Pollinating *Cypripedium acaule* (Pink Lady-slipper)

Text and photos by William Cullina

Cypripedium acaule is pollinated by bees, but it relies on deceit, luring the bee into the pouch and trapping it so it is forced to climb out the back of the pouch (labellum), brushing by the female stigma and depositing pollen from the last flower visited before picking up a new packet of pollen as it squeezes out. Because there is no nectar or pollen reward (the pollen sticks to the insect's back where it cannot access it) the bees quickly learn not to bother with the flowers and typically less than 5% are pollinated each year. Since seed is the only way these orchids can spread, increasing pollination rates and subsequent seed set through hand pollination will greatly enhance local populations over time.

Chose healthy plants with undamaged leaves and flower(s). Flowers are receptive to pollen about 2-3 days after opening. Because producing a seed pod is a heavy investment for the plant, pollinate a maximum of one third of the flowering plants in a give season, and only pollinate one flower per clump.

The pollen is amassed under 2 waxy caps that sit to either side of the column (the shoehorn-like structure at the opening of the pouch).

Using a toothpick or small sliver of bamboo, gently lift the cap off by using the implement to lift up the inside edge. Stringy masses of pollen will stick to the implement as you lift the cap.

Carefully rake out the pollen masses from the cap onto the tip of the toothpick.

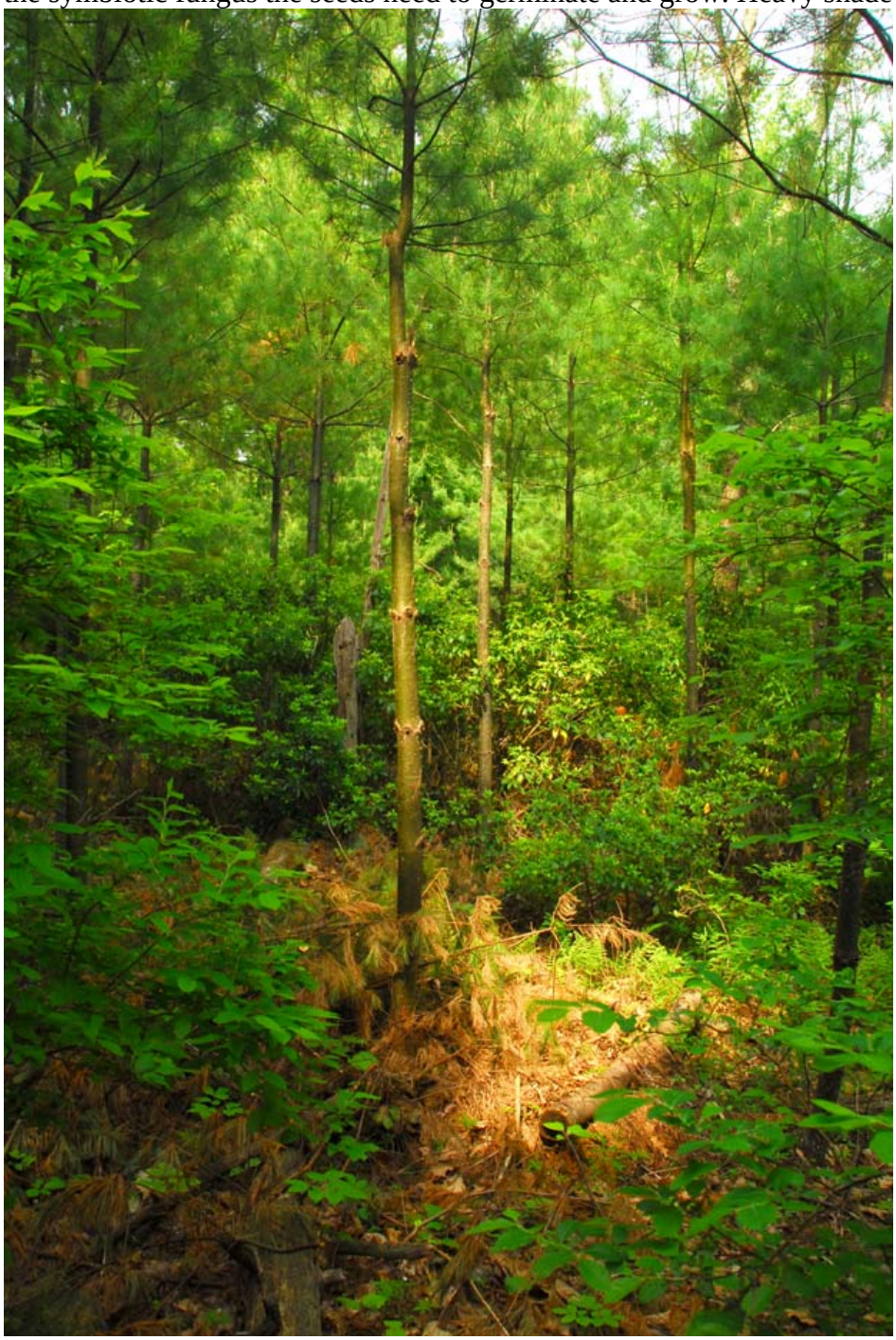
Take the pollen to another healthy flower on a different plant and use your thumb to gently pull down on the pouch to expose the column. You may have to lift the triangular flap (staminode) that sits atop the column. (The staminode was removed in this photo for

better viewing.) The stigmatic surface (the sticky, triangular area that received the pollen) will be evident once you do.

Work the toothpick tip in underneath the column and dap or wipe the pollen onto the stigma. Some pollen may refuse to come off, but the amount pictured above is enough to assure good seed set.

If you are successful, the flower will wither within a week and a football-shaped capsule will begin to swell just behind. The seeds are ripe in fall once the capsule browns and cracks along the seams.You can let the seed shake out naturally into the breeze or collected it in a wax paper envelope and sprinkle it into the leaf litter nearby (or in a similar habitat somewhere else).

Thin, acidic soils in open, upland woods provide the best habitat for the plants as well as the symbiotic fungus the seeds need to germinate and grow. Heavy shade and competition from other woodland wildflowers and ferns will reduce the number of flowering plants over time.



By thinning out some tree saplings and removing the lower branches of larger trees, cutting back aggressive ferns such as hayscented (*Dennstaedtia punctilobula*) and Bracken (*Pteridium aquilinum*) you can create the sort of lightly shaded habitat the orchids thrive in.

Five years after thinning out the canopy of my woods in this way and introducing seed from hand-pollinated plants from another location, I counted 4 blooming and 8 non-blooming (seedling) C. acaule in one small area where previously there were only 2 non-flowering plants before thinning began.

Small seedlings appear 3-4 years after the seed is sown and flower 2-4 years after that.

Young seedlings closely resemble Canada mayflower (*Maianthemum canadense*), which is above lady-slipper seedling in this image. This is especially true in the first year or two when the orchid seedlings produce only one leaf.

Canada mayflower leaves (on left) are borne on a short petiole (leaf stem) while pink lady-slipper leaves are stemless. The lady-slipper foliage is also pubescent (hairy) and matte green while the mayflower leaves are smooth and somewhat glossy. This lady-slipper seedling is 5 years old and 1-2 years from flowering.