THE OHIO STATE UNIVERSITY
SCHOOL OF
Environment and Natural Resources
Impact Statement

Potential Impacts of the Hemlock Wooly Adelgid on Hemlock-dominated Riparian and Swamp Forests of Ohio

SUMMARY

The hemlock woolly adelgid is advancing on Ohio and the result will be devastating to Ohio's hemlock-dominated forests and the local communities that are supported by these forests.

SITUATION

The hemlock woolly adelgid (HWA) is an exotic and invasive species that causes complete mortality of eastern hemlock. To date, there are no adequate controls for HWA, and the insect has impacted hemlock-dominated forests from Massachusetts to Georgia. Recently HWA was found in Meigs County, Ohio along the Ohio River. Estimates from the infested regions put direct economic losses from eastern hemlock mortality in the millions. There are also indirect economic impacts especially where outdoor recreation opportunities are focused in areas dominated by eastern hemlock (such as the Hocking Hills of southeastern Ohio), and the potential impacts of HWA may be devastating to these local communities and their economies. Furthermore, restoration and management planning to mitigate ecological and economic impacts, as well as to accelerate the recovery of impacted forests, is in the initial stages due to significant gaps in our understanding of how these forests will respond to the loss of eastern hemlock.

RESPONSE

OARDC scientists and graduate students have been working to understand how the loss of eastern hemlock will impact successional dynamics and important ecosystem processes, such as light availability, nutrient cycling and species diversity. To do this, they have established a network of study sites across riparian and swamp forests dominated by eastern hemlock in southeastern and northeastern Ohio. At these sites, they have quantified forest composition, structure, and important ecosystem processes (such as light availability and nutrient processing) that are likely to change following the decline of eastern hemlock. Their results suggest that eastern hemlock is best described as a 'foundation species,' regulating almost all forest successional and ecosystem processes where it is the dominant forest tree species. With the loss of eastern hemlock, the development of the future forests will be driven by local environmental factors and the legacies of past disturbances (including HWA). For example, the loss of hemlock will increase light levels and change the type and decomposition rates of leaf litter that drive stream food webs. Thus, the loss of eastern hemlock will have a cascading effect through the forests and streams of southeastern and northeastern Ohio.

IMPACT

The loss of eastern hemlock will have a major impact on the ecology of Ohio's forests, and perhaps more importantly, on the economies of local communities that have many industries that rely on these forests. There is no question that over the next decade HWA will impact Ohio's forests and will be a major challenge facing resource managers. The research developed by OARDC scientists and graduate students will help resource managers meet this challenge and will help guide future efforts to develop management strategies to help mitigate the ecological impacts of HWA on Ohio forests dominated by eastern hemlock.

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