Himalayan knotweed

Persicaria wallichii Greuter & Burdet (*Polygonum polystachyum* Meisner)

Synonyms: *Aconogonon polystachyum* (Wallich ex Meisner) Haraldson, *A. polystachyum* (Wallich ex Meisner) M. Král, *Polygonum polystachyum* Wallich ex Meisner, *Pleuropteropyrum polystachyum* (Wallich ex Meisner) Munshi & G. N. Javied, *Reynoutria polystachya* (Wallich ex Meisner) Moldenke, *Rubrivena polystachya* (Wallich ex Meisner) M. Král
Other common names: Kashmir plume, cultivated knotweed, bell-shaped knotweed
Family: Polygonaceae

Invasiveness Rank: **80** The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description

Himalayan knotweed is a perennial plant that grows 60 to 200 cm tall from creeping rhizomes. Stems are numerous, glabrous to densely hairy, ribbed, red-brown, erect, and branching. Basal leaves are absent. Stipules are fused around the stems to form sheaths that are red-brown, membranous, and 10 to 40 mm long. Petioles are 3 to 20 mm long. Leaves are alternate, green, lanceolate, 9 to 22 cm long, and 2.8 to 7.8 cm wide with flat or heart-shaped bases, long-pointed tips, and slightly hairy margins. Upper leaf surfaces are glabrous or hairy, and lower leaf surfaces are hairy at least on the margins and veins. Panicles are wide, spreading, 40 to 110 mm long, and 10 to 55 mm wide. Flowers are white to pink, fragrant, and 3 to 5 mm long. Tepals are oblong to obovate and 2.2 to 3.8 mm long. They lack wings or keels. Seeds are brown, 2.1 to 2.5 mm long, and 1.3 to 1.8 mm wide (Hinds and Freeman 2005, Bartoszek 2006, Wilson 2007, Klinkenberg 2010).

Lanceolate leaves with long-pointed tips on *Persicaria wallichii* Greuter & Burdet. Photo by F. Vincentz.

Flowers and foliage of *Persicaria wallichii* Greuter & Burdet in Metlakatla, AK. Photo by G. Winter.

Similar species: Himalayan knotweed is similar in appearance to three closely related, non-native species: giant knotweed (*Fallopia sachalinensis*), Japanese knotweed (*F. japonica*), and Bohemian knotweed (*F.* × *bohemica*). These *Fallopia* species can be distinguished from Himalayan knotweed by the presence of wings or keels on the tepals, green-white to white flowers, ovate leaves with tapered or abrupt tips, and mottled, purple-brown stems (Hinds and Freeman 2005, Wilson 2007). Unlike Himalayan knotweed, giant knotweed has leaves that are often 20 to 40 cm long. Japanese knotweed and Bohemian knotweed have few or no hairs along the leaf margins or on the veins on the leaf undersides (Wilson

2007). Himalayan knotweed can also be confused with Alaska wild-rhubarb (*Aconogonon alaskanum*), which is native to Alaska. Unlike Himalayan knotweed, Alaska wild-rhubarb has petioles that are 0.8 to 3.5 mm long, inflorescences that are 0 to 4 cm long, and green-white to white flowers (Hinds and Freeman 2005).

Infestation of *Persicaria wallichii* Greuter & Burdet. in Ketchikan, AK. Photo by T. Wurtz.

Ecological Impact

Impact on community composition, structure, and interactions: Himalayan knotweed forms dense stands and grows up to 2 m tall (DiTomaso and Healy 2007, Klinkenberg 2010), indicating that it can create new tall forb layers and reduce the density of or eliminate underlying layers. This species has large leaves and produces thick foliage, which outshades underlying vegetation (WSDA 2008) and displaces native species (DiTomaso and Healy 2007). This species can limit the establishment of trees (WSDA 2008). Himalayan knotweed can reduce the quality of fish and wildlife habitat in riparian areas. Infestations may reduce insect populations that provide food sources to salmon (WSDA 2008).

Impact on ecosystem processes: Himalayan knotweed reduces the availability of nutrients in the soil. It competes with trees and can reduce shade along rivers and streams by displacing native, woody species (WSDA 2008). Infestations produce dense mats of leaf litter that prevent the germination of native species (Wilson 2007).

Biology and Invasive Potential

Reproductive potential: Himalayan knotweed reproduces sexually by seeds and vegetatively from extensive rhizomes. However, seed production is rare in California, and populations in British Columbia appear to be sterile (DiTomaso and Healy 2007, Klinkenberg 2010). The amount of time seeds remain viable in the soil is unknown.

Role of disturbance in establishment: Himalayan knotweed grows best in unshaded areas (WSDA 2008) and seedlings may not survive in shaded areas. This species grows in moist, disturbed sites, roadsides, fields, and waste areas in North America (Hinds and Freeman 2005, DiTomaso and Healy 2010, Klinkenberg 2010). In Poland, it has established only in anthropogenically disturbed areas (Bartoszek 2006). However, it can also establish in areas disturbed by river action or flooding in the Pacific Northwest (Washington NWCB 2004).

Potential for long-distance dispersal: Seeds are dispersed by wind. Rhizome and stem fragments are dispersed in waterways or by flooding (DiTomaso and Healy 2007).

Potential to be spread by human activity: Himalayan knotweed is grown as an ornamental plant in gardens, and it escapes cultivation (DiTomaso and Healy 2007). Alaskan populations have been associated with roadsides in Ketchikan and current and historic residences on Annette Island (AKEPIC 2011).

Germination requirements: The germination requirements of Himalayan knotweed are largely unknown.

Growth requirements: Shade reduces the growth of Himalayan knotweed (WSDA 2008). This species tolerates a variety of soil types, including loam, sand, gravel, and coarse rock, with pH up to 7.4 (Wilson 2007).

Congeneric weeds: Spotted ladysthumb (*Persicaria maculosa*) and curlytop knotweed (*P. lapathifolia*) are known to occur as non-native weeds in Alaska with invasiveness ranks of 47 (AKEPIC 2011). Spotted ladysthumb is considered a noxious weed in Alberta, Manitoba, and Minnesota, and both species are considered noxious weeds in Quebec (Invaders 2011).

Legal Listings

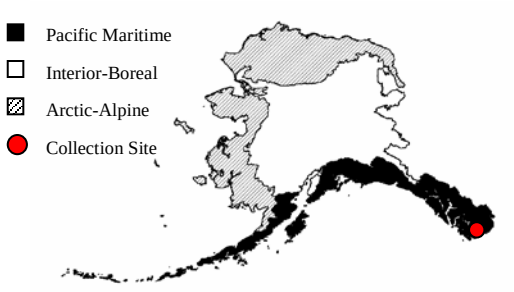
- ☐ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☒ Listed noxious by other states (CA, OR, WA)
- ☐ Federal noxious weed
- ☐ Listed noxious in Canada or other countries

Distribution and Abundance

Himalayan knotweed is grown as an ornamental plant in

gardens (Hinds and Freeman 2005) and has been found growing on roadsides and in residential areas in Southeast Alaska (AKEPIC 2011). It grows in moist, disturbed areas, marshes, and riparian communities in North America (Hinds and Freeman 2005, DiTomaso and Healy 2007).

Native and current distribution: Himalayan knotweed is native to central and eastern Asia (DiTomaso and Healy 2007, eFloras 2008). It has been introduced to North America, Europe, and New Zealand (Hinds and Freeman 2005, Bartoszek et al. 2006, Landcare Research 2011). This species grows in California, British Columbia, Massachusetts, Montana, Nova Scotia, Oregon, and Washington (USDA 2011). Himalayan knotweed has been documented from Ketchikan and Metlakatla in the Pacific Maritime ecogeographic region of Alaska (AKEPIC 2011).



Distribution of Himalayan knotweed in Alaska

Management

Plants can regenerate from rhizome fragments as short as 2 cm and from stem fragments (Washington NWCB 2004, DiTomaso and Healy 2007, Wilson 2007). Small populations of young plants can be removed by hand pulling or digging as long as all rhizomes are removed from the soil (DiTomaso and Healy 2007). Regularly repeated cutting can eventually eliminate small populations. Plants should be cut close to the ground twice per month from April to August and once per month from August until frost for at least two or three years (WSDA 2005). Populations can be covered with opaque material. The material should extend at least 8 m beyond the boundaries of the population and must remain in place for one year or more. Herbicide application is often the most effective method for long-term control (DiTomaso and Healy 2007). Foliar applications of glyphosate, imazapyr, glyphosate-imazapyr mixtures, or triclopyr applied in spring can efficiently control large populations. Glyphosate and triclopyr should be applied at 2% concentration. The addition of 0.5% non-ionic surfactant increases herbicide uptake. Applying 25% glyphosate or triclopyr to cut stems results in high plant mortality and largely avoids killing non-target species. Plants should be cut within three nodes of their bases in summer or fall, and herbicides should be applied directly to the cut portion. Stem injections have also proven effective (Washington NWCB 2004, WSDA 2005). Himalayan knotweed is intolerant of saline conditions and repeated watering with seawater can reduce or eliminate populations near coastal areas (Cheney 2007).

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