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# Status of the Margaree River Gaspereau Fishery (1984) 

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1
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## ABSTRACT

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 600000 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 fishery (Fig. 2). Daily sample size ranged from 20 to 40 fish and was 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 nearest gram. A comparison of length and weight before and after freezing (Vromans, unpublished) showed that a correction ( $y=1.0144 x+4.5567$ ) 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 unless otherwise indicated. Sex and state of maturity were determined by examining gonads and species was identified by examining the colour of the peritoneal lining. The peritoneum in alewives (Alosa pseudoharengus) was considered to vary from pink to pearly-grey while it was sooty-black in blueback
(Alosa aestivalis) (Scott and Crossman, 19.73). 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 25 X 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 accepted. Otoliths were also collected in cooperation with R. Crawford of the Nova Scotia Department of Fisheries. Age structure of the population, 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 $883,409 \mathrm{~kg}$ by the DFO Statistical Services Division compared to $643,768 \mathrm{~kg}$ 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 $136,657 \mathrm{~kg}$ (Table 2) (99,586 kg;

Table 1) occurred on Thursday May 17, the same day that catch per unit effort peaked at $232.7 \mathrm{~kg} / \mathrm{hr}$. Overall catch per unit effort averaged $83.1 \mathrm{~kg} / \mathrm{hr}$. 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 May 30. Reduced catches were perceptible during the closures of May 19-20 and 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 fish. This represents twice the total estimated spawning escapement in 1983 (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 Alexander (1984) for the 1983 fishery included only 1.3\% bluebacks. 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; 0'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 $879,300 \mathrm{~kg}$, representing approximately $99.5 \%$ of the catch and only about 16,100 bluebacks weighing $4,100 \mathrm{~kg}$ 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 overestimation 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.

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## 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 (Alosa pseudoharengus) and blueback herring (A. aestivalis). Can. J. Fish. Aquat. Sci. 38: 544-546.
$0^{\prime}$ 'Neil, J.T. 1980. Aspects of the life histories of anadromous alewife, Alosa pseudoharengus (Wilson), and the blueback herring, A. aestivalis (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, Alosa pseudoharengus (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 ( $\mathrm{kg} / \mathrm{hr}$ ) in the 1984 Southwest Margaree River gaspereau fishery, district 2, as reported through gaspereau catch and effort logbooks.

| Date | Mon | Tue | Wed | Thur | Fri | Sat | Sun | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| April 23-29 |  |  |  |  |  |  |  |  |
| catch (kg) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | , |
| effort (hr) | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 48 |
| CPUE ( $\mathrm{kg} / \mathrm{hr}$ ) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 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 ( $\mathrm{kg} / \mathrm{hr}$ ) | 0.82 | 4.12 | 3.50 | 7.08 | 6.97 | 4.99 | 2.83 | 4.80 |
| $\begin{aligned} & \text { May } 7-13 \\ & \text { catch }(\mathrm{kg}) \end{aligned}$ | 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 | 25,347 365 | 99,586 | 67,288 | $\begin{array}{r}43,134 \\ \hline 244\end{array}$ | 12,474 122 | 263,932 2,108 |
| effort ( hr ) CPUE ( $\mathrm{kg} / \mathrm{hr}$ ) | 241 25.31 | 282 35.47 | 365 69.44 | 428 232.68 | 426 157.95 | 244 176.78 | 122 102.24 | 2,108 125.20 |
| 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 ( $\mathrm{kg} / \mathrm{hr}$ ) | 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 51.32 |
| CPUE ( $\mathrm{kg} / \mathrm{hr}$ ) | 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 38 | 136 | 7,040 448 |
| effort (hr) | 68 | 84 | 83 | 83 | 78 | 38 | 14 | 448 |
| CPUE ( $\mathrm{kg} / \mathrm{hr}$ ) | 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 $\cdot(\mathrm{hr})$ | 25 | 25 | .25 | 24 | 11 | 0 | 13 | 123 |
| CPUE $(\mathrm{kg} / \mathrm{hr})$ | 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 |

Table 2. Estimated catch (kg) and numbers of geapereau in the 1984 S.W. Margaree River gesperean fischery, District 2. (Values are based on commercial samples [daily estimates] and total reported landings.)

| Date | Alewife |  | Blustack |  | Catch (kg) |  |  | Nunber |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Mean ht. (kg) | \% | Mean wt. (kg) | \% | Alewife | Blueback | Combined | Alewife | Bluebark | Combined |
| 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 | . 0000 | . 0 | 231 | 0 | 231 | 664 | 0 | 664 |
| May 03 | . 3068 | 100.0 | .0000 | . 0 | 505 | 0 | 505 | 1,646 | 0 | 1,646 |
| May 04 | . 3053 | 100.0 | . 0000 | . 0 | 441 | 0 | 440 | 1,443 | 0 | 1,443 |
| May 05 | . 2969 | 100.0 | . 0000 | . 0 | 69 | 0 | 69 | 231 | 0 | 231 |
| May 06 | . 2879 | 100.0 | . 0000 | . 0 | 93 | 0 | 93 | 324 | 0 | 324 |
| May 07 | . 2819 | 100.0 | . 0000 | . 0 | 1,711 | 0 | - 1,711 | 6,070 | 0 | 6,070 |
| May 08 | . 2990 | 100.0 | . 0000 | . 0 | 2,054 | 0 | 2,054 | 7,108 | 0 | 7,108 |
| May 09 | . 2970 | 100.0 | . 0000 | . 0 | 2,964 | 0 | 2,964 | 10,186 | - 0 | 10,186 |
| May 10 | . 294 | 100.0 | . 0000 | . 0 | 2,567 | 0 | 2,567 | 8,721 | 0 | 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 | 0 | 9,008 |
| May 13 | . 2759 | 100.0 | . 0000 | . 0 | 1,245 | 0 | 1,245 | 4,511 | 0 | 4,511 |
| May 14 | . 2599 | 100.0 | . 0000 | . 0 | 8,572 | 0 | 8,372 | 32,213 | 0 | 32,213 |
| May 15 | . 2764 | 100.0 | . 0000 | . 0 | 13,725 | 0 | 13,725 | 49,657 | 0 | 49,657 |
| May 16 | . 2713 | 100.0 | . 0000 | . 0 | 34,782 | 0 | 34,782 | 128,206 | 0 | 128,206 |
| Nay 17 | . 2519 | 100.0 | .0000 | . 0 | 136,657 | 0 | 136,657 | 542,504 | 0 | 542,504 |
| May 18 | . 2401 | 100.0 | . 0000 | . 0 | 92,336 | 0 | 92,336 | 384,572 | 0 | 384,572 |
| May 19 | . 2513 | 100.0 | .0000 | . 0 | 59,190 | 0 | 59,191 | 235,537 | 0 | 235,537 |
| May 20 | . 2625 | 100.0 | .0000 | . 0 | 17,117 | 0 | 17,117 | 65,209 | 0 | 65,209 |
| May 21 | . 2371 | 100.0 | . 0000 | . 0 | 80,046 | 0 | 80,046 | 337,604 | 0 | 337,604 |
| May 22 | . 2255 | 100.0 | . 0000 | . 0 | 73,245 | 0 | 73,245 | 324,812 | 0 | - 324,812 |
| May 23 | . 2486 | 100.0 | . 0000 | . 0 | 55,148 | 0 | 55,148 | 221,834 | 0 | 221,834 |
| May 24 | . 2172 | 100.0 | . 0000 | . 0 | 47,150 | 0 | 47,150 | 217,083 | 0 | 217,083 |
| May 25 | . 2769 | 100.0 | . 0000 | . 0 | 73,974 | 0 | 73,974 | 267,150 | 0 | 267,150 |
| May 26 | . 2759 | 100.0 | . 0000 | . 0 | 53,341 | 0 | 53,341 | 193,333 | 0 | 193,333 |
| May 27 | . 2747 | 100.0 | . 0000 | . 0 | 20,541 | 0 | 20,541 | 74,777 | 0 | 74,777 |
| May 28 | . 2073 | 100.0 | . 0000 | . 0 | 38,342 | 0 | 38,342 | 184,959 | 0 | 184,959 |
| May 29 | . 2020 | 100.0 | . 0000 | . 0 | 17,241 | 0 | 17,241 | 85,351 | 0 | 85,351 |
| May 30 | . 2084 | 95.0 | . 3330 | 5.0 | 11,699 | 984 | 12,682 | 56,135 | 2,954. | 59,089 |
| May 31 | . 2825 | 100.0 | . 2670 | . 0 | 8,963 | 0 | 8,964 | 31,729 | 0 | 31,729 |
| Jre 07 | . 2166 | 95.0 | . 2010 | 5.0 | 5,401 | 264 | 5,665 | 24,935 | 1,312 | 26,247 |
| June 02 | . 2106 | 87.5 | . 2374 | 12.5 | 2,520 | 406 | 2,926 | 11,965 | 1,709 | 13,674 |
| June 03 | . 2034 | 80.0 | . 2465 | 20.0 | 1,051 | 318 | 1,370 | 5,167 | 1,292 | 6,459 |
| June 04 | . 1844 | 80.0 | . 2980 | 20.0 | 1,383 | 559 | 1,042 | 7,500 | 1,875 | 9,375 |
| June 05 | . 2109 | 100.0 | . 2804 | . 0 | 1,804 | 0 | 1,805 | 8,556 | 0 | 8,556 |
| June 06 | . 1932 | 95.0 | . 2100 | 5.0 | 1,883 | 108 | 1,991 | 9,748 | 513 | 10,261 |
| Jre 07 | . 2034 | 90.0 | . 2710 | 10.0 | 1,734 | 257 | 1,991 | 8,527 | 947 | 9,474 |
| June 08 | . 2021 | 78.9 | . 2500 | 21.1 | 1,170 | 386 | 1,556 | 5,790 | 1,544 | 7,334 |
| June 09 | . 1951 | 87.2 | . 2388 | 12.8 | 158 | 28 | 187 | 811 | 119 | 930 |
| June 10 | . 1895 | 95.0 | . 1440 | 5.0 | 177 | 10 | 187 | 935 | 49 | 984 |
| June 11 | . 1715 | 10.0 | . 2431 | 90.0 | 31 | 389 | 420 | 178 | 1,602 | 1,780 |
| Jre 12 | . 1982 | 60.0 | . 2004 | 40.0 | 242 | 163 | 405 | 1,220 | 813 | 2,033 |
| Jue 13 | . 2007 | 35.0 | . 2158 | 65.0 | 40 | 80 | 121 | 207 | 373 | 574 |
| June 14 | . 1963 | 60.0 | . 2006 | 40.0 | 120 | 82 | 202 | 611 | 408 | 1,019 |
| Jure 15 | . 1950 | 35.0 | . 1810 | 65.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| June 16 | . 1950 | 35.0 | . 1810 | 65.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Jun 17 | . 1870 | 10.0 | . 1723 | 90.0 | 3 | 28 | 32 | 18 | 164 | 182 |
| Jre 18 | . 2217 | 35.0 | . 1952 | 65.0 | 26 | 43 | 69 | 118 | 218 | 336 |
| June 19 | . 1785 | 80.0 | . 1493 | 20.0 | 134 | 28 | 162 | 750 | 188 | 938 |
| TOTAL <br> \% OF TOTAL | . 2452 |  | . 2570 |  | $\begin{gathered} 879,277 \\ 99.5 \end{gathered}$ | $\begin{gathered} 4,132 \\ .5 \end{gathered}$ | 883,409 | $\begin{gathered} 3,586,572 \\ 99.6 \end{gathered}$ | $\begin{gathered} 16,080 \\ .4 \end{gathered}$ | 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.

| Year | Sample size (no.) | Age |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 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: D'Neil, J.T. 1980
** Source: Crawford, R.H. 1983

Table 4. Estimated nunbers of alevives at age, by day, 1984 S.N. Manganee River fishery, District 2. (Values are bessed an commencial samples [daily estinates] and total reported landings.)

| Date | $\begin{gathered} \text { Age } \\ 1 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 2 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 3 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 4 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 5 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 6 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 7 \end{gathered}$ | $\begin{gathered} \text { Age } \\ 8 \end{gathered}$ | $\begin{gathered} \text { Age } \end{gathered}$ | $\begin{aligned} & \text { Age } \\ & 10 \end{aligned}$ | $\begin{aligned} & \text { Age } \\ & 11 \end{aligned}$ | $\begin{aligned} & \text { Age } \\ & 12 \end{aligned}$ | Totals | \% |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| April 30 | 0 | 0 | 10 | 31 | 29 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 78 | . 0 |
| May 01 | 0 | 0 | 65 | 230 | 209 | 43 | 14 |  | 0 | 0 | 0 | 0 | 568 | . 02 |
| May 02 | 0 | 0 | 68 | 272 | 238 | 51 | 34 | 0 | 0 | 0 | 0 | 0 | 663 | .08 |
| May 03 | 0 | 0 | 43 | 650 | 650 | 130 | 43 | 87 | 0 | 43 | 0 | 0 | 1,646 | . 05 |
| May 04 | 0 | 0 | 361 | 433 | 361 | 253 | 0 | 36 | 0 | 0 | 0 | 0 | , 232 | . 01 |
| May OS | 0 | 0 | 52 | 87 | 75 | 12 | 6 | 0 | 0 | 0 | 0 | 0 | 324 | .01 |
| May 06 | 0 | 0 | 97 | 126 | 84 | 13 | 4 | 0 | 0 | 0 | 0 | 0 | 6,070 | . 17 |
| May 07 | 0 | 0 | 2,297 | 2,461 | 1,148 | 164 | 0 | 0 | 0. | 0 | 0 | 0 | 7,109 | .20 |
| May 08 | 0 | 0 | 3,199 | 2,488 | 1,244 | 178 | 0 | 0 | 0 | 0 | 0 | 0 | 10,186 | . 28 |
| May 09 | 0 | 0 | 3,820 | 2,801 | 2,801 | 509 | 0 | 25 | 0 | 0 |  |  | 8,720 | . 24 |
| May 10 | 0 | 0 | 3,270 | 2,616 | 1,962 | 436 | 436 | 0 | 0 | 0 | 0 | 0 |  | . 46 |
| May 11 | 0 | 0 | 3,264 | 7,752 | 4,488 | 0 | 816 | 0 | 0 | 0 | 0 | 0 | 16,300 9,008 | . 25 |
| May 12 | 0 | 0 | 4,054 | 2,252 | 2,252 | 450 | 0 | 0 | 0 | 0 | 0 | 0 | 4,510 | . 13 |
| May 13 | 0 | 0 | 1,804 | 1,804 | 789 | 113 | 0 | 0 | 0 | 0 | 0 | 0 | 32,213 | . 90 |
| May 14 | 0 | 0 | 11,275 | 17,717 | 3,221 | 0 | 0 | 0 | 0 | 0 | 0 |  | 49,658 | 1.38 |
| May 15 | 0 | 0 | 28,749 | 7,841 | 10,454 | 2,614 | 0 | 0 | 0 | 0 | 0 | 0 | 128,206 | 3.57 |
| May 16 | 0 | 0 | 44,872 | 25,641 | 44,872 | 0 | 0 | 12,821 | 0 | 0 | 0 | 0 | 128,2064 | 3.57 |
| May 17 | 0 | 0 | 244,127 | 162,751 | 108,501 | 27,125 | 0 | 0 | ${ }^{0}$ | 0 | 0 | 0 | 348,572 | 10.72 |
| May 18 | 0 | 0 | 222,647 | 101,203 | 40,481 | 0 | 0 | 0 | 20,241 | 0 | 0 | 0 | 235,537 | 6.57 |
| May 19 | 0 |  | 164,876 | 47,107 | 23,554 | 0 | ${ }_{1,630}$ | 0 | 0 | 0 | 0 | 0 | 65,208 | 1.82 |
| May 20 | 0 |  | 42,386 | 17,932 | 3,260 | 0 | 1,630 | 0 | 0 | 0 | 0 | 0 | 337,603 | 9.41 |
| May 21 | 0 | 0 | 202,562 | 118,161 | 0 | 0 | 16,880 | 0 | 0 | 0 | 0 | 0 | 324,812 | 9.06 |
| May 22 | 0 | 0 | 227,368 | 97,444 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 221,834 | 6.19 |
| May 23 | 0 | 0 | 199,651 | 22,183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 217,083 | 6.05 |
| May 24 | 0 | 0 | 151,958 | 65,125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 267,149 | 7.45 |
| May 25 | 0 | 0 | 232,304 | 23,230 | 11,615 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 193,333 | 5.39 |
| May 26 | 0 | 0 | 174,000 | 19,333 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 74,777 | 2.08 |
| May 27 | 0 | 0 | 69,169 | 5,608 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 184,959 | 5.16 |
| May 28 | 0 | 0 | 175,711 | 9,248 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85,351 | 2.38 |
| May 29 | 0 | 0 | 85,351 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56,135 | 1.57 |
| May 30 | 0 | 0 | 45,610 | 10,525 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31,729 | . 88 |
| May 31 | 0 | 0 | 28,389 | 3,340 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24,935 | . 70 |
| Jne 01 | 0 | 0 | 19,948 | 4,987 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11,965 | . 3 |
| June 02 | 0 | 0 | 10,076 | 1,889 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5,167 | . 14 |
| June 03 | 0 | 0 | 4,724 | 443 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7,500 | . 2 |
| Jue 04 | 0 0 | 0 | 7,500 8,556 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 8,556 | . 2 |
| June 06 | 0 | 0 | 8,286 | 975 | 0 | 487 | 0 | 0 | 0 | 0 | 0 | 0 | 9,748 | . 2 |
| June 07 | 0 | 0 | 8,527 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8,527 | . 2 |
| Jne 06 | 0 | 0 | 5,147 | 322 | 0 | 322 | 0 |  | 0 | 0 | 0 | 0 | 5,791 | . 16 |
| June 09 | 0 | 0 | 710 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 811 | . 0 |
| June 10 | 0 | 0 | 855 | 53 | 27 | 0 | 0 |  | 0 | 0 | 0 | 0 | 935 | . 0 |
| June 11 | 0 | 0 | 169 | 0 | 9 | 0 | 0 | - | 0 | 0 | 0 | 0 | 178 | . 0 |
| Jne 12 | 0 | 0 | 1,220 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,220 | . 0 |
| June 13 | 0 | 0 | 167 | 33 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 200 | . 0 |
| Jre 14 | 0 | 0 | 524 | 0 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 611 | . 0 |
| June 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . |
| Ine 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| Jre 17 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 18 | . |
| June 18 | 0 | 0 | 118 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118 | . 0 |
| Jre 19 | 0 | 0 | 429 | 214 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 750 | . 0 |
| totals | ) | 0 | 2,450,383 | 787,409 | 262,518 | 32,906 | 19,863 | 13,208 | 20,241 | 43 | 0 | 0 | 3,586,571 |  |
| \% | . 0 | . 0 | 68.32 | 21.95 | 7.32 | . 92 | . 55 | . 37 | . 56 | . 00 | . 0 | . 0 |  |  |

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

| Date | Age $1$ | Age $2$ | Age | Age $4$ | Age $5$ | Age $6$ | Age $7$ | $\begin{gathered} \text { Age } \\ 8 \end{gathered}$ | Age | Age <br> 10 | $\begin{aligned} & \text { Age } \\ & 11 \end{aligned}$ | Age $12$ | Totals | $\%$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| April 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| May 01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| May 02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| May 03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .00 |
| May 05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| May 09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| May 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| May 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 18 | 0 | 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 | 0 | 0 | . 0 |
| May 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 0 |
| 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 | 0 | 0 | 0 | 0 | 0 | .00 |
| May 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .00 |
| May 29. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| May 30 | 0 | 0 | 0 | 0 | 0 | 2,954 | 0 | 0 | 0 | 0 | 0 | 0 | 2,954 | 18.37 |
| May 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| June 01 | 0 | 0 | 0 | 656 | 0 | 656 | 0 | 0 | 0 | 0 | 0 | 0 | 1,312 | 8.16 |
| June 02 | 0 | 0 | 0 | 1,709 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,709 | 10.63 |
| June 03 | 0 | 0 | 0 | 517 | 775 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,292 | 8.04 |
| June 04 | 0 | 0 | 0 | 469 | 1.406 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,875 | 11.66 |
| June 05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . 00 |
| June 06 | 0 | 0 | 103 | 103 | 103 | 103 | 0 | 0 | 0 | 103 | 0 | 0 | 515 | 3.20 |
| June 07 | 0 | 0 | 947 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 947 | 5.89 |
| Jne 08 | 0 | 0 | D | 0 | 0 | 1,544 | 0 | 0 | 0 | 0 | 0 | 0 | 1,544 | 9.60 |
| June 09 | 0 | 0 | 0 | 30 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 119 | . 74 |
| Jue 10 | 0 | 0 | 0 | 20 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | . 30 |
| June 11 | 0 | 0 | 0 | 1,602 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,602 | 9.96 |
| 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 |
| June 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 |
| Jne 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 |
| June 19 | 0 | 0 | 14 | 116 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 188 | 1.17 |
| TOTALS | 0 | 0 | 1,336 | 6,223 | 3,039 | 5,378 | 0 | 0 | 0 | 103 | 0 | 0 | 16,079 |  |
| \% | . 00 | . 0 | 8.31 | 38.70 | 18.90 | 33.45 | . 0 | . 0 | . 0 | . 64 | . 0 | . 00 |  |  |

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.)

| Age | Alewife |  |  | Blueback herring |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | No. | $\begin{aligned} & \text { mean } \\ & \text { length (mm) } \end{aligned}$ | $\begin{gathered} \text { mean } \\ \text { weight (g) } \end{gathered}$ | No. | $\begin{aligned} & \text { mean } \\ & \text { length (mm) } \end{aligned}$ | $\begin{aligned} & \text { mean } \\ & \text { weight (g) } \end{aligned}$ |
| 1 | 7 | 158 | 43 ( 44) | 3 | 159 | 40 ( 41) |
| 2 | 0 |  |  | 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) |





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.

