INTRODUCTION

The Endangered American burying beetle (Nicrophorus americanus Oliver) (ABB) (fig. 1) is absent from 90% of its home range in North America. The easternmost population exists on Block Island, RI. With funding from USFWS, a reintroduction of ABB to NY is underway. One factor which may affect the post-release viability of ABB from RI to NY is overwintering habitat. As a univoltine species, ABB must survive through winter before adult burying beetles have some control over selecting an overwintering site, which may play a role in the persistence of their species. This olfactometry study examines the site selection of two populations of N. orbicollis (NY & RI) (fig. 1), a surrogate species, to determine if population influences overwintering site selection.

MATERIAL & METHODS

- A total of 216 N. orbicollis (108 NY & 108 RI) were reared in a laboratory at SUNY Cobleskill.
- Beetles were acclimated for 24-hours before trials (air temp 5 °C, light cycle 11 hours light / 13 hours dark).
- A modified four-arm olfactometer was constructed for use in this experiment.
- Four choices included NY forest leaf litter, NY forest soil, Peromyscus sp. nesting material, and a blank control.
- Choice was determined when the beetle's entire body crossed a threshold line in the arena.

RESULTS

A total of 200 N. orbicollis, 100 of each population, were run through olfactometer trials. Forest leaf litter was the substrate preferred most by both populations (35 RI, 34 NY). The control was found to be the second most preferred (30 RI, 27 NY) and forest soil was the third most selected (21 RI, 21 NY). The nesting material of Peromyscus sp. was the least selected among both populations (14 RI, 18 NY) (fig. 4). No statistically significant relationship was found between population and choice ($\chi^2 = 0.672, df = 3, p = 0.880$).

DISCUSSION

Nicrophorus beetles are defined as habitat generalists. Their reliance on small vertebrate carrion (fig. 5), requires them to be mobile species. Though N. orbicollis and ABB are found in mature forested habitat, it may only be in relation to the small vertebrates that reside there. The inclusion of small mammal nesting material was to test potential habitat provisioning behaviors found among either population. Using abandoned nesting sites and burrows of other species for overwintering survival is a behavior common to both vertebrates and invertebrates alike. Although the nesting material was the least preferred choice, it cannot be determined whether habitat provisioning is a behavior found among N. orbicollis.

As no significant relationship between the populations and choices were observed, it may be likely that habitat management specific to Nicrophorus beetles is not of greatest concern. However, it may be impactful to manage habitat for the small vertebrate species which Nicrophorus beetles require for reproduction.

ACKNOWLEDGEMENTS

The Student Grant Program for Research and Creative Activity at SUNY Oneonta, the State University College at Oneonta Foundation, Inc., SUNY Oneonta Alumni Association, SUNY Oneonta Biology Dept, SUNY Cobleskill, US Fish & Wildlife Service, Rhode Island Dept of Environmental Management, Greenwoods Conservancy, Scott Cummings and the Block Island Nature Conservancy, the Peterson Family, Sophia Knightly, Kathy Meekee, Michael Carson, and Autumn Comacho.

Literature Cited