

Colby Hill Ecological Project

A Survey of Surface-Active Terrestrial Invertebrates at the
Guthrie-Bancroft Farm in Lincoln and Bristol, Vermont

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Executive Summary

Terrestrial invertebrates constitute an important component of faunal biodiversity and provide an attractive alternative to larger animals for ecosystem monitoring. In this study, we examined the surface-active terrestrial invertebrate diversity in three different forest ecosystems (rich hardwood forest, transition hardwood forest, and spruce-fir forest) at the Guthrie-Bancroft Farm in Lincoln and Bristol, Vermont.

We collected 6158 specimens belonging to 21 orders in 53 samples (35 pitfall and 18 litter) taken at two times during the 1999 field season. We identified 2014 specimens to the family level and sorted them into 84 invertebrate families. Using extrapolation techniques, we generated three estimates of overall family richness for surface-active invertebrates, which ranged from 120-159 families.

Non-statistical comparisons of the family richness and the distinctness of the invertebrate assemblages for each of the three forest ecosystems suggested that the rich hardwood forest was the most diverse. In addition to having several uncommon species, this ecosystem had the highest number of observed families, the highest estimates of family richness, and the highest number of unique families. Two factors that may account for the higher diversity of the rich hardwood forest are moisture and nutrients. The transition hardwood forest appeared to be the least diverse of the three ecosystems, having the lowest estimates of family richness and the lowest number of unique families. The results of these ecosystem comparisons, however, should be treated as preliminary.

We selected three focal groups (spiders, ground beetles, and ants) and identified a total of 333 specimens (191 spiders, 112 ground beetles, and 30 ants) to the species level. We identified 19 species of ground beetles and generated an overall ground beetle species richness estimate of 27 for Guthrie-Bancroft Farm. This represents approximately 50 % of the surface-active ground beetles known to occur in the nearby Green Mountain National Forest. We identified 30 species of spiders and estimated that the overall surface-active species richness for the three forest ecosystems ranged from 39-42 species. This represents about 6% of the spider fauna (for the families collected) known from the northeastern states and Canadian provinces.