

September 15, 2020

Connecticut Botanical Society

P.O. Box 9004, New Haven, CT 06532

Recommendations for Electrical Utility Right-of-Way Vegetation Management

Introduction

The mission of the Connecticut Botanical Society (CBS) is to increase knowledge of the state's flora, accumulate a permanent botanical record, and promote conservation and public awareness of the state's rich natural heritage. To that end, the CBS Ecology and Conservation Committee focuses on education of citizens, public officials and organizations about plant conservation, rare plant populations and critical habitats.

The attached electrical utility Right-of-Way (ROW) Vegetation Management Recommendations were developed by the CBS Ecology and Conservation Committee to address recent changes in Eversource's management of powerline ROWs to comply with updated safety and reliability codes. Here, we propose guidelines to ensure the ecological integrity of ROWs and still manage for safe electricity delivery. The recommendations are intended for Eversource, where practicable, and for the property owner whose land is affected by a powerline ROW easement. While some recommendations may not be feasible for implementation on a broad scale by Eversource, we encourage landowners concerned about the ecological integrity of the powerline ROWs on their properties to be proactive in obtaining inventories of species and natural communities in ROWs on their property and consider conducting their own preemptive vegetation management.

The CBS Ecology and Conservation Committee has gained an understanding of the vegetation and soils in ROW stretches in the state by means of literature reviews, professional fieldwork, and botanical field trips led by the CBS. The foundation for the following recommendations is pioneering work on stable shrub communities in ROWs by Connecticut ecologists such as Bill Niering and Frank Egler. Much of the information presented here is based on extensive research conducted in a section of ROW in Glastonbury. We encourage ROW managers to refer to this study for more detail on the effects of gravel and different approaches to vegetation management:

<https://caryaecological.com/publications/>.

For decades, management of powerline ROWs, based on selective removal of tall-growing trees, provided conditions that supported thriving shrub and herbaceous communities, including critical habitats for rare and endangered species. Recent changes to ROW management by Eversource involve a much more aggressive approach to vegetation control, including extensive brush mowing and elimination of all woody species that can grow taller than 15 feet under the wire and taller than 25 feet in the buffer zone alongside the wires (extending 100 feet from the wire or to the limit of the ROW easement, whichever is less). This approach has resulted in damage to shrub communities and the complete elimination of formerly allowed ecologically important tree species such as eastern red cedar, crab apple and flowering dogwood in the "under wire" zone, and eastern red cedar in the "border zone."

Eversource's current vegetation management strategy entails the removal of such species. However, the Electrical Reliability Standard, established by the North American Electrical Reliability Corporation

September 15, 2020

(NERC), that addresses vegetation management and tree trimming in ROWs, FAC-003-2 ([https://www.nerc.com/pa/Stand/Project%20200707%20Transmission%20Vegetation%20Management/FAC-003-2 TR December 17 2010.pdf](https://www.nerc.com/pa/Stand/Project%20200707%20Transmission%20Vegetation%20Management/FAC-003-2_TR_December_17_2010.pdf)) does not dictate removal of any particular tree species. Instead, it states: "In the long run, cultural control is the most desirable method where it is applicable. A cultural control known as cover-type conversion provides a competitive advantage to short-growing, early successional plants, allowing them to thrive and eventually outcompete unwanted tree species for sunlight, essential elements and water. The early successional plant community is relatively stable, tree-resistant and reduces the amount of work, including herbicide application, with each successive treatment." The CBS encourages Eversource and landowners to manage such species in a reasonable fashion that does not necessarily require their complete elimination.

In recent years, Eversource also began building thick gravel roads and large gravel work pads throughout the ROW system to accommodate work cranes and other heavy equipment to replace structures and to comply with National Electrical Safety Code (NESC) standards. This extensive gravel has disrupted functioning ecosystems and threatens rare and endangered plant communities and the faunal species that rely on them. Graveled areas are commonly colonized by invasive species such as common mugwort (*Artemisia vulgaris*).

In granting Eversource permission to conduct the work to comply with NESC codes without a Certificate of Compatibility and Public Need (Petition 1293, March 2017), the Connecticut Siting Council (CSC) established conditions (https://www.ct.gov/csc/lib/csc/pending_petitions/2_petitions_1201through1300/pe1293-dcltr.pdf). Item 7 on page 4 of this document states that [Eversource plans to] "use existing access, where possible, retain work pads unless the property owner requests removal, and remove matting from wetland areas after construction..." The CBS recommends the use of timber matting wherever possible and encourages landowners to request removal of work pads to prevent permanent impairment to native communities and establishment of noxious invasive plants.

Per Petition 1293, landowners are provided a brief (30 day) comment period by the CSC before Eversource maintenance work may proceed. We encourage landowners to gather data on the natural resources (*e.g.*, plant community, birds, turtles) in their stretch of ROW well before the 30-day notice is served by Eversource. Such information would prove helpful in working with Eversource and the CSC to establish conservation measures and reduce adverse impacts of ROW maintenance activities.

Connecticut Botanical Society, Ecology & Conservation Committee

September 15, 2020

David Yih, PhD
President, Connecticut Botanical Society
yyih@wesleyan.edu

Sigrun N. Gadwa, MS
Chair, CBS Ecology and Conservation Committee
Plant Ecologist, Soil Scientist, Prof. Wetland Scientist
www.caryaecological.com
sigrun.n.gadwa@gmail.com

**Connecticut Botanical Society
Ecology & Conservation Committee**

Recommendations for Electrical Utility Right-of-Way (ROW) Vegetation Management

These guidelines set forth a general framework for ROW vegetation management that aims to protect biodiversity. ROW segments with unique native ecological resources or invasive species challenges may need site-specific plans.

Goals:

1. Minimize tree seedling establishment by fostering conditions that do not favor establishment of tall-growing trees and undesirable woody colonizers.
2. Preserve Critical Habitatsⁱ, populations of uncommon/rare plants and key habitats for fauna.
3. Promote establishment of pollinator and wildlife plants, herbaceous and woody.
4. Reduce the extent of invasive plant infestations in ROWs with ecologically strategic approaches.

General Vegetation Management

- Minimize damage to dense, native, shading shrubs and ground cover, which naturally limit colonization by trees and invasive species. Thick, tall stands of native herbs are important for pollinators and wildlife. Shrub thickets provide wildlife cover, fruits and seeds, as well as insect gleaned areas. Shrubs are also valuable nectar/pollen sources, e.g. blueberry, huckleberry, sweet pepperbush maleberry, mountain laurel, sheep laurel, viburnums, rhododendrons, and chokeberries.
- Selectively remove tall-growing tree species, in a framework of Integrated Vegetation Management as described in Dreyer and Niering (1986), Johnstone (1990), and Russell *et al.* (2018).
- For species that do re-sprout, consider treating freshly cut stems immediately with herbicide, or, alternatively, cutting and return the following year, preferably in early summer, to spray the re-sprouts. This reduces the amount of herbicide needed.
- Know which tree species are killed by cutting alone (e.g., most conifers) and do not require herbicide use.
- Use a selective herbicide such as triclopyrⁱⁱ, which does not harm sedges and grasses, rather than a broad-spectrum herbicide such as glyphosate.
- Ensure that field crews are able to identify native shrubs (e.g., hazelnut, witch hazel, high bush blueberry) to prevent accidental spraying with herbicide and take care to minimize overspray.
- Where mowing is needed, e.g. for access, mow high to avoid damage to low-growing patches of huckleberries and blueberries, herbivorous insects, herptiles and other wildlife.
- Where broad-leaved herbs with high pollinator/seed value are abundant but interspersed with tree saplings, mow early in season to avoid impacts to the herb layer. Most of the later-flowering species will still bloom, though stature will be lower.
- Some areas may benefit by periodic mowing, such as rare plant communities and pollinator meadows.

September 15, 2020

- Where mowing is needed for access, manage these linear swaths as pollinator meadows and/or low shrub communities.
- Know the other conservation-concern species and critical habitat assemblages at sites. For example, small-scale localized mowing may be acceptable in known New England cottontail-occupied stretches.
- Do not deposit/spray wood chips in ROWs.
 - Wood chips smother native plant communities and important ground covers, such as dewberries, clubmosses (princess pine, running pine) and wintergreens. Phyto-toxic phenolic compounds leach from thick layers of wood chips.
 - Nutrient enrichment from chips disrupts microbial soil communities, and pollutes wetlands and waterbodies. Nutrients foster establishment of tree saplings and invasives after the wood chips have broken down.
 - In ROW's with naturally acidic, nutrient-poor soil, a chip-free environment will help maintain these conditions, which are not conducive to tree seed germination and will minimize creation of seed beds for undesirable woody species.
- Private land owners may consider allowing eastern red cedar and low densities of oak saplings to remain by coppicing (Logan 2019), not allowing height to exceed the maximum height limit within the four-year vegetation management rotation.

Management recommendations to help achieve goals:

Rare Plants and Plant Communitiesⁱⁱⁱ

- Conduct comprehensive *de novo* surveys^{iv} for rare plants and plant communities before work proceeds. It is recommended that such surveys be conducted as soon as possible. Once Eversource gives its required 30 day notice of work, there is not sufficient time to conduct such a survey.
- If *de novo* surveys are not possible, use Critical Habitat as a surrogate, and plan damage avoidance as appropriate.
- Landowners can request Natural Diversity Database (NDDDB) information about their property from the CT Department of Environmental Protection (CTDEEP), and may conduct surveys to share with Eversource for planning appropriately. Eversource should inform landowners of vegetation height limits, should they wish to manage vegetation themselves in certain areas to avoid damage to rare or noteworthy plants and communities.

Work Pad Issues

- To support equipment during utility pole replacement by Eversource, timber matting is always preferable to gravel work pads, to protect native vegetation and ecological communities in CT DEEP Critical Habitats.
- Where gravel is required, reduce final footprint of gravel pads to not larger than 50' × 50' and road width to not wider than 13' where gravel is necessary. If the power is turned off during pole replacement, work pads can be smaller, as less equipment is needed.

September 15, 2020

- Stockpile topsoil from the site and use it to top dress road shoulders and work pads (which are usually a mix of stone dust and gravel known as “stone process”).
- Use imported topsoil or topdressing only if absolutely necessary.
 - Source material should have been inspected for two growing seasons to insure it is invasive free.
 - Topdressing material should be suitable for proposed planting materials (ideally as prescribed in a written restoration plan).
- Reseed with native warm season grass or cool season grass, or custom mix, as appropriate, based on substrate characteristics (ideally, as set forth in a written restoration planting plan).
- Invasives will still arrive on equipment, work boots and tires. Monitor graveled areas and treat invasives, including mugwort and black swallowwort, for two years. Follow-up control will take little time, if source material really was invasive-free.
- Follow the Best Management Practices issued by the Connecticut Invasive Plant Council (2020) to minimize export of seeds and/or rhizomes of mugwort, Japanese knotweed, Phragmites, and Japanese stiltgrass.
- Landowners and town governments should be aware that they may request removal of work pads. In granting Eversource permission to conduct utility work to comply with new safety codes per Petition 1293 (https://www.ct.gov/csc/lib/csc/pending_petitions/2_petitions_1201through1300/pe1293-dcltr.pdf), the Connecticut Siting Council recognized that Eversource planned to leave work pads in upland areas "unless the property owner requests removal." Eversource is required to share sub-petitions for ROW work under Petition 1293 with those entities.

References and Sources used to develop CBS Recommendations.

Askins, R. A., C. Folsom-O’Keefe, and M. Hardy. 2012. Effects of vegetation, corridor width and regional land use on early successional birds on powerline corridors. *PLoS One* 7(2): e31520.

Askins, R.A., Professor Emeritus of Biology, Connecticut College. March 2017. Assessment of Changes in Vegetation Management on Powerline Corridors in Connecticut. White Paper for the Connecticut Right-of-Way Work Group.

Bramble, W.C., W.R Byrnes, and R.J. Hutnik. 1990. Resistance of plant cover types to tree seedling invasion on an electric transmission right-of-way. *Journal of Arboriculture* 16: 130-135.

Connecticut Invasive Plant Council. March 2020. Guidelines for Best Management Practices for movement of topsoil and gravel fill, mulch, and equipment in Connecticut. <https://cipwg.uconn.edu/wp-content/uploads/sites/244/2020/08/CT-IPC-BMPs-for-topsoil-and-mulch-FINAL-Aug-2020.pdf>

Dreyer, G.D. and W.A. Niering. 1986. Evaluation of two herbicide techniques on electric transmission rights-of-way: Development of relatively stable shrublands. *Environmental Management* 10: 113-118.

September 15, 2020

Egler, F.E. 1949. Right-of-way management by plant community management. Aton Forest, Norfolk, CT. 19pp.

Johnstone, R.A. 1990. Vegetation management: mowing to spraying. *Journal of Arboriculture* 16: 186-189.

Logan, W.B. 2019. *Sprout lands: tending the everlasting gift of trees*. W. W. Norton Company, NY, NY.

Niering, W.A. and R.H. Goodwin. 1974. Creation of relatively stable shrublands with herbicides: Arresting "succession" on rights-of-way and pastureland. *Ecology* 55: 784-795.

Russell, K.N., G.J. Russell, K.L. Kaplan, S. Mian, and S. Kornbluth. 2018. Increasing the conservation value of powerline corridors for wild bees through vegetation management: an experimental approach. *Biodiversity Conservation* doi.org/10.1007/s10531-018-1552-8.

Wagner, D.L., J.S. Ascher and N.K. Bricker. 2014a. A transmission right-of-way as habitat for wild bees (Hymenoptera:Apoidea: Anthophila) in Connecticut. *Annals of the Entomological Society of America* 107: 1110-1120.

Wagner, D.L., K.J. Metzler, S.A. Leicht-Young and G. Motzkin. 2014b. Vegetation composition along a New England transmission line corridor and its implications for other trophic levels. *Journal of Forest Ecology and Management* 327: 231–239, DOI: 10.1016/j.foreco.2014.04.026

Yih, David and S.N. Gadwa. April 2019. Position Paper of the CT Botanical Society on Right of Way Management. Supplement to White Paper Submitted to Eversource by Robert Askins in March 2019

ⁱ Critical Habitats in Connecticut are defined by the Connecticut Department of Environmental Protection (CTDEEP) in an on-line document written by former CT DEEP Plant Ecologist, Kenneth Metzler; the legend to the on-line map shows the larger, better known examples: https://cteco.uconn.edu/guides/resource/CT_ECO_Resource_Guide_Critical_Habitat.pdf. Examples of Critical Habitat include *Poor Fen* defined as “natural peatlands (bogs) occupying topographically defined basins; influenced by acidic ground water; on deep, poorly decomposed peats; dominated primarily by ericaceous shrubs. Subtypes include dwarf shrub, shrub thicket, saturated woodland, and other/unique”, and *Acidic Rocky Summit Outcrop* defined as “dry to xeric exposed summits, ledges, and other outcrops (gneiss, schist, granite, sandstone) with a vegetation of small trees, low shrubs, grasses and herbs. Subtypes include grassy glade/bald, pitch pine, scrub oak, and other/unique”.

ⁱⁱ Use water-soluble triethylamine (TEA) formulation of triclopyr, 7-8.8%, as Ortho Groundclear, Bayer Advanced Brush Killer Plus, & Brush-B-Gon, sold over the counter, already mixed. May be applied by property owner, no license required; also sold as Garlon A, to be applied only by licensed applicators. Use cut stump method or spray small plants with a low pressure sprayer (4% concentration).

ⁱⁱⁱ A copy of Connecticut State-listed plants known in power line ROWs is available here: http://www.ctconservation.org/sites/default/files/F.%20CT%20State-listed%20plants%20known%20in%20power%20line%20ROWs_DRAFT_2020-03-11.pdf.

^{iv} A list of Botanists qualified and willing to perform *de novo* (i.e., comprehensive) surveys for State-listed plants and rare plant communities/Critical Habitats in Connecticut and other useful documents can be found here, under *Additional Information offered by others*: <http://www.ctconservation.org/information-powerline-right-way-vegetation-management>.