

PhD Dissertation Defense

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Title: Temporal And Spatial Aspects Of The Colonization And Re-Colonization Of Dragonflies In Lentic Habitats

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ABSTRACT

This dissertation describes dragonfly species of Hanover County, Virginia, which species are most likely to be first colonizers of a new or re-constructed impoundment, which species are never found as first colonizers, and which species are the dominant species three years after the impoundment fills with water. In this Piedmont region of Virginia, *Erythemis simplicicollis*, *Libellula incesta*, *Libellula luctuosa*, and *Perithemis tenera* were the first to colonize all sites researched. *Celithemis eponina* and *Pachydiplax longipennis* did appear as first colonizers, but not at all sites. Proximity to a source site appears to be the determinate for these six species, not any size or behavioral characteristics. Seventeen species, no matter what the proximity of a source site, never were first colonizer species for a new impoundment. During this research three species not previously noted on published species lists from the federal government for this county were collected: *Anax junius*; *Libellula pulchella*; and *Pantala hymenaea*. Seven species found during this study are new additions for the Commonwealth of Virginia official species list for Hanover County: *A. junius*; *A. longipes*; *Celithemis eponina*; *C. fasciata*; *Libellula vibrans*; *Pantala flavescens*; and *Tamea lacerate*. Investigations regarding dominance after three years indicated that dominance did not change; whatever species arrived first, maintained dominance.

This dissertation investigated the impact of wind on dispersal direction. In a manipulated mark and recapture experiment, findings indicate that wind velocity in excess of 5 km/hr. resulted in the dispersing dragonflies traveling downwind. Less than 5 km/hr. results in random direction of flight. Wind direction may impact direction of dispersal for adult dragonflies. Larval dragonflies were reared in an outdoor vivarium, the first of its kind, with documented survival of 74%, or greater, of the teneral.