

Oregon Department of Agriculture
Noxious Weed Pest Risk Assessment
for
Sweetbriar and Dog Roses
(*Rosa Rubiginosa* and *Rosa Canina*)
Compiled by Mark Porter
February 2022

Findings of Review and Assessment: Sweetbriar rose and dog rose have been determined to be Category “B” noxious weeds as defined by the Oregon Department of Agriculture (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 United States Department of Agriculture, Animal and Plant Health Inspection Services, Plant Protection and Quarantine (USDA-APHIS PPQ) Weed Risk Assessment Guidelines, sweet briar and dog roses scored 53 out of a potential score of 90, indicating a “B” listing. Using the ODA Noxious Weed Rating system, the species scored 14, also indicating a “B” listing.

Introduction: Plants from the genus *Rosa* are a favorite of people worldwide. There are more than 100 species and tens of thousands of cultivars (Wikipedia, 2022). Throughout history roses have been used as a source of food and perfume, ornamental shrubs, cut flowers, and in pharmaceutical research. The same genetic traits that make the genus easy to hybridize for commercial purposes also allow for natural hybridization. Identification within the genus is complicated because individuals are morphologically similar, there have been many reclassifications over time, and because there are many hybrids. Phenotypic variability in *Rosa* may be due to seasonal or annual environmental factors, varying gene expressions, hybridization, and polyploidy (Lewis et al., 2020). Field identification can be challenging for botanists and others natural resource practitioners. The phylogeny of the genus is an ongoing topic of study for geneticists (Fouge`re-Danezan et al., 2015).

The genus *Rosa* is divided into 8 “sections”. One of those sections is Rose sect. *Caninae* or “Dog Roses,” so named because of the assertion by the Roman naturalist Pliny that the root of dog rose (*Rosa canina*), the namesake of the section, could cure the bite of a mad dog (Pavick, 2012 - 2). Rose species in the section *Caninae* have a very unique trait called hemisexual reproduction which further confounds their morphology and taxonomy (Lewis et al. 2020). Dog rose and sweetbriar rose (*Rosa rubiginosa*) are both species in the *Caninae* section. Hybridization between these two species is certainly possible, but hybridization with our native species is unlikely (B. Ertter, pers. comm.). Sweetbriar rose used to be called eglantine rose (*Rosa eglantaria* L.)

Sweetbriar rose is native to Europe and may have been brought to North America by European colonists as an ornamental or as a hedge row. It was documented in New England as early as the late 1600s (Pavick 2012-1). Sweetbriar rose now grows in most states and provinces throughout the U.S. and Canada (Map 1). Dog rose is native to Eurasia and also has a wide distribution in North America (Map 2). The two species are very similar in their growth form, biology, and habitat preferences. They are both able to colonize and even dominate rangelands, pastures and riparian areas. Sweetbriar rose can form dense stands that exclude livestock and larger grazing animals from grasslands and shrublands because of their curved thorns. Dog rose can also form dense thickets in grassland and riparian areas (DiTamosa et al., 2013). Both rose species are causing concern across Eastern Oregon. While both species are present in Western OR, they are not known to be problematic at this time.

Sweetbriar rose has been on the Oregon State Weed Board's watch list since 2014. It is listed as noxious by Willamette and Union Counties.

The two invasive roses have many similarities to some roses native to Oregon, but can be distinguished largely by the presence of stout, flattened, down curving thorns that can be unequal in size (Figure 1). Native roses have less thorns and they are not as thick or downcurved. However, to be certain of species identification, multiple traits need to be used. The sweetbriar and dog roses can be told apart from each other most easily because sweetbriar rose has stalked glands (hairs) on its sepals (Figure 1) and hairs and stalked glands underneath the leaves while dog rose does not. The leaves of sweetbriar rose have a sweet smell while dog rose leaves are not scented (Pavek and Skinner 2013). Other identification traits that are useful in the inland Pacific Northwest area are the pointedness of the leaves and flower color. Dog rose usually has pointier leaves and white flowers, while sweet briar rose has rounder leaves and pink flowers. It is worth noting that *Rosa obtusifolia*, another similar nonnative invasive rose in the *Caninae* section, is being found in the foothills of Boise, Idaho. It can be differentiated from sweet briar and dogrose because it has hairy - not glandular - foliage, leaflets are similar to sweetbriar and its flowers are usually white (B. Ertter, pers. com.). We should be aware of the potential presence of *R. obtusifolia* in our work in Oregon.

Growth Habit and Reproduction: Dog and sweetbriar roses have multiple stems (Figure 2) that arch as they grow, often giving the bushes a round or clumpy look when growing in the open (Figure 3). They are both large, long lived perennial shrubs growing over nine feet tall (Figure 4). Sweet briar rose has been documented to live up to 29 years (Zimmerman et al., 2010). Both species reproduce primarily by seed but can also spread vegetatively by suckering and layering. They both produce rose hips (Figure 5) which contain the achenes (or actual fruit). The hips persist on the plant overwinter and are fed on by many species of wildlife including birds and large mammals (Pavek and Skinner 2013). These roses are known to form large monotypic stands in the Inland Pacific Northwest (Figure 6) and Argentina (Zimmerman et al., 2012).

Factors Effecting Establishment (competitive ability, hardiness zones): These two rose species can exploit a variety of climates as evidenced by their wide distribution across North America (Maps 1 and 2), their native and invaded ranges (Maps 3 and 4). This is confirmed by Zimmerman et al. (2012) in their study of multiple populations of sweet briar across Europe and Argentina where they found that it grew well in sites with a wide variety of climatic conditions. Average annual moisture ranged between 22 and 51 inches. Mean temperatures ranged between 41 and 58 degrees Fahrenheit. The humid temperate climates of Patagonia had summer rains and rarely snowed. In contrast, the mountain temperate climates of Germany and Spain where snow and freezing temperatures are common. Elevations ranged from just above sea level to just over 5400 feet.

Sweetbriar rose is adapted to all soil types with moderate fertility and can tolerate moderately saline conditions (USDA NRCS, 2022). Sweetbriar rose tolerated a wide range of PH, nitrogen and phosphorous levels in the soils it grew in Europe and Argentina (Zimmerman et al., 2012).

Both invasive rose species have an array of reproductive strategies that enable them to invade without pollinators, as they can produce seeds in the same quantity and quality through wind-pollination, self-pollination, and apomixis. Such lack of dependence on pollinators and pollination for reproduction enhances their ability to colonize new areas (Mazzolari et al., 2017). The successful establishment of sweetbriar rose across climates and habitats is probably due to inherent phenotypic plasticity and ecological flexibility, as opposed to rapid adaptive evolutionary change (Zimmerman et al., 2012). Further, the fact they can also reproduce sexually as opportunities arise means they can outcross, enabling recombination and microevolution (Zimmerman, 2010).

Cavallero and Raffaele (2010) and references therein note the large amount of seeds produced (nearly 20,000 per square meter), high seed viability (~90%), longevity (up to 3 years in the soil) and the seeds' capacity for dormancy as factors affecting sweetbriar rose's capacity for invading new sites. USDA NRCS (2022) notes that the plants both have approximately 31,000 seeds per pound.

In Argentina, Zimmerman (2010) observed connected ramets over several meters, as well as impenetrable thickets, and posited that vegetative growth may play a dominant role in the reproductive success of sweet briar rose. Both dog and sweetbriar rose are known to sucker and readily resprout from the roots; stems can root and sprout when they touch the ground (Pavek 2012 1&2). However, interconnected individuals have not been noted in Oregon and the role of clonal growth in the US is unclear.

In Argentina, one time disturbance events like fire, logging and road construction, allowed sweetbriar rose to colonize sites after which the plant populations increased and created large monotypic stands (Zimmerman et al., 2012). USDA NRCS (2022) lists sweetbriar rose as fire tolerant and burning is discouraged as a control method due to the propensity of these species to resprout afterwards (DiTomaso et al., 2013). In Patagonia, Cavallero and Raffaele (2010) found that sweetbriar rose produced seed within two years of a fire as compared to native shrubs and trees which took four years post fire to begin producing seed.

The plant is well protected from vegetative grazing by its impressive thorns (Figure 3). However, large animals and birds are well documented to feed on the rose hips providing a vector for seed spread (Pavek 2012, 1&2), sometimes over long distances.

There are no known biological controls available for either dog or sweetbriar rose. Further, it is unlikely that biological control agents will be developed because of the commercial importance of roses and the numerous native rose species in the western United States (DiTomaso et al., 2013). Both roses are susceptible to attack by a gall-forming wasp (*Diplolepis rosae*) which, like the plant, is a European species. The galls do not cause any harm (Plavick, 2012)

Probability of Detection: The probability of detection for both species is good since they are such large plants. Also, in eastern Oregon they often invade open grasslands and pastures where you would not usually see large shrubs (Figure 7). However, in riparian areas or open forests they can initially blend into the background vegetation because they are similar to native roses in many ways. Once people are aware that they are not native plants and that the thorns and plant size are good identifiers they will be readily noted and identified.

Further, as populations of these plants colonize an area they can get so thick and thorny that they are impassable to people, livestock and wildlife (Figure 3 and Figure 4).

Distribution in Oregon: Both species are documented in multiple counties across the state (Maps 5 and 6). Across eastern Oregon they are found in disturbed areas, pastures, and rangelands as well as roadsides. They can also be found amongst native vegetation of riparian areas as well and occasionally in partial canopy forests. Maps and herbarium collections underrepresent their actual distributions (David Giblin, Pers. Comm., 2022). All counties of NE Oregon have at least one of the species present. Efforts are beginning now to identify them to species and map them so distribution will become clearer over time.

Environmental Impacts: Both dog and sweetbriar rose provide some forage for wildlife in the form of rosehips as well as providing some shelter and cover with their large stature. However, these

benefits are far outweighed by the problems they cause. Both species readily invade open dry rangeland and pastures. Left unmanaged, the rose bushes fill the area reducing habitat diversity and forage production for wildlife. Eventually stands can become so thick that they are impenetrable to all but the smallest creatures. In natural rangelands, invasion changes fundamental habitat structure - changing what were grasslands into monotypic shrublands. In Hells Canyon, sweetbriar rose is documented to be establishing itself in native grasslands that are in good condition and with no disturbance event apparent. While these two roses can also be found as a component of riparian and forest types, they have not been documented to dominate in those habitat types.

Economic Impacts (+/-): Invasion of rangelands by rose bushes reduces forage for livestock. Control costs are high since the roses are very hard to kill, often taking repeated treatments, and they are tough to handle due to their size and thorns. Increased effort is required to move around the rose bushes also adds to treatment costs.

Both roses are available in online nurseries and have been used as rootstock.

Control: Dog and sweetbriar rose species are very hard to kill due to their size and thorns. Manual removal with machinery is often used as an initial treatment so the plant can be more easily reached and treated. Foliar herbicide applications must get complete coverage of the plant or the untreated branches will resprout. Basal bark treatments can be done in winter and be effective. Both species are sensitive to multiple herbicide types. Some of the more common treatments include picloram, aminopyralid, triclopyr, dicamba, metsulfuron, sometimes in various combinations with 2,4-D and each other. Imazapyr, glyphosate, hexazinone and tebuthiuron are also used. See the Weed Report for sweetbriar, dog and multiflora roses in Weed Control in Natural Areas in the Western United States (DiTomaso et al., 2013) for an in-depth description of treatment options.

Noxious Weed Qualitative Risk Assessment 3.8
Oregon Department of Agriculture

Common Name: sweetbriar and dog rose
Scientific Name: *rosa rubiginosa* and *rosa canina*
Family: *Rosaceae*

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: **53** Risk Category: **B**

GEOGRAPHICAL INFORMATION

- 1) **5** **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: Wide climatic tolerance
- 2) **4** **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: Invasiveness in western Oregon not noted by staff.
- 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:
- 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:

BIOLOGICAL INFORMATION

- 5) **4** **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:

- 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:

- 7) **4** **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:

- 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:

9) 3

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: Both species sold by online nurseries

IMPACT INFORMATION

10) 6

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:

11) 4

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:

- 12) **3**
- 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:

CONTROL INFORMATION

- 13) **3**
- 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:

- 14) **4**
- 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:

Category Scores:

14 Geographic score (Add scores 1-4)

13 Biological Score (Add lines 5-9)

19 Impact Score (Add lines 10-12)

7 Control Score (Add Lines 13-14)

53 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

Oregon Department of Agriculture
Noxious Weed Rating System

Common Name: sweet briar and dog rose

Scientific Name: *rosa rubiginosa* and *rosa canina*

Point Total: **14** 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

14 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 2/1/22 V3.9

References:

Cavallero L. and E. Raffaele. 2010. Fire Enhances the 'Competition-free' Space of an Invader Shrub: *Rosa rubiginosa* in Northwestern Patagonia. *Biological Invasions* (2010) 12:3395–3404.

DiTomaso, J.M., G.B. Kyser et al., 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California. 544 pp.

Fougère-Danezan M., S. Joly, A. Bruneau, X. Gao, L. Zhang. 2015. Phylogeny and biogeography of wild roses with specific attention to polyploids, *Annals of Botany*, Volume 115, Issue 2, February 2015, Pages 275–291.

Ertter, Barbara. Research Associate with The College of Idaho and Boise State University and co-author of *Rosa* for *Flora of North America*. Personal communication February 2022

Giblin, David Ph.D., Collections Manager and Research Botanist, University of Washington Herbarium (WTU). Personal Communications, February 2022.

Lewis, W.H., Barbara Ertter, and Anne Bruneau. 2020. *Rosa*, in *Flora of North America*, Voln 9 P. 75. Accessed online Feb 1, 2022 @ <http://floranorthamerica.org/Rosa>.

Mazzolari A.C., H.J. Marrero, and D.P. Va'zquez. 2017. Potential Contribution to the Invasion Process of Different Reproductive Strategies of Two Invasive Roses in *Biol Invasions* (2017) 19:615–623.

Pavek, P.L.S., 2012 -1. Plant guide for sweetbriar rose (*Rosa rubiginosa* L.). USDA-Natural Resources Conservation Service, Pullman, WA.

Pavek, P.L.S., 2012-2. Plant guide for dog rose (*Rosa canina* L.). USDA-Natural Resources Conservation Service, Pullman, WA.

Pamela L.S. Pavek and David M Skinner., 2013. *Roses of the Inland Pacific Northwest, Native and Invasive Species Identification, Biology and Control*. Plant Materials Technical Note No. 21, April 2013

Rose. Wikipediea, Wikimedia Foundation, Feb 1, 2022, en.wikipedia.org/wiki/Rose.

Royal Botanic Gardens Kew, *Plants of the World Online*. 2022. Available at: <https://powo.science.kew.org/results?q=Rosa%20canina>

USDA NRCS. 2022. The PLANTS database. Available at: <https://plants.sc.egov.usda.gov/home/plantProfile?symbol=RORU82> (accessed February 1, 2022).

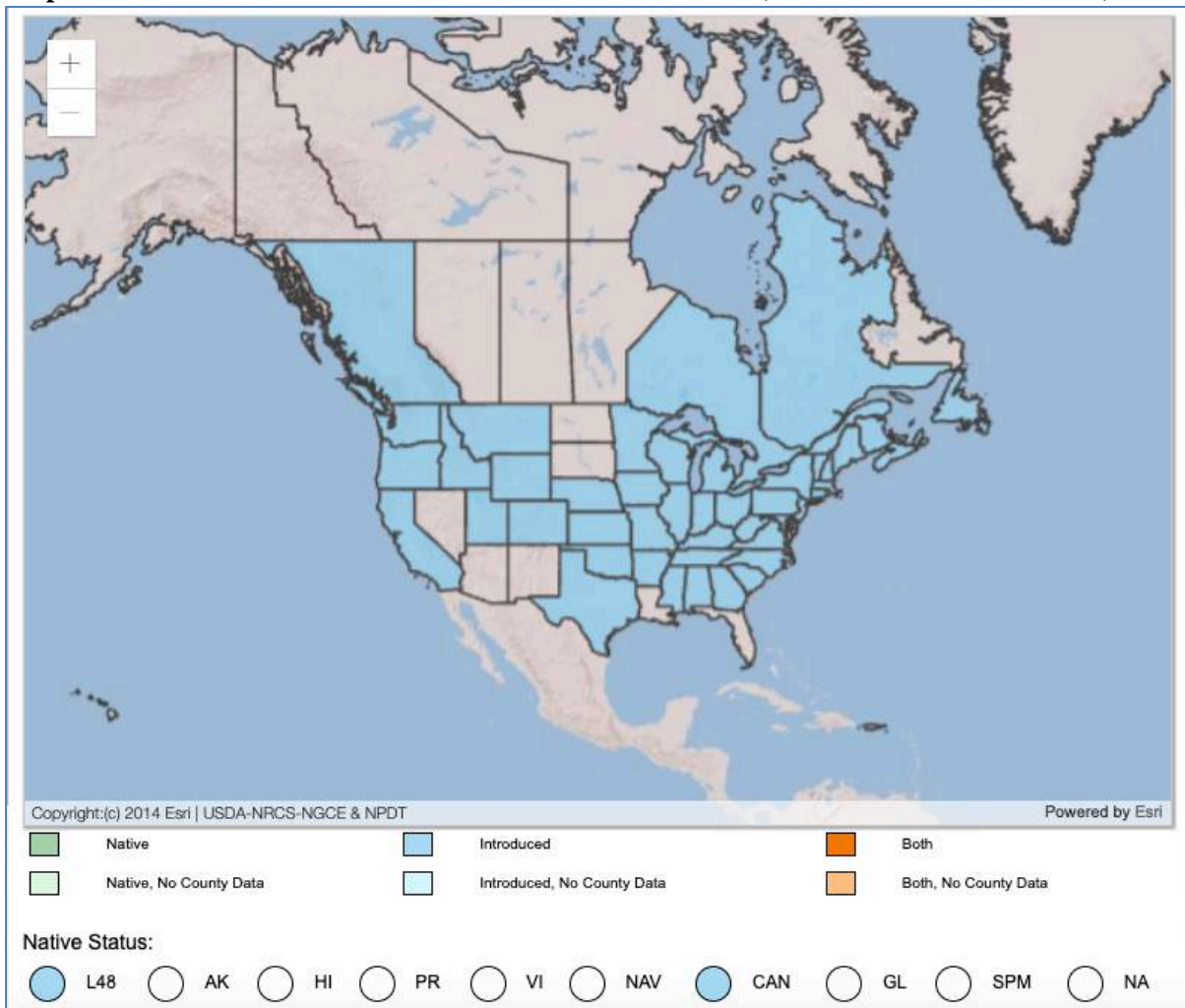
Werlemark G., H. Nybom, A. Olsson & M. Uggia. 2000. Variation and Inheritance in Hemisexual Dogroses, *Rosa* Section *Caninae*, *Biotechnology & Biotechnological Equipment*, 14:2, 28-31,

Zimmermann, H., H. Von Wehrden et al., 2012. Shrub management is the principal driver of differing population sizes between native and invasive populations of *Rosa rubiginosa* L. in *Biological Invasions* (2012) 14:2141–2157

Zimmermann Heike, C. M. Ritz, H. Hirsch, D. Renison, K. Wesche and I. Hensen. 2010. Highly Reduced Genetic Diversity of *Rosa rubiginosa* L. Populations in the Invasive Range. *International Journal of Plant Sciences*, Volume 171, Number 4, May 2010.

Attachments/Figures

Map 1: Known distribution of sweetbriar rose in North America (USDA Plants database, 2022)



Map 2: Known distribution of dog rose in North America (USDA Plants database, 2022)

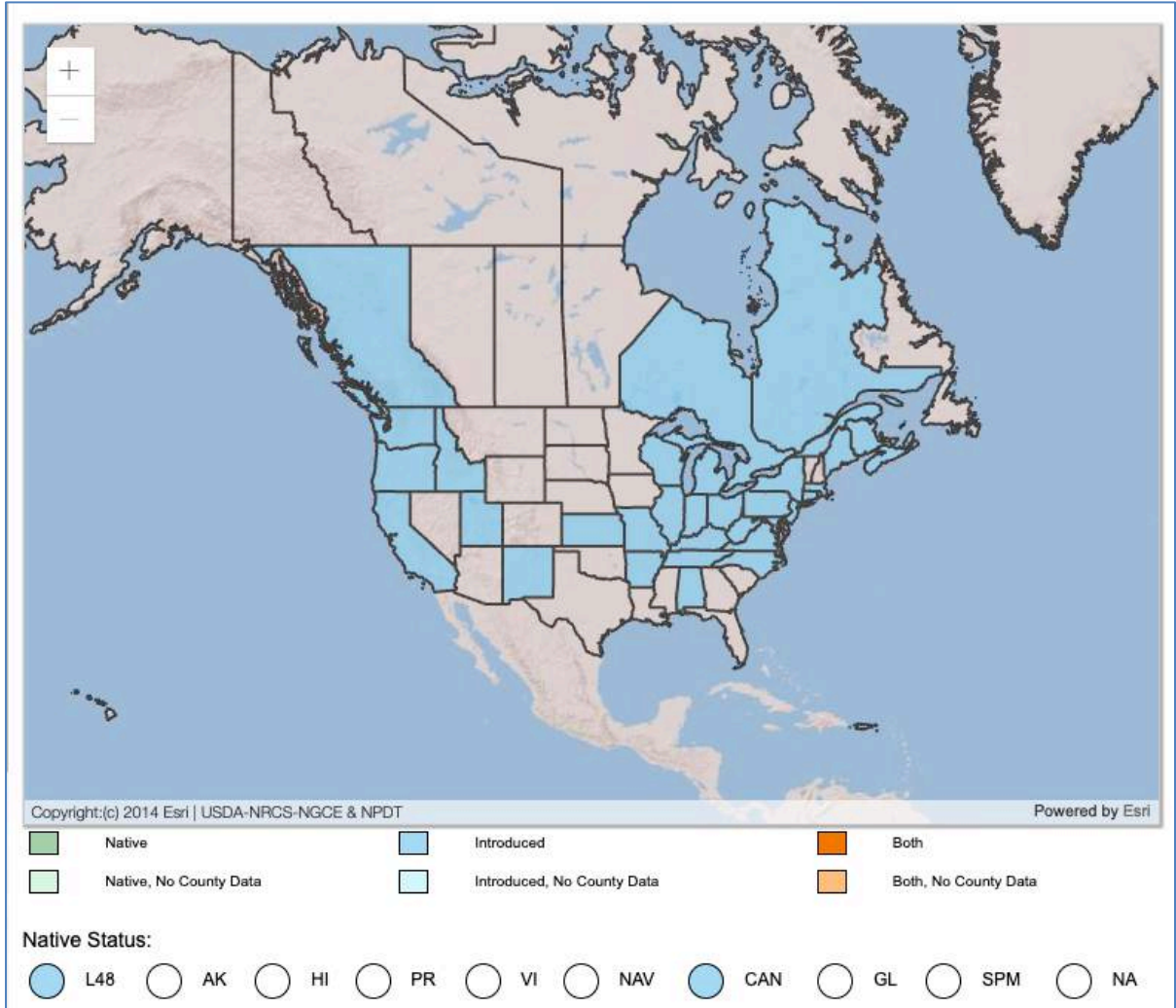
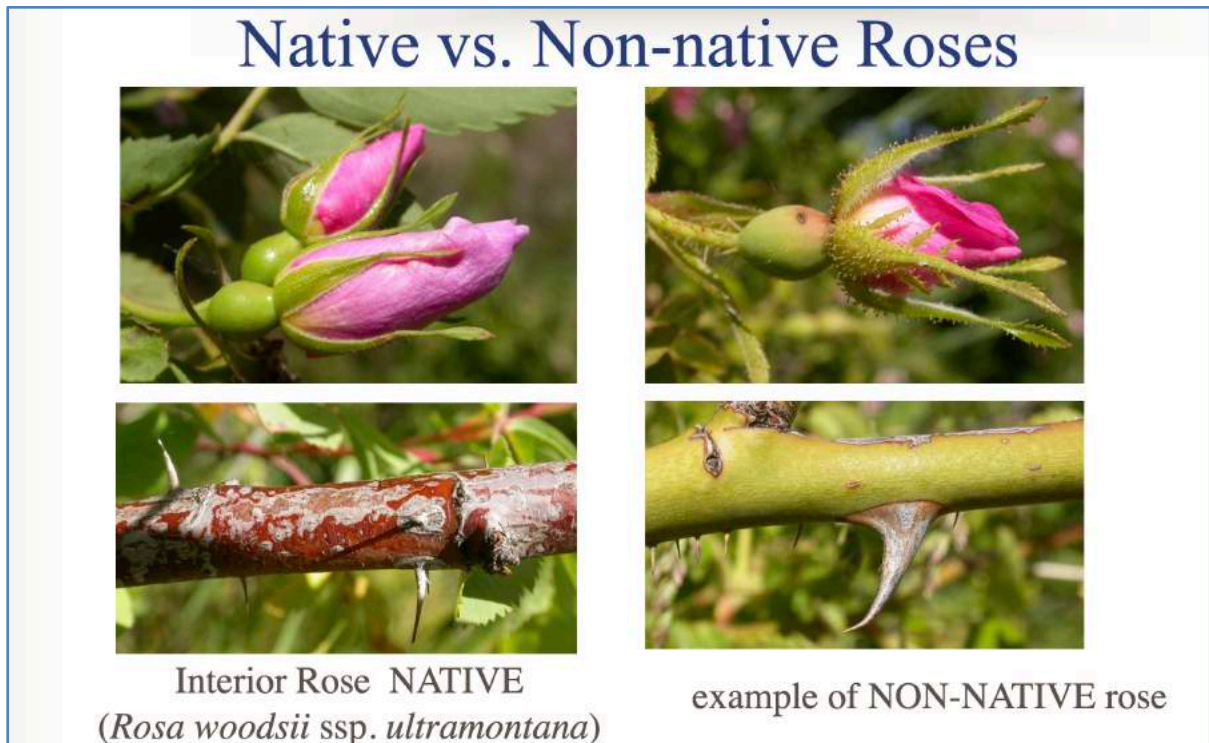
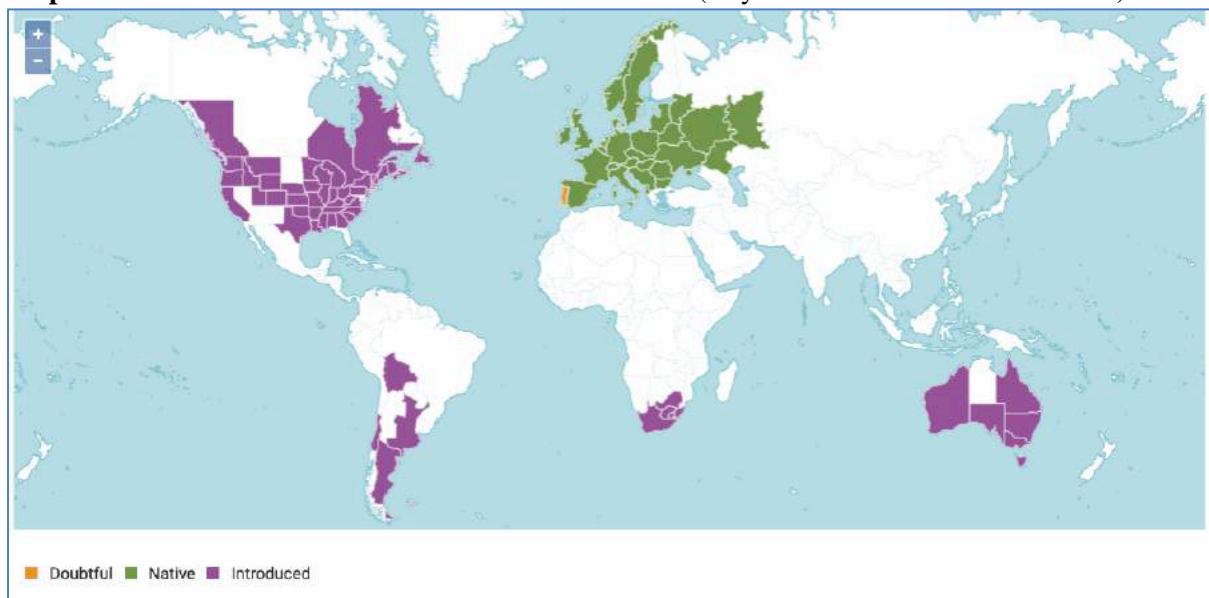


Figure 1: Photographs show examples of the thorns and sepal types of native and nonnative roses. Note the smooth edge of the sepals (top left) and the diminutive thorns (bottom left) of the native. Compare to the appendages on the sepal edges (top right) and the stout decurved thorns (bottom right) of the nonnative. Also note the glandular tipped hairs on the sepals of the nonnative rose which identify it as sweetbriar rose. Dog rose sepals would also have appendages on the edges, but they would be hairless. Photographs courtesy of Barbara Ertter, 2022.



Map 3: Known distribution of sweetbriar rose Worldwide (Royal Botanic Gardens Kew. 2022)



Map 4: Known distribution of dog rose Worldwide (Royal Botanic Gardens Kew. 2022)

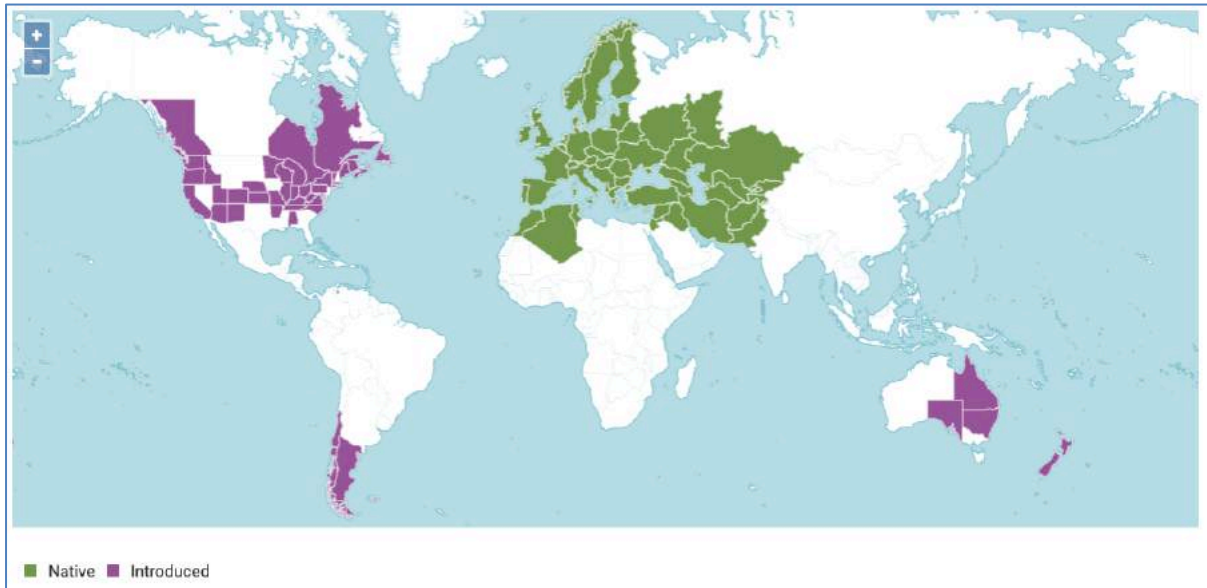


Figure 2: The multiple stems of one dog rose bush. Note multiple ages and some dead stems being replaced by live stems illustrating the ability of the plant to sprout from roots.



Figure 3: Dog rose in Malheur County showing the arching stems and round shape common to dog and sweetbriar roses when grown in the open. Note the two smaller dog rose bushes growing behind the large one.



Figure 4: Photograph illustrates the height of sweetbriar and dog rose shown here growing together. Botanist Paula Brooks (blue hat) from the Umatilla National Forest trains staff from Umatilla County and the Confederated Tribes of the Umatilla Indian Reservation in identification of roses.



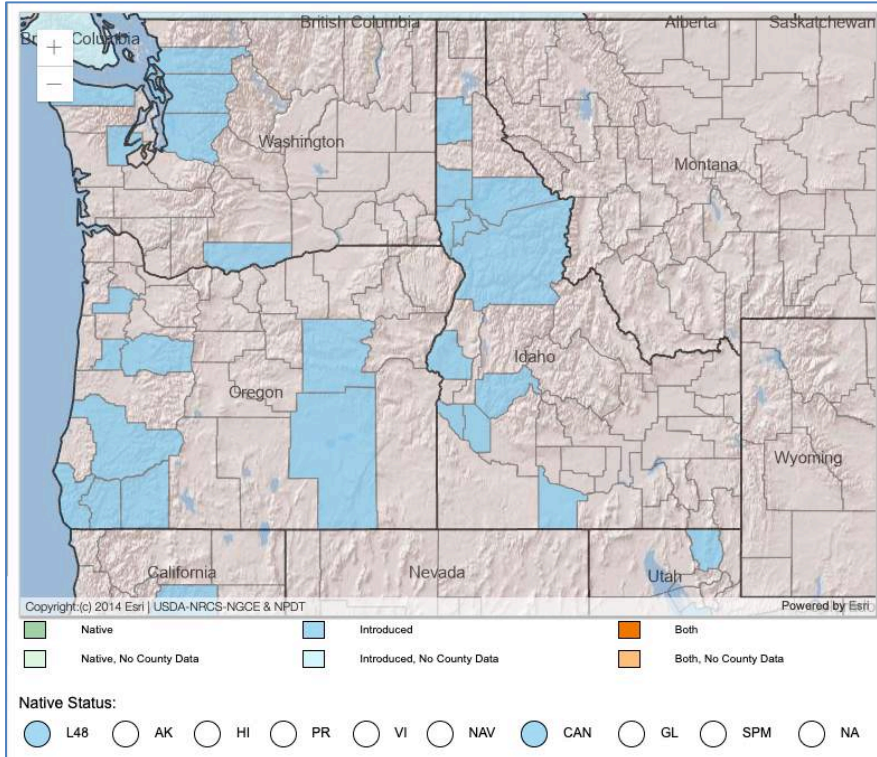
Figure 5: Photograph shows the rose hips of dog rose.



Figure 6: This photo from Umatilla County illustrates the ability of rose brush to create thick monotypic patches. Almost all the foreground shrubs are one of the two roses, the others are Armenian Blackberry. Note how tightly packed some of the patch is and the smaller shrubs in the interspaces as you climb the hill. The upper darker green vegetation on the steeper slopes are native shrubs, not roses.



Map 5: Known distribution of dog rose in Oregon and the Pacific Northwest (USDA Plants database, 2022).



Map 6: Known distribution of sweetbriar rose in Oregon and the Pacific Northwest (USDA Plants database, 2022).

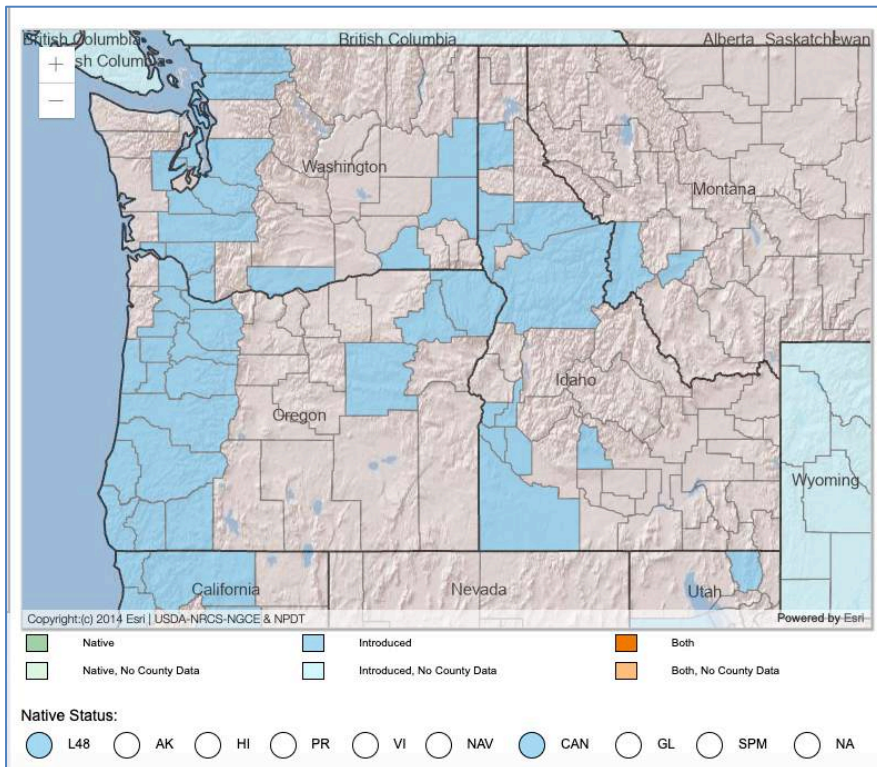


Figure 7: Photo shows dog rose invading a hillside in Wheeler County Oregon, the round bushes on the hillside are the dog rose. Photo by Tim Butler 2020.

