THE CLADOCERA (CTENOPODA AND ANOMOPODA) IN RICE FIELDS DURING A CROP CYCLE AT NAKHON SI THAMMARAT PROVINCE, SOUTHERN THAILAND

BY

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ABSTRACT

A study of the cladoceran community in three rice fields at Nakhon Si Thammarat was carried out from June to September 2007. A total of 21 taxa of Cladocera was recorded. Of these, nine belong to the family Chydoridae, three are from the Macrothricidae, two each from the families Bosminidae, Daphniidae, Moinidae, and Sididae, and one species from the family Ilyocryptidae. The primary species of these three areas were *Moinodaphnia macleayi*, *Diaphanosoma excisum*, and *Bosminopsis deitersi*, and these were also the most frequently found taxa. The dominant species changed throughout a crop cycle: during the seedling stage, *B. deitersi* (27.91%); during the growing period, *Macrothrix triserialis* (30.05%); and in the harvesting period, *D. excisum* (35.40%). Nitrogen, nitrite, and phosphate were shown to play a major role in establishing the distribution of the cladoceran community over a crop cycle.

RÉSUMÉ

Rice is one of Thailand’s most important agricultural crops. Its habitat is usually a temporary aquatic environment that is subjected to large variations in insolation, temperature, pH, O₂ concentration, and nutrient status (Roger, 1996). Therefore, a specialized rice field fauna and community structure might be expected to result. However, previous studies of the fauna that inhabit rice field ecosystems were mainly concerned with agronomic aspects and only a few have paid attention to biodiversity at species level. In Thailand, most research that reported on species richness is the result of surveys of samples from various types of habitats (Heckman, 1979; Pholpunthin, 1997; Sanoamuang, 1998; Kotov & Dumont, 2000; Pipatcharoenchai, 2001; Saeng-aroon, 2001; Sa-ardrit, 2002; Kotov & Sanoamuang, 2004a, b; Kotov et al., 2005a, b; Maiphae, 2005; Maiphae et al., 2005, 2008; Sa-ardrit & Beamish, 2005; Sanoamuang & Faitakum 2005; Sinev et al., 2007). There have been only a few reported studies on zooplankton diversity and composition (Chittapun et al., 2009; Maiphae & Janpriang, 2009). The present study aimed to study the changes of the species diversity of Cladocera and to determine their abundance in representative rice fields in the province of Nakhon Si Thammarat, southern Thailand, during a full crop cycle.

MATERIAL AND METHODS

Study sites

The study was carried out at three rice fields in the Chienyai district, Nakhon Si Thammarat Province. These have all been established as paddy rice fields for about 15 years. The water comes from a natural canal nearby, and from rain.

Sampling periods

Sampling was carried out six times during June-September 2007, covering all four stages of a crop cycle: first soil preparation, and next the seedling, growth, and harvesting stages.

Plankton sampling

Fifty-four samples were collected from three rice fields, on 9 and 23 June, 12 and 25 August, and 8 and 22 September 2007. Species richness was based on samples qualitatively collected with a tow net, 30 cm in diameter and fitted with a 60 μm mesh net. Tows were made obliquely with an approximate linear distance of 5 m in open water, and also dragged through the stem brushes, in order to catch...