

High-Throughput Movement Ecology

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Movement ecology has rapidly evolved since its introduction >12 years ago by an international group in which Prof. David Saltz played a key role. This progress has been driven by new developments in movement theory, data-processing tools and, in particular, wildlife tracking techniques that have revolutionized our capacity to obtain detailed movement information in space and time for an extended range of taxa. With such rapidly increasing rates of data generation, and ongoing advances in the processing of big data, movement ecology is rapidly shifting from a data-poor to a data-rich discipline, similarly to previous high-throughput revolutions in the fields of genomics, bioinformatics, drug discovery, ecoinformatics, meteorology, and remote sensing. By providing rich high-resolution data on multiple individuals on the move, the high-throughput movement ecology (HTME) revolution breaks new grounds in addressing long-lasting big basic-science questions, such as how animals navigate in the wild, what are the main drivers and consequences of conspecific variation in behavior and cognition and of intra- and inter-specific interactions among individuals, and how and why movement varies across spatial and temporal scale. Furthermore, as high-resolution wildlife tracking data provide the only way to directly assess how individual animals respond to environmental changes and threats, HTME brings groundbreaking opportunities for addressing global concerns of biodiversity loss and ecosystem functioning in an era of drastic human-induced environmental change. In this talk, I will briefly overview the history, current state-of-the-art and future prospects of HTME, highlighting some of the most exciting developments and key challenges, enriched by snapshots from David's four-decade long movement ecology research.

