



# Have you seen the Crown of Thorns Starfish?



The Crown of Thorns can have devastating impacts on Vanuatu's coral reefs

If you see more than 2 Crown of Thorns Starfish in a 20 minute swim this is considered an outbreak. They feed on coral and when they occur in large numbers they can wipeout an entire reef ecosystem.

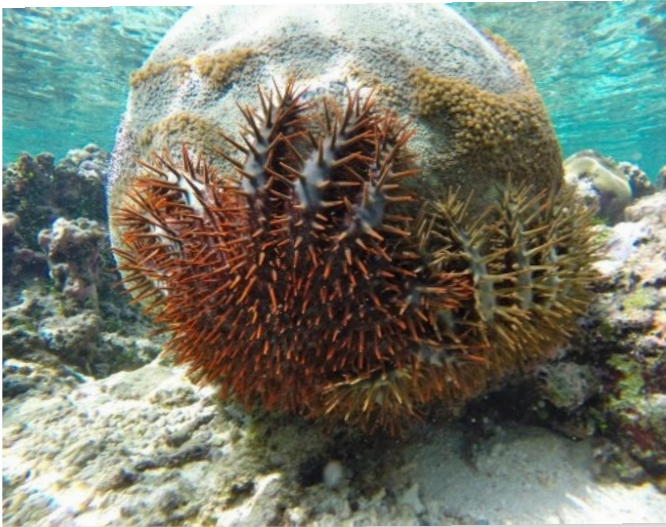
Please report sightings to :  
Vanuatu Fisheries Department, Port Vila  
Phone: 23119 Mobile: 5333340  
[www.fisheries.gov.vu](http://www.fisheries.gov.vu)

Tune into the Vanuatu Ratio Net  
7.30am (USB frequency 8230) for updated  
sightings and reports

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[www.vanuatu.travel](http://www.vanuatu.travel)



# Watch out Thorns about



The Crown of Thorns (*Acanthaster planci*) is a coral devouring starfish, notoriously known for the loss it is currently inflicting on the Great Barrier Reef in Australia. Unfortunately, the coral reefs of Vanuatu that are just as spectacular and teeming with magnificent marine life are not immune to this threat.

This species of starfish, with very distinctive poisonous spines, occurs normally at low densities and sporadically throughout the reefs of the South Pacific. What creates a lot of confusion is the occurrence of a sudden population explosion known as an 'outbreak'. These outbreaks have been plaguing Vanuatu for a number of years, occurring unpredictably throughout the archipelago reducing colourfully rich and diverse reefs into extensive deserts of barren rubble.

Outbreaks are not a new phenomenon, but the frequency in which they are occurring has increased over past decades due to human impacts on our oceans. Scientists link these outbreaks to two main causes including higher nutrient loads in the ocean and overfishing. High concentrations of nutrients enter the waters from urban and agricultural runoff or happen naturally from upwelling of oceanic circulations. This provides a source of food for Crown of Thorns larvae during their spawning season between November to February. In an ideal marine ecosystem, the numbers of larvae are kept down by a variety of predatory marine animals, however, due to greater fishing pressures and the removal of predatory fish, the chances of them reaching maturity have increased.

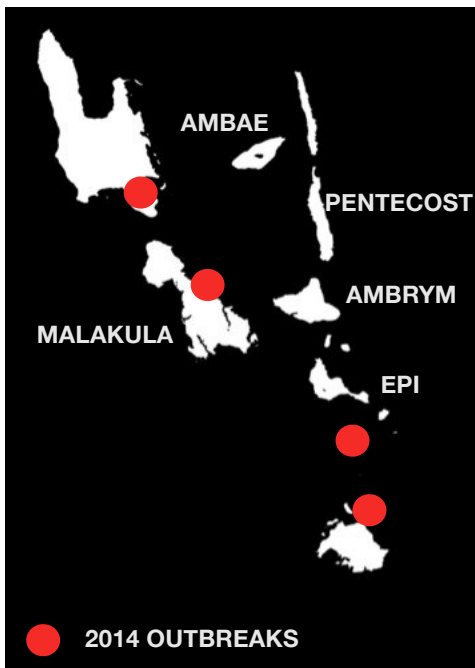


Each year thousands of tourists visit the islands of Vanuatu to swim, snorkel and scuba dive our unique reefs. In order to protect them it is important that everyone remains vigilant and report the presence of any large numbers of Crown of Thorns.

Their spawning season is between November to February and the removal of as many as possible prior to this will only reduce the likelihood of further outbreaks in the future. A number of government departments are working on this issue, but information of their current whereabouts is required.

It is stressed that the starfish spines are **highly poisonous** and independent collections by the general public are not advised unless properly briefed.

# Crown of Thorns in Vanuatu



## FAST FACTS

- Have between 14 to 21 arms.
- Can grow up to 1m in length.
- Capable of moving 20 m in an hour.
- They feed by extruding their stomach through their mouth consuming 1m<sup>2</sup> of coral per month externally.
- They are the most fertile invertebrate in the world with the average female producing ~60 million eggs.
- Outbreaks are the leading cause of coral death on the Great Barrier Reef, more so than storms, coral disease or coral bleaching.
- It takes approximately 3 years for outbreaks to be noted due to the growth rate of the starfish and evidence of feeding to become visible (white scars).

Outbreaks have been an ongoing issue for the coral reefs of Vanuatu particularly over the past two decades. The first recorded sighting of a large aggregation of Crown of Thorns in Vanuatu was in 1969 in Malakula. In 1985-1986 outbreaks were reported off Port Vila and since 2009 outbreaks have been continuously recorded throughout the islands. When there are approximately 15 starfish per hectare, this is classified as an outbreak level. In 2014, some areas were encountering population levels well beyond this. These include;

• Emao Island, Shefa Province	240 .ha <sup>-1</sup>
• Emae Island, Shefa Province	118 .ha <sup>-1</sup>
• Crab Bay, Malakula, Malampa Province	730 .ha <sup>-1</sup>
• Aore Island, Sanma Province	856 .ha <sup>-1</sup>
• Banban area, Santo, Sanma Province	520 .ha <sup>-1</sup>

Collaborative work between Vanuatu Fisheries Department and the French Research Institute IRD conducted community based clean-ups in all of the above areas, but outbreak levels are still being reported in the South Santo region as well as the Amal and Crab Bay Conservation Area. This is in addition to anecdotal information of large population levels of starfish in Ambae and Tanna.

Efforts to control outbreaks have also been carried out by non-government organisations such as Oceanswatch and Island Reach, local tourism operators, indigenous communities as well as tourists particularly yachts passing through the islands during the trade wind season.

Further information to identify locations of outbreaks are desperately needed in order to instigate educational awareness campaigns on the biology and ecology of COTS in those areas as well as implement mitigation efforts to preserve the coral reefs of Vanuatu. Sighting of Crown of Thorns Starfish can be reported directly on the Vanuatu Fisheries Website at [www.fisheries.gov.vu](http://www.fisheries.gov.vu)



# Safe Removal Procedures



There are two options for removing Crown of Thorns Starfish from coral reefs. These include;

## 1. Chemical Injection

The safest and most effective method for the removal of Crown of Thorns Starfish is the injection of bile salts, sodium bisulphate or white vinegar into the starfish via scuba. The technique and equipment is variable but for further information on equipment, place of purchase and technique please visit our website at [www.shefa.travel/crown-of-thorns-starfish.html](http://www.shefa.travel/crown-of-thorns-starfish.html)

## 2. Manual Removal

Manual removal is very risky and labour intensive but it is an ideal technique with limited resources.

With the use of a ~1m metal rode (with a hook), starfish can be removed from the reef and placed either into a bag (i.e. flour bag via snorkel or scuba) or directly into a boat (snorkel only).

If using a bag, the collector must be very careful as spines can penetrate the bag and lead to injury, particularly in swell or current.

For a number of reasons collected starfish need to be removed from the water and burnt or buried on land. Decomposing starfish can emit a terrible odour and their sharp spines are a potential hazard for unknowing people and children passing by.

Starfish should never be cut into pieces and left in the water. This is because the Crown of Thorns has the ability to regenerate. Also, during spawning season, cutting them will only assist them to release their eggs/sperm into the water column.

Decomposing Crown of Thorns Starfish can also be subsequently converted into a compost and fertiliser.