

Ocean Heroes

Save the seahorse, save the oceans

By Dave Harasti



above: A small juvenile White's seahorse (*Hippocampus whitei*) uses an adult as a holdfast

top: This undescribed species of seahorse was originally thought to be *Hippocampus trisits*

opposite page: In 2007, a thorny seahorse (*Hippocampus histrix*) found in Nelson Bay was Australia's first confirmed sighting of this species

My first encounter with a seahorse was 10 years ago at Fly Point, a prolific site in Nelson Bay. It was in just 10m of water; a small, yellow seahorse with its tail curled delicately around a sponge. I was mesmerised, and thanked my lucky stars that I had one shot left in the camera to get a picture. After the dive I quickly developed the slides, and what I saw was a little creature that looked like more like something out of a storybook than a living thing. I was hooked.

As luck would have it, a few years later I moved to Nelson Bay. With seahorses living on my doorstep, it was my chance to finally learn more. Now I spend much of my time dedicated toward the conservation of these shy animals, putting together more and more pieces of their biology and ecology.

You see I want to know what makes seahorses "tick." Discover what's so fascinating about an animal that has the head of a horse and the body of a mermaid. And for the past three years the seahorses of New South Wales (NSW) have become the focus of my PhD research. I want to determine what environments they prefer, whether marine parks provide adequate protection, and test the age-old theory of whether a seahorse is really faithful to its partner. The answers will hopefully provide a better understanding of what seahorses need to survive, which will ultimately assist in their long-term conservation.

A HORSE IS A HORSE

Seahorses are unusual little marine creatures that belong to a family called Syngnathidae, which includes seahorses, pipefish, sea dragons and pipehorses. They occur throughout the oceans of the world (except in the coldest seas at both poles) and can be found living in various habitats including sea grass meadows, sponge gardens, and coral reefs.

All seahorses belong to the one genus, *Hippocampus*, derived from the Greek words *hippos* (meaning horse) and *campus* (meaning sea monster). Most species are found in shallow coastal habitats in less than 20m, but some species such as pygmy seahorses are known to occur in depths of up to 150m.

One particular aspect of seahorse biology intrigues many diving fanatics: In seahorse biology, it's the male that becomes pregnant, carrying eggs in a pouch-like opening. The female deposits her eggs into the male's pouch, and the pregnancy lasts about two weeks to one month, after which the male gives birth to as many as 150 babies. But it doesn't end there: The poor little male may have to go through the whole pregnancy process up to five times in a single breeding season! The babies are left to fend for themselves after birth (I guess that's what happens when you leave parenting to a bloke) and few juveniles make it to adulthood. But with so many babies born at one time, enough manage to survive to breed in the future.

STARTING SMALL

Seahorses are such unassuming animals it's strange to consider them "at risk." But their habitats are threatened, with factors such as marine pollution, declining water quality, and fish trawling contributing to the decline. Without habitat it's unlikely that seahorses would survive as they rely on soft corals, sea grass beds and sponge gardens habitats for camouflage and food. Fortunately, Australia has several marine parks – including the Great Barrier Reef Marine Park – that protect important seahorse habitats.





from top: The author's first seahorse experience, 10 years ago at Nelson Bay's Fly Point; "tattooing" a seahorse using coloured dye is a delicate operation (but one that doesn't hurt the animal); the author's all-time favourite seahorse, Big Red was found living on the same sponge for 12 months at Fly Point

opposite page, from left: The Australian potbelly seahorse (*Hippocampus abdominalis*); a White's seahorse with a nudibranch hitching a ride

As part of my research into seahorse habitats, I spent 12 months diving the protective swimming nets at Manly wharf. The local council has the nets cleaned every year, which would cause a huge decline in the seahorse population. I wanted to find a way the nets could be cleaned without affecting the seahorses, and after research determined that seahorses prefer living low on the net, and only on sections that had some form of growth such as algae, plants, or sponges. The seahorses rely on this growth for food and camouflage from predators. As a result of the research, only the top sections of the net are cleaned, leaving enough growth on the bottom for seahorses to survive.

Their survival adds to Australia's extremely rich syngnathid biodiversity; at least half the species found around the world are known to occur in Australian waters. Australia has introduced several measures to protect seahorse populations, and it's illegal to take them from the wild in New South Wales (NSW), Victoria, South Australia, Tasmania, and Commonwealth waters. The protection of seahorses in these states ensures that fishing and collecting for the aquarium trade cannot exploit local seahorse populations.

The most common seahorse in Australia's most populous state (NSW) is the White's seahorse (*Hippocampus whitei*), found in the sponge gardens and sea grasses of coastal estuaries between Sydney and Forster. Because the very first seahorse I photographed was a White's seahorse, I chose this species as the focus of my research. For nearly four years I've dived with seahorses every week, and on each dive I've recorded valuable data such as seahorse distribution, abundance, depth range, habitat usage, relationship with predators and water temperature.

I then take the data from each area and monitor how the population changes over time, as well as the overall number of seahorses living at one spot. Interestingly enough, there are fewer seahorses in the marine protected area than in the areas where fishing is allowed. Saving the fish, it seems, means increasing the number of predators that eat seahorses. It's not an especially important finding, but it does mean that if any captive-bred animals are released we'll know where to release them so they have the best chance of survival.

Then when all this science glazes my listener's eyes (or your eyes, dear reader), talk turns to how I gather so much information with a small, although thankfully very territorial, animal. My reply gets the same reaction every time.

SEAHORSE RODEO

Like many marine biologists, I use tagging to gather information on a specific animal. But how exactly do you tag an animal that's just a few centimetres long? With a lasso, naturally. Actually, an underwater lasso isn't always necessary as the seahorse is one of the slowest moving fish in the ocean. Once caught, the tagging process is very similar to tattooing. Three small fluorescent dots of dye are injected into different sections of the seahorse's body. Each pattern of dots is unique so it's easy to discern the identity of each individual.

As of November 2008, I've "tattooed" over 700 seahorses within Port Stephens, with another 300-plus seahorses tagged in Sydney Harbour. In fact I've seen some individuals so often that I've given them names. Big Red was my all-time favourite, hanging around on the same gorgonian fan for almost 12 months. I was sad the day he disappeared; it's the only time I've shed an underwater tear. The reality is even seahorses have to move on to the "great ocean in the sky," but it's not as quick as you might think: Some of my seahorses have been seen three-and-a-half years after being tagged, which translates roughly to four to five years of life.

All this work with seahorses has also given me more insight into the theory that seahorses have just one partner for life. Previous studies have shown that some species of seahorses, such as the White's, remain faithful over the breeding season, while others are more promiscuous (I'm looking at you, big belly seahorse). I tested the theory, noting which animals shared their little territories together, and compared whether the partners changed over the course of a breeding season. The results were stunning, even to a faithful monogamist like myself: Not only do some animals remain faithful to one another for one season, but it appears they stay together over subsequent breeding seasons too. It seems seahorses really do fall in love.

IN A SCENE STRAIGHT OUT OF FINDING NEMO, THIS LITTLE GAL HAD HITCHED A FREE RIDE ON THE EAST AUSTRALIAN CURRENT AND WAS SWEEPED INTO NELSON BAY.

FIRST-CLASS TRAVEL

While seahorses don't move around much, some travel in style. In March 2007 I encountered a small thorny seahorse (*Hippocampus histrix*) on one of my research dives. Which wouldn't be remarkable if I were diving in Indonesia or the Philippines. But this was the first confirmed sighting of this tropical seahorse in Australian waters. In a scene straight out of Finding Nemo, this little gal had hitched a free ride on the East Australian Current (EAC) and was swept into Nelson Bay.

That the thorny seahorse made it to Nelson Bay seems almost natural because Nelson Bay has proven to be the place for seahorses in Australia. The Australian potbelly seahorse (*Hippocampus abdominalis*) was discovered in Nelson Bay and, in August 2008, I discovered another new species that not only was new to Nelson Bay but also undescribed and previously only found in deeper water off the NSW north coast. With four species of seahorses found in the one location, Nelson Bay really is the seahorse hotspot of Australia!

When my research is done and dusted next year, my hope is the information will lead to improved management of seahorses and their habitats in Australian waters. The seahorse is a flagship species – it's cute, photographs well, and is rare enough that divers clamour to see one. If we can get people thinking about saving the seahorse, then it might also get them interested in saving our oceans. [SD](#)

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