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Growth of blue crab, *Callinectes sapidus*, in the Yumurtalik Cove, Turkey: a molt process approach

Research Article

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Abstract: The blue crab (*Callinectes sapidus*) is native to the western Atlantic, but is an invasive species in the Mediterranean. This study examined the dynamics of growth in an invasive population of blue crab in the Yumurtalık Cove, Turkey (North Eastern Mediterranean). Growth was quantified using a discontinuous growth model, a molt process model. Crab growth histories were observed for individual crabs held in field enclosures in summer 2010 and 2011. Carapace widths ranged from 14.13 to 80.07 mm. A mean growth per molt of 120.6% increase in carapace width was observed. Chronological inter-molt periods ranging between 3 days and 67 days were observed. The average IMP was 16 days in Yumurtalık Cove. The mean physiological IMP was 270±163 degree-days, ranging from 72-781 degree-days.

Keywords: *Blue Crab • Callinectes sapidus • Yumurtalık Cove • Mediterranean*

1. Introduction

The blue crab, *Callinectes sapidus*, is endemic to the western Atlantic basin. It is a widely distributed, estuarine-dependent species that ranges from South America, throughout the Caribbean and the Gulf of Mexico, and along the eastern seaboard of North America as far north as New England [1]. Throughout this range, the blue crab is an important component of estuarine food webs, acting as a dominant, opportunistic benthic predator and scavenger [2]. In turn the blue crab is an important prey for fish, including striped bass (*Morone saxatilis*), red drum (*Sciaenops ocellatus*) and croaker (*Micropogonias undulatus*). Thus the blue crab represents an important link coupling benthic and pelagic food webs [2,3].

In addition to its ecological importance, the blue crab supports important commercial and recreational fisheries throughout much of its range. Within the United States, commercial fisheries exist from Texas to New York, with landings dominated by catches from Maryland, Virginia, North Carolina and Louisiana [4].

In addition to this endemic range, the blue crab has become established as a non-native species in the Mediterranean basin [5]. Holthuis and Gottlieb suggested that *C.sapidus* was transported to the Mediterranean in ships' ballast tanks [6]. The blue crab was first recorded in the Mediterranean in Egyptian waters in the 1940s [7]. Subsequently, it has been reported in the coastal waters of Italy [8], Israel [6], Greece [9] and Turkey [10]. Most recently, it has been reported in the Bay of Biscay, along the northwest coast of Spain [11]. The ecology of the blue crab populations in the Mediterranean has been studied most in Turkish waters, where it is distributed from the eastern side of the Mediterranean Sea northwards to the Black Sea [12]. It has been reported in 15 lagoonal systems along the Turkish coast [13]. These populations now support important commercial fisheries. The fisheries expanded quickly in the 1980s, and the catch reached 46 t in 2010 (http://tuikrapor.tuik.gov.tr/reports). All of Turkey's commercial blue crab landings are reported from the eastern Mediterranean. Due to its high economic value, the distribution and ecology of the blue crab in Turkish waters are receiving more attention [14].

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