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### CYPRIPEDIUM FLOWERS ENTRAP ADULT THYMELICUS (LEPIDOPTERA: HESPERIIDAE) IN NORTHERN MICHIGAN

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**ABSTRACT.** Adults of the introduced skipper *Thymelicus lineola* were attracted to the nectarless flowers of the native orchids *Cypripedium reginae* and *C. calceolus*. No doubt in search of food, they crawled into orchid labella. Up to 24 skippers and other insects became entrapped and died in a single labellum.

The European skipper, *Thymelicus lineola* (Ochsenheimer), was first discovered in North America in London, Ontario, Canada, in about 1910 (Saunders, 1916; Klots, 1958). Since this time it has spread to British Columbia, New Brunswick, Manitoba, Connecticut, New Jersey, New York, Pennsylvania, Ohio, Michigan, Maryland, and Virginia (Burns, 1966, pers. comm.; Preston & Westwood, 1981) and has become a pest of hay fields in Canada (McNeil & Duchsne, 1975; McNeil et al., 1976). Adults seek nectar from many species of flowers including the lady's-slipper orchids *Cypripedium reginae* Walter and *C. calceolus* L. This report increases knowledge about the peculiar entrapment of adult *T. lineola* by the labella of these orchids in northern Michigan. Arthur (1962) previously reported this phenomenon regarding this butterfly and *C. reginae* in Ontario, and Catling (1974) reported it in both Ontario and southern Michigan.

Observations were made in summer, 1977, in a marshy and swampy area on the property of the University of Michigan Biological Station, Cheboygan County, Michigan, when the skipper was abundant. Orchid labella that were partially or wholly dried after anthesis were removed from pedicels for inspection of their contents. *Thymelicus lineola* was uncommon in the study area in the summer of 1978 when I attempted to continue this study.



FIG. 1. A *Thymelicus lineola* probing the labellar orifice of a nectarless flower of *Cypripedium calceolus*.

Thymelicus lineola frequently alighted on orchid flowers, extended their proboscides into labellar openings and crawled into the labella (Fig. 1). They apparently obtained no food from these nectarless flowers (Stoutamire, 1967; pers. obs.). Cypripedium labella are adaptations for bee, not butterfly, pollination; bees may become temporarily entrapped in them and effect pollination by depositing pollinia as they escape through one of two small orifices at the labella bases (Stoutamire, 1967; Catling, 1974).

On 26 June, 219 *T. lineola* were found in 42 *C. reginae* flowers. Each flower contained from 0 to 11 males ( $\bar{x} = 5$ ) and from 0 to 4 females ( $\bar{x} = 0.5$ ). On 4 July, 42 flowers contained 427 dead *T. lineola*, with from 0 to 15 males ( $\bar{x} = 7.4$ ) and from 0 to 12 females ( $\bar{x} = 2.7$ ) per flower. The flowers contained significantly more males (90.41%) on 26 June than on 4 July (73.0%) (P = 0.035, test for equality of two percentages). Up to 24 *T. lineola* were found in a single labellum. Catling (1974) reported up to five of them per labellum. In late June, I discovered a female acridid grasshopper, *Melanoplus islandicus* Blatchley, eating dried *T. lineola* that she obtained through a hole in a dried labella. These flowers also contained salticid and thomisid spiders; entomobryid springtails; perlodid stoneflies; reduviid and mirid bugs; derodontid, elaterid, and lathridiid beetles; anisopodine, chloropid, phorid, and syrphid flies; geometrid moths; and andrenine bees. Most of these arthropods were dead.

On 26 June and 4 August, a total of eight of 11 inspected *C. calceolus* flowers contained insects. From one to three males of *T. lineola* were in four of the flowers and one female *T. lineola* was in one flower. These flowers also contained a thomisid spider, a culicid fly, geometrid moths, lathridiid beetles, and halictine, andrenine and megachilid bees.

The native skippers, Polites themistocles Latreille and P. coras (Cramer), also enter Cypripedium labella; however, they were not found entrapped in them (Guignard, 1886; pers. obs.). In comparison to T. lineola, these native butterflies may be able to escape from the labella due to their greater strength, behavioral flexibility, or both. Catling (1974) suggested that Euphyes and Ancyloxipha skippers flying in a bog with C. reginae in Ontario may not be trapped due to their having feeding habits different from T. lineola. Further, he made the plausible hypothesis that fatal entrapment of T. lineola is an "accident" due to their encountering a North American orchid with characteristics of C. reginae. Finally, he surmised that pollination of this orchid may be reduced by entrapment of T. lineola because they could obstruct pollinator movements. These and other interesting hypotheses regarding this skipper and these orchids remain to be tested.

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