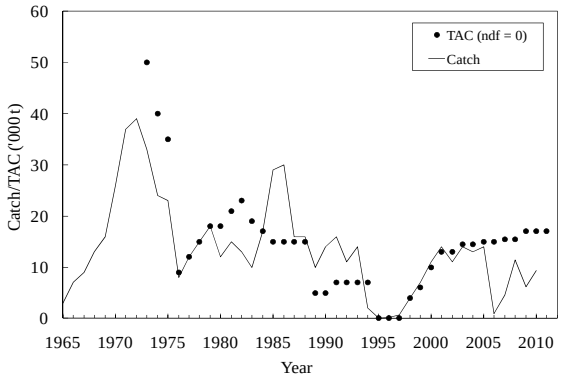
Yellowtail flounder in Divisions 3LNO

Background: The stock is mainly concentrated on the southern Grand Bank and is recruited from the Southeast Shoal area nursery ground, where the juvenile and adult components overlap in their distribution.

Fishery and Catches: 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. Since then, catches have been below the TAC and in some years, have been very low.

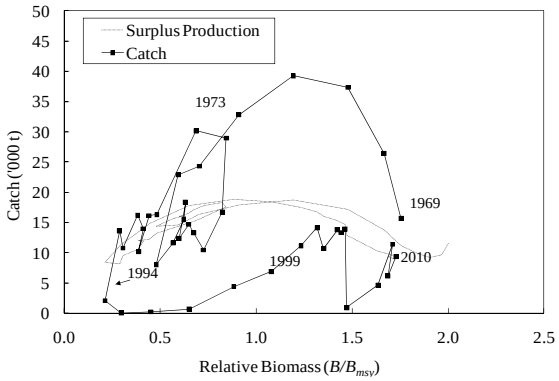
	Catch ('000 t)		TAC ('000 t)	
Year	STACFIS	21	Recommended	Agreed
2008	11.4	11.3	15.5	17.0
2009	6.2	5.5	<85% F_{msy}	17.0
2010	9.4	9.1	<85% F_{msy}	17.0
2011			<85% F_{msy}	17.0

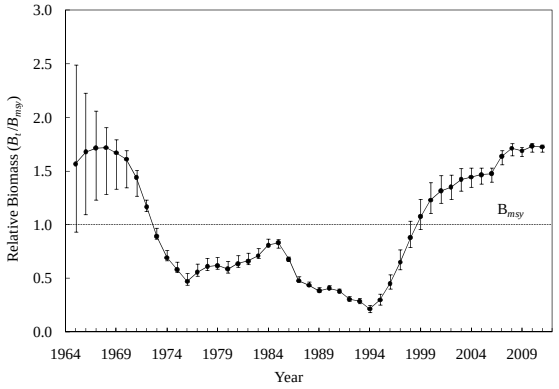


Data: Abundance and biomass indices were available from: annual Canadian spring (1971-82; 1984-2010) and autumn (1990-2010) bottom trawl surveys; annual USSR/Russian spring surveys (1972-91); and EU-Spain surveys in the NAFO Regulatory Area of Div. 3NO (1995-2010). Length frequencies of the catch from Canada (Div. 3LNO), EU-Portugal (Div. 3N) and EU-Spain (Div. 3NO) were also available for 2010.

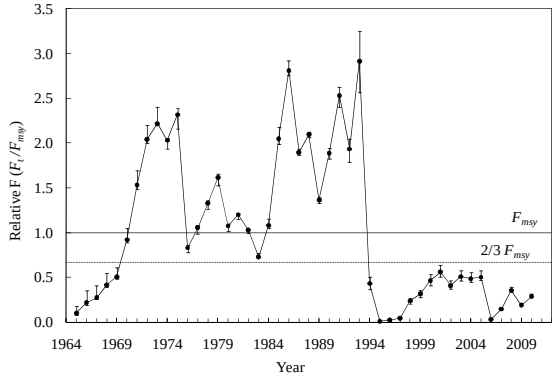
Assessment: An analytical assessment using a stock production model was accepted to estimate stock status in 2011.

Biomass: Biomass estimates in all surveys have been relatively high since 2000. Relative biomass from the production model has been increasing since 1994, is estimated to be above the level of B_{msy} after 1999, and is 1.7 times B_{msy} in 2011.





Fishing Mortality: From 2007-2010 F averaged about 25% of F_{msy}.



Recruitment: Based on a comparison of small fish (<22 cm) in research surveys, recent recruitment appears to be about average.

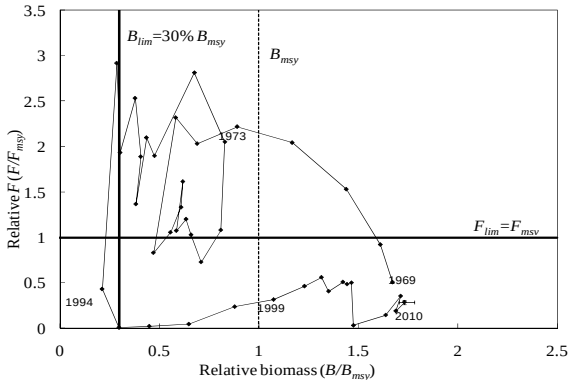
State of Stock: The stock is above B_{msy} and F is less than 1/3 F_{msy}. Stock size has steadily increased since 1994 and is currently estimated to be 1.7 times B_{msy}.

Catch Projections in 2012-13: Catch projections (in '000 t) at two levels of catch in 2011 and various levels of *F* are shown below.

Projected *F* (catch 2011=17 000t)	Catch 2012	Catch 2013
F_{2010}	8.9	9.0
$2/3\ F_{msy}$	19.9	18.9
$75\%\ F_{msy}$	22.2	20.8
$85\%\ F_{msy}$	25.0	22.9
F_{msy}	28.8	25.7
Projected *F* (catch 2011=8 979t)	Catch 2012	Catch 2013
F_{2010}	9.4	9.4
$2/3\ F_{msy}$	21.0	19.6
$75\%\ F_{msy}$	23.4	21.6
$85\%\ F_{msy}$	26.2	23.8
F_{msy}	30.4	26.8

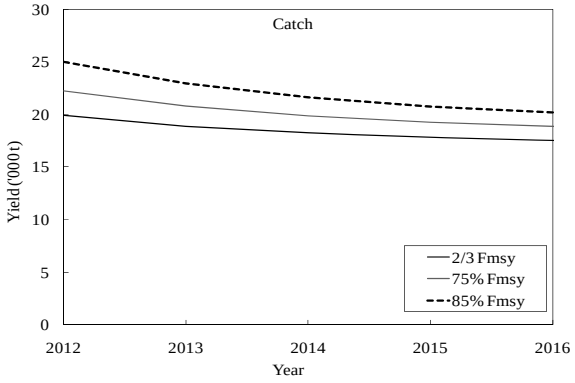
Recommendation: *F* options of up to 85% F_{msy} are considered to have a low risk of exceeding F_{lim} ($=F_{msy}$) in 2012 and 2013, and are projected to maintain this stock well above B_{msy}.

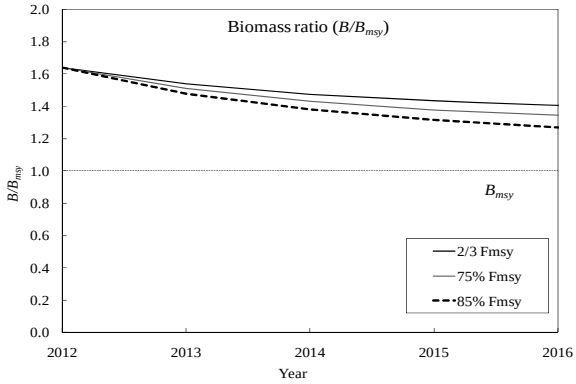
Reference Points: Scientific Council considers that 30% B_{msy} is a suitable limit reference point (B_{lim}) for stocks where a production model is used. At present, the risk of the stock being below B_{lim} = 30% B_{msy} is approximately zero. Currently the biomass is estimated to be above B_{lim} and *F*, below F_{lim} ($=F_{msy}$) so the stock is in the safe zone as defined in the NAFO Precautionary Approach Framework.



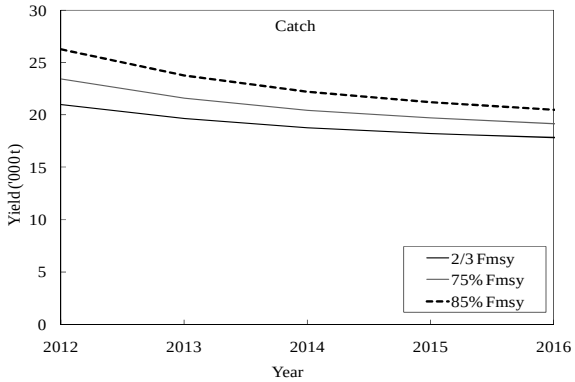
Medium Term Considerations: F_{msy} was estimated to be 0.25. Projections were carried out assuming two levels of catch in 2011 followed by constant fishing mortality from 2012-2016 at several levels of *F*. Although yields are projected to decline in the medium term at both levels of catch in 2011 for 2/3 F_{msy}, 75% F_{msy}, and 85% F_{msy}, at the end of the projection period, biomass is still projected to be above B_{msy}.

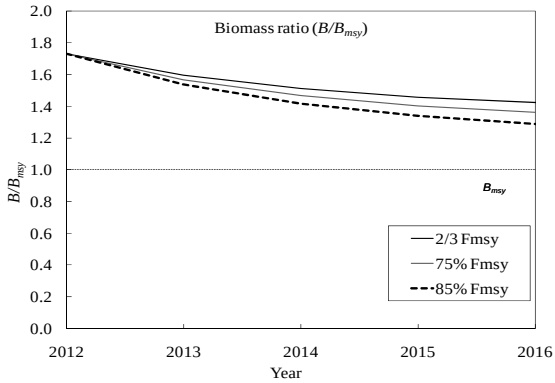
Y_{2011} = 17 000 t





Y_{2011} = 8 971 t





Special Comment: Scientific Council noted that the yellowtail flounder fishery takes cod and American plaice as by-catch. Hence, in establishing the TAC for yellowtail flounder, the impacts on Div. 3NO cod and Div. 3LNO American plaice of any increase in yellowtail flounder TAC should be considered.

The next Scientific Council assessment of this stock will be in 2013.

Sources of Information: SCR Doc. 11/6, 33, 34, 37; SCS Doc. 11/4, 5, 7, 9, 11.