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Wildlife Damage

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Volume 2, Spring 1991

Co-editors: Paul Curtis and Michael Fargione

Produced by: Carol Rundle

Controlled Hunting Programs for Reducing Deer Damage

by Michael J. Fargione, Research Support Specialist

Agriculturalists often use physical barriers or chemical repellents as the first line of defense for alleviating unacceptable levels of deer (*Odocoileus virginianus*) damage. Although these techniques can be effective, they treat the symptoms of the problem without addressing its real cause. Severe damage results when deer numbers exceed acceptable levels and conflict with other local land uses.

Historically, regulated hunting has been the most practical method of managing deer populations, and most herd management goals can be met via sport hunting. Sportsmen are licensed by the NYS Department of Environmental Conservation (DEC), and antlerless permits are available on a Deer Management Unit (DMU) basis. However, management goals for a specific DMU may not always provide reductions in deer damage to crops or ornamental plants. Limited hunting pressure, poor hunter distribution, low success rates, and preferences for harvesting antlered deer over antlerless animals, can prevent deer numbers from being reduced, or even stabilized, in certain localized areas. In addition, landowners may be unwilling to allow hunting due to perceived incompatibilities with other land uses or safety concerns. As pointed out by Mark Ellingwood in the publication "A Guide to Implementing a Controlled Deer Hunt," the solution to managing

deer populations under these conditions may be a customized or "controlled" hunting program.

Controlled hunting programs for reducing deer damage rely on the development of clear objectives regarding the number and sex ratio of deer to be harvested. Programs often stress the removal of adult antlerless deer, as these animals provide the population's breeding potential. In addition, controlled hunting programs usually restrict when, where, and how hunters practice their sport. These restrictions increase the likelihood that an adequate harvest will occur in the desired areas, and ensure that the hunt takes place in a safe and humane fashion.

Controlled hunting programs can be used to reduce deer damage in a variety of situations where fine-tuned management of hunters and harvest levels are required. To be practical, programs must work within existing DMU regulations and harvest goals. The following article describes the Institute of Ecosystem Studies' deer

management program, and is just one example of a controlled-hunting plan tailored to meet the deer management needs of a particular site. This program could be adapted for other situations where more or less deer population control is needed. There is currently a great deal of interest in controlled hunting programs, and we plan to include more information concerning harvest techniques in future issues of the newsletter.

Deer Management at the Institute of Ecosystem Studies Mary Flagler Cary Arboretum
by Ray Winchcombe, Manager of Field Research Facilities, Institute of Ecosystem Studies

The Mary Flagler Cary Arboretum, located near Millbrook, New York, is approximately 2,000 acres in size, with about 50% of the property in closed-canopy forests. Collections of woody plants, display gardens, and

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

(Deer Management con't.)

particularly the natural forest, which is used for a variety of ecological field studies, have the potential to be negatively impacted by an overpopulation of white-tailed deer (*Odocoileus virginianus*). To prevent this from occurring, a comprehensive deer management program was implemented at the Arboretum in the mid-1970's. An annual hunt is the cornerstone of the program, and is supplemented by temporary or permanent fencing and repellents when necessary. Hunting addresses the issue of reducing deer numbers, a critical factor for controlling damage.

The primary objectives of the hunt are to maintain the local deer herd at a level that is compatible with other competing land uses, and protect natural vegetation from excessive browsing. Field research and other activities require the annual hunt to be tightly controlled, which results in a limited number of hunters (55-65). Sportsmen invited to participate must: (1) register early, (2) apply for a Deer Management Unit (DMU) Permit, (3) attend a pre-season orientation meeting, (4) pass a shooting proficiency test, and (5) pay a small annual fee.

Early registration identifies unfilled slots which may be available for a new hunter. The mandatory application for a DMU permit ensures that an adequate number of these second deer permits will be available to allow a sufficient harvest of female deer. On the Arboretum, these permits can only be used to take

antlerless deer, preferably adult does. Only through a consistent doe harvest can deer populations be initially reduced, and then stabilized. The pre-season orientation is used to discuss: (1) the philosophy and goals of the Institute's deer management program (which is primarily for population control—not recreation), (2) the results of previous hunts, (3) current rules and regulations, (4) remind hunters to be selective in filling their DMU permits, (5) active research areas, (6) safety, and (7) ethical, responsible behavior.

The shooting proficiency test consists of hitting a 12" square target 3 of 5 shots at 50 yds. This requirement forces hunters to demonstrate that their firearms are well-sighted, and the shooter is capable of making swift and humane kills. Additional requirements



include: (1) daily sign-in and sign-out at a check station, (2) restricted parking areas, (3) blaze orange requirements, (4) mandatory deer check-in, and (5) assistance with property security and control of deer drives.

Hunters are expected to participate at least five days each year, if necessary, and regularly take adult does with their DMU permits. Sportsmen are invited


back in subsequent years based on their cooperation, efforts, and hunting success. Continued failure to harvest female deer may result in a hunter being dropped from the program, or being required to take a doe before shooting a buck. This ensures that sportsmen expend nearly equal effort hunting both sexes.

The results of the program have been very encouraging. Spring surveys of deer foraging on native vegetation reveal low winter damage and a healthy forest. Data collected annually at check stations indicate deer on the property are in good to excellent physical condition. Hunter success rates have averaged 78% during the past 5 seasons, including an average annual buck take of 33 per year (11 bucks per square mile). These results

keep hunter interest and willingness to participate high. A recent survey indicated overwhelming support for the program in its current form. The low turnover rate among hunters between years supports these findings. Safety was an important issue. When asked why they hunted on the Arboretum, 95% of the respondents said they felt it was a safe place to hunt.

The controlled hunts at the Cary Arboretum have proven to be mutually beneficial to both

the organization and sportsmen. Landowners who wish to protect forests, agricultural crops, and landscaped environments, may find that a controlled hunt will satisfy their particular deer damage management needs.

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

Position Statement of The Wildlife Society: Responsible Human Use of Wildlife

Approved by Council, October 1990

The continued well-being of humans and wildlife is dependent on a diverse, functioning environment sustained through skilled and responsible management of resources. As human populations increase, the quality and availability of habitats for many wildlife species and populations decreases. Each species, including humans, has evolved its own unique set of behavioral and social patterns for its welfare and survival in the environments it occupies. Human societies have recognized and accepted uses of wildlife for food, clothing, shelter, hunting, fishing, trapping, recreation, and as an indicator of environmental quality. These uses generate tangible goods, income, and contribute to the economic and spiritual well-being of society.

Humans are part of a functioning environment and, as such, ultimately and legitimately derive their livelihood from the resource base. All humans and human societies use wildlife directly and/or indirectly. However, human uses of natural resources, including wildlife, must be carried out in a responsible manner so that ecological processes can continue to function and sustain a healthy environment. Careful, scientific resource management is the best way to provide for human needs while sustaining the functional ecological processes of the environment.

Worldwide, the major factor in ecosystem disruption is human activity. Growth and development of human civilizations and technology have resulted in dramatic reduction and alteration of pristine habitats, greater dependence of man on domesticated animals, and changes in the functioning of most ecosystems. It has been demonstrated that regulation of human activities and management of wildlife habitats, achieved through the efforts of conservation-minded citizens and resource management profession-

als, has slowed or reversed declines of many wildlife species. Prudent management practices and regulations, supported by a conservation-minded public have resulted in restoration of wildlife species and populations, and restoration of habitat productivity. This has allowed the continued responsible use—both consumptive and non-consumptive—of most wildlife by humans.

Failure to manage and regulate uses of wildlife and their habitats has resulted in declines in some wildlife populations and deterioration of ecosystem capabilities to support wildlife and human populations. The maintenance, restoration, and enhancement of wildlife populations and suitable habitats through scientific management and regulations are vital to ecological functioning, genetic diversity, and perpetuation of wildlife populations, species, and habitats.

The social acceptance of each use of wildlife reflects the cultural value systems of a particular society, the human benefits derived from the use, and the liabilities associated with using or not using the resource in a particular manner.

Humans are responsible for the stewardship of wildlife. Humans should manage and regulate uses of wildlife and their habitats in an ecological and social context that promotes sustained survival and welfare of wildlife populations in a variety of ecosystems.

Management of wildlife uses is generally achieved by regulating the human activities associated with those uses. The best way to maximize benefits to both wildlife and humans involved in these activities is through scientifically based and implemented management.

Human activities, particularly those altering habitats, have caused many significant environmental changes and corresponding adjustments in wildlife populations. Even inadvertent habitat impacts may have significant influence on wildlife sustainability.

Certain human activities have a minimal impact on the environment or wildlife. However, these activities are sometimes questioned. Responsible hunting, fishing, trapping, wildlife rehabilitation, wildlife feeding, and other appreciative or recreational uses of wildlife are among those activities. The "wise use" doctrine of conservation should place all activities on a sustainable basis.

Social appropriateness of any human activity is determined by members of society. However, the decision of an individual to participate or not in an activity should not prevent others from exercising their own freedom of choice within the realm of constitutional and statutory legality. Participation in or support of wildlife-related activities that do not have long-term detrimental impacts to wildlife populations or their habitats should be a matter of personal choice.

When people choose to be involved directly in responsible wildlife activities, the overall value of wildlife is enhanced. This enhanced resource value includes, but is not limited to, increased: (a) economic importance; (b) cultural importance; (c) understanding of roles and needs of the resources; (d) ability in the long-term to support and perpetuate the resources; (e) ability to protect the ecological processes that sustain the resources; and (f) ability to control negative aspects of the resources, such as crop depredations or disease implications.

The policy of The Wildlife Society with respect to Responsible Human Use of Wildlife is to:

1. Support and promote the philosophy that it is consistent with ecological principles and appropriate for humans to responsibly use wildlife for food, clothing, shelter, hunting, fishing, trapping, recreation, and as an indicator of environmental quality. These uses contribute to the economic and spiritual well-being of society.
2. Support and promote the philosophy that it is equally appropriate for humans to manage wildlife in ways to

(Position Statement con't.)

sustain and enhance wildlife populations, species, and habitats for human benefits, while responsibly protecting property and other resources and preventing health and safety hazards.

3. Support and promote the philosophy that it is consistent with ecological principles and appropriate for each individual to choose whether she or he should be directly involved in any wildlife-related activity.

4. Support and promote the philosophy that management of wildlife-related activities utilizes only those practices that do not threaten the integrity of a population or species for its long-term survival or significantly inhibit the health or integrity of the ecosystem(s) supporting that population or species.

5. Support and promote the philosophy that human wildlife-related activities enhance the overall value of wildlife resources. These enhanced values improve potential opportunities to protect and perpetuate wildlife, understand their habitat needs, and improve their economic, cultural, and social importance.

6. Support and promote the position that the future of wildlife and diverse ecosystems is dependent upon human stewardship. Such stewardship must take into account the growing human population, decreasing availability of pristine wildlife habitats, and the need to manage wildlife populations for sustained human use and enjoyment in economically, socially, and environmentally acceptable ways for present and future generations.

7. Support and promote the position that humans are responsible for promulgating and enforcing laws and developing management programs essential to sustaining the long-term welfare of wildlife.

8. Support and promote the position that wildlife laws, management policies, and programs should enhance the values and benefits of wildlife

resources, while minimizing liabilities associated with wildlife populations, species, and habitats.

9. Support and promote the principle that options for wildlife management activities and habitat alterations be developed by trained wildlife professionals, and be implemented and coordinated through resource management agencies that are legislatively mandated and empowered to do so.

10. Support and promote positive educational efforts that emphasize: (a) the interdependence of humans and wildlife; (b) the obligations to manage uses of wildlife and impacts on habitats under the public trust doctrine of law; (c) management programs based on the best available information from science and accumulated experiences.



Publications

The Fourth Eastern Wildlife Damage Control Conference Proceedings (258pp., \$20.00), edited by Scott R. Craven, contains papers presented at the conference in Madison, Wisconsin, during September 1989. This publication provides up-to-date research information for a variety of problem wildlife species. Order from: Carol Rundle, Cornell Cooperative Extension, Room 108, Fernow Hall, Cornell University, Ithaca, NY 14853.

Managing Mole Problems in Kentucky (FOR-42, 5pp.), by Thomas G. Barnes, describes mole ecology, and trapping methods for urban landscapes. This leaflet includes addresses for mole trap suppliers, and illustrations describing how to properly set mole traps. Order from: Thomas G. Barnes, Extension Wildlife Specialist, Department of Forestry, University of Kentucky, Lexington, KY 40546.

Predator Management in North

Coastal California (95pp., \$5.00), edited by Gregory A. Guisti, Robert M. Timm, and Robert H. Schmidt, is the proceedings of a symposium on predator management held at the Hopland Field Station in March 1990. A wide variety of topics are discussed, including subjects ranging from animal welfare issues to electric fence construction. This is a valuable reference for professional wildlife managers. Order from: Hopland Field Station, University of California, 4070 University Road, Hopland, CA 95449.

Proceedings of the 14th Vertebrate Pest Conference (372pp., \$15.00), edited by Lewis R. Davis and Rex Marsh, contains more than 80 papers describing a variety of vertebrate pest management topics. Order from: T. P. Salmon, DANR-North Region, University of California, Davis, CA 95616.

Being Kind to Animal Pests: A Nonsense Guide to Humane Animal Control with Cage Traps (132pp., \$12.95), by Steve Meyer, describes several wildlife control techniques specifically for cage trap use (see review by Patrick Martin in this issue of "*Wildlife Damage News*"). Order from: Meyer Publishing, Box 247, Garrison, IA 52229.

Wildlife Management: Farms and Woodlands (11pp.), by Greg K. Yarrow, is intended to help landowners identify objectives and plan for an integrated approach to managing wildlife in combination with farm and timber operations. Basic wildlife habitat management principles for enhancing wildlife populations in forests and farms, while meeting other objectives, are discussed. Order from: Cooperative Extension Service, Clemson University, Clemson, SC 29631.

Current Literature

by Paul D. Curtis, Extension Associate

Swihart, R.K. and M.R. Conover.

1991. Responses of woodchucks to potential garden crop repellents. *J. Wildl. Manage.* 55:177-181.

Woodchucks (*Marmota monax*) may damage a variety of garden plants, much to the dismay of home gardeners and commercial vegetable producers. The burrowing and climbing ability of woodchucks makes exclusion with fencing very difficult. The recolonization of burrows usually occurs rapidly after lethal control methods (i.e., shooting, gassing, trapping) are attempted, making animal removal a short-term damage management option. Currently, no chemical repellents are registered by the U.S. Environmental Protection Agency to protect food crops from woodchuck foraging. Hot Sauce Animal Repellent and Hinder are registered as deer (*Odocoileus virginianus*) and rabbit (*Sylvilagus* spp.) repellents for edible crops, but their effects on woodchucks is not known. Connecticut vegetable growers also reported that 2 insecticides registered for food crops, Cygon and Sevin, also appeared to repel some vertebrate pests. Swihart and Conover conducted a field test to compare the effectiveness of these compounds for repelling woodchucks.

In addition, Swihart and Conover treated cherry tomatoes with emetine dihydrochloride to determine if a conditioned aversion could be developed in woodchucks. The goal would be to treat a portion of the crop with the chemical, in the hopes that the illness caused would lead to a subsequent avoidance of cherry tomatoes. If successful, this method may be useful for protecting other garden vegetables. This technique has been used to protect eggs from avian and mammalian predation, but has not been evaluated for vegetable crops.

Eighteen woodchucks were housed in outdoor pens for the feeding trials. Hot Sauce Animal repellent was sprayed on acorn and zucchini squash

plants, and woodchuck consumption of the plants was measured during 3-day pretreatment, treatment, and posttreatment periods. This chemical reduced consumption of acorn and zucchini squash leaves by 16% and 20%, respectively. More than 2/3 of the treated foliage was eaten, and this product was ineffective for preventing plant damage.

Hinder, Cygon, or Sevin was sprayed on Romaine lettuce leaves until both sides were dripping. The consumption of lettuce was measured during a 2-day pretreatment period and a 3-day treatment period. None of these compounds significantly reduced woodchuck consumption of Romaine lettuce, a highly palatable crop.

The effectiveness of Hinder was also examined when alternative forage plants were available. During the 2-day pretreatment stage, woodchucks were presented with 25 g of either Romaine lettuce or butternut squash leaves, and 25 g of a mix of 6 herbaceous plant species commonly eaten by woodchucks in orchards. After a 2-day pretreatment stage, squash and lettuce leaves were sprayed with Hinder, and plant consumption was monitored during a 2-day treatment period. Application of Hinder did not lower the consumption of lettuce when alternative foods were available, and the consumption of butternut squash (a low-palatability species) was only moderately reduced.

The ability of emetine dihydrochloride to create a generalized aversion of cherry tomatoes by woodchucks was also evaluated. During a 7-day pretreatment stage, woodchucks were fed 3 cherry tomatoes each day. For each of 11 consecutive treatment days, each animal was given 3 tomatoes injected with emetine. Treated tomatoes were provided until consumption dropped to <20% of the pretreatment level for 3 consecutive days. Following the treatment period, woodchucks were given 4 untreated tomatoes daily for 7 consecutive days. Untreated tomatoes were also offered to each animal on days 14 and 21 posttreat-

ment. Consumption of tomatoes was lowest at the end of the treatment period, increased significantly during the posttreatment stage, but during both of these periods the amount eaten was less than during the pretreatment stage.

Emetine dihydrochloride almost completely suppressed woodchuck feeding on cherry tomatoes, and aversion gradually developed over the 11-day treatment period. Woodchucks generalized their aversion to untreated tomatoes during a 3-week posttreatment period, typically sampling small amounts of tomato before increasing their consumption. The time for woodchucks to develop an aversion may be shortened if animals are initially presented with treated tomatoes, and do not establish a feeding pattern. The use of this technique on other edible crops would be practical only if the risk of accidental consumption of treated fruit by humans could be eliminated.

Currently, there are no repellents that a vegetable grower can use to protect edible crops from woodchuck damage. A 4-foot-high wire fence buried a foot deep, combined with an electric wire 4 inches above ground and 4 inches in front of the fence to prevent climbing or burrowing, is the most effective method for excluding woodchucks from vegetable crops. In some cases, the electric wire alone has prevented woodchucks from entering garden plots, but this method appears to be less reliable.



Snake Control in Home Landscapes by Paul D. Curtis, Extension Associate

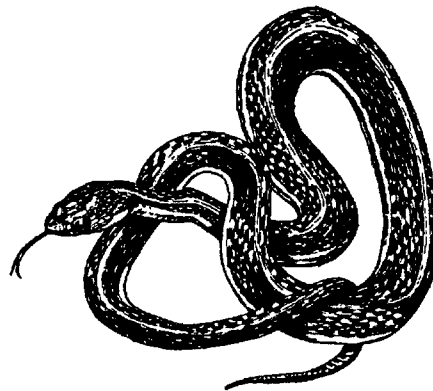
The buds are bursting and warmer spring temperatures are greeting New York State. Several species of reptiles and amphibians that were dormant during the cold winter months are again active. Homeowners may be unpleasantly surprised to find a snake sunning on a rock wall, or near the foundation of their home. The sight of a snake may cause fear in many people either because they cannot positively identify the reptile as nonvenomous, or they lack knowledge of snake behavior and habits. During spring, I receive calls from homeowners requesting information about home remedies intended to keep snakes away from their property. Mothballs, sulphur, pepper spray, lime, wood smoke, creosote, fiber rope, and several other materials have been used as snake repellents under various conditions. Let's examine New York venomous snake distributions, and the results from scientific tests of various chemical repellents.

Most homeowners are primarily concerned with finding a venomous snake on their property. Only 3 species of venomous snakes occur in New York, and their numbers appear to be declining. I contacted Al Breisch at the Endangered Species Unit, N.Y.S. Department of Environmental Conservation (DEC), to obtain their current distributions. The copperhead (*Agkistrodon contortrix*) is found primarily in southeastern New York (portions of Albany, Columbia, Delaware, Dutchess, Greene, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester counties). The timber rattlesnake (*Crotalus horridus*) is the most widespread venomous snake in the state. However, timber rattlers are currently listed by DEC as threatened. Recent timber rattlesnake sightings have occurred in Allegany, Broome, Cattaraugus, Chemung, Columbia, Delaware, Dutchess, Essex, Greene, Livingston, Montgomery, Ontario, Orange, Otsego, Putnam, Rockland, Schoharie, Steuben, Sullivan, Ulster,

Warren, Washington, and Wyoming counties. The eastern massasauga (*Sistrurus catenatus*) is currently listed by DEC as endangered, and occurs only in parts of Genesee and Onondaga counties. Consequently, venomous snakes are either absent, or exist in relatively low numbers, throughout much of the state, often in remote, uninhabited areas.

Some people like to keep venomous snakes as pets, and most sightings in urban locations result from venomous snakes that have escaped or been released. Massasauga and timber rattlesnakes cannot be legally kept as pets because of their endangered and threatened status in the wild, and hence their protection by the state's conservation law.

The vast majority of New York snakes are nonvenomous and beneficial because they forage on cutworms, grubs, small rodents, and other garden



pests. Snakes are predators that eat a variety of animal life including frogs, toads, salamanders, insects, worms, rodents, and bird eggs. Because snakes occupy a variety of habitats from swamps to forested slopes, it would be impractical and undesirable to eliminate snake populations in an area.

Conflicts occur when snakes choose to occupy homes or outbuildings. Many landowners are "tolerant" of these docile reptiles until they enter structures and have the potential to contact children or pets. At that point, seemingly mild-mannered residents will wage an all-out war to eradicate

offending snakes, and seek advice or assistance with keeping snakes out of dwellings. Questions arise concerning methods of capturing snakes and the effectiveness of various repellents.

Snakes in a cellar can be attracted to wet rags or burlap placed on the floor along an outside wall. If the moist cloth is left for a few hours, snakes will likely be found under it, and can then be captured and released outdoors. To prevent snakes from returning, holes in screen doors, foundation cracks, or broken windows should be repaired or sealed.

Researchers from North Carolina State University tested the repellent effects of a dozen materials on black rat snakes (*Elaphe obsoleta*) under controlled conditions. None of these materials altered the normal investigatory behavior of black rat snakes, or prevented them from crossing a test area in the experimental chamber. This is consistent with the lack of products registered by the Environmental Protection Agency for snake control.

The only way to reduce snake numbers near homes is to remove or reduce the habitat available. Snakes are attracted to areas with high rodent or insect populations that provide cover. Homeowners should remove log or trash piles near buildings and keep vegetation near homes closely mowed and trimmed. Snap-back traps or commercial rodenticides can be used to reduce small mammal numbers in structures (follow all label directions and precautions).

Children should be taught to leave all snakes alone unless an adult has positively identified it and will assist with handling the reptile. These suggestions have been made to county agents and homeowners for many years. Because there is no effective chemical way to repel snakes, these control methods continue to be the best options for New York residents with snake problems.

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

by Patrick Martin, NYS-DEC, Special Licenses Unit

Humane Capture of Wild Animals by Patrick Martin, NYS Department of Environmental Conservation

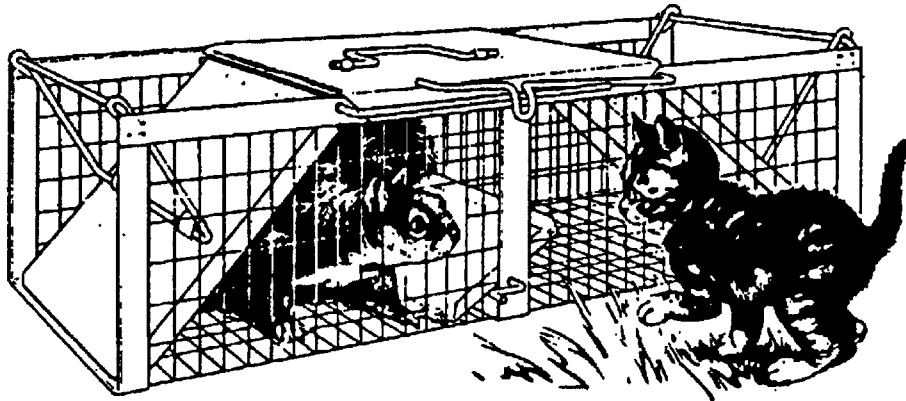
Wildlife Rehabilitators and Nuisance Wildlife Control Licensees are witnesses to, and participants in, the struggle between humans and wildlife to coexist. The most effective tool for the resolution of conflicts between humans and wildlife is knowledge. Therefore, it is the responsibility of humans to learn how to live with wildlife. Because it is impossible to avoid conflicts entirely, we must learn how to mitigate these "nuisance" problems humanely.

One good source of information for Rehabilitators and Nuisance Wildlife Control Persons is the book, "Being Kind To Animal Pests: A No Nonsense Guide To Humane Animal Control With Cage Traps" by Steve Meyer, Meyer Publishing Company, Box 247, Garrison, Iowa 52229 (\$12.95). The theme of this book is the humane treatment of captured wild

animals. Meyer is not an apologist for using the humane approach. Rather, he is an ardent advocate. In fact, we can understand why he wrote this book by first reading the section in the back entitled, "Our Virtue To All Things Wild And Natural." His philosophy echoes that espoused by Albert Schweitzer, when Schweitzer wrote the phrase, "reverence for life."

In his book, Meyer effectively demonstrates that the correct use of cage traps is the most humane method for nuisance wildlife control.

Meyer draws on his education as a wildlife biologist, and his experience as a nuisance wildlife trapper, to reveal the nuances of cage trap use. His formula is to describe the strengths and weaknesses of the cage trap, and to instruct the reader to learn the behavior of the wild animal being trapped. We learn that the cage trap is a unique device, and when used correctly, captures a nuisance wild animal alive and unharmed. The captured wild animal may then be transported to an area where it will not become a nuisance, and can be released into suitable habitat. Meyer makes it clear that the cage trap, while simple in



design and operation, requires a certain level of proficiency for most effective use. He provides detailed information on locating, concealing, baiting, securing, and maintaining cage traps. Throughout the book, we are reminded that cage trap location is critical to the successful capture of most nuisance wild animals. However, proper trap location will depend on our knowledge of wild animal behavior.

Meyer provides a comprehensive chapter on specific nuisance wild animals that can be effectively caught in cage traps. He includes a description of each animal and its range, habitat, characteristics, behaviors, and food habits. Suggested baits, sign, nuisance habits, damage identification, and cage trapping tips are also provided. The sections on damage identification and cage trapping tips were especially informative, and contained useful information for both the novice and experienced trapper.

Obviously, this is a "how to" book. It is well written, informative, and easy to understand. The prospective nuisance wildlife trapper will learn something to make him or her more successful by reading this book.

However, the real value of this book is the approach Meyer uses to make humans responsible for their actions towards wildlife. He tells us that nuisance wildlife problems can be resolved without killing or injuring the wild animal, and demonstrates how this can be done. But more than that, Meyer

charges us with adhering to principles of care that will ensure the humane treatment of captured wild animals: regular and prompt checking of cage trap sets, not harming a captured wild animal, and releasing a captured wild animal in a safe habitat as soon as possible. In a very practical manner, this book tells us how to coexist with wildlife.

Concerns About Lyme Disease Vaccine for Canines

Reprinted from "Lyme Disease Surveillance Summary," by Robert Craven and David Dennis (editors)

During February 1991, the National Association of State Public Health Veterinarians (NASPHV) sent a letter to the United States Department of Agriculture outlining the Association's concerns about scientific issues related to the recent approval for marketing of a canine vaccine for Lyme disease. The issues raised included the following:

1. The company's nationwide advertising campaign is misleading. It is not made clear that this is a provisionally-licensed vaccine for which safety and efficacy data are incomplete. Ads state that Lyme disease is found in 44 states without distinguishing between areas of high endemicity and areas where it is rarely diagnosed. Furthermore, no distinction is made between imported and native cases. Reference to transmission via body fluids is based on limited experimental data and is overstated in the informational brochure supplied by the pharmaceutical company. The unsubstantiated implication is that the canine vaccine will indirectly protect human health.
2. The testing protocol and unpublished data provided to the scientific community by the company are not sufficient to evaluate the efficacy of the vaccine, especially under conditions of natural challenge. Much information and data are claimed as proprietary, thus unavailable for verification and challenge by colleagues in the scientific community.
3. Use of the canine vaccine may give people a false sense of security and result in less emphasis on vector control and other public health measures which provide significantly greater protection to the public.
4. There is a clear need to properly evaluate the vaccine, but no plan apparent to do so. In essence, NAS-

PHV members feel that an uncontrolled field trial is being conducted at the expense of pet owners.

5. The use of canine serosurveys as part of the surveillance for Lyme disease may be precluded by the widespread use of the vaccine. This is of particular concern in transitional areas where Lyme disease is not endemic and public health officials are maintaining vigilance for the spread of *Borrelia burgdorferi*.
6. The package insert recommends annual boosters, although the challenge trial was apparently done at 156 days. There was no documentation that immunity will last a year.
7. If demyelination and arthritic consequences of Lyme disease are immunologically mediated, might the vaccine produce similar results over time?

Editorial Note from Drs. R. Craven and D. Dennis: Transmission of Lyme disease to humans by body fluids of humans or animals has not been established in the scientific literature, and we know of no data which suggest that prevention of Lyme disease in dogs by a vaccine would prevent human Lyme disease cases. Claims by the vaccine manufacturer of direct dog-to-dog transmission in one of its study populations have yet to be published. The issues raised by NASPHV make it clear that substantial questions remain about the efficacy and safety of this canine vaccine in the prevention of Lyme disease in dogs.

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