1077-92-2945 **Wayne M. Getz*** (wgetz@berkeley.edu), Dept ESPM, UC Berkeley, Berkeley, CA 94720-3114.
A Biomass Flow Approach to Population Models and Food Webs.

The Lotka and Volterra paradigm for modeling interacting species lacks a trophic-level-independent formulation of population growth, leading to ambiguities in how to treat populations that are simultaneously both prey and predator. Here I present an approach that provides a unified framework for accounting for biomass transformation in food webs that include both live and dead components of all species in the system. This biomass transformation formulation (BTW) allows for a unified treatment of webs that include consumers of both live and dead material and incorporates scavengers, parasites, and other neglected food web consumption categories in a coherent manner. I trace how BTW is an outgrowth of the metaphysiological growth modeling paradigm and I provide a general compact formulation of BTW in terms of a three-variable differential equation formulation for each species in the food web: viz. live biomass, dead biomass, and a food-intake-related measure called deficit-stress. I then illustrate the application of this new paradigm to provide insights into two-species competition in variable environments and discuss application of BTW to food webs that incorporate parasites and pathogens. (Received September 23, 2011)