

A Comparative Study on the Radula of Three Coleoid Cephalopods

Deepak V. SAMUEL¹ and Jamila PATTERSON¹

Abstract

Radula is a unique feeding organ in mollusc specifically to gastropods and cephalopods. They are useful to grind the food besides other functions. The radula for gastropods is classified into different types but there is no such classification for cephalopod radula. There have been differences in opinion due to the variation and complexity in the radula of individual species of cephalopods. In the present study, the radula of two cuttlefishes (*Sepia prashadi*, *Sepiella inermis*) and a squid (*Sepioteuthis lessoniana*) were studied and the different structures of the individual tooth in the radula are found to be valuable for the taxonomical identification and confirmation of the species.

Key words: cuttlefish, laterals, rachidian, radula, squid

Introduction

The phylum mollusca is characterized by the presence of a long ribbon-like tooth called radula. This apparatus is found nearly in all molluscs in one form or another, and primarily suited for scraping food particles from a surface, although it can assume other functions (MEGLITSCH and SCHRAM 1991). The radula is a unique feeding organ and one of the distinguished features of molluscs (BRADNER and KAY 1996). The radula is further divided into elements, which are different structures of lateral and marginal teeth and these elements vary in different species. The central tooth is called the rachidian followed by the laterals, the marginals and the marginal plates. It is proposed that a nomenclature be established for cephalopods, based on that used for gastropod molluscs (FRETTER and GRAHAM 1962). The gastropod radulae are classified into Docoglossate or Stereoglossate, Ptenoglossate, Rachoglossate, Riphidiglossate, Taenioglossate and Toxoglossate (FRETTER and GRAHAM 1994) but there are no such classifications for cephalopods. As taxonomy is the basis for animal identification and classification of radula becomes an important key in describing a specific species.

Sepia prashadi WINCHWORTH 1936 (SILAS *et al.* 1985), *Sepiella inermis* D'ORBINGY, 1848 (SILAS *et al.* 1985) and *Sepioteuthis lessoniana* LESSON 1830 (SILAS *et al.* 1985) are the commercially important cephalopods of Tuticorin waters that were chosen for the present study. The teeth pattern in radula varies in different orders, classes and even to individual species; for example, there are two marginal teeth in the case of Nautiloidea with an addition of two marginal plates. The radula of *Nautilus* is wide, and its 13 elements are dominated by the relatively large, curved marginal teeth but as for Coleoidea radula, the outer two elements on either side can be omitted for taxonomical analysis (NIXON 1998).

¹ Suganthi Devadason Marine Research Institute, 44 Beach Road, Tuticorin 628001 Tamil Nadu, India. E-mail: deepp_ocean@yahoo.com

