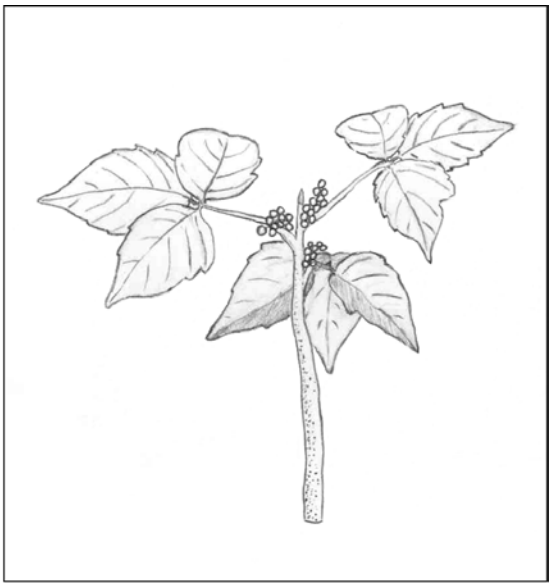
***Toxicodendron radicans* (L.) Kuntze** eastern poison ivy
ANACARDIACEAE

Synonyms: *Rhus radicans* L.
Rhus littoralis Mearns
Rhus blodgettii Kearney
Philostemon radicans Raf.
Toxicodendron blodgettii (Kearney) Greene
Rhus scandens Salisb. (and others: Institute of Systematic Botany 2003)



General Description.—Eastern poison ivy, also known as climbing poison ivy, common poison ivy, poison ivy, poison vine, and bemberecua, is a deciduous vine or shrub capable of ascending into tree crowns 20 m or more and along the ground for as much as 45 m. The stems sometimes reach 15 cm in diameter. The older stems are brown and covered with brown adventitious roots by which they cling to tree trunks and other surfaces and layer (root) whenever they come in contact with the ground. The small stems are lighter colored and covered with dark brown dots. The alternate leaves have long (to 15 cm) petioles and three ovate to lanceolate leaflets 4 to 20 cm long with entire, coarsely toothed, or lobed margins. Small white or greenish white flowers grow in axillary panicles. Clusters of white or greenish-white drupes 3 to 6 mm in diameter develop later and remain on the vine well after the leaves fall. The leaves are dark green during the summer, turning yellow to red in the fall. The species has 2n = 30 chromosomes (Long and Lakela 1976, Pavek 1992, Secretaría de Madio Ambiente y Recursos Naturales 2003).

Range.—Eastern poison ivy is native to Prince Edwards Island and from Nova Scotia to southern Ontario of Canada, all of the Eastern and Midwestern States of the United States (except for North Dakota), Arizona, Mexico, Guatemala, the Bahamas, Bermuda, China, Taiwan, and Japan (Brooks 2003, Griffiths 1994, Natural Resources Conservation Service 2003, Pavek 1992). The species has been planted as an ornamental and medicinal plant and presumably naturalized in Great Britain, Europe, and Australia (Schwartz 1999).

There are at least seven subspecies of eastern poison ivy. Subspecies *divericatum* occurs in Arizona, ssp. *eximium* ranges from Texas to Guatemala, ssp. *negundo* grows in the Midwestern and Northeastern sections of North America, *pubens* is native to the Southwestern States, ssp. *radicans* ranges across the Southern and Eastern portions of U.S., ssp. *verrucosm* occurs in Texas, Oklahoma, and Missouri, and ssp. *barkleyi* inhabits the Far East portion of the range (Griffiths 1994, Natural Resources Conservation Service 2003).

Ecology.—Eastern poison ivy grows in soils of all textures from nearly all parent materials. Although it grows best in fertile, near-neutral, moist but well drained soils, it tolerates a wide range of fertility, pH, and other conditions. Mean annual precipitation ranges from 391 mm to 1,450 mm in the United States and Canada. It grows from sea level on the Eastern and Gulf Coasts to 2,158 m in elevation in New Mexico. In Florida swamps, it survives inundation by fluctuations in water level and tolerates mildly saline water. An average growing season of 150 days with a mean annual temperature of 5.3 °C occurs at the northern extent of its range. There is an average growing season of 240 days in southern Florida, and a mean annual

temperature of 19 °C in Arizona (Pavek 1992). The mean annual temperatures are probably higher, precipitation greater, and growing seasons may approach 365 days in Central America. Eastern poison ivy is moderately tolerant of shade. It is often the most important understory plant, climbs nearly every tree in many Southern river floodplain forests, and is a component of most forest and vegetation types in its ample range. It also grows in full sunlight in forest openings, fencerows, bluffs, railroad tracks, and vacant lots. Eastern poison ivy grows in old-growth forests in some portions of its range and is an early invader during succession in many environments. It is tolerant of fire, browsing, insects, and disease, and competes aggressively with weeds and brush.

Reproduction.—Eastern poison ivy blooms from May through June in Virginia (Von Essen 2000) and from March through May in Mexico (Secretaría de Madio Ambiente y Recursos Naturales 2003). The start of flowering corresponds with leaves being about half formed in the spring (Pavek 1992). The flowers are pollinated by insects, including honey bees (*Apis mellifera* L.) (Pollen Lab 2003). Good crops of fruits and seeds are produced annually. Seeds are dispersed by birds and mammals and sometimes by water. Seeds that have been regurgitated from the crop or passed through the digestive tract of birds demonstrate excellent germination (Pavek 1992). Eastern poison ivy spreads extensively by means of scandent stems that root along their whole lengths and below-ground stems (rhizomes) that send up shoots frequently.

Growth and Management.—Eastern poison ivy grows rapidly after establishment and assumes several forms. It scrambles along the ground and sometimes forms thick mats. When given the opportunity, it ascends trees as a woody vine. Plants take 3 years to reach the flowering stage from seed (Pavek 1992). It often forms diffuse stands of short upright stems. It can be partially controlled by grazing, but there is a resurgence of Eastern poison ivy after secession of grazing because of the reduction in competition. Spot spraying or wiping with the herbicide glyphosate during the active growing season can effectively control it (Pavek 1992). Grubbing and mowing offers some degree of control but puts the worker at risk of contracting dermatitis.

Poison Effects.—The pale yellow oil called urushiol, present in all plant parts, is the source of all the allergenic pain and suffering associated with this species. Even in minute amounts, if it stays in contact with human skin for more than 5 minutes, it will be absorbed and metabolized. The metabolites bind with proteins, forming compounds that the immune system recognizes as "foreign" and attacks. The immune response results in rash, blisters, and an intense itch (Borialforest.org 2003) that lasts for 1 to 3 weeks. Sensitivity can vary over the life of a person. A few people have life-threatening reactions to the allergen (Schwartz 1999). The chemical is the same and the effect (called rhus dermatitis) is the same for all *Toxicodendron*s. Ten to 15 percent of the U.S. population is completely immune to rhus dermatitis, 25 to 35 percent react only to high doses, and 50 percent have a consistent reaction to relatively small doses of the allergen (Family Practice Notebook.com 2003). The best defense is to avoid contact with the plant, especially with the sap or smoke from burning *Toxicodendron* material. The next line of defense is to quickly wash the exposed skin with soap and copious amounts of water, or if not available, with mud and water or an alkaline material such as baking soda or wood ashes and water. After a rash develops, the sufferer is advised to apply hydrocortisone cream or any of several creams sold over-the-counter for the treatment of rhus dermatitis. A folk remedy mentioned in the literature (Felter 1922) and found by the author to almost instantly and completely (but temporarily) stop the itch and irritation of rhus dermatitis is to rub the mashed juicy stems of jewel weed (*Impatiens spp.*) on the affected area.

Benefits.—Eastern poison ivy, for its dark green foliage during the summer and bright fall colors, adds considerably to the beauty of forests and shrublands where it grows. It has been used to a limited extent as an ornamental and for conservation plantings. Eastern poison ivy is an important browse species. It is one of the seven most important food species for white-tailed deer in Indiana (Pavek 1992). Goats are said to like eastern poison ivy and have been used to control it (Schwartz 1999). The fruits are an important fall, winter, and early spring food for upland game birds and many species of song birds (Pavek 1992). Rabbits and rodents also eat the leaves and fruits. In herbal medicine, extracts of the leaves have been and still are used to treat herpetic eruptions, palsy, and rheumatism. Small internal doses will act as a sedative but must be used with care (Felter 1992, Grieve 2003).

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