

## **Management of American eel, *Anguilla rostrata*, in Lake Ontario and the Upper St. Lawrence River.**

Mathers, R. A. <sup>\*1</sup>, J.M. Casselman<sup>2</sup>, and L.A. Marcogliese<sup>3</sup>.

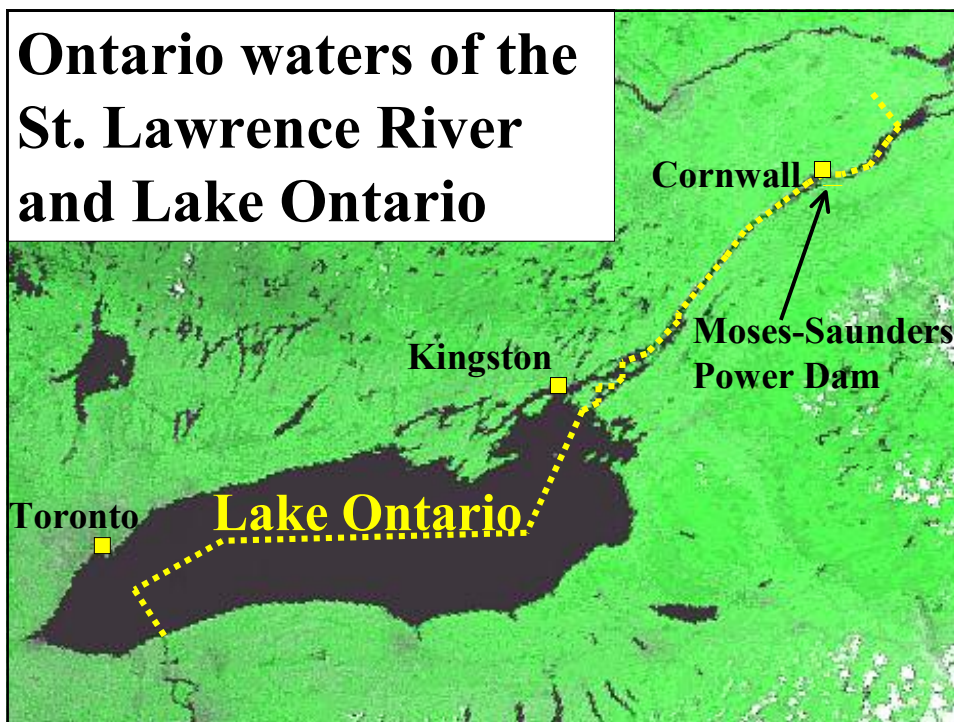
<sup>1</sup>Ontario Ministry of Natural Resources, Lake Ontario Management Unit,  
alastair.mathers@MNR.GOV.ON.CA

<sup>2</sup> Ontario Ministry of Natural Resources, Science Development and Transfer Branch

<sup>3</sup> 30 Salem Rd., RR#1, Ameliasburgh, Ontario, K0K 1A0.

- ⌘ History of eel in the St. Lawrence River and Lake Ontario
- ⌘ Commercial fishery in Ontario waters
- ⌘ Management of eel 'stocks'

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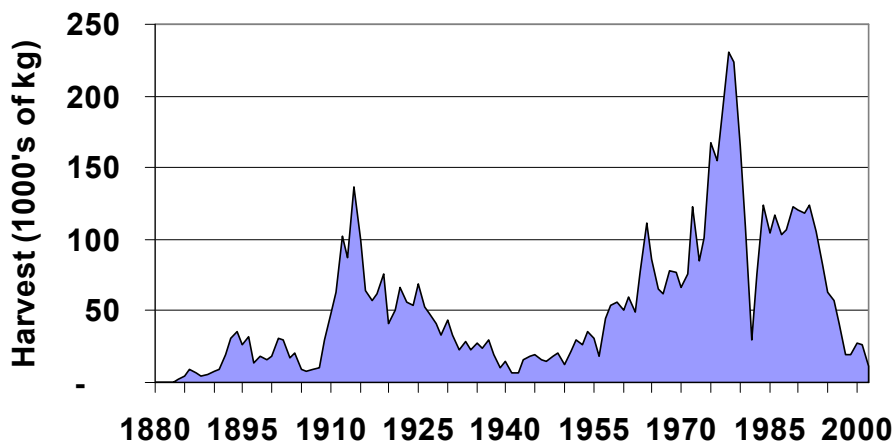
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## History of eel in the St. Lawrence River and Lake Ontario

- ⌘ Early European explorers reported the importance of eel fisheries to native peoples
- ⌘ This area is important to the eel population:
  - ☒ SLR watershed could contribute up to 19% of spawning stock
  - ☒ All large fecund females

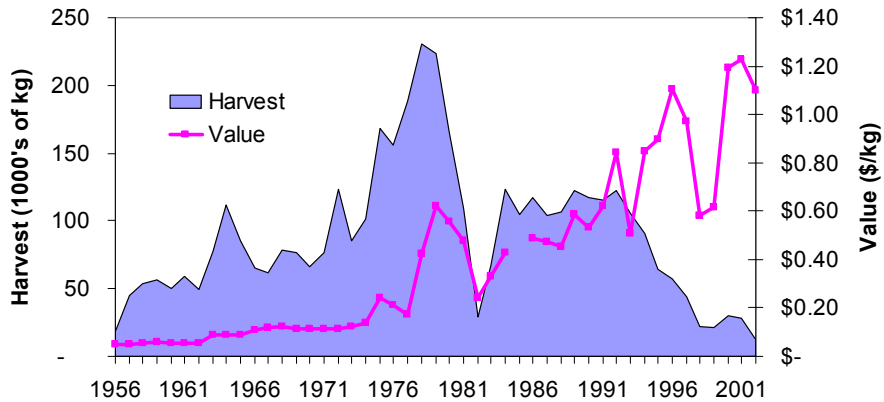


## Commercial eel landings reported for 1886 to 2002

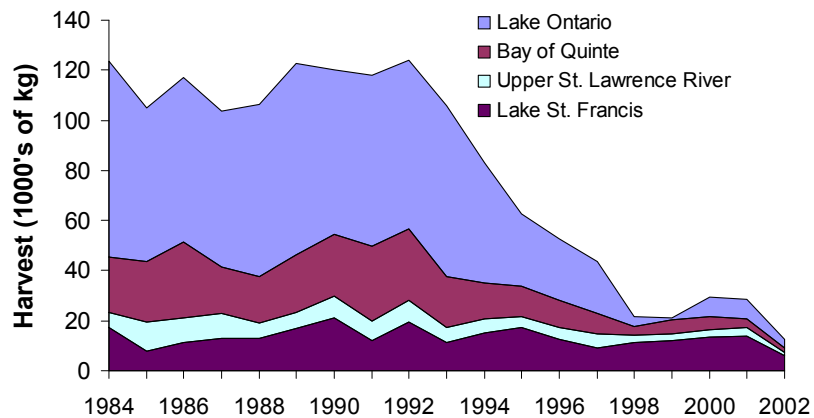


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## Commercial eel landings reported for 1956 to 2002

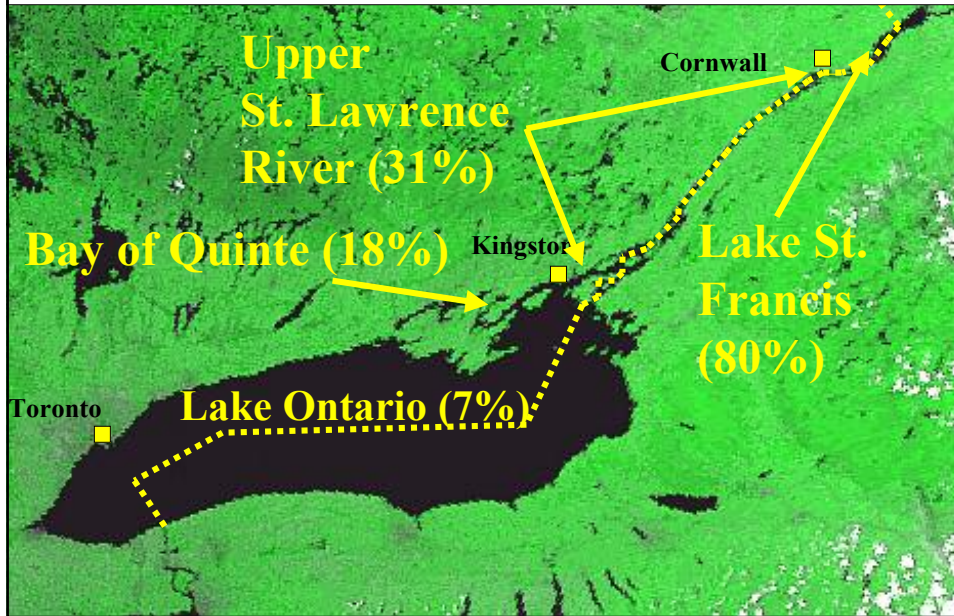


## Location of harvest



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## Eel harvest during 1998 to 2002 relative to 1984 to 1990 harvest

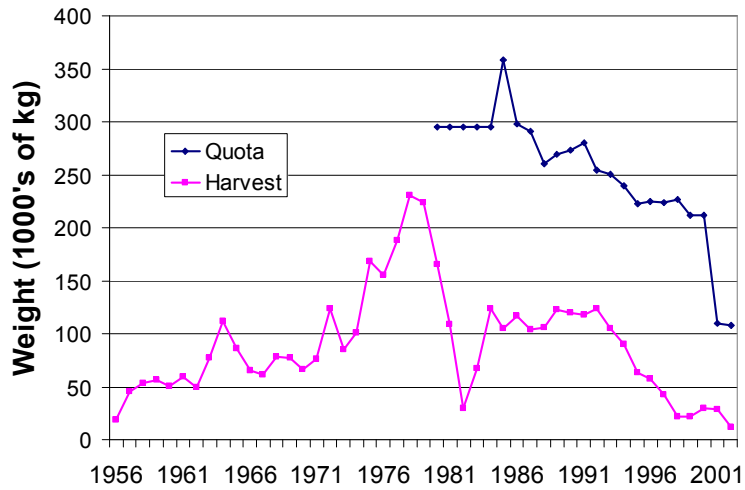


### 1) Licensing of commercial fishers

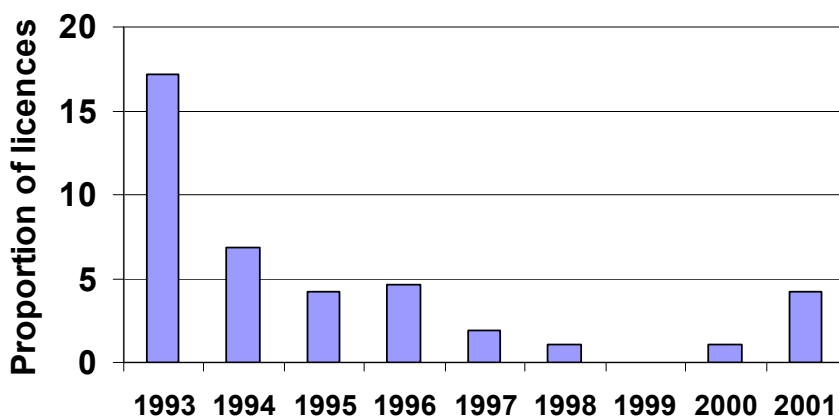
- ⌘ All commercial eel fishers require an annual licence
- ⌘ New licences have not been issued since the mid-1980's
- ⌘ Some eel licences retired during buy-out program
- ⌘ Existing licences can be purchased, or fished temporarily, by other licensed fishers
- ⌘ During 2002, 56 fishers held 96 licences (only 36 fishers reported eel harvest)

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## 2) Quota management



## Proportion of licences that reported >90% harvest of their eel quota



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### 3) Regulation of fishing gear

- ⌘ Licenced gear includes trapnets, hoopnets, eel lines, electrofishing, eel pots and seine nets
- ⌘ During 1959 to 1979, eel lines accounted for 65% of harvest with hoopnets and trapnets making up the bulk of the remaining harvest
- ⌘ Eel lines are set specifically for eel in 3 to 20m of water, 3m below the surface
- ⌘ Usually 150 hooks per line (up to 900 hooks per licence)
- ⌘ Baited with worms or cut alewife



### 3) Regulation of fishing gear *continued*

- ⌘ During 2002, 98% of the harvest was taken in hoopnets and trapnets, with eel lines being the only other gear type reported
- ⌘ Hoopnets set for a variety of species in shallow waters
- ⌘ Markets for live eel have become lucrative (eel caught on lines less desirable)
- ⌘ Eel abundance low - too expensive to bait hooks or run electrofishers



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## **4) Size Restrictions**

- ⌘ 'Yellow' eel are harvested, weighing 1 to 3 kg
- ⌘ Past restrictions based on presence of PCB's and/or mirex in levels that exceed Health Canada's recommendations
- ⌘ During much of the 1980's all eel had to be exported
- ⌘ By the 1990's, sale of eel less than 1kg was permitted in domestic markets
- ⌘ Currently there are no restrictions on sale of fish due to contaminant levels

## **5) Restriction of fishing seasons**

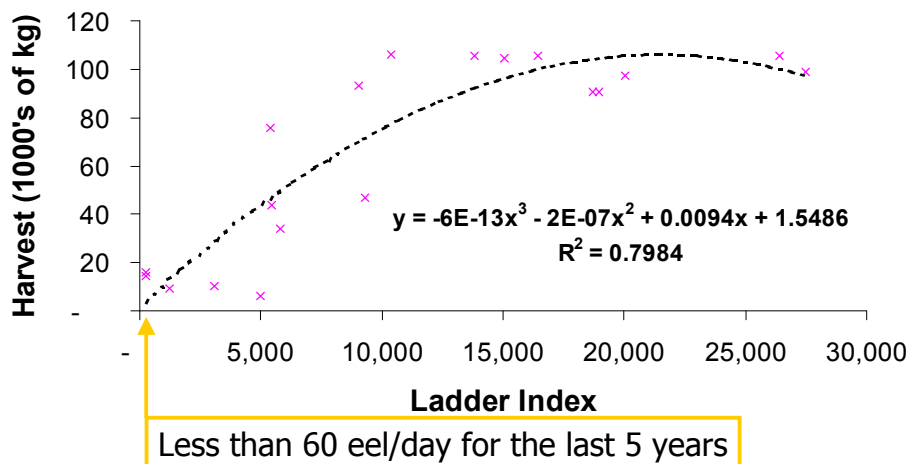
- ⌘ Use of eel lines is not restricted by season
- ⌘ Use of trapnets and hoopnets is not allowed during the summer period in high-use areas, to avoid user-group conflicts

## 6) Harvest reporting

- ⌘ Daily reporting of harvest of all fish species is required as a condition of licence
- ⌘ Information on harvest method, location, and disposition of fish is required



## Prediction of future eel harvest



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## Ontario eel management: Background

- ⌘ Decline of eels severe, concern in Ontario about fishery since 1980
- ⌘ Ladder index clearly suggests poor fishing until at least 2010
- ⌘ Specific cause(s) of decline is unclear
- ⌘ 'Precautionary approach' is appropriate
- ⌘ Limited number of practical management options:
  - ☒ reduce fishing mortality
  - ☒ encourage upstream migration
  - ☒ stocking???

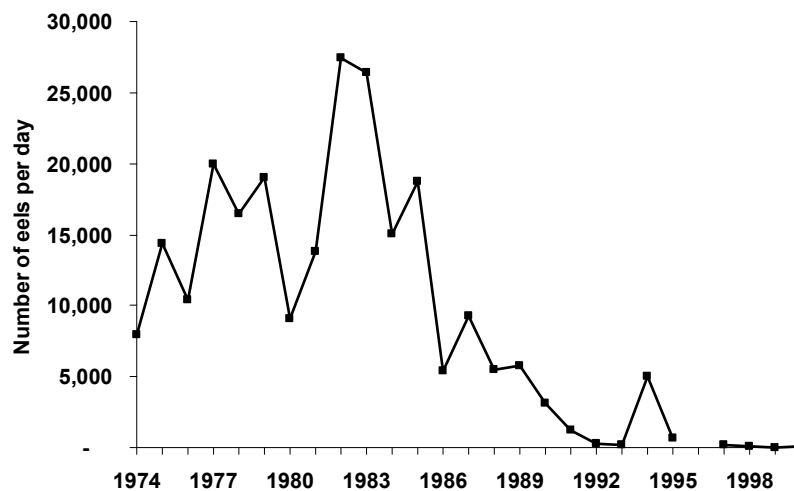
## Ontario eel management: Activities

- ⌘ Continued support of research and monitoring activities
- ⌘ Ongoing operation of eel ladder at Moses-Saunders Power Dam
  - ☒ in operation since 1974
  - ☒ NOTE - additional eel ladders in system
- ⌘ Eel fishery:
  - ☒ need to reduce mortality throughout the eel's range to allow recovery - broad scale approach required!
- ⌘ Support for GLFC position statement on eel

## Great Lakes Fishery Commission Position Statement on American Eel:

- ⌘ American eel are a valuable component of the upper St. Lawrence River / Lake Ontario ecosystem which has contributed to the biological diversity of the system and provided an important commercial fishery in Ontario until the late 1990's.
- ⌘ The American eel population is in serious decline and recruitment to the upper St. Lawrence River / Lake Ontario has now virtually ceased.
- ⌘ Without management intervention, extirpation of the American eel in the Great Lakes Basin is likely.
- ⌘ Management actions within the St. Lawrence River and Lake Ontario should be taken to reduce eel mortality (at all life stages), and encourage safe, effective upstream and downstream migration
- ⌘ To prevent extirpation of the American eel from the Great Lakes Basin, and possibly address management issues elsewhere in the eel's range, the actions above should be implemented in conjunction with a management plan to sustain this species throughout its range, coordinated by Canadian and U.S.A. federal agencies.

## Index of upstream migration of eel at Cornwall ladder



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