

# Preface

This is the second of two volumes treating the pollination biology of all native and introduced orchid species occurring north of Mexico and Florida. Both volumes provide an up-to-date collation of a vast literature previously scattered in numerous, often obscure, journals and books. Like Volume 1, Volume 2 supplies detailed information on genetic compatibility, breeding systems, pollinators, pollination mechanisms, fruiting success, and limiting factors for each species. Distribution, habitat, and floral morphology are also summarized. In addition, original, detailed line drawings emphasize orchid reproductive organs and their adaptation to known pollinators. All drawings are by the author, sometimes based on the published work of others, as indicated.

Volume 1 furnished a brief introduction to the general morphology of the orchid flower and the terminology used to describe orchid breeding systems and reproductive strategies. It treated the lady's-slippers of genus *Cypripedium*, subfamily Cypripedioideae, and introduced nine genera of the subfamily Orchidoideae, including the diverse rein orchids of genus *Platanthera*.

Volume 2 continues the treatment of the Orchidoideae with nine North American genera of tribe Cranichideae. These include the rattlesnake plantains of genus *Goodyera*, often recognized by their clusters of variegated leaves, and the ladies' tresses of genus *Spiranthes* and their relatives, well known for the often spiral arrangement of their flowers in spicate inflorescences.

Seven North American tribes of the large subfamily Epidendroideae are considered next. Tribe Neottieae, with three genera, includes the twayblades of genus *Listera* (*Neottia*) with their long lips and paired stem leaves. Also in this group are the helleborines, including the strange, ghostly white phantom orchid of genus *Cephalanthera* and the native stream orchid and broad-leaved helleborine, both of genus *Epipactis*. The tribe Triphoreae comprises a single North American genus, *Triphora*, the three-birds orchid with an asymmetrical perianth. The tribe Malaxideae includes the diminutive and easily overlooked adder's mouth orchid of genus *Malaxis* and a second genus, *Liparis*, which shares the common name twayblade with *Listera*, but differs in having only basal leaves. The tribe Calypsoeae comprises

four genera native to our flora. The fairy slipper orchid of genus *Calypso*, considered by some as the most beautiful terrestrial orchid in North America; the crane-fly orchid of genus *Tipularia*, with straggly long-spurred flowers that suggest a crane-fly in flight; the coral-roots of genus *Corallorhiza*, mycoparasitic herbs of varying color; and the puttyroot or adam-and-eve orchid of genus *Aplectrum*, with a distinctive pleated, white-ribbed basal leaf. Tribe Cymbideae includes a single southeastern North American genus, *Eulophia*. Tribe Epidendreae embraces a coral root look-alike, *Hexalectris*, and the green fly orchid of genus *Epidendrum*, the only representative of this very large genus in our flora and the only epiphytic orchid found naturally north of Florida. The dragon's mouth (genus *Arethusa*) and grass-pink (genus *Calopogon*) are members of tribe Arethuseae, which along with the rose pogonia (genus *Pogonia*) of subfamily Vanilloideae, share the development of ultra-violet absorbing false stamens on their lips. Other North American members of subfamily Vanilloideae include the large and small whorled pogonias of genus *Isotria* and the spreading pogonias of genus *Cleistesiopsis*.

Although great progress has been made over the last several decades, many aspects of orchid reproduction are not fully understood or have been studied in only a few populations. Areas where information is limited are clearly indicated, spotlighting particular needs for further research.

*The Pollination Biology of North American Orchids* will be of interest to both regional and international audiences including:

- Researchers and students in this field of study who are currently required to search through the scattered literature to obtain the information gathered here.
- Researchers and students in related fields with an interest in the coevolution of plants and insects.
- Conservation specialists who need to understand both the details of orchid reproduction and the identity of primary pollinators in order to properly manage the land for both.
- Orchid breeders who require accurate and current information on orchid breeding systems. The artificial cultivation and breeding of native orchids is an important conservation measure aimed at reducing and hopefully eliminating the collection and sale of wild orchids.
- General readers with an interest in orchid biology. Technical terminology is kept to a minimum, and an extensive glossary is provided for the nonspecialist reader.

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Volume 2

North of Florida and Mexico

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