Rights-of-Way Ecology at Penn State

Plant and animal community response to long-term vegetation management on rights-of-way

sites.psu.edu/transmissionlineecology

Plant Community

When a transmission right-of-way is initially cleared, a short-term decrease in total vegetative cover occurs. Following tree canopy removal, plants that tolerate high levels of sunlight increase in dominance, and tree seeds present in the soil germinate and grow. Thus, follow-up management is necessary to maintain a low-growing plant community to optimize safe and reliable transmission of electricity.

Data collected from SGL33 and GLR&D sites indicate that herbicide treatments to remove incompatible species (e.g., tall-statured trees) produce a distinct change in the plant community. Post-treatment vegetative cover ranges from grasses, to herbicide-tolerant wildflowers, shrubs and small trees. These new plant communities are relatively stable and have diversity that equals or exceeds non-treated areas.

The data also shows that right-of-way vegetation managers can predict cover types and develop the kind of vegetation desired in a particular situation by prescribing appropriate maintenance. Management units that were treated with herbicides alone or in combination with mowing had fewer incompatible trees per acre within the wire zone compared to units with mowing alone or hand-cutting treatments (table 2). The diverse plant community created within the right-of-way as the result of vegetation management practices produces a variety of native species important for wildlife food and cover (table 1, 3).

Key Findings

1. Plant communities can be changed with the use of an appropriate herbicide and application method.

2. Vegetation management practices that include the use of selective herbicides result in diverse vegetation that provides forage and habitat for wildlife on rights-of-way.

3. Plant communities can be created that inhibit tree establishment, thereby reducing maintenance costs for utility companies and mitigating the potential for power outage.

Table 1

Examples of vegetation compatible with wildlife within the wire zone and border zone of the electric transmission right of way in State Game Lands 33 Project Area.

TREES AND TALL SHRUBS (border zone) Witchhazel, *Hammamelis virginiana*; Bear oak, *Quercus ilicifolia*

LOW-GROWING SHRUBS (both zones) Sweet fern, *Comptonia peregrina*; Blueberry, *Vaccinium spp*; Blackberry, *Rubus allegheniensis*

FORBS AND GRASS (both zones) Rough goldenrod, *Solidago rugosa*; Narrow-leaf goldenrod, *Euthamia graminifolia*; Bracken fern, *Pteridium aquilinum*; Hay-scented fern, *Dennstaedtia punctilobula*; Whorled loosestrife, *Lysimachia quadrifolia*; Poverty grass, *Danthonia spicata*

Table 2

Number of incompatible trees remaining per acre under various integrated vegetation management practices on the State Game Lands 33 Project Area.

Treatment	No. of Incompatible Trees
Mowing + Cut Stubble	< 100
High-Volumne Foliar	< 100
Ultra Low-Volume	< 100
Low-Volume Basal Bark	300
Mowing	600
Hand Cutting	1,150

Table 3

Number of plant species present in the wire and border zones with various integrated vegetation management practices on the State Game Lands 33 Project Area.

Treatment	Wire Zone	Border Zone	Both Zones
Mowing + Cut Stubble	39	40	54
High-Volume Foliar	41	40	39
Ultra Low-Volume	33	35	34
Low-Volume Basal Bark	34	28	46
Mowing	31	34	40
Hand Cutting	35	41	47
All Treatment Units Combined	95	110	125

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