



Transboundary Management Guidance Committee

Guidance Document 2015/01

The Transboundary Management Guidance Committee (TMGC), established in 2000, is a government – industry committee composed of representatives from Canada and the United States. The TMGC’s purpose is to develop guidance in the form of harvest strategies, resource sharing, and management processes for Canadian and U.S. management authorities for the cod, haddock and yellowtail flounder transboundary resources on Georges Bank. This document is a summary of the basis of the TMGC’s guidance to both countries for the 2016 fishing year (calendar year for Canada; May 1, 2016, through April 30, 2017, for the United States). Pertinent reference documents and consultations used in the TMGC deliberations are listed at the end of this document.

Since inception, the TMGC has successfully coordinated management of three trans-boundary groundfish resources. Annual harvest levels have been established consistent with the legal and policy requirements of both countries. The benefits of this approach are worth noting: fishing mortality rates for the three management units considered by the TMGC have been reduced and Eastern Georges Bank haddock is at record high abundance.

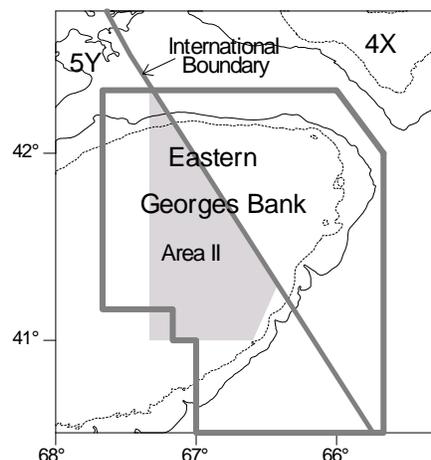
In January of 2011, the International Fisheries Clarification Act was signed into law in the United States. This Act recognizes the U.S./Canada Transboundary Resources Sharing Understanding, and provides the United States with flexibility in the rebuilding period and catch level requirements for Georges Bank yellowtail flounder under the Magnuson-Stevens Fishery Conservation and Management Act.

Regarding Eastern Georges Bank Cod, the Transboundary Resources Assessment Committee (TRAC) advice for 2016 provided by the Virtual Population Analysis (VPA) “M 0.8” model is significantly different from the advice provided by the Age-Structured Assessment Program (ASAP) models used as a consequence analysis by the TRAC and by the United States to assess the entire Georges Bank. There will be significant management impacts from the divergent catch advice and those impacts will be felt differently by both countries. There is also a substantial risk that the TMGC may become ineffective and the benefits of cooperation will be lost. The TMGC advises the Steering Committee that the current situation is not expected to be easily resolved and risks making it difficult to cooperatively manage this stock in the future.

Eastern Georges Bank Cod [5Zjm; 551, 552, 561, 562]

Guidance

The TMGC concluded that the most appropriate combined Canada/U.S. Total Allowable Catch (TAC) for Eastern Georges Bank cod for the 2016 fishing year is 625 mt. In view of the continued poor status of the stock, and in keeping with the harvest strategy, the TMGC sought to keep fishing mortality (F) lower than 0.11 to promote stock rebuilding. A 2016 TAC of 625 mt corresponds to less than a 50% risk of F exceeding the VPA “M 0.8” model reference point of 0.11, and is a slight reduction relative to last year’s TAC. The annual allocation shares between countries for 2016 are based on a combination of historical catches (10% weighting) and resource distribution based on trawl surveys (90% weighting). Combining these factors entitles the United States to 22% and Canada to 78% of the TAC, resulting in a national quota of 138 mt for the United States and 488 mt for Canada.



Harvest Strategy & Reference Points

The strategy is to maintain a low to neutral risk of exceeding the fishing mortality limit reference, $F_{ref} = 0.18$. When stock conditions are poor, fishing mortality rates should be further reduced to promote rebuilding.

At the 2013 cod benchmark assessment, the TRAC agreed that the current $F_{ref} = 0.18$ is not consistent with the VPA “M 0.8” model given that it was derived with an assumption of natural mortality (M) = 0.2 in the assessment. Based on analyses presented at the 2014 TRAC, the TMGC agreed that $F = 0.11$ is an appropriate fishing reference point to use for providing catch advice based on the VPA “M 0.8” model.

Fishery Exploitation

Catches and Biomass (thousands mt); Recruits (millions)

		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg ¹	Min ¹	Max ¹
Canada ⁹	Quota	1.3	1.4	1.6	1.2	1	0.9	0.5	0.5	0.5	0.5			
	Catch	1.4	1.2	1.5	1.2	0.8	0.7	0.5	0.4	0.5		5.4	0.4	17.9
	Landed	1.1	1.1	1.4	1	0.7	0.7	0.4	0.4	0.4		5.3	0.4	17.8
	Discard	0.3	0.1	0.1	0.2	0.1	<0.1	0.1	<0.1	<0.1		0.2	<0.1	0.5
USA ⁹	Quota ²	0.4	0.5	0.7	0.5	0.3	0.2	0.2	0.1	0.2	0.1			
	Catch ²	0.3	0.3	0.5	0.5	0.3	0.2	<0.1	<0.1	<0.1 ¹⁰				
	Landed	0.1	0.2	0.2	0.4	0.4	0.3	0.1	<0.1	0.1		3.3	<0.1	10.6
	Discard	0.1	0.3	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	0.3
Total ⁹	Quota	1.7	1.9	2.3	1.7	1.3	1.1	0.7	0.6	0.7	0.65			
	Catch ^{3,4}	1.7	1.5	2.0	1.7	1.1	0.9	0.5	0.5	0.5 ¹⁰		9	0.5	26
	Catch	1.6	1.8	1.7	1.8	1.3	1.0	0.6	0.5	0.6				

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg ¹	Min ¹	Max ¹
From "M 0.8" model													
Adult Biomass ⁵	7.5	7.5	9.0	11.4	10.3	8.7	7.9	9.1	9.9	10.0	25.7	5.9	59.7
Age 1 Recruits	3.7	2.5	1.4	0.9	1.4	4.4	1.5	0.4	3.1		5.7	0.5	24.1
Fishing mortality ⁶	0.35	0.26	0.23	0.15	0.13	0.11	0.07	0.05	0.04		0.34	0.04	0.66
Exploitation Rate ⁷	27%	21%	18%	15%	11%	14%	9%	6%	5%		25%	5%	44%
Exploitation Rate ⁸	21%	21%	21%	22%	20%	12%	4%	1%	1%		23%	1%	46%

¹1978 – 2014

²for fishing year from May 1 – April 30

³for Canadian calendar year and USA fishing year May 1-April 30

⁴sum of Canadian landed, Canadian discard, and USA catch (includes discards)

⁵Jan 1 ages 3+

⁶ages 4-9

⁷ages 4-5; M=0.2

⁸ages 6-9; M=0.8

⁹unless otherwise noted, all values reported are for calendar year

¹⁰preliminary estimate

Combined Canada/U.S. catches in 2014 were 574 mt, which included 30 mt of discards, with a quota of 700 mt. Historically, catches averaged 17,198 mt between 1978 and 1993, peaking at 26,463 mt in 1982. Catches declined to 1,683 mt in 1995, then fluctuated at about 3,000 mt until 2004 and have subsequently declined.

State of Resource

Evaluation of the state of the resource was based on results from an age-structured analytical assessment (i.e., VPA), which used fishery catch statistics and sampling for size and age composition of the catch for 1978 to 2014 (including discards). The VPA was calibrated to trends in abundance from three bottom trawl survey series: DFO, NMFS spring, and NMFS fall.

The agreement at the benchmark assessment review in 2013 was to provide catch advice based on a VPA “M 0.8” model (Claytor and O’Brien, 2013). M was fixed at 0.2 for all the ages in all years, except for ages 6+ in years from 1994 onward, where M = 0.8.

Since 1995, **adult population biomass** (ages 3+) has fluctuated between 5,900 mt and 18,800 mt. The estimated adult population biomass at the beginning of 2015 from the VPA “M 0.8” model was 10,048 mt, which was about 20% of the adult biomass at the start of the time series in 1978. An increase since 2005 was largely due to recruitment and growth of the 2003 and 2010 year classes.

Recruitment at age 1 has been low in recent years. The 2003 and 2010 year classes are estimated to be the highest since 1998. The current estimate of the 2013 year class is about two-thirds of the 2003 and 2010 year classes based on the 2015 assessment. The other year classes are weak, and the 2012 year class is the lowest on record.

Fishing mortality (population weighted average of ages 4-9) has been declining since 2007 and has been at or below F= 0.11 since 2011. F in 2014 was estimated to be 0.04 from the VPA “M 0.8” model.

Productivity

Recruitment, age structure, fish growth, and spatial distribution typically reflect changes in the productive potential. The current biomass is well below 25,000 mt. When biomass is above this threshold, there is a better chance for higher recruitment. The **population age structure** displays a low proportion of ages 7+ compared to the 1980s. Average weight at length, used to reflect condition, has been stable in the past, but has started to decline in recent years. Lower weights at age in the population in recent years and poor recruitment have contributed to the lack of rebuilding. **Size at age** in the 2014 fishery remained at low levels. The research survey **spatial distribution** patterns of adult (3+) cod have not changed over the past decade.

2016 Catch Risk Assessment

For projections, catch in 2015 was assumed to be equal to the 650 mt quota and F was assumed to be 0.11 in 2016. The projection could be optimistic if the 2014 and 2015 year classes are lower than expected.

A 2016 catch of 600 mt would have a low probability of exceeding $F = 0.11$. Stock size is projected to decline even without any catch in 2016. The TMGC concluded that a 2016 catch of 625 mt with a lower than 50% probability of exceeding $F = 0.11$ was appropriate given stock conditions.

Probability of exceeding F reference point in 2016	25%	50%	75%
2016 Catch	600 mt	675 mt	775mt

Even with no fishing in 2016 there is greater than a 50% risk of a decrease in adult biomass from 2016 to 2017. With a catch of 625 mt in 2016, the expected biomass decline would be less than 6%.

A consequence analysis was examined to understand the risks associated with assumptions of the VPA “M 0.8” and ASAP “M 0.2” models (reviewed at the 2013 cod benchmark assessment). This consequence analysis estimated the projected catch at F_{ref} (0.18) and $F = 0.11$ as if each model represented the true state of the resource and examined the consequences to expected biomass under alternative model assumptions. In the ASAP model, the retrospective bias was not adjusted for 2014, and projected catches would be lower if the adjustments were done. Of note, a catch of 625 mt in 2016 would result in exceeding $F_{ref} = 0.18$ in the ASAP “M 0.2” model used as a consequence analysis.

		VPA “M 0.8”	ASAP “M 0.2”
Catch 2014		574 mt	574 mt
Quota 2015		650 mt	650 mt
2014 Biomass (3+)		9,932 mt	2,422 mt
2015 Biomass (3+)		10,048 mt	1,521 mt
2016 Catch/Model Assumption			
675 mt (VPA F = 0.11)	2016 F	0.11	0.65
	2017 Biomass (mt)	9,425	1,610
	% change in biomass from 2016	-6%	-2%
223 mt (ASAP F = 0.18)	2016 F	0.028	0.18
	2017 Biomass (mt)	9,767	2,058
	% change in biomass from 2016	-3%	26%

Special Considerations

The consequence analysis reflects the uncertainties in the assessment model assumptions. Considering the current poor stock conditions, despite these uncertainties, all assessment results indicate that low catches are needed to promote rebuilding.

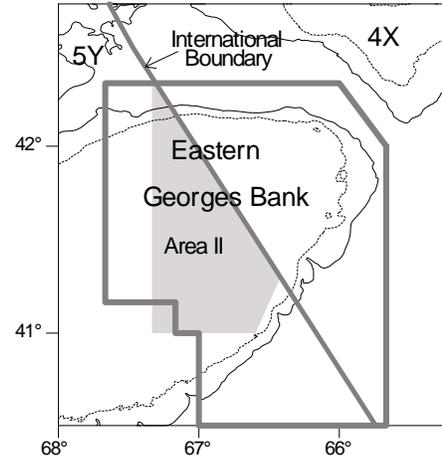
The TMGC finds it difficult to reconcile the VPA “M 0.8” model used for catch advice and the ASAP “M 0.2” model used as a sensitivity analysis.

A calculation being made in the risk analysis for the VPA results did not account for the differences in natural mortality rate between young ages and ages 6+, which could have impacted catch advice since 2009. The TRAC compared deterministic and stochastic projections results for assessments since 2009 and found that the differences were minimal (-11% to 7%) until 2015 (20%).

Eastern Georges Bank Haddock [5Zjm; 551, 552, 561, 562]

Guidance

The TMGC concluded that the most appropriate combined Canada/U.S. TAC for Eastern Georges Bank haddock for the 2016 fishing year is 37,000 mt, representing a neutral risk (50%) of exceeding F_{ref} of 0.26. This is status quo compared to the 2015 TAC. Biomass is expected to remain very high. The annual allocation shares between countries for 2016 are based on a combination of historical catches (10% weighting) and resource distribution based on trawl surveys (90% weighting). Combining these factors entitles the USA to 41% and Canada to 59% of the TAC, resulting in a national quota of 15,170 mt for the U.S. and 21,830 mt for Canada.



TMGC reviewed two year projections provided by TRAC. Given uncertainties and the retrospective bias raised by TRAC, the TMGC recommends a target of 50,000 mt be used as an upper bound when determining 2017 catch advice. This number will be reviewed subject to the 2016 TRAC monitoring report.

Harvest Strategy & Reference Points

The strategy is to maintain a low to neutral risk of exceeding the fishing mortality limit reference, $F_{ref} = 0.26$. When stock conditions are poor, fishing mortality rates should be further reduced to promote rebuilding.

Fishery Exploitation

Catches and Biomass (thousands mt); Recruits (millions)

		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg ¹	Min ¹	Max ¹
Canada ²	Quota	14.5	12.7	15.0	18.9	17.6	12.5	9.1	6.4	16.5	19.2			
	Landed	12.0	11.9	14.8	17.6	16.6	11.2	5.0	4.6	13.0		5.6	0.5	17.6
	Discard	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		0.1	<0.1
USA ²	Quota ³	7.5	6.3	8.1	11.1	12.0	9.5	6.9	4.0	10.5	17.8			
	Catch ³	0.7	0.3	1.6	1.6	1.8	1.1	0.4	0.6 ⁴	1.3				
	Landed	0.3	0.3	1.1	2.2	2.2	1.3	0.4	0.3	1.2		2.0	<0.1	9.1
	Discard	0.3	0.3	0.1	0.1	<0.1	0.1	0.1	0.1	0.1		0.5	0.0	7.6
Total ²	Quota ³	22.0	19.0	23.0	30.0	29.6	22.0	16.0	10.4	27.0	37.0			
	Catch ^{5,6}	12.7	12.3	16.5	19.2	18.4	12.3	5.5	5.2	14.6				
	Catch	12.6	12.5	16.0	19.9	18.8	12.7	5.6	5.1	14.2		8.2	2.1	23.3

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg ¹	Min ¹	Max ¹
Adult Biomass ⁷	88.8	104.2	101.0	102.0	74.3	47.5	29.9	99.5	125.7	117.0	38.1 ⁸	4.9 ⁸	125.7 ⁸
Age 1 Recruits	9.8	3.6	4.8	3.1	5.4	274.7	33.9	14.5	1,300.0	12.9	48.4 ⁸	0.2 ⁸	1,300.0 ⁸
Fishing mortality ⁹	0.35	0.20	0.13	0.22	0.31	0.33	0.37	0.22	0.23		0.31	0.08	0.57
Exploitation Rate ⁹	27%	16%	11%	18%	24%	26%	28%	18%	19%		24%	9%	40%

¹1969 – 2014

² unless otherwise noted, all values reported are for calendar year

³ for fishing year from May 1st – April 30th

⁴ preliminary estimate

⁵ for Canadian calendar year and USA fishing year May 1st – April 30th

⁶ sum of Canadian landed, Canadian discard, and USA catch (includes discards)

⁷ January 1st ages 3+

⁸ 1969 – 2015

⁹ ages 4-8 for 1969 – 2002; ages 5-8 for 2003 – 2014

The combined Canada/U.S. fishery catch (landings + discards) in 2014 was dominated by the 2010 year class (age 4) by numbers and weight.

State of Resource

Evaluation of the state of the resource was based on results from an age-structured analytical assessment (VPA) that used fishery catch statistics and sampling for size and age composition of the catch for 1969 to 2014 (including discards). The VPA was calibrated to trends in abundance from three bottom trawl survey series: DFO, NMFS spring, and NMFS fall.

Several large **recruitment** events since 1990, lower exploitation, and reduced capture of small fish in the fisheries allowed the **adult population biomass** (ages 3+) to increase from near a historical low of 10,300 mt in 1993 to a historical high of 125,700 mt in 2014. The beginning of year biomass estimate for 2015 is slightly lower at 117,000 mt (80% confidence interval: 92,500 mt – 153,000 mt). A preliminary estimate for the 2014 year class is 12.9 million age 1 fish. The current estimate for the exceptional 2013 year class is 1,300 million age 1 fish, which would make it the largest cohort in the assessment time series, followed by the 2010 year class at 275 million.

Fishing mortality (population weighted for ages 4-8) fluctuated between 0.28 and 0.50 during the 1980s, and increased in 1992-1994 to about 0.55, the highest observed since 1971. F was above F_{ref} from 2010-2012 before dropping off again in 2013. In 2014, F was estimated at 0.23 (80% confidence interval: 0.20-0.30), just below F_{ref}.

A retrospective bias was first noted in the 2014 assessment. The 2015 assessment exhibits a retrospective bias in adult (3+) biomass and age 5-8 F, which results in decreases in biomass and increases in F compared to the results of previous assessments. A sensitivity analysis that adjusted for the retrospective bias showed the 2014 age 5-8 F would be 0.39, which is above F_{ref} = 0.26, and the 2015 3+ biomass would be 62,871 mt.

Productivity

This stock exhibits a number of positive features. There have been three exceptionally strong and two strong year classes in the last 13 years. Recruitment, as well as age structure, spatial distribution, and fish growth reflect changes in the productive potential. Recruitment, while

highly variable, has generally been higher when adult biomass has been above 40,000 mt, which has been the case since 2001. The **population age structure** displays a broad range of age groups, reflecting improving recruitment and lower exploitation since 1995. The **spatial distribution** patterns observed during the most recent bottom trawl surveys were similar to the average patterns over the previous ten years. However, there has been a general decline in weights at age since the late 1990s. The 2010 and 2013 year classes are both showing similar growth to the 2003 year class. Fish condition has generally been below the time series average since 2004.

Catch Risk Assessment

A 2016 catch of 37,000 mt results in a neutral risk (50%) that the 2016 fishing mortality rate will exceed F_{ref} .

Probability of exceeding F_{ref}	25%	50%	75%
2016 catch	32,000 mt	37,500 mt	43,500 mt
2017 catch	66,000 mt	81,000 mt	97,000 mt

Assuming a 2015 catch equal to the 37,000 mt total quota and a 2016 catch at $F_{ref} = 0.26$ (37,500 mt), a combined Canada/U.S. catch of 81,000 mt in 2017 results in a neutral risk (50%) that the 2017 fishing mortality rate would exceed $F_{ref} = 0.26$. The 2010 and 2013 year classes are expected to constitute the majority of the 2017 catch biomass at 16% and 78%, respectively. Population biomass in 2018 is expected to decline even at low levels of fishing, but remain high (463,800 mt).

A sensitivity analysis to account for retrospective bias on spawning stock biomass and F for haddock was conducted. Population numbers in 2015 (ages 0-9+) were rho adjusted and a risk assessment was conducted for years 2016-2018.

Using the rho adjusted values, assuming a 2015 catch equal to the 37,000 mt total quota, a combined Canada/U.S. catch of 19,500 mt in 2016 results in a neutral risk (50%) that the 2016 fishing mortality rate would exceed $F_{ref} = 0.26$. A combined Canada/U.S. catch of 45,000 mt in 2017 results in a neutral risk (50%) that F will exceed F_{ref} .

If the 2015 quota is caught, the 2015 F will be above F_{ref} due to the revision of the size of the 2010 year class in the 2015 assessment.

Probability of exceeding F_{ref}	25%	50%	75%
2016 catch (rho adjusted)	16,000 mt	19,500 mt	22,500 mt
2017 catch (rho adjusted)	37,000 mt	45,000 mt	55,000 mt

Special Considerations

The 2015 DFO survey index is the highest value for the time series (1986-2015), while the 2014 NMFS fall and the 2015 NMFS spring survey values are the second highest values for their respective time series.

The TRAC examined the uncertainty in terminal year estimates and determined that there is substantial unmeasured uncertainty, which has increased since last year's assessment.

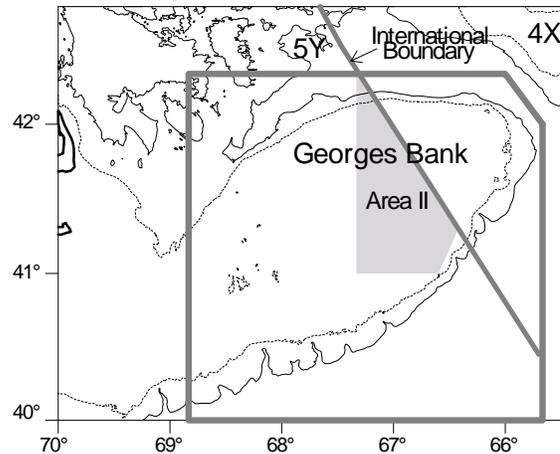
The TMGC is requesting that TRAC further develop the template for data monitoring in interim years between multi-year assessments. An approach which includes criteria for determining whether or not the projections are still appropriate for providing catch advice should be provided to the TMGC in advance of an interim TMGC meeting in early 2016.

The TMGC is requesting that the Steering Committee consider a benchmark review for Eastern Georges Bank haddock in 2017.

Georges Bank Yellowtail Flounder [5Zhjmn; 522,525, 551, 552, 561, 562]

Guidance

The TMGC concluded that the most appropriate combined Canada/U.S. TAC for Georges Bank yellowtail for the 2016 fishing year is 354 mt. Catch advice is based on an empirical approach, which does not provide an estimate of a fishing mortality rate. The TMGC considered two options: a constant exploitation rate and a constant quota approach, as recommended by the TRAC (note: TRAC advice is for three years, TMGC is annual advice). The mean of the three surveys is essentially identical to the revised 2014 value, and so following the constant quota approach, the TMGC recommends rolling over the quota at 354 mt for the second year. The TMGC and the TRAC will continue to explore the appropriate catch strategy to use with the empirical approach. The annual allocation shares between countries for 2016 are based on a combination of historical catches (10% weighting) and resource distribution based on trawl surveys (90% weighting). Combining these factors entitles the United States to 76% and Canada to 24% of the TAC, resulting in a national quota of 269 mt for the United States and 85 mt for Canada.



Harvest Strategy & Reference Points

The strategy is to maintain a low to neutral risk of exceeding the fishing mortality limit reference, $F_{ref} = 0.25$. When stock conditions are poor, fishing mortality rates should be further reduced to promote rebuilding.

Due to the lack of an assessment model, an estimate of fishing mortality rate can no longer be calculated. Status determination relative to reference points is not possible because reference points cannot be defined.

Fishery Exploitation

Catches (thousands mt)

		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg ¹	Min ¹	Max ¹
Canada ²	Quota	0.9	0.4	0.6	0.5	0.8 ³	1.2	0.6	0.3	<0.1	0.1			
	Landed	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		0.5	<0.1	2.9
	Discard	0.5	0.1	0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1		0.4	<0.1	0.8
USA ²	Quota ⁴	2.1	0.9	1.9	1.6	1.2 ³	1.5	0.6	0.2	0.3	0.2			
	Catch ⁴	1.9	1.0	1.6	1.8	1.1	1.1	0.5	0.1	0.1 ⁵				
	Landed	1.2	1.1	0.7	1.0	0.7	0.9	0.4	0.1	<0.1		4.1	<0.1	15.9
	Discard	0.4	0.5	0.4	0.7	0.3	0.2	0.2	<0.1	<0.1		0.6	<0.1	3.0

		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg ¹	Min ¹	Max ¹
Total²	Quota⁶	3.0	1.3	2.5	2.1	2.0 ³	2.7	1.2	0.5	0.4	0.4			
	Catch⁶	2.5	1.1	1.7	1.9	1.3	1.1	0.6	0.1	0.1 ⁵				
	Catch⁷	2.1	1.7	1.5	1.8	1.2	1.2	0.7	0.2	0.2		5.6	0.2	17.2

¹1973 – 2014

² unless otherwise noted, all values reported are for calendar year

³ quotas not jointly determined; established individually by each country

⁴ for fishing year May 1 – April 30

⁵ preliminary estimate

⁶ for Canadian calendar year and USA fishing year May 1 – April 30

⁷ sum of Canadian landed, Canadian discard, and USA catch (includes discards)

Total catches of Georges Bank yellowtail flounder peaked at about 21,000 mt in both 1969 and 1970. The combined Canada/U.S. catch increased from 1995 through 2001, averaged 6,300 mt during 2002-2004, but declined to 159 mt in 2014 due to restrictive management measures. The 2014 value was the lowest catch in the time series beginning in 1935, and discards were greater than landings for the first time.

State of Resource

The declining trend in survey biomass to historical low levels for the past two years, despite reductions in catch to low amounts, indicates a poor state of the resource. The three survey biomasses indicate the capacity of the stock is significantly diminished. Quotas have declined and catches have been well below quotas for the past five years, yet the surveys declined during this period.

Productivity

Recruitment, spatial distribution, and fish growth typically reflect changes in the productive potential. Recent recruitment has generally been below average and age structure is truncated. Spatial distribution patterns from the three groundfish surveys generally follow recent averages. Growth has recently been variable without trend, and condition (weight at length) remains below the long term average. Stock biomass is low and productivity is poor.

2016 Catch Risk Assessment

The TRAC recommended two approaches to management that could be considered and applied for 3 years to measure stock response: constant exploitation rate and constant quota. The constant exploitation rate approach varies the catch as the survey biomass changes, imposing greater variability in the catch. The constant quota approach imposes greater variability in the population.

Special Considerations

TMGC agrees with the conclusions of the TRAC that Harvest Control Rules for this stock should remain simple, given the current state of the yellowtail flounder stock.

Source Documents

Busawon, D.S., L. O'Brien, and H.H. Stone. 2015. Update of allocation shares for Canada and the USA of the Transboundary Resources of Atlantic Cod, Haddock and Yellowtail Flounder on Georges Bank through Fishing Year 2016. TRAC Reference Document 2015/01.

TRAC. 2015. Eastern Georges Bank cod. TRAC Status Report 2015/01.

TRAC. 2015. Eastern Georges Bank haddock. TRAC Status Report 2015/02 (Revised).

TRAC. 2015. Georges Bank yellowtail flounder. TRAC Status Report 2015/03.

Consultations

2015 TRAC meeting, St. Andrews, New Brunswick, 7-9 July 2015.

TMGC public consultation in Canada, Yarmouth, Nova Scotia, 29 July 2015.

TMGC public consultation in U.S., Portsmouth, New Hampshire, 20 August 2015.