

Gulf of Maine Research Institute
Responsibly Harvested Seafood from the Gulf of Maine Region
Report on
Canadian Pollock Stock (4x5) in the Gulf of Maine Region

- ☒ The fishery is managed by a competent authority and has a management plan in place that incorporates a science-based approach to ensure sustainability.
 - *4X5 pollock is managed by the Canadian Department of Fisheries and Oceans (DFO), and the Scotia-Fundy Groundfish Management Plan, in addition to more detailed Conservation Harvesting Plans for each fleet.*

- ☒ If stock sizes are below management target levels, whether due to natural or man-made causes, management plans are established that enable rebuilding within a specified timeframe.
 - *4X5Y pollock: SSB is 27,700t, below the recommend B_{REF} of 30,00t, but quota reduction has ensured that F has remained below the recommend reference point (<0.2) since 2006, resulting in the pollock biomass recovering from a historical low of 7,500t that was witnessed in 2000.*

- ☒ Sufficient data exists to determine harvest levels.
 - *The 2009 stock assessment report for the Western Component of the pollock stock utilized fisheries –dependent and –independent data to determine target levels. The annual TAC is set based on these data.*

- ☒ Monitoring and compliance measures are in place to ensure acceptable harvest levels.
 - *The harvest of pollock in Canada is managed through combination of dockside monitoring, at-sea monitoring, and electronic vessel monitoring systems (VMS), logbook requirements, all of which track landings to monitor compliance with applicable TAC and quota levels.*

- ☒ Enforcement exists to ensure that harvesters follow regulations, and to prevent illegal practices and unreported harvest.
 - *DFO is responsible for enforcing the Fisheries Act and other regulations and legislation. Enforcement activities are carried out by Fishery Officers across Canada who conduct regular patrols on the land, on the sea, and in the air. In addition, harvest levels of small vessels are regulated and enforced by Community Management Boards.*

I. Definition of Pollock (harvested in Canada)

The Canadian Department of Fisheries and Oceans (DFO) manages the pollock (*Pollachius virens*) stock as two separate population segments based on a 2003 stock evaluation. These populations are the faster growing Western Component and the slower growing Eastern Component¹ (DFO 2009). A significant pollock fishery exists in the Western Component contributing to 87% of the total landings. The range of the Western Component extends from Gulf of Maine to the Canadian portion of Georges Banks. Statistical areas of the Western Component include 4X² and 5Yb, and are based on the Northwest Atlantic Fisheries Organization's (NAFO) statistical areas (Fig. 1).

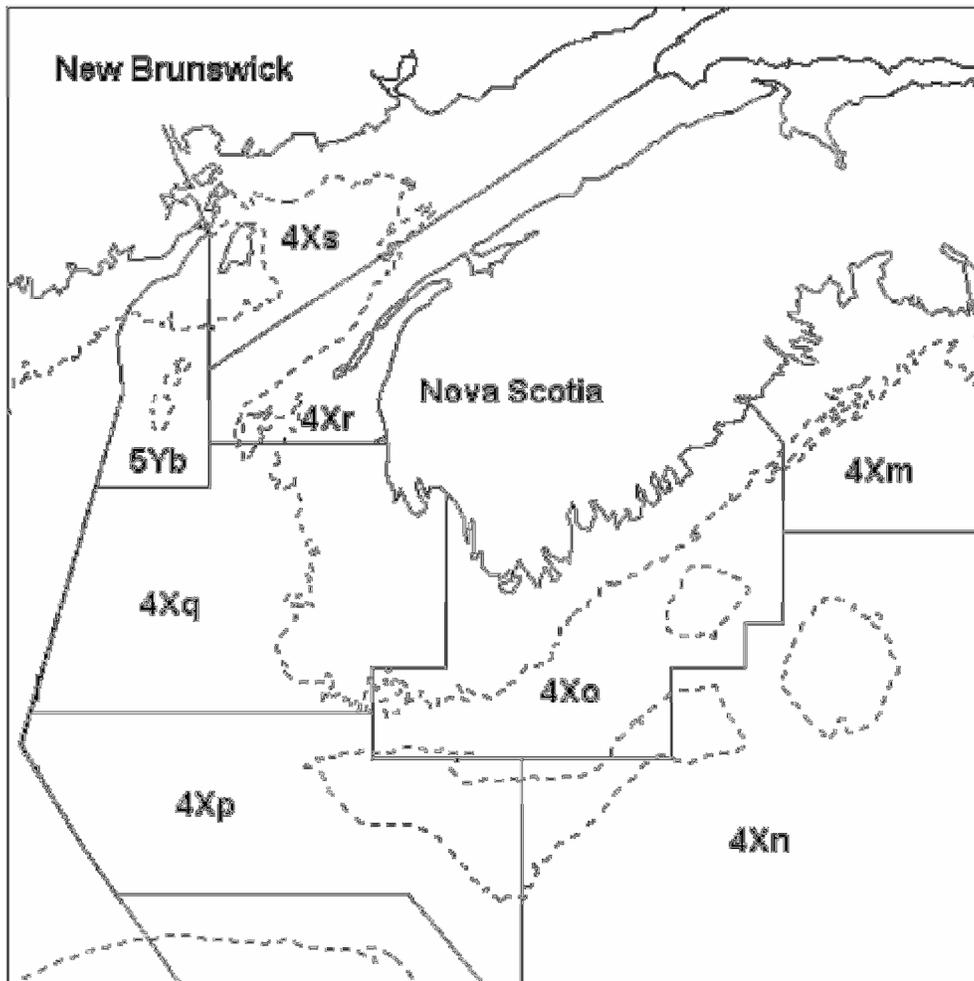


Figure 1. Management units of the Western Component of the pollock fishery (DFO 2009)

¹ The Eastern Component is beyond the Gulf of Maine Responsibly Harvested harvest area.

² The harvest strategies determined are for 4Xopqrs+5, but are applied to all of 4X and thus considered conservative (DFO 2009).

II. Description of Management Authority and Regulatory Process

Regulations in Canada are made under the authority of the federal Fisheries Act (1985), which provides the authority and mechanisms to manage fisheries and implement measures. DFO is the main authority for implementing regulations under the Fisheries Act, the Coastal Fisheries Protection Act (1985), and other fisheries-related legislation. In addition to federal laws and regulations, there are also Maritime Provinces Fishery Regulations³, which govern fishing in the in the Provinces of Nova Scotia, New Brunswick and Prince Edward Island and in adjacent tidal waters. Since 2000, DFO revised the previous Integrated Fisheries Management Planning process, and instituted the current Objective-Based Fisheries Management Planning (OBFM) planning initiative. The current Scotia-Fundy Groundfish Management Plan for planning years 2002 to 2007 includes pollock and implements the OBFM pilot plan. The Scotia-Fundy management area is divided into statistical unit areas for a number of species. These units are defined using the NAFO statistical grid.

The following information is an excerpt from the most recent Groundfish Management Plan for Scotia-Fundy Fisheries in the Maritime Region (April 1, 2002 – March 31, 2007) that describes the advisory and consultative process:

Scientific advice on stock status is provided by the Regional Advisory Process (RAP) for domestic stocks and by the joint Canada - USA Transboundary Resources Assessment Committee (TRAC) for shared stocks on Georges Bank. Members of the fishing industry participate in the meetings of these committees to provide their knowledge of fishing conditions.

The information provided by RAP, in the form of Stock Status Reports (SSRs), is one of the primary inputs to the consultations on conservation issues among DFO, industry clients and the Fisheries Resource Conservation Council (FRCC). The FRCC is a group composed of industry members and non-government scientists appointed by the Minister to provide him with public recommendations on TACs and other conservation measures. Prior to giving their advice, the FRCC conducts public hearings to obtain industry views (DFO 2002).

Following release of the FRCC recommendations, DFO fishery managers consult with regional management committees to assess the impact of implementing them prior to any decisions by the Minister. Following announcement of the regulatory measures approved by the Minister, further consultations are held with the management committees to develop operational rules.

The views of the fishing industry are provided to DFO through an umbrella Scotia-Fundy Sector Groundfish Advisory Committee. For the inshore fleets, there are the following subsidiary committees:

³ Department of Justice Canada. Maritime Provinces Fishery Regulations (SOR/93-55). <http://laws.justice.gc.ca/en/F-14/SOR-93-55/index.html>

- the Fixed Gear Advisory Committee consisting of industry representatives drawn from the community management boards,
- the ITQ Advisory Committee which consists of representatives based on quota holdings by area in specific tonnage groupings, and
- the Generalist Group, represented by a local committee in the Yarmouth area.

Due to the crossover nature of the fixed gear 45–65 feet ITQ fleet, one representative sits on both the ITQ Committee and the Fixed Gear Committee. Consultations also occur on an Atlantic-wide basis with the Groundfish Enterprise Allocation Council (GEAC) for the greater than 65 feet mobile gear fleet and with the Mid-Shore Groundfish Vessel Owners (MIGVO) for the 65-100 feet fixed gear fleet.

Unilateral management of pollock between the US and Canada has been discussed, but transboundary movement of pollock is considered minimal and thus each country manages the resource within its own waters, while biological sampling data is often shared and applied in each country’s individual stock assessments.

III. Pollock data

The annual catch of pollock from the Western Component of the stock has averaged 6,000 tons (t) since 2000 and estimated spawning stock biomass (SSB = Age 4+) has risen from 7,500t in 2000 to an estimated 27,700t in 2008. The regulated fishing year for 4X and 5 extends from April 1st to March 31st and the TAC for the 2009/2010 year was set at 5,000t. Because much of the Eastern Component has been closed to cod and haddock fishing, landings from the Western Component have contributed up to 87% of the total landings in previous years (DFO 2009).

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|-----------------|---------|
| B_{ref} | 30,000t |
| F_{ref} | 0.2 |
| SSB during 2008 | 27,700t |
| F during 2008 | <0.2 |

The most recent stock assessment was conducted in 2008 and the results were released in the 2009 Canadian Science Advisory Report. Data used to estimate biomass include DFO research vessel summer survey data from 1984-2008 and catch per unit of effort (CPUE) data collected from the mobile gear sector of the fishery from 1982-2004. CPUE data after 2004 is not used in the population modeling because changes in fishery management have resulted in these years being non-comparable to the rest of the time series (DFO 2009). Indicators of abundance depict a general trend of increasing biomass since 2000, which is supported by US National Marine Fisheries Service’s pollock trawl surveys conducted in the Gulf of Maine/Georges Bank region. The DFO assessment utilizes Virtual Population Analysis (VPA) model that was developed for the Western Component and incorporates the previously the mentioned indices of abundance (DFO 2010c).

The 2004 Pollock Framework Meetings produced recommendations for a pollock management strategy that adhered to specific biological reference points (Table 1). Results of a yield per recruit analysis combined with stock-recruitment patterns were used to determine a fishing mortality reference point ($F_{ref} = 0.2$) that would not deplete the stock. The Framework Meetings also produced a reference point for biomass ($B_{ref}=30,000t$). Biomass levels below 30,000t can result in reduced production and recruitment (Stephenson 2004). These reference points are recommendations and have been used in subsequent stock assessments and management considerations, but have not been adapted to a fishery management plan. Below is an excerpt from the Framework in regards to utilizing F_{ref} and biomass B_{ref} :

The risk of F exceeding F_{ref} should generally be neutral to risk averse (less than 50%) and the risk of biomass decline (change in $B < 0$ should be neutral to risk averse (less than 50%) when biomass is less than $B_{ref} = 30,000t$. The further biomass is below 30,000t, the decisions should be more risk averse (Stephenson 2004).

The most recent assessment indicates that the SSB= 27,000t and is slightly below the recommended B_{ref} of 30,000t. This is a decline from a biomass estimate high of 66,000t in 1984, but well above the biomass low estimate of 7,500t in 2000. Recruitment analyzed during the assessment estimated that the 2004 and 2005 year classes were of concern, while the 2002 and 2003 year classes were average, and the 2001 class was the strongest (DFO 2009). Figure 2 depicts Age 4+ biomass and Age 2 recruitment.

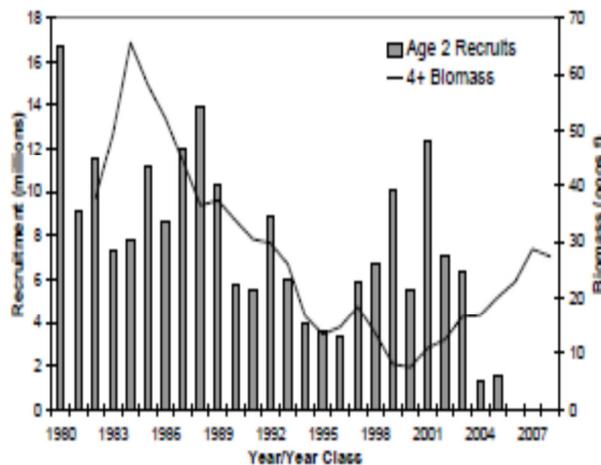


Figure 2. Trends in Age 4+ biomass and Age 2 recruitment for the Western Component of the pollock fishery (DFO 2009)

The biological reference points are considered when the annual pollock TAC is determined by DFO, and the TAC for the 2010/2011 recent year was set at 6,000t (DFO 2011d). Landings peaked at 46,000t in 1987 and have been below 10,000t since 1999. Landings in 2008 were 4,246t, which was below the 2007/2008 TAC of 5,000t. Figure 3 depicts the pollock landings and the annual TACs from 1974-2008.

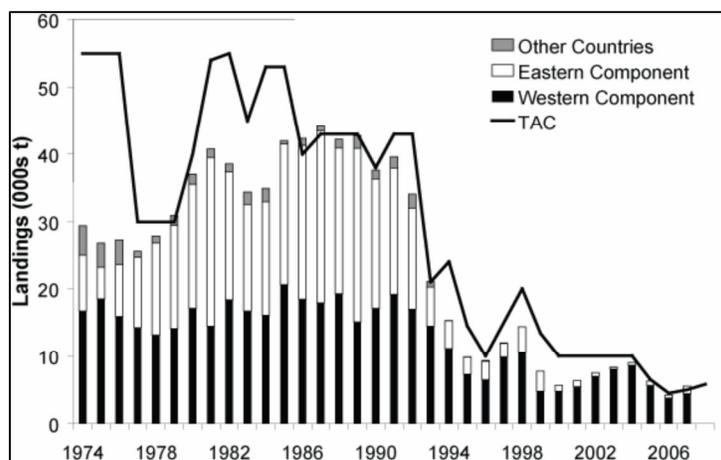


Fig. 3 Landings and TACs for pollock in 4VWX+5, for Eastern and Western Components, including foreign landings (DFO 2009).

Historical fishing mortality for pollock has been as high as 1.0 in the early 1990s, but the reduction of quotas and landings, combined with an increase in biomass has resulted in reduced fishing mortality. According to the assessment, fishing mortality has been below the recommended F_{ref} of 0.2 the since 2006 (Fig.4).

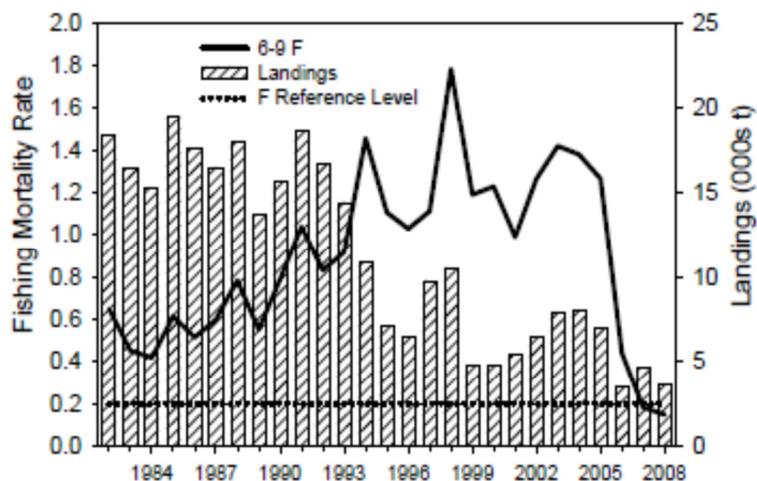


Figure 4. Trends in fishing mortality and landings of pollock for the Western Component (DFO 2009).

IV. Groundfish Management Plan for Scotia-Fundy Fisheries, Maritimes Region

Canadian harvested pollock is managed under the Scotia-Fundy Groundfish Management Plan, which states:

Management measures are the specific provisions that implement the strategies in the plan. Most of these relate to operationalizing conservation strategies (described in detail in Annex 5). The primary conservation mechanism is restriction of fishing mortality

through the TAC system. Shares of the TAC for each species stock are allocated to fleet sectors or individual fishing enterprises, and landings against these shares must be recorded at ports of landing through a dockside monitoring program (DMP). Ancillary to this DMP is a variety of rules for bycatch management to avoid the discarding of fish at sea (DFO 2002).

The plan calls for DFO to outline policy frameworks in which harvesters and community members can develop specific management measures, thus empowering resource users in the decision making process. Management measures include gear restrictions, bycatch protocols, logbooks, at-sea observer coverage, vessel monitoring systems (VMS), and area and seasonal closures.

Groundfish vessels greater than 45 feet operate under individual transferable quotas (ITQ), also known as enterprise allocations. In recent years, the small vessel groundfish fleet (< 45 feet) in the Maritimes region has shifted towards a community-based management approach, with the implementation of Community Management Boards (CMBs). CMBs are regional boards that are made up of mostly harvesters and industry members and are allocated a share of the pollock quota (DFO 2011d). Each CMB is then responsible for managing the share on behalf of its members, through allocation efforts such as trip limits or individual quotas. In addition, CMBs develop Conservation Harvest Plans (CHPs) that vary by region. CHPs must adopt specific catch and control measures, including violation penalties, for their fleet, while respecting conservation provisions (Peacock and Annand 2008). One CHP example is the *CHP for ITQ Mobile Gear Vessels less than 65 feet in 4VWX + 5*, effective April 1, 2010. This plan details minimum mesh sizes for mobile gear, maximum bycatch levels and associated monitoring requirements, limits on undersized fish, information on catch monitoring (e.g., 100% dockside monitoring, and VMS requirement for all vessels), open seasons for specific fisheries, seasonal closures, spawning and juvenile closures, and other measures (e.g., minimum of 5% at-sea monitoring coverage). While CHPs produce fleet specific regulations, DFO remains responsible for determining and enforcing groundfish quotas and TACs.

Additionally, a quota reconciliation policy is in place for the pollock fishery, resulting in quota overages being deducted from the subsequent fishing year's quota.

V. Monitoring

Several mechanisms exist to monitor the harvest of pollock in Canada. A combination of dockside monitoring, at-sea monitoring, and electronic vessel monitoring systems (VMS) track landings to monitor compliance with applicable TAC and quota levels. Vessels that operate under an ITQ are required to have 100% verification through the dockside monitoring program. Licenses managed under CMPs must meet certain thresholds to achieve 100% dockside monitoring, while there is 25%-50% random monitoring for CMB vessels (DFO 2011d).

DFO's Conservation and Protection branch in the Maritimes region is responsible for the areas fisheries monitoring and compliance-related work. The primary source of landing information utilized in fisheries management decisions in the Maritimes is collected through the dockside monitoring program (DMP), which is funded by the fishing industry. The objective of the DMP

is to provide accurate, timely, and independent third party verification of landings (DFO 2011a). Dockside monitoring companies must be certified in accordance with Canadian Manufacturing and Standards Board. Observers collect and record data, including the weight of species landed, gear type, management area, etc. They also verify the species of all fish landed and offloaded, and ensure this information matches what is recorded in mandatory required logbooks.

The At-Sea Observer Program allows for the collection of detailed, geographically coordinated information on the fishing effort, catches and discards at sea. This program is jointly funded by the industry and DFO, and is also administered by an independent, third party company (Gough 2007). At-sea observer coverage in the groundfish industry is generally less than 100 percent. In addition to gathering scientific and technical data used for fisheries management and stock assessment, observers also monitor compliance with fisheries regulations.

Offshore fleets utilize industry-purchased VMSs to report the locations of fishing vessels to DFO during fishing trips.

VI. Enforcement

DFO is responsible for enforcing the Fisheries Act and other regulations and legislation. Enforcement activities are carried out by Fishery Officers across Canada who conduct regular patrols on the land and sea, as well as aerial surveillance (DFO 2011b). Unannounced at-sea inspections are carried out by both DFO's Conservation and Protection branch and Canadian Coast Guard. The monitoring mechanisms described in Section V are conducted in coordination with the monitoring and enforcement activities conducted by Fishery Officers.

VII. Other

Pollock is currently in the final stages of a Management Strategy Evaluation, with new management measures expected to be released in 2011 during a meeting of Canadian Science, Industry and Management.

VIII. References

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