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Protecting biodiversity: Riparian buffers directly affect Appalachian headwater salamanders

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There is growing evidence of worldwide amphibian decline. These declines are largely due to land use such as timber harvest in riparian zones. The southern Appalachian Mountains have miles of streams and arguably the greatest diversity of salamanders in the world. Salamanders are the most abundant predator of invertebrate organisms in the southern Appalachians where their biomass often exceeds that of birds and small mammals. Because salamanders have permeable skin and eggs and are sensitive to changes in the environment, they are good indicators of environmental health. Salamanders thrive in riparian areas where they need both aquatic and terrestrial habitats for foraging and reproduction. My study specifically looks at how logging and riparian buffers affect salamanders inhabiting head water streams. The purpose of my research was to measure the density and abundance of adult salamanders in five experimental streams in North Carolina; three were logged retaining 0, 9, and 30 meter riparian buffers, while two streams were studied as controls. Salamander abundance was estimated through removal sampling at each of the streams. I collected 393 total salamanders and found that salamander densities where the highest in the 0m and 9m sites with Desmognathus monticola being the most abundant. The lowest densities were in the 30m and the two controls sites. My results have implications for the long-term persistence of salamanders in streams following logging in riparian habitats.