

COMPLEX LIFE-HISTORIES AND BIOGEOCHEMICAL CYCLES; INTERACTIONS
BETWEEN AMPHIBIAN LIFE-HISTORY STRATEGIES AND ELEMENTAL CYCLING

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ABSTRACT

All life must balance two key currencies: energy and matter. My dissertation focuses on the struggle that animals face in balancing various permutations of the latter currency: elements. The availability of essential elements governs life processes from cellular to landscape scales. Likewise, biogeochemical cycles are intimately tied to and affected by biotic processes.

At the ecosystem level, exchanges of materials and energy across system boundaries (e.g., between terrestrial and aquatic) vary in their spatial and temporal voracity, but are often essential to the functioning of recipient systems. Animals with complex life-histories (e.g., pond-breeding amphibians, diadromous fishes, holometabolous insects) use multiple habitats at various stages of their lives. In doing so, they translocate energy and matter between disparate systems as well as serving as within-system cyclers. We use amphibians to test various interactions of animals with biogeochemical cycles and their role in shaping spatial subsidies.