（学位第３号様式）

学　位　論　文　要　旨

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題　目	Fisheries biology of *Metapenaeopsis* species (Decapoda, Penaeidae) in Kagoshima Bay, Japan (鹿児島湾におけるアカエビ属エビ類（十脚目・クルマエビ科）の資源生物学的研究)

Metapenaeopsis sibogae, *M. kyushuensis* and *M. provocatoria owstoni* are commercially important species in Kagoshima Bay, of which *M. sibogae* is the latest member of this genus being recorded from Japanese waters in 2004 in the bay. There is, however, no study available on any aspect of population biology of these species. The present study therefore aims to provide first information on their reproduction, growth, distribution patterns and population dynamics in Kagoshima Bay.

Monthly sampling was conducted at 8 stations established in the bay during 2014-2017. Additional laboratory samples collected during 2004-2013 were also used. At each haul, target species were identified based on the shape of petasma in males or thelycum in females. It was not possible to distinguish between the males of *M. kyushuensis* and *M. provocatoria owstoni* due to the lack of identification key. Ovaries were macroscopically classified as one of three maturity stages based on the ratio of ovary width to body width. Ovarian maturity status was then confirmed by histological observation. The growth patterns and longevity were estimated using length-frequency method. The occurrence of parasite was checked by observing the branchial chamber of the shrimp. The effective tow duration was estimated and the catch per unit effort was standardized to the preset tow duration following Fulanda & Ohtomi (2011).

All the species exhibited asynchronous ovaries signifying multiple spawning in a reproductive season. Females containing mature oocytes where germinal vesicle breakdown had occurred, were defined as mature. The gonadosomatic index exhibited gradual relationship with ovarian maturation progression. Macroscopic staging, in contrast, showed a sharper relationship with ovarian maturation progression exposing its potential as a maturity index for the studied species. The size at sexual maturity was estimated to be 14.3 mm, 13.7 mm and 12.8 mm in carapace length for *M. sibogae*, *M. kyushuensis* and *M. provocatoria owstoni*, respectively. *M. sibogae* spawned throughout the year but peaked September-October. *M. kyushuensis* spawned from April to January with a peak in June to September. *M. provocatoria owstoni* spawned from April to December with May-June being the peak. The von Bertalanffy growth function was adopted as the best fitting model to describe the growth of *M. sibogae*. However, seasonal oscillation in growth rate was detected in the females of *M. kyushuensis* and *M. provocatoria owstoni*, and the Pauly and Gaschütz growth function was adopted as the best fitting model. Longevity was estimated to be ~2 years. All the three species showed wide spatial and bathymetric distribution (water depth, ~80 m to ~230 m) in the bay. Similar distribution patterns with progressing age were observed for all the species with 0+ age group individuals were distributed throughout their distribution areas. However, an increased tendency of inhabiting the deeper waters being observed for individual belong to the ≥1+ age groups. Bopyrid parasites *Minicopenaeon intermedium*, *M. liuruiyui* and *Parapenaeon tertium* were identified to infest *M. sibogae*, *M. kyushuensis* and *M. provocatoria owstoni*, respectively. The infestation rate varied significantly among species and the infestation had negative impact on reproduction and growth of the host.