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| NAME OF SPECIES: <i>Lonicera morrowii</i> A. Gray (1) | |
| Synonyms: | |
| Common Name: Morrow's honeysuckle, Asian fly honeysuckle (1) (5) | |
| A. CURRENT STATUS AND DISTRIBUTION | |
| I. In Wisconsin? | 1. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> |
| | 2. <u>Abundance</u> : 84 Known occurrences recorded (1). This species is vastly under reported in WI. The earliest sightings were recorded in the 1920's (1). |
| | 3. <u>Geographic Range</u> : Recorded from 34 counties in WI, mostly from southern, eastern, and north-western areas of the state (1). |
| | 4. <u>Habitat Invaded</u> : Old fields, edges of woods, woodlands that have had past disturbances such as logging or grazing, roadsides and fence lines, prairies, grasslands, and open woodlands. Also early successional woods on sandy soils, old logging roads in hardwoods, edges of white pine forests. (1), (4), (5). In a New England study <i>Lonicera morrowii</i> also invaded the interior of intact forests (4). Disturbed Areas <input checked="" type="checkbox"/> Undisturbed Areas <input checked="" type="checkbox"/> |
| | 5. <u>Historical Status and Rate of Spread in Wisconsin</u> : The earliest sightings were recorded in the 1920's and now there are 84 recorded occurrences across the state. However this species is very under-reported(1). |
| | 6. <u>Proportion of potential range occupied</u> : Anecdotal evidence suggests that <i>L. morrowii</i> is found throughout WI and that most upland communities, except for undisturbed interior forests, provide ideal habitat for this species. In areas with limited intentional planting, i.e. more rural and more northern parts of the state, this species is just beginning to spread. In southern and urban parts of WI, with substantial pools of landscape plantings, some adjacent natural areas are completely dominated by this species. |
| II. Invasive in Similar Climate Zones | 1. YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> <u>Where (include trends)</u> : It is naturalized in a broad band from Minnesota to Arkansas east to Maine and South Carolina with disjunct populations present in Wyoming and Colorado (5) (7). |
| III. Invasive in Similar Habitat Types | 1. Upland <input checked="" type="checkbox"/> Wetland <input checked="" type="checkbox"/> Dune <input type="checkbox"/> Prairie <input checked="" type="checkbox"/> Aquatic <input type="checkbox"/> Forest <input checked="" type="checkbox"/> Grassland <input checked="" type="checkbox"/> Bog <input checked="" type="checkbox"/> Fen <input checked="" type="checkbox"/> Swamp <input type="checkbox"/> Marsh <input checked="" type="checkbox"/> Lake <input checked="" type="checkbox"/> Stream <input type="checkbox"/> Other: In North America, <i>L. morrowii</i> , <i>L. tatarica</i> , and their hybrid <i>L. x bella</i> occupy a wide range of sites. They are most often found on forest edges and in forest interiors but are also found in lacustrine (lakeside) and riparian habitats and in a variety of waste places such as abandoned agricultural land and road and railroad rights-of-way (4) |
| IV. Habitat Effected | 1. <u>Soil types favored (e.g. sand, silt, clay, or combinations thereof, pH)</u> : <i>L. morrowii</i> prefers loamy, well-drained, moist soils with a lower pH limit of 5.0 (5). Also found on a wide range of soils types; poor to well drained and non-calcareous to limey and low nutrient availability (4). |

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| | 2. <u>Conservation significance of threatened habitats:</u> Some of the Savanna and Barrens communities in WI under threat from this species are ranked G1- G2 and S1- S2. Some of the Upland Herbaceous communities in WI under threat from this species are ranked G2 - G3 and S1 - S3. Some of the Wetland Herbaceous communities in WI under threat from this species are ranked S1 - S3. (9). |
| V. Native Habitat | 1. <u>List countries and native habitat types:</u> L. morrowii is native to Japan and Korea, and is found on mesic sites and acidic soils (3) (4) (5). |
| VI. Legal Classification | 1. <u>Listed by government entities?</u> Connecticut - Potentially invasive, banned; Massachusetts - Prohibited; New Hampshire - Prohibited invasive species; Vermont - Class B noxious weed (2). 2. <u>Illegal to sell?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Notes: Currently illegal to sell in Connecticut, New Hampshire, Vermont; and Massachusetts in 2009 (2). However it is routinely available commercially in other states and on the internet (2). The issue of cultivars was addressed by the Mass. Dept. of Agricultural resources regarding the sales ban of some invasive species. Their findings: There are two significant challenges in determining what cultivars are not invasive: 1. There is currently no set of protocols by which to evaluate the lack of invasiveness of a particular cultivar. 2. The processes by which cultivars are identified and labeled in the marketplace is not managed sufficiently to ensure that plants that are labeled as a particular cultivar are indeed that cultivar. (10) |
| B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS | |
| I. Life History | 1. <u>Type of plant:</u> Annual <input type="checkbox"/> Biennial <input type="checkbox"/> Monocarpic Perennial <input type="checkbox"/> Herbaceous Perennial <input type="checkbox"/> Vine <input type="checkbox"/> Shrub <input checked="" type="checkbox"/> Tree <input type="checkbox"/> 2. <u>Time to Maturity:</u> Not Available; however the reproductive age for the hybrid L. X bella is between 3 to 8 years of age (5). 3. <u>Length of Seed Viability:</u> One study concluded that Morrow's honeysuckle does not have the potential to form persistent seed banks. Morrow's honeysuckle seeds, which are dispersed in summer, require warm stratification only and typically germinate prior to winter (5). 4. <u>Methods of Reproduction:</u> Asexual <input checked="" type="checkbox"/> Sexual <input checked="" type="checkbox"/> <u>Please note abundance of propagules and and other important information:</u> Also not well researched, however a study from WI on L. x bella determined that each fruit produces 5-7 seeds and a 2m tall shrub can produce 3,554 in one year so that a typical plant may produce >20,000 seeds annually (5). Research on asexual reproduction for the bush honeysuckles is sparse. One study on L. x bella found that the hybrid can both root sucker and root through layering (5). In the commercial trade greenwood and hardwood cuttings are used to propogate stock of bush honeysuckles (4). 5. <u>Hybridization potential:</u> L. tatarica and L. morrowii have produced a hybrid L. x bella which is a vigorous invasive shrub in WI (1). In addition to Bell's honeysuckle other hybrids have been developed between L, morrowii and other species of honeysuckles |

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| | and some have been found in WI (1) (5). |
| II. Climate | <p>1. <u>Climate restrictions</u>: L. morrowii is adapted to USDA zones 4-6 and the warmer parts of zone 3 (5). Probably close to potential range, given moisture and climate needs(5).</p> <p>2. <u>Effects of potential climate change</u>: NA</p> |
| III. Dispersal Potential | <p>1. <u>Pathways - Please check all that apply</u>: <u>Intentional</u>: Ornamental <input checked="" type="checkbox"/> Forage/Erosion control <input checked="" type="checkbox"/> Medicine/Food: <input type="checkbox"/> Other: Originally brought to North America in 1875 as an ornamental specimen (5). There are at least 14 known cultivars of L. tatarica available for ornamental planting. IT has been used as a windbreak, shelterbelt, or hedge species as well for range restoration, soil stabilization, and streambank reclamation. L. tatarica and L. marrowii have been used for strip mine site reclamation. (5)</p> <p><u>Unintentional</u>: Bird <input checked="" type="checkbox"/> Animal <input checked="" type="checkbox"/> Vehicles/Human <input type="checkbox"/> Wind <input type="checkbox"/> Water <input type="checkbox"/> Other:</p> <p>2. <u>Distinguishing characteristics that aid in its survival and/or inhibit its control</u>: These include high seed and biomass productivity, effective seed dispersal, extended growth period and absence of natural controls (7). Bush honeysuckles have the advantage of longer leaf life span which is usually 4 weeks longer than native shrub species. One WI study comparing the carbon gain of L. x bella and Cornus racemosa found the L. x bella made 47% of its carbon gain during the 4 weeks of the year when it had leaves and C. racemosa did not. On average the bush honeysuckles leaf out 2 weeks before native shrubs and retain their leaves at least 2 weeks longer than native shrubs. The dispersal of seeds by birds is prolific and extremely difficult to control (4) (5). The ability of these species to sprout from root crowns gives the plants an advantage during mechanical management (5). L.morrowii benefits from, but is not dependant on, disturbance for becoming established (8).</p> |
| IV. Ability to go Undetected | 1. HIGH <input type="checkbox"/> MEDIUM <input type="checkbox"/> LOW <input checked="" type="checkbox"/> |
| C. DAMAGE POTENTIAL | |
| I. Competitive Ability | <p>1. <u>Presence of Natural Enemies</u>: A non-native aphid, Hyadaphis tataricae, feeds on bush honeysuckles causing lowered plant vigor and may prevent flowering and fruit development. According to the USGS this insect species is still expanding its range so it may be of some control value in the future. (4) (5)</p> <p>2. <u>Competition with native species</u>: Forest regeneration following disturbance can be severely impeded by this species. In a study in New England, the L. tatarica-L. morrowii-L. X bella complex reduced the richness and cover of herb communities and the establishment of new seedlings. Seedlings that predate L. tatarica establishment were more tolerant of its presence. Annual herbs were entirely suppressed (4). Competition, especially for light, is</p> |

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| | <p>the most commonly described means by which bush honeysuckles effect native plants (5)</p> <p>3. Rate of Spread: HIGH(1-3 yrs) <input type="checkbox"/> MEDIUM (4-6 yrs) <input type="checkbox"/> LOW (7-10 yrs) <input checked="" type="checkbox"/></p> <p>Notes: In a study documenting nearly 40 years of vegetation change in an old-field habitat in southeastern Connecticut. The presence of Morrow's honeysuckle (<1% cover) was first recorded in 1973, 19 years after the study began, in conjunction with the development of a thicket community of small trees, shrubs, and woody vines. This woody stratum was 13 to 20 feet (4-6 m) in height and had >40% cover. By 1983 Morrow's honeysuckle cover increased to 10% in a community characterized as "a young hardwood forest", with tree cover of 90%, shrub/vine cover of 85%, and herbaceous cover decreasing to about 40%. By the end of this study in 1993, there was a relatively continuous tree canopy 40 to 59 feet (12-18 m) in height, a 3.3 to 6.6 feet (1-2 m) high shrub stratum contributing about 50% cover, and 10% herbaceous cover. Morrow's honeysuckle was the dominant shrub species at 24% cover. (5)</p> |
| <p>II. Environmental Effects</p> | <p>1. <u>Alteration of ecosystem/community composition?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>Notes: In a study of an invasion of bush honeysuckles in 3 sugar maple-dominated stands in Vermont, plus a red maple-dominated forest in northwestern Massachusetts, it was found that tree seedling (<1 m tall) density declined significantly ($p<0.01$) with increasing honeysuckle cover. Average seedling density at all sites was >5 m⁻² where honeysuckle was not present, but was <1 m⁻² when honeysuckle cover was >90%. Herb species richness and herbaceous cover both declined significantly ($p<0.05$) with increasing honeysuckle cover. Some evidence indicates that where native shrubs and invasive bush honeysuckles co-occur, bush honeysuckles may be stronger competitors. (5)</p> <p>2. <u>Alteration of ecosystem/community structure?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>Notes: In many U.S. forests, previously open understories are now near-impenetrable masses of <i>Lonicera tatarica</i>, or the hybrid cross of <i>L. tartarica</i> and <i>Lonicera morrowi</i>, <i>Lonicera x bella</i> (8). Where native shrubs and invasive bush honeysuckles co-occur, bush honeysuckles may be creating different nesting habitat for birds with effects on nest production (4) (5) (12). In northern Illinois, nests built in Amur honeysuckle had significantly ($p<0.001$) higher daily nest mortality rate compared with nests built in native species. Reasons offered for increased nest predation in Amur honeysuckle included lower nest height (compared with many native shrubs and trees), absence of sharp thorns (compared with native hawthorns (<i>Crataegus</i> spp.)), and branch architecture that may facilitate predator (e.g. raccoon) movement. Unfortunately, Amur honeysuckle may provide more attractive nest sites due to its early leaf flush and sturdy branches. In fact, American robins significantly ($r^2=0.912$, $p<0.01$) increased their use of Amur honeysuckle over the 6-year study period. (5)</p> <p>3. <u>Alteration of ecosystem/community functions and processes?</u></p> |

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| | <p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>Notes: Reduction of light availability for ground flora and seedlings. In a studies of the effects of the understory dominance by bush honeysuckles could ultimately alter successional patterns in forests by limiting the richness, density and frequency of native ground flora and tree seedlings (4)(5)(7). There are also suggestions that bush honeysuckle invasion could have ecosystem level effects. Net primary production of dense open-grown Amur honeysuckle thickets (up to 1350 g m⁻² yr⁻¹ in northern Kentucky) may have large impacts on carbon and nutrient budgets of invaded sites (5)</p> |
| | <p>4. <u>Allelopathic properties?</u> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>Notes: Some sources indicate that this is suspected in all the bush honeysuckles (11), but all the research to date has been on <i>L. maackii</i> (7) (14).</p> |
| D. SOCIO-ECONOMIC Effects | |
| I. Positive aspects of the species to the economy/society: | Notes: A popular landscaping plant due to the flower, fruits, smells, and low effort to grow (4). Currently available for sale by nurseries and Conservation Districts around the US. A simple Internet search for any of the bush honeysuckles brings up the websites of a number of nurseries and Conservation Districts in WA and OR that sell these species for ornamental and wildlife uses. |
| II. Potential socio-economic effects of restricting use: | Notes: Because of the species popularity, the horticultural industry has significantly invested in developing and maintaining stocks of this plant. A proven invasive and probably not produced, nor grown by Wisconsin nurseries. |
| III. Direct and indirect effects : | Notes: Suppression of tree seedlings and alteration of forest regeneration would have effects on the forestry industry (4) (5). Effects on forest understory vegetation and on bird survival could have negative effects on outdoor recreation and bird watching. A study in NY found that some birds with yellow in their coloring that had been fed <i>L. morrowii</i> berries had the yellow colored feathers change to orange. This could have effects on bird social behavior (mate selection) (12). |
| IV. Increased cost to a sector: | Notes: The costs to the horticultural industry would be that of replacing a popular ornamental with non-invasive alternatives, developing those as nursery stocks and educating the public about them. The forestry industry would bear the costs of honeysuckle inventory, mapping and control. They would also bear the costs in terms of lowered productivity. |
| V. Effects on human health: | Notes: Possibly some bush honeysuckle fruits are toxic, but this is not confirmed (13). |
| E. CONTROL AND PREVENTION | |
| I. Costs of Prevention (including education; please be as specific as possible): | Notes: NA |
| II. Responsiveness to prevention efforts: | Notes: In northern and rural parts of WI where there is a second home growth occurring, preventing the use of invasive bush honeysuckles in landscape plantings will slow the spread into surrounding forests and natural areas. This would provide land |

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| | managers an opportunity to control current infestations. In southern WI some infestations of bush honeysuckles are well beyond the control phase. |
| III. Effective Control tactics: | Mechanical <input checked="" type="checkbox"/> Biological <input type="checkbox"/> Chemical <input checked="" type="checkbox"/> Times and uses: The most effective and least damaging method is the cut-stump method where honeysuckle shrubs are cut and the stumps painted with herbicide, usually in fall. This needs to be followed by monitoring and foliar spraying of seedlings. Usually for 3 or more years. Ripping out of plants is effective but labor intensive. Also, the resulting soil disturbance creates more habitat for invasives to return or move in too. Rx fire in prairies and savannas can be used, however there needs to be enough fine fuels in the understory to carry flames. In addition, fire needs to be used repeatedly to be effective in setting back the sprouting from root crowns. Quickly repeating fires may have a negative impact on native species. (4) (5). |
| IV. Minimum Effort: | Notes: Cutting and stump treating larger individuals along with foliar spraying of seedlings, followed by several follow-up years of surveying for seedlings is the minimum effort required to control an infestation. Depending on the size of the infestation the original treatment could be a very costly and time consuming effort. (4) (5) Labor intensive; repeated treatments for five years or more (3). |
| V. Costs of Control: | Notes: Control cost approximately \$500-\$700 /acre in forested sites in Southern WI(15). The Ottawa National Forest in the UP of Michigan spent \$230/acre to treat a dense patch of bush honeysuckle (16). |
| VI. Cost of prevention or control vs. Cost of allowing invasion to occur: | Notes: NA |
| VII. Non-Target Effects of Control: | Notes: Depending on the time of year that herbicides are used there can be some non-target injury. Because of the early leaf-on and late leaf-off of the non-native bush honeysuckles this can be somewhat avoided. (4) (5) Some site disturbance; some non-target impacts from herbicides (8). |
| VIII. Efficacy of monitoring: | Notes: Because it is easy to identify this plant, monitoring natural areas and removing it as soon as the initial plant shows up is easy. This is the most efficient and least expensive way to control bush honeysuckle spread. (4) (5) |
| IX. Legal and landowner issues: | Notes: This species is a widely planted and popular ornamental (4). As this species may occur on some private land, some access issues will arise and cooperation with landowners for management will be necessary (8). |
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F. REFERENCES USED:

- UW Herbarium
- WI DNR
- TNC
- Native Plant Conservation Alliance
- IPANE
- USDA Plants

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Author(s), Draft number, and date completed: Mariquita Sheehan, 3rd Draft, 11 April 2007

Reviewer(s) and date reviewed: Dean G. Edlin 7-30-07

Approved and Completed Date: Thomas Boos, 9-06-07