Fallopia japonica

Taxon	Family / Order / Phylum
Fallopia japonica (Houtt.) Ronse Decraene var. *japonica* *Fallopia sachalinensis* (F. Schmidt) Ronse Decraene *Fallopia* ×*bohemica* (Chrtek & Chrtková) J. P. Bailey	Polygonaceae / Polygonales / Plantae

COMMON NAMES (English only)
Japanese knotweed s.l.

SYNONYMS
Of *Fallopia japonica* (Houtt.) Ronse Decraene var. *japonica*:
Reynoutria japonica Houtt.
Polygonum cuspidatum Sieb. & Zucc.
Pleuropterus cuspidatus (Siebold & Zucc.) H. Gross
Polygonum sieboldii Reinw. ex de Vries
Polygonum zuccarinii Small
Tiniaria cuspidata (Houtt.) Hedb.
Tiniaria japonica (Houtt.) Hedberg
Of *Fallopia sachalinensis* (F. Schmidt) Ronse Decraene:
Reynoutria sachalinensis (F. Schmidt) Nakai
Of *Fallopia* ×*bohemica* (Chrtek & Chrtková) J. P. Bailey
Reynoutria ×*bohemica* Chrtek & Chrtková

Inflorescence of the hybrid *Fallopia* × *bohemica*
Photo: Petr Pysek

SHORT DESCRIPTION
Herbaceous perennials with robust erect stems up to 4 m tall and extensive system of rhizomes, 15–20 m long, penetrating 2–3 m deep in soil. The invasive knotweeds in Europe include *Fallopia japonica* var. *japonica*, *F. sachalinensis*, and their hybrid, *F.* ×*bohemica*.

BIOLOGY/ECOLOGY

Dispersal mechanisms
Human-transported soil contaminated with rhizomes is the major dispersal mode. Rhizome fragments as small as 7 g fresh weight are able to regenerate, provided a node is present. The hybrid has better regeneration ability than both parents. Some clones of knotweeds can persist in localities for >130 years.

Reproduction
Knotweeds are functionally dioecious. Flowers are exclusively entomophilous. Only one *Fallopia japonica* var. *japonica* female clone has been introduced and spread over Europe, earning the nickname "world's largest female". The number of flowers per stem exceeds 190,000; they can be fertilized by the pollen of *F. sachalinensis*, resulting in *F.* ×*bohemica*, or by a congeneric climber *F. aubertii*, in which case only a low percentage are fertilized and seedling establishment is inefficient. When seed is produced, the winged achenes are dispersed by wind and water.

Known predators/herbivores
Palatable to sheep, donkeys, goats, cattle, and horses. House sparrows have been observed removing *F. japonica* achenes. The extrafloral nectaries present at the base of the leaves attract predatory ants. *Fallopia japonica* is a host to several fungal species. Although herbivorous insects feeding on the foliage of both *F. japonica* and *F. sachalinensi* in Japan can consume >40% of the total leaf area, invertebrate predators do not cause damage in the invaded range.

Resistant stages (seeds, spores etc.)

HABITAT

Native (EUNIS code)

H6: Recent volcanic features.

Habitat occupied in invaded range (EUNIS code)

E2: Mesic grasslands, E3: Seasonally wet and wet grasslands, F9: Riverine and fen scrubs, FA: Hedgerows, J6: Garrigue.

Habitat requirements

In its native range, *F. japonica* is a pioneer species on volcanic slopes. *Fallopia sachalinensis* occurs in tall-forb communities at forest edges, avalanche clearings, riverbanks and coastal cliffs, but also colonizes lava flows. Knotweeds invade disturbed habitats and thrive on a wide range of soils, with pH ranging from 3 to 8.

DISTRIBUTION

Native Range

Knotweeds are native to East Asia, *F. japonica* to Japan, Korea, Taiwan, and northern China, *F. sachalinensis* from Sakhalin Island southwards through Hokkaido to Honshu.

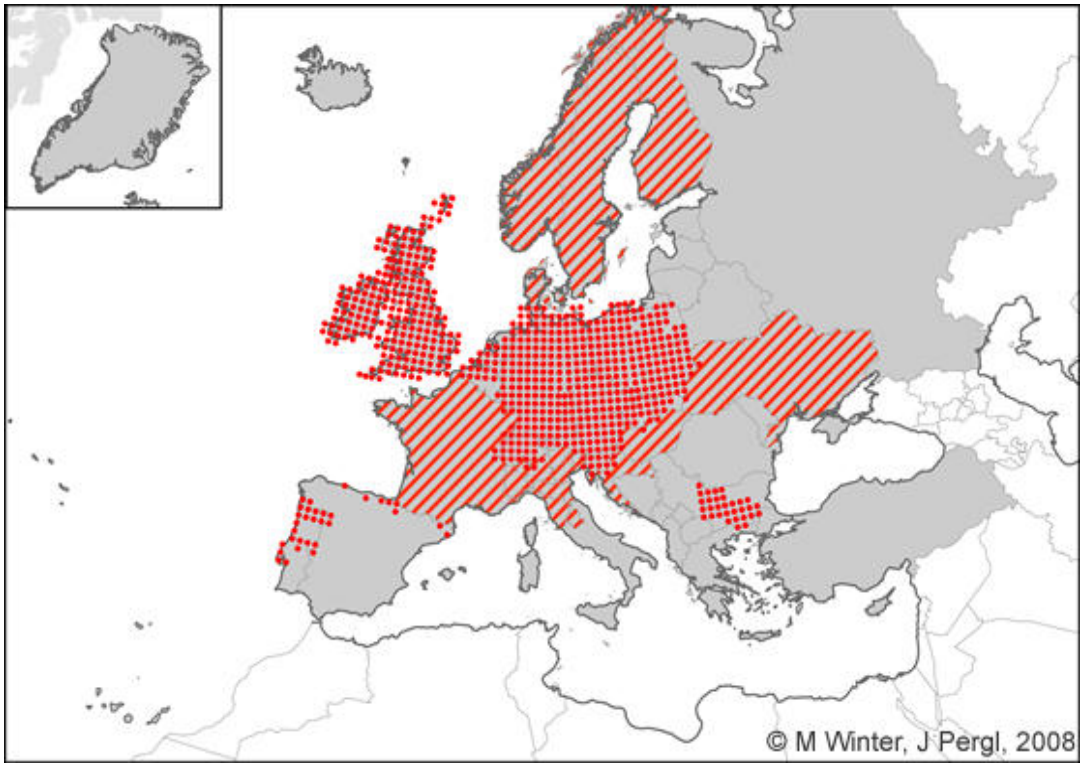
Known Introduced Range

Fallopia japonica is invasive in most European countries, Canada and USA, and reported from Australia and New Zealand. The distribution of *F. sachalinensis* in Europe is similar to that of *F. japonica* but it does not occur quite as far south. It is also reported from USA, Canada, New Zealand and naturalized in S Japan.

Trend

All three taxa are increasing. The hybrid is competitive and is spreading at a faster rate in Central Europe.

MAP (European distribution)



Legend

	Known in country		Known in CGRS square		Known in sea

INTRODUCTION PATHWAY

Fallopia japonica and *F. sachalinensis* were introduced into Europe as garden ornamentals in the 19th century and soon escaped from cultivation. Because of its showy blossoms, *F. japonica* became a popular plant in Victorian gardens of Europe, winning a gold medal in 1847 from the Society of Agriculture and Horticulture at Utrecht as the most

"interesting" plant of the year. The hybrid was not reported from Japan until 1997; this indicates that it resulted from hybridization in the invaded range.

IMPACT

Ecosystem Impact

Fallopia japonica damages native riparian communities by reducing light availability, through the alteration of the soil environment and through the release of allelochemicals. Soil K and Mn is greater under *F. japonica* than under native vegetation. *Fallopia japonica* decreases soil bulk density and increases organic matter content, water content and nutrient levels. It affects other trophic levels: the biomass of green frog *Rana clamitans* was found to be negatively related to *F. japonica* cover.

Health and Social Impact

Unknown.

Economic Impact

Prolific rhizome and shoot growth can damage foundations, walls, pavements, and drainage works, and causes flood hazards by increasing resistance to water flow and damaging flood prevention structures. Knotweeds are an excellent food source for honeybees. Young shoots are consumed in its native range and North America. Secondary compounds isolated from *F. japonica* include the anti-cancer phytoalexin resveratrol.

MANAGEMENT

Prevention

Plant debris should not be released in the wild.

Mechanical

The combination of digging the soil surface and spraying with glyphosate is the most efficient. *Fallopia sachalinensis* is the easiest to control of the three taxa, the hybrid is the most resistant.

Chemical

Biological

In the native range of Japan, the leaf-feeding chrysomelid beetle *Gallerucida nigromaculata* regulates *F. japonica* population growth, and is under consideration as a biocontrol agent in the United Kingdom and USA.

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