

TABLE 1: AVAILABLE DATA**COMMON
NAME:**

WITCH FLOUNDER

SPECIES:*Glyptocephalus cynoglossus***AREA:**

NORTHWEST ATLANTIC

STOCK:

NAFO DIV. 3NO

CREATED BY:

JOANNE MORGAN

UPDATED BY:

JOANNE MORGAN 2002-03-25

Data status									
Year	Stock size	Stock composition	Age	Sex ratio	Maturity	Fecundity	Weight	Condition	Additional data
2001									
2000	(√)	(√)	(√)	(√)	(√)		(√)	(√)	
1999	(√)	√	(√)	(√)	(√)		(√)	(√)	
1998	(√)	√	(√)	(√)	(√)	(√)	(√)	(√)	
1997	(√)	√	(√)	(√)	(√)	(√)	(√)	(√)	
1996	(√)	√	(√)	(√)	(√)	(√)	(√)	(√)	
1995	(√)	√	(√)	(√)	(√)	(√)	(√)	(√)	
1994	(√)	√	(√)	(√)	(√)	(√)	(√)	(√)	
1993	(√)	√	√	(√)	(√)	(√)	(√)	(√)	
1992	(√)	√	√	(√)	(√)		(√)	(√)	
1991	(√)	√	√	(√)	(√)		(√)	(√)	
1990	(√)	√	√	(√)	(√)		(√)	(√)	
1989	(√)	√	√	(√)	(√)		(√)		
1988	(√)	√	√	(√)	(√)		(√)		
1987	(√)	√	√	(√)	(√)		(√)		
1986	(√)	√	√	(√)	(√)		(√)		
1985	(√)	√	√	(√)	(√)		(√)		
1984	(√)	√	√	(√)	(√)		(√)		
1983	(√)	√	√	(√)	(√)		(√)		
1982	(√)	√	√	(√)	(√)		(√)		
1981	(√)	√	√	(√)	(√)		(√)		
1980	(√)	√	√	(√)	(√)		(√)		
1979	(√)	√	√	(√)	(√)		(√)		
1978	(√)	√	√	(√)	(√)		√		

Data status									
Year	Stock size	Stock composition	Age	Sex ratio	Maturity	Fecundity	Weight	Condition	Additional data
1977	(√)	√	√	(√)	(√)	(√)	√		
1976	(√)	√	√	(√)	(√)	(√)			
1975	(√)	√	√	(√)	(√)	(√)			
1974					√	(√)			
1973	(√)	√	√	(√)	(√)				

TABLE 2: DATA BASIS, FORMAT AND QUALITY**COMMON****NAME:**

WITCH FLOUNDER

AREA:

NORTHWEST ATLANTIC

STOCK:

NAFO DIV. 3NO

REPRODUCTIVE STRATEGY:

DETERMINATE BATCH SPAWNER

REF. NO.:**TIMING OF SPAWNING:**

APRIL-JUNE

REF. NO.:

6

OPTIMAL TIME FOR MATURITY SAMPLING:**REF. NO.:**

Data basis, format and quality						
Variables	Year range	Data basis (A/L/W)	Data origin	Sampling frequency	Notes on data, methods and contents	Ref. No.
Stock size	1973-1989	A,L	S	Y		1
	1990-1993	A,L	S	B		1
	1994-1995	L	S	B		2
	1996-2000	L	S	3/yr		2,9
Stock composition	1973-1978	A,L	S	Y		1
	1979-1989	A,L	CC,CL,S	Q,Q,Y		1
	1990-1993	A,L	CC,CL,S	Q,Q,B	Otoliths collected but no ageing done since 1993	1
	1994-1995	L	S	B		2
	1996-2000	L	S	3/yr		2,9
Age determination	1973-1978	A	S	Y	Otoliths collected but no ageing done since 1993	1
	1979-1989	A	CC,CL,S	Q,Q,Y		1
	1990-1993	A	CC,CL,S	Q,Q,B		1
	1994-2000	A	CC,CL,S	Q,Q,B		2

Data basis, format and quality						
Variables	Year range	Data basis (A/L/W)	Data origin	Sampling frequency	Notes on data, methods and contents	Ref. No.
Sex ratio	1973-1989	A,L	S	Y		3
	1990-1993	A,L	S	B		3
	1994-1995	L	S	B		3
	1996-2000	L	S	3/yr		3,9
Maturity:						
A. Ogives (E)	1973-1993	A,L	S	Y		3,4
	1994-2000	L	S	Y		3
B. Skip of spawning						
C. Spawning probability						
D. Other						
Fecundity:						
A. Estimation	1978	A,L,W	S	APRIL-MAY	Data from 1974-1977 combined	8
	1993-1998	A,L,W	S	Y	no ageing since 1993	3
B. First time vs. repeat spawners						
C. Atresia	1998	A,L,W	CL,S	FALL		5
D. Other						
Weight:						
A. Commercial fisheries data	1979-1993	L	CC,CL	Q,Q	invariant length weight relationship	3,7
B. Survey data	1973-1989	A,L	S	Y		3
	1990-1993	A,L	S	B		3
	1994-2000	A,L	S	B	otoliths collected but no ageing since 1993	3
C. Other						
Condition:						
A. Fulton	1990-1993	A,L	S	B		3
	1994-2000	A,L	S	B	Otoliths collected but no ageing since 1993	3
B. HSI	1990-1993	A,L	S	B		3
	1994-2000	A,L	S	B	Otoliths collected but no ageing since 1993	3
C. Energy						
D. Other	1990-1993	A,L	S	B	GSI	3
	1994-2000	A,L	S	B	GSI, otoliths collected but no ageing since 1993	3
Egg viability:						
A. Egg quality						
B. Fertilisation success						

Data basis, format and quality						
Variables	Year range	Data basis (A/L/W)	Data origin	Sampling frequency	Notes on data, methods and contents	Ref. No.
C. Egg mortality						
D. Other						
Larval viability:						
A. Hatching success						
B. Larvae quality						
C. Mortality						
D. Other						
Spawning time	1990		S	VARIOUS	All available data combined	6
Contamination						
Environmental key factors						
Other factors or parameters						

TABLE 4: DATA SOURCES

COMMON NAME:	WITCH FLOUNDER
AREA:	NORTHWEST ATLANTIC
STOCK:	NAFO DIV. 3NO

Data sources (literature reference or contact person)
1. BOWERING, W. R., D. POWER, and W. B. BRODIE. MS 1994. Stock status of witch flounder in NAFO Divisions 3NO. <i>NAFO SCR Doc.</i> , No. 49, 15 p.
2. BOWERING, W. R. MS 2000. Resource status of witch flounder in NAFO Divisions 3NO. <i>NAFO SCR Doc.</i> , No. 14, 20 p.
3. UNPUBL. DATA: W.R. BOWERING, DFO, P. O. Box 5667, St. John's, NF, A1C 5X1, Canada (boweringr@dfo-mpo.gc.ca).
4. BOWERING, W. R. 1976. Distribution, age and growth, and sexual maturity of witch flounder (<i>Glyptocephalus cynoglossus</i>) in Newfoundland waters. <i>J. Fish. Res. Board Can.</i> , 33 : 1574-1584.
5. UNPUBL. DATA: M. J. MORGAN, DFO, P.O. Box 5667, St. John's, NF, A1C 5X1, Canada (morganj@dfo-mpo.gc.ca).
6. BOWERING, W. R. 1990. Spawning of witch flounder (<i>Glyptocephalus cynoglossus</i> L.) in the Newfoundland-Labrador area of the northwest Atlantic as a function of depth and water temperature. <i>Fish. Res.</i> , 9 : 23-39.
7. BOWERING, W. R. and D.E. STANSBURY. 1984. Regressions of weight on length for witch flounder, <i>Glyptocephalus cynoglossus</i> , of the eastern Newfoundland area. <i>J. Northw. Atl. Fish. Sci.</i> , 5 : 105-106.
8. BOWERING, W. R. 1978. Fecundity of witch flounder (<i>Glyptocephalus cynoglossus</i>) from St. Pierre Bank and the Grand Bank of Newfoundland. <i>J. Fish. Res. Board Can.</i> , 35 : 1199-1206.
9. PAZ, X., E. ROMAN, and P. DURAN MUNOZ. MS 2000. Results from the 2000 Spanish bottom trawl survey in the NAFO regulatory area for Divisions 3NO. <i>NAFO SCR Doc.</i> , No. 46, 18 p.

