

JAPANESE KNOTWEED BIOLOGICAL CONTROL

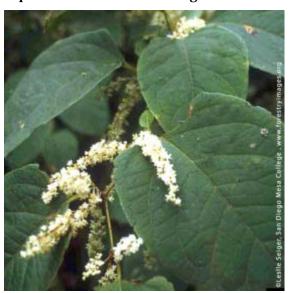
PROVIDING TECHNOLOGY FOR FOREST HEALTH PROTECTION

Japanese knotweed (Fallopia japonica) is native to Eastern Asia. It was introduced to the United Kingdom from Japan as an ornamental in 1825, and from there to North America in the late 1800s. Japanese knotweed is considered one of the most damaging weeds in the United Kingdom and one of the major invasive plant species in the temperate regions of North America. Japanese knotweed is spreading rapidly and most seriously in the eastern US, as far north as Nova Scotia, and as far south as Georgia and Louisiana; in the Pacific Northwest, Oregon and Washington are most heavily infested.



Nature of Ecological Damage

Japanese knotweed is a herbaceous perennial that can grow in a wide range of habitats but is most often found in riparian areas. The species forms monospecific thickets of plants 2 to 4 meters tall. In these areas, native vegetation is all but eliminated. In the Pacific Northwest the encroachment of Japanese knotweed is causing concern because it creates problems in salmon restoration efforts.



Agencies Whose Mandates are Compromised by the Plant

A preliminary survey identified the US Fish and Wildlife Service, the National Park Service, the Nature Conservancy, the Federal Highway Administration, the Oregon State Department of Agriculture, USDA Forest Service, Bureau of Land Management, and Washington State Noxious Weed Board as agencies with great concerns over their ability to manage or restore habitats infested by Japanese knotweed. These agencies are potential partners in the development of a viable biological control program.

Biology/Traditional Control

Japanese knotweed is insect pollinated and seeds are wind dispersed. However, in the US and Europ seeds are not the primary means of reproduction. Spread is

mostly by large rhizomes, which may reach a length of 10 to 25 meters. A small piece of rhizome can float down a river and begin to grow once it is deposited on land. It is a very fast grower that can reach a height of 4 meters and overtop native vegetation very quickly. Japanese knotweed is extremely difficult to control since herbicide use is restricted on its favored riparian habitats and any fragment of rhizome left in cleared land can regenerate a new plant.



Alternating heart-shaped leaves with sprays of minute flowers arising in the angle between the leaf and the stout stem.

The second year (2001) focused on surveys for natural enemies in Japan, prerelease field assessments, identification of native plants for host specificity tests, and development of a standardized monitoring protocol. Cooperative agreements between the Forest Service - FHTET and Cornell University - Biological Control of Non-**Indigenous Plant Species Program, and** between the Forest Service - FHTET and CABI – Bioscience were completed. The third (2002) and fourth (2003) years will focus on overseas exploration, host range testing, ecological impacts, and establishing laboratory colonies of candidate natural enemies in the United States and the United Kingdom.

Overview of Proposed Biological Control Program The scientific literature shows a considerable range of natural enemies inflicting damage, in some cases severe, to Asian populations.

A classical biological control project is being planned by the Forest Health Technology Enterprise Team, Cornell University, Commonwealth Agricultural Bureau International-Bioscience (CABI-Bioscience), Welsh Development Agency, the United Kingdom Environment Agency and various other European and US agencies. This collaboration will allow Japanese knotweed to be controlled in North America and the United Kingdom at a much lower cost.

This project will be the first biological control project against a weed target in the United Kingdom.

In 2000, the first year of a multi-year project focused on: (1) the establishment of sites to evaluate ecological impacts and to survey for native natural enemies of the weed in New York; (2) the development of better contacts with potential partners in various regions; and (3) the initiation of overseas investigations. Preliminary survey results were promising with four species of fungi and over ten species of arthropods (insects and mites) recorded in Japan.



Dense patch of Japanese Knotweed

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