



noosa
biosphere

NOOSA OYSTER REEF RESTORATION TRIAL

A pilot study to re-establish a lost habitat in the Noosa River.

A GLOBAL PROBLEM

OYSTER AND SHELLFISH REEFS ARE ONE OF AUSTRALIA'S MOST THREATENED HABITATS, WITH AN ESTIMATED 97% DECLINE DUE TO HUMAN AND NATURAL IMPACTS.

Oyster reefs provide many benefits:

- Vital fish habitat, food source and protection from predation
- Increased biodiversity
- Natural water filtration
- Riverbed structure & erosion protection
- Commercial & recreation fishing, tourism

Lost oyster reefs typically result in sharp declines in fish diversity and biomass. For these reasons, oyster reefs are being restored worldwide.

BRING BACK THE FISH PROGRAM

The Bring Back the Fish program is a multi-project research program in the Noosa River, Estuary, and Lakes system of which the Oyster Trial forms part of. The program:

- Aims to better understand ways to progressively restore resilient natural aquatic ecosystems in the Noosa River.
- Is a \$1.4m co-funded research program between the Noosa Biosphere Reserve Foundation, Noosa Parks Association and The Thomas Foundation.
- Includes research and delivery partners, USC Australia, University of Queensland, Murdoch University, Noosa & District Landcare, Ecological Services Professionals.
- Includes three key projects focused on core resilience issues:

1. Reducing sediment inputs into the Noosa Estuary (Kin Kin).
2. Restoring structure & habitat for fish (oyster restoration).
3. Measuring biodiversity & fish food source.

"Preserving & enhancing the Noosa Biosphere Reserve relies upon innovative research & ongoing learning, which have long-term benefits for the Noosa community."

**REX HALVERSON - CHAIR,
NOOSA BIOSPHERE RESERVE FOUNDATION**

**Every hectare of oyster reef
(per year) would**

FILTER
2.7 billion
litres of seawater

REMOVE 225
Kilograms
of nitrogen and phosphate

PRODUCE
375kg of new fish
to catch and eat

PROVIDE NEW HOMES FOR OVER
100 marine
species

7,000m³ of used shell, preventing it
from entering local landfill



NOOSA OYSTER REEF RESTORATION TRIAL

The Oyster Reef Restoration Trial is a pilot study with USC Australia to test the effectiveness of re-establishing a lost aquatic habitat and remediate the Noosa River system. Trial oyster reef structures were created by estuarine ecologists using a novel design to create a natural substrate made of coir fibre 'sausage-shaped' bags filled with recycled oyster shells cleaned by hand. In 2017, trial sites were installed at 14 locations throughout the Noosa River and Estuary with monitoring occurring over a three-year period. Learnings from the pilot study would be used to inform future oyster ecosystem restoration projects. In early 2019, 10 of the 14 sites were removed early from the trial due to damage caused by increased recreational boating activity during the holiday period. However, the study had already proven its effectiveness. In late 2020 final monitoring was complete, and all remaining reef sites removed and disposed of in accordance with state requirements.

PROJECT OUTCOMES

- Proved that Noosa River Estuary is suitable for oyster restoration.
- Vigorous growth after one year.
- The largest oyster measured 8.85cm
- An average 350 new oysters per m², up to 538/m².
- Answered important ecological questions specific to Noosa River.
- Sites supported new seagrass growth
- Identified hotspots for spat collection.
- Identified potential future permanent restoration sites for scale-up.

HOW MUCH DID IT COST?

- NBRF contribution: \$240,975
- Partner co-contributions: \$746,500
- Project value: \$987,475

WHAT'S NEXT?

The Noosa Oyster Reef Restoration Trial provided valuable ecological insights and attracted further conservation interest and investment to Noosa.

The pilot study resulted in:

- a \$2.4m partnership between Noosa Council and world-leading conservation organisation, The Nature Conservancy (TNC) to permanently restore a lost oyster ecosystem in the Noosa River.
- In 2020, the Australian Government announced a \$20m 'Reef Builder' program to rebuild shellfish reefs around the Australian coastline in partnership with TNC. Noosa is currently the only site in Queensland to benefit from this national program.
- NBRF continues to partner with stakeholders to further research and education on the ecosystems within the Noosa Biosphere Reserve.

For more information, visit:

noosabiosphere.org.au

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RESOURCES

www.noosabiosphere.org.au

www.shellfishrestoration.org.au

www.natureaustralia.org.au/what-we-do/our-priorities/oceans/ocean-stories/restoring-shellfish-reefs/

www.oceanwatch.org.au/latest-news/coastal-marine/why-do-we-need-more-oyster-reefs-and-what-are-they-anyway/