

Geospatial and temporal niche partitioning of necrophagous flies in a recreationally used urban forest block in Boston, Massachusetts

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Currently, literature on the ecology of forensically relevant flies in the northeastern United States is lacking. However, it is well established that habitat characteristics (such as urbanization and forestation), geographic location, habitat complexity, and heterogeneity are important factors in determining what species reside in the area. Massachusetts presents a unique assemblage of forested habitats adjacent to densely populated city blocks, especially in the greater Boston area. The goal of this study is to understand geospatial and temporal variation of necrophagous fly populations in recreationally used hiking trails. Curry College is 11 km from downtown Boston, and exists adjacent to the Blue Hills Reservation, a ~2,800 hectare protected state park, connecting it to the ~250 hectare Neponset River Reservation through a protected wetland area that bisects north and south campus. An ~1.6 km hiking trail traverses the protected land and forested area around college residential buildings. Necrophagous flies along this trail were monitored using fly traps baited with cat food and hung ~5 ft off the ground during the Fall of 2022. Traps were placed across 24 pre-determined locations with at least ~100 meters between sampling locations. Traps were placed for one week, with each location sampled once every four weeks. All flies were identified to family and necrophagous fly families were identified to species, with ten fly families and eleven necrophagous fly species identified. Spatial means indicate that there is spatial niche partitioning across the landscape, expressing that microhabitats within this habitat are playing a role in species distributions.