



# GREEN FINS

## Newsletter

Volume 2 Issue 1

## Do You Know?

### Fish feeding is a cause of Ecological deterioration!

By : Petchrung Sukpong

Everyone wants to have time with little fishes in the sea. It is an amazing time if you can swim nearby, and very close to them. It is tempting for everyone to offer pieces of bread for them making them come closer and closer. This practice causes food web system collapse and devastated reef ecosystem. There are 3 serious reasons why feeding fish is harmful.

**1.Fishes do not play a role and coral cannot grow.** If fish feeding becomes routine, herbivorous fishes such as parrotfishes and surgeonfishes do not eat enough algae growth from the corals, which can then take over the reef. There is no space for coral juveniles settlement and early process of coral recruitment cannot be started.

#### **2.Outbreak of Coral Eater**

Fish feeding tends to encourage fishes to take the easy option for food and divert them away from their natural food source on the reefs. For example, eggs and baby of Crown of Thorns starfish (*Acanthaster planci*) named 'Coral Eater'. In a food web, the coral eater number is controlled by the normal feeding habits of surgeonfishes, triggerfishes, and pufferfishes. If there is not predation, risk of an outbreak is increased.

**3.Collapse of Food Web System.** By feeding fish, you interrupt the important natural balance of the coral reef.

**Your piece of bread can cause many adverse impacts. But if you can be in charge of your actions, just stop feeding fish and wild marine animals. You can make reef ecosystem healthier.**



Parrot fish



Puffer

# Crown of Thorns Starfish

by Niphon Phongsuwan

**Crown of Thorns Starfish** - a starfish which is the most damaging creature of coral reef. They feed on living coral tissue. It feeds by a method known as 'eversion', where the gastric folds of the stomach membrane are forced through its mouth and turned inside out, smothering the coral. It then secretes digestive enzymes onto the coral, absorbing the digested tissues of its prey externally.

The starfish consume coral faster than it can grow thereby drastically reducing coral cover. The large expanses of dead coral are subsequently colonised by algae, with a knock on effect on other reef organisms that rely on coral colonies for food, shelter and nesting.

Crown of Thorns starfish can grow to more than 25-30 centimetre in diameter.

They has between 8 and 21 arms that radiate from a large central disk. The disk and arms are covered in a soft membranous skin, which is armed with hundreds of stout, hinged, elongate spines. These spines are covered with skin filled with poisonous glands. These contain toxic compounds called 'Saponins' which are thought to be a defence mechanism against other marine animals. This same toxin is painful to humans. The underside of each arm has a series of closely fitting plates which form a groove and extend in rows to the mouth.

Crown of Thorns starfish reproduce by spawning, in which males and females release their gametes into the seawater, where fertilization occurs.

A single female crown of thorns starfish can produce up to 12-24 million eggs in a breeding season. There has not enough data about the main spawning time. It can be happened at any time, day or night. In Great Barrier Reef it is happened around December-January.

The reasons behind outbreaks of Crown of Thorns starfish are poorly understood, despite considerable research being carried out. Outbreaks are where there is a sudden explosion in numbers of Crown of Thorns starfish due it is thought to favourable spawning conditions, and high survival rates of juvenile Crown of Thorns starfish. During these outbreaks, there may be 40-100 starfish per twenty minute swimming survey or there are densities more than 14 hectare (10,000 square metres), causing dramatic damage to the reefs they inhabit.

Outbreak level, an 'incipient' outbreak is the density of Crown of Thorns starfish at which coral damage is likely more than 10 starfish per hectare (10,000 square metres). 'Active outbreaks' are defined when there are more than 30 Crown of Thorns starfish per hectare that would certainly damage reefs. Active outbreak occurred in Guam (in Pacific Ocean). Damage reef area covered 1 kilometre distance and keeps expanding in every month.



### Getting Started from page 2

Coral reefs recover from outbreaks of Crown of Thorns starfish in a similar way to their recovery from other impacts that reduce coral cover, such as coral bleaching. It can be longer to recover, perhaps 10-40 years. The rate at which a reef recovers from predation depends on many factors including the rate of recruitment of corals to the reef, and other impacts.

There are few options to manage outbreaks of Crown of Thorns starfish. Several techniques have been developed to control starfish numbers. However, they are labour-intensive and expensive. For example, Outbreak of Crown of Thorns starfish occurred from 1970s to early 1980s in Ryukyu Archipelago, Japan and destroyed most of the coral communities. Intensive control effort were undertaken by fishermen and divers by hand collecting and disposal on land with removal of about 13 million starfish at the total cost of over 600 million yen. The control programs were mostly unsuccessful for saving the reefs from predation because of inefficiency collection.

The recommended control method involves trained divers injecting sodium bisulfate (dry acid) solution into the starfish, which kills them within a few days. This chemical is non-toxic to other marine life but need to be used under control and it is extremely costly. Another method is biocontrol, using starfish's predators such as the giant triton snail. However, the triton snail can eat only about one crown of thorns starfish per week so its capacity to prevent starfish outbreaks seems limited.

A practical technique that seem possible now is control starfish numbers in small areas, for example, areas that are visited frequently by tourists.

# Voice of Volunteer

By Sujaree Chaiyaboon



Green Fins Project has a great volunteer team from Rajabhat University students namely Pornchai Gangsakul (Nam), Kaewrattana Thiprak (Nuea) and Anchalee Wareesri (Nite). They are all fourth year students and have a passion for exploring the World. Nam, he studies Tourism Management in Faculty of Management and other two girls from Faculty of Science and Technology, Environmental Science is their majors.

This newsletter questions aims to raise young generation's concern about the importance of the environment and to show the simple step to discover the World. "Let's join the activity".

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### **GREEN FINS : What inspire you to be a part of Green Fins volunteers?**

**Nam :** Basically, I'm interested in the conservation but do not have a chance to know in-depth information on this issue. Since volunteering, Green Fins project gives me more aspects about the conservation. From my point of view, I define the conservation as the way of not damaging. For example, no collecting or breaking coral while you are snorkelling. **Nuea :** Diving, coral reef monitoring and ecotourism are my interest. I also want to get involve in the public service activities and aim to make good

use of what I have learned for the public.

**Nite :** Experiences from the volunteer work are what I expect for. I am also interested in Green Fins project because it is related to marine ecology which links to my study in next semester.

### **GREEN FINS : What is the benefits of Green Fins volunteering?**

**Nam :** Volunteering can help me make friends, learn to help others, gain new skills and learn the way to conserve the environment from the real experts.

**Nuea :** Being a volunteer, I am urged to find information about coral reef conservation and keep myself update to the causes of marine resource deterioration and the best practices for ecotourism. These knowledge help me in promoting ecotourism among tour operators.

**Nite :** Volunteer work shows me about the codes of conduct for the environmentally friendly diving which helps reducing negative impacts to the sea. Besides, I also participate in the conservation workshop where people share ideas and the experiences on protecting marine natural resources.

### **GREEN FINS : What is your opinions about youths and the environmental issues? What can youths help for the better environment?**

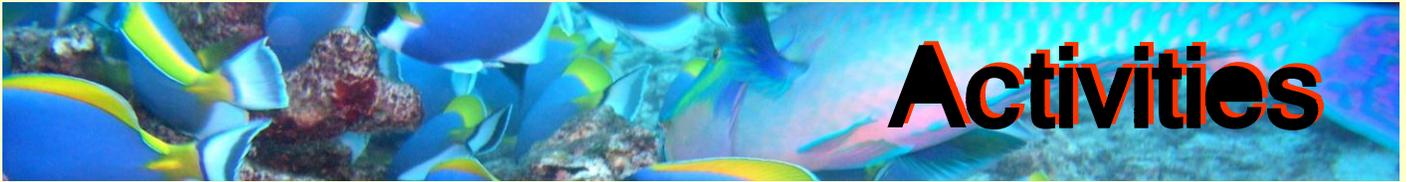
**Nam :** I believe that there are some gaps between youths and the environment. They do not understand about the sustainable environment. At first, my understanding in the conservation is only the way of non-destroying. After experiencing in Green Fins volunteering, I have learned much more about this issue. First step for youths to help the environment is to learn about the negative impacts on natural resources and the next step is to look for the causes. Then they can develop the proper way to prevent the impacts and find good practices to conserve.

**Nuea :** For me, youths should pay more attention to the environment by changing themselves. Starting doing what you can in keeping the ecological balance, otherwise there will be no resources for the next generation. At last, I wish the young generation become much more aware of and concerned about the environment in order to sustain the nature.

**Nite :** I wish people need to become more concern about the marine resources conservation. Another thing is tantamount to educate young people to understand the importance of the healthy sea. If people keep utilizing all the resource without any conservation or restoration, there will be adverse environmental impacts on the marine resources.

**This newsletter questions aims to raise young generation's concern about the importance of the environment and to show the simple step to discover the World, "Let's join the activity".**





★February 19<sup>th</sup>, 2014: Conducted Annual Meeting 2013 for Green Fins members which most member can join the meeting via Google Hang-out OnAir.



★ March 5<sup>th</sup>, 2014: Green Fins Workshop for Diving Tour staff at Sea Fan Bed & Breakfast, Khoa Lak, Phang Nga. Training course comprises of these following topics; Green Fins Code of Conduct (V.2013), and How to make eco-friendly cleaning product. There were attendants from 5 diving shops.

★March 5<sup>th</sup>, 2014: Conducted Green Fins Ambassador orientation in Khoa Lak, Phang Nga. There were 11 Green Fins Ambassadors from 6 diving shops including, Khoalak Scuba Adventure, Sea Dragon, Wicked Dive, Thublamu Andaman, Fantastic Similan Travel, and Seastar.



★April 3<sup>rd</sup>, 2014: United Nation Environment Programme (UNEP) together with Mangrove for the Future (MFF) and Reef World Foundation organized a meeting for the 10<sup>th</sup> years anniversary of Green Fins programme. This is the first time in the region that programme coordinator from 7 countries participated in the meeting.



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