NORTH CAROLINA BEAVER MANAGEMENT ASSISTANCE PROGRAM (BMAP)

Twenty-Third Annual Report

FY 2015 - October 1, 2014 through September 30, 2015

Wildlife Services

Protecting People
Protecting Agriculture
Protecting Wildlife

NORTH CAROLINA Wildlife RESOURCES COMMISSION

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 program primarily focuses on public health and safety and on assistance to landholders experiencing beaver damage problems. Because of practical and ecological considerations, the program is designed to address specific beaver damage problems rather than to eliminate beaver. It seeks to assist the North Carolina Department of Transportation (DOT), local governments, private landholders, and others. The BMAP has grown from four counties in FY 1993 to 44 counties in FY 2015. At the same time, BMAP services specifically delivered to the DOT now covers all 100 counties.

History…….…….....1

Background Information….....2

BMAP Advisory Board…….……..3

BMAP Statistics……...…….....4-5

Damage Economics ……...……..... 6

Damage Economics - DOT…….....7

Damage Economics - Non-DOT…..……..... 8

Funding Sources and Expenditures……...9

Protect Threatened Endangered Species…10

Customer Service ……..11

Protecting Roadways …….…...12

Removing Beaver Dams…….……..13-14

Educational Activities…….....……15

FY 2016 …….……...…….……16

Obtaining BMAP Services in FY 2016.....17

Additional Information……...……..18

Addendum to BMAP Report.……..…..19

Front Cover and Above: Beaver dam removed using delayed explosives from inside a DOT culvert under Stallings Road in Duplin County. Photo credits: William “Reid” Cooper and William Parker, USDA Wildlife Services.

Background Information

The BMAP is a cooperative endeavor funded by the North Carolina Wildlife Resources Commission (NCWRC), DOT, USDA Wildlife Services, participating counties, and cost-share collections from private landholders, businesses, municipalities, and others. (See BMAP Funding Sources and Expenditures on page 9). The BMAP is administered by USDA Wildlife Services through cooperative service agreements with the NCWRC and the DOT.

Participating Counties

Bertie	**Lee**
Bladen	**Lenoir**
Brunswick	**Martin**
Camden	**McDowell**
Carteret	**Nash**
Catawba	**New Hanover**
Cleveland	**Northampton**
Columbus	**Onslow**
Craven	**Pamlico**
Cumberland	**Pasquotank**
Duplin	**Pender**
Edgecombe	**Perquimans**
Franklin	**Pitt**
Gates	**Robeson**
Granville	**Rutherford**
Halifax	**Sampson**
Harnett	**Union**
Henderson	**Vance**
Hoke	**Warren**
Iredell	**Washington**
Jackson	**Wayne**
Johnston	**Wilson**

In FY 2015, BMAP services were available in all 100 counties for the DOT, as well as local governments, landholders, and others in 44 participating counties, each of which opted to contribute $4,000 to the program.

Above: Road damage due to beaver activity along Stallings Road in Duplin County. Photo credit: William "Reid" Cooper, USDA Wildlife Services.

BMAP Advisory Board

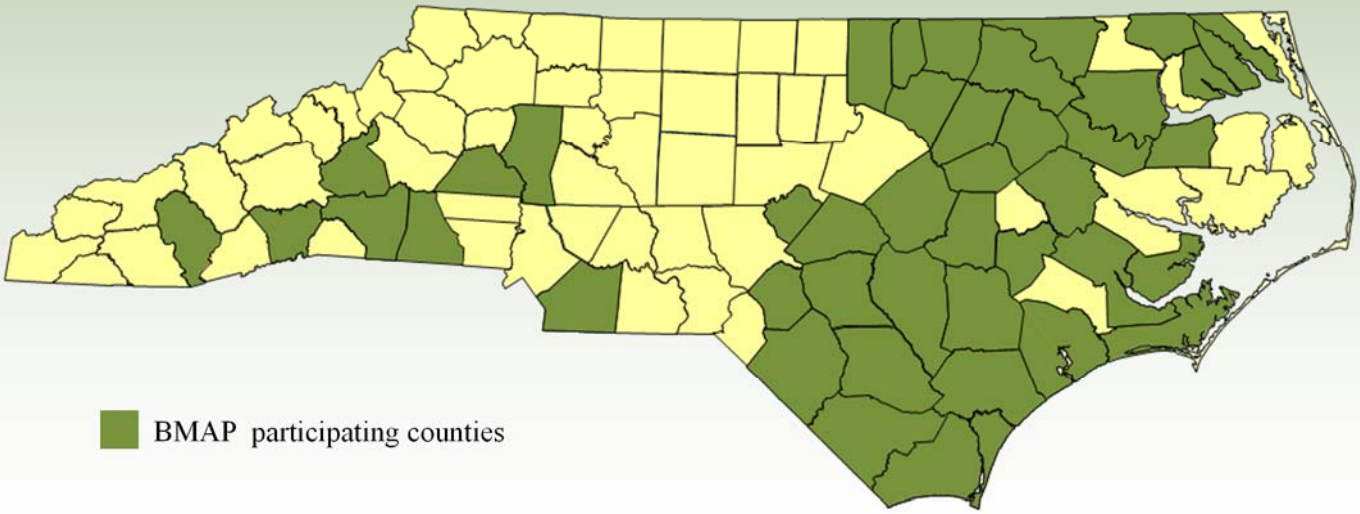
- **Ann May (Chair), NC Wildlife Resources Commission**
- **Tim Sherrill, NC Department of Transportation**
- **James Jeuck, NC Cooperative Extension Service**
- **Charles Bowden, NC Division of Soil and Water Conservation**
- **Joseph Hudyncia, NC Department of Agriculture and Consumer Services**
- **Bill Pickens, NC Forest Service**
- **Anne Coan, NC Farm Bureau Federation**
- **Chris Brown, NC Forestry Association**
- **Keith Wehner / Todd Menke USDA Wildlife Services**

The BMAP is overseen by the NCWRC and advised by a nine-member Advisory Board with current members and respective affiliations listed above. In FY 2015, the BMAP Advisory Board met twice on March 9 and September 8, 2015 to review program accomplishments and to make recommendations on future activities to the Executive Director of the NCWRC.

Left: Clemson Beaver Pond Leveler , a non-lethal method installed in Franklin County, as a water control device to mitigate damages caused by beaver. Beaver do create excellent wetland habitats and for this landholder, an avid waterfowl hunter , he wanted to try to co-exist with the beaver. Photo credit: Todd Menke, USDA Wildlife Services.

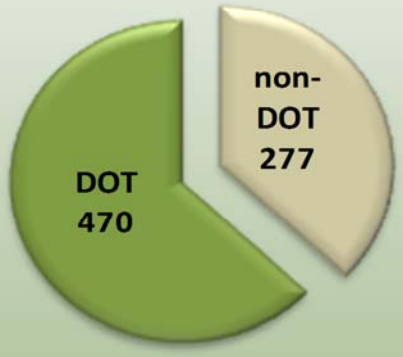
Program Activities and Accomplishments

BMAP Statistics

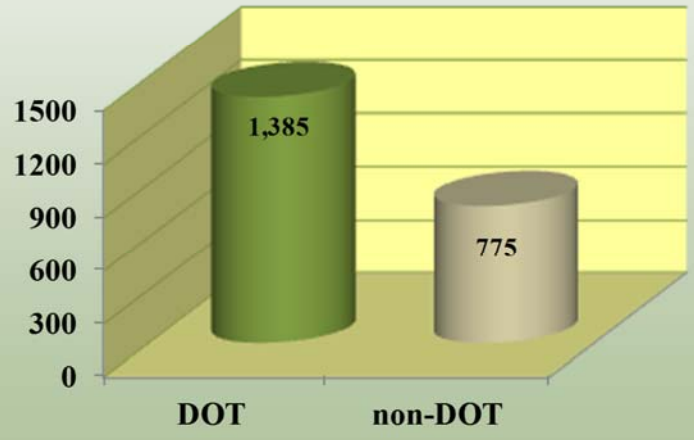


Beaver damage control activities were conducted in 82 counties under 747 agreements with 2,160 beavers being removed (see charts below). These were agreements with both the DOT and non-DOT including private landholders, businesses, local governments, soil/water conservation districts and others. An additional 17 agreements were in place as of September 30, 2015. This work also benefitted an additional 537 adjacent landholders where USDA Wildlife Services wildlife specialists worked on private properties adjoining DOT rights-of-way and other private property to resolve beaver damage. Agreements with private landholders may include several noncontiguous areas, all of which are identified as one agreement. Agreements with local governments and soil/water conservation districts sometimes involve numerous landholders; however, all are identified as just one agreement.

Service Agreements



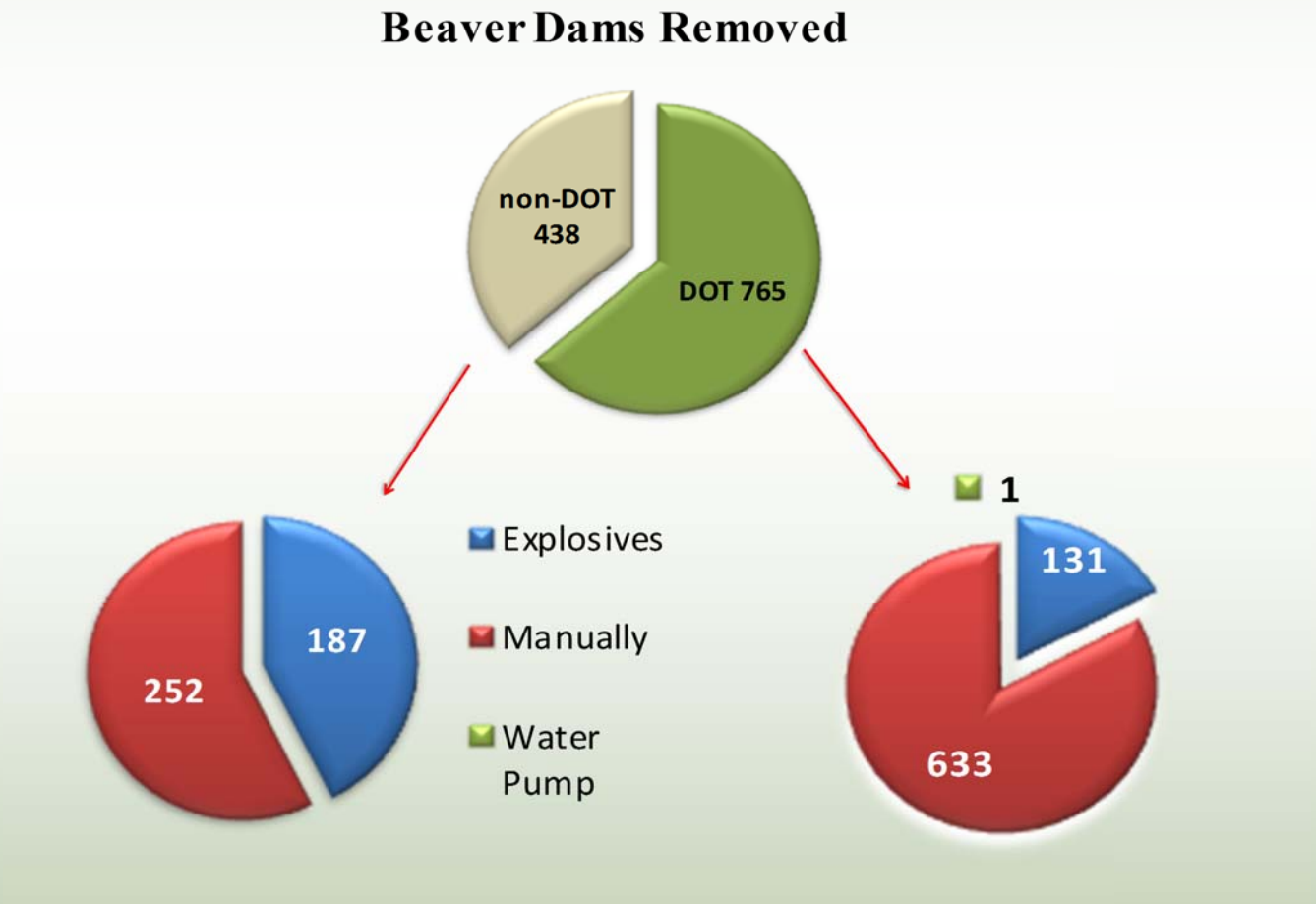
Beavers Removed By Service Agreement



BMAP Statistics

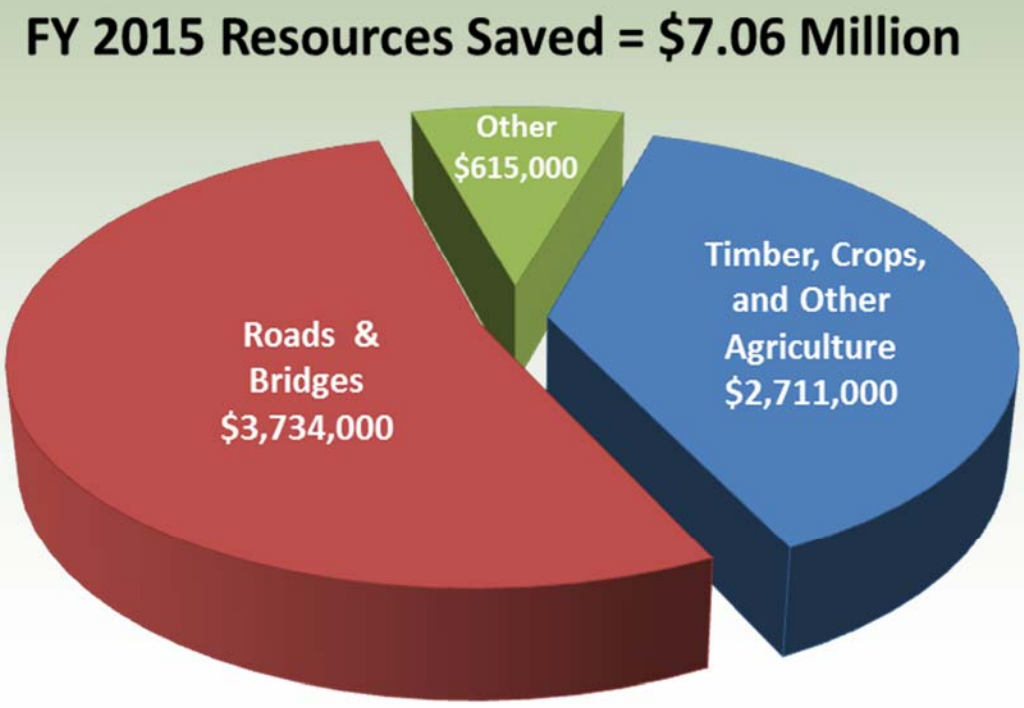
In FY 2015, the numbers of agreements completed, beaver and beaver dams removed decreased compared to the previous years. This decrease was mostly due to reduced funding and the reduction in the number of staff years worked (see BMAP Funding Sources and Expenditures on page 9). However, the value of resources saved increased due to the increase in the value of those resources.

FY	Agreements Completed	Beaver Removed	Dams Removed	Resources Saved
2015	747	2,160	1,204	$7,059,851



BMAP wildlife specialists used explosives, hand tools, and high pressure water pumps to remove 1,204 beaver dams, which were backing up water and flooding public roads and highways, timber, croplands, sewer and septic systems and other lands.

Damage Economics



For every $1 spent,

$6.55 in resources was saved

In FY 2015, USDA Wildlife Services wildlife specialists and cooperators reported that BMAP services prevented the impending loss or repair expenditures of an estimated $7.06 million 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 6.55. In other words, for every $1.00 spent, $6.55 in resources was 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 does not include any state revenue generated from taxes on timber sales that otherwise would have been lost had beaver destroyed the timber.

Damage Economics - DOT

Construction of Hwy. 74 By-Pass near Shelby in Cleveland County was stopped due to beaver activity. The problem was resolved within two weeks of being notified to prevent further delays allowing contractors and DOT to continue construction. Photo credits: Dustyn Reece, USDA Wildlife Services.

Damage Economics - Non-DOT

Two storm water control structures were clogged by beaver in Mecklenburg County. The extremely high water threatened the integrity of the dike system. The material was manually removed to alleviate the flooding of the dikes. Photo credits: Brandon Emert and Dustyn Reece, USDA Wildlife Services.

BMAP Funding Sources and Expenditures

The table below outlines BMAP funding sources and expenditures from October 2014 through September 2015. USDA Wildlife Services personnel worked 12.8 staff years on the BMAP.

Expenditure Type	Expenditures ($$) (a) *by Funding Source* NCWRC/DOT/ Counties	USDA Wild-life Services (WS)	WS Cost Share Collections	Totals
Personnel Costs	$692,316	$0	$35,656	$727,972
Travel & Per Diem	$3,820	$0	$0	$3,820
Vehicle Usage (fuel, maintenance, repair)	$78,686	$0	$0	$78,686
Other Services (telephone, data lines, non-vehicle repairs & maintenance, etc.)	$972	$25,000	$0	$25,972
Equipment (i.e. laptops/vehicles)	$32,438	$0	$0	$32,438
Pooled Job Costs (11%): services, supplies, & equipment	$72,238	$0	$0	$72,238
Indirect Costs to NCWS (13.15%)	$106,283	$0	$4,689	$110,972
Indirect Costs to APHIS (3%)	$24,247	$0	$1,070	$25,317
Total spent (10/1/14-9/30/15)	$1,011,000	$25,000	$41,415	$1,077,415
Amount Funded (10/1/14-9/30/15)	$1,011,000	$25,000	$41,415	$1,077,415
	(b)	(c)	(d)	
BALANCE (10/1/15)	**$0**	**$0**	**$0**	**$0**

(a) Expenditure figures are subject to adjustment.

(b) Funding sources: NCWRC. NCDOT 44 Counties

$385,000 **$450,000** **$176,000**

(c) USDA Wildlife Services contributed $25,000 to fund the BMAP in FY 2015. Wildlife Services provided additional 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 October 1, 2015, $1,105 in outstanding landowner cost-share invoices were over 90 days past due.

Protect Threatened and Endangered Species

WRC, DOT, USDA Wildlife Services and USFWS collaborated with BMAP to enhance rare mussel habitat on the Upper Tar River Rocky Swamp drainage along Hwy 561 in Halifax County. Beaver activities completely inundated habitat utilized by the endangered Dwarf Wedgemussel (*Alasmidonta heterodon*) above which posed a substantial threat to the long-term persistence due to changes in habitat, water flow, water chemistry, and thermal regime alteration. Beaver and dam removal restored natural, stream flowing conditions increasing aquatic wildlife diversity while protecting Threatened and Endangered species. Photo credits: Matthew Ordess, USDA Wildlife Services and USFWS website.

Customer Service

Beaver removed an aluminum drain gutter off the side of a house completely destroying it. The City of Rocky Mount requested assistance to not only help the homeowner but also to protect the Goose Creek Outfall waste water treatment system nearby. Photo credits: Matthew Ordess, USDA Wildlife Services.

Protecting Roadways and the Traveling Public

Lem Brown Road in Duplin County was being threatened after beaver plugged the culvert. The adjacent landholder lost acres of soybeans due to the beaver caused flooding. Results provided by BMAP shown below. Photo credits: William “Reid” Cooper, Chris Raynor and Hunter Walters, USDA Wildlife Services.

Removing Beaver Dams

Above: Beaver blocked a large box culvert under Brown Road in Transylvania County.
Below: Beaver plugged two 18" pipes under Pisgah Hwy. 151 in Buncombe County.
Photo credits: Christopher "Seth" Brown and Russell "Kyle" Childers, USDA Wildlife Services.

Using Explosives to Remove Beaver Dams

Beaver dam removed using delayed explosives from inside a DOT culvert under Daniel Chestnut Road in Duplin County. Photo credits: William “Reid” Cooper and Joey Smith, USDA Wildlife Services.

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. 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.

Left: The amount of damage beaver can cause often surprises many individuals. This is an example of BMAP results alleviating flooding along Stallings Road in Duplin County. Photo credit: William "Reid" Cooper.

Right: Another example of damages caused by beaver activities along Lem Brown Road in Duplin County. Photo credit: William "Reid" Cooper, Chris Raynor and Hunter Walters, USDA Wildlife Services.

FY 2016

The BMAP continues to be a popular program among landholders, counties, municipalities, businesses, and the DOT. Landholders requesting BMAP services are 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.

The WRC conservatively estimates state beaver populations to be near 500,000 and increasing. With increased beaver populations comes increased beaver damage problems for private landholders, businesses, county and local governments, and the DOT, especially where humans and beaver live in close proximity. In 2013-2014, the WRC reported both recreational trappers and wildlife damage control agents trapped and removed 13,138 beaver. This is a minimum figure because, as a "nuisance species," reporting take is not required of private trappers or landholders. Even if the combined recreational and nuisance beaver take was as much as 20,000 (4% of the estimated statewide population), this low take percentage will have little effect on keeping beaver numbers and damage in check, and populations are expected to continue to increase into the future.

Estimated Funding Sources for FY 2016	
NCWRC	**$385, 000**
DOT	**$450,000**
Federal	**$25,000**
Counties	**$180,000**
Private Cost-Share (*a*)	**$40,000**
Total	**$1,080,000**
(a) estimate based on FY 2015 collections	

Obtaining BMAP Services in FY 2016

How to Participate

All counties are eligible to participate in BMAP through an annual cost share assessment of $4,000 per county. In FY 2016, 45 counties are in the program. Individuals residing in these counties may obtain assistance with beaver damage by contacting their county Cooperative Extension or Soil and Water Conservation District office (see below). 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 the Wildlife Specialist discusses with the landholder the positive and negative impacts of beaver and recommends the best course of action. If damage management activities are recommended, time and costs are estimated and the Wildlife Specialist begins work. 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 for dam removal. Wildlife Specialists 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 increase.

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 the USDA Wildlife Services at 6213-E Angus Drive, Raleigh, NC 27617, telephone: 1-866-487-3297, or the NC Wildlife Resources Commission, Division of Wildlife Management at 1751 Varsity Drive, Raleigh, NC 27606, telephone: 919-707-0050.

Bertie	252-794-5317	Halifax	252-583-3481	Pamlico	252-745-4121
Bladen	910-862-4591	Harnett	910-893-7530	Pasquotank	252-338-3954
Camden	252-338-1919 ext. 262	Henderson	828-694-5026	Pender	910-259-1235
Carteret	252-222-6352 (Todd)	Hoke	910-875-3461	Perquimans	252-426-5545
Catawba	828-465-8240	Iredell	704-872-5061 Ext. 3	Pitt	252-902-3250
Cleveland	704-482-4365	Jackson	828-586-4009	Robeson	910-671-3022
Columbus	910-642-2196 ext. 3	Johnston	919-989-5380	Rutherford	828-287-4220 ext. 3
Craven	252-633-1477	Lee	919-775-5624	Sampson	910-592-7161
Cumberland	910-321-6860	Lenoir	252-527-2191	Union	704-283-3801
Duplin	910-296-2120 ext. 3	Martin	252-789-4370	Vance	252-438-8188
Edgecombe	252-641-7821	McDowell	828-652-7121 ext. 375	Wake	919-250-1050
Franklin	919-496-3344	Nash	252-459-9810	Warren	252-257-3640
Gates	252-357-1400	New Hanover	910-798-7660	Washington	252-793-4561 ext. 3
Granville	919-603-1350	Northampton	252-534-2711	Wayne	919-731-1521
Greene	252-747-3705 ext 3	Onslow	910-455-0181	Wilson	252-237-5147 ext. 3

Additional Information

Beaver flooding alleviated at Daniel Chestnut Road in Duplin County. Photo Credits: William "Reid" Cooper, USDA Wildlife Services.

For more information contact:

USDA Wildlife Services

866-487-3297

WS Wildlife Services

Protecting People | Protecting Agriculture | Protecting Wildlife

-or-

North Carolina Wildlife

Resources Commission

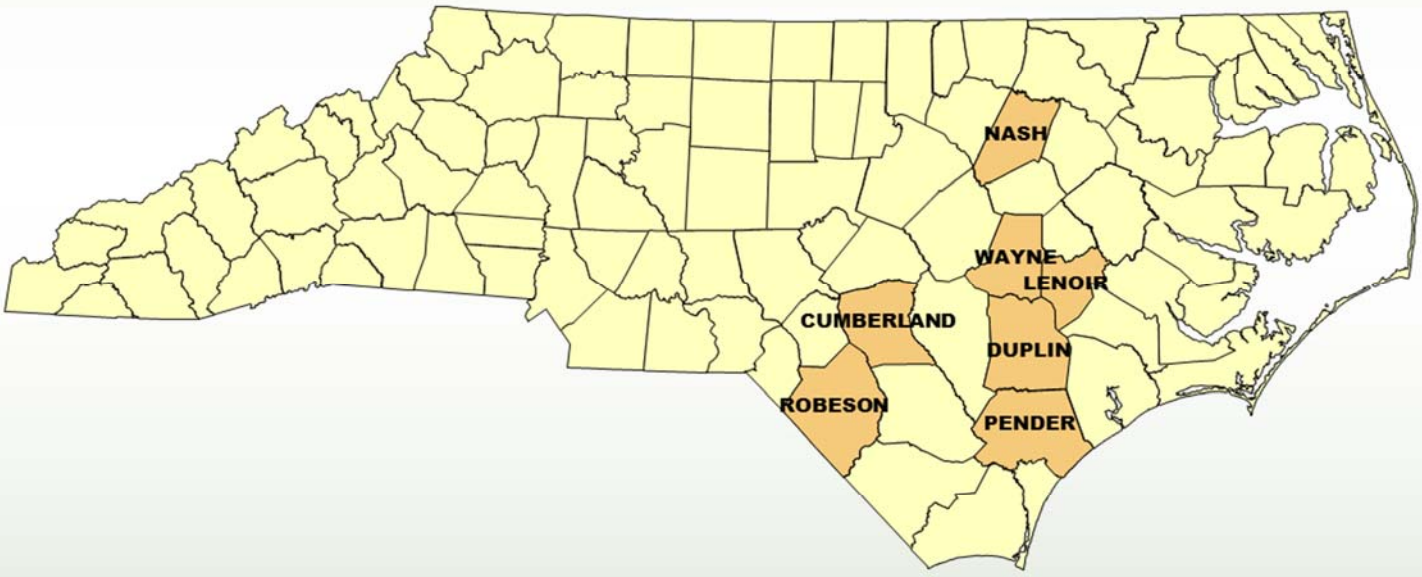
919-707-0050

NORTH CAROLINA Wildlife RESOURCES COMMISSION

Prepared by Keith Wehner, Todd Menke, Barbara Schellinger, Kirsten Bradshaw and Catherine Saunders, USDA Wildlife Services.

APHIS Program for Counties that Pay Additional Beaver Damage Management Services

In addition, seven counties (highlighted below) requested beaver damage management services over and above those received through BMAP. These counties paid directly for these additional services and also paid for a portion of the DOT work conducted in these counties, per BMAP guidelines. Results of this work are listed below, but are not included elsewhere in this report except where noted. In conjunction with these agreements, a total of $2.7 million dollars in resources was saved during FY 2015 (see table below).



FY 2015	Agreements Completed	Beaver Removed	Dams Removed	Resources Saved
Non-DOT	100	299	226	$2,024,433
DOT	80	212	128	$641,864