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THE ROLE OF USDA IN ANIMAL DAMAGE CONTROL

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ABSTRACT: The impact of vertebrate animal damage on agricultural production of row crops, forests, horticulture, poultry and livestock production, other wildlife, health of humans and domestic animals, and the protection of human interests is a vital concern of the U.S. Department of Agriculture. The Department recognizes that it is an old and complex problem that does not lend itself to easy answers. Animal damage problems will continue to be a significant concern of USDA and will probably always be controversial, requiring intensive research, educational, regulatory, and assistance programs. The objectives of the Department are to develop and maintain viable programs in animal damage control that are safe, effective and environmentally sound and to cooperate with programs of other departments and agencies, both federal and state, to alleviate the impacts of animal damage on people and their interests.

INTRODUCTION

Program Chairmen, participants, and honored guests, it is a distinct pleasure to be a part of this great conference. It has been several years since I last participated in this conference, describing an educational program of the Arkansas Cooperative Extension Service. Regardless, I welcome the opportunity to discuss the role of the U.S. Department of Agriculture in animal damage problems, and to briefly describe existing programs.

Input for the preparation of this paper and review was provided by the following USDA Agencies and support functions personnel: Agricultural Research Service (ARS); Animal and Plant Health Inspection Service (APHIS); Cooperative State Research Service (CSRS); Economic Research Service (ERS); Extension Service (ES); Forest Service (FS); National Agricultural Pesticide Impact Assessment Program (NAPIAP); Office of General Counsel (OGC); and Soil Conservation Service (SCS).

The control of animal damage is vital to producers of crops, livestock, and forests. It is also essential to the protection of other agricultural, recreational, and social benefits, as well as prevention of disease and threats to human and domestic animal health. The Department is supportive of effective control of animal damage problems. It also acknowledges the need for use of existing methods and the development of new, alternative methodologies including integrated pest management to address continuing problems and to reduce their impact. It also maintains a responsibility to protect and manage the environment and the natural resources for public benefit.

To accomplish these goals and objectives, the Department supports programs of research, education, regulation, technical assistance and public land management. These programs obviously are complemented by other USDA agencies and authorities which provide for assessment, evaluation, statistical reporting and legislative action. The Department fully recognizes the need to cooperate with other departments and with state agencies and others to coordinate activities and programs to achieve maximum reduction of animal damage problems.

IMPACT OF ANIMAL DAMAGE PROBLEMS

Assessment of the impact of animal damage to: people -- economic, disease and health, choice of livelihood, and social benefits; the resource base -- soil and water, forests, other wildlife and fish and the biological environment; and to the public as a whole is extremely difficult to determine. There have been numerous research efforts undertaken to determine specific animal damage impacts, each of which objectively adds to our knowledge. However, few if any of these efforts, as reported, have attempted to address the significance of the total animal damage impact to those resources and people affected. Maybe it is an impossible task.

For whatever reasons, many of the assessments of animal damage impact on a national scale have been targeted to predator (chiefly coyote) economic damage to sheep and cattle production in the West. There are numerous studies and literature citings in this area; however, it is also well known that coyote predation occurs on other species such as swine, goats, and poultry, as well as some crop depredation for which we have no comprehensive figures. Such depredation also is not limited to the western states and, in fact, is significant in several eastern and midwestern states. As reported in numerous documents and studies by Gee (1978), Gee et al. (1977) and others, predator losses may have had their greatest direct and/or indirect economic impact on consumers, although few, if any, consumers realize it. However, most economic impact is collected as average loss data. As reported by Wade (1981), one of the disadvantages of average loss data is that losses are not equally distributed across the industry. Losses which jeopardize the economic survival of individual producers occur quite often, some suffer losses they can survive, and some sustain no losses. Those producers who cannot survive terminate their operations and provide no further data. Their lands are often converted to other uses.

The description of economic losses because of predator damage briefly described here only scratches the surface of total animal damage problem impacts. Most professionals agree that the magnitude of predator damage losses would be much less than losses from other animals. Field rodent damage or bird damage losses to agriculture and other human interests, if accurate national estimates were available,

would be significantly greater. These comparisons point out the imperative need for better methods of animal damage assessment in addition to that from predation on sheep and cattle. Additional millions of dollars of agricultural and related damage caused by deer, waterfowl, beaver, and other wildlife species, have been documented in localized reports. If the capability existed to estimate the total impact of all animal damage problems, there is no doubt we would be talking in terms of several billions of dollars annually just in economic losses.

ROLES OF THE DEPARTMENT

Research: USDA animal damage control programs are largely based on research supported by the Agricultural Research Service (ARS), Cooperative State Research Service (CSRS), and cooperating land-grant and other universities. Such research, based on identified needs, provides critical support not only to USDA action agencies with animal damage control programs, but to many other programs. For action programs to be responsive and to conduct effective programs, they must be kept abreast of the most current and viable techniques, methodologies, and strategies available from research. Since 1972, numerous articles have been published from ARS predator research on coyote attractants, biological control, fencing, guard dogs, repellents, aversive agents, reproductive inhibitors and other related subjects. In recent years, CSRS-supported research, in cooperation with states, has provided research information from hundreds of studies dealing with damage caused by birds, rodents, predators and other species. Research data compiled by other federal and state agencies and institutions are also utilized to identify needs and to support programs within USDA.

A comprehensive, continuous and intensive research effort is necessary in the areas of crop, livestock, forestry, other natural resources, health protection and wildlife management to maintain continuous productivity, and to provide safe and effective programs in proper perspective. There have been many beneficial research efforts in the past. Presently, both ARS and CSRS have ongoing research projects on predators, rodents, and other vertebrate animal damage problems.

Future research programs should address needs in animal damage control which include: (1) Improved models or methods for effective animal damage impact assessment; (2) Improved, yet economically feasible, biological and physical control measures; (3) Increased utilization of integrated pest management programs; (4) Utilization of improved repellents; effective, species-selective and environmentally wholesome bait applications for safe use of toxicants; aversive agents and attractants; (5) More resistant crops and livestock and methods of better livestock and crop management; (6) Applied vertebrate population dynamics; and (7) More coordinated, cooperative, and extensive integration between federal departments and states on animal damage research. This last recommendation could help improve working relationships not only among agencies, but would also help provide a synergistic effect in research on application of control techniques, the study of vertebrate pests populations, the assessment of animal damage losses, and the management of other wildlife species.

EDUCATIONAL PROGRAMS

The Extension Service identifies, interprets and disseminates the results of research and technology through educational programs of the Cooperative Extension Services in *every* state and territory in the nation to its people. Animal damage control is one of the diverse assistance areas in which state specialists provide educational programs through the county extension agent, other professionals, mass media, and other means to clientele.

The primary goal of Extension is to provide assistance through educational programs to enable people to help themselves. These educational programs are presented to grass-roots clientele, landowners, managers and users, both rural and urban through an effective delivery system. County extension agents provide educational programs through over 3,000 offices across the nation.

Extension educational programs in animal damage control have been provided by professionals to private landowners and managers since 1936 and can reach many audiences that other agency programs cannot reach. Extension is able to reach these and other audiences because it has a long established credibility; it does not have a regulatory or advocacy function; it utilizes over a million volunteers; and it dispenses no funds to the public. Extension wildlife specialists coordinate their programs with those of other Extension and Experiment Station research efforts to identify research needed from the local level to state and federal researchers through established systems. Concurrently, they interpret available research and technology and deliver it through the system to the managers and users who need it so that it can be understood and put into practice. A recent nationwide compilation of available Extension wildlife publications identified 130 leaflets, bulletins, handbooks, or other types of publications on animal damage control written to assist landowners, managers, and users in understanding and alleviating animal damage problems.

Extension efforts in animal damage control are clearly educational, rather than operational or service types of control. This system relies heavily on pilot projects, on-site demonstrations, group training and other techniques to assist clientele as recently reported by Miller (1981). Extension specialists and agents enjoy a close working cooperation and coordination with their state Fish and Wildlife Agency and federal agencies, particularly the Fish and Wildlife Service that employs different types of control in its wildlife management programs. Extension programs stress the use of nonlethal, noncapture/preventive control methods where feasible. However, it also supports the use of legal/registered lethal toxicants and other capture or lethal population control methods when necessary. These educational programs emphasize selective control targeted toward the offending animal whenever possible, utilizing the safest and most humane methods and procedures available.

Extension educational programs assist people in controlling animal damage while concurrently encouraging and supporting the perpetuation and enhancement of habitat for preferred species of wildlife. These efforts include educating the user of agricultural products -- the consumer, including the urban audience -- to encourage their understanding and acceptance of the need for animal damage control as an integral part of wildlife management.

ASSESSMENT

The need for development of new models and methodologies of assessing the impact of animal damage problems other than predation has already been discussed, as have been some of the assessment studies that have been conducted by the Economic Research Service (ERS). The Economic Research Service conducts analysis of various topics related to agriculture and rural America to provide input for public and private decisionmaking. Some of these analyses have contributed toward assessing and evaluating the impact of specific animal damage control problems.

Some updating of previous assessment studies by ERS was made at the request of the Fish and Wildlife Service, U.S. Department of the Interior (FWS 1979) for its analysis on animal damage control. ERS is continuing assessment and update of estimates of the numbers and the values of sheep and cattle losses to predators and other causes. It is expected that these reports will be published by ERS when completed.

Information obtained by ERS regarding impacts of animal damage control is extremely useful. In fact, a great deal more of this type of information is needed such as: the economic impacts of bird damage on row crops, fruit crops and feed lots, as well as damage caused by large winter roosts in urban areas and the potential human health hazards; the economic impact of deer damage to row crops, horticulture and fruit crops and to forest regeneration; the economic impact of beaver to forest, forage and row crops as well as to urban and recreational properties; the economic impact of rodent damage to field crops, orchards, food and feed storage and to urban properties, and costs of control programs. An example of a much needed socio-environmental study related to animal damage control is the total effect of rat and mice problems and public concern with these problems. How does the public, both urban and rural, feel about the need for rodent population control and its cost-effectiveness?

COMPLEMENTARY AND SUPPORT FUNCTIONS

The National Agricultural Pesticide Impact Assessment Program (NAPIAP) involves participation by seven departmental agencies which have responsibility in the area of pesticides and their use. The program is managed on a day-to-day basis by a Technical Advisory Group (TAG) of these seven agencies which work out and propose recommendations for the Department's position on pesticide issues. Its primary purpose in the area of animal damage problems as with other pest control chemicals is to provide the most objective and accurate data available for defining and evaluating the benefits and risks of selected pesticides having critical agricultural and forestry uses. Such analysis is generally precipitated by a proposed regulatory action by the Environmental Protection Agency (EPA). The EPA reregistration review process allows input from USDA and other affected departments and agencies. Legislation requires that EPA notify the Secretary of Agriculture prior to the issuance of regulations or public announcement of an intent to cancel or change classification.

NAPIAP was established to provide input to the EPA decisionmaking process and to establish a scientific basis for the Secretary to respond to proposed EPA actions.

LAND MANAGEMENT AND TECHNICAL ASSISTANCE

The Forest Service (FS) administers most of the federal lands of USDA in the National Forest System (NFS). The 191 million acres of NFS lands are managed to: provide multi-resource benefits, goods, and services, including maintenance of viable populations of all existing native, vertebrate species; maintenance and improvement of habitats of management indicator species; and protection and/or improvement of the status of threatened or endangered species. The FS recognizes that animal damage is a significant problem and is important to the management of wildlife and fish habitat and to other resources on NFS lands. Through its state and private forestry responsibility, the FS in cooperation with state forestry departments, also provides technical information for animal damage control on private forest lands.

Forest Service studies and others have indicated that animal damage impacts to reforestation efforts in various parts of the West are likely to become increasingly important as management intensifies. An economic analysis of survey results in Oregon and Washington indicated that animal damage impact from rodents, ungulates, lagomorphs, and others, reported by Brodie et al. (1979), would reduce the value of the total forest resource at harvest by up to $1.8 billion.

On National Forest System rangelands, significant sheep and livestock losses incurred require predator control. These efforts are planned and conducted under the terms of an agreement between the Forest Service and the Fish and Wildlife Service, U.S. Department of the Interior. There are also individual agreements with many states. Programs to control other vertebrate animals damaging National Forest System lands generally are conducted by the Forest Service, or by an approved state agency or the Fish and Wildlife Service cooperatively.

The Soil Conservation Service (SCS) does not have direct responsibilities in the area of animal damage control. However, SCS field personnel, through providing technical assistance on other matters, do provide information published by others to assist landowners on animal damage problems. They also

refer landowners to other agencies for assistance on animal damage problems and work cooperatively with other agencies who provide educational meetings on animal damage control where needed.

OTHER USDA FUNCTIONS

Other agencies in the Department have important functions relating to animal damage problems, such as those of the Animal and Plant Health Inspection Service (APHIS). Specific roles of this and other agencies will not be delineated in this paper. These agencies' programs contribute significantly to the animal damage role of USDA and they work cooperatively with the other agencies of the Department, and with the Office of the Secretary.

DISCUSSION

The historical perspective of agriculturists dealing with animal damage problems obviously goes back to man's earliest endeavors of growing food and crops as referred to in the Bible. There is considerable legislation on record back to passage of the 1931 Animal Damage Control Act (P.L. 776) directing the Secretary of Agriculture regarding USDA's responsibility to conduct programs in animal damage. Obviously, agricultural and related food and fiber production has changed significantly since 1931; however, we are still confronted with widespread animal damage problems. Some of these problem animals have adapted well to the changes in agriculture and land use and have become more difficult and costly threats to agricultural production and other human interests today than ever before, e.g., blackbirds, beaver, coyote, rats, and others. Other species considered game animals such as deer, waterfowl and others, responding to improved management and protection and to changing land use, have also become significant vertebrate pests to some crop or forest production.

What can be done about these problems? They can't be wished away, and we can't depend on someone else to take care of them for us. The Department of Agriculture has a responsibility as do other departments and agencies, both federal and state, to provide assistance to private landowners/managers and producers to help them reduce animal damage losses.

What are the problems faced by USDA and other departments and agencies with this responsibility? Obviously, one of those problems is opposition by those opposed to killing animals for any reason. Many of these people and some organizations are opposed to professional wildlife management. I mention this not to alienate these groups, but to point out that the agricultural, forest management, wildlife and fisheries management, and educational communities have a tremendous challenge ahead of us. That challenge, if we want support rather than emotional opposition, is education of the public, including many people in the professions listed above. This education must be directed toward "friends and foes" alike to help them understand the environmental, ecological, and social trade-offs of this controversial issue.

Some of you are now aware that, according to information contained in the 1980 Census (U.S. Census 1980), only 2.7 percent of the people in the U.S. live on farms. This figure relates to the rural population living on farms that sold, or normally would have sold, $1,000 or more of agricultural products during the reporting year. These figures are important when we relate them to public attitude studies and when we are faced with supposed public opinion on a controversial issue such as animal damage problems affecting the production of food and fiber. When 97.3 percent of the U.S. population does not depend on their livelihood or income based directly on their production of agricultural products, why should they be concerned? Obviously, some of these people realize that animal damage control is necessary because they may be involved in the management, processing, marketing or industries supporting production. However, most Americans have no apparent reason to be concerned. They have no recognized monetary investment in that crop, no labor, no pride, and no interest as long as they have access to the products at reasonable prices.

The majority of the people in the country today, adults and youth, neither know nor care where their food comes from, as long as it is affordable, available, attractively packaged, and tastes good. Their basic understanding is that meat comes from the supermarket in a styrofoam tray with a piece of plastic wrap around it. How can they be expected to relate to animal damage problems of the landowner/manager in producing the meat or other agricultural product when they are so far removed?

Even closer to the problem being discussed is the situation of most urban dwellers who occasionally are faced with animal damage problems. Such a problem may be a mouse in the house, a flying squirrel in the attic, a woodpecker on the redwood shingles, a mole in the lawn or garden, or a skunk living under their house. Depending on how frustrated they have become or how many sleepless nights they have suffered or how many times the housewife or children have been scared or embarrassed, determines what they wish to do to the animal. In most cases, they want to have someone else take care of the problem, to remove said animal or animals from the premises. If this is not available, most of them then want the animal killed. When they reach this stage, their objectivity improves slightly in understanding why a landowner or manager must effect animal damage control.

Most of the people at this conference understand that animal damage control is an integral part of wildlife management, and that generally it is effected for *very* good reasons. These reasons are: to reduce excessive crop damage or depredation threatening one's income, property or livelihood; to prevent serious health, accident, or disease hazards to humans and to domestic animals; and to prevent habitat destruction for other wildlife or serious depredation on wildlife or other resources. To the objective mind, each of these are legitimate and justified reasons. Can the urban dweller present equal justification for killing or having someone else kill the mouse in the house or the flying squirrel in the attic? I make this point to illustrate how much it depends on whose "ox is being gored," and how badly we need

to educate the 97.3 percent of the people in this country who do not live on farms and do not understand the impact. Admittedly, urban dwellers do have serious animal damage problems and concerns, such as potential contact with rabid bats, skunks, or other vertebrates. There is also a direct potential hazard with coyotes, raccoons and feral animals attacking children, adults and pets, as well as disease hazards from plague, bird droppings, and others.

SUMMARY

I sincerely appreciate the opportunity to participate in this Tenth Vertebrate Pest Conference and look forward to others in the future. In the time allotted for this presentation, I have attempted to describe in a very general manner, the role of USDA in animal damage problems and have included my own philosophy on this issue. In concluding this presentation, a few concerns about the future of animal damage control and wildlife management may be in order.

As a natural resources manager and educator, some problems which genuinely concern me are that many people, including some wildlife students and some professionals, associate the use of toxicants for animal damage control as something totally destructive to the future of wildlife. From my experience, I am reminded of the predicament of a landowner or manager faced with a severe animal damage problem. When the alternatives are considered in how to deal with this problem, what are the approaches? This problem cannot be solved with nonlethal, noncapture methods. Capture methods are not feasible. Toxicants would be effective, but are not registered because they might present some hazard to nontarget species. What alternatives then remain? (1) Frustrated persons, even though otherwise law-abiding, are tempted to use unregistered chemicals or other tools, and often make use of ineffective methods; (2) Hunting, which may be prohibited, and/or an extensive trapping program which may present more hazard to nontarget species; and (3) Because of inability to withstand losses or cope with frustrations, the elimination of existing habitat or permanent conversion to other land use. For the public managers, this last one is not available, but for the private landowner, it is. We are witnessing many private landowners going this route resulting in cleaned-up fencerows, shelterbelts, and odd areas, ditchbank vegetation destroyed and wetlands drained, woodlots and other habitat eliminated, or in some cases, conversion to other uses. This, of course, not only destroys the habitat of the target species, but for all other wildlife species that depended on this habitat.

What are the trade-offs?: (1) Combined use of effective, target-oriented registered pesticides and judicious use of traps which may pose a slight potential hazard to nontarget species; or (2) Existing available habitat (in many cases already severely limited, e.g., ditchbanks) being completely cleared up or eliminated for wildlife species.

In reference to the above alternatives, where do we as ecologists, managers, researchers and educators, place our priorities for the future? I believe we should be looking toward: (1) Increased and intensified research into animal damage problems; (2) More intensive education and information efforts directed towards natural resources college curricula, landowners/managers through certified pesticide-applicator training, and toward the public, including the critics of animal damage control; (3) Integrated pest management programs that deal more with vertebrate pests and wildlife management; (4) Increased cooperation between research, educational, service and operational animal damage efforts, and the regulatory authorities; (5) The maintenance and registration of effective toxicants (existing and new) for uses that are species-selective, target-oriented, and environmentally safe which can be utilized selectively by certified pesticide applicators and/or professionals; and (6) Quantification of the adverse impacts on wildlife caused by habitat elimination as a result of ineffective, unavailable, unregistered methodologies or tools for practical, effective animal damage control.

I conclude by congratulating those responsible for the continuation of this Vertebrate Pest Conference. I know of no better forum to analyze, discuss, and evaluate this area of science. This conference affords us an opportunity to obtain a broader perspective of the ecological system we are a part of, and to join our efforts toward a common objective of maintaining the biological integrity of vertebrate animal damage control as a vital element in wildlife management. This is a part of our responsibility to be wise stewards of our natural resources for present and future generations.

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