

Inner shell as variation key of local hard clam *Meretrix* spp.

H. Hamli^{1*}, M. H. Idris³, M. K. Abu Hena¹, A. H. Rajae¹ and A. Arshad²

¹Department of Animal Science and Fishery, Faculty of Agriculture and Food Sciences, Universiti Putra Malaysia, Bintulu, 97008 Sarawak, Malaysia

²Department of Aquaculture, Faculty of Agriculture, Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor Darul Ehsan, Malaysia

³School of Fisheries and Aquaculture Sciences, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu Darul Iman, Malaysia

*Corresponding Author E-mail: hadihamli@gmail.com

Publication Info

Paper received:
21 April 2015

Revised received:
10 April 2016

Accepted:
15 April 2016

Abstract

The morphology and 12 shell morphometric features proportionate to shell length were analysed between local hard clam; *Meretrix lyrata*, *M. meretrix* and *M. lusoria* from Sarawak, Malaysia. *Meretrix* spp. was observed to comprise a unique feature of a pallial sinus scar for each species. Analysis of variance revealed significant differences among *Meretrix* spp. using proportion ratios of SL for SW; LL; AL; LCT; AW; PW and PS ($p < 0.05$). Cluster analysis among morphometric features of *M. lyrata*, *M. meretrix* and *M. lusoria* were discriminated at 98.5% similarities and supported by the principal component analysis. The present study suggests that pallial sinus scar shape, together with interior and exterior morphometric features, were suitable as identification keys for *Meretrix* spp. Hence, the present study emphasizes on the application of interior, rather than exterior morphology and morphometric features in hard clam identification before further investigation can be performed through genetic identification means.

Key words

Hard clam, *Meretrix* spp., Morphometric, Pallial sinus scar

Introduction

Approximately, 1000 species of marine bivalve from 82 different families are currently known throughout the world. There are two common species of hard clams in Sarawak, Malaysia; *Meretrix lyrata* and *M. meretrix* (Hamli *et al.*, 2012). These species are distributed in the Indo-West Pacific region from east Africa to Philippines, north to Japan and south to Indonesia (Poutiers, 1998). Meanwhile, *Meretrix lusoria* and *M. petechialis* are common *Meretrix* spp. that are often misidentified as *M. meretrix* (Yamakawa and Imai, 2012). However, Chen *et al.* (2009) suggested that *M. lusoria* and *M. petechialis* should be categorised as junior synonyms to *M. meretrix*. Furthermore, Torii *et al.* (2010) suggested that hybridization was occurring between *M. lusoria* and *M. petechialis*, since the later species has been an

introduced alien species from China and Korean Peninsula into the natural habitats of *M. lusoria* in Japan (Yamakawa and Imai, 2012). Therefore, cross-breeding between these two species may cause ambiguous identification.

The morphological features between different *Meretrix* species and locality has been described by Lin *et al.* (2007) and are well supported with molecular works. Shell colour, periostracum character, shell length and outer shell shape are the main morphological components for *Meretrix* spp. classification (Yamakawa and Imai, 2012; Yoon *et al.*, 2012). Moreover, linear dimension between umbo, pallial line scar, anterior and posterior margin of *M. casta* has been explored by Durve and Dharmaraja (1970) as additional features. More quantification of morphological features are used in order to differentiate species as applied by Torii *et al.*