



## Bureau of Planning and Sustainability

Innovation. Collaboration. Practical Solutions.

### Urban Forestry Commission Briefing Portland Plant List Update - Nuisance Plants List Candidate Summary April 21, 2016

Plant Name: Horse Chestnut (*Aesculus hippocastanum*)

PPL Nomination Request: Portland Parks and Recreation and  
Bureau of Environmental Services

Nomination factors:

- Posing threat to natural areas by shading and crowding out native vegetation.
- City staff and partners expending significant resources in trying to control populations of the species.
- Individuals can become very large trees relatively quickly, greatly increasing control costs.



Citations:

- One of the "Dirty Thirty" Alien Invaders of Forest Park:  
<https://www.portlandoregon.gov/shared/cfm/image.cfm?id=216890>
- "Aggressive Spreading Plant in Natural Areas", City of Eugene, OR:  
<https://www.eugene-or.gov/Archive/ViewFile/Item/1531>
- Listed as "Invasive" by the US Forest Service:  
[http://www.na.fs.fed.us/fhp/invasive\\_plants/weeds/horse\\_chestnut.pdf](http://www.na.fs.fed.us/fhp/invasive_plants/weeds/horse_chestnut.pdf)
- Listed as Invasive by the Invasive Plant Atlas:  
<http://www.invasiveplantatlas.org/subject.html?sub=3385>

Encountered:

- Wild Cherry Trail, Forest Park. (R. Felice)
- Lower Macleay: "Years of treatment", "epicenter". (T. Query, D. Santner, R. Felice)
- Johnson Creek Park: "...large specimen tree is amply reseeding in a restoration area with dozens of seedling popping up." (M. Hughes)
- Bluffs near Willamette Blvd. (T. Query)
- "Jackson Bottom Wetland, West Burnside, Abbey Creek, West Hills, Baker Creek". (R. Emanuel)
- Frequently reported target species for Parks "Protect the Best" Program: Marshall Park, Forest Park, etc.

Recommended PPL Rank: C



City of Portland, Oregon | Bureau of Planning and Sustainability | [www.portlandoregon.gov/bps](http://www.portlandoregon.gov/bps)  
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**City of Portland  
Nuisance Plant Risk Assessment v. 1.0**

**City of Portland  
Nuisance Plant Risk Assessment v. 1.0  
Reviewer Evaluation Form**

Species: Horse Chestnut, *Aesculus hippocastanum* L.

Assessor info:

Name: Robert Emanuel, Ph.D.

Affiliation: Water Resources Project Manager, Clean Water Services

Mailing Address: 2550 SW Hillsboro Highway, Hillsboro OR 97123

Phone: (503) 681-3652

Email: [emanuelr@cleanwaterservices.org](mailto:emanuelr@cleanwaterservices.org)

Date assessed: 4/21/15

**City of Portland  
Nuisance Plant Risk Assessment v. 1.0**

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Reviewer Evaluation Form**

Species: *Aesculus hippocastanum*, (Horse chestnut)

Assessor info:

Name: Samuel Leininger

Affiliation: Clackamas County Soil and Water Conservation District

Mailing Address: 221 Molalla Ave. Suite 102 Oregon City, OR 97045

Phone: 503-210-6006

Email: sleininger@conservationdistrict.org

Date assessed: February 25, 2015

Signature: \_\_\_\_\_



# City of Portland

## Nuisance Plant Risk Assessment v. 1.0

**Common name:** Horse chestnut  
**Scientific name:** *Aesculus hippocastanum*  
**Family:** Hippocastanaceae

For use with plant species that occur or may occur in Portland to determine their potential to become, or status as, nuisance plants. For each of the following categories, select the number that best applies. Numerical values are weighted to increase the value of important factors over less important ones. Choose the best number that applies, **intermediate scores can be used**.

**Total Score: 32**

**Risk Category:**

### GEOGRAPHIC INFORMATION

1	Invasive in other areas		
	0	Low	Not known to be invasive elsewhere.
2	2	Medium	Known to be invasive in climates dissimilar to Portland's current climate.
	6	High	Known to be invasive in the region or geographically similar areas.
Comments:	Cited as invasive by the Mid Atlantic Exotic Pest Council, and featured as a Weed of the Week by the Forest Service in Pennsylvania		
2.	Habitat availability: Are there susceptible habitats for this species and how common or widespread are they in Portland?		
	1	Low	Habitat is <i>very</i> limited or seemingly non-existent.
	3	Medium	Habitat encompasses is <i>relatively</i> uncommon in Portland (i.e., gravel bars).
6	6	High	<b>Habitat covers large regions, or is limited to a few locations of high economic or ecological value (e.g., rare species habitat such as Elk Rock Island).</b>
Comments:	Thrives in full sun, and a diverse set of soils		
3.	Proximity to Portland: What is the current distribution of the species?		
0	0	Present	Occurs within Portland.
	1	Distant	Occurs only in distant US regions or foreign countries.
	3	Regional	Occurs in Western regions of US but not adjacent to the Coast Range, Willamette Valley, or Cascade Mountain ecoregions.
	5	Adjacent	Weedy populations occur adjacent (<50 miles) to Portland border.
Comments:	Commonly occurs within Portland and has been commercially available since 1873.		
4.	Current distribution: What is the current distribution of escaped populations in Oregon?		
	0	Not present	Not known to occur in Coast Range, Willamette Valley, or Cascade Mountain ecoregions.
1	1	Widespread	Throughout much of above ecoregions (e.g., herb robert).

	5	Regional	Abundant in parts of above ecoregions (e.g., shining geranium)
	10	Limited	Limited to one or a few infestations in above ecoregions (e.g., goats rue).
Comments:	This has been commercially available for years and is widespread. It has been cited as invasive by the Mid Willamette Cooperative Weed Management Area and by the Native Plant Society of Oregon.		
<b>BIOLOGICAL INFORMATION</b>			
5.	Environmental factors: do abiotic (non-living) factors in the environment affect establishment and spread of the species? (e.g., precipitation, drought, temperature, nutrient availability, soil type, slope, aspect, soil moisture, standing or moving water).		
	1	Low	Severely confined by abiotic factors (e.g., common reed).
2	2	Medium	Moderately confined by environmental factors (e.g., herb Robert, Scots broom).
	4	High	Highly adapted to a variety of environmental conditions (e.g., slender false brome).
Comments:	Preference for full sun		
6.	Reproductive traits: how does this species reproduce? Traits that may allow rapid population increase or complicate management and control.		
	0	Negligible	Not self-fertile, or is dioecious and opposite sex not present.
1	1	Low	Reproduction is only by seed, produces few seeds, or seed viability and longevity are low.
	3	Medium	Reproduction is vegetative (e.g., by root fragments, rhizomes, bulbs, stolons).
	3	Medium	Produces many seeds but seeds of short longevity (<5 years).
	5	High	Produces many seeds and seeds moderately long-lived (>5 years) (e.g., garlic mustard).
	6	Very high	Have two or more reproductive traits (e.g., seeds are long-lived [>10 years] and spreads by rhizomes).
Comments:			
7.	Biological factors: do biotic (living) factors restrict establishment and spread of the species? [What is the interaction of plant competition, natural enemies, native herbivores, pollinators, and pathogens with species?]		
	1	High	Biotic factors highly suppress reproduction or heavily damage plant for an extended period (e.g., biocontrol agents on tansy ragwort).
2	2	Medium	Biotic factors partially restrict or moderately impact growth and reproduction, impacts sporadic or short-lived (e.g., biological agents on Canadian thistle).
	4	Low	Few biotic interactions restrict growth and reproduction. Species expresses full growth and reproductive potential (e.g., reed canary grass).
Comments:	Seed consumption by introduced squirrels may reduce propagule pressure		
8.	Reproductive potential and spread after establishment - non-human factors: how well can the species spread by natural means?		
	0	Negligible	Insignificant potential for natural spread in Portland (e.g., ornamental plants outside of climate zone).
2	2	Low	Low potential for local spread within a year, has moderate reproductive potential or some mobility of propagules (e.g., mole plant).
	3	Medium	Moderate potential for natural spread with either high reproductive potential or highly mobile propagules (e.g., propagules spread by moving water, or dispersed over longer distances by animals) (e.g., weeping sedge).

Comments:	5	High	Potential for rapid natural spread throughout the susceptible range, high reproductive capacity and highly mobile propagules. Seeds are wind dispersed over large areas (e.g., orange hawkweed).
	Spread is local. Large seeds drop close to parent. Some movement through squirrel caching, but size of seed limits dispersal great distances.		
9.	Potential of species to be spread by humans: what human activities contribute to spread of species? Examples include: recreation; interstate or international commerce; contaminated commodities; packing materials or products; vehicles, boats, or equipment movement; right of way and parks maintenance; or intentional introductions of ornamental and horticultural species.		
5	1	Low	Potential for introduction or movement minimal (e.g., species not traded or sold, or species not found in commodities, mulch, gravel, seed mixes or other commercial products).
	3	Medium	Potential for introduction or off-site movement moderate (e.g., not widely propagated, not highly popular, with limited market potential; may be a localized contaminant of gravel, landscape products, or other commercial products) (e.g., Canada thistle).
	5	High	Potential to be introduced or moved within the region high (e.g., species widely propagated and sold; propagules common contaminant of agricultural commodities or commercial products; high potential for movement by contaminated vehicles and equipment, or by recreational activities) (e.g., spotted knapweed, water primrose spp).
Comments:	This species has been sold commercially in west since 1873, with initial introduction in to the Portland area as early as 1875		

#### IMPACT INFORMATION

10.	Economic impact: What impact does/could the species have on Portland's infrastructure and economy?		
2	0	Negligible	Causes few, if any, economic and/or infrastructural impacts.
	2	Low	Potential to, or causes low economic impact to urban or natural areas (e.g., common vetch, creeping bent grass).
	5	Medium	Potential to, or causes moderate impacts to urban areas, right-of-way maintenance, property values, recreational activities; increases costs and risks to a moderate extent (e.g., English/Irish ivy, Himalayan blackberry).
	8	High	Potential to, or causes high impacts and risks in urban areas and natural areas, (e.g., kudzu, giant hogweed).
Comments:	Some potential impact to sidewalk maintenance, increased leaf and litter fall		
11.	Environmental Impact: what risks or harm to the environment does this species pose? Plant may cause negative impacts on ecosystem function, structure, and biodiversity of plant or fish and wildlife habitat; may put desired/rare species at risk.		
2	0	Negligible	None of the above impacts probable.
	2	Low	Can or does cause few or minor environmental impacts, or impacts occur in degraded or highly disturbed habitats (e.g., roadsides, vacant lots, etc.).
	5	Medium	Species can or does cause moderate impacts in less critical habitats (e.g., urban parks, Environmental Zone private properties, etc.).
	8	High	Species can or does cause significant impacts in several of the above categories. Plant causes severe impacts to priority habitats (e.g., aquatic, riparian corridors, Oregon white oak stands, species of concern sites, etc.).
Comments:	Would displace vegetation, but would largely be localized to highly disturbed sites near developed areas		
12.	Impact on Health: What is the impact of this species on human and animal health? (e.g., poisonous if ingested, contact dermatitis, acute and chronic toxicity to livestock, toxic sap, injurious spines or prickles.		
0	Negligible	Has no impact on human or animal health.	
	2	Low	May cause minor health problems of short duration, minor allergy symptoms (e.g., leafy spurge).

4	4	Medium	May cause severe allergy problems, death or severe health problems through chronic toxicity, spines or toxic sap may cause significant injury. (e.g., giant hogweed, gorse).
	7	High	Causes death from ingestion of small amounts, acute toxicity (e.g. poison hemlock).
Comments: Plant is toxic, and may be mistaken for edible food stuff. Unpalatable taste would discourage significant ingestion. Seed pods are spiny and may cause minor injury			
<b>CONTROL INFORMATION</b>			
13.	Probability of detection at point of introduction: How likely is detection of species after introduction and naturalization?		
5	1	High	Grows where probability of early detection is high, showy and easily recognized by public; access to habitat not restricted.
	5	Medium	Easily identified by weed professionals, ranchers, botanists; some survey and detection infrastructure in place. General public may not recognize or report species (e.g., gorse).
	10	Low	Probability of initial detection by weed professionals low. Plant shape and form obscure, not showy for much of growing season, plant resembles common species (e.g., weedy grasses, yellow-flowered hawkweeds).
Comments: Very recognizable, on par with gorse			
14.	Control efficacy: What level of control of this species can be expected with proper timing, herbicides, equipment, and biological control agents?		
2	1	High	Easily controlled by common, non-chemical control measures (e.g., mowing, pulling, and cutting; biocontrol is very effective at reducing seed production and plant density) (e.g., tansy ragwort).
	2	Medium	Somewhat difficult to control, generally requires herbicide treatment (e.g., mechanical control measures effective at preventing flowering and but not reducing plant density; herbicide applications provide a high rate of control in a single application; biocontrol provides partial control).
	4	Low	Treatment options marginally effective or costly. Mechanical control efforts can increase plant density (e.g., rapid regrowth, spread from root fragments). Chemical control is marginally effective. Crop damage occurs or significant non-target impacts result from maximum control rates. Biocontrol agents ineffective or unknown.
	6	Negligible	No effective treatments known or control costs very expensive. Species may occur in large water bodies or river systems where containment or complete control is not achievable.
Comments: Control is effective, without considerable follow up. Some exhaustion of seed bank may be required.			



Signature: \_\_\_\_\_

## City of Portland Nuisance Plant Risk Assessment v. 1.0

**Common name:** Horse Chestnut

**Scientific name:** *Aesculus hippocastanum* L.

**Family:** Sapindaceae

For use with plant species that occur or may occur in Portland to determine their potential to become, or status as, nuisance plants. For each of the following categories, select the number that best applies. Numerical values are weighted to increase the value of important factors over less important ones. Choose the best number that applies, **intermediate scores can be used**.

**Total Score:**

**Risk Category:**

### GEOGRAPHIC INFORMATION

- 1 Invasive in other areas
- 0 Low Not known to be invasive elsewhere.
  - 2 Medium Known to be invasive in climates dissimilar to Portland's current climate.
  - 6** High Known to be invasive in the region or geographically similar areas.
- Comments: **Mid-Atlantic and upper Midwest spread, exotic pest councils in three regions have listed this genus as problematic and two have listed it as noxious. Removed from tree lists for many mid-western cities.**
2. Habitat availability: Are there susceptible habitats for this species and how common or widespread are they in Portland?
- 1 Low Habitat is *very* limited or seemingly non-existent.
  - 3 Medium Habitat encompasses is *relatively* uncommon in Portland (i.e., gravel bars).
  - 6** High **Habitat covers large regions, or is limited to a few locations of high economic or ecological value (e.g., rare species habitat such as Elk Rock Island).**
- Comments: **Disturbed habitat and transitional environments favorable to species and genus.**
3. Proximity to Portland: What is the current distribution of the species?
- 0** Present Occurs within Portland.
  - 1 Distant Occurs only in distant US regions or foreign countries.
  - 3 Regional Occurs in Western regions of US but not adjacent to the Coast Range, Willamette Valley, or Cascade Mountain ecoregions.
  - 5 Adjacent Weedy populations occur adjacent (<50 miles) to Portland border.

Comments: **EDDMaps locates species in Marion, Benton, Lane in Oregon, as well as San Juan, Peirce and King counties in Washington.**

4. Current distribution: What is the current distribution of escaped populations in Oregon?

- |           |             |   |
|-----------|-------------|---|
| 0         | Not present | Not known to occur in Coast Range, Willamette Valley, or Cascade Mountain ecoregions. |
| 1         | Widespread  | Throughout much of above ecoregions (e.g., herb robert).                              |
| 5         | Regional    | Abundant in parts of above ecoregions (e.g., shining geranium)                        |
| <b>10</b> | Limited     | Limited to one or a few infestations in above ecoregions (e.g., goats rue).           |

Comments: **See above. Scattered plants in disturbed locations, but infrequent. Not noted by CWMA membership as particularly common, however sighted occasionally. Common enough in Lane County that the Emerald Chapter of the Native Plant Society of Oregon has listed it as invasive and discouraged local sale where possible.**

### BIOLOGICAL INFORMATION

5. Environmental factors: do abiotic (non-living) factors in the environment affect establishment and spread of the species? (e.g., precipitation, drought, temperature, nutrient availability, soil type, slope, aspect, soil moisture, standing or moving water).

- |          |        |  |
|----------|--------|--|
| 1        | Low    | Severely confined by abiotic factors (e.g., common reed).                            |
| <b>2</b> | Medium | Moderately confined by environmental factors (e.g., herb Robert, Scots broom).       |
| 4        | High   | Highly adapted to a variety of environmental conditions (e.g., slender false brome). |

Comments:

6. Reproductive traits: how does this species reproduce? Traits that may allow rapid population increase or complicate management and control.

- |          |            |  |
|----------|------------|--|
| 0        | Negligible | Not self-fertile, or is dioecious and opposite sex not present.  |
| 1        | Low        | Reproduction is only by seed, produces few seeds, or seed viability and longevity are low.             |
| 3        | Medium     | Reproduction is vegetative (e.g., by root fragments, rhizomes, bulbs, stolons).                        |
| <b>3</b> | Medium     | Produces many seeds but seeds of short longevity (<5 years).   |
| 5        | High       | Produces many seeds and seeds moderately long-lived (>5 years) (e.g., garlic mustard).                 |
| 6        | Very high  | Have two or more reproductive traits (e.g., seeds are long-lived [>10 years] and spreads by rhizomes). |

Comments:

7. Biological factors: do biotic (living) factors restrict establishment and spread of the species? [What is the interaction of plant competition, natural enemies, native herbivores, pollinators, and pathogens with species?]

- |          |        |  |
|----------|--------|--|
| 1        | High   | Biotic factors highly suppress reproduction or heavily damage plant for an extended period (e.g., biocontrol agents on tansy ragwort).                         |
| <b>2</b> | Medium | Biotic factors partially restrict or moderately impact growth and reproduction, impacts sporadic or short-lived (e.g., biological agents on Canadian thistle). |
| 4        | Low    | Few biotic interactions restrict growth and reproduction. Species expresses full growth and reproductive potential (e.g., reed canary grass).                  |

Comments: **Impacted by several locally present lepidopterans and fungi. Seeds large, so movement will be localized.**

8.	Reproductive potential and spread after establishment - non-human factors: how well can the species spread by natural means?	
	0 Negligible	Insignificant potential for natural spread in Portland (e.g., ornamental plants outside of climate zone).
	2 Low	Low potential for local spread within a year, has moderate reproductive potential or some mobility of propagules (e.g., mole plant).
	<b>3</b> Medium	Moderate potential for natural spread with either high reproductive potential or highly mobile propagules (e.g., propagules spread by moving water, or dispersed over longer distances by animals) (e.g., weeping sedge).
	5 High	Potential for rapid natural spread throughout the susceptible range, high reproductive capacity and highly mobile propagules. Seeds are wind dispersed over large areas (e.g., orange hawkweed).
Comments:	<b>Bird and rodent distribution possible—probable or known in movement in other N. American locations.</b>	
9.	Potential of species to be spread by humans: what human activities contribute to spread of species? Examples include: recreation; interstate or international commerce; contaminated commodities; packing materials or products; vehicles, boats, or equipment movement; right of way and parks maintenance; or intentional introductions of ornamental and horticultural species.	
	1 Low	Potential for introduction or movement minimal (e.g., species not traded or sold, or species not found in commodities, mulch, gravel, seed mixes or other commercial products).
	<b>3</b> Medium	Potential for introduction or off-site movement moderate (e.g., not widely propagated, not highly popular, with limited market potential; may be a localized contaminant of gravel, landscape products, or other commercial products) (e.g., Canada thistle).
	5 High	Potential to be introduced or moved within the region high (e.g., species widely propagated and sold; propagules common contaminant of agricultural commodities or commercial products; high potential for movement by contaminated vehicles and equipment, or by recreational activities) (e.g., spotted knapweed, water primrose spp).
Comments:	<b>Street tree and ROW plantings will increase propagule pressure.</b>	

### IMPACT INFORMATION

10.	Economic impact: What impact does/could the species have on Portland’s infrastructure and economy?	
	0 Negligible	Causes few, if any, economic and/or infrastructural impacts.
	2 Low	Potential to, or causes low economic impact to urban or natural areas (e.g., common vetch, creeping bent grass).
	<b>5</b> Medium	Potential to, or causes moderate impacts to urban areas, right-of-way maintenance, property values, recreational activities; increases costs and risks to a moderate extent (e.g., English/Irish ivy, Himalayan blackberry).
	8 High	Potential to, or causes high impacts and risks in urban areas and natural areas, (e.g., kudzu, giant hogweed).
Comments:	<b>Could do well in riparian habitats, along with other European and Asian-origin trees.</b>	
11.	Environmental Impact: what risks or harm to the environment does this species pose? Plant may cause negative impacts on ecosystem function, structure, and biodiversity of plant or fish and wildlife habitat; may put desired/rare species at risk.	
	0 Negligible	None of the above impacts probable.
	<b>2</b> Low	Can or does cause few or minor environmental impacts, or impacts occur in degraded or highly disturbed habitats (e.g., roadsides, vacant lots, etc.).
	5 Medium	Species can or does cause moderate impacts in less critical habitats (e.g., urban parks, Environmental Zone private properties, etc.).
	8 High	Species can or does cause significant impacts in several of the above categories. Plant causes severe impacts to priority habitats (e.g., aquatic, riparian corridors, Oregon white oak stands, species of concern sites, etc.).

Comments: **Probable impact from leaf litter and suppression of native regeneration, but will need disturbance (light) for germination in most natural environments.**

12. Impact on Health: What is the impact of this species on human and animal health? (e.g., poisonous if ingested, contact dermatitis, acute and chronic toxicity to livestock, toxic sap, injurious spines or prickles.

0	Negligible	Has no impact on human or animal health.
2	Low	May cause minor health problems of short duration, minor allergy symptoms (e.g., leafy spurge).
4	Medium	May cause severe allergy problems, death or severe health problems through chronic toxicity, spines or toxic sap may cause significant injury. (e.g., giant hogweed, gorse).
7	High	Causes death from ingestion of small amounts, acute toxicity (e.g. poison hemlock).

Comments: **Seeds poisonous and can cause serious problems if confused with edible chestnuts and consumed raw.**

**CONTROL INFORMATION**

13. Probability of detection at point of introduction: How likely is detection of species after introduction and naturalization?

1	High	Grows where probability of early detection is high, showy and easily recognized by public; access to habitat not restricted.
5	Medium	Easily identified by weed professionals, ranchers, botanists; some survey and detection infrastructure in place. General public may not recognize or report species (e.g., gorse).
10	Low	Probability of initial detection by weed professionals low. Plant shape and form obscure, not showy for much of growing season, plant resembles common species (e.g., weedy grasses, yellow-flowered hawkweeds).

Comments: **Natural area managers will need to recognize the species but due to weed tree detection already underway, removal of populations higher than average. There are no local species to confuse with this one.**

14. Control efficacy: What level of control of this species can be expected with proper timing, herbicides, equipment, and biological control agents?

1	High	Easily controlled by common, non-chemical control measures (e.g., mowing, pulling, and cutting; biocontrol is very effective at reducing seed production and plant density) (e.g., tansy ragwort).
2	Medium	Somewhat difficult to control, generally requires herbicide treatment (e.g., mechanical control measures effective at preventing flowering and but not reducing plant density; herbicide applications provide a high rate of control in a single application; biocontrol provides partial control).
4	Low	Treatment options marginally effective or costly. Mechanical control efforts can increase plant density (e.g., rapid regrowth, spread from root fragments). Chemical control is marginally effective. Crop damage occurs or significant non-target impacts result from maximum control rates. Biocontrol agents ineffective or unknown.
6	Negligible	No effective treatments known or control costs very expensive. Species may occur in large water bodies or river systems where containment or complete control is not achievable.

Comments: **Cut and treat with available/common triclopyr mixes as well as mechanical removal.**

Species is toxic, but fruit mobile with some wildlife utilization. A once popular street tree in some locations in the East Coast and upper Midwest, where escape was first recorded. The Mid-Atlantic Exotic Pest Plant Council has listed the plant as noxious. As species is introduced into right of way locations and streetscapes, potential for escape into natural areas around the metro region will increase. Hydrated cold stratification increases seed viability, which would allow greater success in the Willamette Valley climate zone, especially where elevation is gained. A 2008 survey of King County parcels found *Aesculus* in 8 out of 112 properties sampled. EDD Maps reported that the plant had escaped cultivation and was successful in establishing a limited population in Marion, Benton and Lane counties. Also found escaped in limited numbers in British Columbia.

**City of Portland  
Nuisance Plant Risk Assessment v. 1.0**

**City of Portland  
Nuisance Plant Risk Assessment v. 1.0  
Reviewer Evaluation Form**

Species: *Aesculus hippocastanum* (horse chestnut)

Assessor info:

Name: Michelle Delepine

Affiliation: West Multnomah Soil & Water Conservation District

Mailing Address: 2701 NW Vaughn St, Ste 450, Portland, OR 97210

Phone: 503-238-4775 x115

Email: michelle@wmswcd.org

Date assessed: Feb 13, 2015



Signature: \_\_\_\_\_

# City of Portland

## Nuisance Plant Risk Assessment v. 1.0

**Common name:** horse chestnut

**Scientific name:** *Aesculus hippocastanum*

**Family:** Sapindaceae

For use with plant species that occur or may occur in Portland to determine their potential to become, or status as, nuisance plants. For each of the following categories, select the number that best applies. Numerical values are weighted to increase the value of important factors over less important ones. Choose the best number that applies, **intermediate scores can be used.**

**Total Score: 48**

**Risk Category:**

### GEOGRAPHIC INFORMATION

- 1 Invasive in other areas
- |          |             |  |
|----------|-------------|--|
| 0        | Low         | Not known to be invasive elsewhere.  |
| 2        | Medium      | Known to be invasive in climates dissimilar to Portland's current climate. |
| <b>6</b> | <b>High</b> | <b>Known to be invasive in the region or geographically similar areas.</b> |
- I have personally noted its naturalized presence in several other locations in the Pacific Northwest, including Vancouver Island and Hood River; however, sightings in natural areas are generally not far from cultivated parent populations.*
- Comments:
2. Habitat availability: Are there susceptible habitats for this species and how common or widespread are they in Portland?
- |          |             |  |
|----------|-------------|--|
| 1        | Low         | Habitat is <i>very</i> limited or seemingly non-existent.  |
| 3        | Medium      | Habitat encompasses is <i>relatively</i> uncommon in Portland (i.e., gravel bars).   |
| <b>6</b> | <b>High</b> | <b>Habitat covers large regions, or is limited to a few locations of high economic or ecological value (e.g., rare species habitat such as Elk Rock Island).</b> |
- Susceptible habitat is plentiful, as I've seen escaped populations in both disturbed and in-tact forest on both saturated floodplain soils and well-drained outcropping slopes. Horse chestnut is capable of invading forests and woodlands, and may favor partially shaded to fully shaded areas with canopy cover.*
- Comments:
3. Proximity to Portland: What is the current distribution of the species?
- |          |                |   |
|----------|----------------|---|
| <b>0</b> | <b>Present</b> | <b>Occurs within Portland.</b>  |
| 1        | Distant        | Occurs only in distant US regions or foreign countries.   |
| 3        | Regional       | Occurs in Western regions of US but not adjacent to the Coast Range, Willamette Valley, or Cascade Mountain ecoregions. |

Comments:	5	Adjacent	Weedy populations occur adjacent (<50 miles) to Portland border. <i>Horse chestnut is plentiful in Portland, as it is widely planted in urban areas.</i>
4.			Current distribution: What is the current distribution of escaped populations in Oregon?
	0	Not present	Not known to occur in Coast Range, Willamette Valley, or Cascade Mountain ecoregions.
	1	Widespread	Throughout much of above ecoregions (e.g., herb robert).
	5	<b>Regional</b>	<b>Abundant in parts of above ecoregions (e.g., shining geranium)</b>
	10	Limited	Limited to one or a few infestations in above ecoregions (e.g., goats rue).
Comments:			<i>I have noticed escaped populations of horse chestnut in several locations across urban and semi-urban areas in the Pacific Northwest.</i>

### BIOLOGICAL INFORMATION

5.			Environmental factors: do abiotic (non-living) factors in the environment affect establishment and spread of the species? (e.g., precipitation, drought, temperature, nutrient availability, soil type, slope, aspect, soil moisture, standing or moving water).
	1	Low	Severely confined by abiotic factors (e.g., common reed).
	2	<b>Medium</b>	<b>Moderately confined by environmental factors (e.g., herb Robert, Scots broom).</b>
	4	High	Highly adapted to a variety of environmental conditions (e.g., slender false brome).
Comments:			<i>In general, horse chestnut appears to have a wide ecological aptitude and is capable of proliferating in both very wet and in well-drained soil types and habitats. Possibly drought-tolerant. May prefer "hot shade" – that is under the canopy of south-facing or flat aspects.</i>
6.			Reproductive traits: how does this species reproduce? Traits that may allow rapid population increase or complicate management and control.
	0	Negligible	Not self-fertile, or is dioecious and opposite sex not present.
	1	Low	Reproduction is only by seed, produces few seeds, or seed viability and longevity are low.
	3	Medium	Reproduction is vegetative (e.g., by root fragments, rhizomes, bulbs, stolons).
	3	<b>Medium</b>	<b>Produces many seeds but seeds of short longevity (&lt;5 years).</b>
	5	High	Produces many seeds and seeds moderately long-lived (>5 years) (e.g., garlic mustard).
	6	Very high	Have two or more reproductive traits (e.g., seeds are long-lived [>10 years] and spreads by rhizomes).
Comments:			<i>The outer layer of horse chestnut fruits are armed and sealed in a thick outer shell. The inner nuts themselves are susceptible to rotting once exposed. While fruits are large, mature trees do produce high quantities (relative to other species with large seeds).</i>
7.			Biological factors: do biotic (living) factors restrict establishment and spread of the species? [What is the interaction of plant competition, natural enemies, native herbivores, pollinators, and pathogens with species?]
	1	High	Biotic factors highly suppress reproduction or heavily damage plant for an extended period (e.g., biocontrol agents on tansy ragwort).
	2	Medium	Biotic factors partially restrict or moderately impact growth and reproduction, impacts sporadic or short-lived (e.g., biological agents on Canadian thistle).

Comments:	4	<p><b>Low</b></p> <p><b>Few biotic interactions restrict growth and reproduction. Species expresses full growth and reproductive potential (e.g., reed canary grass).</b></p>
8.		<p><i>Biotic factors for suppression are not known; however, caching of nuts by rodents may lend to increased success of seedling (i.e. positive biotic interaction that favor establishment).</i></p>
		<p>Reproductive potential and spread after establishment - non-human factors: how well can the species spread by natural means?</p>
	0	<p>Negligible</p> <p>Insignificant potential for natural spread in Portland (e.g., ornamental plants outside of climate zone).</p>
	2	<p><b>Low</b></p> <p><b>Low potential for local spread within a year, has moderate reproductive potential or some mobility of propagules (e.g., mole plant).</b></p>
	3	<p>Medium</p> <p>Moderate potential for natural spread with either high reproductive potential or highly mobile propagules (e.g., propagules spread by moving water, or dispersed over longer distances by animals) (e.g., weeping sedge).</p>
	5	<p>High</p> <p>Potential for rapid natural spread throughout the susceptible range, high reproductive capacity and highly mobile propagules. Seeds are wind dispersed over large areas (e.g., orange hawkweed).</p>
Comments:		<p><i>It may take several years before a specimen is capable of producing significant seed. However, once mature, is capable of producing many viable seeds. Has been observed naturalizing readily into natural areas when parent specimens are nearby.</i></p>
9.		<p>Potential of species to be spread by humans: what human activities contribute to spread of species? Examples include: recreation; interstate or international commerce; contaminated commodities; packing materials or products; vehicles, boats, or equipment movement; right of way and parks maintenance; or intentional introductions of ornamental and horticultural species.</p>
	1	<p>Low</p> <p>Potential for introduction or movement minimal (e.g., species not traded or sold, or species not found in commodities, mulch, gravel, seed mixes or other commercial products).</p>
	3	<p>Medium</p> <p>Potential for introduction or off-site movement moderate (e.g., not widely propagated, not highly popular, with limited market potential; may be a localized contaminant of gravel, landscape products, or other commercial products) (e.g., Canada thistle).</p>
	5	<p><b>High</b></p> <p><b>Potential to be introduced or moved within the region high (e.g., species widely propagated and sold; propagules common contaminant of agricultural commodities or commercial products; high potential for movement by contaminated vehicles and equipment, or by recreational activities) (e.g., spotted knapweed, water primrose spp).</b></p>
Comments:		<p><i>Horse chestnut was widely planted as a street tree and in landscaping. As far as I know, there are no trade bans.</i></p>
<b>IMPACT INFORMATION</b>		
10.		<p>Economic impact: What impact does/could the species have on Portland's infrastructure and economy?</p>
	0	<p>Negligible</p> <p>Causes few, if any, economic and/or infrastructural impacts.</p>
	2	<p><b>Low</b></p> <p><b>Potential to, or causes low economic impact to urban or natural areas (e.g., common vetch, creeping bent grass).</b></p>
	5	<p>Medium</p> <p>Potential to, or causes moderate impacts to urban areas, right-of-way maintenance, property values, recreational activities; increases costs and risks to a moderate extent (e.g., English/Irish ivy, Himalayan blackberry).</p>
	8	<p>High</p> <p>Potential to, or causes high impacts and risks in urban areas and natural areas, (e.g., kudzu, giant hogweed).</p>
Comments:		<p><i>Can germinate from sidewalk cracks, etc. Removal of established populations may require moderate effort. Fallen debris from high leaf cover and large fruits leads to high levels of autumnal material (clean-up / park &amp; street maintenance, etc). Have personally observed fallen conkers breaking windows. April2011</i></p>

11.	<p>Environmental Impact: what risks or harm to the environment does this species pose? Plant may cause negative impacts on ecosystem function, structure, and biodiversity of plant or fish and wildlife habitat; may put desired/rare species at risk.</p>
	<p>0 Negligible None of the above impacts probable.</p> <p>2 Low Can or does cause few or minor environmental impacts, or impacts occur in degraded or highly disturbed habitats (e.g., roadsides, vacant lots, etc.).</p> <p>5 Medium Species can or does cause moderate impacts in less critical habitats (e.g., urban parks, Environmental Zone private properties, etc.).</p> <p><b>8 High Species can or does cause significant impacts in several of the above categories. Plant causes severe impacts to priority habitats (e.g., aquatic, riparian corridors, Oregon white oak stands, species of concern sites, etc.).</b></p>
Comments:	<p><i>While numbers and extent are not high (yet) for this species, I rank this category high given its ability to proliferate on both wet, waterlogged boggy soil AND well-drained areas with associate Oregon white oak presence/habitat. When naturalized populations are present, numerous seedlings and saplings can be found. What percentage of these become full fledged canopy trees remains to be seen, but there is potential for a long lag time and subsequent rapid rise in population given "long-lived" nature of this large tree species. Naturalized large saplings/small trees 6'-15' tall are evident in natural areas with escaped, naturalized populations. Mature trees are capable of monopolizing light, space and water resources (large tree canopy and root capillary system). Even saplings (which grow relatively quickly) have been observed competing with native plants for resources.</i></p>
12.	<p>Impact on Health: What is the impact of this species on human and animal health? (e.g., poisonous if ingested, contact dermatitis, acute and chronic toxicity to livestock, toxic sap, injurious spines or prickles.</p>
	<p>0 Negligible Has no impact on human or animal health.</p> <p><b>2 Low May cause minor health problems of short duration, minor allergy symptoms (e.g., leafy spurge).</b></p> <p>4 Medium May cause severe allergy problems, death or severe health problems through chronic toxicity, spines or toxic sap may cause significant injury. (e.g., giant hogweed, gorse).</p> <p>7 High Causes death from ingestion of small amounts, acute toxicity (e.g. poison hemlock).</p>
Comments:	<p><i>Raw nuts, if ingested, are somewhat poisonous. Falling conkers pose hazards; fallen conkers can impede safe bicycle travel.</i></p>
<b>CONTROL INFORMATION</b>	
13.	<p>Probability of detection at point of introduction: How likely is detection of species after introduction and naturalization?</p>
	<p><b>1 High Grows where probability of early detection is high, showy and easily recognized by public; access to habitat not restricted.</b></p> <p>5 Medium Easily identified by weed professionals, ranchers, botanists; some survey and detection infrastructure in place. General public may not recognize or report species (e.g., gorse).</p> <p>10 Low Probability of initial detection by weed professionals low. Plant shape and form obscure, not showy for much of growing season, plant resembles common species (e.g., weedy grasses, yellow-flowered hawkweeds).</p>
Comments:	<p><i>Very easy to identify this plant (distinct leaf shape make ID easy even at early life stages, saplings very easy to spot, etc). Initial escaped populations often near parks, street trees, etc; making observations more accessible.</i></p>
14.	<p>Control efficacy: What level of control of this species can be expected with proper timing, herbicides, equipment, and biological control agents?</p>
	<p>1 High Easily controlled by common, non-chemical control measures (e.g., mowing, pulling, and cutting; biocontrol is very effective at reducing seed production and plant density) (e.g., tansy ragwort).</p> <p><b>2 Medium Somewhat difficult to control, generally requires herbicide treatment (e.g., mechanical control measures effective at preventing flowering and but not</b></p>

**reducing plant density; herbicide applications provide a high rate of control in a single application; biocontrol provides partial control).**

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| 4 | Low        | Treatment options marginally effective or costly. Mechanical control efforts can increase plant density (e.g., rapid regrowth, spread from root fragments). Chemical control is marginally effective. Crop damage occurs or significant non-target impacts result from maximum control rates. Biocontrol agents ineffective or unknown. |
| 6 | Negligible | No effective treatments known or control costs very expensive. Species may occur in large water bodies or river systems where containment or complete control is not achievable.  |

Comments: *Do not have much experience with control, but my impression is that seedlings and saplings are harder to handpull than holly of comparable height. Large specimens require arborist to remove.*