

Comparative Analysis on Morphological Variation of Three Populations of *Saccostrea cucullata* (Rock Oysters) and *Crassostrea madrasensis* (Indian Backwater Oyster) (Bivalve: Mollusca) in Selected Coastal Regions of Sri Lanka

M.S.D Peiris¹, H.K.A.E Prasadika¹, G.G.N Thushari¹ and J.C Pitawala²

¹Department of Animal Science, Uva Wellassa University, Passara Road, Badulla, Sri Lanka

²Department of Science and Technology, Uva Wellassa University, Passara Road, Badulla, Sri Lanka

Crassostrea madrasensis (Indian backwater oyster) and *Saccostrea cucullata* (Rock oyster) are abundant shellfish varieties with higher culture potential along coastline of Sri Lanka. Limited research studies are available on population clustering and distribution patterns of Oysters in Sri Lankan coast. This study was focused to analyze intra-specific morphological variation among 03 populations of *C. madrasensis* and *S. cucullata* in Sri Lanka. *C. madrasensis* samples were collected from Panadura, Trincomalee and Kalpitiya coasts, while *S. cucullata* samples were collected from Dickwella, Jaffna and Mt'Lavinia during August-December 2018. Ten morphometric parameters were measured using 190 samples and standardized morphometric measurements were subjected to Discriminant Function Analysis (DFA). Two discriminant functions were derived by predicted two models for populations of *S. cucullata* (Function 1: Wilks' λ =0.005/Function 2: Wilks' λ =0.81, P<0.05) and *C. madrasensis* (Function 1: Wilks' λ =0.35/Function 2: Wilks' λ =0.82, P<0.05). Derived first Discriminant functions were identified as strongest factors by highly accounting for models of *S. cucullata* and *C. madrasensis* with of 99.9% and 85.8% of total variances respectively (Eigen values: 164.55 and 1.34). The ratio between Adductor Muscle Scar Height of Right Valve/Adductor Muscle Scar Area {AMSH(R)/Area} was selected as the highly contributing parameter on strongest function in extracted models of *S. cucullata* (0.68) and *C. madrasensis* (0.52). The group plots derived for *S. cucullata* indicated overlapping between two populations in Colombo and Jaffna, while population of Dickwella illustrates a clear separation from other two groups with intra-specific variation. Group plots of *C. madrasensis* records overlapping of populations with morphological similarity and three groups consider as one population. This study provides basic information on population structure of *S. cucullata* and *C. madrasensis* in Sri Lanka. Population genetic studies are recommended to confirm the findings of this study.

Keywords: Morphological variation, Oysters, Discriminant Function Analysis (DFA), Morphometric characters, Coastal zone