***Ledum groenlandicum* Oeder** Labrador tea
ERICACEAE

Synonyms: *L. palustre* L. ssp. *groenlandicum* (Oeder) Hulten
L. palustre L. var. *latifolium* (Jacq.) Michx.
L. latifolium Ait.
Rhododendron groenlandicum (Oeder) Kron & Judd

General Description.—Labrador tea is an evergreen, well branched, spreading shrub up to about 1 m in height. The twigs are densely hairy and the buds scaly. The leaves are simple, alternate, entire (not toothed), lanceolate, somewhat narrowly elliptic to oblong, 1.5 to 5 cm long, about 0.7 to 2 cm wide, thick, leathery and evergreen with rolled margins, dark green above, densely off-white to rusty hairy beneath, and fragrant when crushed (Gleason and Cronquist 1963, Britton and Brown 1913). Several synonyms, as given above, may be found for this species (Kartesz 1994, Britton and Brown 1913). The genus *Ledum* appears to be monophyletic, and cladistic analysis places it as most closely related to genus *Rhododendron* subsection Edgeworthia, hence its synonym placing it in the genus *Rhododendon* (Kron and Judd 1990).

Range.—This shrub occurs from Greenland, across Canada from Labrador to British Columbia, north to Alaska, south to New Jersey, Pennsylvania, Massachusetts, Michigan, Wisconsin, Minnesota, and Washington, with isolated sites or occurrences in Ohio and South Dakota (Gleason and Cronquist 1963, Britton and Brown 1913, Great Plains Flora Association 1986, McCance and Burns 1984). Labrador tea has been classified as an endangered species in Ohio, where one population occurs in a bog habitat in the northeastern corner of the state (McCance and Burns 1984). One isolated collection has occurred in the Black Hills of South Dakota (Great Plains Flora Association 1986).

Ecology.—This species grows in acidic soils of bogs, especially sphagnum (*Sphagnum* spp.) bogs, and other swampy and wet shoreline habitats in association with *Picea mariana* (Mill.) BSP (black spruce), *Chamaedaphne calyculata* (L.) Moench. (leatherleaf), and *Kalmia* spp. (laurels). Labrador tea will also grow on some drier upland soils with a reasonable moisture regime in association with *Pinus* spp. (pines) and *Vaccinium* spp. (blueberries). Stands of Labrador tea appear to retard black spruce growth and regeneration (Inderjit 1996). Labrador tea has been reported as an undergrowth species on serpentine substrates on mountain tops in eastern townships of Quebec, Canada. It has also been observed in shrub and sedge dominated serpentine ecotonal communities of Newfoundland with a soil pH of 6.27, and exchangeable soil mineral concentrations: calcium, 13 µg/ml, magnesium 237 µg/ml, and nickel 0.72 µg/ml (reviewed in Brooks 1987).

Ecology in Human Impacted Environments.—Exposure to sulfur dioxide has been shown to cause visible foliar symptoms and significantly reduce photosynthetic net assimilation rates, but the rate of reduction was significantly slower than that in deciduous species (Addison and others 1984). In a radionuclide study, lead-210 and polonium-210 tended to accumulate in lichens and mosses, while radium-226 tended to accumulate in shrubs such as Labrador tea (Sheard 1986). Labrador tea may be an indicator of lead contamination in the environment in the vicinity of lead/zinc mines (Pugh and others 2002). Labrador tea was among four ericaceous shrub species naturally revegetating an abandoned vacuum-mined peatland, despite the absence of new sphagnum moss colonization (Berube and Lavoie 2000).

Reproduction.—Labrador tea flowers are relatively small, about 1 cm wide and 2 cm long, white, with five to seven stamens, and are grouped in terminal clusters. It blooms from May to July, sometimes as late as August. The fruit is a slender capsule, oval in shape, about 5 to 8 mm long and 2 to 3 mm wide, with a persistent style (Gleason and Cronquist 1963, Britton and Brown 1913). The seeds are elongated, numerous and small. For germination, they should be placed onto a good moisture-supplying substrate and covered with a clear plastic film (Young and Young 1992). Seeds germinate best after a 30-day cold stratification period, with optimal germination temperatures of 20 to 25 °C, and light is required (Calmes and Zasada 1982, Baskin and Baskin 2001). The seeds are considered to have non-deep physiological dormancy because of the relatively shorter cold periods needed and that some seeds can germinate shortly after ripening. The cold stratification period can decrease the germination temperature requirement. Full sunlight and high soil moisture seem to be requirements, including a low soil pH, e.g. 5.5 (Karlin and Bliss 1983, Baskin and Baskin 2001). Apparently winter-time cuttings will root well (Dirr and Heuser 1987, Young and Young 1992).

Growth and Management.—This shrub is generally considered a slow growing, late successional, pre-climax or climax species. The low shrub stratum consisting of Labrador tea and leatherleaf was estimated to have an aboveground productivity of 0.4 and 2.0 t/ha/yr on perched and raised bogs, respectively, in northern Minnesota (Grigal and others 1985). Rust fungi of the genus *Chrysomyxa* alternate between spruce and members of the Ericaceae such as Labrador tea. *Chrysomyxa reticulata* sp. nov. may spread from *Ledum* spp. to cultivated rhododendrons (Crane 2001).

Benefits.—As the name implies, the dried leaves have been used for tea. Native Americans, such as the Chippewa, have used this shrub for various purposes. The root has been used for medicinal purposes to treat ulcers and the leaves for making tea (Densmore 1928). As a tea this plant has been used for treating asthma, colds, stomach aches, kidney problems, scurvy, and fevers (Foster and Duke 1990). Externally it has been applied as a wash for burns, ulcers, and stings. It has been used as a folk remedy for lung ailments, dysentery, indigestion, and to kill lice and treat leprosy. Successful traditional use for gout treatment may be due to the presence of phenolics and tannins within the plant (Owen and Johns 1999). This species, as well as others in the genus, has generally been regarded as having low palatability, being unpalatable, or even slightly poisonous (USDA 1937). Since this species often grows in wet boggy habitats, it is generally not accessible to most livestock. The plant may serve as reindeer forage in Alaska. Its unpalatability may also be due to essential oils of the monoterpene family (sabinene and limonene) and the sesquiterpene family (alpha- and beta-selinene and germacrone) (Belleau and Collin 1993). Germacrone has been shown to be a feeding deterrent for snowshoe hares (*Lepus americanus* Erxleben), although they do eat the plant to some extent (Reichardt and others 1990, MacCracken and others 1988).

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James E. Nellessen, Botanist, Biologist and Environmental Scientist, Taschek Environmental Consulting, 8901 Adams St., NE, Albuquerque, NM 87113