

Witch Flounder in Divisions 3NO

Advice June 2017 for 2018 - 2019

Recommendation for 2018 and 2019

All projections resulted in a greater than 10% risk of being below B_{lim} in 2019 and 2020. The stock is estimated to have declined at the exploitation rate in 2016. Levels of fishing mortality above this result in a greater than 30% risk of F exceeding F_{lim} . Scientific Council advises that the exploitation rate in 2018 and 2019 should not exceed 2016 levels and therefore catch should not exceed 1116 t and 1175 t in 2018 and 2019 respectively.

Management objectives

The NAFO Fisheries Commission adopted a total allowable catch (TAC) of 2,225 t in 2017. Bycatches in commercial fisheries directed for other species should be kept to a minimum. General convention objectives (GC Doc. 08/3) are applied.

Convention objectives	Status	Comment/consideration
Restore to or maintain at B_{msy}	●	B decreasing. $B_{lim} < B_{2016} < B_{msy}$
Eliminate overfishing	●	$F < F_{msy}$
Apply Precautionary Approach	●	Stock in safe zone of PA Framework
Minimise harmful impacts on living marine resources and ecosystems	●	VME closures in effect, no specific measures.
Preserve marine biodiversity	○	Cannot be evaluated

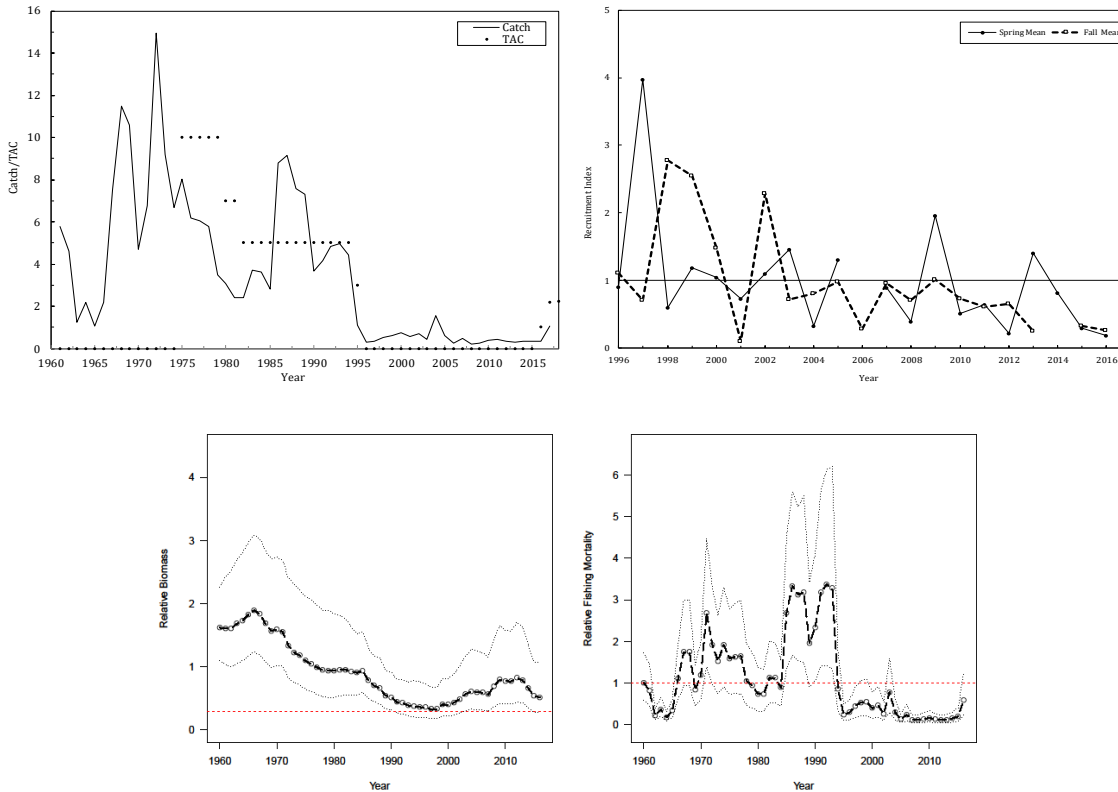
- OK
- Intermediate
- Not accomplished
- Unknown

Management unit

The management unit is NAFO Divisions 3NO. The stock mainly occurs in Div. 30 along the southwestern slopes of the Grand Bank. In most years the distribution is concentrated toward the slopes but in certain years, a higher percentage may be distributed in shallower water.

Stock status

The stock size increased since 1999 to about 2010 and then declined after 2012 and is now at 52% B_{msy} . There is 15% risk of the stock being below B_{lim} and a 19% risk of F being above F_{lim} . Recruitment since 2013 has been decreasing with survey estimates in 2016 approaching the lowest of the time series.



Reference points

Reference points are estimated from the surplus production model. Scientific Council considers that 30% B_{msy} is a suitable biomass limit reference point (B_{lim}) and F_{msy} a suitable fishing mortality limit reference point for stocks where a production model is used.

Projections and risk analyses.

All projections assumed that the catch in 2017 was equal to the TAC of 2 225 t (which produces F_{2017}). This was followed by constant fishing mortality for 2018 and 2019 at several levels of F (F_{2016} , 75% F_{2016} , 125% F_{2016} , 2/3 F_{MSY} , 75% F_{MSY} , and 85% F_{MSY}). The probability that $F > F_{lim}$ in 2017 is 57% at a catch of 2 225 t. The population is projected to grow under all scenarios and the probability that the biomass in 2020 is greater than the biomass in 2016 is greater than 50% in all scenarios. The population is projected to remain below B_{MSY} for all levels of F examined with a probability of greater than 70%.

Yield (t) and risk of $F > F_{lim}$, $B < B_{lim}$ and $B < B_{MSY}$ for projected F values of F_{2016} , 75% F_{2016} , 125% F_{2016} 2/3 F_{MSY} , 75% F_{MSY} , and 85% F_{MSY} .

	Yield 2018	Yield 2019	p> F_{lim}		p< B_{lim}			p< B_{MSY}			p2020> 2016
			2018	2019	2018	2019	2020	2018	2019	2020	
F=0					18%	16%	14%	79%	77%	70%	72%
75% F_{2016} =0.03	844	891	15%	16%	19%	18%	20%	80%	75%	72%	66%
F_{2016} =0.04	1116	1175	24%	25%	19%	18%	17%	79%	76%	73%	65%
2/3 F_{msy} =0.05 =125% F_{2016}	1316	1384	31%	32%	19%	18%	19%	79%	76%	73%	63%
75% F_{msy} =0.052	1468	1555	36%	37%	18%	19%	19%	79%	76%	73%	62%
85% F_{msy} =0.06	1662	1745	42%	43%	19%	19%	20%	80%	77%	74%	60%

Assessment

This stock is assessed utilizing a surplus production model in a Bayesian framework. An interim monitoring report was provided in 2016

The input data were catch from 1960-2016, Canadian spring survey series from 1984-1990, Canadian spring survey series from 1991-2016 (no 2006) and the Canadian autumn survey series from 1990-2016 (no 2014).

Human impact

Mainly fishery related mortality. Other potential sources (e.g. pollution, shipping, and oil-industry) are undocumented.

Biological and environmental interactions

Witch flounder in NAFO Divs 3NO are distributed mainly along the southwestern slopes of the Grand Bank.

Fishery

The fishery was reopened to directed fishing in 2015 and is exploited by otter trawl. Prior to the reopening, witch flounder were caught as bycatch in bottom otter trawl fisheries for yellowtail flounder, redfish, skate and Greenland halibut.

Recent catch estimates and TACs are:

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
TAC	ndf	ndf	ndf	ndf	ndf	ndf	ndf	1.0	2.2	2.2
STATLANT 21A	0.2	0.1	0.4	0.4	0.3	0.3	0.3	0.4	1.0	
STACFIS	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	1.1	

*ndf = no directed fishing

Effects of the fishery on the ecosystem

No specific information available. General impacts of bottom trawl gear on the ecosystem should be considered.

Special comments

Because of the uncertainty and proximity to limit reference points, the next full assessment is rescheduled for 2018.

Sources of Information

SCR Docs 17/xxx, 020; SCS Docs. 17/04, 05, 11, xx; NAFO/GC Doc 08/3