PRELIMINARY STUDY OF SPECIES COMPOSITION AND DISTRIBUTION OF ECONOMICALLY VALUABLE PRAWNS IN THE NORTHEASTERN COASTAL WATERS OF VIETNAM

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ABSTRACT

The northeastern coastal waters of Vietnam contains diverse and abundant prawns with economic importance. In recent years, overexploitation and marine environmental pollution have led to the decrease of prawns. The purpose of this study is to identify the current diversity and distribution of prawns in this region. Prawns were sampled by a trawl net at four sites in 2011. A total of 21 species of three families of the superfamily Penaeoidea was distributed in this area. The family Penaeidae is the most diverse with 19 species, while each of family Sicyoniidae and Solenoceridae has only one species.

Keywords: Penaeoidea**,** diversity, composition, distribution, resources.

INTRODUCTION

Crustaceans live in all water bodies and play an important role in food webs. Annual exploitation of marine crustaceans in the world is around 5.4 million tons, of which prawns account for 60% (FAO, 2007). Among economic prawns, the superfamily Penaeoidea is the most important group in the world. According to FAO (1998), it consists of 376 species distributed widely in various habitat types from coastal waters to the deep sea. The northeastern coastal waters of Vietnam hosts rich biological resources and shows extremely high biodiversity in mangroves and coral reefs around islands. However, recently over-exploitation and pollution are leading to the decrease of abundances of economic marine species, causing the decline of biodiversity. It is necessary to immediately assess the economic marine species to restore them.

There have been only a few studies on prawns in the northeastern coastal waters of Vietnam. Do (2001) reported 32 crustacean species in the waters surrounding Ha Mai Island, including economically valuable prawns such as *Metapanaeus affinis* and *Penaeus orientalis*. Do and Do (2002) assessed the diversity and abundances of benthic animals in the Co To and Thanh Lan waters. Six economic species of the family Penaeidae were found in their surveys.

To stably exploit economically important prawns, more extensive studies on them need to be carried out. In this preliminary short report, species composition and distribution of prawns were studied as a first step to reach these goals.

MATERIAL AND METHODS

The study area is the northeastern coastal waters of Vietnam. It is situated in the Gulf of Tonkin, along the provinces of Hai Phong and Quang Ninh. Samples were collected at four stations, Cat Hai, Co To, Ha Long and Tien Yen (Fig. 1, Table 1). These stations were located in the important prawn fishing grounds in Vietnam. Sampling was carried out in October, 2011.

The sampling and preserving methods followed 'Survey manual for tropical marine resources' (English et al*.,* 1997). Samples were collected by a beam trawl net of 4 m span and 3

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mm mesh size along two parallel transects set from the shore out to the open sea, twice at each station. The trawling was operated continuously for 30 minutes with a speed of 5 km/h. Obtained samples were preserved in 10% formalin and taken to the laboratory of Institute of Marine Environment and Resources for further analyses.

Classification of prawns was based on the morphology according to 'The living marine resources of the Western Central Pacific – Shrimp and prawns (FAO, 1998), 'A guide to the Australian penaeid prawns' (Grey et al., 1983), and 'Fauna of Vietnam, Volume 1 – Marine shrimp' (Nguyen et al., 2000).

RESULTS

A total of 21 species of the superfamily Penaeoidea was collected in the northeastern coastal waters of Vietnam (Table 2). The family Penaeidae was dominant with 19 species. Other than Penaeidae, only one species of Solenoceridae and one species of Sicyoniidae were found. In the family Penaeidae, the genus *Metapenaeopsis* was most diverse with five species, followed by *Penaeus* and *Metapenaeus* with four species and *Parapenaeopsis* and *Trachypenaeus* with three species.

Among the four stations, Stn. Co To was the most diverse with 11 species, followed by Stn. Cat Hai (10 species), Stn. Ha Long (6 species),

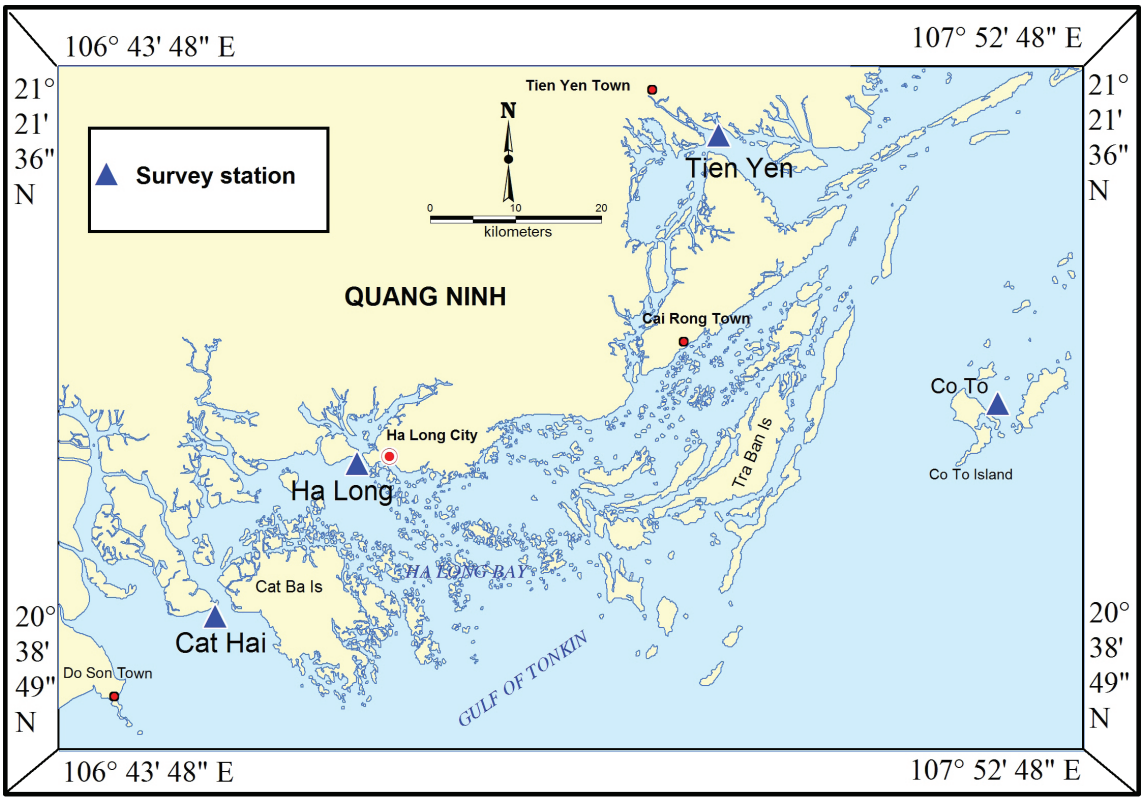

Figure 1. Map of the study area.

Table 1. Sampling sites

Station	Coordinates	Depth (m)
Co To	21° 00' 20.56" N; 107° 46' 59.51" E	10
Cat Hai	20° 46' 58.80" N; 106° 54' 13.87" E	6
Tien Yen	21° 17' 12.48" N; 107° 28' 10.12" E	6
Ha Long	20° 56' 35.39" N; 107° 03' 48.44" E	7

Table 2. Abundance and distribution of prawns in the study area

Species	Co To	Cat Hai	Tien Yen	Ha Long	Total
Family Penaeidae					
Penaeus japonicus Bate, 1888	7	4			11
Penaeus monodon Fabricius, 1798			2	5	7
Penaeus merguiensis De Man, 1888	5	6	4		15
Penaeus penicillatus Alcock, 1905	5	7		4	16
Metapenaeus intermedius (Kishinouye, 1900)		6		3	9
Metapenaeus affinis (H Milner Edwards, 1837)		5			5
Metapenaeus moyebi (Kishinouye, 1896)	4		3		7
Metapenaeus endeavouri (Schemitt, 1926)	2				2
Metapenaeopsis barbata (De Haan, 1844)	3				3
Metapenaeopsis mogiensis (Rathbun, 1902)		5		2	7
Metapenaeopsis palmensis (Haswell, 1879)		4			4
Metapenaeopsis toloensis Hall, 1962	5	4		6	15
Metapenaeopsis stridulans (Alcock, 1905)				4	4
Parapenaeopsis cornuta (Kishinouye, 1900)	5				5
Parapenaeopsis hungerfordi Alcock, 1905			2		2
Parapenaeopsis tenella (Bate, 1888)	4			4	4
Trachypenaeus longipes (Paulson, 1875)		4			4
Trachypenaeus malaianus Balss, 1933			3		3
Trachypenaeus pascadoreensis Schemitt, 1931	3				3
Family Solenoceridae					
Solenocera pectinata (Bate, 1888)	2				2
Family Sicyoniidae					
Sycionia lancifera (Olivier, 1811)		1			2
Total	45	46	14	24	129

and Stn. Tien Yen (5 species). *Penaeus japonicas* inhabited on the sand or sandy-mud bottom from coastline to depths of about 50 m at Stns. Co To and Cat Hai. *Penaeus merguiensis* was found on sand and mud bottoms, from the coastline and river mouths to depths of 55 m at Stns. Co To, Cat Hai and Tien Yen *Metapenaeus moyebi* was distributed on sandy-mud bottom in estuaries and nearshore waters to depths of about 45 m at Stns. Co To and Tien Yen.

DISCUSSION

The present study shows that northeastern coastal waters of Vietnam is a high-diversity area of economically valuable prawns proven by 21 species out of the total of 65 Penaeoidea species in Vietnam's seas. Do (2001) recorded only 6 species in the Ha Mai waters, and this study firstly provided a more complete species composition of economically valuable prawns in the area. In addition, these species are benthic and mainly found on soft bottom of sand and mud in inshore areas. The depth distribution of the prawn species agrees with FAO's conclusions for shrimps in the western central Pacific.

In future studies, it is necessary to measure the standing stock of each species for estimating suitable exploitation to provide effective managing and for protecting coastal resources.

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