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New mussel species invades S'pore shores

Studies being done on its impact amid fears that it may disrupt horseshoe crabs' breeding

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A mussel calamity has befallen Singapore's northern shores.

Since 2016, a new species of mussel that could have come from as far away as the Americas has spread rapidly along the northern coast, clogging up nets in fish farms and displacing the Asian green mussel native to Singapore, as it competes with the local molluscs for space.

Observed in clumps of up to 10,000 individual shellfish, the invasive American brackish-water mussel has also been forming dense mats in the Kranji mudflats – home to rare horseshoe crabs – to the dismay of nature groups here.

Studies on the impact that the invasive mussels have on local ecology, including how they will affect the ancient horseshoe crabs, are ongoing. But there is concern that the appearance of the mussels in the horseshoe crabs' habitat in such dense numbers has made it difficult for the latter to burrow into the sand, where the creatures lay their eggs.

This is the first time the mussel *Mytella strigata* has been recorded in Singapore waters, said National University of Singapore (NUS) scientists at a media briefing yesterday.

The research was led by Dr Serena Teo and Dr Tan Koh Siang, both senior research fellows at NUS' Tropical Marine Science Institute.

According to the research paper, the mollusc could have come from Brazil, Colombia or Ecuador, where they are naturally found, or from the Philippines, where they have been introduced since the 19th century.

Larvae from the mussel, which can grow up to 5cm in length, could have been transported here by ballast water in ships, noted the study published last month in the science journal Molluscan Research.

Invasive species like the American mussel could hurt Singapore's status as a top transhipment hub. The Republic, like many coastal cities with urban harbours, is vulnerable to invasions by such shellfish.

When invasive mussels attach to hard surfaces, they form clumps in places such as seawater intake pipes and vessels. Such undesirable marine growth on man-made surfaces is known as biofouling. The clumps can reduce vessel speeds by over 10 per cent due to drag, and increase fuel consumption of ships. Engines and propellers can also be damaged.

The National Parks Board (NParks) said it was first made aware of the issue early last year, and it is collaborating with experts from NUS on research to better understand the mollusc.

Dr Karenne Tun, director of the marine division at NParks' National Biodiversity Centre, said the board will be working with NUS experts to assess the presence and potential movement of the mussels in Singapore waters using eDNA techniques.

"This would enable us to develop a holistic science-based management plan for the species. At the same time, NParks and the Tropical Marine Science Institute will be working with volunteers from the marine conservation group of the Nature Society (Singapore) on a mussel removal programme at areas most impacted by the mussels," said Dr Tun.

The Nature Society's marine conservation group chairman Stephen Beng said the invasive mussels have "devastated" the Kranji mudflats, an ecologically important habitat.

"We've noted their encroachment since the end of 2015 but received confirmation that it was an invasive species only much later," he said, calling for parties involved to strengthen collaborative efforts and tighten communication loops in dealing with apparent threats.

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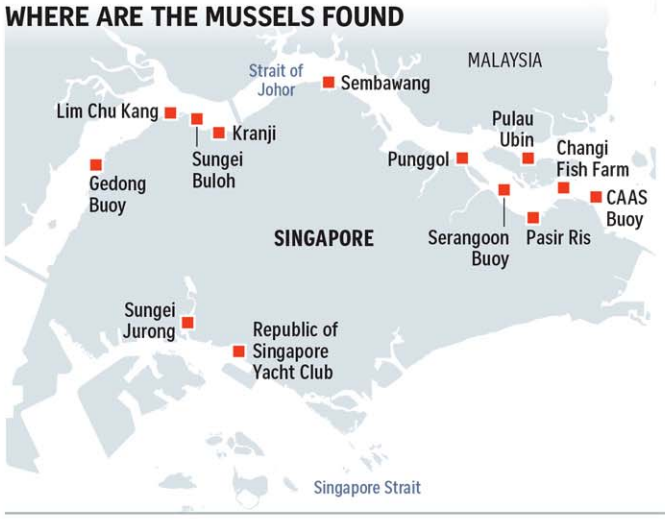
Spreading fast in Singapore

A new species of mussel – *Mytella strigata* – that could have come from as far away as the Americas has since 2016 been spreading rapidly along Singapore's northern coast.

WHERE ARE THE MUSSELS FOUND



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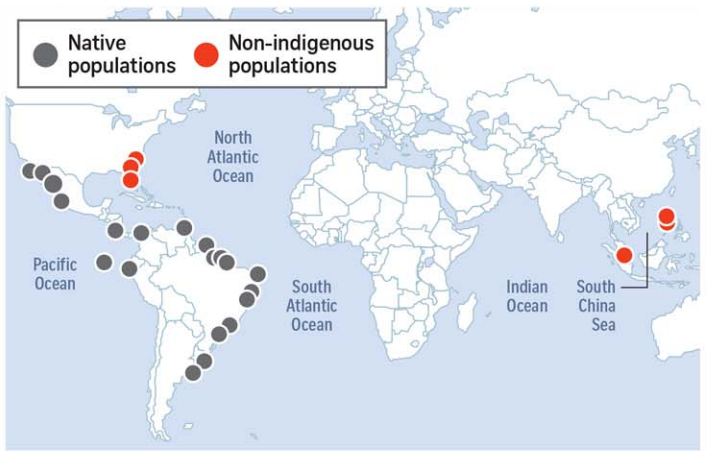

ABOUT THE MOLLUSC

Wide variation in external shell colours – from almost entirely bright green to shades of orange, grey, brown and black.

Its presence in Singapore is likely to persist and spread to other similar habitats in the Singapore Strait.

Singapore has the highest invasion risk among the world's ports

The largest individuals collected from Singapore measured in excess of 5cm.

It is believed that viable and reproducing individuals were already present in the Strait of Johor in late 2015.

The invasive nature of this species outside its native range was first reported in 1986, when a large population of *Mytella* was seen inside seawater intake pipes at a power plant in Florida.

WHY ITS PRESENCE IS OF CONCERN

- Observed in clumps of up to 10,000 individuals (below), the invasive American brackish-water mussel has been clogging up nets in fish farms here, and displacing the Asian green mussel native to Singapore.
- It has also been forming dense mats at the Kranji mudflats – home to rare horseshoe crabs – and the appearance of the mussels in these ancient creatures' habitat has made it difficult for them to burrow into the sand.

PHOTOS AND SOURCES: ST JOHN'S ISLAND NATIONAL MARINE LABORATORY, TROPICAL MARINE SCIENCE INSTITUTE, NATIONAL UNIVERSITY OF SINGAPORE, RIA TAN/WILDSINGAPORE.COM
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