Titmice as community informants: information-scapes for coping with landscapes of fear

Kathryn Sieving[*][†][1] and Jessica Burnett[1]

[1]University of Florida – Department of Wildlife Ecology and Conservation Gainesville, Florida, USA 32611-0430, United States

Abstract

Birds in family Paridae encode specific anti-predator information in their vocalizations that is used to manage predator-attack risk by diverse species. We hypothesize that Paridae accurately assess predator attack risks across landscapes they inhabit. Moreover, because of their vocal abilities and high abundances, we propose that Paridae produce information-scapes that accurately map landscapes of risk (fear) for fellow prey to use in coping with spatiotemporal variation in predation risk.

To determine if Paridae accurately assess predator attack risk, we are quantifying (a) actual attack risk and whether resident Parids and other birds exhibit (b) higher perception of ambient attack risk where actual risk is highest. To determine if Paridae are, in turn, producing accurate information-scapes regarding predation risk variation, we are determining whether (c) risk-relevant information encoded in calls co-varies with actual attack risk.

For (a) we are recording raptor approaches to avian distress calls broadcast during playback in conifer versus hardwood forest and have determined preliminarily using GLM that raptor approaches are more common in species-rich hardwood than conifer. For (b) we are conducting two playback studies: broadcast of (i) screech owl calls to attract bird mobs in Winter and (ii) territorial calls of Paridae (titmice, chickadees) in Spring to generate territorial display in both habitats. Assuming that in both mobbing and territorial displays, birds' perceptions of ambient attack risk are reflected in their conspicuousness, we are using behavioral metrics (calling rate, approach). Preliminary GLM analyses for (b) detect more conspicuous behaviors in conifer than hardwood. Finally, to address (c), we are gathering recordings with 'song meters' and applying automated spectral imaging to extract and quantify information encoded in parid calls for statistical comparison of the structure and production of risk-specific information by habitat type (analyses underway).

Keywords: Paridae, encoded anti, predator information, sound, scapes, information, scapes

[*]Speaker
[†]Corresponding author: chucao@ufl.edu