

History Of Biodiversity Research

Singapore has been a centre for biodiversity research since the arrival of Raffles in 1819. Famous names from the early colonial period include the surgeon-botanist Nathaniel Wallich and the co-discoverer of the theory of evolution, Alfred Russel Wallace. From the late 19th century, botanical research was concentrated in the Singapore Botanic Gardens, where Henry Ridley was the most famous director, and zoological research in the Raffles Museum, under a series of prolific curators. From the 1950s, the leading role in biodiversity research shifted towards the universities, where it remains today, although taxonomic, horticultural and biodiversity research also continue at the Singapore Botanic Gardens.

The history of modern biodiversity research in Singapore stretches over 190 years. Today, Singapore is a major regional research centre and, as it was in the past, many of its researchers make significant contributions to the field. Like many of the more traditional sciences, there is a rich history and it is this history that makes the current research efforts all the more significant.

The following is a historical account of the exceptional people who made great strides in biodiversity research. It is arranged in a more-or-less chronological order, although there are overlaps. The biodiversity work that took place from the 1990s to the present will be covered in another chapter.

Colonial Period (1800s–1940s)

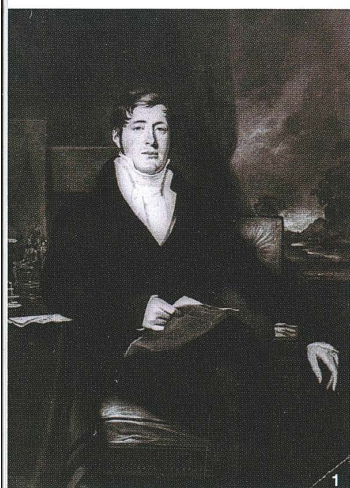
In Singapore, modern studies of natural history started with Sir Thomas Stamford Raffles, the founder of modern Singapore, shortly after he landed on the island in 1819. In fact, it was his interest in natural history that eventually led to the establishment of a natural history museum in Singapore, the Raffles Museum. Raffles only spent about 12 months in Singapore, divided among three visits and for much of that time, he was ill, had a heavy administrative load and travelled around the region. Although not directly involved in much of the research, he facilitated the work of many scientists with his collections. **Many well-known species from the region, including the largest flower in the world, *Rafflesia*, were first discovered by him (Noltie, 2009).** Raffles also named several mammals and birds, such as the now highly endangered cream-coloured giant squirrel (*Ratufa affinis*) (Raffles, 1821), and aided in the discovery of other species such as the slender squirrel (*Sundasciurus tenuis*) (Horsfield, 1823).

On his first visit to Singapore, Raffles was accompanied by Dr William Jack, a Scottish surgeon

and botanist. They collected a number of plants new to science, all apparently from coastal habitats, and several now extinct in Singapore. In a letter from Singapore written on 20 June 1819, and later published in *Curtis's Botanical Magazine*, Jack wrote: "It is impossible to conceive anything more beautiful than the approach to Singapore, through the Archipelago of islands that lie at the extremity of the Straits of Malacca. Seas of glass wind among innumerable islets, clothed in all the luxuriance of tropical vegetation, and basking in the full brilliancy of a tropical sky. ... I have just arrived in time to explore the woods, before they yield to the axe, and have made many interesting discoveries, particularly of two new and splendid species of Pitcher-Plant [*Nepenthes rafflesiana* and *N. ampullaria*], far surpassing any yet known in Europe. I have completed two perfect drawings of them, with ample descriptions. Sir S. Raffles is anxious that we should give publicity to our researches, in one way or other, and has planned bringing out something at Bencoolen."

Raffles' role in the natural history and biodiversity of the region has been well documented; as are the significant contributions by William Hunter, Thomas Horsfield, William Farquhar, Joseph Arnold, William Jack, Pierre Diard and Alfred Duvaucel. Certainly one of Raffles' major contributions to Singapore's natural history was to support Dr Nathaniel Wallich in establishing a botanical garden at Fort Canning. This paved the way for the creation of what is now known as the Singapore Botanic Gardens. The study of natural history in Singapore therefore owes much to Raffles; he was the visionary behind both the Singapore Botanic Gardens and the Raffles Museum, two strongholds of modern-day biodiversity research.

Nathaniel Wallich (another surgeon-botanist) came to Singapore for five months in 1822 from Calcutta to design the new gardens for Raffles, and made extensive botanical collections in the vicinity of the expanding settlement. As with Jack's collections, these included species that have subsequently been lost from the island's flora. In the years of the British colonial rule, many other collectors and natural historians visited Singapore. Many researchers are unaware of the fact that one of the great explorations of the 19th century passed through Singapore. Between 1838 and 1842, the U.S. Navy mounted across the Pacific a massive surveying expedition,



(1) Sir Stamford Raffles was an avid naturalist. He made many interesting discoveries of plants and animals in Southeast Asia, including (2) *Rafflesia*, the largest flower in the world; (3) The pitcher plant (*Nepenthes rafflesiana*) was discovered in Singapore by Raffles' companion, William Jack.

