Systematics of the Japanese Glyceridae (Polychaeta, Annelida)

(日本のチロリ科(多毛綱、環形動物門)の分類学的研究)

March 2014

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DECLARATION

I hereby declare that this thesis is based on my original work except for quotations and citations which have been duly acknowledge. I also declare that it has not been previously or concurrently submitted to another university for the purpose of a degree.

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The dissertation entitled as "Systematics of the Japanese Glyceridae (Polychaeta, Annelida)" prepared and submitted by Yusof Shuaib bin Ibrahim in the partial fulfillment of the requirement for the degree of DOCTOR OF PHILOSOPHY is hereby accepted.

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ABSTRACT

This thesis presents a taxonomic review of all Japanese species (29 species belonging to 3 genera) of the family Glyceridae (Polychaeta, Annelida).

Chapter 1 is an introduction. General characteristics of the morphology of Glyceridae are summarized. Previous taxonomic studies on this family in the world and those in Japan are summarized. After that, the purpose of the present study is shown.

Chapter 2 gives an explanation of materials and methods. Methods for collecting and fixing specimens in the field, and morphological observation under ordinal microscopy and scanning electron microscopy in the laboratory are shown. The museum depositories, from where I borrowed type and non-type specimens, are also shown.

Chapter 3 presents the results on the systematics of 29 Japanese glycerid species and an Australian reference species. For all species, synonym list, diagnosis and geographical distribution are shown. For 15 species, I describe their morphological characteristics based on my own examination of newly collected or museum-deposited specimens including some type materials. Six species groups (*Glycera capitata* species group, *Glycera robusta* species group, *Glycera macintoshi* species group, *Glycera pacifica* species group, *Glycera onomichiensis* species group and *Glycera macrobranchia* species group) are newly erected.

For 3 species, the epitokous metamorphosis and reproductive swimming behavior of sexually mature adults (epitokes) are described; those of *Glycera nicobarica* and *G. onomichiensis* are first recorded in the world, and those of *G. americana* are first recorded in Asia. By a morphological comparison between the epitokes and the immature benthic individuals

(atokes) with comparable body sizes, I confirmed such characteristic features of epitokous metamorphosis as flattening of the body, reduction of the proboscis, enlargement of the parapodia, elongation and increase in number of the chaetae, and addition of simple capillaries in the neuropodia, for all of the three species.

Chapter 4 is a discussion. The geographical and vertical distributions of the all Japanese species of Glyceridae are compared with one another. The epitokous characteristics of the 3 *Glycera* species, *G. nicobarica*, *G. onomichiensis*, and *G. americana*, are compared with those of the other congeneric species which were previously reported from the world. The epitokous metamorphoses of the Japanese three species are basically similar to those previously described in eight other species of *Glycera* in the world.