

Oregon Department of Agriculture
Noxious Weed Pest Risk Assessment for
Old Man's Beard
Clematis vitalba L
Ranunculaceae
February 2008, Revised February 2015

Findings of Review and Assessment: Old man's beard meets the criteria of a "B" listed noxious weed as defined by the ODA Noxious Weed Policy and Classification System. This determination is based on two independent risk assessments following a literature review. Using a rating system adapted from USDA-APHIS Weed Risk Assessment Guidelines, old man's beard scored 47 out of a potential score of 89. Using the ODA Noxious Weed Rating system, old man's beard scored 13.

Introduction: Introduced originally as an ornamental in the Portland and Puget Sound region, old man's beard has escaped cultivation and now infests a large geographic area. In Oregon, the main infestation stretches north from Woodburn along the Willamette River through Portland and east west from Sauvie Island to Hood River. Other populations also exist in the lower McKenzie, Santiam and Lukiamute River watersheds. Infestations can be identified by vine-draped trees, barren in winter except for the puffy white seed heads and leafy green in the summer looking much like kudzu.

Reproduction: Reproduction is primarily through seed production. Whitish, fluffy seed heads are mature in the fall and early winter with the seeds released sporadically over the winter. Birds may be a contributing factor in localized dispersal. Water, wind, humans and mammals are also important vectors of mid to long-distance movement. Stems root readily their entire length providing additional sources of water and nutrients should the mother vine become separated. Plant fragments in roadside waste, fill dirt and yard debris are capable of rooting and establishing new colonies. Old man's beard requires high light for growth and reproduction, and is tolerant of moderate shade. In seedling germination studies done in forests, old man's beard seedlings did not survive in undisturbed forests with low light levels. It was also found that nitrogen might be the limiting nutrient resource.

Factors Effecting Establishment: Old man's beard frequently gets its start along riparian areas when deciduous trees thrive and flood events rapidly spread the seeds downstream. Establishment in conifer forests is much more sporadic due to deeper shading which inhibits seed germination. Birds and small animals contribute to longer-distance seed transport as indicated by the presence of outlier populations far from riparian zones. When established, some minor feeding damage can be attributed to deer and elk but when the vines exceed feeding height, the plant is free from grazing. Little invertebrate feeding has been observed.



Old man's beard young flowers

Characteristics of old man's beard include rapid growth rate; early reproductive maturity; easy vegetative spread from fragmentation; quick recovery from physical damage and the ability to resprout; and prolific seed producer, whose seeds are dispersed by wind. Stems can produce five meters of new growth each season. The trailing stems along the ground can produce roots at each node, giving this plant the capability to produce a new plant every 15cm (5.9 inches). Fragments are spread by water, and from garden cuttings.

Probability of Detection: Old man's beard is not difficult to detect once it climbs trees and emerges above ground vegetation. Often though, populations may establish and expand in areas that are not easily accessed by humans. Identification of native versus non-native can also compound the difficulty. Old man's beard is a climbing, woody, perennial vine growing 20 to 30 meters long. The leaf arrangement is opposite. The leaves are pinnately compound, usually consisting of 5 leaflets and are deciduous. The flowers are white to greenish-white, and they are about 2 cm in diameter growing in stalked clusters of the upper leaf axils. The common name, old man's beard, is derived from the beard-like appearance of the seed ball, produced from the feathery styles that elongate and stay attached to the small hairy seed. Old man's beard is similar in appearance to our native *C. ligusticifolia*, whose range in Washington is east of the Cascades, in sagebrush to ponderosa pine forest, and usually associated with creek bottoms. In Oregon, *C. ligusticifolia* is found on both sides of the Cascades.

Distribution in Oregon: Old man's beard is native to south, west and central Europe. This native distribution also extends to the Netherlands, south to the Mediterranean and east to the Caucasus Mountains. It is a major weed species of the forests of New Zealand. The North Willamette Valley remains the epicenter for *Clematis vitalba* in Oregon. It ranges eastward through Hood River County and southward to the Wilsonville area. Isolated populations can be found in virtually every western Oregon County and surveys will undoubtedly locate more. It can be found in British Columbia but has not been identified as problematic. In Washington and Oregon, old man's beard is found primarily west of the Cascade Mountains except in the Columbian River Gorge. Elsewhere in the United States, it has been planted extensively and can be found wherever conditions for survival are favorable.

Environmental Impacts: In areas where old man's beard has naturalized, (New Zealand and Pacific Northwest), dense vines blanket shrubs and native trees over 20 meters tall. Once the tree collapses, old man's beard continues to grow along the ground in layers that are several feet thick, preventing native plant regeneration. Old man's beard spreads quickly along river margins, but it will establish in any area not intensively managed or grazed. The combined competition of blackberries and ground-hugging canopies of clematis may curtail tree establishment in riparian areas. This can be observed where riverbeds have become stabilized by the regulated water flows emerging from dams.

Economic Impacts: Treatment and removal costs for homeowners, power line maintenance companies, right-of-way managers and park managers are the dominant costs associated with *Clematis* infestations. No impacts to agriculture have been noted.

Control: Large volumes of biomass and the location of the biomass in tree canopies make old man's beard control difficult and expensive. Integrating manual/mechanical removal from the base of trees with herbicide treatment of regrowth and ground hugging vines, offer the best results. Seedling recruitment occurs for several years mandating yearly monitoring and treatment

Noxious Weed Qualitative Risk Assessment 3.8
Oregon Department of Agriculture

Common Name: Old man's beard
Scientific Name: *Clematis vitalba*
Family: Ranunculaceae

For use with plant species that occur or may occur in Oregon to determine their potential to become serious noxious weeds. For each of the following categories, select the number that best applies. Numerical values are weighted to increase priority categories over less important ones. Choose the best number that applies, intermediate scores can be used.

Total Score: 47 Risk Category: B

GEOGRAPHICAL INFORMATION

- 1) **6** **Invasive in Other Areas**
0 Low- not known to be invasive elsewhere.
2 Known to be invasive in climates dissimilar to Oregon's current climates.
6 Known to be invasive in geographically similar areas.
Comments: Known to be invasive in similar habitats in New Zealand
- 2) **6** **Habitat Availability:** Are there susceptible habitats for this species and how common or widespread are they in Oregon?
1 *Low* – Habitat is very limited, usually restricted to a small watershed or part of a watershed (e.g., tree fern in southern Curry County).
3 *Medium* – Habitat encompasses 1/4 or less of Oregon (e.g., oak woodlands, coastal dunes, eastern Oregon wetlands, Columbia Gorge).
6 *High* – Habitat covers large regions or multiple counties, or is limited to a few locations of high economic or ecological value (e.g., threatened and endangered species habitat).
Comments: Much of Western Oregon is susceptible to invasion.
- 3) **0** **Proximity to Oregon:** What is the current distribution of the species?
0 *Present* – Occurs within Oregon.
1 *Distant* – Occurs only in distant US regions or foreign countries.
3 *Regional* – Occurs in Western regions of US but not adjacent to Oregon border.
6 *Adjacent* – Weedy populations occur adjacent (<50 miles) to Oregon border.
Comments: Occurs in Oregon.
- 4) **5** **Current Distribution:** What is the current distribution of escaped populations in Oregon?
0 *Not present* – Not known to occur in Oregon.
1 *Widespread* – Throughout much of Oregon (e.g., cheatgrass).
5 *Regional* – Abundant (i.e., occurs in eastern, western, central, coastal, areas of Oregon) (e.g., gorse, tansy ragwort).
10 *Limited* – Limited to one or a few infestations in state (e.g., kudzu).
Comments: Limited to Western Oregon.

BIOLOGICAL INFORMATION

- 5) **2** **Environmental Factors:** Do abiotic (non-living) factors in the environment effect 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.
 - 2 *Medium* – Moderately confined by environmental factors
 - 4 *High* – Highly adapted to a variety of environmental conditions (e.g., tansy ragwort, Scotch broom).

Comments: Limited by moisture availability, shading, and elevation.

- 6) **5** **Reproductive Traits:** How does this species reproduce? Traits that may allow rapid population increase both on and off site.
- 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 *Medium* – Produces many seeds, and/or seeds of short longevity (< 5 years).
 - 5 *High* – Produces many seeds and/or seeds of moderate longevity (5-10 years) (e.g., tansy ragwort).
 - 6 *Very high* – Has two or more reproductive traits (e.g., seeds are long-lived >10 years and spreads by rhizomes).

Comments: Reproduction primarily by seeds, less so by fragmentation

- 7) **3** **Biological Factors:** Do biotic (living) factors restrict or aid establishment and spread of the species? (What is the interaction of plant competition, natural enemies, native herbivores, pollinators, and pathogens with species?)
- 0 *Negligible* – Host plant not present for parasitic species.
 - 1 *Low* – Biotic factors highly suppress reproduction or heavily damage plant for an extended period (e.g., biocontrol agent on tansy ragwort).
 - 2 *Medium* – Biotic factors partially restrict or moderately impact growth and reproduction, impacts sporadic or short-lived.
 - 4 *High* – Few biotic interactions restrict growth and reproduction. Species expresses full growth and reproductive potential.

Comments: Low levels of vertebrate and invertebrate grazing may effect establishment.

- 8) **3** **Reproductive Potential and Spread After Establishment - Non-human Factors:** How well can the species spread by natural means?
- 0 *Negligible* – No potential for natural spread in Oregon (e.g., ornamental plants outside of climate zone).
 - 1 *Low* – Low potential for local spread within a year, has moderate reproductive potential or some mobility of propagules (e.g., propagules transported locally by animals, water movement in lakes or ponds, not wind blown).
 - 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., perennial pepperweed).
 - 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., rush skeletonweed).

Comments: Birds and water are the primary dispersing agents for Clematis v.

- 9) **1** **Potential of Species to be Spread by Humans.** What human activities contribute to spread of species? Examples include: interstate or international commerce; contaminated commodities; packing materials or products; vehicles, boats, or equipment movement; logging or farming; road maintenance; intentional introductions of ornamental and horticultural species, or biofuel production.
- 1 *Low* – Potential for introduction or movement minimal (e.g., species not traded or sold, or species not found in agricultural commodities, gravel 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., lesser celandine, Canada thistle).
 - 5 *High* – Potential to be introduced or moved within state 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., butterfly bush, spotted knapweed, Eurasian watermilfoil).

Comments: Human activities are a very minor factor in dispersal.

IMPACT INFORMATION

- 10) **3** **Economic Impact:** What impact does/can the species have on Oregon's agriculture and economy?
- 0 *Negligible* – Causes few, if any, economic impacts.
 - 1 *Low* - Potential to, or causes low economic impact to agriculture; may impact urban areas (e.g., puncture vine, pokeweed).
 - 5 *Medium* – Potential to, or causes moderate impacts to urban areas, right-of-way maintenance, property values, recreational activities, reduces rangeland productivity (e.g., English ivy, Himalayan blackberry, cheatgrass).
 - 10 *High* – Potential to, or causes high impacts in agricultural, livestock, fisheries, or timber production by reducing yield, commodity value, or increasing production costs (e.g., gorse, rush skeleton weed, leafy spurge).

Comments: Economic impacts from Clematis invasion are restricted and are primarily limited to control costs.

- 11) **5** **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 species at risk.
- 0 *Negligible* – None of the above impacts probable.
 - 1 *Low* – Can or does cause few or minor environmental impacts, or impacts occur in degraded or highly disturbed habitats.
 - 4 *Medium* – Species can or does cause moderate impacts in less critical habitats (e.g., urban areas, sagebrush/ juniper stands).
 - 6 *High* – Species can or does cause significant impacts in several of the above categories. Plant causes severe impacts to limited or priority habitats (e.g., aquatic, riparian zones, salt marsh; or T&E species sites).

Comments: Clematis can impact plant succession in riparian zones. Vines create significant competition.

- 12) 0 **Impact on Health:** What is the impact of this species on human, animal, and livestock health? (e.g., poisonous if ingested, contact dermatitis, acute and chronic toxicity to livestock, toxic sap, injurious spines or prickles, causes allergy symptoms).
- 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, tansy ragwort).
 - 6 *High* – Causes death from ingestion of small amounts, acute toxicity (e.g. poison hemlock).

Comments: No impacts on human health.

CONTROL INFORMATION

- 13) 5 **Probability of Detection at Point of Introduction:** How likely is detection of species after introduction and naturalization in Oregon?
- 1 *Low* – Grows where probability of early detection is high, showy and easily recognized by public; access to habitat not restricted (e.g., giant hogweed).
 - 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., leafy spurge).
 - 10 *High* – Probability of initial detection by weed professionals low. Plant shape and form obscure, not showy for much of growing season, introduction probable at remote locations with limited access (e.g., weedy grasses, hawkweeds, skeletonweed).

Comments: Easy to identify by land managers and weed professionals though confusion with native species does occur.

- 14) 3 **Control Efficacy:** What level of control of this species can be expected with proper timing, herbicides, equipment, and biological control agents?
- 1 *Negligible* – Easily controlled by common non-chemical control measures (e.g., mowing, tillage, pulling, and cutting; biocontrol is very effective at reducing seed production and plant density) (e.g., tansy ragwort).
 - 2 *Low* – 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 *Medium* – Treatment options marginally effective or costly. Tillage and mowing increase plant density (e.g., causes tillering, 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.
 - 6 *High* – No effective treatments known or control costs very expensive. Species may occur in large water bodies or river systems where containment and complete control are not achievable. Political or legal issues may prevent effective control.

Comments: Control rates are high with herbicides though expensive.

Category Scores:

17 Geographic score (Add scores 1-4)

14 Biological Score (Add lines 5-9)

8 Impact Score (Add lines 10-12)

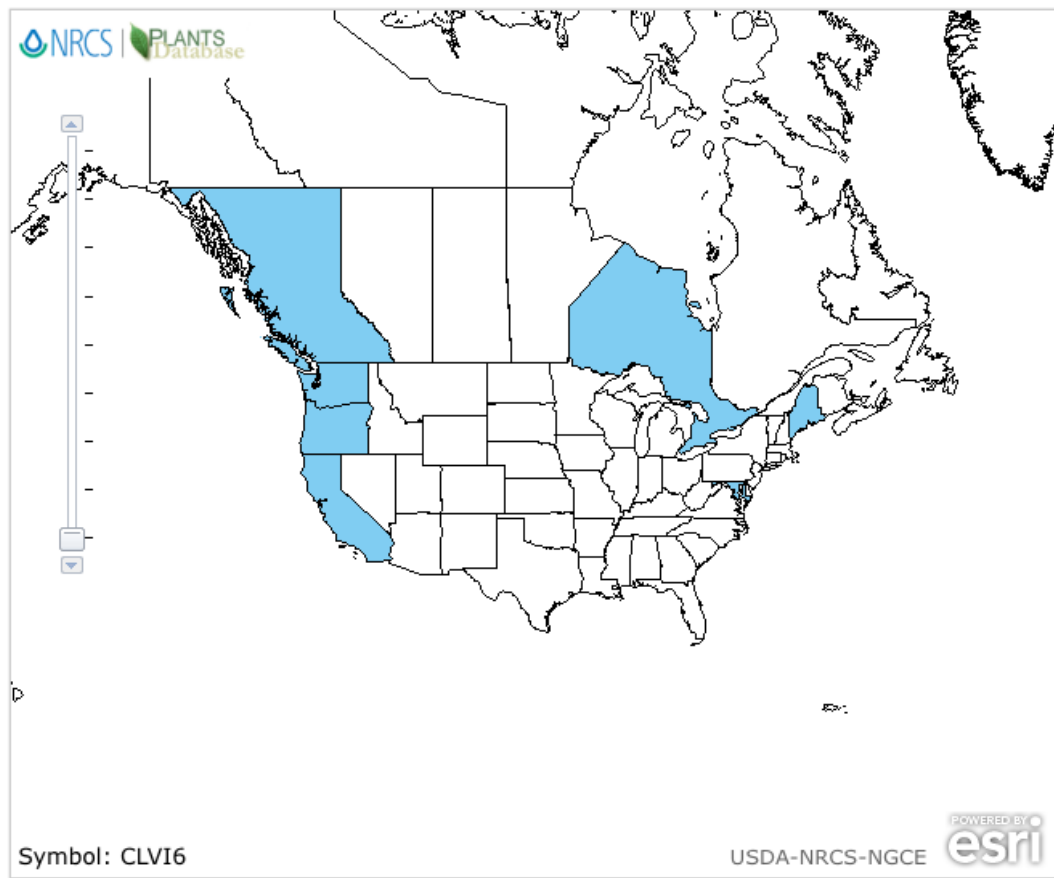
8 Control Score (Add Lines 13-14)

47 Total Score (Add scores 1-14 and list on front of form)

Risk Category: 55-89 = A 24-54 = B < 24 = unlisted.

This Risk Assessment was modified by ODA from the USDA-APHIS Risk Assessment for the introduction of new plant species.

V3.8 2/19/2016



US Distribution of Clematis vitalba

Oregon Department of Agriculture
Noxious Weed Rating System

Common Name: Old man's beard

Scientific Name: *Clematis vitalba*

Point Total: **13**

Rating: **B**

1) Detrimental Effects: Check all that apply, add number of checks

- 1. *Health*: causes poisoning or injury to humans or animals
- 2. *Competition*: strongly competitive with crops, forage, or native flora
- 3. *Host*: host of pathogens and/or pests of crops or forage
- 4. *Contamination*: causes economic loss as a contaminate in seeds and/or feeds
- 5. *Interference*: interferes with recreation, transportation, harvest, land value, or wildlife and livestock movement

2) Reproduction & Capacity for Spread: Check the number that best describes, enter that number

- 1. Few seeds, not wind blown, spreads slowly
- 2. Many seeds, slow spread
- 3. Many seeds, spreads quickly by vehicles or animals
- 4. Windblown seed, or spreading rhizomes, or water borne
- 5. Many wind-blown seeds, high seed longevity, spreading rhizomes, perennials

3) Difficulty to Control: Check the number that best describes, enter that number

- 1. Easily controlled with tillage or by competitive plants
- 2. Requires moderate control, tillage, competition or herbicides
- 3. Herbicides generally required, or intensive management practices
- 4. Intensive management generally gives marginal control
- 5. No management works well, spreading out of control

4) Distribution: Check the number that best describes, enter that number

- 1. Widely distributed throughout the state in susceptible habitat
- 2. Regionally abundant, 5 or more counties, more than 1/2 of a county
- 3. Abundant throughout 1- 4 counties, or 1/4 of a county, or several watersheds
- 4. Contained in only 1 watershed, or less than 5 square miles gross infestation
- 5. Isolated infestation less than 640 acres, more than 10 acres

5) Ecological Impact: Check the number that best describes, enter that number

- 1. Occurs in most disturbed habitats with little competition
- 2. Occurs in disturbed habitats with competition
- 3. Invades undisturbed habitats and crowds out native species
- 4. Invades restricted habitats (i.e. riparian) and crowds out native species

13

TOTAL POINTS

Note: Noxious weeds are non-native plants with scores of 11 points or higher. Any plants in 4.1, 4.2, and 4.3 should not be classified as "A" rated weeds. Ratings: 16+ = A, 15 – 11 = B
ODA Weed Rating System 2/22/16 V3.8

References:

Plants Profile for Clematis vitalba (evergreen clematis) USDA Plants
www.plants.usda.gov

Clematis vitalba: Written findings of the Washington State Weed Board
www.nwcb.wa.gov/weed_info/written_findings

Bungard, R.A. and D. McNeil and J.D. Morton. 1997. Effects of chilling, light and nitrogen-containing compounds on germination, rate of germination and seed inhibition of Clematis vitalba L. Abstract from: Ann-bot. London; New York: Academic Press, June 1997. V. 79 (6) p. 643-650.

Bungard R. A. and J.D. Morton, D.L. McNeil and G.T. Daly. 1998. Abstract from: Effects of irradiance and nitrogen on Clematis vitalba establishment in a New Zealand lowland pod carp forest remnant.

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Ogle, C.C., Cock G.D., Arnold G., Mickleson N. 2000. Impact of an exotic vine Clematis vitalba (F. Ranunculaceae) and of control measures on plant biodiversity, in indigenous forest, Taihape, New Zealand. Austral Ecology Vol. 25 Issue 5, pp. 539-551

Vinkler I., Muller C., Gama A., 2004. From abstract of: Evergreen clematis [Clematis vitalba L.] germination and potential for preventive control in forest. Revue Forestiere Francaise Volume 56 Issue 4, 2004 pp. 275-286

Reported by: Glenn Miller, ODA

USDA Plant Hardiness Zone

