

More than 100 years ago, the Dutch embarked on what is justly recognised as one of the great voyages of discovery. The *Siboga* Oceanographic Expedition to what was then known as the Netherlands East Indies, now known as Indonesia, lasted for just short of a year, departing Surabaya on 7 March 1899, and formally ending on 27 February 1900, when it returned to the same port. In total 323 sites were visited, physical measurements were made at each, and numerous biological and geological specimens were collected.

While only four scientists took part in the expedition, the analysis of the samples involved scientists from 12 countries. The results were published in a series of more than 130 monographs that appeared between 1901 and 1982. Even to this day, the *Siboga* collections are being actively studied, and this remarkable cache of biological material continues to yield interesting new records and taxa.

The expedition did not enter Australian waters, but many species that were recorded are widespread in the tropical Indo-Pacific, including northern Australia. The monographs of the *Siboga* expedition are therefore of considerable importance in assessing and documenting the marine flora and fauna of tropical Australia, as they include the first descriptions of numerous new species.

On board the *Siboga* was seaweed biologist Anna Weber-van Bosse, who was the wife of the expedition leader Max Weber, professor of zoology at the University of Amsterdam. The participation of a woman in such an expedition was unheard of at the time, and Weber-van Bosse is justly regarded as a pioneer. In recognition of her achievements, Weber-van Bosse was awarded an honorary PhD from the University of Utrecht, the first Dutch woman to receive one.

One of the seaweeds collected during the expedition, a small, wrinkled, red blade dredged from 34 metres deep in Makassar Strait, was described by Weber-van Bosse as the new species *Kallymenia maculata*. This species has remained one of the *Siboga* expedition enigmas, as it has never been recollected. Until recently, that is, when I participated in a Western Australian Museum expedition to Ashmore Reef, some



Century-old seaweed resurfaces

350 kilometres north-west of the Australian mainland and about 1200 kilometres south-east of Makassar Strait, the locality where the species was collected originally

During a scuba dive on a reef drop-off, I spied an unusual looking seaweed, one that I was unfamiliar with despite many years of working on the tropical flora. This seaweed had a very corrugated blade, and luckily the plants were reproductive, which meant I was able to assess the correct taxonomic status of the species. The unusual shape of the plants also jogged my memory that I'd seen this before in Weber-van Bosse's 1928 account of the red algae collected on the *Siboga* expedition. Willem Prud'homme van Reine, a colleague at the Leiden herbarium where the *Siboga* algal collections are housed, sent photographs of the original material, and the match with the Ashmore Reef plants was enough to convince me that I had rediscovered the long-lost *Kallymenia*. However, the reproductive structures, although similar to those of *Kallymenia*, had a few subtle but important differences, which seeded a thought, was the species correctly placed in *Kallymenia*?

Answering this question drew in further colleagues, firstly the Canadian phycologist Gary Saunders, whose experience with using DNA sequencing in algal taxonomy is unparalleled. The sequences of the Ashmore Reef specimens demonstrated

clearly that the species belonged to the family Kallymeniaceae, but also that it was only remotely related to the true *Kallymenia*, and did not align with any other known genera. As a result, the species was moved to a newly described genus, named *Rhytymenia*, or 'wrinkled blade', a very apt description of the plants. There the story might have ended, but, as often happens in taxonomy, further questions were raised regarding other Australian species of *Kallymenia*. In a seeming parallel to the international input to the original *Siboga* monographs, three more phycologists became involved: Line Le Gall (France), Alba Vergés (Spain) and Gerry Kraft (Australia), each with a strong interest in the taxonomy of the red algae. More specimens were collected and examined, and more species were sequenced, including authentic *Kallymenia* from the Mediterranean, and others from around Australia, South Africa and elsewhere. The results were surprising and an extensive revision of the family Kallymeniaceae is underway, which will include the recognition of at least six new genera. Thus the rediscovery of one rare species (no small achievement on its own) has led to an international collaboration generating results that will modify our understanding of red algal taxonomy worldwide.