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CATCH-AT-AGE AND WEIGHT-AT-AGE OF ATLANTIC HERRING CATCHES IN NAFO DIVISIONS 4T AND 4VN, 1978-1993

by

F. Mowbray and C. Bourque

Science Branch
Department of Fisheries and Oceans
P.O. Box 5030
Moncton, New Brunswick E1C 9B6

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ABSTRACT

Samples of Atlantic herring catch in the NAFO areas 4T and 4Vn have been weighted by their respective landings to obtain matrices of catch-at-age and mean weight-at-age. Matrices are presented separately for spring and fall spawning stocks in each of four stock areas : the northern, middle and southern areas of 4T and for 4Vn. Matrices are also given for the combined landings of 4T, and the combined landings of 4T and 4Vn. In 1993 4T herring landings were the lowest in 10 years at 47,000 t (46.4 % of the TAC). Spring fisheries generally attained more of their quota than the fall fisheries, except the 4Vn fall fishery which achieved 91% of its TAC. The 1987 cohort dominated catches of fall spawners in all stock areas as did the 1988 year class in the catch of spring spawners. Mean weight-at-age of 4T catch in 1994 was 8-29% below the 1978-92 average for fall spawners, and 12-23 % below average for spring spawners. Trends in cohort strength and mean weight were consistent among stock areas.

RÉSUMÉ

Des échantillons sur les prises du hareng de l'Atlantique dans les régions 4T et 4Vn de l'OPANO ont été pondérés par leurs débarquements respectifs afin d'obtenir des matrices des prises et du poids moyens selon l'âge. Des matrices séparées sont présentées pour les reproducteurs de printemps et d'automne pour chacune des quatre régions de pêche: nord, milieu et sud pour 4T ainsi que pour 4Vn. Des matrices sont aussi présentées pour les débarquements totaux de 4T, ainsi que les débarquements de 4T et 4Vn combinés. En 1993 les débarquements du hareng de la région 4T étaient les plus bas depuis 10 ans (47,000 t ou 46.4% du TPA). En général, les pêcheries de printemps étaient plus près du TPA que les pêcheries d'automne. L'exception était la pêcherie d'automne dans 4Vn, dont les prises se sont élevées à 91% du TPA. La cohorte de 1987 a dominé les prises des reproducteurs d'automne dans toutes les régions de distribution du stock, de même que la cohorte de 1988 a dominé les prises des reproducteurs de printemps. En 1994 le poids moyen selon l'âge des prises de 4T était 8-29% au dessous de la moyenne des 14 dernières années (1978-1992) pour les reproducteurs d'automne et 12-23% au dessous de la moyenne chez les reproducteurs de printemps. Les tendances relatives à la taille des cohortes et les poids moyens des poissons étaient consistant entre les régions de pêche.

INTRODUCTION

Atlantic herring originating in NAFO area 4T are harvested both in 4T, and as they over-winter in 4Vn (Fig.1). For assessment purposes, harvests of fisheries in both 4T and 4Vn are collated with respect to NAFO unit area and divided among four stock areas: south 4Tf-4Tk, middle 4Tl, north 4Tm-4To and 4Vn (Fig.1). However, the total allowable catch (TAC) allocations and quota monitoring reports are divided according to management zones (Fig. 1).

Catches of Atlantic herring in 4T occur in the spring and the fall and with both mobile and fixed gears. In 4Vn there is only a fall mobile gear fishery. In any given fishery, harvests may include fish from a number of age classes (2-11+) and members of two spawning groups (spring and fall). For assessment purposes spring and fall spawning herring are treated as separate stocks. In this document the spring and fall spawning components of each fishery's catch are determined and the age structure (catch-at-age) and mean weight-at-age for each presented for subsequent use in stock assessment (Claytor *et al.*, 1994). Previous catch and weight-at-age tables may be found in documents by Winters et al. (1977), Winters and Moores (1979, 1980), Cleary (1981, 1982, 1983), Ahrens and Neilsen (1984), Ahrens (1985), Clay and Chouinard (1986), Chadwick and Neilsen (1986, 1987), Chadwick and Cairns (1988), Chadwick et al. (1989), Claytor et al. (1990, 1991, 1992), and Chaput et al. (1993).

THE FISHERY

The fixed gear fishery occurs only in 4T, and is mostly gillnets which are set on the spawning grounds during the spring and fall spawning seasons. Herring from fixed gear catches are usually in spawning condition and of a reproductive group consistent with the season of effort (Table 1). The mobile gear fishery is primarily a fall fishery occurring subsequent to fall spawning. In 4T the fall mobile fishery takes place in October and November, in 4Vn it occurs between November and March. Within 4T the mobile landings occur almost exclusively in the north stock area (Table 2), whereas landings from fixed gear occur in north, middle and south (Table 2). From 1978-1984 and since 1991 the mobile fishery has also operated in the spring, harvesting herring prior to spring spawning near the edge of 4S and 4Tf. All mobile fisheries used exclusively purse seines until 1992 when a small experimental fishery for maatjes herring (fat herring between 22-28 cm in length) was introduced. Gears used for the maatjes fishery included both purse seines and mid water trawls. Harvest from mobile fisheries in 4T and 4Vn are composed of a mix of spring and fall spawners (Tables 2 and 3).

METHODS

LANDINGS

Purchase slip data were used to compile landings (Tables 1-3), and to calculate catch-at-age and weight-at-age matrices (Tables 5-26, Appendices 1 and 2), except for mobile fisheries from 1991-1993 which were taken from quota monitoring reports. For these years quota monitoring reports were felt to be more up-to-date than purchase slips since they originated from a 24-hour observer program in 1990, 1992 and 1993 and the dockside monitoring program in 1991.

BIOLOGICAL SAMPLING

4T

A two-stage biological sampling program was applied to samples collected from fisheries in 4T. Random samples of approximately 200 fish each were collected from commercial vessels and lengths were recorded to the nearest 0.5 cm. A sub-sample, consisting of two fish per 0.5 cm interval, was frozen for later determination of length, weight, gonad weight, sex and maturity stage. Otoliths were removed from each sub-sampled fish and ages were assigned based on ring count and a fixed birth date of January 1 for all fish.

Spawning group was assigned using the method presented in the 1990 herring assessment (Claytor et al, 1991). If the gonad maturity stage was 3, 4, 5 or 8, spawning group was assigned using a gonadosomatic index (GSI) (McQuinn, 1989). If maturity stage was 6 or 7, spawning group was assigned as the season in which the fish was captured (spring, before July 1 and fall, after). Juvenile fish (maturity stages 1 and 2) were assigned by visual inspection of otolith characteristics (Dupuis and MacDougall 1990).

Occasionally biological sampling was not available for a particular season, area, and gear combination. In these cases the biological characteristics from samples of the closest fishery were applied to the landings. In 1993 only length frequencies were available for the spring mobile fishery. In this case, the spawning group composition of 1992 spring mobile fishery was applied, but the length-at-age and weight-at-age characteristics used were taken from sampling of the 1993 spring fixed gear fishery.

4Vn

Since 1992, all biological samples obtained from the 4Vn mobile gear fishery were processed by Gulf Region with sampling protocols and spawning group assignment methods the same as those used for 4T samples. Prior to 1992, gonad weights from 4Vn samples were not recorded and spawning group affinity was determined as follows: fish with gonad maturity stages 5-7 were classified according to capture date and all others were assigned by otolith characteristics. This is the same method used to classify 4T herring in assessments prior to 1990 (Dupuis and MacDougall, 1990). The methods used for establishing the proportions of spring and fall spawners prior to 1991 have been described by Claytor et al. (1992).

From 1978-1993, the purse-seine season in Sydney Bight was from 1 November to 31 March. Within the season, landings occurred from November-January, with January landings occurring only in 1980, 1981 and 1984. Fish landed in January were considered to have the same biological characteristics as those landed in November and December of the previous calender year and were included in the previous calender year's catch-at-age.

Catch-at-age matrices

Length-at-age, weight-at-age and spawning group composition at length were determined from sub-samples from each fishery. Specifically, keys were determined for each fishery as delineated by stock area (three in 4T and one in 4Vn), fishing season (spring or fall), gear type (fixed or mobile), and spawning group. These keys were then applied to the associated length frequencies to produce catch-at-age and weight-at-age matrices of the sampled catch. Matrices of the sampled catch were then weighted by landings specific to area, season and gear (Tables 2 and 3) to produce matrices of total catch by area, season, gear and spawning group. Combined catch-at-age matrices were obtained by summing across

fishing season, stock area and gears. Combined weight-at-age matrices were calculated as a weighted mean (by landings) of the weight-at-age produced from sampling in the component fisheries (Dupuis and MacDougall 1990).

Four different sets of combined matrices were calculated; one by stock area, a second with 4T catches only, a third with 4Vn mobile gear catches only, and a fourth with 4T and 4Vn combined. The component matrix from the northern area fall mobile fishery is also appended for comparison with catch-at-age of the 4T herring sampled during the fall acoustic survey.

RESULTS

Catches

Catches of herring in 4T in 1993 totalled 47,000 t, 46.4% of the total allowable catch (TAC). Quotas or TACs have been in place since 1972. From 1974-1980 the TAC ranged from 45,000 to 60,000 t, but was never achieved. From 1981-1987 TACs ranging from 15,000 to 73,000 t were exceeded each year. Most recently (1988-1993) TACs, from 79,000 - 101,000 t, have not been caught. TACs and total catches are compared below:

	83	84	85	86	87	88	89	90	91	92	93
TAC/ TPA	20	19	32.2	43.4	72.8	78.9	86.9	86.9	86.9	101.2	101.2
CATCH/ PRISES	26	24	38	59	78	72	57	76	48	54	47

In 1993, the total quota and catches for 4T were divided as follows:

Season/ Saison	Gear/ Engins	TAC/ TPA	Catch (t) / Prises (t)	
			Quota Monitoring/ Contrôle des contingents	Purchase Slips/ Bordereaux d'achat

Spring	Fixed	16,800	14,254	15,182
Spring	Mobile	4,200	3,268	24
Fall	Fixed	64,640	24,078	33,078
Fall[a]	Mobile	16,160	6,174	6,228
Allotments not counted against 4T quota:				
Winter 4Vn[b]	Mobile	4,200	3,832	3,955

[a] Catches include those made by mid-water trawls as part of the experimental maatjes herring fishery (337 mt in quota monitoring, 391 mt in purchase slips.

In 1993, spring fishery catches (fixed and mobile) ranged from 67 to 95 % of the TAC (Table 4; see Fig.1 for areas). In the fall fixed gear fishery catches varied considerably among management areas (Table 5.) with as little as 10% of the TAC taken in Northern Gaspé (16A), Pictou (16F) and Fisherman's Bank (16G), but from 46 to 76 % landed in Chaleur Bay (16B), Magdelen Islands (16D) and Western P.E.I. / Escuminac (16C). Fall mobile gear fisheries attained 91% of the TAC for 4Vn, but only 33 % of their 4T quota.

Catch composition

Fixed gear catches in 1993 were dominated (95-100%) by the spawning group associated with the season of fishing (i.e. spring spawners in the spring fishery and fall spawners in the fall fishery) (Table 2). In the mobile fisheries, a mixture of spring and fall spawners were caught, but the majority of the catch was of the spawning affinity consistent with the season of capture. When the spring mobile fishery was active prior to 1984, the percent of spring spawners in the catch was 47-50% (1979-84) (Table 2). Since 1990, the percent of spring spawners in the spring mobile fishery catch has varied between 82% and 97%. Presently the proportion of spring spawners in the 4T fall mobile fishery is close to the 26% average (Table 2).

The spawning group composition of 4Vn catches was assigned by the GSI model for the first time in 1992. Using this model, the proportions of spring spawners in 1992 and 1993 were the lowest in the 16 year time series at 7 and 6 % respectively (Table 3). This value is not very different from the 1987-1991 values (10-20%) but is considerably less than the 29-49% found in 1978-1986 time period.

Catch-at-age matrices

Fall spawners

In 1993 fall spawning herring catch was dominated by 6 old fish (1987 cohort). This is the strongest class of 6 year-olds in the series for the combined matrices of 4T and 4Vn (Tables 5,9 and 11). It is also consistently strong throughout all the individual stock areas (Tables 15, 19 and 23).

Spring spawners

The 1988 cohort was the most numerous in all matrix combinations and stock areas for spring spawning herring (Tables 7,9,13,17,21 and 25).

Weight-at-age matrices

The decline in the weight-at-age of herring first noted in 1992 has continued into 1993 for both spring and fall spawners. In 1993, the weight-at-age of fall spawners was 12-20% below the 1978-1992 average. Similarly, spring spawner weights were 8-29% below the average (1978-92). The greatest declines in weight occurred among age classes 2-7 (15-29% spring; 18-23% fall). These observations were consistent all among matrix combinations and stock areas (Tables 6,8,10,12,14,16,18,20,22,24,and 26)

For a further discussion of catch-at-age and weight-at-age matrices see Claytor et al. (1994).

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Table 1. Catch (t) by spawning group of 4T herring caught in spring and fall mobile and fixed gear fisheries; as per purchase slips and calculated by the GSI method. Catch (t) in 4Vn from fall purse seine fishery (Nov-Mar) is assigned by otolith characteristics up to 1991 inclusive. Catches are provisional from 1991-1993; mobile gear landings from 1991-1993 are based on quota-monitoring reports.

Tableau 1. Prises (t) printanières et automnales de harengs de 4T, par groupe reproducteur, engins mobiles et engins fixes; évaluations faites selon les bordereaux d'achat et calculées par la méthode GSI. Les prises de la pêche à la senne coulissante (nov.-mars) dans 4Vn sont définies par les caractéristiques des otolithes jusqu'à, et incluant, 1991. Les prises sont provisoires de 1991 à 1993; les débarquements des engins mobiles de 1991 à 1993 sont basés sur les rapports de contrôle des contingents.

		4T Season-Gear / Saison-Engins					
		Spring / Printemps		Fall / Automne			4Vn Winter/Hiver
Year/ Année	Spawning group/ Groupe de Fraye	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Total 4T	Mobile Mobiles
1978	Spring / Printemps	8,098	6,277	109	8,047	22,531	1,168
	Fall / Automne	449	1,770	5,032	23,708	30,959	1,681
	Total	8,547	8,047	5,141	31,755	53,490	2,849
1979	Spring / Printemps	7,089	6,951	282	5,821	20,143	1,426
	Fall / Automne	535	6,951	5,793	14,798	28,077	1,484
	Total	7,624	13,902	6,075	20,619	48,220	2,910
1980	Spring / Printemps	7,216	6,123	306	4,519	18,164	1,348
	Fall / Automne	56	7,794	6,239	10,293	24,382	2,503
	Total	7,272	13,917	6,545	14,812	42,546	3,851
1981	Spring / Printemps	7,028	10	665	938	8,641	1,374
	Fall / Automne	473	11	10,560	2,250	13,294	2,060
	Total	7,501	21	11,225	3,188	21,935	3,434
1982	Spring / Printemps	5,872	29	332	335	6,568	1,549
	Fall / Automne	51	33	12,650	2,243	14,977	1,971
	Total	5,923	62	12,982	2,578	21,545	3,520
1983	Spring / Printemps	8,211	9	425	1,047	9,692	1,154
	Fall / Automne	312	10	13,415	2,442	16,179	2,826
	Total	8,523	19	13,840	3,489	25,871	3,980
1984	Spring / Printemps	5,001	2	481	387	5,871	1,138
	Fall / Automne	281	2	15,493	1,891	17,667	2,787
	Total	5,282	4	15,974	2,278	23,538	3,925
1985	Spring / Printemps	6,535	0	4,018	2,036	12,589	1,006
	Fall / Automne	682	0	19,689	4,986	25,357	2,464
	Total	7,217	0	23,707	7,022	37,946	3,470

Table 1 (Continued)/Tableau 1 (suite)

Year/ Année	Spawning group/ Groupe de Fraye	4T Season-Gear Saison-Engins					4Vn Winter/Hiver
		Spring / Printemps		Fall / Automne			
		Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Total 4T	Mobile Mobiles
1986	Spring / Printemps	8,015	0	3,249	4,026	15,290	1,262
	Fall / Automne	535	0	36,642	6,889	44,066	3,090
	Total	8,550	0	39,891	10,915	59,356	4,352
1987	Spring / Printemps	10,789	0	2,417	4,393	17,599	332
	Fall / Automne	970	0	49,711	9,341	60,022	2,040
	Total	11,759	0	52,128	13,734	77,621	2,372
1988	Spring / Printemps	11,541	0	3,278	6,644	21,463	257
	Fall / Automne	1,346	1	37,933	10,887	50,167	2,315
	Total	12,887	1	41,211	17,531	71,630	2,572
1989	Spring / Printemps	10,441	0	1,564	4,138	16,143	212
	Fall / Automne	652	0	32,285	10,131	43,068	1,905
	Total	11,093	0	33,849	14,269	59,211	2,117
1990	Spring / Printemps	8,550	2	1,328	3,768	13,648	706
	Fall / Automne	542	0	55,667	6,415	62,624	4,005
	Total	9,092	2	56,995	10,183	76,272	4,711
1991	Spring / Printemps	11,244	787	182	1,994	14,207	993
	Fall / Automne	273	24	27,597	5,675	33,569	3,974
	Total	11,517	811	27,779	7,669	47,776	4,967
1992	Spring / Printemps	12,438	952	239	1,913	15,271	296
	Fall / Automne	37	168	32,840	5,202	38,179	3,932
	Total	12,475	1,121	33,079	7,115	52,450	4,228
1993	Spring / Printemps	14,584	2,175	917	1,388	19,064	219
	Fall / Automne	598	541	22,181	4,840	28,160	3736
	Total	15,182	2,716	23,098	6,228	47,224	3955

Table 2. Landings (t) for NAFO Division 4T by area, fishing season and gear type. Landings from 1991-1993 are provisional. Spring fishing: January-June, Fall fishing: July-December. %P: Percentage by numbers of spring spawners (P) in biological samples; N: sample size; NS: no sample available (*), or inadequate for one of the spawning groups (fall (A) or spring (P)).

Tableau 2. Prises (en tonnes métriques) pour la division 4T de l'OPANO, par zone, saison de pêche et type d'engin. Les données pour 1991-1993 sont provisoires. Pêche printanière: janvier à juin; pêche automnale: juillet à décembre. %P: Pourcentage (en nombre) de géniteurs du printemps (P) dans les échantillons biologiques; N: taille de l'échantillon; NS: aucun échantillon disponible (*), ou échantillon inadéquat pour un des groupes reproducteurs (automne (A) ou printemps (P)).

		South/Sud (4Tf-4Tk)				Middle/Milieu (4Tl)				North/Nord (4Tm-4To)			
		Spring/Printemps		Fall/Automne		Spring/Printemps		Fall/Automne		Spring/Printemps		Fall/Automne	
		Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles
1978	MT/TM	1,114	4,648	933	4,885	6,261	0	630	3,491	1,172	3,399	3,578	23,379
	%P	99	78	0	32	93	--	6	25	100	78	2	24
	N	4275	1090	121	516	489	--	*	292	89	*	945	1487
	NS							*			*		
1979	MT/TM	1,241	13,901	2,305	78	5,246	0	1,069	5,738	1,137	0	2,701	14,803
	%P	98	50	1	30	92	--	4	3	92	--	8	38
	N	6081	1246	1311	*	499	--	193	345	*	--	287	3522
	NS				*			P		*			
1980	MT/TM	1,994	13,897	2,786	320	3,604	20	1,826	793	1,674	0	1,933	13,699
	%P	99	44	3	30	99	44	9	5	100	--	3	32
	N	4780	1487	*	*	1100	*	186	97	298	--	297	2346
	NS			*	*	A	*		P				
1981	MT/TM	2,386	21	3,272	3,081	4,028	0	2,381	14	1,087	0	5,572	93
	%P	97	47	14	30	93	--	4	13	89	--	2	13
	N	3157	*	399	*	494	--	694	*	1053	--	2291	759
	NS		*		*				*				
1982	MT/TM	2,015	0	5,241	0	2,836	0	1,105	9	1,072	62	6,636	2,569
	%P	98	--	0	--	100	--	0	13	99	47	5	13
	N	4070	--	298	--	396	--	75	*	772	*	1867	798
	NS								*	A	*		
1983	MT/TM	1,911	0	5,177	85	5,097	19	1,572	3,256	1,515	0	7,091	148
	%P	97	--	0	30	95	47	9	30	100	--	4	30
	N	*	--	812	*	683	*	175	*	114	--	1151	1200
	NS	*			*		*		*				
1984	MT/TM	663	3	7,939	0	4,192	1	1,338	114	427	0	6,697	2,164
	%P	88	47	1	--	96	47	0	17	92	--	6	17
	N	157	*	459	--	*	*	405	*	143	--	1049	993
	NS		*	P		*	*		*				
1985	MT/TM	2,352	0	9,362	0	3,902	0	1,413	0	963	0	12,932	7,022
	%P	80	--	7	--	100	--	0	--	78	--	26	29
	N	240	--	449	--	70	--	*	--	77	--	336	429
	NS							*					
1986	MT/TM	3,336	0	12,265	44	3,389	0	1,570	0	1,825	0	26,056	10,871
	%P	97	--	1	8	92	--	0	--	91	--	12	37
	N	192	--	664	36	204	--	*	--	281	--	577	693
	NS	A		P	P			*					
1987	MT/TM	3,611	0	18,232	78	3,749	0	1,974	13	4,399	0	31,922	13,643
	%P	78	--	1	30	100	--	0	32	96	--	7	32
	N	268	--	1724	*	230	--	32	*	328	--	1316	450
	NS			P	*				*				
1988	MT/TM	2,091	0	15,080	224	4,047	0	3,797	1	6,749	0	22,334	17,306
	%P	95	--	1	30	96	--	0	38	84	--	14	38
	N	572	--	685	*	425		94	*	527	--	763	530
	NS			P	*				*				

Table 2 (Continue) / Tableau 2 (suite)

		South/Sud (4Tf-4Tk)				Middle/Milieu (4Tl)				North/Nord (4Tm-4To)			
		Spring/Printemps		Fall/Automne		Spring/Printemps		Fall/Automne		Spring/Printemps		Fall/Automne	
		Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles	Fixed Fixes	Mobile Mobiles
1989	MT/TM	5,134	0	6,219	0	2,138	0	1,560	0	3,821	0	26,071	14,269
	%P	96	--	0	--	97	--	0	--	90	--	6	29
	N	445	--	447	--	1027	--	*	--	517	--	1407	801
	NS							*					
1990	MT/TM	4,341	1	23,037	0	2,770	0	2,983	0	1,981	1	30,975	10,183
	%P	97	82	0	--	98	--	3	--	82	82	4	37
	N	446	*	2612	--	338	--	153	--	367	*	2026	406
	NS					A		P					
1991	MT/TM	3,918	0	5,110	0	5,599	0	4,474	0	2,000	811	18,195	7,669
	%P	96	--	0	--	99	--	0	--	97	97	1	26
	N	340	--	1579	--	629	--	261	--	737	*	1403	671
	NS					A					*		
1992	MT/TM	3,683	1121	5,244	--	5,827		3,892	7	2,965		23,943	6,770
	%P	99	85	0	--	100	--	0	26	100	--	1	26
	N	586	247	566	--	542	--	63	*	242	--	1250	895
	NS	A							*				
1993	MT/TM	5,528	2,148	2,148	--	6,305	--	4,820	--	3,349	--	15,330	6,228
	%P	95	87	4	--	96	--	0	--	98	--	5	22
	N	**546	*	725	--	766	--	366	--	525	--	1012	309
	NS												

Table 3. Landings (t) for NAFO Division 4Vn during the fall purse seine fishery (November 1 - March 31). Landings from 1991 - 1993 are provisional. %P: percentage by numbers of spring spawners (P) in biological samples; N: sample size (*: no sample available).

Tableau 3. Prises (tm) pour la division 4Vn de l'OPANO durant la pêche à la senne coulissante d'automne (1er novembre au 31 mars). Les prises de 1991-1993 sont provisoires. %P: pourcentage (en nombre) de géniteurs du printemps (P) dans les échantillons biologiques; N: taille de l'échantillon (*: pas d'échantillon disponible).

YEAR/ANNÉE		4Vn	YEAR/ANNÉE		4Vn
1978	MT/TM	2,849	1986	MT/TM	4,352
	%P	41		%P	29
	N	*		N	*
1979	MT/TM	2,910	1987	MT/TM	2,372
	%P	49		%P	14
	N	542		N	269
1980	MT/TM	3,851	1988	MT/TM	2,572
	%P	35		%P	10
	N	1172		N	392
1981	MT/TM	3,434	1989	MT/TM	2,117
	%P	40		%P	10
	N	65		N	125
1982	MT/TM	3,520	1990	MT/TM	4,712
	%P	44		%P	15
	N	314		N	*
1983	MT/TM	3,980	1991	MT/TM	4,967
	%P	29		%P	20
	N	*		N	196
1984	MT/TM	3,925	1992	MT/TM	4,228
	%P	29		%P	7
	N	*		N	287
1985	MT/TM	3,470	1993	MT/TM	3,955
	%P	29		%P	6
	N	*		N	824

Table 4. The TACs and spring fixed gear catch (quota monitoring) by fishing area in 1993.

Tableau 4. TPA et prises printanières des engins fixes (contrôle des contingents) par zone de pêche en 1993.

Area Zone	Season Saison	TAC (t) TPA (t)	Catch (t) Prises (t)
Escuminac (16C)/ Escouminac (16C)	January 1 to May 31/ 1er janvier au 31 mai	5,900	3,977
Remainder of 4T (16A to G)/ Reste de 4T (16A à G)	January 1 to May 31/ 1er janvier au 31 mai	7,900	7,501
Bait and Roe Fisheries (All Area 16)/ Pêche à l'appât et la pêche à la rave, Sous-division 16	June 1 to June 30/ 1er au 30 juin	3,000	2,776

Table 5. The TACs and fall catch (quota monitoring) in fixed gear by fishing area in 1993.

Tableau 5. TPA et prises automnales (contrôle des contingents) des engins fixes par zone de pêche en 1993.

Area Zone	Season Saison	Weekend Closure Fermeture de fin de semaine	Vessel Limit Limite par bateau (lb)	TAC (t) TPA (t)	Catch (t) Prises (t)
Isle Verte 16A	July 1-Dec 31 1er Juil-31 déc	no/non	20,000	1000	109
Baie des Chaleurs 16B	Aug 1-Dec 31 1er août-31 déc	yes/oui	20,000	31,550	14,608
Baie des Chaleurs 16B	Jul 1-Dec 31 1er Juil-31 déc Bait fishery Pêche à l'appât	no/non	20,000	950	94
Escuminac 16C, 16E & West PEI Escuminac 16C, 16E & Ouest L'I.P.E.	Aug 23-Dec 31 23 août-31 déc	no/non	20,000	8,000	6,130
Magdalen 16D/ Îles-de-la-Madeleine 16D	Aug 1-Dec 31 1er août-31 déc	no/non	15,000	1,000	538
Pictou 16F	Aug 3-Dec 31 3 août-31 déc	yes/oui	20,000	11,070	1,053
Fishermen's Bank 16G/ Banc Fisherman 16G	Aug 15-Dec 31 15 août-31 déc	yes/oui	15,000	11,070	1,546

Table 5. Catch-at-age for 4T herring fall spawners by gear type, 1978-1993. Spawning-group affinity assigned by gonad maturity for spawning and spent fish (stages 6 and 7), by otolith characteristics for juvenile fish (stages 1 and 2) and by McQuinn's (1989) GonadoSomatic index for all remaining individuals. Numbers are in thousands of fish.

Tableau 5. Prises selon l'âge pour les géniteurs d'automne dans 4T par type d'engin, 1978-1993. Groupes des reproducteures étaient classées par la maturité gonadique pour des poissons en état de frai ou épuissée (stades 6 et 7), par des caracteristiques des otolithes pour des poissons juveniles (stades 1 et 2), et par le modèle d'indice gonadosomatique (GSI) pour le restant. En milliers de poissons.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	82	8	64	322	0	0	0	0	253	15	0	0	19	0	52	0
3	3592	474	7965	5753	2154	720	963	1117	1627	8010	1165	294	3702	161	325	78
4	5548	9986	5224	24124	14985	20231	24882	8816	32871	38205	20432	14114	22546	40438	12879	2440
5	3484	5132	6097	6313	16883	9570	13445	24441	16497	30249	41943	22056	19830	10454	54288	29704
6	816	2924	994	2477	4922	13180	8306	14860	34428	20712	20253	29672	28179	7641	12201	36482
7	745	865	1733	1027	2523	2168	5978	9498	19251	36337	13240	14057	54206	11056	7345	6034
8	3911	1065	373	597	1050	1632	1335	4495	8212	15518	14266	7133	17006	13585	8943	3168
9	117	879	232	258	371	486	456	1212	4666	9382	6953	9021	9151	5090	9347	3661
0	157	278	304	239	117	124	200	727	341	4563	2738	3325	9931	2515	4554	1949
11+	1903	545	96	102	62	160	91	159	692	1878	1623	2592	5417	4651	6705	2785
	20355	**23060**	**23082**	**41212**	**43067**	**48271**	**55656**	**65325**	**118538**	**164869**	**122613**	**97418**	**169987**	**95591**	**116639**	**86301**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	241	143	0	0	0	0	0	0	0	65	0	0	0	0	0
2	1422	2728	2393	78	200	126	34	253	157	48	3842	726	43	0	8	22
3	21439	13283	37179	4519	5022	3343	333	2037	974	913	2650	840	3474	4126	288	1903
4	27442	20667	15174	4460	2494	4703	2456	4303	2238	1615	2924	3184	3257	16451	4073	2354
5	23096	16756	12141	623	2464	2080	2914	5103	6335	2618	2754	5829	5992	3426	12283	4218
6	4060	16685	7278	108	322	1048	1612	4897	6705	8300	3273	5054	3031	1129	2782	6214
7	4319	4409	7587	317	111	182	565	1950	6332	7552	8829	4023	2319	1076	1429	1980
8	10527	3701	5647	91	96	45	97	1760	2861	6263	7494	6706	1787	673	764	1266
9	1449	5276	3387	268	102	25	33	601	1106	2161	4154	4308	3628	459	345	408
10	737	1249	1653	116	38	30	13	449	435	289	1234	2284	1874	448	725	2006
11+	11781	9864	911	65	122	19	2	372	210	60	2362	1366	300	516	1101	3152
	106272	**94859**	**93493**	**10645**	**10971**	**11601**	**8059**	**21725**	**27353**	**29819**	**39581**	**34320**	**25705**	**28304**	**23798**	**23527**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	1144	143	0	0	0	0	0	0	0	65	0	0	0	0	0
2	1504	2736	2457	400	200	126	34	253	410	63	3842	726	62	0	61	22
3	25031	13757	45144	10272	7177	4063	1296	3154	2601	8923	3816	1134	7176	4287	613	1986
4	32991	30653	20398	28584	17479	24934	27339	13119	35109	39821	23357	17298	25803	56889	16952	4794
5	26580	21888	18239	6936	19347	11650	16359	29545	22831	32867	44697	27885	25823	13880	66572	33923
6	4876	19609	8271	2584	5244	14227	9918	19758	41132	29012	23527	34726	31210	8770	14983	42696
7	5064	5274	9321	1344	2634	2350	6542	11447	25583	43890	22069	18080	56525	12132	8774	8014
8	14437	4766	6020	688	1146	1677	1432	6255	11073	21780	21760	13839	18792	14258	9706	4434
9	1566	6156	3619	526	473	511	489	1813	5772	11543	11108	13329	12779	5549	9692	4070
10	894	1527	1957	355	155	154	214	1175	777	4851	3972	5608	11805	2962	5280	3956
11+	13684	10409	1006	167	184	179	92	531	902	1938	3984	3959	5717	5167	7806	5937
	126627	**117919**	**116575**	**51856**	**54039**	**59871**	**63715**	**87050**	**146190**	**194688**	**162197**	**136584**	**195692**	**123894**	**140439**	**109831**

Table 6. Weight-at-age (kg) matrices for 4T herring fall spawners by gear type, 1978-1993. Spawning-group affinity assigned by gonad maturity for spawning and spent fish (stages 6 and 7), by otolith characteristics for juvenile fish (stages 1 and 2) and by McQuinn's (1989) GonadoSomatic index for all remaining individuals.

Tableau 6. Matrices du poids selon l'âge (kg) des géniteurs d'automne dans 4T, par type d'engin, 1978-1993. Groupes des reproducteures étaient classées par la maturité gonadique pour des poissons en état de frai ou épuissée (stades 6 et 7), par des caracteristiques des otolithes pour des poissons juveniles (stades 1 et 2), et par le modèle d'indice gonadosomatique (GSI) pour le restant.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0231	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0787	0.1066	0.2115	0.1288	0.0000	0.0000	0.0000	0.0000	0.1793	0.1328	0.0000	0.0000	0.2670	0.0000	0.0658	0.0000
3	0.1344	0.2015	0.2068	0.2048	0.2220	0.1908	0.2362	0.2573	0.1958	0.2347	0.2309	0.2260	0.2103	0.1964	0.1421	0.1596
4	0.2371	0.2554	0.2577	0.2468	0.2660	0.2519	0.2484	0.2541	0.2485	0.2470	0.2645	0.2602	0.2498	0.2343	0.2202	0.2127
5	0.2822	0.2934	0.3118	0.3101	0.3006	0.2853	0.2863	0.2917	0.2896	0.2789	0.2902	0.2955	0.2851	0.2682	0.2551	0.2349
6	0.3074	0.3201	0.3587	0.3679	0.3370	0.3169	0.3219	0.3352	0.3248	0.3164	0.3252	0.3255	0.3248	0.3027	0.2818	0.2599
7	0.3191	0.3553	0.3490	0.3950	0.3739	0.3493	0.3480	0.3611	0.3672	0.3434	0.3538	0.3532	0.3473	0.3367	0.3054	0.2822
8	0.3687	0.3982	0.3672	0.4200	0.3825	0.3652	0.3974	0.3742	0.3848	0.3673	0.3794	0.3731	0.3678	0.3552	0.3423	0.3300
9	0.3711	0.4171	0.4020	0.4585	0.3927	0.3724	0.4128	0.4102	0.4013	0.3818	0.4073	0.3847	0.3876	0.3733	0.3491	0.3520
10	0.3479	0.4274	0.4354	0.4717	0.3700	0.4495	0.3794	0.4055	0.4315	0.3855	0.4095	0.4062	0.4037	0.3914	0.3640	0.3497
11+	0.4324	0.4366	0.4310	0.5211	0.4674	0.4295	0.4896	0.4969	0.4337	0.4257	0.4381	0.4065	0.4319	0.4119	0.3987	0.3826
	0.2770	**0.2847**	**0.2718**	**0.2665**	**0.2963**	**0.2859**	**0.2848**	**0.3157**	**0.3117**	**0.3071**	**0.3196**	**0.3268**	**0.3306**	**0.2926**	**0.2835**	**0.2639**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0692	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0996	0.1191	0.1033	0.1144	0.0960	0.1079	0.1109	0.1023	0.1065	0.1422	0.0959	0.1049	0.1069	0.0000	0.680	0.0797
3	0.1492	0.1514	0.1414	0.1789	0.1709	0.1734	0.1620	0.1886	0.1583	0.2033	0.1651	0.1585	0.1754	0.1543	0.1349	0.1432
4	0.2186	0.1852	0.1687	0.2255	0.2109	0.2076	0.2116	0.2142	0.2143	0.2427	0.2250	0.2159	0.2064	0.1895	0.1756	0.1650
5	0.2552	0.2204	0.2267	0.2491	0.2607	0.2343	0.2368	0.2556	0.2514	0.2683	0.2603	0.2490	0.2383	0.2180	0.2129	0.2020
6	0.2749	0.2514	0.2379	0.2872	0.2817	0.2849	0.2594	0.2829	0.2767	0.2890	0.3050	0.2832	0.2803	0.2523	0.2281	0.2223
7	0.2929	0.2588	0.2641	0.3410	0.3748	0.3185	0.3032	0.3170	0.2943	0.3148	0.3328	0.2946	0.2966	0.2772	0.2608	0.2375
8	0.3397	0.2965	0.2513	0.2568	0.3549	0.3675	0.3313	0.3370	0.3224	0.3352	0.3240	0.3082	0.3241	0.3086	0.2861	0.2262
9	0.3351	0.3440	0.2772	0.2607	0.3079	0.3648	0.3701	0.3754	0.3451	0.3435	0.3800	0.3297	0.3236	0.2956	0.3104	0.3588
10	0.3217	0.3343	0.2871	0.2620	0.4223	0.2639	0.3278	0.4055	0.3288	0.4071	0.4042	0.3609	0.3350	0.3164	0.3030	0.2690
11+	0.3915	0.3810	0.3584	0.2624	0.4439	0.4579	0.4236	0.4365	0.4098	0.4446	0.4108	0.3838	0.4103	0.3538	0.3449	0.3168
	0.2496	**0.2351**	**0.1895**	**0.2121**	**0.2109**	**0.2117**	**0.2366**	**0.2671**	**0.2740**	**0.3035**	**0.2930**	**0.2856**	**0.2628**	**0.2032**	**0.2228**	**0.2269**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0328	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0985	0.1191	0.1061	0.126	0.096	0.1079	0.1109	0.1023	0.1514	0.1400	0.0959	0.1049	0.1567	0.0000	0.0661	0.0797
3	0.1471	0.1531	0.1529	0.1934	0.1862	0.1765	0.2171	0.2129	0.1817	0.2315	0.1852	0.1760	0.1934	0.1559	0.1387	0.1438
4	0.2217	0.208	0.1915	0.2435	0.2581	0.2436	0.2451	0.2410	0.2463	0.2468	0.2595	0.2521	0.2443	0.2213	0.2095	0.1893
5	0.2587	0.2375	0.2552	0.3046	0.2956	0.2762	0.2775	0.2854	0.2790	0.2781	0.2884	0.2858	0.2742	0.2558	0.2473	0.2308
6	0.2803	0.2617	0.2524	0.3645	0.3336	0.3145	0.3117	0.3223	0.3170	0.3085	0.3224	0.3194	0.3204	0.2962	0.2718	0.2544
7	0.2967	0.2746	0.2798	0.3823	0.3739	0.3469	0.3442	0.3536	0.3491	0.3385	0.3454	0.3402	0.3452	0.3314	0.2981	0.2712
8	0.3475	0.3192	0.2585	0.3983	0.3802	0.3652	0.3929	0.3637	0.3687	0.3581	0.3603	0.3416	0.3637	0.3530	0.3379	0.3004
9	0.3378	0.3544	0.2852	0.3577	0.3744	0.3720	0.4099	0.3987	0.3906	0.3746	0.3971	0.3669	0.3695	0.3669	0.3477	0.3527
10	0.3263	0.3512	0.3102	0.4032	0.3827	0.4137	0.3762	0.4055	0.3740	0.3868	0.4078	0.3877	0.3928	0.3801	0.3556	0.3088
11+	0.3972	0.3839	0.3653	0.4208	0.4518	0.4325	0.4885	0.4546	0.4281	0.4263	0.4219	0.3986	0.4308	0.4061	0.3911	0.3477
	0.2540	**0.2447**	**0.2058**	**0.2553**	**0.2790**	**0.2715**	**0.2787**	**0.3035**	**0.3046**	**0.3065**	**0.3131**	**0.3164**	**0.3217**	**0.2722**	**0.2732**	**0.2560**

Table 7. Catch-at-age matrices for 4T herring spring spawners by gear type, 1978-1993. Spawning-group affinity assigned by gonad maturity for spawning and spent fish (stages 6 and 7), by otolith characteristics for juvenile fish (stages 1 and 2) and by McQuinn's (1989) GonadoSomatic index for all remaining individuals. Numbers are in thousands of fish.

Tableau 7. Matrices des prises selon l'âge pour les géniteurs de printemps dans 4T, par type d'engin, 1978-1993. En milliers de poissons. Groupes des reproducteures étaient classées par la maturité gonadique pour des poissons en état de frai ou épuissée (stades 6 et 7), par des caracteristiques des otolithes pour des poissons juveniles (stades 1 et 2), et par le modèle d'indice gonadosomatique (GSI) pour le restant.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	425	0	14	10	0	0	0	0	0	59	0	0	0	53	0
2	14	198	169	394	162	248	84	330	10	271	501	0	105	0	619	6
3	5644	6922	10538	13093	23717	16174	4538	6009	3593	1684	4012	4093	2769	5361	2725	280
4	25469	3140	6746	8353	4509	25937	13994	15844	18110	8051	8626	16434	16100	10955	30568	6477
5	1255	17307	2632	2688	1066	2097	8044	14353	12735	22119	11447	6223	8585	13992	11750	37705
6	1831	641	8501	1818	493	460	376	5198	11482	11213	15722	6114	2997	7381	7680	17143
7	1391	1242	1824	3363	323	102	58	1304	2932	8669	9255	7153	2778	3048	3497	6448
8	259	274	942	486	337	0	49	696	444	3676	7012	4491	4963	2950	1745	2676
9	447	136	851	454	123	0	4	61	32	516	1651	2635	2361	4215	1888	1954
10	1375	302	462	195	91	0	5	0	130	331	89	901	948	2003	1888	1614
11+	1496	1454	699	961	571	0	0	1	205	162	530	283	338	1132	1738	2023
	39181	**32041**	**33364**	**31819**	**31402**	**45018**	**27152**	**43796**	**49673**	**56692**	**58904**	**48327**	**41944**	**51037**	**64151**	**76326**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	1421	6687	630	0	0	0	0	211	50	0	2447	332	30	0	8	1
2	14571	9040	8390	1853	716	737	91	1010	1433	183	4773	396	3291	1145	215	698
3	4922	16130	12287	1302	827	3639	287	1490	1155	398	1382	1545	3012	4416	2271	600
4	15957	12114	12639	137	48	993	844	1454	4071	1525	859	1920	1994	1951	4393	1917
5	2343	12528	5226	5	10	172	444	580	3132	4683	1235	757	1397	1501	2114	3344
6	4474	3329	6243	101	6	1	21	511	2368	3826	4768	2098	844	1061	1181	2355
7	5129	1772	3588	230	4	16	0	58	719	3147	2815	4075	504	623	375	1115
8	1190	1672	1767	390	19	36	15	0	82	1158	2382	1659	1917	481	329	644
9	1314	410	1277	1	68	0	0	113	194	0	1617	1413	1000	647	453	1283
10	1107	145	299	253	1	0	0	0	0	0	0	428	330	502	342	1360
11+	5446	1450	288	3	8	0	0	145	45	37	571	23	179	341	101	1621
	57874	**65277**	**52634**	**4275**	**1707**	**5594**	**1702**	**5572**	**13249**	**14957**	**22849**	**14507**	**14498**	**12668**	**11782**	**14938**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	1421	7112	630	14	10	0	0	211	50	0	2506	332	30	0	61	1
2	14584	9238	8559	2248	877	985	175	1340	1443	454	5274	396	3396	1145	834	703
3	10566	23052	22826	14396	24545	19814	4825	7498	4748	2081	5394	5639	5781	9777	4996	880
4	41426	15254	19385	8490	4557	26930	14838	17297	22181	9576	9486	18353	18093	12906	34961	8395
5	3598	29835	7858	2693	1076	2269	8487	14934	15867	26802	12681	6980	9982	15493	13864	41049
6	6305	3970	14743	1920	498	460	396	5708	13850	15039	20490	8212	3841	8442	8861	19499
7	6519	3014	5412	3593	327	118	58	1362	3651	11817	12070	11228	3282	3670	3872	7563
8	1448	1946	2709	876	356	36	63	696	526	4833	9394	6150	6880	3431	2073	3320
9	1761	546	2128	456	191	0	4	175	226	516	3269	4048	3361	4862	2341	3238
10	2482	447	761	449	92	0	5	0	130	331	89	1329	1278	2505	2230	2975
11+	6942	2904	987	964	579	0	0	146	250	199	1101	306	517	1472	1840	3643
	97052	**97318**	**85998**	**36099**	**33108**	**50612**	**28851**	**49367**	**62922**	**71648**	**81754**	**62973**	**56441**	**63703**	**75933**	**91266**

Table 8. Weight-at-age (kg) matrices for 4T herring spring spawners by gear type, 1978-1993. Spawning-group affinity assigned by gonad maturity for spawning and spent fish (stages 6 and 7), by otolith characteristics for juvenile fish (stages 1 and 2) and by McQuinn's (1989) GonadoSomatic index for all remaining individuals.

Tableau 8. Matrices du poids selon l'âge (kg) pour les géniteurs de printemps dans 4T, par type d'engin 1978-1993. Groupes des reproducteures étaient classées par la maturité gonadique pour des poissons en état de frai ou épuissée (stades 6 et 7), par des caracteristiques des otolithes pour des poissons juveniles (stades 1 et 2), et par le modèle d'indice gonadosomatique (GSI) pour le restant.

FIXED GEAR - SPRING SPAWNERS
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0195	0.0000	0.1005	0.0366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0379	0.0000	0.0000	0.0000	0.0501	0.0000
2	0.1418	0.1608	0.1816	0.1397	0.1953	0.1721	0.0933	0.2132	0.1073	0.1513	0.0798	0.0000	0.1489	0.0000	0.1111	0.1240
3	0.1478	0.1698	0.1674	0.1834	0.1745	0.1554	0.1764	0.1836	0.1603	0.1880	0.1605	0.1658	0.1616	0.1436	0.1421	0.1405
4	0.1888	0.2139	0.1861	0.2358	0.2105	0.2084	0.1957	0.2161	0.1959	0.1959	0.2031	0.2019	0.2034	0.1757	0.1710	0.1667
5	0.2109	0.2291	0.2284	0.2848	0.2640	0.2423	0.2137	0.2456	0.2419	0.2175	0.2402	0.2315	0.2317	0.2174	0.2002	0.1864
6	0.2562	0.2441	0.2691	0.3269	0.3171	0.2675	0.2683	0.2789	0.2561	0.2520	0.2662	0.2552	0.2659	0.2410	0.2309	0.2069
7	0.3221	0.3046	0.3067	0.3362	0.3717	0.3269	0.3029	0.3499	0.3194	0.2705	0.2875	0.2807	0.2721	0.2552	0.2537	0.2395
8	0.3076	0.3362	0.3319	0.3393	0.3794	0.0000	0.3843	0.3705	0.3392	0.2781	0.3038	0.2939	0.2917	0.2815	0.2601	0.2505
9	0.3114	0.3430	0.3678	0.3787	0.4026	0.0000	0.4429	0.4001	0.3486	0.2959	0.3233	0.3124	0.3124	0.2919	0.2886	0.2747
10	0.3308	0.3174	0.3630	0.3986	0.4060	0.0000	0.3713	0.0000	0.3159	0.2964	0.3754	0.3238	0.3168	0.2986	0.3015	0.2864
11+	0.3671	0.3529	0.3731	0.4082	0.4460	0.0000	0.0000	0.4913	0.4181	0.3913	0.3367	0.2978	0.3542	0.3326	0.3198	0.2949
	0.2054	**0.2227**	**0.2264**	**0.2428**	**0.1957**	**0.1916**	**0.1991**	**0.2354**	**0.2289**	**0.2338**	**0.2531**	**0.2385**	**0.2357**	**0.2220**	**0.1999**	**0.2031**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0790	0.0967	0.1054	0.0297	0.0366	0.0000	0.0000	0.0859	0.0866	0.0000	0.0810	0.0882	0.0748	0.0000	0.0579	0.0609
2	0.1281	0.1510	0.1527	0.1749	0.1400	0.1432	0.1384	0.1583	0.1349	0.1893	0.1128	0.1716	0.1641	0.1488	0.1390	0.1167
3	0.1725	0.1475	0.1582	0.2140	0.2127	0.1843	0.1872	0.2033	0.2102	0.1961	0.1733	0.2178	0.1852	0.1785	0.1502	0.1363
4	0.2514	0.1774	0.2135	0.2389	0.2436	0.2159	0.2217	0.2319	0.2525	0.2733	0.2433	0.2586	0.2311	0.2001	0.2019	0.1737
5	0.2462	0.2486	0.2455	0.2698	0.2744	0.2813	0.2529	0.2860	0.2816	0.2972	0.3109	0.2691	0.2641	0.2285	0.2451	0.1870
6	0.2733	0.2411	0.2681	0.4103	0.3241	0.2731	0.3022	0.3112	0.3159	0.3299	0.3226	0.3166	0.2899	0.2450	0.2626	0.2192
7	0.3027	0.2820	0.2632	0.3286	0.3796	0.2455	0.3058	0.2824	0.3241	0.3375	0.3603	0.3410	0.3260	0.2825	0.2805	0.2583
8	0.2984	0.3122	0.2784	0.2846	0.3336	0.2375	0.3189	0.0000	0.3392	0.3713	0.3889	0.3543	0.3049	0.2950	0.3068	0.3287
9	0.3121	0.3525	0.3353	0.3839	0.3221	0.0000	0.4036	0.5884	0.2910	0.0000	0.4024	0.3671	0.3243	0.2954	0.3332	0.3655
10	0.3760	0.3114	0.3821	0.3251	0.4328	0.0000	0.3668	0.0000	0.0000	0.0000	0.0000	0.3829	0.3865	0.3091	0.3412	0.3082
11+	0.3594	0.3917	0.3425	0.4081	0.4472	0.0000	0.0000	0.3466	0.3933	0.5328	0.4281	0.5426	0.3112	0.3330	0.3456	0.3254
	0.2303	**0.1875**	**0.2094**	**0.2219**	**0.1912**	**0.1880**	**0.2214**	**0.2290**	**0.2591**	**0.3139**	**0.2601**	**0.3045**	**0.2366**	**0.2155**	**0.2203**	**0.2379**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0790	0.0921	0.1054	0.1004	0.0366	0.0000	0.0000	0.0859	0.0866	0.0000	0.0800	0.0882	0.0748	0.0000	0.0511	0.0609
2	0.1281	0.1512	0.1533	0.1687	0.1502	0.1505	0.1167	0.1718	0.1347	0.1666	0.1097	0.1716	0.1636	0.1488	0.1183	0.1168
3	0.1593	0.1542	0.1624	0.1862	0.1758	0.1607	0.1770	0.1875	0.1724	0.1895	0.1638	0.1800	0.1739	0.1594	0.1458	0.1376
4	0.2129	0.1849	0.2039	0.2359	0.2109	0.2086	0.1971	0.2174	0.2063	0.2082	0.2067	0.2078	0.2064	0.1794	0.1749	0.1683
5	0.2339	0.2373	0.2398	0.2848	0.2641	0.2453	0.2157	0.2472	0.2497	0.2315	0.2471	0.2356	0.2362	0.2185	0.2070	0.1864
6	0.2683	0.2416	0.2687	0.3313	0.3172	0.2675	0.2700	0.2818	0.2663	0.2718	0.2794	0.2709	0.2712	0.2415	0.2351	0.2084
7	0.3068	0.2913	0.2778	0.3357	0.3718	0.3159	0.3029	0.3471	0.3203	0.2883	0.3045	0.3026	0.2803	0.2599	0.2563	0.2423
8	0.3001	0.3156	0.2970	0.3150	0.3770	0.2375	0.3693	0.3705	0.3392	0.3004	0.3254	0.3102	0.2954	0.2834	0.2675	0.2657
9	0.3119	0.3501	0.3483	0.3787	0.3741	0.0000	0.4429	0.5225	0.2991	0.2959	0.3624	0.3315	0.3159	0.2923	0.2972	0.3107
10	0.3509	0.3154	0.3705	0.3571	0.4063	0.0000	0.3713	0.0000	0.3159	0.2964	0.3754	0.3428	0.3348	0.3007	0.3076	0.2964
11+	0.3611	0.3722	0.3642	0.4082	0.4460	0.0000	0.0000	0.3475	0.4137	0.4179	0.3841	0.3161	0.3393	0.3327	0.3212	0.3085
	0.2203	**0.1990**	**0.2160**	**0.2403**	**0.1955**	**0.1916**	**0.2004**	**0.2347**	**0.2353**	**0.2505**	**0.2551**	**0.2540**	**0.2359**	**0.2207**	**0.2030**	**0.2088**

Table 9. Catch-at-age for spring- and fall spawners caught by purse seines in 4Vn, 1978-1993. Numbers are in thousands of fish. Spawning-group affinity assigned by gonad maturity for spawning and spent fish (stages 6 and 7), by otolith characteristics for juvenile fish (stages 1 and 2) and by McQuinn's (1989) GonadoSomatic index for all remaining individuals.

Tableau 9. Prises selon l'âge des géniteurs de printemps et d'automne capturés à l'aide de sennes coulissantes dans 4Vn, 1978-1993. En milliers de poissons. Groupes des reproducteures étaient classées par la maturité gonadique pour des poissons en état de frai ou épuissée (stades 6 et 7), par des caracteristiques des otolithes pour des poissons juveniles (stades 1 et 2), et par le modèle d'indice gonadosomatique (GSI) pour le restant.

FALL SPAWNERS/
GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	0	0	0	0	0	0	0	5	20	12	0	0	0	0	0
2	42	5827	628	377	1888	1352	997	827	604	816	441	26	0	0	0	25
3	563	2622	2865	541	3147	4652	3551	1987	2533	1613	833	559	697	2183	20	159
4	1601	656	2602	6800	3103	3651	4271	3920	5162	4138	1103	1408	2264	5607	1096	456
5	1092	167	888	693	1428	2114	2790	2982	2394	1413	3328	1130	1524	2642	3273	1814
6	842	100	655	591	359	584	775	927	1375	735	2394	2443	413	778	1427	4357
7	628	324	663	0	158	218	377	590	1770	1040	575	460	2716	888	1474	1684
8	366	0	636	206	40	50	66	66	967	620	734	684	642	1313	990	1473
9	449	0	905	236	47	83	58	130	245	165	346	429	857	1357	1379	1594
10	280	0	638	0	0	0	0	0	75	75	183	123	1686	559	9830	1564
11+	156	0	493	0	57	38	19	48	7	22	79	292	3033	1762	4317	2587
	6019	**9696**	**10973**	**9444**	**10227**	**12742**	**12904**	**11477**	**15137**	**10657**	**10028**	**7554**	**13832**	**17089**	**14959**	**15716**

SPRING SPAWNERS/
GÉNITEURS DE PRINTEMPS

AGE	1978	1879	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	58	5679	349	595	1525	302	522	615	117	73	0	0	8	0	0	16
2	809	5007	2614	2829	3074	3383	1759	953	929	226	214	0	218	173	28	43
3	978	383	901	1833	1994	1561	1702	1129	4064	827	132	105	552	112	11	27
4	358	0	143	0	667	526	636	636	1466	441	145	180	608	1026	74	51
5	330	0	117	438	362	289	371	418	0	0	127	99	701	300	182	176
6	455	298	277	0	0	0	0	0	265	64	0	219	333	139	573	265
7	0	0	0	0	0	0	0	0	0	0	59	0	218	395	0	150
8	114	0	43	0	0	0	0	0	413	67	29	109	35	1200	0	120
9	14	0	17	0	0	0	0	0	0	0	0	0	47	192	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	99	192	0	0
11+	32	0	55	0	0	0	0	0	0	0	0	0	0	202	148	0
	3148	**11367**	**4516**	**5695**	**7622**	**6061**	**4990**	**3751**	**7254**	**1698**	**706**	**712**	**2819**	**3931**	**1016**	**848**

Table 10. Weight-at-age (kg) matrices for spring- and fall-spawners caught in 4Vn by purse seiners, 1978-1993. Spawning-group affinity assigned by gonad maturity for spawning and spent fish (stages 6 and 7), by otolith characteristics for juvenile fish (stages 1 and 2) and by McQuinn's (1989) GonadoSomatic index for all remaining individuals.

Tableau 10. Matrices des poids selon l'âge (kg) des géniteurs de printemps et d'automne capturés dans 4Vn à l'aide de sennes coulissantes, 1978-1993. Groupes des reproducteures étaient classées par la maturité gonadique pour des poissons en état de frai ou épuissée (stades 6 et 7), par des caracteristiques des otolithes pour des poissons juveniles (stades 1 et 2), et par le modèle d'indice gonadosomatique (GSI) pour le restant.

FALL SPAWNERS/
GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0378	0.0389	0.0349	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1934	0.1067	0.1302	0.0803	0.1175	0.1409	0.1258	0.1144	0.0889	0.0750	0.0960	0.1197	0.0000	0.0000	0.0000	0.0280
3	0.1832	0.1755	0.1648	0.1901	0.1951	0.1900	0.1992	0.2011	0.1481	0.1446	0.1589	0.1642	0.1726	0.1443	0.1322	0.1180
4	0.2471	0.2262	0.2328	0.2089	0.2360	0.2382	0.2405	0.2471	0.1838	0.1862	0.2085	0.2077	0.2025	0.1915	0.1796	0.1531
5	0.3042	0.2741	0.3035	0.2807	0.2571	0.2621	0.2655	0.2693	0.2202	0.2111	0.2395	0.2361	0.2240	0.2229	0.2087	0.1783
6	0.3323	0.2979	0.3374	0.3149	0.2943	0.2957	0.2934	0.2983	0.2535	0.2543	0.2605	0.2743	0.2646	0.2477	0.2381	0.2044
7	0.3562	0.3459	0.3655	0.0000	0.3250	0.3238	0.3194	0.3166	0.2601	0.2606	0.2943	0.2905	0.2924	0.2626	0.2468	0.2270
8	0.3744	0.0000	0.3917	0.4284	0.3612	0.3602	0.3543	0.3513	0.2930	0.2968	0.3190	0.3096	0.3150	0.2972	0.2758	0.2455
9	0.3880	0.0000	0.4000	0.4137	0.3958	0.4046	0.3591	0.3794	0.3277	0.3301	0.3331	0.3406	0.3360	0.3073	0.2856	0.2686
10	0.3990	0.0000	0.4136	0.0000	0.0000	0.0000	0.0000	0.0000	0.3203	0.3179	0.3521	0.3371	0.3416	0.3206	0.2853	0.2827
11+	0.4294	0.0000	0.4349	0.0000	0.4205	0.4193	0.4078	0.4213	0.4458	0.3924	0.3700	0.3477	0.3468	0.3544	0.3295	0.3105
	0.3045	**0.1462**	**0.2717**	**0.2245**	**0.2102**	**0.2204**	**0.2325**	**0.2459**	**0.2051**	**0.1964**	**0.2431**	**0.2593**	**0.2850**	**0.2349**	**0.2644**	**0.2368**

SPRING SPAWNERS/
GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0707	0.0966	0.1099	0.1057	0.0995	0.1183	0.0991	0.0895	0.0557	0.0571	0.0000	0.0000	0.0785	0.0000	0.0000	0.0586
2	0.1738	0.1538	0.1556	0.1823	0.1655	0.1679	0.1693	0.1684	0.1207	0.1214	0.123	0.0000	0.1571	0.0941	0.1402	0.0991
3	0.2279	0.1809	0.2149	0.2299	0.2211	0.2198	0.2235	0.2342	0.1557	0.1579	0.1813	0.1447	0.217	0.1126	0.1785	0.1631
4	0.2903	0.0000	0.2753	0.0000	0.2517	0.2536	0.2571	0.2633	0.192	0.1878	0.1976	0.1772	0.2421	0.1807	0.2072	0.2216
5	0.3226	0.0000	0.3141	0.3689	0.2889	0.3005	0.2996	0.3125	0.0000	0.0000	0.2415	0.2127	0.2785	0.2277	0.2433	0.2329
6	0.3702	0.3639	0.3833	0.0000	0.0000	0.0000	0.0000	0.0000	0.2279	0.2279	0.0000	0.2744	0.2802	0.2448	0.2938	0.2690
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2872	0.0000	0.3185	0.2653	0.0000	0.2962
8	0.3627	0.0000	0.3868	0.0000	0.0000	0.0000	0.0000	0.0000	0.2926	0.2941	0.3899	0.2785	0.2791	0.2824	0.0000	0.3421
9	0.4796	0.0000	0.4831	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3604	0.3349	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3409	0.3349	0.0000	0.0000
11+	0.433	0.0000	0.4411	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3287	0.3919	0.0000
	0.2568	**0.1316**	**0.1927**	**0.2040**	**0.1802**	**0.1926**	**0.2013**	**0.2074**	**0.1674**	**0.1645**	**0.1952**	**0.2227**	**0.2555**	**0.2430**	**0.2873**	**0.2579**

Table 11. Catch-at-age for 4T herring fall spawners, including those caught in 4Vn by purse seiners between November 1 - March 31, 1978-1993. Numbers are in thousands of fish.

Tableau 11. Prises selon l'âge des géniteurs d'automne dans 4T, y compris ceux capturés dans 4Vn à l'aide de sennes coulissantes entre le 1er novembre et le 31 mars, 1978-1993. En milliers de poissons.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	82	8	64	322	0	0	0	0	253	15	0	0	19	0	52	0
3	3592	474	7965	5753	2154	720	963	1117	1627	8010	1165	294	3702	161	325	78
4	5548	9986	5224	24124	14985	20231	24882	8816	32871	38205	20432	14114	22546	40438	12879	2440
5	3484	5132	6097	6313	16883	9570	13445	24441	16497	30249	41943	22056	19830	10454	54288	29704
6	816	2924	994	2477	4922	13180	8306	14860	34428	20712	20253	29672	28179	7641	12201	36482
7	745	865	1733	1027	2523	2168	5978	9498	19251	36337	13240	14057	54206	11056	7345	6034
8	3911	1065	373	597	1050	1632	1335	4495	8212	15518	14266	7133	17006	13585	8943	3168
9	117	879	232	258	371	486	456	1212	4666	9382	6953	9021	9151	5090	9347	3661
0	157	278	304	239	117	124	200	727	341	4563	2738	3325	9931	2515	4554	1949
11+	1903	545	96	102	62	160	91	159	692	1878	1623	2592	5417	4651	6705	2785
	20355	**23060**	**23082**	**41212**	**43067**	**48271**	**55656**	**65325**	**118538**	**164869**	**122613**	**97418**	**169987**	**95591**	**116639**	**86301**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	241	143	0	0	0	0	0	5	20	77	0	0	0	0	0
2	1464	8555	3021	455	2088	1478	1031	1080	761	864	4283	720	43	0	8	48
3	22002	15905	40044	5060	8169	7995	3884	4024	3507	2526	3483	1362	4171	6309	308	2067
4	29043	21323	17776	11260	5597	8354	6727	8223	7400	5753	4027	4452	5521	22058	5170	2811
5	24188	16923	13029	1316	3892	4194	5704	8085	8729	4031	6082	6703	7516	6068	15556	6032
6	4902	16785	7933	699	681	1632	2387	5824	8080	9035	5667	7275	3444	1907	4208	10570
7	4947	4733	8250	317	269	400	942	2540	8102	8592	9404	4307	5035	1964	2903	3664
8	10893	3701	6283	297	136	95	163	1826	3828	6883	8228	7095	2429	1986	1754	2738
9	1898	5276	4292	504	149	108	91	731	1351	2326	4500	4548	4485	1816	1724	2002
10	1017	1249	2291	116	38	30	13	449	510	364	1417	2307	3560	1007	1709	3571
11+	11937	9864	1404	65	179	57	21	420	217	82	2441	1598	3333	2278	5417	5739
	112291	**104555**	**104466**	**20089**	**21198**	**24343**	**20963**	**33202**	**42490**	**40476**	**49609**	**40367**	**39537**	**45393**	**38757**	**39240**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	1144	143	0	0	0	0	0	5	20	77	0	0	0	0	0
2	1546	8563	3085	777	2088	1478	1031	1080	1014	879	4283	720	62	0	61	48
3	25594	16379	48009	10813	10324	8715	4847	5141	5134	10536	4649	1642	7873	6470	633	2145
4	34592	31309	23000	35384	20582	28585	31610	17039	40271	43959	24460	17904	28067	62496	18049	5251
5	27672	22055	19127	7629	20775	13764	19149	32527	25225	34280	48025	27716	27347	16522	69845	35737
6	5718	19709	8926	3175	5603	14811	10693	20685	42507	29747	25921	35527	31623	9548	16409	47053
7	5692	5598	9984	1344	2792	2568	6919	12037	27353	44930	22644	17691	59241	13020	10248	9698
8	14803	4766	6656	894	1186	1727	1498	6321	12040	22400	22494	13899	19434	15571	10697	5906
9	2015	6156	4524	762	520	594	547	1943	6017	11708	11454	13148	13636	6906	11071	5664
10	1174	1527	2595	355	155	154	214	1175	852	4926	4155	5471	13491	3521	6263	5520
11+	13840	10409	1499	167	241	217	111	579	909	1960	4063	4066	8750	6929	12122	8524
	132646	**127615**	**127548**	**61300**	**64266**	**72613**	**76619**	**98527**	**161327**	**205345**	**172225**	**137784**	**209524**	**140983**	**155398**	**125542**

Table 12. Weight-at-age (kg) matrices for 4T herring fall spawners, including those caught in 4Vn by purse seiners between November 1- March 31, 1978-1993.

Tableau 12. Matrices des poids selon l'âge (kg) des géniteurs d'automne dans 4T, y compris ceux capturés dans 4Vn à l'aide de sennes coulissantes entre le 1er novembre et le 31 mars, 1978-1993.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0231	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0787	0.1066	0.2115	0.1288	0.0000	0.0000	0.0000	0.0000	0.1793	0.1328	0.0000	0.0000	0.2670	0.0000	0.0658	0.0000
3	0.1344	0.2015	0.2068	0.2048	0.2220	0.1908	0.2362	0.2573	0.1958	0.2347	0.2309	0.2260	0.2103	0.1964	0.1421	0.1596
4	0.2371	0.2554	0.2577	0.2468	0.2660	0.2519	0.2484	0.2541	0.2485	0.2470	0.2645	0.2602	0.2498	0.2343	0.2202	0.2127
5	0.2822	0.2934	0.3118	0.3101	0.3006	0.2853	0.2863	0.2917	0.2896	0.2789	0.2902	0.2955	0.2851	0.2682	0.2551	0.2349
6	0.3074	0.3201	0.3587	0.3679	0.3370	0.3169	0.3219	0.3352	0.3248	0.3164	0.3252	0.3255	0.3248	0.3027	0.2818	0.2599
7	0.3191	0.3553	0.3490	0.3950	0.3739	0.3493	0.3480	0.3611	0.3672	0.3434	0.3538	0.3532	0.3473	0.3367	0.3054	0.2822
8	0.3687	0.3982	0.3672	0.4200	0.3825	0.3652	0.3974	0.3742	0.3848	0.3673	0.3794	0.3731	0.3678	0.3552	0.3423	0.3300
9	0.3711	0.4171	0.4020	0.4585	0.3927	0.3724	0.4128	0.4102	0.4013	0.3818	0.4073	0.3847	0.3876	0.3733	0.3491	0.3520
10	0.3479	0.4274	0.4354	0.4717	0.3700	0.4495	0.3794	0.4055	0.4315	0.3855	0.4095	0.4062	0.4037	0.3914	0.3640	0.3497
11+	0.4324	0.4366	0.4310	0.5211	0.4674	0.4295	0.4896	0.4969	0.4337	0.4257	0.4381	0.4065	0.4319	0.4119	0.3987	0.3826
	0.2770	**0.2847**	**0.2718**	**0.2665**	**0.2963**	**0.2859**	**0.2848**	**0.3157**	**0.3117**	**0.3071**	**0.3196**	**0.3268**	**0.3306**	**0.2926**	**0.2835**	**0.2639**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0692	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0378	0.0389	0.0690	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1023	0.1107	0.1089	0.0861	0.1154	0.1381	0.1253	0.1116	0.0925	0.0787	0.0959	0.1054	0.1069	0.0000	0.0680	0.0522
3	0.1501	0.1554	0.1431	0.1801	0.1802	0.1831	0.1960	0.1948	0.1509	0.1658	0.1636	0.1608	0.1749	0.1508	0.1347	0.1413
4	0.2202	0.1865	0.1781	0.2155	0.2248	0.2210	0.2299	0.2299	0.1930	0.2021	0.2205	0.2133	0.2048	0.1900	0.1764	0.1631
5	0.2574	0.2209	0.2319	0.2657	0.2594	0.2483	0.2508	0.2607	0.2428	0.2482	0.2489	0.2468	0.2354	0.2201	0.2120	0.1949
6	0.2848	0.2517	0.2461	0.3106	0.2883	0.2888	0.2704	0.2854	0.2728	0.2862	0.2862	0.2802	0.2784	0.2504	0.2315	0.2149
7	0.3009	0.2648	0.2722	0.3410	0.3455	0.3214	0.3097	0.3169	0.2868	0.3082	0.3304	0.2942	0.2943	0.2706	0.2537	0.2327
8	0.3409	0.2965	0.2655	0.3758	0.3568	0.3637	0.3406	0.3375	0.3150	0.3317	0.3236	0.3083	0.3217	0.3011	0.2803	0.2366
9	0.3476	0.3440	0.3031	0.3323	0.3356	0.3954	0.3631	0.3761	0.3419	0.3425	0.3764	0.3307	0.3260	0.3043	0.2906	0.2870
10	0.3430	0.3343	0.3223	0.2620	0.4223	0.2639	0.3278	0.4055	0.3275	0.3887	0.3975	0.3596	0.3381	0.3187	0.2928	0.2750
11+	0.3920	0.3810	0.3853	0.2624	0.4364	0.4322	0.4093	0.4348	0.4110	0.4306	0.4095	0.3772	0.3525	0.3543	0.3326	0.3140
	0.2526	**0.2268**	**0.1981**	**0.2180**	**0.2105**	**0.2163**	**0.2340**	**0.2598**	**0.2495**	**0.2753**	**0.2829**	**0.2806**	**0.2705**	**0.2151**	**0.2389**	**0.2329**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0328	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0378	0.0389	0.0690	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1011	0.1107	0.1110	0.1038	0.1154	0.1381	0.1253	0.1116	0.1142	0.0797	0.0959	0.1054	0.1567	0.0000	0.0661	0.0522
3	0.1479	0.1567	0.1536	0.1932	0.1889	0.1837	0.2040	0.2083	0.1651	0.2182	0.1805	0.1719	0.1916	0.1520	0.1385	0.1419
4	0.2229	0.2084	0.1962	0.2369	0.2548	0.2429	0.2445	0.2424	0.2383	0.2411	0.2572	0.2484	0.2409	0.2186	0.2077	0.1862
5	0.2605	0.2378	0.2574	0.3024	0.2930	0.2740	0.2758	0.2839	0.2734	0.2753	0.2850	0.2837	0.2714	0.2505	0.2455	0.2281
6	0.2880	0.2619	0.2586	0.3553	0.3311	0.3138	0.3104	0.3212	0.3149	0.3072	0.3167	0.3162	0.3197	0.2922	0.2689	0.2498
7	0.3033	0.2787	0.2855	0.3823	0.3711	0.3449	0.3428	0.3518	0.3433	0.3367	0.3441	0.3388	0.3428	0.3267	0.2908	0.2635
8	0.3482	0.3192	0.2712	0.4052	0.3796	0.3651	0.3912	0.3636	0.3626	0.3564	0.3590	0.3399	0.3621	0.3483	0.3321	0.2867
9	0.3490	0.3544	0.3082	0.3750	0.3763	0.3766	0.4045	0.3974	0.3880	0.3740	0.3952	0.3659	0.3674	0.3552	0.3400	0.3290
10	0.3436	0.3512	0.3356	0.4032	0.3827	0.4137	0.3762	0.4055	0.3693	0.3858	0.4053	0.3865	0.3864	0.3707	0.3446	0.3014
11+	0.3976	0.3839	0.3882	0.4208	0.4444	0.4302	0.4747	0.4518	0.4282	0.4259	0.4209	0.3949	0.4017	0.3930	0.3692	0.3364
	0.2563	0.2373	0.2114	0.2506	0.2680	0.2625	0.2709	0.2968	0.2953	0.3008	0.3091	0.3132	0.3193	0.2676	0.2724	0.2536

Table 13. Catch-at-age matrices for 4T herring spring spawners, including those caught in 4Vn by purse seiners between November 1 - March 31, 1978-1993. Numbers in thousands of fish.

Tableau 13. Matrices des prises selon l'âge de géniteurs de printemps dans 4T, y compris ceux capturés dans 4Vn à l'aide de sennes coulissantes entre le 1er novembre et le 21 mars, 1978-1993. En milliers de poissons.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0	425	0	14	10	0	0	0	0	0	59	0	0	0	53	0
2	14	198	169	394	162	248	84	330	10	271	501	0	105	0	619	6
3	5644	6922	10538	13093	23717	16174	4538	6009	3593	1684	4012	4093	2769	5361	2725	280
4	25469	3140	6746	8353	4509	25937	13994	15844	18110	8051	8626	16434	16100	10955	30568	6477
5	1255	17307	2632	2688	1066	2097	8044	14353	12735	22119	11447	6223	8585	13992	11750	37705
6	1831	641	8501	1818	493	460	376	5198	11482	11213	15722	6114	2997	7381	7680	17143
7	1391	1242	1824	3363	323	102	58	1304	2932	8669	9255	7153	2778	3048	3497	6448
8	259	274	942	486	337	0	49	696	444	3676	7012	4491	4963	2950	1745	2676
9	447	136	851	454	123	0	4	61	32	516	1651	2635	2361	4215	1888	1954
10	1375	302	462	195	91	0	5	0	130	331	89	901	948	2003	1888	1614
11+	1496	1454	699	961	571	0	0	1	205	162	530	283	338	1132	1738	2023
	39181	**32041**	**33364**	**31819**	**31402**	**45018**	**27152**	**43796**	**49673**	**56692**	**58904**	**48327**	**41944**	**51037**	**64151**	**76326**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	1479	12366	979	595	1525	302	522	826	167	73	2447	318	38	0	8	17
2	15380	14047	11004	4682	3790	4120	1850	1963	2362	409	4987	379	3509	1318	242	741
3	5900	16513	13188	3135	2821	5200	1989	2619	5219	1225	1514	1582	3564	4528	2281	627
4	16315	12114	12782	137	715	1519	1480	2090	5537	1966	1004	2015	2602	2977	4467	1968
5	2673	12528	5343	443	372	461	815	998	3132	4683	1362	822	2098	1801	2296	3520
6	4929	3627	6520	101	6	1	21	511	2633	3890	4768	2225	1177	1200	1754	2620
7	5129	1772	3588	230	4	16	0	58	719	3147	2874	3896	722	1018	375	1266
8	1304	1672	1810	390	19	36	15	0	495	1225	2411	1696	1952	1681	329	764
9	1328	410	1294	1	68	0	0	113	194	0	1617	1351	1047	839	453	1283
10	1107	145	299	253	1	0	0	0	0	0	0	409	429	694	342	1360
11+	5478	1450	343	3	8	0	0	145	45	37	571	22	179	543	250	1621
	61022	**76644**	**57150**	**9970**	**9329**	**11655**	**6892**	**9223**	**20503**	**16655**	**23555**	**14715**	**17317**	**16599**	**12797**	**15787**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	1479	12791	979	609	1535	302	522	826	167	73	2506	318	38	0	61	17
2	15393	14245	11173	5077	3951	4368	1934	2293	2372	680	5488	379	3614	1318	861	743
3	11544	23435	23727	16229	26539	21375	6527	8627	8812	2908	5526	5673	6333	9889	5007	907
4	41784	15254	19528	8490	5224	27456	15474	17933	23647	10017	9631	18504	18701	13932	35035	8445
5	3928	29835	7975	3131	1438	2558	8858	15352	15867	26802	12808	7033	10683	15793	14046	41225
6	6760	4268	15020	1920	498	460	396	5708	14115	15103	20490	8358	4174	8581	9434	20663
7	6519	3014	5412	3593	327	118	58	1362	3651	11817	12129	11046	3500	4065	3872	7714
8	1562	1946	2752	876	356	36	63	696	939	4900	9423	6169	6915	4631	2073	3440
9	1775	546	2145	456	191	0	4	175	226	516	3269	3977	3408	5054	2341	3238
10	2482	447	761	449	92	0	5	0	130	331	89	1291	1377	2697	2230	2975
11+	6974	2904	1042	964	579	0	0	146	250	199	1101	296	517	1674	1988	3643
	100200	108685	90514	41794	40730	56673	33841	53118	70176	73346	82460	63044	59260	67634	76948	92133

Table 14. Weight-at-age (kg) matrices for 4T herring spring spawners, including those caught in 4Vn by purse seiners between November 1 - March 31, 1978-1993.

Tableau 14. Matrices des poids selon l'âge (kg) des géniteurs de printemps dans 4T, y compris ceux capturés dans 4Vn à l'aide de sennes coulissantes entre le 1er novembre et le 31 mars, 1978-1993.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0000	0.0195	0.0000	0.1005	0.0366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0379	0.0000	0.0000	0.0000	0.0501	0.0000
2	0.1418	0.1608	0.1816	0.1397	0.1953	0.1721	0.0933	0.2132	0.1073	0.1513	0.0798	0.0000	0.1489	0.0000	0.1111	0.1240
3	0.1478	0.1698	0.1674	0.1834	0.1745	0.1554	0.1764	0.1836	0.1603	0.1880	0.1605	0.1658	0.1616	0.1436	0.1421	0.1405
4	0.1888	0.2139	0.1861	0.2358	0.2105	0.2084	0.1957	0.2161	0.1959	0.1959	0.2031	0.2019	0.2034	0.1757	0.1710	0.1667
5	0.2109	0.2291	0.2284	0.2848	0.2640	0.2423	0.2137	0.2456	0.2419	0.2175	0.2402	0.2315	0.2317	0.2174	0.2002	0.1864
6	0.2562	0.2441	0.2691	0.3269	0.3171	0.2675	0.2683	0.2789	0.2561	0.2520	0.2662	0.2552	0.2659	0.2410	0.2309	0.2069
7	0.3221	0.3046	0.3067	0.3362	0.3717	0.3269	0.3029	0.3499	0.3194	0.2705	0.2875	0.2807	0.2721	0.2552	0.2537	0.2395
8	0.3076	0.3362	0.3319	0.3393	0.3794	0.0000	0.3843	0.3705	0.3392	0.2781	0.3038	0.2939	0.2917	0.2815	0.2601	0.2505
9	0.3114	0.3430	0.3678	0.3787	0.4026	0.0000	0.4429	0.4001	0.3486	0.2959	0.3233	0.3124	0.3124	0.2919	0.2886	0.2747
10	0.3308	0.3174	0.3630	0.3986	0.4060	0.0000	0.3713	0.0000	0.3159	0.2964	0.3754	0.3238	0.3168	0.2986	0.3015	0.2864
11+	0.3671	0.3529	0.3731	0.4082	0.4460	0.0000	0.0000	0.4913	0.4181	0.3913	0.3367	0.2978	0.3542	0.3326	0.3198	0.2949
	0.2054	**0.2227**	**0.2264**	**0.2428**	**0.1957**	**0.1916**	**0.1991**	**0.2354**	**0.2289**	**0.2338**	**0.2531**	**0.2385**	**0.2357**	**0.2220**	**0.1999**	**0.2031**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0787	0.0967	0.1070	0.1057	0.0995	0.1183	0.0991	0.0886	0.0650	0.0571	0.0810	0.0882	0.0756	0.0000	0.0579	0.0587
2	0.1305	0.1520	0.1534	0.1794	0.1607	0.1635	0.1678	0.1632	0.1293	0.1518	0.1132	0.1716	0.1637	0.1416	0.1391	0.1157
3	0.1817	0.1483	0.1621	0.2233	0.2186	0.1950	0.2183	0.2166	0.1678	0.1703	0.1740	0.2129	0.1901	0.1769	0.1503	0.1375
4	0.2523	0.1774	0.2142	0.2389	0.2512	0.2290	0.2369	0.2415	0.2365	0.2541	0.2367	0.2513	0.2337	0.1934	0.2020	0.1749
5	0.2556	0.2486	0.2470	0.3678	0.2885	0.2933	0.2742	0.2971	0.2816	0.2972	0.3044	0.2623	0.2689	0.2284	0.2450	0.1893
6	0.2822	0.2512	0.2730	0.4103	0.3241	0.2731	0.3022	0.3112	0.3070	0.3282	0.3226	0.3124	0.2872	0.2450	0.2728	0.2242
7	0.3027	0.2820	0.2632	0.3286	0.3796	0.2455	0.0000	0.2824	0.3241	0.3375	0.3588	0.3410	0.3237	0.2758	0.2805	0.2628
8	0.3040	0.3122	0.2810	0.2846	0.3336	0.2375	0.3189	0.0000	0.3003	0.3671	0.3889	0.3494	0.3044	0.2860	0.3068	0.3308
9	0.3139	0.3525	0.3372	0.3839	0.3221	0.0000	0.0000	0.5884	0.2910	0.0000	0.4024	0.3671	0.3259	0.3044	0.3332	0.3655
10	0.3760	0.3114	0.3821	0.3251	0.4328	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3829	0.3760	0.3162	0.3412	0.3082
11+	0.3598	0.3917	0.3583	0.4081	0.4472	0.0000	0.0000	0.3466	0.3933	0.5328	0.4281	0.5426	0.3112	0.3314	0.3731	0.3254
	0.2317	**0.1792**	**0.2081**	**0.2118**	**0.1820**	**0.1904**	**0.2021**	**0.2190**	**0.2266**	**0.3059**	**0.2541**	**0.3038**	**0.2412**	**0.2200**	**0.2399**	**0.2290**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0787	0.0941	0.1070	0.1056	0.0991	0.1183	0.0991	0.0886	0.0650	0.0571	0.0800	0.0882	0.0756	0.0000	0.0511	0.0593
2	0.1305	0.1521	0.1538	0.1763	0.1621	0.1640	0.1645	0.1704	0.1292	0.1516	0.1102	0.1716	0.1632	0.1416	0.1190	0.1167
3	0.1651	0.1546	0.1644	0.1911	0.1792	0.1650	0.1891	0.1936	0.1647	0.1805	0.1642	0.1788	0.1777	0.1589	0.1458	0.1377
4	0.2136	0.1849	0.2044	0.2359	0.2161	0.2095	0.1996	0.2190	0.2054	0.2073	0.2066	0.2072	0.2076	0.1795	0.1750	0.1683
5	0.2414	0.2373	0.2409	0.2966	0.2703	0.2515	0.2192	0.2490	0.2497	0.2315	0.2470	0.2350	0.2390	0.2187	0.2075	0.1864
6	0.2752	0.2501	0.2708	0.3313	0.3172	0.2675	0.2700	0.2818	0.2656	0.2716	0.2794	0.2704	0.2719	0.2416	0.2387	0.2085
7	0.3068	0.2913	0.2778	0.3357	0.3718	0.3159	0.3029	0.3471	0.3203	0.2883	0.3044	0.3020	0.2827	0.2604	0.2563	0.2425
8	0.3047	0.3156	0.2984	0.3150	0.3770	0.2375	0.3693	0.3705	0.3187	0.3003	0.3256	0.3092	0.2953	0.2831	0.2675	0.2659
9	0.3132	0.3501	0.3494	0.3787	0.3741	0.0000	0.4429	0.5225	0.2991	0.2959	0.3624	0.3310	0.3165	0.2939	0.2972	0.3107
10	0.3509	0.3154	0.3705	0.3571	0.4063	0.0000	0.3713	0.0000	0.3159	0.2964	0.3754	0.3423	0.3352	0.3031	0.3076	0.2964
11+	0.3614	0.3722	0.3683	0.4082	0.4460	0.0000	0.0000	0.3475	0.4137	0.4179	0.3841	0.3158	0.3393	0.3322	0.3265	0.3085
	0.2214	**0.1920**	**0.2148**	**0.2354**	**0.1927**	**0.1913**	**0.2005**	**0.2328**	**0.2282**	**0.2485**	**0.2546**	**0.2530**	**0.2368**	**0.2220**	**0.2042**	**0.2089**

Table 15. Catch-at-age matrices for fall spawning herring caught in NAFO subdivisions 4Tm, 4Tn and 4To, from 1978 to 1993. Numbers in thousands of fish.

Tableau 15. Matrices des prises selon l'âge de géniteurs d'automne dans les sous-divsions de l'OPANO 4Tm, 4Tn et 4To, de 1978 à 1993. En milliers de poissons.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2	0	0	51	316	0	0	0	0	0	15	0	0	12	0	0	0
3	174	206	6356	4154	1773	7514	465	477	612	6652	144	266	2723	310	69	78
4	3421	3386	2151	12990	6040	11226	7388	3916	10839	25007	13441	11894	14790	30425	6044	2000
5	2392	1368	2004	2735	11775	3995	6306	8758	10233	14716	22754	19054	12581	8451	37239	21146
6	495	1605	3186	608	1643	8854	3264	7914	21638	13854	7813	20563	19692	6601	11045	24660
7	414	281	852	285	283	920	3030	5641	15446	19049	7549	9916	19995	8864	6149	3741
8	2627	635	159	146	186	382	615	2712	6322	8677	6330	5192	7857	8490	7191	1968
9	57	541	185	73	71	103	78	693	3936	4922	3328	6244	5143	3708	5853	1730
10	77	194	100	49	28	67	73	273	207	2471	1755	2673	5758	1942	3145	522
11+	1205	230	0	37	53	73	56	108	496	639	1176	2232	3590	2702	5106	784
	10862	**8446**	**15044**	**21393**	**21852**	**33134**	**21275**	**30492**	**69729**	**96002**	**64290**	**78034**	**92142**	**71493**	**81841**	**56629**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	239	0	0	0	0	0	0	0	0	64	0	0	0	0	0
2	96	2533	0	3	199	6	32	253	134	47	3790	726	43	0	61	16
3	3914	9020	0	157	5005	148	315	2037	860	906	2614	840	3474	4126	545	1899
4	16052	6394	0	155	2486	206	2333	4303	2155	1604	2885	3184	3257	16451	4424	2292
5	20196	4508	0	21	2455	91	2762	5103	6324	2600	2716	5829	5992	3426	12412	3873
6	3517	7102	0	3	321	46	1531	4897	6699	8242	3229	5054	3031	1129	2685	6129
7	3936	1651	0	11	110	8	536	1950	6331	7500	8709	4023	2319	1076	1336	1870
8	9137	1373	0	3	95	2	92	1760	2858	6219	7392	6706	1787	673	727	1152
9	1294	1931	0	9	102	1	31	601	1106	2146	4098	4308	3628	459	306	293
10	225	329	0	4	38	1	13	449	435	287	1217	2284	1874	448	676	1800
11+	10609	3296	0	2	121	1	1	372	210	60	2330	1366	300	516	1084	2678
	68976	**38376**	**0**	**368**	**10932**	**510**	**7646**	**21725**	**27112**	**29611**	**39044**	**34320**	**25705**	**28304**	**24256**	**22002**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	239	0	0	0	0	0	0	0	0	64	0	1	0	0	0
2	96	2533	51	319	199	6	32	253	134	62	3790	726	55	0	61	16
3	4088	9226	6356	4311	6778	7662	780	2514	1472	7558	2758	1106	6197	4436	614	1977
4	19473	9780	2151	13145	8526	11432	9721	8219	12994	26611	16326	15078	18047	46876	10468	4292
5	22588	5876	2004	2756	14230	4086	9068	13861	16557	17316	25470	24883	18573	11877	49651	25019
6	4012	8707	3186	611	1964	8900	4795	12811	28337	22096	11042	25617	22723	7730	13730	30789
7	4350	1932	852	296	393	928	3566	7591	21777	26549	16258	13939	22314	9940	7485	5611
8	11764	2008	159	149	281	384	707	4472	9180	14896	13722	11898	9644	9163	7918	3120
9	1351	2472	185	82	173	104	109	1294	5042	7068	7426	10552	8771	4167	6159	2023
10	302	523	100	53	66	68	86	722	642	2758	2972	4957	7632	2390	3821	2322
11+	11814	3526	0	39	174	74	57	480	706	699	3506	3598	3890	3218	6190	3462
	79838	**46822**	**15044**	**21761**	**32784**	**33644**	**28921**	**52217**	**96841**	**125613**	**103334**	**112354**	**117847**	**99797**	**106097**	**78631**

Table 16. Weight-at-age matrices for fall spawning herring caught in NAFO subdivisions 4Tm, 4Tn and 4To from 1978 to 1993. Weights in kilograms.

Tableau 16. Matrices des poids selon l'âge (kg) de géniteurs d'automne dans les sous-divsions de l'OPANO 4Tm, 4Tn et 4To, de 1978 à 1993.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.1766	0.1305	0.0000	0.0000	0.0000	0.0000	0.0000	0.1328	0.0000	0.0000	0.1495	0.0000	0.0000	0.0000
3	0.2026	0.2065	0.1838	0.2047	0.2239	0.1355	0.2425	0.2799	0.2214	0.2354	0.2113	0.2257	0.2169	0.1763	0.2267	0.1596
4	0.2598	0.2640	0.2374	0.2565	0.2692	0.2486	0.2581	0.2551	0.2631	0.2512	0.2611	0.2609	0.2545	0.2314	0.2285	0.2122
5	0.2954	0.3081	0.2908	0.3091	0.3000	0.2870	0.2983	0.3051	0.2939	0.2869	0.2870	0.2973	0.2897	0.2603	0.2576	0.2332
6	0.3349	0.3277	0.2618	0.3622	0.3408	0.3222	0.3407	0.3479	0.3304	0.3217	0.3178	0.3277	0.3251	0.2907	0.2826	0.2610
7	0.3446	0.3738	0.3279	0.4279	0.3748	0.3567	0.3553	0.3664	0.3700	0.3553	0.3486	0.3539	0.3499	0.3269	0.3095	0.2884
8	0.3773	0.3969	0.3230	0.4634	0.4133	0.3939	0.3961	0.3795	0.3903	0.3804	0.3762	0.3716	0.3664	0.3467	0.3435	0.3348
9	0.4221	0.4114	0.3694	0.4586	0.4194	0.3993	0.4537	0.4210	0.4031	0.3929	0.4069	0.3848	0.3835	0.3416	0.3535	0.3552
10	0.3920	0.4280	0.4360	0.5027	0.4208	0.4965	0.3612	0.4377	0.4511	0.4085	0.4123	0.4062	0.4018	0.3450	0.3619	0.3265
11+	0.4447	0.4363	0.0000	0.5208	0.4782	0.4527	0.4895	0.5081	0.4562	0.4387	0.4333	0.4042	0.4340	0.3895	0.4035	0.3687
	0.3241	**0.3134**	**0.2358**	**0.2597**	**0.2913**	**0.2533**	**0.3019**	**0.3319**	**0.3332**	**0.3106**	**0.3135**	**0.3254**	**0.3269**	**0.2804**	**0.2902**	**0.2581**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0692	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1957	0.1257	0.0000	0.1154	0.0960	0.1079	0.1109	0.1023	0.1053	0.1422	0.0959	0.1049	0.1069	0.0000	0.0661	0.0849
3	0.1954	0.1853	0.0000	0.1789	0.1709	0.1734	0.1621	0.1886	0.1609	0.2033	0.1651	0.1585	0.1754	0.1543	0.1277	0.1432
4	0.2322	0.2455	0.0000	0.2256	0.2109	0.2079	0.2116	0.2142	0.2161	0.2427	0.2250	0.2159	0.2064	0.1895	0.1733	0.1639
5	0.2567	0.2854	0.0000	0.2498	0.2607	0.2345	0.2369	0.2556	0.2515	0.2683	0.2603	0.2490	0.2383	0.2180	0.2119	0.1961
6	0.2780	0.2799	0.0000	0.2863	0.2817	0.2854	0.2594	0.2829	0.2767	0.2890	0.3050	0.2832	0.2803	0.2523	0.2245	0.2214
7	0.2936	0.2691	0.0000	0.3408	0.3748	0.3185	0.3032	0.3170	0.2943	0.3148	0.3328	0.2946	0.2966	0.2772	0.2584	0.2318
8	0.3413	0.2974	0.0000	0.2547	0.3549	0.3675	0.3313	0.3370	0.3224	0.3352	0.3240	0.3082	0.3241	0.3086	0.2841	0.2116
9	0.3400	0.3621	0.0000	0.2603	0.3079	0.3648	0.3701	0.3754	0.3451	0.3435	0.3800	0.3297	0.3236	0.2956	0.3089	0.3457
10	0.3268	0.3477	0.0000	0.2620	0.4223	0.2639	0.3278	0.4055	0.3288	0.4071	0.4042	0.3609	0.3350	0.3164	0.3030	0.2539
11	0.3942	0.4044	0.0000	0.2566	0.4439	0.4579	0.4236	0.4365	0.4098	0.4446	0.4108	0.3838	0.4103	0.3538	0.3443	0.2972
	0.2848	**0.2567**	**0.0000**	**0.2117**	**0.2109**	**0.2117**	**0.2366**	**0.2671**	**0.2751**	**0.3035**	**0.2930**	**0.2856**	**0.2628**	**0.2032**	**0.2184**	**0.2180**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0692	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1957	0.1257	0.1766	0.1304	0.0960	0.1079	0.1109	0.1023	0.1053	0.1399	0.0959	0.1049	0.1162	0.0000	0.0661	0.0849
3	0.1957	0.1858	0.1838	0.2038	0.1848	0.1362	0.2100	0.2059	0.1861	0.2316	0.1675	0.1747	0.1936	0.1558	0.1388	0.1438
4	0.2370	0.2519	0.2374	0.2561	0.2522	0.2479	0.2469	0.2337	0.2553	0.2507	0.2547	0.2514	0.2458	0.2167	0.2052	0.1864
5	0.2608	0.2907	0.2908	0.3086	0.2932	0.2858	0.2796	0.2869	0.2777	0.2841	0.2842	0.2860	0.2731	0.2481	0.2462	0.2275
6	0.2850	0.2887	0.2618	0.3618	0.3311	0.3220	0.3147	0.3231	0.3177	0.3095	0.3141	0.3189	0.3191	0.2851	0.2712	0.2531
7	0.2985	0.2843	0.3279	0.4247	0.3748	0.3564	0.3475	0.3537	0.3480	0.3439	0.3401	0.3368	0.3444	0.3215	0.3004	0.2695
8	0.3493	0.3289	0.3230	0.4592	0.3936	0.3938	0.3877	0.3628	0.3692	0.3615	0.3481	0.3359	0.3586	0.3439	0.3380	0.2893
9	0.3435	0.3729	0.3694	0.4368	0.3537	0.3990	0.4299	0.3998	0.3904	0.3779	0.3921	0.3623	0.3587	0.3365	0.3513	0.3538
10	0.3434	0.3775	0.4360	0.4845	0.4217	0.4931	0.3562	0.4177	0.3682	0.4084	0.4090	0.3853	0.3854	0.3396	0.3515	0.2702
11+	0.3994	0.4065	0.0000	0.5073	0.4543	0.4528	0.4883	0.4526	0.4424	0.4392	0.4183	0.3965	0.4322	0.3838	0.3931	0.3134
	0.2901	**0.2669**	**0.2358**	**0.2589**	**0.2645**	**0.2527**	**0.2846**	**0.3049**	**0.3169**	**0.3089**	**0.3057**	**0.3133**	**0.3129**	**0.2585**	**0.2738**	**0.2469**

Table 17. Catch-at-age matrices for spring spawning herring caught in NAFO subdivisions 4Tm, 4Tn and 4To, from 1978 to 1993. Numbers in thousands of fish.

Tableau 17. Matrices des prises selon l'âge de géniteurs de printemps dans les sous-divsions de l'OPANO 4Tm, 4Tn et 4To, de 1978 à 1993. En milliers de poissons.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0
2	0	10	99	91	132	6	3	6	10	118	17	0	98	0	0	6
3	1147	1297	3329	1594	3708	7724	832	2044	1088	1014	741	852	373	177	72	40
4	4839	509	589	920	2157	2824	1478	4244	5113	2983	3650	1866	1891	1379	2522	1028
5	171	3190	371	241	198	466	752	3949	5339	8047	6362	2551	1604	1254	3536	4737
6	15	119	3085	241	106	45	92	1748	3497	5428	9251	2437	1286	1288	1748	5501
7	29	132	357	1061	50	0	43	873	1805	5277	5892	3698	1299	903	1264	2364
8	10	24	70	82	92	0	36	510	267	2317	4834	2571	2121	770	876	1099
9	0	0	120	50	19	0	2	0	2	364	1377	1671	1300	1271	1177	1021
10	293	35	0	23	28	0	0	0	61	122	38	825	451	853	1125	965
11+	35	55	0	16	16	0	0	0	182	104	521	265	171	497	1048	1310
	6539	**5371**	**8020**	**4327**	**6506**	**11065**	**3238**	**13374**	**17364**	**25774**	**32683**	**16736**	**10594**	**8392**	**13368**	**18071**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	6282	0	0	0	0	0	211	50	0	2419	332	30	0	61	1
2	2038	7253	0	25	713	28	86	1010	1430	182	4719	396	3290	1145	834	698
3	1579	1313	0	18	824	140	270	1490	1152	395	1367	1545	3012	4416	1092	453
4	12071	419	0	2	48	37	796	1454	4062	1516	850	1920	1994	1951	3508	1601
5	1368	5489	0	0	10	7	418	580	3126	4656	1221	757	1397	1501	1375	1691
6	2608	1406	0	1	6	0	19	511	2364	3803	4714	2098	844	1061	752	710
7	2300	1019	0	3	4	1	0	58	718	3129	2783	4075	504	623	157	493
8	609	635	0	5	19	1	14	0	82	1151	2355	1659	1907	481	120	84
9	593	130	0	0	67	0	0	113	194	0	1599	1413	1000	647	301	35
10	893	67	0	3	1	0	0	0	0	0	0	428	330	502	323	634
11+	2369	432	0	0	8	0	0	145	45	37	564	23	179	341	94	410
	26428	**24445**	**0**	**57**	**1700**	**214**	**1603**	**5572**	**13223**	**14869**	**22591**	**14646**	**14487**	**12668**	**8617**	**6810**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	6282	0	8	0	0	0	211	50	0	2419	332	30	0	61	1
2	2038	7263	99	116	845	34	89	1016	1440	300	4736	396	3388	1145	834	704
3	2726	2610	3329	1612	4532	7864	1102	3534	2240	1409	2108	2397	3385	4593	1164	493
4	16910	928	589	922	2205	2861	2274	5698	9175	4499	4500	3786	3885	3330	6030	2629
5	1539	8679	371	241	208	473	1170	4529	8465	12703	7583	3308	3001	2755	4911	6428
6	2623	1525	3085	242	112	45	111	2259	5861	9231	13965	4535	2130	2349	2500	6211
7	2329	1151	357	1064	54	1	43	931	2523	8406	8675	7773	1803	1526	1421	2857
8	619	659	70	87	111	1	50	510	349	3468	7189	4230	4028	1251	996	1183
9	593	130	120	50	86	0	2	113	196	364	2976	3084	2300	1918	1478	1056
10	1186	102	0	26	29	0	0	0	61	122	38	1253	781	1355	1448	1599
11+	2404	487	0	16	24	0	0	145	227	141	1085	288	350	838	1142	1720
	32967	**29816**	**8020**	**4384**	**8206**	**11279**	**4841**	**18946**	**30587**	**40643**	**55274**	**31382**	**25081**	**21060**	**21985**	**24881**

Table 18. Weight-at-age matrices for spring spawning herring caught in NAFO subdivisions 4Tm, 4Tn and 4To, from 1978 to 1993. Weights in kilograms.

Tableau 18. Matrices des poids selon l'âge (kg) de géniteurs de printemps dans les sous-divsions de l'OPANO 4Tm, 4Tn et 4To, de 1978 à 1993.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0000	0.0000	0.1440	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.1758	0.1790	0.1877	0.2089	0.1868	0.1554	0.1785	0.1073	0.2204	0.1576	0.0000	0.1489	0.0000	0.0000	0.1240
3	0.1548	0.1742	0.1646	0.1989	0.1851	0.1381	0.2057	0.1971	0.2101	0.2064	0.1871	0.1901	0.1833	0.1588	0.1336	0.1706
4	0.1836	0.2172	0.2025	0.2380	0.2200	0.2015	0.2085	0.2585	0.2333	0.2128	0.2249	0.2120	0.2140	0.1803	0.1835	0.1954
5	0.2020	0.2344	0.2579	0.2733	0.2726	0.2735	0.2227	0.2972	0.2678	0.2310	0.2553	0.2410	0.2381	0.2157	0.2035	0.1917
6	0.3098	0.2214	0.2611	0.3107	0.2917	0.2166	0.3039	0.3303	0.2768	0.2679	0.2723	0.2626	0.2874	0.2386	0.2263	0.2173
7	0.3481	0.2993	0.3337	0.3288	0.3286	0.0000	0.3021	0.3749	0.3370	0.2781	0.2923	0.2844	0.2776	0.2548	0.2493	0.2409
8	0.2285	0.3459	0.2998	0.3262	0.3185	0.0000	0.3857	0.3879	0.3451	0.2866	0.3060	0.2982	0.2961	0.2690	0.2731	0.2495
9	0.0000	0.0000	0.3665	0.3443	0.3447	0.0000	0.4875	0.0000	0.4518	0.2909	0.3232	0.3111	0.3152	0.2815	0.2878	0.2698
10	0.3441	0.3057	0.0000	0.3751	0.3471	0.0000	0.3733	0.0000	0.3233	0.3195	0.4114	0.3222	0.3029	0.2906	0.3040	0.2810
11+	0.3897	0.3382	0.0000	0.4224	0.4051	0.0000	0.0000	0.0000	0.4225	0.4192	0.3344	0.2928	0.3130	0.2986	0.3254	0.2818
	0.1884	**0.2215**	**0.2207**	**0.2550**	**0.2062**	**0.1603**	**0.2171**	**0.2824**	**0.2660**	**0.2523**	**0.2736**	**0.2685**	**0.2669**	**0.2438**	**0.2367**	**0.2253**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.1005	0.0000	0.0000	0.0366	0.0000	0.0000	0.0859	0.0866	0.0000	0.0810	0.0882	0.0748	0.0000	0.0511	0.0609
2	0.1880	0.1727	0.0000	0.1749	0.1400	0.1432	0.1385	0.1583	0.1349	0.1893	0.1128	0.1716	0.1641	0.1488	0.1183	0.1167
3	0.2080	0.2286	0.0000	0.2143	0.2127	0.1843	0.1874	0.2033	0.2102	0.1961	0.1733	0.2178	0.1852	0.1785	0.1479	0.1454
4	0.2585	0.2627	0.0000	0.2402	0.2436	0.2161	0.2218	0.2319	0.2525	0.2733	0.2433	0.2586	0.2311	0.2001	0.1988	0.1761
5	0.2453	0.2930	0.0000	0.0000	0.2744	0.2819	0.2531	0.2860	0.2816	0.2972	0.3109	0.2691	0.2641	0.2285	0.2399	0.1865
6	0.2707	0.2457	0.0000	0.4132	0.3241	0.0000	0.3031	0.3112	0.3159	0.3299	0.3226	0.3166	0.2899	0.2450	0.2600	0.2195
7	0.3038	0.2805	0.0000	0.3282	0.3796	0.2448	0.0000	0.2824	0.3241	0.3375	0.3603	0.3410	0.3260	0.2825	0.2913	0.2598
8	0.2898	0.2711	0.0000	0.2844	0.3337	0.2375	0.3189	0.0000	0.3392	0.3713	0.3889	0.3543	0.3049	0.2950	0.3219	0.3326
9	0.3129	0.3073	0.0000	0.0000	0.3221	0.0000	0.0000	0.5884	0.2910	0.0000	0.4024	0.3671	0.3243	0.2954	0.3427	0.3651
10	0.3918	0.3053	0.0000	0.3249	0.4328	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3829	0.3865	0.3091	0.3417	0.2807
11+	0.3603	0.4359	0.0000	0.0000	0.4472	0.0000	0.0000	0.3466	0.3933	0.5328	0.4281	0.3838	0.3112	0.3330	0.3413	0.3034
	0.2701	**0.2027**	**0.0000**	**0.2194**	**0.1911**	**0.1881**	**0.2215**	**0.2290**	**0.2592**	**0.3139**	**0.2601**	**0.3050**	**0.2366**	**0.2155**	**0.2107**	**0.2014**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.1005	0.0000	0.1440	0.0000	0.0000	0.0000	0.0859	0.0866	0.0000	0.0810	0.0882	0.0748	0.0000	0.0511	0.0609
2	0.1880	0.1727	0.1790	0.1849	0.1508	0.1509	0.1391	0.1584	0.1347	0.2015	0.1130	0.1716	0.1637	0.1488	0.1183	0.1168
3	0.1856	0.2016	0.1646	0.1991	0.1901	0.1389	0.2012	0.1997	0.2102	0.2035	0.1782	0.2080	0.1850	0.1777	0.1470	0.1474
4	0.2371	0.2377	0.2025	0.2380	0.2205	0.2017	0.2132	0.2517	0.2418	0.2332	0.2284	0.2356	0.2228	0.1919	0.1924	0.1836
5	0.2405	0.2715	0.2579	0.2733	0.2727	0.2736	0.2336	0.2958	0.2729	0.2553	0.2643	0.2474	0.2502	0.2227	0.2137	0.1903
6	0.2709	0.2438	0.2611	0.3111	0.2934	0.2166	0.3038	0.3260	0.2926	0.2934	0.2893	0.2876	0.2884	0.2415	0.2364	0.2176
7	0.3044	0.2827	0.3337	0.3288	0.3324	0.2448	0.3021	0.3691	0.3333	0.3002	0.3141	0.3141	0.2911	0.2661	0.2539	0.2442
8	0.2888	0.2738	0.2998	0.3238	0.3211	0.2375	0.3670	0.3879	0.3437	0.3147	0.3332	0.3202	0.3003	0.2790	0.2790	0.2554
9	0.3129	0.3073	0.3665	0.3443	0.3271	0.0000	0.4875	0.5884	0.2926	0.2909	0.3658	0.3368	0.3192	0.2862	0.2990	0.2730
10	0.3800	0.3054	0.0000	0.3693	0.3501	0.0000	0.0000	0.0000	0.3233	0.3195	0.4114	0.3429	0.3382	0.2975	0.3124	0.2809
11+	0.3607	0.4249	0.0000	0.4224	0.4191	0.0000	0.0000	0.3466	0.4167	0.4490	0.3831	0.3001	0.3121	0.3126	0.3267	0.2869
	0.2539	**0.2061**	**0.2207**	**0.2545**	**0.2031**	**0.1609**	**0.2186**	**0.2667**	**0.2630**	**0.2749**	**0.2681**	**0.2855**	**0.2494**	**0.2268**	**0.2265**	**0.2188**

Table 19. Catch-at-age matrices for fall spawning herring caught in NAFO subdivision 4T1, from 1978 to 1993. Numbers in thousands of fish.

Tableau 19. Matrices des prises selon l'âge de géniteurs d'automne dans les sous-divsions de l'OPANO 4T1 de 1978 à 1993. En milliers de poissons.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	29	70	288	1650	30	235	100	68	39	204	723	17	200	17	0	0
4	628	2212	1342	4362	1689	3406	1602	467	733	1184	2701	759	1892	6103	5026	325
5	520	1553	2103	1752	1475	1173	1755	1231	676	1669	2923	1348	1371	1421	9319	6654
6	156	604	635	839	211	1373	789	1098	1455	335	2832	1326	1759	771	0	8626
7	253	306	350	286	120	344	638	781	1050	2511	1092	646	2776	1676	595	1459
8	1165	151	148	183	120	0	126	385	430	148	1159	332	627	1788	260	556
9	10	186	71	52	0	0	16	99	268	399	582	386	370	1240	122	362
10	81	35	54	118	0	0	15	39	14	204	29	172	361	529	215	504
11+	694	266	81	52	0	0	15	15	34	55	0	142	58	1241	237	681
	3536	**5383**	**5072**	**9294**	**3645**	**6531**	**5056**	**4183**	**699**	**6709**	**12041**	**5128**	**9414**	**14786**	**15774**	**19167**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	1	118	2	0	0	0	0	0	0	0	0	0
3	1665	231	284	24	17	3114	16	0	0	1	0	0	0	0	0	0
4	6494	1267	702	24	8	4368	122	0	0	2	0	0	0	0	0	0
5	1963	1917	744	3	8	1937	146	0	0	3	0	0	0	0	0	0
6	256	3262	661	1	1	974	81	0	0	8	0	0	0	0	0	0
7	0	863	115	2	0	170	28	0	0	7	0	0	0	0	0	0
8	727	851	70	0	0	42	5	0	0	6	0	0	0	0	0	0
9	0	2396	144	1	0	23	2	0	0	2	0	0	0	0	0	0
10	315	580	59	1	0	28	1	0	0	0	0	0	0	0	0	0
11+	92	5667	0	0	0	18	0	0	0	0	0	0	0	0	0	0
	11512	**17034**	**2779**	**56**	**35**	**10792**	**403**	**0**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	1	118	2	0	0	0	0	0	0	0	0	0
3	1694	301	572	1674	47	3349	116	68	39	205	723	17	200	17	0	0
4	7122	3479	2044	4386	1697	7774	1724	467	733	1186	2701	759	1892	6103	5026	325
5	2483	3470	2847	1755	1483	3110	1901	1231	676	1672	2923	1348	1371	1421	9319	6654
6	412	3866	1296	840	212	2347	870	1098	1455	343	2832	1326	1759	771	0	8626
7	253	1169	465	288	120	514	666	781	1050	2518	1092	646	2776	1676	595	1459
8	1892	1002	218	183	120	42	131	385	430	154	1159	332	627	1788	260	556
9	10	2582	215	53	0	23	18	99	268	401	582	386	370	1240	122	362
10	396	615	113	119	0	28	16	39	14	204	29	172	361	529	215	504
11+	786	5933	81	52	0	18	15	15	34	55	0	142	58	1241	237	681
	15048	**22417**	**7851**	**9350**	**3680**	**17323**	**5459**	**4183**	**4699**	**6738**	**12041**	**5128**	**9414**	**14786**	**15774**	**19167**

Table 20. Weight-at-age matrices for fall spawning herring caught in NAFO subdivison 4T1, from 1978 to 1993. Weights in kilograms.

Tableau 20. Matrices des poids selon l'âge (kg) de géniteurs d'automne dans la sous-divsion de l'OPANO 4T1 de 1978 à 1993.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.2026	0.2395	0.2217	0.2233	0.2446	0.1805	0.2422	0.2806	0.2250	0.2480	0.2334	0.2257	0.1919	0.1858	0.0000	0.0000
4	0.2567	0.2602	0.2802	0.2503	0.2721	0.2242	0.2557	0.2743	0.2635	0.2327	0.2768	0.2589	0.2383	0.2355	0.2178	0.2157
5	0.2970	0.2966	0.3378	0.3133	0.3071	0.2789	0.2729	0.3068	0.2960	0.2617	0.3047	0.2919	0.2880	0.2774	0.2494	0.2413
6	0.3148	0.2952	0.3768	0.3621	0.3706	0.3103	0.3250	0.3517	0.3313	0.3109	0.3566	0.3268	0.3256	0.3113	0.0000	0.2602
7	0.2935	0.3305	0.3845	0.3970	0.4464	0.3690	0.3518	0.3699	0.3701	0.3338	0.3920	0.3524	0.3429	0.3531	0.2805	0.2657
8	0.3587	0.3958	0.4093	0.4141	0.4464	0.0000	0.3952	0.3798	0.3903	0.3330	0.3957	0.3736	0.3689	0.3591	0.3398	0.3265
9	0.4221	0.4242	0.4658	0.4984	0.0000	0.0000	0.4513	0.4210	0.4031	0.3654	0.4569	0.3890	0.3757	0.3730	0.3241	0.3407
10	0.3060	0.3989	0.4453	0.4616	0.0000	0.0000	0.3602	0.4377	0.4511	0.2480	0.4008	0.4114	0.3996	0.4104	0.3892	0.3603
11+	0.4111	0.4331	0.4429	0.5420	0.0000	0.0000	0.4947	0.5081	0.4562	0.4058	0.0000	0.4045	0.4158	0.4144	0.3983	0.3849
	0.3329	**0.2973**	**0.3308**	**0.2809**	**0.3032**	**0.2582**	**0.2895**	**0.3377**	**0.3342**	**0.2941**	**0.3306**	**0.3232**	**0.3131**	**0.3045**	**0.2467**	**0.2638**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0609	0.1154	0.0960	0.1079	0.1109	0.0000	0.0000	0.1422	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.1799	0.2010	0.1916	0.1789	0.1709	0.1734	0.1621	0.0000	0.0000	0.2033	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.2233	0.2473	0.1991	0.2256	0.2120	0.2077	0.2115	0.0000	0.0000	0.2427	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.2593	0.2729	0.2698	0.2498	0.2610	0.2343	0.2364	0.0000	0.0000	0.2683	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.2854	0.2895	0.2570	0.2863	0.2827	0.2850	0.2593	0.0000	0.0000	0.2890	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.3134	0.3040	0.3408	0.3862	0.3185	0.3031	0.0000	0.0000	0.3148	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.3419	0.3231	0.3366	0.2547	0.3559	0.3675	0.3313	0.0000	0.0000	0.3352	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0000	0.3352	0.3672	0.2603	0.3062	0.3648	0.3701	0.0000	0.0000	0.3435	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.3225	0.3195	0.4002	0.2620	0.4239	0.2639	0.3278	0.0000	0.0000	0.4071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11+	0.3981	0.3698	0.3915	0.2566	0.4461	0.4579	0.4236	0.0000	0.0000	0.4446	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.2361	**0.3203**	**0.2518**	**0.2134**	**0.2019**	**0.2117**	**0.2366**	**0.0000**	**0.0000**	**0.3003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0960	0.1079	0.1109	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.1803	0.2100	0.2068	0.2227	0.2179	0.1739	0.2312	0.2806	0.2250	0.2478	0.2334	0.2257	0.1919	0.1858	0.0000	0.0000
4	0.2262	0.2555	0.2523	0.2502	0.2718	0.2149	0.2526	0.2743	0.2635	0.2327	0.2768	0.2589	0.2383	0.2355	0.2178	0.2157
5	0.2672	0.2835	0.3200	0.3132	0.3069	0.2511	0.2701	0.3068	0.2960	0.2617	0.3047	0.2919	0.2880	0.2774	0.2494	0.2413
6	0.2965	0.2904	0.3157	0.3620	0.3702	0.2998	0.3189	0.3517	0.3313	0.3104	0.3566	0.3268	0.3256	0.3113	0.0000	0.2602
7	0.2935	0.3179	0.3646	0.3966	0.4464	0.3523	0.3498	0.3699	0.3701	0.3337	0.3920	0.3524	0.3429	0.3531	0.2805	0.2657
8	0.3522	0.3341	0.3860	0.4141	0.4464	0.3675	0.3928	0.3798	0.3903	0.3331	0.3957	0.3736	0.3689	0.3591	0.3398	0.3265
9	0.4221	0.3416	0.3998	0.4939	0.0000	0.3648	0.4423	0.4210	0.4031	0.3653	0.4569	0.3890	0.3757	0.3730	0.3241	0.3407
10	0.3191	0.3240	0.4218	0.4599	0.0000	0.2639	0.3582	0.4377	0.4511	0.2480	0.4008	0.4114	0.3996	0.4104	0.3892	0.3603
11+	0.4096	0.3726	0.4429	0.5420	0.0000	0.4579	0.4947	0.5081	0.4562	0.4058	0.0000	0.4045	0.4158	0.4144	0.3983	0.3849
	0.2589	**0.3148**	**0.3028**	**0.2805**	**0.3023**	**0.2292**	**0.2856**	**0.3377**	**0.3342**	**0.2941**	**0.3306**	**0.3232**	**0.3131**	**0.3045**	**0.2467**	**0.2638**

Table 21. Catch-at-age matrices for spring spawning herring caught in NAFO subdivision 4T1, from 1978 to 1993. Numbers in thousands of fish.

Tableau 21. Matrices des prises selon l'âge (kg) de géniteurs de printemps dans la sous-divsion de l'OPANO 4T1 de 1978 à 1993. En milliers de poissons.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	319	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	144	0	247	0	211	0	129	0	0	14	0	7	0	0	0
3	4155	5409	6728	8441	15201	6228	2871	2766	2212	4	819	885	1208	2764	340	149
4	19229	2219	5318	4926	1369	16759	11055	7215	9234	1674	2544	3108	5172	7284	18270	2892
5	930	12615	1508	1150	169	1194	6616	6573	2804	11035	3490	1045	1928	7463	6104	19146
6	1333	367	3531	585	0	300	174	2514	3754	2764	5039	1188	907	3132	2687	6638
7	1139	608	762	1136	0	74	4	0	141	1340	2446	2092	680	1300	1318	1327
8	85	111	278	179	0	0	4	0	0	605	1335	542	1848	1632	472	675
9	360	0	90	96	0	0	0	0	0	62	88	210	363	2256	461	318
10	463	160	32	49	0	0	3	0	59	5	22	48	70	752	578	348
11+	753	254	23	231	0	0	0	0	0	0	3	2	22	193	228	272
	28447	**22206**	**18270**	**17040**	**16739**	**24766**	**20727**	**19197**	**18204**	**17489**	**15800**	**9120**	**12205**	**26776**	**30458**	**31765**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0
2	180	87	165	4	3	691	5	0	0	0	0	0	0	0	0	0
3	1224	0	83	3	3	3411	15	0	0	0	0	0	0	0	0	0
4	1791	0	27	0	0	932	45	0	0	1	0	0	0	0	0	0
5	91	500	15	0	0	162	24	0	0	4	0	0	0	0	0	0
6	167	200	94	0	0	1	1	0	0	3	0	0	0	0	0	0
7	60	130	68	0	0	15	0	0	0	3	0	0	0	0	0	0
8	0	0	31	1	0	34	1	0	0	1	0	0	0	0	0	0
9	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
11+	151	34	4	0	0	0	0	0	0	0	0	0	0	0	0	0
	3664	951	523	8	6	5246	91	0	0	12	0	0	0	0	0	0

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	319	15	0	0	0	0	0	0	0	0	0	0	0	0	0
2	180	231	165	251	3	902	5	129	0	0	14	0	7	0	0	0
3	5379	5409	6811	8444	15204	9639	2886	2766	2212	4	819	885	1208	2764	340	149
4	21020	2219	5345	4926	1369	17691	11100	7215	9234	1675	2544	3108	5172	7284	18270	2892
5	1021	13115	1523	1150	169	1356	6640	6573	2804	11039	3490	1045	1928	7463	6104	19146
6	1500	567	3625	585	0	301	175	2514	3754	2767	5039	1188	907	3132	2687	6638
7	1199	738	830	1136	0	89	4	0	141	1343	2446	2092	680	1300	1318	1327
8	85	111	309	180	0	34	5	0	0	606	1335	542	1848	1632	472	675
9	360	0	107	96	0	0	0	0	0	62	88	210	363	2256	461	318
10	463	160	36	49	0	0	3	0	59	5	22	48	70	752	578	348
11+	904	288	27	231	0	0	0	0	0	0	3	2	22	193	228	272
	32111	**23157**	**18793**	**17048**	**16745**	**30012**	**20818**	**19197**	**18204**	**17501**	**15800**	**9120**	**12205**	**26776**	**30458**	**31765**

Table 22. Weight-at-age matrices for spring spawning herring caught in NAFO subdivision 4T1, from 1978 to 1993. Weights in kilograms.

Tableau 22. Matrices des poids selon l'âge (kg) de géniteurs de preintemps dans la sous-divsion de l'OPANO 4T1 de 1978 à 1993.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0195	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.1652	0.0000	0.1253	0.0000	0.1718	0.0000	0.1506	0.0000	0.0000	0.1631	0.0000	0.1493	0.0000	0.0000	0.0000
3	0.1458	0.1694	0.1674	0.1810	0.1677	0.1718	0.1691	0.1715	0.1340	0.1322	0.1553	0.1493	0.1549	0.1363	0.1646	0.1309
4	0.1894	0.2150	0.1813	0.2378	0.1837	0.2092	0.1926	0.1912	0.1687	0.1828	0.1993	0.1913	0.2029	0.1719	0.1712	0.1600
5	0.2077	0.2259	0.2138	0.2834	0.2105	0.2343	0.2118	0.2151	0.2156	0.2090	0.2297	0.2136	0.2398	0.2085	0.1977	0.1869
6	0.2473	0.2370	0.2669	0.3080	0.0000	0.2731	0.2676	0.2448	0.2319	0.2287	0.2597	0.2370	0.2562	0.2302	0.2287	0.1986
7	0.3267	0.2993	0.2848	0.3265	0.0000	0.3269	0.3110	0.0000	0.3021	0.2479	0.2786	0.2713	0.2838	0.2295	0.2566	0.2407
8	0.3106	0.3459	0.3245	0.3066	0.0000	0.0000	0.3465	0.0000	0.0000	0.2532	0.2992	0.2951	0.2894	0.2765	0.2388	0.2486
9	0.3070	0.0000	0.4681	0.3801	0.0000	0.0000	0.0000	0.0000	0.0000	0.2702	0.2997	0.3075	0.3155	0.2834	0.2864	0.2749
10	0.3292	0.3057	0.3448	0.4113	0.0000	0.0000	0.3733	0.0000	0.2897	0.3260	0.3448	0.3373	0.3270	0.2870	0.2943	0.2907
11+	0.3738	0.3382	0.3996	0.4074	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5046	0.3458	0.3344	0.3134	0.3011	0.3033
	0.2008	**0.2123**	**0.2039**	**0.2238**	**0.1694**	**0.2018**	**0.1962**	**0.2033**	**0.1862**	**0.2143**	**0.2445**	**0.2237**	**0.2298**	**0.2081**	**0.1913**	**0.1930**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0000	0.1054	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1763	0.1763	0.1625	0.1749	0.1400	0.1432	0.1385	0.0000	0.0000	0.1893	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.1856	0.0000	0.1914	0.2143	0.2150	0.1843	0.1870	0.0000	0.0000	0.1961	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.2336	0.0000	0.2220	0.2402	0.2507	0.2159	0.2210	0.0000	0.0000	0.2733	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.2105	0.2963	0.2654	0.0000	0.0000	0.2812	0.2519	0.0000	0.0000	0.2972	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.2781	0.2847	0.2667	0.4132	0.0000	0.2731	0.3025	0.0000	0.0000	0.3299	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.2921	0.3538	0.2555	0.3282	0.0000	0.2455	0.0000	0.0000	0.0000	0.3375	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.2643	0.2844	0.3170	0.2375	0.3189	0.0000	0.0000	0.3713	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.3018	0.0000	0.3200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.3896	0.3249	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11+	0.4332	0.4129	0.3058	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5328	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.2254	**0.2949**	**0.2157**	**0.2034**	**0.1775**	**0.1880**	**0.2210**	**0.0000**	**0.0000**	**0.3196**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	0	0.0195	0.1054	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1763	0.1694	0.1625	0.1261	0.1400	0.1499	0.1385	0.1506	0.0000	0.0000	0.1631	0.0000	0.1493	0.0000	0.0000	0.0000
3	0.1549	0.1694	0.1677	0.1810	0.1677	0.1762	0.1692	0.1715	0.1340	0.1322	0.1553	0.1493	0.1549	0.1363	0.0000	0.0000
4	0.1932	0.2150	0.1815	0.2378	0.1837	0.2096	0.1927	0.1912	0.1687	0.1829	0.1993	0.1913	0.2029	0.1719	0.0000	0.0000
5	0.2079	0.2286	0.2143	0.2834	0.2105	0.2399	0.2119	0.2151	0.2156	0.2090	0.2297	0.2136	0.2398	0.2085	0.0000	0.0000
6	0.2507	0.2538	0.2669	0.3080	0.0000	0.2731	0.2678	0.2448	0.2319	0.2288	0.2597	0.2370	0.2562	0.2302	0.0000	0.0000
7	0.3250	0.3089	0.2824	0.3265	0.0000	0.3132	0.3110	0.0000	0.3021	0.2481	0.2786	0.2713	0.2838	0.2295	0.0000	0.0000
8	0.3106	0.3459	0.3185	0.3065	0.0000	0.2375	0.3410	0.0000	0.0000	0.2534	0.2992	0.2951	0.2894	0.2765	0.0000	0.0000
9	0.3070	0.0000	0.4417	0.3801	0.0000	0.0000	0.0000	0.0000	0.0000	0.2702	0.2997	0.3075	0.3155	0.2834	0.0000	0.0000
10	0.3292	0.3057	0.3498	0.4113	0.0000	0.0000	0.3733	0.0000	0.2897	0.3260	0.3448	0.3373	0.3270	0.2870	0.0000	0.0000
11+	0.3837	0.3470	0.3857	0.4074	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5046	0.3458	0.3344	0.3134	0.0000	0.0000
	0.2036	**0.2157**	**0.2042**	**0.2237**	**0.1694**	**0.1994**	**0.1963**	**0.2033**	**0.1862**	**0.2144**	**0.2445**	**0.2237**	**0.2298**	**0.2081**	**0.0000**	**0.0000**

Table 23. Catch-at-age matrices for fall spawning herring caught in NAFO subdivisions 4Tg, 4Tf and 4Th from 1978 to 1993. Numbers in thousands of fish.

Tableau 23. Matrices des prises selon l'âge de géniteurs d'automne dans les sous-divsions de l'OPANO 4Tg, 4Tf et 4Th de 1978 à 1993. En milliers de poissons

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	904	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	82	8	38	6	0	0	0	0	253	0	0	0	7	0	0	0
3	3389	198	4534	595	352	394	399	572	976	1154	299	11	778	12	0	0
4	1500	4388	2296	6479	7256	7897	15893	4433	21298	12014	4291	1460	5864	5243	1297	115
5	573	2211	2363	1732	3633	4705	5384	14452	5587	13864	16267	1654	5879	1729	7469	1904
6	165	715	218	832	3068	2998	4253	5848	11335	6523	9609	7784	6728	1416	1106	3196
7	78	278	821	395	2120	904	2310	3075	2755	14777	4599	3495	31435	1284	596	835
8	118	279	136	267	744	1250	594	1398	1461	6693	6778	1609	8522	4022	1492	644
9	51	153	96	133	299	384	362	420	462	4061	3043	2391	3638	1403	3372	1570
10	0	48	151	72	89	57	112	415	120	1887	954	479	3812	843	1195	923
11+	3	49	14	13	9	86	20	36	163	1184	447	219	1769	1189	1362	1319
	5959	**9231**	**10667**	**10524**	**17570**	**18675**	**29327**	**30649**	**44410**	**62157**	**46287**	**19102**	**68432**	**17141**	**17889**	**10506**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	1	140	0	0	0	0	0	0	0	1	0	0	0	0	0
2	1326	195	2342	75	0	3	0	0	23	0	52	0	0	0	0	6
3	15859	4032	36489	4337	0	81	1	0	114	6	36	0	0	0	0	8
4	4897	13005	14346	4281	0	114	1	0	83	10	40	0	0	0	162	62
5	936	10331	11347	598	0	50	6	0	11	16	37	0	0	0	133	346
6	287	6322	6590	104	0	25	0	0	5	50	44	0	0	0	146	84
7	383	1896	7340	304	0	4	0	0	1	46	119	0	0	0	99	110
8	663	1478	5462	88	0	1	0	0	3	38	101	0	0	0	36	113
9	155	950	3184	257	0	1	0	0	1	13	56	0	0	0	39	115
10	197	340	1562	111	0	1	0	0	0	2	17	0	0	0	49	207
11+	1080	1501	896	62	0	0	0	0	0	0	32	0	0	0	16	474
	25783	**40051**	**89698**	**10217**	**0**	**280**	**8**	**0**	**241**	**181**	**535**	**0**	**0**	**0**	**680**	**1525**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	905	140	0	0	0	0	0	0	0	1	0	0	0	0	0
2	1408	203	2380	81	0	3	0	0	276	0	52	0	7	0	0	6
3	19248	4230	41023	4932	352	475	400	572	1090	1160	335	11	778	12	0	8
4	6397	17393	16642	10760	7256	8011	15894	4433	21381	12024	4331	1460	5864	5243	1459	177
5	1509	12542	13710	2330	3633	4755	5390	14452	5598	13880	16304	1654	5879	1729	7602	2250
6	452	7037	6808	936	3068	3023	4253	5848	11340	6573	9653	7784	6728	1416	1252	3280
7	461	2174	8161	699	2120	908	2310	3075	2756	14823	4718	3495	31435	1284	695	945
8	781	1757	5598	355	744	1251	594	1398	1464	6731	6879	1609	8522	4022	1528	757
9	206	1103	3280	390	299	385	362	420	463	4074	3099	2391	3638	1403	3411	1685
10	197	388	1713	183	89	58	112	415	120	1889	971	479	3812	843	1244	1130
11+	1083	1550	910	75	9	86	20	36	163	1184	479	219	1769	1189	1378	1793
	31742	**49282**	**100365**	**20741**	**17570**	**18955**	**29335**	**30649**	**44651**	**62338**	**46822**	**19102**	**68432**	**17141**	**18569**	**12031**

Table 24. Weight-at-age matrices for fall spawning herring caught in NAFO subdivisons 4Tg, 4Th, and 4Tf from 1978 to 1993. Weights in kilograms.

Tableau 24. Matrices des poids selon l'âge (kg) de géniteurs d'automne dans la sous-divsion de l'OPANO 4Tg, 4Th, et 4Tf de 1978 à 1993.

FIXED GEAR - FALL SPAWNERS/
ENGINS FIXES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0233	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0787	0.1066	0.2115	0.0354	0.0000	0.0000	0.0000	0.0000	0.1793	0.0000	0.0000	0.0000	0.1731	0.0000	0.0000	0.0000
3	0.1303	0.1828	0.2062	0.1951	0.2104	0.0000	0.2273	0.2357	0.1786	0.2283	0.2342	0.2327	0.1919	0.1737	0.0000	0.0000
4	0.1773	0.2462	0.2498	0.2258	0.2619	0.1943	0.2431	0.2512	0.2405	0.2398	0.2673	0.2554	0.2416	0.2357	0.2197	0.2138
5	0.2139	0.2820	0.2980	0.3249	0.3000	0.2514	0.2768	0.2822	0.2809	0.2726	0.2922	0.2784	0.2745	0.2624	0.2532	0.2322
6	0.2182	0.3239	0.3243	0.3834	0.3327	0.2829	0.3069	0.3150	0.3133	0.3053	0.3219	0.3190	0.3236	0.2961	0.2793	0.2507
7	0.2669	0.3640	0.3397	0.3803	0.3696	0.3041	0.3374	0.3493	0.3499	0.3297	0.3533	0.3516	0.3460	0.3332	0.2888	0.2837
8	0.2765	0.4024	0.3385	0.4003	0.3645	0.3342	0.3992	0.3623	0.3596	0.3510	0.3796	0.3778	0.3691	0.3558	0.3369	0.3182
9	0.3048	0.4285	0.3735	0.4429	0.3864	0.3564	0.4023	0.3900	0.3854	0.3699	0.3982	0.3838	0.3947	0.3750	0.3423	0.3511
10	0.0000	0.4458	0.4316	0.4670	0.3538	0.3946	0.3937	0.3813	0.3956	0.3703	0.4045	0.4040	0.4070	0.3887	0.3651	0.3570
11+	0.4085	0.4568	0.3638	0.4346	0.4004	0.4098	0.4862	0.4580	0.3605	0.4195	0.4509	0.4307	0.4282	0.4142	0.3810	0.3897
	0.1582	**0.2509**	**0.2552**	**0.2676**	**0.3011**	**0.2384**	**0.2716**	**0.2965**	**0.2755**	**0.3030**	**0.3254**	**0.3330**	**0.3379**	**0.3101**	**0.2946**	**0.2955**

MOBILE GEAR - FALL SPAWNERS/
ENGINS MOBILES - GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0692	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0926	0.0331	0.1032	0.1144	0.0000	0.1079	0.0000	0.0000	0.1136	0.1422	0.0959	0.0000	0.0000	0.0000	0.0000	0.0660
3	0.1346	0.0727	0.1405	0.1789	0.0000	0.1734	0.1313	0.0000	0.1384	0.2033	0.1651	0.0000	0.0000	0.0000	0.0000	0.1380
4	0.1678	0.1495	0.1667	0.2255	0.0000	0.2079	0.1665	0.0000	0.1686	0.2427	0.2250	0.0000	0.0000	0.0000	0.1478	0.2053
5	0.2147	0.1823	0.2236	0.2500	0.0000	0.2345	0.1945	0.0000	0.1925	0.2683	0.2603	0.0000	0.0000	0.0000	0.2080	0.2686
6	0.2279	0.1998	0.2357	0.2872	0.0000	0.2854	0.2497	0.0000	0.2450	0.2890	0.3050	0.0000	0.0000	0.0000	0.2722	0.2845
7	0.2856	0.2250	0.2634	0.3410	0.0000	0.3185	0.2805	0.0000	0.2757	0.3148	0.3328	0.0000	0.0000	0.0000	0.2920	0.3343
8	0.3142	0.2804	0.2502	0.2569	0.0000	0.3675	0.0000	0.0000	0.2886	0.3352	0.3240	0.0000	0.0000	0.0000	0.3255	0.3747
9	0.2946	0.3294	0.2735	0.2607	0.0000	0.3648	0.3964	0.0000	0.2757	0.3435	0.3800	0.0000	0.0000	0.0000	0.3217	0.3922
10	0.3146	0.3464	0.2832	0.2620	0.0000	0.2639	0.0000	0.0000	0.0000	0.4071	0.4042	0.0000	0.0000	0.0000	0.3024	0.4006
11+	0.3636	0.3813	0.3587	0.2626	0.0000	0.4579	0.0000	0.0000	0.0000	0.4446	0.4108	0.0000	0.0000	0.0000	0.3816	0.4272
	0.1615	**0.1806**	**0.1872**	**0.2122**	**0.0000**	**0.2114**	**0.1831**	**0.0000**	**0.1541**	**0.3032**	**0.2929**	**0.0000**	**0.0000**	**0.0000**	**0.2433**	**0.3546**

ALL GEARS - FALL SPAWNERS/
TOUS LES ENGINS - GÉNITEURS D'AUTOMNE

	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0232	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0918	0.0360	0.1049	0.1085	0.0000	0.1079	0.0000	0.0000	0.1738	0.0000	0.0959	0.0000	0.1731	0.0000	0.0000	0.0660
3	0.1338	0.0779	0.1478	0.1809	0.2104	0.0296	0.2271	0.2357	0.1744	0.2282	0.2268	0.2327	0.1919	0.1737	0.0000	0.1380
4	0.1700	0.1739	0.1782	0.2257	0.2619	0.1945	0.2431	0.2512	0.2402	0.2398	0.2669	0.2554	0.2416	0.2357	0.2117	0.2108
5	0.2144	0.1999	0.2364	0.3057	0.3000	0.2512	0.2767	0.2822	0.2807	0.2726	0.2921	0.2784	0.2745	0.2624	0.2524	0.2378
6	0.2244	0.2124	0.2385	0.3727	0.3327	0.2829	0.3069	0.3150	0.3133	0.3052	0.3218	0.3190	0.3236	0.2961	0.2785	0.2516
7	0.2824	0.2428	0.2711	0.3632	0.3696	0.3042	0.3374	0.3493	0.3499	0.3297	0.3528	0.3516	0.3460	0.3332	0.2893	0.2896
8	0.3085	0.2998	0.2523	0.3648	0.3645	0.3342	0.3992	0.3623	0.3595	0.3509	0.3788	0.3778	0.3691	0.3558	0.3366	0.3266
9	0.2971	0.3431	0.2764	0.3228	0.3864	0.3564	0.4023	0.3900	0.3852	0.3698	0.3979	0.3838	0.3947	0.3750	0.3421	0.3539
10	0.3146	0.3587	0.2963	0.3427	0.3538	0.3923	0.3937	0.3813	0.3956	0.3703	0.4045	0.4040	0.4070	0.3887	0.3626	0.3650
11+	0.3637	0.3837	0.3588	0.2924	0.4004	0.4098	0.4862	0.4580	0.3605	0.4195	0.4482	0.4307	0.4282	0.4142	0.3810	0.3996
	0.1609	**0.1938**	**0.1944**	**0.2403**	**0.3011**	**0.2380**	**0.2716**	**0.2965**	**0.2749**	**0.3030**	**0.3250**	**0.3330**	**0.3379**	**0.3101**	**0.2927**	**0.3030**

Table 25. Catch-at-age matrices for spring spawning herring caught in NAFO subdivisions 4Tf, 4Tg, and 4Th, from 1978 to 1993. Numbers in thousands of fish.

Tableau 25. Matrices des prises selon l'âge (kg) de géniteurs de printemps dans la sous-divsion de l'OPANO 4Tg, 4Th, et 4Tf de 1978 à 1993. En milliers de poissons.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	481	0	5	10	0	0	0	0	0	59	0	0	0	0	0
2	14	1698	70	56	30	31	81	195	0	153	470	0	0	0	0	0
3	342	14821	481	3054	4808	2222	835	1198	293	665	2452	2356	1188	2420	1852	91
4	1402	11692	840	2508	982	6354	1461	4384	3763	3394	2432	11460	9036	2292	9524	2557
5	154	6512	753	1298	698	437	677	3832	4592	3037	1594	2627	5053	5274	2078	13821
6	483	1717	1884	992	387	114	109	936	4231	3021	1433	2490	803	2962	3246	5004
7	223	618	705	1167	273	28	12	431	985	2053	916	1364	799	844	915	2758
8	163	1034	594	225	245	0	9	186	177	754	843	1378	993	548	396	902
9	87	280	641	308	104	0	2	61	30	91	186	754	698	688	251	615
10	619	77	430	124	62	0	2	0	10	203	29	28	427	398	185	301
11+	708	982	675	714	554	0	0	1	22	58	6	16	144	442	463	441
	4195	**39912**	**7073**	**10451**	**8153**	**9186**	**3188**	**11224**	**14103**	**13429**	**10420**	**22473**	**19141**	**15868**	**18910**	**26490**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	1421	406	601	0	0	0	0	0	0	0	28	0	0	0	0	0
2	12352	1700	8073	1825	0	18	0	0	3	1	54	0	0	0	0	0
3	2128	14817	12140	1282	0	89	2	0	2	2	16	0	0	0	1639	117
4	2095	11694	12603	135	0	24	3	0	8	8	10	0	0	0	1137	316
5	884	6538	5203	5	0	4	2	0	6	23	14	0	0	0	771	1653
6	1699	1723	6064	100	0	0	0	0	5	19	54	0	0	0	429	1645
7	2768	623	3458	226	0	0	0	0	1	16	32	0	0	0	217	622
8	580	1037	1709	383	0	1	0	0	0	6	27	0	0	0	209	560
9	721	281	1246	1	0	0	0	0	0	0	18	0	0	0	152	1248
10	214	78	291	249	0	0	0	0	0	0	0	0	0	0	19	726
11+	3076	984	281	3	0	0	0	0	0	0	6	0	0	0	8	1211
	27938	**39881**	**51669**	**4209**	**0**	**136**	**7**	**0**	**25**	**75**	**259**	**0**	**0**	**0**	**4581**	**8098**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	1421	887	601	5	10	0	0	0	0	0	87	0	0	0	0	0
2	12366	3398	8143	1881	30	49	81	195	3	154	524	0	0	0	0	0
3	2470	29638	12621	4336	4808	2311	837	1198	295	667	2468	2356	1188	2420	3491	208
4	3497	23386	13443	2643	982	6378	1464	4384	3771	3402	2442	11460	9036	2292	10661	2873
5	1038	13050	5956	1303	698	441	679	3832	4598	3060	1608	2627	5053	5274	2849	15474
6	2182	3440	7948	1092	387	114	109	936	4236	3040	1487	2490	803	2962	3675	6649
7	2991	1241	4163	1393	273	28	12	431	986	2069	948	1364	799	844	1132	3380
8	743	2071	2303	608	245	1	9	186	177	760	870	1378	993	548	605	1462
9	808	561	1887	309	104	0	2	61	30	91	204	754	698	688	403	1863
10	833	155	721	373	62	0	2	0	10	203	29	28	427	398	204	1027
11+	3784	1966	956	717	554	0	0	1	22	58	12	16	144	442	471	1652
	32133	**79793**	**58742**	**14660**	**8153**	**9322**	**3195**	**11224**	**14128**	**13504**	**10679**	**22473**	**19141**	**15868**	**23491**	**34588**

Table 26. Weight-at-age matrices for spring spawning herring caught in NAFO subdivision 4Tf, 4Tg and 4Th, from 1978 to 1993. Weights in kilograms.

Tableau 26. Matrices des poids selon l'âge (kg) de géniteurs de printemps dans la sous-divsion de l'OPANO 4Tg, 4Th, et 4Tf de 1978 à 1993.

FIXED GEAR - SPRING SPAWNERS/
ENGINS FIXES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0307	0.0000	0.0297	0.0366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0379	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1418	0.0568	0.1853	0.1247	0.1352	0.1716	0.0910	0.2557	0.0000	0.0981	0.0745	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.1497	0.1403	0.1865	0.1821	0.0000	0.1699	0.1722	0.1888	0.1734	0.1603	0.1542	0.1632	0.1617	0.1509	0.1410	0.1431
4	0.1989	0.1743	0.2055	0.2311	0.2272	0.2092	0.2059	0.2159	0.2120	0.1875	0.1743	0.2031	0.2014	0.1851	0.1679	0.1627
5	0.2403	0.2074	0.2431	0.2882	0.2744	0.2310	0.2218	0.2447	0.2278	0.2129	0.2031	0.2295	0.2266	0.2305	0.2026	0.1888
6	0.2788	0.2323	0.2864	0.3419	0.3241	0.2731	0.2392	0.2746	0.2604	0.2446	0.2499	0.2566	0.2425	0.2535	0.2353	0.2064
7	0.2949	0.2694	0.3167	0.3524	0.3796	0.3269	0.3032	0.2992	0.2895	0.2657	0.2800	0.2851	0.2531	0.2953	0.2554	0.2378
8	0.3107	0.3375	0.3391	0.3702	0.4022	0.0000	0.3936	0.3229	0.3302	0.2721	0.2991	0.2855	0.2865	0.3139	0.2567	0.2533
9	0.3294	0.3735	0.3539	0.3839	0.4133	0.0000	0.4140	0.4001	0.3404	0.3333	0.3352	0.3168	0.3053	0.3388	0.2967	0.2828
10	0.3256	0.3168	0.3644	0.3978	0.4328	0.0000	0.3668	0.0000	0.4220	0.2818	0.3522	0.3471	0.3298	0.3378	0.3085	0.2985
11	0.3598	0.3714	0.3722	0.4081	0.4472	0.0000	0.0000	0.4913	0.3830	0.3409	0.4621	0.3757	0.4057	0.3792	0.3162	0.3288
	0.2634	**0.1751**	**0.2909**	**0.2688**	**0.1305**	**0.2018**	**0.1998**	**0.2344**	**0.2384**	**0.2235**	**0.2020**	**0.2221**	**0.2221**	**0.2340**	**0.1935**	**0.2025**

MOBILE GEAR - SPRING SPAWNERS/
ENGINS MOBILES - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0790	0.0387	0.1054	0.0297	0.0000	0.0000	0.0000	0.0000	0.0866	0.0000	0.0810	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1175	0.0572	0.1523	0.1749	0.0000	0.1432	0.0905	0.0000	0.1349	0.1893	0.1128	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.1386	0.1403	0.1577	0.2140	0.0000	0.1843	0.1647	0.0000	0.2102	0.1961	0.1733	0.0000	0.0000	0.0000	0.1464	0.0987
4	0.2254	0.1743	0.2134	0.2389	0.0000	0.2161	0.2034	0.0000	0.2525	0.2733	0.2433	0.0000	0.0000	0.0000	0.2011	0.1617
5	0.2512	0.2077	0.2454	0.2698	0.0000	0.2819	0.2197	0.0000	0.2816	0.2972	0.3109	0.0000	0.0000	0.0000	0.2513	0.1875
6	0.2768	0.2324	0.2681	0.4102	0.0000	0.0000	0.2283	0.0000	0.3159	0.3299	0.3226	0.0000	0.0000	0.0000	0.2673	0.2190
7	0.3019	0.2695	0.2635	0.3286	0.0000	0.2448	0.3058	0.0000	0.3241	0.3375	0.3603	0.0000	0.0000	0.0000	0.2727	0.2571
8	0.3075	0.3373	0.2789	0.2846	0.0000	0.2375	0.4161	0.0000	0.3392	0.3713	0.3889	0.0000	0.0000	0.0000	0.2981	0.3281
9	0.3114	0.3734	0.3362	0.3839	0.0000	0.0000	0.4036	0.0000	0.2910	0.0000	0.4024	0.0000	0.0000	0.0000	0.3143	0.3655
10	0.3098	0.3168	0.3819	0.3251	0.0000	0.0000	0.3668	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3327	0.3322
11+	0.3587	0.3715	0.3435	0.4081	0.0000	0.0000	0.0000	0.0000	0.3933	0.5328	0.4281	0.0000	0.0000	0.0000	0.3973	0.3329
	0.1944	**0.1756**	**0.2093**	**0.2219**	**0.0000**	**0.1877**	**0.1970**	**0.0000**	**0.2575**	**0.3133**	**0.2594**	**0.0000**	**0.0000**	**0.0000**	**0.2086**	**0.2688**

ALL GEARS - SPRING SPAWNERS/
TOUS LES ENGINS - GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0790	0.0344	0.1054	0.0297	0.0366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0518	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1175	0.0570	0.1526	0.1734	0.1352	0.1612	0.0910	0.2557	0.1349	0.0987	0.0784	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.1401	0.1403	0.1588	0.1915	0.0000	0.1705	0.1722	0.1888	0.1736	0.1604	0.1543	0.1632	0.1617	0.1509	0.1435	0.1181
4	0.2148	0.1743	0.2129	0.2315	0.2272	0.2092	0.2059	0.2159	0.2121	0.1877	0.1746	0.2031	0.2014	0.1851	0.1714	0.1626
5	0.2496	0.2076	0.2451	0.2881	0.2744	0.2315	0.2218	0.2447	0.2279	0.2135	0.2040	0.2295	0.2266	0.2305	0.2158	0.1887
6	0.2772	0.2324	0.2724	0.3482	0.3241	0.2731	0.2392	0.2746	0.2605	0.2451	0.2525	0.2566	0.2425	0.2535	0.2390	0.2095
7	0.3014	0.2695	0.2725	0.3485	0.3796	0.3269	0.3032	0.2992	0.2895	0.2663	0.2827	0.2851	0.2531	0.2953	0.2587	0.2414
8	0.3082	0.3374	0.2944	0.3163	0.4022	0.2375	0.3936	0.3229	0.3302	0.2729	0.3019	0.2855	0.2865	0.3139	0.2710	0.2820
9	0.3133	0.3734	0.3422	0.3839	0.4133	0.0000	0.4140	0.4001	0.3404	0.3333	0.3411	0.3168	0.3053	0.3388	0.3033	0.3382
10	0.3215	0.3168	0.3715	0.3493	0.4328	0.0000	0.3668	0.0000	0.4220	0.2818	0.3522	0.3471	0.3298	0.3378	0.3108	0.3223
11+	0.3589	0.3715	0.3638	0.4081	0.4472	0.0000	0.0000	0.4913	0.3830	0.3409	0.4451	0.3757	0.4057	0.3792	0.3176	0.3318
	0.2034	**0.1753**	**0.2191**	**0.2554**	**0.1305**	**0.2016**	**0.1998**	**0.2344**	**0.2385**	**0.2240**	**0.2034**	**0.2221**	**0.2221**	**0.2340**	**0.1964**	**0.2180**

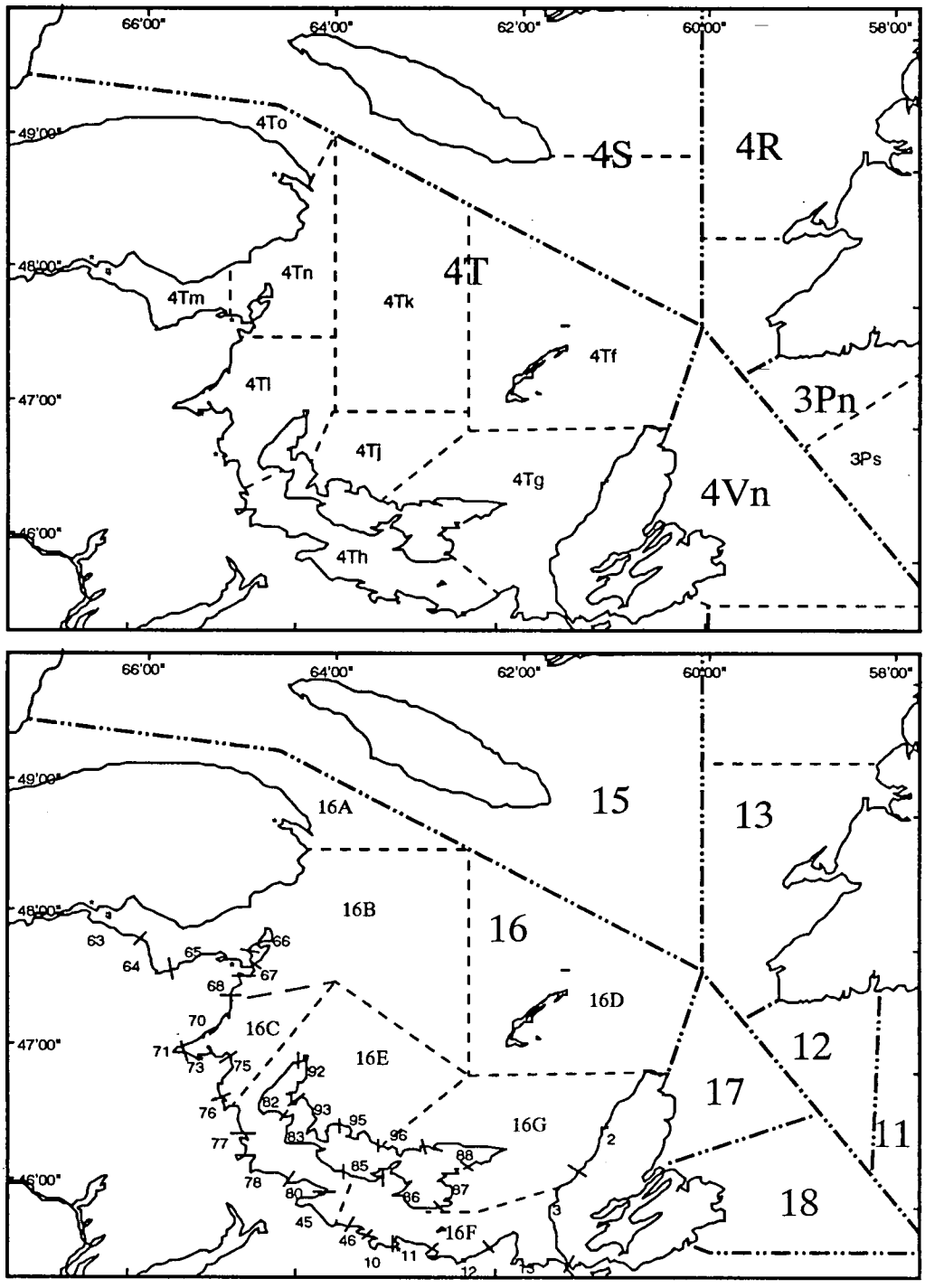

Fig. 1. Northwest Atlantic Fisheries Organization (NAFO) districts (upper), and Herring management zones (lower) in the Southern Gulf of St. Lawrence.

Fig. 1 Districts de l'Organisation des pêches de l'Atlantique nord-ouest (en haut) et zones de gestion du hareng (en bas) dans le sud du golfe Saint-Laurent.

APPENDIX 1. Catch-at-age matrices for spring and fall spawning herring caught by mobile gear in NAFO subdivisions 4Tm, 4Tn, and 4To, from 1978 to 1993. Numbers in thousands of fish.

Annex 1. Matrices des prises selon l'âge de géniteurs d'automne des engins mobiles dans les sous-divsions de l'OPANO 4Tm, 4Tn, et 4To, de 1978 à 1993. En milliers de poissons

FALL SPAWNERS/
GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	239	140	0	0	0	0	0	0	0	64	0	0	0	0	0
2	96	2533	2113	3	199	6	32	253	134	47	3790	726	43	0	8	16
3	3866	9020	17215	157	5004	148	315	2037	860	906	2614	840	3474	4126	288	1899
4	15718	6394	5315	155	2422	206	2333	4303	2155	1604	2885	3184	3257	16446	3912	2291
5	19842	4508	2137	21	2431	91	2762	5103	6324	2600	2716	5829	5992	3416	12150	3873
6	3390	7102	1152	3	306	46	1531	4897	6699	8242	3229	5054	3031	1129	2636	6129
7	3656	1651	5606	11	99	8	536	1950	6331	7500	8709	4023	2319	1035	1330	1870
8	8665	1373	4864	3	83	2	92	1760	2858	6219	7392	6706	1786	663	727	1152
9	1181	1931	2529	9	99	1	31	601	1106	2146	4098	4308	3628	455	306	293
10	81	329	1329	4	33	1	13	449	435	287	1217	2284	1874	433	676	1800
11+	9820	3296	614	2	116	1	1	372	210	60	2330	1366	300	510	1084	2678
	66315	38376	43014	368	10792	510	7646	21725	27112	29611	39044	34320	25704	28213	23117	22001

SPRING SPAWNERS/
GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0	239	140	0	0	0	0	0	0	0	64	0	0	0	0	0
2	96	2533	2113	3	199	6	32	253	134	47	3790	726	43	0	8	16
3	3866	9020	17215	157	5004	148	315	2037	860	906	2614	840	3474	4126	288	1899
4	15718	6394	5315	155	2422	206	2333	4303	2155	1604	2885	3184	3257	16446	3912	2291
5	19842	4508	2137	21	2431	91	2762	5103	6324	2600	2716	5829	5992	3416	12150	3873
6	3390	7102	1152	3	306	46	1531	4897	6699	8242	3229	5054	3031	1129	2636	6129
7	3656	1651	5606	11	99	8	536	1950	6331	7500	8709	4023	2319	1035	1330	1870
8	8665	1373	4864	3	83	2	92	1760	2858	6219	7392	6706	1786	663	727	1152
9	1181	1931	2529	9	99	1	31	601	1106	2146	4098	4308	3628	455	306	293
10	81	329	1329	4	33	1	13	449	435	287	1217	2284	1874	433	676	1800
11+	9820	3296	614	2	116	1	1	372	210	60	2330	1366	300	510	1084	2678
	66315	38376	43014	368	10792	510	7646	21725	27112	29611	39044	34320	25704	28213	23117	22001

APPENDIX 2. Weight-at-age matrices for spring and fall spawning herring caught by mobile gear in NAFO subdivisions 4Tm, 4Tn, and 4To, from 1978 to 1993. Numbers in thousands of fish.

Annex 2. Matrices des poids selon l'âge de géniteurs d'automne des engins mobiles dans les sous-divsions de l'OPANO 4Tm, 4Tn, et 4To, de 1978 à 1993. En milliers de poissons

FALL SPAWNERS/
GÉNITEURS D'AUTOMNE

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.0692	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0753	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.1957	0.1257	0.1078	0.1154	0.0960	0.1079	0.1109	0.1023	0.1053	0.1422	0.0959	0.1049	0.1069	0.0000	0.0680	0.0849
3	0.1965	0.1853	0.1865	0.1789	0.1709	0.1734	0.1621	0.1886	0.1609	0.2033	0.1651	0.1585	0.1754	0.1543	0.1349	0.1432
4	0.2334	0.2455	0.2218	0.2256	0.2120	0.2079	0.2116	0.2142	0.2161	0.2427	0.2250	0.2159	0.2064	0.1895	0.1768	0.1639
5	0.2574	0.2854	0.2935	0.2498	0.2610	0.2345	0.2369	0.2556	0.2515	0.2683	0.2603	0.2490	0.2383	0.2181	0.2130	0.1961
6	0.2796	0.2799	0.2972	0.2863	0.2827	0.2854	0.2594	0.2829	0.2767	0.2890	0.3050	0.2832	0.2803	0.2523	0.2257	0.2214
7	0.2942	0.2691	0.2633	0.3408	0.3862	0.3185	0.3032	0.3170	0.2943	0.3148	0.3328	0.2946	0.2966	0.2788	0.2585	0.2318
8	0.3428	0.2974	0.2484	0.2547	0.3559	0.3675	0.3313	0.3370	0.3224	0.3352	0.3240	0.3082	0.3241	0.3097	0.2841	0.2116
9	0.3443	0.3621	0.2583	0.2603	0.3062	0.3648	0.3701	0.3754	0.3451	0.3435	0.3800	0.3297	0.3236	0.2958	0.3089	0.3457
10	0.3486	0.3477	0.2660	0.2620	0.4239	0.2639	0.3278	0.4055	0.3288	0.4071	0.4042	0.3609	0.3350	0.3169	0.3030	0.2539
11+	0.3967	0.4044	0.3436	0.2566	0.4461	0.4579	0.4236	0.4365	0.4098	0.4446	0.4108	0.3838	0.4103	0.3543	0.3443	0.2972
	0.2847	0.2567	0.2207	0.2117	0.2106	0.2117	0.2366	0.2671	0.2751	0.3035	0.2930	0.2856	0.2628	0.2031	0.2222	0.2180

SPRING SPAWNERS/
GÉNITEURS DE PRINTEMPS

AGE	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1	0.0000	0.1005	0.1054	0.0000	0.0000	0.0000	0.0000	0.0859	0.0866	0.0000	0.0810	0.0882	0.0748	0.0000	0.0579	0.0609
2	0.1905	0.1727	0.1633	0.1749	0.1400	0.1432	0.1385	0.1583	0.1349	0.1893	0.1128	0.1716	0.1641	0.1488	0.1390	0.1167
3	0.2204	0.2286	0.2004	0.2143	0.2150	0.1843	0.1874	0.2033	0.2102	0.1961	0.1733	0.2178	0.1852	0.1788	0.1602	0.1454
4	0.2626	0.2627	0.2398	0.2402	0.2507	0.2161	0.2218	0.2319	0.2525	0.2733	0.2433	0.2586	0.2311	0.2084	0.2022	0.1761
5	0.2401	0.2930	0.2853	0.0000	0.0000	0.2819	0.2531	0.2860	0.2816	0.2972	0.3109	0.2691	0.2641	0.2359	0.2415	0.1865
6	0.2650	0.2457	0.2665	0.4132	0.0000	0.0000	0.3031	0.3112	0.3159	0.3299	0.3226	0.3166	0.2899	0.2555	0.2600	0.2195
7	0.3181	0.2805	0.2549	0.3282	0.0000	0.2448	0.0000	0.2824	0.3241	0.3375	0.3603	0.3410	0.3261	0.3221	0.2913	0.2598
8	0.2510	0.2711	0.2630	0.2844	0.3170	0.2375	0.3189	0.0000	0.3392	0.3713	0.3889	0.3543	0.3049	0.3439	0.3219	0.3326
9	0.3252	0.3073	0.2977	0.0000	0.3200	0.0000	0.0000	0.5884	0.2910	0.0000	0.4024	0.3671	0.3243	0.3499	0.3427	0.3651
10	0.4093	0.3053	0.3904	0.3249	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3829	0.3866	0.3509	0.3417	0.2807
11+	0.4109	0.4359	0.3015	0.0000	0.0000	0.0000	0.0000	0.3466	0.3933	0.5328	0.4281	0.3838	0.3112	0.3830	0.3413	0.3034
	0.2601	0.2027	0.2169	0.2194	0.1873	0.1881	0.2215	0.2290	0.2592	0.3139	0.2601	0.3050	0.2366	0.2064	0.2277	0.2012