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**Collection and Identification of Bioinvasive Spider Crab *Acanthonyx euryseroche* Griffin & Tranter, 1986 From Buleji, East Coast, Pakistan**

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**ABSTRACT**

Two female specimens of bioinvasive spider crab *Acanthonyx euryseroche* Griffin & Tranter, 1986 were collected alive in association with brown seaweeds from lower intertidal zone of Buleji (24°50'356"N 66°49'368"E) situated in the vicinity of the largest shipping port along the Karachi coast, Pakistan (Northern Arabian Sea). Collected *Acanthonyx euryseroche* transported to laboratory and housed in sea water filled glass aquarium for further taxonomic studies. Any previous published record of occurrence of this species is not available from Pakistan. Main feature of this species observed to have seaweeds leafy structures affixed on their head region that they use for camouflage thus hide themselves inside the seaweeds for protection purpose. *A. euryseroche* has been declared invasive alien species to the Indo-Pak region. Invasive alien species (IAS) spread outside of their natural distribution and considered a threat to indigenous biodiversity. Entry of this alien species in Pakistani water could be destructive to the native species. Hence, occurrence of *A. euryseroche* requires more rigorous study, monitoring and management plan.

**INTRODUCTION**

The *Acanthonyx euryseroche* has been reported first time from Pakistan and second time from the Arabian Sea as this commonly known spider crab species was reported for the first time from neighboring territorial waters of central west coast of India (Joshi et al., 2011). Due to meager abundance and restricted occurrence of this species in the harbour regions of India this species is believed bioinvasive alien species in the Northern Arabian Sea.

Anthropogenically influenced introduction of marine bioinvasives is historically an oldest phenomenon on planet earth but was only accredited as a potent driver of change in the marine ecosystems on local and global level (Ojaveer et al., 2018). European Union (EU) passed the regulation on the prevention and management of the introduction and spread of invasive alien species (Regulation (EC) No 1143/2014) also approved and addressed the recommendations of the EU Biodiversity strategy 2020. Non-indigenous alien species may affect endemic species and their ecosystems by changing the habitat, predation, competition, spread of diseases, and other patterns (Eno et al., 1997; Leppäkoski et al., 2002; Streftaris et al., 2005; Wolff, 2005; Kerckhof, 2006; Lescauwaet et al., 2015).

## MATERIALS AND METHODS

Specimens were collected during October 2018 from Buleji rocky ledge (GPS location: 24°50'356"N 66°49'368"E) by hand picking method transferred to laboratory and kept in aquarium for further studies. All necessary physical parameters were taken on spot by the help of research tools. Detailed identification of prescribed species was done by the help of available material found in online identification keys and by reviewing the published literature (Griffin and Tranter, 1986; Kazmi, 1997; Ghory and Siddiqui, 2009; Peter *et al.*, 2008; Joshi *et al.*, 2011; Dev Roy, 2013; Kazmi and Khatoon, 2016; Tamburus and Mantelatto, 2016; Trivedi *et al.*, 2018).

### Study Area:

Buleji coast is situated at Southwestern side of the Arabian Sea. It is composed of about 8 kilometers long rocky outcrop, which is triangular and enriched with diverse floral and faunal assemblages. The eastern side is predominately sandy and somewhat muddy-spattered. While its western side is predominantly rocky and comprised of different sizes of tidal pools (Saifullah, 2009; Afsar *et al.*, 2012; Nasir *et al.*, 2018).

## RESULTS

### Identification of Species:

Two female specimens of *Acanthonyx euryseroche* (Figure 1) were collected alive from the lower tidal rocky zone of Buleji which found dwelt in association of brown seaweeds. Aforementioned species has a specialized feature of seaweed like leafy structure fastened to head region by the virtue of which species can hide itself in seaweeds. During the study, it was observed that the prescribed species could detach its leafy seaweed part by the help of its chelipeds for defense purpose. Specimens were analyzed and identified in the light of diagnostic characters as described by Joshi *et al.* (2011). Taxonomic classification is as given below.

### Taxonomic Classification:

**Kingdom:** Animalia (Margulis, L.; Schwartz, K.V, 1998)

**Phylum:** Arthropoda von Siebold, 1848

**Subphylum:** Crustacea Brünnich, 1772

**Super class:** Multicrustacea Regier *et al.*, 2010

**Class:** Malacostraca Brusca, R.C.; Brusca, G.J, 1990

**Sub-class:** Eumalacostraca Brusca, R.C.; Brusca, G.J, 1990

**Super order:** Eucarida Calman, 1904

**Order:** Decapoda Latreille, 1802

**Suborder:** Pleocyemata Burkenroad, 1963

**Infra order:** Brachyura Latreille, 1802

**Super family:** Majoidea Samouelle, 1819

**Family:** Epiplatidae MacLeay, 1838

**Genus:** *Acanthonyx* Latreille, 1828

**Species:** *Acanthonyx euryseroche* Griffin & Tranter, 1986

Specimens biometric measurements and in-situ and ex-situ physical parameters are given below

Table 1. Biometrics and physical parameters.

Specimen	Carapace Length	Carapace Width	
1	20 mm	16 mm	
2	17 mm	11 mm	

  

S. No.	Parameters	In Situ (Field)	Ex Situ (Aquarium):
1	pH	8.0	8.0
2	Salinity	31‰	31‰
3	Temperature	32.6 °C	28.4 °C

Figure 1. Specimen of *Acanthonyx euryseroche* collected from Buleji rocks.

## DISCUSSION

Spider crabs decorate their bodies with materials such as algae, sponges and hydroids from their habitats (Wicksten, 1993; Furbock and Patzner, 2005; Joshi et al., 2011). *Acanthonyx* species are widely distributed in Atlantic, Pacific, Indian oceans, alongside Mediterranean and Red Sea (Griffin and Tranter, 1986; Empananza et al., 2007; Tamburus and Mantelatto, 2016). A phylogenetic study showed all Brazilian and Caribbean specimens of *Acanthonyx* which eventually clustered through analysis in the same clade (Tamburus and Mantelatto, 2016).

Different species of spider crabs belonging to different genera and families have also been reported from Pakistan like Spider *Majid* crabs and *Pleistacantha crab* (Kazmi, 1997). *Majoidea Crabs* such as *Pisidae crab*, *Doclea muricata* (Herbst, 1788), and the *Epialtidae crab*, *Acanthonyx limbatus* were reported by Ghory and Siddiqui (2009). Spider crabs of Family Majidae and Epialtidae of Order Decapoda were identified from the samples collected from Pakistani waters during International Indian Ocean Expedition (IIOE), 1965-66 (Kazmi and Khatoon, 2016). Other foreign researches also revealed the presence of different species of spider crabs belonging to different genera but with the same family of above identified species 58 species of 22 genera belonging to family *Epialtidae* (Peter et al., 2008) and *Acanthonyx lunulatus* have been reported from North-east Atlantic, Portugal, Namibia, Azores and

Mediterranean (Tavares, 2015; Manning and Holthuis, 1981; Guerao and Abello, 1996).

Entry of alien *Acanthonyx euryseroche* in Pakistani water could be destructive to the native species. Hence, occurrence of *A. euryseroche* requires more rigorous study and monitoring.

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