

WILDLIFE DAMAGE MANAGEMENT EDUCATION NEEDS: SURVEY OF GEORGIA COUNTY FASAT AGENTS

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Abstract: The Service and Outreach Program of the Warnell School of Forest Resources at the University of Georgia conducts an annual county agent training program: Forestry: Area Specialty Advanced Training (FASAT). This training is provided to one or more lead agents in each county cluster (2-4 counties) throughout Georgia. At the spring 2002 training, 58 agents were surveyed to assess their needs for wildlife damage management information and programs. Agents were asked to supply information on the type of training programs they would find most useful. Agents were also questioned about the nature of damage calls they received in the past year. In addition to background information on county demographics, they were questioned about the wildlife species group accounting for damage complaints and the number of complaints related to physical landscape (e.g., yard, crops, house, orchard, etc.). Finally they were presented with a list of damage problems and asked to indicate the number of requests they received for each problem. All agents responded to the survey. Agents (52 of 58) indicated that programs in wildlife damage management and food plot management (51 of 58 agents) were most desired. Deer (*Odocoileus virginianus*) and armadillo (*Dasypus novemcinctus*) were responsible for most complaints (14% for each). Damage to yards/landscape and gardens (an average of 52 and 36 complaints per agent, respectively) were the categories receiving the most complaints. Agents reported 11,405 complaints or requests for information in 2001. Moles (12.4% of inquiries; 82.8% of agents), armadillo (10.1% of inquiries; 77.6% of agents) and deer (9.6% of inquiries; 77.6% of agents) ranked highest in total number of inquiries or complaints. Results of this survey will direct efforts in landowner programming, future agent training, and research activities. I will compare this survey to previous agent surveys conducted in Georgia and other states.

Key words: county agent survey, damage categories, damage complaints, FASAT training information needs, Georgia county agents, training opportunities

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INTRODUCTION

Georgia is the largest state east of the Mississippi River with a land area of 58,977 mi². Approximately 29% of the land base is in farms but agricultural crop production accounts for only 9% of the land base. Forestland makes up 65% (24 million ac) of the total land area and 73% of the forested land is owned by non-industrial private

landowners. Total forest industry output exceeds \$19 billion and wildlife associated recreation expenditures add \$3 billion to the economy annually (Boatright and Bachtel 2000). While the number of farmers has declined by 50% since 1964, agriculture remains economically important, generating \$22.7 billion in total annual economic

output (Dangerfield et al. 2001). While the largest single agricultural component is poultry production, forestry generates \$17.8 billion in annual output.

Georgia's population grew 21% in the last decade. The urban population (63.2%) greatly exceeds the rural population (36.8%), but is concentrated in only eight metropolitan areas. In recent years, interest in forestry and forest-related activities among county agents, landowners and citizens has increased (Dangerfield et al. 2001). Increased interest in forests, forestry and landownership is attributed to drought (1998-2002), low crop prices, low timber and pulpwood prices, low productivity on marginal agricultural lands, conservation reserve program (CRP), and shifting demographics (i.e., aging population, increased income levels, second homes and land) (Dangerfield et al. 2001).

Since 1988, 767,000 ac of marginal cropland have been afforested due to CRP (Dangerfield et al. 2001). An additional 500,000 ac have been afforested outside CRP. It is estimated that over one million ac of land would earn greater returns if shifted from crop production to tree crops (Moorhead et al. 1999). Additional benefits of this transformation include reduced erosion, enhanced water quality, enhanced wildlife habitat and benefits to rural economies.

At the University of Georgia (UGA), the Cooperative Extension Service (CES) includes three units, including the College of Agricultural and Environmental Sciences (CAES), the College of Family and Consumer Sciences, and the Daniel B. Warnell School of Forest Resources (WSFR). Each unit has both separate and shared responsibilities for extension programming. Programming includes public service and outreach along with providing continuing education programs for county agents in a variety of disciplines.

The Georgia CES is organized into five administrative districts covering all 159 counties. At present, there are 209 county agriculture agents. In 1998, CES grouped all 159 counties into 55 clusters of 2-4 counties each for administrative and programming purposes. Since then, 67 agents have been self-identified as working substantially in the areas of Production Forestry (PF) or Urban/Rural Interface Forestry (IF). Based on recent economic studies, Georgia demographics, and the implementation of the cluster system in CES, the WSFR faculty seized the opportunity to train agents in the new cluster organization. In conjunction with the WSFR Center for Forest Business, the extension faculty in WSFR developed a program called Forestry: Area Specialty Advanced Training (FASAT).

The trainings have been offered in early April each year since 1998. Training spans 3-4 days and is held at the WSFR Whitehall forest education center. Past trainings have covered principles of forest stand evaluation, growth and yield model use, water quality and wildlife. The composition of each class has been largely uniform with only slight changes due to retirements, resignations or additions of new agents with PF or IF responsibilities. During the 2002 training on water quality, I administered a ten question survey to the agents to assess their level of interest in wildlife damage programming, their perceived areas of greatest need for programming and the nature of damage complaints or inquiries they most frequently handle.

METHODS

I designed the survey instrument based on questions modified from Jackson (1980), McComb and Bonney (1983), and Armstrong (1992). Due to scheduling conflicts, only 58 of the 67 (86%) cluster

agents were able to attend FASAT IV training. I administered the survey instrument to 58 county agents while they attended the FASAT IV (2001) training. Questions were divided into three areas: background information (three questions), program information needs or preferences (four questions), and wildlife damage issues (three questions).

Survey responses were entered into a MS Excel spreadsheet for analysis. Responses were ranked based on the number of complaints received about each topic or the proportion of agents selecting a particular choice for each question. This analysis was meant to provide a general overview of wildlife damage issues in Georgia, provide an avenue for opening communication between agents and the new wildlife specialist, and to minimally compare wildlife damage issues to a prior Georgia survey (Jackson 1980) and similar surveys in nearby states.

RESULTS

All 58 agents completed the survey (100% response) but they represent only 89% of the clusters. Only four agents from the North CES District attended FASAT IV, therefore 30 counties (18.8% of all counties) in the mostly rural northern parts of the state are not included in this discussion. Of the 58 FASAT Agents 69% reported that their counties were rural, 24% suburban, 3.5% urban, and 3.5% rural/suburban. Agents reported working with a variety of client groups.

Ninety-five percent of agents reported working with farmers, 91% with non-farm landowners, 90% with forest landowners, 86% with 4-H and Youth, and 88% with garden clubs. Agents offered a few additional client groups for the list, including county government (1 agent), landscape/horticulture (3 agents), and homeowners (3 agents).

Agents indicated that the most needed landowner programs are food plots, backyard wildlife and forest/wildlife management. However, programming preferred for agents was quite different (Table 1). The 58 agents indicated the most needed Agent-only programs include: providing wildlife management training to youth, threatened and endangered species, and wildlife damage. Most agents preferred combined programs targeted to both landowners and agents. The three most often selected topics for this group were wildlife damage control (selected by 52 of 58 agents), food plots (selected by 51 of 58 agents) and wildlife management in general (selected by 48 of 58 agents).

Agents generally preferred a half-day or evening program (56.9% and 53.5% of respondents, respectively) compared to an all-day (20.7% of the agents) or two-day (1.7% of the agents) program. Tuesday was the preferred day for programs (84% of respondents), followed by Thursday (74% of respondents). Monday and Wednesday were nearly equal (34% and 31% of respondents, respectively). Not surprisingly, agents generally did not favor Friday or Saturday (14% of respondents, each) programs.

Three questions were designed to quantify the animals that caused damage and the location of the damage. When asked to select a species or species group that accounts for damage complaints, agents gave 323 responses – again multiple selections were permitted from a list. Deer were selected by 79% of the agents, followed by armadillo (78% of agents). Both deer and armadillo accounted for 14% of the 323 responses, while squirrel and beaver accounted for 12 and 10%, respectively. Woodpeckers, bats and mice remain a problem for many homeowners (Tables 2 and 4; Appendix 1).

Agents were asked to estimate the number of complaints received in 2001

about damage to any of several physical areas such as yard/landscape, row crops, gardens, house/barn and several other categories. This question allowed agents to enter an estimated number for each category. Responses were summed for all agents. Agents reported a total of 6,504 complaints. The categories receiving the

most complaints about wildlife damage were yard/landscape (38%), gardens (25%) and house/barn (19%). A total of 81% of the agents said they received complaints about wildlife damage to yards/landscapes. Damage to livestock and vehicles/equipment received the fewest number of complaints (Table 3).

Table 1. Rank order preferences of county agent for programs offered to landowners only, agent training, or to both landowners and agents.

Program Type	Landowner only	Agent training	Both	Sum ¹
Wildlife damage	5	3	1	1
Forest management	3	7	6	7
Food plots	1	9	2	2
Backyard wildlife	2	4	7	4
Alternative income	7	4	4	6
Wildlife management in general	3	6	3	3
Pine plantation for wildlife	4	7	5	5
Wildlife management training to youth	7	1	9	8
Threatened & endangered species	9	2	8	8

¹ Some agents indicated their choice by simply marking an "X" next to the program type. These responses are included in the Sum column but not the other 3 columns.

Table 2. County agent responses for species or species group that account for damage complaints received in the past year (2001). Agents could select multiple answers.

Species or species-group ¹	Number of times selected	Percent of responses (N=323)	Percent of agents selecting
Deer	46	14	79
Armadillo	45	14	78
Squirrel	40	12	69
Beaver	34	10	69
Bats	32	10	55
Snakes	30	9	52
Rats/Mice	27	8	47
Woodpecker	38	9	47

¹ Other selections included: coyotes (4.6% of responses; 26% of agents selected); waterfowl (3.7% of responses; 21% of agents selected); pigeons (1.9% of responses; 9% of agents selected); crow (1.5% of responses; 9% of agents selected); and blackbirds/starlings (1.2% of responses; 7% of agents selected)

Table 3. Number of complaints about wildlife damage received by county agents in Georgia during 2001.

Location of damage	Number of complaints	Average per agent	Pct. of complaints (N=6,504)	Pct. of agents (N=58)
Yard/landscape	2,445	52	38	81
Gardens	1,530	36	25	74
House/barn	1,231	29	19	74
Orchard/fruit trees	540	16	8	57
Row crops	408	15	6	47
Forest stands	180	11	3	28
Livestock	113	13	2	16
Vehicles/equipment	56	7	1	14

The final question listed 58 situations or species and asked them to indicate the number of questions or requests for information they received in 2001. County agents reported receiving a total of 11,405 requests ($x = 196$ requests/agents) for information in 2001. Information on moles was the most frequently requested topic followed by armadillo, deer in yard/garden, bats in buildings, snakes, squirrels in building and squirrels in

yard/garden (Table 4 and Appendix 1). These same topics or situations ranked highest (and in the same order) in terms of number of agents receiving requests. However, after these top 7 topics the number of requests received and the number of agents receiving the request began to diverge (Table 4). Backyard wildlife plantings ranked 8th in number of requests received but 13th based on number of agents receiving requests.

Table 4. Number of questions or requests for information received by county agents in Georgia during 2001. Only the top twelve items are listed ranked in decreasing order by percent of all requests. A complete list is given in Appendix 1.

Item or situation	Number of requests	Pct. of all requests (N=11,405)	Number of agents	Pct. of agents receiving this request
Moles	1,414	12.4	48	82.8
Armadillo in yard	1,149	10.7	45	77.6
Deer in yard/garden	1,098	9.6	45	77.6
Bats in building	973	8.5	44	75.9
Snake	613	5.4	43	74.1
Squirrel in building	555	4.9	36	62.7
Squirrel in yard/garden	450	4.0	35	60.3
Backyard wildlife planting	406	3.6	24	41.4
Squirrel in bird feeder	391	3.4	23	39.7
Chipmunks	365	3.2	24	41.8
Rats/mice – suburban/urban	345	3.0	23	39.7
Woodpecker on house	337	3.0	35	60.3

DISCUSSION

Marion (1988) found that in urban areas of the United States bats and snakes accounted for most requests for information. The most frequently mentioned groups of animals causing damage were roosting birds, woodpeckers, squirrels, bats and moles. White-tailed deer caused the greatest dollar amount of damage (Marion 1988).

There have been numerous surveys of county agents aimed at understanding their needs for information and their preferences in receiving that information. McComb and Bonney (1983) found that agents in Kentucky ranked management of fishponds as the highest problem in need of information, followed by information on control of undesirable species, control of wildlife damage and habitat management for game. Both Cutler (1980) and Miller (1982) noted the importance of information on wildlife damage control. My survey started from that premise.

Jackson (1980) found that homeowner problems with vertebrate pests were the most common source of requests for extension information from county agents. Jackson concluded that free roaming dogs, bats in buildings, moles, commensal rodents, chipmunks, woodpeckers and squirrels were the most frequent topics of landowner or client calls to agents. Jackson found that bats, pigeons, snakes, deer and commensal rodents ranked highest in requests among urban, or metro, county agents. Not much has changed in 23 years. Armadillos have been added to the list of culprits (Table 2) but damage to yards/landscape, gardens and structures remain at the top of the list for categories of places where damage occurs.

In Alabama, Armstrong (1992) found that snakes, rats, mice, deer, squirrels, coyotes, armadillos, beaver and woodpeckers made up a high percentage of complaints received by agents. Damage to

yards, orchards, row crops, greenhouses, and gardens were prevalent in Alabama (Armstrong 1992). With the exception of coyotes and greenhouses, this list of complaints is similar to the Georgia list compiled by Jackson in 1980 and in this study. This is not entirely unexpected. The animals listed by Armstrong (1992), Jackson (1980) and this study are not easily deterred and they seem to lack any strong, innate aversion to humans. That is, they are adaptable, diet generalists and well suited to the habitats we often create through development of housing complexes, parks, golf courses and other habitats.

Similar to this study, Jackson (1980) estimated that agents annually received approximately 200 requests for information per agent. One might argue that there is job security in this constant demand. As people continue to relocate to rural environments and the boundary between urban and rural lands becomes blurred, the potential for increasing human-wildlife interaction and conflicts will increase. Overabundant populations of large herbivores and meso-mammals will exacerbate this situation. Restoration and protection of large carnivores and increased canid populations will contribute to the problems.

Rather than a failure of the extension system or the methods of information exchange, I suggest this lack of change in public knowledge is due to a resistance to learning about wildlife and an attitude of getting someone else to solve a problem. Marion (1988) found that 78% of people were willing to implement control measures recommended by extension specialists but 61% wanted the offending animal removed by someone else. A simple wire fence placed around a vegetable garden would all but eliminate damage by rabbits (*Sylvilagus floridanus*). Burying the fence would help eliminate moles. Application of repellents would deter deer browsing (although no deer

repellent is completely "deer-proof"). Installation of a simple and cost effective electric fence (hot tape powered by ordinary flashlight batteries can be effective) would also be effective. I acknowledge that there are no simple solutions to the deer problems nor does any single method work in all cases. However, landowners have not embraced the information available to them despite considerable efforts by the extension system to provide sound and factual information in a variety of formats (newsletters and extension publications, webpages, video, and face-to-face training). An urban population or an aging population can be uncomfortable with animal control or simply unwilling or physically unable to implement control measures such as trapping mice, capturing snakes or frequent application of a deer repellent.

While not feasible in all situations, a field day with both hands-on demonstrations and visual demonstrations may be effective in persuading homeowners, landowners, master gardeners and others to become proactive in wildlife damage management. Wildlife specialists and county agents could create scenarios in which participants (clients) actually build a fence, set traps, install hot tape or scare devices (scarecrow, Mylar tape), apply taste and odor repellents or implement other control strategies. Such applied knowledge, first learned with close supervision from the specialist or agent, may encourage citizens to apply such methods at home. This may be more effective in bringing about actual behavioral change than verbally communicating with clients or handing him/her an extension publication. Actual demonstration sites and field days are effective methods of information exchange and can then be easily reinforced with handouts or a "user-friendly" webpage.

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APPENDIX 1. Estimates by county agents of the number of questions or requests for information received in 2001 for each of the following categories.

Category	Number of complaints received	Pct. of all complaints	Number of agents reporting	Pct. of agents w/ this complaint
Moles	1414	12.40%	48	82.76%
Armadillo in Yard	1149	10.07%	45	77.59%
Deer in Yard/Garden	1098	9.63%	45	77.59%
Bats in Buildings	973	8.53%	44	75.86%
Snake	613	5.37%	43	74.14%
Squirrel in House or Barn	555	4.87%	36	62.07%
Squirrel in Yard or Garden	450	3.95%	35	60.34%
Backyard Wildlife Plantings	406	3.56%	24	41.38%
Squirrel in Bird Feeders	391	3.43%	23	39.66%
Chipmunks	365	3.20%	24	41.38%
Rats/Mice Suburban/Urban	345	3.02%	23	39.66%
Woodpecker on House	337	2.95%	35	60.34%
Rabbits in Garden	309	2.71%	33	56.90%
Deer in Agric. Crops	272	2.38%	25	43.10%
Bluebird Houses	246	2.16%	25	43.10%
Beavers Flooding Timber	201	1.76%	30	51.72%
Woodpecker in Tree/Orchard	187	1.64%	18	31.03%
Beaver Damage Ornamentals	167	1.46%	17	29.31%
Feral Hogs	163	1.43%	18	31.03%
Bat Boxes	148	1.30%	21	36.21%
General Damage Information	145	1.27%	13	22.41%
Skunk or Odor	132	1.16%	13	22.41%
Bird Damage to Fruit/Vege	111	0.97%	19	32.76%
Unknown	106	0.93%	9	15.52%
Coyote	98	0.86%	20	34.48%
Deer Vehicle Collision	95	0.83%	7	12.07%
Dogs, Livestock/Wildlife	83	0.73%	15	25.86%
Rats/Mice Agriculture	67	0.59%	13	22.41%
Pigeon Roosts	64	0.56%	11	18.97%
Gophers	60	0.53%	8	13.79%
Rodents Damaging Ornamentals	59	0.52%	10	17.24%
Poultry Loss to Predation	55	0.48%	8	13.79%
Opossum	53	0.46%	9	15.52%
Pine Mice	49	0.43%	8	13.79%
Livestock Loss to Predation	45	0.39%	11	18.97%
Crow Damage to Crops	41	0.36%	9	15.52%
Vulture Roosting	40	0.35%	11	18.97%

Wading Birds in Fish Ponds	34	0.30%	9	15.52%
Bluejay Damage to Pecan	31	0.27%	3	5.17%
Dogs, Urban/Suburban	31	0.27%	8	13.79%
Otter in Fish Ponds	28	0.25%	8	13.79%
Woodchucks	28	0.25%	3	5.17%
Squirrel in Agric. Crops	27	0.24%	2	3.45%
Fox	26	0.23%	5	8.62%
Rodents in Crops	24	0.21%	3	5.17%
Vulture Injury to Livestock	12	0.11%	2	3.45%
Other Fish Eating Birds	12	0.11%	5	8.62%
Gopher Tortoise	10	0.09%	5	8.62%
Bears in Beehive	10	0.09%	1	1.72%
Blackbird Roosts	7	0.06%	3	5.17%
Blackbird Damage to Crops	7	0.06%	2	3.45%
Muskrat in Fishpond	6	0.05%	2	3.45%
Sparrow Roosts	6	0.05%	4	6.90%
Vulture Damage Bldgs./Vehicle	5	0.04%	3	5.17%
Bears Other	2	0.02%	1	1.72%
Starling Damage to Bldg.	2	0.02%	2	3.45%
Owl Boxes	2	0.02%	1	1.72%
Cougar	2	0.02%	1	1.72%
Weasel	1	0.01%	1	1.72%
