

NORTH CAROLINA RACCOON FIELD TRIAL SURVEY REPORT 1987 THROUGH 2011

N. C. WILDLIFE RESOURCES COMMISSION

Colleen Olfenbuttel, Black Bear and Furbearer Biologist



Funding for the raccoon field trial survey report was partially provided through a Pittman-Robertson Wildlife Restoration Grant. The Federal Aid in Wildlife Restoration Act, popularly known as the Pittman-Robertson Act, was approved by Congress on September 2, 1937, and began functioning July 1, 1938. The purpose of this Act was to provide funding for the selection, restoration, rehabilitation and improvement of wildlife habitat, wildlife management research, and the distribution of information produced by the projects. The Act was amended October 23, 1970, to include funding for hunter training programs and the development, operation and maintenance of public target ranges.

Funds are derived from an 11 percent Federal excise tax on sporting arms, ammunition, and archery equipment, and a 10 percent tax on handguns. These funds are collected from the manufacturers by the Department of the Treasury and are apportioned each year to the States and Territorial areas (except Puerto Rico) by the Department of the Interior on the basis of formulas set forth in the Act. Funds for hunter education and target ranges are derived from one-half of the tax on handguns and archery equipment.

Each state's apportionment is determined by a formula which considers the total area of the state and the number of licensed hunters in the state. The program is a cost-reimbursement program, where the state covers the full amount of an approved project then applies for reimbursement through Federal Aid for up to 75 percent of the project expenses. The state must provide at least 25 percent of the project costs from a non-federal source



INTRODUCTION

The Black Bear and Furbearer Biologist with the North Carolina Wildlife Resources Commission (NCWRC) monitors raccoon harvest and average pelt price through annual licensed fur dealer reports. Hunter numbers and effort are determined through a statewide mail survey every three years. Although information on harvest and effort is provided through the hunter mail surveys, the small sample size of survey respondents limits the use of this information for detecting population trends in raccoons. Also, the relationship between number of raccoons harvested and population trends is difficult to determine when small fluctuations in pelt prices occur.

More recently, trapper harvest of raccoons has been monitored via a voluntary mail survey. Attempts to monitor populations using bridge-crossing and scent station surveys in the past resulted in unreliable data at extremely high costs. In 1987, a Raccoon Field Trial Survey (RFTS) of United Kennel Club (UKC) raccoon field trial events was initiated to examine trends in hunting success rates by region. The index, expressed in number of raccoons seen or treed per hour, continues to be evaluated for how well it correlates with raccoon population density.

Methods

Raccoon field trials are conducted in North Carolina by established raccoon hunting clubs in all regions of the state. These hunts are conducted under very exacting guidelines. Each competing hunt party or "cast" is accompanied by a judge who insures that the hunt is conducted strictly by the rules. Each cast is composed of 2 to 4 hounds, each with a handler, and for a specific period of time. During field trials, raccoons may not be killed, but treed raccoons must be seen before points are awarded.

For the first 10 years of the survey, Furbearer Project personnel contacted the UKC to obtain a list of scheduled hunts for the coming year. Beginning in 1997, copies of all raccoon field trial permits issued by wildlife enforcement officers were sent to the Furbearer Biologist and included in the survey; in addition to UKC field trials, these permits included both PKC and AKC field trials. A database is created with each club contact's name and address as well as the scheduled hunt date. Each club is mailed a RFTS form with instructions approximately 2 weeks prior to the scheduled hunt date. As each hunt club returns the survey form, it is checked off of the list of hunts to allow calculation of response rates. Participation in the survey has been voluntary for clubs in the hope that response rates would be sufficiently high enough to provide valid information on raccoon populations across North Carolina.

Upon receipt of the completed survey, data are recorded and used to calculate regional success rates expressed as raccoons treed or seen per hour. For the purposes of the raccoon field trial survey, North Carolina is divided into 3 furbearer management regions based on landform, land use, and broad habitat type (Figure 1). The RFTS year begins March 1 of each year, because this date represents the end of the annual legal raccoon harvest and the beginning of raccoon population recruitment. The survey was adopted by the NCWRC Furbearer Biologist for several reasons: (1) relatively large sample size, (2) low cost, (3) immediately available data, (4) ability to analyze data at the regional level, (5) data available for all times of the year, (6) data available for most areas of the state, (7) the high value of raccoons as a sport and

furbearing animal, and (8) the positive relationship afforded by additional contact with raccoon hunt clubs.

Results

Summary: During the 24 years of the RFTS (March 1, 1987 - February 28, 2011), data were received from raccoon hunting clubs and special events. The number of casts for which hunting success was reported has averaged 801/year over the life of the survey. Since 1987, raccoon hunting clubs have reported 19,198 field trial casts with 35,100 raccoons observed. Figure 2 shows the annual number of casts and the number of hunt clubs submitting data (range from 21 to 62) over the 24 years of the survey. This past year, 46% of surveys were returned by raccoon hunt clubs, compared to a response rate of 56% last year.

Hunter Success: The statewide hunting success was above the 24-year average, which is an increase from last year's results (Figure 3). The number of raccoons seen per hour decreased from 0.97 to 0.90 in the coastal region, increased from 1.03 to 1.11 in the piedmont region, and decreased from 1.04 to 1.00 in the mountain region (Figure 4). Success (raccoons seen per hour) in the coastal plain and the piedmont region shows fluctuations approximately every 2-3 years, but both regions appear to have reached a plateau in success rates. Success in the mountain region has shown an overall increasing trend from 1987 through 2003, but since 2003, success rates have started to fluctuate and may be starting to plateau as experienced in the other regions.

Twenty-four years of data indicate that hunting success by month varies among the three regions (Figure 5). In the coastal plain, hunting success was highest in July and August. In the piedmont, hunting success was highest in February and November, while in the mountain region, hunting success was highest in August and September. The peaks in hunting success coincided with the time of year when either breeding has begun (February), when young raccoons have left their mother and are more active as they disperse. Hunting success in all regions declined through the spring months, as breeding season ends and young are born. Though peak hunting success occurred in August, February, and September for the coastal plain, piedmont, and mountain regions, respectively (Figure 5), raccoon hunt clubs in all regions were most active during March, based on number of casts conducted (Figure 6).

Casts: We have received data from 97 of the 100 North Carolina counties during the entire survey (Figure 7). This dot-density map shows that many casts are clumped due to the locations of raccoon hunting clubs who chose to participate in the survey. While at first glance it would seem that the data would provide a representative sample for analysis on a county basis, many counties had only a few field trial casts while other counties had large numbers of casts. The number of casts per county for the entire survey has ranged from 0 to 707. Randolph County has recorded the highest number of casts (n=707), followed by Orange County (n=656 casts) and Alamance County (n=643). We have received no data on casts from Chowan, Dare, and Gates counties.

The lowest number of recorded casts occurred in Graham (n=1), Washington (n=2 casts), Hertford (n=4 casts), Martin (n=4 casts) and New Hanover (n=4 casts) counties.

Rabies: Raccoon rabies appeared in North Carolina four years after the inception of the RFTS. All but 3 western North Carolina counties have had positive terrestrial rabies cases at the end of 2010 (Figure 8). Skunks and raccoons are the primary species of wildlife in which rabies is observed in North Carolina, excluding bats. Rabies cases do not always show up uniformly across the state from year to year; often, in any given year, several counties will report a greater number of rabies cases than other counties. This gives the impression that rabies is only in certain regions of the state. There are several reasons for these yearly “hotspots”: 1) The cycling of rabies in the wild animal population. 2) The number of animals submitted by each county. 3) The selective submission of animals more likely to be infected. 4) The human population of the county; more densely populated areas are more likely to encounter a sick-acting animal.

Despite the presence of rabies in the raccoon population, there has been an increase in statewide hunting success (Figure 9). The number of positive raccoon rabies cases peaked in 1997 (n=660) followed by a sharp decline the following year (n=354). There was also a sharp decline in statewide hunting success from 1.05 in 1997 to 0.92 in 1998. The decline in positive rabies cases and in statewide hunting success likely reflected a decline in the raccoon population due to the rabies outbreak. Since 1997, the number of positive raccoon rabies cases has fluctuated while statewide hunting success has been stable.

Peaks in positive raccoon rabies cases occurred in different years for each region (Figure 10). In the coastal plains, piedmont, and mountains, positive raccoon rabies cases peaked in 1996, 1997, and 2003, respectively. The piedmont region accounts for a majority of positive raccoon rabies case; during the 2010-2011 survey year, 55% of positive raccoon rabies cases occurred in the piedmont, followed by the coastal plains (31%) and the mountains (14%). More densely populated areas are more likely to encounter a sick-acting animal, which partially explains the number of positive cases that occur in the piedmont.

Hunter Harvest Survey: About every 3 years since the 1950s the NCWRC has conducted a mail survey of licensed hunters to estimate population numbers of hunters, hunter effort and hunter harvest. The latest survey was conducted after the 2010-2011 season. The survey indicates an overall decline in the number of hunters who harvest raccoons (n=14,905 hunters in 2010-2011) and a corresponding decline in the number of raccoons harvested (n=79,495 raccoons in 2010-2011; Figure 11). The number of raccoons harvested per hunter has fluctuated since the 1990's. For the past two survey years, the number of raccoons harvested per hunters has shown an increasing trend.

Discussion

It will be important to maintain a relatively high level of reporting by raccoon hunting clubs and to submit surveys for non-UKC hunting events through information obtained from copies of enforcement officer issued permits. It is hoped that distribution

of this report with an accompanying letter encouraging all raccoon hunt clubs to submit surveys and reminding enforcement officers to submit copies of raccoon field trial survey permits will result in increased reporting. Possible changes in the field trial permit process that might increase reporting by raccoon hunt clubs include both mandatory reporting and centralizing the permitting so that all permits are issued from one location.

Since the RFTS began, both raccoon fur prices and harvest have remained at historically low levels. This may explain the increases in hunting success observed statewide, especially in the mountain and piedmont regions where harvest may have suppressed raccoon populations prior to initiation of the RFTS. Prior to the occurrence of raccoon rabies in the state in 1991, the most likely non-hunting cause of raccoon mortality was canine distemper virus (CDV) which tended to impact local raccoon populations in a 3-year cycle. It is possible that raccoon rabies and/or CDV may be causing localized fluctuations in raccoon populations since both are density-dependent diseases. Another possible influence on hunting success levels over time is whether a hunt club elected to use bait; the use of bait may artificially increase hunting success data over time.

It will be important to continue to monitor the raccoon hunting success using the RFTS to document any fluctuations in raccoon populations due to either change in disease, hunter mortality or other factors in the future. Another measure of regional raccoon population densities such as a deer hunter observation survey is needed to provide another independent measure of population changes over time. A method for validating the relationship between the RFTS hunting success with actual population density is also needed. At the current time, caution should be used when interpreting these data, as it has not yet been determined what relationship exists between these data and raccoon population densities or raccoon population trends.

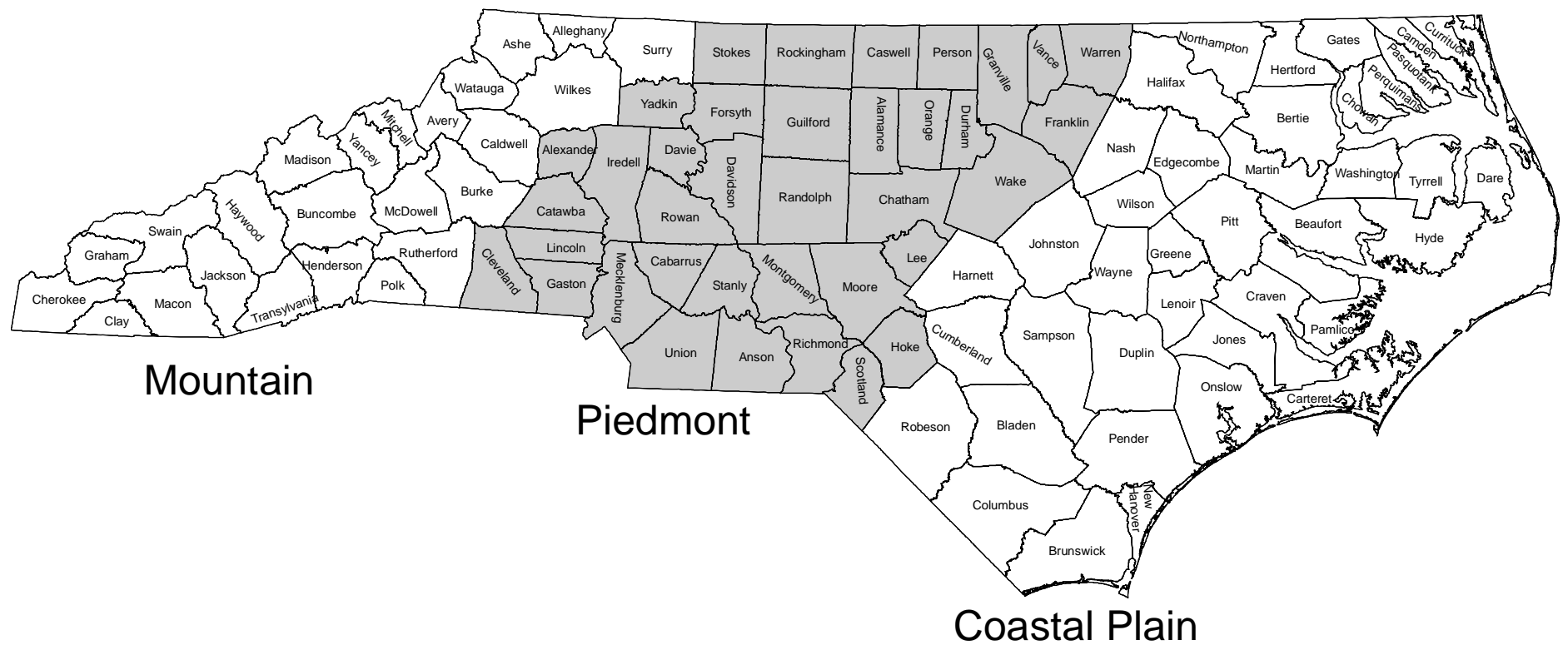


Figure 1. Furbearer management regions of North Carolina.

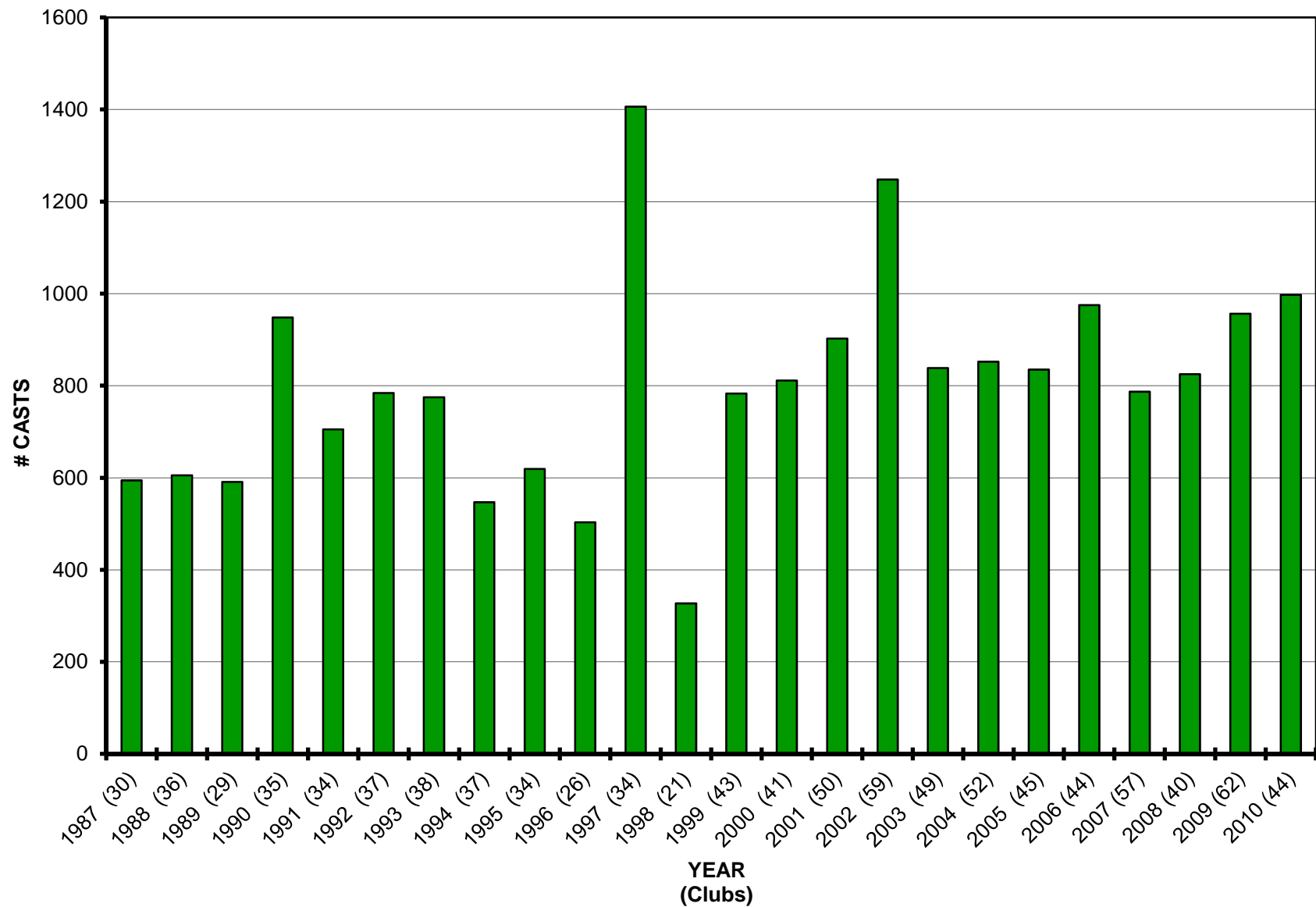


Figure 2. Annual number of casts and clubs participating in the North Carolina RFTS, 1987 through February 2011.

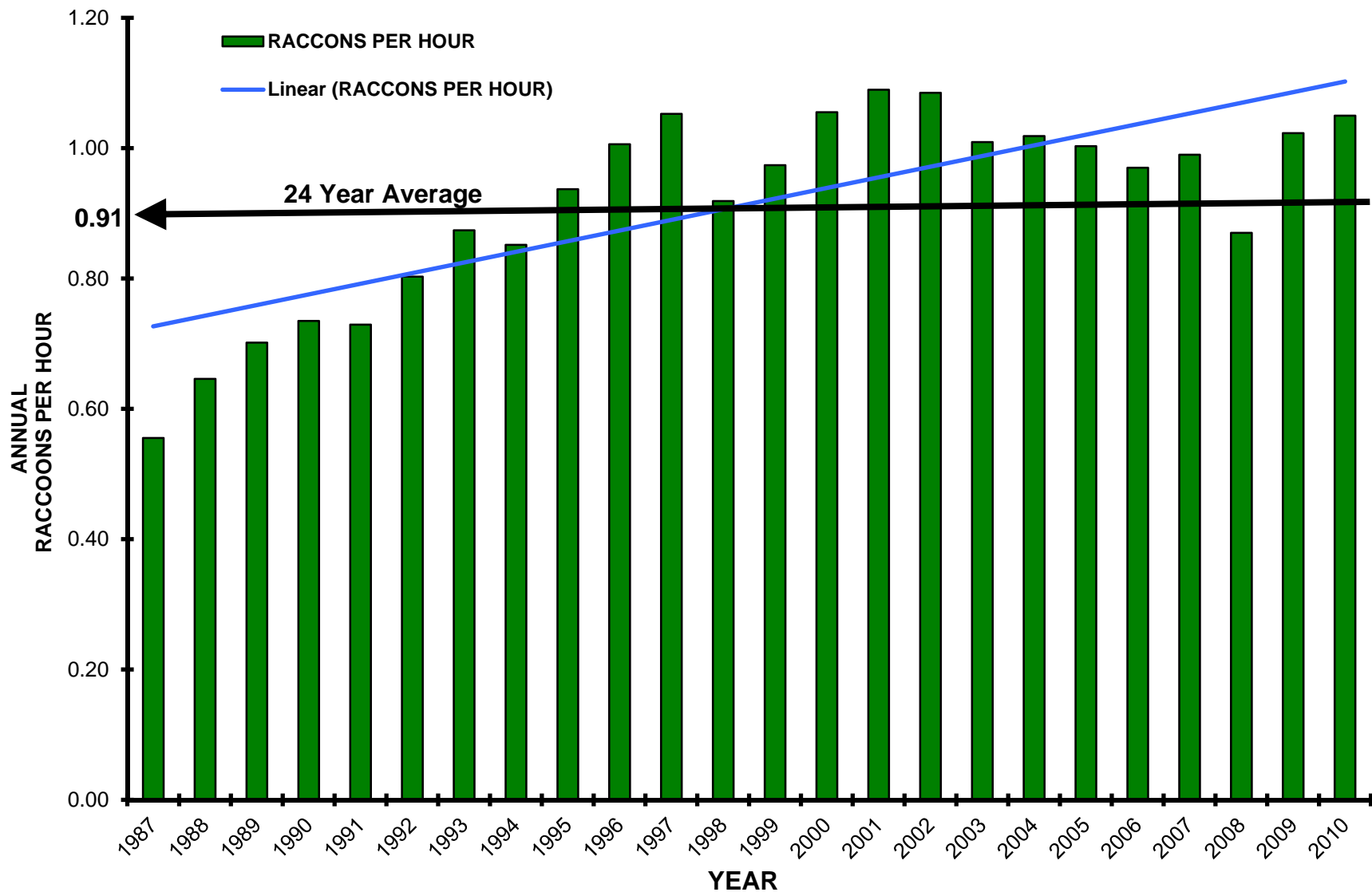


Figure 3. Statewide annual North Carolina RFTS results and 24-year average, 1987 through February 2011.

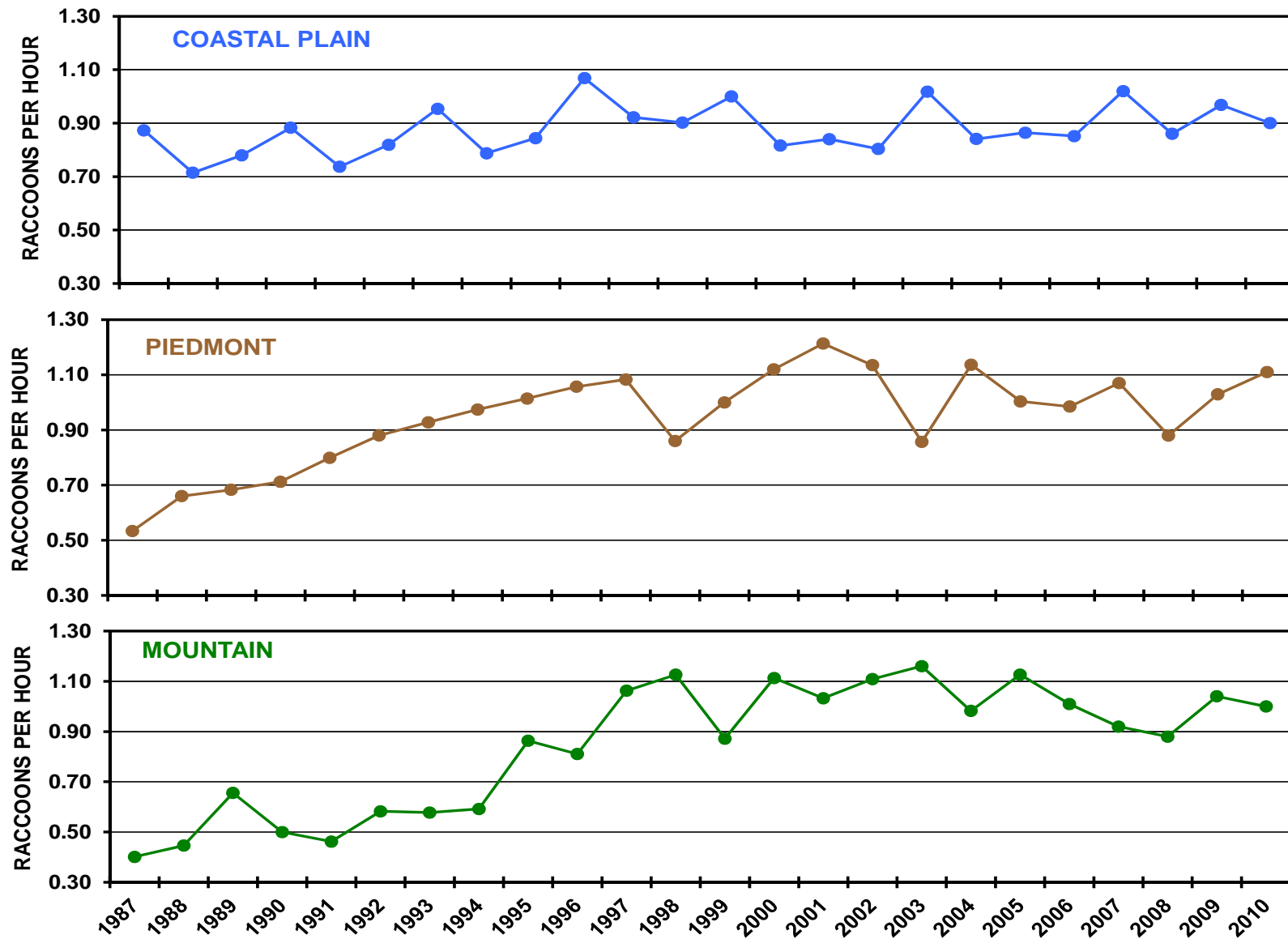


Figure 4. Regional annual hunter success from the North Carolina RFTS, 1987 through February 2011.

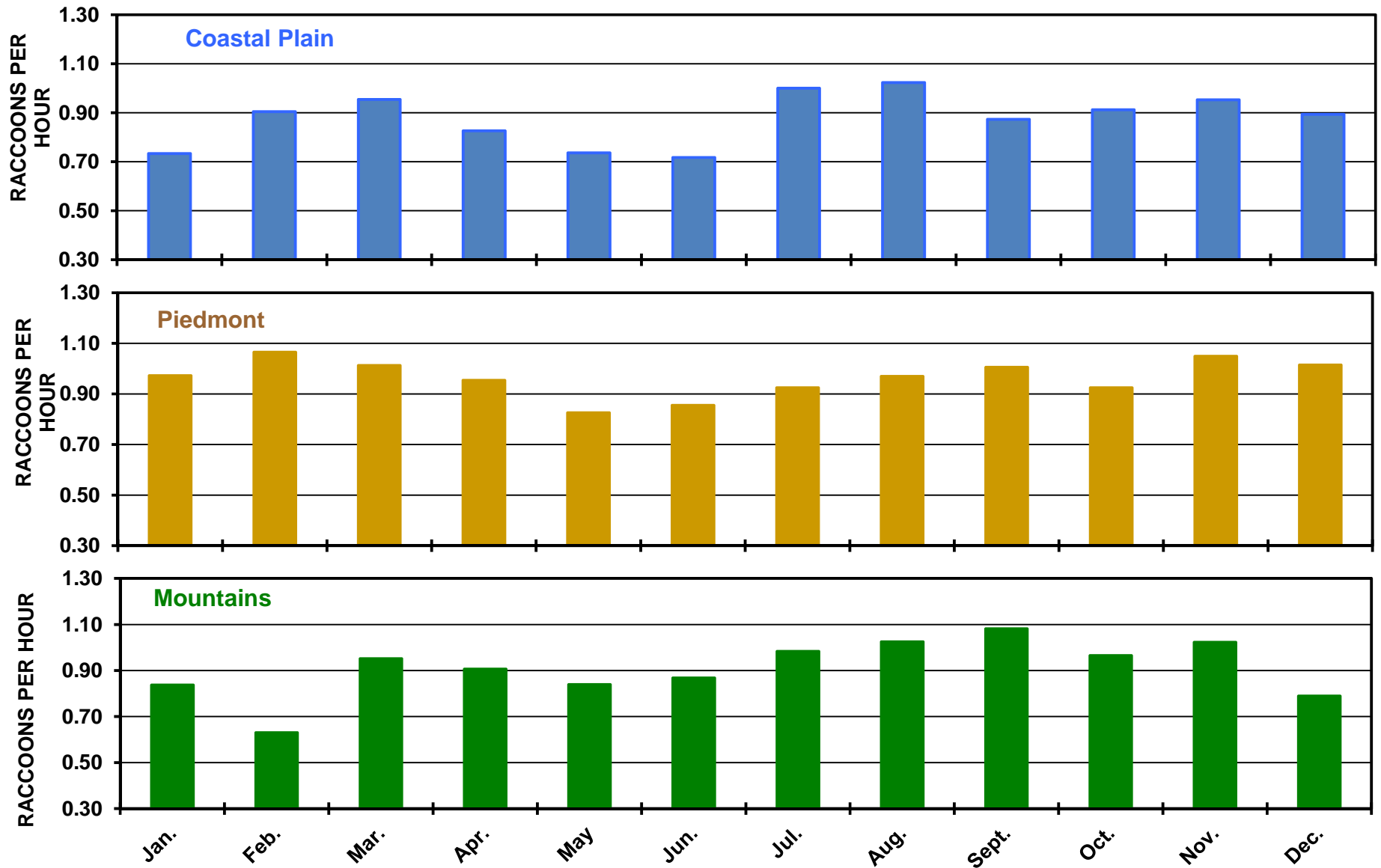


Figure 5. Regional hunter success reported by month from the North Carolina RFTS, 1987 through February 2011.

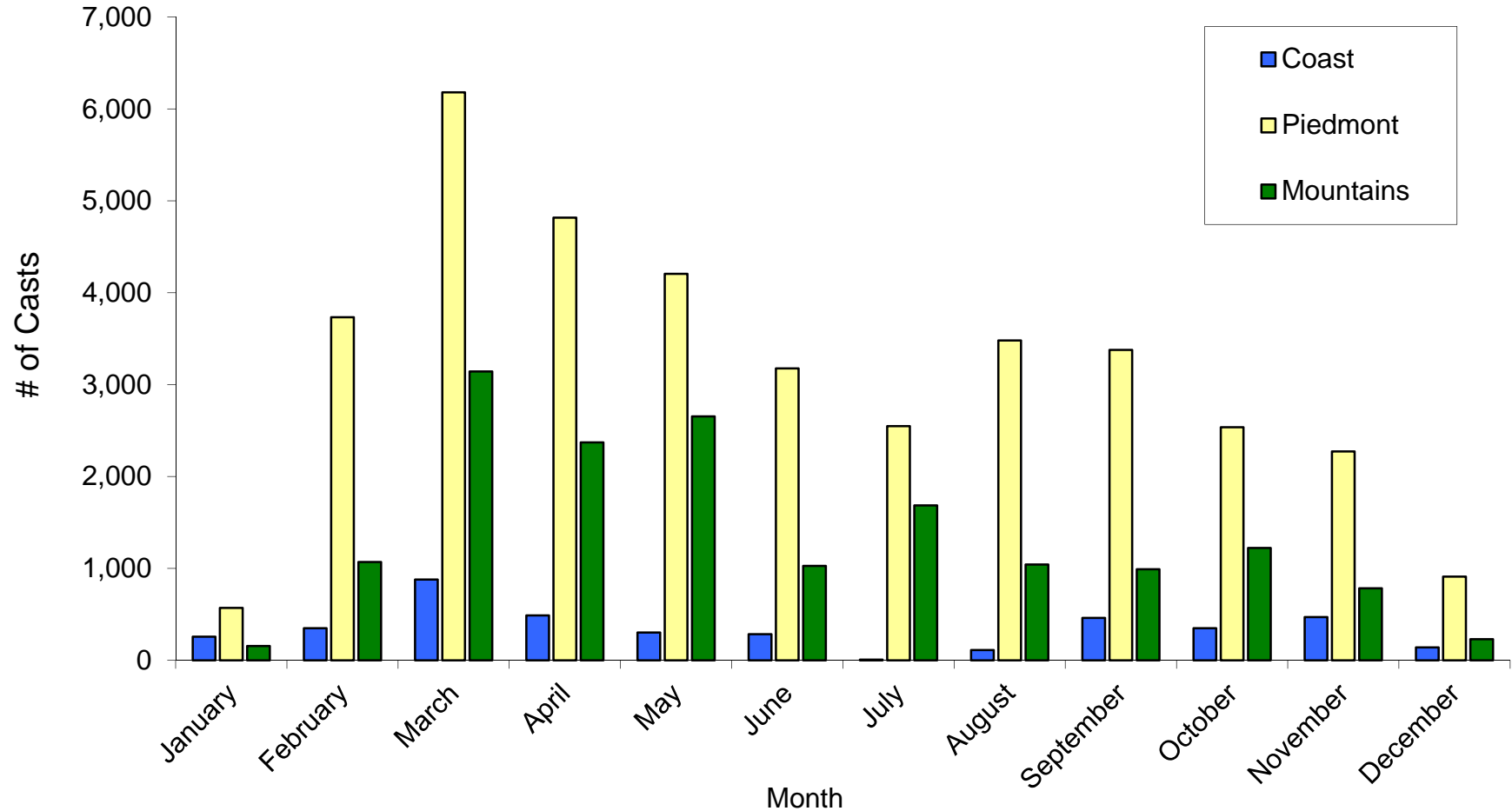


Figure 6. Number of casts reported by month and by region from the North Carolina RFTS, 1987 through February 2011.

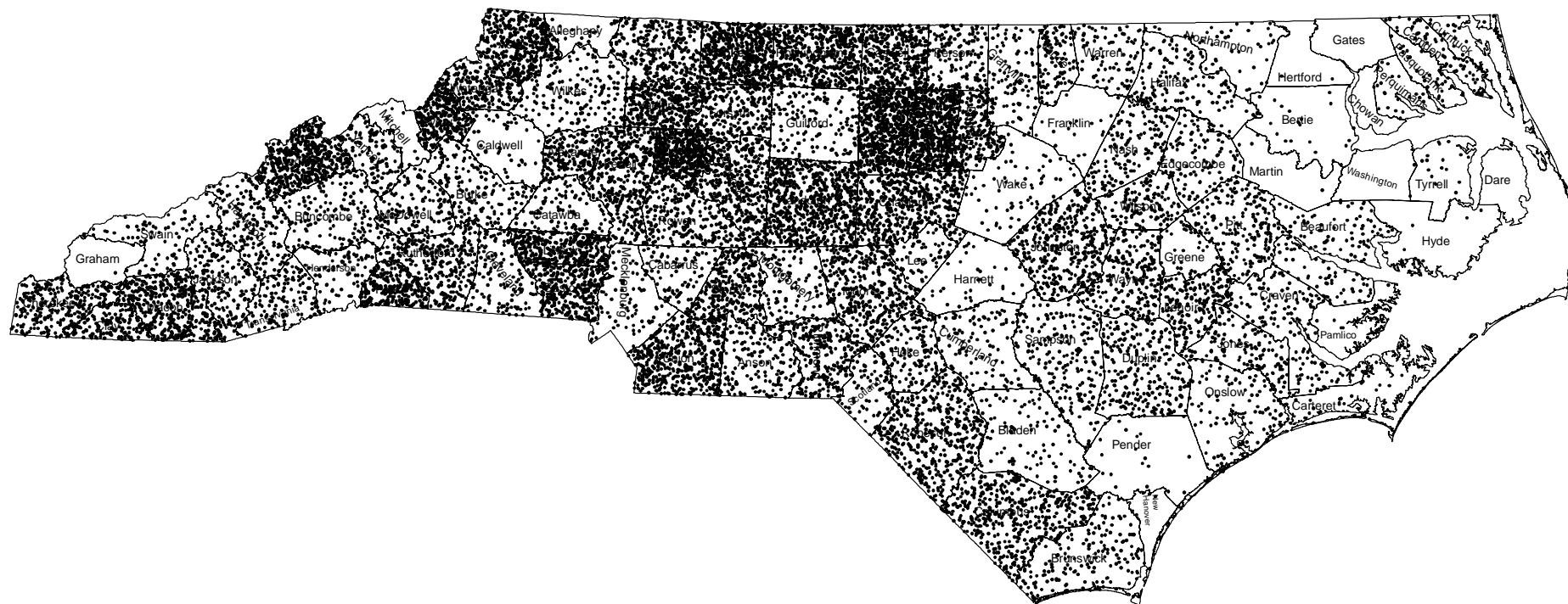
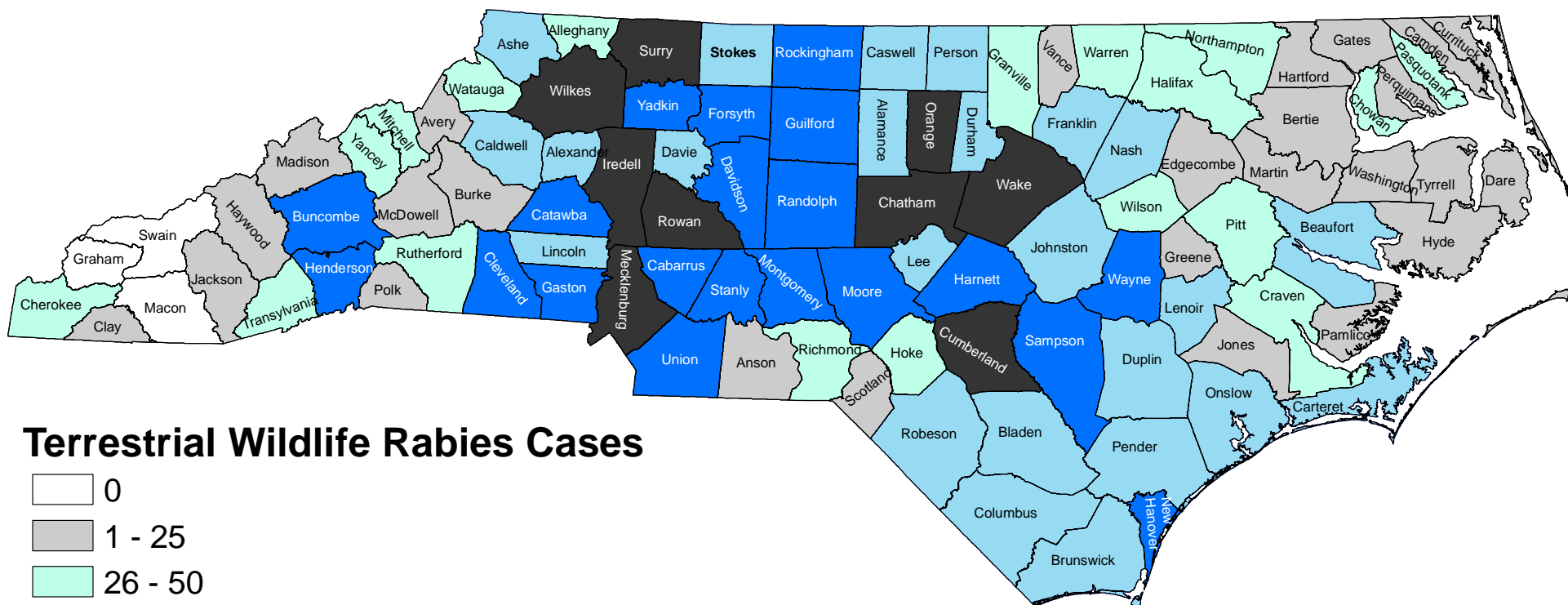


Figure 7. Number of casts reported by county from the North Carolina RFTS, 1987 through February 2011 (each dot represents one cast).



Terrestrial Wildlife Rabies Cases

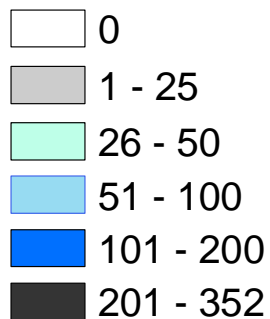


Figure 8. Number of positive terrestrial wildlife rabies cases reported by county, 1991-2010.

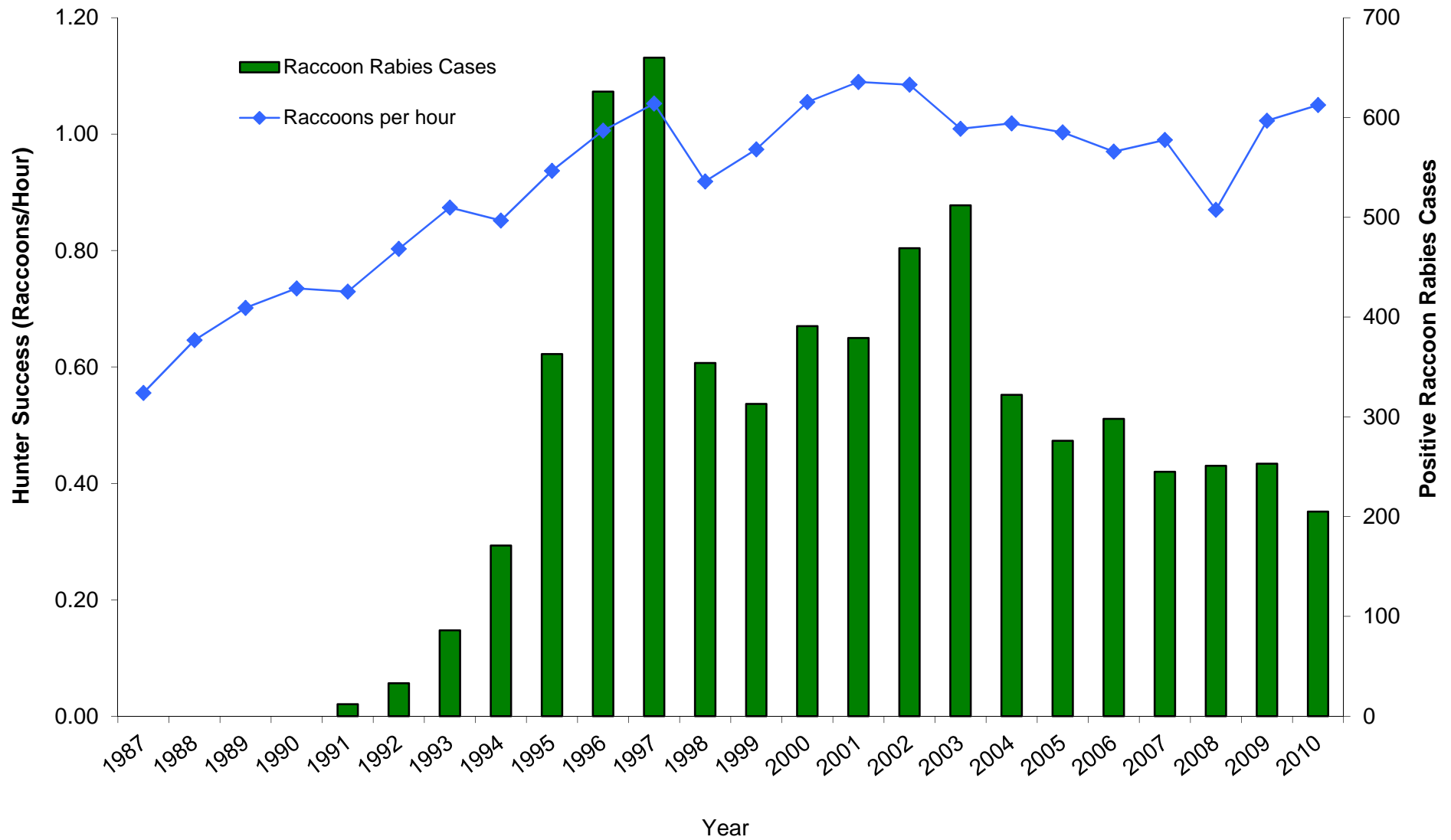


Figure 9. Annual statewide hunter success from the North Carolina RFTS and annual number of positive raccoon rabies cases.

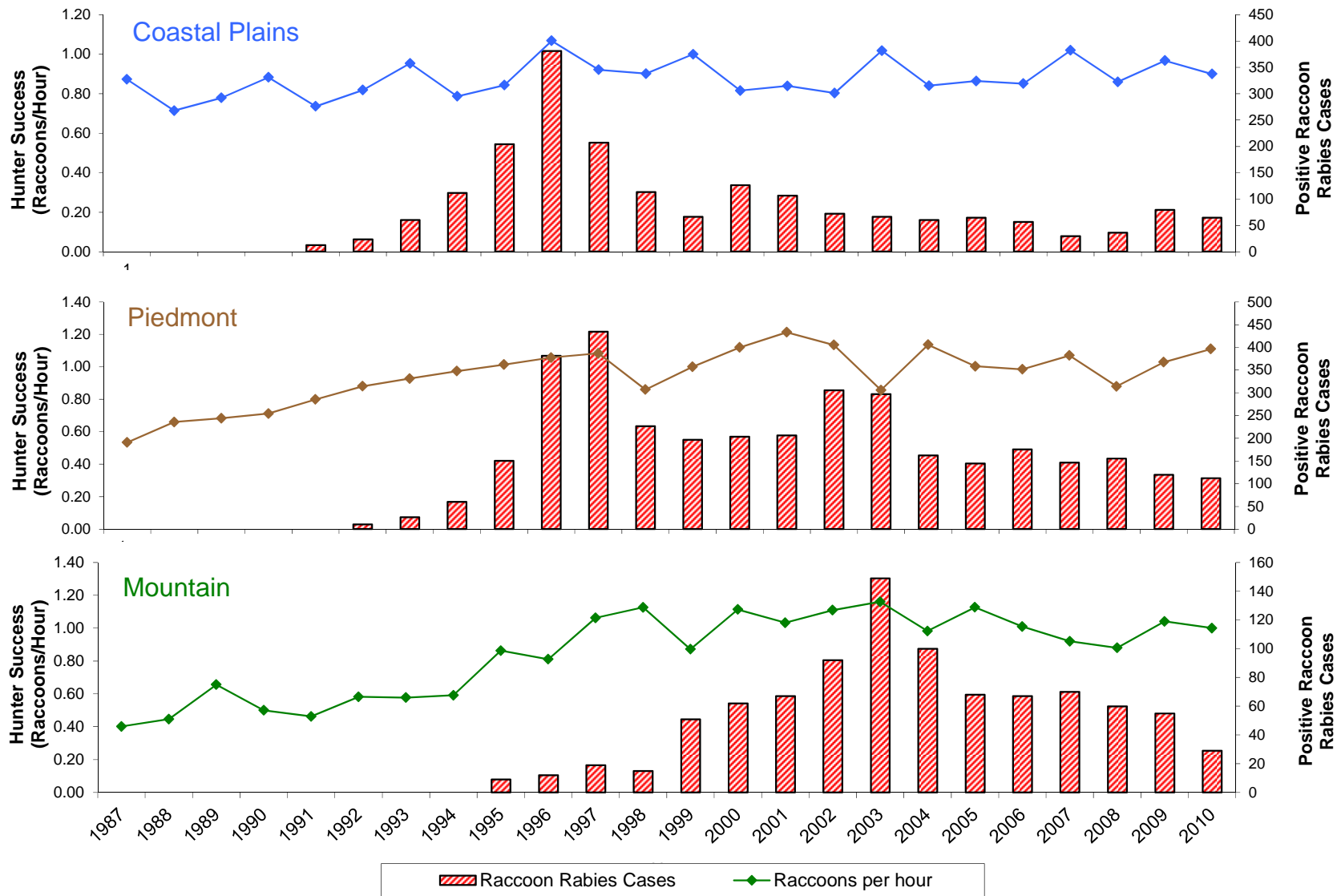


Figure 10. Annual regional hunter success from the North Carolina RFTS and annual number of positive raccoon rabies cases.

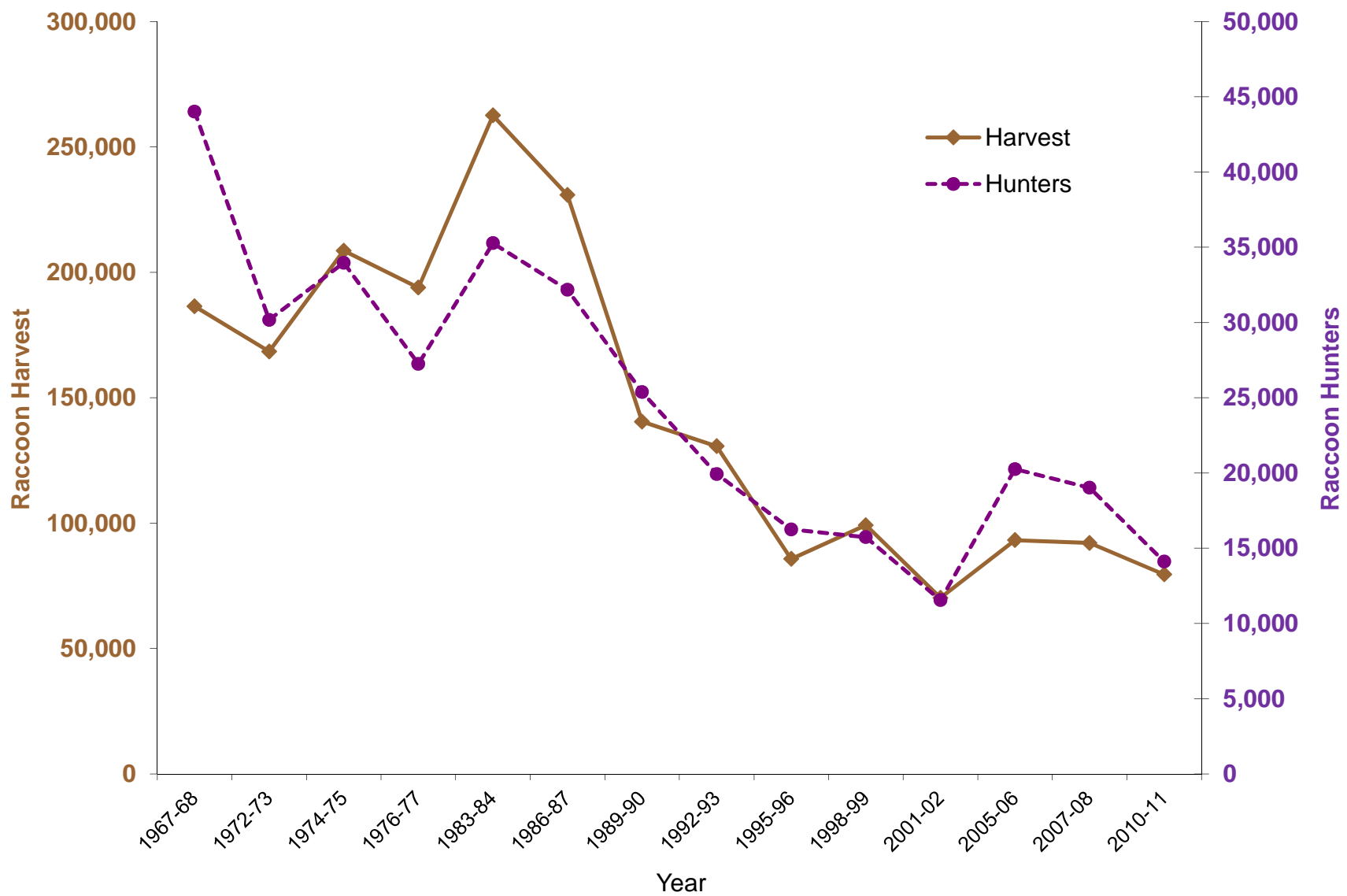


Figure 11. Number of raccoons harvested and number of raccoon hunters based on NCWRC Hunter Harvest Surveys, 1967 through 2011.

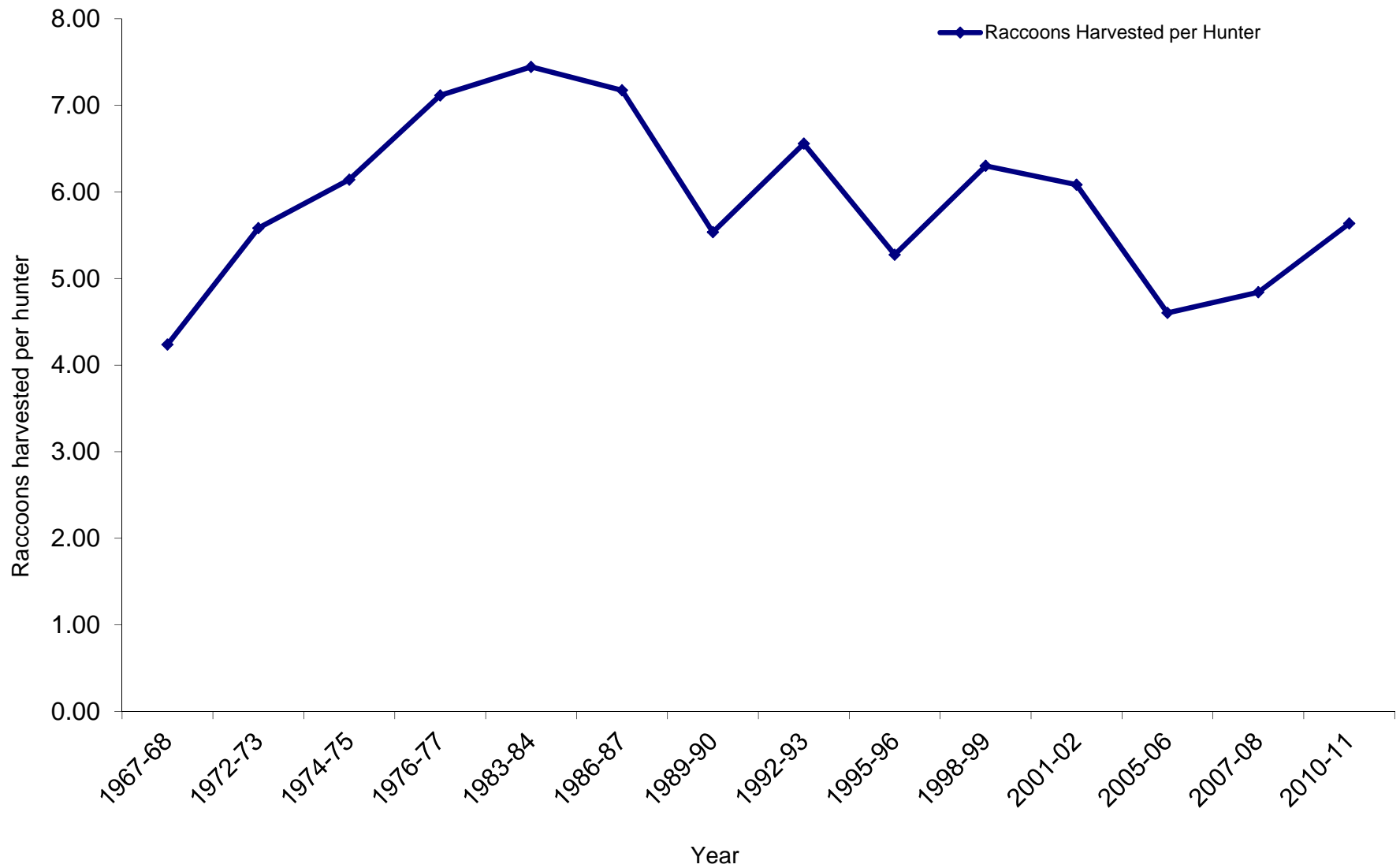


Figure 12. Number of raccoons harvested per hunter based on NCWRC Hunter Harvest Surveys, 1967 through 2011.