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A MARK-RECAPTURE STUDY
OF STRIPED BASS IN THE
RAPPAHANNOCK RIVER, VIRGINIA



ANNUAL REPORT 1989/1990

Virginia Institute of Marine Science
School of Marine Science
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Gloucester Point, Virginia 23062

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A Mark-Recapture Study of Striped Bass in
the Rappahannock River, Virginia

Annual Report 1989/1990

Sport Fish Restoration Project: F77-R
Project Period: 1 September 1989 - 31 August 1990
Principal Investigator: Joseph G. Loesch

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Virginia Marine Resources Commission
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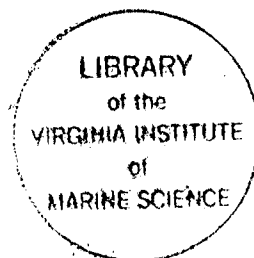


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PREFACE

Financial support for this project was provided by the Virginia Marine Resources Commission, research grant F77-R.

The specific objectives executed during the 1989 through 1990 research were to:

1. Tag and release 3,000 striped bass in the Rappahannock River in fall 1989 and 3,000 in spring 1990.
2. Cooperate in a multi-state program to tag and release striped bass.
3. Analyze preliminary tag return data.

ACKNOWLEDGMENTS

We are indebted to the following commercial fishermen on the Rappahannock River for the capture of wild striped bass for tagging in fall 1989 and spring 1990: Barrack & Wilmer Seafood, Allen Ingraham, Ned Morris and Son Seafood, Oliff Brothers Seafood, S. & A. Oliff. All personnel of the VIMS Anadromous Program, and many others from within and outside of VIMS also assisted in the tagging program.

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EXECUTIVE SUMMARY

1. A total of 6,203 striped bass were tagged in fall 1989 and 2,033 in spring 1990 on the Rappahannock River.
2. In fall 1989, 63.5% of the tagged striped bass were less than 400 mm fork length (FL). In comparison, 86% of the fish were greater than 400 mm FL in spring 1990.
3. Pound nets in the Rappahannock River account for 75% of the recaptures, while out of state recaptures account for only 0.008% of the total returns.

INTRODUCTION

The need for studies of striped bass (Morone saxatilis) in Chesapeake Bay was discussed by Loesch et al. (1987). For succinctness, we extracted the following from the introduction of their report.

Striped bass production in Chesapeake Bay not only affects the commercial and recreational fisheries in Virginia but influences the degree of success attained by the fisheries in other Atlantic coastal states.

Due to the concern about the decline in striped bass stocks along the Atlantic coast since the mid-1970's, an interstate fisheries management plan was developed under the auspices of the Atlantic States Marine Fisheries Commission (ASMFC) as part of their Interstate Fisheries Management Program (ASMFC 1981). Federal legislation was enacted in 1984 (Public Law #98-613, The Atlantic Striped Bass Conservation Act) which enables Federal imposition of a moratorium for an indefinite period in those states that fail to comply with the coastwide plan. To be in compliance with the plan, coastal states imposed restrictions on their commercial and recreational striped bass fisheries ranging from combinations of catch quotas, size limits, and limited moratoriums. In addition, the Striped Bass Management Board has urged the coastal states to monitor the stocks and to institute tagging programs. Mark-recapture studies of striped bass in Virginia were initiated in the James and Rappahannock rivers; elsewhere, striped bass are being tagged in Rhode Island, New York, and Maryland waters. These studies should provide information about exploitation rates, migration patterns, and the proportions of Hudson River, Maryland

and Virginia striped bass in northern waters. The Maryland and Virginia studies will also provide information on the degree of striped bass movement within Chesapeake Bay. The data collected will be an important constituent of the total information base needed to assess present management strategies.

METHODS

Striped bass were obtained from cooperating commercial fishermen. Fish were captured with pound nets at river km 33 to 87 during fall 1989 and spring 1990. A Floy internal anchor tag 5 mm X 20 mm, with an 85 mm external tube was used for all fish tagged. The anchor tag was inserted into the body cavity through a small surgical incision made just posterior to the apex of the pectoral fin on the museum (left) side of the fish. Thus, the anchor was inserted into the peritoneal cavity posterior to the pericardial cavity and anterior to the spleen. The tags were treated by the Floy Company with an algaecide which reduces algae build-up, reduces drag, and increases retention (Hillman and Werme 1983).

Basically, the VIMS tagging personnel followed the fisherman to the net. One side of the pound head was lowered and the fisherman's skiff was pulled inside the head. The bottom of the head was gradually pulled into the boat, thereby concentrating the fish in the remaining portion of the head. Fish were dipped from the head and placed in the fisherman's boat, except for striped bass which were placed in a VIMS "live car" (floating pocket) attached to the net. The live car measured 1.2 m x 2.4 m x 1.2 m with a 25.4-mm mesh. The net was kept open by a float line around the outside of the surface perimeter, a spreader board (1.2 m) inside of the surface perimeter at each end, and lead lines on the bottom of the net. After the fisherman finished, the tagging vessel retrieved the live car and together the vessel and live car drifted with the current while the fish were tagged and released. Taggers retrieved a fish from the live car, implanted a tag, and recorded its fork length (FL), total length (TL), and, if possible, sex. Striped bass less than 300 mm FL were released untagged. Several scales were removed from the area above the lateral line midway between the insertion of the first dorsal fin and the origin of the second. Salinity, water temperature and tidal stage were also recorded.

Scales were prepared for reading by the method described by Merriman (1941), except an acetate sheet replaced the glass slide and acetone. Scales were aged using the microcomputer program (DISBCAL) of Frie (1982), as modified for a sonic digitizer-microcomputer complex (Loesch et al. 1985). Growth increments were measured from the focus to the posterior edge of each annulus. There was little difficulty in reading the scales when a clear focus was found. Often the first annulus, and sometimes the second, was difficult to define for fish age 6 or older.

Aging was not an objective of the study; scales were to be stored for "reading" at a later date. However, a reading of scales collected in fall 1989 and spring 1990 was accomplished. Striped bass scale annuli form between April and June in Virginia waters; therefore, year classes, other than 0 year class, are considered to be a year older on 1 July (Grant 1974). This aging scheme differs from that utilized in Maryland and North Carolina where age is incremented on 1 January. Thus, the same year class is designated one year older in Maryland and North Carolina six months before age designations are equalized for all three states.

The U. S. Fish and Wildlife Service (FWS) supplied the Floy anchor tags for our project and to the other coastal states tagging striped bass, and it is functioning as the repository for the tag-return data. The data will be sorted and subsequently returned to the appropriate states. The external tube of the tag, as well as its anchor, is inscribed with instructions to return the tag to, or telephone, the Annapolis, Maryland, office of the FWS. The National Fish and Wildlife Foundation (Washington, D. C.) forwards a reward of \$5.00 or a fisherman's cap with a striped bass conservation logo as an acknowledgment for the recapture information.

RESULTS AND DISCUSSION

A total of 6,203 striped bass were tagged and released in fall 1990 on the Rappahannock River between 2 October and 1 November. The maximum number of fish tagged in a day was 982 (27 October) and the fewest was 141 (30 October). In spring 1990 tagging commenced on 12 March and ended on 23 May, with a total of 2,033 fish tagged and released. The maximum number of fish tagged in a day was 260 (19 April) and the fewest was 7 (12 April). As of 23 May 90, the grand total of striped bass tagged and released in the Rappahannock River since fall 1987 is 18,757 (Table 1).

There was a noticeable difference in size between the striped bass tagged in fall 1989 and spring 1990 pound net fisheries in the Rappahannock River. During fall 1989 and spring 1990 we did not tag a striped bass smaller than 300 mm in FL. In fall 1988 the tagged striped bass averaged 387 mm FL (SE = 1.21 mm), and 77.6% of the fish were less than 400 mm FL (Loesch and Hill 1989). However, in fall 1989 the tagged fish averaged 398 mm FL (SE = 0.709 mm) and 63.5% of the fish were less than 400 mm FL (Fig. 1). Due to the presence of mature coastal migrant striped bass which ascend the system to spawn, fish averaged 528 mm FL (SE = 3.06 mm) in spring 1990, and 86.0% of the tagged striped bass were 400 mm FL or greater (Fig. 2). During spring 1988 the mean FL was 495 mm (S.E. 2.22) with 31% of the tagged fish between 501 and 550 mm FL (Loesch et al. 1988). The striped bass tagged in fall 1989 ranged in size from 304 mm FL to 709 mm FL; however, the striped bass tagged in spring 1990 ranged in size from 320 mm FL to 1240 mm FL.

Prior to the total closure of the striped bass fishery in Virginia, there was a minimum size restriction of 24 inches TL (610 mm TL = 571 mm FL). If the fishery were reopened only in the fall with a 24 inches TL (571 mm FL) minimum, only about 1.8% of the catch could have been retained in the fall 1989. If the

minimum size were set at 18 inches TL (427 mm FL), about 19.8% of the catch could have been retained. In fall 1988 the percentages of retainable striped bass for the same minimum size considerations were 1.4% and 10% (Loesch and Hill 1989).

A biological concern about the fall fishery is that nearly all the striped bass are immature. A minimum size limit to protect most of the immature fish would result in a de facto fishing moratorium, while the 18 inches TL limit could lead to recruitment overfishing unless the frequency of strong year classes is much higher than it has been in the past 16 years, or other management restrictions are applied during a fall fishery.

In the spring (March, April, and May) the available stock contains mature fish as well as young nonmigrant fish. Thus, if the minimum size were 24 inches TL (571 mm FL) in spring 1990 about 32.8% could have been harvested. If the minimum were 18 inches TL (427 mm FL), over 72.5% of the fish would have been of legal size. The corresponding percentages in spring 1989 were 29.8% and 77.3% (Loesch and Hill 1989). Since larger striped bass tend to spawn early, and spawning is on the wane in May, an alternative management approach would be to have a spring fishery in the latter part of May with a 24 inches TL size limit.

The difference in the degrees of vulnerability of the available stock in the fall relative to the available stock in the spring is shown by the recaptures per net-day in pound nets during the tagging periods. There was a total effort of 202.5 pound net-days, during the fall 1989 tagging season, with 680 recaptures. Of these 680 recaptures 638 of them were re-released and the remainder were sacrificed. The recapture per net-day rate during the fall 1989 tagging program was 3.36 fish per pound net-day. During the spring 1990 tagging program there was a total effort of 194 pound net-days, with 169 recaptures. Of these recaptures 103 individuals were re-released and the remainder were sacrificed. This is the same pattern that has been observed during the two

previous tagging contracts (Loesch et al. 1987, Loesch and Hill 1988). The fall recapture rate exceeded the spring recapture rate.

The 1986 year class (age 3) made up 51.7% of the fall primary releases (Fig. 3). During spring 1990 the dominant cohort was the 1986 year class, accounting for 35.8% of the individuals that were tagged (Fig. 4). The striped bass tagged in spring 1990 had the most diverse age structure to date, with ages ranging to 2-15. The commercial fishermen had their pound nets deployed in mid-March (Table 2), earlier than in previous years. The fall fishery is composed mostly of younger resident fish while the spring fishery contains migratory fish, and the mean size of the tagged fish in the fall is smaller than in the spring (Table 2).

As of 31 December 1989 FWS reported a total of 6,041 recaptures from striped bass tagged in the Rappahannock River. The majority of tag returns were captured from pound nets within the Rappahannock River system (75%) (Table 3). The vast majority of these returns have usually occurred during the first 120 days of release for the fall 1987, 1988, and 1989 (55.4%, 62.1% and 100.0%, respectively); for the spring 1988 and 1989, the percentages were smaller (37.9% and 28.4%, respectively) (Figs. 5-9). Out-of-state returns account for less than 0.008% of the returns (Table 3).

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Table 1. Number of striped bass tagged and released in the Rappahannock River, fall 1987 - spring 1990.

| Tagging Period | Number Tagged |
|-------------------|------------------|
| Fall 1987 | 3,319 |
| Spring 1988 | 2,024 |
| Fall 1988 | 3,892 |
| Spring 1989 | 1,316 |
| Fall 1989 | 6,203 |
| Spring 1990 | <u>2,033</u> |
| Total | 18,787 |

Table 2. Mean size of striped bass tagged on the Rappahannock River by year, month, day and river mile, fall 1987 - spring 1990.

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|-----------|----------|----------|-------|
| YEAR | 1987 | 384.0338 | 89.1577 | 3311 |
| MONTH | September | 410.6731 | 69.3481 | 731 |
| DAY | 24 | 403.9383 | 71.3265 | 389 |
| River Mile | 37 | 404.2176 | 62.3617 | 216 |
| River Mile | 39 | 409.9259 | 88.4512 | 27 |
| River Mile | 40 | 402.2292 | 80.0322 | 48 |
| River Mile | 41 | 403.2353 | 82.9213 | 17 |
| River Mile | 42 | 408.3200 | 76.7798 | 25 |
| River Mile | 44 | 409.0294 | 76.4902 | 34 |
| River Mile | 47 | 385.2727 | 92.2260 | 22 |
| DAY | 28 | 418.3333 | 66.3023 | 342 |
| River Mile | 37 | 410.5094 | 61.9546 | 159 |
| River Mile | 39 | 418.0128 | 67.0372 | 78 |
| River Mile | 40 | 437.2200 | 63.3556 | 50 |
| River Mile | 41 | 441.2857 | 77.1157 | 14 |
| River Mile | 42 | 401.6111 | 61.0209 | 18 |
| River Mile | 44 | 431.5652 | 86.6633 | 23 |
| MONTH | October | 376.4860 | 92.6435 | 2580 |
| DAY | 1 | 431.3042 | 66.7414 | 263 |
| River Mile | 37 | 435.0778 | 67.6415 | 90 |
| River Mile | 40 | 433.2394 | 66.2445 | 71 |
| River Mile | 41 | 441.6471 | 56.2160 | 17 |
| River Mile | 42 | 425.3077 | 62.5061 | 39 |
| River Mile | 44 | 419.1538 | 57.6250 | 13 |
| River Mile | 47 | 423.3939 | 80.0457 | 33 |
| DAY | 5 | 374.3356 | 95.3693 | 593 |
| River Mile | 37 | 383.7391 | 101.8626 | 69 |
| River Mile | 39 | 394.2543 | 97.0780 | 232 |
| River Mile | 40 | 357.4407 | 94.0076 | 59 |
| River Mile | 41 | 363.9556 | 86.9564 | 45 |
| River Mile | 42 | 366.7937 | 82.7636 | 63 |
| River Mile | 44 | 327.0357 | 81.5081 | 84 |
| River Mile | 47 | 390.0000 | 94.7468 | 41 |
| DAY | 8 | 353.0485 | 89.8337 | 206 |
| River Mile | 37 | 356.9688 | 94.4749 | 32 |
| River Mile | 39 | 346.1389 | 101.6695 | 36 |
| River Mile | 40 | 345.0417 | 84.6884 | 24 |
| River Mile | 41 | 379.5000 | 92.1439 | 10 |
| River Mile | 42 | 417.2222 | 91.6647 | 18 |
| River Mile | 44 | 330.4655 | 72.1724 | 58 |
| River Mile | 47 | 360.3929 | 90.0228 | 28 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|----|----------|----------|-------|
| DAY | 12 | 369.8241 | 92.8768 | 307 |
| River Mile | 37 | 372.8372 | 103.4834 | 43 |
| River Mile | 39 | 383.0952 | 111.2913 | 42 |
| River Mile | 40 | 338.3846 | 72.4354 | 26 |
| River Mile | 41 | 386.7407 | 96.1416 | 27 |
| River Mile | 42 | 411.7143 | 73.2408 | 42 |
| River Mile | 44 | 345.2921 | 83.9574 | 89 |
| River Mile | 47 | 372.3947 | 90.2766 | 38 |
| DAY | 15 | 360.1022 | 87.7673 | 225 |
| River Mile | 37 | 355.4286 | 91.4372 | 21 |
| River Mile | 39 | 313.7419 | 70.9798 | 31 |
| River Mile | 40 | 365.3214 | 76.6947 | 28 |
| River Mile | 41 | 399.9231 | 90.7675 | 13 |
| River Mile | 42 | 430.0645 | 70.7936 | 31 |
| River Mile | 44 | 337.7234 | 81.8394 | 47 |
| River Mile | 46 | 361.9583 | 103.3283 | 24 |
| River Mile | 47 | 350.4333 | 78.5246 | 30 |
| DAY | 19 | 387.1033 | 92.9027 | 397 |
| River Mile | 37 | 420.8500 | 82.9320 | 20 |
| River Mile | 39 | 353.8704 | 76.5837 | 54 |
| River Mile | 40 | 401.1000 | 78.7996 | 40 |
| River Mile | 41 | 375.5217 | 94.6582 | 23 |
| River Mile | 42 | 418.6739 | 77.4603 | 46 |
| River Mile | 44 | 384.3061 | 101.3035 | 147 |
| River Mile | 46 | 387.2683 | 96.8680 | 41 |
| River Mile | 47 | 378.5769 | 100.2298 | 26 |
| DAY | 22 | 368.8127 | 94.1960 | 267 |
| River Mile | 37 | 418.5000 | 87.7936 | 8 |
| River Mile | 39 | 422.5588 | 104.4501 | 34 |
| River Mile | 40 | 366.0750 | 82.2084 | 40 |
| River Mile | 41 | 458.5000 | 80.5581 | 10 |
| River Mile | 42 | 400.0000 | 86.3124 | 25 |
| River Mile | 44 | 343.0435 | 86.2180 | 115 |
| River Mile | 46 | 334.6842 | 81.0720 | 19 |
| River Mile | 47 | 357.5625 | 102.0333 | 16 |
| DAY | 26 | 355.4033 | 89.7611 | 181 |
| River Mile | 39 | 364.7500 | 96.5804 | 20 |
| River Mile | 40 | 366.3182 | 98.3693 | 22 |
| River Mile | 41 | 379.4545 | 85.2389 | 11 |
| River Mile | 42 | 426.2333 | 75.4013 | 30 |
| River Mile | 44 | 341.4800 | 84.7267 | 50 |
| River Mile | 46 | 306.5862 | 66.4957 | 29 |
| River Mile | 47 | 318.3158 | 70.9335 | 19 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|-------|----------|----------|-------|
| DAY | 29 | 369.8723 | 92.9105 | 141 |
| River Mile | 37 | 455.0870 | 97.4926 | 23 |
| River Mile | 39 | 397.3478 | 92.3165 | 23 |
| River Mile | 40 | 351.1176 | 101.5793 | 17 |
| River Mile | 41 | 453.2500 | 29.4548 | 4 |
| River Mile | 42 | 404.8095 | 76.6385 | 21 |
| River Mile | 44 | 311.7273 | 30.5024 | 22 |
| River Mile | 46 | 286.5333 | 20.3816 | 15 |
| River Mile | 47 | 319.1875 | 50.3007 | 16 |
| YEAR | 1988 | 404.7789 | 106.7412 | 5915 |
| MONTH | April | 503.9147 | 102.0882 | 1055 |
| DAY | 18 | 532.4417 | 113.1460 | 120 |
| River Mile | 40 | 352.2000 | 96.9933 | 5 |
| River Mile | 44 | 536.7451 | 138.0129 | 51 |
| River Mile | 46 | 573.9167 | 98.1700 | 12 |
| River Mile | 47 | 535.9808 | 68.9909 | 52 |
| DAY | 21 | 511.5678 | 102.8648 | 118 |
| River Mile | 40 | 464.2667 | 110.0899 | 15 |
| River Mile | 42 | 492.0000 | 60.8112 | 2 |
| River Mile | 44 | 518.8125 | 96.7497 | 48 |
| River Mile | 46 | 488.6667 | 139.6254 | 9 |
| River Mile | 47 | 525.3636 | 98.6863 | 44 |
| DAY | 25 | 500.3648 | 97.1155 | 540 |
| River Mile | 40 | 467.4030 | 102.6902 | 67 |
| River Mile | 42 | 488.8495 | 98.4366 | 93 |
| River Mile | 44 | 503.2051 | 85.3335 | 195 |
| River Mile | 46 | 503.7143 | 117.1225 | 42 |
| River Mile | 47 | 518.4406 | 98.8349 | 143 |
| DAY | 28 | 495.2166 | 104.3873 | 277 |
| River Mile | 40 | 480.2727 | 132.6415 | 33 |
| River Mile | 42 | 456.5946 | 112.8092 | 37 |
| River Mile | 44 | 519.1241 | 78.7496 | 137 |
| River Mile | 46 | 451.6364 | 121.8280 | 22 |
| River Mile | 47 | 487.0000 | 117.1814 | 48 |
| MONTH | May | 488.4509 | 95.4966 | 896 |
| DAY | 2 | 521.2944 | 97.3136 | 197 |
| River Mile | 40 | 486.5652 | 96.2013 | 46 |
| River Mile | 41 | 453.5000 | 132.5355 | 4 |
| River Mile | 42 | 505.6667 | 81.8067 | 36 |
| River Mile | 44 | 532.1548 | 85.7416 | 84 |
| River Mile | 46 | 604.1667 | 115.0524 | 12 |
| River Mile | 47 | 556.2667 | 120.5940 | 15 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|------|----------|----------|-------|
| DAY | 5 | 498.1967 | 81.6064 | 183 |
| River Mile | 40 | 491.8493 | 80.7721 | 73 |
| River Mile | 41 | 471.4000 | 66.0794 | 10 |
| River Mile | 44 | 506.9070 | 84.0741 | 86 |
| River Mile | 46 | 474.3333 | 79.4900 | 6 |
| River Mile | 47 | 513.8750 | 83.2971 | 8 |
| DAY | 9 | 502.8359 | 91.3084 | 128 |
| River Mile | 40 | 490.6329 | 95.2346 | 79 |
| River Mile | 41 | 474.5000 | 85.5599 | 2 |
| River Mile | 44 | 526.4359 | 81.5771 | 39 |
| River Mile | 47 | 515.3750 | 88.5146 | 8 |
| DAY | 12 | 483.6867 | 85.4430 | 83 |
| River Mile | 40 | 495.3846 | 54.3817 | 26 |
| River Mile | 41 | 500.0000 | 88.8313 | 3 |
| River Mile | 42 | 500.5556 | 95.1607 | 18 |
| River Mile | 44 | 479.4545 | 75.0592 | 22 |
| River Mile | 46 | 443.4286 | 125.3019 | 14 |
| DAY | 16 | 461.6566 | 91.1525 | 99 |
| River Mile | 40 | 459.6923 | 116.8349 | 13 |
| River Mile | 41 | 399.7143 | 117.4716 | 7 |
| River Mile | 42 | 464.5319 | 64.5876 | 47 |
| River Mile | 44 | 497.1429 | 80.7975 | 21 |
| River Mile | 47 | 423.3636 | 132.4124 | 11 |
| DAY | 19 | 445.5614 | 102.8777 | 57 |
| River Mile | 40 | 466.8800 | 82.7478 | 25 |
| River Mile | 44 | 418.5625 | 101.6064 | 16 |
| River Mile | 46 | 357.8571 | 86.4512 | 7 |
| River Mile | 47 | 502.5556 | 123.7721 | 9 |
| DAY | 23 | 457.5638 | 99.0884 | 149 |
| River Mile | 40 | 485.1212 | 102.6410 | 33 |
| River Mile | 41 | 419.2222 | 78.9917 | 9 |
| River Mile | 42 | 479.6739 | 79.1367 | 46 |
| River Mile | 44 | 440.7660 | 98.5418 | 47 |
| River Mile | 47 | 401.0000 | 129.7222 | 14 |
| MONTH | June | 445.5972 | 104.6945 | 72 |
| DAY | 2 | 445.5972 | 104.6945 | 72 |
| River Mile | 40 | 451.1905 | 99.4228 | 42 |
| River Mile | 41 | 421.2000 | 89.9849 | 10 |
| River Mile | 46 | 442.3750 | 110.6202 | 8 |
| River Mile | 47 | 448.5000 | 137.1671 | 12 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|----------|---------------|----------|----------|-------|
| MONTH | September | 343.0564 | 68.0000 | 621 |
| DAY | 29 | 343.0564 | 68.0000 | 621 |
| | River Mile 40 | 335.2156 | 50.6526 | 218 |
| | River Mile 42 | 356.4025 | 84.0451 | 159 |
| | River Mile 44 | 337.5455 | 56.4068 | 143 |
| | River Mile 46 | 338.1887 | 84.5293 | 53 |
| | River Mile 47 | 356.2500 | 81.8732 | 48 |
| MONTH | October | 362.6876 | 78.1310 | 2753 |
| DAY | 3 | 373.4239 | 79.1875 | 611 |
| | River Mile 40 | 364.8606 | 75.2261 | 208 |
| | River Mile 41 | 370.5200 | 72.2926 | 75 |
| | River Mile 42 | 368.1339 | 75.7312 | 127 |
| | River Mile 44 | 385.5728 | 84.4913 | 103 |
| | River Mile 46 | 390.0952 | 90.2500 | 42 |
| | River Mile 47 | 386.2679 | 88.0771 | 56 |
| DAY | 6 | 377.2424 | 88.1119 | 528 |
| | River Mile 40 | 367.3892 | 77.8052 | 167 |
| | River Mile 41 | 398.0625 | 89.4156 | 32 |
| | River Mile 42 | 358.6916 | 73.1550 | 107 |
| | River Mile 44 | 387.8217 | 98.2017 | 157 |
| | River Mile 46 | 356.1250 | 76.1606 | 32 |
| | River Mile 47 | 437.2121 | 107.5002 | 33 |
| DAY | 10 | 355.3375 | 73.4623 | 477 |
| | River Mile 40 | 334.2763 | 56.6047 | 76 |
| | River Mile 41 | 382.6129 | 76.2035 | 31 |
| | River Mile 42 | 354.2941 | 65.0961 | 102 |
| | River Mile 44 | 353.5440 | 76.4048 | 182 |
| | River Mile 46 | 381.3429 | 85.2080 | 35 |
| | River Mile 47 | 360.7843 | 82.4860 | 51 |
| DAY | 13 | 359.0995 | 82.5688 | 402 |
| | River Mile 40 | 361.1918 | 72.5296 | 73 |
| | River Mile 41 | 346.0870 | 88.9703 | 23 |
| | River Mile 42 | 365.5472 | 77.7105 | 106 |
| | River Mile 44 | 342.2056 | 81.5617 | 107 |
| | River Mile 46 | 383.7381 | 101.3047 | 42 |
| | River Mile 47 | 363.7255 | 84.2860 | 51 |
| DAY | 27 | 350.0395 | 66.5353 | 735 |
| | River Mile 40 | 362.5507 | 61.0614 | 138 |
| | River Mile 41 | 383.1190 | 58.7600 | 42 |
| | River Mile 42 | 376.6723 | 70.3196 | 119 |
| | River Mile 44 | 348.0186 | 48.7062 | 161 |
| | River Mile 46 | 325.1006 | 68.1560 | 159 |
| | River Mile 47 | 332.8448 | 73.0810 | 116 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|----------|---------------|----------|----------|-------|
| MONTH | September | 343.0564 | 68.0000 | 621 |
| DAY | 29 | 343.0564 | 68.0000 | 621 |
| | River Mile 40 | 335.2156 | 50.6526 | 218 |
| | River Mile 42 | 356.4025 | 84.0451 | 159 |
| | River Mile 44 | 337.5455 | 56.4068 | 143 |
| | River Mile 46 | 338.1887 | 84.5293 | 53 |
| | River Mile 47 | 356.2500 | 81.8732 | 48 |
| MONTH | October | 362.6876 | 78.1310 | 2753 |
| DAY | 3 | 373.4239 | 79.1875 | 611 |
| | River Mile 40 | 364.8606 | 75.2261 | 208 |
| | River Mile 41 | 370.5200 | 72.2926 | 75 |
| | River Mile 42 | 368.1339 | 75.7312 | 127 |
| | River Mile 44 | 385.5728 | 84.4913 | 103 |
| | River Mile 46 | 390.0952 | 90.2500 | 42 |
| | River Mile 47 | 386.2679 | 88.0771 | 56 |
| DAY | 6 | 377.2424 | 88.1119 | 528 |
| | River Mile 40 | 367.3892 | 77.8052 | 167 |
| | River Mile 41 | 398.0625 | 89.4156 | 32 |
| | River Mile 42 | 358.6916 | 73.1550 | 107 |
| | River Mile 44 | 387.8217 | 98.2017 | 157 |
| | River Mile 46 | 356.1250 | 76.1606 | 32 |
| | River Mile 47 | 437.2121 | 107.5002 | 33 |
| DAY | 10 | 355.3375 | 73.4623 | 477 |
| | River Mile 40 | 334.2763 | 56.6047 | 76 |
| | River Mile 41 | 382.6129 | 76.2035 | 31 |
| | River Mile 42 | 354.2941 | 65.0961 | 102 |
| | River Mile 44 | 353.5440 | 76.4048 | 182 |
| | River Mile 46 | 381.3429 | 85.2080 | 35 |
| | River Mile 47 | 360.7843 | 82.4860 | 51 |
| DAY | 13 | 359.0995 | 82.5688 | 402 |
| | River Mile 40 | 361.1918 | 72.5296 | 73 |
| | River Mile 41 | 346.0870 | 88.9703 | 23 |
| | River Mile 42 | 365.5472 | 77.7105 | 106 |
| | River Mile 44 | 342.2056 | 81.5617 | 107 |
| | River Mile 46 | 383.7381 | 101.3047 | 42 |
| | River Mile 47 | 363.7255 | 84.2860 | 51 |
| DAY | 27 | 350.0395 | 66.5353 | 735 |
| | River Mile 40 | 362.5507 | 61.0614 | 138 |
| | River Mile 41 | 383.1190 | 58.7600 | 42 |
| | River Mile 42 | 376.6723 | 70.3196 | 119 |
| | River Mile 44 | 348.0186 | 48.7062 | 161 |
| | River Mile 46 | 325.1006 | 68.1560 | 159 |
| | River Mile 47 | 332.8448 | 73.0810 | 116 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|----------|----------|----------|-------|
| MONTH | November | 350.1641 | 65.8404 | 518 |
| DAY | 3 | 350.1641 | 65.8404 | 518 |
| River Mile | 40 | 339.7414 | 72.3204 | 116 |
| River Mile | 41 | 427.9286 | 69.5031 | 14 |
| River Mile | 42 | 397.5882 | 63.8446 | 51 |
| River Mile | 44 | 333.8054 | 50.0694 | 149 |
| River Mile | 46 | 350.2435 | 67.1094 | 115 |
| River Mile | 47 | 351.9452 | 57.3210 | 73 |
| YEAR | 1989 | 418.9173 | 84.2298 | 7517 |
| MONTH | April | 561.2905 | 108.3191 | 623 |
| DAY | 20 | 598.2169 | 81.6853 | 83 |
| River Mile | 44 | 583.2353 | 54.2742 | 17 |
| River Mile | 47 | 602.0758 | 87.2851 | 66 |
| DAY | 24 | 583.4758 | 109.7046 | 227 |
| River Mile | 40 | 483.2857 | 124.1903 | 7 |
| River Mile | 42 | 550.0000 | 111.1342 | 6 |
| River Mile | 44 | 601.4359 | 105.7188 | 39 |
| River Mile | 47 | 584.6286 | 108.5731 | 175 |
| DAY | 27 | 535.4089 | 107.3619 | 313 |
| River Mile | 40 | 446.9630 | 117.8387 | 27 |
| River Mile | 42 | 458.9048 | 106.5044 | 21 |
| River Mile | 44 | 539.2113 | 115.1861 | 71 |
| River Mile | 47 | 554.6082 | 93.1038 | 194 |
| MONTH | May | 481.6893 | 111.1064 | 692 |
| DAY | 1 | 521.6778 | 97.2244 | 239 |
| River Mile | 30 | 588.2000 | 109.7962 | 5 |
| River Mile | 32 | 584.0000 | 121.9672 | 5 |
| River Mile | 40 | 524.9091 | 94.0937 | 44 |
| River Mile | 42 | 482.5897 | 95.2906 | 39 |
| River Mile | 44 | 515.7910 | 94.7554 | 67 |
| River Mile | 47 | 536.0127 | 94.9694 | 79 |
| DAY | 4 | 500.8684 | 97.5163 | 114 |
| River Mile | 40 | 493.3333 | 89.2168 | 21 |
| River Mile | 42 | 521.2593 | 94.5339 | 27 |
| River Mile | 44 | 505.5185 | 87.4750 | 27 |
| River Mile | 46 | 453.6000 | 128.1572 | 15 |
| River Mile | 47 | 508.8333 | 94.6599 | 24 |
| DAY | 8 | 527.2857 | 91.2717 | 21 |
| River Mile | 42 | 527.2857 | 91.2717 | 21 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|----|----------|----------|-------|
| DAY | 11 | 521.3462 | 84.8835 | 52 |
| River Mile | 30 | 503.8947 | 100.0127 | 19 |
| River Mile | 40 | 509.0000 | 92.4758 | 10 |
| River Mile | 44 | 587.5000 | 63.1638 | 4 |
| River Mile | 46 | 573.0000 | .0000 | 1 |
| River Mile | 47 | 529.0556 | 64.1372 | 18 |
| DAY | 15 | 519.9444 | 96.8483 | 18 |
| River Mile | 42 | 480.3750 | 84.2156 | 8 |
| River Mile | 44 | 503.3333 | 116.1995 | 3 |
| River Mile | 46 | 571.6667 | 57.8302 | 3 |
| River Mile | 47 | 572.7500 | 120.5277 | 4 |
| DAY | 18 | 497.7586 | 112.0544 | 29 |
| River Mile | 40 | 511.6429 | 104.9678 | 14 |
| River Mile | 44 | 382.0000 | 119.7163 | 3 |
| River Mile | 46 | 521.8333 | 112.4018 | 6 |
| River Mile | 47 | 499.1667 | 118.4169 | 6 |
| DAY | 22 | 443.5143 | 101.1099 | 70 |
| River Mile | 18 | 367.8462 | 53.7430 | 13 |
| River Mile | 19 | 431.9000 | 53.0020 | 10 |
| River Mile | 25 | 357.7778 | 129.3453 | 9 |
| River Mile | 30 | 506.7500 | 100.7683 | 4 |
| River Mile | 32 | 397.0000 | .0000 | 1 |
| River Mile | 40 | 510.5333 | 64.8469 | 15 |
| River Mile | 42 | 480.1667 | 100.1853 | 18 |
| DAY | 24 | 349.4048 | 67.4649 | 42 |
| River Mile | 19 | 351.2857 | 71.9426 | 35 |
| River Mile | 25 | 340.0000 | 40.6079 | 7 |
| DAY | 25 | 507.9302 | 90.8162 | 43 |
| River Mile | 40 | 528.5238 | 86.3624 | 21 |
| River Mile | 42 | 488.2727 | 92.5363 | 22 |
| DAY | 26 | 350.8889 | 79.2404 | 18 |
| River Mile | 18 | 335.0909 | 48.8538 | 11 |
| River Mile | 19 | 409.2000 | 118.5188 | 5 |
| River Mile | 25 | 292.0000 | 2.8284 | 2 |
| DAY | 31 | 341.1739 | 57.6253 | 46 |
| River Mile | 18 | 324.3125 | 26.5505 | 32 |
| River Mile | 19 | 409.9000 | 85.2414 | 10 |
| River Mile | 25 | 304.2500 | 11.5289 | 4 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|----|----------|----------|-------|
| DAY | 11 | 521.3462 | 84.8835 | 52 |
| River Mile | 30 | 503.8947 | 100.0127 | 19 |
| River Mile | 40 | 509.0000 | 92.4758 | 10 |
| River Mile | 44 | 587.5000 | 63.1638 | 4 |
| River Mile | 46 | 573.0000 | .0000 | 1 |
| River Mile | 47 | 529.0556 | 64.1372 | 18 |
| DAY | 15 | 519.9444 | 96.8483 | 18 |
| River Mile | 42 | 480.3750 | 84.2156 | 8 |
| River Mile | 44 | 503.3333 | 116.1995 | 3 |
| River Mile | 46 | 571.6667 | 57.8302 | 3 |
| River Mile | 47 | 572.7500 | 120.5277 | 4 |
| DAY | 18 | 497.7586 | 112.0544 | 29 |
| River Mile | 40 | 511.6429 | 104.9678 | 14 |
| River Mile | 44 | 382.0000 | 119.7163 | 3 |
| River Mile | 46 | 521.8333 | 112.4018 | 6 |
| River Mile | 47 | 499.1667 | 118.4169 | 6 |
| DAY | 22 | 443.5143 | 101.1099 | 70 |
| River Mile | 18 | 367.8462 | 53.7430 | 13 |
| River Mile | 19 | 431.9000 | 53.0020 | 10 |
| River Mile | 25 | 357.7778 | 129.3453 | 9 |
| River Mile | 30 | 506.7500 | 100.7683 | 4 |
| River Mile | 32 | 397.0000 | .0000 | 1 |
| River Mile | 40 | 510.5333 | 64.8469 | 15 |
| River Mile | 42 | 480.1667 | 100.1853 | 18 |
| DAY | 24 | 349.4048 | 67.4649 | 42 |
| River Mile | 19 | 351.2857 | 71.9426 | 35 |
| River Mile | 25 | 340.0000 | 40.6079 | 7 |
| DAY | 25 | 507.9302 | 90.8162 | 43 |
| River Mile | 40 | 528.5238 | 86.3624 | 21 |
| River Mile | 42 | 488.2727 | 92.5363 | 22 |
| DAY | 26 | 350.8889 | 79.2404 | 18 |
| River Mile | 18 | 335.0909 | 48.8538 | 11 |
| River Mile | 19 | 409.2000 | 118.5188 | 5 |
| River Mile | 25 | 292.0000 | 2.8284 | 2 |
| DAY | 31 | 341.1739 | 57.6253 | 46 |
| River Mile | 18 | 324.3125 | 26.5505 | 32 |
| River Mile | 19 | 409.9000 | 85.2414 | 10 |
| River Mile | 25 | 304.2500 | 11.5289 | 4 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|---------|----------|---------|-------|
| MONTH | October | 395.7299 | 53.6812 | 5860 |
| DAY | 2 | 369.8186 | 42.2888 | 711 |
| River Mile | 18 | 357.3571 | 27.0083 | 182 |
| River Mile | 19 | 391.7098 | 49.9627 | 193 |
| River Mile | 25 | 363.9940 | 39.6348 | 336 |
| DAY | 4 | 377.8885 | 40.9244 | 547 |
| River Mile | 18 | 360.7951 | 27.7477 | 122 |
| River Mile | 19 | 380.3590 | 33.1812 | 195 |
| River Mile | 25 | 384.8609 | 49.4367 | 230 |
| DAY | 5 | 407.3407 | 70.4594 | 135 |
| River Mile | 32 | 366.3500 | 40.6115 | 20 |
| River Mile | 40 | 371.0000 | 53.5770 | 17 |
| River Mile | 44 | 434.4348 | 82.0769 | 23 |
| River Mile | 46 | 415.0769 | 63.9264 | 52 |
| River Mile | 47 | 425.2609 | 81.9985 | 23 |
| DAY | 9 | 397.5511 | 51.6651 | 793 |
| River Mile | 18 | 384.5935 | 40.1741 | 155 |
| River Mile | 19 | 416.0249 | 54.8634 | 201 |
| River Mile | 25 | 385.4943 | 38.8928 | 261 |
| River Mile | 32 | 477.4000 | 97.8126 | 5 |
| River Mile | 40 | 397.2143 | 68.1792 | 28 |
| River Mile | 44 | 396.9767 | 57.1591 | 43 |
| River Mile | 46 | 396.6604 | 58.0643 | 53 |
| River Mile | 47 | 421.4681 | 66.3547 | 47 |
| DAY | 11 | 391.2395 | 49.0040 | 622 |
| River Mile | 18 | 372.5500 | 34.6014 | 140 |
| River Mile | 19 | 401.8213 | 50.4854 | 375 |
| River Mile | 25 | 378.6075 | 49.8715 | 107 |
| DAY | 12 | 405.7228 | 61.6900 | 267 |
| River Mile | 18 | 371.4737 | 37.1414 | 19 |
| River Mile | 32 | 435.0000 | .0000 | 1 |
| River Mile | 40 | 421.8462 | 67.6763 | 91 |
| River Mile | 44 | 398.7087 | 58.6374 | 103 |
| River Mile | 47 | 403.3962 | 57.5795 | 53 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|----------|----------|---------|-------|
| DAY | 16 | 404.6424 | 65.2652 | 618 |
| River Mile | 18 | 368.5657 | 36.2526 | 99 |
| River Mile | 19 | 392.8584 | 45.2138 | 113 |
| River Mile | 25 | 389.6197 | 67.4608 | 71 |
| River Mile | 30 | 425.9231 | 79.5829 | 104 |
| River Mile | 32 | 395.2500 | 49.1418 | 4 |
| River Mile | 40 | 404.0430 | 59.1303 | 93 |
| River Mile | 42 | 448.6351 | 75.0774 | 74 |
| River Mile | 47 | 414.5500 | 58.5029 | 60 |
| DAY | 18 | 393.2066 | 61.9346 | 213 |
| River Mile | 18 | 370.4407 | 34.6496 | 59 |
| River Mile | 19 | 414.4364 | 64.5620 | 110 |
| River Mile | 25 | 370.6591 | 65.8945 | 44 |
| DAY | 23 | 410.9651 | 54.4256 | 831 |
| River Mile | 18 | 407.2575 | 41.3709 | 233 |
| River Mile | 19 | 422.2625 | 54.8257 | 301 |
| River Mile | 25 | 401.3629 | 53.5477 | 124 |
| River Mile | 40 | 403.1850 | 65.7486 | 173 |
| DAY | 25 | 404.4033 | 47.9459 | 982 |
| River Mile | 18 | 394.9333 | 31.6813 | 180 |
| River Mile | 19 | 409.2000 | 42.0353 | 135 |
| River Mile | 25 | 401.2246 | 43.0587 | 334 |
| River Mile | 40 | 410.9231 | 77.2717 | 13 |
| River Mile | 42 | 469.7500 | 74.7624 | 24 |
| River Mile | 44 | 398.5402 | 56.7856 | 87 |
| River Mile | 46 | 398.9725 | 47.4760 | 109 |
| River Mile | 47 | 420.0800 | 58.9389 | 100 |
| DAY | 30 | 389.6809 | 40.3308 | 141 |
| River Mile | 18 | 383.9886 | 35.3594 | 88 |
| River Mile | 25 | 399.1321 | 46.2768 | 53 |
| MONTH | November | 429.8567 | 77.8184 | 342 |
| DAY | 1 | 429.8567 | 77.8184 | 342 |
| River Mile | 30 | 438.4565 | 79.9452 | 138 |
| River Mile | 40 | 398.3171 | 66.4163 | 41 |
| River Mile | 42 | 468.3810 | 74.7023 | 42 |
| River Mile | 46 | 413.1250 | 74.6896 | 96 |
| River Mile | 47 | 433.6400 | 68.8094 | 25 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|-------|----------|----------|-------|
| YEAR | 1990 | 527.8381 | 137.6407 | 2026 |
| MONTH | March | 483.8539 | 115.6247 | 712 |
| DAY | 12 | 453.8421 | 79.6156 | 95 |
| River Mile | 47 | 453.8421 | 79.6156 | 95 |
| DAY | 15 | 446.0815 | 80.5033 | 135 |
| River Mile | 37 | 435.5909 | 56.7171 | 22 |
| River Mile | 47 | 448.1239 | 84.4086 | 113 |
| DAY | 19 | 487.8298 | 125.3494 | 141 |
| River Mile | 37 | 535.0000 | 142.4612 | 45 |
| River Mile | 44 | 465.7188 | 110.4868 | 96 |
| DAY | 22 | 493.4583 | 119.3165 | 48 |
| River Mile | 37 | 501.8750 | 107.5304 | 16 |
| River Mile | 44 | 489.2500 | 126.2320 | 32 |
| DAY | 26 | 506.4385 | 122.1336 | 244 |
| River Mile | 37 | 519.6667 | 149.3234 | 6 |
| River Mile | 47 | 506.1050 | 121.7345 | 238 |
| DAY | 29 | 512.7959 | 151.1914 | 49 |
| River Mile | 37 | 481.7500 | 109.8190 | 8 |
| River Mile | 44 | 479.5294 | 130.0414 | 17 |
| River Mile | 47 | 546.7083 | 172.9671 | 24 |
| MONTH | April | 589.2588 | 141.4942 | 997 |
| DAY | 2 | 589.5714 | 172.4127 | 56 |
| River Mile | 44 | 579.7500 | 215.2663 | 4 |
| River Mile | 47 | 615.7500 | 171.9724 | 44 |
| DAY | 5 | 547.7308 | 135.3135 | 78 |
| River Mile | 37 | 553.3333 | 264.0537 | 3 |
| River Mile | 44 | 510.8333 | 130.5426 | 6 |
| River Mile | 47 | 550.6957 | 131.5252 | 69 |
| DAY | 9 | 548.8356 | 138.9448 | 73 |
| River Mile | 37 | 446.6667 | 136.6685 | 6 |
| River Mile | 44 | 529.9565 | 137.7922 | 23 |
| River Mile | 47 | 572.6364 | 134.9553 | 44 |
| DAY | 12 | 517.4286 | 126.2152 | 7 |
| River Mile | 37 | 517.4286 | 126.2152 | 7 |
| DAY | 16 | 591.0707 | 147.1504 | 198 |
| River Mile | 37 | 572.2500 | 122.0283 | 4 |
| River Mile | 44 | 599.4324 | 139.1862 | 37 |
| River Mile | 47 | 589.5796 | 150.1974 | 157 |
| DAY | 19 | 582.6332 | 134.9396 | 259 |
| River Mile | 37 | 596.3333 | 157.0630 | 12 |
| River Mile | 44 | 568.4545 | 132.5106 | 121 |
| River Mile | 47 | 594.9444 | 134.8694 | 126 |

Table 2. (cont.)

| VARIABLE | | MEAN | STD DEV | CASES |
|------------|-----|----------|----------|-------|
| DAY | 23 | 620.9578 | 135.1716 | 166 |
| River Mile | 37 | 803.0000 | 137.1787 | 2 |
| River Mile | 44 | 637.7742 | 114.9669 | 31 |
| River Mile | 47 | 614.3008 | 138.1286 | 133 |
| DAY | 26 | 606.5750 | 135.4035 | 160 |
| River Mile | 37 | 560.0000 | 173.2070 | 4 |
| River Mile | 44 | 569.8261 | 118.9620 | 23 |
| River Mile | 47 | 614.3308 | 136.6825 | 133 |
| MONTH | May | 433.4543 | 54.9761 | 317 |
| DAY | 2 | 468.5000 | 113.7019 | 16 |
| River Mile | 18 | 438.5000 | 58.0991 | 6 |
| River Mile | 25 | 486.5000 | 136.7904 | 10 |
| DAY | 9 | 436.5200 | 58.5447 | 100 |
| River Mile | 18 | 430.7344 | 57.9182 | 64 |
| River Mile | 19 | 451.2308 | 47.5414 | 26 |
| River Mile | 25 | 435.3000 | 84.1283 | 10 |
| DAY | 16 | 428.9683 | 44.5665 | 189 |
| River Mile | 18 | 420.4762 | 38.0277 | 84 |
| River Mile | 19 | 443.4937 | 44.8276 | 79 |
| River Mile | 25 | 412.2692 | 51.6353 | 26 |
| DAY | 23 | 431.8333 | 46.7116 | 12 |
| River Mile | 18 | 433.5000 | 57.8125 | 8 |
| River Mile | 25 | 428.5000 | 13.4040 | 4 |

Table 3. Number of recaptures of striped bass by gear, state, and season as of 31 December 1989.

| | CT | MA | MD | NC | ME | NH | NJ | NY | RI | VA | Tagging Season |
|-----------------|----|----|----|----|----|----|----|----|----|------|----------------|
| Anchor Gill Net | | | | | | | | | | 362 | Fall 1987 |
| Gill Net | | | | | | | | | | 20 | |
| Hook & Line | 1 | 6 | 3 | | | | | | | 86 | |
| Other | | | | | | | | | | 2 | |
| Trap | | | 2 | | 1 | 1 | | 2 | 2 | 1203 | |
| Found Dead | | | | | | | | | | 3 | |
| Anchor Gill Net | | | 1 | | | | | | | 84 | Spring 1988 |
| Gill Net | | | | | | | | | | 2 | |
| Hook & Line | 1 | 5 | 5 | | | | 4 | 1 | | 60 | |
| Other | | | | | | | | | | 1 | |
| Trap | | | | | | | | | | 196 | |
| Found Dead | | | 1 | | | | | | | 9 | |
| Anchor Gill Net | | | | | | | | | | 491 | Fall 1988 |
| Drift Gill Net | | | | | | | | | | 1 | |
| Hook & Line | | 7 | 2 | | 4 | 1 | | | | 59 | |
| Other | | | | 1 | | | | 4 | 2 | 4 | |
| Trap | | | | | | | | | | 800 | |

Table 3. (cont.)

| | CT | MA | MD | NC | ME | NH | NJ | NY | RI | VA | Tagging Season |
|-----------------|----|----|----|----|----|----|----|----|----|------|----------------|
| Anchor Gill Net | | | | | | | | | | 5 | Spring 1989 |
| Drift Gill Net | | | | | | | | | | 1 | |
| Hook & Line | | | | | | | 1 | | | 7 | |
| Other | | | | | | | | | | 2 | |
| Trap | | | | | | | | | | 139 | |
| | | | | | | | | | | | |
| Anchor Gill Net | | | | | | | | | | 34 | Fall 1989 |
| Drift Gill Net | | | | | | | | | | 1 | |
| Hook & Line | | | | | | | | | | 8 | |
| Trap | | | | | | | | | | 2399 | |
| Trawl | | | | | | | | | | 2 | |

Fig. 1. Size frequency of striped bass tagged in the Rappahannock River, fall 1989

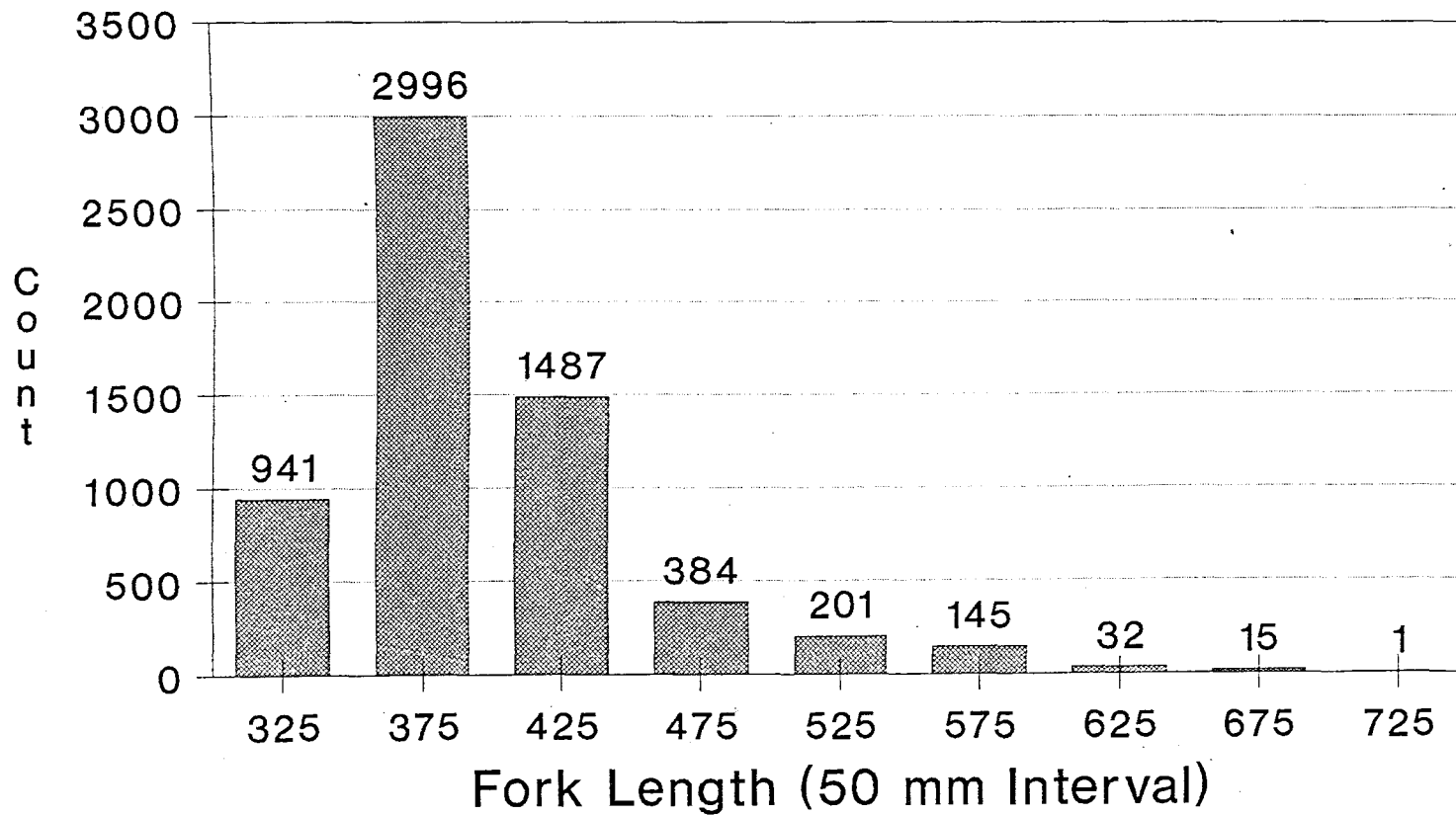


Fig 2. Size frequency of striped bass tagged in the Rappahannock River, spring 1990

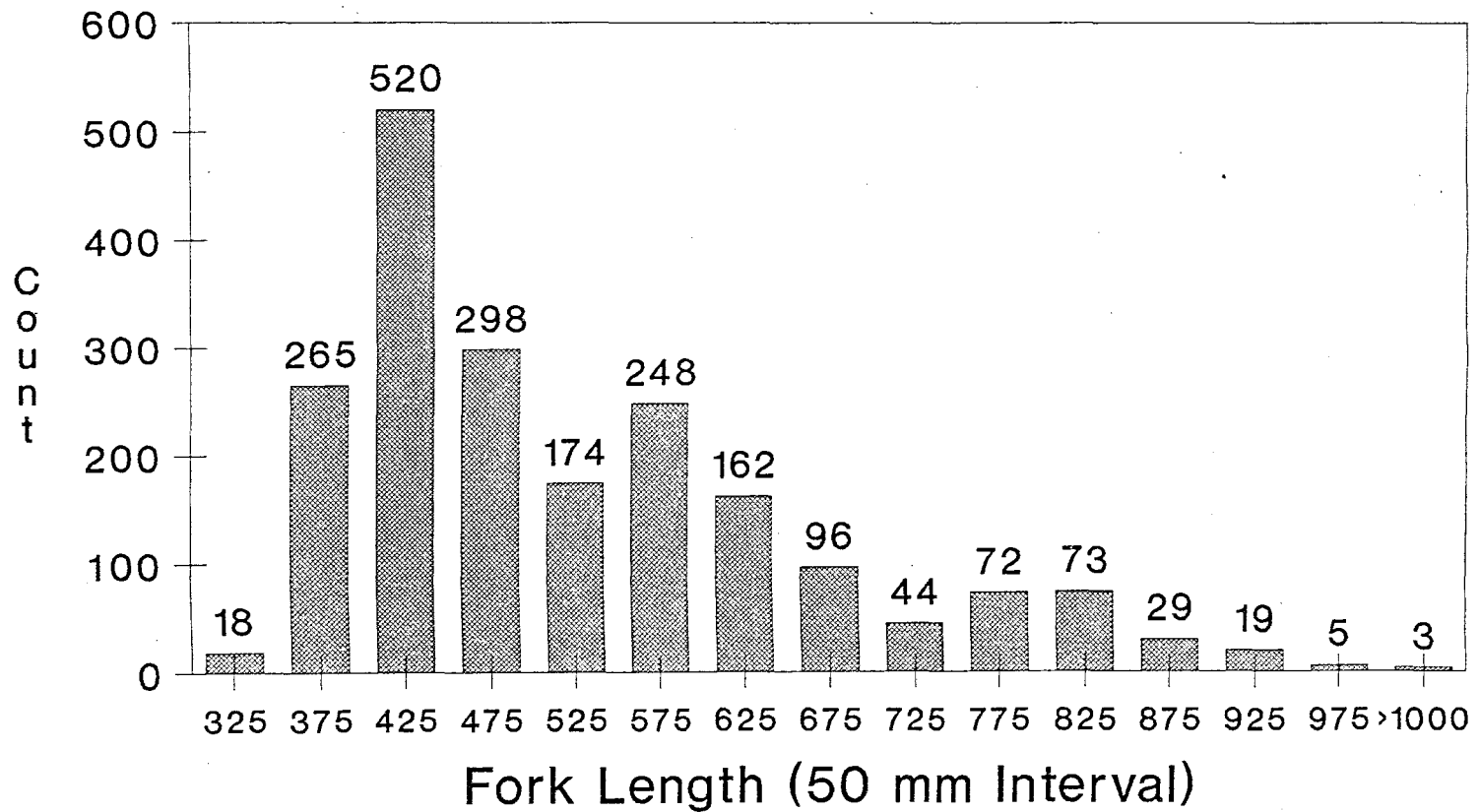


Fig. 3. Year class frequency of striped bass tagged in the Rappahannock River, fall 1989

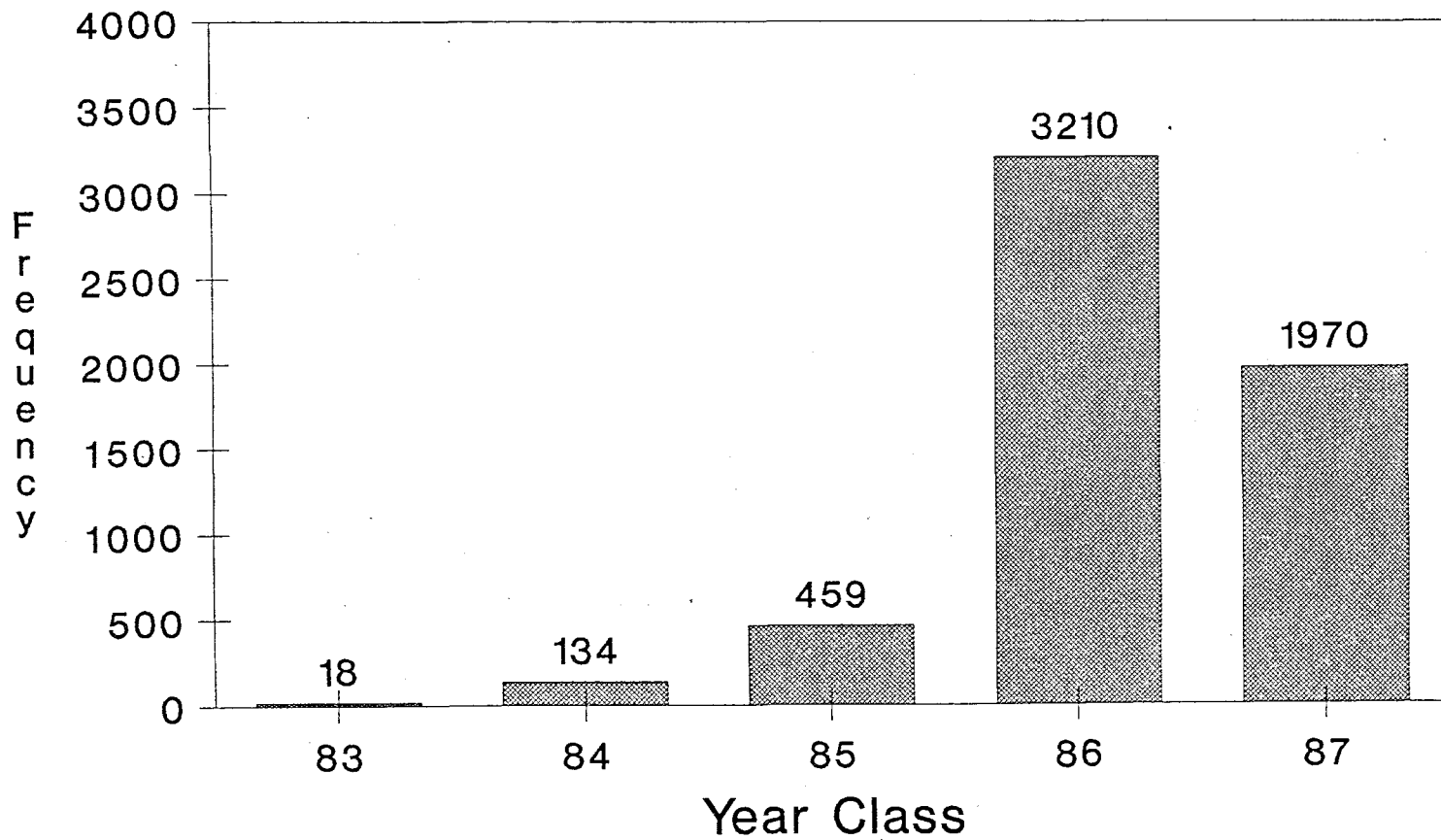


Fig 4. Year class frequency of striped bass tagged in the Rappahannock River, spring 1990

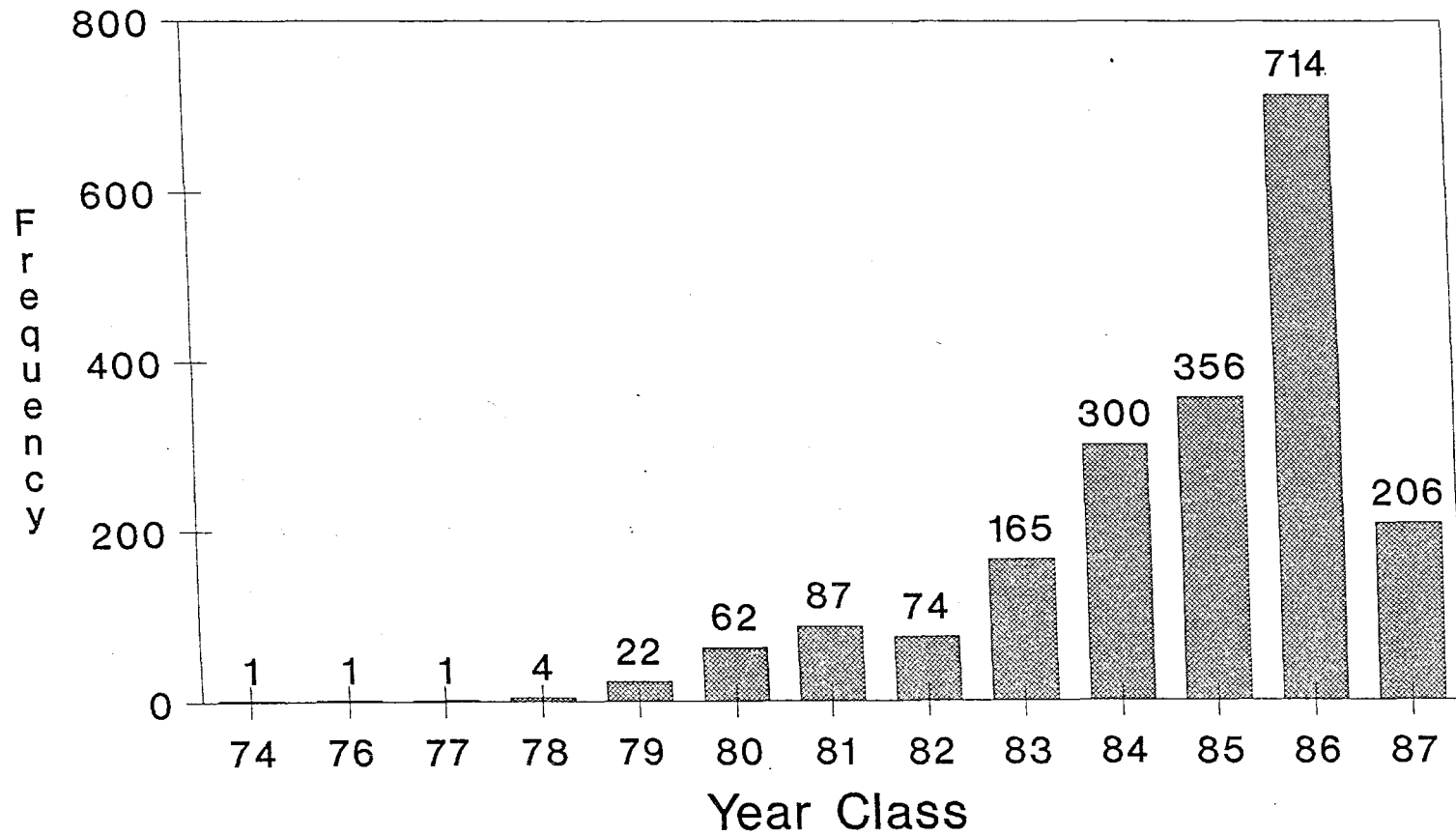
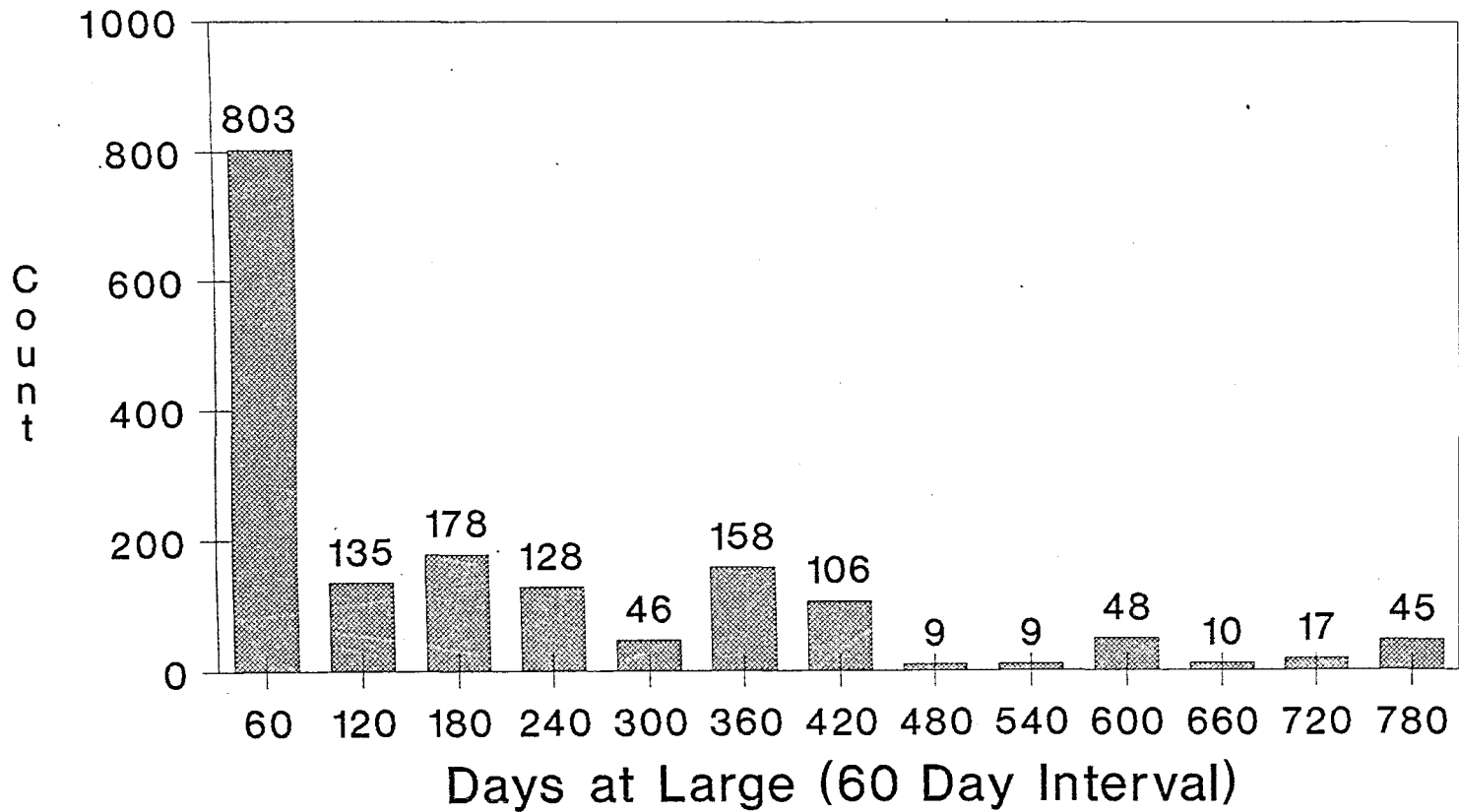
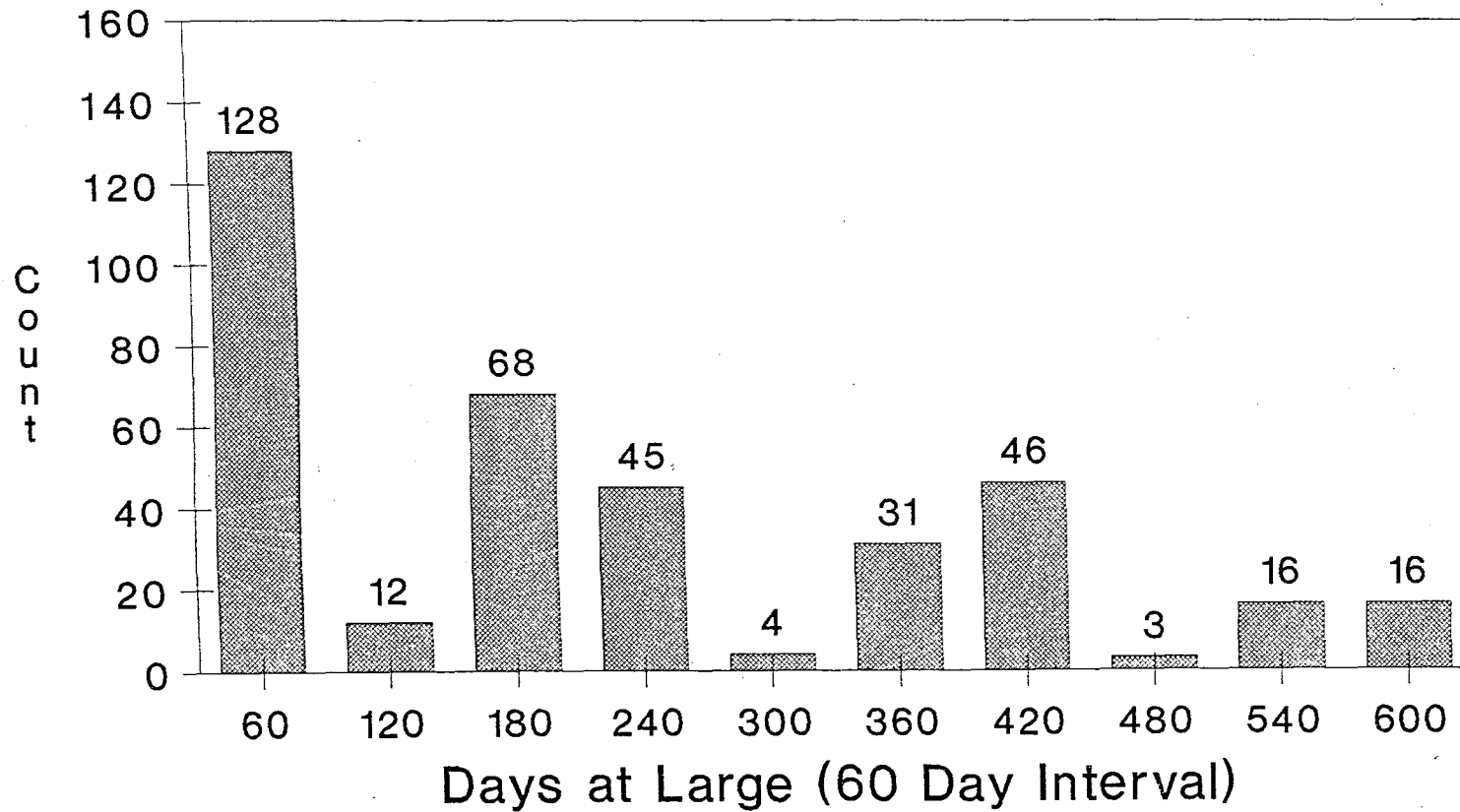


Fig. 5. Days at large of recaptured striped bass tagged in the Rappahannock River, fall 1987



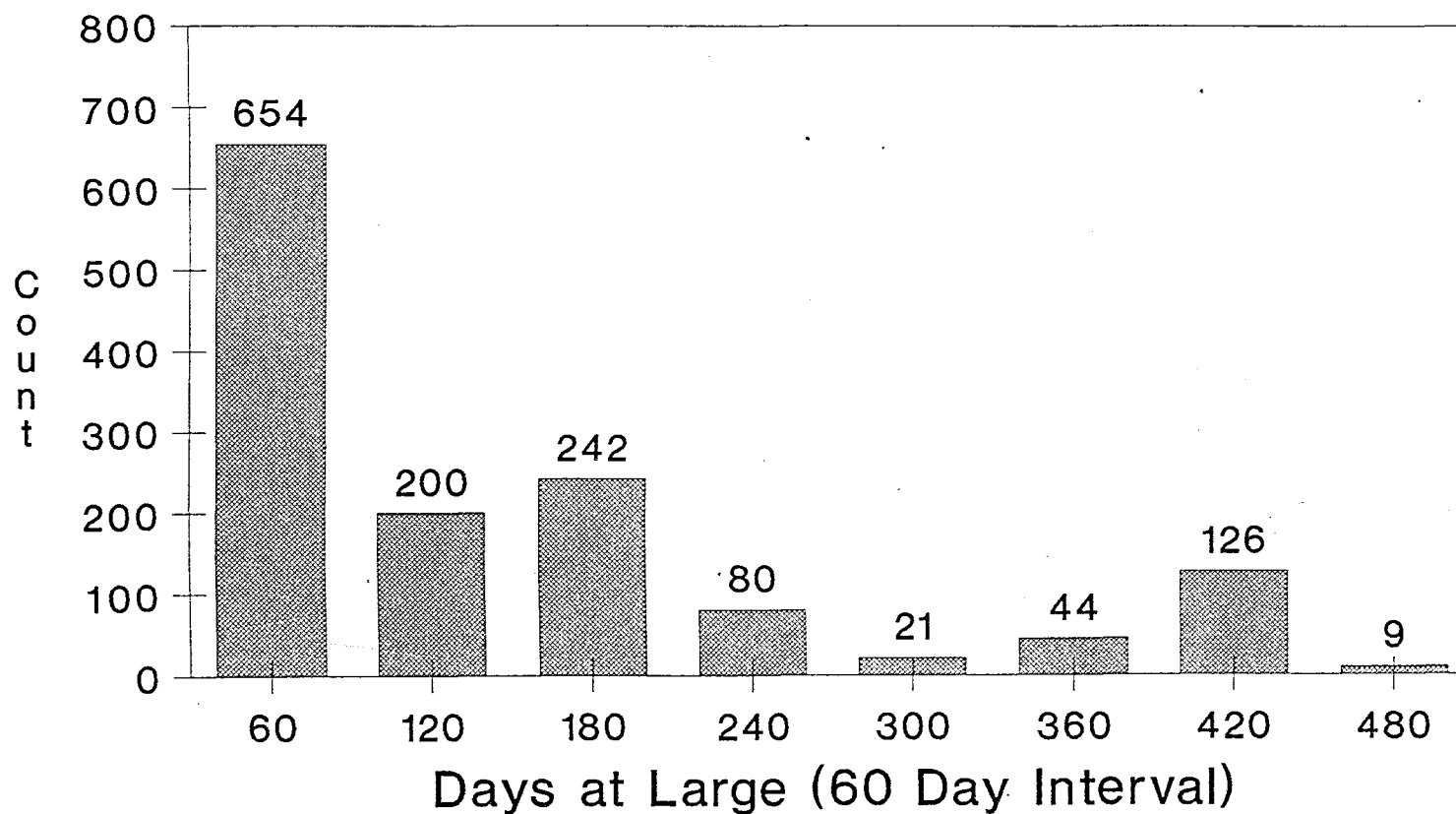
As of December 31, 1989

Fig. 6. Days at large of recaptured striped bass tagged in the Rappahannock River, spring 1988



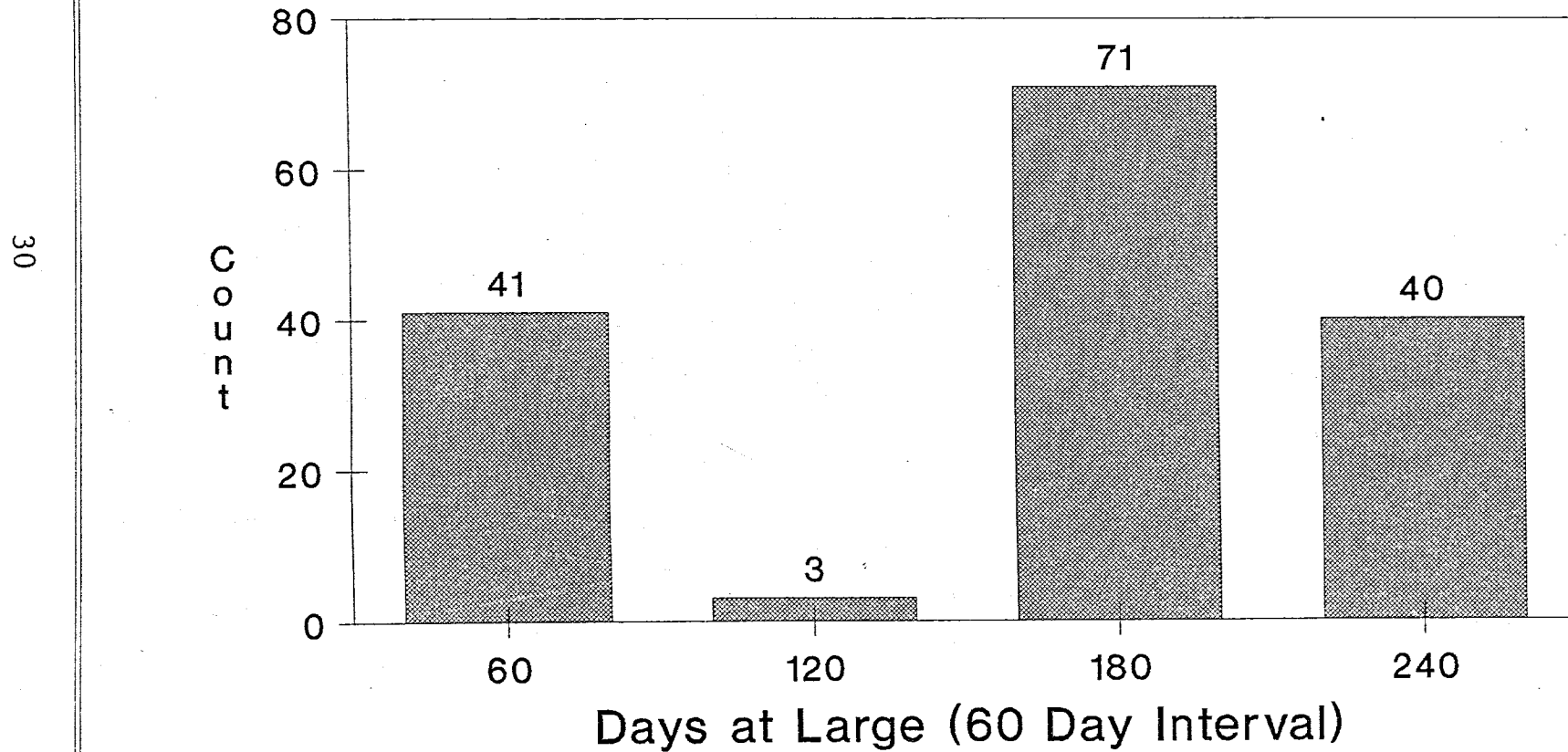
As of December 31, 1989

Fig. 7. Days at large of recaptured striped bass tagged in the Rappahannock River, fall 1988



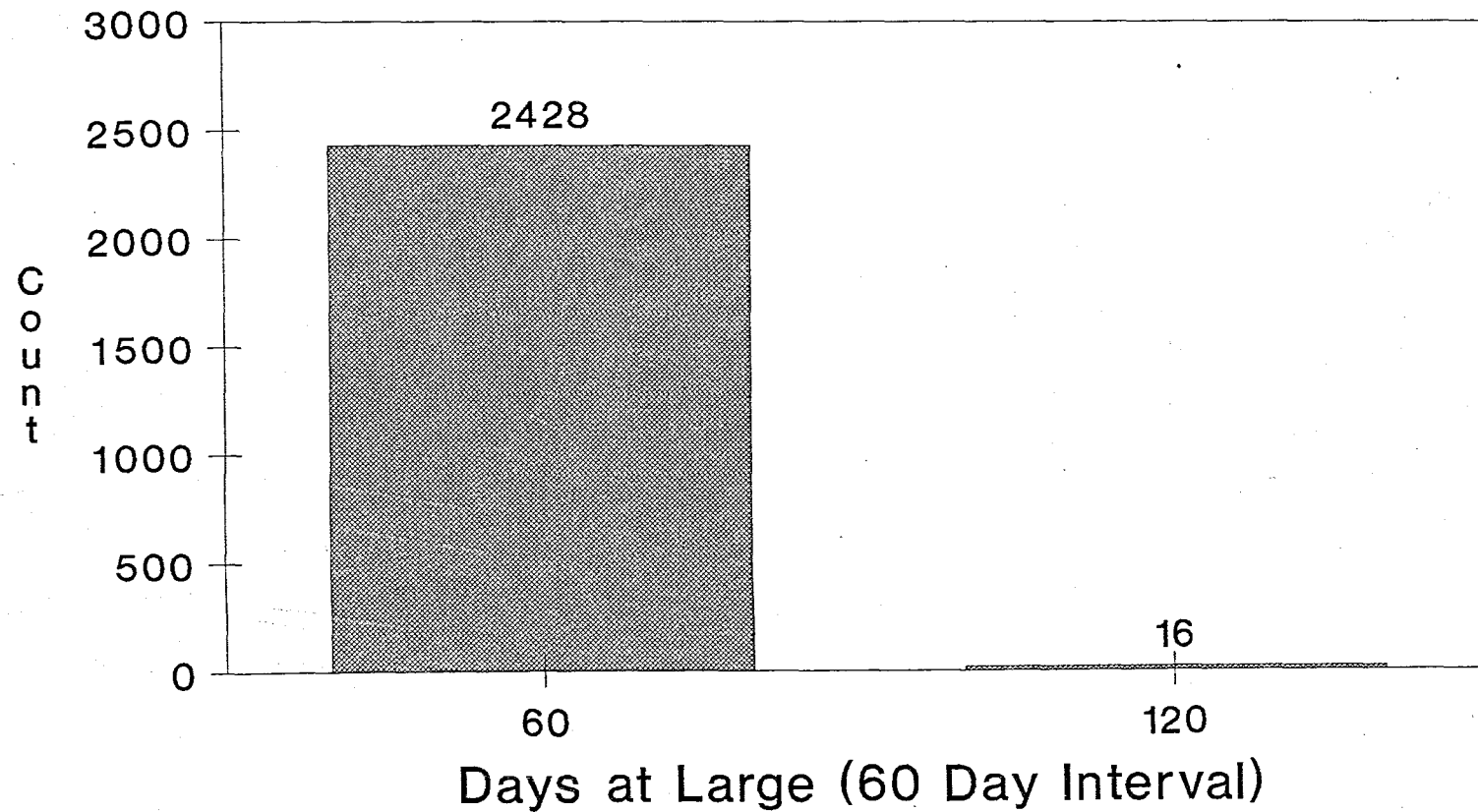
As of December 31, 1989

Fig. 8. Days at large of recaptured striped bass tagged in the Rappahannock River, spring 1989



As of December 31, 1989

Fig. 9. Days at large of recaptured striped bass tagged in the Rappahannock River, fall 1989



As of December 31, 1989