

TRAC Status Reports

Eastern Georges Bank Cod and Haddock and Georges Bank Yellowtail

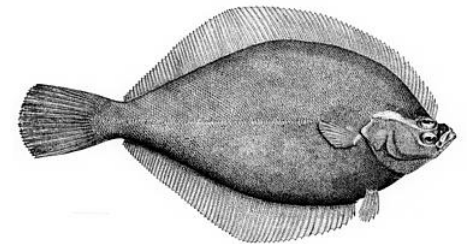
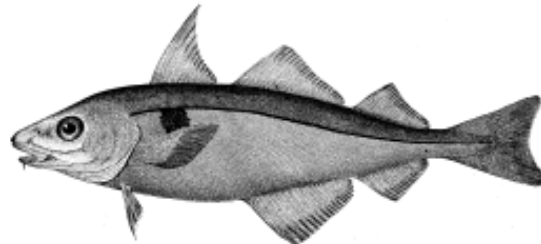
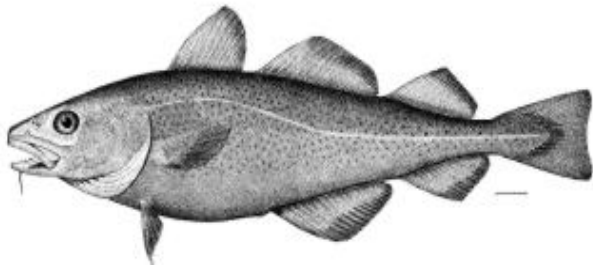
<http://www.mar.dfo-mpo.gc.ca/science/trac/tsr.html>

NEFMC

September 3, 2008

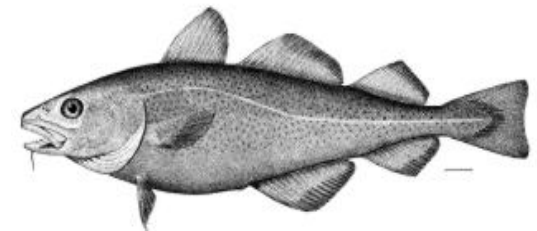
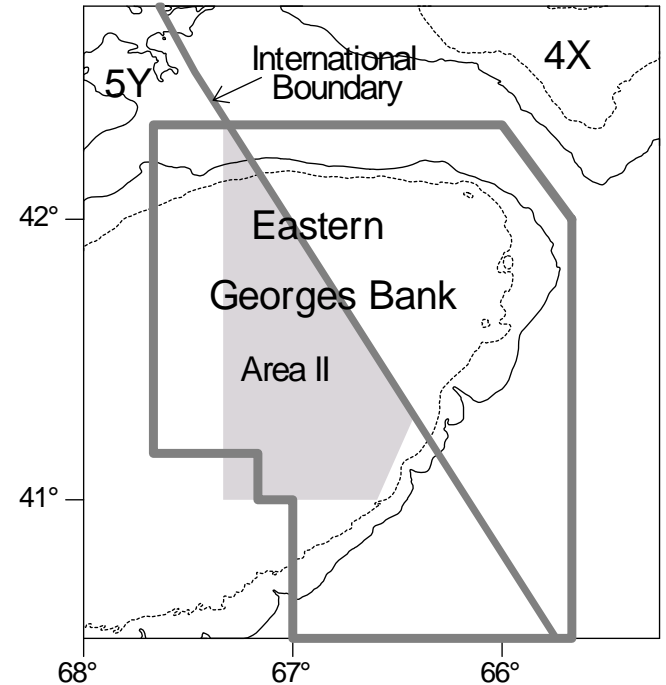
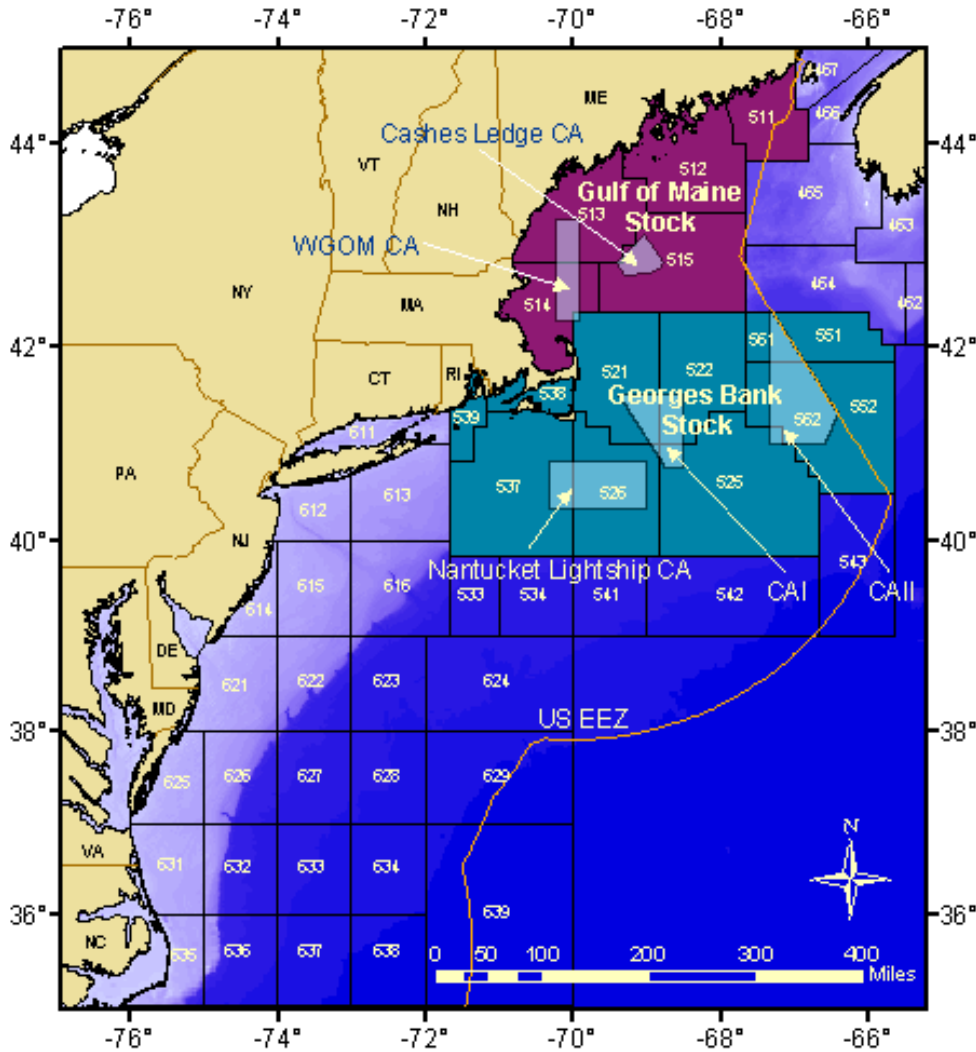
Providence, RI

Loretta O'Brien

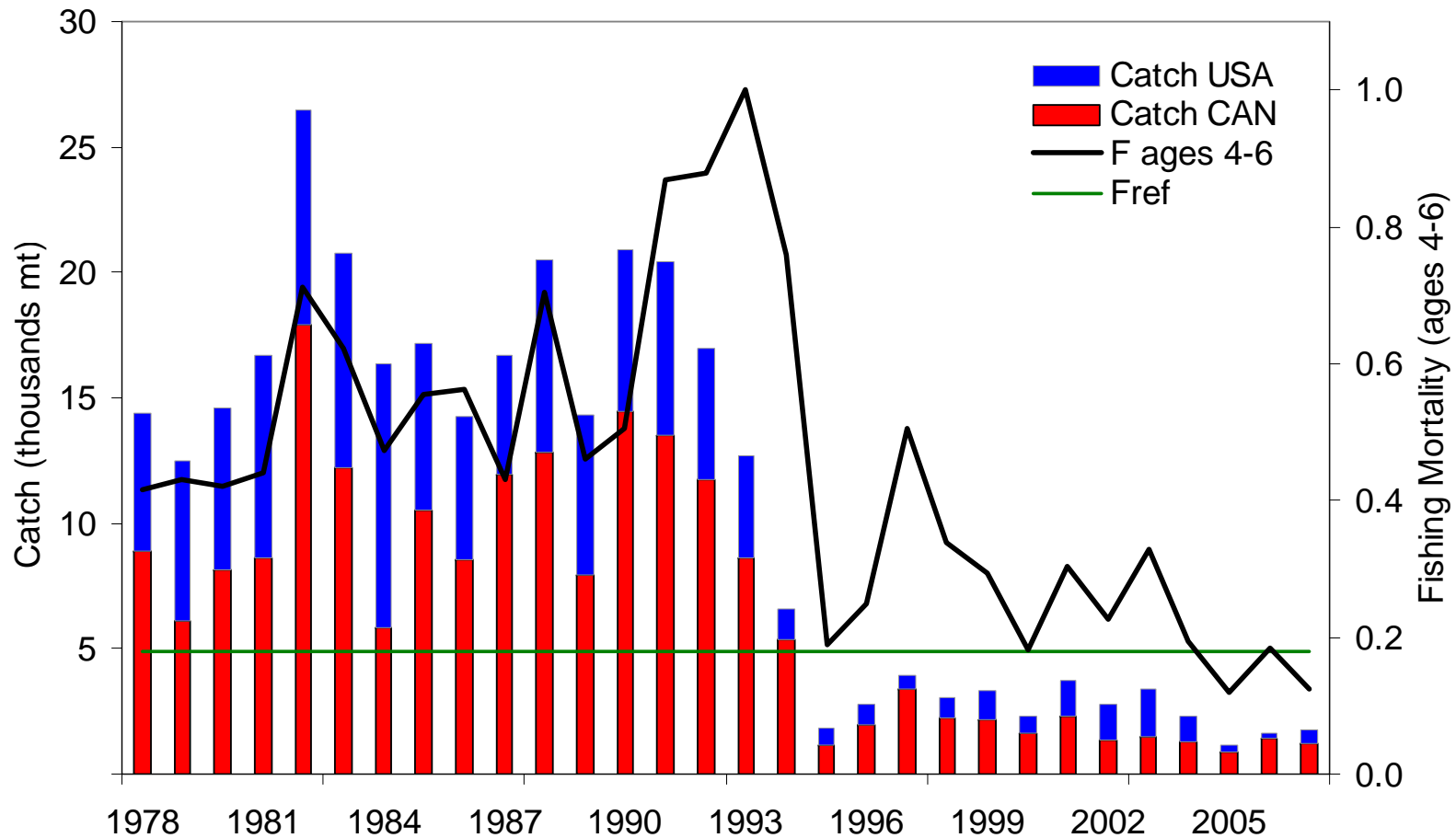


Eastern Georges Bank Cod

Atlantic Cod Assessment Area



EGB Cod: Catches & Fishing Mortality

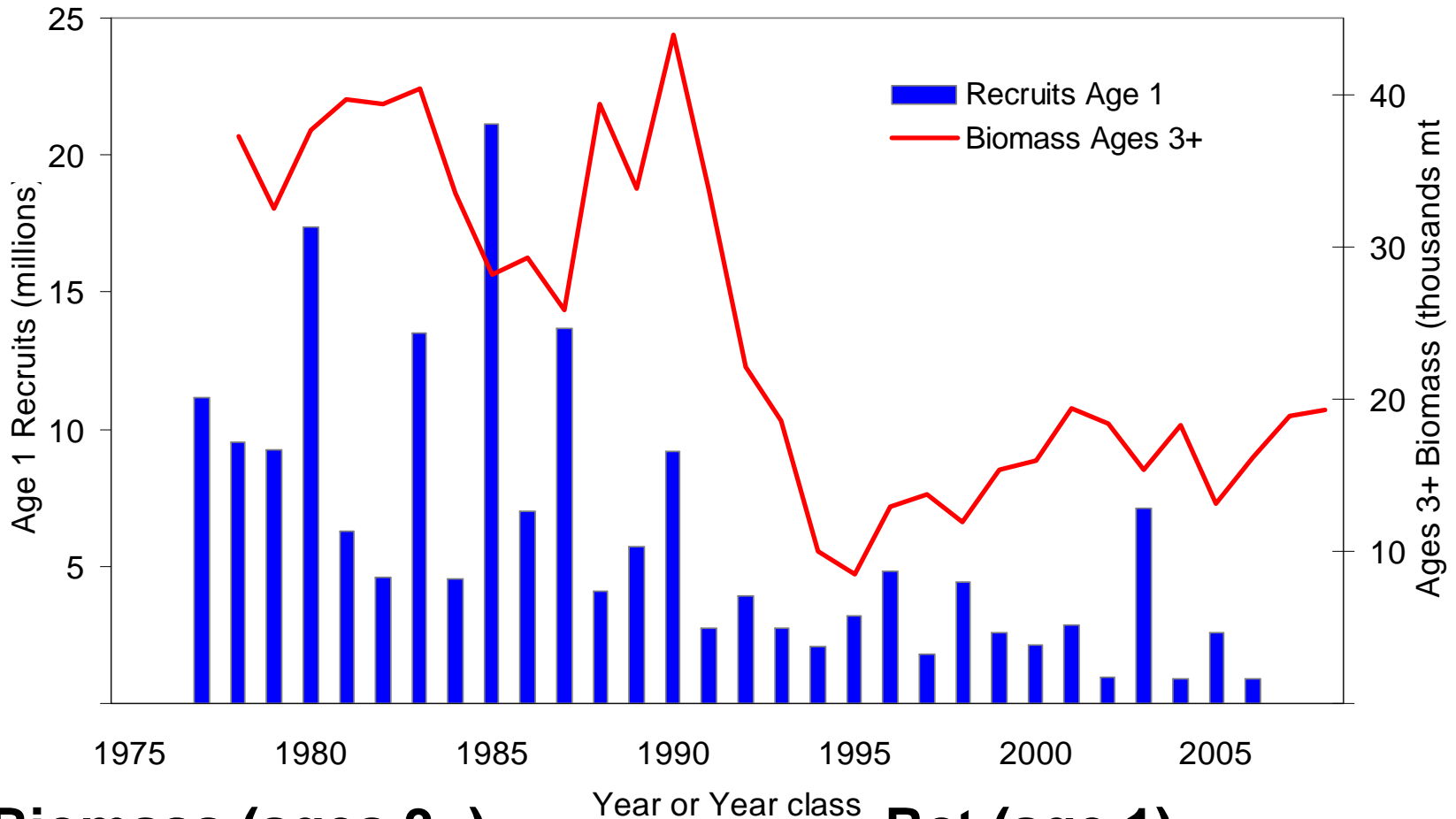


Total USA/CDN 2007 catch = 1,796 mt (472 mt discards)

USA 2007 catch = 564 mt (348 mt discards)

F: 2007 = 0.12, below Fref = 0.18

EGB Cod: Biomass & Recruitment



Biomass (ages 3+) :

19,400 mt (2001)

13,200 mt (2005)

19,300 mt (2008)

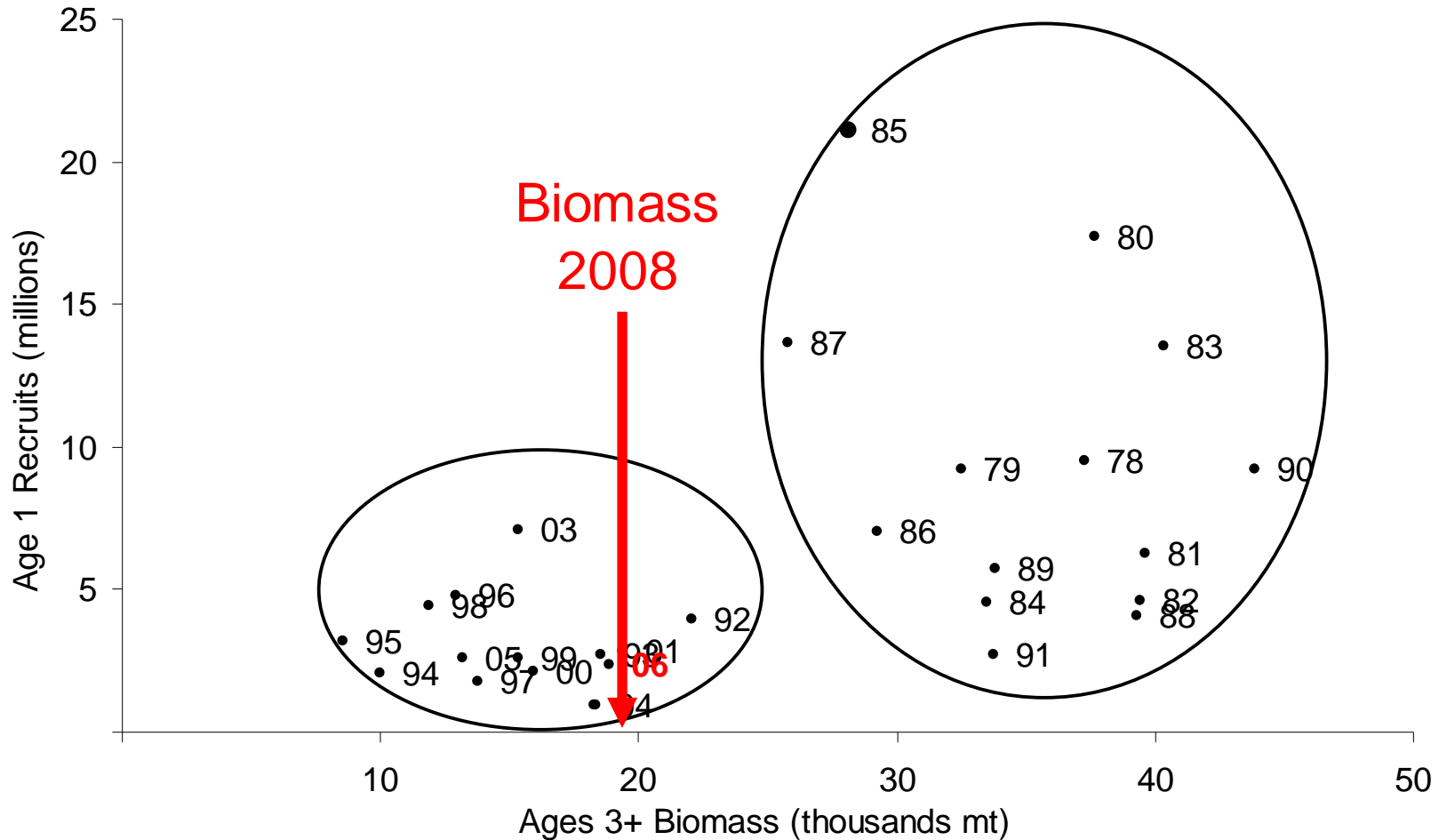
Rct (age 1) :

2003 (7.1 million)

1990 (9.2 million)

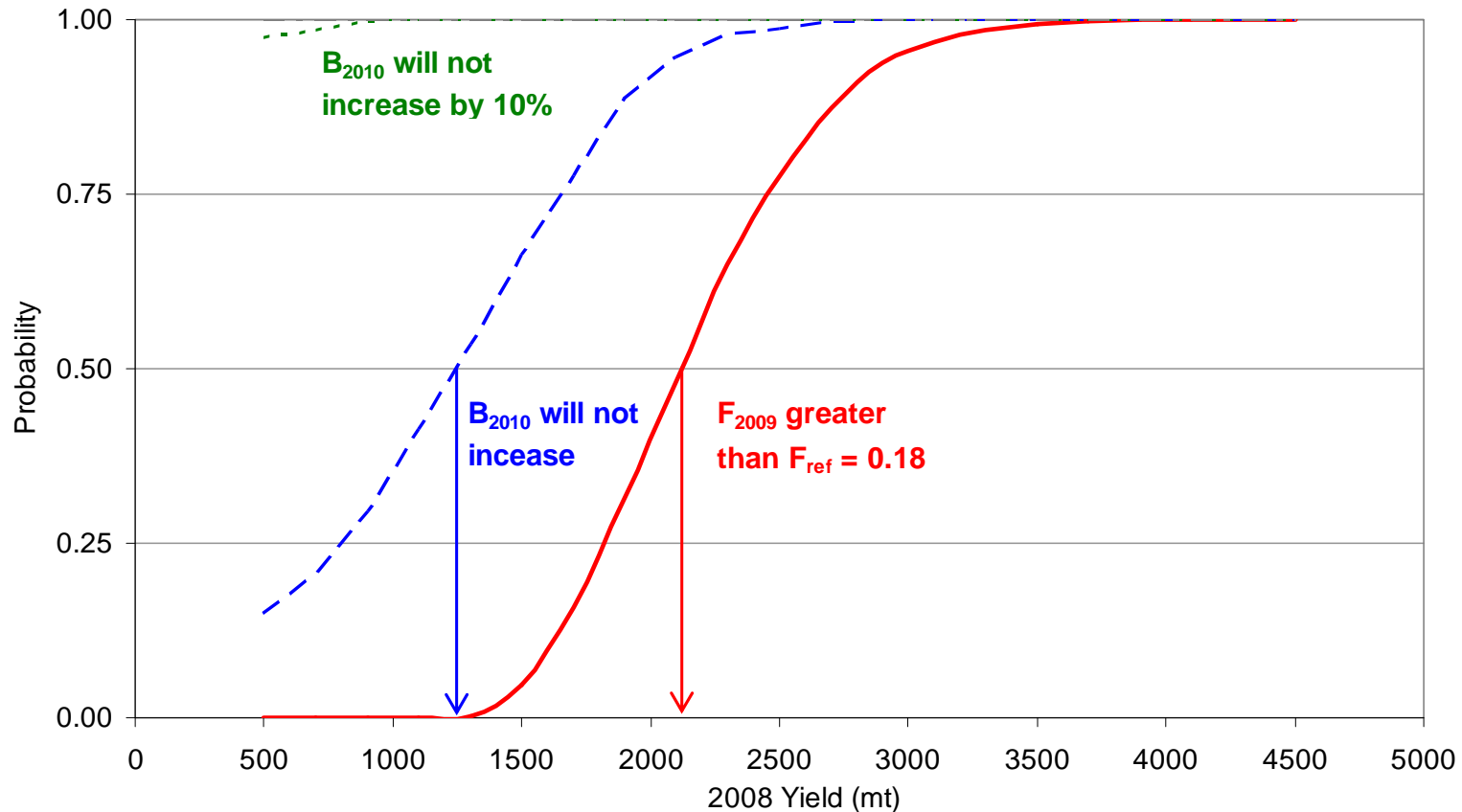
2002, 2004, 2006 yc lowest

EGB Cod: Stock Recruitment Patterns



Better rct > 25,000 mt ; Current biomass < 25,000 mt
Resource productivity low: declines in waa. , poor rct
F below Fref : maintain higher biomass inc. chance good rct

EGB Cod: Projection Risks & 2009 TAC



2,100 mt in 2009 ~ 50% risk $F_{2009} > F_{ref}$

1,300 mt in 2009 ~ 50% risk 2010 B lower than 2009 Biomass

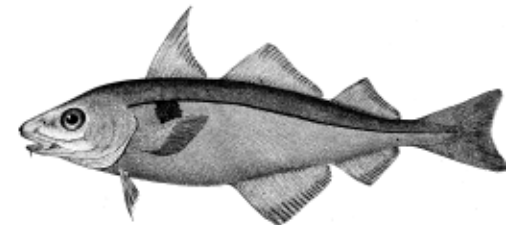
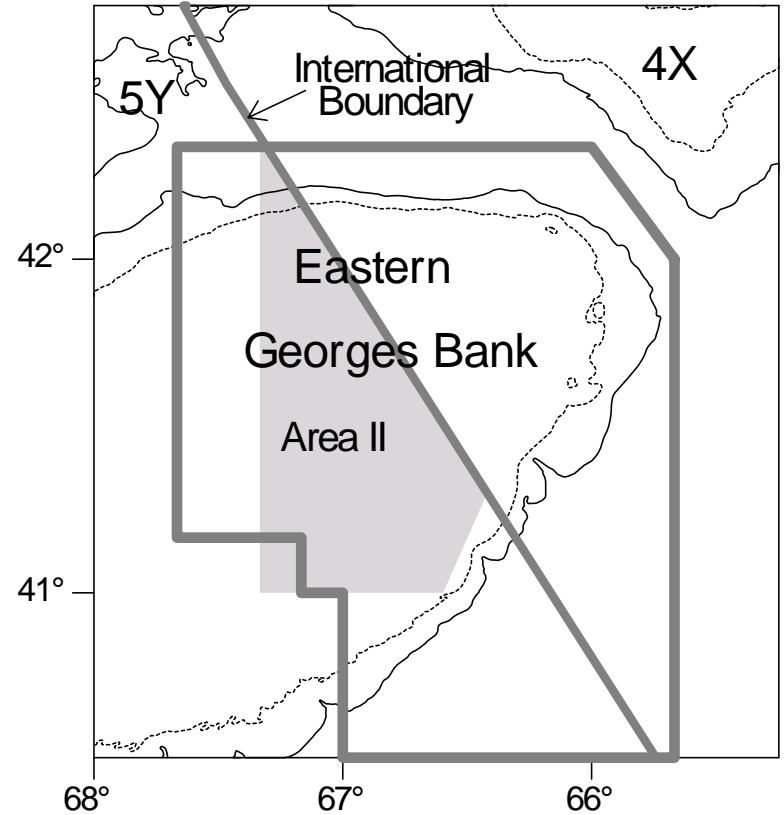
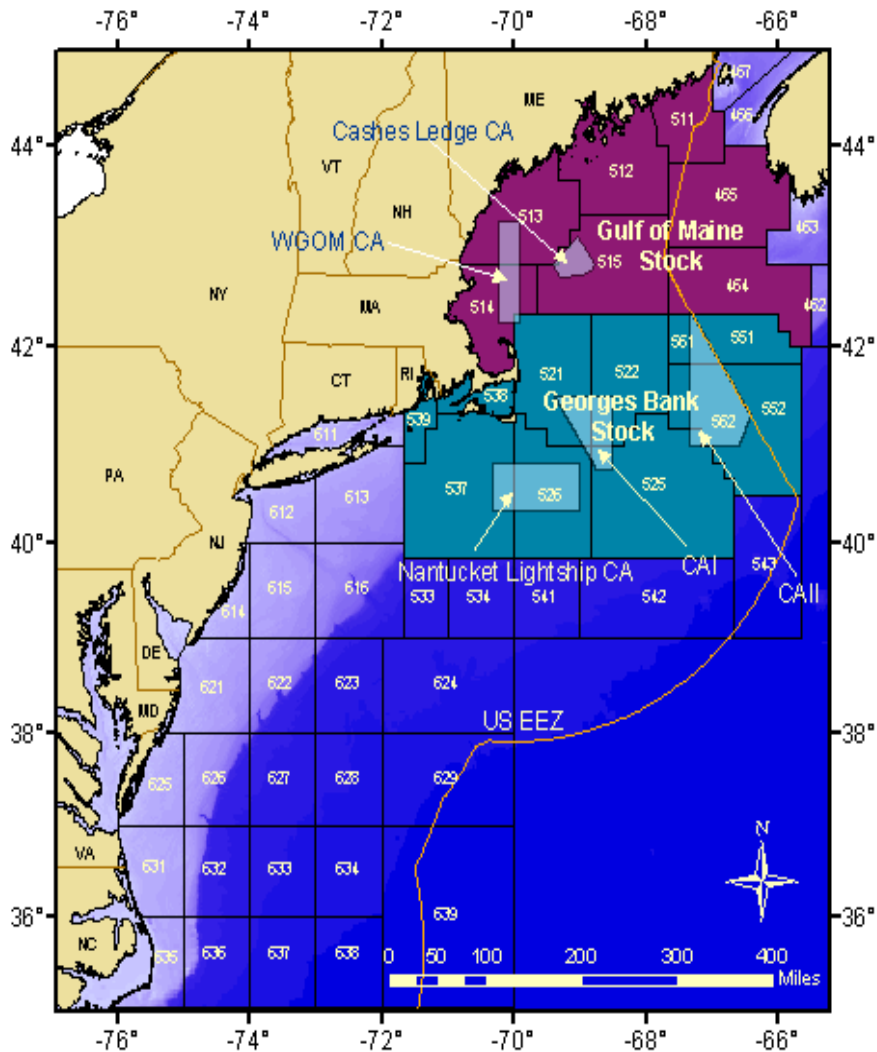
10% B increase unlikely even with no catch

2003 yc proj. contribute > 50% catch B in 2008-2009

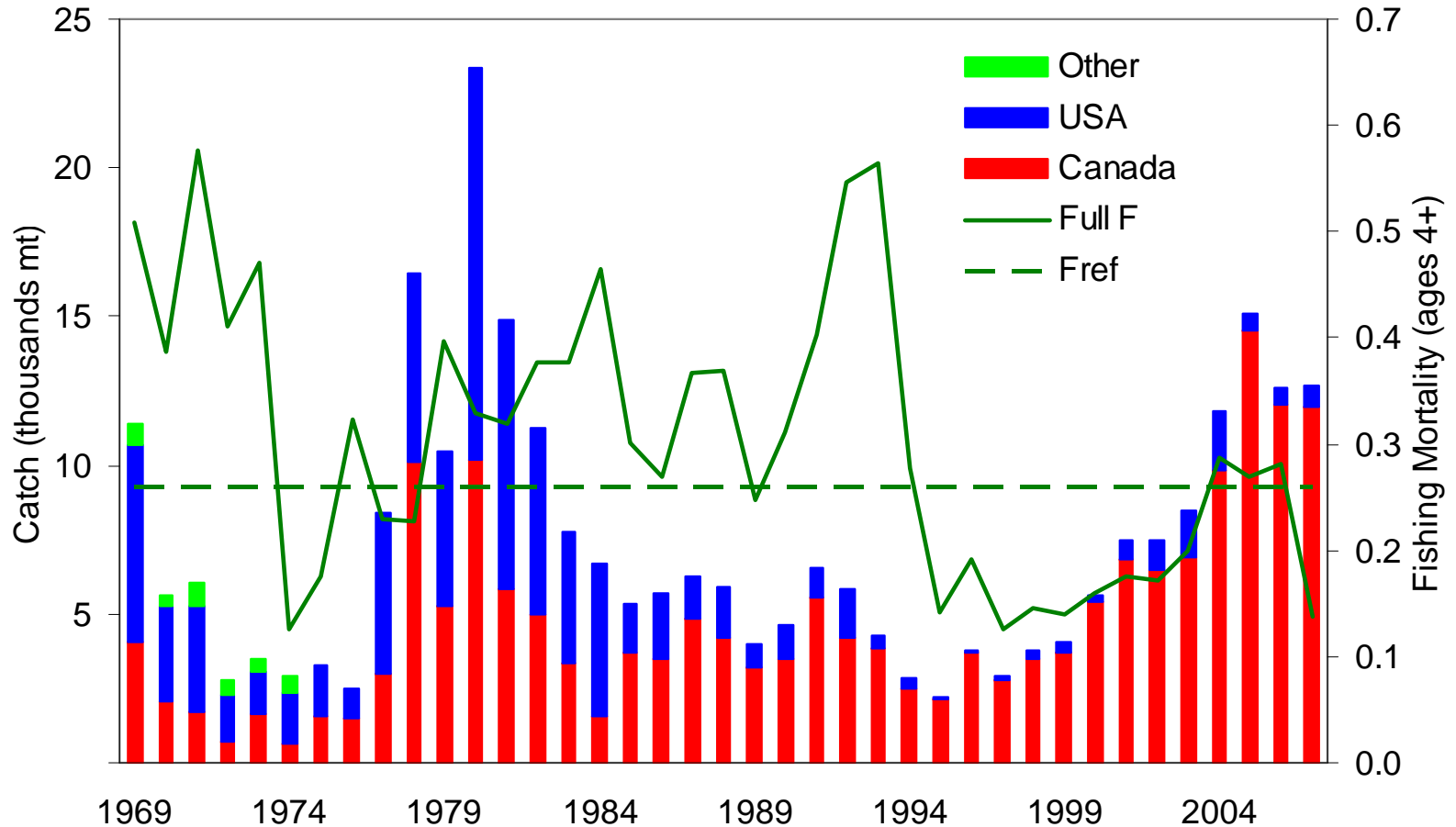
EGB Cod Summary

- F reduced in 2007
- Above average 2003 yc
- Recent recruitment generally poor
- Lower weight at age
- Lower quota required to prevent biomass decline

Eastern Georges Bank Haddock



EGB Haddock: Catches & Fishing Mortality

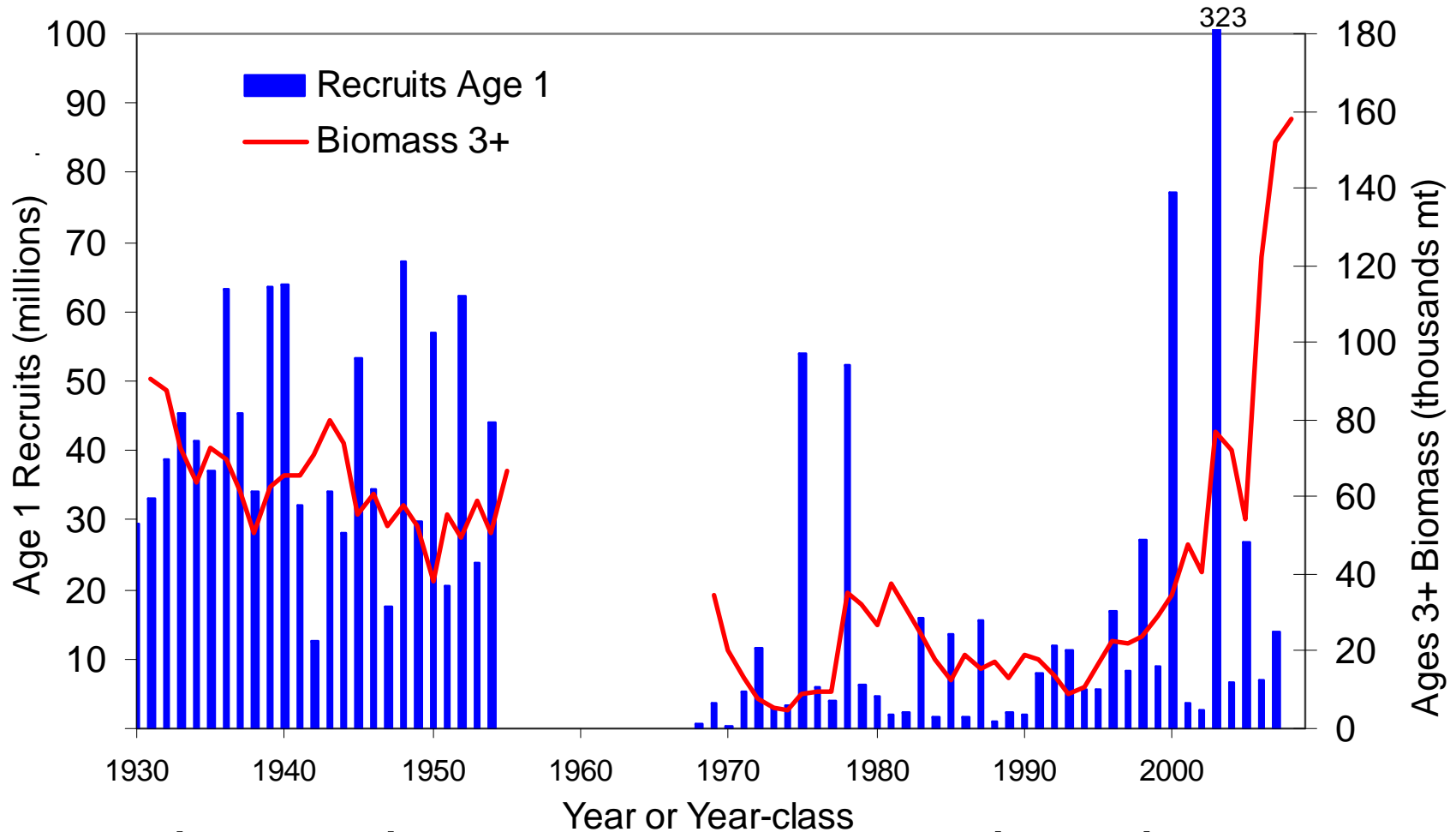


Total USA/CDN 2007 catch = 12,680 mt (543 mt discards)

USA 2007 catch = 729 mt (482 mt discards)

F: 2007 = 0.14, below Fref = 0.26

EGB Haddock: Biomass & Recruitment



Biomass (ages 3+) :

9,000 mt (1993)

77,100 mt (2003)

158,100 mt (2008)

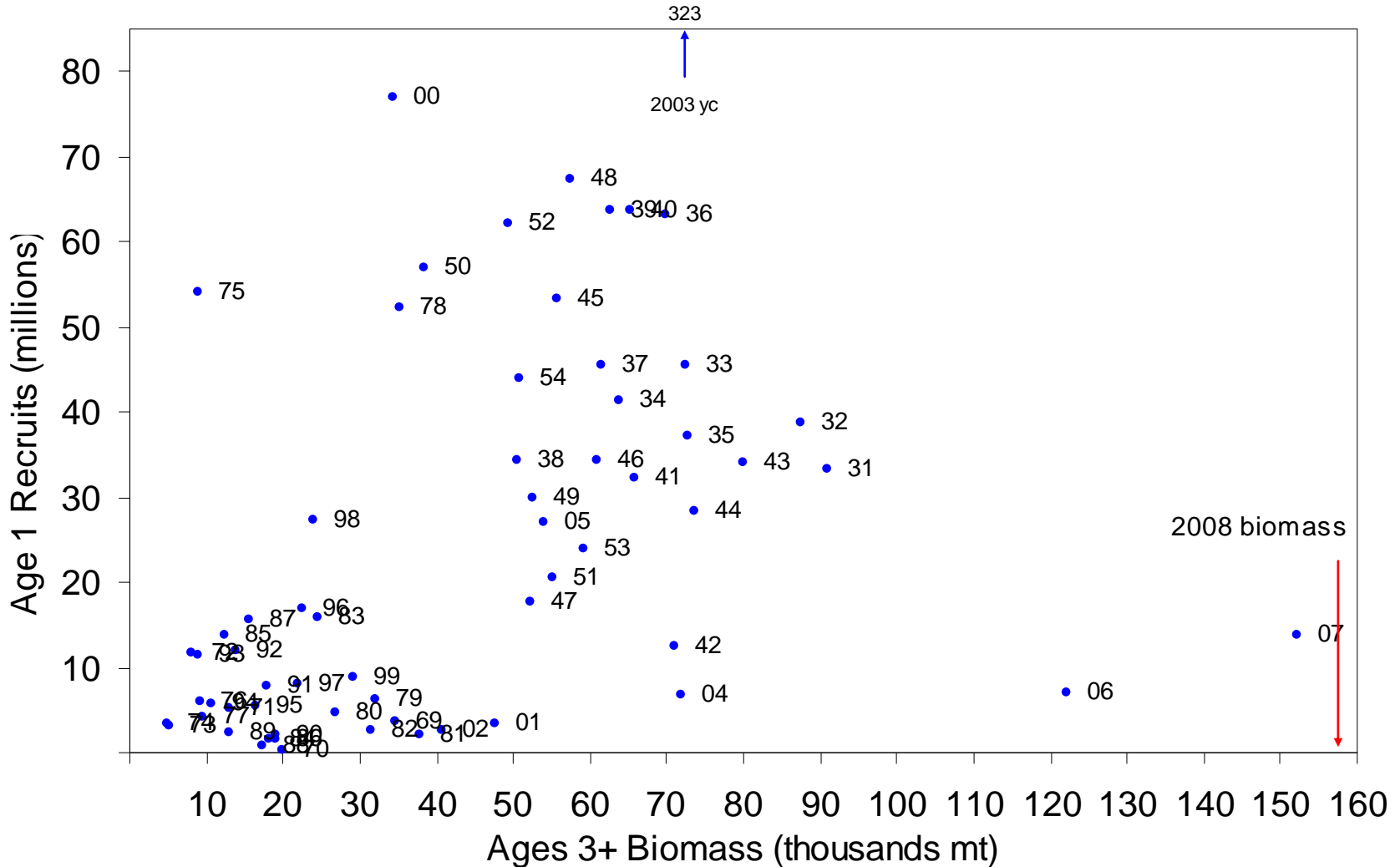
Rct (age 1) :

2003 (322.7 million)

2005 (26.9 million, > 10-yr avg)

'01, '02, '04, '06 yc < 10-yr avg

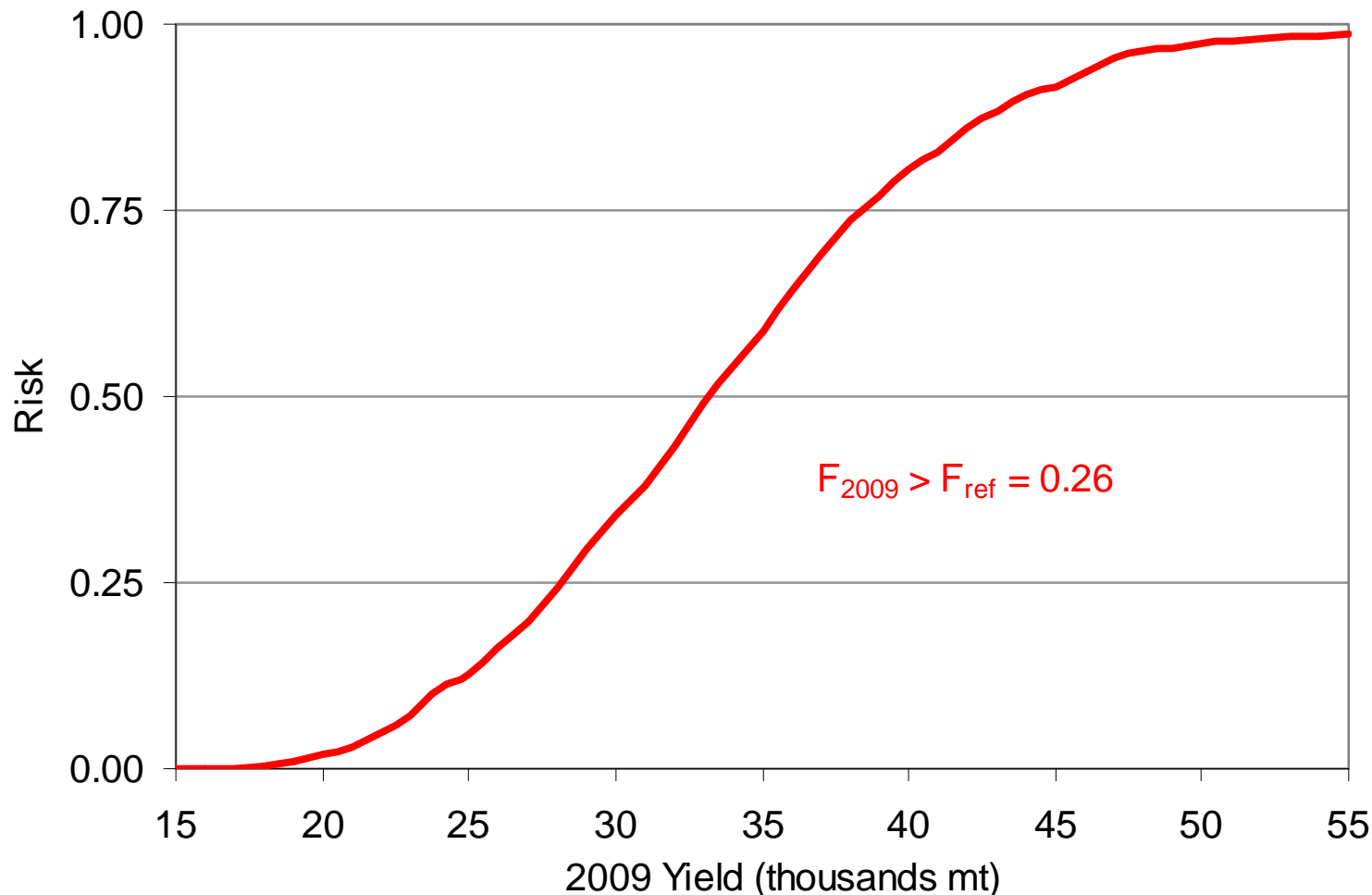
EGB Haddock: Stock Recruitment Patterns



Better rct >40,000 mt ; Current biomass >150,000 mt

Resource productivity high: exp. age struc., broad spatial dist., imp.rct , only offset by declines in waa.

EGB Haddock: Projection Risks & 2009 TAC



28,000 mt in 2008; 33,000 mt in 2009 ~ 50% risk $F_{2009} > F_{ref}$

28,000 mt in 2009 ~ 25% risk $F_{2009} > F_{ref}$

No concern re: biomass fluctuations at current biomass

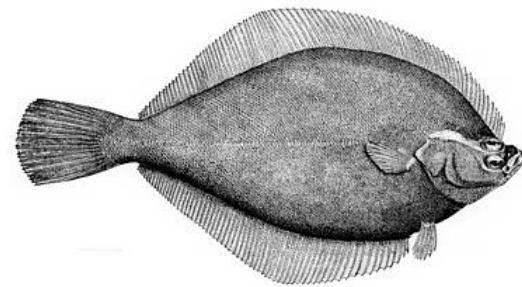
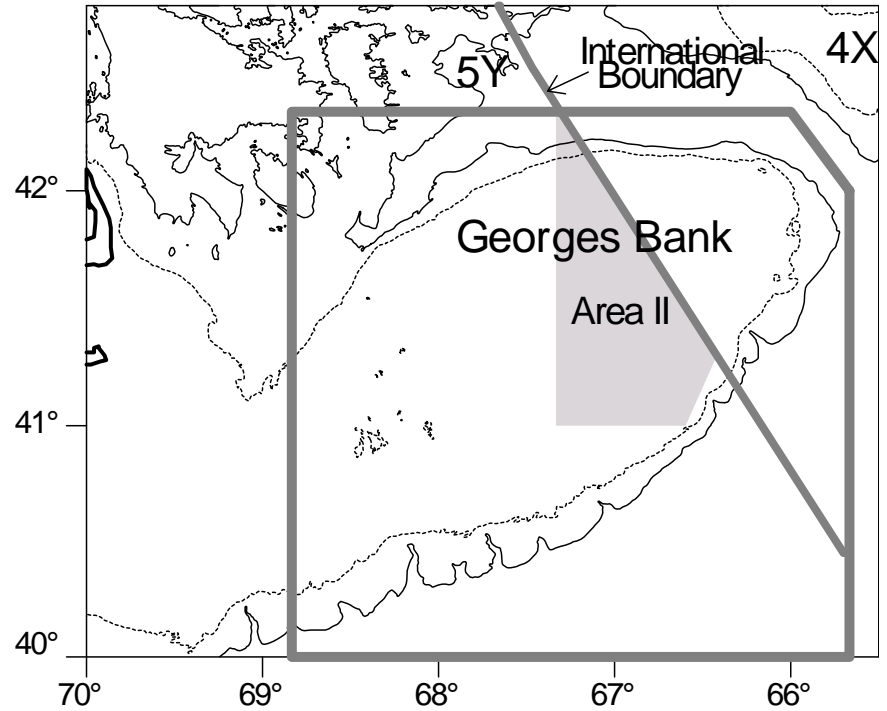
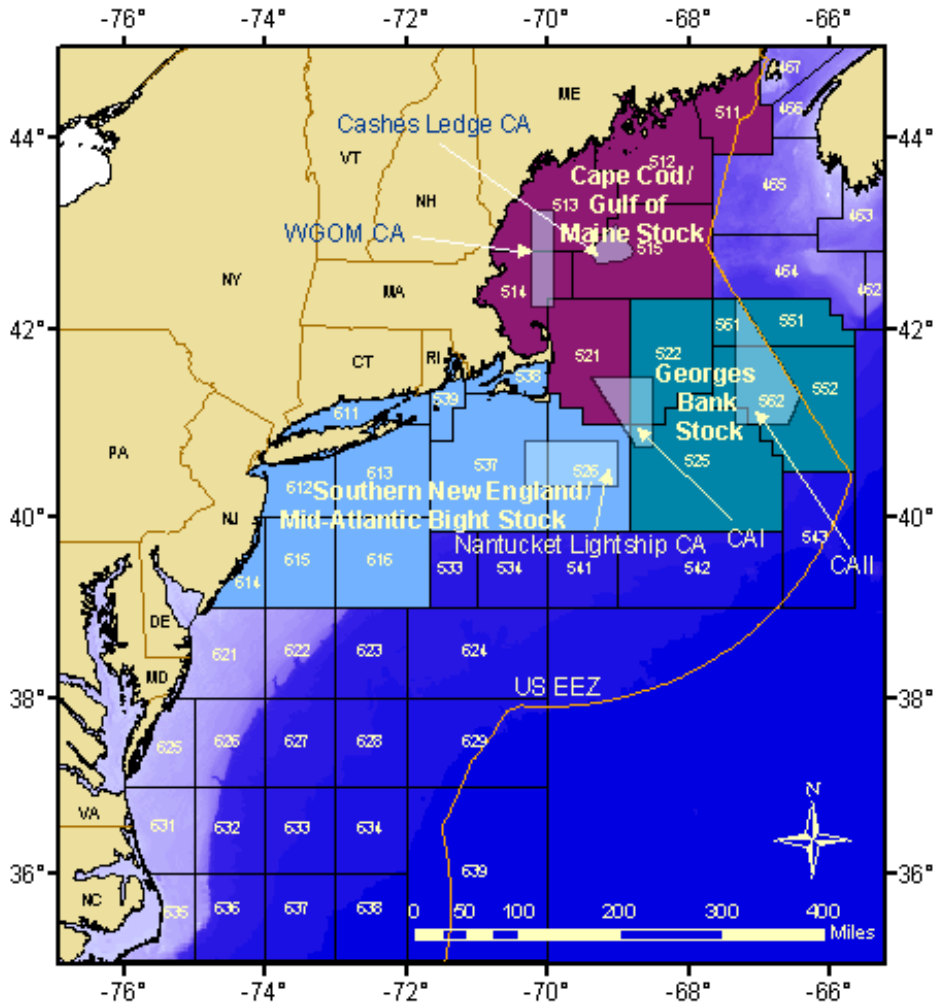
EGB Haddock Summary

- Low F
- Improved recruitment
- High biomass

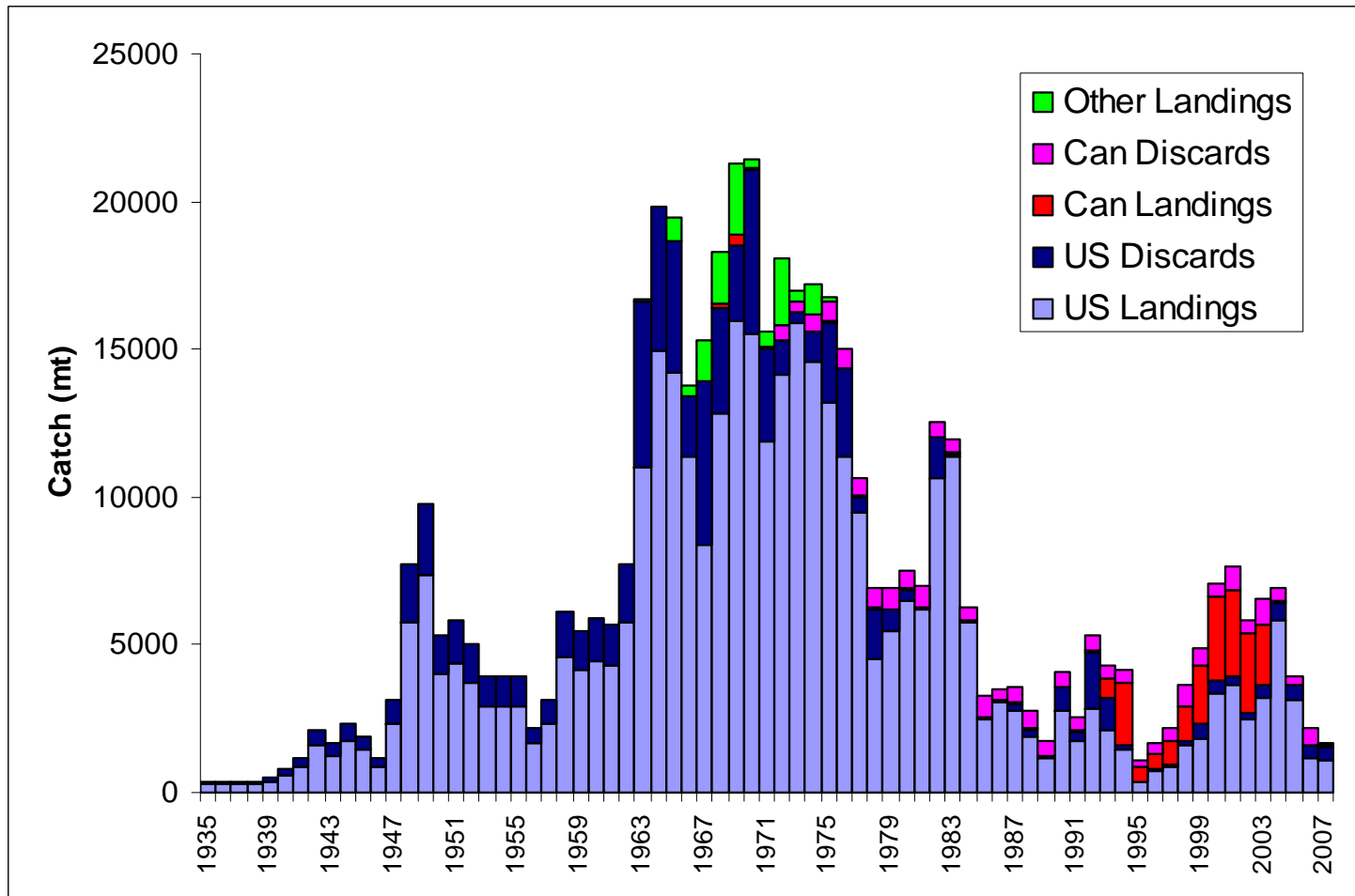
- Fishing up to F_{ref} does not pose conservation concerns for haddock

- Catch of cod needs to be considered

Georges Bank Yellowtail Flounder

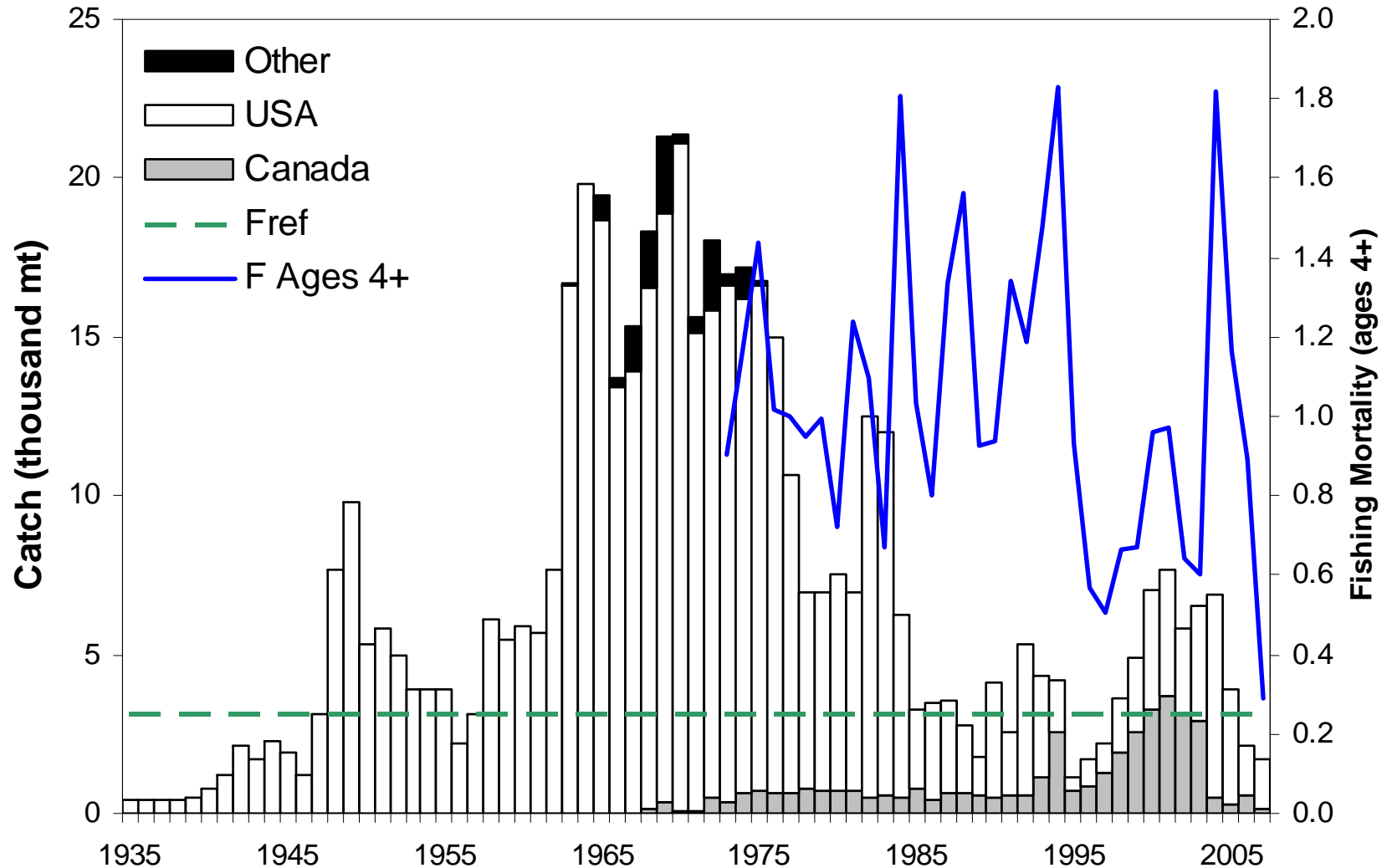


GB Yellowtail: Catches



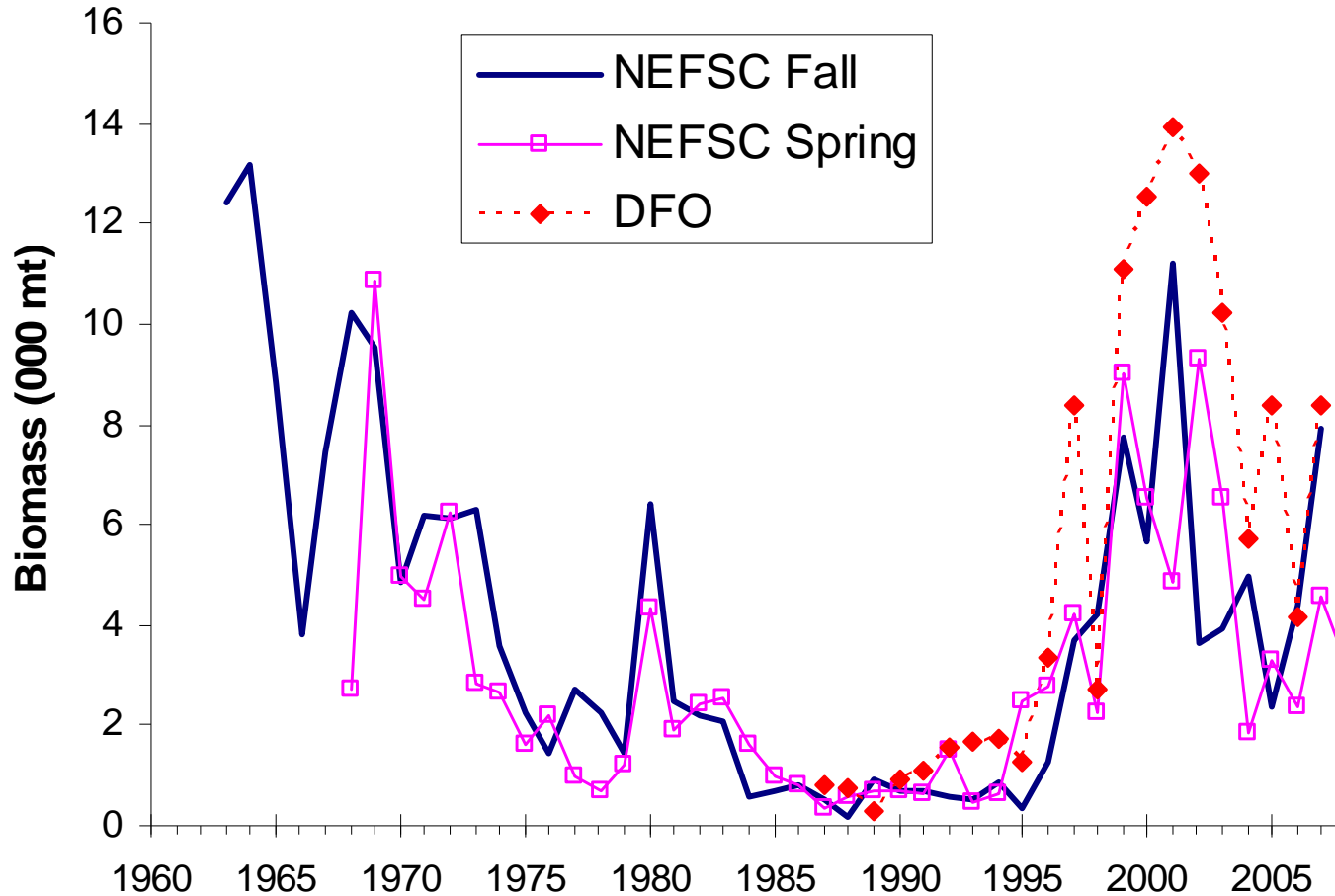
Total USA/CDN 2007 catch = 1,686 mt (608 mt discards)
USA 2007 catch = 1,061 mt (503 mt discards)

GB YT: Catches & Fishing Mortality



F well above Fref = 0.25 except F2007 = 0.29

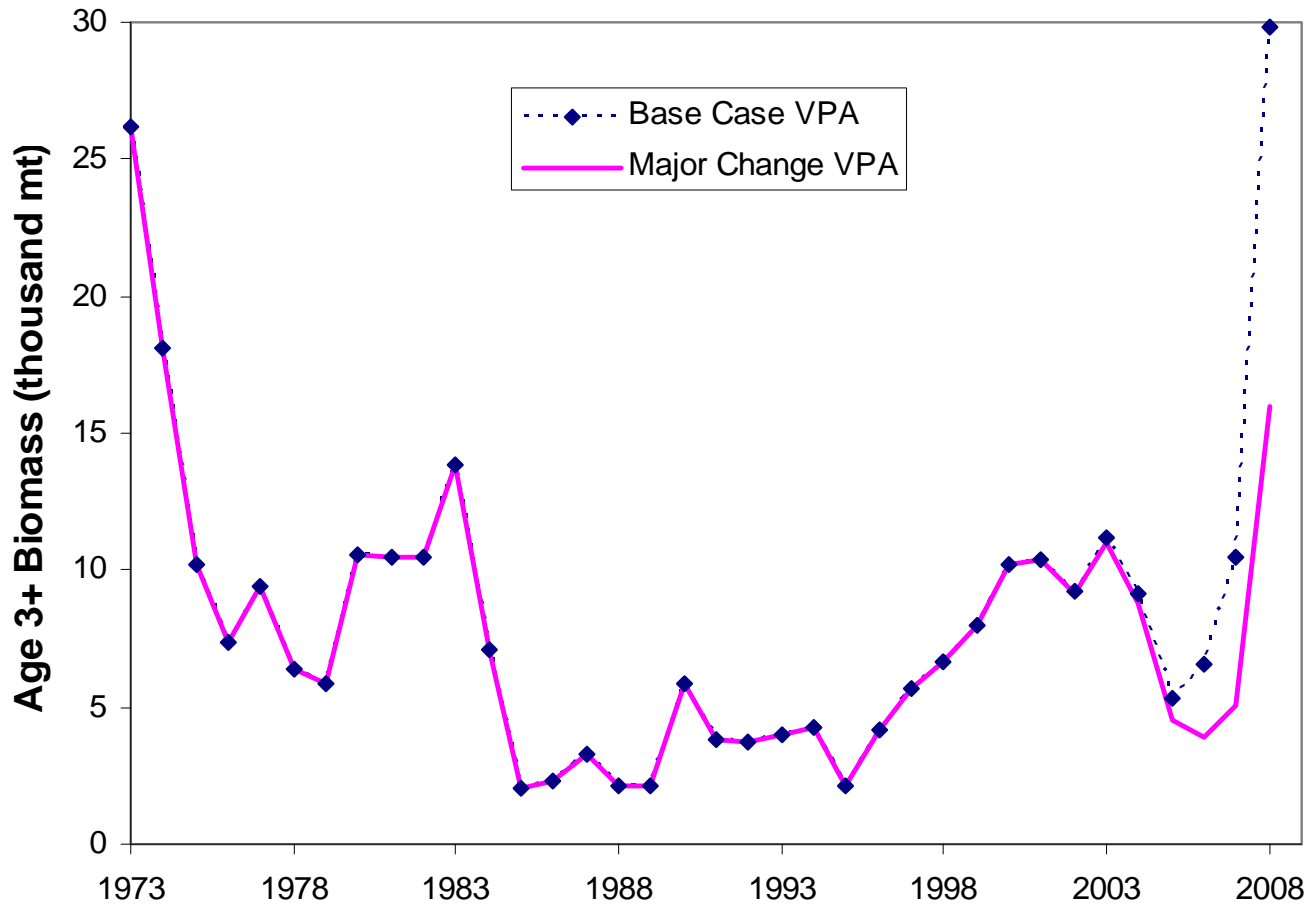
GB YT: Survey Index Trends



Biomass inc. from mid 1990s, peaked ~ 2000,

Declined until mid 2000s, increase in 2007 due 2005 yc

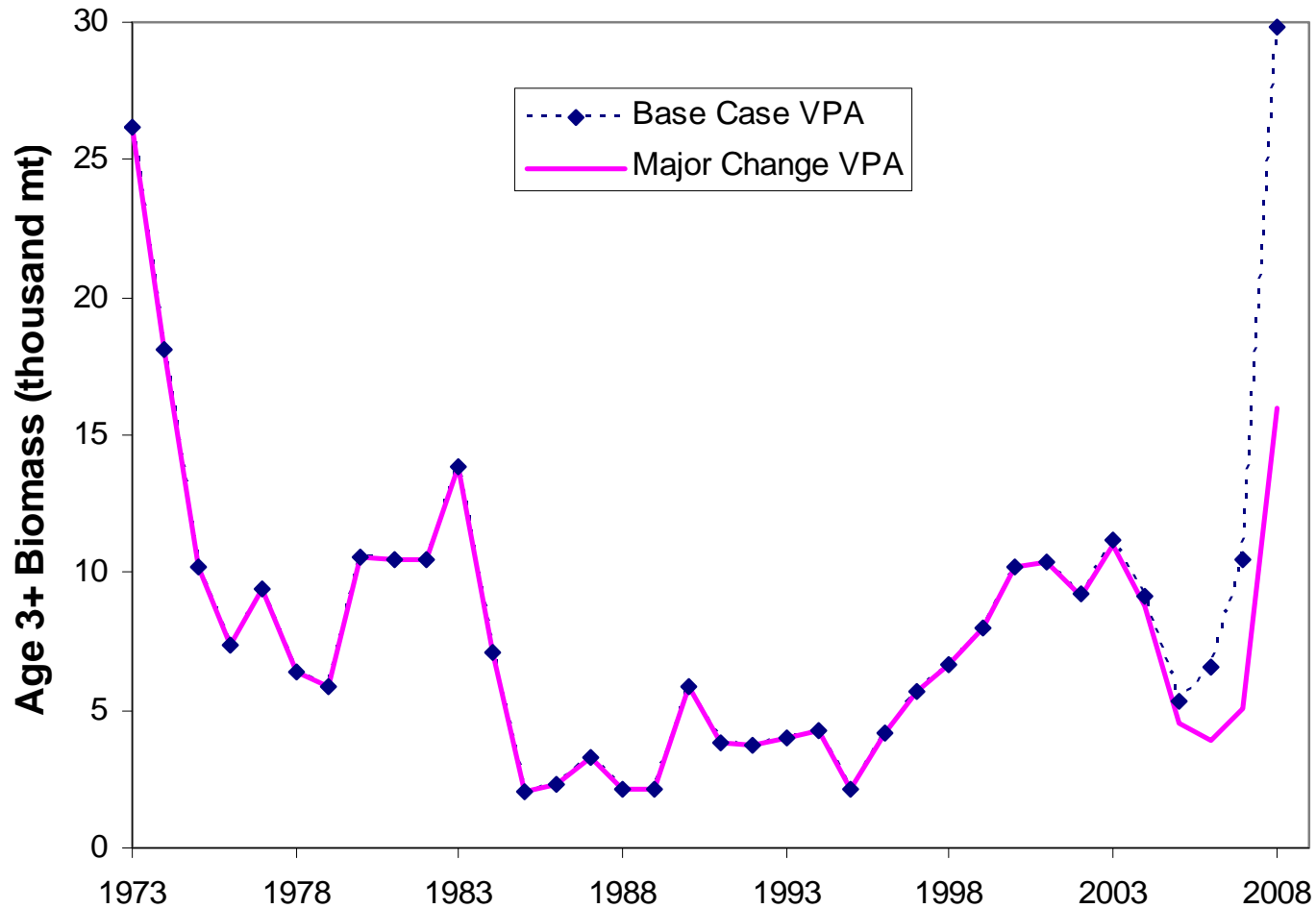
GB YT: Model Fit



**Major Change: large changes in SV catchability
adds uncertainty to assessment**

Reflects Survey Trends in Abundance: recommended model

GB YT: Model Fit



Biomass (ages 3+) :

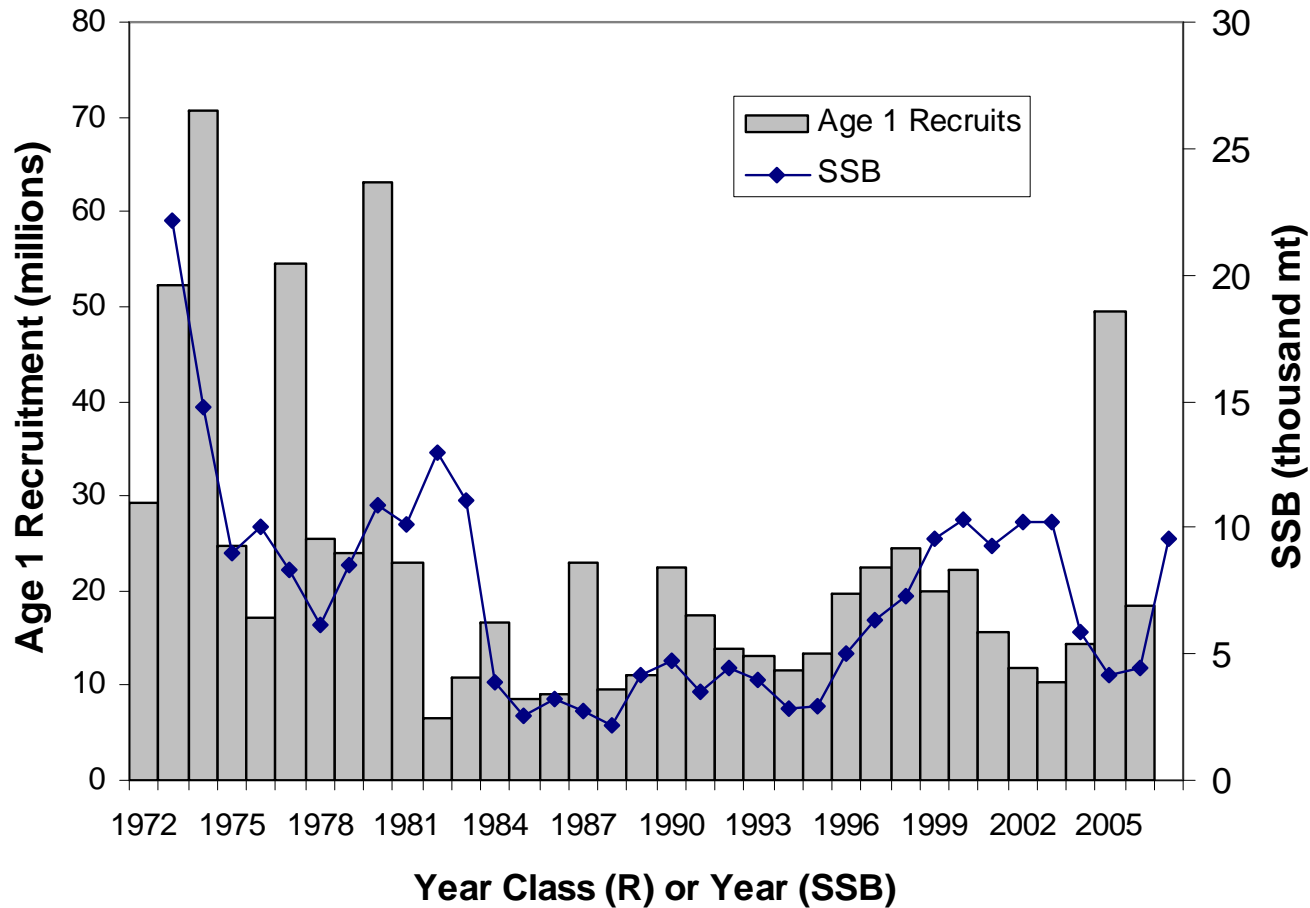
2,100 mt (1995)

11,000 mt (2003)

3,900 mt (2006)

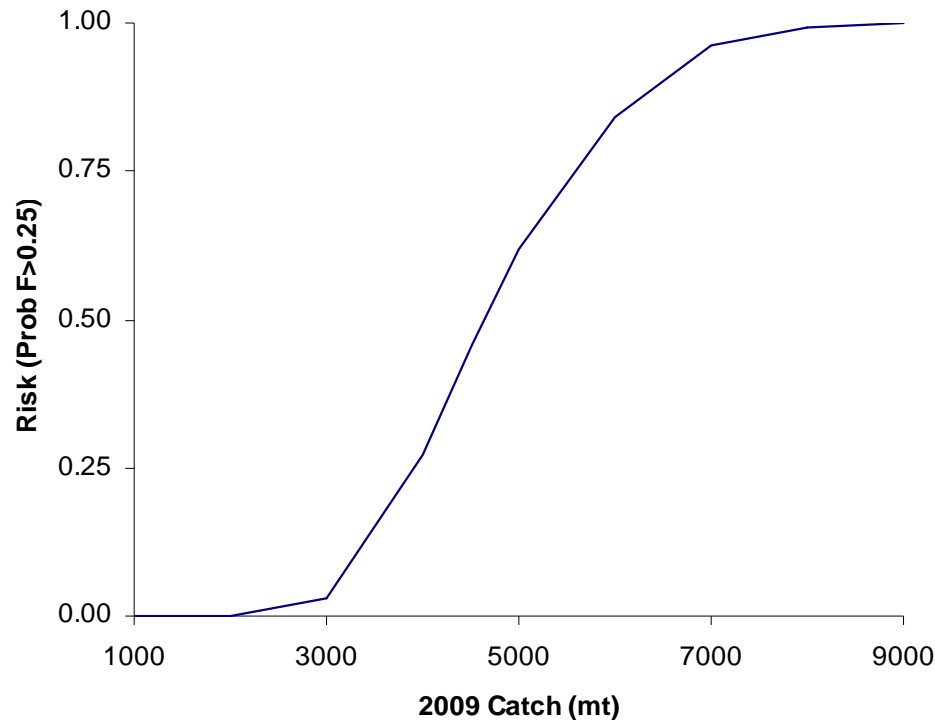
15,900 mt (2008)

GB YT: SSB & Recruitment



- **SSB: 2007 SSB : 9,500 mt**
- **Recruitment: averaged 22.3 million (1998-2001), below 20 million (2002-2006), exception 2005 yc (49.4 million), strongest since 1980**

GB YT: Projection Risks & 2009 TAC



2,500 mt in 2008; 4,600 mt in 2009 ~ 50% risk $F_{2009} > F_{ref}$

Fishing at $F_{ref}=0.26$ in 2009:

9% increase in median age 3+ Biomass

from 20,500 mt in 2009 to 23,300 mt in 2010

GB Yellowtail flounder Summary

- F was very high and only recently approaching F_{ref}
- Biomass increasing
- Improvement heavily dependent on only one strong year class
- Rebuilding still required

Allocation Sharing Agreement

Resource Utilization

	Cod	Haddock	Yellowtail
USA	40%	45%	98%
CANADA	60%	55%	2%

Resource Distribution

Allocation Shares

Survey					Fishing					
Year		Cod	Haddock	Yellowtail	Year	Utilization	Distribution	Cod	Haddock	Yellowtail
USA	2000	18%	20%	54%	2002	40%	60%	27%	30%	72%
CANADA		82%	80%	46%				73%	70%	28%
USA	2001	14%	16%	64%	2003	40%	60%	24%	28%	78%
CANADA		86%	84%	36%				76%	72%	22%
USA	2002	12%	26%	62%	2004	40%	60%	23%	34%	76%
CANADA		88%	74%	38%				77%	66%	24%
USA	2003	18%	27%	56%	2005	35%	65%	26%	33%	71%
CANADA		82%	73%	44%				74%	67%	29%
USA	2004	14%	29%	56%	2006	30%	70%	22%	34%	69%
CANADA		86%	71%	44%				78%	66%	31%
USA	2005	21%	29%	63%	2007	25%	75%	26%	33%	72%
CANADA		79%	71%	37%				74%	67%	28%
USA	2006	26%	32%	73%	2008	20%	80%	29%	35%	78%
CANADA		74%	68%	27%				71%	65%	22%
USA	2007	29%	36%	73%	2009	15%	85%	31%	37%	77%
CANADA		71%	64%	27%				69%	63%	23%

- **DFO 2008 survey not included..due to very large tow (7.5 mt)**
- **Previous maximum tow = 1 mt**
- **If include 2008: substantial increase in abundance of ages 2-5 , inconsistent with stock dynamics , and indicates that tow is outlier**
- **sensitivity runs...using DFO 2008 SV**
with tow: abund and rct higher as expected , however,
with or without tow: generate a higher F for ages 4-5, counter-intuitive, but explained by age structure of fish caught in tow.

Influence mitigated by other surveys:

w/tow : 2005 yc , age 3 in 2008 = 36.1 million

w/o tow = 31.7 million

Summary of Georges Bank Yellowtail Flounder Projections v2

Case	Filename
A	MAJORCHANGE_NO2008DFO_EMPIR_2014_FSTQUO
B	MAJORCHANGE_NO2008DFO_EMPIR_F40
C	MAJORCHANGE_NO2008DFO_EMPIR_2014_FREBUILD
D	FREF
E	FREBUILD75
F	FREBUILD50

Case	A	B	C	D	E	F
R 2008	All Years	All Years	All Years	Last 10	Last 10	Last 10
Catch 2008	C2007	C2007	C2007	Quota	Quota	Quota
Strategy	F status	F40%	Frebuild	Fref	Frebuild	Frebuild
	quo		50% prob		75% prob	50% prob
Rebuild w/ 75% prob?	No	No	No	No	Yes	No
Rebuild w/ 50% prob?	No	No	Yes	No	Yes	Yes
Name in GARM Doc	Fstquo	Fmsy	Frebuild	Fref	Freb75	N/A

Year	median Catch (000 mt)					
2008	1.686	1.686	1.686	2.500	2.500	2.500
2009	5.503	4.908	3.989	4.650	2.114	3.798
2010	5.947	5.444	4.599	5.222	2.643	4.428
2014	8.711	8.285	7.451	8.193	4.984	7.373

Year	median F (4-5 unweighted)					
2008	0.126	0.126	0.126	0.191	0.191	0.191
2009	0.289	0.254	0.202	0.250	0.107	0.200
2010	0.289	0.254	0.202	0.250	0.107	0.200
2014	0.289	0.254	0.202	0.250	0.107	0.200

Year	median SSB (000 mt)					
2008	18.760	18.760	18.760	18.421	18.421	18.421
2009	22.196	22.468	22.895	21.719	22.844	22.098
2010	24.810	25.702	27.079	25.122	28.968	26.421
2014	36.263	38.827	43.216	38.983	53.221	43.212

Year	25%ile SSB					
2008	16.092	16.092	16.092	15.743	15.743	15.743
2009	19.104	19.338	19.700	18.507	19.444	18.830
2010	21.622	22.403	23.628	21.748	25.164	22.878
2014	28.911	31.083	34.741	31.178	43.183	34.742