

UNIVERSAL PATTERNS OF MATTER AND ENERGY FLUXES IN LAND AND OCEAN ECOSYSTEMS

A. V. Nefiodov

*Petersburg Nuclear Physics Institute named by B. P. Konstantinov of NRC «Kurchatov Institute», Gatchina, St. Petersburg, 188300, Russia
E-mail: anef@thd.pnpi.spb.ru*

Abstract. In work [1], the fundamental relationships for the fluxes of matter and energy in terrestrial ecosystems were obtained. Taking into account the universal characteristics of biota, these relationships permitted an estimate to be made of the vertical thickness of the live biomass layer for autotrophs and heterotrophs. The distribution of consumption of biota production as dependent on the body size of heterotrophs was also investigated. For large animals (vertebrates), the energy consumption in sustainable ecosystems was estimated to be of the order of one percent of primary production. In this comment, it is shown that the results of work [1] also hold true for ocean ecosystems and thus are universal for life as a whole. This is of paramount importance for human life on Earth.

Keywords: biotic regulation, energy flux, photosynthesis, metabolism, productivity, autotrophs, heterotrophs, plankton.