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WALLACE AND THE BEES

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ABSTRACT

Alfred Russel Wallace spent eight years collecting natural history specimens in the Indo-Malayan region from 1854-1862. The historical climate at the time was characterised by several conflict “scuffles”, a collecting mania was sweeping Victorian England, and many of our contemporary sciences were in their nascent stages. Facing logistical and transportation hurdles Wallace was able to collect more than 125,000 specimens for shipment back to England and classification by experts in the particular Families and Orders resulting in numerous papers published in scientific journals. Wallace is recognised as the “co-discover”, along with Charles Darwin, of the theory of evolution and principles of natural selection. Among his collections were the type specimens of several new species of bees both honey bees (*Apis* spp.) and other Hymenoptera; descriptions and subsequent naming by Frederick Smith provide the earliest record of (to name only a few), *Apis andreniformis*, *Apis nigrocincta*, *Apis dorsata binghami*, *Chalicodoma pluto* and most likely *Apis koschevnikovi*. This article reviews a few of his bee discoveries and presents them in the light of modern accepted nomenclature.

Keywords: Alfred Russel Wallace, Indo-Malayan Hymenoptera, distribution and holotypes of *Apis andreniformis*, *Apis nigrocincta*, *Apis dorsata binghami*, *Chalicodoma pluto* and *Apis koschevnikovi*

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Alfred Russel Wallace spent eight years collecting natural history specimens in the Indo-Malayan region from 1854-1862. The historical climate at the time was characterised by several conflict “scuffles”, a collecting mania was sweeping Victorian England, and many of our contemporary sciences were in their nascent stages. Facing logistical and transportation hurdles Wallace was able to collect more than 125,000 specimens for shipment back to England and classification by experts in the particular Families and Orders resulting in numerous papers published in scientific journals. Wallace is recognised as the “co-discover”, along with Charles Darwin, of the theory of evolution and principles of natural selection. Among his collections were the type specimens of several new species of bees both honey bees (*Apis* spp.) and other Hymenoptera; descriptions and subsequent naming by Frederick Smith provide the earliest record of (to name only a few), *Apis andreniformis*, *Apis nigrocincta*, *Apis dorsata binghami*, *Chalicodoma pluto* and most likely *Apis koschevnikovi*. This article reviews a few of his bee discoveries and presents them in the light of modern accepted nomenclature.

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INTRODUCTION

Alfred Russel Wallace (8 January 1823 – 7 November 1913) was a noted British explorer, collector, naturalist and author (*The Malay Archipelago*, first published in 1869 and still in print) who spent eight years collecting in the Indo-Malaysian archipelago and is credited for “co-discovering”, along with Charles Darwin, the theory of evolution and principles of natural selection. His collections secured a place for him in the disciplines of biology, biogeography, entomology and other fields of natural science. Self-educated, he possessed a tremendous grasp of taxonomic concepts and is credited for the discovery of hundreds of new-to science species among the 125,660 specimens he collected (Sochaczewski, 2012). He authored dozens of scientific papers, reviewed books, presented papers to prestigious British institutions and delved into such varied subjects as land reform, spiritualism, socialism and life on other planets.

Among the insects he collected were more than 900 aculeate hymenoptera (“stinging” insects such as bees, wasps and ants; insects having two pair of membranous wings); many of these were new to science. Of particular concern in this article are some members of the Apidae family specifically the genera *Apis* and *Chalicodoma* (then called *Megachile*). Wallace is credited for discovering the “world’s largest bee” (up to 40 mm long) *Chalicodoma pluto* (Smith, 1860a & b) and for collecting the holotypes (type specimens) for *Apis andreniformis* and *Apis nigrocincta*; two honey-producing bees. He also collected honey bees that, through later systematics (in the mid 1980s), were found to be distinct species.

Scientific name changes (with all due respect to taxonomists) are like clothing in a tropical environment; frequent changes seem to be the order of the day. It is not without a lot of Latin binomial sleuthing and terminology definition that I was hopefully able to sort out the “bee species” from the more than 178 names of species, subspecies,

races, natiois, forms and varieties that have been used in the past to categorise the now recognised species of honey bees (Engel, 1999).

The Wallace Scene (1850s); A Historical Snapshot

To fully appreciate the travails and deprivations of Wallace's collecting activities (1854-1862 in Indo-Malayan region) one must consider the "climate" of the 1850s and 60s. The weather has not radically changed (global warming and climate aside, it *was* and *is* still hot). It was a long (3+ months) trip from England to the East (no Suez Canal); plus no air-con, refrigeration or fans. The world had its hot spots – e.g., the Crimean War 1853-56; the 2nd Anglo Burmese War 1852; the Indian Mutiny 1857; the 2nd Opium War 1856; the Bau Chinese Rebellion in Sarawak 1857; and the United States was on the brink of its own Civil War (1861-1865).

The natural sciences were beginning to bloom and Victorian England was seized by a "collecting mania"; shells, exotic orchids, ferns (pteridomania), *Nepenthes* (pitcher plants), butterflies, moths, beetles, and other insects were all the rage (Wallace self-financed by selling specimens) for the upwardly mobile middle class. Modern day ecologists cringe at the slaughter in the name of "collecting for science"; Wallace himself shot some 17+ orang-utan and was perhaps a contributor to the Victorian milliners' use of bird-of-paradise feathers in ladies hats.

The causes for malaria and tropical fevers were yet unknown; the science of epidemiology was born when John Snow traced a cholera outbreak to a single pump in London; Louis Pasteur's work on fermentation laid the foundations for microbiology; and fossils of Neanderthal man were discovered in a German quarry.

In the early 1850s in the honey bee world Ukrainian settlers brought the first honey bees (*Apis mellifera carnica*) to the Russian Far East (Vladivostok); German Black bees (*Apis mellifera mellifera*)