Japanese knotweed

***Polygonum cuspidatum* Siebold & Zucc.**

(synonyms: *Polygonum zuccarini* Small, *Fallopia japonica* Ronse Decraene, or *Reynoutria japonica* Houtt.)

and

Giant knotweed

***Polygonum sachalinense* F.W. Schmidt ex Maxim.**

[synonyms: *Fallopia sachalinensis* or *Reynoutria sachalinensis* (F. Schmidt ex Maxim) Nakai]

Buckwheat Family (Polygonaceae)

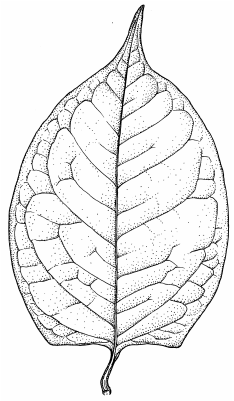
DESCRIPTION

Japanese knotweed and giant knotweed are herbaceous perennials that form large colonies of erect stems that can reach 9 feet in height. They spread by vigorous rhizomes (horizontal stems that grow just below the soil surface).

Japanese knotweed and giant knotweed are very similar in appearance and are known to hybridize. The best character for separating them is the shape of the leaf base, those of Japanese knotweed are truncate (squared-off) at the bottom, while those of giant knotweed are heart-shaped.

Height - Individual stems are 3–9 feet tall depending on the vigor of the colony.

Japanese knotweed with flower buds



P. cuspidatum

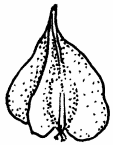
Stem - The hollow, bamboo-like stems are erect and unbranched or with a few branches toward the tip. Despite their size, knotweed stems are annual; they die back to the rhizome at the end of the growing season. New shoots emerge in April and grow rapidly; early in the season they can grow 3–4 inches per day.

Leaves - Leaves are alternate on the stem, simple, 4–6 inches long and almost as wide, and dark green. Japanese knotweed leaves are abruptly squared-off (truncate) at the base; those of giant knotweed have a heart-shaped base. Both narrow to a pointed tip.

Flowers - Both Japanese knotweed and giant knotweed have numerous small, greenish-white lowers that are produced in late summer. Japanese knotweed bears only male or female flowers on a given plant.

Giant knotweed blooms have both male and female parts in the same flower. However, appearances can be difficult to interpret as both the male and female flowers of Japanese knotweed have vestigial organs of the other sex present.

Fruit and seed - The seed (technically a fruit called an achene) of both knotweeds is shiny black, 3-angled, and about 1/6 inch long. It is enclosed in a winged calyx that contributes to its buoyancy. The seeds have no dormancy requirement and germinate readily.



winged calyx which encloses the fruit (achene) of *P. cuspidatum*

Roots - Roots are present along the rhizome and can extend quite deeply into the soil making knotweed effective in preventing erosion.

DISTRIBUTION AND HABITAT

Japanese knotweed is native to Japan; giant knotweed comes from Sakhalin Island in northern Japan. They were introduced into North America for ornamental use in the late 1800s. Japanese knotweed is now widely naturalized in Europe and North America. In the east it extends from Newfoundland to North Carolina. It is also widespread in the Midwest and in coastal areas of the Pacific Northwest. It is most commonly found lining the banks of creeks and rivers where it often forms an impenetrable wall of stems; it also occurs in wetlands, waste ground, and along roads and railroads. In Pennsylvania knotweed has also been extensively planted at strip mine reclamation sites.

EFFECTS OF INVASION

Dense stands of knotweed exclude other plant species leading to very limited biological diversity in infested sites.

REPRODUCTION AND METHODS OF DISPERSAL

Japanese knotweed and giant knotweed both spread vegetatively by the growth and fragmentation of rhizomes. Even a 1–2 inch-long piece of rhizome dislodged by flooding can initiate a new colony when it is deposited downstream. Knotweed also grows from seeds, which are produced in large numbers and dispersed by wind and water. Seed viability is high, and seed bank densities have been measured at 220–1758 seeds per square meter. Highest germination rates occur on exposed mineral soil.

CONTROL

Mechanical - Repeated cutting of the stems reduces vigor and with persistence might be sufficient to control small, isolated populations. Attempts to dig out the plants are doomed to fail because of the ability of even small segments of rhizome to resprout.

Chemical - Research conducted at Penn State for the National Park service resulted in a recommendation of a foliar spray of glyphosate plus sticker-spreader applied in early June and

again in late August of the same year at the rate of 4 lbs active ingredient per acre. A third application may be needed the following spring if significant regrowth occurs. Rapid establishment of alternative plant cover is an important aspect of control as knotweed seedlings do not compete well with other vegetation.

The British Nature Conservancy Council recommends cutting in late spring or summer followed by an application of glyphosate in the fall. At least two additional applications will be needed to control the regrowth.

Biological - No biological control options are currently available.

NATIVE ALTERNATIVES FOR REVEGETATION OF STREAM BANKS

The following species are suggested for establishing native plant cover after knotweed has been removed: ***shrubs*** - winterberry holly (*Ilex verticillata*), spicebush (*Lindera benzoin*), buttonbush (*Cephalanthus occidentalis*), silky willow (*Salix sericea*), pussy willow (*Salix discolor)*, American elderberry (*Sambucus canadensis*), alder (*Alnus serrulata* and *A. incana* ssp. *rugosa);* ***herbaceous species***- riverbank rye (*Elymus riparius*), wild-rye (*Elymus villosus*), big bluestem (*Andropogon gerardii*), switch grass (*Panicum virgatum*), wingstem (*Verbesina alternifolia*), joe-pye-weed (*Eupatorium fistulosum* and *E. maculatum*), boneset (*Eupatorium perfoliatum*).

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Internet resources – http://www.paflora.org, http://www.invasivespecies.gov, http://tncweeds.ucdavis.edu

Invasive species fact sheet prepared by:
Ann F. Rhoads and Timothy A. Block
Morris Arboretum of the University of Pennsylvania
100 Northwestern Ave., Philadelphia, PA 19118
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