

Dear Renee,

Thank you sincerely for submitting assessments to the Myers II database. We have entered 26 of your assessments, and now wish to quality assure/quality control (QA/QC) these data for a release version of the database. Please follow the steps below to ensure that your assessments have been dutifully represented:

### **QA/QC steps**

For each assessment:

1. Ensure that the General assessment details are correct.
2. Ensure that the units for all Biometrics and Time Series shown are correct. To aid in this, we have included the minimum, maximum, first year, and last year of the spawning stock biomass, recruitment, fishing mortality, total biomass, and catch (where provided).
3. If there are blank values in the Biometrics table, please include these in your response (see below), where they are available. Please note that in the Biometrics table, the following abbreviations are used:
  - SSB-AGE-yr = Ages for which the spawning stock biomass is defined
  - REC-AGE = Age at recruitment
  - F-AGE-yr = Ages for which the fishing mortality is defined
  - TB-AGE-yr = Ages for which the total biomass is defined
  - M = Natural mortality
  - A50-yr = The age at 50% maturity
  - L50-cm = The length at 50% maturity
  - MORATOR-yr-yr = Moratorium years
  - LME = Large Marine Ecosystem
4. To ensure that the recruitment time series has been offset by the age at recruitment so that yearclass matches up with spawner biomass, please make sure that the difference between the last year of the recruitment and last year of the SSB time series is equal to the age at recruitment supplied (unless there is another reason, e.g. estimates unavailable).
5. Provide Large Marine Ecosystem (LME) designation(s) for your stock (unless it is a high seas stock). Please enter a primary, secondary and tertiary LME (if they exist) in the issue you submit (see below). A map of the LMEs is provided on the last page of this document.

### **QA/QC submission process**

If you (or someone else) submitted the assessments via the RAM legacy site, please log into : <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting> and locate the issue(s) associated with your spreadsheet submission(s). Once you locate your assessment, open the associated issue and choose "Add response". At the top of this response write:

*QAQC: Assessment ID* (this ID is located at the top of each assessment in the current document)

If you did not submit via the RAM Legacy site, please go to the url above and click "Submit a new issue" with the title: *QAQC: Assessment ID* (located at the top of each assessment in this pdf).

If you found no issues with the QA/QC document, please type:

"QA/QC correct". If you have found issues, please update the assessment spreadsheet accordingly or write the details of corrections to be made in the dialogue box. Once we have received and processed your response, the assessment will be flagged as quality controlled and the data it contains will be used for analyses.

## Contents

QA/QC steps . . . . .	1
QA/QC submission process . . . . .	1
DFO-COD5Zjm-1978-2003-PREFONTAINE . . . . .	3
DFO-HAD4X5Y-1960-2003-PREFONTAINE . . . . .	5
DFO-HAD5Zejm-1968-2003-PREFONTAINE . . . . .	7
DFO-HERR4VWX-1965-2006-PREFONTAINE . . . . .	9
DFO-MAR-BSKATCANATL-1970-1987-PREFONTAINE . . . . .	11
DFO-MAR-COD4VsW-1958-2002-PREFONTAINE . . . . .	13
DFO-MAR-WHAKE4VWX5-1964-2005-PREFONTAINE . . . . .	15
DFO-NFLD-AMPL23K-1960-2004-PREFONTAINE . . . . .	17
DFO-NFLD-AMPL3Ps-1960-2005-PREFONTAINE . . . . .	19
DFO-NFLD-COD2J3KLIS-1959-2006-PREFONTAINE . . . . .	21
DFO-NFLD-COD3Ps-1959-2004-PREFONTAINE . . . . .	23
DFO-NFLD-MONK2J3KLNOPs-1977-2000-PREFONTAINE . . . . .	25
DFO-NFLD-REDFISHSPP23K-1959-2001-PREFONTAINE . . . . .	27
DFO-POLL4VWX5Zc-1974-2007-PREFONTAINE . . . . .	29
DFO-QUE-COD3Pn4RS-1964-2007-PREFONTAINE . . . . .	31
DFO-QUE-GHAL4RST-1970-2002-PREFONTAINE . . . . .	33
DFO-QUE-HERR4RFA-1971-2003-PREFONTAINE . . . . .	35
DFO-QUE-HERR4RSP-1963-2004-PREFONTAINE . . . . .	37
DFO-QUE-REDFISHSPP3Pn4RSTVn-1953-2000-PREFONTAINE . . . . .	39
DFO-SG-COD4TVn-1965-2007-PREFONTAINE . . . . .	41
DFO-SG-HERR4TFA-1974-2007-PREFONTAINE . . . . .	43
DFO-SG-HERR4TSP-1974-2007-PREFONTAINE . . . . .	45
NAFO-SC-GHAL01ABCDEF-1987-2006-PREFONTAINE . . . . .	47
NAFO-SC-GHAL23KLMNO-1960-2006-PREFONTAINE . . . . .	49
NAFO-SC-REDFISHSPP1-1965-2004-PREFONTAINE . . . . .	51
NAFO-SC-REDFISHSPP3M-1989-2006-PREFONTAINE . . . . .	53
LME map . . . . .	55

# Assessment of Georges Bank atlantic cod (*Gadus morhua*)

Assessment ID:DFO-COD5Zjm-1978-2003-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/163>

Area ID: Canada-DFO-5Zjm

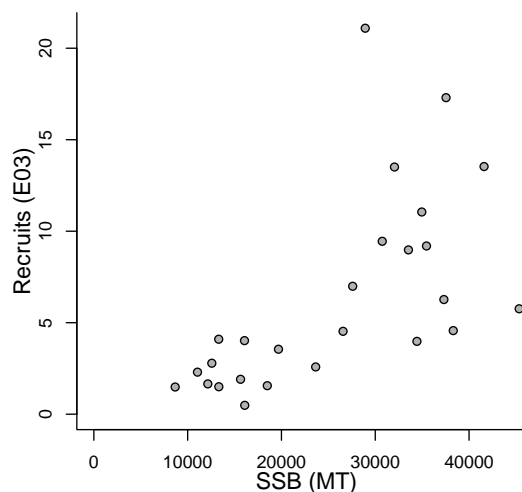
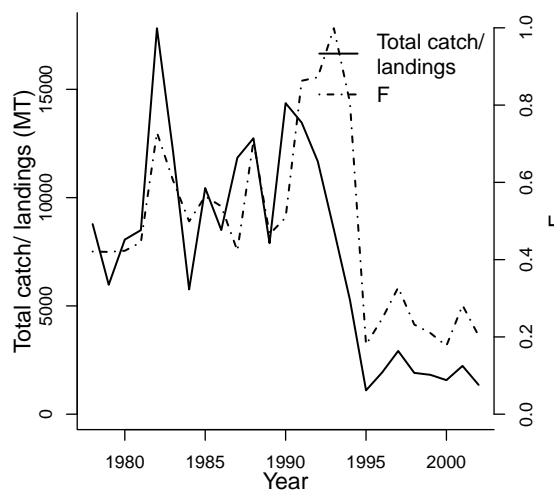
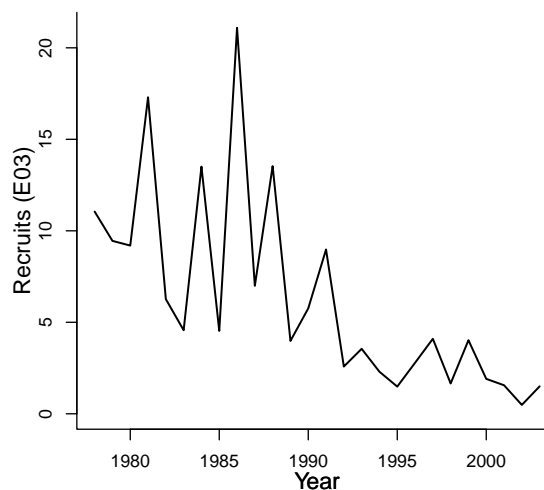
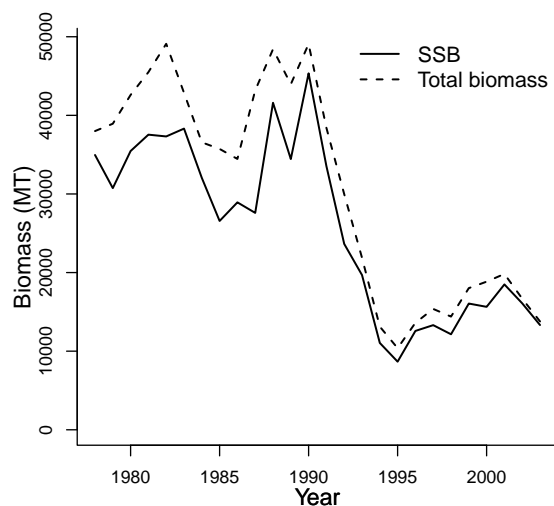
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans
Assessment authors	Hunt, J.J.
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2003
Timeseries span	1978-2003
Document	NAFO-COD5Zjm-2003.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-10
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
7 - Northeast U.S. Continental Shelf			na	na
Parameter	Value	Units	Reference points	
SSB-AGE-yr	3+	yr	Parameter	Value
REC-AGE-yr	1	yr		
F-AGE-yr-yr	4-9	yr-yr	F0.1-1/yr (F)	0.18
TB-AGE-yr	1-10	yr		
M-1/T	0.2	1/T	1/yr	
SSB-SEX-sex				
M				
A50-yr				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1978	1978	1978	1978	1978
Maximum year	2003	2003	2002	2003	2002
Time series minimum	8667	0.485	0.177	10384	1100
Time series maximum	45343	21.094	0.999	49102	17824
Units	MT	E03	1/T	MT	MT



# Assessment of Western Scotian Shelf, Bay of Fundy and Gulf of Maine haddock (*Melanogrammus aeglefinus*)

Assessment ID:DFO-HAD4X5Y-1960-2003-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/166>

Area ID: Canada-DFO-4X5Y

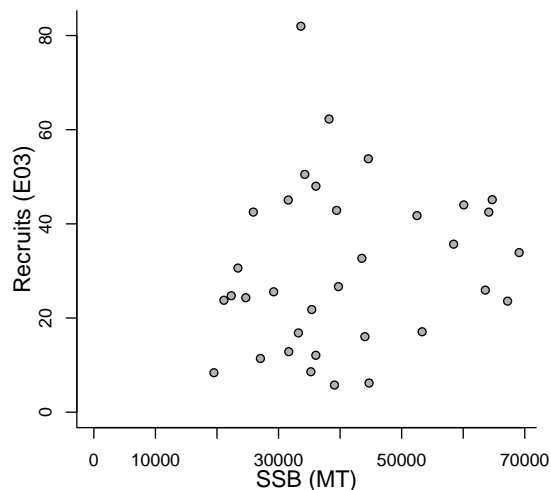
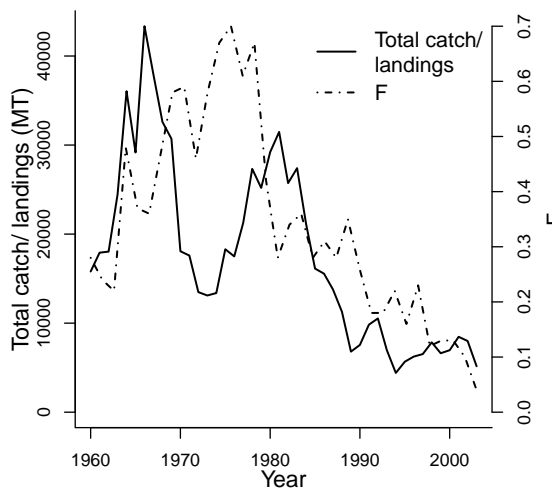
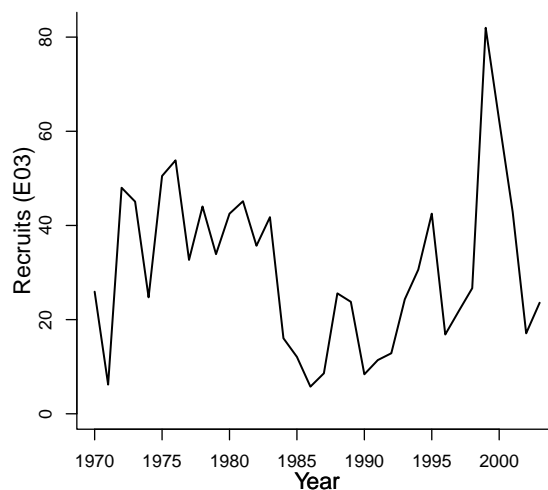
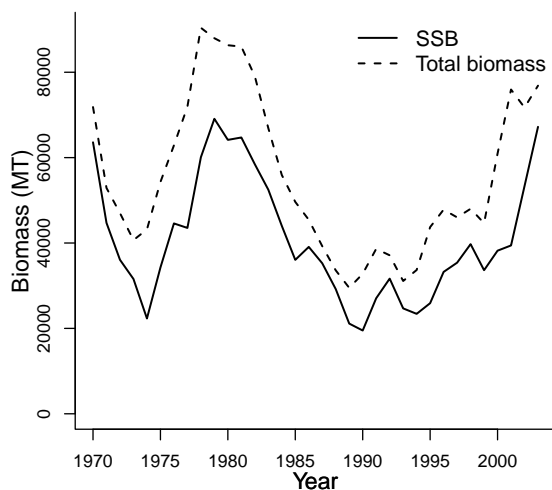
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans
Assessment authors	Hurley, P.C.F.
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2003
Timeseries span	1960-2003
Document	NAFO-HAD4X5Y-2003.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-03
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
7 - Northeast U.S. Continental Shelf			8 - Scotian Shelf	na
Parameter	Value	Units	Reference points	
SSB-AGE-yr	4+	yr	Parameter	Value
REC-AGE-yr	1	yr		Units
F-AGE-yr-yr	5-7	yr-yr	F0.1-1/yr (F)	0.25
TB-AGE-yr	1-10	yr		1/yr
M-1/T	0.2	1/T		
SSB-SEX-sex				
M				
A50-yr				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1970	1970	1970	1970	1960
Maximum year	2003	2003	2003	2003	2003
Time series minimum	19506	5.765	0.04	29495	4406
Time series maximum	69091	81.978	0.7	90408	43349
Units	MT	E03	1/T	MT	MT



# Assessment of Georges Bank haddock (*Melanogrammus aeglefinus*)

Assessment ID:DFO-HAD5Zejm-1968-2003-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/105>

Area ID: Canada-DFO-5Zejm

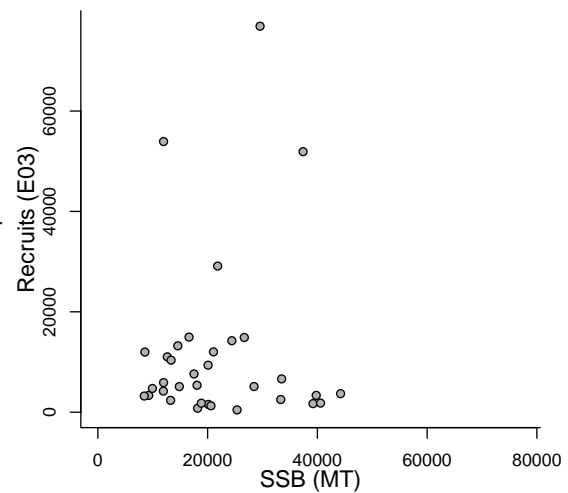
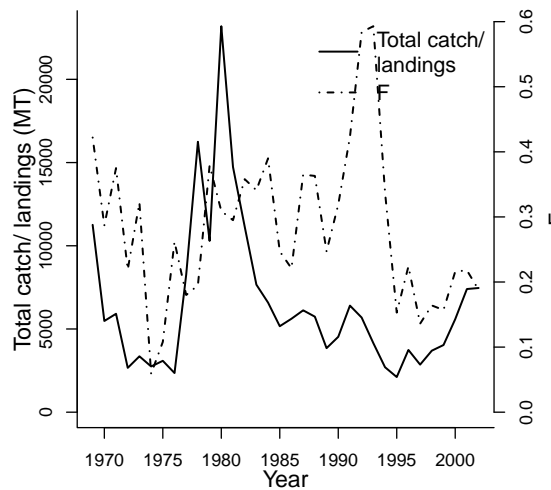
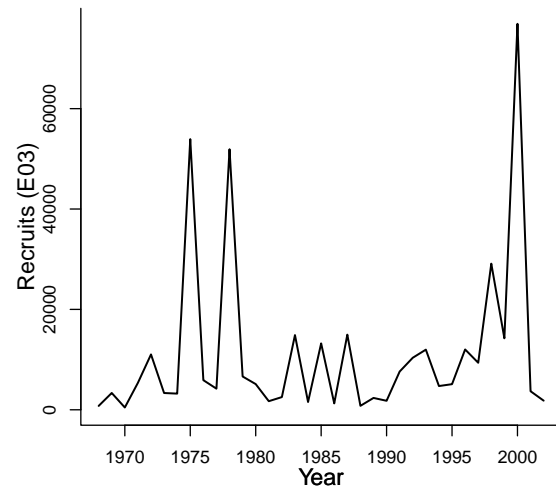
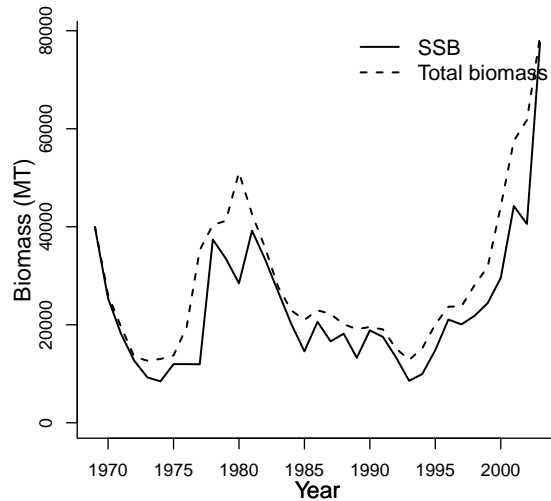
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans
Assessment authors	Van Eeckhaute, L.
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2003
Timeseries span	1968-2003
Document	NAFO-HAD5Zejm-2003.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-04
Date last loaded	2010-07-14
QA/QC complete	YES
Date approved	2010-07-14

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME	
7 - Northeast U.S. Continental Shelf			na	na	
Parameter	Value	Units			
SSB-AGE-yr	3+	yr			
REC-AGE-yr	1	yr			
F-AGE-yr-yr	4+	yr-yr	Reference points		
TB-AGE-yr	1-9+	yr	Parameter	Value	Units
M-1/T	0.2	1/T	Fref-1/T (F)	0.26	1/T
SSB-SEX-sex			Brebuild-MT (TB)	65000	MT
M					
A50-yr					
L50-cm					

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1969	1968	1969	1969	1969
Maximum year	2003	2002	2002	2003	2002
Time series minimum	8458	456	0.059	12672	2112
Time series maximum	77501	76905	0.593	78763	23193
Units	MT	E03	1/T	MT	MT





# Assessment of Scotian Shelf and Bay of Fundy herring (*Clupea harengus*)

Assessment ID:DFO-HERR4VWX-1965-2006-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/171>

Area ID: Canada-DFO-4VWX

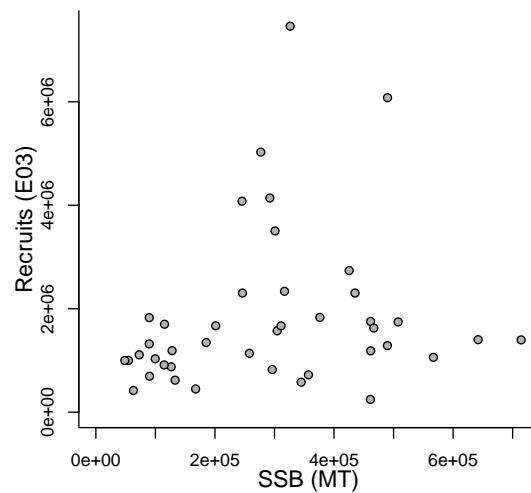
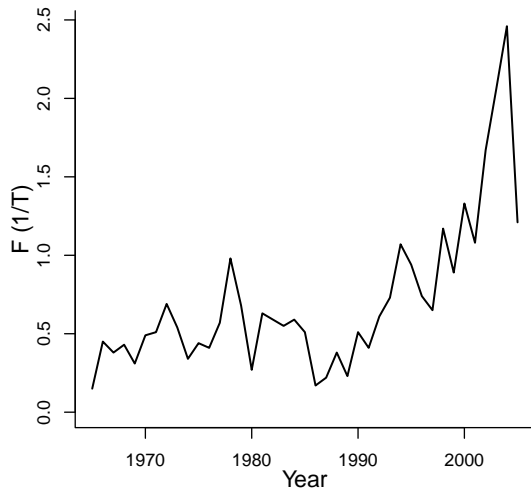
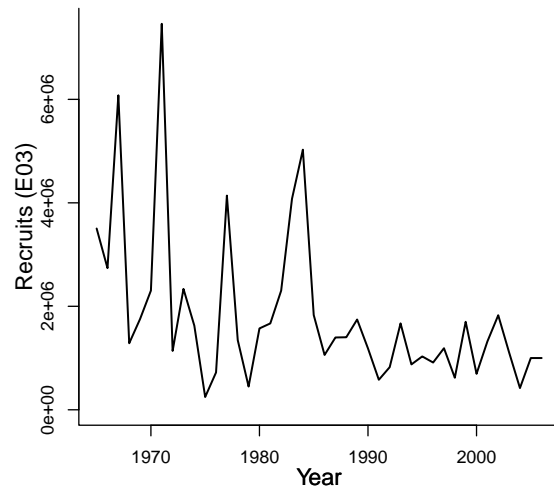
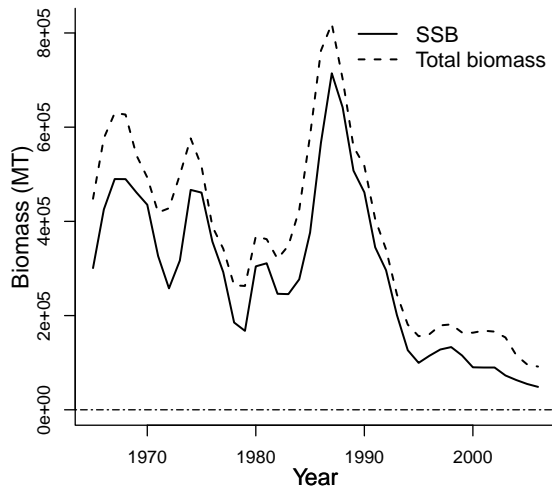
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans
Assessment authors	Power, M.J.
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2006
Timeseries span	1965-2006
Document	NAFO-HERR4VWX-2006.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-02
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

			Parameter	Value	Units
primary LME	secondary LME	tertiary LME	SSB-AGE-yr	3+	yr
			SSB-SEX-sex	NA	sex
			REC-AGE-yr	1	yr
			F-AGE-yr-yr	5-8	yr-yr
			TB-AGE-yr	NA	yr
			A50-yr	3	yr
			M-1/T	0.2	1/T
			M		
			L50-cm		
Reference points					
Parameter	Value				Units
Bmsy-MT (TB)	SEE NOTES				MT
F0.1-1/yr (F)	0.23				1/yr
Fmax-1/yr (F)	0.57				1/yr
BH-h-dimless	4 to 8 compared with ages 5-9 the following year				dimless

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1965	1965	1965	1965	
Maximum year	2006	2006	2005	2006	
Time series minimum	48646	247148	0.15	91734	
Time series maximum	714331	7460417	2.46	819446	
Units	MT	E03	1/T	MT	



# Assessment of Canadian Atlantic Ocean barndoor skate (*Dipturus laevis*)

Assessment ID:DFO-MAR-BSKATCANATL-1970-1987-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/151>

Area ID: Canada-DFO-ATL

General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Maritimes Region
Assessment authors	Simon, James E.
Assessment method	Temporal indices derived from scientific survey data
Publication year	2002
Timeseries span	1970-1987
Document	NAFO-BARNSK-2002.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-09
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME	secondary LME	tertiary LME
8 - Scotian Shelf	7 - Northeast U.S. Continental Shelf	9 - Newfoundland-Labrador Shelf
Parameter	Value	Units
REC-AGE		
SSB-AGE-yr		
SSB-SEX-sex		
TB-AGE-yr		
F-AGE-yr		
M		
A50-yr		
L50-cm		

Reference points		
Parameter	Value	Units

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					
Maximum year					
Time series minimum					
Time series maximum					
Units					

No biomass data  
available

No recruitment  
data available

No exploitation  
data available

No SSB–recruit  
data available

# Assessment of Eastern Scotian Shelf atlantic cod (*Gadus morhua*)

Assessment ID:DFO-MAR-COD4VsW-1958-2002-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/162>

Area ID: Canada-DFO-4VsW

General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Maritimes Region
Assessment authors	Fanning, L.P.
Assessment method	Unknown
Publication year	2003
Timeseries span	1958-2002
Document	NAFO-COD4VsW-2003.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-09
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

	primary LME	secondary LME	tertiary LME
	8 - Scotian Shelf	na	na

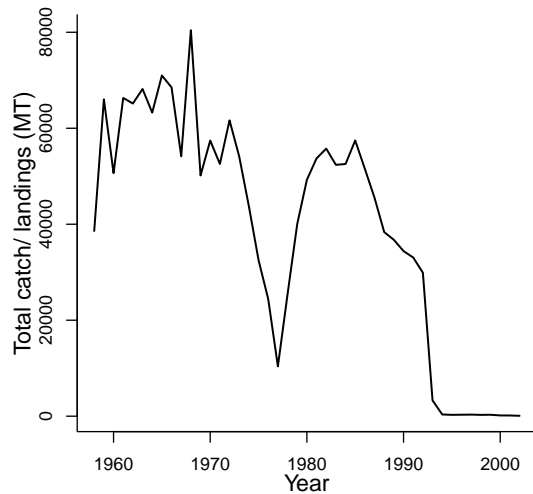
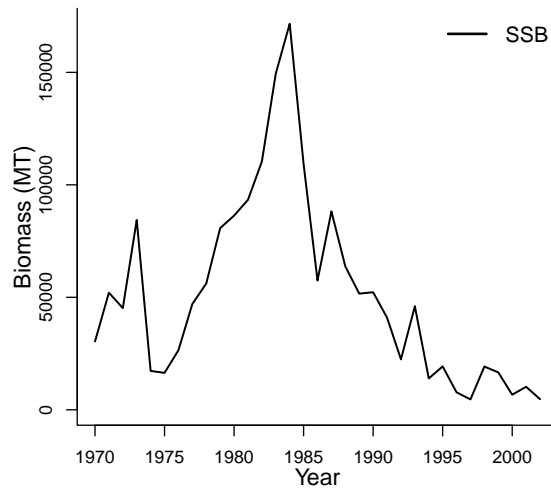
  

Parameter	Value	Units
A50-yr	3	yr
L50-cm	SEE FIGURES 15 AND 16 OF THE ASSESSMENT	cm
REC-AGE		
SSB-AGE-yr		
SSB-SEX-sex		
TB-AGE-yr		
F-AGE-yr		
M		

Reference points		
Parameter	Value	Units
MORATOR-yr-yr	1993-2008	yr-yr
SSBrecovey-MT	16420	MT
SSBnp50-MT	53990	MT
SSBrk50-MT	23940	MT
SSBbh50-MT	33670	MT
SSBsb50/90-MT	12590	MT

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1970				1958
Maximum year	2002				2002
Time series minimum	4607				83
Time series maximum	171591.6				80428
Units	MT				MT



# Assessment of Scotian Shelf, Bay of Fundy and Georges Bank white hake (*Urophycis tenuis*)

Assessment ID:DFO-MAR-WHAKE4VWX5-1964-2005-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/6>

Area ID: Canada-DFO-4VWX5

General assessment details.

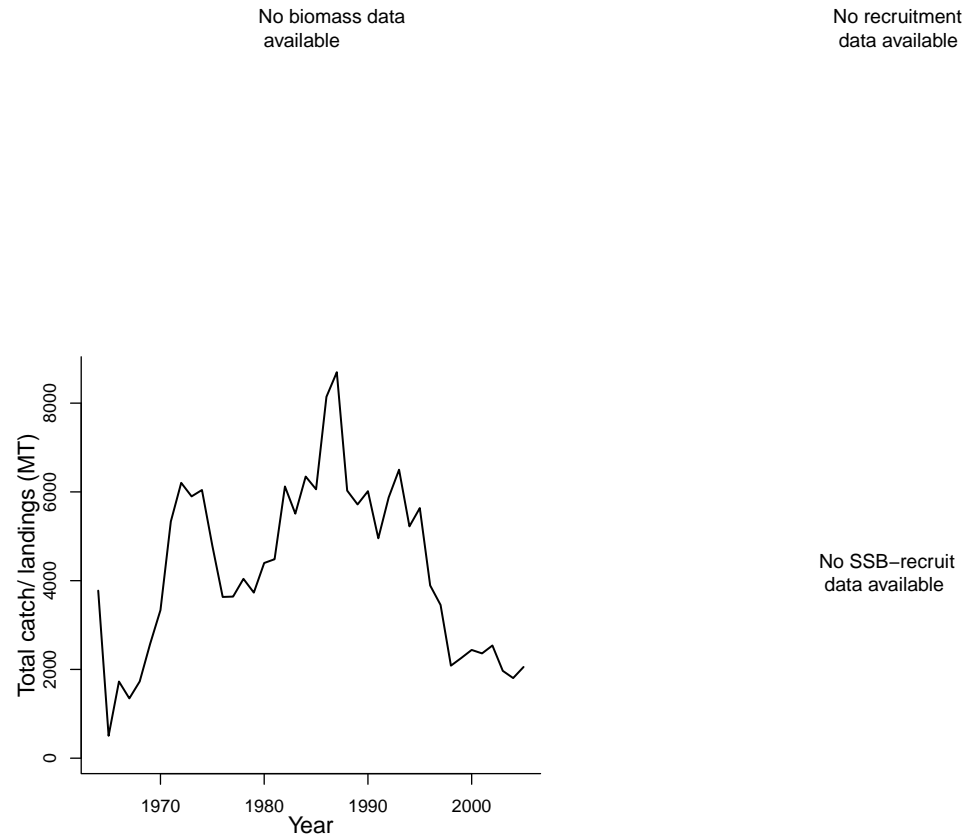
Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Maritimes Region
Assessment authors	Bundy, A.
Assessment method	Unknown
Publication year	2005
Timeseries span	1964-2005
Document	NAFO-WHAKE4VWX5-2005.pdf (pdf in database)
Recorder	PREFONTAINE
Date entered	2008-06-18
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME	secondary LME	tertiary LME
8 - Scotian Shelf	7 - Northeast U.S. Continental Shelf	na
Parameter	Value	Units
F-AGE-yr-yr	SEE NOTES	yr-yr
REC-AGE		
SSB-AGE-yr		
SSB-SEX-sex		
TB-AGE-yr		
M		
A50-yr		
L50-cm		

Reference points		
Parameter	Value	Units

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1964
Maximum year					2005
Time series minimum					505
Time series maximum					8697
Units					MT





# Assessment of Labrador - NE Newfoundland american plaice (*Hippoglossoides platessoides*)

Assessment ID:DFO-NFLD-AMPL23K-1960-2004-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/8>

Area ID: multinational-NAFO-23K

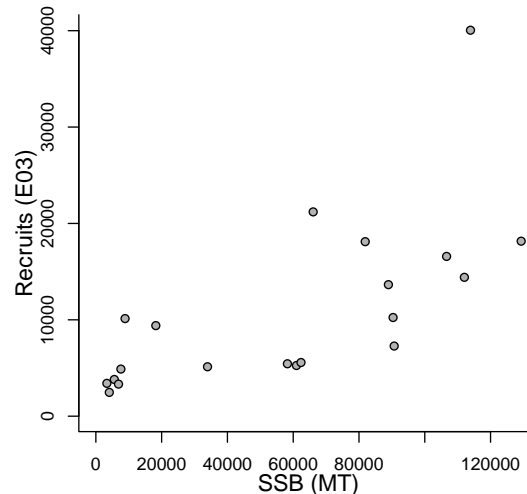
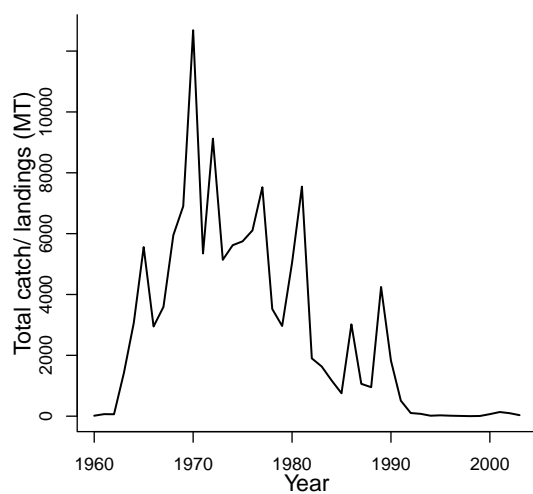
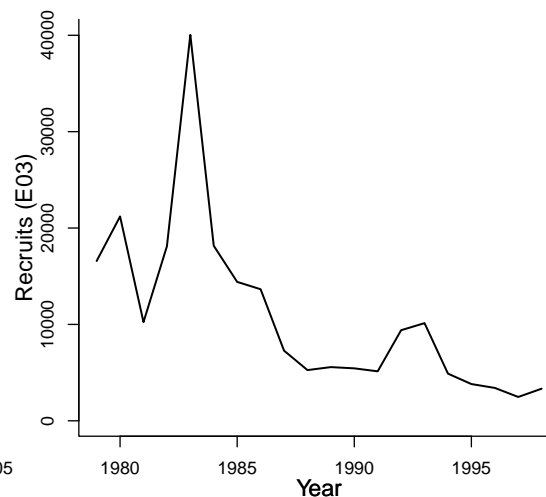
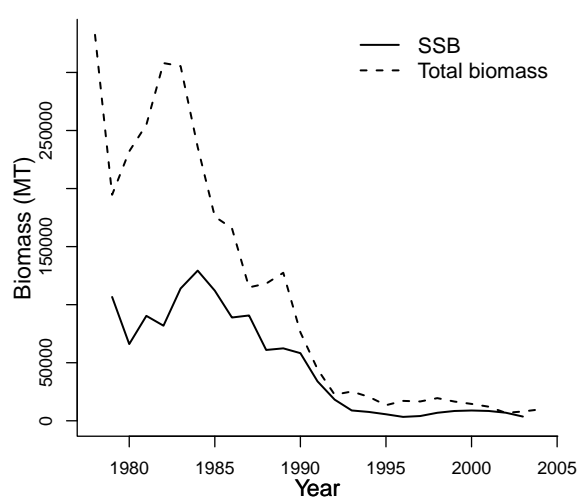
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Newfoundland Region
Assessment authors	Dwyer, K.S.
Assessment method	Temporal indices derived from scientific survey data
Publication year	2003
Timeseries span	1960-2004
Document	NAFO-AMPL23K-2003.pdf (pdf in database)
Recorder	PREFONTAINE
Date entered	2008-06-03
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME		secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf		na	na
Parameter	Value	Units	
SSB-SEX-sex	1	sex	
REC-AGE-yr	3+	yr	
TB-AGE-yr	0-19	yr	
A50-yr	FOUND AS A TIME SERIES IN FIGURE 10	yr	
L50-cm	FOUND AS A TIME SERIES IN FIGURE 11	cm	
SSB-AGE-yr			
F-AGE-yr			
M			
Reference points			
Parameter	Value	Units	
MORATOR-yr-yr	1994-2003	yr-yr	

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1979	1979		1978	1960
Maximum year	2003	1998		2004	2003
Time series minimum	3350	2470		6820	2
Time series maximum	129310	40050		332410	12686
Units	MT	E03		MT	MT



# Assessment of St. Pierre Bank american plaice (*Hippoglossoides platessoides*)

Assessment ID:DFO-NFLD-AMPL3Ps-1960-2005-PREFONTAINE  
Issue URL: <http://www.marinemarinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/178>

Area ID: Canada-DFO-3Ps

General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Newfoundland Region
Assessment authors	Morgan, M.J.
Assessment method	Unknown
Publication year	2005
Timeseries span	1960-2005
Document	NAFO-AMPL3Ps-2005.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-04
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

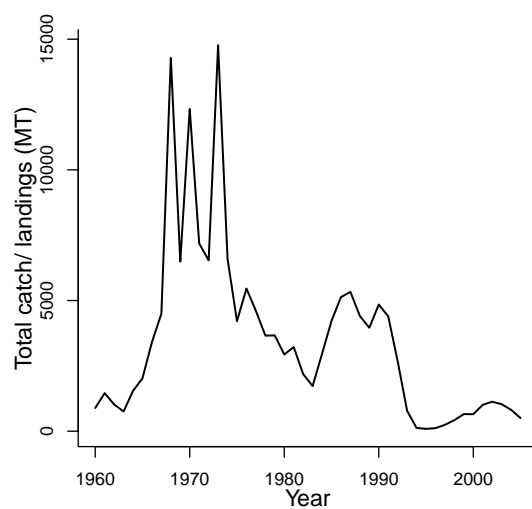
Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME		tertiary LME
9 - Newfoundland-Labrador Shelf			8 - Scotian Shelf		na
Parameter	Value	Units	Reference points		
REC-AGE			Parameter	Value	Units
SSB-AGE-yr			Blim-MT (TB)	7.7-16.2	MT
SSB-SEX-sex			MORATOR-yr-yr	1993-present	yr-yr
TB-AGE-yr			SSB50-MT	13.6	MT
F-AGE-yr					
M					
A50-yr					
L50-cm					

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1960
Maximum year					2005
Time series minimum					90
Time series maximum					14769
Units					MT

No biomass data  
available

No recruitment  
data available



No SSB–recruit  
data available

# Assessment of Southern Labrador-Eastern Newfoundland atlantic cod (*Gadus morhua*)

Assessment ID:DFO-NFLD-COD2J3KLIS-1959-2006-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/152>

Area ID: Canada-DFO-2J3KL

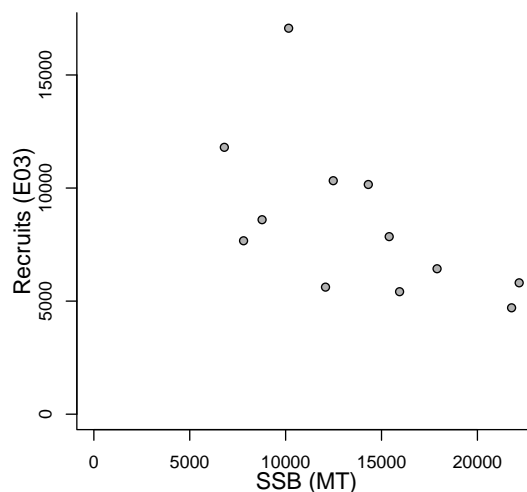
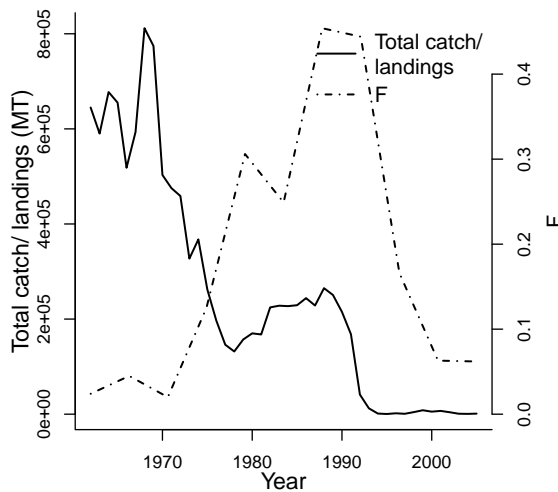
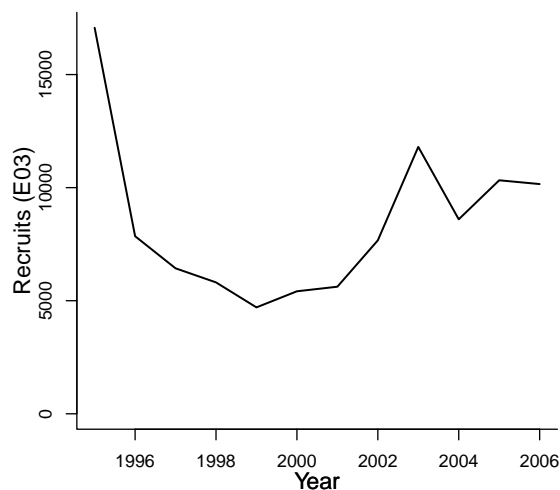
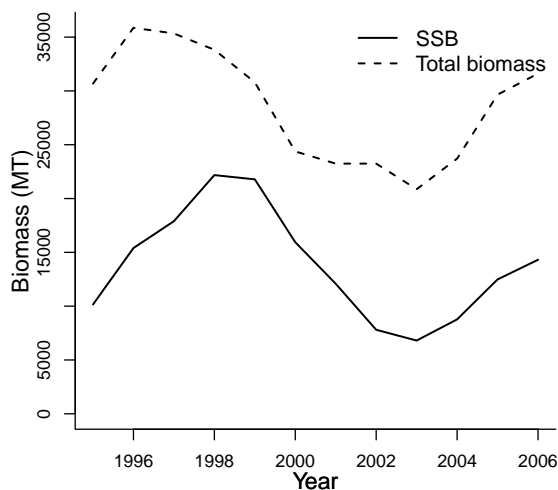
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Newfoundland Region
Assessment authors	Lilly, G.R.
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2006
Timeseries span	1959-2006
Document	DFO-COD2J3KLIS-2006.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-05-28
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf			na	na
Parameter	Value	Units		
SSB-AGE-yr	2+	yr		
REC-AGE-yr	3	yr		
F-AGE-yr-yr	2-10	yr-yr	Reference points	
A50-yr	6-7	yr	Parameter	Value
M-1/T	0.4	1/T		Units
SSB-SEX-sex			MORATOR-yr-yr	1992-2005
TB-AGE-yr				yr-yr
M				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1995	1995	1995	1995	1962
Maximum year	2006	2006	2005	2006	2005
Time series minimum	6804	4705	0.02	20866	411
Time series maximum	22178	17068	0.454	35864	811698
Units	MT	E03	1/T	MT	MT



# Assessment of St. Pierre Bank atlantic cod (*Gadus morhua*)

Assessment ID:DFO-NFLD-COD3Ps-1959-2004-PREFONTAINE  
Issue URL: <http://www.marinemarinebiodiversity.ca/ramlegacy/ramlegacy-bug-reporting/155>

Area ID: Canada-DFO-3Ps

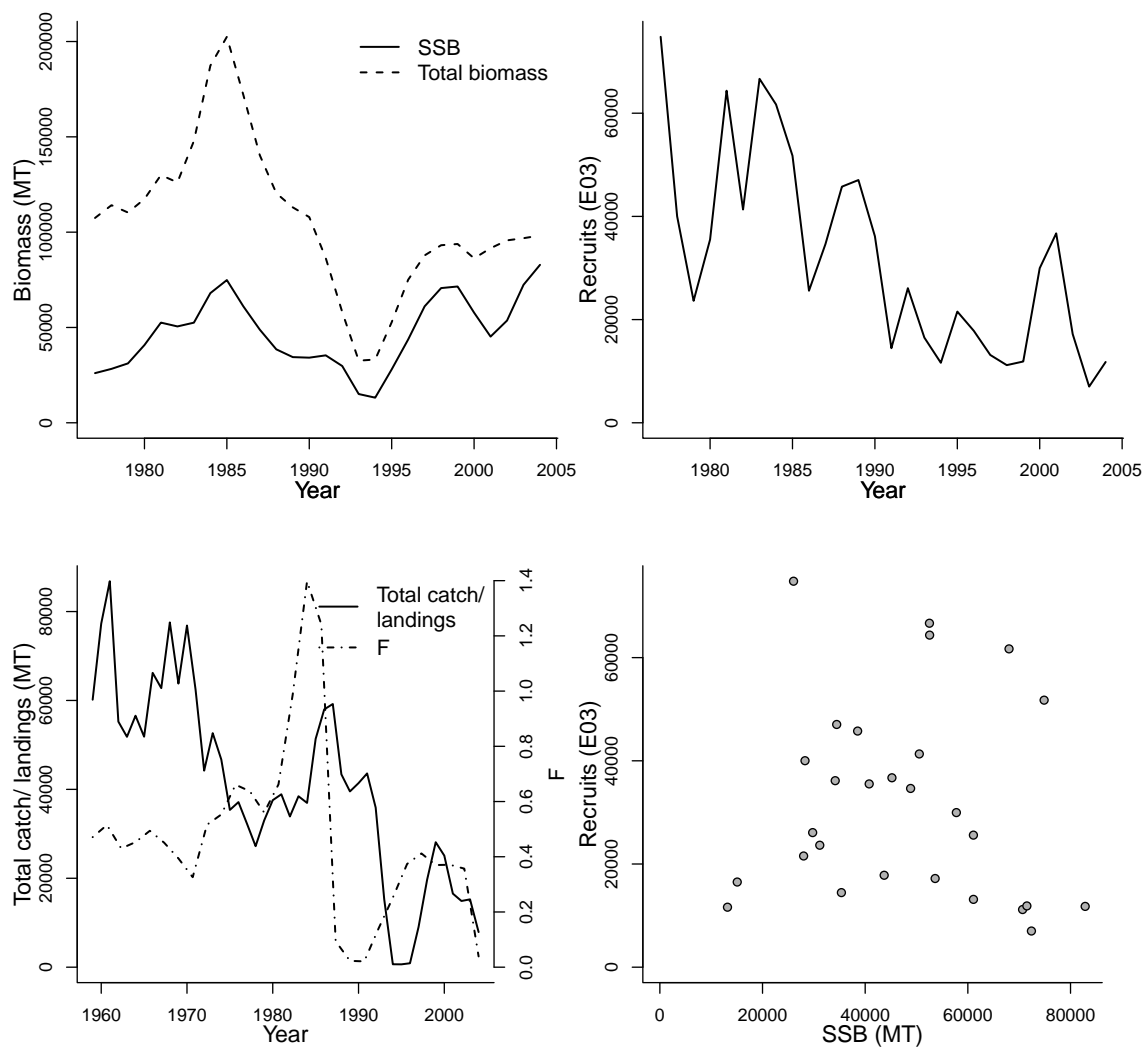
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Newfoundland Region
Assessment authors	Bratney, J.
Assessment method	The ADAPT approach with year effects in a catch multiplier
Publication year	2004
Timeseries span	1959-2004
Document	DFO-COD3Ps-2004.pdf (pdf in database)
Recorder	PREFONTAINE
Date entered	2008-05-27
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf			na	na
Parameter	Value	Units	Reference points	
A50-yr	7-8	yr	Parameter	Value
M-1/T	0.2	1/T		Units
REC-AGE			MORATOR-yr-yr	1994-1996
SSB-AGE-yr			SSB recovery-1-MT	36000
SSB-SEX-sex			SSB recovery-2-MT	13000
TB-AGE-yr				
F-AGE-yr				
M				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1977	1977	1977	1977	1959
Maximum year	2004	2004	2004	2004	2004
Time series minimum	13173	7014	0.021	32591	641
Time series maximum	82857	74809	1.398	202478	86824
Units	MT	E03	1/T	MT	MT





# Assessment of Labrador Shelf-Grand Banks-S. Pierre Bank monkfish (*Lophius americanus*)

Assessment

ID:DFO-NFLD-MONK2J3KLNOPs-1977-2000-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/5>

Area ID: Canada-DFO-2J3KLNOPs

General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Newfoundland Region
Assessment authors	Kulka, D.W.
Assessment method	Unknown
Publication year	2001
Timeseries span	1977-2000
Document	NAFO-MONK2J3KLNOPs-2001.pdf (pdf in database)
Recorder	PREFONTAINE
Date entered	2008-06-26
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME	secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf	na	na

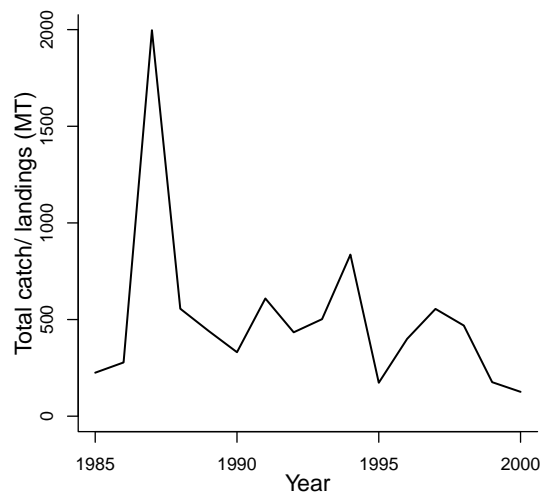
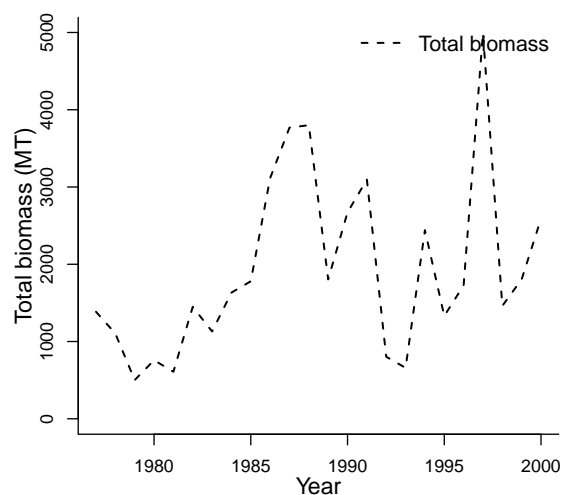
  

Parameter	Value	Units
REC-AGE		
SSB-AGE-yr		
SSB-SEX-sex		
TB-AGE-yr		
F-AGE-yr		
M		
A50-yr		
L50-cm		

Reference points		
Parameter	Value	Units

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year				1977	1985
Maximum year				2000	2000
Time series minimum				501	126
Time series maximum				4996	1997
Units				MT	MT



# Assessment of Labrador - NE Newfoundland redfish species (*Redfish species*)

Assessment

ID:DFO-NFLD-REDFISHSPP23K-1959-2001-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/175>

Area ID: Canada-DFO-23K

General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Newfoundland Region
Assessment authors	Power, D.
Assessment method	Unknown
Publication year	2001
Timeseries span	1959-2001
Document	NAFO-RED23K-2001.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-08-19
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME		secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf		na	na

Parameter	Value	Units
REC-AGE		
SSB-AGE-yr		
SSB-SEX-sex		
TB-AGE-yr		
F-AGE-yr		
M		
A50-yr		
L50-cm		

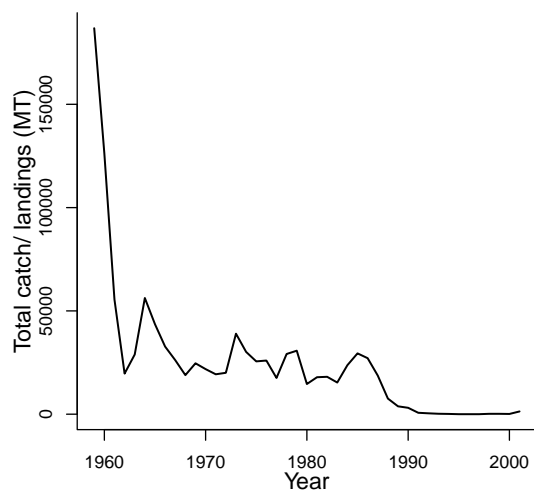
  

Reference points		
Parameter	Value	Units
F0.1-1/yr (F)	0.12	1/yr
MORATOR-yr-yr	1997-2001	yr-yr

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1959
Maximum year					2001
Time series minimum					3
Time series maximum					186837
Units					MT

No biomass data  
available

No recruitment  
data available



No SSB–recruit  
data available

# Assessment of Scotian Shelf, Bay of Fundy and Georges Bank pollock (*Pollachius virens*)

Assessment ID:DFO-POLL4VWX5Zc-1974-2007-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/179>

Area ID: Canada-DFO-4VWX5Zc

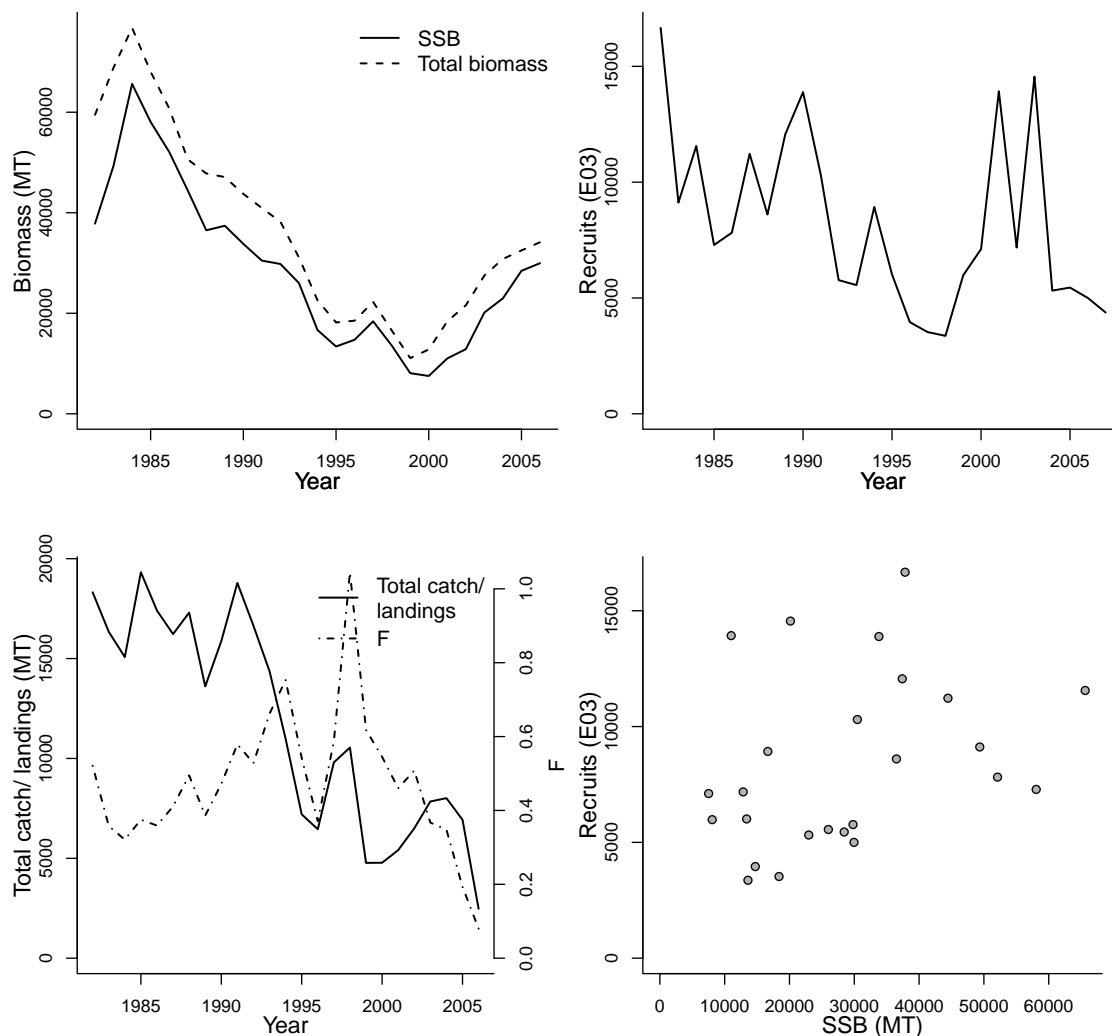
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans
Assessment authors	Stone, Heath
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2006
Timeseries span	1974-2007
Document	NAFO-POLL4VWX5Zc-2006.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-05-29
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
7 - Northeast U.S. Continental Shelf			8 - Scotian Shelf	na
Parameter	Value	Units	Reference points	
SSB-AGE-yr	4+	yr	Parameter	Value
REC-AGE-yr	2+	yr		Units
F-AGE-yr-yr	4-9	yr-yr	Fref-1/T (F)	0.2
M-1/T	0.2	1/T		1/T
SSB-SEX-sex				
TB-AGE-yr				
M				
A50-yr				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1982	1982	1982	1982	1982
Maximum year	2006	2007	2006	2006	2006
Time series minimum	7524	3365	0.08	11074	2474
Time series maximum	65627	16664	1.045	76792	19323
Units	MT	E03	1/T	MT	MT



# Assessment of Northern Gulf of St. Lawrence atlantic cod (*Gadus morhua*)

Assessment ID:DFO-QUE-COD3Pn4RS-1964-2007-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/154>

Area ID: Canada-DFO-3Pn4RS

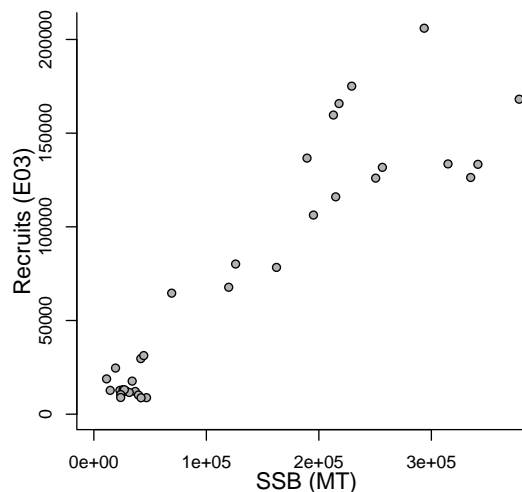
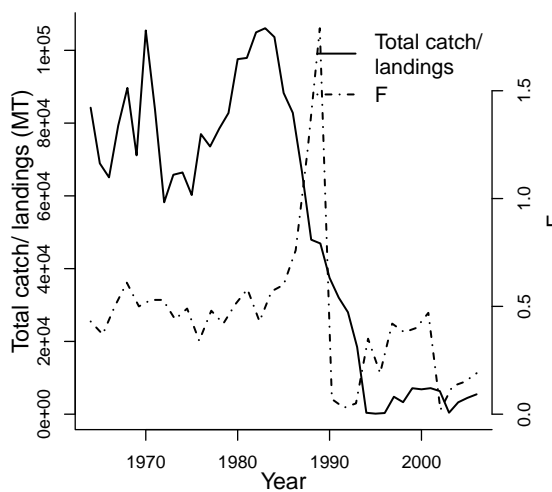
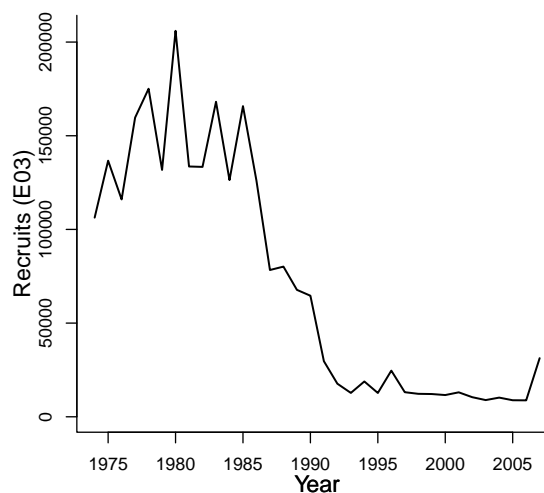
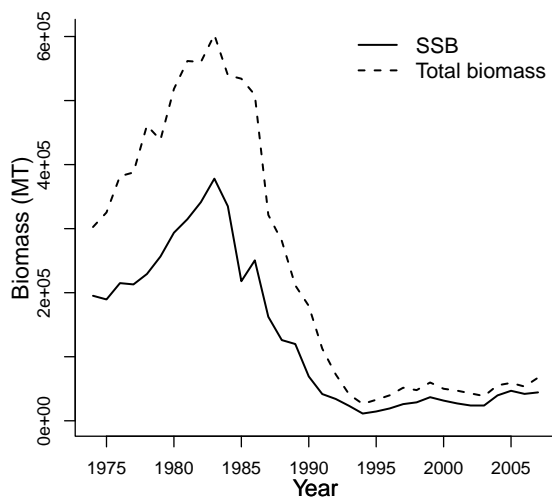
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Quebec Region
Assessment authors	Fréchet, Alain
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2007
Timeseries span	1964-2007
Document	DFO-COD3Pn4Rs-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-08-20
Date last loaded	2010-07-16
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME	secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf	na	na
Parameter	Value	Units
SSB-AGE-yr	3+	yr
REC-AGE-yr	3	yr
F-AGE-yr-yr	7-10	yr-yr
A50-yr	4-5	yr
M-1/T	timeseries	1/T
SSB-SEX-sex		
TB-AGE-yr		
M		
L50-cm		
Reference points		
Parameter	Value	Units
MORATOR-yr-yr	1994-1996 AND 2003	yr-yr

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1974	1974	1974	1974	1964
Maximum year	2007	2007	2006	2007	2006
Time series minimum	11307	8769	0.02	26347	148
Time series maximum	378057	206009	1.79	602678	106080
Units	MT	E03	1/T	MT	MT





# Assessment of Gulf of St. Lawrence greenland halibut (*Reinhardtius hippoglossoides*)

Assessment ID:DFO-QUE-GHAL4RST-1970-2002-PREFONTAINE  
Issue URL: <http://www.marinemarinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/165>

Area ID: Canada-DFO-4RST

General assessment details.

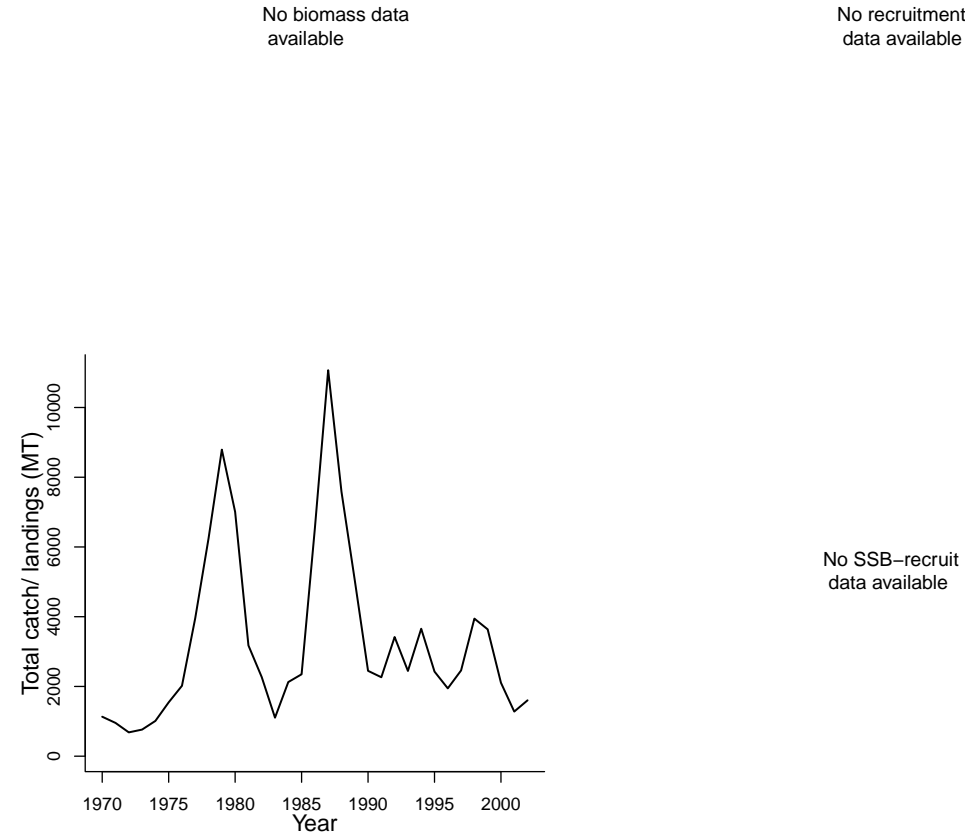
Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Quebec Region
Assessment authors	Bernier, B.
Assessment method	Unknown
Publication year	2003
Timeseries span	1970-2002
Document	NAFO-GHAL4RST-2003.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-03
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf			8 - Scotian Shelf	na
Parameter	Value	Units		
REC-AGE				
SSB-AGE-yr				
SSB-SEX-sex				
TB-AGE-yr				
F-AGE-yr				
M				
A50-yr				
L50-cm				

Reference points  
Parameter Value Units

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1970
Maximum year					2002
Time series minimum					683
Time series maximum					11069
Units					MT



# Assessment of NAFO 4R herring (*Clupea harengus*)

Assessment ID:DFO-QUE-HERR4RFA-1971-2003-PREFONTAINE  
 Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/167>

Area ID: Canada-DFO-4R

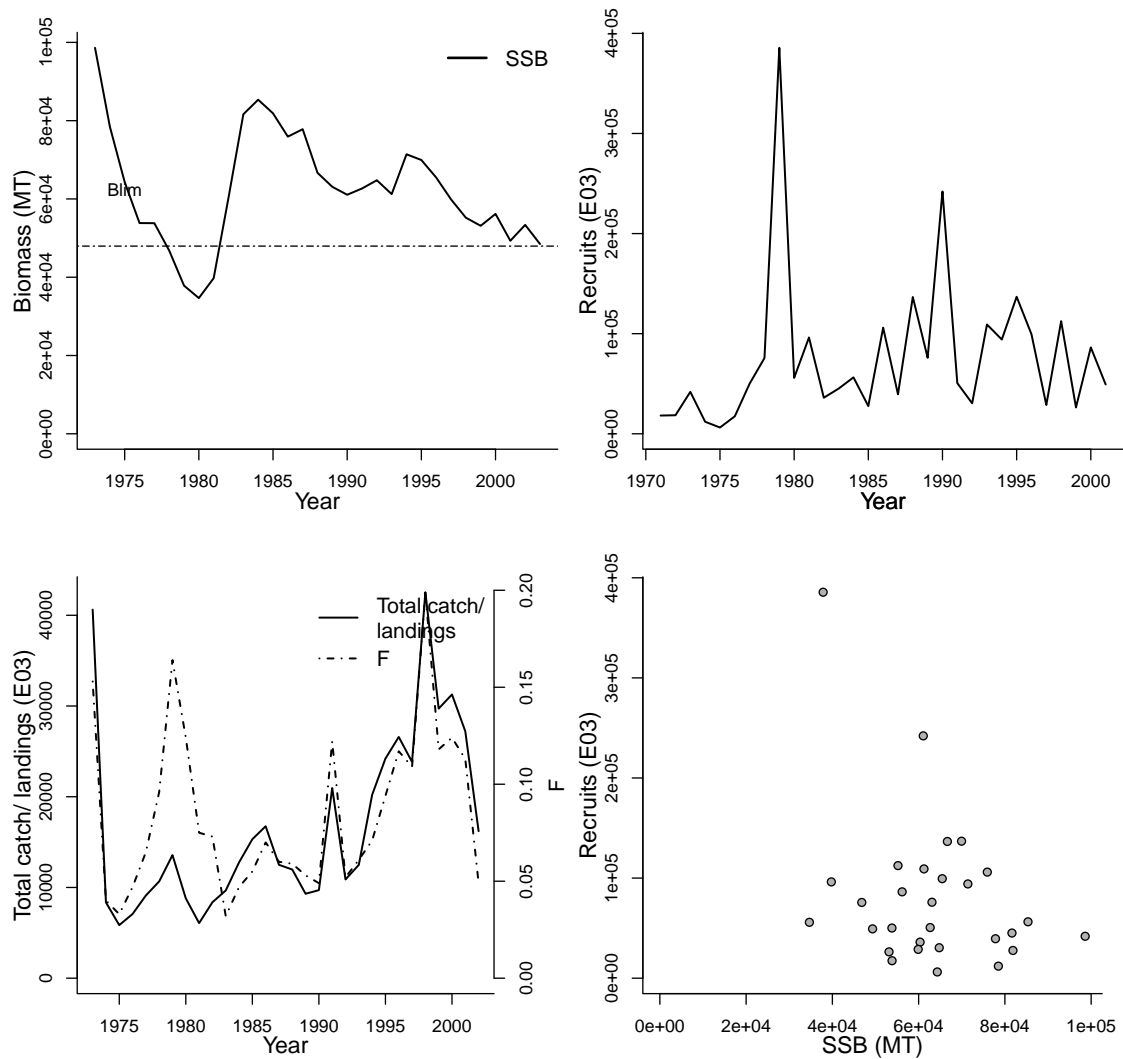
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Quebec Region
Assessment authors	Grégoire, François
Assessment method	Sequential Population Analysis / ADAPT
Publication year	2004
Timeseries span	1971-2003
Document	NAFO-HERR4RSP-2004.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-05
Date last loaded	2010-07-14
QA/QC complete	YES
Date approved	2010-07-14

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME	
9 - Newfoundland-Labrador Shelf			na	na	
Parameter	Value	Units			
SSB-AGE-yr	2+	yr	Reference points		
REC-AGE-yr	2	yr	Parameter	Value	Units
F-AGE-yr-yr	4+	yr-yr	Blim-MT (TB)	47953	MT
A50-yr	03-Apr	yr	F0.1-1/yr (F)	0.3	1/yr
M-1/T	0.2	1/T	Fmax-1/yr (F)	0.55	1/yr
SSB-SEX-sex			Bbuf-MT (TB)	57453	MT
TB-AGE-yr					
M					
L50-cm					

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1973	1971	1973		1973
Maximum year	2003	2001	2002		2002
Time series minimum	34671	6244	0.032		5849
Time series maximum	98616	385586	0.199		42543
Units	MT	E03	1/T		E03



# Assessment of NAFO 4R herring (*Clupea harengus*)

Assessment ID:DFO-QUE-HERR4RSP-1963-2004-PREFONTAINE  
 Issue URL: <http://www.marinemarinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/168>

Area ID: Canada-DFO-4R

General assessment details.

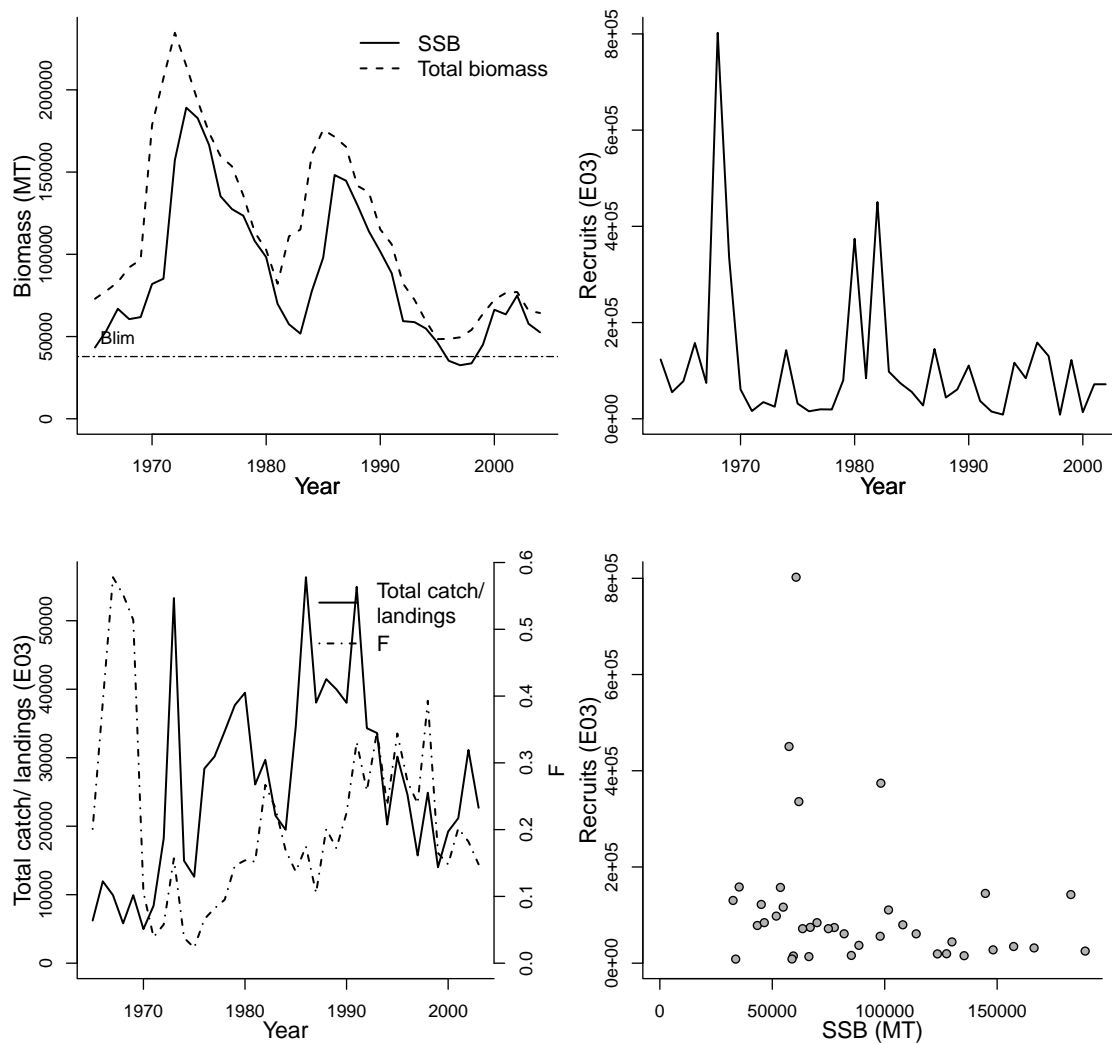
Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Quebec Region
Assessment authors	Grégoire, François
Assessment method	Sequential Population Analysis / ADAPT
Publication year	2004
Timeseries span	1963-2004
Document	NAFO-HERR4RSP-2004.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-05-30
Date last loaded	2010-07-14
QA/QC complete	YES
Date approved	2010-07-14

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME	
9 - Newfoundland-Labrador Shelf			na	na	
Parameter	Value	Units			
SSB-AGE-yr	2+	yr	Reference points		
REC-AGE-yr	2	yr	Parameter	Value	Units
F-AGE-yr-yr	4+	yr-yr	Blim-MT (TB)	37831	MT
A50-yr	3-4	yr	F0.1-1/yr (F)	0.3	1/yr
M-1/T	0.2	1/T	Fmax-1/yr (F)	0.55	1/yr
SSB-SEX-sex			Bbuf-MT (TB)	57453	MT
TB-AGE-yr					
M					
L50-cm					

Time series minima and maxima

	SSB	R	F	TB	Catch
Minimum year	1965	1963	1965	1965	1965
Maximum year	2004	2002	2003	2004	2003
Time series minimum	32559	8533	0.023	48431	4983
Time series maximum	189156	802298	0.578	234686	56356
Units	MT	E03	1/T	MT	E03



# Assessment of Gulf of St. Lawrence and Cabot Strait redfish species (*Redfish species*)

Assessment

ID:DFO-QUE-REDFISHSPP3Pn4RSTVn-1953-2000-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/176>

Area ID: Canada-DFO-3Pn4RSTVn

General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Quebec Region
Assessment authors	Morin, B.
Assessment method	Temporal indices derived from scientific survey data
Publication year	2001
Timeseries span	1953-2000
Document	NAFO-RED3Pn4RSTVn.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-25
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

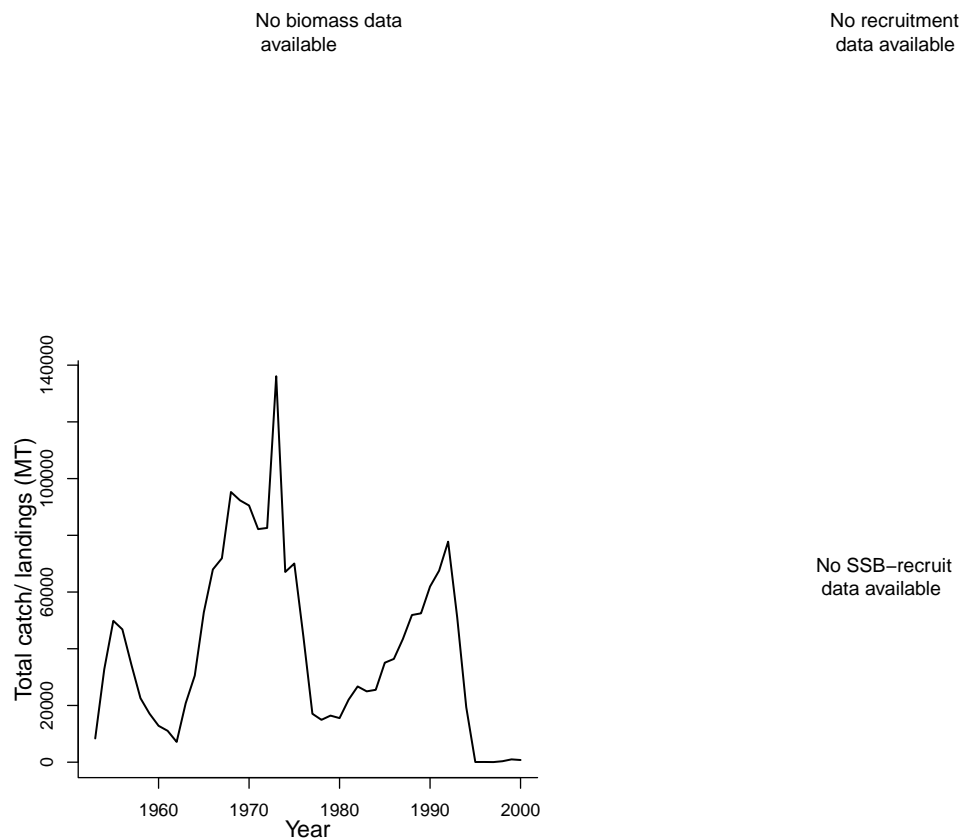
Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME		secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf		8 - Scotian Shelf	na
Parameter	Value	Units	
REC-AGE			
SSB-AGE-yr			
SSB-SEX-sex			
TB-AGE-yr			
F-AGE-yr			
M			
A50-yr			
L50-cm			

Reference points		
Parameter	Value	Units
MORATOR-yr-yr	1995-PRESENT	yr-yr

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1953
Maximum year					2000
Time series minimum					39
Time series maximum					136101
Units					MT





# Assessment of Southern Gulf of St. Lawrence atlantic cod (*Gadus morhua*)

Assessment ID:DFO-SG-COD4TVn-1965-2007-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/156>

Area ID: Canada-DFO-4T

General assessment details.

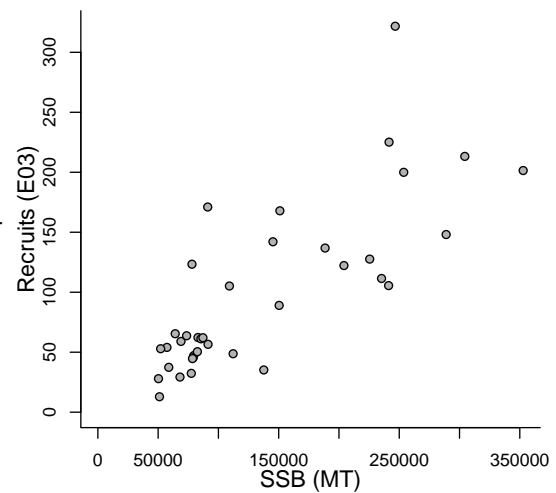
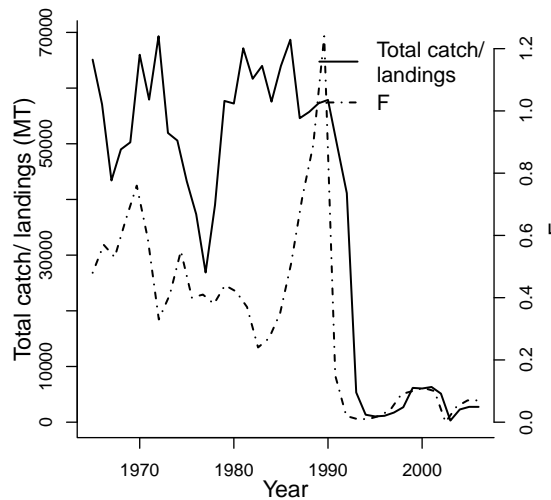
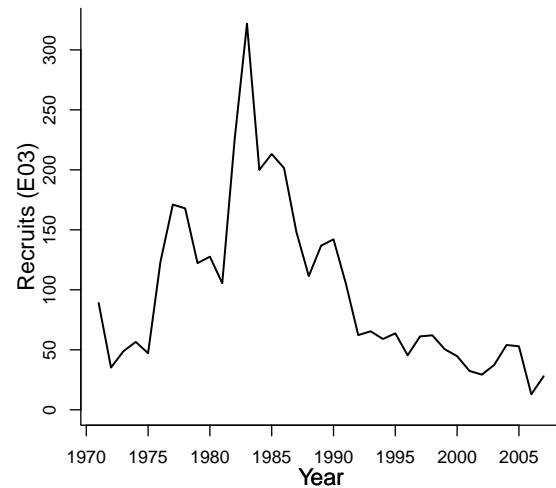
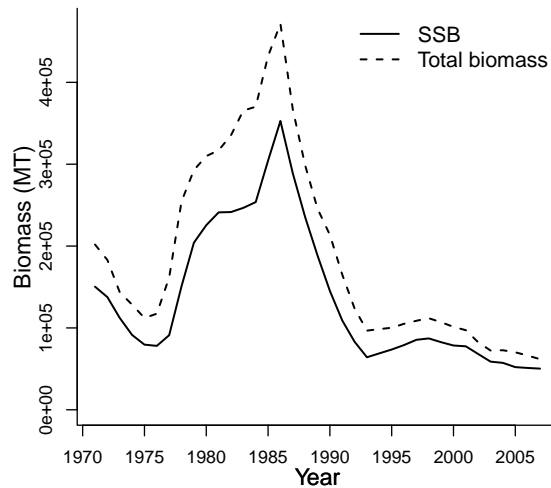
Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Southern Gulf Region
Assessment authors	Swain, D.P.
Assessment method	A general approach to fitting VPA models. ADAPT is based on minimising the sum-of-squares over any number of indices of abundance to find best-fit parameters.
Publication year	2007
Timeseries span	1965-2007
Document	NAFO-COD4TVn-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-05-28
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

	primary LME	secondary LME	tertiary LME
	8 - Scotian Shelf	na	na
Parameter	Value	Units	
F-AGE-yr-yr	7+	yr-yr	
A50-yr	4-5	yr	
M-1/T	SEE TIMESERIES	1/T	
REC-AGE			Reference points
SSB-AGE-yr			Parameter Value Units
SSB-SEX-sex			Bcrp-MT 80000 MT
TB-AGE-yr			
M			
L50-cm			

Time series minima and maxima

	SSB	R	F	TB	Catch
Minimum year	1971	1971	1971	1971	1965
Maximum year	2007	2007	2006	2007	2006
Time series minimum	50276	12.896	0	61834	289
Time series maximum	352804	321.751	1.24	471519	69317
Units	MT	E03	1/T	MT	MT



# Assessment of Southern Gulf of St. Lawrence herring (*Clupea harengus*)

Assessment ID:DFO-SG-HERR4TFA-1974-2007-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/169>

Area ID: Canada-DFO-4T

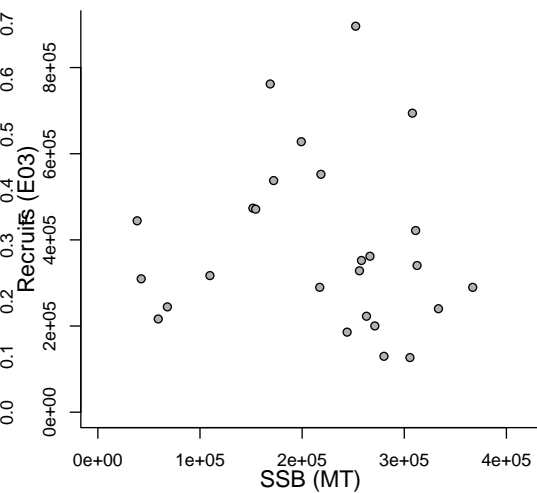
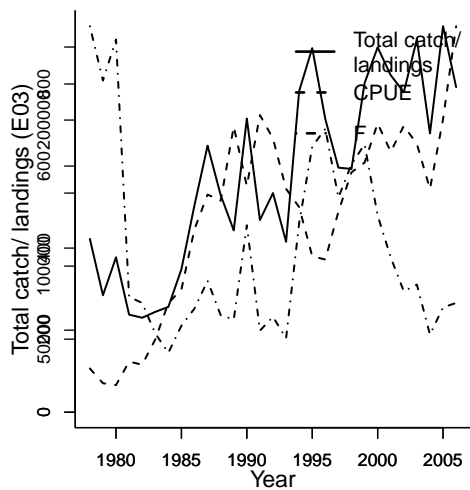
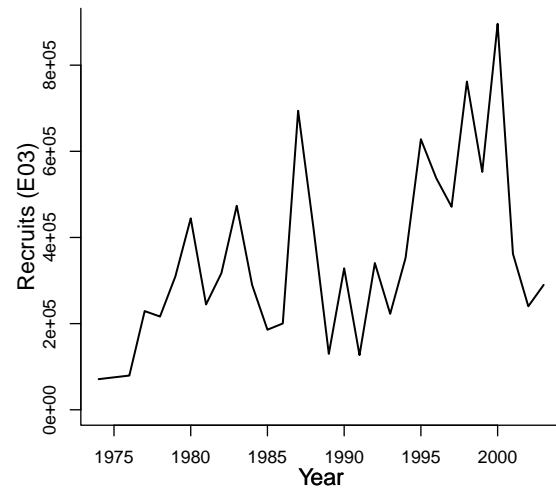
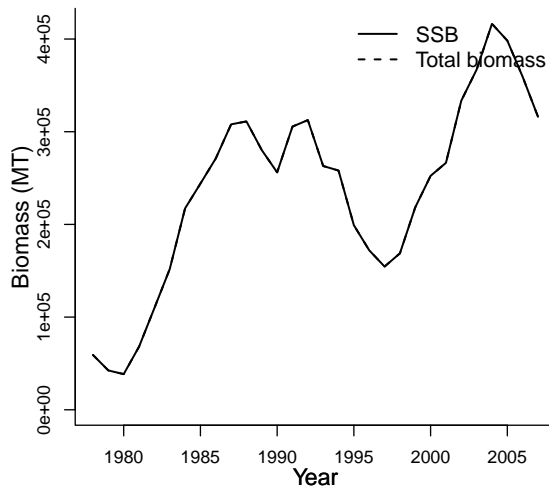
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Southern Gulf Region
Assessment authors	LeBlanc, C.H.
Assessment method	Sequential Population Analysis / ADAPT
Publication year	2007
Timeseries span	1974-2007
Document	NAFO-HERR4TFA-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-05
Date last loaded	2010-07-14
QA/QC complete	YES
Date approved	2010-07-14

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

			Parameter	Value	Units
primary LME	secondary LME	tertiary LME	SSB-AGE-yr	4+	yr
			REC-AGE-yr	4	yr
			F-AGE-yr-yr	5-10	yr-yr
			TB-AGE-yr	4+	yr
			M-1/T	0.2	1/T
8 - Scotian Shelf	na	na	SSB-SEX-sex		
			M		
			A50-yr		
			L50-cm		
			Reference points		
			Parameter	Value	Units
			Busr-MT	172000	MT
			Blrp-MT	51000	MT
			SSB recovery-MT	37000	MT

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1978	1974	1978	1978	1978
Maximum year	2007	2003	2006	2007	2006
Time series minimum	38470.25	71101	0.107	38470	64654
Time series maximum	416422.04	896001	0.696	416422	264254
Units	MT	E03	1/T	MT	E03



# Assessment of Southern Gulf of St. Lawrence herring (*Clupea harengus*)

Assessment ID:DFO-SG-HERR4TSP-1974-2007-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/170>

Area ID: Canada-DFO-4T

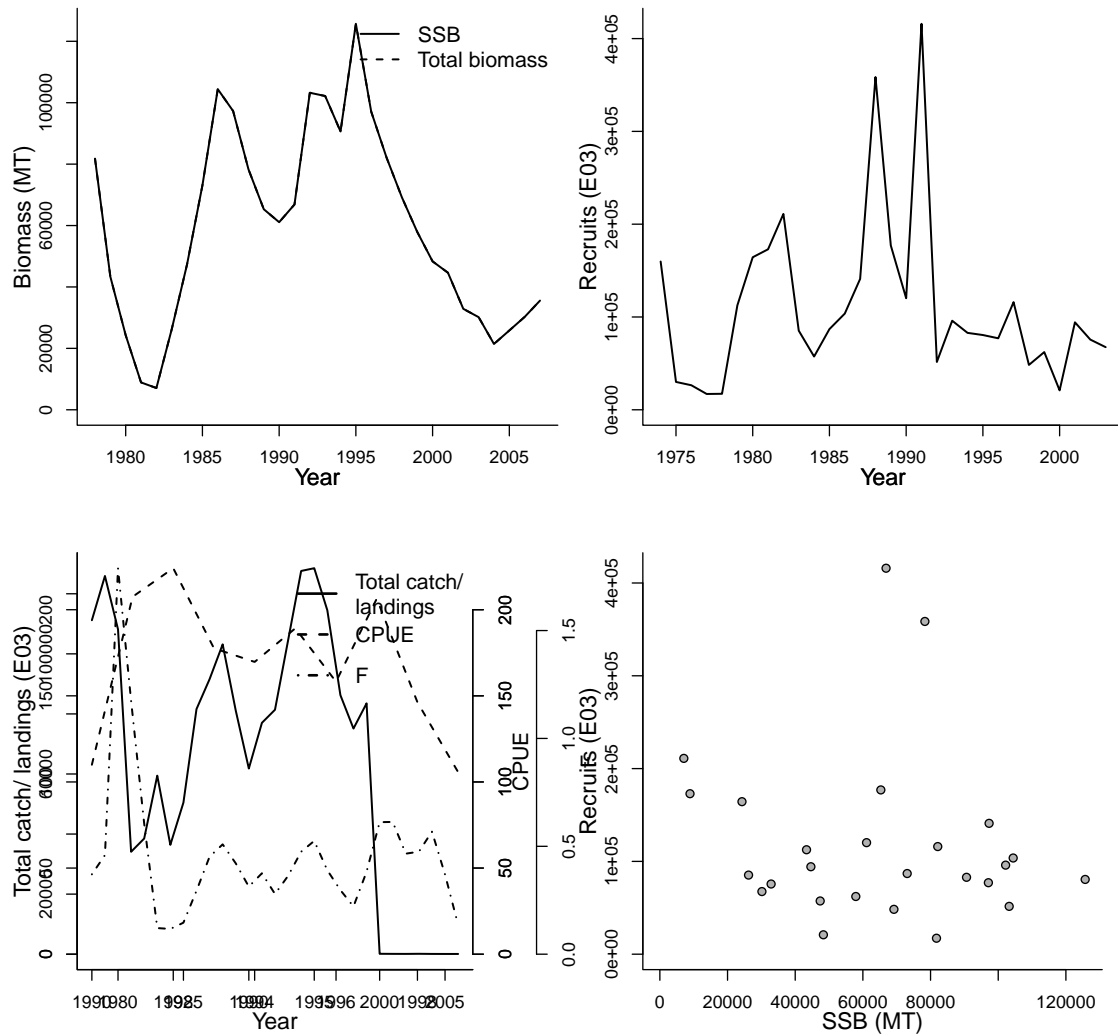
General assessment details.

Detail	Value
Management body	DFO
Assessment group	Department of Fisheries and Oceans - Southern Gulf Region
Assessment authors	LeBlanc, C.H.
Assessment method	Sequential Population Analysis / ADAPT
Publication year	2007
Timeseries span	1974-2007
Document	NAFO-HERR4TFA-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-06-05
Date last loaded	2010-07-14
QA/QC complete	YES
Date approved	2010-07-14

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

			Parameter	Value	Units
primary LME	secondary LME	tertiary LME	SSB-AGE-yr	4+	yr
			REC-AGE-yr	4	yr
			F-AGE-yr-yr	6-8	yr-yr
			TB-AGE-yr	4-10	yr
8 - Scotian Shelf	na	na	M-1/T	0.2	1/T
			SSB-SEX-sex		
			M		
			A50-yr		
			L50-cm		
			Reference points		
			Parameter	Value	Units
			F0.1-1/yr (F)	0.35	1/yr
			Busr-MT	54000	MT
			Blrp-MT	22000	MT
			SSB recovery-MT	11500	MT

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year	1978	1974	1978	1978	1978
Maximum year	2007	2003	2006	2007	2006
Time series minimum	7084.78	17034	0.117	7085	76.2
Time series maximum	125697.55	415931	1.789	125698	128513
Units	MT	E03	1/T	MT	E03



# Assessment of NAFO 01ABCDEF greenland halibut (*Reinhardtius hippoglossoides*)

Assessment ID:NAFO-SC-GHAL01ABCDEF-1987-2006-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/4>

Area ID: multinational-NAFO-01ABCDEF

## General assessment details.

Detail	Value
Management body	NAFO
Assessment group	NAFO Scientific Council
Assessment authors	Jrgensen, O.A.
Assessment method	Temporal indices derived from scientific survey data
Publication year	2007
Timeseries span	1987-2006
Document	NAFO-GHAL01ABCDEF-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-02-13
Date last loaded	2009-06-08
QA/QC complete	YES
Date approved	2009-06-08

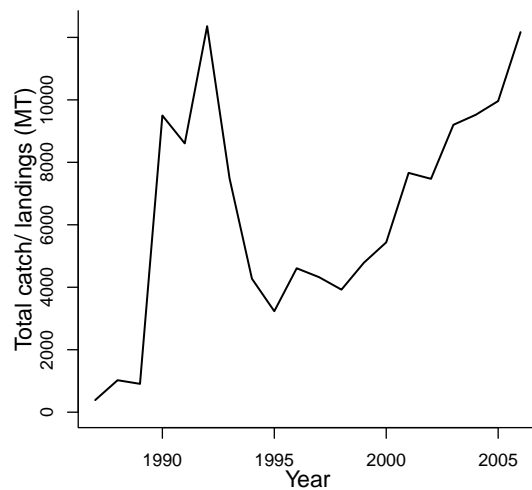
Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
18 - West Greenland Shelf			na	na
Parameter	Value	Units	Reference points	
REC-AGE-yr	1	yr	Parameter	Value Units
SSB-AGE-yr			Fmsy-1/yr (F)	0.22 1/yr
SSB-SEX-sex				
TB-AGE-yr				
F-AGE-yr				
M				
A50-yr				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1987
Maximum year					2006
Time series minimum					388
Time series maximum					12358
Units					MT

No biomass data  
available

No recruitment  
data available



No SSB–recruit  
data available



# Assessment of Labrador Shelf - Grand Banks greenland halibut (*Reinhardtius hippoglossoides*)

Assessment ID:NAFO-SC-GHAL23KLMNO-1960-2006-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/164>

Area ID: multinational-NAFO-23KLMNO

## General assessment details.

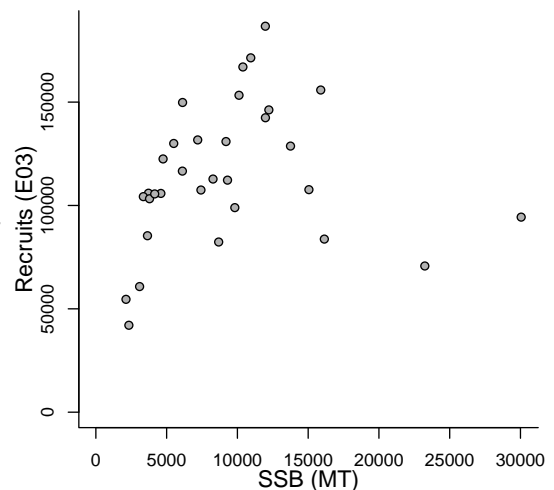
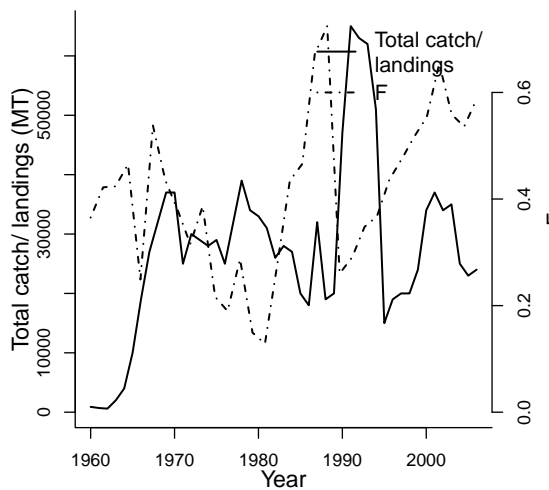
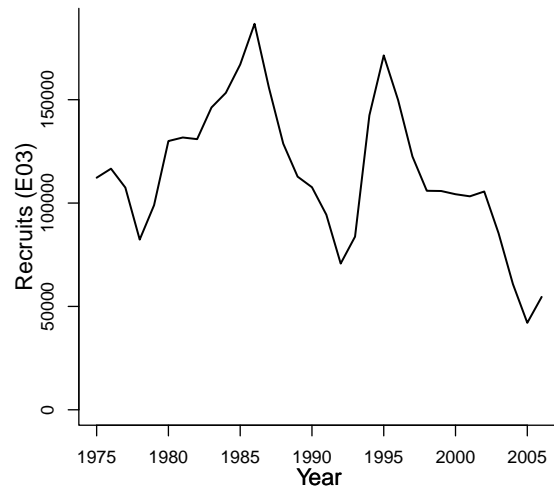
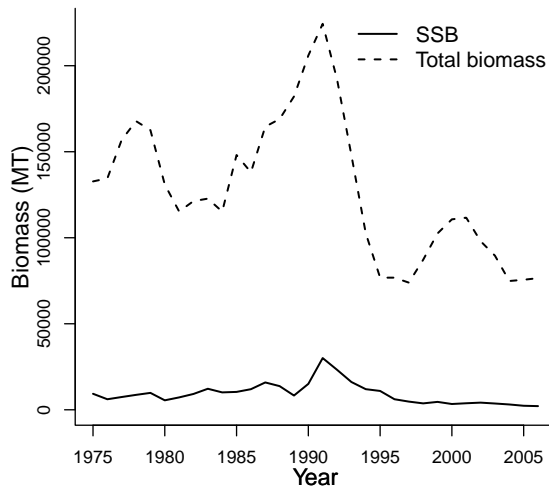
Detail	Value
Management body	NAFO
Assessment group	NAFO Scientific Council
Assessment authors	Healey, B.P.
Assessment method	Extended Survivor Analysis
Publication year	2007
Timeseries span	1960-2006
Document	NAFO-GHAL23KLMNO-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-02
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf			na	na
Parameter	Value	Units	Reference points	
REC-AGE-yr	1	yr	Parameter	Value
M-1/T	0.2	1/T		
SSB-AGE-yr			Parameter	Value
SSB-SEX-sex			F0.1-1/yr (F)	0.14
TB-AGE-yr			Fmax-1/yr (F)	0.25
F-AGE-yr				
M				
A50-yr				
L50-cm				

Time series minima and maxima

	SSB	R	F	TB	Catch
Minimum year	1975	1975	1975	1975	1960
Maximum year	2006	2006	2006	2006	2006
Time series minimum	2129	42064	0.1285	73913	600
Time series maximum	30050	186714	0.7243	224362	65000
Units	MT	E03	1/T	MT	MT



# Assessment of West Greenland redfish species (*Redfish species*)

Assessment ID:NAFO-SC-REDFISHSPP1-1965-2004-PREFONTAINE  
Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/172>

Area ID: multinational-NAFO-1

General assessment details.

Detail	Value
Management body	NAFO
Assessment group	NAFO Scientific Council
Assessment authors	Siegstad, Helle
Assessment method	Unknown
Publication year	2005
Timeseries span	1965-2004
Document	NAFO-RED1-2005.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-29
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

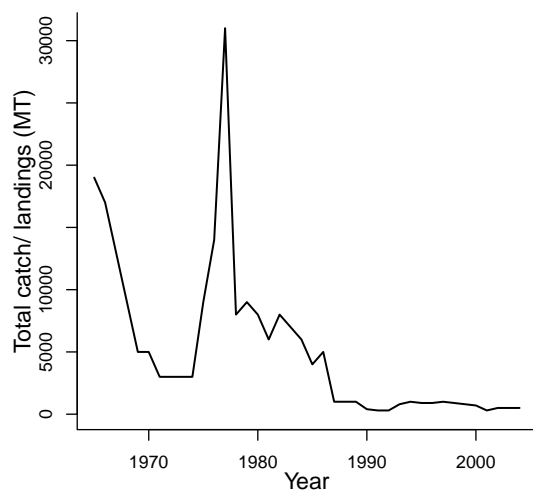
Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
18 - West Greenland Shelf			na	na
Parameter	Value	Units		
REC-AGE				
SSB-AGE-yr				
SSB-SEX-sex				
TB-AGE-yr				
F-AGE-yr				
M				
A50-yr				
L50-cm				

Time series minima and maxima					
	SSB	R	F	TB	Catch
Minimum year					1965
Maximum year					2004
Time series minimum					300
Time series maximum					31000
Units					MT

No biomass data  
available

No recruitment  
data available



No SSB–recruit  
data available

# Assessment of Flemish Cap redfish species (*Redfish species*)

Assessment ID:NAFO-SC-REDFISHSPP3M-1989-2006-PREFONTAINE

Issue URL: <http://www.marinebiodiversity.ca/RAMlegacy/ramlegacy-bug-reporting/173>

Area ID: multinational-NAFO-3M

General assessment details.

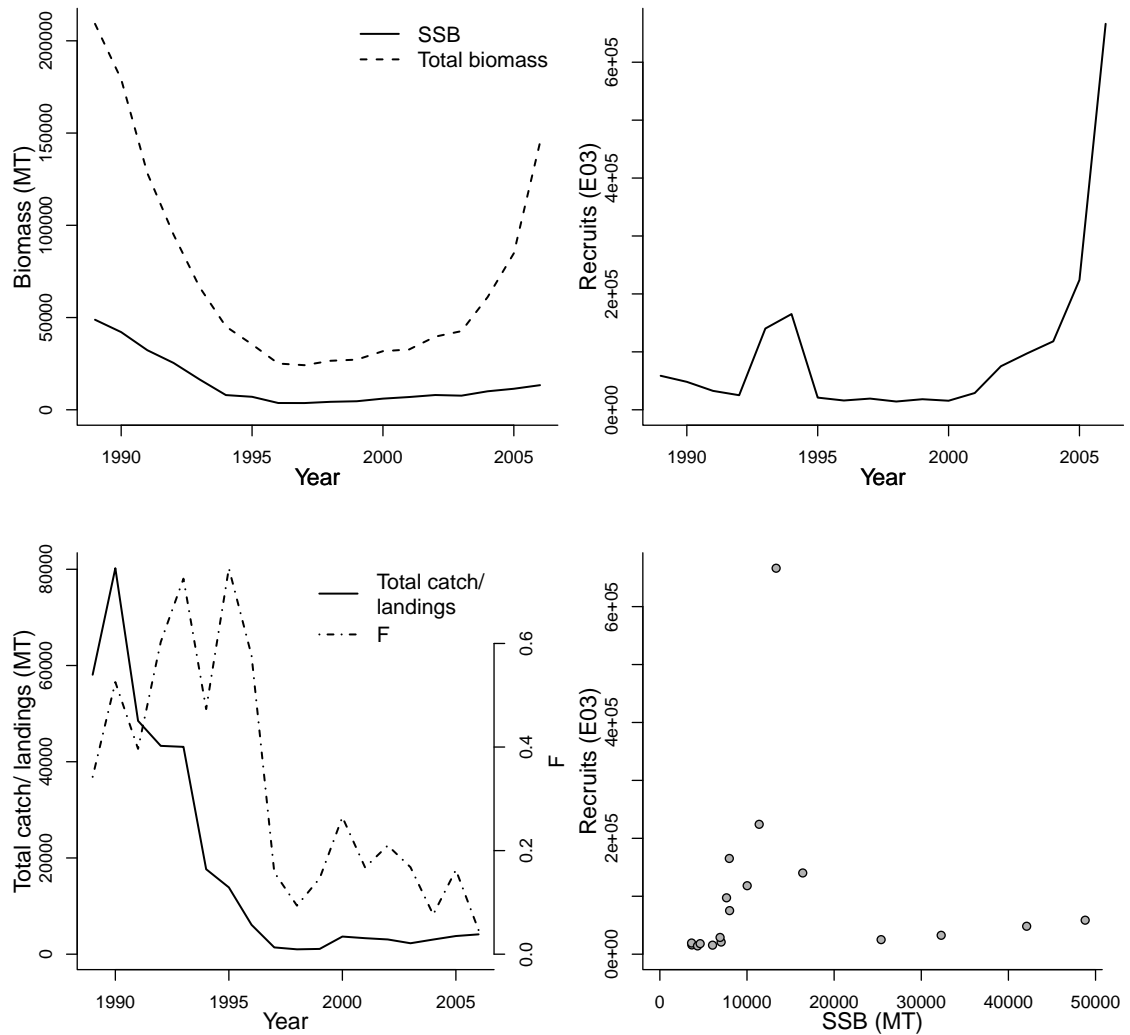
Detail	Value
Management body	NAFO
Assessment group	NAFO Scientific Council
Assessment authors	vila de Melo, A. M.
Assessment method	Extended Survivor Analysis
Publication year	2007
Timeseries span	1989-2006
Document	NAFO-RED3M-2007.pdf (pdf not in database)
Recorder	PREFONTAINE
Date entered	2008-07-28
Date last loaded	2009-03-17
QA/QC complete	NO
Date approved	

Biometrics provided. Note that the assumed timeseries to which the reference point pertains is indicated in parentheses.

primary LME			secondary LME	tertiary LME
9 - Newfoundland-Labrador Shelf			na	na
Parameter	Value	Units		
SSB-SEX-sex	1	sex		
REC-AGE-yr	4	yr		
F-AGE-yr-yr	6-16	yr-yr		
TB-AGE-yr	4+	yr		
A50-yr	15	yr		
M-1/T	0.1	1/T		
SSB-AGE-yr				
M				
L50-cm				

Time series minima and maxima

	SSB	R	F	TB	Catch
Minimum year	1989	1989	1989	1989	1989
Maximum year	2006	2006	2006	2006	2006
Time series minimum	3640	14280	0.0463	24168	1011
Time series maximum	48810	666290	0.7453	209223	80223
Units	MT	E03	1/T	MT	MT





**MAP KEY:**

- | LME Number | LME Name                  |
|------------|---------------------------|
| 1          | East Baltic Sea           |
| 2          | North Sea                 |
| 3          | Gulf of California        |
| 4          | California Current        |
| 5          | Chukchi Sea               |
| 6          | South Sea                 |
| 7          | Indian Ocean              |
| 8          | South East Labrador Shelf |
| 9          | North East Labrador Shelf |
| 10         | Indian Pacific Ocean      |
| 11         | Indian Pacific Ocean      |
| 12         | Indian Pacific Ocean      |
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| 99         | Indian Pacific Ocean      |
| 100        | Indian Pacific Ocean      |



**LARGE MARINE ECOSYSTEMS** are areas of the ocean characterized by distinct bathymetry, hydrography, productivity, and trophic interactions. They annually produce 95 percent of the world's fish catch. They are national and regional focal areas of a global effort to reduce the degradation of linked watersheds, marine resources, and coastal environments from pollution, habitat loss, and over-fishing.

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