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Ecological Research on Tintinnids in Tieshan Harbour, Guangxi

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Abstract: This paper investigates tintinnids in water samples taken from Tieshan Harbour sea area in Guangxi in spring and summer of 2010. Totally 15 species are found, in which genera *Tintinnopsis* and *Leprotintinnus* are in dominance. In April, the average abundance of tintinnids is 4 385. 6 ind/m^3 and the dominant species are *Leprotintinnus simplex*, *Leprotintinnus nordqvist* and *Favella panamensis*. In August, the average abundance of tintinnids is 13 967. 3 ind/m^3 and the dominant species are *Tintinnopsis radix*, *Tintinnopsis nucula*, *Leprotintinnus simplex*, *Leprotintinnus nordqvisti* and *Tintinnopsis tocantinensis*. In this investigation, the species number, abundance, diversity and evenness in summer are higher than those in spring. The abundance distributes in patches in spring, and is higher in coastal water than in offshore water in summer. In the cluster and multidimensional scaling analysis, tintinnids community from 16 stations is divided into two groups, spring group and summer group with seasonal characters respectively. Redundancy analysis reveals that DOC, temperature and TN are the main factors influencing tintinnids community composition in Tieshan Harbour sea area with great positive correlation in summer. In spring, however, ammonia nitrogen, alkalinity and dissolved oxygen have great influence on the community composition.

Key words: tintinnids; community structure; physical and chemical factors; Tieshan Harbour

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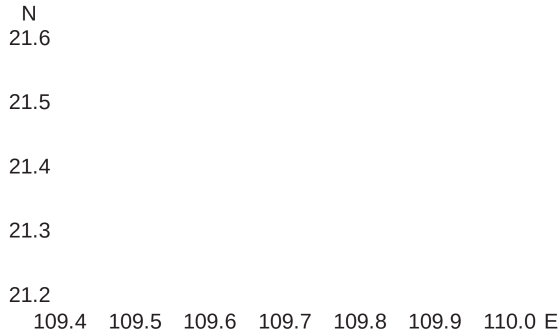

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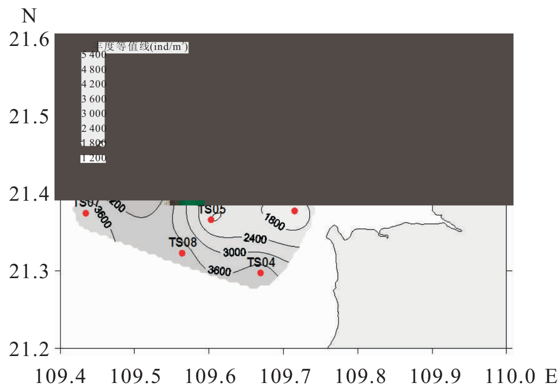

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Fig. 3 Horizontal distribution of the abundance of tintinnids in spring

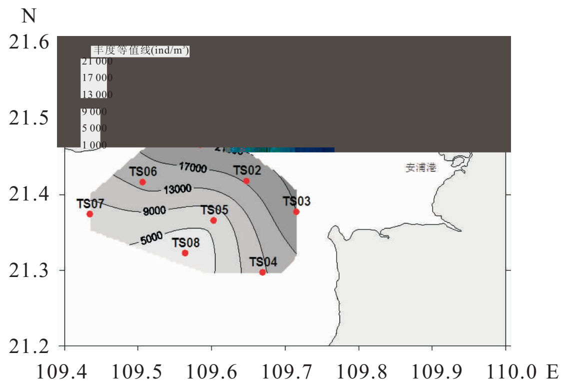

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Fig. 4 Horizontal distribution of the abundance of tintinnids in summer

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， 1 2。 ， H' 0.591 67～1.896 24 ，J 0.421 82～0.886 86 （ 1），H' TS07 ，J TS01 ； H' 1.614 33～2.746 91 ，J 0.628 92～0.931 40 （ 2），H' TS06 ，J TS05 。

1

（H'） （J）

Table 1 Diversity and evenness of *Tintinnida* in spring(April,2010)

	（H'）	（J）		（H'）	（J）
TS01	1.405 64	0.886 86	TS05	0.668 56	0.421 82
TS02	1.236 08	0.618 04	TS06	1.238 90	0.781 66
TS03	0.591 67	0.591 67	TS07	1.896 24	0.816 67
TS04	1.491 11	0.745 56	TS08	1.485 06	0.742 53

2

（H'） （J）

Table 2 Diversity and evenness of *Tintinnida* in summer(August,2010)

	（H'）	（J）		（H'）	（J）
TS01	1.989 45	0.856 81	TS05	2.162 64	0.931 40
TS02	2.195 82	0.731 94	TS06	2.746 91	0.915 64
TS03	1.625 74	0.628 92	TS07	2.228 27	0.862 01
TS04	2.149 26	0.925 63	TS08	1.614 33	0.807 17

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3 ，
Leprotintinnus simplex（$Y=0.576$）、*Leprotintinnus nordqvisti*（$Y=0.214$）、*Favella panamensis*（$Y=0.093$）； 5 ，
Tintinnopsis radix（$Y=0.429$）、*Tintinnopsis nucula*（$Y=0.061$）、*Leprotintinnus simplex*（$Y=0.237$）、*Leprotintinnus nordqvisti*（$Y=0.089$）、*Tintinnopsis tocantinensis*（$Y=0.055$）。
，*Leprotintinnus simplex*（$Y=0.576$） ， 8 ，*Leprotintinnus nordqvisti* *Favella panamensis*
， ； ，*Tintinnopsis radix*，*Leprotintinnus simplex* *Leprotintinnus nordqvisti*

8 *Tintinnopsis tocantinensis*

Cluster 8 16

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I TS08 TS05 TS04

TS07 TS02 TS03

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MDS

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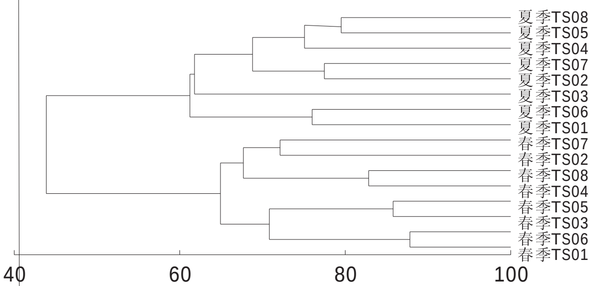

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Fig. 5 Cluster analysis of tintinnids in 8 investigated stations in spring and summer

6 8

MDS

Fig. 6 MDS analysis of tintinnids in 8 investigated stations in spring and summer

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29. 8～31. 6℃ 26. 2‰～29. 9‰ 0. 014 0～0. 042 0 mg L 0. 186～0. 305 mg L

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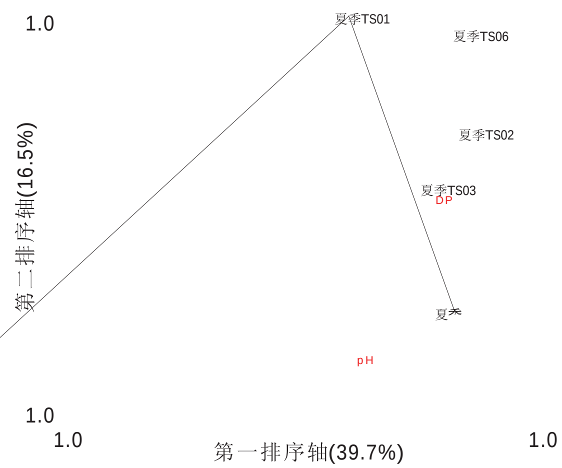

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