

# Beaver Damage Management In North Carolina

Twenty-Sixth Summary Report to NC General Assembly  
July 1, 2017 through June 30, 2018



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# Beaver Management Assistance Program

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## 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 44 participating in 2016-17. 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 to be 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, 2017 through June 30, 2018.

## Beaver Damage Control Advisory Board

The Beaver Damage Control Advisory Board is comprised 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.

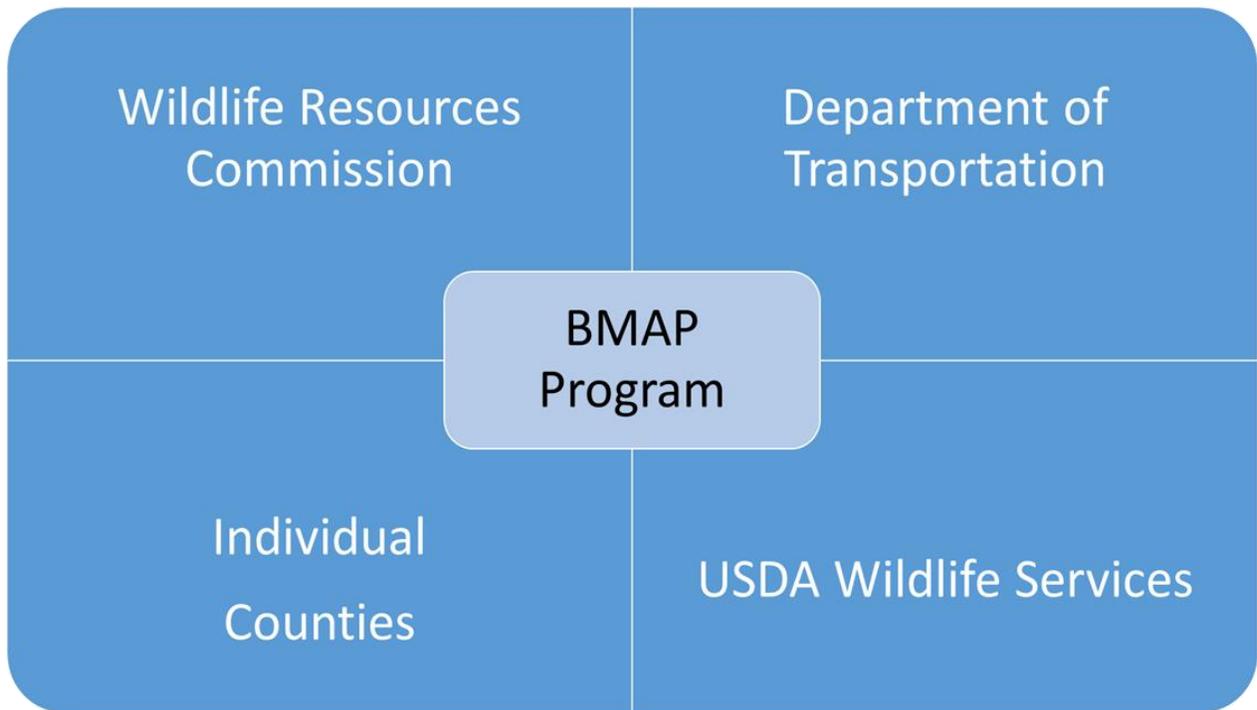
Falyn Owens (Chair)	NC Wildlife Resource Commission
Tim Sherrill	NC Department of Transportation
Vacant	NC Cooperative Extension Service
Eric Galamb	NC Division of Soil and Water Conservation
Joseph Hudyncia	NC Department of Agriculture and Consumer Services
Bill Pickens	NC Forest Service

Anne Coan  
Justin Faircloth  
Todd Menke

NC Farm Bureau Federation  
NC Forestry Association  
USDA, APHIS, Wildlife Services

## Program Structure

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



The 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.

The 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, 2017 through June 30, 2018 are summarized below:

Expenditure Type	Expenditures (a) by Funding Source					Totals
	NC WRC	NC DOT	Counties*	USDA Wildlife Services (WS)	Cost-Share Collections	
Personnel Costs	\$239,829	\$600,736	\$273,612	\$0	\$46,944	\$1,161,121
Travel & Per Diem	\$1,272	\$37,837	\$9,450	\$0	\$0	\$48,559
Vehicle Usage (i.e. fuel, maintenance, repair)	\$18,654	\$60,952	\$14,896	\$0	\$0	\$94,502
Other Services (i.e. telephone, data lines, non-vehicle repairs & maintenance)	\$380	\$824	\$2,457	\$25,000	\$0	\$28,661
Supplies (i.e. waders, tools, traps, explosives)	\$7,800	\$7,522	\$20,945	\$0	\$0	\$36,267
Equipment (i.e. laptops/printers)	\$34,857	\$24,335	\$63,089	\$0	\$0	\$122,281
Pooled Job Costs (11%):	\$33,307	\$80,543	\$25,811	\$0	\$0	\$139,660
Indirect Costs to NCWS (11%)	\$33,307	\$80,543	\$42,289	\$0	\$5,164	\$161,303
Indirect Costs to APHIS (5.15%)	\$15,594	\$37,709	\$19,799	\$0	\$2,417	\$75,519
Total spent (7/1/17-6/30/18)	\$385,000	\$931,000	\$472,348	\$25,000	\$54,525	\$1,867,873
Amount Funded (7/01/17-6/30/18)	\$385,000	\$931,000	\$472,348	\$25,000	\$54,525	\$1,867,873
	(b)	(b)	(b) and (c)	(c)	(d)	
<b>BALANCE (6/30/18)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

(a) Expenditure figures are subject to adjustment.

(b) Funding sources:           NCWRC           NCDOT    Baseline County Fees\*           Additional County Fees\*  
**\$385,000                   \$931,000           \$168,000                   \$304,348**

(c) Pooled job costs are lower than 11% for the county participation fees.

(d) USDA Wildlife Services contributed \$25,000 to fund the BMAP from July 1, 2017 through June 30, 2018. Wildlife Services provided additional indirect support to administer the program that is not included in the \$25,000.

(e) BMAP cost-share collections by Wildlife Services from landowners, municipalities, and other sources. As of July 1, 2018, \$325 in outstanding landowner cost-share invoices were over 90 days past due.

## Program Statistics in Summary

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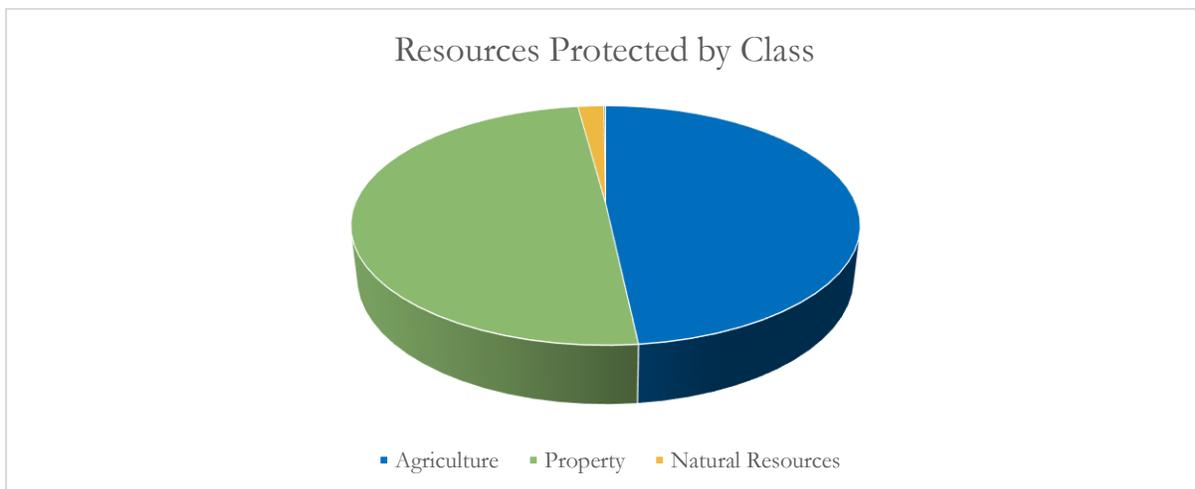
The Cooperative Service Agreements between WS, DOT, WRC, and Counties were converted from a Federal to a State fiscal year. This switch in timetable caused this summary report to only span nine months, resulting in a pro-rated funding structure covering activities from July 1, 2017 through June 30, 2018. In total 905 projects were worked during this timeframe. There were an additional 808 adjacent landholders who benefitted from these services at no cost to them.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
905	464	1,043	3,023

## Damage Economics in Summary

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USDA Wildlife Services staff and cooperators reported that BMAP services prevented the impending loss or repair expenditures of an estimated \$9,083,814 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 4.86. In other words, for every \$1.00 spent, \$4.86 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.



## Beaver Damage Example

Beaver damage takes many forms but a typical situation is depicted below. In this example, beaver have flooded a culvert under a state highway. The flooded water has saturated the road bed, drowned timber, and saturated the ground and threatening to flood the road surface.



After USDA Wildlife Services conducted beaver damage management activities, all of these problems were corrected and the threats had been removed from Lane Store Road Franklin County.

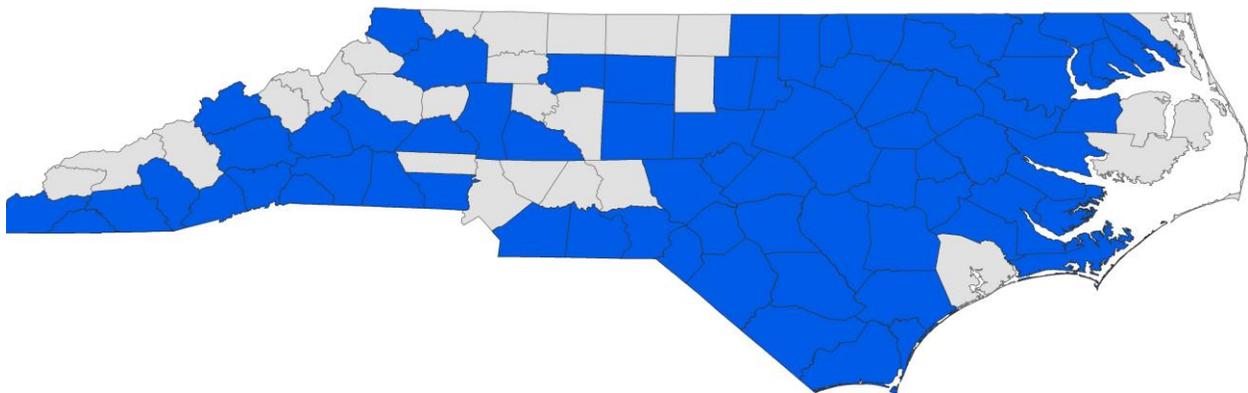


# NC Department of Transportation

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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, DOT agreements continued to receive priority, but response time varied depending on the number of public and private agreements backlogged to ensure equity of services provided. In counties where DOT work was done, DOT received on average 6 to 8 completed agreements under the current funding levels, demand, number of counties worked, and the program's ability to meet increasing demand. Some non-participating counties received varying amounts of DOT services depending on the demand in that county. 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



The NC Department of Transportation beaver damage management activities were conducted in 72 of North Carolina's 100 counties. A total of 522 projects were worked for the DOT resulting in the removal of 1,669 beaver and 864 dams. In addition, WS worked with 691 adjacent landholders who benefitted from these services at no cost to them.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
522	185	679	1,669

## Damage Economics - DOT

Beaver damage management activities protect numerous valuable, which include physical property, agriculture and natural resources totalling **\$5,034,183**. The additional benefit of protecting human health and safety occurred but remains difficult to quantify.

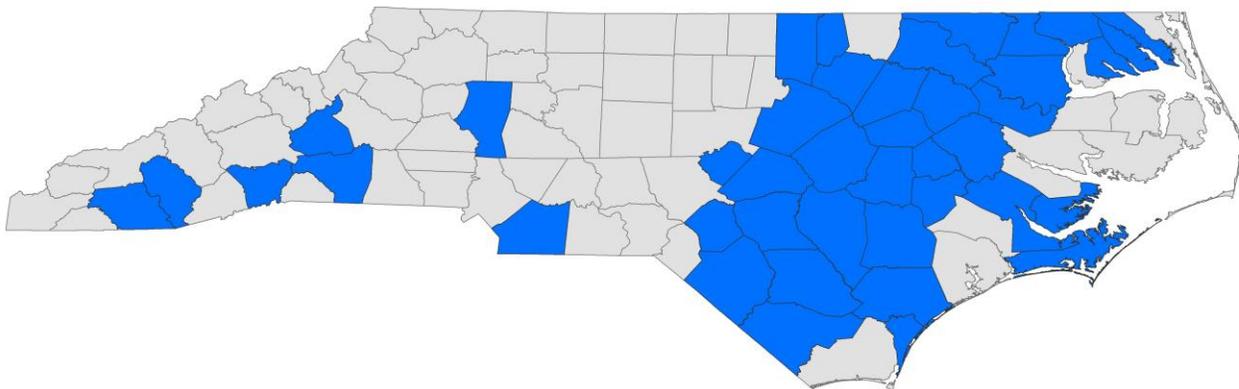
### Estimated Value of Protected Resources by Individual Category

Timber	Crops & Pasture	Roads & Bridges	Irrigation & Drainage	Utilities & Sewer	General Property	Wetlands
\$739,440	\$7,643	\$4,106,800	\$28,300	\$29,000	\$48,000	\$75,000

## 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. In counties where work was done, those participating counties received on average 11 to 15 agreements (5-7 non-DOT and 6-8 DOT) being completed under the current funding levels, demand, number of counties worked, and the program's ability to meet the increasing demands. Some participating counties received varying amounts of services depending on the demand in that county.

### 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 308 projects were worked resulting in the removal of 1,092 beaver and 468 dams.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
308	189	279	1,092

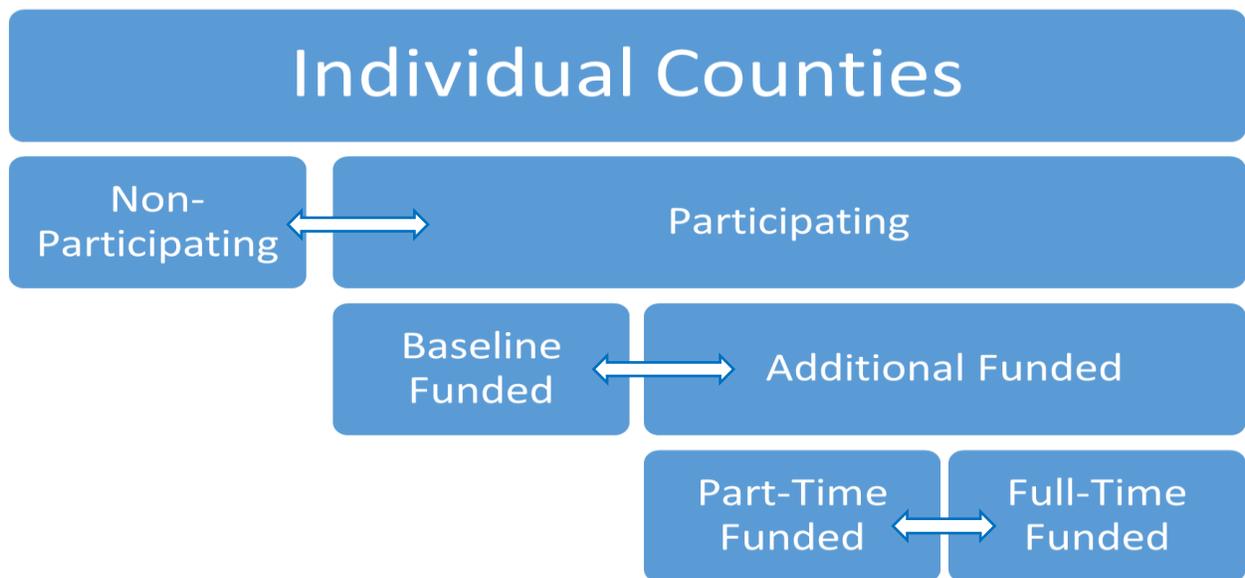
## Damage Economics - WRC

Beaver damage management activities protect numerous valuable resources which included physical property, agriculture and natural resources totalling **\$7,447,387**. 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
\$2,537,094	\$283,880	\$3,772,825	\$81,108	\$204,364	\$82,970	\$348,657	\$136,489

## Individual Counties



Individual North Carolina counties are invited to participate in the BMAP on an annual basis and have the choice to participate or opt out. If the counties choose to participate, then they have the choice of which level to participate in (see above).

**Non-participating counties** – Landholders in non-participating counties have access to beaver damage management activities if needed. These activities can be provided by USDA Wildlife Services without the cost-share benefit at the full cost of the activities.

**Participating counties at Baseline Funding** – The cost to become a participating county was \$4,000. Participation in the program gives counties access to funding provided by the NC Wildlife Resources Commission and generally covers 6 to 8 private projects within the County. Individual landholders that request these services pay cost share fees of \$25 per visit and \$125 per large dam. The 42 counties listed below participated at this level during the reporting period.

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

## Educational Activities

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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 the positive and negative aspects of beaver activity on their land so that they can make informed decisions about management options. If landholders decide to use non-lethal or lethal means to address a beaver damage problem, they are always given the option to do the work themselves with direction and training provided by USDA Wildlife Services at no cost.

## State Fiscal Year 2018/2019

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The BMAP continues to be a popular program among landholders, counties, municipalities, businesses, and the DOT. Landholders requesting BMAP services are often faced with significant losses as a result of beaver activity. The severity is evident by the value set on BMAP services. As in previous years, BMAP participants continued to show little interest in conducting damage management activities themselves. This is most likely because of a lack of ability and/or time. USDA Wildlife Services wildlife 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 2017/2018

NC Department of Transportation	\$1,250,000
NC Wildlife Resources Commission	\$385,000
42 Participating Counties	\$168,000
USDA Wildlife Services	\$25,000
Private Cost-Share (estimated)	\$54,000
Counties Providing Additional Funds	\$304,000
<b>Total</b>	<b>\$1,867,000</b>

## Obtaining Services

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### How to Participate

All counties are eligible to participate in BMAP through an annual cost share assessment of \$4,000 per county. Individuals residing in these counties may obtain assistance with beaver damage by contacting their county Cooperative Extension or Soil and Water Conservation District office. Statewide assistance with beaver damage problems is also provided to the DOT. All requests for assistance receive an immediate response, but due to current workloads the start of direct assistance activities may vary.

### Cost Share

Individuals in participating counties pay a small cost-share fee for services. There is 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 recommends 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 are provided individualized training at no cost. The cost-share fee for individuals in participating counties is \$25 for each visit to their property, with no charge for travel time. There is 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 landholders will 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 addressing 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

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Participating counties occasionally request beaver management services for landholders in addition to those received under the cost-share BMAP. 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.

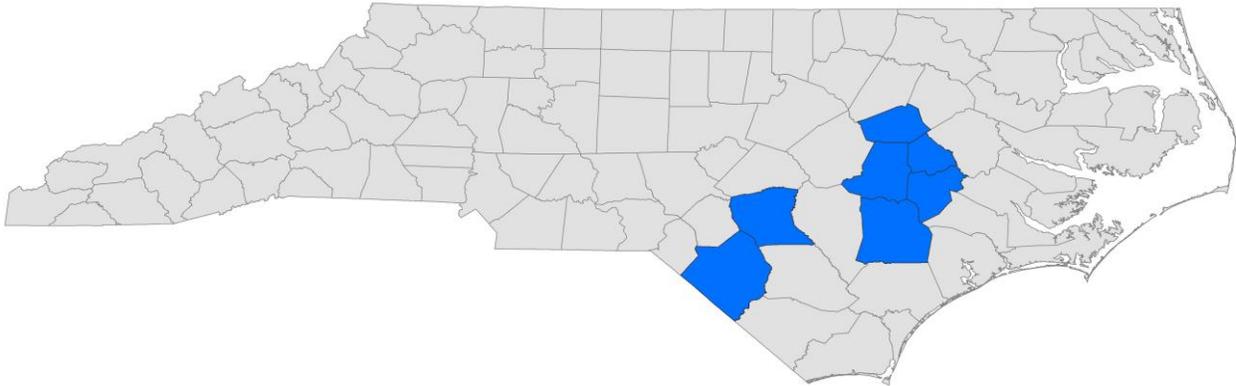
**Participating counties with Additional Funding** – Beaver damage management activities were conducted in 6 participating counties and 1 city that provided additional funding beyond the baseline \$4,000. These counties/city provided additional funding directly to USDA Wildlife Services to cover the 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 (\$55,000) Counties

**Part-time personnel** – City of Fayetteville (\$16,547.58), Greene (\$6,000), Lenoir (\$17,800) , and Wilson (\$13,000) Counties

## Operational Statistics – Additional Services



A total of 144 projects were worked resulting in the removal of 472 beaver and 310 dams.

Projects Worked	Dams Removed w/Explosives	Dams Removed Manually	Beaver Removed
144	129	181	472

## Damage Economics – Additional Services

Beaver damage management activities protect numerous valuable resources which included physical property, agriculture and natural resources totalling **\$1,636,429**. 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
\$838,725	\$30,397	\$594,975	\$11,243	\$56,636	\$31,530	\$9,903	\$63,020