

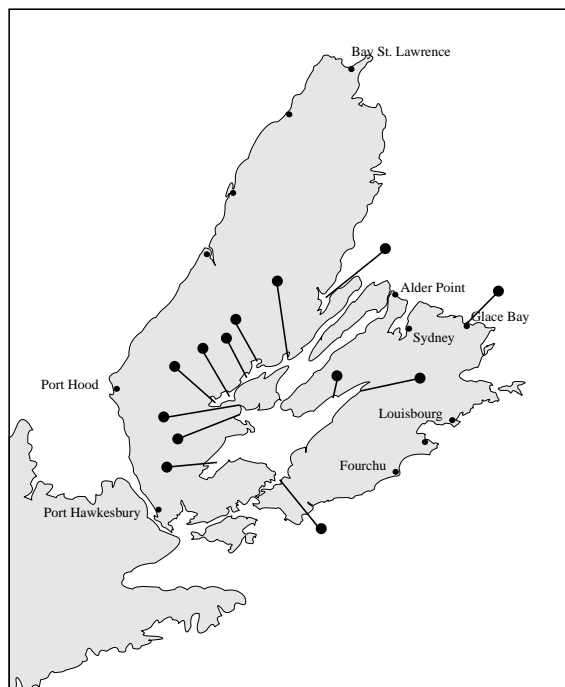


Cape Breton American Oyster

Background

The American oyster *Crassostrea virginica* is a bivalve mainly distributed in Atlantic Canada in the southwestern portion of the Gulf of St. Lawrence. Smaller populations exist in Cape Breton's Bras d'Or Lake, Aspey Bay and in Ragged Head in Chedabucto Bay. Optimum habitats are found in sheltered bays and estuaries usually with depths of 2-3 meters and a firm, stable bottom. Although able to tolerate wide variations in both salinity and temperature the Maritime provinces delimit the northern range of the American oyster and often environmental conditions are not conducive to full production. Oyster reproduction is affected by temperature, salinity, food availability and water quality. The sexes are separate with females producing up to 70 million eggs per year. Size at maturity is 25mm shell length. Spawning occurs if water temperatures reach 20°C (early June/late July) generally at midday low tides. Fertilized eggs become pelagic larvae which swim in the water column for about 21 days, whereupon they attempt to locate a clean firm substrate for permanent attachment. The larvae attach to the abundant eelgrass blades thriving on the mud bottom. Suspended off the bottom, the oyster is surrounded in food enriched waters resulting in exceptional initial abundance, growth and survival. One estimate of seed in Deny's Basin exceeded 20 million, with a surveyed adult population no greater than 10,000 individuals. However during the fall the eelgrass dies back, floats to the surface and is usually blown up on shore or into deeper water during storms. Only 1% of the seed is estimated to survive to reach harvestable size. Market size of 76mm can be reached in 2 to 4 years depending on environment (Lavoie, 1989).

Oyster fishing has not expanded in mainland Nova Scotia mainly because of the lack of a dependable seed supply. There are three proposed reasons; 1) water temperatures cooler than those required for spawning; 2) delay in recovery of stocks after the outbreak of the lethal Malpeque



Background cont.

disease during the 1950's (with the exception of Cape Breton) and 3) failure of commercial fishers to employ advanced seed production technology. However the Bras D'Or Lake fishery has been recorded as far back as 1876. This fishery occurs on both public grounds and private leases first issued in 1865. The Mi' kmaq have historically been the main fishers. Long handled tongs or rakes are the principal gear used to detach the oysters from the bottom. SCUBA, snorkeling, and picking oysters on beaches at low tide are also common methods. Oyster fisheries within the Bras D'Or Lakes are not subject to rigorous management. This reflects in part, their historic role as a means to supplement income obtained from other more established fisheries as well as a seasonal market for the product. Many leases are small and were viewed as family heirlooms. Leasing agreements have not until recently provided for mandatory surrender or buy-back if not fished and consequently little of the unexploited grounds became available through transfer to active leaseholders

The Fishery

Regulations for public bed fishing include a minimum harvest size of 76mm shell height, a license issued by the Department of Fisheries and Oceans (DFO), and harvesting only from "open" shellfish beds (water quality suitable for harvesting shellfish). The public bed season starts September 15 and ends Nov. 30. First Nation fisheries tend to occur on both public beds and

leases with harvesting year round because of historical treaty rights.

The majority of oysters harvested from Nova Scotia Department of Fisheries approved leases are not cultured or “farmed” mussels, which can be harvested year-round. Lease holders having DFO relay permits collect oysters from closed wild stocks (public beds) and re-lay them onto their lease. In this case the oysters achieve near market size (63 to 75mm depending on location) in the wild before being relocated and are subject to the same regulations as the wild fishery. Permits are required for picking wild seed oysters (no size limits) from intertidal and upper subtidal beds.

In 1989 DFO developed a “Summer Marketing Oyster Program” which allowed for harvesting during the period from May 15 to August 15 (for leases) and May 15 to September 15 (for public beds). This program provides permits to leaseholders to allow for: 1) Marketing oysters off an approved lease during the period May 15 to August 15; 2) Moving oysters from non-classified public beds to lease area (May 1-September 30); and 3) Relaying contaminated oysters from public beds to lease areas with clean water for the purpose of cleansing the shellfish (May 1 - July 15). Few oysters from the Bras d’Or Lake industry are marketed through this program because oysters harvested in the summer months are of poorer quality.

Landings for this fishery are most likely underestimated and are inconsistent among data sources. DFO does not require oyster buyers to send in purchase slips to the Statistics Branch and conservation officers do not monitor harvesters and therefore cannot provide any estimates of landings. The majority of landings shown are from lobster pounds which also purchase oysters, or from oyster purchasers in Prince Edward Island. They do not include landings from the three main oyster buyers at present. It is estimated that at least another 30,000 to 40,000kg are purchased each year. These landings also do not discriminate between oysters harvested from public beds and leases. Nova Scotia Department of Fisheries (NSDoF) oyster production statistics derived from lease holders are probably more accurate but also underestimated. These landings do not discriminate between oysters cultured on the lease, or re-layed from contaminated areas. Reported landings have increased over the past 5 years and appear to have exceeded the peaks reported during the late 1980’s. There are currently 87 oyster leases in Cape Breton with a net decline in leases over the past 2 years. In the wild fishery, there are currently 80 commercial licenses, double the number since 1991. There are no **biological data** obtained from the fishery.

Oyster Production Statistics

Year	No. of Oyster Licenses	
	Recreational	Commercial
1991	23	45
1992	23	41
1993	26	41
1994	54	81
1995	60	103
1996	49	80

Year	DFO Landings (Kg) Total	NSDoF Production (kg) Total
1984	50146	n/a
1985	9239	n/a
1986	36290	17
1987	39095	21109
1988	10692	132789
1989	6534	100535
1990	5579	121301
1991	612	46825
1992	1417	67482
1993	4265	45005
1994	2721	96405
1995	3037	156155

Resource Status

The most recent population survey in the Bras d’Or Lakes was done in the summer of 1990, using a combination of direct field observations and interviews with leaseholders. The authors assume that estimates provided by lease holders who did not grant access are high. The estimated total standing crop of harvestable oysters was between 340,000 and 1 million animals, with 85% of oysters located on leases and 15% on public beds. Only 6.8% of the oysters were found in closed areas.

1990 Population Survey Results (no. of animals)

Area	Oysters Reported or Leases	Estimated Public Beds	Open/Closed
Deny's Basin South	330,050	5,250	O
Deny's Basin North	91,000	3,500	O
Wycocomagh Bay	84,350	3,675	O
Washbuck	15,750	1,750	O
Little Narrows to Washbuck	5,250		O
St. Patrick's Channel North	10,150	13,650	O
St. Patrick's Channel South	5,250		O
East Bay		54,250	O
Eskasoni	17,500		O
Baddeck Bay	7,000		C
Nyanza Bay	350	3,850	C
Deny's Basin	28,000		C
Eskasoni	1,050		C
Totals	595,700	85,925	

Estimates with plus or minus 50%

Outlook

It is difficult to summarize the status of the Bras D'Or Lakes oyster industry using the landings presented. Combined production statistics from NSDoF and the DFO landings for 1990 indicate an exploitation rate of between 12.7% and 37.3%. However, inaccuracy in the estimates of both standing crop biomass and landings lend little confidence to these values. The likelihood that current landings can be sustained at current levels with apparent increasing effort cannot be estimated. Oyster harvesters express concern that public oyster stocks are on the decline.

It is difficult to separate the wild fishery from oysters harvested on leases in Cape Breton. It would be useful to consolidate and improve reporting of marketed oysters. It is suggested that the comprehensiveness of the DFO statistical database be evaluated.

Management of this fishery would benefit from additional knowledge on the factors that control local oyster abundance: 1) minimum required spawning stock biomass; and 2) availability and carrying capacity of suitable substrates for settling larvae.

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