

Seadragons are quintessential Australian animals and are found only along our southern coast. There are two recognised species, the leafy seadragon (*Phycodurus eques*) and the common seadragon (*Phyllopteryx taeniolatus*). Despite their evocative name, seadragons are members of the seahorse and pipefish family Syngnathidae which includes a wide variety of bizarrely modified fish, some with prehensile tails. The leafy seadragon is known from South Australia and southern Western Australia, but the common seadragon is more widely distributed from Geraldton to Port Stephens in New South Wales, including Tasmania.

Their bodies are modified with various leaf-like appendages that help to camouflage the animal as it gently swims or floats among seaweed or seagrass. They move using their thin, translucent fins which quickly rotate providing propulsion. Like their seahorse and pipefish cousins, seadragon males care for the eggs in a brood pouch on his tail. They are perennial favourites in aquaria around the world, and are keenly sought by scuba divers for quiet observation or photography.

The current taxonomy of seadragons has been in place for several decades, with two species, each placed in separate genera. Each species, however, has junior synonyms – taxa that were thought to represent distinct species by their describer but which have since been shown to represent the same species as the original name. Previous research using DNA data confirmed that the two Australian seadragons are each other's closest relatives and diverged from their most recent common ancestor about 8.3 million years ago.

While studying a seadragon collected from deep water in the Recherche Archipelago off Western Australia's south coast, researchers found that its genetic signature was vastly different to those of other seadragons. They also noticed that its bright red colouration contrasted with that of its closest relative, the common seadragon, which is more yellow with purple patches. Furthermore, it was trawled from 51m, which is much deeper than most other seadragon records. Intrigued



Ruby seadragon

by these results, Josefin Stiller and Greg Rouse from the Scripps Institution of Oceanography, California, and Nerida Wilson from the Western Australian Museum, examined records of common seadragons from deeper waters stored in Australian museums, hoping to locate more specimens. Their hunch paid off, as they located three more specimens that closely matched the morphology of the Recherche Archipelago seadragon, but which had been classified by museum staff as common seadragons. Two were collected from west of Garden Island in 1956 and lodged in the CSIRO Marine and Atmospheric Research collection in Hobart, and the other was washed up on Cottesloe Beach in 1919 and stored in the Western Australian Museum. These three specimens were too old or improperly preserved to extract DNA, but their morphology clinched the deal, confirming that the Recherche Archipelago specimen was not an aberration. And so, a previously unknown species was discovered, raising the world's seadragon fauna from two species to three.

While writing up the results of their study for publication in a scientific journal – which is the only way that new species can be formally recognised – the authors decided to name the species *Phyllopteryx dewysea*, dedicating it to Mary 'Dewy' White, co-founder of the Lowe Family Foundation

which supported the research, "for her love of the sea and her support of seadragon conservation and research".

The other two seadragon species are considered by the International Union for Conservation of Nature (IUCN) to be Near Threatened due to habitat loss or habitat degradation, but the status of the ruby seadragon is unknown. With so few collecting sites known – two at depths of 72m and 51m (the Cottesloe specimen was washed onto shore, so no depth can be inferred) – the habitat requirements of this enigmatic species remain to be discovered. Are they truly restricted to deeper waters than the common seadragon? Is their reproductive biology the same? Are they more widely distributed?

The scientific paper reporting the discovery was recently published in the prestigious journal *Royal Society Open Science*, and we can now celebrate the latest addition to the Australian fish fauna. We can also be thankful that museum and herbarium collections are available for ongoing biodiversity work and that biodiversity collections are not static entities but enduring storehouses of our biological heritage.

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Above Ruby seadragon.
Photo – Zoe Della Vedova