Galatheid and chirostylid crustaceans (Decapoda: Anomura) from a cold seep environment in the northeastern South China Sea

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Abstract
Six species of squat lobsters from a cold seep field in the northeastern South China Sea are studied. Two new species, Uroptychus jiaolongae n. sp. and U. spinulosus n. sp., are described, and their distinctions from the related species are detailed. Two species, Munidopsis tuberosa Osawa, Lin & Chan, 2008 and M. verrilli Benedict, 1902, are herein reported for the first time from a cold seep/hydrothermal vent environment. The number of squat lobsters species associated with those chemosynthetic environments now stands at forty-one.

Key words: squat lobster, Munidopsis, Shinkaia, Uroptychus, new species

Introduction
The squat lobsters are one of the most diverse groups of deep sea animals, and are prevalent in both hydrothermal vent and cold seep environment. To our knowledge, forty-one species have been reported as colonists or vagrants in these chemosynthetic ecosystems, twenty of which were newly recorded after Martin & Haney’s review (Martin & Haney 2005; Macpherson & Segonzac 2005; Macpherson et al. 2005; Cubelio et al. 2007a–c, 2008; Macpherson 2007; Jones & Macpherson 2007; Thurber et al. 2011; Liu et al. 2013; Ahyong & Roterman 2014; Thatje et al. 2015). Among them, six species are from the western Pacific: Munidopsis gracilis Cubelio, Tsuchida & Watanabe, 2008, M. kermadec Cubelio, Tsuchida & Watanabe, 2007, M. longispinosa Cubelio, Tsuchida & Watanabe, 2007, M. myojinensis Cubelio, Tsuchida, Hendrickx, Kado & Watanabe, 2007, M. naginata Cubelio, Tsuchida & Watanabe, 2007 and M. ryukyuensis Cubelio, Tsuchida & Watanabe, 2007 (M. naginata is from both hydrothermal vents in the Okinawa Trough and cold seeps off Sagami Bay; Cubelio et al. 2007a–c, 2008); five species are from the eastern Pacific: Kiwa hirsuta Macpherson, Jones & Segonzac, 2005, K. puravida Thurber, Jones & Schnabel, 2011, M. bracteosa Jones & Macpherson, 2007, M. recta Baba, 2005 and M. scotti Jones & Macpherson, 2007; seven species are from the Atlantic Ocean: M. acutispina Benedict, 1902, M. exuta Macpherson & Segonzac 2005, M. geyeri Pequegnat & Pequegnat, 1970, M. hirtella Macpherson & Segonzac 2005, M. livida (Perrier, 1886), M. marionis (A. Milne-Edwards, 1882) and K. tyleri Thatje, Marsh, Roterman, Mavrogordato & Linse, 2015 (M. acutispina are from both the central Atlantic Ocean vent field and the Kazan mud volcano cold seep field in the eastern Mediterranean Sea; Macpherson & Segonzac 2005); two species are from the Indian Ocean: M. laticorpus Cubelio, Tsuchida & Watanabe, 2008 and Munida marinquingae Liu, Lin & Huang, 2013 (Cubelio et al. 2008; Liu et al. 2013). Another two species have been collected in the vicinity of hydrothermal vents: Munidopsis maunga Schnabel & Bruce, 2006 (within the caldera of Macauley volcano in the Kermadec volcanic arc; Schnabel & Bruce 2006), and M. vrijenhoeki Jones & Macpherson, 2007 (from White Lady locality, Fiji basin; Jones & Macpherson 2007). However, the authors did not confirm whether these two species were found in communities directly related to vent environments. Therefore, we did not consider them vent/seep associated species in this study.

A cold seep field, which is located between the continental shelf and slope in the northeastern South China Sea (Fig. 1), was recently investigated with several squat lobsters being reported (Baba et al. 2009, Lin et al. 2013).