

DETRITUS AS A FOOD SOURCE IN MARINE ECOSYSTEMS: AN OVERVIEW OF RESEARCH IN THE 1980's

Pitiwong Tantichodok

*Institute of Science, Walailak University, Thasala
Nakhon Si Thammarat 80160, Thailand*

ABSTRACT

Research in the 1980's leads to the conclusion that detritus derived from phytoplankton and macroalgae in the early stages of decomposition is a good food source. In contrast, detritus from vascular plants is a poor food source. In the early phase of decomposition, however, its nutritional value will increase with age. When any detritus approaches the final stage of decomposition, which is becoming humic materials, the nutritional value of detritus decreases greatly. Bacteria can provide a nitrogen source to consumers, but the microbial biomass is too low to meet the energetic demands for the consumer. Detritus becomes substrates providing potential energy to do work as well as substrates for maintenance (building or repair) and for metabolic processes. Calorific availability, utilizability, and certain nutrient supplements depend on types or origin of detritus and seasonal availability. Detritus feeders are predominantly common in many marine tropical ecosystems, they are important in terms of linking detritus with economically important top consumers like fish.

INTRODUCTION

The term "detritus" generally refers to dead or non-living organic matter. However, certain organisms (microflora and microfauna) which are intimately associated with the non-living particulate organic matter are usually considered to be part of detritus as well (Mann 1972). Detritus is defined as all

types of biogenic material in various stages of microbial decomposition which provide some potential energy to consumer species (Darnell 1967). Wetzel *et al.* (1972) also gave another working definition of detritus to emphasize that the potential energy of detritus to consumers is not derived from carnivory or herbivory. The definition is as follows: non-predatory losses of organic carbon from any trophic level (in cl u d i n g egestion, excretion, secretion, etc.) or inputs from sources external to the ecosystem that enter and recycle in the system (allochthonous organic carbon). By these definitions, detritus also includes dissolved forms of organic matter as well as mucus and faeces from living organisms. Dissolved organic matter can be either utilized by bacteria, adsorbed onto particles to form bigger aggregates or directly actively taken up by soft-bodied animals through the body wall.

Most of the organic detritus appears to be derived from plants. In estuaries, detrital organic matter can come from the terrestrial sources (allochthonous origin) or from estuaries themselves (autochthonous). In temperate shallow waters and salt marsh areas, the major source is probably from the marsh grass, *Spartina alterniflora*. In deeper waters, phytoplankton contributes mostly to the detrital pool, especially after sporadic phytoplankton blooms (Wilson, *et al.* 1985). In the tropics, mangroves play a more important role in contributing to the detrital pool in estuaries.