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Singaporeâ??s NParks launches most extensive coral reef restoration effort using Smart technology

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Tapping on technology and research to plant 100,000 corals in Singaporeâ??s waters over the next 10 years and beyond

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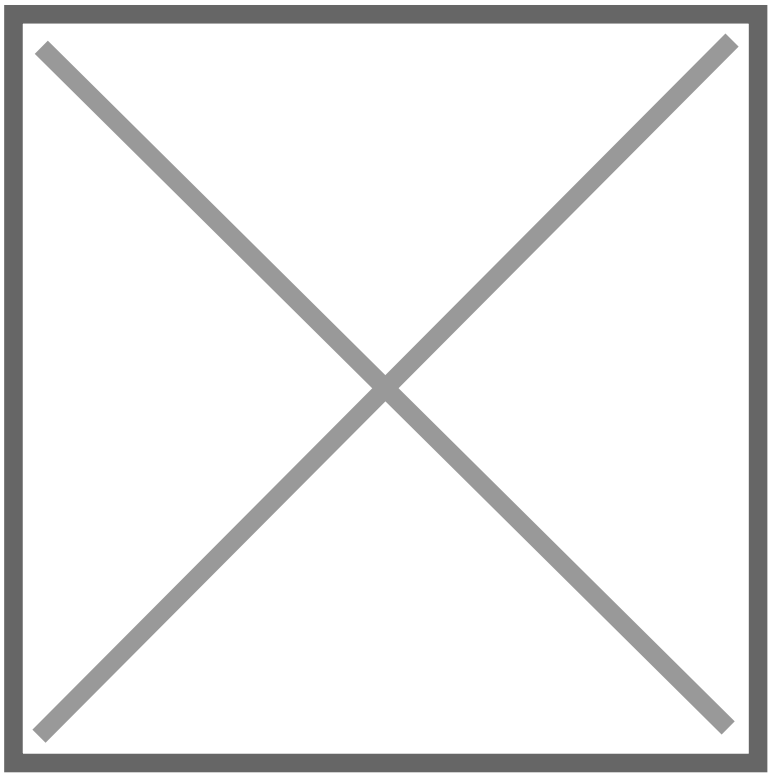
Singapore's The National Parks Board (NParks) has launched the **100K Corals Initiative**, which aims to plant 100,000 corals in Singaporeâ??s waters over the next 10 years and beyond. Corals will be cultivated at a new coral culture facility at NParksâ?? Marine Park Outreach and Education Centre on St Johnâ??s Island, before being transplanted into our marine environment to restore degraded reefs or establish new coral communities. This will be the most extensive coral restoration effort in Singapore to date. Given Singaporeâ??s limited coral cover, the programme will also scale up NParksâ?? existing coral restoration efforts to substantially improve the resilience of local coral communities and reefs.

NParks is working with the **St Johnâ??s Island National Marine Laboratory (SJINML)** to roll out the 100k Corals Initiative, which has received over S$2 million in support to date through the Garden City Fund, NParksâ?? registered charity and IPC, from the following donors: **Delta Electronics** (approximately S$1.7 million); **GSK-EDB Trust Fund** (S$1 million); **Deutsche Bank** (S$100,000); **Takashimaya Singapore**; **KPI OceanConnect**

To mark the launch of the 100k Corals Initiative, Minister for National Development and Minister-in-charge of Social Services Integration Desmond Lee took part in a coral planting activity at the coral culture facility today.

New coral culture facility for ex-situ coral cultivation



As part of the 100k Corals Initiative, NParks is establishing a new coral culture facility at the Marine Park Outreach and Education Centre on St Johnâ??s Island. The cultivation of corals at the facility will be carried out by coral restoration experts and researchers from the National University of Singapore at SJINML. The coral species cultivated include several that are under NParksâ?? Species Recovery Programme, such as the Staghorn coral (*Acropora digitifera*) and Plate Acropora coral (*Acropora millepora*).

Serving as an ex-situ coral nursery, the coral culture facility will house six tanks that can rear up to 600 coral nubbins each. The nubbins, which are small coral fragments produced from adult colonies, will be attached to a specially designed frame that maximises the number of corals that can be grown in the tanks, and grown under controlled conditions. Once the nubbins have grown large enough, they will be transplanted onto degraded reefs for restoration purposes, or inserted into other areas to establish new coral communities. Corals-of-opportunity, which are naturally fragmented corals lying free on the floor that may not survive without external intervention, could potentially be used as a source of transplant as well. The coral culture facility is targeted to be fully operational and open to the public in the second quarter of 2025.

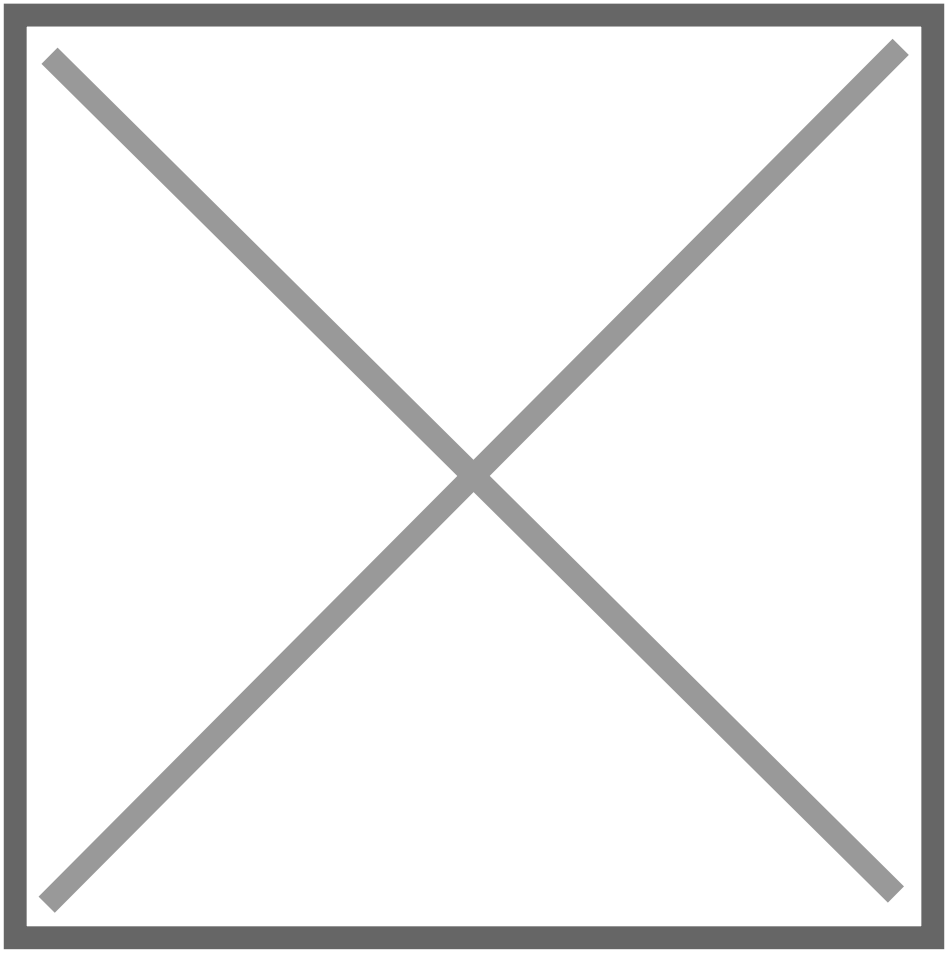


Photo Credit: CNA

During the launch event, special guest Dr. Jane Goodall DBE, founder of the Jane Goodall Institute, also did a sharing on marine conservation at the new coral culture facility. Altogether, this will aid species recovery efforts for rarer coral species, and increase coral cover and diversity in Singapore, complementing efforts under NParksâ?? Marine Conservation Action Plan to protect the natural heritage of our City in Nature.

NParks-Delta Corals Research Programme

Established to kickstart the 100k Corals Initiative, the NParks-Delta Corals Research Programme is a collaborative project between **NParks and Delta Electronics** that integrates smart technology into NParksâ?? coral cultivation efforts.

As part of the two-year research programme, NParks will leverage Deltaâ??s expertise in industrial and building automation to optimise large-scale coral cultivation at the coral culture facility. As the healthy growth of corals is dependent on several parameters, including lighting, temperature, water quality and water flow, smart technology will be deployed to cultivate corals under controlled conditions in the tanks, enabling them to thrive without being subject to environmental stressors such as ocean warming and acidification.

The tanks will be installed with a smart coral culture aquaculture system set up by Delta that integrates intelligent aquaculture and environment management. Designed to detect abnormalities that can affect coral growth, the system monitors water conditions using various instruments and transmits the data to researchers, enabling real-time, remote monitoring and timely intervention. For instance, if the temperature of the tanks is too high, the automated system will send an alert, allowing for a quicker response that can minimise adverse impact such as coral bleaching.

As part of the research programme, NParks will work with experts to develop a nationwide coral reef restoration plan for resilience as well. A training programme will also be developed by NParks, SJINML and Friends of Marine Park for citizen science monitoring of the transplanted corals, and volunteers will be trained to assist with coral husbandry and underwater monitoring techniques. More details of volunteer training opportunities will be shared when ready.

In all, the NParks-Delta Research Programme will provide the 100k Corals Initiative with a sustainable source of corals to be transplanted, and enable further cross-sector collaborations and research opportunities. Furthermore, it will build capacity and technical know-how in large-scale coral restoration for future conservation efforts.

Importance of coral conservation

Corals are keystone reef-building animals that support a marine ecosystem, and an estimated one-quarter of marine species depend on coral reefs to survive. They are also a potential nature-based solution to help mitigate the impacts of climate change, serving as a natural defence against shoreline erosion while providing habitats for a rich array of marine biodiversity. Hence, to safeguard this valuable ecosystem, it is imperative to scale up coral restoration efforts locally, which will contribute towards a high-quality living environment in our City in Nature.