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# The Pine Vole - Monitoring and Research Efforts

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## THE PINE VOLE - MONITORING &amp; RESEARCH EFFORTS

by

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The fruit industry is an important segment of New York's agricultural economy generating over 100 million dollars of farm income annually. Of the 66,740 acres of apples in the state, four counties of the lower Hudson River Valley incorporate 20,680 acres or approximately 30% of New York's apple acreage.

This viable fruit area is now in jeopardy due to severe tree damage by the meadow mouse, Microtus pennsylvanicus, and pine vole, Pitymys pinetorium. These rodents have caused very serious economic loss to many growers in this important fruit area of our state. During the last six years, pine voles have spread from a relatively few farms to over 4,000 acres of infestation, thereby threatening a fruit industry in the area averaging an annual farm cash income in excess of \$18,000,000.

Prior to 1971, growers could use Endrin as well as other pesticides for the control of rodent populations in the orchards. There was little reported economic damage up to that time. On January 1, 1971, the New York State Department of Environmental Conservation issued an order totally prohibiting the use of Endrin in the state. As a result, growers had no effective rodenticides as Zinc Phosphide treated corn and bait did not control pine vole populations. The anticoagulant rodenticide, Chlorophacinon, was tried in both a spray and bait form. In 1975 and 1976 another anticoagulant, Diphacinon, was also used in control efforts. During both seasons the control obtained was very erratic.

On August 11, 1977, the New York State Department of Environmental Conservation held an informational hearing to solicit comments and information relevant to the risks and benefits associated with the use of Endrin in orchards for pine vole control. After reviewing the hearing record, Commissioner Peter Berle, on September 22, 1977, announced that he had approved a highly restricted, one time use of Endrin as a "stopgap measure" to combat pine voles in the lower Hudson River Valley.

Commissioner Berle set the following restrictions upon use of Endrin:

- Use is permitted only for the fall of 1977.
- Use only in orchards with obvious pine vole damage and not as a preventive.
- Applicant must attend an approved training session on the use of Endrin before applying for a permit, pass a written examination and be certified as competent to use restricted pesticides.
- Endrin be applied only after the area to be treated has been harvested, including the collection of drops.

Consideration of the requested use of Endrin in New York was a classic example in which potential risks to non-target organisms and the environment must be carefully balanced against benefits obtained in reducing severe economic losses to an important industry. Local, state and national environmental groups expressed their opposition to the proposal to again permit use of the material.

Commissioner Berle, in announcing his decision, stated that any subsequent use of Endrin would be approved only after careful review of the control program with regard to Endrin's efficacy, its effects on non-target organisms and the environment in general. In other words, a monitoring program must be implemented to obtain this essential information on which to base any decision for future use of Endrin in New York. At the same time he indicated that it was absolutely essential that the College of Agriculture and Life Sciences at Cornell, the New York State Department of Agriculture and Markets, the United States Department of Agriculture, and/or the United States Department of Interior cooperate to develop a comprehensive research effort which would result in a long-term control program more effective and more acceptable than the use of Endrin.

In an effort to support Commissioner Berle and comply with his request, our Department, in cooperation with the Department of Environmental Conservation, has implemented a monitoring program in the fruit area where Endrin was applied. The objectives are:

- to determine effectiveness of the Endrin application on pine vole control.
- to determine effects of Endrin usage on non-target organisms within and surrounding the area.

- to determine changes in Endrin residue levels in organisms within and bordering the Endrin treatment area.
- to determine the time and extent of movement of Endrin from the application site.
- to determine changes in water quality related to Endrin usage.

Samples of soil, water and appropriate species of wildlife, fish and aquatic organisms from and adjacent to the treated orchards will be collected and analyzed for residue levels. Collection periods will include pre-treatment, post-treatment, post-snow melt and one year post-treatment. Our Department has made a commitment with a projected 257 man-days of expense allocated to monitoring and field sample collection. An estimated 500 to 600 samples will be analyzed in our laboratory for residue levels. The combined cost for field monitoring and laboratory analysis will be in excess of \$59,000. Data accumulated from this effort is considered vital in adequately evaluating any continued use of Endrin in pine vole control in our state. This data will also be available and utilized in the expanded research effort by the College of Agriculture and Life Sciences at Cornell.

On our part, we are also aware of the potential toxicity and residual life of Endrin. We agree that use of the material should not be permitted any longer than absolutely necessary. The only real solution lies in research to develop biological or cultural control methods and alternate environmentally acceptable pesticides - an integrated pest management program. The College of Agriculture and Life Sciences at Cornell has recently increased funds available for expanded research on pine vole control in the Hudson Valley fruit area. However, this effort alone is not adequate to find a satisfactory solution to the problems.

We assume that fruit areas in other states are experiencing similar tree damage from the orchard mouse and pine vole. Undoubtedly research efforts are also occurring in other states with the basic objective of finding a safe, effective, selective, economical, and environmentally acceptable rodent control technique. While having a unity of purpose, at best such efforts by individual states currently lack proper coordination and direction of research effort.

On September 28, 1977, the prestigious National Association of State Departments of Agriculture adopted a resolution requesting research funding to develop new pest control materials and/or cultural methods to reduce pine vole damage in orchards. A copy of the resolution is attached. It requests the United States Department of Interior, Bureau of Fish and Wildlife Services, to assign high priority to a request for research funding. This

agency has the responsibility for wildlife resources. It has the capability to conduct and coordinate a broadly based research program for orchard rodent control. It could conduct in-house research and contract for complementary research with State Universities and research organizations.

A research field station in the northeast, in an area where there are severe pine vole problems, is absolutely essential. To date, research efforts have been very limited and fragmented with little evident progress in a solution to the problem. Currently in New York there is an annual increase in damage to orchard fruit trees with no effective environmentally acceptable, pine vole control materials or methods. Undoubtedly, orchards in other eastern states are experiencing similar losses. We request that the Department of Interior recognize this severe orchard problem and immediately initiate an emergency research program to alleviate damage to fruit crops by meadow mice and pine voles.

February 22, 1978

## NATIONAL ASSOCIATION OF STATE DEPARTMENTS OF AGRICULTURE

Policy No. PI-12

## PINE VOLE DAMAGE IN ORCHARDS

The pine mouse or pine vole, Pitmys pinetorum, a recognized serious pest of fruit trees, is present in increasing population in orchards of the eastern United States. This rodent causes severe economic loss to the grower through girdling of roots and trees with resulting loss of vigor, productivity and eventual death of both young and mature trees. There is currently no registered environmentally acceptable pesticide material which effectively reduces orchard pine vole populations.

RESOLVED, that the National Association of State Departments of Agriculture in convention in Bedford, New Hampshire, September 28, 1977, requests the United States Department of Interior, Fish and Wildlife Services, to assign high priority to a request for research funding to discover and develop new pest control materials and/or cultural methods to reduce pine vole damage to trees in fruit orchards.