

DOA 2049. PRELIMINARY Detailed Economic Impact Analysis Report for board order SS-04-12, pertaining to the Wisconsin Invasive Species Rule (Chapter NR 40, Wis. Adm. Code)

Additional data for Fiscal Estimate and Economic Impact Analysis (form DOA-2049).

Pursuant to s. 227.137 Wis. Stats., the Department is required to solicit comments on the economic impact of the proposed rule changes, and if requested to coordinate with local governments in the preparation of the Economic Impact Analysis (EIA). Comments will be collected and incorporated into this document during the 60 day solicitation for information and advice on the economic impact of the proposed rule revisions.

To determine implementation and compliance costs expected to be incurred, DNR Invasive Species Team staff and Wisconsin Invasive Species Council members compiled a list of individuals and organizations who might be economically impacted by the proposed rule revisions or were affected by invasive species. Types of positive and negative effects from both regulating and not regulating were identified along with a method on how they might be quantified. Given the unknowns and the complexity of assessing the impacts, a relative impact of low-moderate-high (L/M/H) was determined. The economic cost of listing a species is highly dependent on its commercial uses, distribution, response to control tools currently available, level of impact, management needs, etc.

Examples of relative impacts of currently proposed species:

- Diffuse knapweed (*Centaurea diffusa*) – Prohibited. This and other species in the knapweed genus *Centaurea* are weeds of pastures and invasive in prairies. These species do provide nectar to bees and have been identified by bee keepers as a nectar source. As there are multiple other species that bloom during the general flowering period from July to September that could provide nectar, this species is not grown for the ornamental plant market, and is not widely distributed in Wisconsin.
- Japanese barberry (*Berberis thunbergii*) – Restricted with exemptions. This species has been distributed and sold as an ornamental plant for many years. Cultivars are currently patented, developed, and marketed. Over the past few decades this species has been observed developing dense thickets in the understory of forested areas where it is naturalizing. This creates barriers to movement as the shrubs are extremely spiny. The small fleshy red fruits are readily spread by birds and the widely dispersed records of naturalization indicate that this species is likely to spread in all parts of Wisconsin. The Wisconsin Nursery Association survey indicated that respondents valued sales of this species at approximately \$650,000 per year. The short term impact is likely to be high as switching to other non-invasive alternatives will take time and resources to develop and the long term impacts are likely to remain high as naturalized populations will require ongoing management to prevent the loss of access to woodlands, native wildflower diversity in woodland understory habitat, and encourage continuing recruitment of forest trees.

This detailed EIA report was developed with economic impacts known to the Department, gathered by the Wisconsin Invasive Species Council, and offered by members of the public during the informal public information sessions held in February and March 2013 and will include the economic-related comments received during the EIA public comment period. The report is organized by the types of small businesses, organizations, units of government, etc. that could be affected. The proposed language changes to clarify and organize NR 40 are not included in this analysis because there is no impact.

Effects of listing/delisting invasive species will be highly variable among different types of businesses and user groups. There are 51 species proposed for listing as Prohibited, 32 for listing as Restricted, 3 for downlisting from Prohibited to Restricted, 2 for delisting, 2 plants for split-listing between Prohibited and Restricted and 1 split-listed plant for downlisting to Restricted statewide.

Agricultural community including farms, livestock, forage, pasture, and beekeeping

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|---|--|--|
| REGULATE | Several species that are agricultural weeds will be subject to reasonable precautions and may not be spread to fields and pastures. | One species that is currently used in forage mixes and hay mixes, crown vetch (<i>Coronilla varia</i>) would not be available and substitute species would need to be identified. | Determine long term trends in the abundance and distribution of species included in regulation. Survey for regulated species in trade. | Low. The impact of the species recommended for listing can be mitigated by using substitute species. |
| DO NOT REGULATE | Agricultural producers retain greater flexibility in their choice of species available for planting. | Weedy and invasive species would continue to be used and spread to adjacent areas. Some of these alter nutrient cycling or create monocultures that reduce structural and bio-diversity of invaded sites. | Determine long term trends in the abundance and distribution of these species. | High. The large volume of seed introduced and area used for forage, hay, and biofuels create extremely high propagule pressure. Shifting species use to less invasive alternatives is unlikely without regulation. |

Species with specific impacts

* A number of species were assessed by the Wisconsin Invasive Species Council's species assessment groups (SAG) and determined to be invasive, but are not being proposed to be regulated due to the high economic value, difficulty in limiting their spread and their current widespread abundance. Among these are reed canary grass (except ornamental variegated varieties and cultivars) and sweet clover.

* Terrestrial plants (all). The impact will be mixed. Species are valued by some groups including bee keepers and livestock producers are considered weedy by other managing for different land uses. Plants introduced for use as biofuel were discussed: the diversity of feedstocks under development and flexibility in fuel sources by powerplants make reliance on any one species unnecessary. Overall, the shift from invasive plants to non-invasive alternatives will reduce control costs and harm caused by the spread of the regulated species. Alternatively, intensive and widespread use has established many species discussed during the assessment process like bird's foot trefoil and sweet clovers widely across the state reducing the feasibility of control. Generally, few species identified as important turf, forage or biofuel crops were recommended by SAG as the participants were largely representing economic interests in maintaining use of the proposed species.

* Crown vetch (*Coronilla varia*) - proposed Restricted, is grown by several Wisconsin farmers and sold for erosion control and nitrogen fixation. Growers wanting to continue harvesting and selling seed would be required to obtain permits to continue propagation for out of state sale. Outreach should decrease in state use and spread.

Aquaculture, fish distributors, pet stores, aquarium hobbyists, and the pond trade

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|--|--|--|
| REGULATE | The use of best management practices will reduce the spread of many unintentional introductions. Limiting the introduction of mollusk species reduces the likelihood of parasitic disease by decreasing intermediate hosts. | Five invertebrates and two popular floating aquatic plants would not be available legally to the public. Businesses would incur increased costs from time and materials needed to decontaminate equipment. | Measure expenditures to develop and use best management practices. Assess time to inspect and remove hitchhiking organisms and develop alternatives to listed species. | Medium. There are few species available to substitute for floating pond plants and regulation may encourage internet and illegal import. |
| DO NOT REGULATE | No new preventative actions will be required by pond and aquarium stores and individuals to inspect and remove hitchhiking organisms. | There would be a continuing relatively high risk of introduction from ponds and aquariums to Wisconsin waters with unpredictable results and few mitigation options. | Measure expenditures to control unwanted organisms in aquariums and ponds. Measure expenditures required for newly established invasive species in Wisconsin waters. | Medium. There is a high risk of introduction but unknown probability of harm to Wisconsin waters from the species assessed. |

Species with specific impacts

* Genetically Modified (GM) fish are divided into two categories, for non-viable GM fish in the aquarium trade there would be no change to business with new regulation or not regulating as all non-viable fish would remain legal to possess and transfer. Viable GM fish in the aquaculture trade could be allowed under permit requiring some additional time and assessment of the risks posed by these species.

* Down-listing mosquitofish from Prohibited to Restricted under the rule would allow businesses importing fish to continue to use best management practices to remove these species from bait and other fish import shipments or the new opportunity to apply for a permit to possess these species under limited circumstances. This would address business concerns about being found in violation of NR 40 but could include additional reporting requirements.

* Aquatic invertebrates may be sold or are more likely unintended hitchhikers on other pond and aquarium materials. Some are difficult to remove and widespread in aquaculture requiring significant time and effort to remove.

* Aquatic plants especially water lettuce and water hyacinth are sold by approximately 2/3 of Wisconsin shops that sell aquatic plants. Few options are available to substitute for these floating plants. Overwintering and spread have been observed at several locations and control has been ongoing.

Department of Transportation, County, and Town Highway Managers

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|--|---|--|--|
| REGULATE | More opportunities to develop partnerships to manage significant weeds. Over the long term, fewer persistent weeds to manage in rights-of-way and to spread into adjacent lands. | Time needed to evaluate current mowing and management guidance to accommodate additional species. Additional training required for operators and contractors. | Assess effectiveness of current resources invested in rights-of-way maintenance and annual expenditures at the state and local level for management. Listed prohibited species may incur additional costs. | Low. Best management practices and invasive species in rights-of-way have already been incorporated into training and management considerations. |
| DO NOT REGULATE | No need to alter mowing instructions or update best management practices for additional species. | Rights-of-way will continue to be the primary corridors for the spread of weeds and roadside managers, private landowners, and public land management agencies will incur increasing costs to manage these species. | Assess effectiveness of current resources invested in rights-of-way maintenance and annual expenditures at the state and local level for management. Mowing timing and other actions already exist as costs. | Low. Best management practices and invasive species in rights-of-way have already been incorporated into training and management considerations. |

Species with specific impacts

* A number of species were assessed by SAG and were determined to be invasive, but are not being proposed to be regulated due to the high economic value, difficulty in limiting their spread and their current widespread abundance. Among these are reed canary grass (except ornamental variegated varieties and cultivars) and sweet clover.

* Bird's foot trefoil, a widespread weed that has already largely been removed from DOT recommended seed mixes, is not being proposed for listing.

* Red and white clover are currently used for seed mixes and were determined by SAG as "not invasive" and are not being proposed to be regulated under this rule, allowing for their continued use.

* Regulated invasive plants (all) are likely to benefit from increased light and disturbance more than native species and will likely be weedier along roadsides than in forests and prairies. By restricting the transport and introduction of additional species, long-term burdens for managing rights-of-way should be reduced. For prohibited plant species specifically, roadside managers would be required to control these plants where they are found under their jurisdiction. These are uncommon species and few would be likely to be found on roadsides.

Department of Agriculture, Trade and Consumer Protection

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|--|--|---|
| REGULATE | Increased opportunities for prevention success stories and protection of agricultural resources from weeds and pests. | Increased staff time required for training and inspection of licensed nurseries for additional listed species. | Determine staff time and work planning changes required to accommodate additional species, time spent processing additional violations discovered. | Low. Existing Memorandum of Understanding and cooperation with the nursery inspectors has already been established. Training would require additional time. |
| DO NOT REGULATE | Avoid increases to time spent conducting nursery inspections at licensed nurseries. | Additional harm anticipated to stakeholder groups with continued introduction and spread of weeds and pests. | Determine time spent inspecting regulated species, already a part of work planning. | Low. No change anticipated to current work load. |

Species with specific impacts

* Garden yellow loosestrife, moneywort, queen of the meadow, and garden heliotrope - proposed Restricted, may appear in the cut flower trade. Nursery inspectors who contact these businesses may be asked additional questions about these regulated species.

* Japanese barberry and burning bush cultivars - proposed Restricted, are ubiquitous in local stock maintained by both nursery growers and dealers. Proposed exemptions for varieties will be complicated to enforce as consistent labeling is currently lacking.

* Mountain pine beetle is proposed Prohibited. Local regulation of this complex would complement state quarantines placed to slow the spread of this beetle and associated disease causing organisms.

Green Industry (Landscaping, Nursery dealers and growers, wholesale, florists)

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|--|---|--|
| REGULATE | Removal of weedy or invasive species from trade improves public trust that this industry is “green” and that plants purchased will not be invasive. Educating customers about phasing out invasive plants may increase sales of non-invasive alternatives when invasive species in the landscape are removed. | Existing stock will be subject to a phase-out over 3 years for herbaceous plants and 5 years for woody plants for restricted species and immediately for prohibited species incurring short term costs. May lose business from members of the public trying to acquire a specific species. | Measure sales volume before and after transition to non-invasive alternative species. | Medium. Prohibited species would be required to be removed from sale immediately. Restricted species would be required to be phased out of production over 3 or 5 years. |
| DO NOT REGULATE | No change to current practices required, short term savings from not shifting to non-invasive alternatives. | No change required to stock offered for sale in Wisconsin. A patchwork of county and local weed control efforts may create an inconsistent regulatory burden. | Measure sales volume of species assessed but not regulated to determine the impact of perceived invasiveness on demand. | Low. Currently regulated species have been largely removed from both production and sale. |

Species with specific impacts

* Garden yellow loosestrife, moneywort, queen of the meadow, and garden heliotrope - proposed Restricted, may appear in the cut flower trade, annual baskets, or be used as medicinal herbs. Nursery inspectors who contact these businesses may be asked additional questions about these regulated species.

* Japanese barberry and burning bush cultivars - proposed Restricted, are ubiquitous in local stock maintained by both nursery growers and dealers. Proposed exemptions for varieties will be complicated to enforce as consistent labeling is currently lacking.

* Yellow iris, aquatic forget-me-not, ribbon grass, garden yellow loosestrife, and moneywort - proposed Restricted, are occasionally requested by those planting along shorelines and in and around ponds. These species are resistant to wildlife damage, crowd out native plants, other weedy plants, and provide flowers making them desirable to customers.

Federal agencies (NRCS, USFWS, USFS, NPS, USACE)

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|--|--|---|---|
| REGULATE | Reduced introductions spreading into managed federal lands. Increased opportunity for partnering on control of invasive species. | Increased costs to use best management practices, time spent training staff on newly listed species. | Measure land management expenditures and staff time. Number of grants and partnering opportunities. | Low. Federal agencies typically require best management practices for all managers and contractors already. |
| DO NOT REGULATE | Greater flexibility in implementing best management practices as fewer species would trigger action. | Likely spread of additional invasive species into managed lands. Less opportunity to partner on regional control projects. | Measure land management expenditures and staff time. | Low. Flexibility in managing invasive species that are impacting specific resources on federal lands are generally at the discretion of the managers. |

Species with specific impacts

* Mosquito fern (*Azolla pinnata*) - proposed Prohibited, and several other species are currently listed as Federal Noxious Weeds. By dual listing these species in Wisconsin education and control efforts will be improved through greater consistence and the ability to create partnerships.

* Plants, woody. Many of the woody plants that are invasive in forests if listed would provide local weed management groups with additional incentive to apply for federal funds to manage established populations in or near forest lands.

* Plant pests and diseases. Local regulation of these species would benefit local federal land management goals and potentially decrease the spread of these species regionally meeting the goals of federal quarantine agencies.

Forest Industry

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|--|---|---|
| REGULATE | Forest resources would be offered a higher level of protection from pests and diseases. | More precautionary practices would be required adding time and cost to harvest and transport operations. | Determine project expenditures to use best management practices to reduce the spread of regulated species. Long term access to forest resources that are pest-free. | Low. Most general best management practices are already used in forest lands. |
| DO NOT REGULATE | Fewer precautions and best management practices to consider when conducting harvest and transport operations. | Increased risk that emerging pests and diseases would establish. | Determine availability to forest resources that are pest-free. | Low. Most general best management practices are already used in forest lands. Additional effort may be required for newly establishing species over time. |

Species with specific impacts

* Plants, woody. Many of the woody plants that are invasive in forests if listed would provide local weed management groups with additional incentive to apply for federal funds to manage established populations in or near forest lands. Regulating cultivars would reduce the spread of invasive plants into forest areas and reduce future management costs for new woody weeds such as barberry and euonymus on top of the existing management burden for common and glossy buckthorn and several honeysuckle species that are also horticultural introductions and are currently regulated.

* Mountain pine beetle and associated fungi, *Grosmannia clavigera* and *Ophiostoma montium* are proposed Prohibited. Preventing spread of this beetle and its associated fungi would require heat treatment of infested wood before shipment to an un-infested area. This is an expensive treatment relative to the value of the pine logs or chips themselves. Most of the wood used in Wisconsin mills comes from Wisconsin so the loss of access to infrequently used western state sources for pine wood is exceeded by the value of protecting fully utilized Wisconsin pine stands. Local regulation of this complex would complement state quarantines placed to slow the spread of this beetle and associated disease causing organisms.

Habitat (e.g. uplands, wetlands, waters)

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|--|---|---|
| REGULATE | Reduces risk of loss of native species due to exclusion, disease, or predation from regulated invasive species so subsequently reduce adding species to the endangered/threatened species list. | Public opinion that the number of invasive species will always increase reduces motivation to take preventative actions. | Measure acreage of land and waters that do not require additional management effort for newly establishing invasive species. Reduced number of reports of new invasive species locations. | Moderate. Regulating invasive species under the proposed rule addresses intentional movement and well regulated pathways only. Effects on ecosystems are difficult to predict and altered services are not easily measured. |
| DO NOT REGULATE | No change from present. Public and private land managers are likely to recognize species that are acting invasive and take action with or without regulation. | Continued, increased risk from invasive species due to continuing introductions. | Measure acreage of land and waters altered/degraded. Assess invaded sites to determine if there are reduced ecosystem services. | Moderate. The number of invasive species would likely be greater but the effects on ecosystems are difficult to predict and altered services are not easily measured. |

Species with specific impacts

* Giant reed (*Arundo donax*) - proposed Prohibited, has colonized and transformed sandy river banks across the southern US and could dramatically alter structure, water flow, and habitat if it were able to establish further north.

* Floating water hyacinth (*Eichhornia crassipes*) - proposed Prohibited, has no Wisconsin ecological equivalent and if it does establish over large areas, at least seasonally, would dramatically alter open water habitats to solid vegetative cover.

* Burning bush (*Euonymus alatus*) cultivars - proposed Restricted, and several other woody species alter the structure of woodlands and may change the litter cover and cycling rate converting woodlands to shrublands or shift to a canopy of weedy black locust with little spring forb diversity. Altered canopy structure (trees, shrubs, and forbs) can affect habitat quality and the animal (e.g. birds) that depend on specific structural attributes. Shifts in species composition can also impact the availability and seasonality of food resources for wildlife.

* Crown vetch (*Coronilla varia*) - proposed Restricted, if established widely alters the nitrogen cycle and excludes other species shifting diverse prairie systems to an assemblage of weedy species.

* Wavy leaf basket grass (*Oplismenus hirtellus ssp. undulatifolius*) - proposed Prohibited, creates continuous grass cover in woodland areas excluding species that depend on leaf litter and reducing native forb cover.

Land management and conservation groups (NGOs)

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|--|--|--|
| REGULATE | Increase in grant opportunities with ability to reference that regulated invasive species are being proposed for management. Improved partnership opportunities. | Increased costs and time associated with addressing newly listed prohibited species, time required to train staff on identification of newly listed species. | Assess project expenditures to use best management practices to reduce the spread of regulated species. | Low. Most general best management practices are already used in conservation management. |
| DO NOT REGULATE | Land managers would not be required to implement additional best management practices to avoid spreading additional listed species, best management practices would continue for currently regulated species. | Increased risk that emerging pests and diseases would establish on lands set aside for conservation. | Assess project expenditures to use best management practices to reduce the spread of regulated species. Determine long term costs associated with increased introductions. | Low-Moderate. Most general best management practices are already used in conservation management. Education efforts encourage local residents to avoid spreading pests and introducing invasive species but these would not be backed by regulation. |

Species with specific impacts

* Burning bush (*Euonymus alatus*) cultivars - proposed Restricted with cultivar exemptions, and several other ornamental woody species available in the nursery trade are still popular in developed urban landscapes. Without backing from administrative rules, efforts to control the spread of these weeds in conservation areas will continue to be hindered by the continued introduction and spread of these species from urban plantings.

Private landowners

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|---|---|--|---|
| REGULATE | Fewer weeds and plant pests introduced from urban plantings and unintentional spread by neighboring right of way, forestry operations, and other land management actions due to use of best management practices. | Potential for increased management costs if prohibited species are present. Time required learning how to integrate and care for alternative plants for planting instead of more familiar invasive species. | Determine land management expenditures and staff time. Count grants and incentives awarded to manage regulated invasive species. | Moderate. Prohibited species are only required to be controlled “as feasible” and control is suggested but not required for restricted species. Additional steps may be required to exclude regulated species from being transported (hay, other products). |
| DO NOT REGULATE | Additional choices in purchasing plants for planting and in moving wood products that may also contain pests. | Increased cost due to continued introductions of invasive plants, plant pests, and other invasive species to property and subsequent loss of property value. | Determine land management expenditures and staff time. Count grants and incentives awarded to manage regulated invasive species. | Low. Most currently regulated species are either widespread or generally subject to management. Best management practices already defined to avoid transport of invasive species. |

Species with specific impacts

* Plants (all) and plant pests regulated species are less likely to be introduced via intentional movement. By restricting the transport and introduction of additional species, long term burdens for managing property should be reduced.

Small businesses

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|--|--|---|--|
| REGULATE | Partnering and collaboration opportunities to control invasive species. Seen as being proactive by customers. | Increased cost due to additional species triggering best management practices, decreased options for purchase of plants for planting and species for aquarium trade. | Determine project expenditures to use best management practices to reduce the spread of regulated species. Count number of enforcement actions. | Low. Few small businesses (other than groups specifically mentioned in this report) are required to change practices due to newly listed invasive species. |
| DO NOT REGULATE | Greater flexibility in species sold and in fewer species would require best management practice during operations. | Reduced consumer confidence that species being sold are not invasive, potential to spread infested materials with hitchhiking invasive species. | Determine project expenditures to use best management practices to reduce the spread of regulated species. | Low. There would not be any change to currently required practices or species sales. |

Species with specific impacts

* Plant pests and diseases. Local regulation of these species would benefit land management goals over the longer term but would increase operation costs to comply with best management practices. With the increased establishment of these species the increased costs to remove infested plants (especially trees) will increasingly fall to local businesses and land owners. Lost trees and vegetation cover reduce land values.

Tourism

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|--|---|--|--|
| REGULATE | Educational opportunities to encourage a sense of ownership through conservation of visitor destination sites. | Exposure to increased inspection and potential confiscation of infested materials. | Assess number of tour/visitors reporting invasive species as a reason to alter travel plans. | Low. Most restrictions already address pathways (firewood for example) so additional regulated species will not change required practices. |
| DO NOT REGULATE | Fewer restrictions on the movement of invasive species and materials that may be infested. | Potential for loss of favored destination sites due to continued introductions of invasive plants, plant pests, and other invasive species. | Assess number of tour/visitors reporting invasive species as a reason to alter travel plans. | Low. Most restrictions already address pathways (firewood for example) so additional regulated species will not change required practices. |

Species with specific impacts

* Aquatic plants especially water lettuce and water hyacinth have the ability to completely cover open water making boating, swimming, and fishing difficult or impossible in these waters.

* Japanese barberry (*Berberis thunbergii*) is proposed Restricted with cultivar exemptions. This species has been distributed and sold an ornamental plant for many years. Cultivars are currently patented, developed, and marketed. Over the past few decades this species has been observed developing dense thickets in the understory of forested areas where it is naturalizing. This creates barriers to movement including recreational use as the shrubs are extremely spiny. The short term impact is likely to be high as switching to other non-invasive alternatives will take time and resources to develop and the long term impacts are likely to remain high as naturalized populations will require ongoing management to prevent the loss of access to woodlands, native wildflower diversity in woodland understory habitat, and encourage continuing recruitment of forest trees.

Utility companies and the Public Service Commission

| <u>Proposed action</u> | <u>Types of positive effects from the action</u> | <u>Types of negative effects from the action</u> | <u>Methods for assessing the effects</u> | <u>Relative Impact and Complexity Factors</u> |
|------------------------|--|--|---|--|
| REGULATE | More opportunities to develop partnerships to manage significant weeds. Over the long term, fewer persistent weeds to manage in right-of-ways. | Time needed to evaluate current vegetation and pest management guidance to accommodate additional species. Additional training required for operators and contractors. | Measure effectiveness of current resources invested in rights-of-way maintenance and annual expenditures at the state and local level for management. Listed prohibited species may incur additional costs. | Low. Best management practices and invasive species in rights-of-way have already been incorporated into training and management considerations for contractors. |
| DO NOT REGULATE | No increase in costs and project management time required to implement best management practices for additional species. | More weeds likely over the long term in rights-of-way incur additional costs to maintain access corridors. | Measure effectiveness of current resources invested in rights-of-way maintenance and annual expenditures at the state and local level for management. Listed prohibited species may incur additional costs. | Low. Best management practices and invasive species in rights-of-way have already been incorporated into training and management considerations for contractors. |

Species with specific impacts

* Regulated invasive plant species are likely to benefit from increased light and disturbance more than native species and will likely be weedier along utility access corridors than forests and prairies. By restricting the transport and introduction of additional species, long term burdens for managing rights-of-way should be reduced. Weedy native plants such as ragweed will still require management.

* Woody plants proposed for regulation including black locust and Siberian elm may incur additional costs to the maintenance of right-of-ways. These weedy trees grow quickly and can pose a hazard to utility lines. Depending on the surrounding land use, additional transport and disposal costs may be incurred as these species establish and spread.