

October 2021 Plant of the Month



Monotropa uniflora L.; Indian pipe, Ghost pipe, or ghost plant

The October *Plant of the Month* is a native, forest perennial classified in the family Monotropaceae. Indian pipe grows throughout the native forests of New Jersey, and has a record in every county. The species is distributed throughout North America, Central America, and eastern Asia. Fernald (1950) cites its habitat as woodland humus. That is an apt description captured by this month's species photo above.

The monotrops are a family related to the heaths. The *Monotrop* family is related to a group of families that have similar heath characters, such as the pyrola's and sweet pepperbush. Some taxonomists include this family under the larger umbrella of the Ericaceae. Fernald (1950) placed the genus within the Pyrolaceae. *Monotropa* is unique among this group. The plant is devoid of chlorophyll, so the plant does not photosynthesize its own carbohydrates. To obtain sugars, the plant has become a parasite of a type known as a mycoheterotroph (Wikipedia). Indian pipes get their sun-fixed energy in a complex association with soil fungi. All woody forest plants have mycorrhizal associates, and the Indian pipe has capitalized on this relationship.

Monotropa uniflora is an upland plant, with no tolerance to saturated soils. It is one of two species of *Monotropa* found in New Jersey. The second species called pine-sap, *Monotropa hypopithys*, has similar habit and habitat to our *Plant of the Month*. It is distinguished from Indian pipe's single flower per stem by a multi flowered raceme. Also, where *Monotropa uniflora* is white, the pine-sap is pink or light orange. Indian pipe is a regular member of our flora, whereas pine sap seems to come and go, appearing sometime years after an earlier presence.

Native American of the eastern forests used Indian pipes for a number of medicinal purposes. They also recognized its association with soil fungi. The plant was recognized as an indicator where mushrooms would be plentiful the following spring. Although Native Americans did not know of the complex interactions between *Monotropa* roots and the soil fungi hyphae, they recognized a seasonal pattern that predicted this association. The *Plant of the Month* can be seen

right now anywhere there is a dry upland forest with a thick humus soil layer. Look for the white stalks, or the protruding flower buds that appear as if they are little clusters of white mushrooms.

JRA, 10/2021