NAFO Sci. Coun Studies, 37: 111–119

TABLE 1: AVAILABLE DATA

COMMON NAME:	ATLANTIC COD	**SPECIES:**	*Gadus morhua*
AREA:	BARENTS SEA	**STOCK:**	NORTHEAST ARCTIC (ICES AREAS I AND II)
CREATED BY:	C.T. MARSHALL/N.A. YARAGINA 2001-08	**UPDATED BY:**	

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	√	√	√	(√)	√		√	√	√
1972	√	√	√	(√)	√		√	√	√
1971	√	√	√	(√)	√		√	√	√
1970	√	√	√	(√)	√		√	√	√
1969	√	√	√	(√)	√		√	√	√
1968	√	√	√	(√)	√		√	√	√
1967	√	√	√	(√)	√		√	√	√
1966	√	√	√	(√)	√		√	√	√
1965	√	√	√	(√)	√		√	√	√
1964	√	√	√	(√)	√		√	√	√
1963	√	√	√	(√)	√		√	√	√
1962	√	√	√	(√)	√		√	√	√
1961	√	√	√	(√)	√		√	√	√
1960	√	√	√	(√)	√		√	√	√
1959	√	√	√	(√)	√		√	√	√
1958	√	√	√	(√)	√		√	√	
1957	√	√	√	(√)	√		√	√	
1956	√	√	√	(√)	√		√	√	
1955	√	√	√	(√)	√		√	√	
1954	√	√	√	(√)	√		√	√	
1953	√	√	√	(√)	√		√	√	
1952	√	√	√	(√)	√		√	√	
1951	√	√	√	(√)	√		√	√	
1950	√	√	√	(√)	√		√	√	
1949	√	√	√	(√)	√		√	√	
1948	√	√	√	(√)	√		√	√	
1947	√	√	√	(√)	√		√	√	
1946	√	√	√	(√)	√		√	√	

TABLE 2: DATA BASIS, FORMAT AND QUALITY

COMMON NAME: ATLANTIC COD

AREA: BARENTS SEA

STOCK: NORTHEAST ARCTIC (ICES AREAS I AND II)

REPRODUCTIVE STRATEGY: DETERMINATE BATCH SPAWNER **REF. NO.:** 1

TIMING OF SPAWNING: FEB-MAY **REF. NO.:** 2

OPTIMAL TIME FOR MATURITY SAMPLING: JAN-MAR **REF. NO.:** 3

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	1946-2001	A	CC, S	Q,A	VPA	6
Stock composition	1978-2001	L,A,W	CC, S	Q	Winter survey	6
	1985-2001	L,A,W			Lofoten survey	6
	1946-2000	L,A,W			Russian survey	6,7
	1932-1979	L,A			Norwegian sampling of commercial fishery	8
Age determination	1946-2001	A	CC, S	Q	Otoliths	33, 50
Sex ratio	1985-1996	L	S	A	Winter + Lofoten surveys combined	9
	1950's-1990's	A	CC,S	10 YEAR MEANS		10
Maturity:						
A. Ogives (E)	1946-2001	A	S	A		6, 10
B. Skip of spawning	1985-1996	L	S	A		9
	1991-1992	L,A	S	A		51
C. Spawning probability						
D. Other	1923-1976	A, L	CC	M	Spawning check in otolith sex differences in ogive	11
	1989-1997	A, L	S		sex differences in ogive	12
	1950's-1990's	A	CC,S		Sorokin maturity scale	10
	1940's-1950's					56, 57
Fecundity:						

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.**
A. Estimation	1986-1991	L, W	EW		Gravimetric	4
	1999	L, W	EW		auto-diametric	5
	1971-1972	L,W,A			gravimetric	42
	1990, 1991, 1993-1996, 1999	L,W,A			gravimetric	52
B. First time vs. repeat spawners	1989-1992	L,W	X		Spawners held in captivity over consecutive seasons	13,14
C. Atresia	lab expt	L,W	EC		Laboratory-reared cod	15
D. Other	lab expt		EC		Effects of starvation on relative fecundity	20
Weight:						
A. Commercial fisheries data	1946-2001	A	CC, S	A	Russian+Norwegian	6,8
	1949-1993	A	CC, S	A	Russian	53
B. Survey data	1984-2001	A	S	A	Russian+Norwegian	6
C. Other	1913-1953	L	CL	A	Historical data on size from Lofoten	47
Condition:						
A. Fulton						
B. HSI	1927-1996	L	CC	M	By 10-cm length class	16
	1828-1842	-	CL	A	industrial index of liver	48
C. Energy	1946-1996	L	CC,S	A	Total lipid energy in livers of mature females	17
D. Other	1929-1982	W	CL	A	median spawning intensity based on roe samples	2
Egg viability:						
A. Egg quality	lab expt		EC		Cortical reaction following fertilization	18
	lab expt		EC		egg diameter and dry weight	19
	lab expt		EC		egg diameter in relation to maternal size	1
	lab expt		EC		egg diameter in relation to maternal condition	15
	lab expt		EC		egg dry weight in relation to spawning experience	13
	lab expt		EW		buoyancy studies	30
B. Fertilisation success	lab expt		EC		Incomplete hardening of chorion associated with poor fertilization	18
	lab expt		EC		links between broodstock, egg quality and fertilization	21
	lab expt		EW		links between length and condition of females and fertilization	27

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	lab expt		EC		Links between egg mortality and spawning experience	14
	1983-1984		S	A	field estimate of egg mortality	22
D. Other	review				Broodstock management and egg rearing	23
	review				egg quality	24
	review				maternal effects	25
	lab expt		EC		fatty acid composition	26
Larval viability:						
A. Hatching success						
B. Larvae quality	mesocosm		EC		Relationship between larval growth and survival and links to broodstock	28
	mesocosm		EC		relationship between larval growth and survival	29
C. Mortality	1983-1985		S		Mortality and first-feeding	31
	1983-1985		S		mortality estimates from ichthyoplankton surveys	32
D. Other						
Spawning time	consult original reference				ref. 34 describes seasonal activity of thyroid gland	2,3,34
Contamination	1993		S	A	Concentration of heavy metals, PAH, and organochorine discussed in relation to egg abnormalities	35
Environmental key factors	consult original reference				Temperature, wind stress	36, 37,54
Other factors or parameters	consult original reference				Cannibalism,	38
					overwintering of recently settled juveniles	39
					historical data on Barents Sea	55

TABLE 3: STUDIES OF REPRODUCTIVE POTENTIAL

COMMON NAME: ATLANTIC COD

AREA: BARENTS SEA

STOCK: NORTHEAST ARCTIC (ICES AREAS I AND II)

Estimation of reproductive potential			
Subject	**Brief description**	**Year range**	**Ref. No.**
Potential or realised egg production	Estimates of total egg production (also referred to as population fecundity)	1985-1996	9, 40, 41, 42, 43, 44
Viable egg and larvae production	Estimates of relative abundance of eggs and larvae from Russian ichthyoplankton surveys conducted from April-July	1959-1993	45
Critical life stages	Early pelagic juveniles and 0-group surveys		32, 46
Environmental influences	Influence of wind and temperature on S/R relationship		37
Stock recruitment relations	Biomass-based S/R relationship bioenergetic index of reproductive potential	1946-1989 1946-1996	37 17
Other studies	Reconstructing the S/R relationship using the total lipid energy contained in the livers of mature females	1946-1996	17, 49

TABLE 4: DATA SOURCES

COMMON NAME:	ATLANTIC COD
AREA:	BARENTS SEA
STOCK:	NORTHEAST ARCTIC (ICES AREAS I AND II)

Data sources (literature reference or contact person)
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