

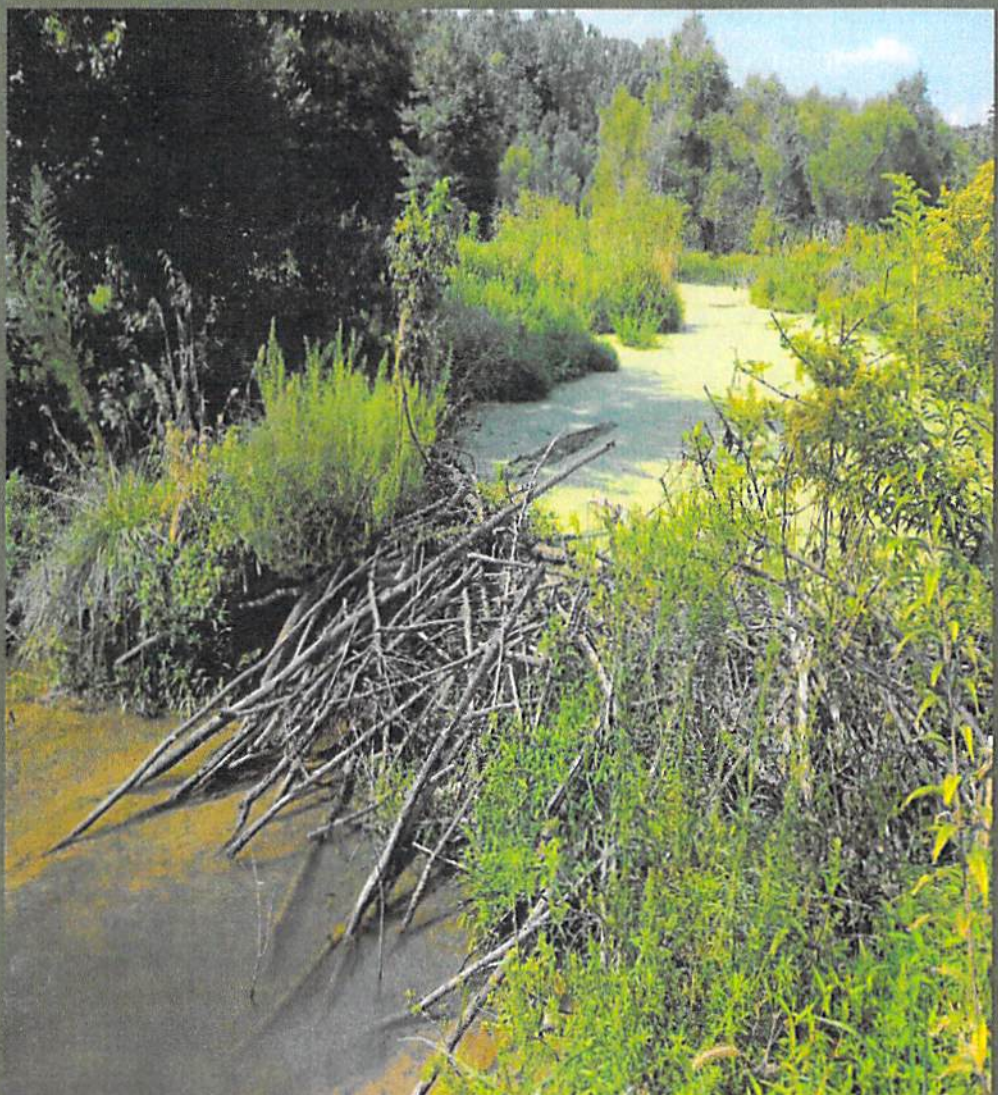
United
States
Department
of
Agriculture
Animal and
Plant
Health
Inspection
Service

October 1, 2012
through
September 30,
2013

FY 2013

21ST
ANNUAL
REPORT

NORTH CAROLINA BEAVER MANAGEMENT ASSISTANCE PROGRAM (BMAP)



WS Wildlife
Services

Protecting People
Protecting Agriculture
Protecting Wildlife

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 primary focus of the program is oriented toward public health and safety and assistance to landholders experiencing beaver damage problems. Because of practical and ecological considerations, the program is designed to assist the North Carolina Department of Transportation (DOT), local governments, private landholders, and others to address specific beaver damage problems rather than eradicate beaver populations. The BMAP has grown from four counties in 1992-1993 to 42 counties in 2012-2013. At the same time, BMAP services specifically delivered to the DOT now covers all 100 counties.



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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 program funding sources and expenditures on page 10.) The BMAP is administered by USDA Wildlife Services through a cooperative service agreement with the NCWRC. In 2012-2013 BMAP services were available to the DOT in all 100 counties as well as landholders, local governments, soil and water conservation districts, and others in the 42 participating counties who each opted to contribute \$4,000 to the program.

BMAP Participating Counties FY 2013

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



Beaver dam blocking a CSX railroad trestle in Wake County. In February 2000, 39 cars of a CSX train carrying hazardous chemicals derailed due to a collapsed trestle in Pitt County. Backed up water from a beaver dam eroded the railroad bed and was blamed for the wreck.

BMAP Advisory Board

- Ann May (Chair), NC Wildlife Resources Commission
- Greg Perfetti / Rick Nelson, NC Department of Transportation
- James Jeuck, NC Cooperative Extension Service
- Charles Bowden, NC Division of Soil and Water Conservation
- Dewitt Hardee / Keith Larick, NC Dept. of Ag and Consumer Services
- Bill Pickens, NC Forest Service
- Anne Coan, NC Farm Bureau Federation
- Chris Brown, NC Forestry Association
- Jon Heisterberg / Todd Menke USDA Wildlife Services

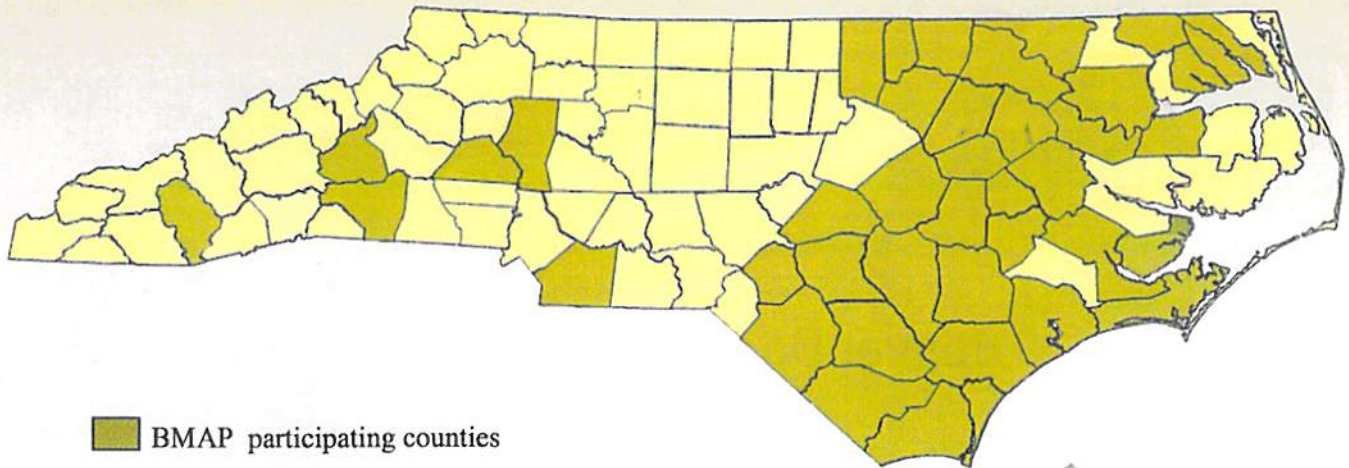
The BMAP is overseen by a nine member Advisory Board with current members and respective affiliations listed above. In FY 2013, the BMAP Advisory Board met on March 7, 2013, to review program accomplishments and to make recommendations on future activities to the Executive Director of the NCWRC.



Seven acres of bottomland hardwood in Hertford County lost to flooding due to beaver activity.

Program Activities and Accomplishments

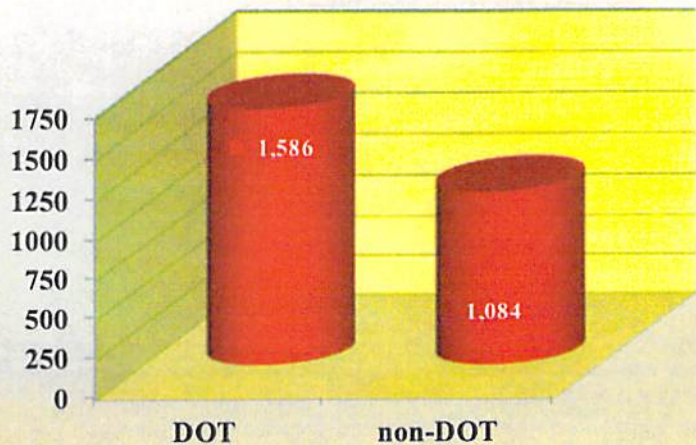
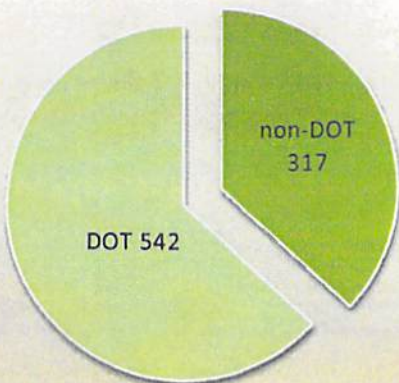
BMAP Statistics



Beaver damage control activities were conducted in 85 counties under 859 non-DOT (private landholder or business, local government, soil and water conservation district, other) and DOT agreements with 2,670 beavers being removed (see charts below). An additional 20 agreements were underway as of September 30, 2013. This work also benefitted an additional 498 adjacent landholders where wild-life 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 and water conservation districts sometimes involve numerous landholders; however, all are identified as just one agreement.

Beavers Removed By Service Agreements

Service Agreements

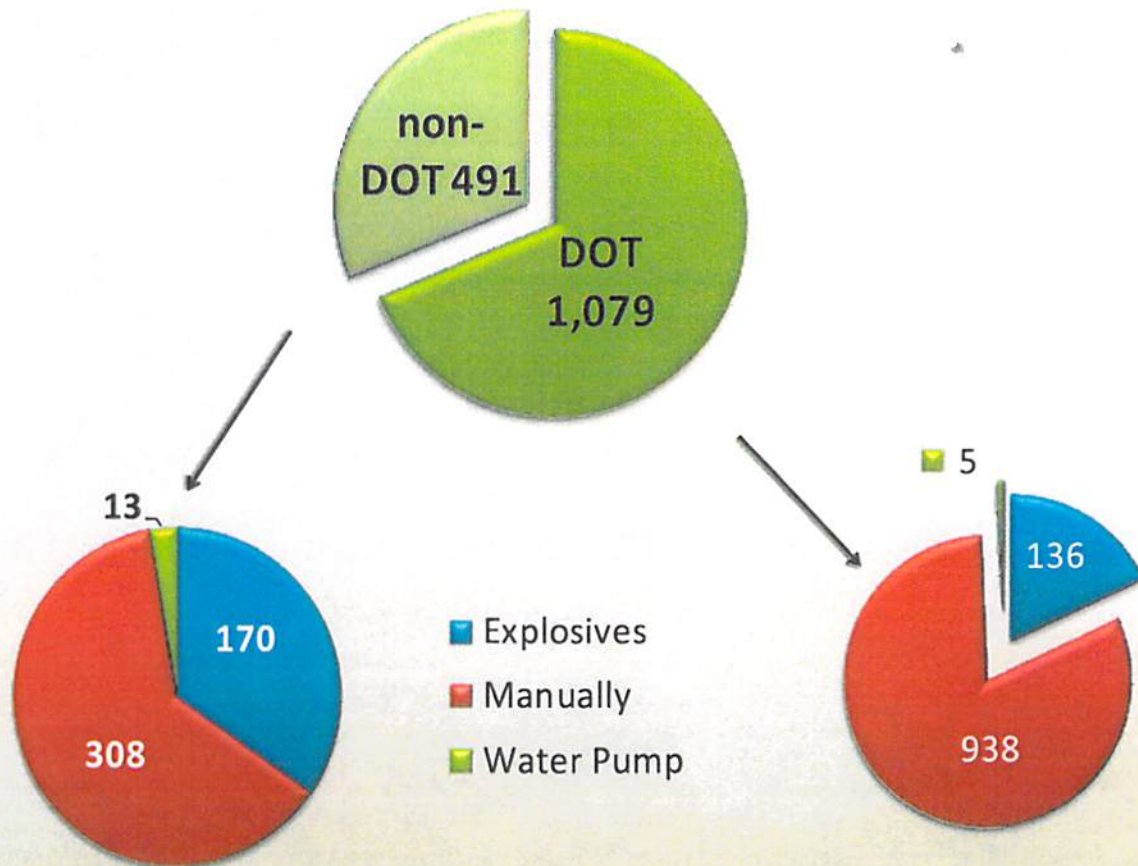


BMAP Statistics

In FY 2013, the numbers of agreements completed, beaver removed, beaver dams removed and value of resources saved all increased compared to previous years. This increase was mostly due to more requests for assistance and higher timber prices compared to previous years.

| FY | Agreements Completed | Beaver Removed | Dams Removed | Resources Saved |
|------|----------------------|----------------|--------------|-----------------|
| 2013 | 859 | 2,670 | 1,570 | \$7.0 million |

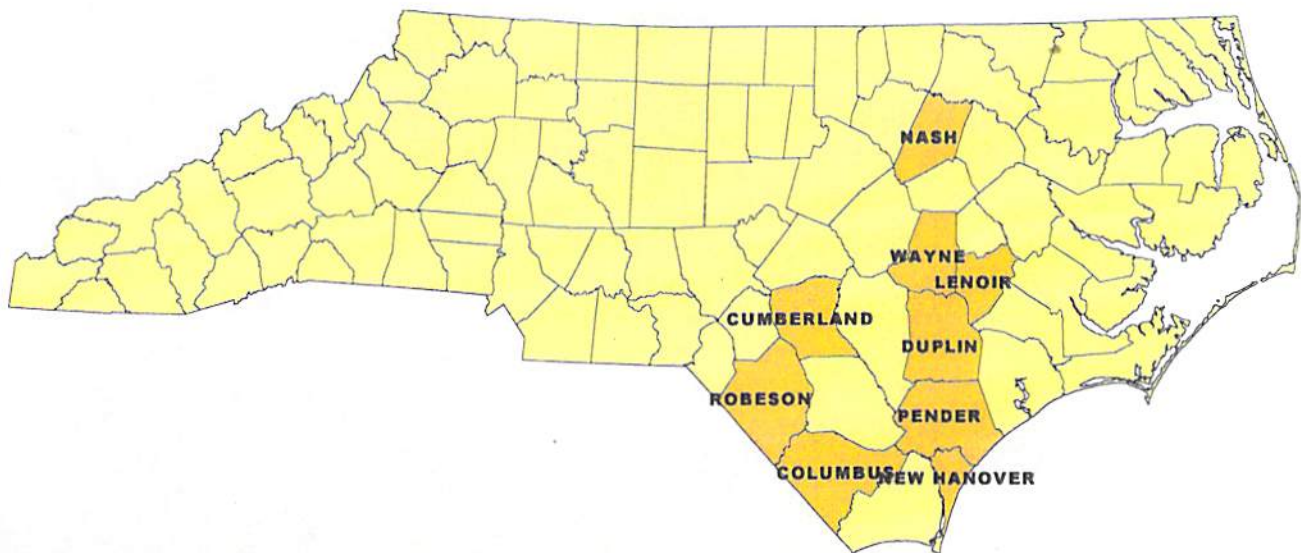
Beaver Dams Removed



BMAP wildlife specialists used explosives, hand tools, and high pressure water pumps to remove 1,570 beaver dams backing up water and flooding public roads and highways, timber, croplands, sewer and septic systems and other lands.

Counties Paying for Beaver Damage Management Services in Addition to BMAP

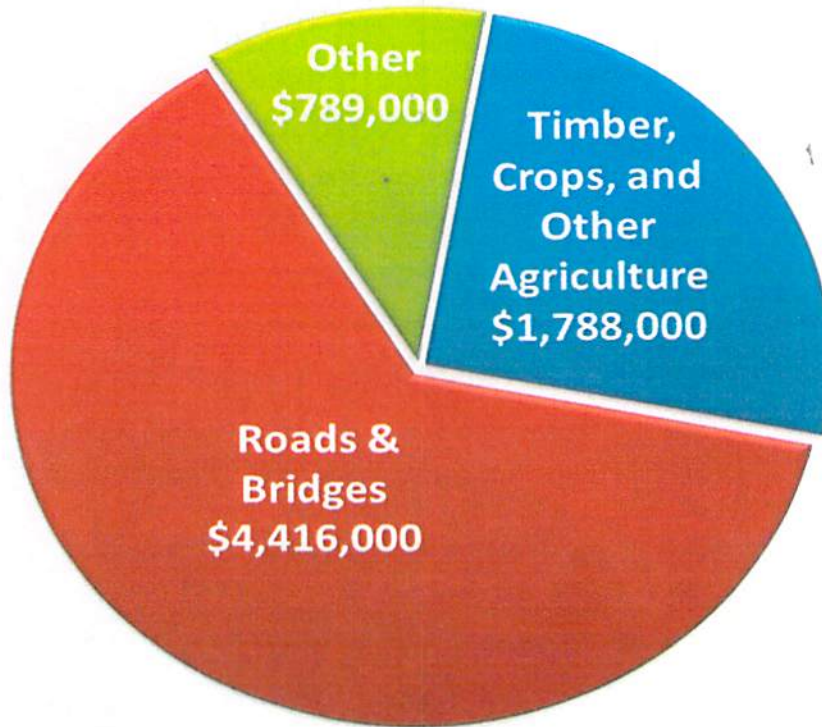
Nine BMAP participating counties (highlighted below) requested beaver damage management services over and above those received through the BMAP. These counties paid USDA Wildlife Services directly for these additional services. Per BMAP guidelines, these counties also paid for a portion of the DOT work conducted in these counties. Results of this work are listed below, but are not included elsewhere in this report except where noted. A total of \$2.8 million dollars in resources was saved during FY 2013 (see table below).



| FY 2013 | Agreements Completed | Beaver Removed | Dams Removed | Resources Saved |
|---------|----------------------|----------------|--------------|-----------------|
| Non-DOT | 144 | 524 | 336 | 1.8 million |
| DOT | 135 | 480 | 241 | 1.0 million |

Damage Economics

FY 2013 Resources Saved = \$7.0 Million



**For every \$1 spent,
\$5.28 in resources was saved**

In FY 2013, wildlife specialists and cooperators reported that BMAP services prevented the impending loss or repair expenditures of an estimated \$7.0 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 5.28. In other words, for every \$1.00 spent, \$5.28 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 and state revenue generated from taxes on timber sales that otherwise would have been lost had beaver destroyed the timber.

Damage Economics - DOT

In FY 2013, wildlife specialists conducted 677 separate agreements in 85 counties for the DOT. Of these projects, 542 were completed under the BMAP and 135 were paid with additional county funds. Nine counties (Columbus, Cumberland, Duplin, Lenoir, Nash, New Hanover, Pender, Robeson and Wayne) entered into separate agreements with USDA Wildlife Services to conduct these additional beaver damage management services over and above that provided through the BMAP. These counties understood that beaver damage management services not only benefits the driving public but also the landowners adjacent to DOT rights-of-way. In FY 2013, BMAP saved the DOT an estimated \$5.45 million in labor and repair expenditures to the state's roadways (\$4.42 million under the BMAP and \$1.03 million with funds provided by the nine counties listed above).

Beaver clogged up two 24" pipes flooding Camp Perry Road in Perquimans County creating a driving hazard.



Same location as above after beaver and their dams were removed.

Damage Economics - Non-DOT

Beaver and their dams were removed from 25 sewer and waste water treatment facilities in Cumberland, Franklin, Granville, Halifax, Harnett, Nash, Stanly, Union and Wayne Counties averting over \$99,000 in damages, repair costs, and regulatory penalties.

Wildlife specialists continue to use the worksheet developed by the North Carolina Forestry Service and North Carolina Department of Agriculture and Consumer Services to help estimate the value of BMAP services, which is measured as prevented expenditures or losses to timber and other agricultural resources. Timber and crop values are updated annually. However, some non-agriculture prevented losses or expenditures such as those to roadways, water treatment facilities, drainage control structures, sewer or septic systems, and man-made structures were better estimated by resource owners.



A City of Creedmoor sewer line being flooded as a result of multiple beaver dams backing up water in the Robertson Creek watershed. Flooded sewer lines are a major concern for public works departments.

A Granville County Home Owners Association in Creedmoor benefits through the cost-sharing BMAP, preventing thousands of dollars of damage to private and community-owned property.



BMAP Funding Sources and Expenditures

The table below outlines BMAP funding sources and expenditures from October 2012 through September 2013. USDA Wildlife Services personnel worked 23.6 staff years on the BMAP. In addition, State Director Heisterberg and Assistant State Director Menke provided an estimated 1.0 staff years supporting BMAP activities. Their salaries were not charged to the BMAP program.

In FY 2013, the BMAP operating budget was \$1,324,241 which is a decrease of \$7,362 from FY 2012. Although Congress eliminated the \$208,000 Congressional Directive funding the BMAP in 2011, in state FY 2012-13 the NC General Assembly directed the NCWRC to increase their contribution by \$250,000 which more than offset the reduction in federal funding.

| Expenditure Type | Expenditures (\$\$) (a) by Funding Source | | | |
|---|---|---------------|---------------|-----------|
| | NCWRC/DOT/ USDA Wildlife | | WS Cost Share | Totals |
| | Counties | Services (WS) | Collections | |
| Personnel Costs | 972,183 | 17,924 | 35,554 * | 1,025,661 |
| Travel & Per Diem | 5,575 | 297 | 0 | 5,872 |
| Vehicle Usage (fuel, maintenance, repair) | 102,109 | 3,022 | 0 | 105,131 |
| Other Services (telephone, data lines, non-vehicle repairs & maintenance, etc.) | 5,503 | 14,984 | 0 | 8,275 |
| Supplies and Materials (trap supplies, tools, ammo, work gear, explosives, misc.) | 63,315 | 985 | 80 | 64,380 |
| Equipment (vehicles, ATV's, canoes, misc.) | 57,929 | 0 | 33,832 | 91,761 |
| Indirect costs to APHIS | 10,386 | 0 | 563 | 10,949 |
| Total spent (10/1/12-9/30/13) | 1,217,000 | 37,212 | 70,029 | 1,324,241 |
| Amount Funded (10/1/12-9/30/13) | 1,217,000 | 37,212 | 70,029 | 1,324,241 |
| | (b) | (c) | (d) | |
| BALANCE (10/1/13) | 0 | 0 | 0 | 0 |

(a) Expenditure figures are subject to adjustment.

(b) Funding sources: NCWRC. NCDOT 42 Counties
 \$599,000 \$450,000 \$168,000

(c) USDA Wildlife Services contributed \$37,212 to fund the BMAP in FY 2013. Wildlife Services provided additional indirect support to administer the program that is not included in the \$37,212.

(d) BMAP cost-share collections by Wildlife Services from landowners, municipalities, and other sources. As of October 1, 2013, \$1,520 in outstanding landowner cost-share invoices were over 90 days past due.

Customer Service

Greene County DOT requested BMAP assistance after placing high water signs on Howell Swamp Church Road. Beaver completely plugged the 54 inch culvert under the roadway causing water to run over the road creating a driving hazard. To alleviate the flooding, special delayed explosives were used to remove the beaver dam inside the culvert.



Flooded roadway caused by a beaver dam inside the roadway culvert. Roadway banks can become unstable due to the digging nature of beaver activity costing DOT expensive repairs. Note beaver lodge just off highway.

Same site after beaver and beaver dam removal. Note same beaver lodge high and dry. Also note the dead bottomland hardwoods in the background.



Customer Service

Graham County DOT contacted USDA Wildlife Services regarding a property where beaver dams had caused extensive flooding. After a relative of the landowner removed the beaver, wildlife specialists removed five beaver dams to alleviate the flooding. One of the dams extended 10-12 linear feet inside a 4-ft-diameter concrete culvert. Two wildlife specialists spent 12 man-hours crawling into the culvert to pull out the dam material. Both the DOT and the property owner were extremely pleased the BMAP was available to alleviate flooding and safety concerns.

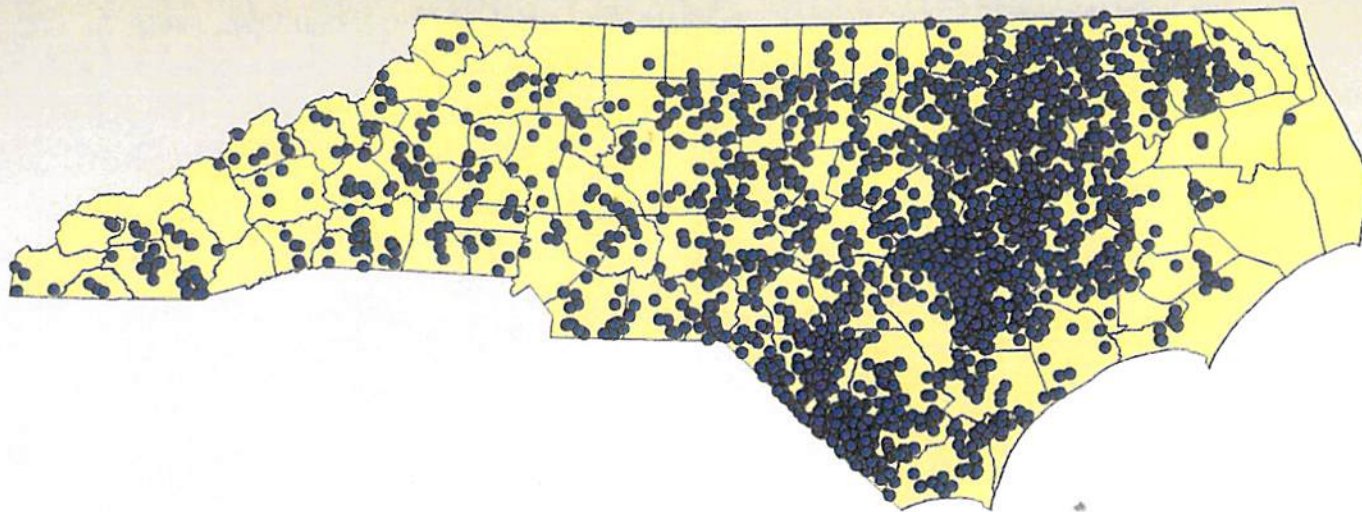


Before



After

Protecting Roadways and the Traveling Public



Location of DOT sites with beaver damage that were worked by USDA Wildlife Services, 2008 - 2013

Between 2008 and 2013, USDA Wildlife Services resolved beaver damage problems at a minimum of 3,508 distinct DOT sites (see map). Sites worked include work paid for by both BMAP funds and funds from counties requesting additional beaver management services for their residents. Approximately 63% of the work USDA Wildlife Services completed in FY 2013 was at DOT sites. Some of these sites are repopulated with beaver in as little time as a few months while others may go years and years without further problems. Unfortunately, there is no way to avoid this as the narrowed stream or creek channel created by the pipe or culvert presents an ideal location for beaver dam construction.



Removing Beaver Dams

In FY 2013, USDA Wildlife Services removed 1,570 beaver dams using explosives, hand tools or a high pressure water pump. Wildlife specialists used customized explosives charges and delayed detonators to remove 32 beaver dams within pipes and culverts, under power lines and in other sensitive areas. Such dams would have been difficult, if not impossible, to remove using conventional techniques. This has resulted in significant savings to the DOT which sometimes had to dig up and replace such pipes. USDA Wildlife Services currently has 17 explosive specialists, six of whom are advance certified, to use explosives in confined or sensitive areas. Between 2008 and 2013, explosives were used to remove 3,975 beaver dams with no damage to property or personnel. The North Carolina USDA Wildlife Services program leads the nation in beaver dam removal expertise and frequently hosts explosives certification training for USDA Wildlife Services employees from throughout the country.



Wildlife specialists finish rigging a beaver dam for removal using explosives. This dam was 10 ft. high and required 10 lbs of explosives to remove. The dam was backing up water on 2-3 acres near the Tar River in Edgecombe County. The DOT was completing construction of a bridge over the Tar River and could not access the area because of the flooding. Once the beaver and dams were removed, the DOT was able to complete the project.

A Wildlife specialist uses a potato rake to remove a beaver dam on a farm that was blocking a drainage ditch and causing problems for the farmer in accessing his crop fields. Typically, a wildlife specialist will first remove all the beaver from a site and then remove any beaver dams that are backing up water. If all the beaver aren't removed, the dam will be rebuilt, usually within a few days.



Using Explosives to Remove Beaver Dams



Beaver use the backdrop of a fallen oak tree to construct a large beaver dam that backed up water and flooded bottomland hardwoods at a Franklin County farm. Following beaver removal by a private trapper, a Wildlife Specialist used explosives to remove the dam. The fallen oak tree remains after a blast (below). A chainsaw is needed to completely open the channel.



Educational Activities

Technical assistance was provided landholders statewide through personal consultations on site, 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. An important aspect of the BMAP is 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 the wildlife specialist at no cost.



Over 14,000 residents were educated about the benefits of wildlife, beaver ecology, and damage management in FY 2013 through talks, workshops, and exhibits.



FY 2014

The BMAP continues to be a popular program among landholders, counties, municipalities, businesses, and the DOT. Landholders requesting BMAP services are threatened with significant losses as a result of beaver activity which is evident by the value set on BMAP services. As in previous years, BMAP participants continued to show little interest in conducting beaver damage management activities themselves. This is most likely because of a lack of ability and/or time. 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 NCWRC conservatively estimates beaver populations in the state 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. This is especially true as humans move into areas where beaver are present. In 2012-2013, the NCWRC reported 10,815 beaver being trapped and removed by both recreational and wildlife damage control agents. This is a minimum figure because beaver are considered a nuisance species and as such are not required to be reported by private trappers or landholders. Even if the combined recreational and nuisance beaver take was as much as 20,000, this would still only represent only 4% of the estimated statewide population. Such low take percentages will have little effect on keeping beaver numbers and damage in check, and populations are expected to continue to increase into the future.

In June 2013 the NC General Assembly cut the NCWRC's budget by approximately 30%. This cut was passed along to the BMAP resulting in a \$214,000 reduction in state funding for FY 2014. This equates to an approximate 16% reduction in overall funding in FY 2014 compared to the previous year. To address this funding cut, USDA Wildlife Services cut four full and part-time positions effective October 1, 2013. Wildlife Services will continue to deliver services to all participating counties and the DOT. However, response time will be longer and cooperators may have to wait longer for service. Work addressing threats to public health and safety, particularly along highway rights-of-ways and county-owned property, will continue to have the highest priority. In FY 2014 Wildlife Services plans to contribute an estimated \$37,000 from their federal appropriation. This will more than meet the required \$25,000 minimum federal funding mandate outlined in NC State Statute 113-291.10(f).

| Estimated Funding Sources for FY 2014 | |
|--|--------------------|
| NCWRC | \$385,000 |
| DOT | \$450,000 |
| Federal | \$37,000 |
| Counties | \$168,000 |
| Private Cost-Share (a) | \$70,000 |
| Total | \$1,110,000 |

(a) estimate based on FY 2013 collections

Obtaining BMAP Services in 2013-2014

How to Participate

All counties are eligible to participate in the program through an annual cost share assessment of \$4,000 per county. In 2013-14, 42 counties participated 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

Participants in the program pay a small cost-share fee for services. This cost-share fee is \$20 for each visit to their property. There are no charges 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. There is no charge for the initial assessment which includes 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.

Assistance Priorities

Requests for assistance are handled on a first-come, first-served basis with top priority 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 Beaver Management Assistance Program, please call or write the USDA Wildlife Services at 6213-E Angus Drive, Raleigh, NC 27617, tel. 866-487-3297, or the NC Wildlife Resources Commission, Division of Wildlife Management at 1751 Varsity Drive, Raleigh, NC 27606, tel. 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 |
| Brunswick | 910-253-2610 | Henderson | 828-694-5026 | Pender | 910-259-1235 |
| Camden | 252-338-1919 ext. 262 | Hoke | 910-875-3461 | Perquimans | 252-426-5545 |
| Carteret | 252-222-6352 (Todd) | Iredell | 704-872-5061 Ext. 3 | Pitt | 252-902-3250 |
| Catawba | 828-465-8240 | 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 | Lenoir | 252-527-2191 | Sampson | 910-592-7161 |
| Cumberland | 910-321-6860 | Martin | 252-789-4370 | Union | 704-283-3801 |
| Duplin | 910-296-2120 ext. 3 | McDowell | 828-652-7121 ext. 375 | Vance | 252-438-8188 |
| Edgecombe | 252-641-7821 | Nash | 252-459-9810 | Warren | 252-257-3640 |
| Franklin | 919-496-3344 | New Hanover | 910-798-7660 | Washington | 252-793-4561 ext. 3 |
| Gates | 252-357-1400 | Northampton | 252-534-2711 | Wayne | 919-731-1521 |
| Granville | 919-603-1350 | Onslow | 910-455-0181 | Wilson | 252-237-5147 ext. 3 |



Pond bank damaged after beaver plugged an overflow pipe in Pender County.



Protecting People
Protecting Agriculture
Protecting Wildlife

**Wildlife
Services**

For more information contact USDA

Wildlife Services at 866-487-3297

-OR-

North Carolina Wildlife Resources

Commission at 919-707-0050

