

DFO Atlantic fisheries  
stock status report 93/3

## UPDATE ON GROUNDFISH STOCK STATUS REPORT

### INTRODUCTION

This report presents information from groundfish abundance surveys conducted since the publication of the "Report on the status of groundfish stocks in the Canadian Northwest Atlantic" in July 1993 (Stock Status Report). Some anecdotal information on the 1993 fisheries to date are also provided. The stocks for which updated information is presented are those identified by the Fisheries Resource Conservation Council, in their August 23, 1993 report, as being in a critical situation:

COD:	3Ps, 3Pn4RS, 4T-4Vn(Jan.-Apr.), 4Vn(May-Dec.), 4VsW, 4X, 5Zj,m
HADDOCK:	4TVW, 4X, 5Zj,m
POLLOCK:	4VWX+5Zc
A. PLAICE:	3Ps

Information is also provided for 4T American Plaice and 4T White Hake.

The new information from the surveys and the commercial fisheries have been compared to the results of the most recent assessments with respect to overall stock abundance, the size and age compositions, as well as recruitment prospects.

The interpretation of the information from the fisheries is complicated by the changes in fishing patterns and management measures during 1993. The regulation to close the fisheries when the proportion of small fish in the catch exceeded 15% in numbers, combined with the stocks being comprised mostly of small fish, resulted in mobile gear fisheries being open for a much shorter duration than in previous years. Therefore the fish that were not caught by mobile gear fisheries in 1993 became available to other gear sectors, which, in some cases, resulted in better performance for those other gear sectors. The better performances, where they occurred, are good signs, but they cannot be interpreted directly as increases in stock sizes.

For several stocks (cod in 3Ps, 4T-4Vn(Jan.-Apr.), 4Vn(May-Dec.), 4VsW, 4X, 5Zj,m; haddock in 4TVW, 5Zj,m, and A. Plaice in 3Ps) the new information is consistent with the most recent assessments. A further decline in abundance is suggested for 3Pn4RS cod and 4X haddock. The 1993 abundance survey suggests that the 1989 year-class of 4VWX+5Zc pollock may be above average in size.

### **3Ps COD**

#### **Research Surveys**

There is no new survey information for this stock. The February and April 1993 survey results were used in the assessment presented in the July 1993 Stock Status Report.

Winter surveys in this area have been conducted mainly during the months of February and March. The 1994 survey is planned for April to reduce the influence of recent changes in depth distribution and stock overlap (3Pn-3Ps) on biomass and abundance estimates. This should also be at a time before any major shoreward migration.

The 1994 survey plan includes, to the extent possible, parts of Placentia Bay because of concerns expressed by inshore fishers that the inshore portion of the stock was not being adequately covered. The results of this additional coverage will be of limited value in the short term, other than to see if large amounts of cod may be found in these previously unsurveyed areas. As with all new survey observations, it will take several years to evaluate the impact of this new coverage on the stock assessment.

#### **Information from the Fishery**

The 1993 fishery was very variable, from very good in some areas to very poor in others. Overall, the fixed gear catch was about equal to 1992 (10,400t in 1993 compared with 11,000t in 1992) but less than the 15,000t average for the most recent five years. Factors that may have contributed to this include the participation in NCARP by some fishers from 3Ps, the number of small fish closures in the area in 1993, and a good lumpfish fishery may have diverted some traditional effort away from cod.

The fishery was closed in September, 1993 following the FRCC recommendation.

### **3Pn4RS COD**

#### **Research Surveys**

This stock has been surveyed during August-September 1993 as part of a new bottom trawl survey started in 1990 to estimate cod, redfish and shrimp abundance in the northern Gulf of St. Lawrence. The first year of this new survey series is not considered representative of cod abundance because shallow depths (less than 50 fathoms) were not surveyed. In addition, 3Pn was surveyed for the first time in 1993. The preliminary biomass estimate from the 1993 survey is about 30% of the 1992 value, suggesting a substantial decrease between the two years (Figure 1). The decrease in estimated biomass between 1991 and



1992 was of a similar magnitude.

The summer survey was considered too short to be used in the assessment presented in the July Stock Status Report. The assessment is based on a January survey series, including the January 1993 biomass estimate. The decrease in survey estimated biomass between January 1992 and January 1993 was of the same magnitude as the decreases observed in the summer series.

The assessment presented in the Stock Status Report estimated that the adult (7+) biomass of 3Pn4RS cod would increase in 1993. Although the summer series is short and its usefulness as an index of cod abundance has not been established, it suggests that the increase forecast in the July assessment has not occurred and that the decline may in fact have continued.

It is difficult to estimate relative year-class strengths from the summer surveys due to the short time series. However, the decline in the 1993 survey estimate occurred across all ages. The 1993 survey estimates of the 1986 and 1987 year-classes, which appeared to have been strong in previous assessments, were about 40% of the three year average.

The distribution of cod during the 1993 survey is similar to that of previous years and the highest catches were made well within the survey area; away from the boundaries. There are no reports from industry about increased fishing activity or about unusual abundance of cod in the unsurveyed shallow waters (<20 fm).

#### **Information from the Fishery**

Reports from index fishers, from fisheries unions, from fisheries association and from DFO personnel generally concur that fish are small, skinny and scarce. Mobile gear fisheries have taken 8844 t out of their 10985 t quota. The fixed gear catches to date are 6222 t of a 6619 t quota compared to 7500 t to this date last year.

Detailed examination of the commercial length frequencies and aging will be undertaken in early 1994. Given that the fleet sectors are highly selective, it is essential that detailed landings statistics from western Newfoundland be made available.

#### **4T-4Vn(Jan.-Apr.) COD**

##### **Research Surveys**

This stock was surveyed in September 1993 as part of the regular groundfish survey series conducted in the southern Gulf of St. Lawrence since 1971. The average catch per tow for all ages was 53.7 cod/tow in 1993 compared with 45.3 cod/tow in 1992, an increase of about 20% (Figure 2). However, this difference is within the normal variability of survey estimates and may not be significant. An approximate age composition of the 1993 survey population abundance was derived from age-length information from 1992. This suggests that the 1993 survey estimate for ages 3 and older of 47.4 cod/tow is very close to the 44.2 cod/tow expected based on the July 1993 assessment (Figure 3). Abundance in the survey therefore is still very low compared with the early 1980s and the stock continues to be in a depressed state. These results are consistent with the assessment presented in the Stock Status Report.

There is no sign of improved recruitment in the survey.

##### **Information from the Fishery**

The total 1993 catch is expected to be less than 4,000t. The mobile gear fishery was considerably restricted by fishery closures because the percentage of small fish in the catch exceeded 15% in number. Fishers reported that the 1993 fixed gear fisheries were better in some areas (e.g. Baie des Chaleurs).

The fishery was closed in September, 1993 following the FRCC recommendation.

#### **4Vn(May-Dec.) COD**

##### **Research Surveys**

This stock was surveyed in July 1993 as part of the regular groundfish survey series conducted on the Scotian Shelf since 1971. Survey results for cod are quite variable in this area because there are few fishing sets and to a lesser extent because of the sporadic and variable presence of cod from neighboring management units. The 1993 catch per tow is very low compared to the early 1980s (Figure 4). These results are consistent with the assessment presented in the Stock Status Report.

There are no indications of improved recruitment.



### **Information from the Fishery**

Fixed gear catches have generally been poor during 1993, although the fishery appeared to improve somewhat towards the end of August. The mobile gear fishery has yielded less than 100 t to date and has been closed on several occasions because of the presence of small fish.

The fishery was closed in September, 1993 following the FRCC recommendation. A fixed gear test fishery was approved after demands by local fishers.

### **4VsW COD**

#### **Research Surveys**

The March 1993 survey results for this stock were reviewed during the latest assessment but were not used to calibrate the VPA. This stock was surveyed in July 1993 as part of the regular groundfish survey series conducted on the Scotian Shelf since 1970. The July 1993 survey results are higher than the 1992 results both in terms of numbers per tow (23.7 vs 13.9 for 3+) and biomass (90.9 vs 46.2 for 3+), but remain considerably lower than values from the late 1970's through the mid 1980's (Figure 5). There is no indication of incoming strong recruitment and the abundance of large cod remains very low. These results are consistent with the assessment presented in the Stock Status Report.

### **Information from the Fishery**

The mobile gear fisheries in 1993 were severely restricted by fishery closures because the percentage of small fish in the catches exceeded 15% in number. To date the mobile gear has landed about 1400 t from an allocation of about 8000 t. By comparison, the fixed gear have done somewhat better landing over 1700 t which is over half of their allocation.

Most of the fishery was closed in September, 1993, following the FRCC recommendation. The landings to date (Oct. 6) total 2627 for all gear sectors which may be compared to about 23000 t to the same date last year.

### **4X COD**

#### **Research Surveys**

This stock was surveyed in July 1993 as part of the regular groundfish survey series conducted on the Scotian Shelf since 1970. Overall, the results are consistent with those presented in the Stock Status Report (Figure 6). However, the 1990 year-class, which was assumed to be average in the assessment, now appears marginally better than average while

ages 6,7 and 8 are less abundant in the 1993 survey than would have been expected from the assessment.

#### **Information from the Fishery**

Landings to date (13,720t) in the 1993 commercial fishery are lower than at the same time last year (19,248t), however it is not possible to interpret this pattern meaningfully due to changes in the management plan and to changes in fishing strategy by the fleets under ITQs. Anecdotal information though, supports the perception that fishable sized cod are scarce. Some fishermen noted that the fish they did catch were small.

#### **5Zj,m COD**

##### **Research Surveys**

There is no new survey information on this stock. The results of the March 1993 survey were used in the assessment presented in the July Stock Status Report.

#### **Information from the Fishery**

Reported 1993 landings to the end of September were about 7,500 t, a decline from 10,500 t for the same period in 1992. The 1993 mobile <65' otter trawl fishery opened in January rather than June and about 2,000 t, compared to a recent average of less than 500 t, were taken by the otter trawl fleet in the first quarter of 1993. Opening of the otter trawl fishery in January 1993 rather than June probably resulted in high catch rates on densely aggregated and actively spawning fish. Preliminary analysis of 1993 commercial landings samples indicates that the 1990 year-class at age three accounted for over 65 percent of the total landings (Figure 7).

#### **4TVW HADDOCK**

##### **Research Surveys**

This stock was surveyed in July 1993 as part of the regular groundfish survey series conducted on the Scotian Shelf since 1970. The average catch per tow for all ages was about 27 haddock/tow in 1993 almost equal the 1992 value of about 28 haddock/tow (Figure 8). Most of the haddock were in Division 4W, very few were in 4V (Figure 9). Therefore, there appears to be very little change in stock status and the stock continues to be dominated by a single year-class, that of 1988. These results are consistent with the assessment presented in the Stock Status Report.

Recruitment since the 1988 year-class appears to be below average.



### **Information from the Fishery**

Total catches to date are approximately 1000 t compared to a catch of 4067 t in 1992. As opposed to previous years, the Emerald/Western Bank closure applied to all gear types including fixed gear in 1993. Rumours of impending closure and the restrictive by-catch measures imposed have also contributed to these reduced catches.

### **4X HADDOCK**

#### **Research Surveys**

This stock was surveyed in July 1993 as part of the regular groundfish survey series conducted on the Scotian Shelf since 1970. The average catch per tow for all ages in 1993 was 9 kg/tow, the lowest observed in the survey series and about half the 1992 value (Figure 10). Previous survey results had indicated that the 1987 and 1988 year-classes were of average abundance. The 1993 results indicate a considerable decrease in abundance of these year-classes and would suggest extremely high exploitation rates.

There are indications that the 1992 year-class could be of average strength (Figure 11).

### **Information from the Fishery**

Total catches to date are 5920 t. The fixed gear fleet has exceeded its haddock quota and is restricted to 10% haddock bycatch levels.

Anecdotal information from the industry suggests that haddock are more abundant than indicated by the 1993 survey. Consultations are ongoing to explain this discrepancy.

### **5Zj,m HADDOCK**

#### **Research Surveys**

There is no new survey information on this stock. The most recent survey was conducted in March 1993 and the results were used in the assessment presented in the July Stock Status Report.

### **Information from the Fishery**

For the first time in recent years, the mobile gear fishery was opened in January. There was an active fishery on the spawning aggregations and landings in the first half of the year were 1,381t, more than double those for the first half of 1992. Subsequent landings have been considerably lower with the result that landings to date (3,181t) are lower than those for the

same period in 1992 (3,319t). Information suggests that mis-reporting of 4X haddock to 5Z, though not quantified, has increased in 1993, further complicating interpretation of trends and compromising the ability to accurately assess the status of the resources.

### **4VWX+5Zc POLLOCK**

#### **Research Surveys**

This stock was surveyed in July 1993 as part of the regular groundfish survey series conducted on the Scotian Shelf since 1971. The results suggest that the 1989 year-class, age 4 in 1993, which was assumed to be of average strength in the July Stock Status Report, could be considerably stronger (Figure 12). If this year-class proves to be as strong as the 1993 survey indicates, it would contribute substantially to catches in the coming years.

#### **Information from the Fishery**

Total catches to date are 16791 t compared to 25215 t last year. Reports from industry indicate large numbers of small pollock are being caught though large pollock are rare.

### **3Ps AMERICAN PLAICE**

#### **Research Surveys**

There is no new survey information on this stock. The most recent surveys were conducted in February and April 1993 and the results were used in the assessment presented in the July Stock Status Report.

#### **Information from the Fishery**

The catch to date is less than 300 t, compared to 1300 t last year, and will likely be near the total catch for the year. The catch may have been slightly higher except for the new by-catch regulations at the beginning of the year as the first quarter is generally the best. However, the fishery didn't really get under way until late February. Nevertheless, the catch rates were so poor that it is unlikely things would have been much different regardless of either the by-catch regulations or the fishery closure.



## **4T AMERICAN PLAICE**

### **Research Surveys**

Mean numbers per tow (1+) for American plaice declined from 259 fish/tow in 1992 to 210 fish/tow in 1993, near the lowest observed (Figure 13). As indicated in the last review of this stock, the abundance of American plaice in the last ten years appears to be relatively stable at a low level.

Length-frequency distributions for the last five surveys suggest that the 1989 year-class and the 1991 year-class may be more abundant than adjacent year-classes. However, abundance at this size is not considered to be a reliable index because plaice are only partially recruited to the survey gear. The abundance of plaice in the 25-35 cm size category has declined markedly since 1991. This size-class is exploited by the fishery.

The largest catches in the 1993 survey were obtained in waters off northeastern New Brunswick, similar to previous years. Catches were low south of the Magdalen Islands compared to the three previous years.

### **Information from the Fishery**

The landings of plaice to date are currently less than half of corresponding 1992 landings; however, numerous factors other than stock abundance may account for reduced catches: late start of the fishery, numerous cod closures, and reduced effort. The American plaice fishery will continue in November in a restricted zone off northern Cape Breton.

## **4T WHITE HAKE**

### **Research Surveys**

Mean numbers per tow have declined by about 50% from 1992 and are the lowest since 1983-84 (Figure 14). A cursory examination of the length frequency of white hake caught during the 1993 survey did not indicate significant improvement in recruitment. The abundance of larger fish has continued to decline.

The distribution pattern of catches during the survey was similar to that observed in previous years. White hake were caught either in the shallow, inshore waters of the southern Gulf or in the deeper waters of the Laurentian Channel. The area of distribution, however, appears to be shrinking.

### **Information from the Fishery**

These results are consistent with fishermen's views expressed during the recent round of public hearings of the Fisheries Resource Conservation Council. They indicated that the abundance of white hake has declined markedly over the last few years. The fishery is still continuing in some areas (as of 20/10/93 864 t had been caught from the 3,600 t TAC). Aside from a few index fishermen that reported better than average catch rates of large hake, many of the fixed gear index fishermen that targeted hake this year again reported that the fish were "small and scarce".



**Abondance de la morue de 3Pn 4RS sur les relevés**  
 3Pn 4RS Cod abundance from surveys

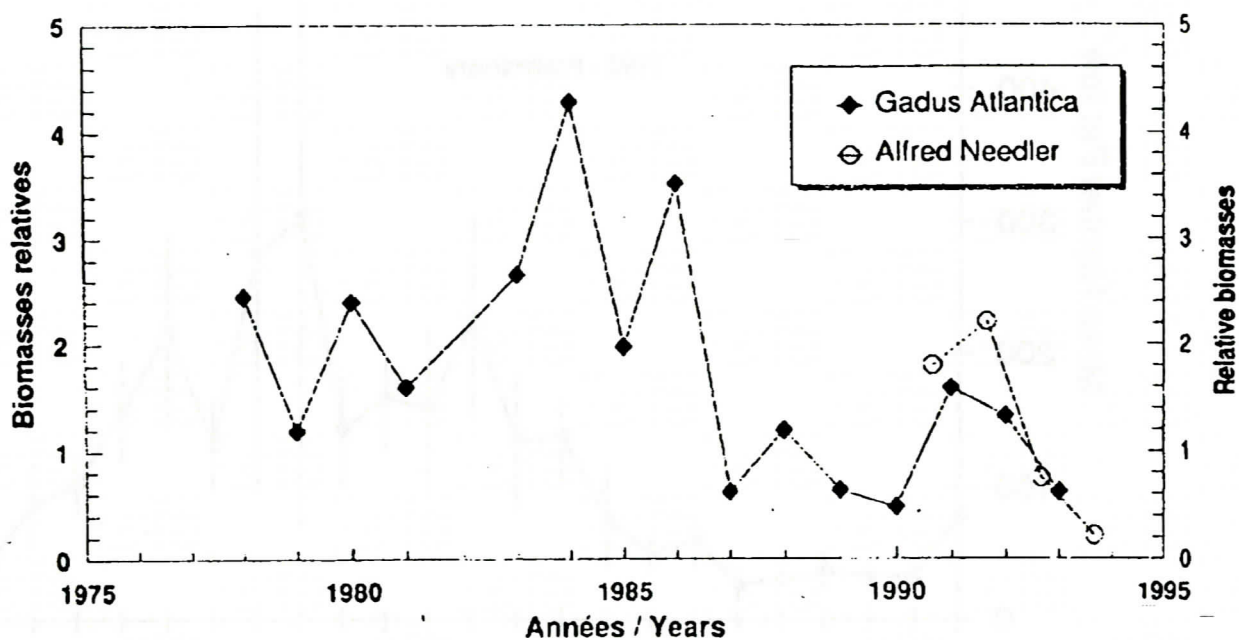
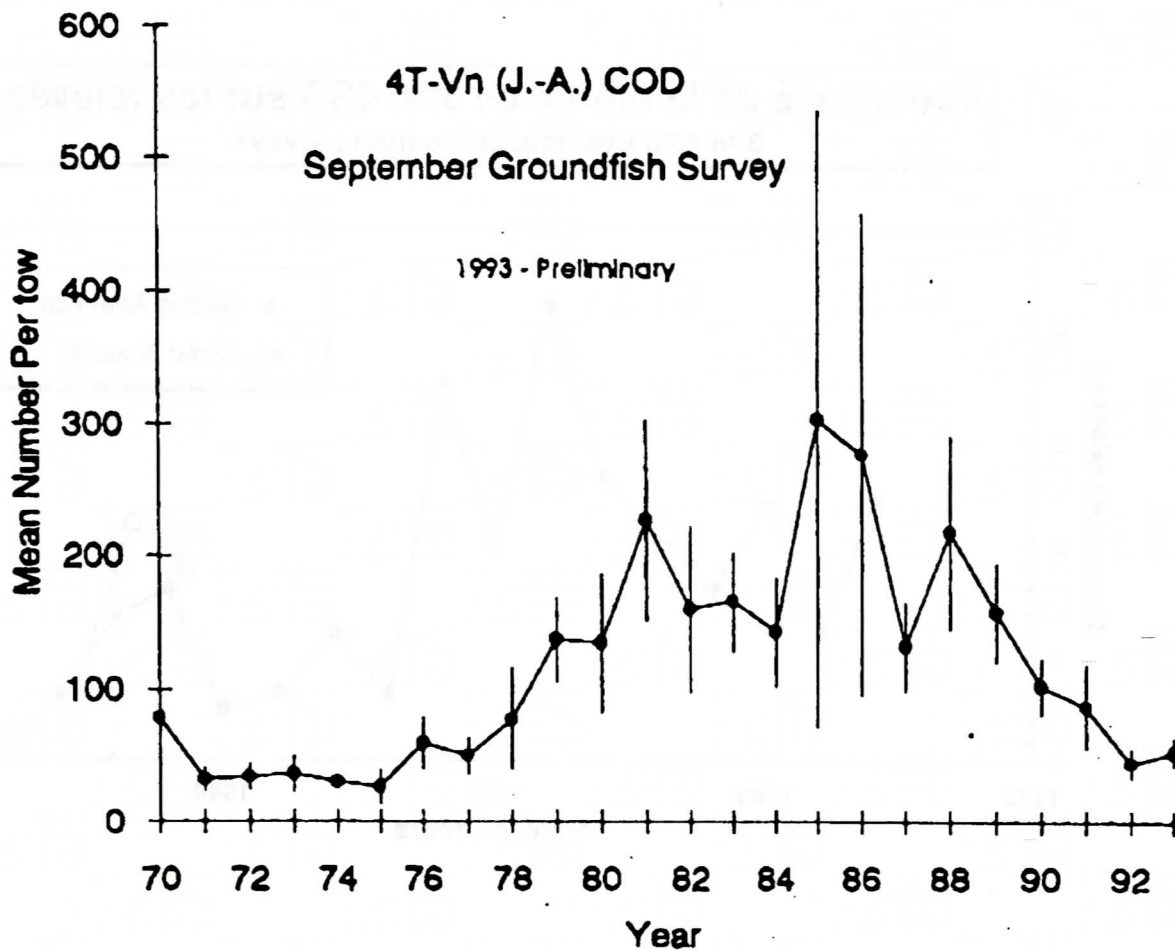


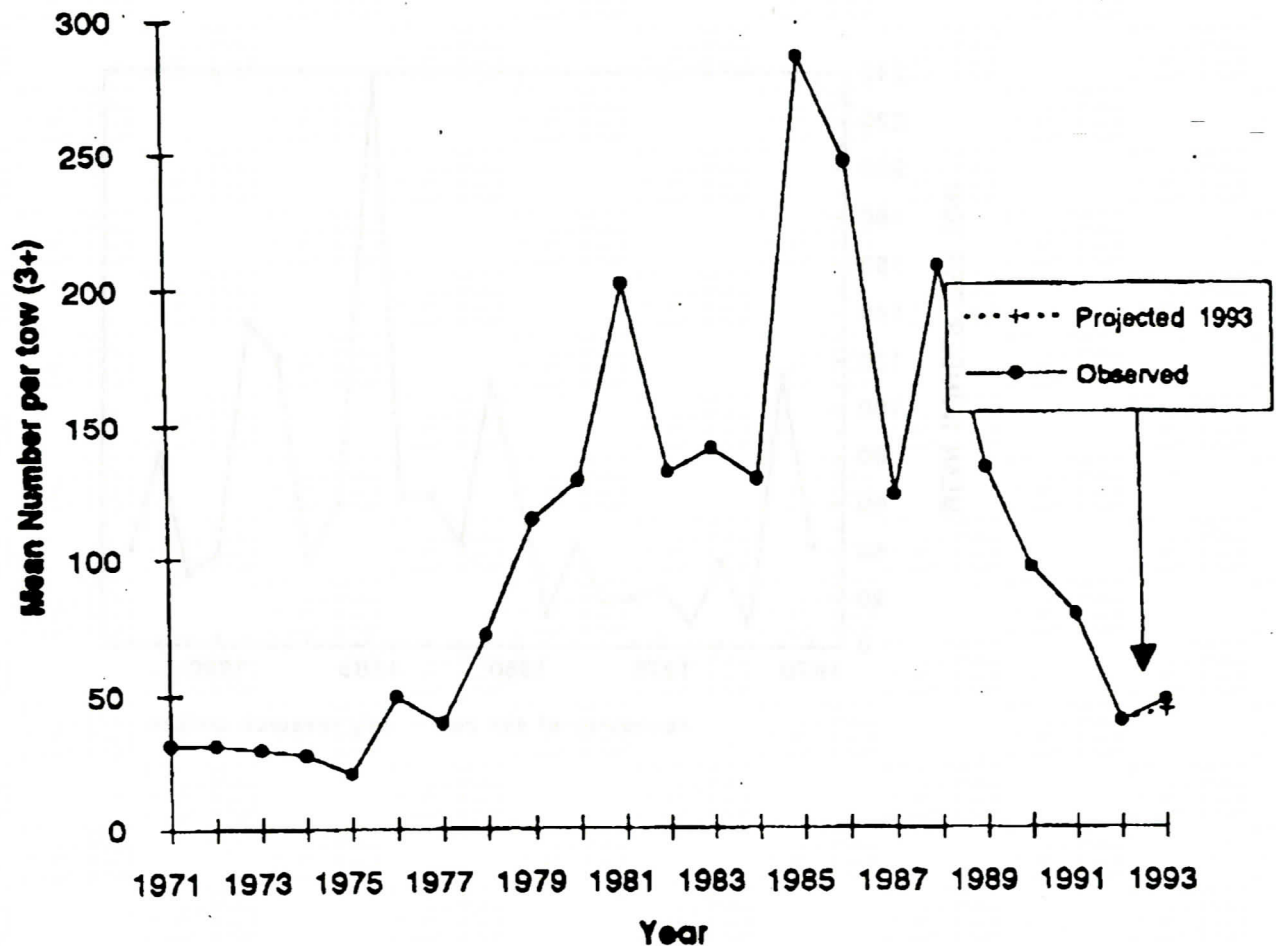
Figure 1



Mean number per tow (ages 0+) for cod in the southern Gulf of St. Lawrence September groundfish survey. Note: 1992 and 1993 adjusted for the *Lady Hammond* / *Alfred Needler* comparative experiment.

Figure 2





Mean number per tow (ages 3+) for cod in the southern Gulf of St. Lawrence from the September research surveys. The dotted line connects the 1992 point with the predicted estimate for 1993 using the results from the last assessment and estimated catches for 1993.

Figure 3

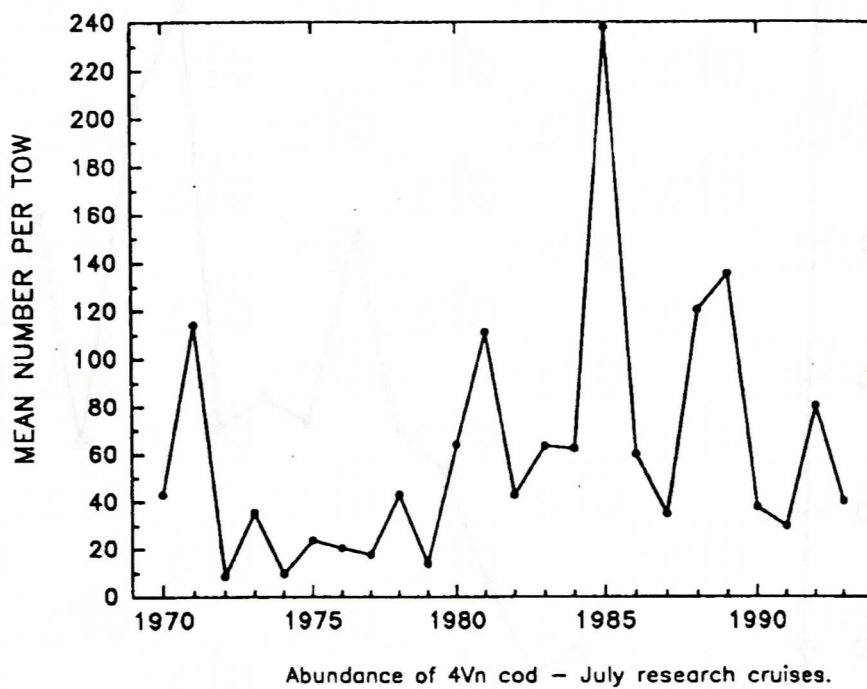


Figure 4

4VsW Cod 3+ biomass from July survey and VPA

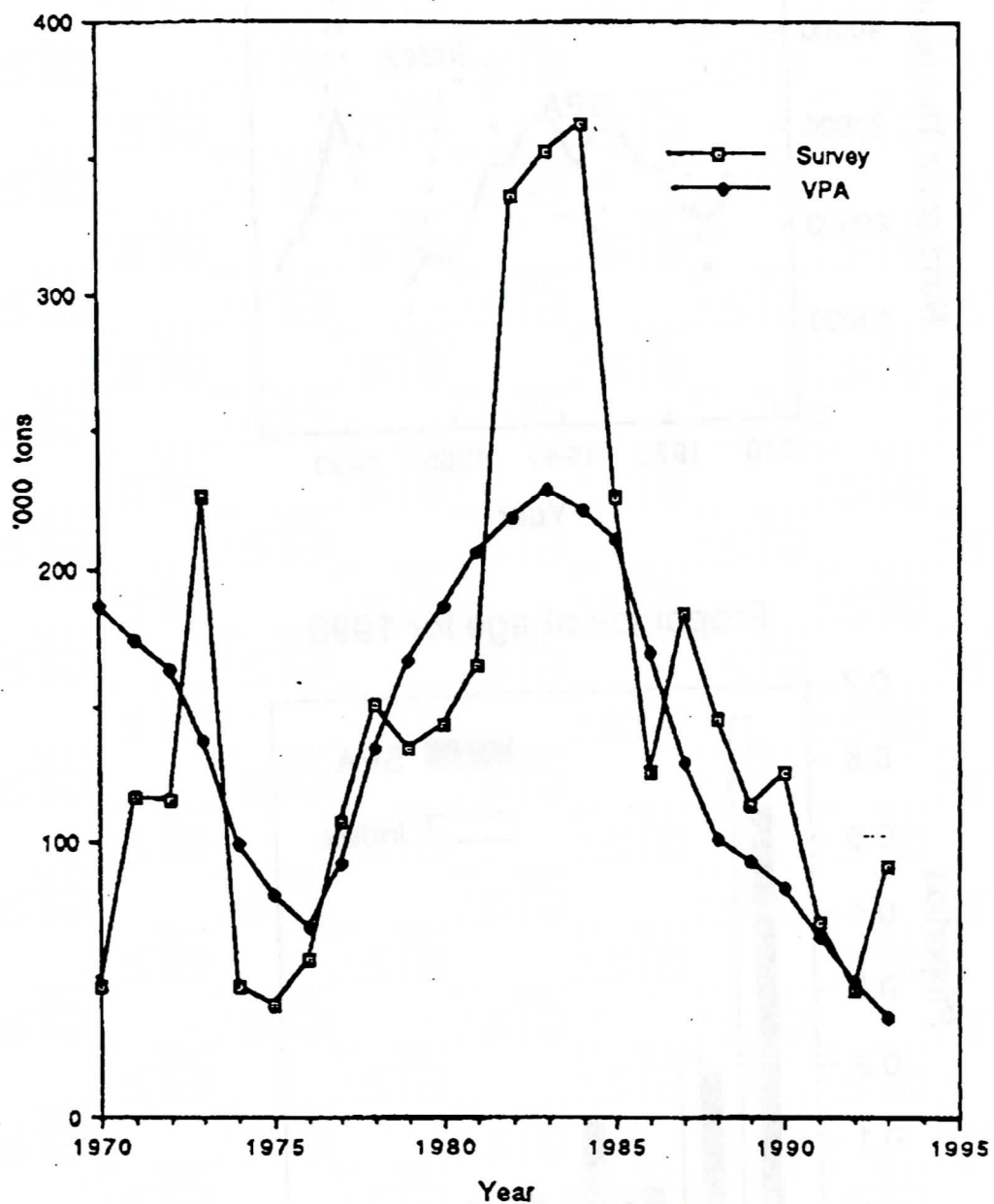
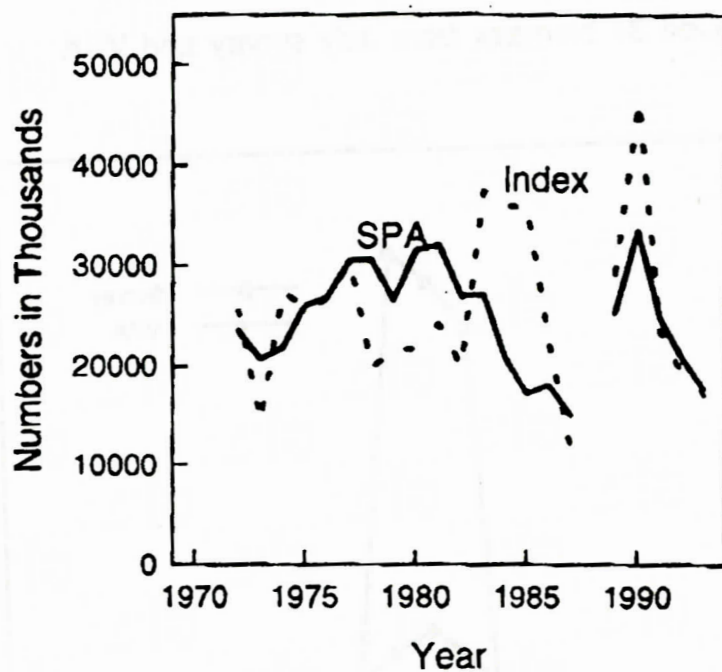


Figure 5



R.V. Indices and Mid-Year Populations  
For 4X Cod Ages 3-10



Proportion at age for 1993

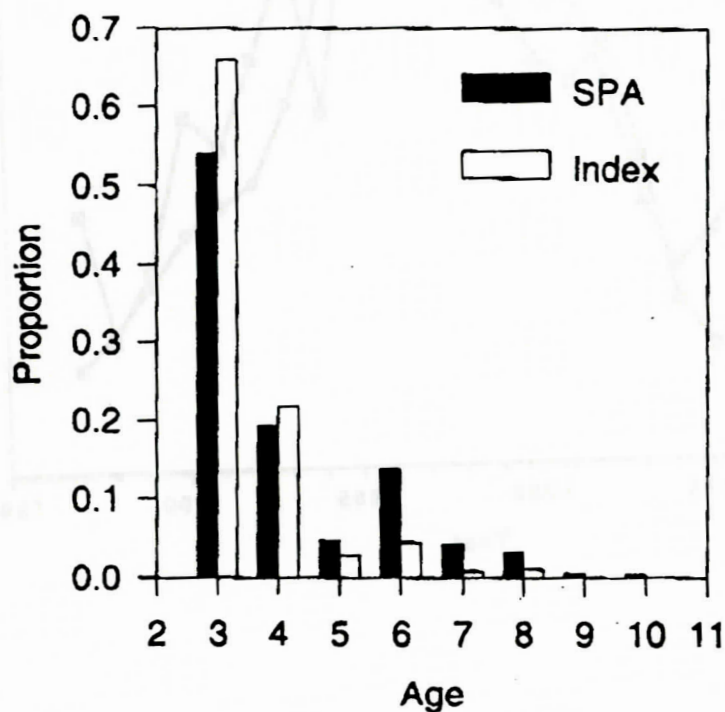


Figure 6

Figure. Catch at length for 1993 Canadian landings  
of 5Zj,m cod to the end of September 1993

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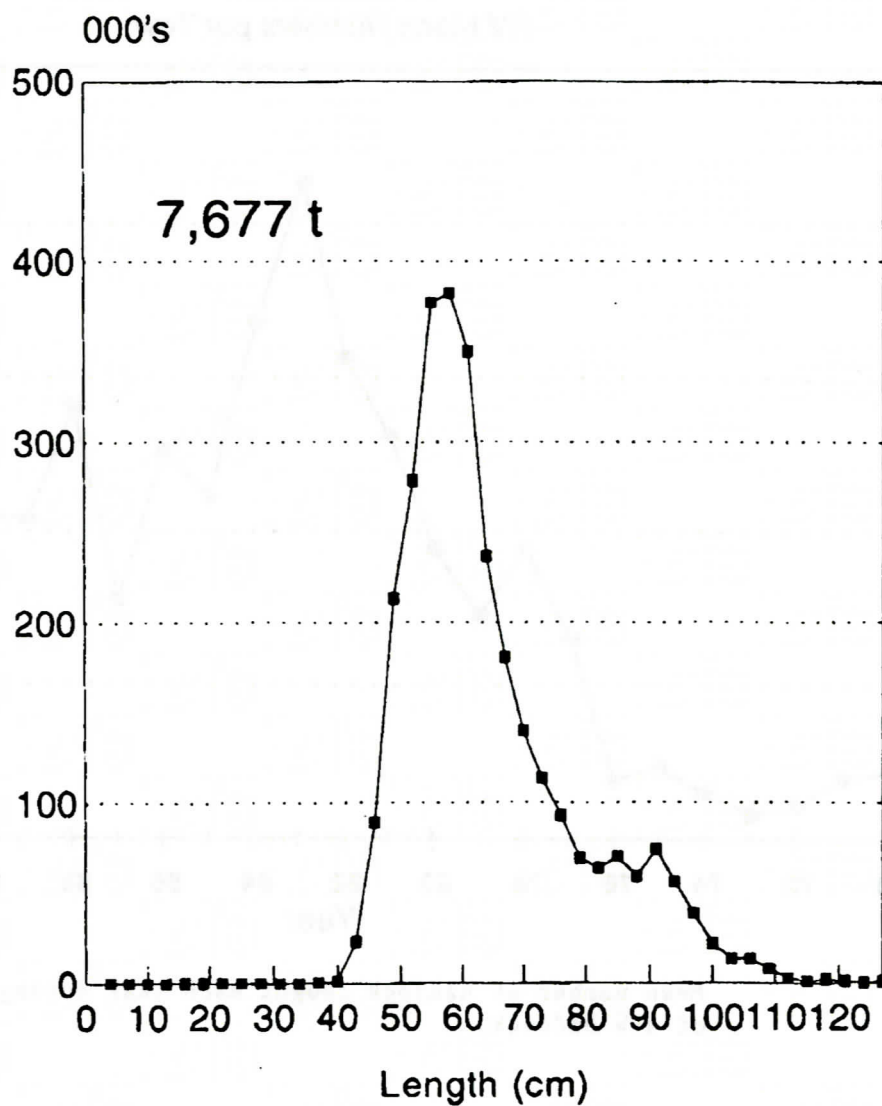
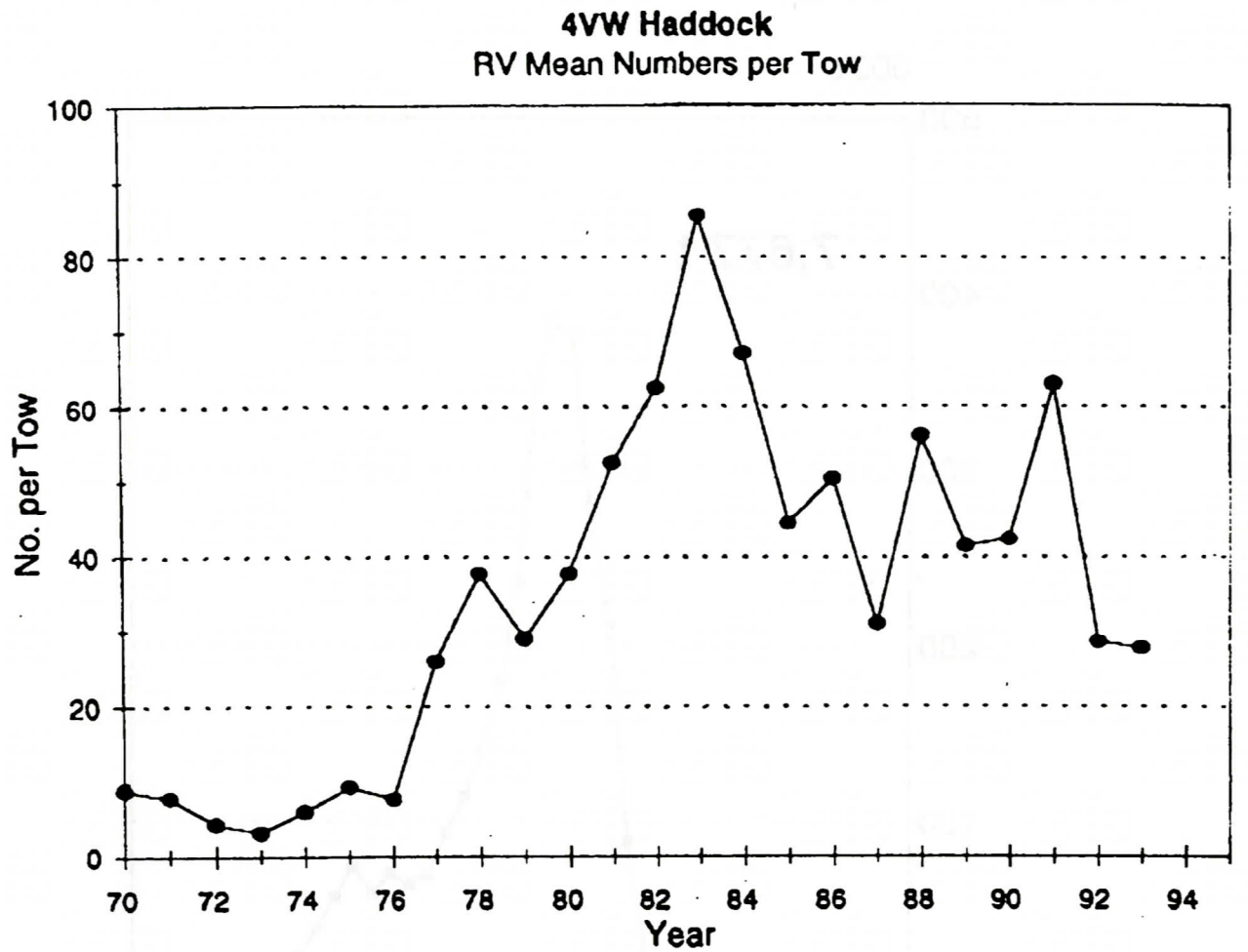


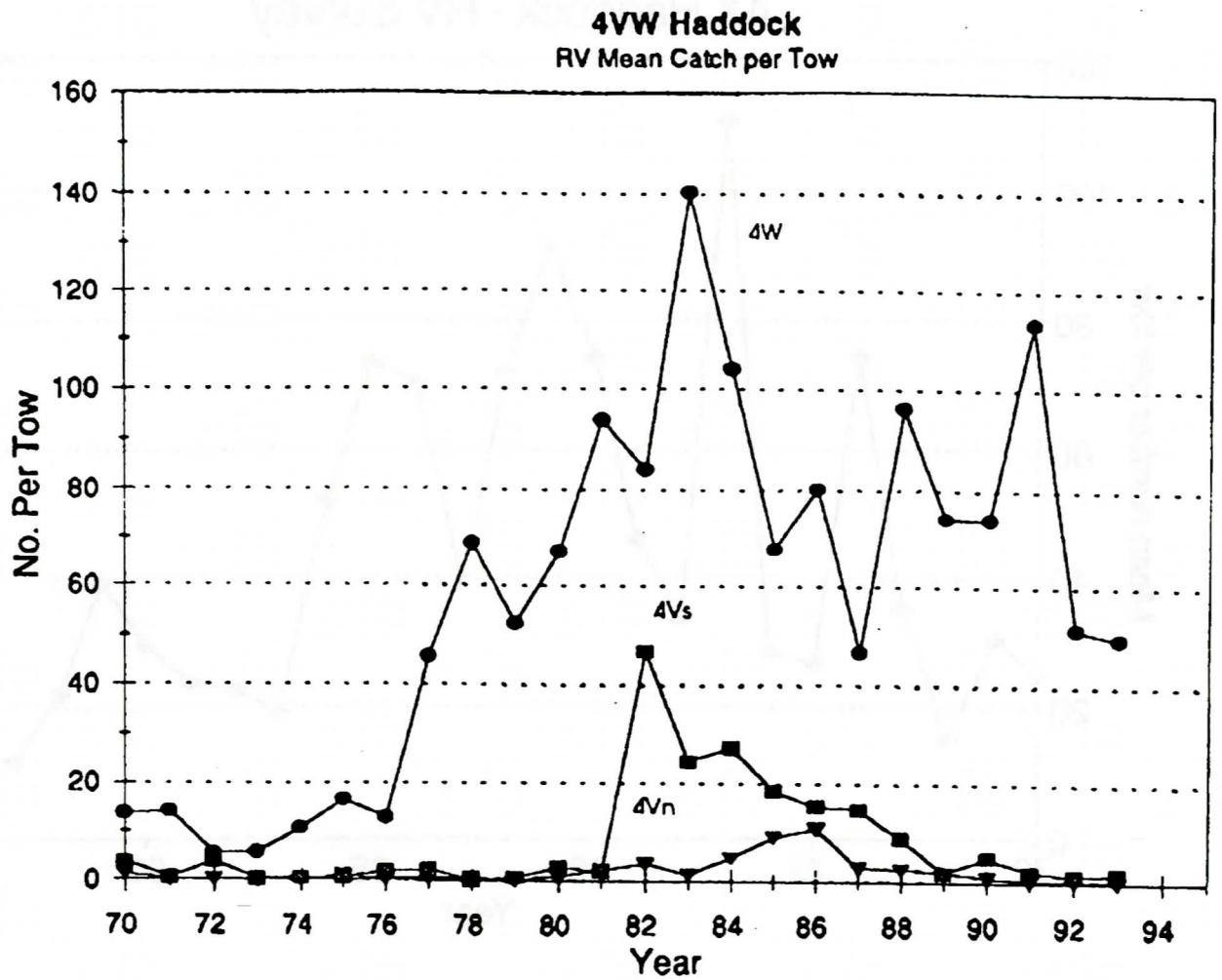
Figure 7



Mean number of haddock caught each year during the July survey of 4VW haddock.

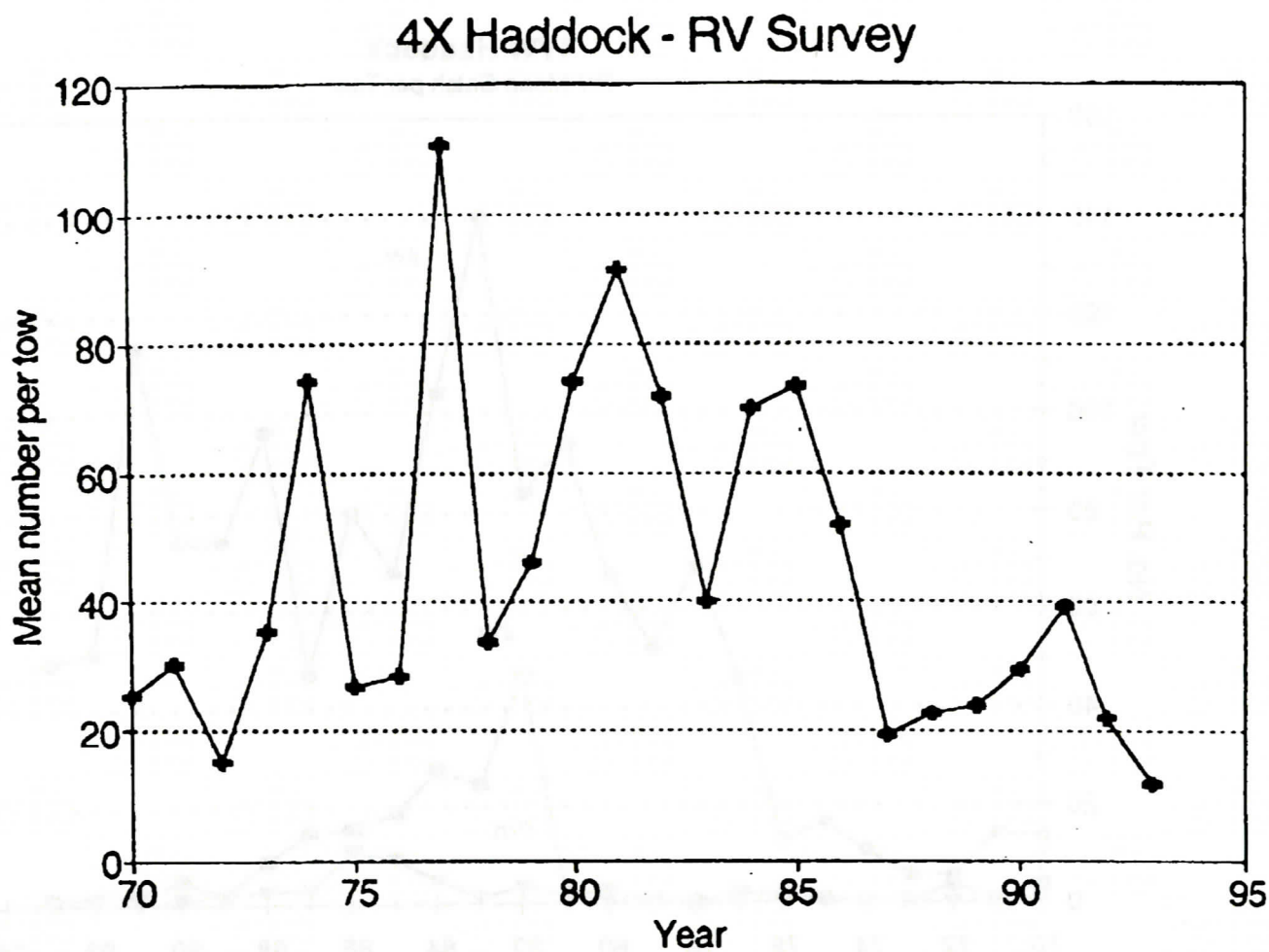
Figure 8





Mean number of haddock caught each year in each of the three NAFO areas comprising the 4VW haddock stock.

Figure 9



Research vessel survey 4X haddock stratified mean number per tow 1970-1993.

Figure 10

### 4X Haddock - RV Survey

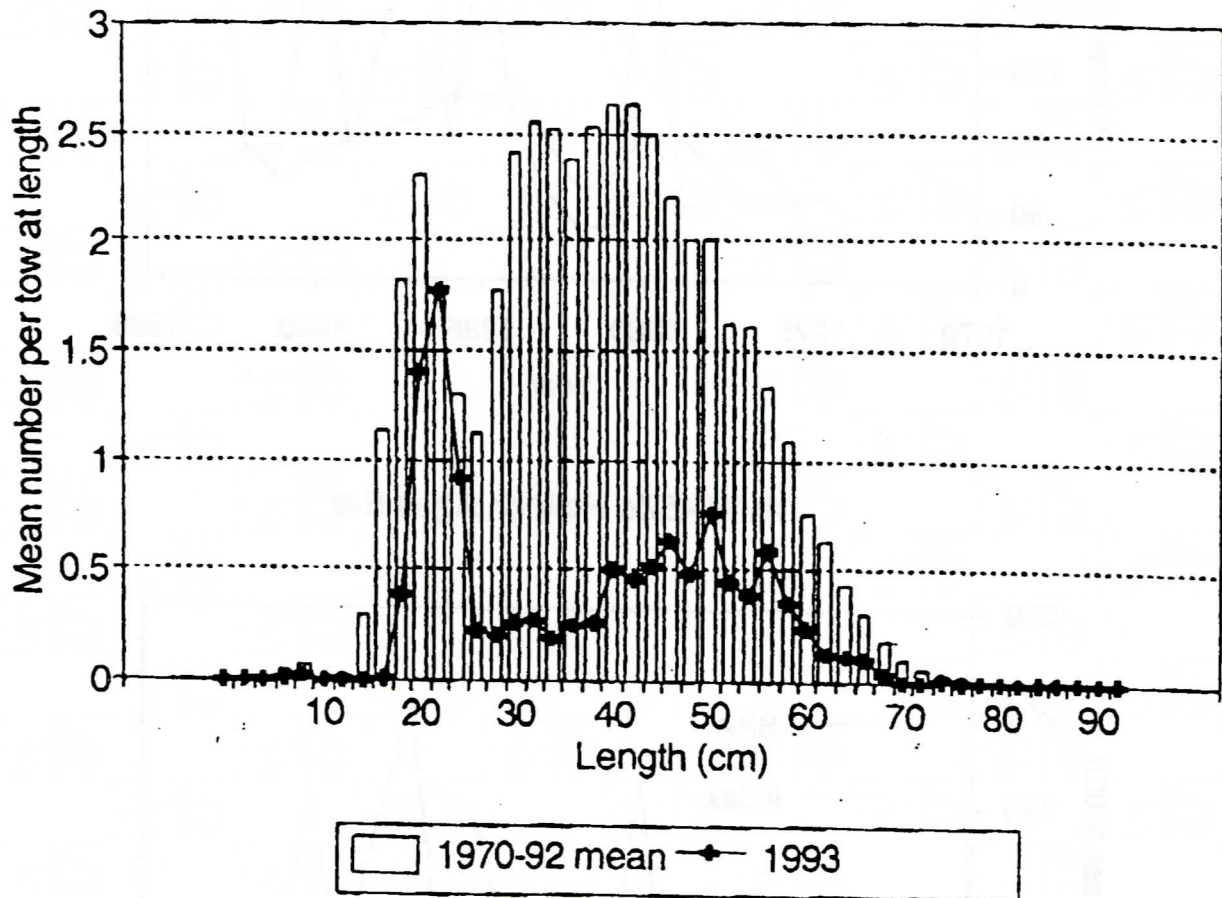
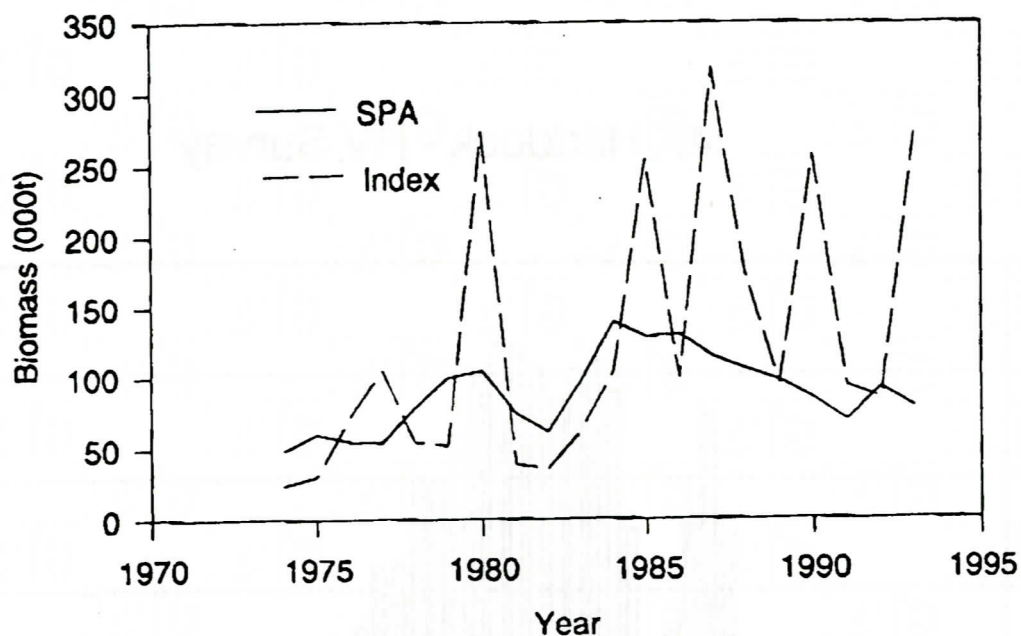


Figure 5.2. Research vessel survey 4X haddock length composition (bars are 1970-92 mean and points are 1993 values).



### 4VWX5Zc Pollock Ages 4-9



### 4VWX5Zc Pollock Ages 5-9

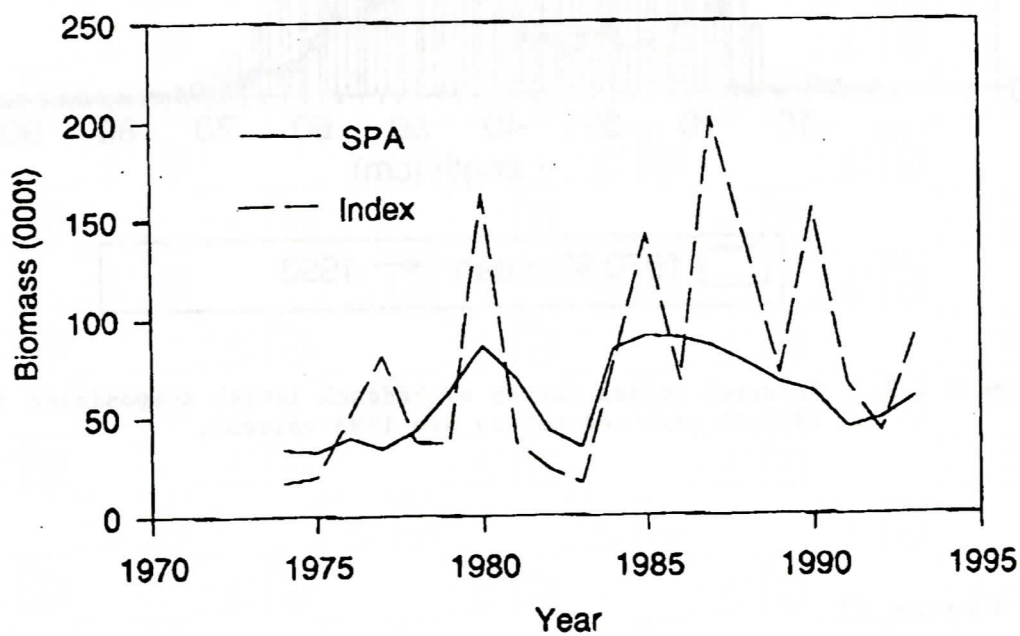
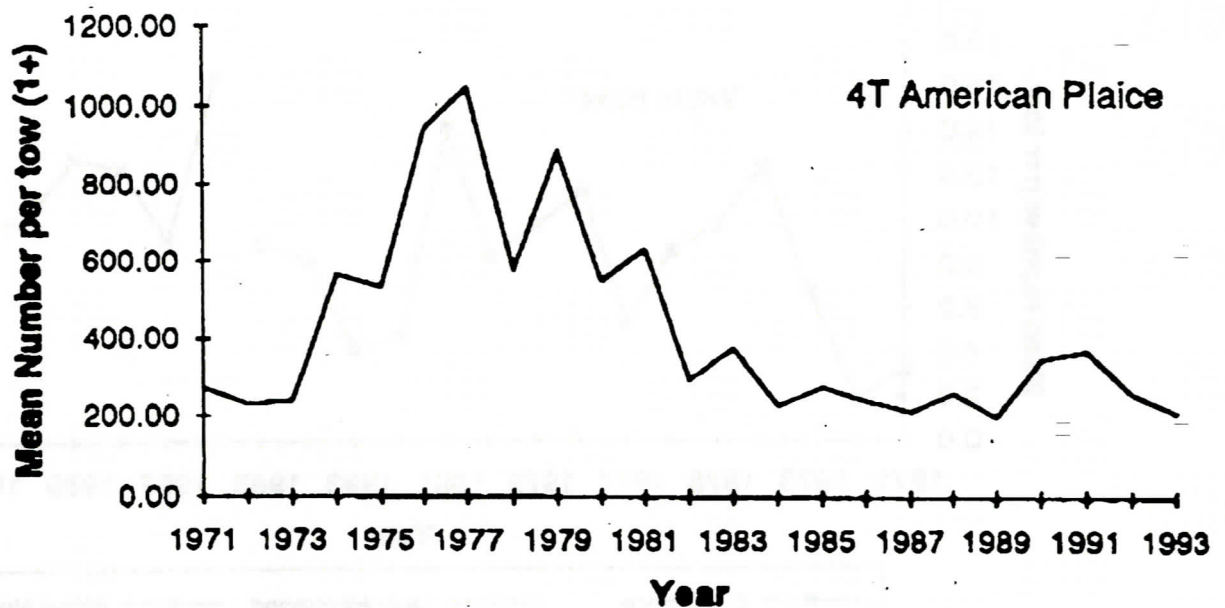
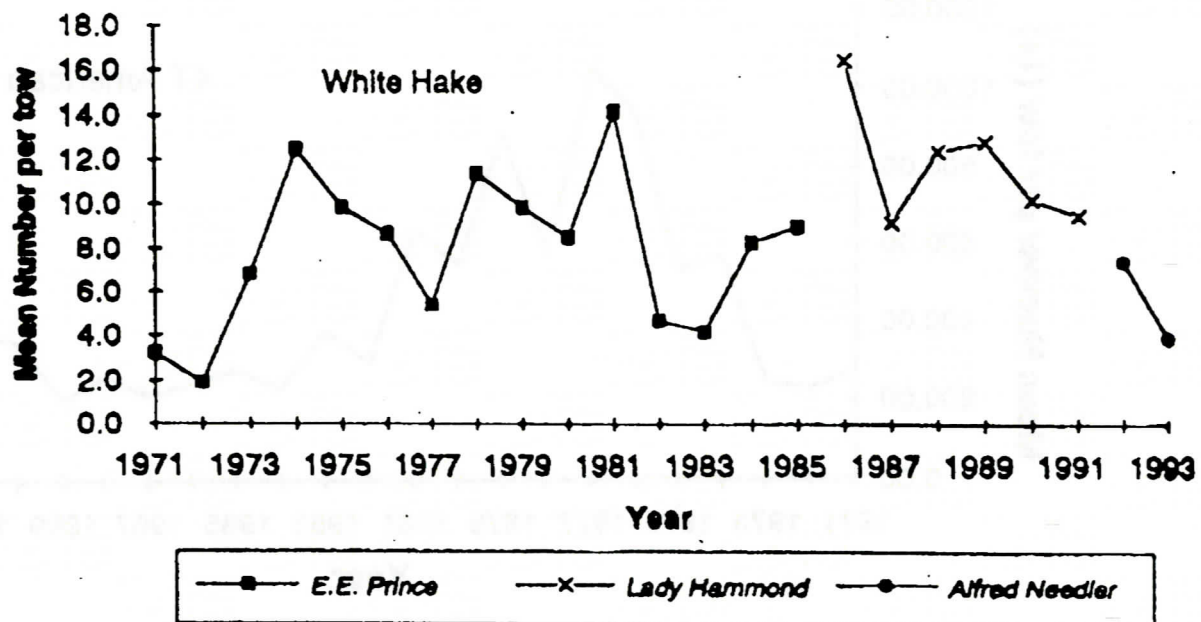


Figure 12



Mean number per tow (Ages 1+) for American plaice from the southern Gulf of St. Lawrence September groundfish surveys (1993 - preliminary)

Figure 13



Mean numbers per tow (Ages 0+) for white hake from the southern Gulf of St. Lawrence September groundfish surveys (1993 -preliminary). Note: *E.E. Prince* numbers multiplied by 1.2 to account for difference in fishing power