

SINGAPORE

Advisory on shielding marine mammals from development noise in the works

Guidelines aim to help developers of coastal projects reduce underwater noise

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Developers undertaking marine works in Singapore waters will get guidelines designed to reduce underwater noise, in a move to protect the Republic's elusive marine mammals.

The National Parks Board (NParks) is drawing up an advisory that informs developers on ways to avoid harming creatures such as the Indo-Pacific humpback dolphin and the dugong that frequent Singapore's coastal waters, The Straits Times has learnt.

This comes as more coastal development projects are in the pipeline as Singapore combats rising sea levels and reclaims more land. In the coming decades, for instance, it is planning to reclaim about 800ha of land off East Coast Park to develop Long Island.

Industry consultants said the advisory will ensure that underwater noise here is dealt with systematically, instead of leaving its management to the discretion of developers.

Underwater noise is an invisible but potent stressor for marine mammals, which rely heavily on sounds like clicks and trills to communicate and navigate.

Dr Karenne Tun, group director of NParks' National Biodiversity Centre, told ST that the measures could advise developers to gradually ramp up the intensity of marine piling works – a noisy process that involves driving piles deep into the seabed – while ensuring that no marine mammals are in sight.

This "soft start" approach gives marine mammals a crucial window of time to flee the area before noise levels increase further.

She did not mention when the advisory will be ready.

The development of the advisory follows a recent study by researchers from the National University of Singapore (NUS) who compiled all reliable records of marine mammals in Singapore's territorial waters from 1820 to 2024 to identify their hot spots.

Mr Sirius Ng, the paper's lead author, noted that the research was initiated to establish a baseline for Singapore's wild marine mammals.

"Because of the paucity of this data, policies protecting marine mammals tend to focus on the general marine environment, rather than being ecologically tailored for the species themselves," he said.

The study found that Indo-Pacific humpback dolphins and Indo-Pacific bottlenose dolphins were mainly observed within the Southern Islands. The average sizes of their pods also declined, a trend that appeared most evidently over the past three decades.

Dugongs were most commonly spotted at the Sungei Johor Estuary, notably Changi, Pasir Ris and Pulau Ubin, where two international shipping channels meet.

Surprisingly, the paper found that over time, Indo-Pacific humpback dolphins tended to appear in areas closer to urban areas with higher vessel activity, adapting to human activities in ways that are still not fully understood.

Dr Tun said NParks plans to study these important findings, which complement a separate project by NUS researchers that monitored the vocalisations of marine mammals between 2019 and 2022.

That project, funded by NParks, sought to understand the distribution of marine mammals in Singapore's coastal waters as well as guide development activities in the waters.

"In particular, results from (the acoustic project) highlighted that



The National Parks Board is drawing up an advisory that informs developers of coastal development projects on ways to avoid harming creatures such as the dugong that frequent Singapore's coastal waters. PHOTO: ROBERT TAN/FACEBOOK

waters off both Sisters' Islands and Kusu Island recorded the highest number of vocal detections of dolphins in the southern waters of Singapore, playing a key factor in safeguarding this location as the second marine park," said Dr Tun.

Dr Tun said the acoustic research project emphasised the need to account for the impact of sound in the planning and staging of marine works.

Industry consultants said the advisory will also help Singapore develop its environment responsibly while avoiding delays and reputational concerns arising from negative acoustic impact on fauna.

Ms Holly Siow, head of ecology at environmental consultancy DHI Water & Environment, said the advisory will give "much-needed clarity and consistency for developers", elevating acoustic impact to a core component of marine development planning.

"From a developer's perspective,

Industry consultants said the advisory will ensure that underwater noise here is dealt with systematically, instead of leaving its management to the discretion of developers. Underwater noise is an invisible but potent stressor for marine mammals, which rely heavily on sounds like clicks and trills to communicate and navigate.

this also reduces regulatory and project risk," she added.

"When expectations around

acoustic mitigation are clearly articulated upfront, developers can factor them into project design and scheduling early on, rather than responding to issues later during approval or construction."

Singapore's coastal waters are rich in marine biodiversity, and ensuring mitigation is targeted where it matters most is essential to balancing development with conservation, she said.

Ms Siow called on NParks to consider embedding noise-related standard operating procedures into tender specifications for environmental impact assessments, as well as environmental monitoring and management plans.

Mr Lee Adam Harryman, head of the Climate Resilience Studio at CPG Consultants, said the advisory "should lead to better coordinated projects, fewer late changes and closer alignment between environmental safeguards and engineering delivery".

He noted that "measures to manage underwater noise are commonly built into project approval processes at the government level" in some countries abroad.

He added that Singapore's approach is encouraging because it is "grounded in local, science-based research".

"This ensures the measures are tailored to Singapore's waters and marine species, rather than simply adopting overseas standards."

NParks' move to draw up an advisory is consistent with practices in jurisdictions with established marine construction activity, such as Australia, Britain, Canada and the United States, where more sophisticated guidelines are already in place, the consultants said.

In Europe, standard measures include deploying marine mammal observers for high-risk activities, and bubble curtains – technology that uses veils of air bubbles to dampen sound waves, according to Ms Siow.

As the Republic looks to the future, the integration of acoustic monitoring can play a key role in long-term coastal management, said NUS researchers Hari Vishnu and Koay Teong Beng, who had worked on the acoustic monitoring project.

"Acoustics can especially play an important part in assessing the effects of anthropogenic events such as oil spills, or development projects around Singapore's waters," said Dr Vishnu, citing the technology's ability to monitor at scale.

Mr Koay noted that while their initial study covered the majority of expected biodiversity hot spots, it did not cover the entire Singapore coastline.

They said: "Our study was done over a period of 2.5 years, so it would make sense to extend this to more continuous and longer-term monitoring so that our observations are not just limited to this period."

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Balls made from high-density foam have been shown to reduce the noise level to around 60 decibels – comparable to the volume of a normal conversation.

‘Silent pickleball’: Mountbatten residents trial playing with foam balls to reduce noise

Nadine Chua

In a bid to promote considerate play amid the sport's growing popularity, Mountbatten residents of all ages are giving silent pickleball a go.

At a tryout event on Jan 11, residents received free foam balls, replacing the regular plastic balls typically used for the paddle sport and which result in significantly quieter gameplay.

Speaking to reporters at the event at Mountbatten Community Club, which drew over 120 residents, MP for Mountbatten Gho Sze Kee said she had received feedback from residents on the noise generated by players.

A blend of tennis, badminton and table tennis, the game is typically played on a badminton-sized court, and has become popular due to its ease of learning and accessibility.

"The general consensus is that there is no issue with playing pickleball at the neighbourhood courts, but the issue is the very sharp 'pop' sound that's being generated," said Ms Gho, of the noise made by plastic balls striking hard paddles and ricocheting off the ground.

"Understandably, some residents may feel uncomfortable that their daily routines are disrupted by the noise."

Complaints about noisy pickleball games have surfaced periodically on social media, a source of

tension among some residents.

In June 2025, one writer to The Straits Times' Forum page expressed her concerns about "constant noise" from pickleball, which prevents her husband, a night-shift security officer, from resting during the day.

In August, operators of a number of community hard courts across the island announced that they had updated their operating hours, citing noise disturbances affecting residents' rest as a reason for the adjustment.

Ms Gho said using foam balls could be one solution to minimise community disputes.

Balls made from high-density foam have been shown to reduce the noise level to around 60 decibels – comparable to the volume

of a normal conversation, and significantly quieter than the typical 70 to 80 decibel "pop" of a standard pickleball.

However, such balls are usually marketed as being for recreational play and use in quiet zones, and are not typically used in competition settings due to differences in bounce and ball speed.

Ms Gho said: "Pickleball is a great sport for all ages, I even see pickleball players in their 70s. So we should encourage it but, at the same time, be mindful of the noise that's being generated."

"If we can minimise it, that'll be a great win-win situation."

Ms Gho said Mountbatten will host a silent pickleball tournament in the coming months to promote the use of foam balls.

"What I'm very much hopeful for is a collaborative, give-and-take approach, and a kampung spirit that can be inculcated in society."

For one pickleball player and Mountbatten resident, Mr Isaac Teo, switching to using foam balls is an easy choice to cause less disturbance to other residents.

The national serviceman said: "I have a friend who also lives in Mountbatten and is sometimes frustrated with the noise from people playing pickleball because he works from home almost every day. Even though he lives on the seventh floor, he can still hear it."

"So I would say that a foam ball is a good alternative as it promotes considerate play. It is also safer, especially since the ball gets hit out of the court at times," he added.

The 21-year-old picked up the sport less than a month ago.

Ms Aarti Naidu, 56, a marketing and sales executive who has lived in Mountbatten for more than 15 years, said she picked up pickleball in 2023 in a bid to exercise and get moving.

"I've actually been playing pickleball with foam balls for six months now. It started when I wanted to practise at home without disturbing my neighbours," said Ms Aarti, who plays pickleball twice a week.

"I enjoy the game just as much and because a lot of the noise gets reduced, I think the use of foam balls will really catch on among more players."

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National serviceman Isaac Teo and marketing and sales executive Aarti Naidu participating in the "Silent Pickleball" tryout event at Mountbatten Community Club on Jan 11. ST PHOTOS: GIN TAY



Mountbatten MP Gho Sze Kee says using foam balls could be one solution to minimise community disputes.