# 4 Reef Watch Guidelines

Reef watch is a simple one-dive-one-survey method to record the health of a coral reef. You can easily learn the method and take part in the programme. On your dive or snorkel trip you will be able to collect valuable information to help us care for the reefs you visit today.


The data you collect using the Reef Watch underwater slate will help us to see any trends developing on the reef. Your participation provide us with valuable information to monitor the reef's health.

**Record information** on country, province, (island if appropriate), name of the reef, direction the reef faces (back of the reef facing out to sea), and the latitude and longitude of the dive. If you do not have the latitude and longitude please sketch a map of the location on the reef where you dived.

Your dive leader can provide this information or any other part of the survey where you are unsure.

**Reefs name:** Dive/Snorkel site

**Facing direction:** Which side of the coast (island) are you surveying?

**Reef width (m):** Distance between the shore's edge to seaward edge of the reef.

**Maximum depth of reef and time when recorded:** Maximum depth is measured at the slope end. Note that depth of reef varies with time and tidal movement, so when you record depth you have to record time as well.

**Average depth of dive:** Provide average depth of dive as this tells us the approximate depth you found most of your data.

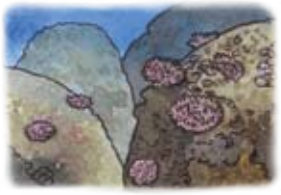
**Reef Topography at the Diving Site:** What type of topography is the entire reef in general? Is it a gentle slope from the shore(1)? Is there obvious reef flat or reef slope(2)? Is it a steep slope or wall type(3)? Or is it a submerged rocky reef(4)?


**Reef Type:** Please choose only one

**Dense coral reef:** Dense area of hard corals alive or dead (may have small areas of sand or rock).

**Patch reef:** Reef that contains patches of coral colonies scattered on the sand floor. This type of reef is usually found on a sandy lagoon or channel between two islands where the current is rather strong. So, in a patch reef, you might find that the sand floor area cover is more or less over 50% and the rest is corals.

**Rocky reef:** Corals grow on rock beds



**Zone of Reef Where Observed:** Please choose only one zone matched your site survey.

- ☐ reef flat area exposed at extreme low tides
- ☐ reef slope
- ☐ both reef flat and reef slope
- ☐ wall
- ☐ irregular topography or submerged rock

**Percentage Cover (Estimate):** In a diving path of every 10 minutes, record cover of each category. Find the average value of cover type over the whole area surveyed.

**Live hard coral:** Reef builders - Hermatypic Corals.

**Dead coral rock:** Coral dead but still intact.

**Dead coral rubble, scattering on sand:** An entire sand bed area with dead coral rubble.

**Soft coral:** Coral without hard skeleton, mostly swaying with the tide/waves.

**Sea fan:** Feathery branches often form in a 2-dimensional traditional fan shape.



**Fleshy algae:** Generally green or brown and leafy or grass-like, they can grow much quicker than coral and rapidly smother the reef.

**Other:** Anemone, Corallimorph, Giant Clam, Sponges and Zoanthid, are organisms which have taken up available space and are firmly attached

to substrate. Zoanthid and Corallimorph are close cousins to corals but do not build reefs and can instead smother coral.

**Sand floor:** Sand area.

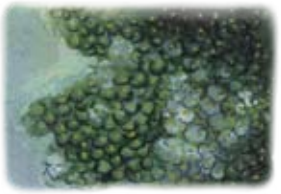
**Rock floor:** This does not mean limestone from dead coral, but other rock such as granite. This can be covered in encrusting algae as a suitable substrate for larvae settlement.

Remember you can always use the marine life identification book provided by your operator if you would like to learn more about the animals you are identifying.

**Common Type of Corals:** Those coral growth forms which are the most dominant on reef (not all growth forms seen).

- ☐ Massive – large or small boulders
- ☐ Submassive – short very thick columns
- ☐ Short or Long branches – Finger-like or staghorn





- ☐ Table – branching form which has spread horizontally
- ☐ Leafy or vertical plate – folds or coral flowing in area with a definite edge like a lettuce
- ☐ Encrusting - coral seems to spread over the floor in a thin layer
- ☐ Mushroom – corals are single large polyps of several centimeters in diameter and are found scattered over reef floor

## Indicator Species:

Remember to look in crevices and under rocks and corals for sessile animals. Select one method to survey.

1) Count in the area of approximately 10 x 10 m. The recommendation is to do this in 3 plots and take the average. Note that you are not to fill in the actual number, but check one of the following in the given range: none, small number, fair number, or large number.
2) For some fish, especially those that wander around in a school (such as parrot fish) or animals, which may stay in clumps (such as crown-of-thorns starfish), you may count or estimate for a total dive (not in a plot of 10x10 m). Please remember to enter approximately how far you dove in meters.

**Needle spined urchin:** Identified by long spines usually found on sea floor where they are grazing for food, algae grazers small number good for healthy reef, large number may indicate to much algae and dead matter.

**Crown- of- thorns- starfish (COT):** Purple, blue, light brown, green and black color, usually at least 20 cm in diameter. They can be found anywhere on the reef generally where coral is dense as they feed on coral polyps. They are nocturnal predators so are usually hidden in crevices or under table corals during the day. You might find a dead white patch on coral while COT is hidden under such coral. Spines are toxic, 1 or 2 COT on a dive is normal. More than 10 in 1 hectare (100x100 m) could be defined as an outbreak. Over 30 in 1 hectare is a serious case. Please contact the Phuket Marine Biological Center. An email address is provided at the back of your slate.



**Sea cucumber:** Variety of colors, cleaners of reef because they feed on dead and decaying matter from top to bottom of the reefs.

**Parrot fish:** Reef Grazers which average 20 cm in length in a variety of colors. Recognised by parrot like jaws. Swim over several habitats on the reef and regularly graze on the reef. Important reef fish as graze on algae clearing the way for new coral larvae to settle and keeping algae in check, some species will eat coral polyps.

**Bumphead parrot fish:** Very large, distinctive bump on the forehead, found in all areas of the reef, regularly nipping down on rocks and coral to feed.



**Grouper:** Generally found at the bottom of the reef or in places they can hide and wait for prey. Predators on the reef, they rely on their camouflage. They are usually shy and have a rock or crevice to run to so they can be difficult to spot. Under branching and massive corals, they are usually resting on their pectoral fins. As a top predator on the reef they prey on weak and sick fish, keeping the overall reef healthy.

**Snapper:** Cruise around reef in schools and have a sloping forehead. They are fished regularly for food so there is danger in overfishing.

**Butterfly fish:** Mostly found in pairs, generally disk shaped. They roam along the reef grazing on many types of food and as they feed, clear space for new coral or other animals to settle.

**Napolean wrasse:** Rare visitor, fished for its lips

**Spiny lobster:** Spiny lobsters tend to live in crevices of rocks and coral reefs, only occasionally venturing out at night to seek snails, clams, crabs, sea urchins or carrion to eat. Spiny lobsters are edible and an indicator of overfishing. Sometimes, they migrate in long lines across the sea floor.

## Over the whole dive how would you rate the following?

**Reef attractiveness:**
Provide your personal opinion. Was it exceptional, very good, good, fair, or poor?

**Hard coral variety:**
Provide your personal opinion on the variety of growth forms and amount of species. Was it exceptional, very good, good, fair, or poor?

**Reef fish count:**
Do you think there were many fish? Was it superabundant, abundant, moderate, limited or poor?

**Reef fish variety:**
Provide your personal opinion on the variety. Was it incredibly varied, varied, limited or noticeably few?

**Damage to the Reef :** Over the course of your dive, did you see damage being done to the reef or the results of earlier damage?

**Fishing gear:** Nets, lines, traps entangled on or over the reef.

**Spear fishing:** Did you see this?

**Dynamite blasting:** Did you hear an explosion during your dive or notice recent impact from dynamite fishing? In the blasted reef, you might find that large massive corals were broken into small pieces (wrist size). Can anything else cause this?

**Careless diving:** Fins or equipment hitting coral, kicking up sediment on to corals.

**Shell collecting:** People collecting shells



**Stepping / holding on to coral:** People stepping or holding on to the reef while snorkelling or diving.

**Oil slick :** Appear as a thin film on the surface of the water.

**Anchoring on coral:** Anchors on coral or being dragged across coral reefs.

**Sediment:** Kicked or stirred up on reef or from land based activities.

**Sewage:** Expelled into the sea from boats or land near coral reefs.

## Over the course of your dive, did you find?

**Coral bleaching:** Coral turns white, very pale or a bright pale yellow (polyps still exist)

**Seaweed smothering the reef:** Particularly leafy algae, either green or brown

**Standing dead coral:** Corals that are dead but are still intact and not broken up

**Additional comments:** Please use this section to add sightings of rare or endangered species or any crown of thorn out breaks. Anything you are unsure about may be relevant and can be added here.

Please submit data online at www.greenfins-thailand.org Alternatively you can send information to Niphon Phongsuwan, Phuket Marine Biological Center, P.O. box 60, Muang District, Phuket, 83000 or e-mail to nph1959@gmail.com , info@greenfins-thailand.org

Thank you


# REEF WATCH

Location : Province.....Island.....Reef's name.....
Facing direction.....Latitude.....Longitude.....Date.....
Position accuracy
☐ completely certain ☐ fairy certain ☐ slightly uncertain ☐ very uncertain

Sketch location of the surveyed reef (if could not give the latitude, longitude)
Reef width (approx.) .....m. Average depth of dive.....m.
Maximum depth of the reef.....m. Time when record depth.....
Reef topography at diving site :
☐ gentle slope from shore ☐ obvious reef flat and reef slope
☐ steep slope or wall ☐ submerged rocky reef
Reef type :
☐ dense coral reef ☐ patch reef ☐ rocky reef
Zone of reef where you observed % cover
☐ reef flat ☐ reef slope ☐ both reef flat and slope
☐ wall ☐ irregular topography on submerged rock

| (%) Percentage cover (visual estimate) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Live coral | Dead coral | Dead coral fragment scattering on sand | Soft coral | Sea fan | Fleshy algae | Other | Sand floor | Rock floor | Total |
| | | | | | | | | | 100% |

Common type of corals (can tick more than one)
☐ massive ☐ submassive, very thick branches
☐ short/long branches ☐ table ☐ leafy/verticle plate
☐ encrusting ☐ mushroom

In approx. area 10x10 m2 you found (none, small number, fair number, large number) of (or you may tell total number and estimate distant you dived) Distance dived.....m.
Needle spined urchin.....Crown-of-thorns starfish.....
Sea cucumber.....Parrot fish.....Bumphead parrot fish.....
Grouper.....Snapper.....Butterfly fish.....
Napoleon wrasse.....Spiny lobster.....

Reef attractiveness:

☐ exceptional ☐ pretty good ☐ moderately good ☐ limited ☐ very poor

Hard coral variety:

☐ exceptional ☐ pretty good ☐ moderately good ☐ a bit limited ☐ very poor

Reef fish number:

☐ superabundant ☐ abundant ☐ moderately ☐ a bit limited ☐ very poor

Reef fish variety:

☐ incredibly varied ☐ pretty varied ☐ moderately variety ☐ a bit limited ☐ noticeably few

Damage on the reef (Please check on box)

| Causes of destruction | none | possible/little | some | moderate | extensive |
|---|---|---|---|---|---|
| Fishing gear | | | | | |
| Spear fishing | | | | | |
| Dynamite blasting | | | | | |
| Careless diving | | | | | |
| Shell collecting | | | | | |
| Stepping/holding on to coral | | | | | |
| Oil slick | | | | | |
| Anchoring on coral | | | | | |
| Sediment | | | | | |
| Sewage | | | | | |
| Crown-of-throns starfish | | | | | |

Did you find.....?

| | no. | yes, slightly | yes, moderate | yes, wide spread |
|---|---|---|---|---|
| Corals are bleaching | | | | |
| Seaweed smothering the reef | | | | |
| Standing dead coral | | | | |

Water visibility (viewed horizontally underwater).....m.

Water temperature.....

Sea floor charactor ☐ muddy ☐ fine sand ☐ coarse sand

Additional comments.....

.....

Reporter.....E-mail.....

Address.....

.....

.....

Please submit data online at www.greenfins-thailand.org alternatively you can send information to Niphon Phongsuwan, Phuket Marine Biological Center, P.O. box 60, Muang District, Phuket, 83000 or e-mail to nph1959@gmail.com, info@greenfins-thailand.org