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SUMMER AZURE (*CELASTRINA NEGLECTA* W. H. EDWARDS, LYCAENIDAE) NECTARING ON POISON IVY (*TOXICODENDRON RADICANS*, ANACARDIACEAE)

The purpose of this communication is to report on the ecological relationship between poison ivy (*Toxicodendron radicans* [L.] Kuntze) and Summer Azure (*Celastrina neglecta*, W. H. Edwards; Papilionoidea: Lycaenidae) as discovered during a systematic survey of poison ivy pollination during the summer of 2005.

Daily observations of at least one hour in length were conducted at a central Iowa site (East River Valley Park/Carr Woods, Ames, Iowa; Story County) from June 6–June 20, 2005. June 6 was the day of the first recorded open inflorescence and pollination event and June 20 the last recorded pollination event. This site harbors both climbing and nonclimbing individuals of eastern poison ivy (*Toxicodendron radicans* subsp. *negundo*, Anacardiaceae; Gillis 1971). Each pollination event was photographed using an Olympus D-540 (either still shots or video) and was accompanied by field notes indicating length of visit and time of day.

Celastrina neglecta visited inflorescences on three of the fifteen days that viable inflorescences were available (Fig. 1). Five distinct nectaring observations were recorded on June 8, eleven on June 9, and one on June 10. All events occurred between 13:00 and 18:00 hours, and the observation period on each of the three days was approximately the same (~2 h). These days were towards the beginning of the flowering period when inflorescences were most abundant throughout the population (pers. obs.). Multiple individuals were observed visiting the same plants simultaneously on both June 8 and 9, indicating visits were not by a single butterfly that repeatedly visited the same site.

Fig. 1. *Celastrina neglecta* nectaring at an inflorescence of poison ivy (*Toxicodendron radicans*) on June 8, 2005.

Total length of time spent per visit on a single inflorescence was recorded on both June 9 and June 10 (n = 12). Mean time per visit was 39.3 s (standard deviation = 38 s; median = 37.6 s). During this observation period, *Celastrina neglecta* would only nectar at an inflorescence if it was the sole visitor; when a competing visitor (such as a bee) alighted on the same inflorescence, the butterfly would immediately leave. *Celastrina neglecta* was persistent in its visits even when strong wind was present.

Previously, the only known relationships between Lepidoptera and poison ivy and its relatives (*Toxicodendron* section *Toxicodendron*, Anacardiaceae) were for larval feeding and shelter (Criddle 1927; Dyar 1904; Eastman and Hansen 1991; Gillis 1971; Richers 2007; Robinson *et al*. 2007; Tietz 1972). Nectar-seeking at poison ivy (*T. radicans)* by *Celastrina neglecta* represents a novel relationship between adult Lepidoptera and poison ivy previously unrecognized, and enhances our understanding of Lepidoptera-*Toxicodendron* interactions. This observation also adds to our understanding of the diversity of plant lineages for which Lepidoptera may provide pollination service. Insects from two other orders are also known to pollinate poison ivy, including multiple coleopteran families (*e.g.*, Cantharidae, Cerambycidae, and Cleridae; Senchina 2005) and the ubiquitous honeybee (*Apis mellifera*, Hymenoptera:Apidae; Gillis 1971; Lieux 1981). The identification of *Celastrina neglecta* as a poison ivy floral associate suggests that adults from multiple insect orders may be important in poison ivy pollination ecology.

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ROAD CROSSING BEHAVIOR OF AN ENDANGERED GRASSLAND BUTTERFLY, *ICARICIA ICARIOIDES FENDERI* MACY (LYCAENIDAE), BETWEEN A SUBDIVIDED POPULATION

Additional key words: conservation, *Lupinus*, Oregon.

As high quality grasslands dwindle from degradation, habitat fragmentation increases, and urbanization expands butterflies must cope with the encroachment of human modified landscapes if they are to survive. Some butterflies have incorporated exotic larval host plants and non-native nectar resources to survive in urbanized habitats (Shapiro 2002, Graves & Shapiro 2003) while others occupy the isolated vestiges of historically dominant habitats (Severns *et al*. 2006). For butterflies to survive in human modified habitats they must successfully navigate amongst an array of unnatural physical structures like residential areas, roads, vacant lots, agricultural fields, orchards, to find adult resources, mates, and larval host plants. While some vagile, polyphagous butterflies appear to be successful in urban situations (Blair & Launer 1997) others with narrow host plant breadth and specific habitat requirements suffer as habitat modification increases. If we are to conserve, create, and maintain areas for butterflies with specialized habitat requirements, then understanding how these species respond to human modified habitats is important for conservation planning.

Fig. 1. Photograph of narrow, two-lane paved road, and hedgerow (3m - 5m tall x 100m long) separating the southern subpopulation habitat (left) and the northern subpopulation (behind the hedgerow).

Icaricia icarioides fenderi Macy (Lycaenidae), hereafter Fender's blue, is an endangered, endemic species to remnant Willamette Valley upland prairies of western Oregon, U.S.A. Fender's blue is presently known from about 15 remnant upland prairie sites (Wilson *et al*. 2003) and most of these are fragmented and isolated. About half of the remaining Fender's blue butterflies are located within the city limits and just west of Eugene, Oregon (Schultz *et al*. 2003), suggesting that conservation of this species will likely involve butterfly movement through human modified habitats (McEntire *et al*. 2007). Furthermore, Fender's blue appears to be limited to primarily local movements (Schultz 1998) and its primary larval host, *Lupinus sulphureus* Dougl. ex Hook. ssp. *kincaidii* [C.P. Smith] Phillips (Fabaceae), Kincaid's lupine, is also a locally restricted, threatened species that can be difficult to establish (Schultz 2001, Severns 2003). In the near future, Fender's blue will face the pressures of navigating through a matrix human modified habitats as open areas surrounding remnant native prairies are becoming increasingly urbanized. An understanding of how Fender's blue responds to roads and physical barriers that isolate butterfly populations and suitable grassland habitat will contribute important information to aid landscape level butterfly conservation planning.

I selected a population of Fender's blue butterfly that occupies remnant upland prairie in western Oregon, USA to study if a road and hedgerow were barriers to butterfly movement. This study site, ≈10km west of Eugene, contains one of the larger remnant butterfly populations that is bisected by a paved, narrow two-lane road, bordered on the east side by a 3–5m tall