

学 位 論 文 要 旨	
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題 目	Fisheries biology of <i>Parapenaeus</i> species (Penaeidae) in Kagoshima Bay, southern Japan (鹿児島湾におけるサケエビ属エビ類 (クルマエビ科) の資源生物学的研究)
<p><i>Parapenaeus</i> are commercially important penaeid shrimp and are found in relatively deep waters. <i>Parapenaeus fissuroides</i> Crosnier, 1985 and <i>Parapenaeus lanceolatus</i> Kubo, 1949 are two of the dominant species in the benthic community of Kagoshima Bay, southern Japan. These shrimps are emergent fisheries resources in the bay. The present study aims to describe fisheries biology including reproduction, growth and spatiotemporal distribution of <i>P. fissuroides</i> and <i>P. lanceolatus</i> in Kagoshima Bay.</p> <p>Monthly and seasonal samplings were conducted in Kagoshima Bay, southern Japan during 2011-2016. In addition, previously collected samples during 2003-2010 were also used in the present study. The effective tow durations were estimated and the catch in numbers and weight per haul were then standardized to preset tow durations (Fulanda and Ohtomi, 2011). The ovaries of female individuals of <i>P. fissuroides</i> and <i>P. lanceolatus</i> were examined by histological observations and ovarian maturity stages were classified into four categories. The growth pattern and longevity of these shrimps were estimated from monthly length-frequency distributions.</p> <p>The ovaries of <i>P. fissuroides</i> and <i>P. lanceolatus</i> were observed as asynchronous type, suggesting that these species are multiple spawners. The mature females for both species were defined as those having nearly ripe or ripe ovaries containing cortical granules in the peripheral region of the oocytes. The size at sexual maturity of female <i>P. fissuroides</i> and <i>P. lanceolatus</i> was estimated to be 23.5 mm and 22.0 mm in carapace length, respectively. The spawning season was estimated during July to February for <i>P. fissuroides</i> and July to April for <i>P. lanceolatus</i>. The reproduction of these species might be influenced by photoperiodicity as the spawning starts around summer solstice and the peak spawning season was estimated to be in autumn. Growth was best described by Pauly and Gaschütz growth equation for both sexes of <i>P. fissuroides</i> and von Bertalanffy equation for both sexes of <i>P. lanceolatus</i>. The monthly growth rate of <i>P. fissuroides</i> was the highest during July to August and the lowest during January to February. This suggests that the growth of this shrimp slows down during the reproductive period from summer to winter. Females grew faster and reached larger sizes than males of the same age group in both of these species. The majority of <i>P. fissuroides</i> was distributed in the central area of Kagoshima Bay around 135 m water depth, while <i>P. lanceolatus</i> was distributed both in shallower (around 135 m) and deeper (180-230 m) area of central bay. From the analysis of distribution of <i>P. fissuroides</i> and <i>P. lanceolatus</i> with the progression of age revealed different distribution pattern in the bay. <i>P. fissuroides</i> recruited, spawned and spent their life mainly in central area with around 135 m water depth. In case of <i>P. lanceolatus</i>, the spawning grounds for young individuals were almost entire central part while older individuals spawned only in deeper area of central bay. The provided information from this study is indispensable for appropriate stock management of these species.</p>	