TAXONOMIC STUDIES ON MARINE TUBIFICIDAE (OLIGOCHAETA)

by

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We accept this dissertation as conforming
to the required standard

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ABSTRACT

Supervisor: Professor Ralph O. Brinkhurst

Thirty new species and eight new genera of marine tubificid oligochaetes are described, three genera and four species are redescribed and revised. The diversity of intertidal marine oligochaetes is high and about equivalent in four separate geographic areas (North East Pacific, northern and southern North West Atlantic, and Heron Island, Australia) but the North East Atlantic fauna differs in being less diverse and dominated by two widespread, common and abundant species.

The North East Pacific fauna contains twelve genera and thirty species, all but one of which are described here. Only five species are at all widespread, and two others are the same as or related to North West Pacific species; three genera are totally or largely restricted to the area.

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TABLE OF CONTENTS

Table of Contents (continued)

INTRODUCTION

This thesis is presented posthumously for the late Howard Randall Baker (1955-1983), and was prepared by Ralph O. Brinkhurst, K. Bruce and M. Stone. The thesis is based on fifteen papers published in externally refereed journals. The text, figures, and plates have been reproduced to achieve a uniform page size and to comply as closely as possible to the normal thesis format. The kind indulgence of all of the appropriate University authorities in allowing us to present the thesis in this form is deeply appreciated. The text is largely that which would have been used by the candidate in the presentation of his work. The final paper constitutes a version of what would have been the discussion section of the thesis, in which the first evidence of zoogeographic distribution of marine oligochaetes was to be presented.

The oligochaetes have traditionally been held to be a terrestrial and freshwater group, with a few specialized estuarine or intertidal species. This view persisted for over a century until marine oligochaetes were found in offshore marine sediments, notably by Howard Sanders and Bob Hessler at Woods Hole in the early 1960's. This discovery led to the pioneering work of David Cook, who published several accounts referred to by Randy Baker in the following text. This work was carried on, first by Christer Erséus in Sweden and then by collaboration between him and Randy Baker, who rapidly acquired collections from the oceans of the world. Mr. Baker collected extensively in British Columbia,

covering the entire coastlines of the Queen Charlotte Islands and Vancouver Island, and sections of the mainland coast (especially the Portland Inlet system, the Skeena River system, the Hugh Sound-Rivers Inlet system, the inlets on the mainland side of Queen Charlotte South-Johnson Strait) and areas such as Alberni Inlet and the Gulf Islands.

Comparative material was obtained during a study tour of Eire, England, Scotland, Norway and Sweden to check the hypothesis that the North East Atlantic coasts had an exceptionally low species diversity of tubificid species dominated by two widely distributed, common and abundant forms. Only by collecting with similar methods to those employed on the Pacific coast of Canada could the truth of this traditional view be established.

Access to material from the Eastern United States and the rest of the world came as result of direct solicitation by Mr. Baker based on published accounts of ecological surveys which clearly contained oligochaete material that remained unworked, or from requests for assistance with such material from the collectors themselves. This enabled comparative studies to be undertaken which provide a first insight into global distribution patterns of this group of animals that have only been known to exist for twenty years. The tangible results of the study are a large number of both genera and species new to science, detailed revisions of many others, and a foundation on which to build in the North East Pacific.