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A PYRALID MOTH (LEPIDOPTERA) AS POLLINATOR OF BLUNT-LEAF ORCHID

Edward G. Voss¹ and Richard E. Riefner, Jr.²

As early as 1912, mosquitoes were observed bearing the pollen masses (pollinia) of the blunt-leaf orchid, *Habenaria obtusata* (Pursh) Richardson, in Reese's Bog, a cedar swamp at the north end of Burt Lake, Cheboygan County, Michigan, near the campus of the University of Michigan Biological Station (Dexter 1913). A number of subsequent observers in Canada and the northern United States have reported pollinia of this orchid on mosquitoes, always females of the genus *Aedes*. Details of mosquito behavior and the pollination process have recently been described, with excellent pictures, by Stoutamire (1968), Thien (1969), and Thien & Utech (1970). These authors also noted three species of *Xanthorhœ* (Geometridae) as removing pollinia; two other geometrids were listed by Thien and Utech (1970) as very rarely bearing pollinia, but no other moths or insects of other orders have been reported as pollinators.

The blunt-leaf orchid is a circumpolar species, ranging in North America from the tundra south into Michigan (Voss 1972) as far as the latitude of Saginaw Bay (with an old outlying record in northern St. Clair County). Toward this southern limit of its range, it favors coniferous swamps and forests, where the soil is cold and often moist. The inconspicuous plants are rarely over 20 cm tall, with a single leaf and a few greenish flowers about 5–6 mm long, scarcely larger than the mosquitoes which pollinate them. While it is comforting to contemplate that mosquitoes have some important function in the cedar swamps where this little orchid thrives, they have no monopoly on pollination. We now report, as an apparent pollinator, a small moth not much larger than the orchid flower (and smaller than the geometrid species previously noted).

Anageshna primordialis (Dyar) was originally placed (1906) in *Geshna*, but was transferred by Munroe (1956) to a monotypic new genus. It is now classified in the Pyralidae, subfamily Pyraustinae (not Nymphulinae as originally thought). Forbes (1923, p. 581), who had first questioned its taxonomic placement, stated its occurrence as "Very common in damp places in June and early July." Indeed, it seems to be a rather common moth in the cedar swamps of northern Michigan, although (like most microlepidoptera) not previously reported from the state in any literature we have seen. The wingspread is barely 15 mm, and the wings are brownish with transverse bands of rather angular pale spots (Fig. 1). Specimens in the collections of the University of Michigan Museum of Zoology and the Entomology Museum of the Department of Entomology, Michigan State University, indicate a range throughout the Upper Peninsula and northern half of the Lower Peninsula, i.e., the entire range of the orchid in the state; the moth has also been collected farther south, in Berrien, Livingston, Oakland, and Washtenaw counties. Dates in the northern part of the state are 16 June–21 July. None of the museum specimens bear pollinia, perhaps because they were probably not collected in the habitat of this orchid.

On 24 June 1976, the specimen shown in Figure 1 was noted as it was stuck on a flower of *Habenaria obtusata* in Reese's Bog, where mosquitoes continue to be major pollinators. Eventually the moth pulled itself free without removing the pollinium. However, on 25 June 1981, a moth similarly stuck removed the pollinium, firmly attached to an eye, the usual location for pollinia of this species to become cemented on insect visitors (Fig. 2). One specimen captured in free flight bore two pollinia, both attached to the right eye (Fig. 3).

This little pyralid moth has been repeatedly observed resting on the lateral sepals of the orchid flowers; after probing a flower, it pushes its proboscis into the spur and feeds upon

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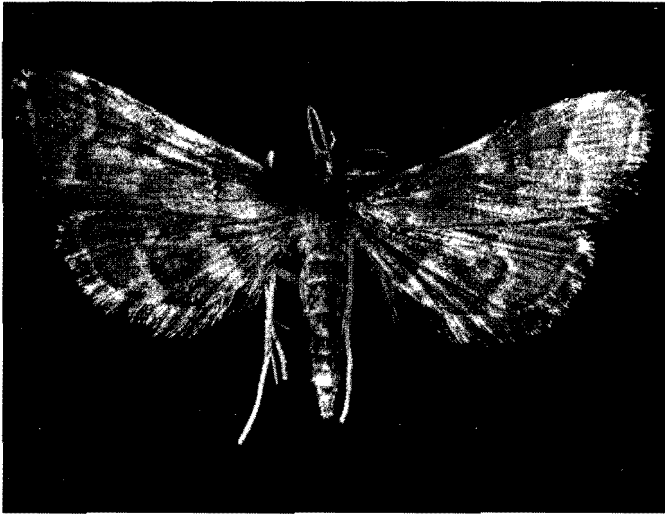


Fig. 1. *Anageshna primordialis* from a flower of *Habenaria obtusata*, Reese's Bog, Cheboygan Co., Michigan, 24 June 1976. Wingspan is 15 mm. (Photo by D. Bay.)

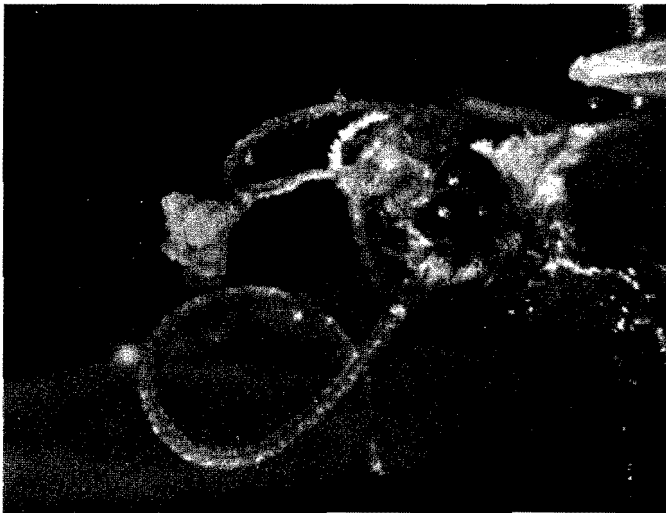


Fig. 2. Pollinium of *Habenaria obtusata* attached to right eye of *Anageshna primordialis* collected on the orchard in Reese's Bog, 25 June 1981. Note the stalk by which the pollinium is connected to the sticky pad or viscidium which is firmly cemented to the lower front of the eye. (Photo by D. Bay.)

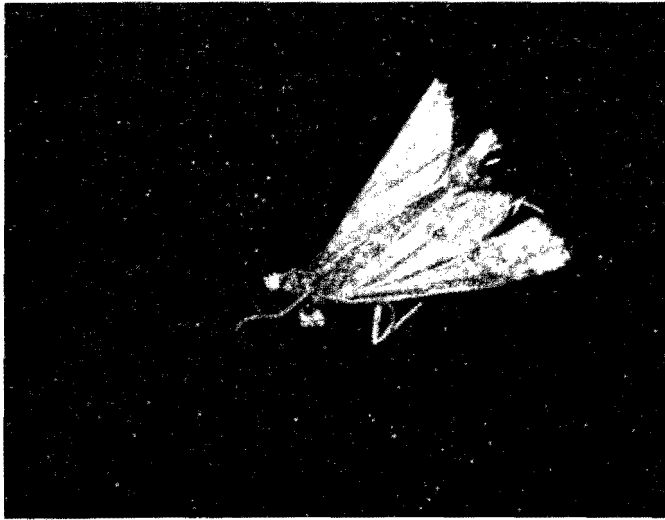


Fig. 3. *Anageshna prinordialis* with two pollinia attached to the right eye, collected in flight in Reese's Bog, 25 June 1981. (Photo by R. Riefner.)

nectar before taking flight. Moths bearing pollinia have been captured into the evening hours. The moths are apparently not attracted to the flowers from a distance, but as suggested by Stoutamire (1968) for mosquitoes, move toward the flowers after coming to rest on the inflorescence. This behavior seems to suggest attractants perceived close at hand. The flowers tested UV⁻ and have no scent perceptible to us.

Thien and Utech (1970) suggested that the longer proboscis in *Xanthorhoë* (about twice as long as in the mosquitoes) might confer some advantage in obtaining nectar, especially from spurs only partly filled. Further observations are required to confirm that moths do indeed deposit pollen on visits to flowers and to determine any means by which they compete for nectar with mosquitoes. *Anageshna*, like the mosquitoes, ranges well to the south of the orchid (into Florida; Kimball 1965, p. 219) and clearly is not closely dependent upon it. In fact, it appears to be a moth of quite catholic tastes, having been reported to visit pig carrion in a state of advanced decay (Payne & King 1969).

ACKNOWLEDGMENTS

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LITERATURE CITED

- Dexter, John Smith. 1913. Mosquitoes pollinating orchids. *Science* 37:867.
- Dyar, Harrison G. 1906. The North American Nymphulinae and Scopariinae. *J. New York Entomol. Soc.* 14:77-107.
- Forbes, William T. M. 1923. The Lepidoptera of New York and neighboring states. Cornell Univ. Agric. Exp. Sta. Mem. 68. 729 p.
- Kimball, Charles P. 1965. The Lepidoptera of Florida an annotated checklist. *Arthropods of Florida and neighboring land areas* Vol. 1. Florida Dept. Agric., Gainesville. 363 p. + 26 pl.
- Munroe, Eugene. 1956. *Geshna primordialis* Dyar, with descriptions of two new genera and two new subspecies (Lepidoptera: Pyralidae). *Canadian Entomol.* 88:126-128.
- Payne, Jerry A. and Edwin W. King. 1969. Lepidoptera associated with pig carrion. *J. Lepid. Soc.* 23:191-195.
- Stoutamire, Warren P. 1968. Mosquito pollination of *Habenaria obtusata* (Orchidaceae). *Michigan Bot.* 7:203-212.
- Thien, Leonard B. 1969. Mosquito pollination of *Habenaria obtusata* (Orchidaceae). *Amer. J. Bot.* 56:232-237.
- Thien, Leonard B. and Frederick Utech. 1970. The mode of pollination in *Habenaria obtusata* (Orchidaceae). *Amer. J. Bot.* 57:1031-1035.
- Voss, Edward G. 1972. Michigan Flora Part I Gymnosperms and Monocots. Cranbrook Inst. Sci. Bull. 55. 488 p.