Not to be cited without permission of the authors<sup>1</sup>

Canadian Atlantic Fisheries Scientific Advisory Committee

CAFSAC Research Document 85/91

Ne pas citer sans autorisation des auteurs<sup>1</sup>

Comité scientifique consultatif des pêches canadiennes dans l'Atlantique

CSCPCA Document de recherche 85/91

Status of the Margaree River Gaspereau Fishery (1984)

Ъy

D.R. Alexander and A.H. Vromans Fisheries Research Branch, Gulf Region Department of Fisheries and Oceans P.O. Box 5030 Moncton, New Brunswick ElC 9B6

This series documents the scientific basis for fisheries management advice in Atlantic Canada. As such, it addresses the issues of the day in the time frames required and the Research Documents it contains are not intended as definitive statements on the subjects addressed but rather as progress reports on ongoing investigations.

Research Documents are produced in the official language in which they are provided to the Secretariat by the author. <sup>1</sup> Cette série documente les bases scientifiques des conseils de gestion des pêches sur la côte atlantique du Canada. Comme telle, elle couvre les problèmes actuels selon les échéanciers voulus et les Documents de recherche qu'elle contient ne doivent pas être considérés comme des énoncés finals sur les sujets traités mais plutôt comme des rapports d'étape sur les études en cours.

Les Documents de recherche sont publiés dans la langue officielle utilisée par les auteurs dans le manuscrit envoyé au secrétariat. In 1984, the commercial fishery on the southwest Margaree River harvested 883 tonnes of gaspereau. This is a substantial increase from the 580 tonnes landed in 1983 despite a reduction in exploitation as a result of imposing a weekly closed-time. It is estimated that this closed-time allowed an additional 600,000 fish to reach the spawning grounds in Lake Ainslie. The improved harvest and escapement appears to be largely the result of a strong 1980 year-class which provided 62% of the landings. It is recommended that action be taken to further reduce the rate of exploitation in order to stabilize the fishery with more year-classes of older, larger fish.

#### RESUME

En 1984, la pêche commerciale sur la rivière Margaree sud-ouest a produit 883 tonnes de gaspareau, soit une augmentation importante par rapport aux 580 tonnes débarquées en 1983 malgré une réduction de l'exploitation imposée par une période de fermeture hebdomadaire. On estime que cette période de fermeture a permis à 600 000 poissons additionnels d'atteindre les zones de frai dans le lac Ainslie. La production et l'échappement accrus semblent résulter surtout d'une forte classe d'âge de 1980 qui a fourni 62 % des débarquements. On recommande de prendre des mesures pour réduire davantage le taux d'exploitation afin de stabiliser la pêche à même d'autres classes d'âge de poisson plus vieux et plus gros.

## INTRODUCTION

The Margaree River supports an economically important gaspereau fishery which, in some years, including 1984, harvests more fish than from any other river in the Gulf Region including the Miramichi (Fig. 1). Since 1950, this fishery has harvested between 58 and 1,776 tonnes annually with a 35-year average of 811 tonnes. Concern expressed by the gaspereau fishermen and by fisheries managers that the stock may be over-exploited prompted a review of available data by the Anadromous Catadromous Freshwater Fishes \* (ACFF) Subcommittee of the Canadian Atlantic Fisheries Scientific Advisory Committee (CAFSAC) following the 1983 season. That review (Alexander 1984) concluded that recent levels of exploitation were excessive and should be reduced. A reduced rate of exploitation should stabilize the fishery by increasing the contribution from more year-classes of older, larger fish.

Gaspereau fishermen and fisheries managers agreed to take action to reduce the rate of exploitation on the Margaree although not to the extent recommended by CAFSAC. Most conditions of licence remained unchanged in 1984, but closed-times were imposed on the non-tidal portion of the Margaree River as follows:

- "(a) that portion of the Margaree River from the head-of-tide, upstream to the #19 highway bridge crossing the Southwest Margaree River at Southwest Margaree - weekly closure from 6:00 pm Friday to 8:00 am Sunday immediately following." (Downstream area [Fig. 2]).
- "(b) that portion of the Southwest Margaree River from the #19 highway bridge at Southwest Margaree, upstream to Lake Ainslie - weekly closure from 6:00 pm Saturday to 8:00 am Monday, immediately following." (Upstream area [Fig. 2]).

CAFSAC also recommended that more detailed studies of this fishery be implemented for use in future stock assessments. This report summarizes the results of the 1984 investigation of this revised fishery.

## METHODS

In 1984, fish for biological sampling were collected daily from a commercial tip-trap operated by Martin Cameron located in the lower half of the Daily sample size ranged from 20 to 40 fish and was fishery (Fig. 2). considered to be representative of the commercial landings. Samples were frozen for subsequent processing in the lab. Immediately after thawing, each specimen was measured to the nearest mm fork length and total length and weighed to the A comparison of length and weight before and after freezing nearest gram. (Vromans, unpublished) showed that a correction ( $y = 1.0144 \times + 4.5567$ ) was required to convert frozen fish lengths (x) to fresh fish equivalents (y), but no correction was required for weights. Only fresh fish equivalents are shown Sex and state of maturity were determined by unless otherwise indicated. examining gonads and species was identified by examining the colour of the The peritoneum in alewives (Alosa pseudoharengus) was peritoneal lining. considered to vary from pink to pearly-grey while it was sooty-black in blueback

(Alosa aestivalis) (Scott and Crossman, 1973). In the few cases where species identification remained uncertain, species was later determined by examination of scales using criteria described by MacLellan et al (1981). For species confirmation and age determination, a sample consisting of 6-8 non-regenerated scales was collected from an area below the dorsal fin and extending above and below the lateral line; these were mounted on acetate slides. Regenerated scales could usually be identified by visual inspection. Age of each specimen was subsequently determined in two independent readings by examining scales at a magnification of 25X and applying the criteria established by Cating (1953) and reviewed by Rothschild (1963). Where there was disagreement between the two age determinations, a third reading was made and the age common to two readings was Otoliths were also collected in cooperation with R. Crawford of the accepted. Age structure of the population. Nova Scotia Department of Fisheries. determined by independent examination of scales and otoliths, will be examined at a later date.

Provision of logbook information on daily catch and effort was stated as a condition of licence. Data on mean fish size, species composition and age structure from biological samples were applied to the daily catch records as reported in logbooks for a detailed simulation of the catch. Where rates such as catch per hour were determined, figures were derived directly from logbooks. Where necessary, components of total landings in the fishery, such as effective effort, catch per hour or catch at age, were derived by increasing (weighting) that component calculated from logbook reports by the ratio of total landings to logbook reported landings. Although the data set was considered to be inadequate to conduct sequential population analysis, numbers at age and changes in mean weight in recent years were used to provide an assessment of this gaspereau stock.

## **RESULTS AND DISCUSSION**

The number of licenced gaspereau traps in 1984 was reduced to 68 from 69 in 1983. However, the number of active traps increased from 44 to 45 (R. Watts, pers. comm.). It is probable that some fishermen entered the fishery in 1984 because they already held "back-pocket" licences which they were informed would not be renewed unless fished annually. Also, some fishermen may have been encouraged to participate more actively by an earlier prediction of a good run in 1984 (Crawford 1983). It is possible, therefore, that effective fishing effort in 1984 increased even with the imposition of a weekly closed time.

The 1984 Margaree gaspereau catch was recorded as 883,409 kg by the DFO Statistical Services Division compared to 643,768 kg reported in logbooks submitted for 42 traps. Consequently, a conversion factor of 1.3722 was used to convert logbook data to represent the fishery as a whole.

Some fishing effort began during the week of April 23, but no fish were recorded as being caught (Table 1). As fish began to arrive in the river, catch per hour rose and effort increased in response. Three weeks of intensive fishing were observed between May 14 and June 3. The effects of the closure can be seen in the daily effort reports particularly on May 19-20 and May 26-27 (Table 1). The peak single day catch of 136,657 kg (Table 2) (99,586 kg; Table 1) occurred on Thursday May 17, the same day that catch per unit effort peaked at 232.7 kg/hr. Overall catch per unit effort averaged 83.1 kg/hr. and the logbook effort of 7,749 hours corresponds to an effective effort of 10,633 hours for the season.

It is interesting to note that 26% of the catch was taken on May 17 and 18 and that more than 90% of the catch was taken in the 16-day period May 15 to Reduced catches were perceptible during the closures of May 19-20 and May 30. May 26-27 (Table 1; Table 2; Fig. 3). If it is assumed that catch on these days would have remained near the average for the first day before and the first day after, in the absence of a closure, and that the difference between those values and estimated catch represents escapement, then closure on these two weekend periods may have contributed to an increased escapement of approximately 600,000 This represents twice the total estimated spawning escapement in 1983 fish. (Alexander 1984). 'If these fish did escape the fishery, then it can be assumed that many will survive to contribute to the 1985 or later fisheries. However, this remains highly speculative since catch of fish on these days may have been reduced for other reasons had the traps not been raised. Also, some of the catch lost during closure may have been deferred only to succeeding days.

The 1984 fish sample of 1,131 specimens consisted of 88.7% alewives and 11.7% blueback herring. This is similar to the species composition in 1981 and 1982 for samples collected by Crawford (1983), but the small sample described by for the 1983 fishery included only 1.3% bluebacks. Alexander (1984) Unfortunately, it is likely that none of these figures are highly accurate because they are not weighted to reflect the number of fish being caught at the time of sampling. This weighting is important since it is well known that in mixed populations, the alewife run precedes the blueback run (Alexander and Vromans 1983, 1984; Crawford 1983; O'Neil 1980) even though the two may overlap. When the 1984 samples were weighted with logbook data to reflect the number in the fishery, harvest was estimated to include 3,586,600 alewives weighing 879,300 kg, representing approximately 99.5% of the catch and only about 16,100 bluebacks weighing 4,100 kg to represent the remaining 0.5% of the catch (Table 2). These data again show that alewives began contributing to the fishery a full month before bluebacks. The decline in the average size of fish caught over time is typical of gaspereau fisheries and reflects changes in age structure with time. For alewives, the initial weight of fish was about 318 g, finishing at 179 g, with an average of 245 g (Table 2). Although there were few bluebacks, their initial weight was 333 g, declining to 149 g at the end of the run, with an average of 257 g.

Weighting of samples to reflect the catch is likely to be even more important when considering age structure. The percentage of gaspereau in each age-group from samples previously collected on the Margaree has been calculated (Alexander 1984) to illustrate change in age between years. A similar calculation was completed for the 1984 sample (Table 3). These figures suggest that 53% were age 3, 25% age 4 and 16% age 5 with small numbers in other age groups. However, when the samples were weighted to represent the daily harvest, age 3 accounted for 68% of the catch with 22% and 7% at age 4 and 5, respectively. The 1984 sample was collected throughout the run and is therefore likely to include at least some fish from all ages. If the sample had concentrated only on the early catch, it would have been more heavily biased toward older age fish than it was. If the sample had concentrated on the late run, then it would have over-estimated the harvest of young fish. Crawford (1984) concedes that bias in his 1981 sample probably did result in over-estimation of the catch at age 3. Because of these types of bias, age distributions estimated prior to 1984 can be used as an indication of possible, or even probable, major shifts in age, but cannot be used for stock assessment using techniques such as sequential population analysis unless appropriate catch data can be found to weight the samples. The age distribution calculated for alewives (Table 4) and bluebacks (Table 5) in the 1984 harvest must be considered as the first set of data suitable for that purpose.

The average length of alewife and blueback herring in the 1984 fishery at each age has been calculated (Table 6). Average weight of the sampled fish at each age as well as the projected weight at the mean size for that age are also shown. Using the same regression equations and the mean weights of alewife (245 g) and blueback (257 g) previously calculated (Table 2), the mean length of alewife and blueback in the fishery can be estimated at 261 mm and 272 mm, respectively.

General comments by many gaspereau fishermen suggest that most were happier with the 1984 fishery. Although no data are available, it appears that there may have been some reallocation of fish from downstream traps to upstream traps. This may be socially desirable. Strict enforcement of regulations resulted in confiscation of one trap for fishing during hours of darkness. This action was applauded by other fishermen. Community concern for the health of the fishery and the quality of the local product was demonstrated in the strong vocal opposition to one fisherman who imported landed fish from another region for processing on the Margaree.

### CONCLUSION

By employing sampling techniques developed for gaspereau assessment elsewhere in the region (Alexander and Vromans 1983, 1984), the 1984 Margaree fishery has been described in detail. These data will eventually contribute to more sophisticated stock assessment using sequential population analysis.

The 1984 study results confirm earlier observations that this fishery is almost totally dependent on only two age-classes. In fact, this dependence on young fish may be even more pronounced than previously suggested. Unlike the heavily exploited Miramichi fishery which harvests large numbers of both alewife and blueback, only alewives are harvested in significant numbers from the Margaree. These factors contribute to a potentially unstable fishery. Failure of a single year-class for any reason can lead to virtual collapse of the fishery in its present condition. The 1984 catch improved relative to the 1983 harvest almost entirely because the 1980 year-class (age 3) proved to be strong. Although there is no conclusive proof that escapement increased as a 600,000 additional fish did survive. If true, this accounts for a harvest reduction of about 147 tonnes. That higher level of harvest would almost certainly have represented a level of exploitation which has been deemed excessive.

# RECOMMENDATIONS

It is recommended that action be taken to reduce current levels of exploitation in order to stabilize the fishery by increasing the number of year-classes contributing to the fishery, with more year-classes of older, larger fish. Two options for reducing the exploitation rate were considered:

a) Two-day closure during each week of the fishing season

Closure of the fishery for two consecutive days each week during the fishing season would reduce the potential effective fishing effort. However, the extent of the likely reduction in fishing mortality has not been quantified since gaspereau in the river may be vulnerable to the succession of traps and weirs for several days.

b) Closure for a week during the peak run

Data indicate that closure of the fishery for several days near the peak of the run would allow a significant portion of the run to escape the fishery and spawn. However, a one-week in-season closure would be difficult to implement because the peaking nature of the landings could jeopardize success of the fishery. For example, in 1984, 90% of the catch occurred during the 16-day period May 15-May 30.

#### ACKNOWLEDGEMENT

We are particularly grateful to Bruce Hendsbee, Area Director, and his staff for assistance in gaining improved cooperation from the fishermen for data collection. Martin Cameron and Darlene Cameron were of great help by taking time to collect fish for sampling particularly during their busy peak catch days. COSEP student, Monique Niles, processed many of the fish sampled with assistance from Bill Gorman of the Nova Scotia Department of Fisheries. This task was somewhat more tedious than normal because of the need to collect both otolith and scale samples. Perry Swan also participated in the sampling and applied his usual expertise in drafting figures. Drs. Mike Chadwick and Scott Campbell provided constructive comment on the final manuscript.

## LITERATURE CITED

- Alexander, D.R. 1984. Status of the Margaree River gaspereau fishery (1983). Department of Fisheries and Oceans, Fisheries Research Branch, P.O. Box 5030, Moncton, NB. CAFSAC Research Document 84/17. 14 p.
- Alexander, D.R. and A.H. Vromans. 1983. Status of the Miramichi River estuary gaspereau fishery (1982). Department of Fisheries and Oceans, Fisheries Research Branch, P.O. Box 5030, Moncton, NB. CAFSAC Research Document 83/37. 40 p.
- Alexander, D.R. and A.H. Vromans. 1984. Status of the Miramichi estuary gaspereau fishery (1983). Department of Fisheries and Oceans, Fisheries Research Branch, P.O. Box 5030, Moncton, NB. CAFSAC Research Document 84/23. 23 p.
- Cating, J.P. 1953. Determining age of Atlantic Shad from their scales. US Fish and Wildl. Ser., Fish. Bull. 54 (85): 187-199.
- Crawford, R.H. 1983 MS. The gaspereau fishery of the S.W. Margaree River, 1982. Nova Scotia Department of Fisheries. 10 p.
- Crawford, R.H. 1984 MS. The gaspereau fishery of the S.W. Margaree River, 1983. Nova Scotia Department of Fisheries. 16 p.
- MacLellan, P., G.E. Newsome and P.A. Dill. 1981. Discrimination by external features between alewife (<u>Alosa pseudoharengus</u>) and blueback herring (A. aestivalis). Can. J. Fish. Aquat. Sci. 38: 544-546.
- O'Neil, J.T. 1980. Aspects of the life histories of anadromous alewife, <u>Alosa</u> <u>pseudoharengus</u> (Wilson), and the blueback herring, <u>A. aestivalis</u> (Mitchell) in the southwest Margaree River and Lake Ainslie, Nova Scotia, 1978-79. M.Sc. thesis. Acadia Univ., Wolfville, NS.
- Rothschild, B.J. 1963. A critique of the scale method for determining the age of the alewife, <u>Alosa pseudoharengus</u> (Wilson). Trans. Amer. Fish. Soc. 92: 409-413.
- Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Bull. Fish. Res. Board Can., 184: 966 p.

Table 1. Daily catch (kg), effort (hours) and catch per unit effort (kg/hr) in the 1984 Southwest Margaree River gaspereau fishery, district 2, as reported through gaspereau catch and effort logbooks.

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Date	Mon	Tue	Wed	Thur	Fri	sat	Sun	Total
$\begin{array}{c} \operatorname{catch}\left(\mathrm{kg}\right) & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & $	April 23-29		<u> </u>						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	catch (kg)	0	0	0	. 0	0	0	0	0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	effort (hr)	8	8	8	8	8	8	0	48
April 30-May 6 catch (kg) 18 136 168 368 321 50 68 1,129 effort (hr) 22 33 48 52 46 10 24 235 CPUE (kg/hr) 0.62 4.12 3.50 7.08 6.97 4.99 2.83 4.80 May 7-13 catch (kg) 1,247 1,497 2,160 1,871 3,538 1,882 907 13,103 effort (hr) 92 118 142 136 160 66 56 770 CPUE (kg/hr) 13.56 12.96 15.21 13.76 22.11 28.52 16.20 17.02 May 14-20 catch (kg) 6,101 10,002 25,347 99,586 67,288 43,134 12,474 263,932 effort (hr) 241 282 365 428 426 244 122 2,108 CPUE (kg/hr) 25.31 35.47 69.44 232.68 157.95 176.78 102.24 125.20 May 21-27 catch (kg) 58,332 53,376 40,188 34,360 53,907 38,871 14,969 294,002 effort (hr) 439 492 495 478 420 234 130 2,688 CPUE (kg/hr) 132.87 108.49 81.19 71.88 128.35 166.11 115.14 109.38 May 28-June 3 catch (kg) 27,941 12,564 9,242 6,532 4,128 2,132 998 63,537 effort (hr) 257 235 208 208 168 115 47 1,238 CPUE (kg/hr) 108.72 53.47 44.43 31.40 24.57 18.54 21.23 51.32 June 4-10 catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 68 84 83 83 78 38 14 448 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 11-17 catch (kg) 50 118 0 0 0 0 1 13 123 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 1 168 effort (hr) 22 22 12 12 11 0 13 223 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 1 168 effort (hr) 2.27 5.36 0.00 0.00 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 0 0 0 0 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 0 0 0 0 0.00 1.84 Totals catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 4.48 7,789 CPUE (kg/hr) 1.27 5.36 0.00 0.00 0.00 0.00 0.00 1.84	CPUE (kg/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
catch (kg) 18 136 168 368 321 50 68 1,129 effort (hr) 22 33 48 52 46 10 24 235 CPUE (kg/hr) 0.82 4.12 3.50 7.08 6.97 4.99 2.83 4.80 May 7-13 catch (kg) 1,247 1,497 2,160 1,871 3,538 1,882 907 13,103 effort (hr) 92 118 142 136 160 66 56 770 CPUE (kg/hr) 13.56 12.96 15.21 13.76 22.11 28.52 16.20 17.02 May 14-20 catch (kg) 6,101 10,002 25,347 99,586 67,288 43,134 12,474 263,932 effort (hr) 241 282 365 428 426 244 122 2,108 CPUE (kg/hr) 25.31 35.47 69.44 232.68 157.95 176.78 102.24 125.20 May 21-27 catch (kg) 58,332 53,376 40,188 34,360 53,907 38,871 14,969 294,002 effort (hr) 439 492 495 478 420 234 130 2,688 CPUE (kg/hr) 132.87 108.49 81.19 71.88 128.35 166.11 115.14 109.38 May 28-June 3 catch (kg) 27,941 12,564 9,242 6,532 4,128 2,132 998 63,537 catch (kg) 1,415 1,315 1,451 1,451 1,154 136 136 7,040 effort (hr) 257 235 208 208 168 115 47 1,238 CPUE (kg/hr) 108.72 53.47 44.43 31.40 24.57 18.54 21.23 51.32 June 4-10 catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 68 84 83 83 78 38 14 448 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 11-17 catch (kg) 50 118 0 0 0 0 1 13 123 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 1 13 123 CPUE (kg/hr) 12.27 5.36 0.00 0.00 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 1 0 0 0 0 1 168 effort (hr) 22 2 12 12 11 0 12 91 CPUE (kg/hr) 12.27 5.36 0.00 0.00 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 1 0 0 0 0 1 168 effort (hr) 22 2 12 12 11 0 12 91 CPUE (kg/hr) 2.27 5.36 0.00 0.00 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 1.27 6.105 56.74 100.99 98.13 120.57 70.5 83.00	April 30-May 6								
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	catch (kg)	18	136	168	368	321	50	68	1,129
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	effort (hr)	22	33	48	52	46	10	24	235
$\begin{array}{llllllllllllllllllllllllllllllllllll$	CPUE (kg/hr)	0.82	4.12	3.50	7.08	6.97	4.99	2.83	4.80
$\begin{array}{cccc} catch \ (kg) & 1,247 & 1,497 & 2,160 & 1,871 & 3,538 & 1,882 & 907 & 13,103 \\ effort \ (hr) & 92 & 118 & 142 & 136 & 160 & 66 & 56 & 770 \\ CPUE \ (kg/hr) & 13.56 & 12.96 & 15.21 & 13.76 & 22.11 & 28.52 & 16.20 & 17.02 \\ \\ may 14-20 & catch \ (kg) & 6,101 & 10,002 & 25,347 & 99,586 & 67,288 & 43,134 & 12,474 & 263,932 \\ effort \ (hr) & 241 & 282 & 365 & 428 & 426 & 244 & 122 & 2,108 \\ CPUE \ (kg/hr) & 25.31 & 35.47 & 69.44 & 232.68 & 157.95 & 176.78 & 102.24 & 125.20 \\ \\ may 21-27 & catch \ (kg) & 58,332 & 53,376 & 40,188 & 34,360 & 53,907 & 38,871 & 14,969 & 294,002 \\ effort \ (hr) & 439 & 492 & 495 & 478 & 420 & 234 & 130 & 2,688 \\ CPUE \ (kg/hr) & 132.87 & 108.49 & 81.19 & 71.88 & 128.35 & 166.11 & 115.14 & 109.38 \\ \\ may 28-June 3 & catch \ (kg) & 27,941 & 12,564 & 9,242 & 6,552 & 4,128 & 2,132 & 998 & 63,537 \\ effort \ (hr) & 257 & 235 & 208 & 208 & 168 & 115 & 47 & 1,238 \\ CPUE \ (kg/hr) & 108.72 & 53.47 & 44.43 & 31.40 & 24.57 & 18.54 & 21.23 & 51.32 \\ \\ June 4-10 & catch \ (kg) & 1,415 & 1,315 & 1,451 & 1,451 & 1,134 & 136 & 136 & 7,040 \\ effort \ (hr) & 25 & 25 & 25 & 24 & 11 & 0 & 13 & 123 \\ CPUE \ (kg/hr) & 20.18 & 15.66 & 17.49 & 17.49 & 14.54 & 3.58 & 9.72 & 15.71 \\ \\ June 11-17 & catch \ (kg) & 306 & 295 & 88 & 147 & 0 & 0 & 23 & 860 \\ effort \ (hr) & 25 & 25 & 25 & 24 & 11 & 0 & 13 & 123 \\ CPUE \ (kg/hr) & 12.25 & 11.79 & 3.54 & 6.14 & 0.00 & 0.00 & 1.74 & 6.99 \\ \\ June 18-24 & catch \ (kg) & 50 & 118 & 0 & 0 & 0 & 0 & 0 & 0 \\ effort \ (hr) & 2.27 & 5.36 & 0.00 & 0.00 & 0.00 & 0.00 & 1.84 \\ CPUE \ (kg/hr) & 2.27 & 5.36 & 0.00 & 0.00 & 0.00 & 0.00 & 1.84 \\ CPUE \ (kg/hr) & 2.27 & 5.36 & 0.00 & 0.00 & 0.00 & 0.00 & 1.84 \\ CPUE \ (kg/hr) & 81.27 & 61.05 & 56.74 & 100.99 & 98.13 & 120.57 & 70.75 & 83.08 \\ \end{array}$	May 7-13								
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	cátch (kg)	1,247	1,497	2,160	1,871	3,538	1,882	907	13,103
$\begin{array}{c} \mbox{CPUE} \ (kg/hr) & 13.56 & 12.96 & 15.21 & 13.76 & 22.11 & 28.52 & 16.20 & 17.02 \\ \mbox{May 14-20} & & & & & & & & & & & & & & & & & & &$	effort (hr)	<b>9</b> 2	118	142	Í 136	160	66	56	770
$\begin{array}{llllllllllllllllllllllllllllllllllll$	CPUE (kg/hr)	13.56	12.96	15.21	13.76	22.11	28.52	16.20	17.02
$\begin{array}{cccc} catch \ (kg) & 6,101 & 10,002 & 25,347 & 99,586 & 67,288 & 43,134 & 12,474 & 263,932 \\ effort \ (hr) & 241 & 282 & 365 & 428 & 426 & 244 & 122 & 2,108 \\ CPUE \ (kg/hr) & 25.31 & 35.47 & 69.44 & 232.68 & 157.95 & 176.78 & 102.24 & 125.20 \\ \end{array}$	May 14-20								
effort (hr)2412823654284262441222,108CPUE (kg/hr)25.3135.4769.44232.68157.95176.78102.24125.20May 21-27 catch (kg)58.33253.37640.18834.36053.90738.87114.969294.002effort (hr)4394924954784202341302,688CPUE (kg/hr)132.87108.4981.1971.88128.35166.11115.14109.38May 28-June 3 catch (kg)27,94112,5649,2426,5324,1282,13299863,537effort (hr)257235208208168115471,238CPUE (kg/hr)108.7253.4744.4331.4024.5718.5421.2351.32June 4-10 catch (kg)1,4151,3151,4511,4511,1141361367,040effort (hr)6884838378814448CPUE (kg/hr)20.1815.6617.4917.4914.543.589.7215.71June 11-17 catch (kg)306295881470023860effort (hr)22221211013123CPUE (kg/hr)12.2511.793.546.140.000.001.746.99June 18-24 catch (kg)5011800000	catch (kg)	6,101	10,002	25,347	99,586	67,288	43,134	12,474	263,932
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	effort (hr)	241	282	365	428	426	244	122	2,108
$\begin{array}{llllllllllllllllllllllllllllllllllll$	CPUE (kg/hr)	25.31	35.47	69.44	232.68	157.95	176.78	102.24	125.20
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	May 21-27								
effort (hr) 439 492 495 478 420 234 130 2,688 CPUE (kg/hr) 132.87 108.49 81.19 71.88 128.35 166.11 115.14 109.38 May 28-June 3 catch (kg) 27,941 12,564 9,242 6,532 4,128 2,132 998 63,537 effort (hr) 257 235 208 208 168 115 47 1,238 CPUE (kg/hr) 108.72 53.47 44.43 31.40 24.57 18.54 21.23 51.32 June 4-10 catch (kg) 1,415 1,315 1,451 1,451 1,134 136 136 7,040 effort (hr) 68 84 83 83 78 38 14 448 CPUE (kg/hr) 20.18 15.66 17.49 17.49 14.54 3.58 9.72 15.71 June 11-17 catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 25 25 25 24 11 0 13 123 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 0 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0.00 0.00 1.84 Totals catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	catch (kg)	58,332	53,376	40,188	34,360	53,907	38,871	14,969	294,002
$\begin{array}{c} \mbox{CPUE} (kg/hr) & 132.87 & 108.49 & 81.19 & 71.88 & 128.35 & 166.11 & 115.14 & 109.38 \\ \mbox{May 28-June 3} & & & & & & & & & & & & & & & & & & $	effort (hr)	439	492	495	478	420	234	130	2,688
May 28-June 3 catch $(kg)$ 27,941 12,564 9,242 6,532 4,128 2,132 998 63,537 effort $(hr)$ 257 235 208 208 168 115 47 1,238 CPUE $(kg/hr)$ 108.72 53.47 44.43 31.40 24.57 18.54 21.23 51.32 June 4-10 catch $(kg)$ 1,415 1,315 1,451 1,451 1,134 136 136 7,040 effort $(hr)$ 68 84 83 83 78 38 14 448 CPUE $(kg/hr)$ 20.18 15.66 17.49 17.49 14.54 3.58 9.72 15.71 June 11-17 catch $(kg)$ 306 295 88 147 0 0 23 860 effort $(hr)$ 25 25 25 24 11 0 13 123 CPUE $(kg/hr)$ 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch $(kg)$ 50 118 0 0 0 0 0 1.74 6.99 June 18-24 catch $(kg)$ 50 118 0 0 0.00 0.00 1.84 Totals catch $(kg)$ 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort $(hr)$ 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE $(kg/hr)$ 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	CPUE (kg/hr)	132.87	108.49	81.19	71.88	128.35	166.11	115.14	109.38
cátch (kg) 27,941 12,564 9,242 6,532 4,128 2,132 998 63,537 effort (hr) 257 235 208 208 168 115 47 1,238 CPUE (kg/hr) 108.72 53.47 44.43 31.40 24.57 18.54 21.23 51.32 June 4-10 catch (kg) 1,415 1,315 1,451 1,451 1,134 136 136 7,040 effort (hr) 68 84 83 83 78 38 14 448 CPUE (kg/hr) 20.18 15.66 17.49 17.49 14.54 3.58 9.72 15.71 June 11-17 catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 25 25 25 24 11 0 13 123 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0.00 0.00 1.84 Totals catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	May 28-June 3								
effort (hr) 257 235 208 208 168 115 47 1,238 CPUE (kg/hr) 108.72 53.47 44.43 31.40 24.57 18.54 21.23 51.32 June 4-10 catch (kg) 1,415 1,315 1,451 1,451 1,134 136 136 7,040 effort (hr) 68 84 83 83 78 38 14 448 CPUE (kg/hr) 20.18 15.66 17.49 17.49 14.54 3.58 9.72 15.71 June 11-17 catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 25 25 25 24 11 0 13 123 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0.00 0.00 1.84 effort (hr) 22 22 12 12 11 0 12 91 CPUE (kg/hr) 2.27 5.36 0.00 0.00 0.00 0.00 1.84 Totals catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	catch (kg)	27,941	12,564	9,242	6,532	4,128	2,132	998	63,537
$\begin{array}{c} \mbox{CPUE (kg/hr) 108.72 } 53.47 & 44.43 & 31.40 & 24.57 & 18.54 & 21.23 & 51.32 \\ \mbox{June 4-10 } \\ \mbox{catch (kg) 1,415 1,315 1,451 1,451 1,134 136 136 7,040 \\ \mbox{effort (hr) 68 84 83 83 78 38 14 448 } \\ \mbox{CPUE (kg/hr) 20.18 15.66 17.49 17.49 14.54 3.58 9.72 15.71 } \\ \mbox{June 11-17 } \\ \mbox{catch (kg) 306 295 88 147 0 0 23 860 \\ \mbox{effort (hr) 25 25 25 24 11 0 13 123 } \\ \mbox{CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 } \\ \mbox{June 18-24 } \\ \mbox{catch (kg) 50 118 0 0 0 0 0 0 0 1.74 6.99 } \\ \mbox{June 18-24 } \\ \mbox{catch (kg) 50 118 0 0 0 0.00 0.00 0.00 1.84 } \\ \mbox{effort (hr) 22 22 12 12 11 0 12 91 } \\ \mbox{CPUE (kg/hr) 2.27 5.36 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.84 } \\ \mbox{Totals } \\ \mbox{catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 } \\ \mbox{effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 } \\ \mbox{CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08 } \\ \end{tabular}$	effort (hr)	257	235	208	208	168	115	47	1,238
June 4-10 catch $(kg)$ 1,4151,3151,4511,4511,1341361367,040effort $(hr)$ 68848383783814448CPUE $(kg/hr)$ 20.1815.6617.4917.4914.543.589.7215.71June 11-17 catch $(kg)$ 306295881470023860effort $(hr)$ 2525252411013123CPUE $(kg/hr)$ 12.2511.793.546.140.000.001.746.99June 18-24 catch $(kg)$ 5011800000168effort $(hr)$ 222212121101291CPUE $(kg/hr)$ 2.275.360.000.000.000.001.84Totals catch $(kg)$ 95,41179,30478,645144,316130,31686,20529,574643,770effort $(hr)$ 1,1741,2991,3861,4291,3287154187,749CPUE $(kg/hr)$ 81.2761.0556.74100.9998.13120.5770.7583.08	CPUE (kg/hr)	108.72	53.47	44.43	31.40	24.57	18.54	21.23	51.32
catch (kg) 1,415 1,315 1,451 1,451 1,134 136 136 7,040 effort (hr) 68 84 83 83 78 38 14 448 CPUE (kg/hr) 20.18 15.66 17.49 17.49 14.54 3.58 9.72 15.71 June 11-17 catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 25 25 25 24 11 0 13 123 CPUE (kg/hr) 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 168 effort (hr) 22 22 12 12 11 0 12 91 CPUE (kg/hr) 2.27 5.36 0.00 0.00 0.00 0.00 0.00 1.84 Totals catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	June 4-10								
effort (hr) $68$ $84$ $83$ $83$ $78$ $38$ $14$ $448$ CPUE (kg/hr) $20.18$ $15.66$ $17.49$ $17.49$ $14.54$ $3.58$ $9.72$ $15.71$ June 11-17 catch (kg) $306$ $295$ $88$ $147$ $0$ $0$ $23$ $860$ effort (hr) $25$ $25$ $25$ $24$ $11$ $0$ $13$ $123$ CPUE (kg/hr) $12.25$ $11.79$ $3.54$ $6.14$ $0.00$ $0.00$ $1.74$ $6.99$ June $18-24$ catch (kg) $50$ $118$ $0$ $0$ $0$ $0$ $122$ $91$ CPUE (kg/hr) $2.27$ $5.36$ $0.00$ $0.00$ $0.00$ $0.00$ $1.84$ Totals catch (kg)catch (kg) $95,411$ $79,304$ $78,645$ $144,316$ $130,316$ $86,205$ $29,574$ $643,770$ Fortals catch (kg)PUE (kg/hr) $1,174$ $1,299$ $1,386$ $1,429$ $1,328$ $715$ $418$ $7,749$ CPUE (kg/hr) $81.27$ $61.05$ $56.74$ $100.99$ $98.13$ $120.57$ $70.75$ $83.08$	catch (kg)	1.415	1,315	1,451	1,451	1,134	136	136	7,040
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	effort (hr)	68	<b>ُ</b> 84	É 83	83	78	38	14	448
June 11-17 catch $(kg)$ 306 295 88 147 0 0 23 860 effort $(hr)$ 25 25 25 24 11 0 13 123 CPUE $(kg/hr)$ 12.25 11.79 3.54 6.14 0.00 0.00 1.74 6.99 June 18-24 catch $(kg)$ 50 118 0 0 0 0 0 0 1.74 6.99 June 18-24 catch $(kg)$ 50 118 0 0 0 0 0 0 168 effort $(hr)$ 22 22 12 12 11 0 12 91 CPUE $(kg/hr)$ 2.27 5.36 0.00 0.00 0.00 0.00 0.00 1.84 Totals catch $(kg)$ 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort $(hr)$ 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE $(kg/hr)$ 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	CPUE (kg/hr)	20.18	15.66	17.49	17.49	14.54	3.58	9.72	15.71
catch (kg) 306 295 88 147 0 0 23 860 effort (hr) 25 25 25 24 11 0 13 123 CPUE (kg/hr) 12.25 11.79 $3.54$ 6.14 0.00 0.00 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 0 1.74 6.99 June 18-24 catch (kg) 50 118 0 0 0 0 0 0 168 effort (hr) 22 22 12 12 11 0 12 91 CPUE (kg/hr) 2.27 5.36 0.00 0.00 0.00 0.00 0.00 1.84 Totals catch (kg) 95,411 79,304 78,645 144,316 130,316 86,205 29,574 643,770 effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	June 11-17								
effort (hr)2525252411013123CPUE (kg/hr)12.2511.79 $3.54$ $6.14$ $0.00$ $0.00$ $1.74$ $6.99$ June 18-24 catch (kg)5011800000168effort (hr)222212121101291CPUE (kg/hr)2.27 $5.36$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $1.84$ Totals catch (kg)Fort (hr) $1.74$ $1.299$ $1.386$ $1.429$ $1.328$ $715$ $418$ $7.749$ CPUE (kg/hr) $81.27$ $61.05$ $56.74$ $100.99$ $98.13$ $120.57$ $70.75$ $83.08$	catch (kg)	306	295	88	147	0	0	23	860
CPUE $(kg/hr)$ 12.2511.793.546.140.000.001.746.99June 18-24 catch $(kg)$ 5011800000168effort $(hr)$ 222212121101291CPUE $(kg/hr)$ 2.275.360.000.000.000.000.001.84Totals catch $(kg)$ 95,41179,30478,645144,316130,31686,20529,574643,770Fotals catch $(kg)$ 95,41179,30478,645144,316130,31686,20529,574643,770CPUE $(kg/hr)$ 1,1741,2991,3861,4291,3287154187,749CPUE $(kg/hr)$ 81.2761.0556.74100.9998.13120.5770.7583.08	effort (hr)	25	25	.25	24	11	0	13	123
June 18-24 catch (kg)50118000000effort (hr)222212121101291CPUE (kg/hr)2.27 $5.36$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $1.84$ Totals catch (kg)95,41179,30478,645144,316130,31686,20529,574643,770effort (hr)1,1741,2991,3861,4291,3287154187,749CPUE (kg/hr)81.2761.0556.74100.9998.13120.5770.7583.08	CPUE (kg/hr)	12.25	11.79	3.54	6.14	0.00	0.00	1.74	6.99
catch (kg)  50  118  0  0  0  0  0  168    effort (hr)  22  22  12  12  11  0  12  91    CPUE (kg/hr)  2.27  5.36  0.00  0.00  0.00  0.00  0.00  1.84    Totals	June 18-24								
effort (hr)  22  22  12  12  11  0  12  91    CPUE (kg/hr)  2.27  5.36  0.00  0.00  0.00  0.00  0.00  1.84    Totals  catch (kg)  95,411  79,304  78,645  144,316  130,316  86,205  29,574  643,770    effort (hr)  1,174  1,299  1,386  1,429  1,328  715  418  7,749    CPUE (kg/hr)  81.27  61.05  56.74  100.99  98.13  120.57  70.75  83.08	catch (kg)	50	118	0	0	0	0	0	168
CPUE (kg/hr)  2.27  5.36  0.00  0.00  0.00  0.00  0.00  1.84    Totals  catch (kg)  95,411  79,304  78,645  144,316  130,316  86,205  29,574  643,770    effort (hr)  1,174  1,299  1,386  1,429  1,328  715  418  7,749    CPUE (kg/hr)  81.27  61.05  56.74  100.99  98.13  120.57  70.75  83.08	effort (hr)	22	22	12	12	11	0	12	91
Totals    catch (kg)  95,411  79,304  78,645  144,316  130,316  86,205  29,574  643,770    effort (hr)  1,174  1,299  1,386  1,429  1,328  715  418  7,749    CPUE (kg/hr)  81.27  61.05  56.74  100.99  98.13  120.57  70.75  .83.08	CPUE (kg/hr)	2.27	5.36	0.00	0.00	0.00	0.00	0.00	1.84
catch (kg)95,41179,30478,645144,316130,31686,20529,574643,770effort (hr)1,1741,2991,3861,4291,3287154187,749CPUE (kg/hr)81.2761.0556.74100.9998.13120.5770.75.83.08	Totals	·				<u> </u>		····	
effort (hr) 1,174 1,299 1,386 1,429 1,328 715 418 7,749 CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	catch (kg)	95,411	79,304	78,645	144,316	130,316	86,205	29,574	643 <b>,</b> 770
CPUE (kg/hr) 81.27 61.05 56.74 100.99 98.13 120.57 70.75 83.08	effort (ĥr)	1,174	1,299	1,386	1,429	1,328	715	418	7,749
	CPUE (kg/hr)	81.27	61.05	56.74	100.99	98.13	120.57	70.75	.83.08

- 10 -
--------

---

. . . بىيمىت بىيىن

Table 2.	Estimated catch (kg) and numbers of gaspereau in the 1984 S.W. Margaree River gaspereau fishery, District	t <b>2.</b>	(Values are based	an
comercial	l samples [daily estimates] and total reported landings.)			

		Alewif	<del>е</del>	Blueba	::::::::::::::::::::::::::::::::::::::		Catch (kg)			Nunber	
Date	е	Mean Wt. (kg)	%	Mean Wt. (kg)	20	Alewife	Blueback	Combined	Alewife	Blueback	Cambined
April	30	.3178	100.0	.0000	.0	25	0	25	78	0	. 78
May	01	.3286	100.0	.0000	.0	187	0	187	568	0	568
May	02	.3473	100.0	.000	.0	231	0	231	664	0	664
May	03	.3068	100.0	.0000	.0	505	0	505	1,646	U	1,646
May	04	.3053	100.0	.000	.0	- 441	0	440	1,445	U	1,445
May	05	.2969	100.0	.0000	.0	69	0	69	231	U	231
May	06	.2879	100.0	.000	.0	93	0	93	524	U O	524
May	07	.2819	100.0	.0000	•0	1,711	0	- 1,711	6,0/0	U	6,0/0
May	08	.2890	100.0	.000	.0	2,054	, O	2,054	7,108	0	7,108
May	09	.2910	100.0	.0000	.0	2,964	0	2,964	10,186	· U	10,186
May	10	.2944	100.0	.0000	.0	2,567	0	2,567	8,721	U	8,721
May	11	.2975	100.0	.0000	.0	4,855	0	4,855	16,319	0	16,319
May	12	.2867	100.0	.0000	.0	2,583	0	2,583	9,008	U	9,008
May	13	.2759	100.0	.0000	.0	1,245	0	1,245	4,511	0	4,511
May	14	.2599	100.0	.000	.0	8,372	0	8,372	32,213	0	32,213
Mav	15	.2764	100.0	.0000	.0	13,725	0	13,725	49,657	0	49,657
May	16	.2713	100.0	.000	.0	34,782	0	34,782	128,206	0	128,206
May	17	.2519	100.0	.0000	.0	136,657	0	136,657	542,504	0	542,504
Mav	18	.2401	100.0	.0000	.0	92,336	0	92,336	384,572	0	384,572
Mav	19	.2513	100.0	.0000	.0	59,190	0	, 59,191	235,537	0	235,537
Mav	20	.2625	100.0	.0000	.0	17,117	0	17,117	65,209	0	65,209
Marv	21	.2371	100.0	.0000	.0	80,046	0	80,046	337,604	0	337,604
Mav	22	.2255	100.0	.0000	.0	73,245	0	73,245	324,812	0	• 324,812
Mav	23	.2486	100.0	.0000	.0	55,148	0	55,148	221,834	0	221,834
May	24	2172	100.0	.000	.0	47,150	· 0	47,150	217,083	0	217,083
May	25	2769	100.0		.0	73,974	0	73,974	267,150	0	267,150
May	26	2759	100.0	imm	.0	53,341	Ō	53.341	193,333	· 0	193,333
Man /	27	27/7	100.0		.0	20,541	Ō	20,541	74,777	0	74,777
Mov	29	2073	100.0		.0	38,342	Ō	38,342	184,959	0	184,959
Monu	20	2020	100.0	i	.0	17,241	Ō	17,241	85,351	0	85,351
Mov	30	2020	95.0	3330	5.0	11,699	984	12,682	56,135	2,954	59,089
Mou	20 31	2825	100.0	2670	.0	8,963	0	8,964	31,729	Ó	31,729
Tray		2144	95.0	2010	ร์ก	5,401	264	5.665	24,935	1,312	26,247
3000	m m	2104	87.5	237/	12.5	2,520	406	2,926	11,965	1,709	13,674
June	02	203/	90.0	2/45	20.0	1 051	318	1.370	5,167	1,292	6,459
June	0	.20,24		-2402	20.0	1 707	550	1 9/12	7 500	1 875	9 375
June	04	. 1844	80.0	• 2700	20.0	1,202	,,,,	1,242	9 556	1,0/2	8 556
June	05	.2109	100.0	•2004	.0	1,004	108	1,002	9.7/19	513	10,261
June	06	. 1952	95.0	.2100	10.0	1,002	257	1 991	8 527	947	9,474
June	07 m	.2054	70.0	.2/10	21.1	1,774	304	1 554	5,790	1 544	7 334
June	08	.2021	/0.7	- 4200	41.1	1,170	29	197	811	119	930
June	10	•1921 1006	0/.2	• 2,200 10/0	12.0	170	10	197	935	49	984
June	10	• 1072 1715	99.U 10.0	- 1740	9.0	31	399	420	178	1.602	1.780
June	10	.1715	10.0	2421	20.0	262	163	405	1 220	813	2,033
June	12	. 1962	60.U	• 2004	40.0	244	20	121	201	373	574
June	12	.2007	JJ.0	.2120	62.0	40.		202	201 411	408	1 019
June	14	.1965	60.0	.2005	40.0	120	02	202	011		,,0,2
June	15	.1950	35.U	. 1810	67.0	U	U 0	U 0	U n	0 N	0
June	16	.1950	35.U	. 1810	67.0	U	U 20	U 22	10	12/1	102
Jue	1/	.1870	10.0	.1/25	9U.U	ر ~	28	22	10	104	102
June	18	.2217	35.0	.1952	65.0	26	4)	67	110	400	070 010
June	19	.1785	80.0	.1493	20.0	154	28	162	/ <b>2</b> U	100	728
total % of	Total	.2452		.2570		879,277 99.5	4,132 .5	883,409	3,586,572 99.6	16,080 .4	3,602,652

Table 3. Approximate percentage of biological samples in each age group from gaspereau (primarily alewives) collected from the Margaree River in 1978, 1979, 1981, 1982, 1983 and 1984. The percentage in each age group in the 1984 fishery after weighting samples to reflect the harvest is shown for comparison.

	size		2222222		bille side bille bille bille and substantia				
Year	(no.)	3	4	5	6	7	8	9	10
1978*	302		48	31	13	5	2	1	1
1979*	2,009		11	57	20	9	3	1	1
1981**	419	85	8	5	3	1	-	-	-
1982**	537	33	48	7	6	5	1	-	-
1983	314	52	33	12	2	1	0	1	
1984	1,131	53	25	16	3	1	<1	<1	<1
1984	weighted	68	22	7	1	1	<1	<1	<1

\* Source: 0'Neil, J.T. 1980

\*\* Source: Crawford, R.H. 1983

Date		Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Totals	×.
Annil	 30	0	0	10	31	29	6	0	2	• 0	0	0	0	78	.00
Mav (	n	ō	0	65	230	209	43	14	7	. 0	U	U	U	200	.02
Mav (	12	Ō	0	68	272	238	51	34	0	U	U 47	U	0	1 6/16	-02
May (	33	0	0	43	650	650	130	43	8/	U	42	n U	0	1,040	.04
Mary (	04	0	0	361	433	361	253	U	26	0	ů n	ů n	ň	232	.01
Mary (	05	0	0	52	87	75	12	6	0	0	0	n	ñ	324	.01
May (	06	0	0	<del>9</del> 7	126	84	15	4	. U	0	0	ň	n	6.070	.17
Mary (	07	0	0	2,297	2,461	1,148	164	0	0	0 0	0	n	ñ	7,109	.20
May I	08	0	0	3,199	2,488	1,244	1/0 500	0	255	· 0	ñ	ñ	Õ	10,186	.28
May I	09	0	0	3,820	2,801	2,801	207	674 1		n	ň	õ	õ	8,720	.24
May	10	0	0	3,2/0	2,616	1,704	4,0	420 816	ň	n	õ	Ō	Ō	16,320	.46
May	11	0	0	3,264	1,152	4,400	450	010	n	ถ้	õ	Ō	Ō	9,008	.25
May	12	0	U	4,054	2,02	2,22	113	ñ	ň	Ő	õ	Ō	0	4,510	.13
Mary	13	0	0	1,804	1,504	707	10	ň	ถ้	Õ	ō	Ō	0	32,213	.90
May	14	U	U	11,2/2	7 0/1	10 / 5/	2 61/1	ñ	ñ	ō	Ō	0	0	49,658	1.38
May	15	U	U	28, 147	7,041	40,424 40,872	2,014	ñ	12.821	Ō	Ū.	Ð	0	128,206	3.57
May	16	U	U	44,872	142 751	108 501	27, 125	n	0	õ	Ō	0	0	542,504	15.13
May	1/	U	U	244,121	101 203	AR 481	<b>1</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	õ	Õ	20,241	0	0	0	384,572	10.72
May	18	U	0	16/ 876	/17 107	23 554	ň	Ō	Ō	ÓO	0	0	0	235,537	6.57
May	19	0	0	104,070	17 932	3,260	õ	1.630	0	0	0	0	0	65,208	1.82
May	20	0	0	202 562	118,161	,	õ	16.880	0	0	0	0	0	337,603	9.41
May	21	0	ñ	202,202	97.444	õ	Ō	, O	0	0	0	0	0	324,812	9.06
May	22	0	0	199 651	22,183	õ	Ō	Ō	0	0	0	0	0	221,834	6.19
Mary	2	0	n	151,958	65,125	Ō	Ō	0	0	0	0	0	0	217,083	6.05
May	24 25	0 N	n	232,304	23,230	11.615	0	· 0	0	0	0	0	0	267,149	7.45
Man	26	0	ñ	174,000	19.333	0	0	0	0	.0	0	0	0	193,333	5.39
Max	20	ň	ñ	69,169	5.608	0	0	0	0	0	0	0	0	74,777	2.08
Mav	28	ñ	ñ	175.711	9,248	0	0	0	0	0	ò	0	0	184,959	5.16
Mov	29	ñ	ŏ	85.351	í o	. 0	0	0	0	0	0	0	0	85,351	2.58
May	30	õ	Ō	45,610	10,525	0	0	0	0	0	0	0	U	26,122	1.2/
Mav	31	Ō	0	28,389	3,340	. 0	0	0	0	0	U	U	U	21,727	.00
Jine	01	Ō	0	19,948	4,987	· 0	0	0	0	0	U	U	U	24,700	./0
June	02	0	0	10,076	1,889	0	0	0	0	U	U	U	0	5 167	1/1
ງນາຍ	03	0	0	4,724	443	0	0	0	0	U	U	U	0	7,00	21
June	04	0	0	7,500	0	0	0	U	U	U	U	U	0	7,500	•2 •
June	05	0	0	8,556	0	0	0	0	0	0	0	0	0	8,556	.20
June	06	0	0	8,286	975	٥	487	0	0	0	0	U	U	9,748	.21
June	07	0	0	8,527	0	0	0	0	U	U	U	U	U	5,527	• 24
Jne	08	0	0	5,147	322	0	522	U	U	U	U	U	0	2,771	<u>م</u> ، د
June	09	0	0	710	101	0	U	U	U	U	0	U	0	011	-04
June	10	0	0	855	55	2/	U	U	U	U	0	0	0	179	.u.
June	11	0	0	169	U	9	U	U	U	0	0	0	0	1 220	.u. m
June	12	0	U	1,220	U 77	U	U	U 0		0	0	0	0	200	.0.
June	13	U	U	167	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	· U	0	0	0	0	0	0	n n	611	.0
June	14	U	U	524	U	8/	0	U O	U n	U N	n	n	n	n	n.
June	15	U	U	U	U	U n	0	U N	U N	n D	0	n	n	n	ñ.
June	16	U	U	U 10	U n	U n	U 0	0	0	n	n	n	n	18	n.
June	1/	U O	U 0	18	U 0	U n	0	n	0 0	ט ח	ñ	ñ	Ő	118	œ.
June	10	U n	0	118	U 21/-	107	. U	0	n	ñ	ñ	ŏ	ŏ	750	.0
Jue	17	U	U	427	214	107	J	5	0	Ŭ	v	-	-		
	5	n	Ω	2,450,383	787.409	262.518	32.906	19,863	13,208	20,241	43	0	0	3,586,571	
%	-	.oo	.00	68.32	21.95	7.32	.92	.55	.37	.56	.00	.00	.00		

.

Table 4. Estimated numbers of alexives at age, by day, 1984 S.W. Margaree River fishery, District 2. (Values are based on commercial samples [daily estimates] and total reported landings.)

- 12 -

... ·

----

-----

----

. ....

. .

Dat	e	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Totals	6×
April	. 30	0	0.	0	0	0	0	0	0	0	0	0	0	0	.00
May	01	0	0	0	0	0	0	0	0	0	0	0	0	0	.00
May	02	0	0	0	0	0	0	0	0	0	U	Ű	0	0	.00
May	03	0	0	0	0	U	U	0	U	U	U	U	U	U	
May	04	0	0	0	0	U	U	U	U	0	U	U	U	U	
Mary	05	0	U	U	U	0	U	U	U	0	0	U	0	U 0	.00
May	06	U	U	U	U	U	0	U	U	U 0	0	U	0	. U	.00
May	U/	U	U	U	U	0	0	0	0	0	0	0	0	0	.00
May	08	U	0	0	0	0	0	0	0	0 N	n N	0	0 N	0	 m
May	10	0	0	0	n	ບ ກ	0 0	0	0	ň	n	ñ	ñ	0	 m.
Mov	10	0	n	n n	ň	n	n	n	ň	ñ	ň	õ	ñ	ů.	
Mon	12	0	n	n N	n	n	ñ	ñ	ñ	ň	ñ	õ	ñ	ñ	
Mav	13	0	n	. 0	ñ	ñ	ñ	ñ	ŏ	ñ	õ	Ő	õ	õ	
Mav	14	ñ	ñ	ů 0	õ	õ	Ó	õ	õ	ō	ō	õ	õ	Ō	.00
Mav	15	ñ	õ	Õ	Ō.	Ō	Ō	Ō	Ō	Ō	Ō	Ō	Ō	0	.00
Mav	16	õ	õ	õ	Ō	Ō	Ō	Ō	Ō	Ó	0	0	0	0	.00
Mav	17	ō	Õ	Ō	Ō	0	0	0	0	0	0	0	0	0	.00
May	18	Ō	0	0	0	0	0	0	0	0	· 0	0	0	0	.00
May	19	0	0	0	0	· 0	0	0	0	0	0	0	0	0	.00
May	20	0	0	0	0	0	0	0	0	0	0	0	0	0	.00
May	21	0	0	0	0	0	0	0	0	0	0	0	0	0	.00
May	22	0	0	0.	0	0	· 0	0	0	0	0	0	, O	0	.00
May	23	0	0	0	0	0	0	0	0	0	0	0	0	0	.00
May	24	0	0	0	0	0	0	0	0	0	0	0	0	0	.00
May	25	0	0	0	0	0	0	0	0	0	0	0	0	0	.00
May	26	0	0	0	0	0	0	0	0	Û	U	U	U	U	
May	27	0	0	0	0	0	0	0	U	U	0	U	U	U	 
May	28	0	U	U	0	0	U	<u>,</u> U	U	U	0	U	U	U	
May	29.	U.	0	U	U	U 0	· U	0	0	0	0	0	0	2 95/1	19 37
May	70	U	0	0	0	0	2,774	0	0	0	ບ ກ	0	0	2,774	0.57
Tery	01	U 0 <sup>.</sup>	0	0	454	U N	454	0	0	n	0	0	ñ	1 312	8 16
Jue	02	0	0	· 0	1 709	0	0.0	n	0	0 0	n	0	n n	1 709	10.63
June	02	n	n	0	517	775	ñ	n	ñ	ň	ñ	ñ	ñ	1,292	8.04
line	Ωú	n	ñ	ň	469	1 406	0	ñ	ñ	n	ñ	ñ	n	1,875	11.66
hne	05	0	n n	n	/ N	0	n	n	n	n	n	n n	n	,,0,2	00
line	n.	ň	0 N	103	103	103	103	n	ň	0	103	n n	0	. 0	3.20
June	07	ñ	Õ	947	ົ້	0	0 ·	ň	ñ	ñ	, ŭ	ñ	n	947	5.89
Jine	08	ŏ	Ō	0	ō	Õ	1.544	õ	õ	õ	Õ	ŏ	ñ	1.544	9.60
June	09	Ō	Ō	Ō	30	89	0	Ō	õ	ō	ō	õ	õ	119	.74
June	10	Ō	Ō	Ō	20	29	Ō	Ō	Õ	õ	Ō	ō	ō	49	.30
June	11	0	0	0	1,602	0	0	0	0	0	0	0	0	1,602	9.%
June	12	0	0	45	316	361	90	0	0	· 0	0	0	0	812	5.05
June	13	0	0	140	233	0	0	0	0	0	0	0	0	373	2.32
June	14	0	0	31	188	157	31	0	0	0	0	0	0	407	2.53
Jue	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
June	16	0	0	0	0	0	0	0	0	0	0	0	0	· 0	0.00
Jue	17	0	0	32	107	25	0	0	0	0	0	. 0	0	164	1.02
June	18	0	0	24	157	36	0	0	0	0	0	0	0	217	1.35
Jine	19	0	0	14	116	58	0	0	. 0	0	0	- 0	0	188	1.17
total %	S	0 .00	0 .00	1,336 8,31	6,223 38.70	3,039 18.90	5,378 33.45	0 00.	0 .00	0 00.	103 •64	0 .00	0 00.	16,079	

Table 5. Estimated numbers of blueback at age, by day, 1984 S.W. Margaree River fishery, District 2. (Values are based on commercial samples [daily estimates] and total reported landings.)

.....

		Alewife		Blueback herring					
Age	No.	mean length (mm)	mean weight (g)	No.	mean length (mm)	mean weight (g)			
1	7	158	43 (44)	3	159	40 ( 41)			
2	, O			1	218	119 (114)			
3	532	248	205 (210)	15	238	162 (166)			
4	252	274	289 (288)	66	247	184 (187)			
5	160	291	356 (349)	35	267	242 (243)			
6	35	297	382 (376)	7	288	315 (314)			
7	9	307	428 (394)	0					
8	5	310	443 (356)	0					
9	2	317	478 (446)	0					
10	1	321	500 (478)	1	298	355(324)			

Table 6. Mean weight (g) at age for alewife and blueback herring, 1984 Southwest Margaree River fishery as determined from LOG (length): LOG (weight) regression equations. (Values in parenthesis are actual mean weights from sampling.)

- -



ł,

(Landings from the Miramichi River are shown for comparison)



Fig. 2 Map showing Margaree River, Nova Scotia, and the location of the fish fence installed on the S.W. Margaree in 1979 & 1983.



Fig. 3. Number of gaspereau caught per day in the 1984 Margaree River gaspereau fishery. Daily catch on Saturday and Sunday is shaded for contrast.

Ĩ.

.