

UNDERSTANDING VARIATIONS IN AUTUMN MIGRATION OF NORTHERN WHITE-TAILED DEER BY LONG-TERM STUDY¹

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ABSTRACT

Much of our present knowledge of mixed migration strategies of northern white-tailed deer (*Odocoileus virginianus*) comes from short-term studies, which limits the observed variation of winter severity, its potential influence on the migration behavior of study cohorts, and our understanding. From 1991 to 2006, we assessed: (1) the incidence of autumn migratory versus non-migratory behavior of 335 adult (>1.0 years old) females; (2) what proportion were conditional versus obligate migrators; (3) the importance of winter severity as a factor affecting the migratory response; and (4) the effect of winter severity and study length on the classification of deer as conditional or obligate migrators and the overall composition of the study populations. Annual winter conditions ranged from historically mild to severe. The annual estimated proportion of deer migrating from spring-summer-autumn range to winter range was positively related to winter severity, and the cumulative probability of deer migrating tracked accumulating snow depths as winters progressed. However, the relationship was highly variable, largely attributable to the annual variation in migratory behavior of individuals radio-monitored for 2-7 years. Importantly, due to the variability of autumn-winter weather conditions, we noted that the proportion of deer we classified as obligate migrators was inversely related to the number of years individuals were monitored. Further, the composition (non-migratory, conditional and obligate migrators) of the study cohort was strongly influenced by the severity of winter conditions in the year of capture, as well as in subsequent winters of monitoring.

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