



Use of Forested Habitat Adjacent to Highways by Northern Long-Eared Bats

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ABSTRACT

Bat populations throughout the Northeast have undergone precipitous declines in less than a decade due to the fungal disease white-nose syndrome, with Northern long-eared bat (*Myotis septentrionalis*) suffering the most severe declines of any species. The overarching objective of the proposed research was to address several major gaps in the knowledge of Northern long-eared bat distributions and activity as they relate to the use of habitat along or adjacent to highways in New England. We first conducted a comprehensive literature review of peer-reviewed articles on the habitat use, distribution, roosting locations, and effects of noise and roads on Northern long-eared bats throughout the United States and Canada. We then compiled all available survey data to assist with determining habitat use and the effects of roads on this bat species, with a focus on habitats of the New England region. Using presence-absence occupancy modeling, we determined that Northern long-eared bat distributions change spatially across New England but did not find a strong relationship between their distributions and any highway features or other landscape attributes.

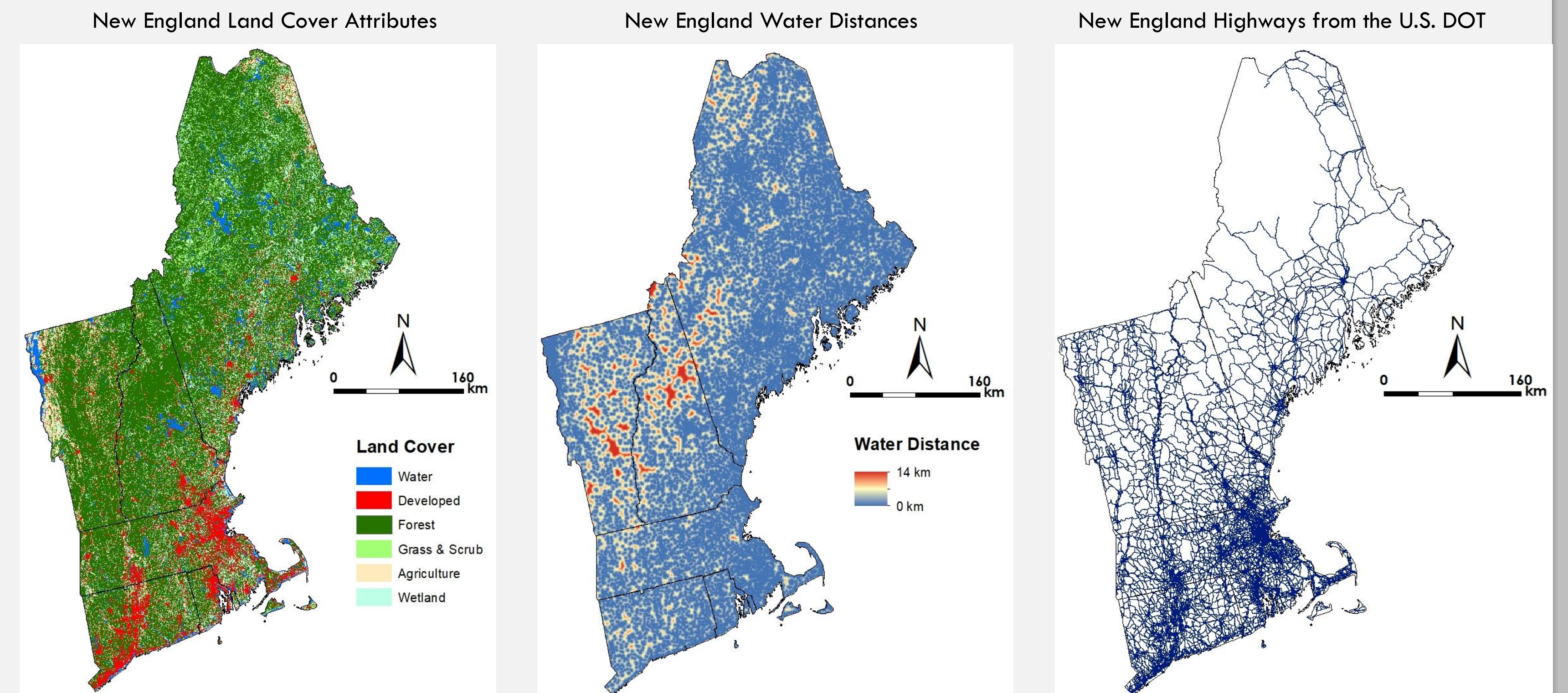
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The contents of this poster reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein.

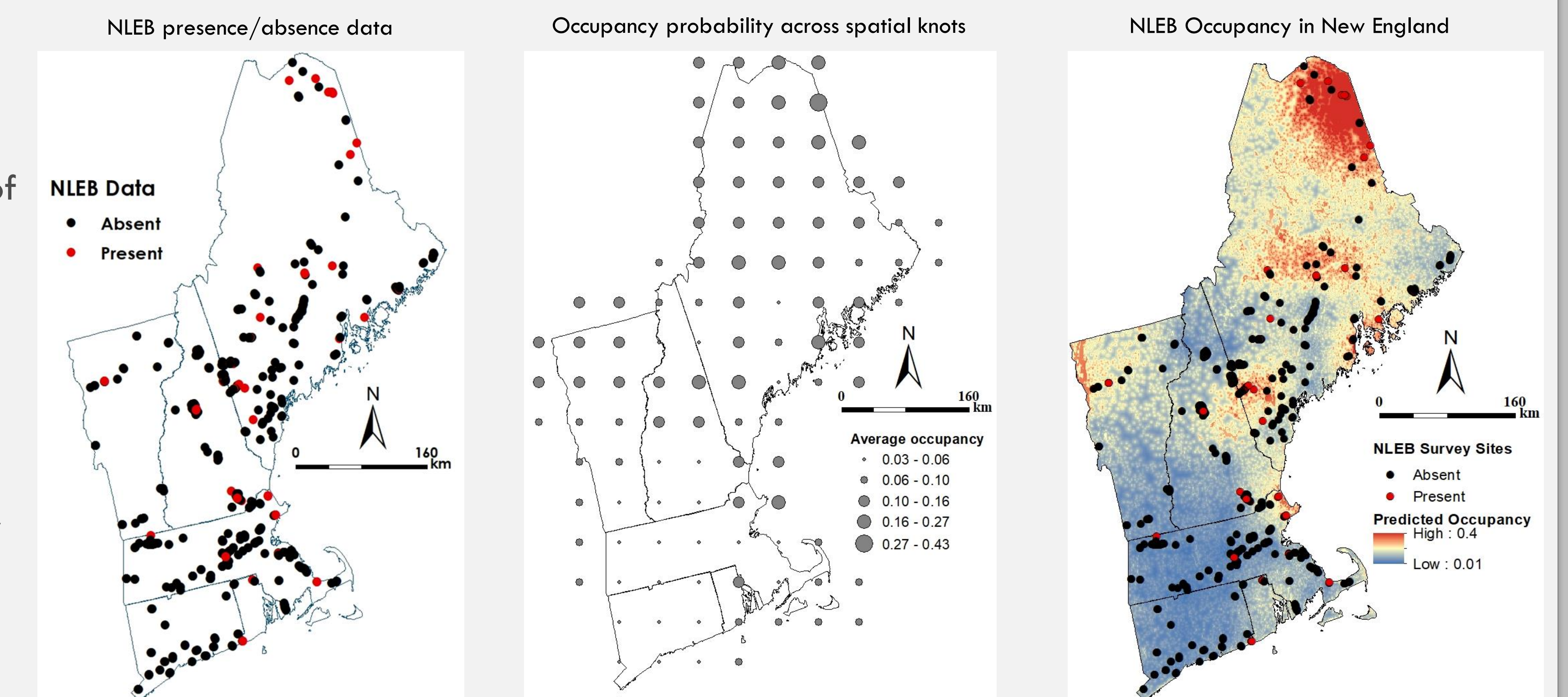
DATA

We compiled all available survey data from New England to determine Northern long-eared bat (NLEB) distributions in the region and assess potential road and landscape effects. While we collated over a thousand survey points, once we excluded problematic data (e.g. uncertain species ID), only 65 of 711 survey points had a verified NLEB presence. We assessed the relationship of 20 highway and landscape variables on Northern long-eared bat presence such as land cover, distance to water, and highway attributes.



ANALYSIS

We applied cutting-edge presence-absence occupancy modeling to assess the relationship of the highway and landscape variables to Northern long-eared bat presence. Occupancy models indicate that Northern long-eared bat distributions change spatially across New England, with highest occupancy in Northern Maine but were generally low overall, ranging from 0.01–0.4 chance of occupancy. Moreover, we found no strong relationship between Northern long-eared bat distributions and any highway or other landscape features.



CONCLUSIONS

Northern long-eared bat populations have declined so drastically that even with more extensive sampling, sufficient detections may not be achievable for robust estimates of occupancy and to assess potential landscape and road effects.

To evaluate potential stressors of roads on bats, such as noise creating a “zone of influence” near roadways, surveys should be established at increasing distances perpendicular to roads using an appropriate experimental design.