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Abstract. We examined the effects of integrated vegetation management (IVM) and nonselective mechanical removal techniques (hand cutting and mowing) on the richness and abundance of native compatible flowering plants and noncompatible trees on an electric transmission line right-of-way in central Pennsylvania, USA. Our study focused on native flowering plants to help determine how different vegetation management techniques may affect native wildlife communities. We found no correlation between amount of herbicide applied and native flowering plant species richness or tree abundance. We found that the richness of native flowering plants did not differ between plots treated with an IVM herbicide approach and those that were mechanically treated ($t = 1.06$, df = 1, $p = 0.31$). However, mechanically treated plots had significantly higher abundance of trees than IVM plots ($t = 3.10$, df = 1, $p = 0.009$). We found that plots that were treated with herbicide mixtures that contained glyphosate in 2012 had lower native flowering plant species richness in 2016 than those treated with herbicide mixtures that did not contain glyphosate ($t = -2.44$, df = 1, $p = 0.04$). Our study indicates that long-term IVM approaches support native flowering plant species richness while limiting tree abundance under electric transmission line right-of-way. However, further study is needed to determine if the herbicide type and method (selective versus broadcast) of application affects species richness of native flowering plant communities.

Keywords. Early Successional Habitat; Forest Vegetation; Herbicide; Plant Species Richness.

Abstract. Sixteen tree risk assessment methods were subjected to sensitivity analysis to determine which factors most influenced the output of each method. The analyses indicate the relative influence that the input variables exert on the final risk value. Excel was used to create a simple ± 25% or ± 1 rank change (depending on the method) for each criterion, with the change to the output recorded as a percentage. Palisade's @Risk software was used to undertake a Monte Carlo (with Latin Hypercube sampling) simulation of 5000 iterations based on the input variables and output formula. From the simulation, multivariate stepwise regression was undertaken to determine the influence of each method's input variables in determining the output values. Results from the sensitivity analysis indicate some clear and strong differences amongst the 16 methods, reflecting that the underlying mathematics, input categories, ranges, and scaling influence the way that different methods process and express risk. It is not surprising that methods perform differently in different circumstances and express risk level differently. The analyses demonstrated that most methods placed too great an emphasis on limited aspects of risk assessment. Most methods strongly focused on the hazard or defect aspects of assessment and the likelihood of failure rather than the consequence aspect of an assessment. While methods were uniquely different, they could be placed into 3 broad groups: Group 1 methods produced a normal distribution with most values around the

mean; Group 2 methods produced outputs at the lower end of the risk scale; and Group 3 methods produced outputs evenly if not continuously across the risk scale. Users of tree risk assessment should understand the strengths and weaknesses of any method used, as it could be relatively simple to challenge the results of a risk assessment based on limitations inherent in the underlying methodology.

Keywords. Risk Assessment; Risk Consequence; Risk Likelihood; Sensitivity Analysis; Tree Risk.

Abstract. Reduction pruning of the main stem is commonly used during the maintenance of power lines to encourage the establishment and development of scaffold limbs away from wires. Understanding the physiology of epicormic branch initiation and growth as well as wound compartmentalization following reduction pruning are important for optimizing the pruning cycle and maintaining healthy and safe trees. In this study, the influence of both intensity and time of year of pruning on epicormic branch response and wound compartmentalization was investigated on 56 11-year-old Pennsylvania ash trees (*Fraxinus pennsylvanica* Marsh.) about 5 to 7 m in height within a controlled nursery environment. During the second growing season following reduction of the main stem, the number, height, and volume of epicormic branches, as well as tallest epicormic branches and the area of discolored wood, increased with pruning intensity. Pruning during the leaf-on season compared to the leaf-off season limited the establishment and development of epicormic branches without affecting wound-closure rate or the area of wood discoloration at the cutting point. Results are consistent with the known seasonal fluctuation of carbohydrates reserves. In the context of the electrical distribution network, where trees are subjected to pruning throughout the year, trees pruned in summer during a maintenance cycle could be pruned during the next cycle, in winter, and so on, to optimize the return interval of the pruning cycle.

Keywords. CODIT; Electricity Distribution Networks; Pruning Return Cycle; Sucker Growth; Utility Arboriculture; Vegetation Management.