



# THE NOOSA OYSTER ECOSYSTEM RESTORATION PROJECT

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RESTORING LOST ROCK OYSTER ECOSYSTEMS TO THE NOOSA RIVER ESTUARY

*An aerial view of the beach at Noosa © Darren Tierney*

## WHO ARE WE?

The Noosa Oyster Ecosystem Restoration Project is led by The Nature Conservancy, a global environmental non-profit organisation working to create a world where people and nature can thrive. In the last 70 years, The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organisations in the world, with over 400 scientists.

In a unique partnership, The Nature Conservancy, Noosa Shire Council and the Noosa community together with support from The Thomas Foundation and Australian Marine Conservation Society are working together to restore lost oyster ecosystems to the Noosa River estuary.

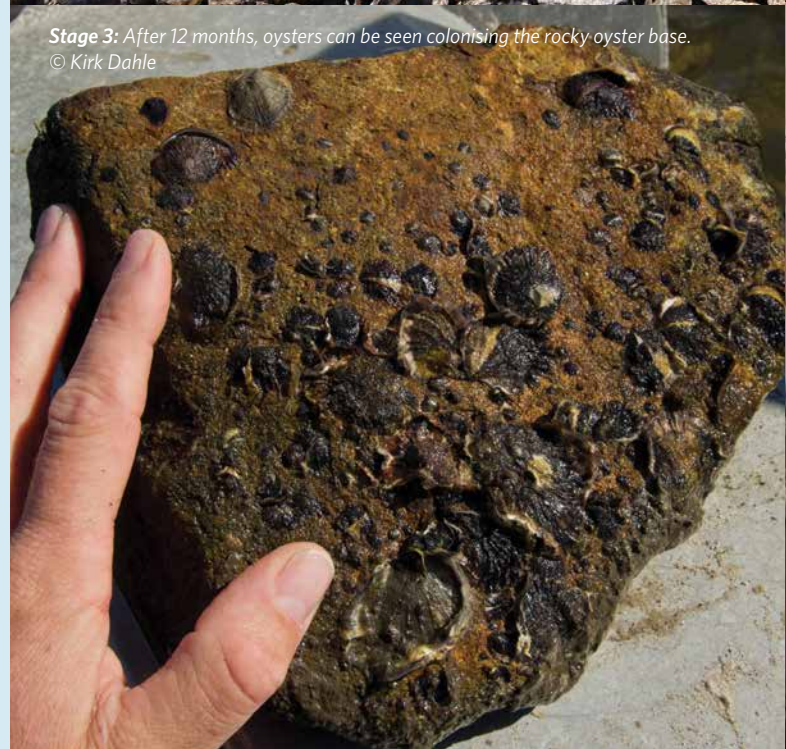
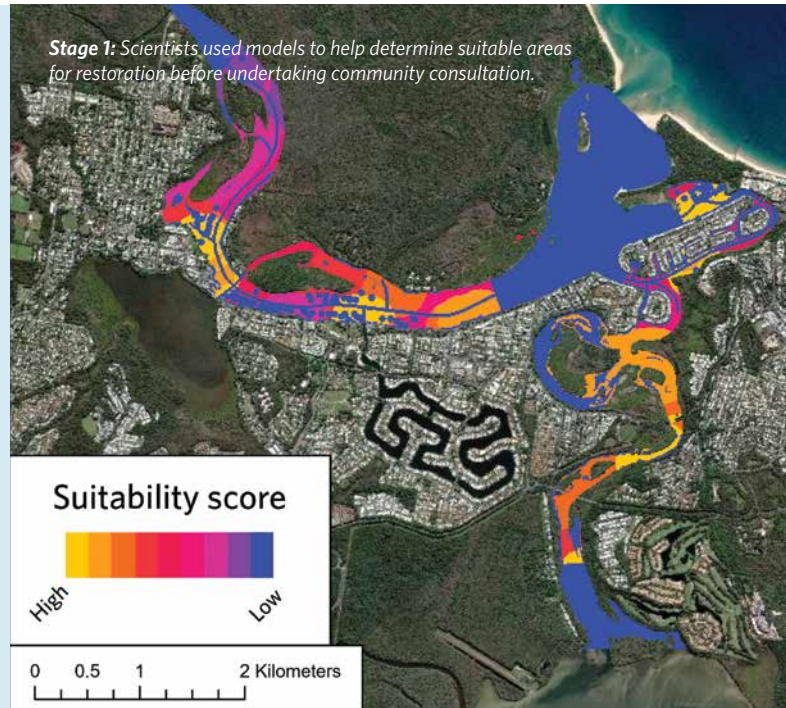
This project is part of The Nature Conservancy's efforts to restore 30% of Australia's lost shellfish ecosystems, which if achieved, would make Australia the first nation to recover a critically endangered marine ecosystem. Over the last 20 years The Nature Conservancy has restored shellfish reefs in over 200 locations throughout the world including in Australia.

## WHERE HAVE ALL THE SHELLFISH GONE?

Shellfish ecosystems are created when millions of oysters and other shellfish join together to form a living reef that functions just like a reef made from coral. In Australia, shellfish reef and beds are one of Australia's most threatened marine ecosystems with over 90% of the ecosystem lost since European settlement. We know that shellfish ecosystems were once common throughout the Noosa estuary and south-eastern Queensland because of the many historical records, fishing reports and newspaper articles that describe the abundance of these ecosystems during early European settlement. There are many reasons for why shellfish ecosystems have disappeared from southeast Queensland, and despite recent improvements to water quality and coastal management, these ecosystems have not naturally returned. The main reasons for why they have not returned include loss of available settlement areas and low oyster population numbers, which are below the thresholds required to sustain oyster reefs and beds.

## WHY RESTORE OYSTER ECOSYSTEMS?

From previous projects all around the world we know that oyster reefs and beds are important habitats in estuaries that help to maintain fish populations, keep waters clean and clear and protect shorelines from eroding. Along with seagrasses, mangroves and saltmarshes, shellfish ecosystems play an important role in supporting healthy populations of birds, fish and other marine life. The natural features and ecosystems, and clean waters help attract visitors to Noosa. By restoring oyster ecosystems, we can help ensure that the Noosa River estuary can continue to provide the many fishing, recreational and tourism benefits for years to come.



## Every hectare of oyster bed (per year) would




FILTER  
**2.7 billion L**  
LITRES OF SEAWATER



REMOVE 142 AND 22

**Kilograms**  
OF NITROGEN AND PHOSPHATE

PRODUCE  
 **375kg**  
OF NEW FISH TO CATCH AND EAT

PROVIDE NEW HOMES FOR OVER  
   **100** MARINE SPECIES

 **7,000m<sup>3</sup>** OF USED SHELL, PREVENTING IT FROM ENTERING LOCAL LANDFILL

*Stage 4: After several successive generations of oysters settling onto the rocky oyster beds, the rock is no longer visible, and the oyster ecosystem is formed. © Francisco Martinez Baena*



*Stage 5: Fish such as mullet are attracted to oyster beds because they provide refuge and food.*



## WHERE WILL THE OYSTER BEDS BE RESTORED?

The locations of restoration sites are determined through scientific analysis, Kabi Kabi consultation and community input. First, scientists examine the entire estuary for locations where oysters are likely to grown and survive, including information such as water quality, sediment characteristics and past and present oyster populations. Then, these locations are reviewed for logistical considerations such as access and navigation. Initial maps are produced from this information which are then extensively reviewed and refined through consultation with Kabi Kabi People, State Government agencies and the Noosa community.

## HOW ARE OYSTER BEDS RESTORED?

Oysters can settle onto most materials, but they prefer to settle onto fresh rock which have certain chemical properties (such as calcium carbonate) and old shells. In order to recreate shellfish ecosystems, it's important to consider the type of rock used to form the reef base, the timing of construction (to coincide with the peak of oyster spawning) and the location.

Beds of rock aggregate and recycled oyster shell are placed in the river at the selected restored sites. Depending on how may oysters initially settle on the rock base, juvenile oysters spawned in the hatchery may also be added later to boost oyster populations.

It takes up to three years for oysters to mature and spawn at least once. Second generation oysters then settle on the old oysters, forming a complex reef ecosystem. After 10 years, the oyster ecosystem is mature and has attracted a range of other marine life including marine invertebrates, fish and birds.

## MONITORING AND LONG-TERM MANAGEMENT

Oyster beds once restored are generally self-sustaining and robust ecosystems. By treating Noosa's oyster beds as valuable marine habitats and fish nurseries, they will return benefits to the environment and community.

After deployment of the rock base and dried oyster shell, scientists monitor the growth and survival of oysters in addition to the biodiversity that the oyster beds attract. This ensures that the reefs and beds are colonised by the right type of marine life and the oyster densities are at levels that help maintain oyster bed growth and survival.

## CAN I EAT THE OYSTERS OFF THE RESTORED BEDS?

No, collection of wild oysters for food consumption is dangerous with health authorities advising against eating wild oysters. Oyster lovers should source their seafood from local seafood suppliers. You will be supporting local business and eating oysters that are quality assured.

## SHELL RECYCLING PROJECT: SHUCK DON'T CHUCK

Part of the restoration method uses recycled oyster shells to add to the rocky base. Some shells will be seeded with oyster larvae to fast-track new populations of oysters. To support this method, we've established a local shell recycling program called Shuck Don't Chuck.

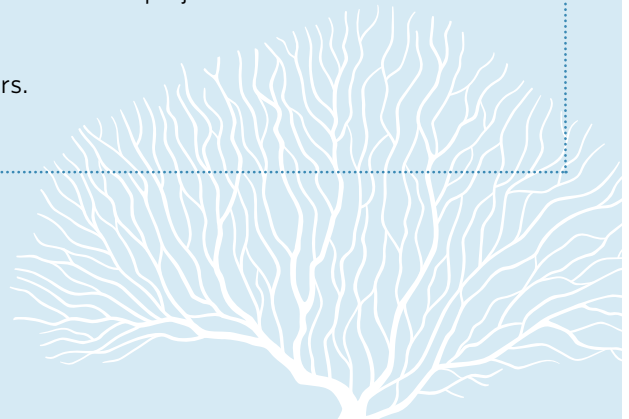
### How it works:

- Oyster shells are collected from local seafood wholesalers and retailers.
- Shells are sun-dried following strict biosecurity protocols to ensure they're contaminant-free.
- Dried shells are added to the rocky base.

Adding oyster shells increases the surface area of the base providing additional settlement sites for oyster larvae to cement to. This technique has been used successfully by The Nature Conservancy around the world for more than 15 years.

## WHAT CAN I DO?

1. **Share information** - tell family and friends about Noosa's lost ecosystem and this project.
2. **Love and respect** - give oyster ecosystems space to grow.
3. **Support local business** - source oysters from quality assured suppliers.
4. **Get involved** - contact us to see how you can help.



### The Nature Conservancy Australia

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We acknowledge the Kabi Kabi Traditional Owners who are the custodians of cultural knowledge and their collective memories of the Noosa River and Lakes region and advise this project accordingly. The project is located on Kabi Kabi Sea Country.