

## MONOTROPACEAE INDIAN PIPE FAMILY

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Perennial, mycotrophic herbs, with bracteate white to yellow or reddish flowering stalks without green leaves. FLOWERS perfect, actinomorphic, hypogynous, in racemose inflorescences; corolla fused or separate, petals 3-5(-6); stamens 6-10; anthers awned or not, dehiscing by longitudinal slits; pollen grains single; ovary 1, 4, 5, or 6-loculed; nectaries present. FRUITS berries or loculicidal capsules. SEEDS numerous, minute. --6 primarily monotypic genera of coniferous forests in w N. Amer. Wallace, G. D. 1975. *Wasmann J. of Bio.* 33:1-88.

1. Flowering stalks always erect, reddish brown, glandular hairy; flowers and fruit nodding; corolla fused, urn-shaped, cream to yellow ..... *Pterospora*  
1' Flowering stalks nodding during anthesis, becoming erect in fruit, white to yellow or reddish, finely hairy or smooth; flowers nodding, the fruit erect; corolla not fused, campanulate, white, yellow or reddish ..... *Monotropa*

### *Monotropa* L. Indian Pipe

Flowering stems 1- several, nodding, becoming erect in fruit, variously short hairy, especially in the inflorescence; bracts of various shapes, appressed, with erose margins. FLOWERS nodding, 1-several, the parts separate; sepals variable in number and shape, generally 3-5; petals 3-6, saccate at base, with hairy inner surfaces, the outer hairy or not; margins erose or ciliate; stamens 8-10(-12), in two series, alternating in length; filaments slender, hairy; anther sacs joined laterally; style short and thick to somewhat elongate; stigma umbilicate to funnelform with 4-6 shallow lobes, smooth or with a ring of hairs below; ovary (4-)5(-6)-locular, usually hairy; nectary lobes 8-10 pairs. FRUITS erect, globose to ovoid capsules. SEEDS minute, spindle-shaped. --A N. Amer. and Eurasian genus with three species.  $x = 8$  or 13. (Greek: *monos* = one + *tropos* = direction).

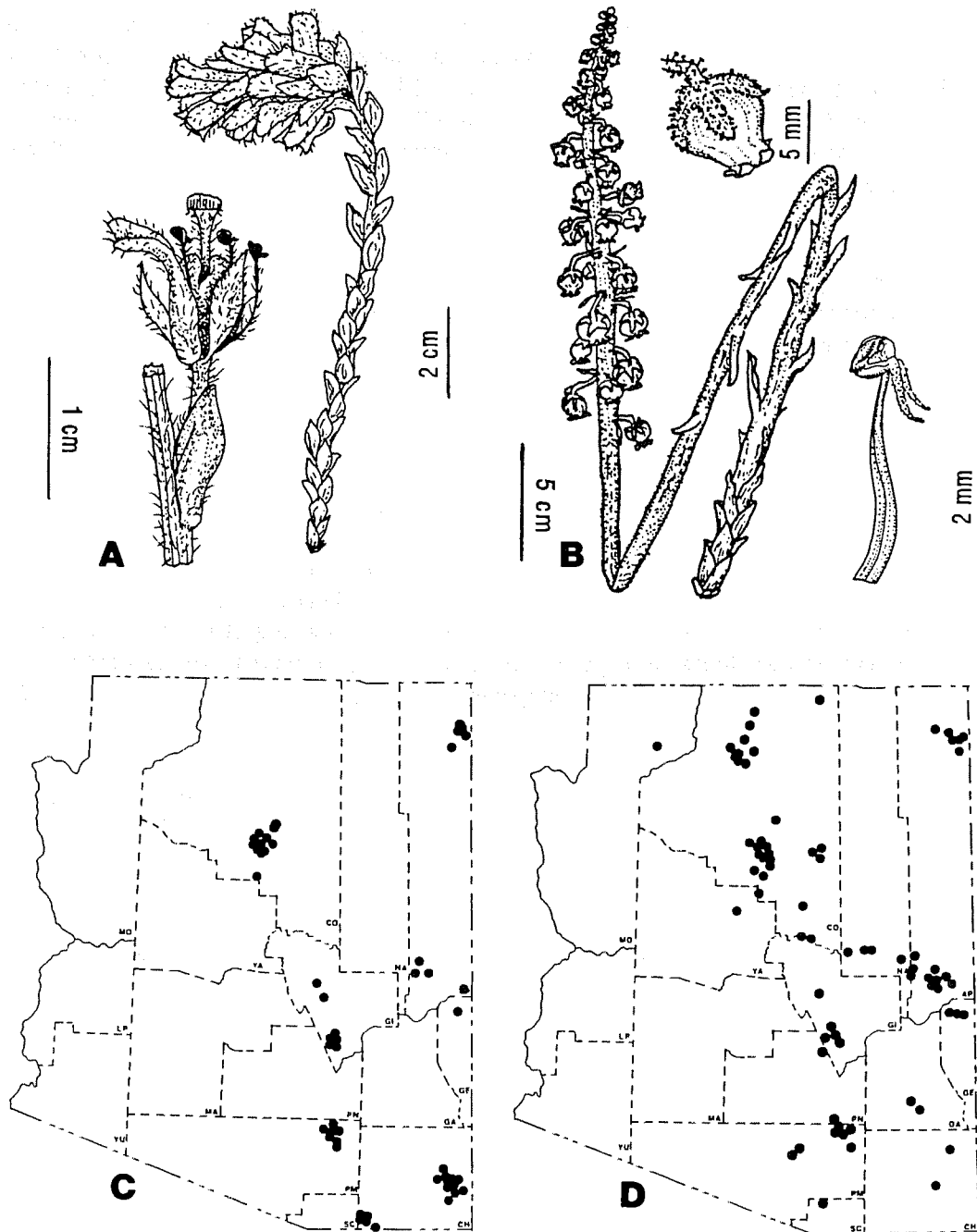
*Monotropa hypopitys* L. (beneath pine tree). Pinesap. --Flowering stems to 30 cm tall, with 1 to usually several flowers, yellowish to orange or reddish, nodding, finely hairy, particularly in upper part of stem, smoothish below. FLOWERS with sepals (0-)4-5, these densely hairy inside, sparsely so outside; petals saccate at base, free from sepals; stigma umbilicate, surrounded by a ring of hairs beneath. FRUITS globular capsules, 4-8 mm wide.  $2n = 48$ . [*Hypopytis monotropa* Crantz; *Monotropa latisquama* (Rydb.) Hultén]. --Coniferous forests in rich humus: Apache, Cochise, Coconino, Gila, Greenlee, Pima cos.; 2100-2900 m (7000 - 9500 ft); Jul-Aug; temperate Eurasia.

### *Pterospora* Nutt. Pinedrops

Flowering stems erect, fleshy, reddish-brown, densely glandular-hairy, 1-several from a dense spherical root mass, to 1 m tall, the inflorescence terminal; bracts triangular, overlapping, clustered near base of stem, becoming reduced linear-lanceolate and scattered above, merging with the inflorescence bracts. FLOWERS nodding, whitish, yellow or pink, numerous in an elongate, open raceme-like inflorescence, at times clustered in groups of 2-5; sepals 5, separate, linear-lanceolate, glandular, to 5 mm long; corolla fused, urn-shaped, persistent, the lobes 5, reflexed; stamens 10, the filaments smooth; anthers ovoid with two recurved awns the length of the sacs; pollen grains four-grooved, many aborted; style short, columnar; stigma capitate, obscurely 5-lobed. FRUITS 5-locular, nodding, depressed-globose capsules, 8-12 mm wide. SEEDS ovoid, tapered to one end, with 5 ribs and a conspicuous rounded wing larger than the seed body. --A monotypic

N. Amer. genus, widely distributed but mainly with a bicentric range, in coniferous forests of w and ne N. Amer. and Mex. (Greek: *pteron* = wing + *sporos* = seed, for the conspicuously enlarged wing attached at one end of the seed).

***Pterospora andromedea* Nutt. (like *Andromeda*). Pinedrops.  $-2n = 16$ . --Coniferous, especially pine, forests: Apache, Cochise, Coconino, Gila, Greenlee, Mohave, Navajo, Pima, Pinal, Santa Cruz cos.; 1800-2900 m (6000-9500 ft); Jun-Aug; temperate N. Amer.**



**Monotropaceae** Fig. 1. Plant habit and floral details of *Monotropia hypopitys* (A) and *Pterospora andromedea* (B); distribution of *M. hypopitys* (C) and *P. andromedea* (D).