

# PROTECTING & RESTORING VIRGINIA'S MUSSEL POPULATIONS

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## EXECUTIVE SUMMARY

Freshwater mussels are an important part of Virginia's natural heritage and they benefit streams and rivers by filtering water and removing pollutants such as nitrogen. These valuable organisms have shown rapid decline, and investments and strategies are needed to protect and restore these populations.

## CHALLENGE

Freshwater mussels represent a great source of biodiversity, natural heritage, and ecological services. A single mussel can filter up to 15 gallons of water per day,<sup>1</sup> which in turn can prevent pollutants such as nitrogen from reaching downstream waters.<sup>2</sup> Unfortunately, mussels represent the most endangered class of organisms with 70% of species vulnerable to extinction.<sup>3</sup> Virginia has 80 species, many have incurred significant population losses. Since the endangered species act's adoption in 1973, the largest single loss of endangered species occurred in the Clinch River in 1998 due to a spill.<sup>4</sup> Further, water quality, dams and loss of habitat have degraded these resources and threats will be exacerbated with climate change.

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Freshwater mussels have elaborate reproductive cycles which are linked with fish populations, often associated with specific species. As such, restoration of mussels is complicated and challenging, as it requires consideration of both mussels and fish populations. Further, the diversity of mussels combined with a lack of robust historical surveys presents challenges to identifying restoration sites.<sup>5</sup> Investments to protect mussels have largely been limited to mitigation dollars but restoring these beneficial organisms will require greater investments.

## SOLUTION

Fortunately, our ability to propagate and restore populations of mussels has significantly advanced. Hatcheries have vastly improved their ability to propagate mussels by using fish hosts in recent decades and are very capable of restoring populations given available funding mechanisms. Still, very limited resources have been appropriated and these funds have primarily come from mitigation events. Mitigation is only aimed at returning what was lost, not necessarily to restore species and rivers that require intervention to prevent extirpation or decline. In order to protect these important resources, Virginia needs to invest in these efforts. Virginia has partnered with businesses and public organizations in Southwest Virginia to augment and



monitor mussel populations in the Tennessee drainage of Virginia. This effort has seen progress towards creating self-sustaining populations of endangered mussels. Given this success, Virginia needs to create a similar plan for the entire Commonwealth.

To develop and implement such a plan, state agencies need additional support. Specifically, there is a need to add staff dedicated to the protection and restoration of freshwater mussel populations. Additionally, the state needs to invest in restoration programs that support hatcheries in restoration efforts and in efforts to grow and release mussels across the Commonwealth. Virginia has recognized the benefits of shellfish in previous conservation efforts, and freshwater mussel restoration offers an opportunity to extend those successful initiatives into the headwaters of the state. Virginia has a willing coalition of partners that can help with mussel restoration, but the Commonwealth needs a comprehensive restoration plan.

## USFWS Display of mussel diversity from the Clinch River (right)

Image credit: Joe Wood



## POLICY RECOMMENDATIONS

Dedicate funding (\$400,000 over the biennium) to develop a freshwater mussel restoration plan for the Commonwealth.

Support two additional Full Time Employees (FTEs) dedicated to the protection and restoration of freshwater mussels.

Provide funding (\$2M) to increase mussel restoration projects at hatcheries across the Commonwealth.

Make initial investment (\$5M) in needed renovations and expansions at the Aquatic Wildlife Conservation Center at the Buller Fish Hatchery in Southwest Virginia to meet mussel production needs and synergize with the new Clinch River State Park.

## Wavy Rayed Lampmussel (*Lampsilis fasciola*)

Image credit: Rachel Mair