

## Title: Contributions of Perception, Learning, and Memory to Animal Movement

### Abstract:

Explosive growth in the availability of animal movement tracking data is providing unprecedented opportunities for investigating the linkages between behavior and ecology over large spatial scales. Cognitive movement ecology brings together aspects of animal cognition (perception, learning, and memory) to understand how animals' context and experience influence movement and space use, affording insights into encounters, territoriality, migration, and biogeography, among many other topics.

Perception — the acquisition and interpretation of information through sensory mechanisms — is critical to how animals interact with and respond to their worlds, and is fundamentally non-local in character. Learning, when defined from a psychological perspective, emphasizes information acquisition via experience, and when defined from a task-based perspective, emphasizes improved performance through repetition. Studies of animal movement afford opportunities for exploring the roles of both information acquisition and repetition in navigational tasks. Memory, often defined as the acquisition, encoding, storage, and retrieval of information, provides a platform for informed decision-making with regard to movement. Ongoing efforts emphasize the co-evolution of cognitive and movement capacities, the inference of memory use from movement patterns, and the role of movement behavior in shaping memory.

I will share results from empirical and theoretical investigations of perception, learning, and memory in the context of animal movement. Key findings, drawn from a variety of systems and approaches, will 1) outline the role of perception (including context-dependent changes in behavior mediated by perception) for enhanced resource acquisition, and 2) discuss contributions of repetition and/or social context for route following, pattern formation, and space use.

