



North Carolina Forest Service



A Division of the N.C. Department of Agriculture and Consumer Services

Steve Troxler, Commissioner

BMP Newsletter

Best Management Practices for Water Quality & Soil Conservation



This issue's cover photo was taken in a coastal marsh of North Carolina. Low ground pressure machines were being used to mat down marsh grass to create a wet line for prescribed fire. The N.C. Forest Service routinely conducts prescribed burns in coastal marshes upon private and state lands, and often in partnership with the U.S. Fish and Wildlife Service on federal lands. These burns are a vital tool to reduce wildfire risk for coastal communities.

The [eastern black rail](#), a wetland and marsh bird, is an example of a threatened species occurring in this type of habitat. Fire is needed for the maintenance of bird habitat. The use of BMPs during prescribed burning can minimize direct negative effects to the bird and can enhance its habitat.

See the [fire management section in the BMP manual](#) for additional recommendations related to fire and water quality.

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Special Edition: Threatened and Endangered Aquatic Species

North Carolina contains many plant and animal species that are listed as either threatened or endangered under the federal Endangered Species Act. Some of these animal species live in streams. Examples of the type of aquatic animals that have been, or may be, listed include fish species, freshwater mussels and amphibians. The list of threatened and endangered (T&E) species in North Carolina is available on the U.S. Fish and Wildlife Service (USF&WS) website: www.fws.gov/raleigh/es_tes.html. This newsletter edition focuses on the forestry BMP perspective for aquatic T&E species.

How does forestry cross paths with aquatic T&E species?

Forests play a key role in protecting habitat of rare aquatic species such as the Carolina madtom, a tiny catfish and the Neuse River waterdog, a small salamander.



Carolina madtom

(Endangered)

Photo credit: U.S. Fish & Wildlife Service

Neuse River waterdog



(Threatened with a 4d-rule)

Photo credit: U.S. Fish & Wildlife Service

Threatened and Endangered Aquatic Species continued...

How does forestry cross paths with aquatic T&E species? [continued...]

The connection is straightforward. Improvements or protections to water quality also protect the habitat needs for aquatic life. More than 75 years of research in the eastern U.S. has shown that basic and easy-to-implement forestry BMPs are effective in protecting water quality. Many of these BMPs have been referenced in previous editions of this newsletter! Check out previous editions at https://www.ncforestservice.gov/water_quality/bmp_newsletter.htm.

For a published review article on forestry BMPs and aquatic wildlife, check out:

Warrington, B.M.; Aust, W.M.; Barrett, S.M.; Ford, W.M.; Dolloff, C.A.; Schilling, E.B.; Wigley, T.B.; Bolding, M.C. Forestry Best Management Practices Relationships with Aquatic and Riparian Fauna: A Review. *Forests* 2017, 8, 331, doi:[10.3390/f8090331](https://doi.org/10.3390/f8090331).

What are three things natural resource professionals should know about T&E species?

- 1) Familiarize yourself with the following terms (see [USF&WS](#) for official definitions):
 - ***Endangered***: Species is at risk of becoming extinct in the foreseeable future.
 - ***Threatened***: Species is at risk of becoming endangered in the foreseeable future.
 - ***At-Risk***: Species is in decline and may warrant listing as either threatened or endangered, but has not yet been listed.
 - ***Critical habitat***: The associated species is known to exist in the designated waterway, and that waterway is essential for the continued conservation and survival of that species.
 - ***4(d) rule***: The Endangered Species Act prohibits "take" of a T&E species unless the USF&WS issues a permit. However, section 4(d) of the Act can allow exceptions to the permitting requirements if an 'incidental take' occurs as a result of specific activities that are in the federal rule. These permit exceptions are known as "4(d) rules."
 - ***Take***: To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.
 - ***Harm***: An act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns such as breeding, feeding or sheltering.
- 2) Consider exploring T&E related online map viewers as part of your preharvest planning (see pages 3-4 for more information). There may be additional opportunities to further reduce the probability of a 'take' and/or enhance habitat.
- 3) Add aquatic species protection to the list of reasons why forestry BMPs are important! Recognize that forestry BMPs help protect water quality and indirectly help protect aquatic species. Many aquatic species, especially freshwater mussels, are negatively impacted by siltation or sedimentation, excessive nutrients, adverse stream water temperatures, and physical disruptions (obstruction or dis-connection) of the stream they inhabit. There are many BMPs that can be used to address these concerns.

Threatened and Endangered Aquatic Species continued...

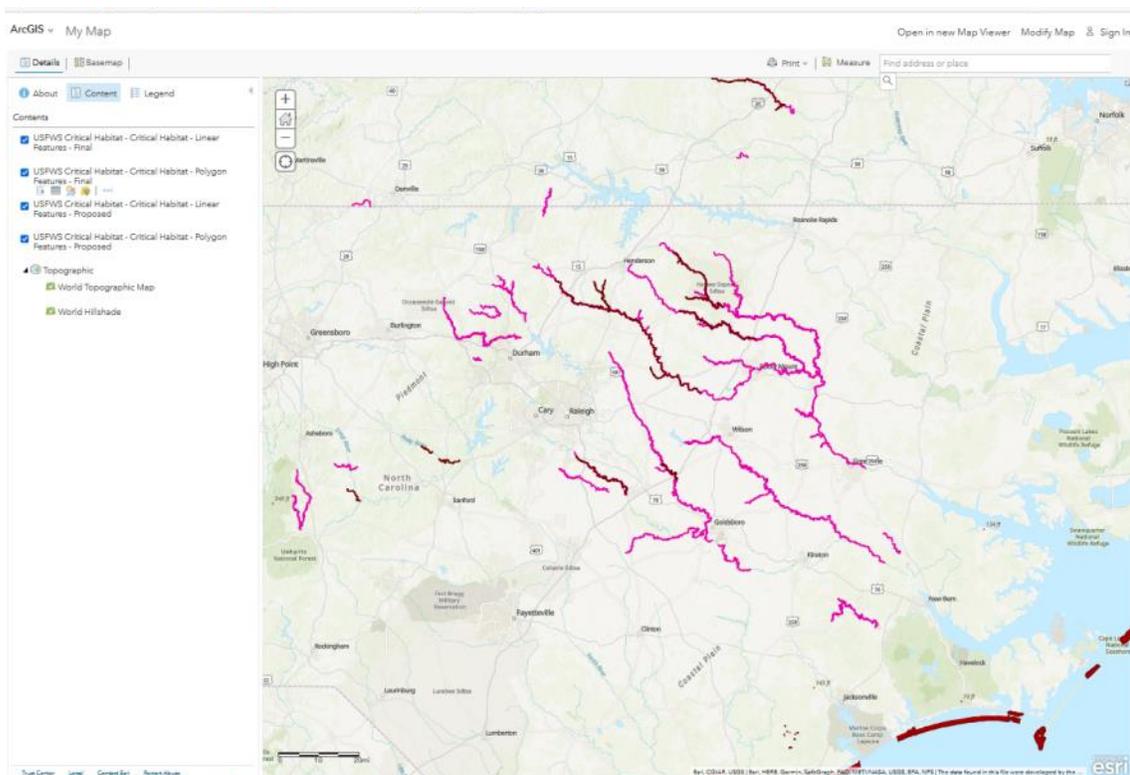
There are information leaflets for some newly listed aquatic T&E species available on the N.C. Forest Service website. These leaflets explain the requirements that forestry activities must meet to comply with the Endangered Species Act.

https://www.ncforestservice.gov/water_quality/regulations.htm

USF&WS Critical Habitat Map Viewer

Some federally listed T&E species have "critical habitat" designated by rule. This habitat is vital for the survival of that species. For aquatic species, this usually includes segments of streams and rivers. The USF&WS has an online map viewer showing proposed and designated critical habitat.

1. Go to <https://ecos.fws.gov/ecp/>.
2. Click the bullet point "Critical Habitat Report." This takes you to a new webpage.
3. On this new web page, look for "ArcGIS Online Web Services." Click the bullet point "Critical Habitat ArcGIS Feature Service." This takes you to a new webpage. (Note: This web page also has .zip files for downloading critical habitat shapefiles into a GIS system.)
4. On this new webpage, click the link "View In: ArcGIS.com Map." You can zoom in on your area of interest and observe the colored areas of critical habitat, designated or proposed.



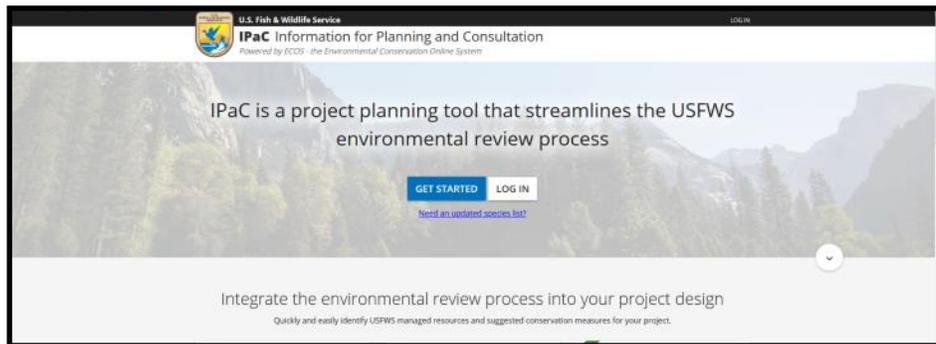
Screenshot image from the USF&WS Critical Habitat map viewer, showing a portion of North Carolina. The actual locations of critical habitat may be different from what is shown by this image. This is only for your awareness and is not to be used for decision-making.

Threatened and Endangered Aquatic Species continued...

USF&WS Species and Habitat Locator Tool

The USF&WS *Information for Planning and Consultation* (IPaC) tool is a map viewer to determine whether a project is near listed species and critical habitat.

- 1) Go to <https://ecos.fws.gov/ipac/>. Users can explore a project area for protected species and habitats without having to log in to the website. If you get a pop-up window about a "MAJOR UPGRADE," just close that pop-up and select "Get Started."
- 2) Follow the instructions on the interactive map to find a location, draw your project area, and get a list of protected species and critical habitats. You can also upload shapefiles.



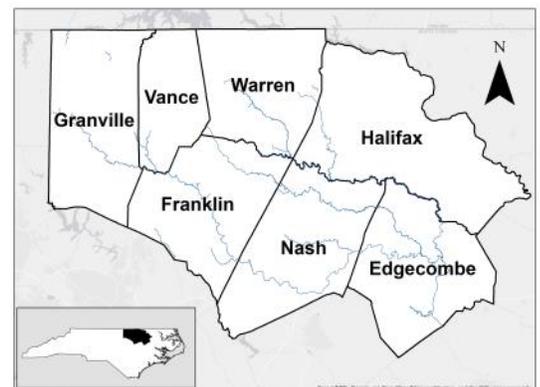
Foresters for Healthy Waters Program: Preharvest Plan Cost Share

Foresters for healthy waters is a new landowner cost share program for preharvest plans. The goal of this program is to ensure rivers and streams on forestlands remain in good condition to support habitat needs for multiple rare aquatic species.

In this voluntary program, preharvest plans go above and beyond existing baseline requirements for protecting water quality. These plans emphasize forest management strategies to help protect rare aquatic species and their habitat, formally documenting available information and resources regarding species on the tract.

Nonindustrial forest landowners with 10 acres of contiguous forestland within the counties pictured on the right are eligible to receive reimbursement for the cost of having a qualifying preharvest plan prepared for their pending timber harvest.

This project is funded by the [U.S. Fish and Wildlife Service](https://www.fws.gov/) in cooperation with support from the N.C. Forest Service. Check out https://www.ncforestservice.gov/healthy_waters/costshare.htm for more information.





Caroline Durham is the agency’s new forest water quality senior specialist. Among her duties, she will be managing the BMP implementation survey and Forest Preharvest Planning Tool. She joined the NCFS in May 2021 after having worked for the Triangle Land Conservancy. She attained a degree in environmental sciences with a minor in biology from UNC-Chapel Hill. We are very pleased to have Caroline join the Water Resources Branch team!

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Recent Water & Forestry Podcast

Check out the [How the River Flows](#) podcast by Keeping Forests. They have released six new episodes since the release of our last BMP newsletter. This podcast focuses on forest conservation and water quality.

N.C. Forest Service — Water Quality

www.ncforestsservice.gov/water_quality/water_quality.htm

Healthy Trees, Healthy Lives

www.healthytreeshealthy lives.org

North Carolina Forest Service

WATER RESOURCES BRANCH

1616 Mail Service Center. Raleigh, NC. 27699-1600

Protect, Manage and Grow Your Forest
www.ncforestsservice.gov

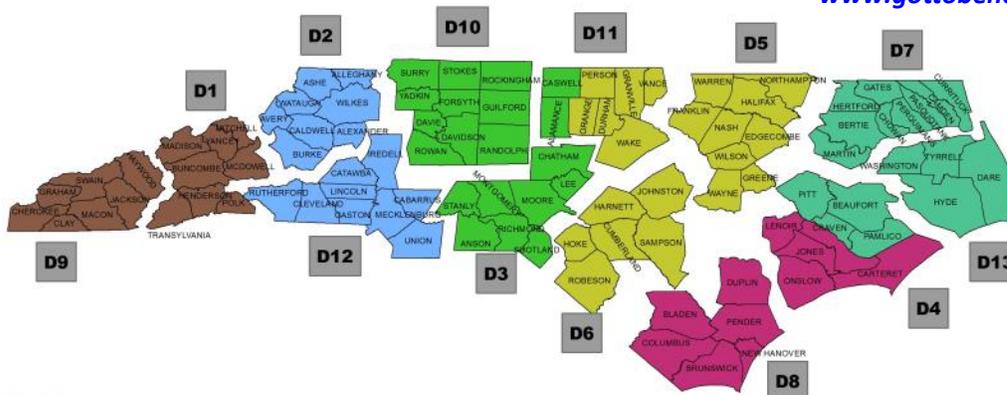
NCD&CS Agricultural Services
www.ncagr.gov

Go Out and Learn in the Forest
www.ncesf.org

Purchase NCFS Forest Tree Seedlings
www.buynctrees.com

Keep Your Home Safe from Wildfire
www.resistwildfire.nc.gov

Locate North Carolina Farm Products
www.ncfarmfresh.com
www.gottobenc.com



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