

Enduring legacy

One man's vision becomes another's life's work in the quest to protect the fragile inhabitants of the marine world, discovers **Elena Koshy**

In search of seahorses in the seagrass-rich Sungai Pulai estuary in Johor.



BENEATH the serene azure waters, love flourishes amidst the gently swaying seagrass, creating a romantic tableau under the sea. Two seahorses find their way to each other across the ocean and lock their bony, plated tails together in a courtship dance like no other.

Dr Adam Lim Chee Ooi, a marine biologist, vividly remembers his first encounter with seahorses in their natural habitat. "I spotted a pair of courting seahorses," recalls Lim, smiling. It was his third attempt to find seahorses in the vast expanse of Sungai Pulai's exposed seabed at low tide in Johor, trailing after his lecturer and mentor, the late Choo Chee Kuang.

Since 2005, Choo had been at the helm of a special interest group he founded and named Save Our Seahorses (SOS), demonstrating his dedication to the preservation and study of seahorses.

The lecturer at Universiti Malaysia Terengganu frequently organised excursions to the estuary with volunteers and researchers, aiming to monitor and conserve the seahorse population.

Thanks to his initial comprehensive project mapping the locations of sea-

horse habitats around the country's waters, Choo had identified the Sungai Pulai estuary for in-depth research on these creatures.

This estuary has been described as "possibly the richest marine biodiversity spot in Malaysia". In 2003, it was recognised as a "Wetland of International Importance" under the Ramsar Convention. This international environmental treaty, signed in 1971 in Ramsar, Iran, under the auspices of the United Nations Educational, Scientific and Cultural Organisation, involves 168 nations committed to wetland conservation.

Remarkably, this particular location is also known for the ease with which seahorses can be found without the need for snorkelling or scuba diving, making it a significant site for ongoing studies and conservation efforts.

Lim refers to this specific coastal area identified by his mentor as a sort of "magical" place, rich in opportunities for research and discovery. Choo, the intrepid lecturer and conservationist, began frequenting this area, often accompanied by a local boatman. Lim humorously notes his supervisor's reliance on glasses, implying that spotting seahorses was not always easy for him. To address this, Choo enlisted the help

of friends, who in turn brought more friends to assist in the endeavour.

This collaborative effort gradually evolved into a broader concept. It became a means of involving the public in marine biology and citizen science programmes, turning it into a communal and educational experience. This approach not only aided in the research and conservation of seahorses, but also fostered a greater public understanding and appreciation of marine life.

"And that's how SOS was born," says Lim, smiling.

Lim fondly remembers Choo's deep passion for marine biology, particularly his fascination with seahorses. "I found his work with seahorses profoundly fascinating as it eventually led to my own 'love affair' with seahorses," says Lim. He'd begun volunteering with SOS while studying for his degree in marine biology under Choo.

For Lim, his first two excursions with Choo drew a nought. "It was frustrating," he recounts, chuckling. "Everyone spotted seahorses except me!" The third expedition proved to be a defining moment for Lim as he finally observed the tiny seahorses nestled at the base of the seagrass. This discovery marked a pivotal point

in his burgeoning career and deepened his fascination for these extraordinary marine creatures.

It's easy to see the seahorse's allure, with its fanciful blend of traits that seem borrowed from other animals: a horse's head, a chameleon's independent eyes and camo skills, a kangaroo's pouch, a monkey's prehensile tail.

The seahorse comes in wide spectrum of colours and a multitude of bumps and blotches, stripes and speckles, spikes and lacy skin extensions. It has bony plates instead of scales, and with no stomach to store food, it almost constantly sucks up copepods, shrimp, fish larvae and other tiny edibles.

"The seahorse is an odd little creature," Lim concedes, adding: "But as I learnt more about them, they intrigued me."

DANCE OF LOVE

When it comes to animal mating rituals, they don't get much more beautiful than that of the seahorse. These rituals involve a series of synchronised dances, vibrant colour changes and ultimately, a unique role reversal where the male seahorse becomes impregnated by the female, leading to

the birth of numerous tiny offspring.

"It's a complete role reversal!" he exclaims, smiling.

The courting process, shares Lim, is a dramatic display of colour changes and coordinated movements. Seahorses often swim closely together, tails entwined in a parallel promenade, or they may clasp the same strand of seagrass with their tails, prancing around it in perfect harmony. This elegant dance, called the "maypole dance", is a mesmerising spectacle.

"It's quite a Bollywood dance!" quips Lim, grinning. "They have a thing or two to teach us about relationships too. They keep the romance 'burning' by dancing with each other every single day!"

As courtship progresses towards a deeper commitment, the dance becomes more elaborate, resembling an Olympic-style synchronised swimming routine. Lim explains that the seahorses move up and down the water column in unison, waiting for the perfect moment of synchronisation.

At the climax of this courtship, the pair forms a heart shape, and the female transfers her eggs into the male's pouch, completing this remarkable cycle of seahorse reproduction.



A pair of seahorse, male and female.



All in the family. Lim with his wife and daughter on a field trip to survey seahorses.



Measuring seahorses.

"That's... romantic!" I breathe. Heart shapes? Males getting pregnant? A daily courtship dancing? I almost wish I was a seahorse, I quip, and we break into laughter. "See?" he exclaims. "That's fascinating right? And imagine, the sight of the courting seahorses sparked my curiosity even more!"

The aspect that particularly captivated the young student was the process by which a female seahorse locates a male for their intricate courtship dance. "There must've been some form of communication between them," he pondered, considering the vastness of the ocean as a backdrop.

So how does the female find the male? This line of inquiry, filled with curiosity about the seahorses' communication and mating behaviours, led him to delve deeply into the subject, eventually shaping the focus of his undergraduate research thesis.

In his research, Lim used a hydrophone — a "toy" version purchased by Choo from the United States (US) — to listen to the sounds made by seahorses in the aquarium.

He found that they produce a series of snapping, growling or grunting noises, audible to other seahorses. This discovery was a key element of his PhD research, deepening his study into the communication behaviours of seahorses.

PASSING THE BATON

Did he always want to be a marine biologist?

Lim responds with a chuckle and a nod, his tone laced with dry humour: "I blame all those *National Geographic* programmes!" he quips, adding: "They conned me into loving nature. These programmes never show you the countless hours spent waiting and searching for animals out in the wild!"

When it came to university, his path seemed predestined. "There were no other choices when I applied," he says dryly. "I picked marine biology and got it, probably because nobody else wanted that course!"

His university years brought him into contact with Choo, under whom he began his involvement with the SOS initiative, precipitating his own love affair with seahorses. This experience deeply influenced his academic trajectory.

Lim's recollections of his time with Choo are filled with a blend of humour and nostalgia. He vividly remembers their excursions with SOS, especially his supervisor's cautious driving style. "He was the slowest driver!" Lim

recalls, chuckling. "I took four naps during one such trip and we were still far from our destination!"

Lim recounts a hilarious experience when transporting a rubber dinghy on a motorcycle to the shore with Choo. They then took a boat out to the ocean, where Lim and a fellow student were tasked with sitting in the dinghy to watch for dugongs.

Despite their diligent efforts under the scorching sun, they inadvertently drifted near Singaporean waters. Luckily, Choo intervened in time and rescued them — a memory that Lim looks back on with disbelief and amusement.

Their paths diverged when Choo moved to the US, marking a significant transition in their journey. During this time, Lim completed his undergraduate studies and opted for an unconventional academic path: he fast-tracked to a PhD programme, skipping the traditional master's degree. This bold decision led him to Universiti Malaya, where he earned his doctorate in 2017.

In 2013, a pivotal moment occurred in Lim's life when he received an unexpected phone call from Choo. The call came as a surprise, but the message was even more startling. "I need you to take over SOS," Choo told his former protege.

The reason behind this sudden request was heart-wrenching: Choo had been diagnosed with nasopharyngeal cancer, and the prognosis was dire — he had only six months to live. This news not only shook Lim, but also marked a significant turning point in his responsibility towards the SOS initiative.

As Choo grappled with his illness, he entrusted a significant legacy to his former student: all of his research papers and notes. This bequest was a testament to the deep trust and respect Choo held for Lim. Consequently, Lim found himself deeply involved once again with SOS, the group that had initially set him on his career path.

Reflecting on this transition, Lim acknowledges the weight of the responsibility. "I couldn't say no," he admits. While SOS had competent leadership during Choo's time in the US, the latter recognised the need for a scientist at the helm to guide the group effectively.

This realisation led him to hand over the reins to Lim, who was uniquely positioned to continue and build upon Choo's groundbreaking work in marine biology and seahorse conservation.

"I agreed to that, with the support



Lim's first trip with SOS in October 2007.



Choo Chee Kuang, the founder of Save Our Seahorses (SOS).

of the other members. That's when I started getting involved again and I'm still with SOS to this day," says Lim, who serves as the organisation's director.

Sadly, Choo, a guiding figure for SOS, didn't survive beyond four months. He passed away peacefully on June 9, 2013, at the young age of 36.

One of Choo's lasting wishes was

for SOS to gain official recognition. True to his vision, a year after his untimely passing, SOS achieved this goal, becoming a registered non-governmental organisation on Feb 14, 2014.

Lim reflects on this coincidence, noting the date — Valentine's Day — as fittingly symbolic for an organisation

linked to seahorses, creatures known for their unique courtship rituals.

Choo's dreams and vision for SOS live on through his notes and research papers, which continue to serve as a crucial reference. "They contain so much valuable information," Lim reveals quietly, underscoring the enduring impact of Choo's work on the organisation.

SOS, says Lim, is actively working to expand its reach throughout Malaysia, emphasising the critical need to protect the nation's marine heritage. "Protecting our marine heritage is of paramount importance," he states firmly.

"We aim to grow bigger and more impactful, covering more areas and reaching more people. There's a vast scope of work to be done for marine conservation in Malaysia," he shares.

He invites those interested in seahorses and marine conservation to engage with SOS through social media and participate in their events and talks. "Come along, ask questions; we'll also have calls for volunteers periodically."

He emphasises the broader benefits of their work, stating: "At the end of the day, it's not just the animals that benefit. Saving the seahorses means saving the seas," highlighting the interconnectedness of marine conservation efforts and the overall health of marine ecosystems.

Meanwhile, amidst the vibrant aquatic life in Sungai Pulai where seahorses perform their unique courtship dances beneath calm waters, Choo's enduring work and legacy continue.

Each gentle wave of the ocean serves as a reminder of his indelible impact on marine conservation, as his vision through Lim and his band of nature champions at SOS continue to inspire and guide efforts to protect these delicate creatures and their underwater realm.



At low tide, a whole new world emerges from beneath the waters.



A seahorse species known as 'Hippocampus denise'. PHOTO BY KEN SOH, SIPUTSCUBA

Wonderfully weird

Seahorses are truly fascinating creatures, discovers **Elena Koshy**

SOS volunteers
conducting an
evening survey.



THE Sungai Pulai estuary in southern Johor reveals a hidden underwater realm as the tide recedes. The seagrass beds, usually submerged, become visible in the shallow pools of water. Members of Save Our Seahorses (SOS), led by their director, Dr Adam Lim Chee Ooi, carefully disembark from their boat, stepping into the shallow waters with a sense of awe and purpose.

Lim likens the scene to the mythical city of Atlantis rising from the depths. The group proceeds in a single file, their eyes scanning the

calm, shallow pools where seagrass sways gently. Hidden among these grasses are the enigmatic and captivating creatures they seek: seahorses, each one an embodiment of the estuary's delicate and vibrant ecosystem. This expedition underscores their commitment to understanding and preserving these unique marine inhabitants.

"Seahorses play a crucial role in marine ecosystems," explains Lim. They serve as a symbol for marine conservation, highlighting the importance of preserving diverse habitats like mangroves, coral

reefs, estuaries, seagrass beds and seaweed forests. Their presence is indicative of healthy marine environments. Malaysia is home to 12 out of the approximately 47 species of seahorses found worldwide.

As bottom-feeders, seahorses help maintain the balance of organisms on the seabed. Simultaneously, they are a vital part of the food chain, being preyed upon by various marine species, including invertebrates, fish, seabirds and marine mammals. This dual role underscores their importance; removing seahorses from these environments can dis-

rupt entire ecosystems.

As our knowledge about seahorses deepens, it becomes increasingly clear that these fascinating creatures require our aid. Their primary habitats — mangroves, estuaries, and coral reefs — are exceptionally vulnerable to human-induced threats such as pollution, climate change and harmful fishing practices.

The *Hippocampus kuda*, a species of seahorse found along our coasts, has experienced a concerning global decline of about 30 per cent within five to eight years. Consequently,

it's now classified as "Vulnerable" on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.

This growing awareness underscores a critical need: it's imperative that we turn our attention towards the conservation of seahorses. Their wellbeing is not just about preserving a species, but also about protecting the delicate balance of their ecosystems, which are integral to the health of our planet's oceans.

So, what else makes a seahorse uniquely special?

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UNIQUE BIOLOGY

Seahorses are remarkable marine creatures, distinct in the fish world for having necks, a feature that gives them an almost whimsical, horse-like appearance.

Interestingly, seahorses aren't known for their swimming prowess.

In an ingenious twist of evolution, they've developed prehensile tails that act like anchors, allowing them to cling to seagrass and other underwater structures. This adaptation is crucial for their survival, keeping them steady and secure in the ocean's currents.

COMMUNICATION SKILLS

Seahorses have these cool "crowns" on their heads called coronets, and each seahorse has its own special design. But these crowns aren't just for show. They're super important for how seahorses "talk" to each other.

Scientists found that inside these crowns are two bones that work like our thumbs and pointer fingers. When seahorses lift their heads, these bones click together to make a snapping sound. It's their way of saying "hello" to other seahorses!

So, the coronet isn't just a pretty crown; it's a cool tool for seahorse chat. It shows us how smart and well-adapted they are to their underwater world. They really are like tiny sea kings and queens!

FEARFUL HUNTERS

Seahorses might be tiny, but they're mighty when it comes to hunting! These little guys are the ninjas of the sea. They stay super still, blending into their surroundings, and then, bam! They snap up their food with lightning speed. Their favourite snacks include krill, tiny fish and small sea critters.

Seahorses don't have teeth or a stomach for storing food. They use their long snouts like mini vacuum cleaners, constantly slurping up plankton and small creatures from the water around them. It's like they're always sipping through a straw, getting all the nutrients they need to stay active and healthy. So next time you see a seahorse, remember, it's not just a pretty face — it's a skilled and relentless hunter of the ocean.



DANCING PARTNERS

Seahorses have a magical way of finding a mate. They perform a beautiful dance that can last for days. They swirl around each other, change colours, and even hold tails, just like holding hands.

But their partnerships aren't always "forever". If a seahorse couple spends too much time apart, or if the male gets sick, the female might look for a new partner. It's their way of making sure they find the best match for having baby seahorses.

ROLE REVERSAL

Seahorses have a unique way of having babies. It's like a role reversal! In the seahorse world, it's the dads — the male — who gets pregnant. When seahorses decide it's time for babies, the female uses a special tube called an "ovipositor" to transfer her eggs into the male's "brood pouch". Think of it like a cosy baby-carrying backpack, but for seahorse dads!

Once the eggs are safely in his pouch, the male seahorse takes care of them. He incubates them, keeps them fed, and carries them around until they're ready to hatch, which

takes about two to four weeks.

When it's time, the male seahorse has these strong contractions and out pops the baby seahorses, called the fry. Depending on the type of seahorse, he may give birth to dozens or even more than a thousand at once!

But here's the catch: as soon as they're born, these tiny seahorse babies are on their own. They drift off into the big ocean, where many dangers await. Unfortunately, not many of them make it past their first days. So, while seahorse dads are amazing at giving birth, they're not really around for the parenting part!

