

渔山岛岩石相潮间带大型底栖动物物种多样性

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Species diversity of macrobenthos in the rocky intertidal zone of Yushan Island

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摘要 为系统研究渔山岛潮间带大型底栖动物群落结构与生物多样性, 作者于2009年3月至2010年1月在该岛潮间带布设5条断面进行了4个季节的取样, 调查大型底栖动物种类组成、生物量和丰度, 并分析了多样性状况。结果显示: 共鉴定出大型底栖动物100种; Shannon-Wiener多样性指数(H')、Pielou均匀度指数(J)、Margalef物种丰富度指数(R)和Simpson多样性指数(D)的周年平均值分别为 3.328 ± 0.109 、 0.725 ± 0.021 、 4.350 ± 0.216 和 0.823 ± 0.016 。One-Way ANOVA分析结果表明, 多样性指数(H')和物种丰富度指数(R)在断面间表现出显著(H' : $F_{4,15}=3.192$, $P<0.05$)与极显著差异(R : $F_{4,15}=5.623$, $P<0.01$), 均匀度(J)和多样性指数(D)的季节性差异达到显著水平(J : $F_{3,16}=6.575$, $P<0.01$; D : $F_{3,16}=3.359$, $P<0.05$)。渔山岛潮间带大型底栖动物的群落结构分化明显, 季节性的节律变化显著。ABC曲线分析表明: 虽然仅夏季大型底栖动物群落受到了轻微的扰动, 但潮间带生物群落已处于受潜在干扰的边缘。

关键词: 渔山岛 海洋特别保护区 底栖动物 多样性

Abstract: In order to understand the diversity and structure of macrobenthic communities in the intertidal zone of Yushan Island, we surveyed the diversity of macrobenthos at five sampling stations between March 2009 and January 2010. A total of 100 species of intertidal macrobenthos was identified. We quantified species diversity based on investigations of species composition, biomass and abundance. The results showed that: the average Shannon-Wiener diversity index (H'), Pielou index (J), Margalef's richness index (R) and Simpson's diversity index (D) in different sections and seasons were 3.328 ± 0.109 , 0.725 ± 0.021 , 4.350 ± 0.216 and 0.823 ± 0.016 , respectively. Shannon-Wiener (H') and Margalef's richness indices (R) varied among sampling stations (H' : $F_{4,15}=3.192$, $P<0.05$; R : $F_{4,15}=5.623$, $P<0.01$), meanwhile Pielou (J) and Simpson's indices (D) demonstrated significant seasonal variation (J : $F_{3,16}=6.575$, $P<0.01$; D : $F_{3,16}=3.359$, $P<0.05$). Using an ABC (abundance biomass comparison) curve, we analyzed the structure of the intertidal community in Yushan Island and found that overall disturbance was not apparent except in summer.

Keywords: Yushan Island special marine reserve macrobenthos diversity

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