

Aerial (aboveground) arthropods are a key link in the grazing food chain of salt marsh ecosystems, and the characteristics of arthropod functional groups have been hotly debated. But unfortunately, little research exists on the functional groups of aerial arthropods in the salt marsh. Still less information is available for the salt marshes of the Yangtze Estuary. Chongming-Dongtan is one of the largest salt marshes in the Yangtze Estuary. In 2007, 3 permanent sampling sites were established in each of three different vegetation zones in the Chongming-Dongtan salt marshes. These zones were identified as the native *Phragmites australis* zone, the *Scirpus mariqueter* zone, and the exotic *Spartina alterniflora* zone. Based on monthly sweep net surveys of arthropods during neap tides from April to November, the characteristics of arthropod functional groups in the aerial habitat of the salt marsh and the effects of vegetation type were analyzed. Because of the special attention given to exotic species, especially *S. alterniflora*, impacts of this alien species were emphasized. A total of 3778 specimens of arthropods were collected, belonging to 2 classes, 11 orders, 37 families and 49 species. According to their trophic characteristics, the arthropods were divided into three functional groups: phytophagous, predatory-parasitic, and saprophagous. Among them, the phytophagous group had the highest species richness and abundance. This functional group consisted of 25 species, which belong to 1 class, 6 orders and 19 families, accounting for 51.0% of the total number of species and 86.2% of the total number of individuals. The predatory-parasitic group had 21 species of 2 classes, 7 orders and 15 families, accounting for 42.9% of the total number of species and 7.8% of the total number of individuals. The saprophagous functional group had the lowest species richness and abundance. It had 3 species comprised of 1 class, 1 order and 3 families, accounting for 6.1% of the total number of species and 6.0% of the total number of individuals. In different vegetation zones, the predatory-parasitic and phytophagous groups demonstrated the characteristics of "enemy tracing". But such characteristics could only be found for the number of species that had significant correlations between these two groups, not for the number of individuals. In the different vegetation zones, the composition, species diversity and monthly variation of characteristics of the functional groups were different, but these differences were not significant. Vegetation type appeared to have no significant effect on arthropod functional group in the aerial habitat of the salt marsh. Furthermore, the introduced exotic species *S. alterniflora* had no significant negative effects, contrary to what others have observed. The arthropod functional groups in the aerial habitat of the *S. alterniflora* zone were not significantly different from those in the other vegetation zones with respect to the number of species and individuals, species diversity, and monthly variation. Relative to the phytophagous group, although the number of individuals in the *S. alterniflora* zone was obviously lower than in the other vegetation zones, the number of species in the *S. alterniflora* zone was equivalent to those in the other zones. The mechanisms that control these findings need further investigation."/>

# 生态学报 Acta Ecologica Sinica

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童春富. 植被类型对盐沼湿地空气生境节肢动物功能群的影响. 生态学报, 2012, 32(3): 786-795

## 植被类型对盐沼湿地空气生境节肢动物功能群的影响

Effects of vegetation type on arthropod functional groups in the aerial habitat of salt marsh

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中文摘要:

2007年4-11月,在长江口崇明东滩盐沼湿地的芦苇带、海三棱藨草带和互花米草带设置固定样地,每月小潮期对空气生境的节肢动物进行了扫网取样调查。在此基础上,分析研究了盐沼湿地空气生境节肢动物功能群特征以及植被类型的影响,特别是对互花米草的生态效应进行了进一步讨论。调查期间共获得节肢动物标本3778头,分属2纲11目37科49种。根据不同种类的营养特征将其划分为植食性、捕食寄生性和腐食性三大功能群。其中,植食性功能群的种类、数量最为丰富,涉及1纲6目19科25种,物种数占总数的51.0%,个体数占总数的86.2%;捕食寄生性功能群次之,涉及2纲7目15科21种,物种数占总数的42.9%,个体数占总数的7.8%;腐食性功能群种类、数量最少,涉及1纲1目3科3种,物种数占总数的6.1%,个体数占总数的6.0%。不同植被带捕食寄生性功能群与植食性功能群均具有一定的"天敌跟随"特征,但主要表现在物种数上,而在个体数上的对应关系并不明显。不同植被带功能群的组成、多样性及月际变化特征存在一定差异,但是植被类型对功能群的影响并不显著。与已有研究结果不同,研究中外来种互花米草对空气生境的节肢动物并未表现出显著的负面影响,相应节肢动物功能群的物种数、个体数、多样性、月际变化等特征与其他植被带并没有显著差异。就植食性功能群而言,尽管互花米草带植食性功能群的个体数明显低于其它植被带,但是物种数并没有减少,相应的作用机理还有待进一步研究。

English Summary:

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exotic species *S. alterniflora* had no significant negative effects, contrary to what others have observed. The arthropod functional groups in the aerial habitat of the *S. alterniflora* zone were not significantly different from those in the other vegetation zones with respect to the number of species and individuals, species diversity, and monthly variation. Relative to the phytophagous group, although the number of individuals in the *S. alterniflora* zone was obviously lower than in the other vegetation zones, the number of species in the *S. alterniflora* zone was equivalent to those in the other zones. The mechanisms that control these findings need further investigation.

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