Transboundary Management Guidance Committee

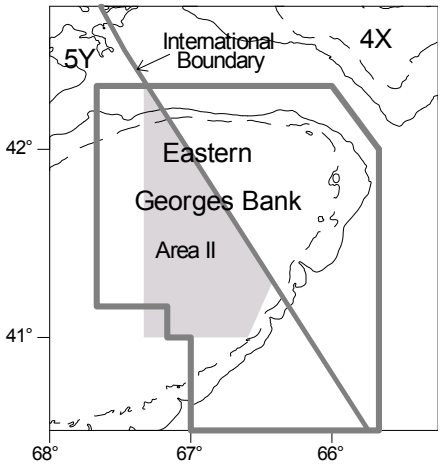
Guidance Document 2003/1

The Transboundary Management Guidance Committee (TMGC), established in 2000, is a government – industry committee comprised of representatives from Canada and the United States. The Committee's purpose is to develop guidance in the form of harvest strategies, resource sharing and management processes for Canadian and US 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 2004 fishing year. Pertinent reference documents and consultations used in the TMGC deliberations are listed at the end of this document.

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

Guidance:

The TMGC concluded that the most appropriate combined Canada/USA TAC for Eastern Georges Bank cod for the 2004 fishing year is 1,300 mt. This corresponds to an F in 2004 of about 0.18, which represents a neutral risk of exceeding the F_{ref} of 0.18. At this level of harvest (less than half of the catch in 2002) there is about a 75% chance that stock biomass will increase from 2004 to 2005. The annual allocation shares for 2004 between countries are based on a combination of historical catches (40% weighting) and resource distribution based on trawl surveys (60% weighting). Combining these factors entitles the USA to 23% and Canada to 77%, resulting in a national quota of 300 mt for the USA and 1,000 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.

Fishery Exploitation:

Catches, Biomass (thousands of tonnes); Recruits (millions)

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Avg[1]	Min[1]	Max[1]
Canada	**Quota**	6.0	1.0	2.0	3.0	1.9	1.8	1.6	2.1	1.2	1.3			
	Landed	5.3	1.1	1.9	2.9	1.9	1.8	1.6	2.2	1.3		7.5	1.1	17.8
	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	**Quota**													
	Landed	1.2	0.7	0.8	0.6	0.8	1.2	0.6	1.4	1.4		4.6	0.6	10.6
	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
Total	**Quota**													
	Catch	6.5	1.8	2.7	3.5	2.7	3.0	2.2	3.6	2.7		12.1	1.8	26.4

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Avg[1]	Min[1]	Max[1]
Adult Biomass	11.0	8.6	12.4	13.1	12.0	15.8	15.4	18.4	16.0	13.2	25.5[2]	8.6[2]	45.2[2]
Age 1 Recruits	2.3	1.5	2.8	4.1	1.7	4.0	1.9	1.6	0.5		6.8	0.5	21.1
Fishing mortality	0.72	0.19	0.27	0.37	0.27	0.24	0.20	0.32	0.23		0.48	0.19	0.92
Exploitation Rate	47%	16%	22%	28%	22%	20%	16%	25%	19%		34%	16%	55%

[1]1978 - 2002
[2]1978 - 2003

Combined Canada and USA catches averaged about 17,900 mt between 1978 and 1992, peaked at 26,000 mt in 1982 and declined to a low of 1,800 mt in 1995. Landings since 1999 have been about 3,000 mt. Catches in 2002 (2,800 mt) decreased by 22% from 2001, due to reduced Canadian landings.

Fishing mortality rate for fully recruited ages (4-6) increased rapidly between 1989 and 1993 to F = 0.9, well above the fishing mortality reference, F_{ref}= 0.18. In 1995, fishing mortality declined to near F_{ref} and since 1995, fishing mortalities have been greater than F_{ref} (F_{2002}=0.23).

State of Resource:

There was a substantial decline in adult (3+) stock biomass from about 45,000 mt in 1990 to about 8,600 mt in 1995, the lowest observed. The biomass subsequently increased to 18,400 mt in 2001 but declined to 13,200 mt at the beginning of 2003. Almost all of the increase in the late 1990s has been the result of growth and increased survival of the 1982, 1995 and 1996 year-classes. Lower weights-at-age in the population and the continuing low recruitment have contributed to the recent decline.

Productivity:

Recruitment has been below the 1978-2002 average of 6.8 million since the 1990 year-class. The 1996 and 1998 year-classes, at about 4 million each, appear to be the strongest since the 1990 year-class. Recruitment since the 1998 year-class has been less than 2 million. The recruit per adult biomass ratio (an index of survivorship of young fish) has been lower than the norm in recent years. Relative to the early 1990's, the population age structure displays an increasing representation of older age groups, in terms of both absolute numbers and percent age composition. Spatial patterns observed during the most recent bottom trawl surveys were similar to the average patterns over the previous five years. The stock has exhibited lower weights-at-age and lower partial recruitments to the fishery in recent years, which impact yield projections.

2004 Catch Risk Assessment:

A combined Canada/USA yield of 1,300 mt in 2004 would be risk neutral with respect to exceeding F_{ref} = 0.18. A yield below 1,300 mt in 2004 would be risk averse with respect to preventing a decline in adult biomass from 2004 to 2005.

2004 Catch (mt) associated with levels of risk

Performance attribute	25% (risk averse)	50% (risk neutral)	75% (risk prone)
Exceeding F_{ref}	1,100 mt	1,300 mt	1,500 mt
Biomass decline	1,300 mt	1,600 mt	1,900 mt

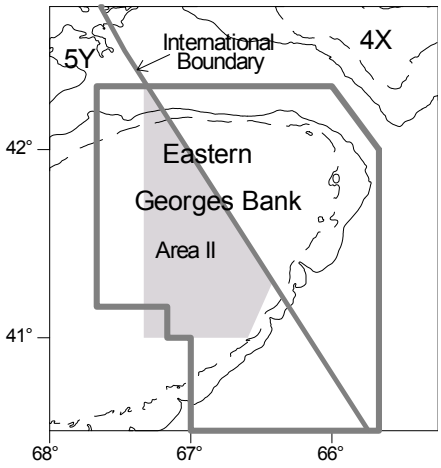
Special Considerations:

Cod and haddock are often caught together in groundfish fisheries, although their catchabilities to the fisheries differ and they are not necessarily caught in proportion to their relative abundance. With current fishing practices and catch ratios, the achievement of rebuilding objectives for cod may constrain the harvesting of haddock. Modifications to fishing gear and practices, with enhanced monitoring, may mitigate these concerns. While the TMGC guidance for the combined cod quota for 2004 is risk neutral for attaining F_{ref}, this quota represents a cut in catch of more than 50% from 2002, and it will be a challenge for both countries not to exceed their 2004 national quotas for cod while fishing for haddock.

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

Guidance:

The TMGC concluded that the most appropriate combined Canada/USA TAC for Eastern Georges Bank haddock for the 2004 fishing year is 15,000 mt. This represents a low risk of exceeding the F_{ref} of 0.26 and corresponds to an F in 2004 of about 0.16. At this level of harvest (double the catch in 2002) there is likely to be less than a 10% reduction in adult biomass from 2004 to 2005. The annual allocation shares for 2004 between countries are based on a combination of historical catches (40% weighting) and resource distribution based on trawl surveys (60% weighting). Combining these factors entitles the USA to 34% and Canada to 66%, resulting in a national quota of 5,100 mt for the USA and 9,900 mt for Canada.



Harvest Strategy & Reference Points:

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

Fishery Exploitation:

Catches, Biomass (thousands of tonnes); Recruits (millions)

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Avg[1]	Min[1]	Max[1]
Canada	**Quota**	3.0	2.5	4.5	3.2	3.9	3.9	5.4	7.0	6.7	6.9			
	Landed	2.4	2.1	3.7	2.7	3.4	3.7	5.4	6.8	6.5		3.8	0.5	10.0
	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	**Quota**													
	Landed	<0.1	<0.1	<0.1	<0.1	0.3	0.3	0.2	0.6	0.9		2.3	<0.1	9.1
	Discard	0.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		1.5	<0.1	7.6
Total	**Quota**													
	Catch	2.7	2.1	3.7	2.9	3.7	4.0	5.6	7.4	7.4		6.5	2.1	23.2
Adult Biomass		9.9	14.8	21.1	20.1	21.8	24.4	29.6	44.2	40.6	77.5	40.0[2]	8.5[2]	90.9[2]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Avg[1]	Min[1]	Max[1]
Age 1 Recruits	12.0	4.7	5.1	12.0	9.4	29.1	14.2	76.9	3.7	1.8	23.5[2]	0.5[2]	76.9[2]
Fishing mortality	0.34	0.15	0.22	0.14	0.16	0.16	0.22	0.22	0.19		0.28	0.06	0.59
Exploitation Rate	26%	13%	18%	12%	14%	13%	18%	18%	16%		22%	5%	41%

[1]1969 - 2002
[2]1931 - 1955, 1969 - 2003

Combined Canada and USA catches in 2002 were about 7,400 mt, increasing from a low of about 2,100 mt in 1995. Recent catches have been near the 1969-2002 average but are below the level of catches observed during the 1930s to 1950s.

Fishing mortality rate for fully recruited ages 4+ has been below $F_{ref} = 0.26$ since 1995. Fishing mortality fluctuated between 0.2 and 0.4 during the 1980s followed by a marked increase between 1989 and 1993 to its maximum of about 0.6, before declining to below the fishing mortality reference, $F_{ref} = 0.26$.

State of Resource:

Adult biomass (ages 3+) increased from about 10,000 mt in 1994 to about 78,000 mt at the beginning of 2003. The recent increase has been due to more consistent and improved recruitment and has been enhanced by lower exploitation and by reduced catches of small fish.

Productivity:

The 2000 year-class is estimated to be larger than the good 1975 and 1978 year-classes and the 1998 year-class is the second strongest since the 1979 cohort. The 2001 year-class appears weak and early signs of the 2002 year-class indicate that it is also weak. The age structure in both the catch and the population continues to broaden. The average survival of young fish since the 1990's appears similar to that during the period 1930 through 1955. The spatial distribution patterns observed during the most recent bottom trawl surveys were similar to the average patterns over the previous five years. Fish condition (weight at length) does not show any notable trends.

2004 Catch Risk Assessment:

A combined Canada/USA yield below 20,000 mt in 2004 would be risk averse with respect to exceeding $F_{ref} = 0.26$. A yield below 8,000 mt in 2004 would be risk neutral with respect to preventing a decline in adult biomass from 2004 to 2005.

2004 Catch (mt) associated with levels of risk

Performance attribute	25% (risk averse)	50% (risk neutral)	75% (risk prone)
Exceeding F_{ref}	20,000 mt	23,000 mt	27,000 mt
Biomass decline	6,000 mt	8,000 mt	10,000 mt

Special Considerations:

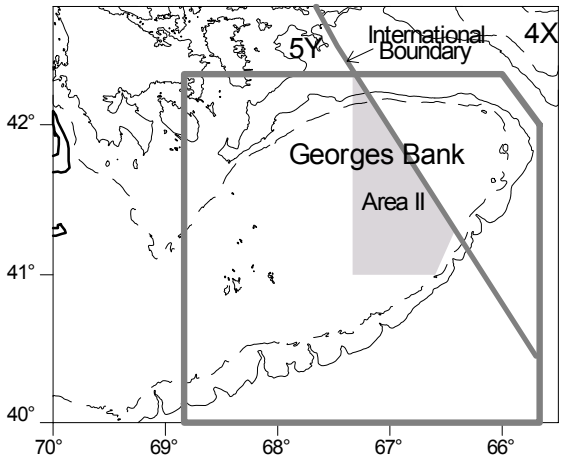
Cod and haddock are often caught together in groundfish fisheries, although their catchabilities to the fisheries differ and they are not necessarily caught in proportion to their relative abundance. With current fishing practices and catch ratios, the achievement

of rebuilding objectives for cod may constrain the harvesting of haddock. Modifications to fishing gear and practices, with enhanced monitoring, may mitigate these concerns.

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

Guidance:

The TMGC concluded that the most appropriate combined Canada/USA TAC for the 2004 fishing year is 7,900 mt. A projected catch of 7,900 mt results in a neutral risk of exceeding the F_{ref} of 0.25 based on the 2003 assessment. At this level of harvest, adult biomass is expected to remain stable between 2004 and 2005. The annual allocation shares for 2004 between countries are based on a combination of historical catches (40% weighting) and resource distribution based on trawl surveys (60% weighting). Combining these factors entitles the USA to 76% and Canada to 24%, resulting in a national quota of 6,000 mt for the USA and 1,900 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.

Fishery Exploitation:

Catches, Biomass (thousands of tonnes); Recruits (millions)

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Avg[1]	Min[1]	Max[1]
Canada	**Quota**		0.4	0.4	0.8	1.2	2.0	3.0	3.4	2.9	2.2			
	Landed	2.1	0.5	0.5	0.8	1.2	2.0	2.9	2.9	2.6		1.6	0.5	2.9
	Discard	-	-	-	-	-	-	-	0.6	0.5				
USA	**Quota**													
	Landed	1.6	0.3	0.8	1.0	1.8	2.0	3.7	3.8	2.5		5.1	0.3	16.0
	Discard	0.2	<0.1	<0.1	<0.1	0.1	0.4	0.3	0.5	0.5		0.6	<0.1	3.0
Total	**Quota**													
	Catch	3.9	0.8	1.3	1.8	3.1	4.4	6.9	7.8	6.1		6.3	0.8	16.6
Adult Biomass		4.4	1.6	2.9	4.4	5.9	8.4	12.5	16.1	17.1	26.1	8.1[2]	1.5[2]	26.1[2]
Age 1 Recruits		8.8	10.1	12.7	19.0	28.0	35.8	33.8	48.2	43.7	30.0	24.5[2]	5.8[2]	67.3[2]
Fishing mortality		2.33	0.95	0.61	0.67	0.66	0.53	0.60	0.45	0.22		1.02	0.22	2.33
Exploitation Rate		85%	57%	42%	45%	44%	38%	41%	33%	18%		56%	18%	85%

[1]1973 - 2002
[2]1973 - 2003

Combined Canada and USA catches in 2002 were about 6,100 mt, increasing from a low of 800 mt in 1995.

Fishing mortality rates were high, considerably greater than $F_{ref} = 0.25$, until the mid 1990s, then declined to about twice F_{ref} . There is uncertainty about the estimate of F in 2002.

State of Resource:

Adult biomass (ages 3+) has steadily increased from near an historical low of about 1,600 mt in 1995 to about 26,000 mt at the beginning of 2003. The recent increase in biomass has been due to more consistent and improved recruitment, lower exploitation and reduced catches of small fish.

Productivity:

The 1997 and later year-classes are generally stronger than any since the mid 1980s and comparable to those in the 1970s. The 2000 year-class is the largest since 1980, but is considerably lower than previously estimated. The population age structure displays an expansion of age groups. However, given the recent reductions in exploitation, there are fewer fish than expected in the oldest groups in both the catch and the surveys.

2004 Catch Risk Assessment:

While there is considerable uncertainty in the projections provided in the 2003 assessment, a combined Canada/USA yield of 7,900 mt in 2004 should be risk neutral with respect to exceeding $F_{ref} = 0.25$. A full risk assessment table was not included due to the uncertainty in the assessment (Note: Special Considerations below).

Special Considerations:

The TRAC noted that the stock status in the 2003 assessment was not as optimistic as in the previous assessment. Due to uncertainties and inconsistencies in the 2003 assessment and the failure to explain the absence of older fish in the catch, the TRAC did not rely on the projections, advising instead that status quo catches may be appropriate. Recent catches have ranged between 6,100 mt and 7,800 mt.

Source Documents

Hunt, J.J., B. Hatt and L. O'Brien. 2003. Population status of Eastern Georges Bank cod (unit areas) 5Zj,m) for 1978-2004. Canadian Stock Assessment Secretariat Research Document 2003/096. pp 51.

Stone, H.H. and C.M. Legault. 2003. Stock assessment of Georges Bank (5Zhjmn) yellowtail flounder for 2003. Canadian Stock Assessment Secretariat Research Document 2003/055. pp 80.

Van Eeckhaute, L., S. Gavaris, J. Brodziak. 2003. Assessment of haddock on Eastern Georges Bank. Canadian Stock Assessment Secretariat Research Document 2003/076. pp 63.

DFO. 2003. Eastern Georges Bank cod. DFO Science Stock Status Report 2003/040.

DFO. 2003. Eastern Georges Bank haddock. DFO Science Stock Status Report 2003/041.

DFO. 2003. Georges Bank yellowtail flounder. DFO Science Stock Status Report 2003/042.

NEFSC. 2003. Proceedings of the Seventh Meeting of the Transboundary Resources Assessment Committee (TRAC), Woods Hole, Massachusetts, May 27-29, 2003. Northeast Fisheries Science Center Reference Document 03-19.

Consultations

Transboundary Resources Assessment Committee (TRAC), Woods Hole, Massachusetts, May 27-29, 2003.