

Cod in Divisions 3NO






Advice June 2018 for 2019 - 2021





Recommendation for 2019 – 2021

No directed fishing in 2019 to 2021 to allow for stock rebuilding. By-catches of cod in fisheries targeting other species should be kept at the lowest possible level. Projections of the stock were not performed, but given the poor strength of all year classes subsequent to 2006, the stock will not reach B_{lim} in the next three years.

Management objectives

General convention objectives are applied in conjunction with an Interim Conservation Plan and Rebuilding Strategy adopted in 2011 (NAFO/FC Doc. 11/22). The long-term objective of this plan is to achieve and to maintain the spawning stock biomass in the “safe zone” of the NAFO PA framework (FC Doc. 04/18), and at or near B_{msy} .

Convention objectives	Status	Comment/consideration
Restore to or maintain at B_{msy}		$B < B_{lim}$
Eliminate overfishing		F is very low, $F < F_{lim}$
Apply Precautionary Approach		B_{lim} and F_{lim} established, no directed fishery.
Minimise harmful impacts on living marine resources and ecosystems		No directed fishery
Preserve marine biodiversity		Cannot be evaluated

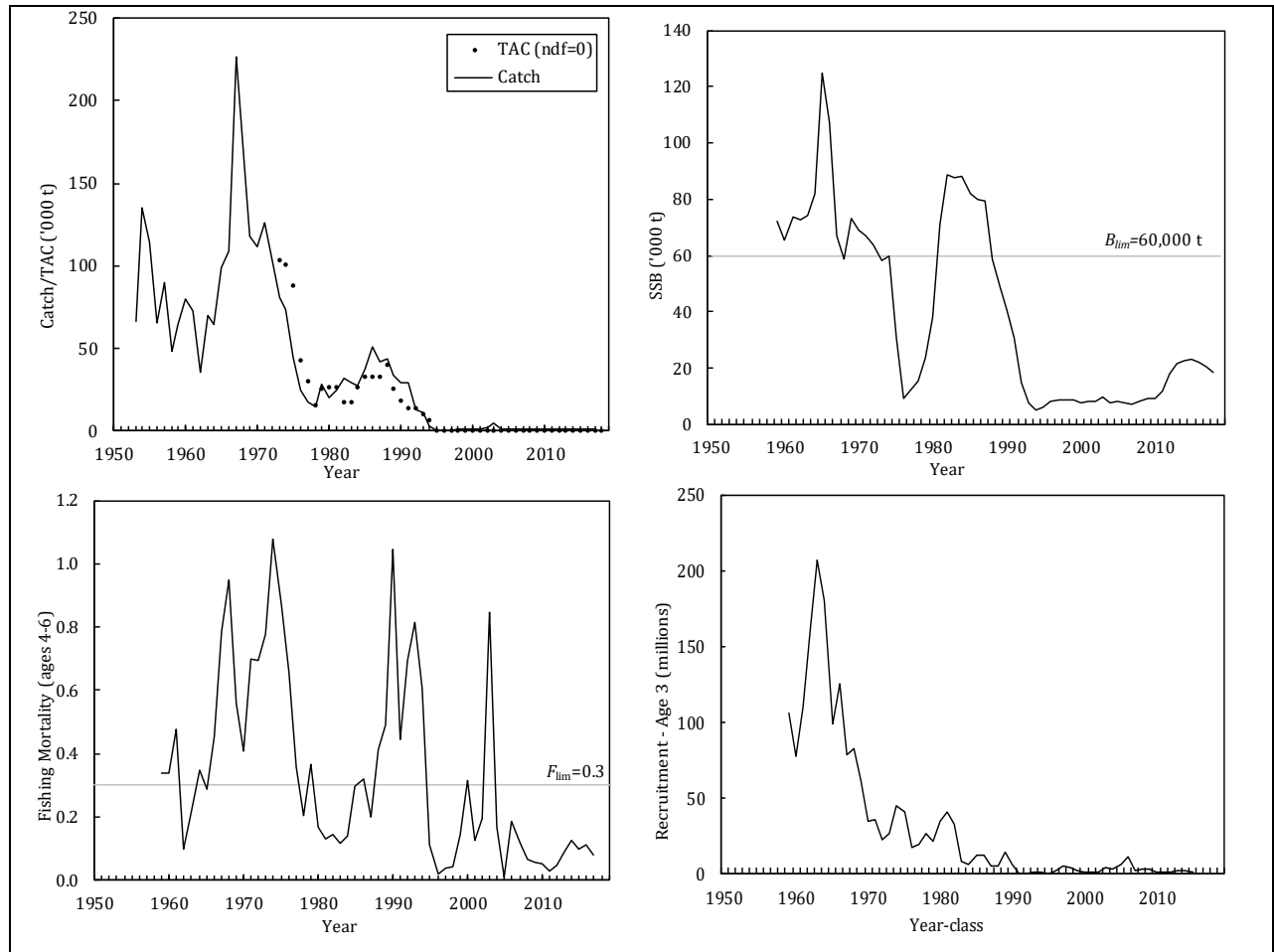
 OK
 Intermediate
 Not accomplished
 Unknown

Management unit

The stock occurs in Divs. 3NO, with fish occupying shallow parts of the bank, particularly the southeast shoal area (Div. 3N) in summer and on the slopes of the bank in winter.

Stock status

The spawning biomass increased noticeably between 2010 and 2015 but has subsequently declined and the 2018 estimate of 18,537 t represents only 31% of B_{lim} (60,000 t). The 2006 year class remains relatively strong and at age 12 in 2018 makes up more than half of the estimated SSB. Subsequent year classes are much weaker, suggesting that the medium-term prospects for the stock are not good. Fishing mortality values over the past decade have been low and well below F_{lim} (0.3).



Reference points

B_{lim} : 60 000 t of spawning biomass (SC, 1999)

F_{lim} ($=F_{msy}$): 0.3 (SC, 2011).

Projections

A decision was made to not project the stock forward because the 2006 year class, which in 2018 is age 12 and makes up more than half of the estimated SSB, will no longer be part of the virtual population starting in 2019. This is a limitation of the current model formulation which ends at age 12 (i.e. there is no plus group) and any attempt to project the stock forward would be characterized by the ‘artificial’ removal of this strong year class from the population. Revising the assessment model to incorporate a plus group is considered of high priority for this assessment going forward. Although projections of the stock were not performed, the poor strength of year classes subsequent to 2006 suggests that the medium-term prospects for the stock are not good.

Assessment

A sequential population analysis model was used, and the results were consistent with the previous assessment. Input data comes from research surveys and commercial removals.

The next assessment is planned for 2021.

Human impact

Mainly bycatch related fishery mortality has been documented. Other sources (e.g. pollution, shipping, oil-industry) are undocumented.

Biology and Environmental interactions

Productivity of this stock was above average during the warm 1960s. During the cold 1990s, productivity was very low and surplus production was near zero. The Grand Bank (3LNO) EPU is currently experiencing low productivity conditions and biomass has declined across multiple trophic levels and stocks since 2014.

Fishery

A moratorium was implemented in 1994. Catches since that time are by-catch in other fisheries.

Recent catch estimates and TACs ('000 tonnes) are:

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TAC	ndf	ndf	ndf	ndf	ndf	ndf	ndf	ndf	ndf	ndf
STATLANT 21	0.6	0.8	0.8	0.7	1.1	0.7	0.5	0.6	0.6	
STACFIS	1.1	0.9	0.8	0.7	1.1	0.7	0.6	0.7	0.6	

ndf : No directed fishery

Effects of the fishery on the ecosystem

No specific information is available. There is no directed fishery for this stock. General impacts of fishing gears on the ecosystem should be considered. Areas of Divs. 3NO have been closed to protect sponges and corals.

Special comments

Recent stock trends in SSB differ between this and the previous (2015) assessment. The previous assessment estimated SSB in 2015 to be 64% of B_{lim} , whereas the current estimate for 2015 is only 39% of B_{lim} . Differences result from the fact that weights at age for 2015 (i.e. the terminal year) in the 2015 assessment were simply the average of the three previous years, whereas the current assessment uses actual estimates of weights at age for 2015 that were not available at the time of the previous assessment. These new weights at age for 2015 are much lower than the mean values used in the previous assessment and largely contribute to the lower estimates of SSB.

Sources of information

SCR Docs. 18/11, 17, 28; SCS Docs. 18/5, 6, 7, 8, 13, 14, 15