

English ivy

Hedera helix L.

Synonyms: none
Other common names: none
Family: Araliaceae

Invasiveness Rank: 73 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.

Note on Taxonomy: Approximately 500 cultivars of English ivy have been developed by horticulturalists, and all have differing morphological and ecological traits. The most invasive of these cultivars is Atlantic Ivy (Irish Ivy), which is treated by some taxonomists as *H. hibernica* and by others as *H. helix* ssp. *hibernica*. Atlantic Ivy is treated here as a subspecies of *H. helix* (Metcalf 2005, DiTomaso and Healy 2007).

Description

English ivy is a climbing, prostrate, or creeping shrub or vine that can form extensive mats and can reach heights of 30 m. Plants have two growth forms with differing reproductive mechanisms: juvenile plants produce creeping stems or vines and reproduce vegetatively, and adult plants produce erect, shrubby stems and reproduce sexually. Stems are woody and up to 25 cm in diameter with numerous branches. Young twigs are covered with small hairs. Leaves are evergreen, alternate, and petiolated. Upper surfaces are shiny, glabrous, dark green, and often pale-veined. Lower surfaces are pale green. Leaf stalks and lower leaf surfaces are glabrous or are covered in grey, star-shaped hairs. Leaves of juvenile (climbing or creeping) stems are 4 to 10 cm long and palmately lobed with three to five triangular, entire lobes. Leaves of adult (flowering) stems are 6 to 10 cm long, entire, and ovate or rhombic. One to several spherical umbels are arranged in terminal panicles on flowering stems. A single umbel consists of approximately 20 flowers. Petals are yellow-green, triangular to ovate, and 3 to 5 mm long. Fruits are dark blue to black, spherical, several-seeded, and 5 to 10 mm in diameter (Metcalf 2005, DiTomaso and Healy 2007, Klinkenberg 2010).



Dense mat of *Hedera helix* L. Photo by C. Evans.

Similar species: No other species in Alaska are likely to be confused with English ivy.



Adult stem of *Hedera helix* L. with flowers and ovate leaves. Photo by J. Samanek.

Ecological Impact

Impact on community composition, structure, and interactions: English ivy causes reductions in the biodiversity of native plant communities in the southeastern U.S., California, and the Pacific Northwest (Hyland and Roye 2005, Biggerstaff and Beck 2007, Waggy 2010). It establishes in natural areas in the Pacific Northwest at elevations less than 900 m, where it outshades trees, shrubs, and forest floors (Simon 2004, Oregon State University 2008, Jones et al. 2010). English ivy forms dense, creeping, sometimes monotypic mats of foliage that significantly reduce the growth rates and population sizes of tree and shrub seedlings and forbs (Simon 2004, Hyland and Roye 2005, Biggerstaff and Beck 2007, DiTomaso and Healy 2007, Oregon State University 2008, Swearingen and Diedrich 2009, Jones et al. 2010, Waggy 2010). Climbing stems form new mid to upper canopy layers and outshade deciduous foliage during summer months, progressively killing host trees (Simon 2004, Hyland and Roye 2005, DiTomaso and Healy 2007, Oregon State University 2008, Jones et al. 2010, Waggy 2010). This species has the potential to dominate secondary woodlands, decrease the diversity of native plant

communities, and increase the density of vegetation in understory, shrub, and tree layers in forests in southeast Alaska at low elevations. English ivy is mildly poisonous to humans and cattle if consumed in large quantities. Contact with the sap can cause dermatitis in some people (DiTomaso and Healy 2007, Waggy 2010). Expansive monocultures of English ivy reduce available habitat for wildlife in California and the Pacific Northwest (Hyland and Roye 2005, Oregon State University 2008) and decrease the local diversity of animal species (Waggy 2010). Deer, sheep, and birds consume English ivy. Flowers are pollinated by many species of insects but primarily by flies in northern latitudes. Roots are associated with mycorrhizal fungi (Metcalf 2005, Waggy 2010). This species is a known host for many nematodes, insect pests, and harmful fungi. It has been associated with several plant diseases (Metcalf 2005, Pennisi et al. 2009, Swearingen and Diedrich 2009).

Impact on ecosystem processes: English ivy changes the natural successional processes of natural areas in forests in the Pacific Northwest. It limits the regeneration of understory species by outshading surrounding vegetation. This species also limits soil moisture and nutrient availability (Simon 2004, Waggy 2010).



Climbing stem and juvenile foliage of *Hedera helix* L. Photo by C. Bargeron.



Infestation of *Hedera helix* L. in Ketchikan. Photo by Google.

Biology and Invasive Potential

Reproductive potential: Juvenile plants reproduce vegetatively by rooting at the nodes of creeping stems, and adult plants can reproduce vegetatively by forming new shoots. Only the erect stems of adult plants, which usually require at least ten years to reach maturity, reproduce sexually. Usually, only one umbel per panicle develops fruit (Metcalf 2005). Adult plants can produce thousands of fruits per year (DiTomaso and Healy 2007). However, at the northern limit of its geographical distribution, English ivy is propagated primarily by vegetative reproduction. Established populations expand primarily through vegetative reproduction while new populations are established primarily from seeds (Metcalf 2005).

Role of disturbance in establishment: English ivy germinates most readily in disturbed areas or sparsely vegetated habitats (Metcalf 2005, Waggy 2010). Seeds do not readily germinate in heavily vegetated areas; however, once established, English ivy may spread vegetatively into undisturbed areas. It readily colonizes naturally disturbed woodlands and can establish in shaded conditions under evergreen canopies (Metcalf 2005). This species has invaded many natural habitats in the Pacific Northwest (Simon 2004, Oregon State University 2008). In California, it has established in intact plant communities, away from roads and trails, at the bases of trees where birds perch (Hyland and Roye 2005).

Potential for long-distance dispersal: Seeds are primarily dispersed by birds after being ingested in winter or spring. Birds can transport seeds from gardens to natural areas (Hyland and Roye 2005, Metcalf 2005, DiTomaso and Healy 2007, Waggy 2010). Seeds can be regurgitated by birds (Waggy 2010), or several seeds can be deposited in a single bird dropping. Deer and martens also ingest fruits and disperse seeds. However, at the northern limit of its geographical distribution, English ivy rarely produces seeds and in some cases is incapable of sexual reproduction (Metcalf 2005).

Potential to be spread by human activity: English ivy is cultivated as an ornamental plant, and many different cultivars have been developed in the U.S. (Pennisi et al. 2009, Waggy 2010). This species was found growing in

front of a private residence in Ketchikan in 2006 (AKEPIC 2010). It escapes cultivation, especially near coastal areas (DiTomaso and Healy 2007, Waggy 2010). *Germination requirements:* Seeds usually germinate 6 to 14 days after dispersal, although seed dormancy can last up to 30 days. Light and the presence of fruit pulp are known to inhibit germination. Seeds are killed when they dry within the fruits (Metcalf 2005, Waggy 2010). The digestive tracts of birds remove fruit pulp from the seeds and improve germination rates (Oregon State University 2008, Waggy 2010).

Growth requirements: English ivy grows best in moist, fertile soil in shaded areas. It is intolerant of highly acidic (pH less than 4), waterlogged, and very dry soils. This species is well-adapted to woodland habitats. The development and fruiting of English ivy is limited in areas where the mean temperature of the coldest month is less than -1.5°C, and this species is intolerant of areas where the mean temperature of the coldest month is less than -2°C. English ivy can grow in soils that have high calcium carbonate (CaCO₃) contents, but it does not tolerate saline conditions (Metcalf 2005). Climbing stems often take 30 or 40 years to reach the canopies of trees (Waggy 2010).

Congeneric weeds: Colchis ivy (*Hedera colchica*) is known to occur as a non-native species in Arizona, North Carolina, and South Carolina (USDA 2010), but it has not been documented as being invasive or growing outside of cultivation.

Legal Listings

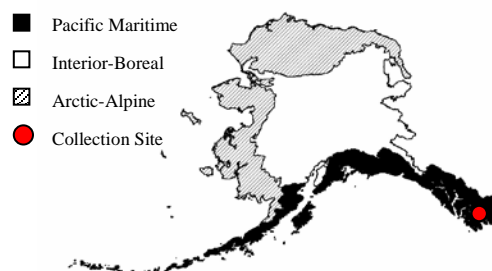
- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (OR, WA)
- Federal noxious weed
- Listed noxious in Canada or other countries

Distribution and Abundance

English ivy is grown commercially and planted as a landscape ornamental in the U.S. (DiTomaso and Healy 2007, Pennisi et al. 2009, Waggy 2010). In North America, it grows in moist to mesic disturbed areas, roadsides, woodlands, forests, grasslands, and shrublands (DiTomaso and Healy 2007, Klinkenberg 2010, Waggy 2010). *Hedera helix* is known to invade riparian areas in California, Oregon, North Dakota, and South Dakota (Hyland and Roye 2005, Fierke and Kauffman 2006, DiTomaso and Healy 2007, Ringold et al. 2008, Waggy 2010). It grows on the edges of wetland communities in California and Virginia and on

the edges of salt marshes in the mid-Atlantic U.S. (Swearingen and Diedrich 2009, Waggy 2010).

Native and current distribution: English ivy is native to Europe, North Africa, and parts of Asia Minor. It has been introduced to North America, South America, Australia, New Zealand, India, and South Africa (Metcalf 2005). It grows in 31 states of the U.S. (USDA 2010). This species rarely grows north of 60°32'N in Scandinavia and has not been documented from arctic or subarctic regions (Metcalf 2005). English ivy is known from two locations in Ketchikan in the Pacific Maritime ecogeographic region of Alaska (AKEPIC 2010).



Distribution of English ivy in Alaska

Management

Manual removal of English ivy is labor intensive but can be effective. Covering infested areas with several inches of mulch can control creeping populations. Regularly repeated mowing can contain creeping infestations when the clippings are removed. Mowing is more effective when combined with herbicide treatments or mulching (Simon 2004, Shaw pers. comm.). Roots can be hand pulled or dug out. Climbing stems should be chopped to kill vines on trees. The thick, waxy cuticles on the leaves reduce the absorption and effectiveness of foliar herbicide applications. Herbicides are most effective when applied to recovering plant tissues after mechanical removal efforts (Simon 2004, DiTomaso and Healy 2007). Applying herbicides directly to cut stem surfaces is often the most effective way to control populations with thick stems or vines (Swearingen and Diedrich 2009). Foliar applications of glyphosate or triclopyr herbicides (at 2% to 5% solutions) can kill English ivy (Oregon State University 2008, Swearingen and Diedrich 2009), especially when applied on sunny, warm, winter days (Oregon State University 2008). Controlled areas should be revisited for at least one year following any control efforts (Oregon State University 2008).

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