



Discarded oyster shells mixed with litter, Lau Fau Shan © See-Ming Lee



A nudibranch on reef built from recycled oyster shells © Dr. Bayden Russell

## LESS TRASH AND MORE REEFS: TURNING WASTE INTO VALUE FOR HONG KONG'S OYSTER SHELLS

### THE CHALLENGE

Hong Kong is facing a monumental waste crisis, especially food waste which represents over 30% of municipal solid waste. [Recent figures](#) have indicated that the disposal rate per capita has been steadily increasing, and already, the city has reached capacity at 13 landfills, with land being a precious limited resource to build more.

Due to popular consumption of fresh and dried oysters in Hong Kong, oyster shells contribute to the massive amount of waste produced by a city with a population of over 7 million. And with no shell recycling program in the city, **most discarded shells from the food and beverage industry end up in Hong Kong's already overflowing landfills.**

In addition, local farmers often discard shells from harvested oysters along with other debris—such as

concrete and plastic nets—creating excess debris on the shoreline and degrading habitat for wildlife such as the endangered horseshoe crab.

Oysters aren't just good for eating—their shells are made of natural materials that are the perfect substrate for new reefs to build on. High in calcium carbonate, oyster shells can also be used as a fertilizer or supplement. Recognizing the challenge of oyster shell waste and the opportunity it presents to our conservation efforts in restoring [Hong Kong's lost shellfish reefs](#), The Nature Conservancy (TNC) is proposing a **shell recycling program to provide new value and purpose for oyster shells that would otherwise be destined to the landfill.**

### OUR STRATEGY

TNC is embarking a new initiative called “Save Our Shells” that will recycle discarded shellfish shells from the aquaculture and restaurant industry—shells that are normally destined to the landfills or discarded as trash on the shoreline—and repurpose them into substrate for new, living reefs. These reefs in turn will provide a boon of benefits, serving as habitats for juvenile fishes and other marine life, as natural filter feeders that improve local water quality and as shoreline stabilizers. In addition, we also aim to mill oyster shells into a fine powder that can be used as a high-quality soil additive or as a supplement for local farmers.

#### RESTORING HONG KONG'S LOST SHELLFISH REEFS

Shellfish reefs are the most endangered marine habitat on the planet with an estimated 85 percent global loss. In Hong Kong, overharvesting and coastal development have destroyed much of the city's shellfish reefs, degrading local marine environments and jeopardizing livelihoods. With the support of our partners, TNC has established two pilot reefs to monitor their impact on biodiversity, establish a baseline of local oyster habitats and biodiversity and study the feasibility for new growth to bring back Hong Kong's shellfish reefs at scale.

Leaning on expertise gained from TNC's successful oyster recycling and reef restoration projects around the world, our strategy is to provide a solution for the food and beverage industry as well as aquaculture farmers to recycle discarded shells, thereby lowering the negative impact on the environment and diverting food waste from the landfill. And because there will be a way to properly store and sort oyster shells that are usually mixed with non-natural debris, we will be reducing the negative impact discarded shells have on Hong Kong's natural coastlines, creating a cleaner environment for native species such as seagrasses, horseshoe crabs and shorebirds.

## OUR OBJECTIVES

Over the next three years, we aim to work with partners such as the Deep Bay Oyster Cultivation Association, the Deep Bay community, the University of Hong Kong, restaurant groups, hotels and others to establish Hong Kong's first shellfish shell recycling program through the following objectives.

### **Objective 1: Establish a recycling program to collect shellfish shells**

We will work with restaurants, community partners and farmers to:

- Set up a pilot collection protocol for discarded shells;
- Collect at least 20 metric tonnes of shellfish shells, and;
- Organize volunteer events to help in the clean-up, collection and transportation of collected shells.

### **Objective 2: Process and re-use collected shells for reef restoration and other products**

To process the collected shells, we will:

- Secure a site for storing and processing and establish a management plan;
- Procure machinery and tools for the processing of shells into fertilizer and other products, and;
- Establish additional reefs using the collected shells as part of our shellfish conservation work.



Volunteers preparing oyster shells as new reef substrate © Lori Cheung/TNC

### **Objective 3: Increase public awareness on the importance of oysters and shellfish reefs**

To ensure the long-term sustainability of this project, we aim to:

- Build visibility of the program to the general public through online and offline media exposure and publicity such as stories, promotional videos and project updates, and;
- Engage more stakeholders through workshops, site visits to our project site and promotion of our work to our supporters.

## JOIN US

Discarded shells don't have to go to the landfills, contributing to Hong Kong's overwhelming waste problem. **Help us re-purpose these shells to reduce waste and bring benefits for our local marine environment and communities.**

For more information on how you can support this project, please contact us at [natureworkshk@tnc.org](mailto:natureworkshk@tnc.org).