



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 program. 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 is very valuable in given us plenty of information to monitor the reef's health.

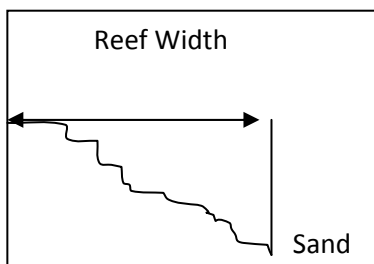
Record information on Country, province, (island if appropriate), name of the reef and which direction it faces (back to the reef facing out to sea). Then latitude and longitude of the dive. If you do not have the latitude and longitude please sketch a map of the location on the reef where you dived.

Your dive leader can help with this information or any other part of the survey you are not sure about.

Reefs name: Dive/Snorkel site

Facing Direction: back to area surveyed on reef facing out to sea.

Reef Width (m): Distance between the shores edge to seaward edge of the reef.



Maximum depth of reef and Time when recorded: Important as depth of reef varies with time and tidal movement

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

Reef topography at the diving site:

- Gentle slope from shore
- Obvious reef flat and reef slope
- Very steep slope or wall type
- Submerged rocky reef

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Reef Watch Guidelines

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: Isolated, often circular or oval reef formations are spread over a sandy floor, usually within a lagoon or embayment, are usually found near one of the major types of coral reefs. Patch reefs develop in calm protected waters

Rocky reef: Corals growing on rock beds

Zone of Reef where you observed: Please choose only one zone to carry out your survey

- Reef flat Area exposed at extreme low tides
- Reef slope
- Both flat and slope
- Wall
- Irregular topography or submerged rock

Percentage Cover: estimate: Over dive record cover after 10, 20 and 30 minutes over the area dived in the last 10 minutes; each category at these times can then be divided by 3 to give an average 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: small pieces of coral scattered < 20 cm on sand or seafloor

Soft Coral: Can be recognised by their compact, defined vegetable-like look and bright colours

Sea Fan: feathery branches often form in a 2-dimensinal traditional fan shape

Fleshy Algae: Generally green and leafy or grass like, they can grow much quicker than coral and rapidly smother the reef

Other: Sponges, Anemone, Giant Clam, Zoanthid, Corallimorph, these are organisms which have taken up available space and are firmly attached to substrate. Zoanthid and Corallimorphs are close cousins to corals but do not build reefs and can instead smother coral.

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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 suitable substrate for larvae settlement.

Percentage cover should equal 100% and be recorded in multiples of 5.

To estimate percentage cover record the category most abundant followed by other categories, most important is recording amount of live and dead coral.

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

Indicator Species

Remember to look in crevices and under rocks and corals for sessile animals

Survey method, 10 x 10 m; please divide number of fish by number of observations (ex. 3) and select, none, small number, fair number, or large number.

Survey method, distance dived. Total number found over dive. Please remember to enter how far (approximate) you dived in meters.

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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 too much algae and dead matter.

Crown of Thorns Starfish:

Purple, blue, light brown, green and black colour large, are usually at least 20cm in diameter. Can be found anywhere on the reef generally where coral is dense, feed on coral polyps, they are nocturnal predators so are usually hidden in crevices or under table corals during the day. Spines are toxic.

1 or 2 on a dive is OK, 5 or more is an early warning, 10 or more is of concern, please contact Phuket Marine Biological Centre. 30+ COTs is a serious outbreak. An email address is provided at the back of your slate.

Sea Cucumber:

Variety of colours, cleaners of reef feed on dead and decaying matter from top to bottom of the reef.

Parrot fish:

Reef Grazers, average length 20cm, range of colours. 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 to rocks and coral to feed.

Grouper:

Found generally at the bottom of the reef or places they can hide and lie in wait for prey. Predators on the reef so rely on their camouflage, they are usually shy and have a rock or crevice to run into, this means they can be quite difficult to spot, try looking under branching and massive corals, they are usually resting on their pectoral fins. As a top predator on the reef they weed out the weak and sick fish keeping overall reef health high.

Snapper:

Cruise around reef in schools, have a sloping forehead, fished regularly for food so there is a danger they may be overfished.

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Butterfly fish:

Mostly found in pairs, generally disk shaped. Roam along the reef grazing, eat many types of food and as they feed open up space for new coral or other animals to settle.

Napolean wrasse: Rare visitor, fished for its lips

Spiny lobster: Spiny lobsters are edible, these 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. Sometimes, they migrate, in long files of lobsters across the sea floor. Indicator of over-fishing.

Over the whole dive how did you rate the following;

Reef attractiveness

- Give your personnel opinion, was it exceptional, pretty good, moderately good, limited, or very poor.

Hard coral variety

- Your personnel opinion on variety of growth forms and amount of species, was it exceptional, pretty good, moderately good, limited, or very poor.

Reef fish number

- Did you think there were many fish, Superabundant, abundant, moderate, limited or poor

Reef fish variety

- What was your opinion on the variety, incredibly varied, pretty varied, limited or noticeably few

Damage in the reef – Over the whole dive did you see damage being done to the reef or the results of some earlier damage.

- **Fishing Gear:** Nets, lines, traps entangled on or over the reef
- **Spear Fishing:** Did you see this
- **Dynamite blasting:** if you hear explosion during your dive or see recent impact from dynamite fishing

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- **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 thin film on water surface
- **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

Do you find? Over the whole dive

Corals are bleaching: Coral turns white or very pale or very bright pale yellow (polyps still exist)

Seaweed smothering the Reef: Especially the 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, any crown of thorn outbreaks. Also anything you are unsure may be relevant can be added here.

Survey over whole dive:

Measure distances dived and do continuous Indicator species counts, at 10, 20 30 minute intervals stop to record percentage cover from the past 10 minutes.

Survey using 10 x 10 for indicator species:

At 10, 20 30 minute intervals stop to record percentage cover from the past 10 minutes and indicator species in an approx 10 x 10 area.

Reef Flat - Area exposed at extreme low tides

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

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