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Wildlife Damage

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Volume 1, Fall 1990

Co-editors: Paul Curtis and Michael Fargione

Produced by: Carol Rundle

Relocating Suburban Raccoons on Long Island

by David J. Hagen, Graduate Research Assistant, SUNY-ESF

The raccoon (*Procyon lotor*) is a mammal well-adapted to the rigors of life on western Long Island and similar suburban areas in New York State. Unfortunately, the opportunistic nature of raccoons frequently leads to conflicts with humans when the two reside in close proximity. Suburbanites who tire of seeing spilled trash containers or repairing damage to dwellings, the result of foraging and denning activity of raccoons, may resort to removal of the offending animal to remedy the situation.

Live-trapping is a practice often employed to deal with "nuisance" raccoon problems in suburban areas and the fate of a captured animal is decided by the trapper. Licensed Nuisance Wildlife Control Agents (NWCA's) and homeowners legally may destroy captured nuisance raccoons at any time of the year. However, we believe that many individuals, homeowners, and NWCA's prefer to see an animal released unharmed in a distant park or vacant lot.

Opposition to relocation of wild animals traditionally has been based on two premises. First, there is a potential for introduction of diseases from one population to another. A statewide rule restricting the relocation of raccoons was implemented in NYS after a confirmed case of raccoon rabies was reported during May 1990. NWCA's may no longer transport live

raccoons more than 10 miles from their capture site. Secondly, a relocated raccoon may be sentenced to an "ecological death" if it is released in an area already occupied by the maximum number of animals that the area's resources will support.

Many questions, some seldom addressed, arise when a nuisance raccoon is relocated within suburbia. Does a relocated raccoon remain near the site of its release or does it immediately attempt to find its former home? Is its search rapid and far-ranging? Does the animal survive in the new area or does the possible confusion associated with relocation make it more susceptible to dogs and traffic than a "settled" animal? Does relocation of nuisance raccoons create a problem for homeowners in the new area and simply become a case of "passing-the-buck"? Are the possibly stressful effects of relocation more "humane" than euthanasia?

We currently are studying the fate and movements of relocated nuisance raccoons in the vicinity of Islip, Long Island. The study, funded by Return a Gift to Wildlife and directed by SUNY-ESF's Dr. Larry VanDruuff, is based at Seatuck National Wildlife Refuge. Field research began in August 1989 and will conclude this winter. The current study follows a two-year study of the resident raccoon population on the refuge and in the adjacent residential area.

More than 20 raccoons have been obtained from cooperating NWCA's within 10 miles of Seatuck. Study animals were fitted with radio collars, and released either on the refuge, or in a "greenbelt" located within the adjacent residential area. Each raccoon's activity was monitored nightly for a period of at least two weeks, and the animal was located again after establishment of a new "home range". Daytime resting sites of each animal also were identified during the tracking periods.

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This is a quarterly publication of the Cornell Cooperative Extension Wildlife Damage Management Program.

(Relocating con't)

To date, few study animals have exhibited an ability to find their original homes, however, many have moved extensively following release into the new area. Several raccoons have travelled more than 4 miles in one night, and one animal's nightly movements totaled nearly 50 miles over a two-week period. An earlier SUNY-ESF study of local raccoons suggested that resident animals (those with established home ranges) seldom moved more than one-half mile on any given night when released at the point of capture. The unusual behavior of the relocated raccoons may be attributed to an intense desire to find "home" and/or confusion and fear caused by the unfamiliar surroundings.

Addressing whether "nuisance" behavior persists in relocated raccoons is a more difficult task. Most study animals captured in or around human structures have continued to frequent habitat types similar to those within their former home ranges. Several radio-collared raccoons gained access to attics and crawl-spaces in their new surroundings, but without the knowledge of the homeowners. It is not likely that a raccoon's behavior changes considerably after it settles in a new area, but it is possible that the suburbanites residing at the new site will be more tolerant of that behavior than those at the former site.

The intent of this study is not to attempt to answer ethical questions associated with the practice of relocating nuisance raccoons, but rather to provide sound information for predicting how a relocated animal might react. Hopefully, the knowledge gained from our study will provide wildlife managers with more information on which to base policy-making decisions affecting the handling of nuisance raccoon problems.

 This publication is also available on the CENET Damage News BulletinBoard.

Those wishing to learn more about this study may contact David Hagen at the Seatuck Foundation (516-581-6908) or Dr. Larry VanDruff at SUNY-ESF (315-470-6803).



Wildlife Damage Management Advisory Committee Holds November Meeting

by Paul D. Curtis, Extension Associate

The Cornell Cooperative Extension Wildlife Damage Management Advisory Committee (WDMAC) conducted their fall meeting on 8 November, at the Sheraton Inn Conference Center in Ithaca. Representatives from the CCE field staff and faculty, NY Cooperative Fish and Wildlife Research Unit, NYS Department of Agriculture and Markets, SUNY-ESF, and the USDA- Animal and Plant Health Inspection Service discussed current wildlife damage-related activities, and future statewide wildlife damage management program development.

The WDMAC meeting provides a forum for coordinating statewide wildlife damage management education and research projects among the state and federal agencies represented. Committee members share the results of on-going research and educational efforts, exchange ideas, and ask for assistance or advice. Opportunities for collaboration between management professionals are identified and explored. The committee meets twice annually, once each spring and fall. For more information, contact: Paul Curtis, Cornell Cooperative Extension, Cornell University, Ithaca, NY 14853 (607-255-2835).

Rabies Publications Available from the NYS Department of Health
by Paul D. Curtis, Extension Associate

The NYS Department of Health (DOH) recently issued a new informational brochure entitled "Rabies in Wildlife". This pamphlet answers many frequently asked questions concerning human/wildlife interactions, and the potential risk of contracting the disease. Your regional NYS Department of Environmental Conservation (DEC) office handles most wildlife-related rabies questions or problems. To report a possible exposure to rabies, or suspected cases of rabies in animals, local health departments should be contacted. The NYS-DOH Rabies Laboratory in Albany (518-869-4527) provides advice concerning animal bites and rabies diagnosis.

Another publication produced by NYS-DOH entitled "Bat Rabies in New York State," answers rabies questions specific to bats. Methods for excluding bats from dwellings, and removing bats from living areas are discussed. Again, additional information is available from your regional DEC office, or the DOH Rabies Laboratory.

I recently forwarded copies of these publications to each of the CCE County Associations. Additional copies can be ordered from the Publications Section, NYS Department of Health, Empire State Plaza, Albany, NY, 12237-0001.

Deer Damage Management Demonstration Area at IES-Cary Arboretum

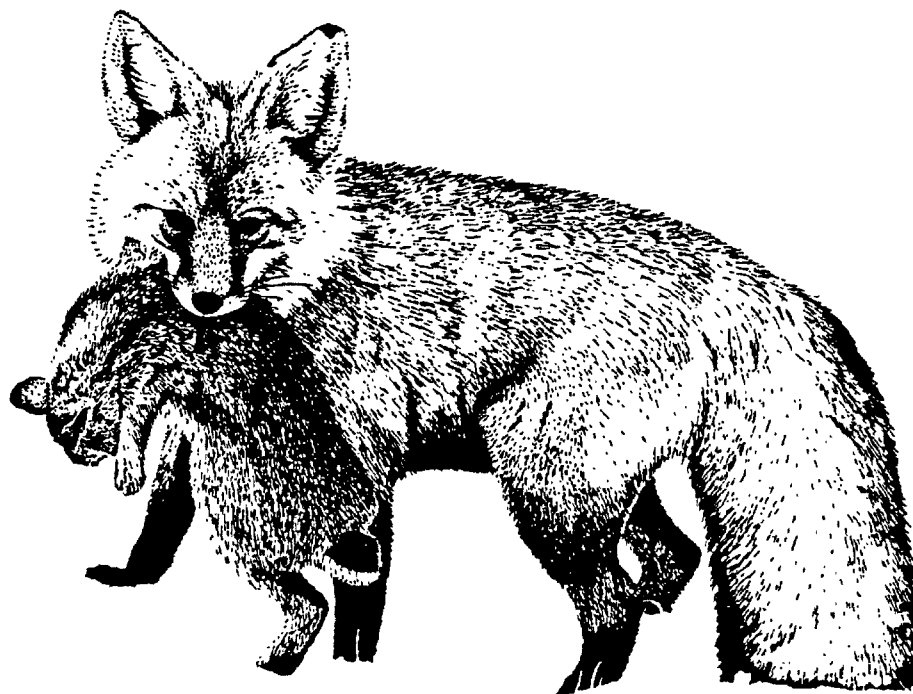
by Paul D. Curtis, Extension Associate and Michael J. Fargione, Research Support Specialist

A new deer damage management demonstration area is being developed at the Institute of Ecosystem Studies (IES)-Cary Arboretum, in Millbrook, New York. Brad Roeller, Manager of Display Gardens at IES, Mike Fargione, and I are cooperating with site planning and establishment. The goals of this demonstration project are to show the effects of deer damage to landscaped habitats, demonstrate physical and chemical damage mitigation techniques, and illustrate the use of plants with low susceptibility to deer browsing. The project will also allow us to gather data concerning the costs of damage prevention measures, and to test the deer-browsing resistance of several ornamental plant varieties.

The site would be established at the IES' new Visitor and Education Center. This is an ideal location for a demonstration area because of the large number of horticulturalists and homeowners that visit Cary Arboretum. Also, IES is within a mile of the

Cornell Cooperative Extension Dutchess County office, and the site will provide opportunities for CCE agent inservice education and other workshops. IES will plant and maintain the plot, and Cornell University is providing deer control expertise, and deer browsing susceptibility information for ornamental plants frequently used by NYS landscapers. The American Wildlife Research Foundation, Inc. recently approved a funding request to support this project.

We plan to establish plant materials during Fall 1991, and the site should be available for field tours during Winter and Spring 1991-92. CCE and IES are excited about the educational opportunities this demonstration area will provide. We would like to develop a similar project near Ithaca, but funding sources must be identified to support the field work, and an agreement for future maintenance will be necessary at potential project locations.



Current Literature

by Michael J. Fargione, *Research Support Specialist*

May, J. A., and D. Slate. 1989. An investigation of animal damage associated with maple syrup production. *Proc. East. Wildl. Damage Control Conf.* 4:211-219.

Many maple syrup producers in the northeastern U.S. have modified their age-old production methods, and are incorporating new technology in order to boost yields and reduce costs. Plastic-tubing gathering systems now carry sap from trees directly to collecting tanks. This innovation has allowed increased syrup production, but has also resulted in increased wildlife damage problems. Here, I summarize the findings from an on-going study in Vermont conducted by USDA/APHIS/ADC biologists. The project was designed to identify wildlife species causing the damage, and explore potential control options.

The major source of damage to tubing systems was rodents chewing on tubing, spouts, and fittings. Red squirrels, grey squirrels, and chipmunks were the primary culprits. Other species causing damage included flying squirrels, white-footed mice, porcupines, and woodpeckers.

Annual losses to syrup producers in Vermont were estimated to be greater than \$300,000. At one study site, 12% of the average annual potential profit was lost to wildlife damage. Growers suffered increased labor costs associated with locating and repairing damaged tubing or fittings. Poor sap production in recent years, and tree health problems, may potentially magnify the reported losses.

Past attempts to control rodent damage with zinc phosphide-treated grain, shooting, and trapping were described as costly, labor intensive, and generally unsuccessful. The authors recommended that producers suffering severe, persistent damage should temporarily discontinue washing tubing with chlorine solutions, because these solutions leave salt residues



which may attract rodents. Conifers should also be eliminated from sugar bush stands and surrounding "buffer zones" to reduce the available nesting and foraging habitat for red squirrels. Tubing connectors which allow for the easy removal and reattachment of droplines could reduce labor costs for tubing repair. This may also enable producers to economically remove tubing systems after use and prevent further damage.

Rodenticides, including zinc phosphide, may not be used to control squirrels in sugar bush stands in New York State. Rat-sized snap-back traps may be wired to trees and baited with peanut butter or apples to reduce squirrel populations in problem areas. Lethal control techniques usually provide only short-term relief from rodent damage. Changes in cultural practices or habitat modifications will often result in longer-term reductions in rodent numbers, and are the recommended management alternatives.



Deer Management Unit Citizen Task Force Meetings—An Update
by Rebecca Stout, Research Support Specialist and Dan Decker, Department Extension Leader

Department of Environmental Conservation, Bureau of Wildlife (DEC) staff have completed an initial effort to involve citizens in setting objectives for deer population levels in four Central New York Deer Management Units (DMU's). Feedback from Cornell Cooperative Extension facilitators and task force members indicated the meetings successfully provided a policy education forum for citizens to learn about deer management, and the alternatives and consequences of various deer population levels. Each of the four task forces reached a consensus, and recommended a deer population level to the DEC staff.

The task force for DMU 70, located primarily in Broome County, recommended maintaining the 1990 deer population level. The task force for DMU 73, located mostly in Oswego County, recommended maintaining a

1989 deer population level (which is lower than the current population size). The DMU 75 task force, located primarily in Onondaga and Madison Counties, recommended a 5% decline from the 1990 deer population level. The DMU 77 task force, located mostly in Chenango and Cortland Counties, recommended a 10% increase from the 1989 deer population level.

An evaluation of these meetings is being conducted by Dr. Dan Decker and Rebecca Stout, Human Dimensions Research Unit, Department of Natural Resources, Cornell University. This research project is sponsored by the USDA/APHIS-ADC program, as part of a study concerning ways to ensure that agricultural stakeholders' views are incorporated in deer management policy formulation. The evaluation strategy and preliminary results from these initial meetings are being used by DEC to implement an evaluation of 11 additional citizen task forces being held in various locations throughout the state. This program has been very successful, and exceeded the expectations of the DEC and Cooperative Extension professional staff.

Wildlife Damage Management Inservice Educational Opportunities
by Paul D. Curtis, Extension Associate

Several different wildlife damage management educational opportunities were available during the Production Agriculture Inservice Education Week, and the 52nd NYS Pest Management Conference, which were held during November 12-15, 1990 at the Sheraton Inn and Conference Center in Ithaca. On Monday morning, approximately 18 members of the CCE campus and field staff braved the snow storm to attend a presentation titled "Human Health Concerns and Wildlife Management," which was scheduled during the Natural Resources Session. Dan Decker also provided an update of the Deer Management Unit Citizen Task Force strategy implemented in many sections of NYS this past summer and fall.

Several agents participated in the Fruit Session of the Pest Management Conference on Tuesday, and I presented a paper titled "Meadow Vole Activity and Damage to Apple Trees in Relation to Orchard Ground Cover Management." Dr. Ian Merwin, from the Department of Fruit and Vegetable Science, co-authored that paper.

On Wednesday, I met Brian Magee at the Dryden Teaching and Research Center Sheep Facilities, and discussed "Predator Management for Reducing Livestock Losses" with more than a dozen NYS sheep producers. Finally, on Thursday afternoon, I provided an "Overview of the Wildlife Damage Management Program" during the general session at Riley-Robb Hall. I'd like to thank all the members of the campus and field staff who participated in Agriculture Inservice Education Week and the Pest Management Conference, and made these two events an outstanding educational opportunity.



Deer Damage Management in Christmas Tree Plantations: Site and Tree Species Selection

by Paul D. Curtis, Extension Associate and Michael J. Fargione, Research Support Specialist

A 1985 survey indicated that 57% of New York State's Christmas tree growers experienced severe deer damage. Deer browsed the buds and new growth of trees, and bucks injured many evergreens by antler rubbing during the fall. The U.S. Department of Agriculture, Animal and Plant Health Inspection Service, recently reported that deer were responsible for more agricultural losses nationwide than any other mammal species. Deer populations in some sections of New York State have grown to the point that growers must consider deer damage abatement as part of their overall farm management system.

Many of the practices that orchardists and nurserymen use to reduce deer damage to fruit trees and ornamentals can also be used effectively by

Christmas tree growers. In this article, we will describe pre-planting site and tree species selection considerations that growers can use to reduce potential future deer browsing damage to Christmas tree plantations and transplant beds. Methods for protecting established plantings are discussed in two additional articles listed in the CENET "Damage-News" and "Christmas-Trees" bulletin boards.

Growers should consider the deer damage potential of each site before establishing new plantings. A recent study reported that deer browsing intensity in nurseries was not influenced by characteristics of the planting itself (size, amount of edge bordered by woodlots, distance from paved roads or occupied houses). Damage was strongly related to the size of woodlots adjacent to nursery plantings, and the combined size of all woodlots within 2 km of the site. Deer fecal pellet-group counts in adjacent woodlots were a good predictor of damage to fields of yews, and may also be valuable for predicting damage to Christmas tree plantings. Christmas tree fields near

heavily wooded areas are likely to receive more deer browsing. It may be cost-effective for growers to install fences or plant deer-resistant tree species on sites with a high potential for damage.

Growers may already be aware that taxonomically related plant species suffer different amounts of deer browsing damage. Firs tend to be much more susceptible to deer damage than pines or spruces (Table 1). For example, it may be more cost-effective to plant blue spruce or red pine rather than balsam fir in fields where deer damage is expected to be moderate to severe. Careful pre-planting site and tree species selection may save thousands of dollars in deer damage management expenses or tree losses at a later date.



Table 1. Susceptibility ratings of Christmas tree species to deer browsing as reported by New York-State growers.¹

Species	Common Name	N	Frequency of Deer Browsing (%)		
			Frequent	Rarely	Never
<u>Abies fraseri</u>	Southern balsam fir	55	98	2	0
<u>Abies balsamea</u>	Balsam fir	90	92	8	0
<u>Pseudotsuga menziesii</u>	Douglas fir	129	84	8	8
<u>Abies concolor</u>	White fir	23	61	22	17
<u>Pinus strobus</u>	White pine	74	59	15	26
<u>Pinus sylvestris</u>	Scots pine	113	47	19	34
<u>Picea abies</u>	Norway spruce	52	38	24	38
<u>Picea glauca</u>	White spruce	119	26	31	43
<u>Pinus nigra</u>	Austrian pine	48	21	33	46
<u>Pinus resinosa</u>	Red pine	21	19	43	38
<u>Picea pungens</u>	Blue spruce	85	6	22	72

¹From J. B. McAninch and M. J. Fargione. 1987. Characteristics of deer damage in selected plant industries of New York State. Final Rep. Proj. No. 4943, N. Y. State Dep. Agric. and Markets, Albany, NY. 106pp.

Hunters— Protect Yourself from Ticks and Lyme Disease
by Paul Curtis, Extension Associate

Hunters, hikers, and other people using NYS's woodlands and fields should guard against the risk of contracting Lyme disease. As hunting season moves into full swing, sportsmen need to remember to check frequently for ticks, and use extra care when handling and processing game animals.

Lyme disease is usually transmitted by the bite of an infected deer tick (*Ixodes dammini*), and Lyme is currently the most important tick-borne disease in the United States. The disease is actually caused by a bacterial spirochete, *Borrelia burgdorferi*. Early signs of infection may include fever, flu-like symptoms, and muscle or joint pain. In about half the human cases, a red rash appears, expands over several days, then becomes clear in the center leaving behind a red ring.

NYS accounted for 56% of the 4,572 human cases reported to the federal Centers for Disease Control in 1988. Westchester and Suffolk Counties alone accounted for 44% of the nation's cases. In 1989, 7,400 human cases were reported—a 60% increase! The greatest risk of contacting an infected animal or deer tick in NYS occurs in 8 southeastern counties, but the spread of ticks appears to be following a northward path through the Hudson Valley. Deer ticks may choose a variety of hosts including small mammals, birds, man, and his pets. The white-footed mouse (*Peromyscus leucopus*) is an important reservoir for the spirochete, and one of the primary hosts of larval ticks. Because of their mobility, birds have been implicated in the northward spread of *Ixodes* ticks in NYS.

Hunters should wear rubber gloves and apply a tick repellent when handling or field-dressing any game, especially in southeastern NYS. The bacterial spirochete causing Lyme can penetrate human skin through cuts or scrapes, and the disease may be transmitted by handling the body

Nuisance Wildlife/Wildlife Rehabilitator I n f o r m a t i o n

by Patrick Martin, NYS-DEC, Special Licenses Unit

Euthanasia: Ethical Considerations and Guidelines
by Patrick Martin, NYS Department of Environmental Conservation

Individuals who have been issued Nuisance Wildlife Control Licenses or Wildlife Rehabilitator Licenses have occasion to kill or destroy wild animals. When it becomes necessary to kill a wild animal, the licensee has both a legal and ethical responsibility to euthanize that animal. Euthanasia, for purposes of this article, is the act or practice of painlessly putting a wild animal to death. The key word in this definition is "painlessly". Painless death requires rapidly occurring unconsciousness followed by cardiac or respiratory arrest. An unconscious wild animal cannot experience pain because the cerebral cortex is not functioning. Unfortunately, conscious and unconscious, restrained wild animals may exhibit behavioral and physiological responses (distress vocalization, struggling, defensive or redirected aggression, salivation, urination, defecation, tremors, etc.). These responses are unpleasant to observe and may be the result of the wild animal feeling pain. Therefore, it is essential for a licensee to know the best ways to euthanize a wild animal. The appropriate method of euthanasia will vary depending on the species of animal involved, the available means of animal control, and the skill of the licensee. Unfortunately, many acceptable methods of euthanasia cannot be used in field situations. However, it is the responsibility of the licensee to select a method that is legal, ethical, and painless to the wild animal.

The first step to euthanize any wild animal is to maintain physical control over the animal. A number of companies supply animal control equipment and restraint systems, and each licensee should purchase the necessary equip-

ment to restrain the wild animals they will encounter. Remember, wild animals that are injured, excited, or afraid may be more difficult to control. Animal death is due to one of three basic mechanisms: (1) lack of oxygen in the blood; (2) direct depression of neurons vital for life function; or (3) physical damage to brain tissue. The most practical method of euthanasia under most field conditions encountered by nuisance wildlife control persons and wildlife rehabilitators is a gunshot to the brain. It is effective and death is instantaneous. If the licensee can maintain adequate control of the wild animal, a captive bolt pistol is preferred to a gunshot. Also, any wild animal suspected of having rabies should not be shot in the head. The NYS Health Department Rabies Laboratory requires fresh brain tissue to test for the rabies virus. Other disadvantages associated with gunshot use for euthanasia include: (1) danger to the licensee or bystanders; (2) legal restrictions for firearms in the area; (3) aesthetic unpleasantness; and (4) it may be difficult to hit the brain. However, a competently performed gunshot is an acceptable method of euthanasia.

Whenever it becomes necessary for a nuisance wildlife control person or a wildlife rehabilitator to kill a wild animal for any reason, death should be induced as painlessly as possible. This is a legal and moral obligation under the authority of the license. The reader is encouraged to obtain a copy of the "1986 Report of the AVMA Panel on Euthanasia" published in *Journal of the American Veterinary Medical Association*, Vol. 188, No. 3, February 1, 1986; for a detailed description of other acceptable and unacceptable methods of euthanasia.



(Hunters con't)

fluids or organs from infected animals. The chance of contracting Lyme disease in this manner is much less than through a tick bite, as the concentration of spirochetes in blood and other body fluids tends to be low. However, it's advisable to take additional precautions and reduce your risk of infection.

Immediately after harvest, an animal's body temperature begins to drop. Unattached ticks may sense this change and begin searching for another host. Ticks often climb upward to quest for a new host, and a hunter dragging his buck by the antlers may end up with an unwanted passenger on his arm. In deer tick-prone areas of NYS, it is advisable to let deer cool completely before skinning. Unattached ticks should drop off the carcass in less than 12 hours, and sportsmen can then proceed with processing the meat. Butchers and taxidermists usually face little chance of contracting Lyme disease by the time they receive animals for preparation.

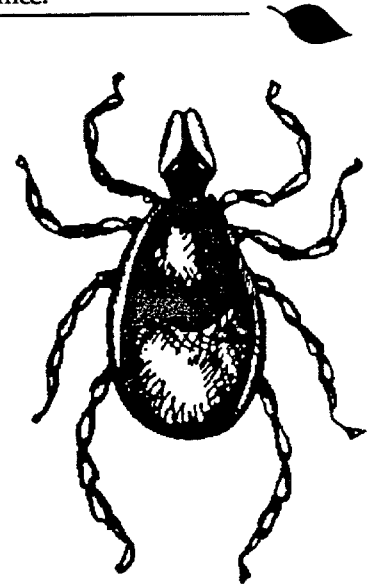
The well-cooked meat of deer or other game cannot transmit Lyme disease, and is safe to eat even if deer ticks are found on the animal. Some hunters prefer to eat their venison cooked more rarely. It's very difficult to quantify the increased risk of contracting the disease from eating under-cooked meat because no research data are available. Generally, the risk of spirochete transmission from blood in the meat or the animal's body cavity is low. Also, due to variability in cooking temperatures, it's difficult to determine the point at which the spirochetes in the meat may be killed.

The NYS Health Department has two publications (numbers 2806 and 2807) concerning Lyme disease that are available by writing: Publications, NYS Department of Health, Empire State Plaza, Albany, NY 12237. The NYS Health Department will identify ticks for individuals for free, but their staff will not determine if the ticks are infected with the Lyme disease bacteria. Ticks should be dropped into

a film canister with rubbing alcohol, the lid should be taped shut, and the canisters should be mailed in a padded envelope or box (include a slip of paper with your name and phone number). Mark the package "hand cancel" and send it to: NYS Department of Health, ESP Corning Tower-651, Albany, NY 12237.

June and July are the highest risk months for human Lyme disease exposure. Ticks commonly feed from April through October, but they will become active if a warm spell occurs during winter. **REMEMBER, YOU ARE AT RISK DURING ANY SEASON OF THE YEAR EXCEPT DURING PERIODS OF SUBFREEZING TEMPERATURES.** During fall, hunters may be at greater risk of becoming infected with Lyme disease than other NYS residents because they frequent areas where deer, and consequently deer ticks, are abundant.

Chemical tick control information can be obtained from the Cornell Cooperative Extension 1990 Pest Management Recommendations for Public Health ("Cornell Redbook"), available at your County Cornell Cooperative Extension Office.



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