

学 位 論 文 要 旨	
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題 目	Ecology of <i>Simplisetia erythraeensis</i> (Annelida, Nereididae) in the southern limit of distribution (分布南限域におけるコケゴカイ <i>Simplisetia erythraeensis</i> の生態学的研究)
<p><i>Simplisetia erythraeensis</i> is common species and frequently dominate the macrobenthic fauna of estuaries and tidal flats, and thought to have an important role in the ecosystem function of tidal flats. In late year, benthic species in tidal flats are threatened by decreasing their habitat caused by coastal development. However, little is known about the ecology of most species of Nereididae including <i>S. erythraeensis</i>. This study investigated the life history including maturation characteristics of <i>S. erythraeensis</i> and their distribution in Ryukyu Island, their southernmost distribution area in North Pacific.</p> <p>In Chapter two, the reproductive season and life span of <i>S. erythraeensis</i> were investigated by monthly sampling at two different regions in southern Japan: Shigetomi in Kagoshima Bay, Kyusyu Islands, a warm-temperate region and Ichi on Amami-Oshima Island, Ryukyu Islands, a maritime subtropical region. At both sites, one or two cohorts were distinguished simultaneously by using monthly body-width histograms. Recruitment of new cohorts occurred from August to September in Kagoshima Bay and from July on Amami-Oshima Island. Ovigerous females were observed from March to August in the former area and from April to July in the latter area, with the highest female maturity rate in July in both areas. The density of each cohort decreased from May and disappeared in early October. These results showed that the life span of <i>S. erythraeensis</i> was one year, and the reproductive period occurred in summer.</p> <p>In Chapter three, the histological and morphological processes of sexual maturation in <i>S. erythraeensis</i> were investigated at Omoi River estuary in Kagoshima Bay, Japan. Histological sections of sampled individuals revealed that <i>S. erythraeensis</i> is gonochoristic, and undergoes extraovarian oogenesis at sexual maturity. Female showed two stages in the sexual maturation: F1 and F2. In addition, the inside portion of the muscular layers of females disappeared with sexual maturity (epitokous metamorphosis), and was replaced by amoebocyte associations around the oocytes (presumably to store nutrition for the oocytes), which enabled the species to spend the majority of its energy for monotelical reproduction. No significant changes were observed in parapodia of F2 in response to epitokous metamorphosis, namely, <i>S. erythraeensis</i> does not seem to engage in reproductive swarming.</p> <p>In Chapter four, the detailed distribution and morphological variance among islands of <i>S. erythraeensis</i> in Ryukyu Islands including Yaeyama Islands was clarified. Two different types were found to coexist on Ryukyu Islands. One of them was thought to have the same morphology as the original description. According to these results, <i>S. erythraeensis</i> may be composed of plural species and two of them occurrence sympatrically in Ishigaki and Iriomote.</p> <p>The egg size revealed in this study shows that they have short planktonic developmental stage or direct development. Therefore, we can say that the larval of <i>S. erythraeensis</i> settle on the same or near from tidal flats where they hatched. The rate of genetic exchange of this species is suggested to be low among tidal flats or islands. We should regard that a disappearance of tidal flats on coastal areas may give an important problem on <i>S. erythraeensis</i> especially in Ryukyu Islands.</p>	