

## Cod in Division 3NO






Advice June 2013 for 2014-16





### Recommendation for 2014 - 2016

No directed fishery to allow for stock rebuilding. By-catches of cod in other fisheries should be kept at the lowest possible level. Projections based on either  $F_{status\ quo}$  or  $F=0$  suggest a >95% probability that the stock will remain below  $B_{lim}$  by 2016.

### Management objectives

General convention objective 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”, (PA framework, FC Doc. 04/18), and at or near  $B_{msy}$ .

Convention objectives	Status	Comment/consideration
Restore to or maintain at $B_{msy}$		Stock is below $B_{lim}$
Eliminate overfishing		$F$ is very low, $F < F_{lim}$ (0.3)
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		No directed fishery

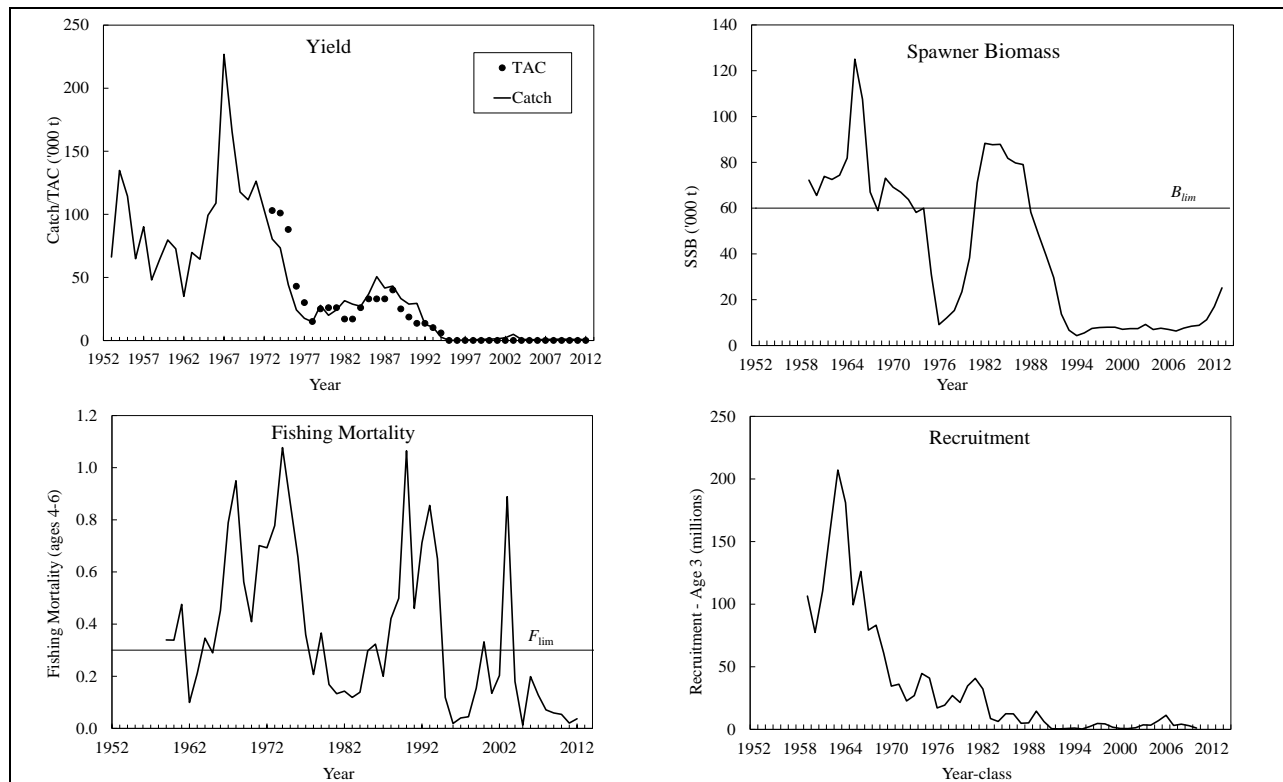
 OK  
 Intermediate  
 Not accomplished  
 Unknown

### Management unit

The stock occurs in Div. 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 has doubled since 2010 but remains well below  $B_{lim}$ . This increase in biomass has been driven by the relatively strong 2005 and 2006 year classes and by fishing mortality well below  $F_{lim}$ . More recent year classes do not appear strong.



**Reference points**

$B_{lim}$  is 60 000 t and  $F_{lim}$  is 0.3 (SC 2011).

**Projections**

SSB is projected to increase but remain below  $B_{lim}$  in both scenarios.

Fishing Mortality	2014	Yield 2015	2016	2014	P(SSB< $B_{lim}$ ) 2015	2016	P(SSB <sub>2016</sub> <SSB <sub>2013</sub> )
$F = 0$	-	-	-	>95%	>95%	>95%	<5%
$F_{status\ quo} = 0.04$	1224	1110	1177	>95%	>95%	>95%	<5%

**Assessment**

A sequential population analysis model was used; settings were unchanged from- and the results were consistent with the previous assessment. Input data comes from research surveys and by-catch fisheries (STACFIS 2013). Next assessment is planned for 2016.

*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.

**Fishery**

A moratorium was implemented in 1994. Catches since that time have been low levels of by-catch in other fisheries.

Recent catch estimates and TACs are as follows:

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TAC	ndf	ndf	ndf	ndf	Ndf	ndf	ndf	ndf	ndf	ndf
STATLANT 21	0.9	0.6	0.3	0.7	0.7	0.6	0.8	0.8	0.7	
STACFIS	0.9	0.7	0.6	0.8	0.9	1.1	0.9	0.8	0.7	

ndf No directed fishery

**Effects of the fishery on the ecosystem**

There is no directed fishery.

**Special comments**

As part of the Conservation and Rebuilding Strategy “The Fisheries Commission shall request the Scientific Council to review in detail the limit reference point when the Spawning Stock Biomass has reached 30 000 t” (FC Doc. 13/01). As the stock is currently nearing this level, Scientific Council notes that multiple years of SSB greater than 30 000 t will be needed prior to re-evaluation of reference points as productivity at these levels of biomass is not well known.

**Sources of information**

SCR Doc. 13/10, 13/43, 13/44; SCS 13/5, 13/7, 13/9, 13/10