

# Hainan earthworm community and the comparison with other East and Southeast Asia countries for geographic distribution and endemic rate

(Oligochaeta)

Qi Zhao, Daniel Cluzeau, Charlène Briard, Jing Sun,  
Jibao Jiang, Muriel Guernion, Jiang-Ping Qiu

**Abstract.** This paper presents an up-to-date list of the terrestrial earthworms of Hainan Island, which is the second largest island of China and separated by Qiongzhou Strait from the Leizhou Peninsula, Guangdong Province. Actually, 45 species are already known in this island, 60% of which is native species. Ten new species which were collected in the fieldwork in 2006 are also included in the list. Of these 45 species, 82% belongs to the family Megascolecidae, with the dominant genus *Amyntas* (70%). Some of the species also disperse in other regions of the Southeast Asia and China mainland, except 5 species only have a limited distribution. The endemism rate of Hainan (60%) is similar with that of China mainland (66%) and Taiwan (58%), but its endemism rate of *Amyntas* (77%) is much higher. All of these results maybe have some links with the geographical history of Hainan Island.

**Key words.** Earthworm, biodiversity, distribution, endemism rate, Hainan Island.

## Introduction

Earthworms are terrestrial oligochaetes composed of around 5000 species within 18 families (BLAKEMORE 2002). Brazil is clearly the most biodiverse in terms of earthworm species richness, followed by Australia, Mexico and China in uncertain order (JAMES & BROWN 2006). In China, some 300 nominal species have been found (CHEN & XU 1977, FENG & MA 1987, QIU 1988, 1992, 1993, QIU & WANG 1992, QIU et al. 1991, 1993, QIU & WEN 1988, QIU & ZHONG 1993, TAN & ZHONG 1986, 1987, ZHONG 1986), but the species in the dissected tropical and subtropical terrain of the southern part are poorly known. The earthworm fauna of Hainan Island has not been extensively studied. Before the 1970s, only 35 species of earthworms were reported here (CHEN 1938, QUAN 1985, QUAN & ZHONG 1989). During 1970s to the 1990s, there was a cessation of earthworm research in this island.

Without human intervention, earthworms can not readily cross seas, rivers, or mountains; therefore, the modes which make their distribution be restricted can be very valuable in testifying the geographical history of the world. QIU & BOUCHÉ (1998a-b) thought that the paleogeography of Europe can be dovetailed well with the phylogeny of Lumbricidae. TSAI et al. (2000, 2001) also hypothesized that the ancestors of earthworms in Taiwan were mainly from southeast China, a region on the other side of the Taiwan Strait, which connected with Taiwan through land bridges for several times in the past.