NCASI Fact Sheet

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Forestry BMPs Protect Aquatic Biodiversity in Central Appalachian Critical Biodiversity Area

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Introduction

The Clean Water Act established national goals and a legal framework for protecting the physical, chemical, and biological integrity of waterbodies. Forestry best management practices (BMPs) have been developed and approved by states as the primary mechanism for controlling sediment, nutrients, and chemical delivery to streams during forest management. Forestry BMPs refer to a practice or combination of practices that have been determined to be the most effective and practicable means of controlling nonpoint source pollutants (e.g., sediment) during and after silvicultural activities. State agencies have the lead role in collaborating with forest landowners and workers to implement BMPs to protect water quality during forest management activities.

The Central Appalachian Critical Biodiversity Area (CACBA) has been identified as an area of specified risk under the Forest Stewardship Council National Risk Assessment for the Conterminous United States of America (FSC-NRA-USA V1-0). Options to mitigate risk in the CACBA include using BMPs that contribute to conservation of aquatic biodiversity. This factsheet highlights the ability of forestry BMPs to conserve aquatic biodiversity within the CACBA.

Forestry BMP Implementation

State forestry agencies routinely monitor BMP implementation and use results to identify problem areas and document improvement over time. Implementation rates in the CACBA have increased over time, largely due to education, outreach, and training across the region in response to efforts of state forestry agencies and forest certification programs (Cristan et al. 2018). While implementation rates are slightly lower than the regional average of 93.6% in the CACBA, it is important to note that statewide BMP scores are a general indicator of BMP use, since on-site evaluations consist of detailed reports of many on-site practices (SGSF 2019, 2007). Furthermore, statewide BMP implementation scores are not a direct measure of impacts to water quality because individual BMP practices may be redundant, of variable importance, and involve professional judgment to apply and evaluate. The relatively high rates of implementation across the CACBA indicate that protective measures are broadly applied by forest landowners.

Forestry BMPs Protect Aquatic Biodiversity

Numerous studies have demonstrated effectiveness of forestry BMPs for protecting water quality (Cristan et al. 2016). Additionally, Warrington et al. (2017) noted that forestry BMPs not only contribute to protecting water quality, but also to conservation of aquatic species, by retaining streamside forests. These Streamside Management Zones (SMZs) provide a forested buffer along streams that protect water quality and in-stream structure that benefits aquatic biodiversity (NCASI 2019). The U.S. Fish and Wildlife Service (Service) has recognized that privately-owned, managed forests that

implement BMPs can be an important component of conservation strategies for aquatic biodiversity in the CACBA. The examples below demonstrate that forest management coupled with BMPs on private working forests can be an important tool for conserving CACBA aquatic biodiversity.

The Candy darter (*Etheostoma osburni*) is a freshwater fish found in Virginia and West Virginia. A recent species status assessment for the Candy darter recognized that levels of stream sedimentation have improved over historical conditions in the specie's range due, in part, to implementation of forestry BMPs designed to reduce erosion and sedimentation (Service 2018, p. 39).

The Atlantic pigtoe (*Fusconaia masoni*) is a freshwater mussel found in Virginia and North Carolina, with populations in the Upper James River basin of Virginia within the CACBA. The proposed rule for threatened species status by the Service noted that use of forestry BMPs can retain adequate conditions for aquatic ecosystems (83 Fed. Reg. 51575).

In 2003, the Service proposed critical habitat for five mussel species (Cumberland elktoe (*Alasmidonta atropurpurea*), oyster mussel (*Epioblasma capsaeformis*), Cumberlandian combshell (*Epioblasma brevidens*), purple bean (*Villosa perpurpurea*), and rough rabbitsfoot (*Quadrula cylindrica strigillata*)) that occur in the Tennessee and Cumberland River Basins within the CACBA. The Service recognized that conservation recommendations provided in previous biological opinions for these mussel species have included the use of forestry BMPs to minimize erosion (68 Fed. Reg. 33247).

Conclusion

A large body of scientific literature confirms that properly implemented forestry BMPs are effective at protecting water quality and, increasingly, silvicultural practices implemented with BMPs have been noted to protect aquatic biodiversity. Additional studies, outside the CACBA, have also documented the value of forestry BMPs, and specifically SMZs, for conservation of riparian and aquatic species (NCASI 2019). Regulatory agencies recognize the importance of BMPs and have noted contributions of privately managed forests where BMPs are implemented to conservation of aquatic species. Maintaining working forests where management activities are implemented with water quality BMPs represents a clear, actionable, and scientifically sound approach for conserving aquatic species in the CACBA.

References

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