WILDLIFE DAMAGE CONTROL:
A CHALLENGE TO WILDLIFE PROFESSIONALS

Robert M. Timm
202 Natural Resources Hall
University of Nebraska
Lincoln, NE 68583-0819

ABSTRACT.

In recent times, our growing human population has demanded more food, fiber, and energy from the land. These demands have resulted in more intensive land use for housing, agriculture, and resource development. This has led to increased conflict between man and wildlife.

One form of conflict is wildlife damage. Commensal rodents, field rodents, birds, large mammals, and predators may at times cause serious economic losses. At other times they may affect human health or simply become nuisance pests. The goal of wildlife damage control is to reduce or alleviate damage in an acceptable manner.

Employees of county, state, and federal agencies, as well as landowners and homeowners, conduct wildlife damage control. Increased restriction and regulation of damage control methods, combined with a lack of emphasis on education in wildlife damage control, have made this area of wildlife management more controversial and less effective today than in past times.

To make wildlife damage control effective as well as acceptable, we in the wildlife profession must take the following steps: (1) educate the public about the need for damage control and its benefits; (2) educate ourselves more thoroughly concerning wildlife damage, characteristics of pest species, and methods of control; (3) provide factual information to those who influence and implement public policy so that they will have a basis for intelligent decisions; and (4) keep our own minds open to new ideas, while recognizing that we too hold opinions and beliefs based on emotion as well as on knowledge and experience.

A sound program of wildlife damage control will benefit agriculture, people, and the environment. The principles that govern wildlife pests also govern game and nongame animals. By recognizing wildlife damage control to be an integral part of wildlife management, we will enhance our own knowledge and credibility. At the same time, we will find greater acceptance from the individual homeowner, farmer, rancher, and land manager for all wildlife management programs.

INTRODUCTION

Human population growth, both in this country and beyond our borders, is affecting our environment. Specifically, it affects the way our land is used. Increasing demands for food, fiber, and energy all impact the biotic and abiotic resources in every state and country. These demands have resulted in more intensive land use for housing, agriculture, and resource development. And since land, or more correctly habitat, is the foundation of wildlife's existence, we often find human needs and actions in direct conflict with wildlife. This conflict will continue to increase and intensify.

One form of conflict is wildlife damage. Many species of wildlife have the potential for coming into conflict with human interest. Some species do so more frequently than others. These we sometimes call "vertebrate pests." Wildlife damage encompasses a myriad of situations; for example, native or introduced animals may destory crops or rangeland, prey on livestock, spread diseases, or simply become a nuisance to humans. Often such problems are of economic significance to homeowners, agricultural producers, or to the general public. Unlike insect pests or weeds, which seem of uniformly negative value, most wildlife pests are species to which we also attribute positive values. For this reason, simply eradicating the pests usually is not an acceptable way to solve wildlife damage problems. The goal of wildlife damage control is to use acceptable, practical methods in order to reduce or alleviate damage.

Today's wildlife biologist is often called upon to provide solutions to wildlife damage problems. The problems may be as simple as moles in the lawn or house sparrows in one's purple martin house. Or they may be as complex as the management of prairie dogs on rangelands potentially occupied by endangered black-footed ferrets, or predation on young lambs by golden eagles. The effective resolution of these problems is often hampered by the public's misunderstanding, differing value judgements, inadequate training of wildlife biologists in this subdiscipline, and increased restriction and regulation of damage control tools and methods. It is my intention to discuss some of the problems faced by persons working in wildlife damage control and also to suggest ways in which wildlife biologists can meet these challenges.

PUBLIC ATTITUDES

Among the general public, a variety of attitudes toward wildlife damage control can be found. It is not unusual, particularly among urban residents, to encounter one or more of the following opinions:

1. That present damage control methods are archaic and inhumane.

2. That damage control regularly involves willful and unnecessary killing of wildlife.

3. That the personnel involved in damage control are untrained, unprofessional individuals (sometimes referred to as "gopher chokers") who are basically killers at heart.

4. That most of the tools and methods now employed in damage control should be banned.

5. That the life of a single individual non-target animal should never be sacrificed during the course of controlling damage.

Considering the sources of information on wildlife damage control available to the public--including television, newspapers, and publications by various animal protection and environmental groups--perhaps these opinions are not altogether surprising. Yet I believe such opinions are based on misunderstandings or factual errors, compounded by an absence of information which would give an objective, unbiased look at wildlife damage control practices and philosophies.

Let's consider the opinions above. Many of today's damage control methods are based on practices and materials which have been developed over many years of use. Researchers and practitioners have made a concerted effort to incorporate new developments in technology in order to make today's damage control practices effective, efficient and acceptable to users as well as to the public. Although "humaneness" is a value judgement, persons who develop and use damage control methods generally strive to reduce suffering by animals whenever possible.

The objective of wildlife damage control is not to kill animals; it is to prevent or control damage. While it may be necessary in some instances to reduce populations of vertebrates or to kill individual problem-causing animals, many damage control techniques (e.g. exclusion, repellents, frightening stimuli) are not lethal. When lethal techniques are

required, such as may be the case in predator damage control, current practices are to remove only specific, offending target animals or reduce a given local population of predators, rather than to attempt predator population reduction or extermination over large areas (USDI 1978:52). Considerable effort has been made to ensure that damage control techniques are selective and therefore do not have negative impacts on nontarget wildlife populations. Selectivity is achieved both as a result of the control method chosen and the expertise of the user.

Over the years, efforts have been made to increase the level of professionalism and training of persons employed in wildlife damage control activities. For example, by the late 1970s, more than 90 percent of U.S. Fish and Wildlife Service - Division of Wildlife Services supervisory staff held academic degrees in wildlife biology (USDI 1978:3), and an increasing number of field personnel are similarly trained. I have found wildlife damage control personnel to be among the best and most knowledgeable observers of wildlife that I know. In general, they are no less sensitive to concerns about wildlife and the environment than the general public. Often they have chosen their career because of their enjoyment of the outdoors and of wildlife, and they feel personally rewarded when they are able to help people to solve wildlife damage problems.

Tools and methods used in wildlife damage control have evolved through years of research and field use. Those now in use reflect the current state of technological development in this area. Determination of allowable materials and methods typically takes into consideration such factors as general efficacy, selectivity, humaneness, safety, social acceptance, and environmental risk (USDI 1978:60-62).

The question of whether animals should be intentionally killed, and for what purpose, is a moral and ethical one that has received increasing attention recently with the rise of groups promoting animal rights. Most wildlife biologists base their management decisions on the welfare of wildlife populations, rather than of individual animals. Traditionally, wildlifers have supported regulated hunting, trapping, and fishing as legitimate and appropriate uses of wildlife and have used these as management tools. Similarly, wildlife damage control operations have used lethal control when it has been found to be an appropriate means of solving a particular problem. There continue to be some situations in which few effective non-lethal solutions are available.

Opportunities exist for wildlife biologists working together with agricultural producers and others to improve the public's understanding of the need for damage control activities. For people to formulate informed opinions about this topic, it is necessary that they have available to them factual information about the extent and impact of wildlife damage.

Additionally, they need to know more about the tools and techniques used today to solve these problems. Agricultural producers in recent years have not been particularly effective in convincing the public about the need for animal damage control programs, perhaps because such persons are perceived as having a vested interest in preventing any and all damage to their crops and livestock. I believe that wildlife biologists, together with agricultural producers and other affected groups, have the potential to provide information to the public and to decision-makers which describes the need for the benefits of programs that deal effectively with rodent, bird, predator, and other wildlife damage problems. Yet, there are some challenges faced by wildlife biologists who might seek to promote a better understanding of wildlife damage control.

CHALLENGES TO WILDLIFE BIOLOGISTS

One difficulty is that few wildlifers have had the opportunity to receive formal training in this area. Colleges and universities seldom offer a course in this subdiscipline. Even within the land grant universities, where agricultural subjects receive principal attention, courses in wildlife damage control are uncommon. The new wildlife graduate, in his or her first professional position, may be called upon to deal with such problems. The wildlifer is expected to know of workable solutions, or at least is expected to be able to discuss the problems with some authority. A quick retreat to the office or library may fail to

turn up the desired practical solution. In short, wildlife damage control may prove an unexpected, frustrating, and unwanted part of being a wildlife professional.

This lack of formal training, coupled with inadequate informational resources, also has contributed to what I believe are misconceptions about wildlife damage control on the part of some wildlife biologists. Such misconceptions may include the following:

1. That ecosystems are delicately balanced, and damage control activities which remove a species or seriously reduce its numbers cause undesirable imbalances. In actuality, damage control has no effect on the basic flow of materials and energy in ecosystems. Thus, vertebrate control does not destroy the vitality of biotic communities within man-modified ecosystems (Howard 1967). Rather, natural balances are dynamic, and natural biotic communities which existed in past times already have been changed as a result of human activities such as agriculture, urbanization, etc. This has been detrimental for some species which were not able to adapt. Yet other species, such as Norway rats (*Rattus norvegicus*), house mice (*Mus musculus*), domestic pigeons (*Columba livia*), starlings (*Sturnus vulgaris*), and coyotes (*Canis latrans*) have benefitted from human activities and as a result have increased their numbers and distribution. Wildlife damage control programs directed at such populations in some respects seek to restore a more "balanced" situation.

2. That poisons are inherently nonselective. In actuality, poisons, like other tools such as traps, snares, etc., are quite often selective depending upon the characteristics of the toxicant, the manner in which it is formulated and applied, and the expertise of the user (USDI 1978:60-62; Marsh 1985).

3. That predators always control numbers of prey, and predator control activities lead to irruptions of prey populations. Where carnivores or raptors prey on rodents or lagomorphs, there is little evidence that most predators or complexes of predator species within a biotic community exert significant influence on prey numbers. Exceptions may be found when prey have relatively low reproductive rates and/or the ratio of predator to prey numbers is high. Even when carnivores utilize large prey such as ungulates, there are many instances where they do not appear to control prey populations (Connolly 1978). In general, it appears that number of prey is more likely to determine the number of predators than the reverse. Predators and their natural prey often seem to have reached some sort of equilibrium where predators simply harvest a percentage of the prey population, but are not the most important factor limiting the prey population; the prey are quite likely limited by a variety of factors such as intraspecific competition, habitat constraints, disease, and weather (Howard 1967).

4. That predators feeding on livestock take only the sick and the weak, those that would have died in any case of other causes. This is not borne out in studies of coyote-livestock predation in the United States. Rather, coyotes seem to select a random sample of sheep from the population available (O'Gara et al 1983). To think a coyote incapable of catching a healthy, vigorous lamb is an insult to the coyote's ability. And after all, domestic sheep have been bred and selected for so many generations that they possess little if any effective defense against predators.

5. That livestock losses to predators are exaggerated by greedy livestock operators, and that losses are the fault of the ranchers anyway because of poor management of their flocks. While some ranchers undoubtedly report higher losses than actual, others are conservative and report fewer than actual because carcasses and other evidence of predation are often difficult to locate (O'Gara 1982). While some improvements in animal management practices may result in reduction in predation loss, this is by no means a panacea. In some cases, management changes are impossible for economic or other reasons. And in other cases it is clear that well-managed operations are sustaining intolerably high predation losses despite any and all actions taken to prevent damage (O'Gara 1982). Regardless of the situation, few wildlife professionals are well-trained in animal production and husbandry, yet we occasionally find ourselves telling ranchers how to go about their business of managing livestock. In a recent issue of Fish and Wildlife News, a National Wool Growers official emphasized the problem of people with no formal education or experience in agriculture telling agricultural producers about husbandry techniques which happen to be their life's work (Rich 1981). At the very least, this is poor public relations.

6. That habitat manipulation and similar methods of damage control are preferable to killing or removing offending wildlife. In fact, habitat modification is often rather non-selective, changing an entire biotic community (Howard 1980). A selective, carefully-conducted toxicant application aimed at the target species will have little effect on non-target populations and will allow the biotic community to exist without significant disruption. Habitat manipulation may therefore be less environmentally sound than other damage control techniques (Marsh 1984).

There are additional examples one could cite, but these serve to illustrate the point. Such misconceptions illustrate the need for better educational efforts. Too often a wildlife biologist's only training in wildlife damage control is self-taught or acquired on the job, perhaps haphazardly and out of necessity. There is a need to provide in-serve training and factual information in wildlife damage control for today's working wildlife professionals.

Wildlife biology is a large and diverse field of study. I do not wish to suggest that every wildlifer should be a specialist in damage control, any more than I would suggest that each must be a specialist in big game or in habitat analysis. Yet there is a need for all wildlife students to be exposed to the fundamental principles of vertebrate pest biology and control. And we must all try to keep our minds open to new ideas, as new information is continually becoming available to us. We recognize that the public's opinion of wildlife management is based on limited information and is influenced by previous experience, background, age, education, and a variety of other factors (USDI 1978:86-90). We must also realize that our own opinions regarding wildlife damage control are based on a mixture of factual information and emotion and colored by our personal experience.

At present, wildlifers with a specialty in damage control are relatively few (Timm 1982). Traditional wildlife biologists have been more interested in producing game or managing desirable wildlife populations, so agricultural specialists in entomology and other disciplines have found themselves called upon to handle vertebrate pest problems in addition to subjects in their own disciplines (Stone and Hood 1979). Thus, wildlife damage control as a subdiscipline of wildlife biology has not advanced as it should.

It is my contention that if we as wildlife biologists will meet the challenge of increasing both the public's and our own awareness and understanding of damage control, this will result in benefits for us as professionals and for the whole arena of natural resources management. Such benefits from strong programs in wildlife damage control are likely to include increased levels of funding for research on vertebrate pests, development of new and better solutions to damage problems, additional job opportunities for wildlife graduates, greater efficiency in production of food and fiber, and higher levels of credibility for all wildlife professionals.

FUTURE NEEDS AND DIRECTIONS

On a national scope, wildlife damage is not well documented except for selected species in certain localities. It is apparent from the available data that rodents, birds, predators, and other vertebrates may cause substantial economic losses or be involved in significant public health concerns. More research to assess wildlife damage should provide an impetus for strengthening damage control research and operational programs.

Research on vertebrate pests, having received relatively little attention in past decades, offers the potential for important progress to be made. New, more specific toxicants and selective methods of application await discovery. Work needs to be continued and expanded on nonlethal approaches such as exclusion, repellents, behavioral modification, and environmental or biological control. We need to know more about the biotic or abiotic factors that regulate populations of various species so that we can utilize these mechanisms to manage pest populations in ways that make them self-limiting. Additionally, integration of various damage control techniques and methods offers the possibility of creating new strategies and approaches for dealing with damage situations.

I think it is important that wildlife biologists be in the forefront of advances in wildlife damage control. This subdiscipline utilizes the same basic principles of wildlife manage-

ment as do other areas of specialty; damage control is really applied ecology, involving the regulation of population levels or management of individual vertebrates. Should we fail to develop, promote, and utilize practical and effective damage control strategies, we abdicate our responsibility. Persons facing wildlife damage, particularly those who suffer significant economic loss, will find ways of solving their problems. Such solutions often will be effective but are less likely to be as selective or as hazard-free as we would desire.

The solutions wildlife biologists can develop for dealing with vertebrate pests, if we devote time and energy to this need, will reap benefits. Production of food and fiber will be more efficient, as fewer resources are lost to pests. In a world of increased human demand upon natural resources, this increase in efficiency will allow us to use our land and other limited resources more wisely. Additionally, when we as wildlife biologists are able to provide workable solutions to problems that homeowners, farmers, or ranchers face, we gain credibility for our profession. Those we serve by providing assistance with damage problems will be more likely to show interest in our ideas and recommendations for wisely managing all of our natural resources.

LITERATURE CITED

Connolly, G. E. 1978. Predators and predator control. Pp. 369-394 in J. L. Schmidt and D. L. Gilbert, (eds.), Big Game of North America, Stackpole Books, Harrisburg, Pa. 494 pp.

Howard, W. E. 1967. Biocontrol and chemosterilants. Pp. 343-386 in W. W. Kilgore and R. L. Doutt (eds.), Pest Control: Biological, Physical, and Selected Chemical Methods, Academic Press, N.Y. 477 pp.

_____. 1980. Teaching the complex biological problems of wild vertebrate populations. Pp. 205-212 in T. S. Bakshi and Z. Naveh (eds.), Environmental Education, Plenum Publishing Co., N.Y.

Marsh, R. E. 1984. IPM concepts in vertebrate pest control relative to forestry. Pp. 25-37 in S. J. Branham and G. D. Hertel (eds.), Proceedings, Integrated Forest Pest Management Symposium, University of Georgia, Athens. 281 pp.

_____. 1985. Principles and techniques of formulating effective rodent baits--present and future. Proc. Second Symp. Recent Advances in Rodent Control, Kuwait (In Press).

O'Gara, B. W. 1982. Let's tell the truth about predation. Trans. No. Amer. Wildl. Nat. Res. Conf. 47: 476-484.

O'Gara, B. W., K. C. Brawley, J. R. Munoz, and D. R. Henne. 1983. Predation on domestic sheep on a western Montana Ranch. Wildl. Soc. Bull. 11(3): 253-264.

Rich, R. J. 1981. Straight talk on wildlife and wool growers. Fish and Wildlife News, Feb/March, pp. 8-9, 11.

Stone, C. P. and G. A. Hood. 1979. Extent, costs, and trends in control of plant pests: vertebrates. Pp. 218-232 in W. B. Ennis, Jr. (ed.), Introduction to Crop Protection. Amer. Soc. of Agronomy and Crop Soc. of Amer., Madison, Wisc.

Timm, R. M. 1982. Teaching vertebrate pest control: a challenge to wildlife professionals. Trans. No. Amer. Wildl. Nat. Res. Conf. 47: 194-199.

USDI. 1978. Predator damage in the West: a study of coyote management alternatives. U. S. Fish and Wildlife Service, Department of Interior, Washington, D. C. 168 pp.