Japanese knotweed (*Fallopia japonica* (Houtt.) R. Decr. or *Polygonum cuspidatum* Sieb. & Zucc.)

Giant knotweed (*Fallopia sachalinensis* (F. Schmidt ex Maxim.) R. Decr. or *Polygonum sachalinense* F. Schmidt ex Maxim.)

Bohemian knotweed *(Fallopia* X *bohemica* (Chrtek & Chrtková) J. P. Bailey or *Polygonum* ×*bohemicum* (J. Chrtek & Chrtkovß) Zika & Jacobson [cuspidatum x sachalinense])

Family: Polygonaceae

Fallopia japonica other synonyms: *Pleuropterus cuspidatus* (Sieb. & Zucc.) Moldenke, *P. zuccarinii* (Small) Small, *Polygonum cuspidatum* Sieb. & Zucc. var. *compactum* (Hook. f.) Bailey, *P. zuccarinii* Small, *Reynoutria japonica* Houtt.
Other common names: Japanese bamboo, fleeceflower, Mexican bamboo

Fallopia sachalinensis other synonyms: *Reynoutria sachalinensis* (F. Schmidt ex Maxim.) Nakai
Other common names: none

Fallopia X *bohemica* other synonyms: none
Other common names: none

Description
Japanese knotweed is a perennial with long creeping rhizomes. Stems are stout, hollow reddish-brown, 4 to 9 feet tall, and swollen at the nodes. Twigs often zigzag slightly from node to node. Leaves are alternate, short-petioled, broadly ovate with more or less truncate bases and acuminate tips, and 2 to 6 inches long. Rhizomes are thick, extensive, 5-6 m long, and store large quantities of carbohydrates. Plants are dioecious with male and female flowers on separate plants. The inflorescences are branched, open, and lax, with numerous flowers (ca. 2 mm long). This species is pollinated by insects (Whitson et al. 2000).
All other native species of *Polygonum* in Alaska are considerably smaller and without broad leaves. Giant knotweed (*P. sachalinense*) or hybrids between Japanese and giant knotweeds (*P. bohemicum*) may also be present in Alaska. Giant knotweed has more heart-shaped leaf bases and less tapered tips than Japanese knotweed (Zika and Jacobson 2003).

Japanese knotweed flowering stem

Ecological Impact
Impact on community composition, structure, and interactions: Japanese knotweed forms single-species stands, reducing of biodiversity through outshading native vegetation. This species clogs waterways and lowers the quality of habitat for wildlife and fish. It reduces the food supply for juvenile salmon in the spring. Japanese knotweed hybridizes with the introduced giant knotweed, *Polygonum sachalinense* (Saiger 1991).

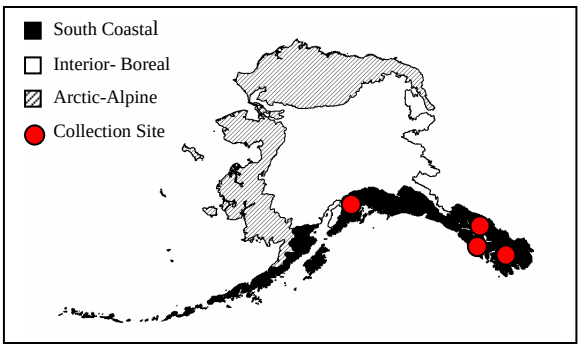
Impact on ecosystem process: There is an increased risk of soil erosion due to the presence of this species. Dead stems and leaf litter decompose very slowly and form a deep organic layer, which prevents native seeds from germinating, thus altering the natural succession of native plant species. During dormant periods, dried stems and leaves and can create a fire hazard.

Biology and Invasive Potential

Reproductive potential: Reproduction is primarily by vegetative regeneration of rhizomes and fresh stems. Very small fragments of rhizome (as little as 0.7 grams) can produce a new plant. Seed production in Britain varies from none when fertile male plants are rare to several hundred seeds nearer to sources of *F. baldschuanica* and *F. sachalinensis* (Beerling et. al. 1994). No systematic study of the seed longevity has been undertaken, but seed stored at room temperature, retained viability for four years.
Role of disturbance in establishment: Japanese knotweed can establish in native habitats with little or no observable disturbance.
Potential for long-distance dispersal: Plant fragments washed downstream are capable of producing new colonies. Example of dispersal across marine waters has also been reported (Beerling et. al. 1994). Fruits disperse primarily with wind.
Potential to be spread by human activity: Japanese knotweed has been planted as an ornamental in Southeast Alaska and in the Anchorage area and commonly escapes from gardens. Additionally, transportation of soil containing rhizome fragments on construction/maintenance equipment is possible.
Germination requirements: Germination rates are high either after 5 months storage at room temperature, or 3 months at 2-4°C (36-40°F).
Growth requirements: Japanese knotweed has been observed growing in a variety of soil types, including silt, loam, and sand, with pH levels ranging from 4.5 to 7.4. This species requires high light environments and can tolerate high temperatures, salinity, and drought (Saiger 1991).
Congeneric weeds: *Polygonum perfoliatum* L., *P. polystachyum* Wallich ex Meisn., and *P. sachalinense* F. Schmidt ex Maxim. are declared noxious in a number of American states (USDA, NRSC 2006). Also *Polygonum arenastrum* Jord. ex Boreau, *P. caespitosum* Blume, *P. convolvulus* L., *P. persicaria* L., *P. lapathifolium* L., *P. orientale* L., and *P. aviculare* L. are listed as a weeds in the PLANTS Database (USDA, NRSC 2006). A number of *Polygonum species* native to North America have a weedy habit and are listed as noxious weeds in some of the American states. Although the latest taxonomy considers these species as members of three different genus: *Polygonum*, *Fallopia* and *Persicaria* (FNA 1993+), they are closely related taxa and can be considered as congeneric weeds.
Listing: Polygonum cuspidatum is declared Noxious in California (List B), Oregon (List B), and Washington (List C) (USDA 2002).

Distribution and Abundance

Japanese knotweed was introduced to North America in the late 1800's. It is now widely found in at least 42 states in the United States, and most Canadian provinces. In Alaska it is invasive plant with established infestations in the Tongass National Forest. This species is often found near water sources, such as along streams and rivers, in waste places, utility rights-of-way, neglected gardens, and around old homesites. In Europe, the northern limit of distribution corresponds with the boundary of not less than 120 frost-free days (Beerling et. al. 1994).
Native and current distribution: A native of Japan, Northern China, Taiwan, and Korea, it is now a serious invasive plant in Europe, the United Kingdom, North America, and New Zealand.



Distribution of Japanese knotweed in Alaska

Management

Control methods are expensive and extremely labor intensive. Grubbing and hand pulling are effective for small initial populations. Mechanical methods followed by herbicide treatments will provide some control in infested areas. The species requires a number of herbicide treatments (4 or more time per season) over several years before it is completely eradicated. Monitoring of the treated areas for at least one growing season after treatment is recommended. Research has only recently begun on biological control.

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