Uncovering Treasures in Singapore's Soils: The First Female Geologist, Elizabeth Alexander

Who is Elizabeth Alexander?

Frances Elizabeth Somerville Alexander (1908-1958) was a British geologist and physicist. She made important contributions to the geology of Singapore and was the island's first female geologist. She also uncovered several fossils from Singapore that are at the Natural History Museum in London.

A biography of Alexander, entitled *Rock, Radio and Radar: The Extraordinary Scientific, Social and Military Life of Elizabeth Alexander*, was written by her daughter, Mary Harris. The three words in the title sum up her biggest contributions to science, both in and away from Singapore. The excerpts below are taken from this book.

Portrait of Elizabeth Alexander.
Source: Mary Harris

Evacuation

January 1942

In January 1942, Alexander was ordered to evacuate her children to New Zealand. She had planned to return to Singapore but after the fall of Singapore on 15 February, she was stranded in New Zealand.

Radio and Radar
1942–1945

During the war, Alexander was involved in radio and radar research for applications such as meteorology and astronomy.

Reunion
September 1945

Alexander was reunited with her husband in New Zealand in September 1945. In March 1946, he returned to Singapore and Alexander followed her husband back to the island. In Singapore, Alexander acted as registrar for the conversion of Raffles College to the University of Malaya (today the National University of Singapore).

Back to Rocks
October 1949

In October 1949, Alexander was employed by the government of Singapore to conduct a survey of the granite resources of the island for use in post-war reconstruction.

Granite of Singapore
1950

Alexander's granite report entitled *Report on the Availability of Granite on Singapore and the Surrounding Islands* was published six months after she began her survey. Her conclusion was that:

> "Omitting the granite in Bukit Timah and the Forest Reserve and taking 400,000 cubic yards as the annual consumption, the granite resources of Singapore and Pulau Ubin may be expected to last for over five hundred years."[1]

This statement and her report would have implications for the conservation of Singapore's biodiversity.

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1 https://linc.nus.edu.sg/search~S16?/cQE462+Gra.A/cqe++462+graa/1%2C2%2C2%2CE/frameset&FF=cqe++462+graa&1%2C1%2C/indexsort=-

Leaving Singapore Once More
1951

In 1951, Alexander left Singapore to follow her husband to his new post at college University College Ibadan in Nigeria. She continued to advise the government of Singapore on geological matters until her sudden death in 1958.

A Farewell Gift?
November 1952

A previously undescribed collection of fossils from Singapore now at the Natural History Museum in London appears to have been collected by Alexander in 1950 but presented to the museum in November 1952. The context and details of this collection are still to be studied.

Geology and Conservation
Epilogue

A report published in the *Straits Times* on 3 February 1951 stated:

> "This select committee was appointed in April of last year, and it first dealt with charges voiced … that commercial granite quarries on the slopes of Bukit Timah were threatening to spoil the nature reserve which had been created there in 1931 and which was intended to conserve in perpetuity the only area of primitive jungle left on Singapore Island. This part of the committee's task proved to be unexpectedly easy and amicable, thanks to the fact that Dr. (Mrs.) Alexander had just made a survey of the granite resources of the island, together with a study of its geology in general, for the Government. Dr. Alexander showed that, contrary to the popular belief that granite was scarce on Singapore Islands, there was an abundance of it. Leaving Bukit Timah out altogether, Dr. Alexander estimated that there was enough granite on Singapore Island and on Pulau Ubin to last five hundred years. So, with that comfortably long prospect ahead, all that the select committee had to do was to recommend in its interim report that the Bukit Timah quarries should observe certain restrictions to safeguard the nature reserve while working in the present sites, and gradually transfer to the Mandai area."[2]

[2] https://eresources.nlb.gov.sg/newspapers/Digitised/Article/straitstimes19510203-1.2.92

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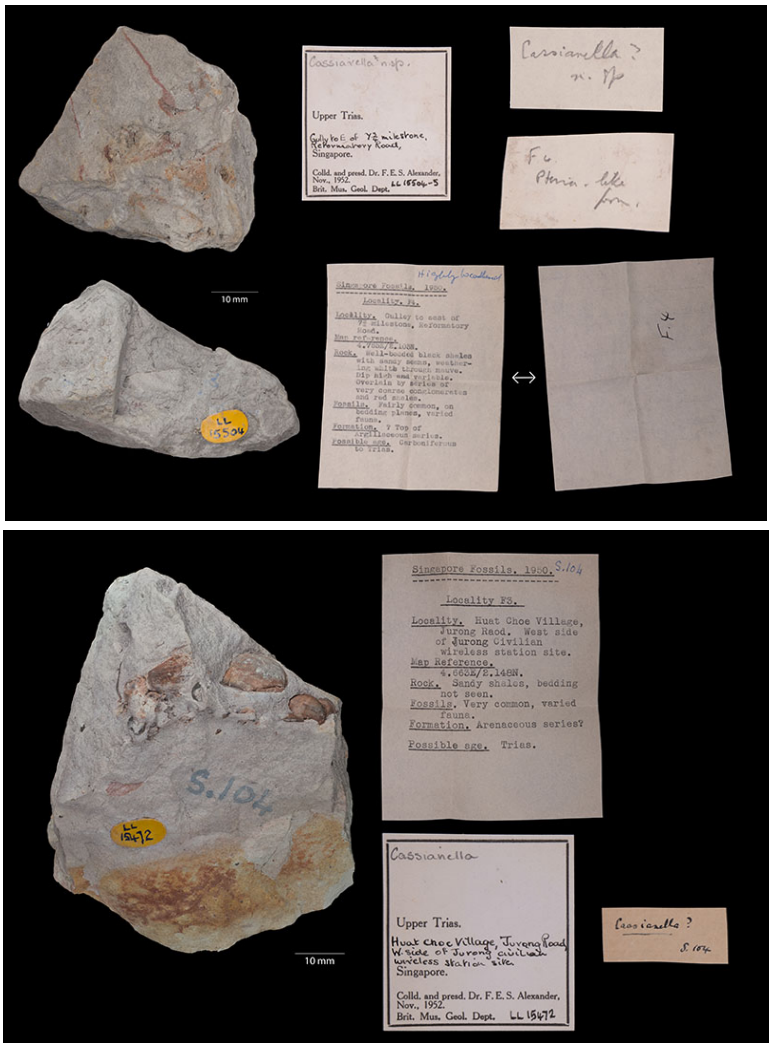
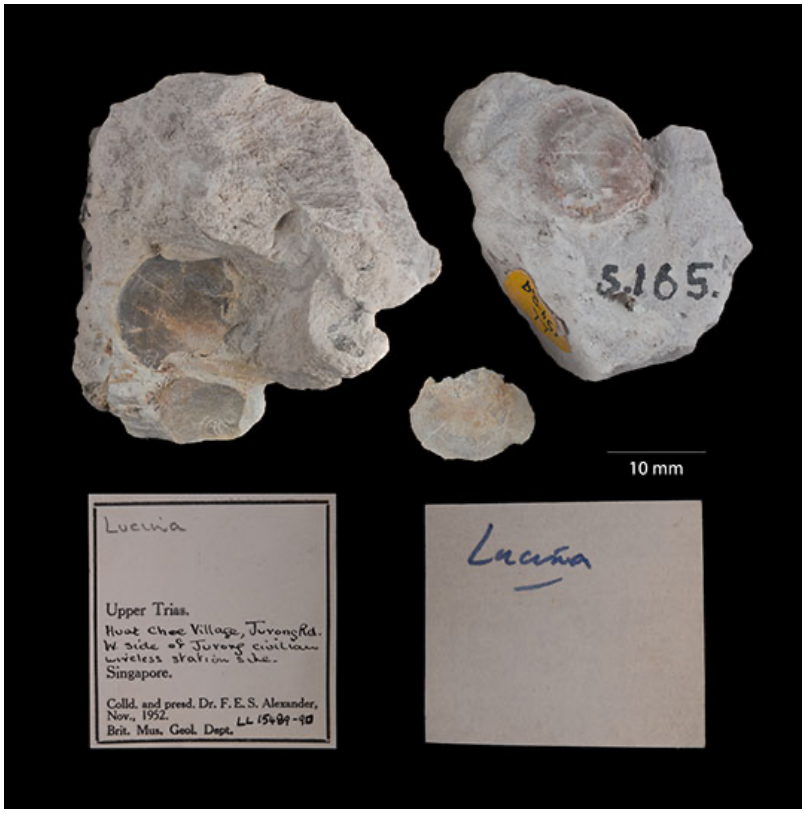
Today, Bukit Timah remains a protected nature reserve and – apart from a small plot within the Botanic Gardens – the last remaining area of primary rainforest. The study of old rocks led to the protection of an old forest.

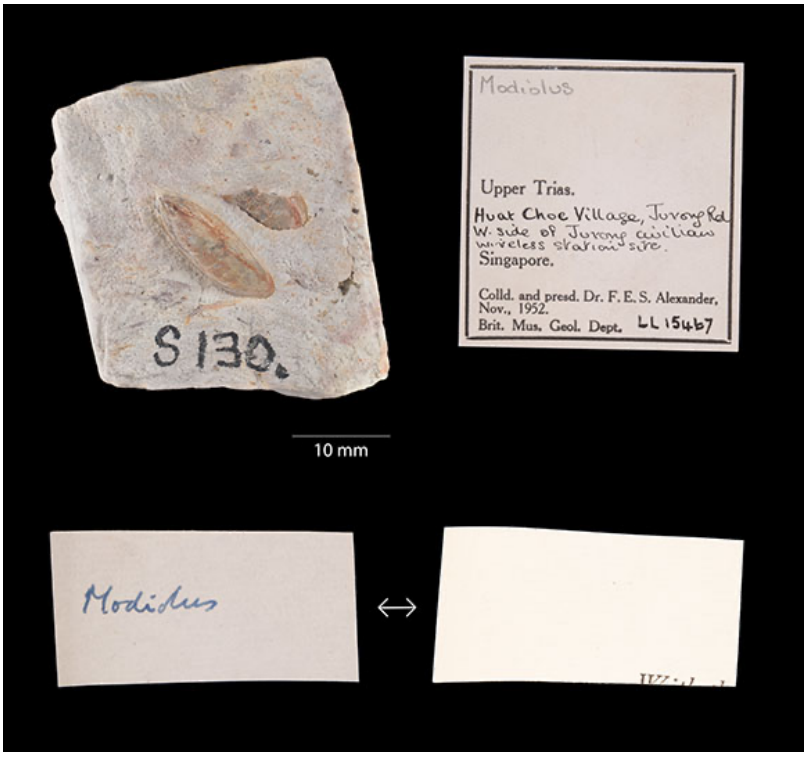
Alexander's 1950 report produced important findings that had unexpected (and positive) consequences for Singapore's biodiversity. We look forward with anticipation that her fossil collection will also produce interesting findings that will help us better understand the natural history of the island that she called home – on and off – for almost two decades of her remarkable life.

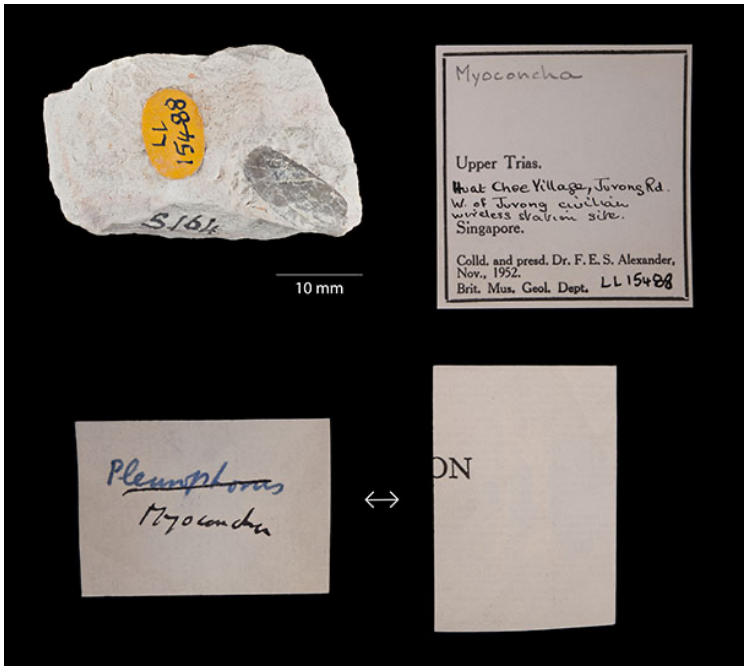
Fossil specimens[3]

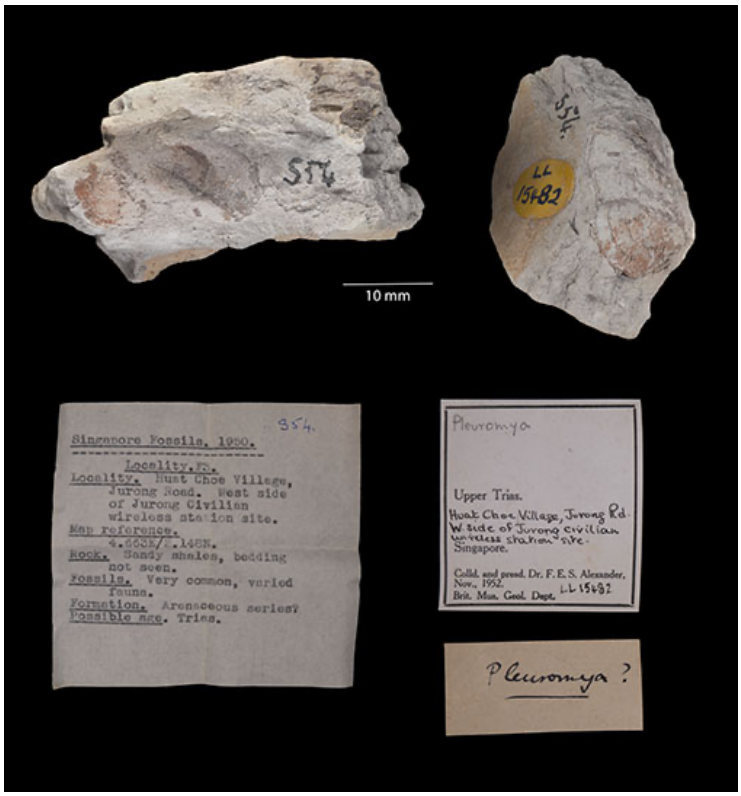


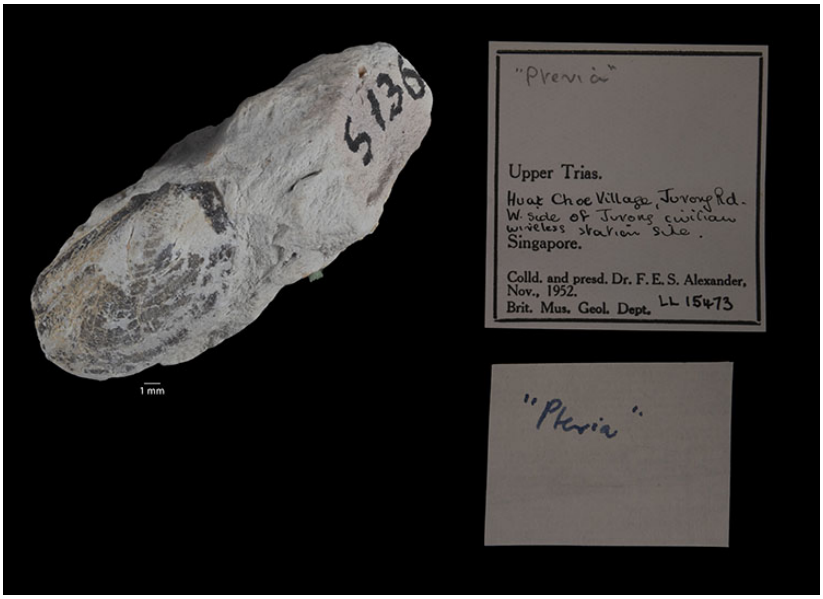
[3] SIGNIFY species page

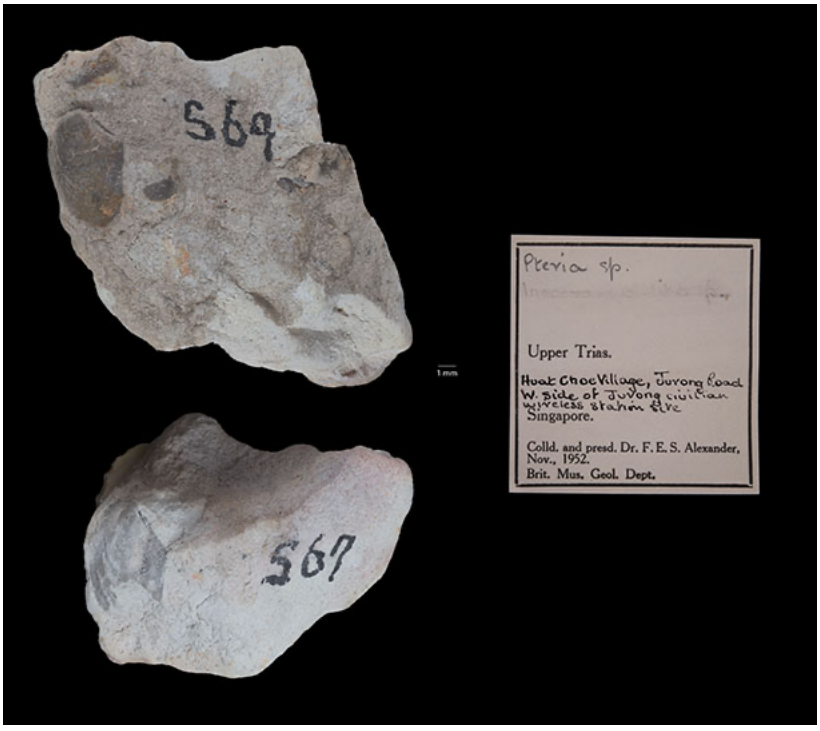












Research and text by Wendy Y. Zhang