Special Report/A Newly Naturalized Orchid Found in Florida

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DESPITE their widespread cultivation, orchids, unlike other flowering plants and ferns, rarely naturalize. Naturalize, in this usage, means the ability of an alien (nonnative) species to successfully establish beyond cultivation, to reproduce and spread, without direct human assistance. We suspect the need for specialized pollinators and the requirement for suitable mycorrhizal fungi to promote orchid seed germination limits the naturalization of all but a few orchid species. We are only beginning to investigate orchid naturalization, so orchids that do naturalize are more than new additions to our floras, they are opportunities to try to understand orchid naturalization processes.

Some naturalized species become agricultural pests, while others invade natural areas where they can displace native species and disrupt the biotic communities. Not many naturalized orchids behave this badly, but at least one appears to be causing problems. *Oeceoclades maculata*, an African orchid naturalized in Florida and widely in the Neotropics, may be displacing native terrestrial orchids in tropical forests in Mexico (*Orchids of Mexico* by Eric Hágsater, Miguel Soto, Gerardo Salazar, Rolando Jimenez, Marco Lopez and Robert Dressler, 2006). So while we are pleased to have the opportunity to study this newly naturalized orchid in Florida, we shouldn't be too happy about the naturalization of yet another nonnative plant in the state, where fully one third of the flora is nonnative. Although our cultivated plants (and especially orchids) provide enormous benefit to people, the native flora and other biota are what more fundamentally define the uniqueness, integrity and health of environments.

During this past year we discovered a new terrestrial orchid in Miami-Dade County in southern Florida. The orchid was unknown to us, and required interactions with orchid taxonomists, as well as investigating possibilities on the Internet and in the published literature to identify it as *Eulophia graminea*. This orchid is native to the warmer parts of Asia from Pakistan east through India, Nepal, Southeast Asia and southern China to the Ryuku Islands south of Japan. Thus far we have found it in five residential areas and in a parking lot island at a supermarket. The area where the orchid was detected stretches 22 miles (35 km) from north to south. In five of the six sites, the orchid is growing in woodchip mulch. In its native range, the plants grow in many kinds of open, disturbed habitats, including grasslands and even beaches.

The small flowers, which are usually about 1 inch (2.5 cm) across, are not showy but have charm when viewed close up; the white lip is marked with rose-pink, contrasting nicely with the somber green petals and sepals. The lip is keeled and covered with hairlike papilliae. The inflorescences arise from spherical to conical pseudobulbs, usually about 2 to 3 inches (5 to 8 cm) in diameter, which typically sit completely or partly above the ground. The slender inflorescences range from 12 to 60 inches (30 cm to 1.5 m) tall and bear up to 60 flowers.

In addition to defining the naturalization, we have been studying the orchid's reproduction. Most of the plants are producing fruit but at low levels, and the flowers appear to need a pollinator. The flowers are faintly fragrant and bear a small nectar-filled spur, attractants probably for an insect pollinator. No flower visitors have been seen yet and determining the identity of the pollinator(s) is a focus of our studies. We also wish to understand which mycorrhizal fungi are promoting the germination of its seed and seedling establishment. How *Eulophia graminea* has managed, unlike

GETTING INVOLVED

We request your help to detect new populations of *Eulophia graminea* in Florida and anywhere in the region to document its spread. So, if you go for a walk in your neighborhood, to the beach, golf course, or even the supermarket, please keep your eyes open for our newest orchid immigrant, If you spot it, please send us photographs or specimens and some details of the location and occurrence.

To learn more about the newest orchid on the block, see our recently published paper in *Lankesteriana* (*International Journal of Orchidology*) 2008. 8:5–14.

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the great majority of exotic orchids, to overcome the twin barriers of pollination and mycorrhizal fungal limitations to naturalize will be interesting to figure out.

We don't know how *Eulophia graminea* entered Florida or the United States. Searches of the Internet, however, reveal that plants are offered for sale by nurseries in Thailand, as capsules, flask, and pseudobulbs. Amateur growers outside the United States also offer to trade the orchid via the Internet. Coupling this availability of plants with the considerable enthusiasm for orchid growing suggests that this orchid was imported to Florida for cultivation and then escaped.

The orchid's airborne seed and pseudobulbs, moved in mulch and soil, will help it spread. In its native region, *Eulophia graminea* lives in Kashmir, a region of northwestern India that has a southern border at 32 degrees north latitude, and in Sikkim, a Himalayan state with a southern border of 27 degrees north latitude, between 900 and 1,000 meters (ca. 3,000 feet) elevation. Those areas are both farther north than Miami's 26 degrees north latitude, and cooler than Miami's sea level subtropical climate, indicating that *Eulophia graminea* probably can live well north of the current naturalization area. The plant's robust pseudobulbs can help the orchid get through Florida's dry season, and also probably to survive cold temperatures if buried in soil or mulch. *Eulophia graminea* might reach and survive in southern Georgia or beyond. The orchid's airborne seed may spread it south into the West Indies, an area with an even more suitable climate for the plant. Purposeful movement by people is also a possibility. We met an enthusiastic orchid grower in Miami, who, after discovering this orchid in a vacant lot slated for development, moved plants to his yard and gave some away as gifts.

[1] Flowers of *Eulophia graminea,* an orchid the authors recently found to be naturalized in Miami-Dade County in southern Florida. Individual flowers are usually about 1 inch (2.5 cm) wide and open for 10 to 11 days.

[2] Inflorescence of *Eulophia graminea*. The inflorescences vary in size but are often 1.3 to 2 feet (.4 to .6 m) tall.

[3] Authors Bob Pemberton and Suzanne Koptur working with the flowers of naturalized *Eulophia graminea* plants to determine the breeding system of the orchids in Florida. These plants are growing in mulch in a residential yard in South Miami.

— Robert Pemberton, PhD, an invasive-species biologist who studies orchid pollination, wrote about Florida's newly naturalized orchid bee in the June 2007 issue of Orchids *(2007, 76:446–448). Fairchild Tropical Botanic Garden, 2121 Southwest 28th Terrace, Ft. Lauderdale, Florida 33312 (e-mail Robert.Pemberton @ars.usda.gov). Suzanne Koptur, PhD, a plant ecologist, does research primarily in plant–insect interactions, including pollination. Timothy Collins, PhD, a molecular systematist interested in evolution and invasive animals, grows species cattleya orchids and is a member of the East Everglades Orchid Society. Both are with the Department of Biological Sciences, Florida International University, Miami, Florida 33199 (e-mails kopturs@ fiu.edu; Collinst@fiu.edu).*