



UPDATE OF STOCK STATUS INDICATORS FOR NORTHERN GULF OF ST. LAWRENCE (3PN, 4RS) COD IN 2017

Context

The assessment of the northern Gulf of St. Lawrence (3Pn, 4RS) cod (*Gadus morhua*) stock is conducted every two years, with the most recent assessment completed in February of 2017. In the interim years, an update of the main indicators of this resource is conducted to determine if major changes in stock status have occurred.

Monitoring indicators for the interim years were identified during the last assessment. It has also been agreed that no assessment would be completed in 2018. This update was prepared to provide Fisheries Management with an overview of the most recent stock status.

This Science Response is a result of the Science Response Process of December 12, 2017, regarding the update of stock status indicators for cod (3Pn4RS) in the northern Gulf of St. Lawrence in 2017.

Analysis

The Fishery

The fishing season was still ongoing at the time of this update. As of November 22, 2017, preliminary directed fishery landings of cod were 2,297 t, or 72% of the TAC (3,185 t) (Figure 1). This percentage is comparable to that of previous years at the same date. These landings do not include recreational fishing. Although the recreational cod fishery has increased from 32 to 46 days since 2016, there is still no estimate of the harvest resulting from this fishery.

Stock Status Indicators

DFO Bottom Trawl Research Survey (4RS)

In the DFO survey, the average number and weight of cod per tow generally showed a slow and gradual increase since the mid-1990s. From 2014 to 2016, the value of these indices was above the 1990–2016 series average. In 2017, these indices fell significantly below the series average (Figure 2). The spatial analysis of the catches reveals that these indices decreased in the two sampled NAFO divisions, 4S and 4R. However, compared to the years 2011 to 2016, there were larger catches of cod in a few strata in the southern portion of Division 4R in 2017.

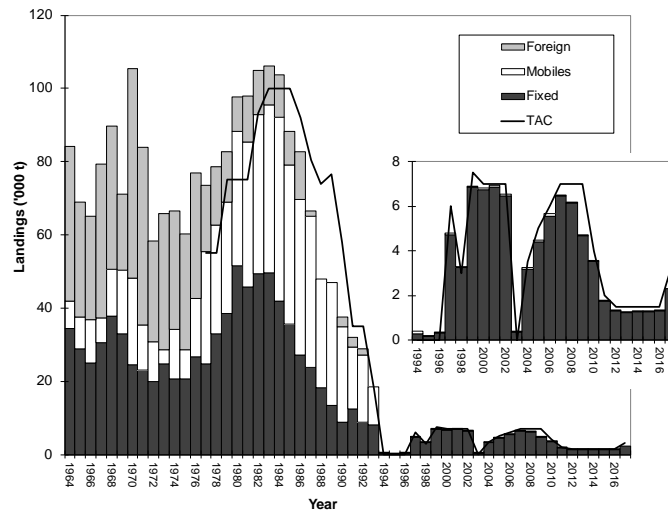


Figure 1. Annual and total allowable catches (TAC) by fleet and by management year (1999: TAC from 1999/01/01 to 2000/05/14; 2000 to 2017: TAC from May 15 to May 14 of the following year).

In 2017, the size frequency distribution of cod caught during the DFO survey is generally comparable to the 1990-2016 series average. However, this distribution represents a significant decrease when compared to 2016 in the abundance of cod larger than 25 cm (Figure 3).

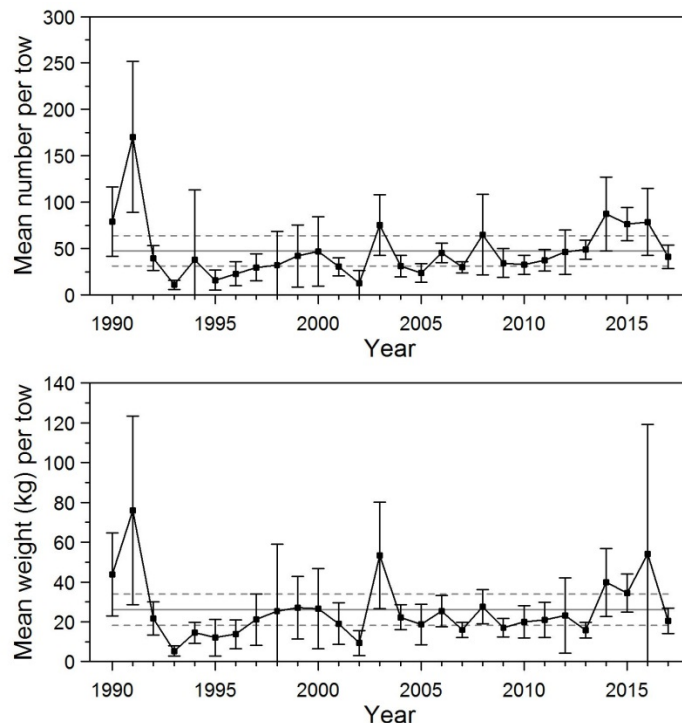


Figure 2. Mean number and mean weight of cod per 15-minute tow during the DFO research survey (4RS). The error bars indicate 95% confidence intervals. The solid line represents the 1990–2016 series average and the dotted lines $\pm 1/2$ standard deviation around the average.

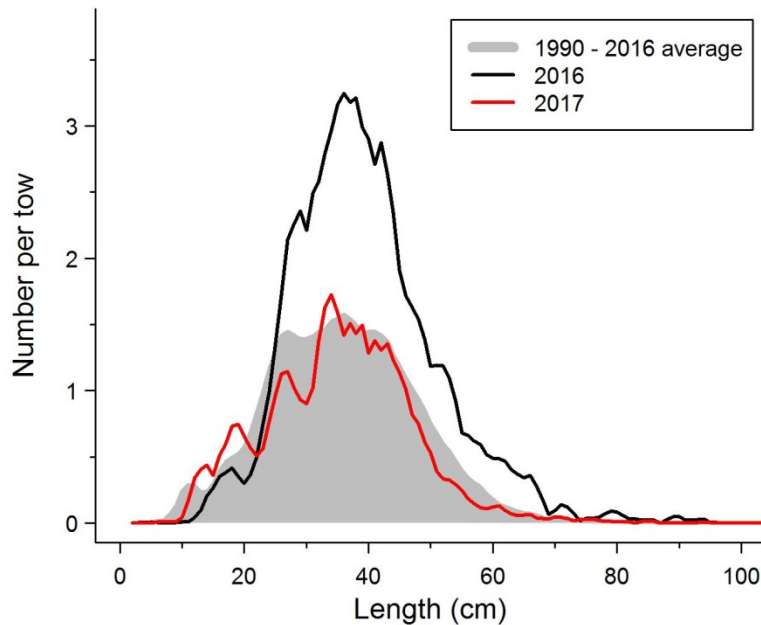


Figure 3. Observed length frequency distributions of cod (mean number per 15-minute tow) in the DFO survey in 4RS.

Sentinel Fisheries Program – Mobile Gear Survey (3Pn, 4RS)

The mean number of cod for the sentinel fisheries survey per tow with mobile gear has not shown a clear trend since 1995. The 2017 value is below the average of the 2003-2016 series (Figure 4).

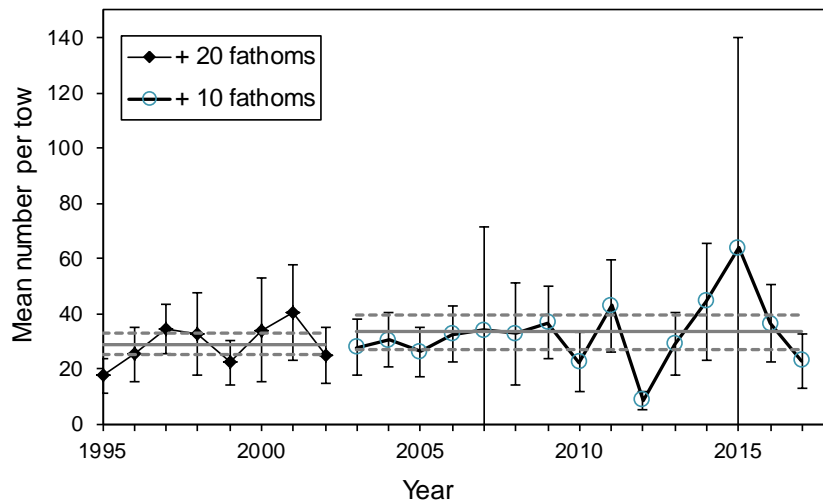


Figure 4. Average observed number of cod per 30-minute tow (\pm 95% confidence interval) in the sentinel fisheries program mobile gear survey (1995 to 2002, includes strata greater than 20 fathoms; 2003-2017 includes strata greater than 10 fathoms). The solid line represents the average of each series and the dotted lines \pm $\frac{1}{2}$ standard deviation around the average.

Sentinel Fisheries Program – Fixed Gear (3Pn, 4RS)

The standardized catch per unit effort (CPUE) index for the sentinel longline fisheries program increased from 1995 to 2006 then declined, reaching its lowest point in 2010. It then generally increased until 2016 to reach a value well above the series average (1995–2016). This index shows a decrease for 2017 with a value comparable to the average (Figure 5). Detailed analysis of this program data in the NAFO sub-division 3Pn reveals that summer catch rates were higher than the series average at this time of year. This information supports the hypothesis of an atypical spatial distribution of cod in 2017.

The CPUE index for the sentinel gillnet fisheries shows a similar pattern to that of the longline index with values in 2015 and 2016 well above the 1995–2016 series average. In 2017, the index fell sharply and is at the average level (Figure 5).

In 2017, the deployment of fishing activities in the fixed gear sentinel fishery is different from previous years. On one hand, various problems delayed the start of activities, resulting in a significant reduction in the spring fishing effort for the longline component. On the other hand, the data on activities carried out in November and December were not yet available at the time of preparation of this response.

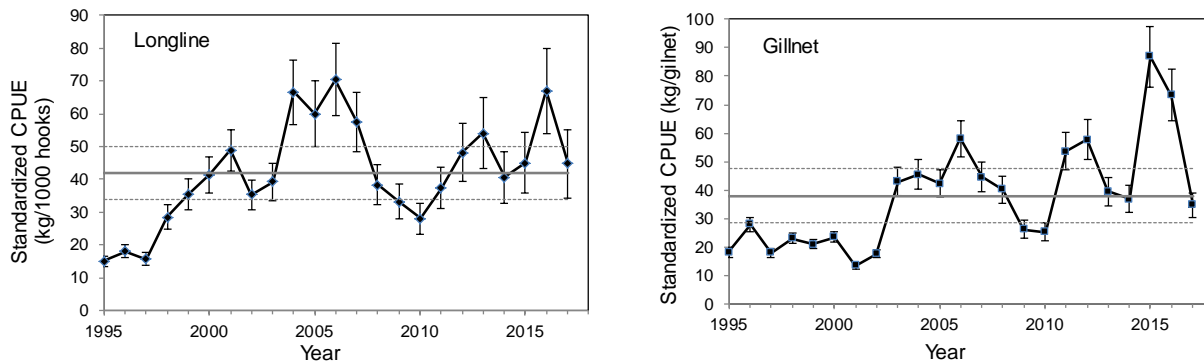


Figure 5. Standardized catch per unit effort (CPUE) (\pm 95% confidence interval) for the Sentinel Fisheries Fixed Gear Program (2017, July to October). The solid line represents the 1995–2016 series average and the dotted lines \pm 1/2 standard deviation around the average.

Conclusion

In 2017, landings of directed cod fishing increased in proportion to the increase in the TAC. The four indicators for monitoring the status of the northern Gulf of St. Lawrence cod stocks are decreasing, and their values are close to the average of their respective series. The size distribution of cod caught during the DFO survey indicates a marked decrease in the abundance of cod greater than 25 cm when compared to 2016. These results do not correspond to the projection from the last assessment, which in fact, foresaw an increase in the mature biomass of this stock in 2017. The situation will be re-evaluated during the next stock assessment in the winter of 2019.

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Sources of information

This Science Response results from the December 12, 2017 Science Response Process on the update of stock status indicators for cod in the northern Gulf of St. Lawrence (3Pn, 4RS) in 2017.

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