

Prince Edward Island

EELS

Prince Edward Island Eels, Gaspereau, Silversides, and Smelts

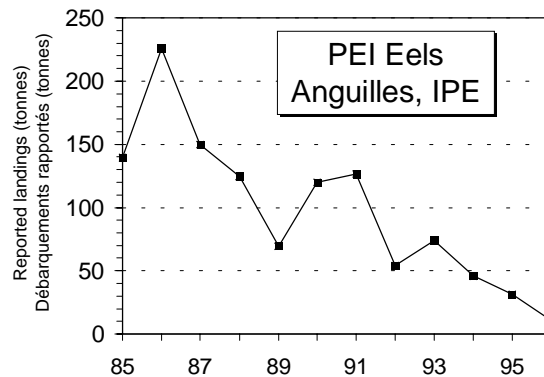
The Fishery

Background

Prince Edward Island, with its shallow bays, broad estuaries, and short rivers, contains an abundance of favourable habitat for diadromous fishes. There have been major fisheries for eels, gaspereau, and smelt on PEI from the time of European contact, and probably before. In contrast, the commercial silverside fishery began in the 1970s, and PEI is the only location in Canada where the species is currently fished.

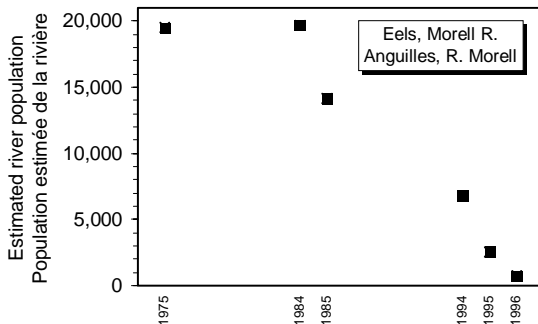
PEI's diadromous fisheries are prosecuted in bays, coastal ponds, estuaries, and the lower parts of rivers. Fish are captured only during the phases of their migratory cycles when they occupy these habitats. Eels occupy PEI waters from the elver stage to the silver eel stage. Eels are found in ponds, rivers, estuaries, and bays, but the fishery occurs only in tidal waters. Gaspereau, which consist of two species (the alewife and the blueback herring) are fished during spring spawning runs. At other times they are found in open bays or open salt water. Silversides move back and forth between estuaries, coastal ponds, and open water throughout the year. They are fished in ponds and along the shore in fall. Smelts spawn in rivers in spring, but they are fished in fall and winter when they are commonly found in open estuaries and bays.

Eels are fished commercially on PEI from 1 April to 30 June by spearing under generator-powered lights (flambeauing), and from 16 August to 31 October by trap-nets. There is also a winter recreational spearing season. Both recreational and commercial fisheries are prosecuted in tidal waters only, and a minimum size of 46 cm applies to both sectors. In 1996, 978 licence-holders were authorized to use 4095 traps and 842 spears. However, only a small (but unknown) fraction of licence-holders is active in the fishery.



Resource Status

Reported landings in PEI's eel fishery have greatly declined in the last decade. No time series of catch per unit effort is available. However, the steep landings decline, and a decrease in Morell River eel populations as estimated by electrofishing surveys, strongly suggest diminishing populations. This conclusion is supported by anecdotal information from fishers, who report that catch rates have fallen to the point where a commercial fishery is no longer viable at many sites, despite high market prices.



The apparent decline in eel numbers could be due to one or both of the following: i) a reduction in recruitment, or ii) growth overfishing (excessive exploitation of recruits before they can gain weight). It has been proposed that eel recruitment in the St. Lawrence River and Gulf has decreased because of changes in the position of the Gulf Stream in the North Atlantic Ocean. There are no data to evaluate growth overfishing as a potential cause of low eel catches, but given the heavy fishing pressure on what appears to be a small population, this hypothesis is plausible.

Outlook

Fishers reported anecdotally that catch rates of sub-legal eels (<46 cm) were higher in 1996 than in previous years, but there are no quantitative data from earlier years for comparison. Higher numbers of sub-legal

eels may portend a future increase in recruitment. However, such an increase would have to be very large to reverse the current trends of rapidly decreasing catch. The most likely prospect is that landings and fishable biomass will continue to decrease.

Management Considerations

Given the steep and continuing decline in landings, a very conservative management approach is recommended, including measures to substantially decrease catch.

GASPEREAU

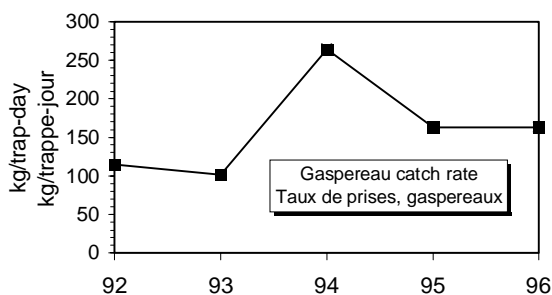
The Fishery

Gaspereau are fished commercially by trap and gillnet from 30 April to 30 June. They are also corralled by sweep net prior to being dipnetted, although sweep nets are not an authorized gear. Twenty-three commercial licence-holders are authorized to fish 25 trap-nets, 15 gillnets, and 9 dipnets on PEI. Gaspereau may also be fished under bait licences. Catch from this fishery must be used personally for bait in the commercial fishery (usually for lobster), and not sold.

Resource Status

Little information is available on the status of PEI's gaspereau resource. Landings data are of little value because most catches are used as bait and are not recorded by official statistics. Gaspereau catch per unit effort is available for only one site on Prince Edward Island (graph below). However, this time series cannot be used to infer resource status elsewhere because stocks in individual rivers may vary independently. In addition, PEI gaspereau are composed of two species, and

the specific composition of river stocks is unknown.



There are anecdotal reports of rivers where gaspereau runs have disappeared after periods of intensive fishing, but the extent to which overfishing may have caused local extirpations is unknown.

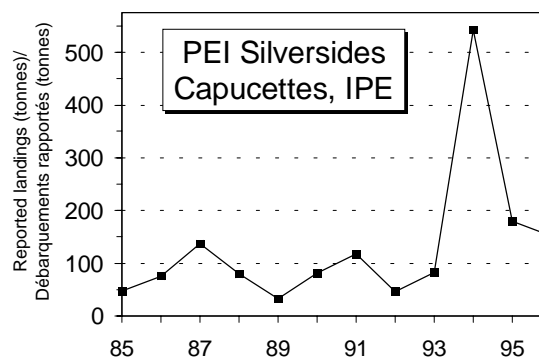
Outlook

The status of PEI gaspereau stocks is unknown, but it is possible that overfishing in some rivers may jeopardize local populations. The fishery should be managed with caution, and measures that increase exploitation should be avoided.

SILVERSIDES

The Fishery

The modern silverside fishery on Prince Edward Island began in 1973. Since then the fishery has been prosecuted in the fall, with trap nets set along the coast, in estuaries, and in coastal ponds. Most fishing takes place in central and eastern PEI. The season is 1 October to 31 December. One hundred and two fishers are authorized to trap silversides, but most licences are inactive.



Resource Status

Reported silverside landings in PEI fell sharply in 1995 and 1996 after a major peak in 1994, but nevertheless exceeded landings in other years of the past decade. Landings are not necessarily indicative of abundance because effort changes with fluctuating market demand. In addition, fishing is often interrupted due to the intrusion of unwanted bycatch of sticklebacks into traps.

Mean catch rate in 1996 (415 kg/net-day) was lower than rates recorded in 1975 (520 kg/net-day) and 1995 (752 kg/net-day), but higher than the rate from 1979 (75 kg/net-day).

Outlook

Silverside numbers can be expected to fluctuate from year to year because most fish in the population are less than one year old. Unless fishing pressure becomes excessive, silverside biomass available to the fishery will likely continue to fluctuate around the long-term mean.

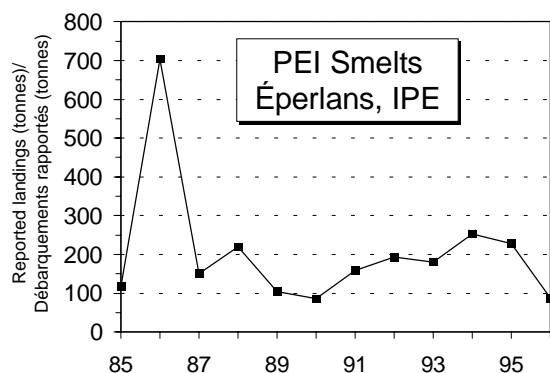
Most silverside licences are presently unused, and no more should be issued. If market prices rise, fishing pressure could increase sharply as unused licences come into use. Such pressure might increase harvest above sustainable levels. Because of their

small size, silversides are prey for a very broad range of marine life, including other commercial fishes. Silversides' potentially important role in marine food chains provides an additional reason that the species should be managed with caution.

SMELT

The Fishery

Smelts are gillnetted commercially on PEI from 1 October to the end of February, and trapped in box and bag nets from 15 October to the end of February. They are also taken recreationally by spearing through the ice, by dipnetting during spring runs, and by gillnets. In 1996, PEI's 372 smelt licences were authorized to fish 900 box nets and 3842 gillnets. However, only a small proportion of authorized gear is used. A helicopter survey in the winter of 1997 reported 188 box nets, only 21% of those authorized.

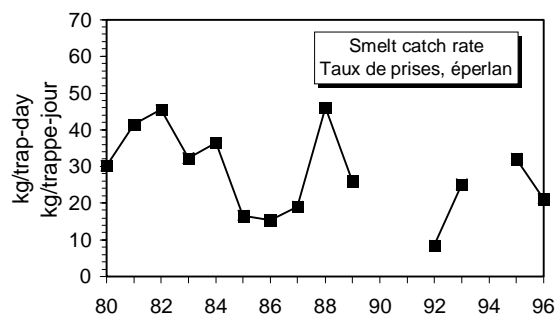


Resource Status

Reported commercial smelt landings on PEI showed a strong peak in 1986, fell in the late 1980s, and rose until the mid-1990s. Landing statistics for 1996 as shown above may be incomplete, so trends for that year cannot be evaluated. Harvest from recreational spear fisheries, as estimated from catch rate measured in a logbook

program in 1995 and effort from a helicopter survey of smelt shacks in 1997, is less than 2% of commercial landings.

Commercial catch per unit effort at a single site has fluctuated irregularly since 1980. However, this time series cannot be used to infer the overall state of PEI smelts because stocks in individual rivers may vary independently.



Outlook

There is no quantitative basis for predictions of trends in PEI smelt stocks. The most likely prospect is that biomass and landings will continue to fluctuate around a long-term mean.

The fishery should be managed with caution, and measures that increase exploitation should be avoided.

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References

Cairns, D.K., 1997. A biological review of commercial diadromous fisheries of Prince Edward Island. DFO Atlantic Fisheries Research Document 97/7.

This report is available from the:

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