

## West Coast of Newfoundland Atlantic Herring (Division 4R) - Update (2000)

### Background

This document is an update of the main data regarding the fishery, biology, and abundance of Atlantic herring (*Clupea harengus*) on the west coast of Newfoundland (NAFO Division 4R; Figure 1). It complements the information presented in Stock Status Report SSR B4-01 (2000), published in 2000, with a complete analytical assessment of the spring and fall spawning stocks of this species.

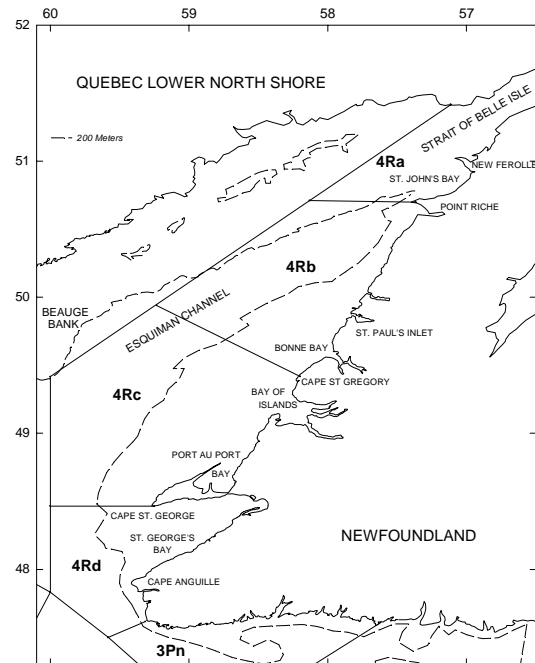


Figure 1. Management units for Atlantic herring on the west coast of Newfoundland (NAFO Division 4R).

### The Fishery

#### Nominal Catches

In 2000, herring landings for the west coast of Newfoundland totalled 12,584 t, which was 1,876 t higher than in 1999 (Table 1) and 584 t higher than the 12,000 t figure from the last assessment advice (Figure 2). Large purse seines (>75 feet) captured 8,488 t of herring, compared with 3,165 t for small purse seines (<65 feet) and 931 t for gillnets. Since 1990, annual landings of herring for these three types of gear have averaged 12,205 t, 2 883 t, and 1 475 t, respectively.

Table 1. West Coast of Newfoundland herring landings (t) by gear sector since 1990.

GEAR	YEAR											AVERAGE (1990-1999)
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000**	
Gillnet*	983	842	669	247	893	1 806	2 279	2 156	4 455	962	931	1 475
Small purse seine	0	0	4 390	3 752	3 854	3 392	3 072	3 053	4 435	2 599	3 165	2 883
Large purse seine	16 301	25 594	10 277	11 309	17 634	10 814	9 473	7 751	9 468	7 147	8 488	12 205
<b>TOTAL</b>	<b>17 284</b>	<b>26 436</b>	<b>15 336</b>	<b>15 308</b>	<b>22 381</b>	<b>16 012</b>	<b>14 824</b>	<b>12 960</b>	<b>18 358</b>	<b>10 708</b>	<b>12 584</b>	

\* Includes bar seine and trap

\*\* Preliminary statistics

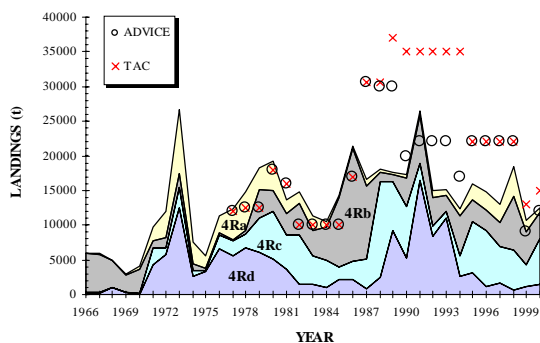


Figure 2. Cumulative commercial herring landings (t) by NAFO unit area from 1965 to 2000 (TAC and assessment advices shown).

**Resource Status**

**Biological Indicators**

In 2000, the condition of spring and fall-spawners was better than in 1999 (Figure 3). These new condition values for herring now exceed the historic averages and are of the same order of magnitude as those measured in the 1980s.

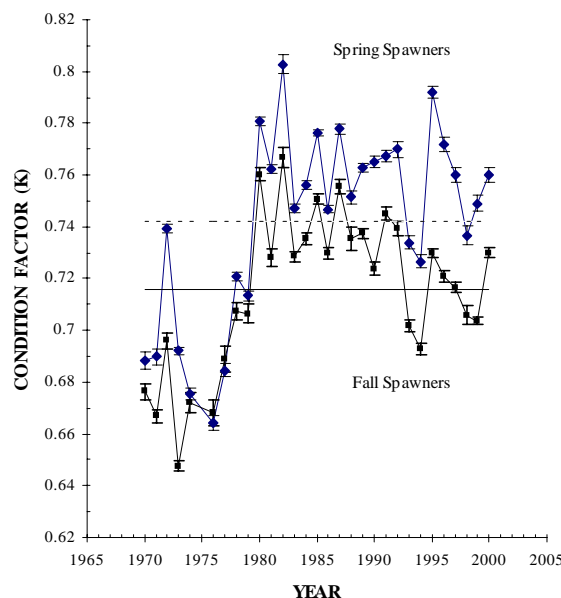


Figure 3. Condition factors (with standard errors) for spring-spawners (◆) and fall-spawners (■), calculated from October to December for the years 1970 to 2000 (average values are indicated by horizontal lines).

**Average Age of Catch**

The average age of the fall-spawners rose slightly from 1999 to 2000 (Figure 4), but the average age of the spring-spawners continued to fall. In fact, the value calculated for 2000 is the lowest in the entire time series.

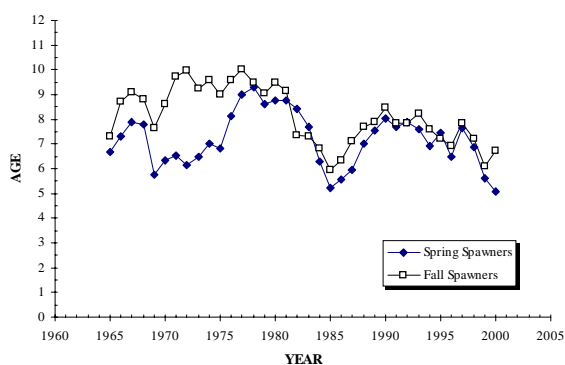


Figure 4. Average age of spring and fall-spawners caught from 1965 to 2000.

### Abundance Indicators

#### Questionnaire

After the 2000 fishing season, several respondents to a survey questionnaire expressed their concern about the status of the fall-spawner herring stock. These fishermen, mainly in unit areas 4Ra and 4Rb (Figure 1), perceive the abundance of this stock as declining. But unlike in previous years, some respondents also said that the spawn of the spring-spawner herring stock in St George's Bay had greatly improved.

#### Catch Rates

The normalized gillnet catch rates calculated from index-fisherman logbooks and industry logbooks had shown a downward trend since 1987, but rose slightly in 2000 (Figure 5), so that the measured values were similar to those observed in the mid-1990s.

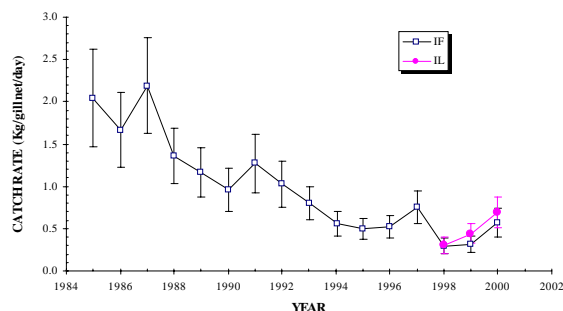


Figure 5. Normalized catch rates for spring-spawners, calculated from index-fisherman (IF) logbooks for 1985 to 2000 and from industry logbooks (IL) for 1998 to 2000 (95% confidence intervals also shown).

### Outlook

Despite the management measures that have been applied in recent years to reduce the fishing effort targeting the spring-spawner herring stock, the average age of this stock continues to decrease. The cause of this decrease might be a continued high level of fishing effort directed at this stock, or the arrival of a large number of small herrings associated with a dominant year-class, or a combination of these two factors.

A rise in the catch rates for the spring-spawner herring stock was observed in 2000, which indicates an improvement in the status of this stock. It would be premature, however, to discontinue the management measures currently in effect (i.e., the protection of certain bays during the spawning season). For example, after this stock's status had improved slightly in 1997, and the fishery was resumed the following year, the abundance of this stock immediately began to decline again. Hence we recommend that the current measures be maintained.

***References***

DFO, 2000. West Coast of Newfoundland Atlantic Herring (Division 4R). DFO Science, Stock Status Report B4-01 (2000).

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