





## DISCUSSION

The pereopods are five in number in the infraorder Astacidea and the first three pairs have claws (Crandall and Buhay, 2008). Though, in this case, the left cheliped of female specimen has an abnormality and no claw was existing. In previous studies, the authors reported lateral outgrowths from the chelipeds in naturally captured red swamp crayfish (Nakatani et al., 1992, 1997) and laboratory studies have resulted that this type of occurrence could be induced in this crayfish species by wounded healing (Murayama et al., 1994; Nakatani, 1996; Nakatani et al., 1998; Nakatani and Kitahara, 1999). In contrast, in this case, no claw has appeared, while two branched structures were recorded. Also, Nakatani et al. (1997) found an outcrop at the propodus of the left third pereopod and they stated that a dactylus was appeared at the next moult. Abnormal branched appendage existed from the basis of the left cheliped and no propodus and dactylus were formed in the current case. Rasheed et al. (2014) reported an existing propodus and dactylus in the fifth

pereopod (shaped like paddle) of blue swimming crab (*Portunus pelagicus*) and the authors declared that the cause of abnormality is an accident during moulting or regenerating.

In previous research, it has been stated that these abnormalities are the results of failing in healing of the wounds (Shelton et al., 1981; Nakatani et al., 1992; Nakatani, 1996; Mariappan et al., 2000). Nakatani et al. (1998) declared that various mechanisms led to cause of these kinds of outgrowths, extra claws or dactyls. The outgrowth may be related to the shape of the wound or to the period of the moulting during the moment of wounding. Failure in healing of wounds in some cases could explain with occurring of lateral outgrowths (Shelton et al., 1981; Murayama et al., 1994). Additionally, these abnormalities would result some disadvantages, such as to reduce the feeding efficiency, mating failure, and more vulnerable to external attacks (Juanes and Smith, 1995). Further studies are needed to research the causes and results of these abnormalities in detail.

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