



## Crown of Thorns Starfish control program protecting key reefs from coral-eating predator

**Cutting-edge science funded by the Australian government will more than double the effectiveness of a program to protect the Great Barrier Reef from outbreaks of a coral-eating starfish.**

Crown of Thorns Starfish (*Acanthaster spp*) feed on coral polyps and have been occurring in outbreaks off the coast of north Queensland since the 1960s, with the species responsible for up to 25 per cent of live coral cover loss on the Great Barrier Reef up until mass bleaching events in 2012.

The Australian government's National Environmental Science Programme (NESP) has drawn together researchers, industry and government in an innovative pest management program for a targeted effort to control outbreaks of Crown of Thorns Starfish on the northern Great Barrier Reef.

Called the Crown of Thorns Starfish Targeted Control Program, this industry-led effort has operated in northern Great Barrier Reef Marine Park since 2015 with the aim of protecting key coral sites and priority tourism reefs.

Now in a 'mopping-up phase', the program has been successful at protecting these key sites, along with the world-class biodiversity and over 60,000 jobs they support, from Crown of Thorns Starfish predation.

Divers in the program are trained to find and inject the starfish with a compound derived from ovine and bovine stomach bile, which causes a fatal allergic reaction within 24 hours without the risk of harming any other marine organisms. As soon as the starfish's poisonous spines slough off, it is usually quickly consumed by nearby fish.

Currently, the program operates two control vessels, *MV Venus II* and *MV Hero*, each with a complement of divers that can remove approximately 3000 Crown of Thorns Starfish per 12-day voyage.

To date, the program has removed over 620,000 Crown of Thorns Starfish from the Great Barrier Reef.

With each starfish consuming an average 20 square metres of coral over its lifetime, this equates to the protection of over 12,640,000 square metres of coral.

This innovative and productive partnership between pest control researchers, managers and the GBR tourism industry – applying best-practice integrated pest management principles to the marine realm in what is believed to be a world-first – has already delivered improvements in the effectiveness and efficiency with which starfish can be controlled on the Great Barrier Reef.

The Reef and Rainforest Research Centre (RRRC) provides the crucial two-way knowledge exchange link between NESP Tropical Water Quality Hub researchers from CSIRO, managers at the Great Barrier Reef Marine Park Authority (GBRMPA) and the Association of Marine Park Tourism Operators (AMPTO)'s starfish control teams in the water.

Data from CSIRO indicates that the integrated approach, combined with other discoveries and an extra vessel thanks to new funding from the Australian Department of Environment and Energy, should enable divers to remove over 320,000 starfish per year by 2020, equal to saving 6.4 million square metres of coral a year.

This represents an increase in effectiveness of 155 per cent – and CSIRO considers that estimate conservative.

RRRC managing director Sheriden Morris said that the program demonstrated the beneficial outcomes of a well-managed and supported direct intervention for the health of the Great Barrier Reef.

“Where you have an effective, well-supported program like this, it works,” she said.

“Crown of Thorns Starfish outbreaks represent a factor that we can take direct action against at a local level, which is especially important considering they prey on healthy coral that has survived other impact events like bleaching and storms.

“So it’s not all bad news for the Great Barrier Reef.”

“The strong cooperative relationship that we have built with AMPTO, GBRMPA and the Queensland and Australian governments has enabled the protection of a lot of coral that would otherwise be lost and we’re looking forward to continue building that relationship into the future.”

AMPTO Project Manager Steve Moon OAM said the use of advanced science from TWQ Hub meant dive teams could save time spent searching for the starfish and allow them to focus on control efforts.

“Each adult female Crown of Thorns can release millions of eggs and if even a tiny percentage of that number survives, it can translate into huge outbreaks down the line,” he said.

“Among other things what the Integrated Pest Management approach enables us to do is to have a much better idea of where the large aggregations of Crown of Thorns are going to be ahead of time, so we can go straight to that location and get to work instead of spending time on those voyages trying to find that aggregation.

“The research has been an extremely valuable addition to the program.”

The Control Program will also be sending trained divers to the southern end of the Great Barrier Reef where a large outbreak of Crown of Thorns Starfish has been discovered on the Swain Reefs group off the coast of Gladstone.

AMPTO member Bruce Stobo and his vessel *Kanimbla* will carry Control Program divers to the Swain Reefs on January 16<sup>th</sup>, where they will assist and share their expertise with personnel from the Queensland Parks and Wildlife Service (QPWS) in assessing the outbreak.

The Crown of Thorns Starfish Targeted Control Program is a cooperative effort between the Australian government's National Environmental Science Programme (NESP) Reef and Rainforest Research Centre (RRRC), the Association of Marine Park Tourism Operators (AMPTO) and the Great Barrier Reef Marine Park Authority (GBRMPA). It is supported by funding from the Australian government and training support from the Queensland government.

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