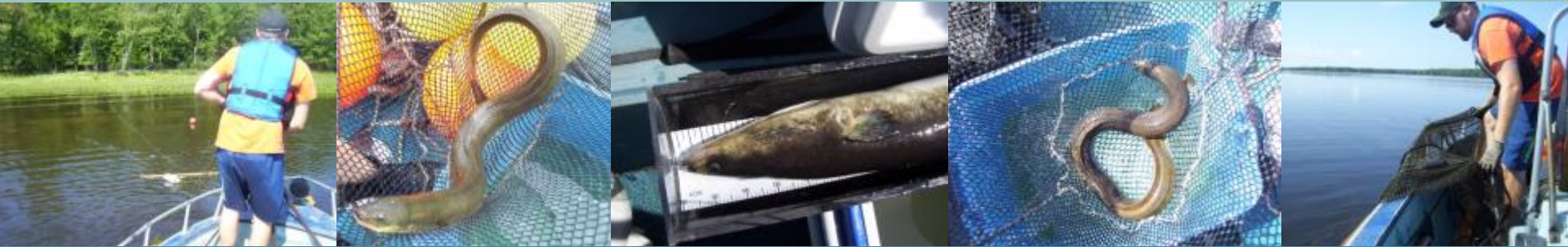
Historic productive capacity of eel habitat in Ontario (Verreault et al. 2004)

Ontario Ecosystem	Area of suitable habitat above dams	Estimated historic adult females per year
Ottawa River Watershed	3700 km ²	255,000
Upper St. Lawrence/ Lake Ontario	5800 km ²	400,000

Ottawa River = 39% of Ontario escapement



Translocation and Movement of Juveniles



Initiative of: Hydro-Quebec, Quebec and Ontario Governments

Objective: build partnerships and demonstrate broad collaboration

Methods:

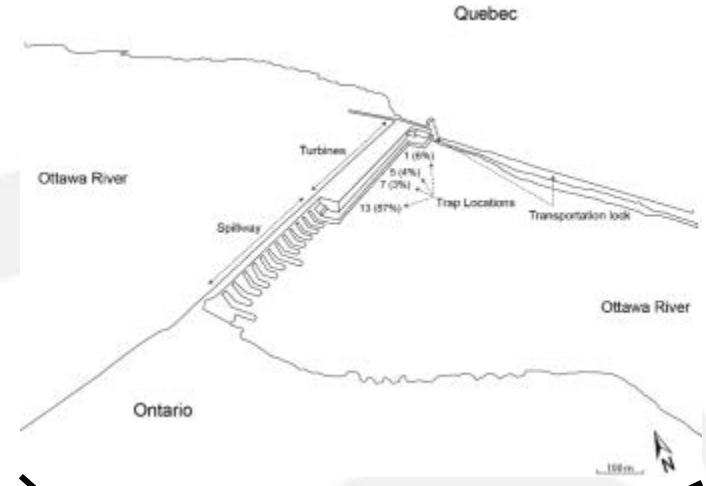
- Juvenile eels collected from Beauharnois Dam (St. Lawrence River)
- Transported above Carillon Dam (Ottawa River)
- Measured, weighed, PIT tagged 400 eels/year

Study Site: Lac Dollard-des-Ormeaux Reach

Upstream barrier: Chaudière Falls



Downstream barrier: Carillon Dam

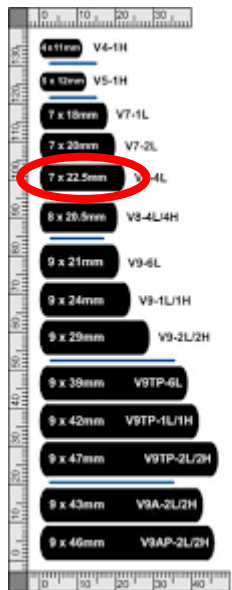


Juvenile Eel Acoustic Telemetry



Objectives

- Ascertain fate of juvenile American Eel transported around a barrier
 - Do they remain in the system or return downstream?
 - Does release location affect fallback?
- Identify which channel at the upstream barrier is most frequently visited
 - Ideal location for future eel ladder



Tagged (Acoustic) Eels in Ottawa River



Release Site	Year	Eels Released	Mean Length (\pm SD)
Upstream (1.1-1.8 km below barrier)	2015	20	492 \pm 71 mm
Downstream (6.1 km above barrier)	2015	20	505 \pm 49 mm



Ottawa River Acoustic Telemetry Array 2015



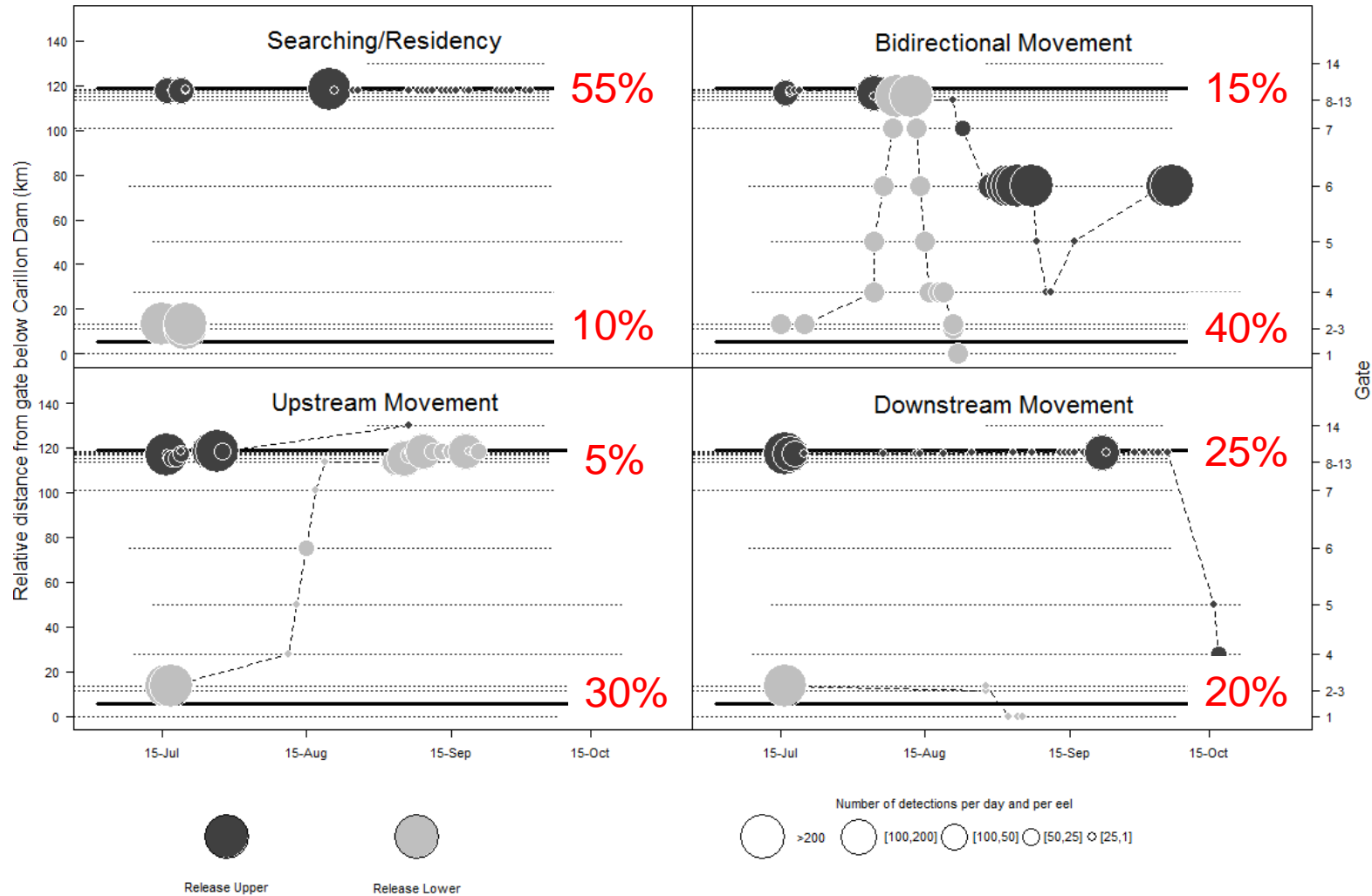
- 31 receivers; 14 gates

Final location of tagged eels

Release Site	Upstream dispersal	Within System	Not Detected	Downstream Exit	Sample Size
Upstream	1	17	0	2	20
Downstream	0	13	0	7	20

- Retention is higher if eels are released further upstream of a barrier (though not significant; $X^2 = 2.29$, $df = 1$, $p\text{-value} = 0.13$).
 - Effect size = 25% difference
 - Limited sample size; power = 0.35
- One eel managed to pass upstream (route unknown)

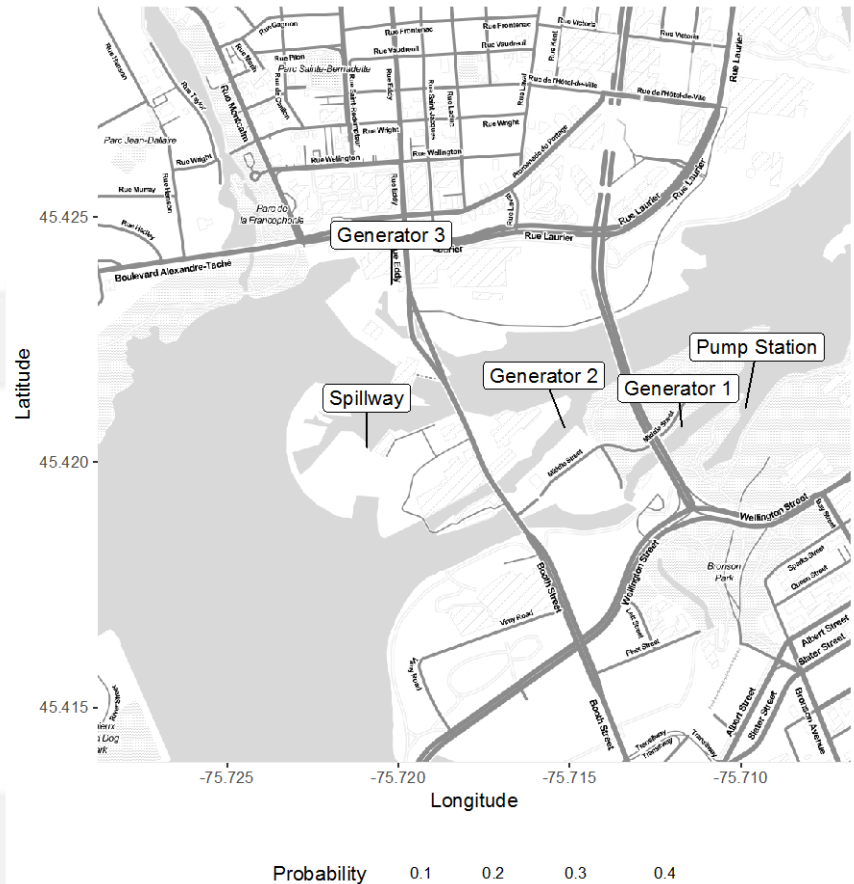
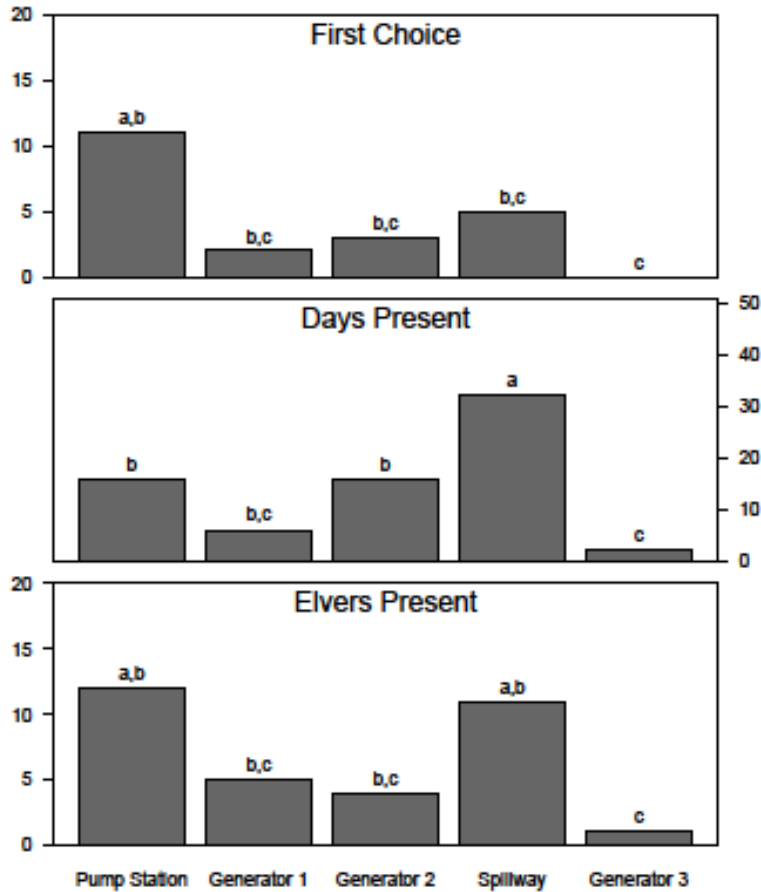
Post-release Movements



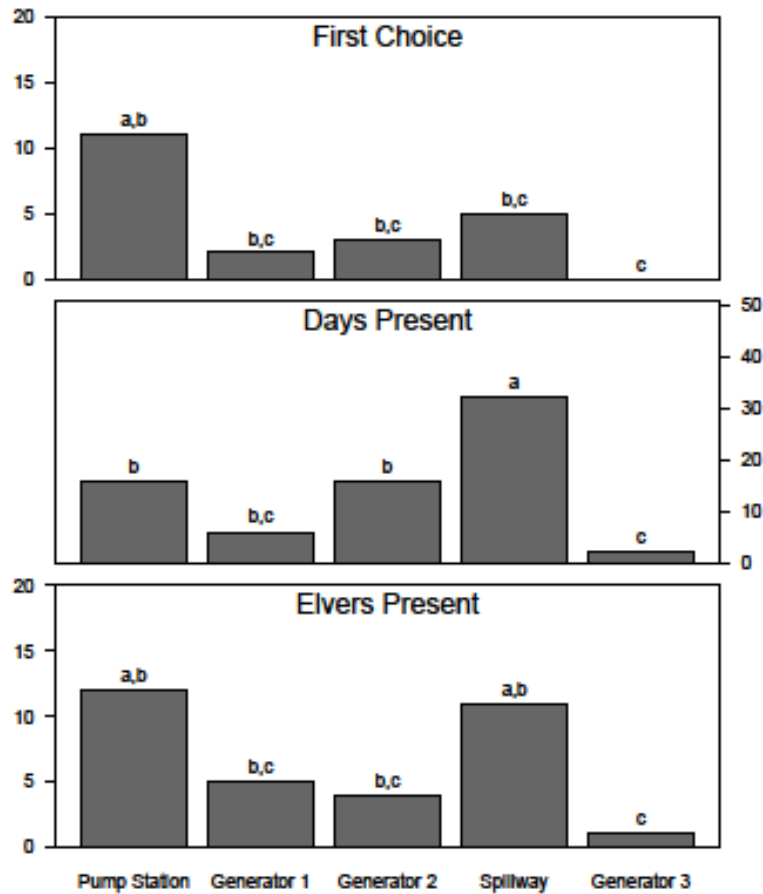
Travel Speed

- 8 eels travelled >100 km upstream
 - Average 20 days (min = 7 days)
 - Average speed = 8 km/day (max = 15 km/day)
- Similar to downstream movements of yellow eels in the St. Lawrence River (Béguier-Pon et al. 2015)
 - Average of 3.6 to 9.5 km/day (max = 39 km/day)
- Considerably faster than PIT-tagged eels observed by Verdon and Desrochers (2003)
 - 0.9-1.1 km/day average (max 4.5 km/day)

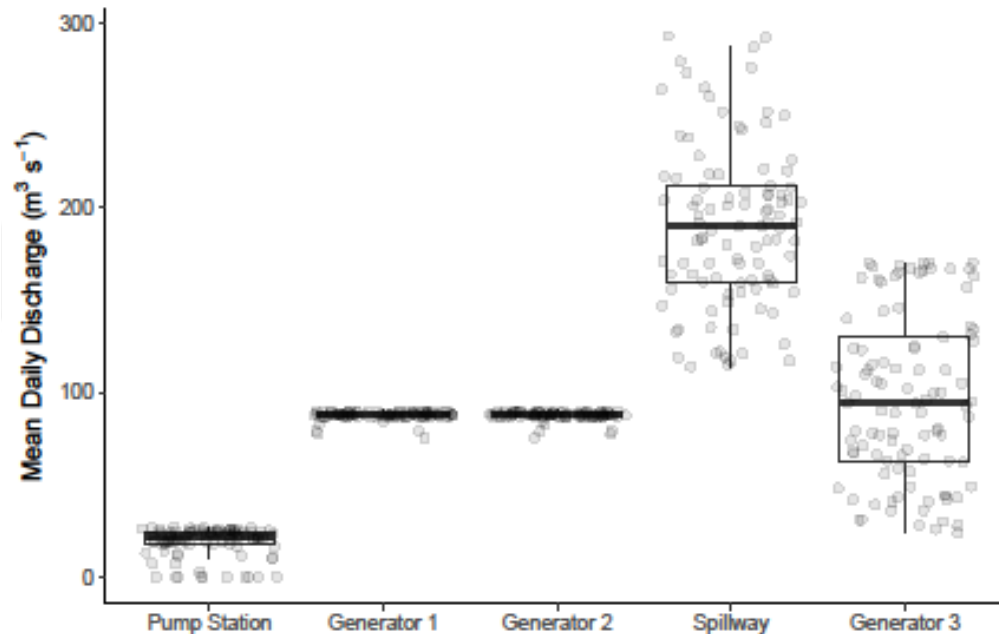
Channel Selection at Upstream Barrier



Channel Selection at Upstream Barrier



Daily Discharge



Conclusions

- Retention at upstream site appeared higher, but may be random
- Fallback rate (22.5%) seemed high
- Spillway was approached most frequently by eels at the base of the upstream barrier

Current Project – PIT tagging SOPs

- Many groups are currently PIT tagging eels in the St. Lawrence River system
- Methods are not consistent
 - Tag type, tagging location, minimum size
- CWF and Carleton University are working to identify best practices
- If you PIT tag eels, please share your methods and any lessons learned



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Questions?

Contact for PIT tagging follow-up:
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