

Biomass: Biomass has declined from timeseries highs in the mid-2010s to the long-term mean.

Fishing mortality: In the absence of Canadian spring surveys in 2020 and 2021 proxy fishing mortality cannot be determined. However, it is unlikely that levels of fishing mortality have changed substantially.

Recruitment: Recruitment of redfish between 15 and 20 cm has been below the long-term average since the mid-2010s across Canadian 3LN spring and autumn as well as EU-Spain 3L and 3N survey series.

State of stock: Lack of survey indices in recent years limits our understanding of stock status since 2019, but available data indicate that biomass is at or below the long-term mean. The stock appears to be above the interim limit reference point (B_{lim}).

e) Short term projections

Projections could not be undertaken for this assessment due to rejection of the ASPIC assessment model.

f) Reference points

Prior reference points were dependent on the ASPIC model fit and outputs. Upon rejection of the assessment model and until the MSE process is completed, an interim limit reference point was adopted using the average of the mean standardized biomass of the Canadian spring and autumn 3LN and EU-Spain 3N surveys ($B_{lim} = B_{rec}$) from the period 1991-2005. This period was chosen as it represented a time when stock biomass recovered from a prolonged low level.

The next full assessment of this stock is scheduled for 2024.

g) Research recommendations

STACFIS **recommends** that *changes in maturity be explored for this stock.*

STACFIS **recommends** that *stock boundaries and definitions as well as synchronicity with adjacent stocks be explored for this stock.*

11. American plaice (*Hippoglossoides platessoides*) in NAFO Divisions 3LNO

(SCR Doc. 22/005, 007, 21/020, 025,032,035; SCS Doc. 22/006, 010, 013). Interim Monitoring Report

a) Introduction

Fisheries and Catch: American plaice supported large fisheries from the 1960s to the 1980s. However, due to the collapse of the stock in the early 1990s, there was no directed fishing in 1994 and a moratorium was put in place in 1995. Landings from by-catch increased until 2003, after which they began to decline. The majority of the catch has been taken by offshore otter trawlers. STACFIS agreed catches were 1 171t in 2020 and 1 556t in 2021 (Figure 11.1). American plaice are taken as by-catch mainly in the Canadian yellowtail flounder fishery, EU-Spain and EU-Portugal skate, redfish and Greenland halibut fisheries.

Recent nominal catches and TACs ('000 t) are as follows:

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
TAC	ndf	ndf	ndf	ndf	ndf	ndf	ndf	ndf	ndf	ndf
STATLANT 21	2.2	1.4	1.1	1.0	1.1	0.8	1.2	1.1	1.3	
STACFIS	3.0 ¹	2.3 ¹	1.1 ²	1.7 ²	1.2	1.0	1.2	1.2	1.6	

ndf No directed fishing.

¹ Catch was estimated using fishing effort ratio applied to 2010 STACFIS catch.

² Catch was estimated using STATLANT 21 data for Canadian fisheries and Daily Catch Records for fisheries in the NRA.

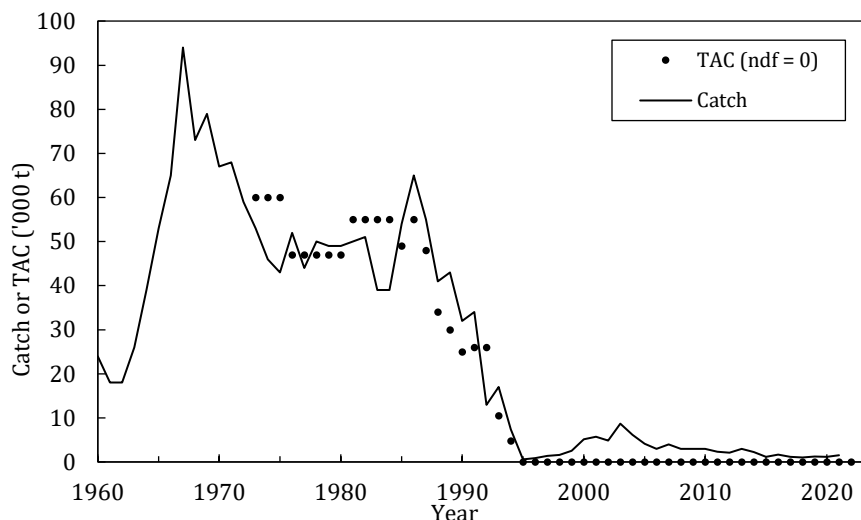


Figure 11.1. American Plaice in Div. 3LNO: estimated catches and TACs. No directed fishing is plotted as 0 TAC.

b) Data Overview

i) Research Survey Data

Canadian spring survey. Due to coverage issues in the Canadian spring survey, indices are not available from 2006, 2015, 2017. Due to COVID-19 restrictions there was no spring survey in 2020, and due to operational difficulties, the 2021 spring survey did not occur (see Appendix III, section 5.b).

Biomass and abundance estimates from spring surveys for Div. 3LNO declined during the late 1980s-early 1990s. Biomass indices generally increased from the mid-1990s to 2014 but declined sharply after that (Figure 11.2). The abundance index follows a similar trend. Spring estimates of biomass and abundance in 2019 are the lowest since 1995 and 1998, respectively.

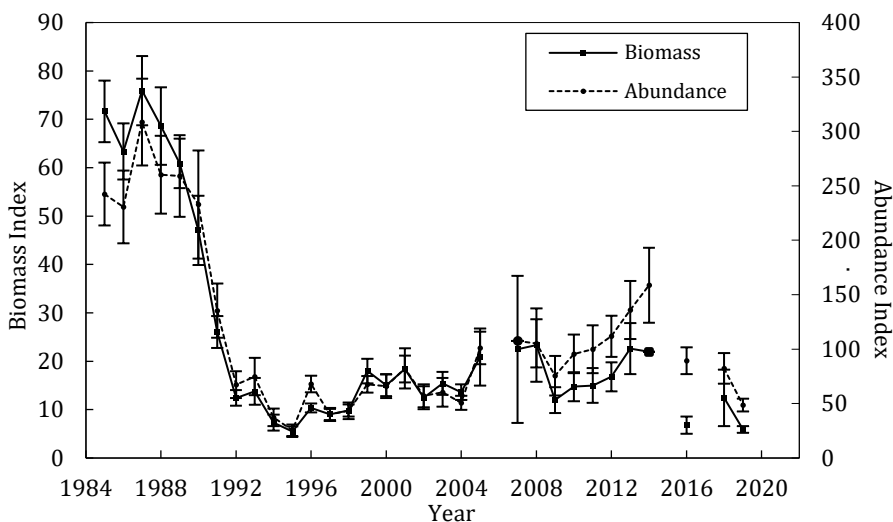


Figure 11.2. American Plaice in Div. 3LNO: biomass and abundance indices with approximate 95% confidence intervals from Canadian spring surveys. Data prior to 1996 are Campelen equivalents and since then are Campelen. Open symbols represent years where CIs extend to negative values.

Canadian autumn survey. Autumn survey points for 2004 and 2014 are excluded due to incomplete coverage of Div. 3L and 3NO, respectively. Due to operational difficulties, there was no autumn survey in



Div. 3LNO in 2021 (see Appendix III, section 5.b). Biomass and abundance indices from the autumn survey declined rapidly from 1990 to the mid-1990s, and indices have generally been below average since. There was an increase in biomass to 2013 but this did not persist.

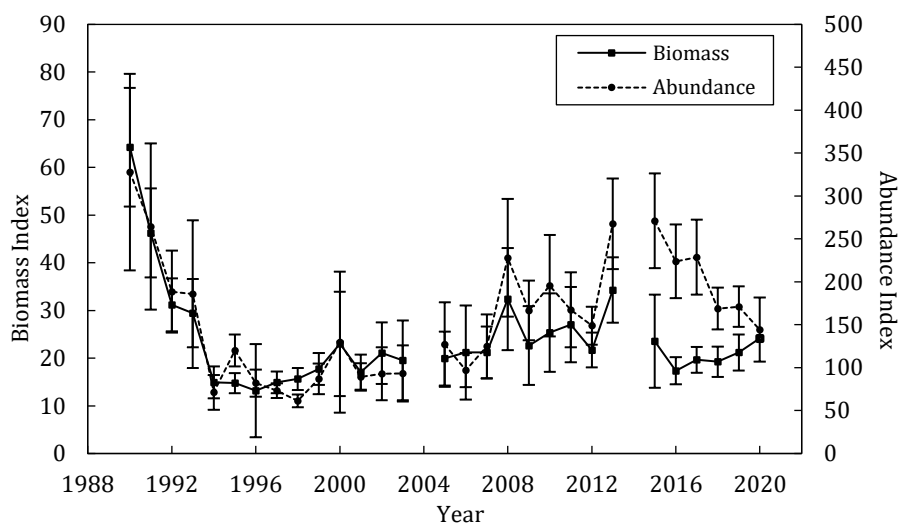


Figure 11.3. American Plaice in Div. 3LNO: biomass and abundance indices with approximate 95% confidence intervals from Canadian autumn surveys. Data prior to 1996 are Campelen equivalents and since then are Campelen.

EU-Spain Div. 3NO Survey. From 1998-2021, surveys have been conducted annually by EU-Spain in the Regulatory Area in Div. 3NO. There was no survey in 3NO in 2020. The biomass and abundance indices varied without trend for most of the time series but then subsequently declined to the lowest values in the time series.

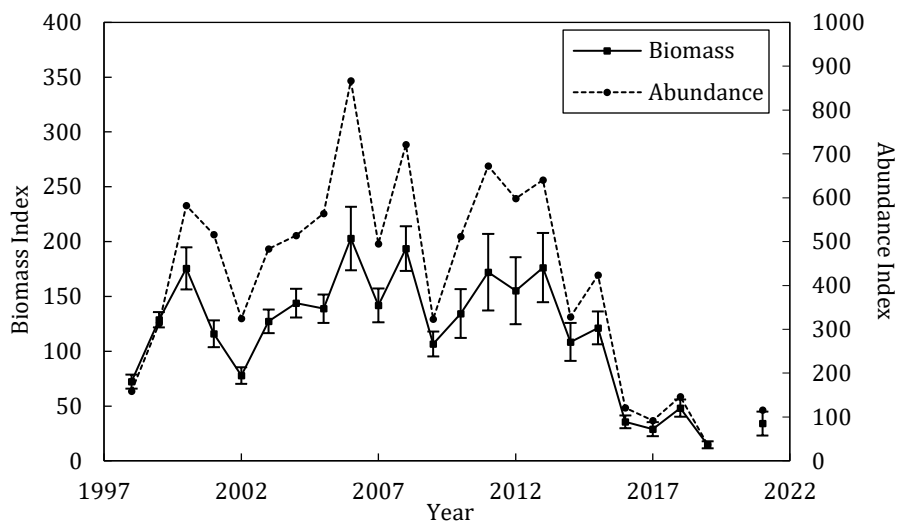


Figure 11.4. American Plaice in Div. 3LNO: biomass and abundance indices from the EU-Spain Div. 3NO survey (Data prior to 2001 are Campelen equivalents and since then are Campelen).

EU-Spain Div. 3L Survey. Since 2003 surveys have been conducted annually by EU-Spain in the Regulatory Area in Div. 3L. No EU-Spain survey was completed in 3N or 3L in 2020, nor in 3L in 2021 due to COVID-

19 restrictions. The biomass and abundance indices increased from 2010 to 2015, and subsequently declined to 2019.

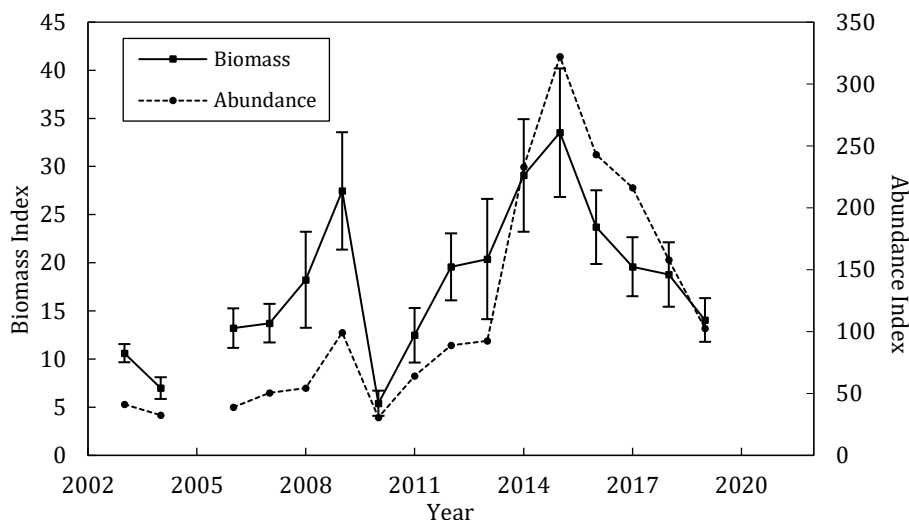


Figure 11.5. American Plaice in Div. 3LNO: biomass and abundance indices from the EU-Spain Div. 3L survey.

c) Conclusion

Based on available data, there is nothing to indicate a change in the status of the stock since the 2021 assessment.

The next full assessment of this stock is planned for 2024.

d) Research Recommendations

STACFIS **recommends** that *investigations be undertaken to compare ages obtained by current and former Canadian age readers.*

STATUS: Work is ongoing. This recommendation is reiterated.

STACFIS **recommends** that *investigations be undertaken to examine the retrospective pattern and take steps to improve the model.*

STATUS: Sensitivity analysis was completed during the 2021 assessment examining the impact of changing the model assumptions on M, and two alternative models in progress were examined. Work is ongoing. The recommendation is reiterated.

STACFIS **recommended** that *investigations be undertaken to reexamine which survey indices are included in the model.*

STATUS: Work is ongoing. This recommendation is reiterated.

12. Yellowtail Flounder (*Limanda ferruginea*) in Divisions 3L, 3N and 3O

(SCR Doc. 22/005, 22/007, 20/002, 20/009; SCS Doc. 22/06, 22/07, 22/09). Interim Monitoring Report

a) Introduction

Fisheries and Catch: There was a moratorium on directed fishing from 1994 to 1997, and small catches were taken as by-catch in other fisheries. The fishery was re-opened in 1998 and catches increased from 4 400 t to 14 100 t in 2001 (Fig 12.1). Catches from 2001 to 2005 ranged from 11 000 t to 14 000 t. The catch in 2006 was only 930 t, due to corporate restructuring and a labour dispute in the Canadian fishing industry. Since then, catches have continued to be influenced by industry related factors, remaining below the TAC and in some years, have been very low. In 2021, catches totalled 14 600 t.