Eastern Skunk Cabbages: A Natural and Sustainable Solution for Combating Bank Erosion

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Due to increased urbanization and climate change, there has been an increase in bank erosion and destruction of riparian zones. Riparian zones are vegetative areas of land bordering streams that are vital to keeping tributary water systems clean and well-managed. This research assessed the implementation of Symplocarpus foetidus (Eastern Skunk Cabbages), an obligate wetland indicator in the Chesapeake watershed, as a potential source for reducing bank erosion in North America. Penetrometer tests were performed to examine whether the contractile Skunk Cabbage roots increased the strength of the surrounding soil. A controlled experiment was performed using stream models to assess the effect of Skunk Cabbages on strengthening banks. One of the stream models had Eastern Skunk Cabbages present; the other, acting as a control, contained just soil. The models were placed into streams and a decanter was attached at the end of the pipe to collect the eroded sediment from the model. It was found that soil with Skunk Cabbages exhibited significantly higher compactness compared to soil without them. It was also observed that the bank model with Skunk Cabbages collected less soil on average compared to the control model meaning that Skunk Cabbages helped decrease bank erosion. Finally, it was determined that the Skunk Cabbages had no adverse effects on water quality. Future research should focus on implementing and comparing Eastern Skunk Cabbages with existing methods (coir logs, ripraps, Vetiver grass, etc.) as this would provide hope for an entirely new generation of bank erosion prevention that incorporates local vegetation.

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