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The Status of Pinnipeds in the Newfoundland Region

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Abstract

In order to determine the potential impact of seals on commercial fish stocks in the Northwest Atlantic, it is necessary to have accurate estimates of the abundance of each species. Recent information on the abundance and catches of harp (*Phoca groenlandica*), hooded (*Cystophora cristata*), grey (*Halichoerus grypus*), harbour (*Phoca vitulina*), ringed (*Phoca hispida*) and bearded (*Erignathus barbatus*) seals is summarized. The most recent (1990) estimates of pup production for harp and hooded seals are 577 900 (S.E. = 38 800; Northwest Atlantic) and 82 182 (S.E. = 12 636; Newfoundland only), respectively. This represents total populations of approximately 3.1 million (range 2.7–3.5 million) harp seals and 400 000–450 000 hooded seals. No estimates are available for the abundance of other seal species in the Newfoundland area.

Key words: Abundance, catch, harp, hooded, ringed, Newfoundland, seals

Introduction

Six species of seals are present in Newfoundland waters; harp (*Phoca groenlandica*), hooded (*Cystophora cristata*), grey (*Halichoerus grypus*), harbour (*Phoca vitulina*), ringed (*Phoca hispida*) and bearded (*Erignathus barbatus*) seals. With the recent decline in commercial groundfish stocks in the Northwest Atlantic (Sinclair, 1993), considerable debate has been focused on the potential impact of these seals on fish populations. Much of this debate has centred on the numbers of seals present. For example, various media reports place the number of harp seals in 1990 between 3 and 8 million. Also, all seal species are often grouped together, ignoring species differences in abundance, population growth rate and diet. Much of the public discussion on the role of seals in the Northwest Atlantic ecosystem which has taken place has been based on unsubstantiated and often, contradictory reports.

This report attempts to review some recent information of these seals and provide a summary of their status.

Harp Seals

In the Northwest Atlantic, harp seals whelp in the Gulf of St. Lawrence and off the coast of southern Labrador or northeastern Newfoundland ('Front') (Fig. 1). Although seals from both areas mix in the Canadian Arctic or Greenland during the summer, they are thought to exhibit some site fidelity during the whelping and breeding periods. The most recent estimate of pup production were made in 1990 based on a combination of photographic and visual aerial surveys (Stenson *et al.*, 1993). An estimated 467 200 (S.E. = 31 200) pups were born at the Front, 106 300 (S.E. = 23 000) in the southern Gulf (Magdalen Is.) and 4 373 (S.E. = 1 264) in the northern Gulf (Mecatina) for a total of 577 900 (S.E. = 38 800).

Previous estimates of pup production were based primarily on age composition data (Sergeant, 1971; 1975; Benjaminsen and Øritsland, MS 1975; Winters, 1978; Cooke, 1985), aerial surveys (Lavigne *et al.*, 1980; MS 1982), and mark-recapture experiments (Bowen and Sergeant, 1983; MS 1985). The results for similar time periods were often conflicting, for example ranging from 251 000 (1975/77, Lavigne *et al.*, 1980; MS 1982) to 450 000–534 000 (1977–1983, Bowen and Sergeant, 1983; MS 1985). The Royal Commission on Seals and Sealing in Canada (Anon., 1986) concluded that pup production in 1978 was in the order of 300 000–350 000. Although it is difficult to compare the most recent estimate with earlier ones due to the different methods used, and the wide range in the latter, it suggests that an increase in pup production has occurred but the rate of growth cannot be estimated.

Shelton *et al.* (MS 1992) applied a harp seal estimation model to the 1990 pup production survey results to obtain an estimate of total population. Fitting this model to estimates of pup production in the late-1970s and 1990 suggests that the total population in 1990 was in the order of 3.1 million (range 2.7–3.5 million). The Royal Commission

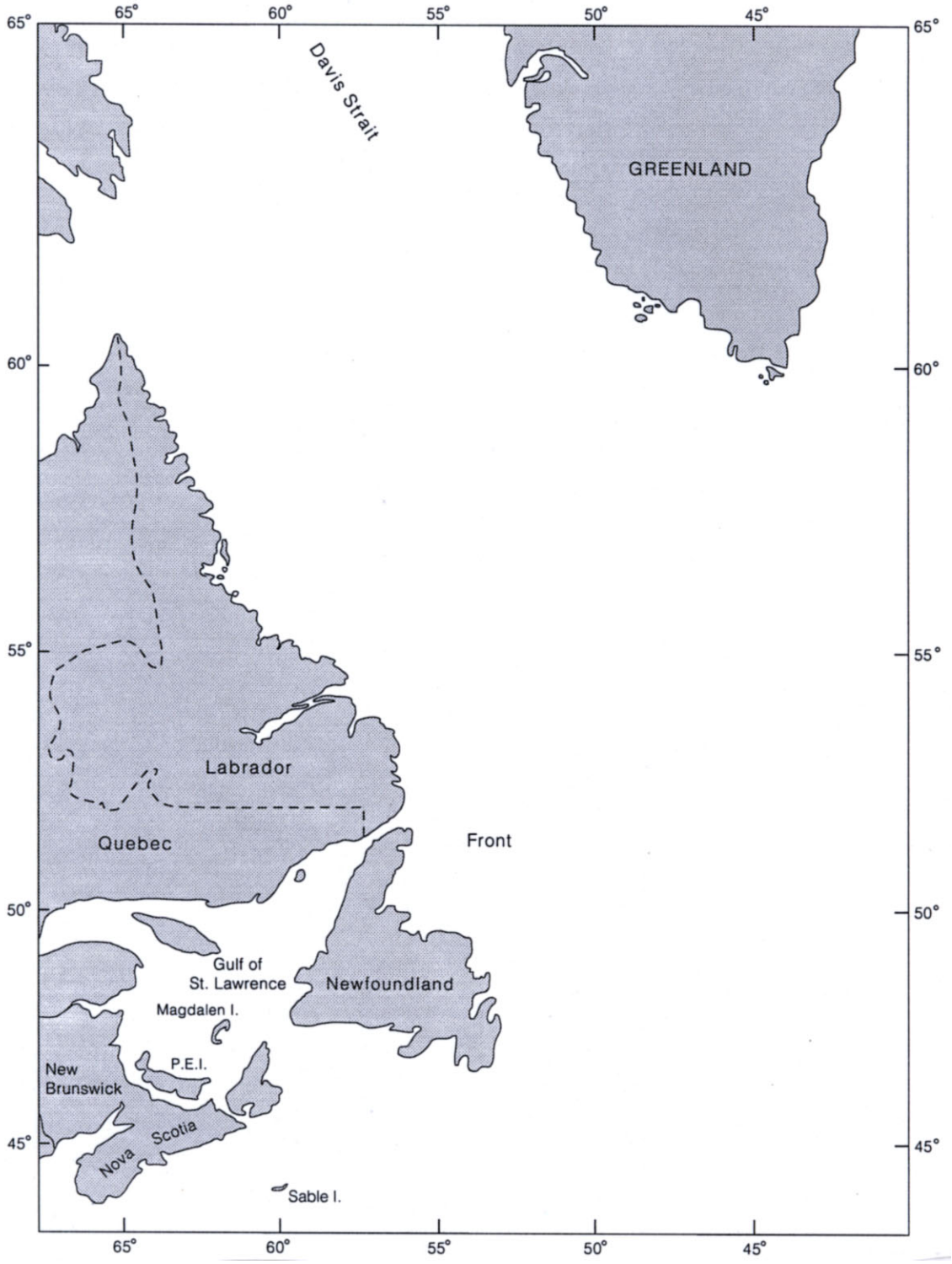

Fig. 1. Map of the Northwest Atlantic indicating locations mentioned in the text.

on Seals and Sealing in Canada (Anon., 1986) estimated the total population to be approximately 1.5–1.75 million in 1978. If this estimate was correct, the population has grown at an average annual rate of 7%. However, the Commission did not consider the mark-recapture estimates of pup production when developing its estimate of total population. If these estimates are included, the model indicates that the population has likely increased since the 1970s, but at a lesser rate (Shelton *et al.*, MS 1992).

Commercial hunting of harp seals along the east coast of Canada has been reported since the mid-1800s. A TAC was first set in 1971 at 200 000. The TAC varied until 1982 when it was set at the present 186 000. With the demise of the large vessel hunt in 1983, catches declined rapidly from an annual average of 172 000 between 1978 and 1982 to range between 19 035 (1985) and 94 046 (1988). The annual average catch in eastern Canada between 1983 and 1992 was 51 696. Current regulations do not allow the use of vessels greater than 18 m or the hunting of whitecoat pups for commercial purposes. Recent catches are shown in Table 1.

TABLE 1. Reported catches of harp seals in Atlantic Canada, 1988–92.

	1988	1989	1990	1991	1992
TAC	186 000	186 000	186 000	186 000	186 000
Catch	94 846	65 072	60 128	52 565	68 130

With the possible exception of 1987, the reported catch does not include harp seals caught incidentally in fishing gear. In 1991, over 44 000 seals were estimated to have been caught in fishing gear in Newfoundland (Lien, unpubl. data). In addition to hunting in eastern Canada, harp seals are also hunted in the Canadian Arctic and Greenland. No recent catch statistics are available for the Canadian Arctic but were estimated to range between 1 200 and 6 500 in the late-1970s and early-1980s. Catches in Greenland were estimated to be in the order of 14 000–18 000 in the early-1980s, but recent catch figures are not available.

Hooded Seals

Hooded seals whelp on pack ice near Jan Mayen Island in the eastern Atlantic, in Davis Strait, off the coast of southern Labrador or northeastern Newfoundland, and in the Gulf of St. Lawrence. It is not known if there is interbreeding among these populations although seals from the Front, Gulf and Davis Strait areas appear to intermix during the non-breeding season.

In the Northwest Atlantic, the majority of production occurs at the Front. A series of estimates are available for pup production of this stock. Unfortunately, many of these results were obtained using different methods and therefore, are not directly comparable. Based on the survival index method or sequential population analysis, pup production from 1966–77 was estimated to be in the order of 25 000–32 000 (Øritsland and Benjaminsen, MS 1975; Sergeant, 1976; Winters and Bergfløt, MS 1978). These estimates are similar since they are influenced by the high catch of 1966. Based on aerial surveys, pup production in 1984 was estimated to be 62 000 (95% C.I. 43 700–89 400, Bowen *et al.*, 1987). Surveys conducted in 1990 using similar techniques, and therefore directly comparable to the 1984 estimate, produced an estimate of 82 182 (S.E. = 12 636, Stenson *et al.*, MS 1994). These results suggest that pup production has increased slowly (5% per annum). However, because of the size of the confidence intervals and the lack of understanding concerning the relationships between the Front and other Northwest Atlantic populations, the possibility of a stable or slightly declining pup production cannot be ruled out.

The second most numerous population whelps in the Davis Strait. The only available estimate of pup production, 18 600 (95% C.I. 14 000–23 000), was based on aerial surveys conducted in 1984 (Bowen *et al.*,1987). Low numbers of hooded seals are born in the Gulf of St. Lawrence. Using visual survey techniques, Hammill *et al.* (1992) estimated that pup production in the Gulf during 1990 and 1991 was 1 638 (S.E. = 466) and 2 006 (S.E. = 190), respectively.

No recent population model is available for hooded seals. However, assuming a ratio of pups to total population of 1:5 (seen in similar species such as harp and grey seals), pup production in the Gulf and Front would represent a total population of approximately 400 000–450 000 hooded seals.

Commercial sealing at the Front was reported as early as 1874 and for many years there was no distinction made between harp and hooded seals. Following the shift to hunting for fur in the 1940s, the blueback, defined as hooded seal less than 1 year of age, became the most valuable of all the furs and hunting effort increased accordingly. Before implementation of quotas in 1974, annual catches varied greatly and ranged from less that 1 000 to over 25 000 seals. From 1974 through 1982, the average catch was 12 800, mainly pups. Since

1983, catches have varied, ranging from 33 in 1986 to 6 321 in 1991, with a mean catch of 1 116 between 1983 and 1992. This variation was likely due to variability in the availability of hooded seals to land-based hunters. The original TAC was set at 15 000 in 1974. This was reduced to 12 000 in 1983 and 2 340 in 1984. Hunting of bluebacks for commercial purposes and the use of vessels over 18 m was prohibited in 1987. In 1991 the TAC was increased to 15 000. A TAC of 8 000 was set for 1992 and 1993. Recent TACs and catches are given in Table 2.

TABLE 2. Reported catches of hooded seals in Atlantic Canada, 1988–92.

	1988	1989	1990	1991	1992
TAC	2 340	2 340	2 340	15 000	8 000
Catch	908	367	636	6 321	119

Hunting in the Gulf of St. Lawrence has been prohibited since 1964. No catches of hooded seals are permitted in the Davis Strait.

Other Seals

In addition to harp and hooded seals, four other species of pinnipeds (grey, harbour, ringed and bearded seals) are present in Newfoundland Region. Grey seals from both the Sable Island and Gulf breeding stocks are seasonal migrants to the area. They have been reported from all areas of Newfoundland and Labrador as far north as Nain. Bounty returns indicate that Grey seals are most common during July and August but low numbers are present in all months of the year. No confirmed whelping concentrations have been found in Newfoundland and the numbers migrating into the area are unknown.

Harbour seals are also present in most areas of Newfoundland and Labrador. Although locally common in many areas, the distribution and population size is not known.

Ringed and bearded seals are primarily Arctic species whose southern range extends to the coast of Labrador and northern Newfoundland. Ringed seals are the most common pinniped in northern Labrador and are considered to be 'numerous' through most of their range. Bearded seals are solitary and are thought to be relatively rare. No population estimates are available for either species.

The official sealing statistics combines catches of seals other than harps and hoods as 'others'. In most years these seals, taken mainly in Labrador, are primarily made up of ringed seals. The number of 'other' seals reported taken in the last 5 years are shown in Table 3. In 1992, 91.8% of the catch were reported to be ringed seals while harbour and bearded seals accounted for 5.5% and 2.7%, respectively. No TAC is set for 'other' seals.

TABLE 3. Reported catches of 'other' seals in Atlantic Canada, 1988–92.

	1988	1989	1990	1991	1992
Catch	1 036	2 561	1 821	1 771	1 127

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