

## *Trapezia cheni* Galil, 1983 (Decapoda: Brachyura: Trapeziidae) – a new species of coral-associated crabs for coastal waters of central Vietnam

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Coral-associated crab *Trapezia cheni* Galil, 1983 (Decapoda: Brachyura: Trapeziidae) is firstly recorded from the Nhatrang Bay and coastal waters of Vietnam increasing the area of distribution greatly to the south. Previously, the species has been known from Taiwan and along coasts of China in the South China Sea. The record increase the number of trapezoid crabs known from Nhatrang Bay up to 22 with 10 species of the genus *Trapezia* that close to mostly diverse localities – Mollucca Islands and French Polynesia. *Trapezia cheni* is one of the smallest species in the genus and inhabit colonies of *Pocillopora verrucosa* (Ellis & Solander, 1786) (Cnidaria: Scleractinia: Pocilloporidae) influenced in tidal zone by strong waves thereby avoiding competition with larger *Trapezia* species inhabiting deeper dwelling coral colonies.

**Keywords:** Crustacea; Decapoda; *Trapezia*; corals; symbiosis; *Pocillopora*; high energy reef ecosystems; Nhatrang Bay; Vietnam

Symbiotic decapod assemblages in Nhatrang Bay associated with different groups of marine invertebrates such as sponges (Marin, 2007a), hydroids (Marin, 2007c, 2009a), echinoderms (Marin, 2009b) and others (Marin, 2012a) are actively studied in the last time. Scleractinian coral associated fauna is one of hot spots in biodiversity studies in the Bay (see Marin, 2007b, 2014; Marin & Spiridonov, 2007). The list of trapezoid crabs (Brachyura: Trapeziodea) from the Nhatrang Bay, central Vietnam presently includes 21 species of Domeciidae, Tetraliidae and Trapeziidae (see Seréne, 1968; Marin & Spiridonov, 2007). The representatives of the family Trapeziidae Miers, 1886 are presented by 12 species, namely *Quadrella coronata* Dana, 1852, *Q. maculosa* Alcock, 1898, *Q. reticulata* Alcock, 1898, *Trapezia bidentata* (Forskål, 1775), *T. cymodoce* (Herbst, 1801), *T. digitalis* Latreille, 1828, *T. guttata* Ruppell, 1830, *T. lutea* Castro, 1997, *T. rufopunctata* (Herbst, 1799), *T. septata* Dana, 1852, *T. speciosa* Dana, 1852 and *T. tigrina* Eydoux et Souleyet, 1842.

Castro (2000) mentioned that about 60% of the Trapeziidae are widespread in the Indo-Pacific region, while three of widespread species (*T. digitalis*, *Trapezia ferruginea* Latreille, 1828 and *Trapezia formosa* Smith, 1869) shows Amphi-pacific distribution recording from both Indo-Pacific and Eastern Pacific areas. At the same time, Marin & Spiridonov (2007) mentioned that all species of these families and the Domeciidae found in the Nhatrang Bay area have a rather wide distribution but two *Trapezia* species, i.e. *T. cheni* Galil, 1983 and *T. garthi* Galil, supposed to be endemics of the Western Pacific (Castro, 2000) are still not found in the Nhatrang Bay.

During the biodiversity studies of coral communities in central Vietnam (Nhatrang Bay, Tre Is., Dam Bay) numerous specimens of *T. cheni* were found inhabiting small encrusting colonies of scleractinian coral genus *Pocillopora verrucosa* (Ellis & Solander, 1786) (Cnidaria: Scleractinia: Pocilloporidae) living in a tidal zone (see Fig. 1) increasing the number of trapezoid crabs in the Bay to 22 species with 10 species of the genus *Trapezia*. The specimens of host coral and symbiotic animals were collected using SCUBA equipment at 16–18 May 2011. All collected crustaceans were fixed in 80% solution of ethanol; photographs were accomplished using digital camera Canon G11 on alive animals using a clove oil for their relaxing. The material is deposited at the collection of Laboratory of Ecology and Morphology of Marine Invertebrates of A.N. Severtzov Institute of Ecology and Evolution (LEMMI), Moscow, Russia.

### Taxonomic part

Family Trapeziidae Miers, 1886

Genus *Trapezia* Latreille, 1828

*Trapezia cheni* Galil, 1983

(Figure 1)

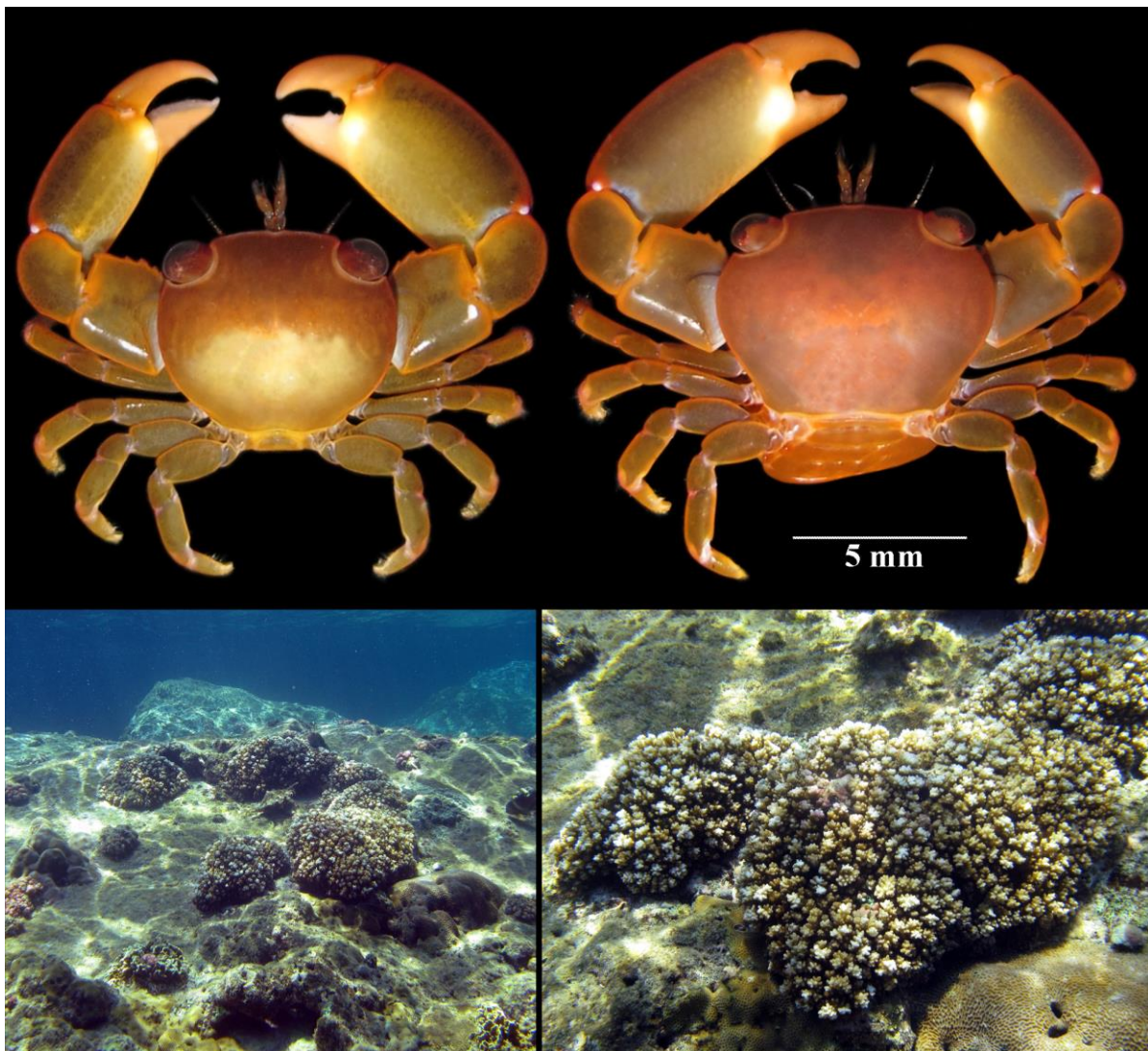
*Trapezia cheni* Galil, 1983: 123, Figs. 1-4, 9a [type locality: Taiwan].

**Material examined.** 5 ovigerous females, 7 males – South China Sea, Vietnam, Nhatrang Bay, Tre Island, 12°11'29.0"N 109°19'49.4"E, tidal zone, depth 0.5–1 m, inside small encrusting colonies of *Pocillopora verrucosa*, coll. I.N. Marin, 16–18 May 2011.

**Remarks.** Our specimens are clearly referring to the original description of the species presented by Galil (1983). *Trapezia cheni* can be clearly separated from the most morphologically similar *T. formosa* by smaller size being one of the smallest species in the genus, scarcely emarginated front of carapace, the absence of spines or notches on the lateral margins of carapace and distinct color pattern as well as the species can be clearly separated from all other congeners by the complete absence of a tooth at the distal margin of merus of chelipeds (Galil, 1983). Specimens from the South China Sea and Taiwan identified as *T. formosa* (Dai et al., 1983, 1986; Dai & Yang, 1991; Chang et al., 1987) are most probably the result of an erroneous identification (after Castro, 1996) and also belong to *T. cheni* according to Castro (1996).

**Coloration.** Carapace and walking legs uniformly reddish orange or brownish yellow. Dorsal portion of chelipeds and front of carapace more dark; fingers of chelipeds uniformly brown (see Fig. 1).

**Hosts and ecology.** *Trapezia cheni* is one of the smallest species in the genus. The specimens of *T. cheni* found in the Nhatrang Bay were living inside small encrusting colonies of scleractinian coral *Pocillopora verrucosa* (Ellis & Solander, 1786) (Cnidaria: Scleractinia: Pocilloporidae) growing on rocks in a tidal zone of Tre Island (12°11'29.0"N 109°19'49.4"E) (see Fig. 1) influenced by strong waves (high energy reef ecosystems) thereby avoiding competition with larger species of the genus. The colonies of the same corals living deeper were not harbored by the species. The ecological niche of the species is very similar to *Philarius condi* Marin, 2012 (Decapoda: Palaemonidae: Pontiinae) also known in the Bay inhabiting the *Acropora* coral colonies influenced by strong waves in upper 1.5 meter depth where larger antagonist species *Harpilius consobrinus* de Man, 1902 (Decapoda: Palaemonidae: Pontiinae) is possibly washing out from the colonies (see Marin, 2012b).



**Figure 1.** Alive coloration of *Trapezia cheni* Galil, 1983 (Decapoda: Brachyura: Trapeziidae) (upper) and colonies of coral host *Pocillopora verrucosa* (Ellis & Solander, 1786) (Cnidaria: Scleractinia: Pocilloporidae) growing on rocks in a tidal zone of Tre Island in Nhatrang Bay, Vietnam.

**Distribution.** Firstly recorded from coastal waters of Vietnam increasing the area of distribution greatly to the south. Previously, the species has been known from Taiwan and along the coasts of China in the South China Sea (Galil, 1983; Dai et al., 1983, 1986; Dai and Yang, 1991; Chang et al., 1987).

## Discussion

The resulted number of 22 species found in the Nhatrang Bay is mostly relative to Mollucca Islands (with most records from Ambon) (26 species) and French Polynesia (26 species) (Castro, 1999b). The similar number of species is known for Reunion (21 species), Seychelles (19 species), Madagascar (19 species), Kenya and Somalia (19 species) and New Caledonia (17 species) (after Seréne, 1984; Galil, 1983, 1988; Galil & Lewinsohn, 1985; Castro, 1996, 1997a, 1997b, 1999a, 1999b, 2000, Castro et al., 2004; Galil & Clark, 1988; Galil & Vannini, 1990; Marin & Spiridonov, 2007).

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