spotted ladysthumb
Persicaria maculosa Gray or *Polygonum persicaria* L.

curlytop knotweed
Persicaria lapathifolia (L.) Gray or *Polygonum lapathifolium* L.

Invasiveness Rank: **47** 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.

Family: Polygonaceae

Synonyms for *Persicaria maculosa*: *Persicaria fusiformis* (Greene) Greene, *P. maculata* (Raf.) S.F. Gray, *P. persicaria* (L.) Small, *P. ruderalis* (Salisb.) C.F. Reed, *P. ruderalis* var. *vulgaris* (Webb & Moq.) C.F. Reed, *P. vulgaris* Webb & Moq., *Polygonum dubium* Stein, *P. fusiforme* Greene, *P. minus* auct. non Huds., *P. minus* var. *subcontinuum* (Meisn.) Fern., *P. persicaria* var. *angustifolium* Beckh., *P. persicaria* var. *ruderale* (Salisb.) Meisn., *P. puritanorum* Fern.
Other common names: lady's-thumb, ladysthumb, ladysthumb smartweed, smartweed, spotted knotweed, spotted smartweed

Synonyms for *Persicaria lapathifolia*: *Persicaria incarnata* (Ell.) Small, *P. tomentosa* (Schrank) Bickn., *Polygonum incanum* F.W. Schmidt, *P. incarnatum* Ell., *P. lapathifolium* ssp. *pallidum* (With.) Fries, *P. lapathifolium* var. *incanum* (F.W. Schmidt) W.D.J. Koch, *P. lapathifolium* var. *nodosum* (Pers.) Small, *P. lapathifolium* var. *ovatum* A. Braun, *P. lapathifolium* var. *prostratum* C.F.H. Wimmer, *P. lapathifolium* var. *salicifolium* Sibthorp, *P. linicola* Sutulov, *P. nodosum* Pers., *P. oneillii* Brenckle, *P. pensylvanicum* ssp. *oneillii* (Brenckle) Hultén, *P. scabrum* Moench, *P. tomentosum* Schrank.
Other common names: curltop ladysthumb, curlytop smartweed, dock-leaf smartweed, nodding smartweed, pale smartweed, smartweed

Description
Spotted ladysthumb and curlytop knotweed are annual herbs with coarse, erect or ascending stems that grow 30 ½ to 91 cm tall. Stems are swollen at the nodes. Leaves are alternate, petiolate to subsessile, lanceolate to elliptic, 2 ½ to 15 cm long, and up to 4 cm wide. They often have a purplish triangular spot near the center. Nodes are surrounded by leaf sheaths, translucent membranes that wrap around the stem. Flowers are borne in terminal or sometimes axillary, cylindrical racemes. Tepals are fused for one-third of their length and have 4 or 5 lobes. Seeds are lens-shaped to three-angled, black, smooth, and shiny (Welsh 1974).

Persicaria maculosa Gray.

Similar species: Spotted ladysthumb can be distinguished from curlytop knotweed by the presence of stiff hairs that are up to 3.5 mm long on the margins of the leaf sheathes and erect spikes with deep pink flowers. Curlytop knotweed has almost entire margins on its leaf sheathes, arching or nodding inflorescences, and greenish to pale pink flowers. Pennsylvania smartweed (*Persicaria pensylvanica* / *Polygonum pensylvanicum*), which is native to Alaska and grows in the Pacific Maritime ecogeographic region, can be distinguished from spotted ladysthumb and curlytop knotweed by a combination of characteristics listed in Table 1 below.

Leaf sheath with hairs on *Persicaria maculosa* Gray. Photo by J. Altland.

Table 1. Comparison of three *Persicaria* species.

	spotted ladysthumb (*P. maculosa*)	**curlytop knotweed** (*P. lapathifolia*)	**Pennsylvania smartweed** (*P. pensylvanica*)
margins of leaf sheath	bristly-hairy	nearly glabrous	nearly glabrous
inflorescence	erect	arching or nodding	erect or, rarely, nodding
tepals	deep pink or, rarely, white; 2 mm long	greenish to pale pink; 2 mm long	light to deep pink; 4 to 5 mm long
peduncle	lacking glands	sessile glands	stalked glands

Flowering stem of *Persicaria lapathifolia* (L.) Gray. Photo by R. Bauer.

Ecological Impact

Impact on community composition, structure, and interactions: Both spotted ladysthumb and curlytop knotweed provide important cover for wildlife species. Seeds of both species are important food sources for many birds and mammals (DiTomaso and Healy 2003). Flowers are frequently visited by insects (Simmons 1945a, Gubanov et al. 2003). Hybrids of *Persicaria maculosa* and *P. lapathifolia* have been recorded (Simmons 1945a, b).

Impact on ecosystem processes: Stands spotted ladysthumb and curlytop knotweed can slow water flow in canals and streams (DiTomaso and Healy 2003).

Biology and Invasive Potential

Reproductive potential: Spotted ladysthumb and curlytop knotweed reproduce entirely by seeds. Spotted ladysthumb can produce up to 1,550 seeds per plant in one season; curlytop knotweed is capable of producing up to 19,300 seeds per plant in one season (Stevens 1932). Askew and Wilcut (2002) estimated that curlytop knotweed can produce 25,000 to 63,000 seeds per square meter.

Role of disturbance in establishment: These species readily colonize both anthropogenically and naturally disturbed areas (Simmonds 1945a, b).

Potential for long-distance dispersal: Seeds can be dispersed by birds and mammals after being ingested. They can be transported in mud stuck to the feet of birds and mammals. Seeds can float for one day and can be dispersed by irrigation water, rain, streams, and rivers (Simmonds 1945a, b).

Potential to be spread by human activity: Seeds can survive passing through the digestive tracts of domesticated mammals and birds. Wet seeds can stick to clothes, animal fur, or agricultural equipment (Simmonds 1945a, b, DiTomaso and Healy 2003). Seeds can contaminate commercial seed (Dorph-Petersen 1925) or soil (Hodkinson and Thompson 1997).

Germination requirements: Seeds possess innate dormancy and require a cold, moist period before they can germinate (Ransom 1935). Most seeds germinate in spring. The optimum temperature for germination is 20°C. Moisture and light do not appear to be critical for seeds to germinate (Bouwmeester and Karssen 1992).

Growth requirements: Both species inhabit an extremely broad range of habitats, from moderate shade to full sun, flooded areas to dry areas, and fertile soils to nutrient-poor soils. (DiTomaso and Healy 2003, Heschel et al. 2004, USDA, NRCS 2006). These species are adapted to all types of soils, including sand, clay, peat, and river mud. They grow best in soils with pH levels between 4.0 and 8.5. Spotted ladysthumb can tolerate a slightly broader range of environmental conditions than curlytop knotweed (Sultan et al. 1998). Spotted ladysthumb requires 110 frost free days for successful growth and

reproduction. It can tolerate winter temperatures as low as 0°C (USDA, NRCS 2006).

Congeneric weeds: Prostrate knotweed (*Polygonum aviculare*), Asiatic tearthumb (*P. perfoliatum*), Himalayan knotweed (*P. polystachyum*), black bindweed (*Fallopia convolvulus* / *Polygonum convolvulus*), Japanese knotweed (*Fallopia japonica* / *Polygonum cuspidatum*), giant knotweed (*Fallopia sachalinensis* / *Polygonum sachalinense*), and Bohemian knotweed (*Fallopia ×bohemica* / *Polygonum ×bohemicum*) are considered noxious weeds in one or more states of the U.S. or provinces of Canada (USDA, NRSC 2006, Invaders 2010). A number of *Polygonum* species that are native to North America have weedy habits and are listed as noxious weeds in some states of the U.S. The species listed above are closely related taxa and can be considered congeneric weeds, although the latest taxonomy considers them to be members of three different genera: *Polygonum*, *Fallopia*, and *Persicaria* (FNA 1993+).

Legal Listings for spotted ladysthumb

- ☐ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☒ Listed noxious by other states (MN)
- ☐ Federal noxious weed
- ☒ Listed noxious in Canada or other countries (AB, MB, QC)

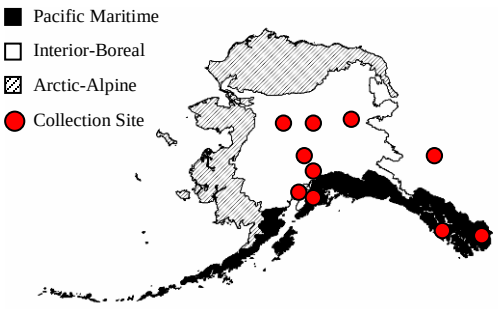
Legal Listings for curlytop knotweed

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

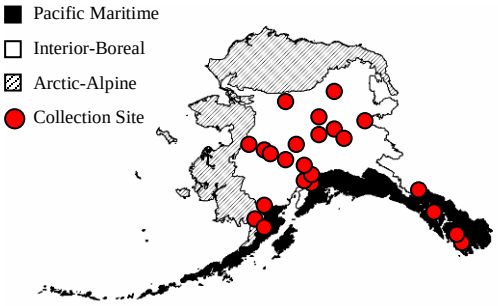
Distribution and abundance

Spotted ladysthumb and curlytop knotweed are plants of disturbed sites, roadsides, gardens, and waste areas. In their native ranges, these species typically grow on the edges of ponds, lakes, streams, and wet fields (DiTomaso and Healy 2003).

Native and current distribution: Spotted ladysthumb was probably introduced to North America from Europe. Curlytop knotweed is native to North America (ITIS 2006) but is considered non-native in Alaska (Hultén 1968, Welsh 1974). Spotted ladysthumb and curlytop knotweed are distributed throughout Europe to 70°N in Norway (Lid and Lid 1994) and Russia. They also grow in Asia, North Africa, North America, South America, Australia, and New Zealand (Hultén 1968). Spotted ladysthumb has been documented from the Pacific Maritime and Interior-Boreal ecogeographic regions of Alaska. Curlytop knotweed has been documented from all three ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2010, UAM 2010).



Distribution of spotted ladysthumb in Alaska



Distribution of curlytop knotweed in Alaska

Management

Mechanical methods, such as hand-pulling and mowing, can control populations of spotted ladysthumb and curlytop knotweed. Improving the drainage of the soil will discourage these weeds from reestablishing (DiTomaso and Healy 2003).

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