



Common Name: CAROLINA TREFOIL

Scientific Name: *Lotus helleri* Britton

Other Commonly Used Names: Carolina birdfoot-trefoil, Heller's bird's-foot-trefoil

Previously Used Scientific Names: *Lotus unifoliolatus* (Hooker) Bentham var. *helleri* (Britton) Kartesz & Gandhi; *Lotus purshianus* Clements var. *helleri* (Britton) Isely

Family: Fabaceae/Leguminosae (pea)

Rarity Ranks: G3/S1

State Legal Status: Endangered

Federal Legal Status: none

Federal Wetland Status: none

Description: Annual **herb** with erect, leaning, or trailing **stems** up to 30 inches (75 cm) tall; main stems reddish with strongly two-ranked side branches; stems and branches usually hairy. Most **leaves** with 3 narrow, pointed **leaflets**, $\frac{1}{4}$ - $\frac{3}{4}$ inch (0.5 - 1.8 cm) long and less than $\frac{1}{4}$ inch (0.5 cm) wide, the uppermost leaves with only 1 leaflet. **Flower** less than $\frac{3}{8}$ inch (0.8 cm) long, pink, with an erect banner petal and 2 wing petals enclosing a yellowish keel petal; flower usually solitary on a stalk up to $\frac{7}{8}$ inch (2 cm) long that arises in the angle between leaf and stem. **Fruit** a narrow pod up to $1\frac{3}{8}$ inches (2 - 3.5 cm) long.

Similar Species: Milk-pea (*Galactia volubilis*) occurs in the same habitat as Carolina trefoil. It is a trailing vine with oval leaflets; its flowers are in an elongated cluster.

Related Rare Species: None in Georgia.

Habitat: Openings in post oak and blackjack oak woodlands with clay soils, over bedrock high in iron and magnesium, such as ultramafic rock; clearings, roadsides, and rights-of-way through these habitats.

Life History: Carolina trefoil is an annual herb. As with most members of the pea family, Carolina trefoil flowers are probably pollinated by bees, which are attracted to nectar and to the showy banner petal. However, the pollination mechanism in *Lotus* differs from most other pea family flowers where bees force the wing and keel petals apart and are dusted with pollen while they search for nectar. In *Lotus*, pollen accumulates in the end of the keel petal; when the wing petals and keel petal are weighed down by a bee, a sticky ribbon of pollen is forced out of a hole in the tip of the keel and onto the underside of the bee. The ribbon of pollen is then carried to another flower by the bee, where it is transferred to the stigma. *Lotus* flowers usually require cross-pollination to set fruit and seed although some researchers have observed seed set following self-fertilization. As an annual, Carolina trefoil is dependent on the production of viable seed to survive.

Survey Recommendations: Surveys are best conducted during flowering (late August–September) and fruiting (August–October).

Range: Piedmont of Georgia, South Carolina, North Carolina, and Virginia.

Threats: Conversion of habitat to pine plantations, pastures, farmland, and development. Encroachment by woody species in the absence of fire.

Georgia Conservation Status: Three populations have been observed. Only one (in Elbert County) has survived; it is on private land.

Conservation and Management Recommendations: Avoid logging and mechanical clearing. Hand-clear or use fire to create openings in dry woodlands.

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L. Chafin, May 2007: original account

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