

*Eastern Wildlife Damage Control Conferences*  
*Sixth Eastern Wildlife Damage Control*  
*Conference (1993)*

---

University of Nebraska - Lincoln

Year 1993

---

STATUS AND MANAGEMENT OF  
VOLE DAMAGE TO  
HORTICULTURAL PLANTINGS IN  
NORTH CAROLINA

Peter T. Bromley  
North Carolina State University

William T. Sullivan Jr.  
North Carolina State University,

# STATUS AND MANAGEMENT OF VOLE DAMAGE TO HORTICULTURAL PLANTINGS IN NORTH CAROLINA

PETER T. BROMLEY, Department of Zoology, North Carolina State University, Raleigh, NC 27694-7646

WILLIAM T. SULLIVAN, JR., Department of Zoology, North Carolina State University, Raleigh, NC 27695-7617

**ABSTRACT:** A trapping study in 1979 indicated that voles (*Microtus pinetorum* and *M. pinetorum*) were distributed widely in North Carolina. In 1991, Extension Agents with the North Carolina Cooperative Extension Service were surveyed to determine the distribution, nature and severity of vole damage to horticultural plantings, home orchards, and other plantings. Data from the statewide trapping survey and the poll of agents coincided to indicate that voles, particularly pine voles, caused damage from the mountains to the coast. Existing, legal control methods were judged grossly inadequate by agents. Pursuant to the surveys, the North Carolina Pesticide Board and the North Carolina Wildlife Resources Commission were petitioned to approve changes in the North Carolina Administrative Code to reclassify voles as pests in horticultural plantings. The rule change, published on March 3, 1993, permitted use of non-restricted rodenticides to control voles. The product recommended was Rozol Parrafinized Pellets. Extension Agents enthusiastically welcomed the change. An extension publication for home horticulturalists on controlling vole damage is in preparation.

**Key words:** voles, damage, policy, North Carolina

Proc. East. Wildl. Damage Control Conf. 6:171-174. 1995.

---

A review of the status and management of voles, both pine voles (*Microtus pinetorum*) and meadow voles (*M. pennsylvanicus*) in North Carolina may serve as a case history exemplifying many of the challenges inherent in resolution of wildlife damage management issues. The story includes legislative recognition of orchardists beset with severe vole problems and without reasonable control options, the role of wildlife scientists to document the extent of vole populations and conduct applied research on controlling vole populations, the interaction of state agencies with differing objectives with the state university, the actions of extension agents and wildlife specialists who were not satisfied with current policy, and leadership by the North Carolina Chapter of The Wildlife Society and professionals in the agencies to resolve the problems.

## LEGISLATIVE ACTION AND WILDLIFE POLICY

The North Carolina General Assembly has impacted the management of damage caused by voles in two ways. It has established policy guiding the handling of wildlife damage and it has addressed the special problems of the apple growers.

In 1974 the General Assembly amended the North Carolina Wildlife law so that unprotected birds or animals could be controlled by pesticides. The North Carolina Pesticide Board (NCPB), an independent agency tied to the North Carolina Department of Agriculture was empowered to declare birds or animals pests through official rule making. However the law required that the North Carolina Wildlife Resources Commission (NCWRC) be given the opportunity to hold hearings on such rules. If NCWRC objects to a rule approved by NCPB, the rule is null and void. Alternatively, if

NCWRC does not act within 60 days, the rule passed by NCPB becomes part of the North Carolina Administrative Code, carrying the authority of law. With regard to voles in 1974, the rule was established that pine voles and meadow voles were declared "pests" on or immediately adjacent to cultivated land or horticultural nursery, or forest plantings of trees or shrubs (2NCAC 9L .0701 -.0702). In 1990, Dr. Gary San Julian, Wildlife Extension Specialist requested the NCPB grant permission for homeowners or pest control operators to use registered pesticides for controlling voles around homes and gardens. The NCPB solicited the office of the Attorney General for an opinion. It was determined that such a use was not considered in 1974 and would not be considered legal.

Because voles were protected by law, the only recourse open to the homeowner with vole problems was to shoot the offending animals while they were doing damage or to obtain a Wildlife Depredation Permit from an agent of NCWRC (NCAC 10B.0106). All citizens of North Carolina, including of course wildlife biologists and extension agents, are bound to follow the law regardless of its impracticality.

## UNIVERSITY PROGRAMS ON VOLES

North Carolina State University has been involved in the vole issue for the last 20 years. Under the leadership of Dr. Don W. Hayne, Professor of Zoology and Statistics, the North Carolina Agricultural Research Service of North Carolina State University responded to the problems of apple growers by establishing an applied research project on voles in 1973. The action of the university was augmented in 1977, when the state legislature established a continuing commitment to establish the Vole Research laboratory in association with the Mountain Horticultural Crops Research Station. The station

is located in the heart of the apple producing region in North Carolina. The early work at the station was dedicated to determining the extent of vole damage and evaluation of rodenticides to control populations. The program has continued to the present, with the objectives of the applied research expanded to include evaluation of different ground covers, development of repellents to control vole populations, and conduct of basic research on vole population ecology.

Major summaries of the work conducted under the guidance of Don Hayne were made available in 1983 and 1984. In a final report to the U.S. Fish and Wildlife Service, Hayne and Atwood (1984) documented that voles were distributed statewide. Their method was to establish a stratified random sample of voles by snap trapping in 36 locations scattered through mountain, piedmont and coastal plain regions.

In 1983, the North Carolina Agricultural Research Service published Technical Bulletin 276, Integrated Pest & Orchard Management Systems (IPOMS) for Apples in North Carolina. The publication contained chapters by Hayne and Sullivan (1983) and Sutton et al. (1983) which documented the prevalence of voles in orchards and the relationships between voles and tree disease and death. A by product of the research on rodenticides reported in IPOMS was grower elimination of endrin ground sprays prior to removal of the product from use by the Environmental Protection Agency. Growers switched to the rodenticides zinc phosphide, chlorophacinone and diphacinone, based on field tests conducted by the Vole Research laboratory.

Extension Wildlife Specialists Dr. Gary San Julian and, later, Dr. Peter T. Bromley have worked with Vole Research laboratory to help apple producers and horticulturalists utilize results of the applied research. Extension specialists and agents who were aware of the efficacy of these rodenticides were barred from recommending them to homeowners because of the restrictive interpretation of the law noted above. Responding to this problem, Bromley surveyed extension agents statewide in August, 1991 to document their perceptions of the nature and severity of vole damage in their counties and their opinions on the current rules protecting voles. The results of the survey indicated (1) that vole damage was extensive across the state, with locally severe problems, (2) existing control restrictions on trapping and pesticide use were unrealistic and not supported in the field, (3) the voles should be declared pests in horticultural plantings, and (4) that actions should be taken to permit use of registered, non-restricted rodenticides by homeowners (Bromley et al. 1992).

With the 1992 survey data in hand, Bromley carried forward the recommended rule change through the procedure for changing the administrative rules at a hearing of the NCPB in November, 1992. At the hearing, he was challenged by advocates contrary to use of pesticides in North Carolina and forced to defend the recommended change. He was on hand but not called on to testify before the NCWRC Commission

hearing in January, 1993, at which time the rule change was approved unanimously. The rule change became effective on March 1, 1993, and it was published in the North Carolina Administrative Code on March 3, 1993. The new wording substituted "cultivated land, forest plantations, ornamentals nurseries, orchards, or horticultural plantings in institutional, recreational, and residential areas" for "cultivated land or horticultural, nursery, or forest plantings of trees and shrubs" in 2 NCAC 9L .0701.

## **ACTIONS OF THE NORTH CAROLINA CHAPTER OF THE WILDLIFE SOCIETY**

In 1991, the North Carolina Chapter of The Wildlife Society established an ad hoc committee to review the wildlife damage management problems in the state and recommend appropriate changes. This committee was comprised of biologists with NCWRC, NCSU, and Animal Damage Control Office of the United States Department Agriculture, Animal and Plant Health Inspection Service. Representatives of the North Carolina Pest Control Operators Association and commercial wildlife nuisance control interests were invited to participate in committee business. The committee upon reviewing the results of the statewide survey of extension agents views on voles agreed to support a resolution to be presented at the 1992 annual meeting of the state chapter. That resolution called for changing the state Administrative Rules to declare voles pests in horticultural plantings. It is significant to note that The Wildlife Society provided a forum for open debate of alternative approaches to resolving the vole problem in horticultural sites. Even though the biologists and guests of the committee brought to the meetings considerations from their agencies or businesses, the professionals were open minded enough to forge a consensus on the needed policy change. This consensus, viewed as a win-win agreement by all members of the committee, provided the essential professional support for the ultimate change in the Administrative Code of North Carolina.

## **RESPONSE TO RULE CHANGE**

Within days after the rule change was published, the Extension Agents were advised by electronic mail of the change and specific instructions for using the approved pesticide. Several agents called or wrote expressing satisfaction with the change. No opposition to the rule change has come forward. In fact, when Bromley went to his local hardware and building supply center the next weekend, he saw a FAX message announcing the new provisions stuck to the cash register at the check-out counter. The FAX was written by an Extension Agent. Several calls were received from garden supply centers requesting information on how to obtain the pesticide. In short order, the supply problem was resolved. At the Annual Professional landscapers and Turfgrass Managers Field Day at NCSU, Bromley discussed the rule change and demonstrated proper use of the chlorophacinone

pellets. Approval for the change was quite evident at that field day, especially from the landscapers who have had numerous problems with vole damage.

## CONCLUSION

The case history of the rule change permitting horticulturalists to administer rational control of vole damage in North Carolina illustrates a successful attempt to change governmental policy. The problem was documented by a team of scientists and extension educators at the university. The team reviewed the data with a committee of professional wildlife biologists, and an appropriate change in policy was presented the North Carolina Chapter of The Wildlife Society at its annual meeting. The recommended change was reviewed by the staff of the North Carolina Pesticide Board, who wrote the amendment to the rule that was accepted. After action by NCPB, the NCWRC voted to concur. When the rule change was published, the public was informed through Extension Agents of the North Carolina Cooperative Extension Service. Managers of horticultural plantings quickly adopted the newly approved control method.

What lessons can be learned from this case history? Formality associated with changing part of the state administrative code required factual documentation of the problem and careful review of existing and proposed policy. The Wildlife Society provided an objective forum for professional consideration, lending credibility to the recommended change. Wildlife damage management professionals should be prepared to not only solve problems in the field but also they need to be skilled at guiding changes in governmental policy. Particularly in the area of wildlife damage management, where taking the lives of problem animals may be the only reasonable alternative, it is essential that professionals be capable communicators. Though tedious, the governmental and university machinery acted appropriately to resolve the issue, demonstrating that it is wise to work within standard governmental procedures when solving public policy issues.

## LITERATURE CITED

- Bromley, P.T., W.T. Sullivan, Jr., J.G. Vandenberg and M.L. Parker. 1992. Status of vole damage in residential settings and damage control options in North Carolina. Dept. of Zoology, North Carolina State Univ. Unpubl. Report.
- Hayne, D.W. and S.T. Atwood. 1984. Prevalence of vole populations and their reported damage in North Carolina. North Carolina Wildlife Resources Commission, Pittman-Robertson Report 11-16-0009-79-122: 1-20.
- Hayne, D.W. and W.T. Sullivan. 1983. Voles in orchards: biology, numbers, associated factors. Pages 127-142 in Integrated Pest Orchard Management Systems for Apples in North Carolina. North Carolina Agricultural Research Service Tech. Bull. 276.
- Sutton, T.B., D.W. Hayne, W.T. Sullivan, Jr., J.F. Nardacci, and D.E. Klimstra 1983. Causes of Apple Tree Death. Pages 143-146 in Integrated Pest & Orchard Management Systems for Apples in North Carolina. North Carolina Agricultural Research Service Tech. Bull. 276.