Forestry, Wildlife & Natural Resources Team Impacts 2020

► The mission of the Alabama Extension Forestry, Wildlife, and Natural Resources team is to provide relevant, science-based information to help Alabama's residents make informed natural resource–related management decisions.

Forests cover more than two-thirds of the state. Approximately 85 percent of timberland in Alabama is owned by nonindustrial private landowners.

Wood products, hunting and other outdoor recreation, and improved water quality make significant contributions to Alabama's economy.

In 2019, Alabama ranked second in the United States in pulp, paper, and paperboard production and third in lumber production.

Outdoor recreation activities, such as camping, hiking, boating, and hunting, generated $857 million in state and local tax revenue for Alabama in 2019. Healthy, well-managed forests are essential to support these industries and society's well-being.

Watershed Management

The Watershed Management Project develops and demonstrates management practices to enhance the development and implementation of effective watershed education, monitoring, planning, and improvement. Project efforts include training in water and watershed management using demonstrations and stakeholder meetings at the watershed level, incorporation of management practices into landowner education programs, and facilitation of volunteer water monitoring workshops. Project outcomes include improved knowledge of watershed best management practices, increased adoption of watershed best management practices, and improved conditions of water resources as documented by Alabama Water Watch volunteer water monitors.

Alabama Water Watch

Project Team: Mona Dominguez, Sergio Ruiz-Córdova, Sydney Smith, Rachel McGuire, Carolina Ruiz

Background: The focus of Alabama Water Watch (AWW) is promoting community-based, science-based, volunteer water monitoring to residents throughout the state. In 2020, AWW awarded 192 certifications in water chemistry monitoring and bacteriological monitoring to 117 individuals. In addition to training workshops, AWW staff conducted educational programs that reached more than 1,570 participants. Most programs were conducted virtually through Zoom. Although AWW's ability to engage new volunteers was extremely limited because of COVID, monitors submitted 3,438 water data records, exceeding the number from the previous year.

Number of Participants: 1,774

Evaluation Technique: Analysis of volunteer monitor data submitted to AWW database.

Impact Estimates:

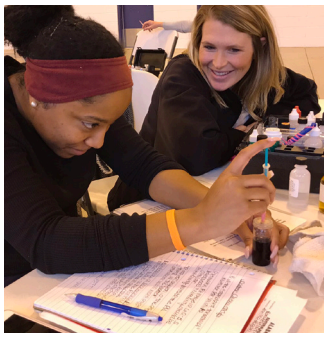
- Volunteers spent 14,415 hours of their time (valued at $339,029) participating in workshops, other outreach events, and collecting 3,438 water data records.
- The 3,438 data records collected by AWW volunteer monitors will be included in the Alabama Department of Environmental Management's 305 (b) Water Quality Report to Congress and used to determine if water bodies are meeting water quality standards. This amount of data would cost an agency approximately $620,000 to collect.

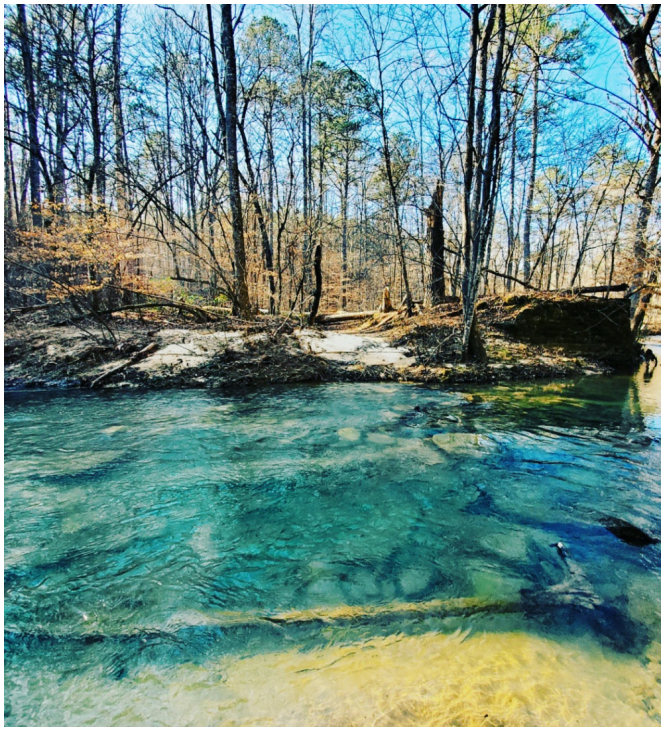
Return on Investment: 68:1

Developing a Citizen Volunteer Water Quality Monitoring Program in Alabama's National Forests

Project Team: Mona Dominguez, Sergio Ruiz-Córdova, Sydney Smith, Rachel McGuire, Carolina Ruiz

Background: In 2020, AWW established an effective partnership with the National Forests in Alabama. Through a project funded by the USDA CitSci Fund, AWW, and United States Forest Service, a network of AWW citizen scientists worked in the National Forests in Alabama assisting with the collection of water data in priority watersheds. Priority watersheds were identified through the USDA Forest Service's Watershed Condition Framework, which establishes a consistent, comparable, and credible process for improving the health of watersheds on national forests.





For this project, fifteen volunteers submitted a total of 141 water chemistry and bacteriological data records from the Bankhead, Tuskegee, and Conecuh National Forests. Data collection for the project will continue in 2021. Water data collected by volunteer monitors will be used to evaluate to what extent current management practices are resulting in clean water for the forests, its ecosystems, and the public. Specifically, the data will help determine the condition of the streams within the priority watersheds, establish baseline data for the watersheds, and develop a Watershed Restoration Action Plan (WRAP) to make better land management decisions within each forest. Alabama Extension staff in Winston, Walker, Covington, and Escambia Counties played a major role in the coordination and promotion of the project, contributing to its success.

Evaluation Technique: Analysis of volunteer monitor data submitted to AWW database

Number of Participants: 15 active volunteer monitors

Impact Estimates: Considering the resources and time it would take USFS personnel to collect the same amount of data, the project return on investment (ROI) is significant. Because this project successfully established a framework that can sustain volunteer water quality monitoring in NFALs for years to come, it is expected that the ROI will increase exponentially in coming years as less staff time will be needed to sustain consistent monitoring.

Return on Investment: 2:1

Beekeeping

Project Leader: William Rowe

Background: Beekeeping focuses on bringing up-to-date management practices to Alabama's beekeepers, along with hive product processes to help maximize the production of honey and other edibles, wax, and bees themselves.

Number of Participants: 8,601

Audience Diversity: Male (49%); Female (51%); Ethnicity (90% Non-Hispanic); White (84%); Black (2%); Hispanic (2%)

Impact Assessment: Extension beekeeping efforts are expanding in Alabama with more programming and training for both professional and hobbyist beekeepers. Beekeeping as both a hobby and small business has expanded exponentially in Alabama.

The honey bee itself has never been more valuable with package bees (4 pounds of workers with a mated queen) now regularly costing more than $100.00 to $200.00. Nucleus colonies, small working colonies used to quickly start a full-sized hive, now cost between $125.00 to $200.00 for Alabama beekeepers.

Alabama experiences about 21 percent loss of managed honey bee colonies per year. Complex health and habitat issues now make beekeeping more intensive and difficult.

Extension Collaborators: Geoffrey Williams, Allyson Shabel

Evaluation Technique: Zoom Poll

Direct Impacts:

- 94% of attendees report intending to implement practices taught.
- 57% of attendees report potential savings between $50.00 and $200.00. Average potential savings: $87.00 per beekeeper.

Return on Investment: 17:1

- Based on $87.00 per attendee self-reported savings average, number of attendees, and cost of man hours for beekeeping team members.

Community Forestry Program

Project Leaders: Beau Brodbeck and Jack Rowe

Background: The focus of this project is to improve the health, safety, and resilience of Alabama's urban and community forests. This project seeks to do this in two ways: by increasing the professionalism and knowledge of commercial and municipal tree-care professionals and by educating private homeowners to improve their knowledge and demand for best management practices in urban forest management.

Number of Participants: 14,438

Audience Diversity: 65% Male, 35% Female, 92% White, 2% Black, 2% Hispanic, 2% Other

New Virtual Programs for Professional and Homeowner Groups

Background: In March of 2020, the pandemic forced all face-to-face education and outreach programs to be canceled or postponed. In response, the Community Forestry program launched one new weekly webinar, The Raising Trees Webinar Series, and increased the output of the existing Tree Fund webinar series. These two webinars, one providing introductory educational content aimed at homeowners and the other providing more technical and emerging research aimed at professionals ensured that diverse audiences continued to have access to the information needed to care and manage urban forests. The webinar series provided a rich diversity of topics and speakers, including timely content (post-hurricane tree evaluation tips in the days after Hurricane Sally), emerging tree-care challenges (management of new invasive pests), and new applied research. Combined, the two series offered 39 one-hour webinars in 2020.

> "This was a very timely response to the COVID challenges and the impact on continuing education. Would not have found such a wide range of topics and instructors anywhere else."
>
> "I especially appreciated the timely talk on post-storm damage in late September, after Hurricane Sally!"

Extension Collaborators: William Rowe, Norm Haley, Tony Glover

Agency Collaborators: International Society of Arboriculture Southern Chapter, Alabama Urban Forestry Association and Tree Fund.

Number of Participants: 12,371; 54% Professional, 27% Homeowner, 19% Educators

Evaluation Technique: Event survey and year-end survey

Direct Impacts:

- 80% experienced a change in knowledge
- 79% indicated they implemented knowledge gained

> "The series prompted me to evaluate the trees on my property. I found one chestnut oak that was showing signs of internal decay. I had the tree inspected and the decision was to take it out. Cutting revealed the decay was extensive. If it had fallen the power for many houses would had suffered a major outage."
>
> "I feel more secure in my knowledge when advising clients."

- 82% indicated financial gains or savings as a result of knowledge gained
    - $532,000 in estimated cost savings resulting from participating in webinars
- 59 continuing education hours offered to arborists to maintain professional licensing

Return on Investment: 19:1

Community Forestry's ALA-TOM Program

Background: Rural towns and cities often face tree management problems they are not equipped to deal with. The cost of hiring consulting arborists or hiring full-time qualified personnel are prohibitive for most of these small rural communities. Instead, this program provides the resources of Extension and the ALA-TOM RC&D in the person of a qualified arborist/urban forester to consult on a part-time basis, spreading the benefits and costs as needed. Currently, there are 16 participating member towns and cities in the nine-county ALA-TOM district. Participating towns and cities pay $30,915.00 per year for the services of Jack Rowe. Each town and city represent thousands of Alabama residents affected by the program.

Number of Participants: 121

Direct Impacts: $512,750.00 in avoided consultation fees for program services

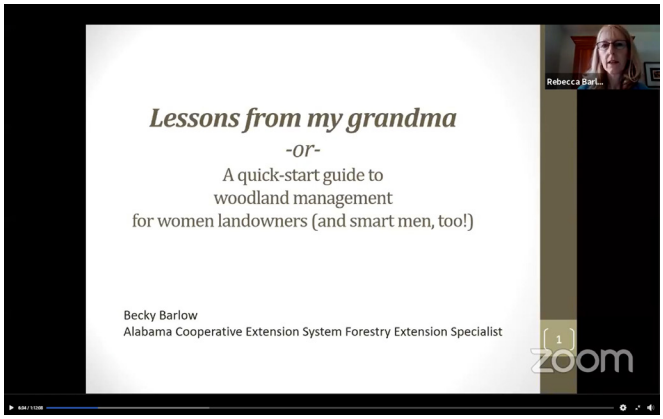
Return on investment: 17:1

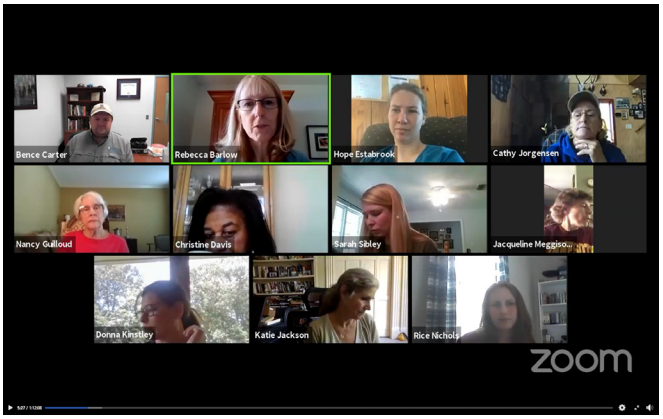
Forestry, Wildlife, and Natural Resources: Promoting and Supporting All Aspects of Natural Resource Management

Project Leader: Becky Barlow

Background: When surveyed, many of Alabama's landowners state that their primary reason for owning land is to pass it on to their heirs, with outdoor recreation and scenic beauty rounding out the top three. Most landowners indicate that they care about the health of their natural resources and want to be good land stewards. Some also state that they would like to generate some revenue from of their land but are often unsure of how to proceed. To address the forestry, wildlife, and natural resource education needs of Alabama's residents, forestry, wildlife, and natural resources 2020 programs included the following:

- **Community forestry** including risk assessment, chainsaw safety, arborist education, and beekeeping
- **Forest management** including principles, practices, and stewardship for landowners; professional logging management, forest business resources, alternative income generation, and land management for women and minority landowners
- **Invasive species** identification and control
- **Water quality** and **farm pond** management
- **Wildlife management** including game and nongame management techniques and wild pig control





Collaborators: FWNR Regional Agents, FWNR Specialists, County Extension Coordinators, County Forestry Planning Committees, Alabama Forest Owners Association, Alabama Forestry Commission, Alabama Forestry Association, Alabama Treasure Forest Association, Alabama Ag Credit, Regions Bank, Alabama Forests Forever Foundation

Number of Participants: 1157 events, 64,694 participants

Audience Diversity: 57% Female, 43% Male, 69% White, 27% Black, 4% Other

Evaluation Techniques: Event surveys, follow-up surveys

Direct Impact of Forestry, Wildlife, and Natural Resources Team:

- Approximately 621,895 forestland acres owned or managed by participants
- Estimated value of service: $171 million

Return on Investment: 114:1

Direct Impact of Continuing Education Credits Generated

- Specialist Leads—Beau Brodbeck, Richard Cristian, Adam Maggard
- Regional Extension Agent Leads—Ryan Mitchell, Drew Metzler, Norm Haley, Bence Carter, Jack Rowe
- 5,531 continuing education credits generated
- $636,065 reported value

Return on Investment: 2.6:1

Direct Impact of Forestry, Wildlife, and Natural Resource REA One-on-One Contacts:

- Regional Extension Agent Lead—Bence Carter
- Supporting Regional Extension Agents—Andy Baril, Norm Haley, Doug Fulghum, Drew Metzler, Ryan Mitchell
- A short e-survey (using a QR code or Qualtics link) was developed by FWNR Regional Agent Bence Carter to track 190 one-on-one contacts in 2020.
- 13,558 acres
- $37,700 reported value

Return on Investment: 5.8:1

Forest Business Resources: Increasing the Health and Wealth of Private Forestland in Alabama

Project Leader: Adam Maggard

Background: The focus of this project is to enhance the livelihoods of Alabama residents through the betterment of forest management, business practices, and increased opportunities for producing income. Specifically, the information and tools focus on temporary or small-scale income-producing opportunities and owning and operating a value-added business to assist private forest owners in achieving their goals and objectives. Further, this project educates landowners on the benefits of healthy forests and how practicing forest management can not only enhance the health and resiliency of forests but also enhance opportunities to generate income from forests that can potentially be used to support the costs of forest management practices.

Collaborators: FWNR Regional Agents, County Extension Coordinators, County Forestry Planning Committees, Alabama Forest Owners Association, Alabama Forestry Commission, Alabama Forestry Association, Alabama Treasure Forest Association, Forest Landowners Association, ALFA, Alabama Forests Forever Foundation

Number of Participants: 30 events, 1,898 participants

Audience Diversity: 38% Female, 62% Male, 79% White, 20% Black, <1% Other.

Evaluation Techniques: Event surveys, follow-up discussions and interviews 6 and 12 months post event.

Direct Impact of Forest Business Resources:

- Specialist Leads —Adam Maggard, Becky Barlow REA Leads—Bence Carter, Norman Haley
- Approximately 383,068 forestland acres owned or managed by participants of FBR workshops
- Estimated $4.7 million in improved forestland value, recovered loss, and financial decision-making based on information learned

Return on Investment: 246:1

Direct Impact of Online Course—Forest Principles, Practices, and Stewardship for Landowners:

- Specialist Leads—Adam Maggard, Becky Barlow, Jim Armstrong, Beau Brodbeck
- Participants from 14 states including Alabama, Florida, North Carolina, Tennessee,Texas, South Carolina, California, Mississippi, Virginia, Michigan, Massachusetts, Louisiana, Colorado, Georgia
- 17,680 timberland acres owned or managed by participants in this workshop
- Estimated $1.1 million in improved forestland value from information learned and applied

Return on Investment: 303:1

Forest Business Resources
ALABAMA EXTENSION

Invasive Plant Identification and Control

Project Leader: Nancy Loewenstein

Background: Invasive species reduce forest health and productivity across the state. This project provides in-service training, educational events, and publications for a wide range of stakeholders including forest landowners, foresters and other natural resource land managers, federal and state agency personnel, natural resource educators, Master Gardeners, and the general public. Although two planned conferences and many scheduled presentations were canceled this year due to COVID-19, we were able to participate in several pre-COVID-19 or small socially distanced outdoor events. Otherwise, we shifted our focus to webinars, social media, development of Extension publications, and response to stakeholder requests for assistance.

Extension Collaborators: Master Gardeners, 4-H, Water Resources Team, Animal Sciences and Forages Team

Agency Collaborators: Alabama Invasive Plant Council, Alabama Forestry Association, Alabama Forestry Commission, Alabama Department of Agriculture and Industries, Southern Regional Extension Forestry, FFA, City of Auburn

Number of New Products: Six peer-reviewed Extension publications, one educational ad, one peer-reviewed journal article, collaboration on three regional Extension grant proposals.

Number of Webinar Presentations: 5

Number of Participants: 650 at 11 events

Social Media: 73 posts, 107,292 reach, 18,229 engagement

Overall Impact Estimate: As in years past, impacts range from homeowners and landscapers not planting invasive species to improved invasive plant control through increased ability to identify invasive plants, use of more effective methods of control, more effective and safer use of herbicides, and encouragement to take action. Forest health and productivity are ultimately improved through enhanced control efforts, more acres treated, and fewer plants escaping. Impacts are amplified through collaborating with federal and state agency personnel and other stakeholders who share timely information with their clients.

Impact Estimates, Land Managers (2019)

- Acres Impacted: 2.5 million acres owned or under the management of program participants
- Adoption Rate Among Land Managers: 96%
- Acres Treated: 150,000 acres of invaded land controlled with more effective methods

Return on Investment: 22: 1

Professional Logging Manager (PLM)

Project Leader: Richard Cristan

Background: Alabama has 23 million acres of timberland and ranks third in largest commercial forest land in the United States. Logging is important in the state economically and brings the need to train loggers in both sustainable forestry practices and safety. The Alabama Professional Logging Manager (AL PLM) initial trainings (two-day training) and subsequent required yearly continuing education (five hours each year) provide loggers the needed training. Initial trainings educate loggers on the Sustainable Forestry Initiative (SFI) Program, forest management, resource conservation and biodiversity, timber harvest practices to reduce impacts on wildlife, forestry best management practices for water quality protection, development of safety programs, OSHA regulations, logging safety, ergonomics, hearing conservation, trucking, and several other topics related to sustainable practices and logging safety.

Continuing education for loggers has typically been conducted in-person in the past, but due to COVID-19 we had to rethink this strategy in 2020. Loggers often work in remote areas and work long hours so live webinars may not be the best option for them. Forestry, Wildlife, and Natural Resource Extension Specialists and Regional Extension Agents created on-demand content for loggers to complete on their own time to help them meet their continuing education requirements. On-demand webinars were uploaded between June 2020 and December 2020 and will continue to be available for loggers along with new content.

PLM Initial Training Collaborators: Alabama Forestry Association, Alabama Forestry Commission, Sustainable Forestry Initiative–Alabama, Forest Workforce Training Institute

PLM Continuing Education Collaborators: Alabama Extension specialists and regional Extension agents

Number of PLM Initial Training Participants: 82

Number of On-Demand Webinars: 12 webinars for a total of 14 continuing education hours available

Number of On-Demand Participants: 71

Total On-Demand Continuing Education Hours Awarded: 121

PLM On-Demand Webinars: Available on the Alabama Extension website, www.aces.edu.

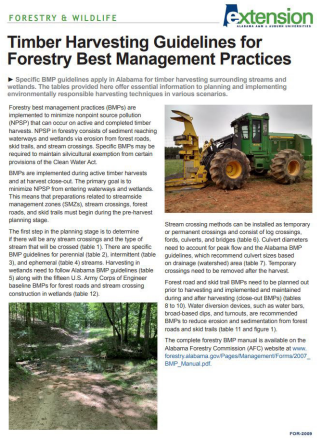
New Products: Peer-reviewed Extension publications available on the Alabama Extension website at www.aces.edu.

Evaluation Techniques: Surveys following PLM initial trainings

Audience Diversity of PLM Initial Trainings: 81% White, 19% Black

Direct Impacts: Loggers indicated an increase in knowledge in sustainable forestry practices and logger safety by an average of 68% following PLM initial trainings while 75% of loggers indicated at least a 50% increase in knowledge.

ROI: First-year reporting data for this program is not yet available.


FORESTRY & WILDLIFE

Timber Harvesting Guidelines for Forestry Best Management Practices

► Specific BMP guidelines apply in Alabama for timber harvesting surrounding streams and wetlands. The tables provided here offer essential information to planning and implementing environmentally responsible harvesting techniques in various scenarios.

Forestry best management practices (BMPs) are implemented to minimize nonpoint source pollution (NPSP) that can occur on active and completed timber harvests. NPSP in forestry consists of sediment reaching waterways and wetlands via erosion from forest roads, skid trails, and stream crossings. Specific BMPs may be required to maintain silvicultural exemption from certain provisions of the Clean Water Act.

BMPs are implemented during active timber harvests and at harvest close-out. The primary goal is to minimize NPSP from entering waterways and wetlands. This means that preparations related to streamside management zones (SMZs), stream crossings, forest roads, and skid trails must begin during the pre-harvest planning stage.

The first step in the planning stage is to determine if there will be any stream crossings and the type of stream that will be crossed (table 1). There are specific BMP guidelines for perennial (table 2), intermittent (table 3), and ephemeral (table 4) streams. Harvesting in wetlands need to follow Alabama BMP guidelines (table 5) along with the fifteen U.S. Army Corps of Engineer baseline BMPs for forest roads and stream crossing construction in wetlands (table 12).

Stream crossing methods can be installed as temporary or permanent crossings and consist of log crossings, fords, culverts, and bridges (table 6). Culvert diameters need to account for peak flow and the Alabama BMP guidelines, which recommend culvert sizes based on drainage (watershed) area (table 7). Temporary crossings need to be removed after the harvest.

Forest road and skid trail BMPs need to be planned out prior to harvesting and implemented and maintained during and after harvesting (close-out BMPs) (tables 8 to 10). Water diversion devices, such as water bars, broad-based dips, and turnouts, are recommended BMPs to reduce erosion and sedimentation from forest roads and skid trails (table 11 and figure 1).

The complete forestry BMP manual is available on the Alabama Forestry Commission (AFC) website at www.forestry.alabama.gov/Pages/Management/Forms/2007_BMP_Manual.pdf.

FOR-0069

Wild Pig Damage Management

Project Leader: Mark Smith, Bence Carter

Background: Wild pigs are found in nearly all 67 counties of Alabama causing more than $55 million a year in agricultural and forestry damage. This project provides hands-on technical training to landowners and natural resource professionals who work with landowners (training the trainers) on practical, cost- and time-effective approaches for reducing or eliminating local populations of wild pigs resulting in reductions in agricultural and natural resource damage. This project used multiple approaches to reach a diversity of audiences in Alabama including in-person seminars and demonstrations, print and electronic publications, and short how-to videos available on the Internet.

In 2020, this project began providing outreach and monitoring technical support to the Alabama Feral Swine Control and Eradication Pilot Project administered by the Alabama Soil and Water Conservation Committee. This multiagency, multiyear effort aims to reduce damage caused by wild pigs in select counties in Alabama.

Collaborators: USDA Natural Resources Conservation Service, Alabama Wildlife and Freshwater Fisheries Division, USDA Wildlife Services, Alabama Farmers Federation, Soil and Water Conservation Districts, National Wild Turkey Federation

Number of Participants: 110

Audience Diversity: 97% White, 3% Black

Evaluation Techniques: Event surveys, in-person technical assistance

Adoption Rate: 99%

Conservative Direct Impact Estimate: $264,000 in damage reduction on more than 52,360 acres of farm and forestland in Alabama and neighboring states.

Return on Investment: 96:1

Key Project Resources: Wild Pig Education Unit Trailer, Landowner's Guide to Wild Pig Management, Alabama Extension Fresh from the Field Wild Pig How-To YouTube video series

Wildlife Management: Enhancement and Damage

Project Leader: Mark Smith

Background: Alabamians spend more than $2.2 billion a year for wildlife-related recreation with most of these expenditures made by 1.1 million wildlife watchers ($734 million) and 535,000 hunters ($913 million a year). Moreover, these individuals spend more than 14.3 million days per year engaged in these two outdoor activities. The Wildlife Management: Enhancement and Damage project is designed to assist clients in managing Alabama's natural resources. Management may involve programs and one-on-one contacts to improve wildlife habitat or to minimize or eliminate damage caused by wildlife. Enhancement programs cover topics ranging from backyard birds and planting food plots for deer to managing habitats for wild turkeys and pond management.

Given the COVID-19 restrictions regarding in-person meetings, several formerly in-person programs went online including Snakes of Alabama, Backyard Wildlife Management, and Basics of Wildlife Management.

However, our team continued providing leadership and technical expertise through electronic media. This involved email, phone calls, Zoom meetings, and social media, including Facebook.

Wildlife damage and legal ways to address those problems comprise a significant amount of work for regional Extension agents and specialists. These activities may be in the form of one-on-one contacts (phone calls, emails, office visits) or structured educational programs. Backyard wildlife damage programs focus on vertebrate species that may cause damage to structures, yards, and ornamentals or pose health threats. Program topics include squirrels, chipmunks, moles, voles, commensal rodents, bats, snakes, and white-tailed deer.

The goal of these activities is to educate clients in how to identify damage and take actions necessary to eliminate them either by contacting a professional or using the information provided to address the problems themselves.

Number of Participants: 772

Audience Diversity: 54% Male, 46% Female, 74% White, 26% Black, 67% Youth, 33% Adult

Conservative Direct Impact Estimate: $93,665 in prevented wildlife damage to property (assumes an average of $715 per contact event) and $882,095 in wildlife enhancement in both urban and rural communities ($1,230 per enhancement expenditure per contact based on 2006 National Survey of Fishing, Hunting, and Wildlife–Associated Recreation)

Return on Investment: 110:1

For more information, contact your county Extension office.
Visit www.aces.edu/directory.

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