

Beaver Damage Management In North Carolina

Twenty-Seventh Summary Report to NC General Assembly

July 1, 2018 through June 30, 2019



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Beaver Management Assistance Program

Background

The North Carolina Beaver Management Assistance Program (BMAP) was created by state legislative action in 1992 with the express purpose of helping manage ever-increasing problems caused by beaver on private and public lands. The BMAP was structured to be flexible, fair, and feasible. Since its inception, the program has grown more than tenfold from four participating counties during its pilot version to 42 participating in 2018-19. Because of practical and ecological considerations, the program's goal is to address specific beaver damage problems rather than to eliminate beaver from the State. Beaver are present in all North Carolina counties. Their population is considered stable or slightly increasing and is conservatively estimated to be near 500,000. BMAP-related beaver removals account for about 17% of total known annual beaver harvest (including recreational trapping and nuisance removals), and about 0.5% of the total beaver population. Even if the combined recreational and nuisance beaver take was as much as 20,000 annually (or 4% of the estimated statewide population), this would have little to no effect on the beaver population. The program instead prioritizes activities first that remove threats to public health and safety, and secondly on assistance to landholders experiencing beaver damage.

The BMAP is implemented by USDA Wildlife Services (WS) through Cooperative Service Agreements with the NC Department of Transportation (DOT), NC Wildlife Resources Commission (WRC), participating counties, and private landholders through a cost-share system. The Cooperative Service Agreements between WS, DOT, WRC, and Counties and this summary report covers activities from July 1, 2018 through June 30, 2019.

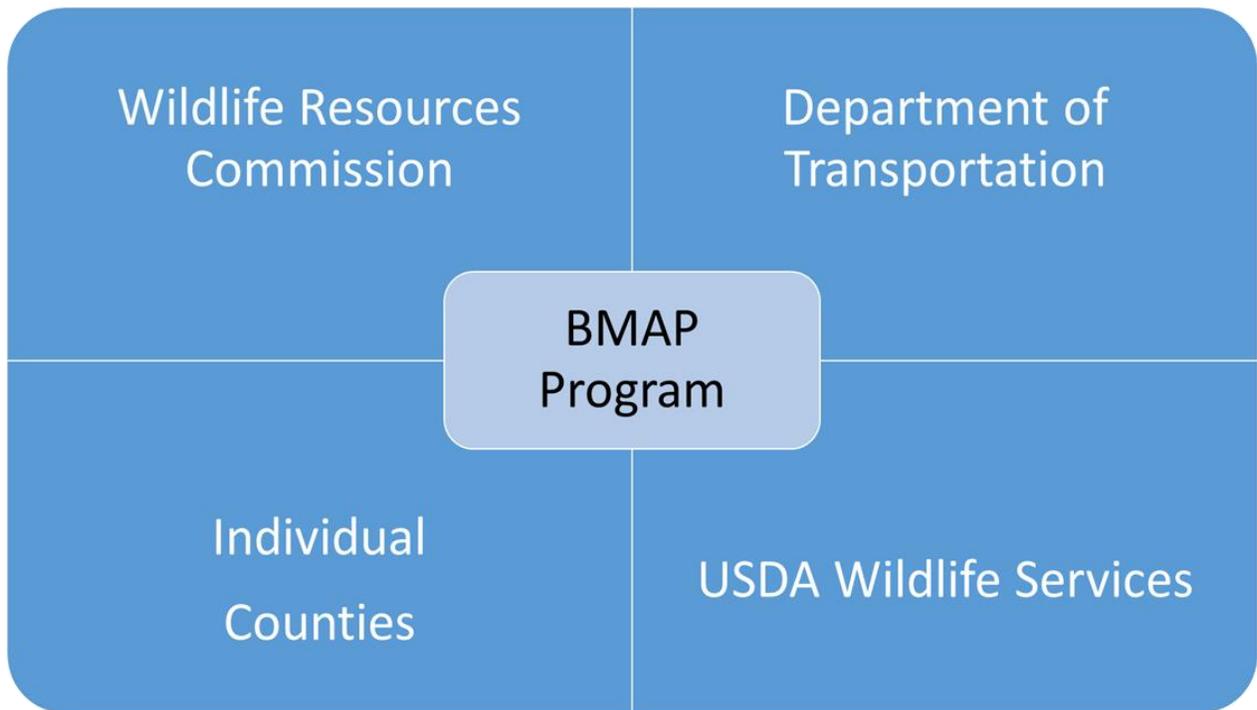
Beaver Damage Control Advisory Board

The Beaver Damage Control Advisory Board is composed of representatives from nine State/Federal agencies and non-governmental organizations. It meets annually to review the previous year's accomplishments and to make recommendations for the coming year to the Executive Director of the WRC.

Falyn Owens (Chair)	NC Wildlife Resource Commission
Tim Sherrill	NC Department of Transportation
Vacant	NC Cooperative Extension Service
Eric Galamb	NC Division of Soil and Water Conservation
Joseph Hudyncia	NC Department of Agriculture and Consumer Services
Bill Pickens	NC Forest Service
Anne Coan	NC Farm Bureau Federation
Justin Faircloth	NC Forestry Association
Todd Menke	USDA, APHIS, Wildlife Services

Program Structure

The BMAP is composed of 4 major entities, each with its own expectations and guidelines.



NC Wildlife Resources Commission (WRC) funds beaver damage management activities as part of a cost-share program with participating counties and landholders within those counties. Activities are conducted to reduce water levels that threaten private roadways, timber, agricultural crops, and general property. Administrative authority for the BMAP rests with the WRC but enabling legislation and cooperative agreement allows WRC to transfer program implementation to Wildlife Services.

NC Department of Transportation funds beaver damage management activities to provide services in all 100 counties. Activities are conducted to reduce beaver flooding that impacts state roads and threatens roadway infrastructure; and human health and safety.

Individual counties have the choice to participate annually in the BMAP at various levels. Participation levels range from no participation, to baseline participation, and then to elevated funding to support providing additional services.

USDA Wildlife Services provides at least \$25,000 annually to the program to facilitate its implementation, and its staff conduct all beaver damage management activities.

Funding Sources and Expenditures

Program funding by source and expenditures from July 1, 2018 through June 30, 2019 are summarized below:

Expenditure Type	Expenditures (\$\$) (a) by Funding Source						Totals
	NCWRC	DOT	Counties	Counties Additional Funding	Wildlife Services (WS)	Landholder Cost Share Collections	
Personnel Costs	\$261,345	\$676,928	\$105,976	\$193,387	\$0	\$0	\$1,237,636
Travel & Per Diem	\$1,020	\$2,255	\$70	\$0	\$0	\$0	\$3,345
Vehicle Usage (fuel, maintenance, repair)	\$27,481	\$66,796	\$1,754	\$13,693	\$0	\$0	\$109,725
Other Services (telephone, data lines, non-vehicle repairs & maintenance, etc.)	\$284	\$1,032	\$4,408	\$19	\$25,000	\$0	\$30,743
Supplies (i.e. waders, traps, explosives)	\$10,793	\$33,530	\$14,324	\$13,043	\$0	\$0	\$71,690
Equipment (i.e. laptops/printers)	\$1,869	\$4,858	\$5,596	\$42	\$0	\$43,328	\$55,692
Pooled Job Costs:	\$33,307	\$86,394	\$14,534	\$24,220	\$0	\$0	\$158,455
Indirect Costs to NCWS	\$33,307	\$86,394	\$14,534	\$24,220	\$0	\$4,766	\$163,221
Indirect Costs to APHIS	\$15,594	\$40,448	\$6,805	\$11,339	\$0	\$2,231	\$76,417
Total spent	\$385,000	\$998,636	\$168,000	\$279,964	\$25,000	\$50,325	\$1,906,925
Amount Funded	\$385,000	\$998,636	\$168,000	\$279,964	\$25,000	\$50,325	\$1,906,925
	(b)	(b)	(b)	(b)	(c)	(d)	
BALANCE	\$0	\$0	\$0	\$0	\$0	\$0	\$0

(a) Expenditure figures are subject to adjustment.

(b) Funding sources: NCWRC NCDOT 42 Participating Counties
\$385,000 \$998,636 \$168,000

Counties Providing Additional Funding

Duplin \$135,000; Greene \$6,000; Lenoir \$17,800; Robeson \$61,000; Wayne \$43,209; Fayetteville \$13,582; Wilson \$3,373

(c) USDA Wildlife Services contributed \$25,000 to fund the BMAP from July 1, 2018 through June 30, 2019. Wildlife Services also provided indirect support to administer the program that is not included in the \$25,000.

(d) BMAP cost-share collections by Wildlife Services from landowners, municipalities, and other sources. As of July 1, 2019, \$7,625 in outstanding landowner cost-share invoices were over 90 days past due. Cooperators with past due accounts will not receive additional BMAP services unless their outstanding balance is paid.

Program Statistics in Summary

The Cooperative Service Agreements between WS, DOT, WRC, and participating counties resulted in a total of 1,025 projects worked from July 1, 2018 through June 30, 2019. An additional 791 adjacent landholders benefitted from BMAP services at no cost to them.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
1,025	368	1,281	2,796

Damage Economics in Summary

USDA Wildlife Services staff and cooperators reported that BMAP services prevented the impending loss or repair expenditures of an estimated \$10,062,379 in roads and bridges, timber and other agricultural resources, railroad trestles, dams and ditches, city and county sewer systems and water treatment facilities, landscape plantings, and other resources such as homes, airport runways, and golf courses. Comparing BMAP expenditures to savings, the estimated cost benefit ratio was 1 to 5.28. In other words, for every \$1.00 spent, \$5.28 in resources were saved. Also, the benefits of BMAP services reported by the DOT does not include projected future savings estimates, which can be significant. Furthermore, the cost-benefit ratio does not include the benefits of educational activities such as training individuals to address their own beaver damage problems. It also does not include any state revenue generated from taxes on timber sales that otherwise would have been lost had beaver destroyed the timber, or indirect losses due to agriculture from farmers being prevented from planting or using land that is flooded or saturated.

Resources Protected by Class



Beaver Damage Examples

Beaver damage can take many forms, but the situations depicted below are typical.

The photos below show a dammed culvert under Scotland County Line Road along the Richmond/Scotland County line. Trapped water has saturated the roadbed and surrounding ground, drowned timber, and flooded the road surface. After USDA Wildlife Services conducted beaver damage management activities, all these problems were corrected, and the threats were removed.



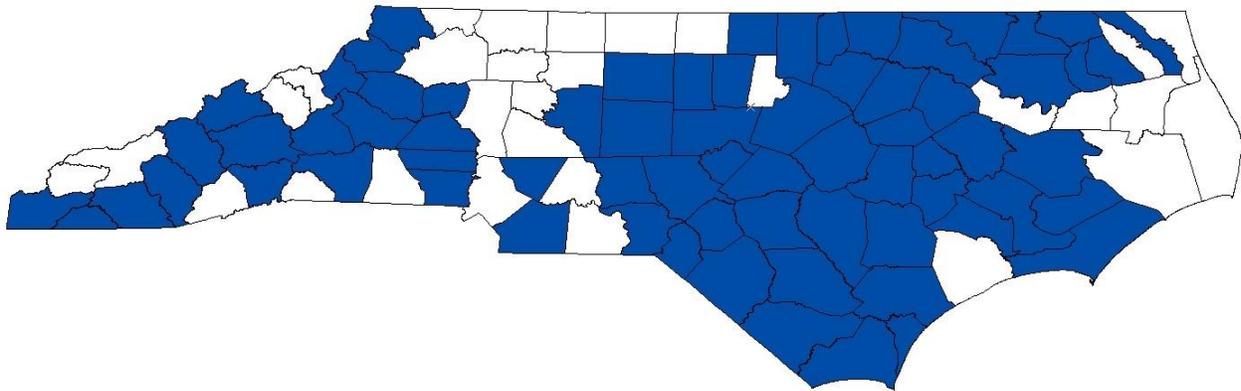
In the photos below, beaver dams caused flooding to agricultural fields near Stokes in Pitt County. After beaver damage management activities were conducted, normal drainage was restored.



NC Department of Transportation

Beaver management services to the North Carolina Department of Transportation (DOT) were available in all 100 counties regardless of a county’s participation in the program. Due to health and safety concerns along roadways, DOT agreements continued to receive priority, but response to these projects was balanced against any backlogged requests on public and private lands. DOT received on average 6 to 8 completed agreements in counties where DOT work was done. Services were provided based on demand and the program’s ability to meet those demands at current funding levels. Counties that did not participate in BMAP during this fiscal year received services on DOT rights-of-way where requested. There were no additional cost-share charges to the DOT relating to beaver damage management along state-owned highways, roads, and bridges throughout North Carolina. When beaver damage management work was conducted on adjacent properties to resolve a problem affecting DOT rights-of-way, those landholders were not charged for services.

Operational Statistics - DOT



Beaver damage management activities were conducted on NC Department of Transportation property in 70 of North Carolina’s 100 counties. DOT received a total of 595 completed projects, resulting in the removal of 1,571 beaver and 942 dams. In addition, WS worked with 711 adjacent landholders who benefitted from these services at no cost to them.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
595	154	788	1,571

Damage Economics - DOT

Beaver damage management activities for the DOT protected numerous valuable resources, including physical property, agricultural and natural resources totaling **\$4,873,158**. The additional benefit of protecting human health and safety occurred but remains difficult to quantify.

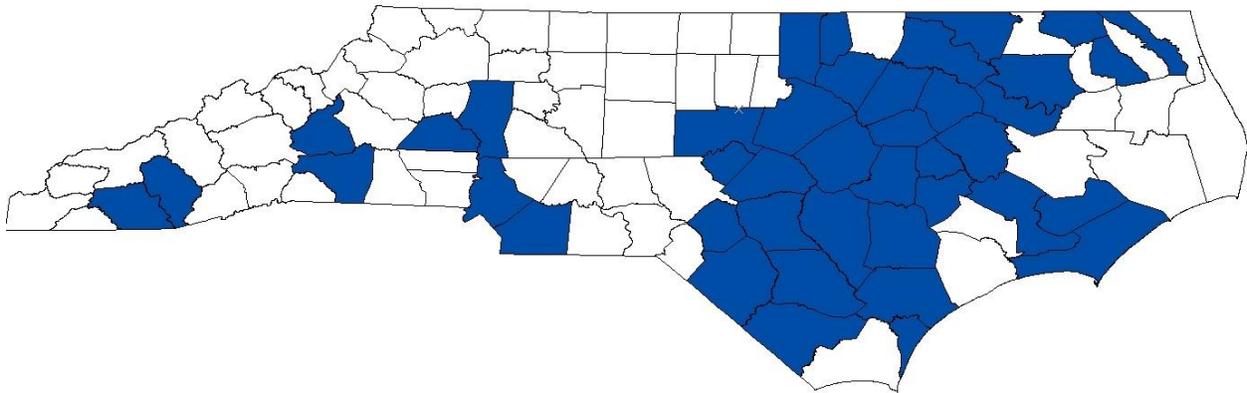
Estimated Value of Protected Resources by Individual Category

Timber	Crops & Pasture	Roads & Bridges	Irrigation & Drainage	Utilities & Sewer	General Property	Wetlands Nat. Res.
\$519,401	\$115,318	\$4,069,300	\$22,400	\$15,600	\$93,600	\$37,539

NC Wildlife Resources Commission

The North Carolina Wildlife Resources Commission (WRC) funds beaver damage management activities as part of a cost-share program with participating counties and landholders within those counties. County participation is required before any direct beaver damage management assistance is provided to landholders. Participation in the program is open to all North Carolina counties. Participating counties received 11 to 15 agreements (5-7 non-DOT and 6-8 DOT) each, on average. Services in each county were provided based on demand and the program's ability to meet those demands at current funding levels.

Operational Statistics - WRC



Beaver damage management activities were conducted in 42 participating counties with combined funding provided by WRC, participating counties, and individual landholders. A total of 322 projects were completed and resulted in the removal of 912 beaver and 509 dams.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
322	124	385	912

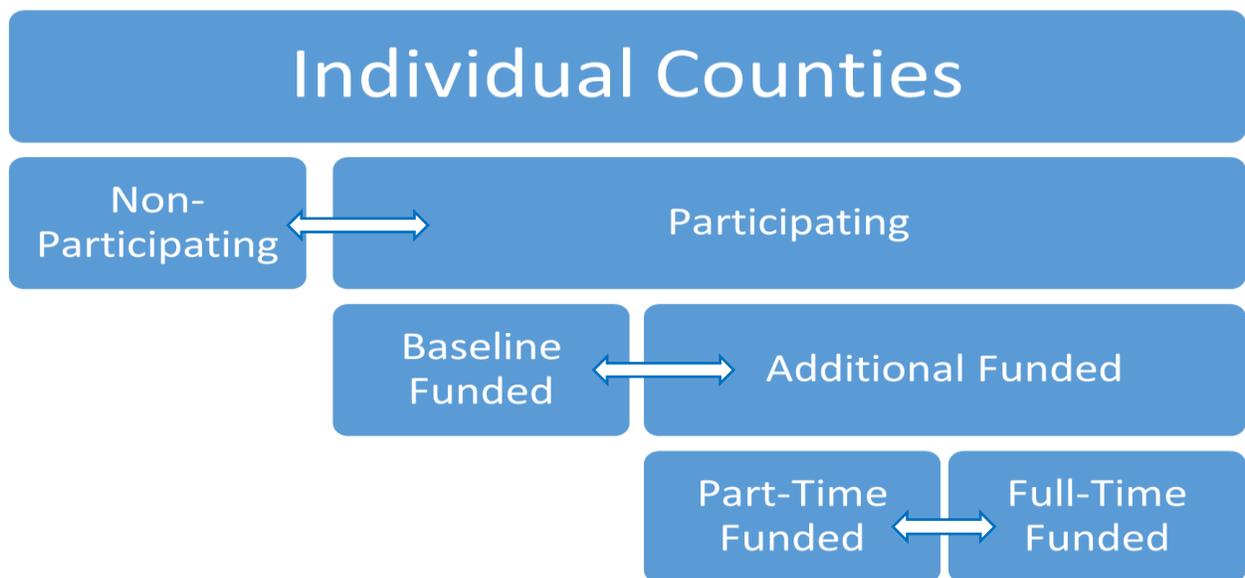
Damage Economics - WRC

Beaver damage management activities in counties participating in the BMAP protect numerous valuable resources, including physical property, agricultural and natural resources totaling **\$8,027,606**. The additional benefit of protecting human health and safety occurred but remains difficult to quantify.

Estimated Value of Protected Resources by Individual Category

Timber	Crops & Pasture	Roads & Bridges	Dams & Dikes	Irrigation & Drainage	Utilities & Sewer	General Property	Natural Resources
\$2,213,289	\$848,806	\$3,588,227	\$100,513	\$119,710	\$67,450	\$978,042	\$111,569

Individual Counties



Individual North Carolina counties are invited to participate in the BMAP on an annual basis and must opt in each year. Counties can choose several levels at which to participate, from baseline coverage to funding a full-time BMAP professional in that county (see diagram above).

Non-participating counties – Landholders in non-participating counties have access to beaver damage management services through USDA Wildlife Services if requested. They are not eligible to

receive services at the BMAP cost-share rate and must pay full market cost for services rendered.

Participating counties at Baseline Funding – In FY 2018-19, counties could participate in the BMAP for a \$4,000 fee. A county’s participation fee is combined with funding provided by the NC Wildlife Resources Commission to offset the cost of beaver damage control services to landholders in that county. Landholders in participating counties were eligible for services as a reduced cost-share rate of \$25 per visit and \$125 per large dam. The 42 counties listed below participated at the baseline level during FY 2018-19.

Bertie	Duplin	Hoke	McDowell	Perquimans	Wayne
Bladen	Edgecombe	Iredell	Mecklenburg	Pitt	Wilson
Carteret	Franklin	Jackson	Nash	Robeson	
Catawba	Gates	Johnston	New Hanover	Rutherford	
Chatham	Granville	Lee	Northampton	Sampson	
Columbus	Greene	Lenoir	Pamlico	Union	
Craven	Halifax	Macon	Pasquotank	Vance	
Cumberland	Harnett	Martin	Pender	Wake	

Educational Activities

Advice and information, or “technical assistance” was provided to landholders statewide through on-site visits, written/telephone consultations, and educational programs and exhibits. USDA Wildlife Services distributed thousands of leaflets to landholders and the general public on how best to address beaver damage on their property. The BMAP strives to educate landholders and others about both positive and negative aspects of beaver activity so they can make informed decisions about management options on their land. If landholders decide to address a beaver damage problem themselves, whether by lethal or non-lethal means, they are always given the option to do so with direction and training provided by USDA Wildlife Services at no cost.

State Fiscal Year 2019-20

The BMAP continues to be popular among landholders, counties, municipalities, businesses, and the DOT. Landholders who request BMAP services are often faced with significant losses as a result of beaver activity. The severity of these losses is evident by sustained demand and support for the program. As in previous years, BMAP participants continued to show little interest in conducting damage management activities themselves, which is most likely due to lack of ability and/or time. USDA Wildlife Services specialists will, however, continue to make concerted efforts to encourage

individuals to solve their own problems through on-site training and damage management workshops.

Estimated Funding Sources for State FY 2019-20

NC Department of Transportation	\$1,000,000
NC Wildlife Resources Commission	\$385,000
44 Participating Counties	\$176,000*
USDA Wildlife Services	\$25,000
Private Cost-Share (estimated)	\$55,000
Counties Providing Additional Funds	\$342,000
Total	\$2,071,000

*The passing of HB 597 on Aug. 27, 2019 will raise the participation fee for counties to \$6,000. The county participation fee has been set at \$4,000 since the program's inception in 1995 and the fee increase is intended to offset rising costs due to inflation. FY 2019-20 will be the last year that counties will pay a baseline fee of \$4,000 to participate.

Obtaining Services

How Counties Participate

All counties were eligible to participate in FY 2018-19 through an annual participation fee of \$4,000 per county. Individuals residing in these counties could obtain assistance with beaver damage by contacting their county Cooperative Extension Service or Soil and Water Conservation District office. Statewide assistance with beaver damage problems was also provided to the DOT. All requests for assistance received an immediate response, but the start of direct assistance activities varied based on the workload of Wildlife Services personnel at the time of the request.

Cost Share

Individuals in participating counties paid a small cost-share fee for services. There was no charge for time spent discussing the program and signing paperwork. During this assessment, USDA Wildlife Services personnel discuss both the positive and negative impacts of beaver with the landholder and recommend the best course of action. If damage management activities are recommended, time and costs are estimated before work begins. Landholders wishing to conduct their own work were provided individualized training at no cost. The cost-share fee for individuals in participating counties was \$25 for each visit to their property, with no charge for travel time. There was also a \$125 charge per large dam removal. USDA Wildlife Services personnel average about 10 visits over a 30-day period to resolve a beaver problem. After 15 visits to a landholder's property in any one year, costs to the landholder increase to the full market value of beaver removal services.

Assistance Priorities

Requests for assistance are handled on a first-come, first-served basis with top priority given to projects that address threats to public health and safety, particularly along highway rights-of-way and county-owned property. Work for individual landholders is next, followed by work for soil and water conservation districts, municipalities, corporate landholders, and others.

Additional Information

For additional information about the BMAP please call or write:

USDA Wildlife Services, 6213-E Angus Drive, Raleigh, NC 27617, 1-866-487-3297

- OR -

NC Wildlife Resources Commission, Division of Wildlife Management at 1751 Varsity Drive, Raleigh, NC 27606, 1-919-707-0050.

Additional Expanded Services Provided by USDA-WS

Participating counties occasionally request BMAP services in addition to those received under the cost-share program at baseline. Generally, requests for additional assistance require hiring additional experienced personnel, which is inherently difficult, especially if such a request is for seasonal or less than full time work. If USDA Wildlife Services is able to accommodate such requests, any additional work provided to landholders in the county follow BMAP policies and procedures. Cost share fees paid by landholders are used to support the overall BMAP. Any county requesting additional assistance pays full program costs (labor, vehicle usage, supplies and equipment, etc.). In addition, both landholders and the DOT will receive services. To receive additional services, a county must enter into a cooperative service agreement with USDA Wildlife Services with payment going directly to USDA Wildlife Services, not the WRC.

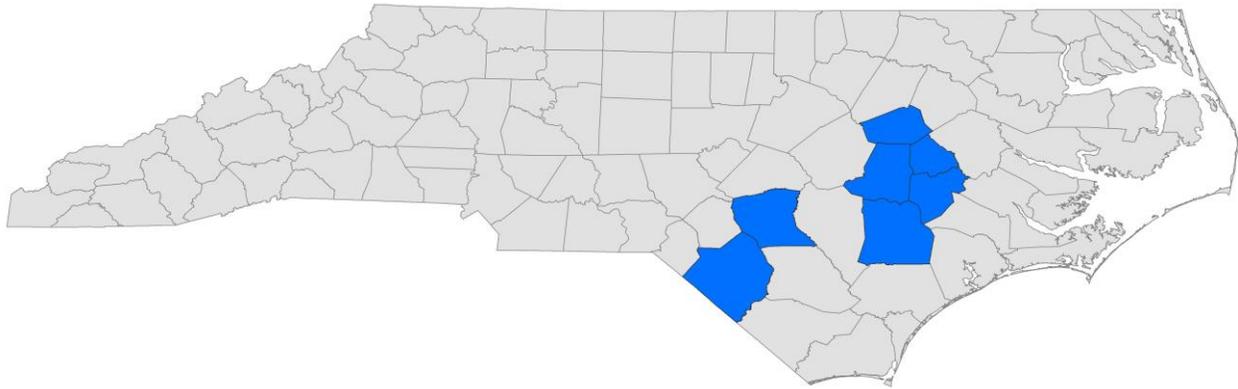
Participating counties with Additional Funding – Expanded services were conducted in 6 participating counties and 1 city that provided additional funding beyond the baseline \$4,000. These counties/city provided additional funding directly to USDA Wildlife Services to cover the remaining expenses of a part-time, full-time or sometimes multiple full-time beaver damage management specialists. Counties that participated at one of these levels included:

Multiple full-time personnel – Duplin County (\$135,000)

Single full-time personnel – Robeson (\$61,000) and Wayne (\$43,209) Counties

Part-time personnel – City of Fayetteville (\$13,582), Greene (\$6,000), Lenoir (\$17,800), and Wilson (\$3,373) Counties

Operational Statistics – Additional Services



A total of 200 projects were worked resulting in the removal of 553 beaver and 329 dams.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
200	130	199	553

Damage Economics – Additional Services

Beaver damage management activities protect numerous valuable resources which included physical property, agricultural and natural resources totaling **\$2,034,776**. The additional benefit of protecting human health and safety occurred but remains difficult to quantify.

Estimated Value of Protected Resources by Individual Category

Timber	Crops & Pasture	Roads & Bridges	Dams & Dikes	Irrigation & Drainage	Utilities & Sewer	General Property	Natural Resources
\$661,685	\$97,292	\$627,423	\$27,438	\$51,741	\$18,600	\$511,009	\$39,588