

ALASKA NON-NATIVE PLANT INVASIVENESS RANKING FORM

Botanical name: *Prunus maackii* Rupr.
Common name: Amur chokecherry
Date: 12/10/2018

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Reviewers:
 Alaska Invasive Species Partnership members (formerly Committee for Noxious and Invasive Pests Management)
 Alaska Invasive Species Workshop 2018, Homer, Alaska
 This species was collectively ranked and reviewed in a group setting of 20 AISP members on 15Nov2018.

OUTCOME SCORE: 45

A. Climatic Comparison		
	This species is present or may potentially establish in the following eco-geographic regions:	
		Yes
		No
1	South Coastal	X
2	Interior-Boreal	X
3	Arctic-Alpine	X
	This species is unlikely to establish in any region in Alaska	

B.	Invasiveness Ranking	Total (Total Answered*) Possible	Total
1	Ecological impact	40 (20)	10
2	Biological characteristic and dispersal ability	25 (23)	12
3	Ecological amplitude and distribution	25 (19)	9
4	Feasibility of control	10 (10)	2
	Outcome score	100 (72) ^b	33 ^a
	Relative maximum score [†]		.45

* For questions answered “unknown” do not include point value for the question in parentheses for “Total Answered Points Possible.”

† Calculated as: a/b.

A. CLIMATIC COMPARISON

1.1. Has this species ever been collected or documented in Alaska?

- Yes- continue to 1.2
 No - continue to 2.1

1.2. From which eco-geographic region has it been collected or documented? Proceed to

Section B. INVASIVENESS RANKING

- Pacific Maritime
- Interior-Boreal
- Arctic-Alpine

Documentation: *Prunus maackii* has been documented in the Pacific Maritime region of Alaska (AKEPIC 2018).

2.1. Is there a 40 percent or higher similarity (based on CLIMEX climate matching, see references) between climates where this species currently occurs and:

a. Juneau (Pacific Maritime region)?

- Yes – record locations and percent similarity; proceed to Section B.
- No

b. Fairbanks (Interior-Boreal region)?

- Yes – record locations and percent similarity; proceed to Section B.
- No

c. Nome (Arctic-Alpine region)?

- Yes – record locations and percent similarity; proceed to Section B.
- No

If “No” is answered for all regions; reject species from consideration

2018 Documentation: assessment not needed

B. INVASIVENESS RANKING

1. Ecological Impact

1.1. Impact on Natural Ecosystem Processes

- a. No perceivable impact on ecosystem processes 0
- b. Has the potential to influence ecosystem processes to a minor degree (e.g., has a perceivable but mild influence on soil nutrient availability) 3
- c. Has the potential to cause significant alteration of ecosystem processes (e.g., increases sedimentation rates along streams or coastlines, degrades habitat important to waterfowl) 7
- d. Has the potential to cause major, possibly irreversible, alteration or disruption of ecosystem processes (e.g., the species alters geomorphology, hydrology, or affects fire frequency thereby altering community composition; species fixes substantial levels of nitrogen in the soil making soil unlikely to support certain native plants or more likely to favor non-native species) 10
- e. Unknown U

Score:

3

Documentation:

Current effects and impacts are unknown, however this is a *Prunus* species with similar traits to invasive *Prunus* that occur in Alaska and therefore it at least has potential to influence ecosystem processes (AISP members).

1.2. *Impact on Natural Community Structure*

- a. No perceived impact; establishes in an existing layer without influencing its structure 0
- b. Has the potential to influence structure in one layer (e.g., changes the density of one layer) 3
- c. Has the potential to cause significant impact in at least one layer (e.g., creation of a new layer or elimination of an existing layer) 7
- d. Likely to cause major alteration of structure (e.g., covers canopy, eliminating most or all lower layers) 10
- e. Unknown U

Score

7

Documentation:

P. maackii is a tree species observed to grow several meters in height in Anchorage, has potential to affect several layers in the understory (J. Fulkerson, T. Stallard- pers. obs.).

1.3. *Impact on Natural Community Composition*

- a. No perceived impact; causes no apparent change in native populations 0
- b. Has the potential to influence community composition (e.g., reduces the population size of one or more native species in the community) 3
- c. Has the potential to significantly alter community composition (e.g., significantly reduces the population size of one or more native species in the community) 7
- d. Likely to cause major alteration in community composition (e.g., results in the extirpation of one or more native species, thereby reducing local biodiversity and/or shifting the community composition towards exotic species) 10
- e. Unknown U

Score

U

Documentation:

In the natural area it doesn't appear to be crowding out other species in Anchorage (pers. obs. – T. Stallard). Observed to not be as robust as other *Prunus* species (AISP members).

1.4. *Impact on associated trophic levels (cumulative impact of this species on the animals, fungi, microbes, and other organisms in the community it invades)*

- a. Negligible perceived impact 0
- b. Has the potential to cause minor alteration (e.g., causes a minor reduction in nesting or foraging sites) 3
- c. Has the potential to cause moderate alteration (e.g., causes a moderate reduction in habitat connectivity, interferes with native pollinators, or introduces injurious components such as spines, toxins) 7
- d. Likely to cause severe alteration of associated trophic populations (e.g., extirpation or endangerment of an existing native species or population, or significant reduction in nesting or foraging sites) 10

e. Unknown

U
Score

U

Documentation:

Total Possible: 20
Total: 10

2. Biological Characteristics and Dispersal Ability

2.1. Mode of reproduction

- a. Not aggressive (produces few seeds per plant [0-10/m²] and not able to reproduce vegetatively). 0
- b. Somewhat aggressive (reproduces by seed only [11-1,000/m²]) 1
- c. Moderately aggressive (reproduces vegetatively and/or by a moderate amount of seed [<1,000/m²]) 2
- d. Highly aggressive (extensive vegetative spread and/or many seeded [>1,000/m²]) 3
- e. Unknown U

Score

1

Documentation:

Reproduces by seeds (presumably more than 10 per tree), and can be propagated from cuttings, grafting, or budding (Fordham undated). However, seeds germinate best with warm and cold stratification of 30 and 60 days, respectively; cold stratification only results in very low germination rates. Unlike *Prunus padus*, this tree is non-suckering (Morgenson 1986).

2.2. Innate potential for long-distance dispersal (wind-, water- or animal-dispersal)

- a. Does not occur (no long-distance dispersal mechanisms) 0
- b. Infrequent or inefficient long-distance dispersal (occurs occasionally despite lack of adaptations) 2
- c. Numerous opportunities for long-distance dispersal (species has adaptations such as pappus, hooked fruit coats, etc.) 3
- d. Unknown U

Score

3

Documentation:

Fruits are eaten by birds and seeds are spread in droppings (Fordham undated).

2.3. Potential to be spread by human activities (both directly and indirectly – possible mechanisms include: commercial sale of species, use as forage or for revegetation, dispersal along highways, transport on boats, common contaminant of landscape materials, etc.).

- a. Does not occur 0
- b. Low (human dispersal is infrequent or inefficient) 1
- c. Moderate (human dispersal occurs regularly) 2
- d. High (there are numerous opportunities for dispersal to new areas) 3
- e. Unknown U

Score

Documentation: *Prunus maackii* are cultivated for commercial sales and ornamental plantings (J. Fulkerson - pers. obs.). Numerous plantings for ornamental use around Anchorage and at a golf course in Kodiak (AISP members - pers. obs).

2.4. *Allelopathic*

- a. No 0
- b. Yes 2
- c. Unknown U

Score

Documentation:

2.5. *Competitive ability*

- a. Poor competitor for limiting factors 0
- b. Moderately competitive for limiting factors 1
- c. Highly competitive for limiting factors and/or able to fix nitrogen 3
- d. Unknown U

Score

Documentation:

Prunus maackii has little, if any, invasive potential (Gilman and Watson 1994).

2.6. *Forms dense thickets, has a climbing or smothering growth habit, or is otherwise taller than the surrounding vegetation.*

- a. Does not grow densely or above surrounding vegetation 0
- b. Forms dense thickets 1
- c. Has a climbing or smothering growth habit, or is otherwise taller than the surrounding vegetation 2
- d. Unknown U

Score

Documentation:

Prunus maackii grows as a tree with no documented tendency to smother, form thickets, or climb.

2.7. *Germination requirements*

- a. Requires sparsely vegetated soil and disturbance to germinate 0
- b. Can germinate in vegetated areas, but in a narrow range of or in special conditions 2
- c. Can germinate in existing vegetation in a wide range of conditions 3
- d. Unknown U

Score

Documentation:

Germination of *Prunus maackii* is dependent on warm stratification then cold stratification and a germination inhibitory substance (Longfei et al. 2011). Recruitment observed in natural setting outside ornamental plantings in Anchorage (T. Stallard- pers. obs.).

2.8. *Other species in the genus invasive in Alaska or elsewhere*

- | | | |
|----|---------|---|
| a. | No | 0 |
| b. | Yes | 3 |
| c. | Unknown | U |
| | | Score 3 |

Documentation: *Prunus padus* and *P. virginiana* have been documented in Alaska (AKEPIC 2018), the former is known to be highly invasive throughout Southcentral Alaska (ACCS 2016).

2.9. *Aquatic, wetland, or riparian species*

- | | | |
|----|-------------------------------------|---|
| a. | Not invasive in wetland communities | 0 |
| b. | Invasive in riparian communities | 1 |
| c. | Invasive in wetland communities | 3 |
| d. | Unknown | U |
| | | Score 1 |

Documentation:

It is unknown how *Prunus maackii* affects wetland and riparian communities. Chokecherry is not listed on the Alaska wetland plant list (Lichvar et al. 2014). Observed in Anchorage to recruit on edge of floodplain (T. Stallard pers. obs.).

Total Possible: 23

Total: 12

3. Ecological Amplitude and Distribution

3.1. *Is the species highly domesticated or a weed of agriculture?*

- | | | |
|----|---|---|
| a. | Is not associated with agriculture | 0 |
| b. | Is occasionally an agricultural pest | 2 |
| c. | Has been grown deliberately, bred, or is known as a significant agricultural pest | 4 |
| d. | Unknown | U |
| | | Score 4 |

Documentation:

Cultivar varieties “Amber Beauty”, “Goldrush”, and “Goldspur” are available (Cornell Univ. 2018).

3.2. *Known level of ecological impact in natural areas*

- | | | |
|----|---|---|
| a. | Not known to impact other natural areas | 0 |
| b. | Known to impact other natural areas, but in habitats and climate zones dissimilar to those in Alaska | 1 |
| c. | Known to cause low impact in natural areas in habitats and climate zones similar to those in Alaska | 3 |
| d. | Known to cause moderate impact in natural areas in habitat and climate zones similar to those in Alaska | 4 |
| e. | Known to cause high impact in natural areas in habitat and climate zones similar to those in Alaska | 6 |

f. Unknown

U
Score

U

Documentation:

3.3. Role of anthropogenic and natural disturbance in establishment

- a. Requires anthropogenic disturbance to establish 0
- b. May occasionally establish in undisturbed areas, readily establishes in naturally disturbed areas 3
- c. Can establish independently of natural or anthropogenic disturbances 5
- e. Unknown U

Score

2

Documentation:

Prunus maackii has been documented growing outside of landscaped areas in Anchorage, but infrequent (AKEPIC 2018). Occasionally seen in undisturbed areas in Anchorage (AISP members).

3.4. Current global distribution

- a. Occurs in one or two continents or regions (e.g., Mediterranean region) 0
- b. Extends over three or more continents 3
- c. Extends over three or more continents, including successful introductions in arctic or subarctic regions 5
- e. Unknown U

Score

3

Documentation:

Native to parts of temperate Asia, including Manchuria, Siberia, China, Korea, Russia (USNPGS 2011, MBG 2016, Cornell University 2018). Found in European countries, North America, and Asia (GBIF 2018).

3.5. Extent of the species' U.S. range and/or occurrence of formal state or provincial listing

- a. Occurs in 0-5 percent of the states 0
- b. Occurs in 6-20 percent of the states 2
- c. Occurs in 21-50 percent of the states and/or listed as a problem weed (e.g., "Noxious," or "Invasive") in one state or Canadian province 4
- d. Occurs in more than 50 percent of the states and/or listed as a problem weed in two or more states or Canadian provinces 5
- e. Unknown U

Score

0

Documentation:

Readily available and recommended as an ornamental plant throughout the United States and Canada, (Cornell University 2018). In Alaska, this plant is non-native and its invasiveness is being evaluated (AKEPIC 2018).

Total Possible: 19

Total: 9

4. Feasibility of Control

4.1. Seed banks

- | | | |
|----|---|---|
| a. | Seeds remain viable in the soil for less than three years | 0 |
| b. | Seeds remain viable in the soil for three to five years | 2 |
| c. | Seeds remain viable in the soil for five years or longer | 3 |
| e. | Unknown | U |

Score

0

Documentation:

Prunus maackii seeds remains viable in the soil for at least one year, seeds show higher germination rate with at least a 30-day warm stratification period (Morgenson 1986).

4.2. Vegetative regeneration

- | | | |
|----|--|---|
| a. | No resprouting following removal of aboveground growth | 0 |
| b. | Resprouting from ground-level meristems | 1 |
| c. | Resprouting from extensive underground system | 2 |
| d. | Any plant part is a viable propagule | 3 |
| e. | Unknown | U |

Score

0

Documentation:

Amur chokecherry reproduces by seeds and is a non-suckering tree (Fordham Undated, Morgenson 1986).

4.3. Level of effort required

- | | | |
|----|--|---|
| a. | Management is not required (e.g., species does not persist in the absence of repeated anthropogenic disturbance) | 0 |
| b. | Management is relatively easy and inexpensive; requires a minor investment of human and financial resources | 2 |
| c. | Management requires a major short-term or moderate long-term investment of human and financial resources | 3 |
| d. | Management requires a major, long-term investment of human and financial resources | 4 |
| e. | Unknown | U |

Score

2

Documentation:

Management efforts of *Prunus maackii* is undocumented. Efforts in Anchorage to control appeared to be easily pulled from the ground (T. Stallard- pers. obs.).

Total Possible: 10

Total: 2

Total for four sections possible: 72

Total for four sections: 33

References:

AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2018. Available:

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