**Massachusetts Invasive Plant Advisory Group**
**c/o Wayne Mezitt, Chair**
**25 Phipps St.**
**Hopkinton, MA 01748**

January 31, 2024

Taryn LaScola-Miner
Director, Crop & Pest Services
MA Department of Agricultural Resources
251 Causeway Street, Suite 500
Boston, MA 02114

Dear Taryn,

The Massachusetts Invasive Plant Advisory Group (MIPAG) is writing to request that the Massachusetts Department of Agricultural Resources add the species listed below to its regulated invasive plant list. As you know the first 66 species reviewed by MIPAG in 2002-2004 were listed as regulated in 2006 under new rules established in 2005 to ban or phase out the importation, propagation, and sale in the Commonwealth of more than 140 plants identified as either noxious and/or invasive in the Commonwealth. In 2023 MIPAG has evaluated and determined the following species to be invasive:

*Alnus glutinosa* (L.) Gaertner (Black Alder) – Designated as Invasive in 2023

Black alder is a rapidly growing tree, native to Europe and portions of northern Africa and Asia. It has been widely planted for ornamental purposes and erosion control. Black alder is primarily a riparian species that forms large stands and readily disperses via waterways, wildlife and wind. It may hybridize with other alder species.

Phase Out Period

MIPAG would also like to recommend that MDAR consider a phase out period for any plants that are in the horticultural trade. In 2006, all species assessed as invasive, potentially invasive, and likely invasive were added to the prohibited plant list. In the original listing of species, the phase out period was three years for trees, two years for shrubs and one year for herbaceous plants. We're suggesting that a three year phase out period be specified for *Alnus glutinosa* if it is in the trade.

More information on the process and designations can be found on our website: *www.massnrc.org/**mipag**/*.

If you would like to discuss this further, please contact me at waynem@westonnurseries.com.

Sincerely,

R. Wayne Mezitt
MIPAG Chair

cc: Karen Lombard

**SPECIES: *Alnus glutinosa* (L.) Gaertner**

**STATUS: INVASIVE**

## NON-NATIVE INVASIVE PLANT WORKSHEET

## MASSACHUSETTS CRITERIA FOR EVALUATING NON-NATIVE PLANT SPECIES FOR INVASIVENESS

The Massachusetts Invasive Plant Advisory Group (MIPAG) defines invasive plants as "*non-native species that have spread into native or minimally managed plant systems in Massachusetts. These plants cause economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems.*" As defined here, "species" includes all synonyms, subspecies, varieties, forms, and cultivars of that species, unless proven otherwise by a process of scientific evaluation.

The following criteria are being used to objectively evaluate and categorize plant species suspected of being, or with the potential to become, invasive in Massachusetts. They were originally developed in 2005 by the George Safford Torrey Herbarium at the University of Connecticut and a subcommittee of the Massachusetts Invasive Plant Group representing science, nursery, and conservation professionals. They were updated by MIPAG in 2022 to include climate change considerations and other minor clarifications.

The criteria enable the separation of plants into the following categories:

- *Invasive Plants* in Massachusetts
- *Likely Invasive Plants* in Massachusetts
- *Potentially Invasive Plants* in Massachusetts (species not currently known to be naturalized in Massachusetts, but that can be expected to become invasive within minimally managed habitats within the Commonwealth)

For a species to be included on the list of species determined to be **Invasive, Likely Invasive or Potentially Invasive** in Massachusetts, it must be substantiated by scientific investigation (including herbarium specimens, peer-reviewed papers, published records and other data available for public review) to meet specific criteria. The process of reviewing individual plant species for their invasiveness in Massachusetts is ongoing and may result in a change in status pending new data and further review.

**Tabular summary of criteria to be met**

| | Criteria that must be met |
|---|---|
| Base criteria | 1-4 |
| Invasive | 1-9 |

| | |
|---|---|
| Likely Invasive | 1-5, at least one of 6-9, at least one of 10-12 |
| Potentially Invasive | 1-4 (not 5), 13-15 |

**For a species to be designated as "INVASIVE," "LIKELY INVASIVE" or "POTENTIALLY INVASIVE" it must meet certain base criteria (#1-4 below). The species must:**

1. Be nonindigenous to Massachusetts.

***Yes*** *No*

*Native range includes most of Europe and portions of northern Africa and Asia (CABI 2019).*

2. Have the biologic potential for rapid dispersion and establishment in minimally managed habitats

***Yes*** *No*

Alnus glutinosa *is primarily a riparian species, though noted as highly adaptable to a range of soil conditions, and is tolerant of infertile soils due to nitrogen fixation (USFS 2006, GISD 2010, CABI 2019). Individuals have high average seed production (240,000 seeds/tree) which disperse via waterways, wildlife, and wind (USFS 2006, CABI 2019). Seeds are able to germinate without cold stratification and can establish dense stands in less than 10 years (GISD 2010). Able to establish in a variety of minimally managed habitats including riparian areas, wetlands, early successional forests, forest edges, and floodplain forests (USFS 2006). Early records indicate populations that had escaped cultivation on Long Island to minimally managed habitat as early as 1876 (J. Torrey Botanical Society 1876). The species is shade intolerant and may be replaced through succession at a given site (Carter & Ungar 2002; CABI 2019).*

3. Have the biologic potential for dispersing over spatial gaps away from the site of introduction.

***Yes*** *No*

*Trees mature in 3-30 years, flower every 3-4 years, and produce prolific seed (240,000 seeds/individual on average) when they flower (GISD 2010). Seeds can be readily dispersed away from the site of introduction by water, wildlife, and wind (USFS 2006, CABI 2019).*

4. Have the biologic potential for existing in high numbers away from intensively managed artificial habitats

***Yes*** *No*

*The species has high periodic seed production, readily disperses away from source populations, establishes readily in favorable habitats (moist soil and ample sunlight), and has a high growth rate until maturity (GISD 2010, CABI 2019). The species is reported to form large monospecific stands in favorable habitats within 10 years (GISD 2010).*

**If a species does not meet all four of the previous criteria, stop here. The species cannot be listed at this time. If a species meets all four, go on to #5.**

5. The species is naturalized in Massachusetts (persists without cultivation in Massachusetts)

***Yes*** *No*

Alnus glutinosa *is recognized as widely planted for ornamental purposes and erosion control since colonial times (USFS 2006; Flora of North America 2022). The species was reported well established outside of cultivation in MA in 1900 without record of introduction in the state (Morss 1900). There are 39 modern observations in minimally managed habitats in MA with no known history of planting, including Suffolk (2), Plymouth (1), Norfolk (2), Middlesex (24), Franklin (2), and Barnstable (8) counties (iNaturalist 2023, EDDMapS 2023, GBIF 2023). Note that some of the iNaturalist observation points in Middlesex County are within close proximity of each other and may or may not represent unique individuals given multiple observers and the accuracy of mobile device GPS. It is likely, however, that the points represent a collection of unique individuals, and spatially distinct observations have been made along the Mystic and Charles Rivers over the last 10 years.*

**If a species meets Criteria 1-4 and Criterion 5, it may be considered "INVASIVE" or "LIKELY INVASIVE" in Massachusetts. Go to Criteria 6-9.**

**If it does not meet Criteria 5, it may be considered "POTENTIALLY INVASIVE" if it meets Criteria 13-15.**

6. The species is widespread in Massachusetts, or common in a region or habitat type(s) in the state.

***Yes*** *No*

*Confirmed naturalization in Middlesex, Norfolk, Plymouth, Barnstable, Suffolk, and Franklin Counties, typically in wetland or riparian habitats (USDA PLANTS 2023, EDDMapS 2023, iNaturalist 2023). Middlesex County has the greatest number of documented naturalized observations (27, 3 of which are historical), followed by Barnstable County (10 observations, 2 historical). Documented, but unconfirmed modern occurrences are also in Hampshire, Hamden, Worcester, Bristol, and Nantucket counties (iNaturalist 2023). Some of the Middlesex County observations may represent duplicate observations (multiple observers on different dates using mobile phone GPS), however, many of the observations are spatially distinct, representing unique observations.*

7. The species has many occurrences in MA that have high numbers of individuals in minimally managed habitats.

***Yes*** *No*

*Five locations (3 in Barnstable County, 2 in Middlesex County) have documented occurrences with many individuals in minimally managed habitat (EDDMapS 2023, GBIF 2023). While many of the occurrence records in Middlesex County document a single individual, the locations are located within close proximity and along waterways, suggesting that they may represent samples from*

*within one or more abundant populations (iNaturalist 2023).*

8. The species is able to out-compete other species in the same natural plant community.

***Yes*** *No*

*Species is reported to be a threat to native species by dispersing rapidly along waterways and forming monospecific stands in favorable conditions (USFS 2006; GISD 2010; CABI 2019). The species is shade intolerant and may decline later in succession (Carter & Ungar 2002; CABI 2019).*

9. The species has the potential for rapid growth, high seed or propagule production and dissemination, and establishment in natural plant communities.

***Yes*** *No*

Alnus glutinosa *produces high numbers of seeds (240,000 on average per tree) every 3-4 years, which can spread long distances through water and wind (CABI 2019). Seeds establish readily in moist soils with ample sunlight and established plants have a high growth rate until maturity (GISD 2010, CABI 2019). The species is regulated as invasive in Maine (as of Jan. 1, 2024), New Hampshire, Indiana, Minnesota, and Wisconsin and listed as invasive in Kentucky, Pennsylvania, and New Jersey (Beaury et al. 2021, EDDMapS 2023b; Maine Department of Agriculture, Conservation, & Forestry 2023). It has become naturalized in six Massachusetts counties (iNaturalist 2023, GBIF 2023, EDDMapS 2023).*

**If a species meets the initial five Criteria and Criteria 6-9 it may be considered an "INVASIVE" species in Massachusetts.**

**If a species meets the initial five Criteria, but does not meet all of Criteria 6-9 at this time, it may be considered a "LIKELY INVASIVE" species in Massachusetts if in addition it meets at least one of the following three Criteria (#10-12).**

10. The species has at least one occurrence in Massachusetts that has high numbers of individuals forming dense stands in minimally managed habitats.

***Yes*** *No*

*There are multiple occurrences of forming dense stands in minimally managed habitats in Barnstable (3 occurrences) and Middlesex Counties (2 occurrences) (EDDMapS 2023, GBIF 2023).*

11. The species has the potential, based on its biology, colonization history outside its native range, and likelihood of range expansion or change in biologic potential from climate change predictions, to become invasive in Massachusetts.

***Yes*** *No*

*Suitable habitats and dispersal conduits for the species are widely available throughout the state. The species is able to germinate without cold stratification and form dense stands in less than 10 years after establishment (GISD 2010, CABI 2019). It readily establishes populations outside of*

*cultivation in locations where introduced worldwide (CABI 2019). There is high agreement in climate change predictions that all Massachusetts counties will be suitable for this species with climate change (Allen & Bradley 2016, EDDMapS 2023c).*

12. The species is acknowledged to be invasive in nearby states, but its status in Massachusetts is unknown or unclear. This may result from lack of field experience with the species or from difficulty in species determination or taxonomy.

***Yes*** *No*

*This species is currently regulated as invasive in New Hampshire, Indiana, Minnesota, and Wisconsin (Beaury et al. 2021) and will be prohibited in Maine as of January 1, 2024 (Maine Department of Agriculture, Conservation, & Forestry 2023). It is also listed as invasive (non-regulated) in Kentucky, Pennsylvania, and New Jersey (EDDMapS 2023b).*

**If the species meets the basic criteria for invasiveness (Criteria 1-4) but is not naturalized in Massachusetts (Criterion 5), the species may be considered "POTENTIALLY INVASIVE" in Massachusetts if it meets the following three criteria (#13-15):**

**13.** The species, if it becomes naturalized in Massachusetts, based on its biology and biologic potential, would pose an imminent threat to the biodiversity of Massachusetts **and**

***Yes*** *No*

*The species is naturalized in Massachusetts. It forms monospecific stands that exclude native species, particularly in wetland and riparian habitats, and can spread through wind and water (GISD 2010, CABI 2019).*

**14.** Its naturalization in Massachusetts is anticipated, **and**

***Yes*** *No*

*The species is naturalized in four Massachusetts counties and is expected to have suitable climate in all MA counties with climate change (EDDMapS 2023).*

15. The species has a documented history of invasiveness in other areas outside its native range including expansion of range and/or change in biological potential from climate change predictions.

***Yes*** *No*

*This species is currently regulated as invasive in New Hampshire, Indiana, Minnesota, and Wisconsin (Beaury et al. 2021) and will be prohibited in Maine as of January 1, 2024 (Maine Department of Agriculture, Conservation, & Forestry 2023). It is also listed as invasive (non-regulatory) in Kentucky, Pennsylvania, and New Jersey (EDDMapS 2023b) and most Canadian provinces (CABI 2019).*

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*Morss, C.H. 1900. A colony of Alnus glutinosa in eastern Massachusetts. Rhodora 2(19): 157.*

*United States Forest Service (USFS). 2006. Weed of the Week: European Alder, Alnus glutonosa L. Gaertn. Forest Health Staff, Newtown Square, PA.*

**SPECIES: *Alnus glutinosa* (L.) Gaertner**

*Completed by:* Jenica M. Allen University of Massachusetts, 29 June 2023

Voted as **Invasive** by MIPAG, 12-12-23

**DEFINITIONS* TO ACCOMPANY**
**"CRITERIA FOR EVALUATING NON-NATIVE PLANT SPECIES FOR INVASIVENESS IN MASSACHUSETTS"**

**Biologic potential** - The ability of a species to increase its number, either sexually and/or asexually.

**Invasive plants** - Non-native species that have spread into native or minimally managed plant systems in Massachusetts. These plants cause economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems. *As defined here, "species" includes all synonyms, subspecies, varieties, forms, and cultivars of that species unless proven otherwise by a process of scientific evaluation.*

**Indigenous species** - A species that occurs natively in Massachusetts. Indigenous species often have a pre-colonial presence (pre-1500) or have arrived in the region more recently without the aid of human intervention. Synonymous with native species.

**Intensively managed habitats** - Intensively managed habitats are habitats or land systems where management efforts and investments of time, money and labor occur frequently. Examples include manicured lawns, landscaped grounds, gardens, roadsides or agricultural lands for crops or livestock.

**Likely Invasive plants** - Non-native species that are naturalized in Massachusetts and meets some but not all criteria that would trigger an "Invasive plant" designation.

**Minimally managed habitats -** Minimally managed habitats are habitats where management efforts and investments of time, money and labor are infrequent or non-existent. These habitats may have been intensively managed for anthropogenic reasons at one time in their history. In some instances, management may be more intense, but management is done for conservation purposes and is primarily aimed at preserving elements of biological diversity such as imperiled species or critical natural communities. Minimally managed habitats are similar to "natural areas" but the distinction is made in order to remove bias, misconceptions or ambiguities that surround the term "natural area".

**Non-indigenous species** - A species that is not native or naturally occurring (based on its biology, phylogeny, distribution and current knowledge about the species) within Massachusetts. A species may be indigenous to North American but non-indigenous in Massachusetts. Synonymous with non-native species.

**Naturalized species** - A non-indigenous taxon that occurs without the aid and benefits of cultivation in Massachusetts. Further, it implies two biological points: it freely and regularly reproduces in the wild, sexually or asexually, and occurrences persist over time.

**Natural plant community** - A natural plant community is an association or assemblage of plant species that repeatedly occur together in re-occurring patterns in a specific type of habitat. This assemblage can be characterized by dominant species and biological properties. A natural plant community implies a minimally managed situation where all or most of the species that make up the assemblage are indigenous

to the defined area.

**Occurrence** - Existing example of a species on the landscape.

**Potentially invasive plants** - Non-native species not currently known to be naturalized in Massachusetts, but that can be expected to become invasive within minimally managed habitats within the Commonwealth.

**Spatial gaps** - This term is used in reference to the ability of a species to disperse away from existing occurrences. The concept of crossing spatial gaps is used to distinguish those species that can disperse over discontinuities and become established elsewhere, from species that spread across a habitat only by continual, uninterrupted growth.

**There are no definitions for certain terms (e.g. widespread or high numbers) with the intent that discussion within MIPAG will be used to determine the outcome, given that we do not have perfect information.*

## Species Information

***Alnus glutinosa (L.) Gaertner***

**Syn.** *Alnus alnus* (L.) Britt; *Betula alnus* var. glutinosa L.; *Betula glutinosa* (L.) Lam

# TAXONOMY

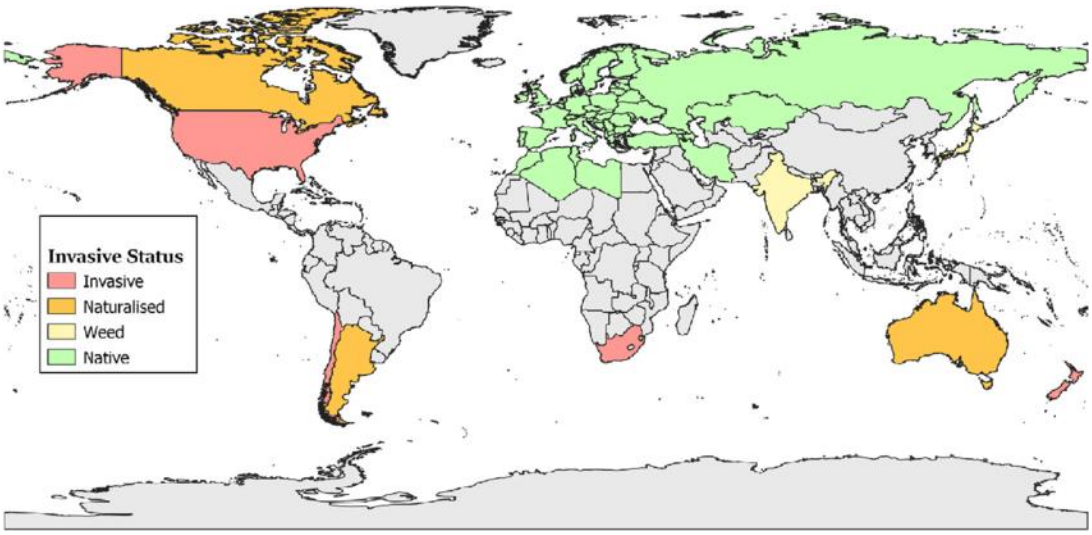
**Family**: Betulaceae

**Summary***:*

This species is a rapidly growing tree (60-70 ft). Trees mature in 3-30 years, flower every 3-4 years, and produce prolific seed (240,000 seeds/individual on average) when they flower (GISD 2010). The leaf, flower, and fruit are similar to the native shrub alders in the northeast. The leaves are smooth, 3-5 in long with a serrated margin. A small-winged seed is produced in little woody cone-like fruits. The bark is dark brown with prominent warty strips (USDA 2002). There are several known cultivars and a rare hybrid *Alnus x pubescens* between *Alnus glutinosa* and *Alnus incana* (found in Europe).

*Credit: USDA PLANTS database*

**Native Region or Range:** Native range includes most of Europe and portions of northern Africa and Asia (CABI 2019).




# HISTORY

*Alnus glutinosa* is invasive in maritime Canada, Australia, India, Korea and New Zealand (Cao et al. 2023).

*Alnus glutinosa* is recognized as widely planted for ornamental purposes and erosion control since colonial times (USFS 2006; Flora of North America 2022). The species was reported well established outside of cultivation in MA in 1900 without record of introduction in the state (Morss 1900). Early records indicate populations that had escaped cultivation on Long Island to minimally managed habitat as early as 1876 (J. Torrey Botanical Society 1876).

# BIOLOGY

**Life Form** – 60-70 ft monoecious deciduous tree

**Naturalized** - Confirmed naturalization in Middlesex, Norfolk, Plymouth, Barnstable, Suffolk, and Franklin Counties, typically in wetland or riparian habitats (USDA PLANTS 2023, EDDMapS 2023, iNaturalist 2023). Middlesex County has the greatest number of documented naturalized observations (27, 3 of which are historical), followed by Barnstable County (10 observations, 2 historical). Documented, but unconfirmed modern occurrences are also in Hampshire, Hamden, Worcester, Bristol, and Nantucket counties (iNaturualist 2023). Some of the Middlesex County observations may represent duplicate observations (multiple observers on different dates using mobile phone GPS), however, many of the observations are spatially distinct, representing unique observations.

**Dispersal** – Seeds can be readily dispersed away from the site of introduction by water, wildlife, and wind (USFS 2006, CABI 2019).

**Massachusetts habitats** – Five locations (3 in Barnstable County, 2 in Middlesex County) have documented occurrences with many individuals in minimally managed habitat (EDDMapS 2023, GBIF 2023). While many of the occurrence records in Middlesex County document a single individual, the locations are located within close proximity and along waterways, suggesting that they may represent samples from within one or more abundant populations (iNaturalist 2023).

**Biological potential** – The species has high periodic seed production, readily disperses away from source populations, establishes readily in favorable habitats (moist soil and ample sunlight), and has a high growth rate until maturity (GISD 2010, CABI 2019). The species is reported to form large monospecific stands in favorable habitats within 10 years (GISD 2010). Suitable habitats and dispersal conduits for the species are widely available throughout the state. The species is able to germinate without cold stratification and form dense stands in less than 10 years after establishment (GISD 2010, CABI 2019). It readily establishes populations outside of cultivation in locations where introduced worldwide (CABI 2019). This species is naturalized in four MA counties. There is high agreement in climate change predictions that all Massachusetts counties will be suitable for this species with climate change (Allen & Bradley 2016, EDDMapS 2023c).

*Alnus glutinosa* is primarily a riparian species, though noted as highly adaptable to a range of soil conditions, and is tolerant of infertile soils due to nitrogen fixation (USFS 2006, GISD 2010, CABI 2019). Individuals have high average seed production (240,000 seeds/tree) which disperse via waterways, wildlife, and wind (USFS 2006, CABI 2019). Seeds are able to germinate without cold stratification and can establish dense stands in less than 10 years (GISD 2010). It also readily hybridizes with other alder species. It is able to establish in a variety of minimally managed habitats including riparian areas, wetlands, early successional forests, forest edges, and floodplain forests (USFS 2006). The species is shade intolerant and may be replaced through succession at a given site (Carter & Ungar 2002; CABI 2019).

# REPORTED INVASIVENESS

# DISTRIBUTION

Massachusetts Counties

| | BE | FR | HS | HD | WO | MI | ES | SU | NO | BR | PL | BA | DU | NA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | x | | | | x | | x | x | | x | x | | |

There are 39 modern observations in minimally managed habitats in MA with no known history of planting, including Suffolk (2), Plymouth (1), Norfolk (2), Middlesex (24), Franklin (2), and Barnstable (8) counties (iNaturalist 2023, EDDMapS 2023, GBIF 2023). Note that some of the iNaturalist observation points in Middlesex County are within close proximity of each other and may or may not represent unique individuals given multiple observers and the accuracy of mobile device GPS. It is likely, however, that the points represent a collection of unique individuals, and spatially distinct observations have been made along the Mystic and Charles Rivers over the last 10 years.

# SPREAD & IMPACTS

The species has been planted for erosion control, soil improvement and as an ornamental (GISD 2023).

The species is regulated as invasive in Maine (as of Jan. 1, 2024), New Hampshire, Indiana, Minnesota, and Wisconsin and listed as invasive in Kentucky, Pennsylvania, and New Jersey (Beaury et al. 2021, EDDMapS 2023b; Maine Department of Agriculture, Conservation, & Forestry 2023). It has become naturalized in six Massachusetts counties (iNaturalist 2023, GBIF 2023, EDDMapS 2023).

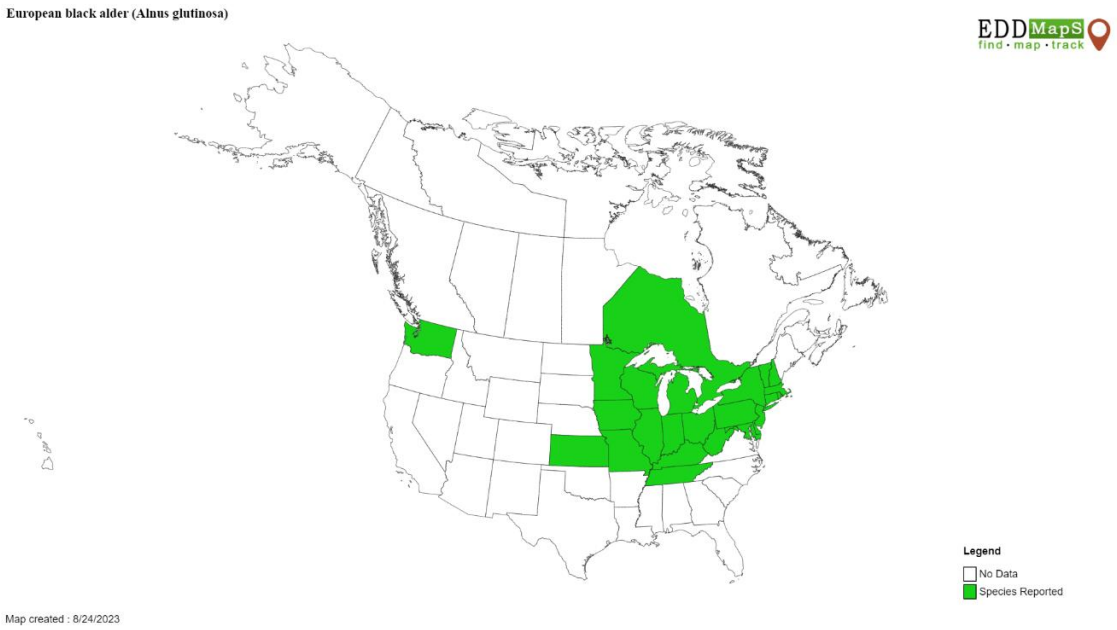



Figure 1: Introduced range of *Alnus glutinosa* in U.S. (based on EDDMapS)

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**Information compiled by:** Jenica M. Allen, University of Massachusetts, 29 June 2023 with additions by Karen Lombard (The Nature Conservancy)