

**DRAFT WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD
(November 2001)**

Scientific Name: *Hedera hibernica* 'Hibernica'
 Hedera helix 'Baltica'
 Hedera helix 'Pittsburgh'
 Hedera helix 'Star'

Common Name: English ivy

Family: Araliaceae

Legal Status: Proposed Class C

Description and Variation: English ivy is a woody evergreen perennial. The plant can grow as a woody vine (juvenile form) or a shrub (adult form). Vining stems can grow up to 99 feet. In its juvenile form, the plant produces adventitious roots that allow climbing stems to anchor to vertical surfaces. Adult branches extend away from the juvenile form's support and do not produce adventitious roots. Ivy leaves are alternate and leathery, with long petioles. On juvenile plants, leaves are deeply 3 to 5 lobed and 1.6 to 4 inches long and wide. Flowering stems have primarily un-lobed leaves that are ovate to rhombic. Young shoots and leaves are hairy, while older shoots and leaves are glabrous. English ivy only matures to produce flowers when it begins to grow vertically. The small (0.2 to 0.3 inch), bisexual, greenish-white flowers occur in umbrella-like clusters in the fall. The dark colored fruits (berry-like drupes) mature in the spring. Each fruit produces 4 to 5 seeds (Hitchcock 1973; Morisawa 1999; Reichard 2000; Swearingen 2000).

There are more than 400 different English ivy cultivars, which vary in leaf shape, size, color and habit (Sulgrove 1987b). Many cultivars are sold as ornamental plants. Murai (1999) evaluated the taxonomic identity of 58 invasive ivy populations in the Pacific Northwest. She found that 80 percent of the 119 samples were derived from *Hedera hibernica* 'Hibernica,' while 13 percent were from *H. helix* cultivars. Both *H. hibernica* 'Hibernica' and *H. helix* are commonly sold as English ivy in the Pacific Northwest. Murai also examined genetics and growth rates of potentially invasive *Hedera* taxa. Her findings indicated that *H. hibernica* 'Hibernica,' *H. helix* 'Baltica,' *H. helix* 'Pittsburgh,' and *H. helix* 'Star' have invasive potential and should be avoided as landscaping plants in the Pacific Northwest.

Economic Importance: *Beneficial:* Ivies are popular ornamental plants, since they are inexpensive and easy to grow. They are used as hardy groundcovers, as well as in topiaries, baskets and window boxes (Sulgrove 1987a). The American Ivy Society has worked on developing new ornamental ivies. By 1987, the Society had accumulated approximately 400 cultivars for its Ivy Research Center Collection (Sulgrove 1987b). While some publications have listed ivy for erosion control, the plant's shallow root system is actually ill-suited for this purpose (Parker 1996 cited in Murai 1999).

In addition to its use as an ornamental plant, poultices for cuts and sores are made from the leaves. Secondary leaf compounds may be natural product pesticides for insects and mollusks (Morisawa 1999).

Detrimental: English ivy can outcompete grasses, herbs, and trees, often reducing animal foraging habitat. Ivy inhibits regeneration of understory plants and also kills understory and overstory trees by shading them out. When it reaches the canopy, ivy can shade out deciduous foliage during summer months, suppressing the host tree. As the tree dies back, the open crown allows for additional ivy growth (Thomas 1980). In warm areas, English ivy can grow throughout the year, which probably allows it to outcompete native species that are dormant in the winter (Morisawa 1999; Thomas 1980). As an evergreen vine, English ivy can also add substantial weight to a tree; the estimated weight of ivy removed from a tree in Olympic National Park was 2100 pounds. The additional weight of the vine and associated water and/or ice may increase storm damage to trees (Reichard 2000; Swearingen 2000). This impact has been observed in trees infested with *Vitus* sp. (Siccama et al. 1976).

In addition to its competitive abilities, English ivy contains some compounds that are slightly toxic, including glycosides that can cause vomiting, diarrhea, nervous conditions, and dermatitis in sensitive individuals (Swearingen 2000).

Geographical Distribution: *Hedera* is native to the north temperate and subtropical zones of Europe and Asia (Jacobsen 1954). However, it has been widely introduced into temperate parts of the world (Lee and Richards 1991). In the U.S., English ivy occurs in at least 26 states, but it is primarily a problem in the coastal Pacific Northwest, California, and the eastern seaboard, from New York to Virginia (Reichard 2000; Swearingen 2000).

Habitat: English ivy is found extensively in landscaped areas. In the West, escaped populations are usually found in disturbed forests, from sea level to 3300 feet in elevation (Hickman 1993). *Hedera helix* grows well in many soil types. Once established, plants are drought tolerant (Morisawa 1999). While typically considered a shade plant, ivies can grow in shade and sun. In hardiness trials, the American Ivy Society planted 100 cultivars in southeast and southwest facing greenhouses. With extra water and fertilizer, the plants survived well under these conditions (Sulgrove 1987a).

History: Ivy has a long history as a garden plant. Theophrastus described several different ivies in his *Historia Plantarum* (ca. 314 B.C.). By the eighteenth century, ivy was becoming a popular ornamental plant in the United Kingdom. It was brought to North America by colonial settlers. The first record of ivy in the United States dates back to 1727 (Rose 1996 cited in Murai 1999). It has been cultivated in gardens, landscapes, and as house plants (Morisawa 1999). While the exact date of ivy introduction in the Pacific Northwest is not known, populations date back to at least the 1890's (Murai 1999).

Growth and Development: All *Hedera* species have two distinct growth phases: juvenile and adult. In *Hedera helix*, the sterile juvenile phase lasts at least ten years (Hackett et al. 1991 cited in Murai 1999), during which time the plant can spread rapidly by vegetative growth (Murai 1999). Since the

plant is evergreen, it can photosynthesize year-round. Growth of the adult form is slower (Reichard 2000). The juvenile phase is associated with high gibberellin levels. The transition to the adult stage may result from reduced gibberellic acid production in the absence of roots (Lee and Richards 1991). *Hedera* species can be long-lived; a plant in France was estimated to be greater than 400 years old (Rose 1996 cited in Murai 1999).

Reproduction: During its juvenile stage, ivy spreads rapidly by vegetative growth (Murai 1999). Mature plants can also spread by seed. Flowers are produced in the fall and are pollinated by flies, wasps, and bees (Rose 1996 cited in Murai 1999). Fruits are produced the following spring. On average, 70 percent of ivy seeds are viable (Dirr and Heuser 1987 cited in Murai 1999). The seeds are dispersed by birds, such as European starlings, American robins, English house sparrows, Stellar's jays, and cedar waxwings. (Murai 1999; Swearingen 2000). Seeds have a hard coat that must be scarified before germination; this requirement is met as the seed passes through the digestive system of birds (Reichard 2000).

Response to mechanical methods: Plants can successfully be pulled by hand or dug out. In the case of plants climbing on trees, vines can be cut at a comfortable height to kill the upper portions of the vine. A large screwdriver or forked garden tool can be used to pry vines off trees. For large vines, an axe or pruning saw may be needed to cut the vines. Rooted portions of the plant must then be pulled (Swearingen 2000).

Response to cultural methods: Burning plants and re-sprouts at regular intervals with a blow torch will eventually deplete the plant's energy (Reichard 2000).

Response to herbicides: Due to its waxy cuticle, ivy is not easily controlled with herbicides (Derr 1993; Morisawa 1999). The plant is tolerant of commonly used pre-emergent herbicides (Derr 1993). Reports on the efficacy of various post-emergent herbicides are sometimes conflicting. Derr (1993) reported complete control of English ivy with two applications of 2,4-D at 1 lb/acre, applied as foliar sprays in June and August. Similarly timed applications of dicamba, triclopyr, and glyphosate (0.5 lb/acre, 0.5 lb/acre, 2 lb/acre, respectively) did not provide control of ivy (Derr 1993).

Other sources report successful ivy control with triclopyr. Swearingen (2000) suggested applying a 2.5% mixture of triclopyr amine (Garlon 3A) to leaves or cut stems in the summer or fall. After plants re-grow, the herbicide would need to be re-applied to the new foliage. Reichard (2000) also reported success with triclopyr. In this case, a string trimmer was used to remove leaves and young stems, then plants were immediately treated with Garlon 4 (6.5 oz/gallon + surfactant). Triclopyr can also be applied in a basal bark treatment. A 15% to 30% solution of triclopyr ester (Garlon 4) may be used on ivy stems growing up trees. However, there may be some chance of absorption by the host tree. Applications can be made any time of year if the temperature is above 55 to 60 degrees for a few days (Swearingen 2000).

Biocontrol potentials: No biocontrol agents are available. Prospects for classical biocontrol development are unlikely because the plant is widely used as an ornamental.

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