

THE BUTTERFLY EFFECT

A GUIDE TO THE BUTTERFLYFISH
OF MALAYSIA, THAILAND AND THE PHILIPPINES

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"I dreamed I was a butterfly, flitting around in the sky; then I awoke. Now I wonder: Am I a man who dreamt of being a butterfly, or am I a butterfly dreaming that I am a man?"

- ZHUANGZI

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FOREWORD

Dr. Azhar Hamzah

Senior Director of Fisheries Research Institute



Among the first things visitors to our Marine Parks notice are the exquisitely coloured butterflyfish that seem to dance and dart through an underwater forest of coral. Malaysia is blessed with at least 42 species, making our marine park system one of the more biodiverse protected areas for this very important family.

Once a curiosity, we are now beginning to understand how important these little fish are as living ‘monitors’ of coral reef health. Their numbers and distribution reflect the abundance and diversity of a wide variety of corals over vast areas of reef tract.

We are very proud of our Marine Parks and the strong influence of a scientifically-based sustainable management program on their success. These ‘islands of protection’ in a rapidly changing ocean are a heavy responsibility we gladly shoulder for the benefit of future generations and for the continued success of the diversity of species we share this planet with.

I extend my gratitude to all those involved in the publication of this beautifully presented ‘The Butterfly Effect: A Guide to the Butterflyfish of Malaysia, Thailand, and The Philippines.’ Only through our dedicated management of Malaysia’s marine resources will we continue to experience the delights of The Butterfly Effect.

Dr. Azhar Hamzah

PREFACE

As scientists working on coral reefs throughout the Indo-Pacific, some of the most conspicuous and beautiful encounters we experience are with the butterflyfish. They are usually the most visible of fish and create an immediate impression of the color and life of the coral realm we are entering. But as scientists, we find ourselves asking questions about these odd little fish. What could they possibly eat with those tiny mouths? Why are such conspicuous fish seldom preyed upon by larger predators and yet, despite their apparent immunity, why do they occur in such small numbers? Why are most butterflyfish all about the same size?

In today’s rapidly changing world, “climate” seems to affect everything and over the years the coral reef has been changing. Large tracts of coral reefs have been decimated by ocean warming and coral colony numbers have been reduced by about 14% in the last decade. Even heavier losses of corals are forecast and could reach 50% by 2035 and 99% by 2055. Mankind has been responsible for these changes. Unfortunately, coral reefs have been heavily impacted by a combination of local and global stressors, including overfishing, climate change-induced coral bleaching, pollution and disease.

But coral reefs provide a wide range of economic goods and services to humanity valued at nearly US\$400 billion or about US\$6,000 per hectare per annum. In tropical shallow waters, the skeletons of hard coral colonies are major contributors to the reef structure that sustains the ocean’s most biodiverse ecosystem. In a broader context, the degradation of coral reefs has a “flow-on” effect on ocean fisheries and ocean health since an estimated 25% of offshore fisheries depend on coral reefs during their juvenile stages. Certainly, the potential loss of coral reefs will change the face of coastal and offshore fisheries that supply protein and livelihoods to as many as one billion people. Anticipating the impacts of climate change is important; “Forewarned is forearmed”.

South East Asia lags behind better financed countries in coral reef research and yet it is here that the impacts of climate change will be felt the most. Unfortunately, we have few “barometers” to warn us of coming “storms”, but there are indications that the butterflyfish are much more than decorative; that this small group of fish play an important part in coral reef ecology and help with fisheries management.

We are fortunate that butterflyfish are relatively easy to see at a distance and that their identification is mostly resolved. But many answers are lacking and butterflyfish offer numerous opportunities to learn more about coral reefs and ecological relationships. We offer this book as a central starting point and possible inspiration for marine ecologists in their quest to unravel the complex interactions of species in the most complex and biodiverse ecosystem to have ever existed, the tropical coral reef. It is incumbent on all of us to sustain this remarkable ecosystem.

A sustainable ocean ecosystem is in fact, an existential necessity.

Ts. MOHAMAD SAUPI ISMAIL

DR. GERALD B. GOEDEN

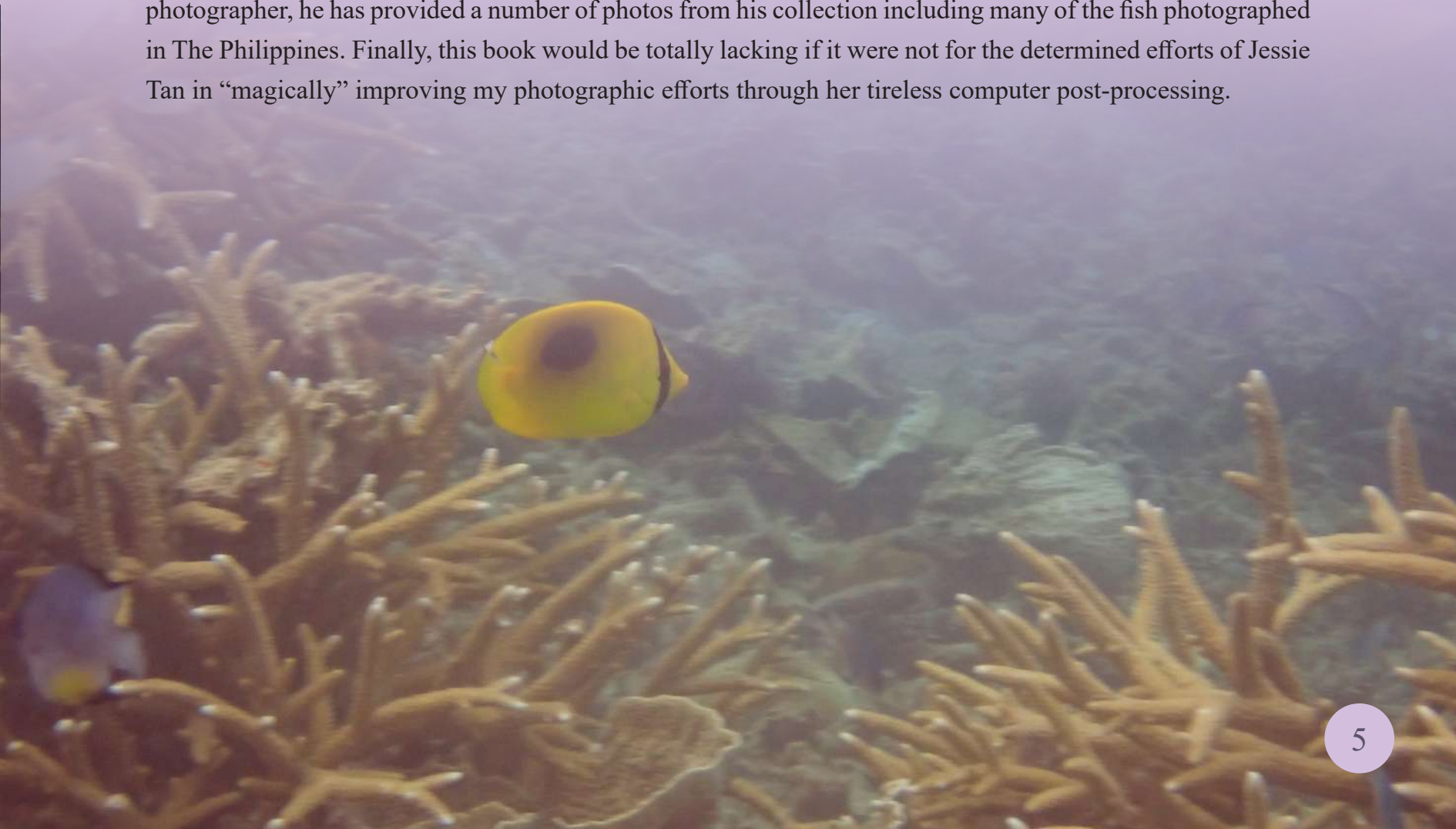


ACKNOWLEDGEMENT

Many people have contributed to the creation of this book among them the numerous researchers who have published critical papers on butterflyfish and coral reef ecology. Several have been research colleagues and have offered inspiration along the way.

Ts. Mohamad Saupi wishes to thank the staff of Inprokom, FRI Batu Maung, especially Dr. Wan Norhana, for making this book possible. Also, his colleagues and dive buddies, particularly Hj. Zaid, Nizam, Wannik and Lisa “Blackpink”, who have assisted him during the field-trips and dives. Last but not least, this book is dedicated to his family, Liz, Aida, Rio and Miki, for their unconditional love, care and supports.

Dr. Goeden wishes to specifically acknowledge two people for their generous contributions and encouragement. Dr. Jean Dorlo dived with him through Indonesia, Malaysia, and the Andaman Sea; a trusted friend and good photographer, he has provided a number of photos from his collection including many of the fish photographed in The Philippines. Finally, this book would be totally lacking if it were not for the determined efforts of Jessie Tan in “magically” improving my photographic efforts through her tireless computer post-processing.



INTRODUCING BUTTERFLYFISH

What are Butterflyfish?

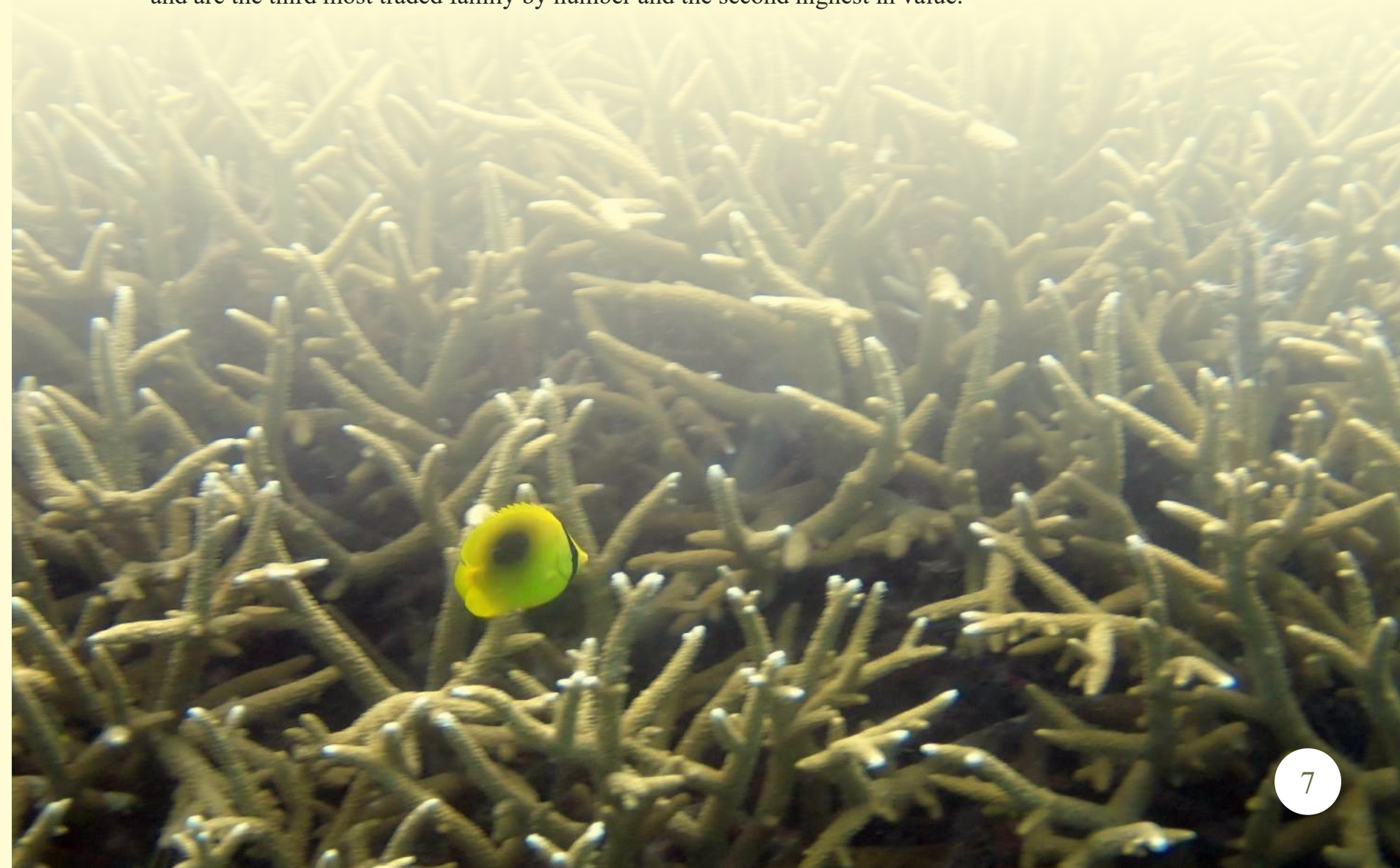
Butterflyfish are among the most “iconic” groups of coral reef fishes. Few “promotional” images of coral reefs fail to include a brilliantly colored butterflyfish in the scene. But, only recently science has discovered that butterflyfish are more than brightly colored marine life; they are critical to the ecological workings of the coral community and pose a collection of mysteries yet to be solved. They make up the family Chaetodontidae, from chaite (from Greek) meaning hair or bristle and odontos (also from Greek) meaning teeth and are characterized by their bristle-like teeth, bright coloration and unusual body form. The ability to identify butterflyfish species during recreational diving or as part of coral reef surveys can increase our understanding and tell us something about coral reef health.

In the last two decades, butterflyfish have received considerable scientific attention compared to other common and conspicuous families of coral reef fishes. This is reflected in the number of marine research publications dealing with butterflyfish. Published butterflyfish research is much more numerous than for most other families of similarly sized reef fishes (e.g., angelfish, surgeonfish, and rabbitfish). The few families that have received greater attention are the Damselfish, and the more commercial Groupers and the Parrotfish and Wrasses. No doubt the ease of recognition and restricted travels of butterflyfish has made them easier to study than many other coral reef species and science has used butterflyfish as any entry into understanding some of the complexities of coral reef ecology in a changing ocean. Although these butterflyfish are rarely abundant, they are very conspicuous and easily identified.

But butterflyfish are not as “uncomplicated” as they may seem. One unsolved “mystery” is their relatively high speed. Most high-speed fishes are long and slender with minimal surface area; designed to move the water like a torpedo. But the short, highly flattened bodies of butterflyfish with their large surface areas should be much more difficult to move through the water at speed. Surprisingly, butterflyfish seem to get around this problem. The fact is that when compared to 92 reef fishes from 17 families, butterflyfish demonstrated that their swimming performance far exceeded what “engineering” predicts for these little reef dwellers.

The great majority of butterflyfish are coral reef dwellers that are active during daylight (diurnal) and shelter at night. During the day, most butterflyfish are strikingly colored, most with a dark vertical band obscuring the eye or a darkened head. Many species have a dark ocellate or “false-eye” spot on the posterior portion of the body. The most common color patterns usually include yellow, orange, black and white. Many species bear patterns including broad vertical bars, thin vertical stripes, cross-hatching patterns, spots, and dark soft-dorsal and anal-fin margins. In fact, the colorations are so distinctive that traditional “dichotomous keys” are not usually necessary for identifying species in the Chaetodontidae. Older live individuals and preserved specimens often lose color and keys can be more reliable.

While butterflyfish are seldom taken as food, they have a high value in the ornamental marine aquarium trade and are the third most traded family by number and the second highest in value.



Reproduction and Growth

Butterflyfish have separate sexes (they are either male or female) like the majority of reef fish species. What is unknown is whether butterflyfish are capable of changing sex with age as is common in a few large families (e.g., Groupers, Parrotfish, and Wrasses). It is also well established that butterflyfish have external fertilization, are pelagic spawners and may release over 20,000 eggs into the water where they mix with the males' sperm released at the same time. Because the fertilized eggs float freely, butterflyfish are described as “non-guarders”.

We also know that when these fertilized eggs hatch the tiny larvae float with the currents for many days. Some butterflyfish (e.g., *Chaetodon trifascialis*) have been observed to form harems, but this is uncommon and most butterflyfish practice strong, long term pair bonding with a single partner. It's probable that there is a wide range of reproductive behaviors within the butterflyfish family and we can assume that these have evolved to suit differences in how each of the species move about the reef, defend territories, find mates, etc.

The larval stage of butterflyfish is unique with a bony helmet sometimes with small spines and is called a tholichthys larvae. Although infrequent in plankton samples, the tholichthys larvae is easily recognized.

The pelagic larval stage of butterflyfish development is very important to the distribution of each species since pelagic larvae can be dispersed great distances from their reef of origin. During these travels (generally up to 3-8 weeks), the larvae must locate a habitat suitable for settlement before they begin to change to a more sedentary juvenile form.

It has been shown by Dr. Bay and his team (2006) that there is a close relationship between how large each species distribution is and how long their larvae drift in the plankton. In fact, we know that some species drift for 20 days while others may drift for as long as 56 days. This does not mean that all larvae travel great distances; many will settle on the same reef where they were originally spawned. If they are able to settle early, do they begin their transformation into juvenile butterflyfish or take cover from predators and “wait to grow up”? What are their predators? What do they eat? Do they just drift in hopes of finding a good place to stop or do they actively search for the shelter of a coral reef? And when they do stop, what kind of place is it? We know very little about the life of butterflyfish during this critical, and dangerous larval period.



Chaetodon miliaris 40 days after hatching showing the characteristic head “bump” or helmet of butterflyfish larvae. Photo by Montalvo, 2016.

It is common practice for scientists working underwater to use visual surveys and count identified fish and estimate their sizes to learn more about the fish community. These categories help us to estimate the age, annual mortality rate and even the sex ratio of the species. But this doesn't work very well for butterflyfish. Several studies have found that they can grow to adult size in only one or two years. From that point on, growth rate and increasing age are no longer connected. In fact, Berumen (2005) studying four butterflyfish species at Lizard Island, Great Barrier Reef, found that they reached 92% of their maximum size in under two years. In another study in 2012, Berumen's team found that many of these butterflyfish were living for more than a decade but had stopped growing very early in life. Other scientists working on the Red Sea species, *Chaetodon larvatus*, found that most lived to be more than a decade old and one individual was determined to be 14 years old but all were similar sizes.



Feeding

There is a pattern of marine species diversity found throughout the tropics with fewer species in the tropical Atlantic and Eastern Pacific than in the Indian Ocean and much lower species numbers than in the Indo-Pacific. It is thought that because there are more kinds of coral in the Indo-Pacific, there are also more kinds of coral eating butterflyfish. The center of this higher coral and butterflyfish diversity is the Indo-Pacific, especially the Coral Triangle.

In a detailed 2005 study, Dr. M.S. Pratchett looked at the range of corals, and other prey types, consumed by 20 species of butterflyfish, at Lizard Island, Great Barrier Reef, Australia. He found that 30% fed almost exclusively on hard corals, and another 40% consumed “a significant proportion” of their diet from corals. The remaining 30% of the species were generalists and mostly fed on small prey items like worms and shrimps from non-coral substrates. One surprising finding in his work was that the coral eating butterflyfish consumed a wide range of coral species, e.g., *Chaetodon lunulatus*, consumed 51 coral species. He also found that, “there was up to 72% dietary overlap between coral-feeding butterflyfish”. We can see that while coral eating butterflyfish are specialist predators, most of them don’t rely on the presence of only a few coral species. While at least one species of butterflyfish defended its corals from other predators, most corallivorous species coexisted within the prey resource’s habitat and will often feed in close proximity to each other.

Researchers working on reefs in the Gulf of Aqaba found that the, “Abundance of *Chaetodon austriacus* is the single best indicator species for proportion of benthic habitat covered by coral complex [and that the] Abundance of *C. austriacus* is the single best indicator of soft coral coverage.” Their findings suggest only some and not all butterflyfish may be indicators of healthy coral reefs.

Other researchers have found similar connections between butterflyfish food preferences and coral reef health. This could open important lines of research connecting butterflyfish feeding to the health of managed coral communities in Marine Protected Areas (MPA). We may also find that feeding preferences could change with changes in coral communities resulting from global warming and ocean acidification.

Although we know very little about the diets of butterflyfish in South East Asia, we can assume that coral

predators will remain so throughout their range. By way of example, Dr. H. Madduppa and his team working in Indonesia in 2014 had proposed *C. octofasciatus* as a “useful indicator species” for the loss of staghorn and tabular corals. However, another research project found that in comparing *C. octofasciatus* at Tioman Islands, Malaysia with the Southern Islands, Singapore, the fish was able to significantly change the composition of its diet. These results were published in 2018 by Feary, et. al. in the Marine Ecology Progress Series.

Indeed, it seems that the ability of “specialist” feeders to change diet based on food availability is likely to make them much more successful in dealing with changing environmental conditions. Understanding these changing patterns of coral predation by butterflyfish could add important background information and help managers understand the response of coral communities to a rapidly changing environment.

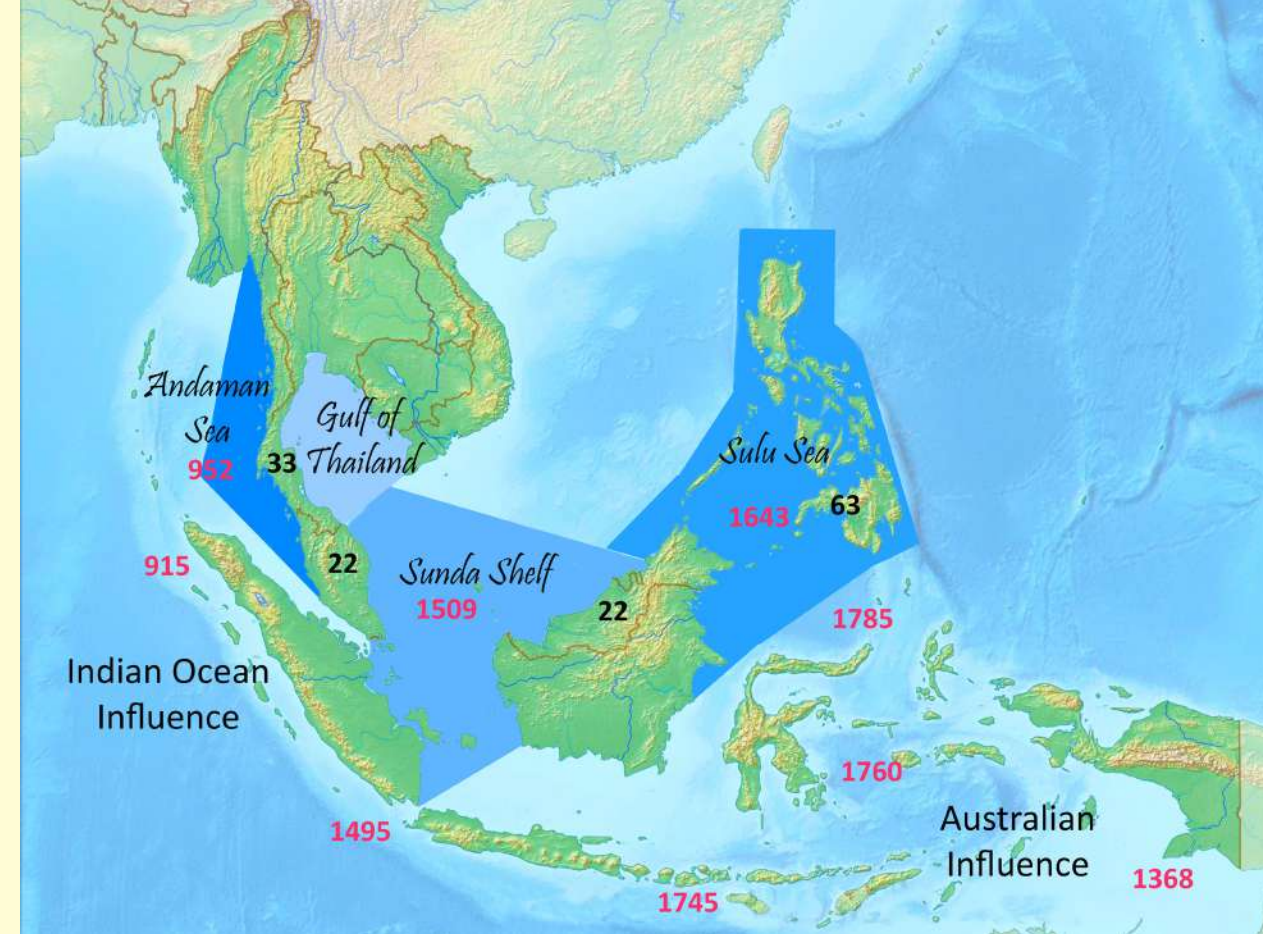
Distribution

While most butterflyfish are found in the tropics, a few species are found subtropical and even temperate waters. They are present in the Mediterranean, Atlantic, Indian and Pacific Oceans but the greatest concentration of different species is in the Indo-west Pacific.

With the exception of the genus *Roa*, that may be found at depths of more than 50m, most butterflyfish are restricted to shallow water environments where they are associated with the substrate. An exception is the genus *Hemitaenichthys* from the Indian Ocean that is a mid-water plankton feeder.

This book aims to provide simplified identification of butterflyfish on coral reefs from Thailand, through Malaysia, and into the Philippines using close-up photography. An unexpected difficulty in producing this book was the decision of what geographic areas and species to include and where we should stop; should the book be species range-based, country-based, broadly regional or follow some kind of zonation. If we choose a zonation, should it be taxonomic or ecological?

First, it was important to recognize that there are very strong external influences on the composition of the South East Asian fish fauna and on individual species distributions from both the Indian Ocean and the Australian-New Guinea coral reefs and that there are “invisible barriers to connectivity” for many species through the



Butterflyfish ecoregions used in this book. Reef fish species richness by region is shown in red (Huffard et al., 2012) and butterflyfish species by country is shown in black (Froese and Pauly, 2023)

central Indonesian archipelago. These barriers are related to distances and prevailing currents. Because a large percentage of butterflyfish are coral eaters (corallivorous), it was felt that coral distribution should play an important part in defining the scope of this book. Our final decision was to adopt a format that strongly reflects the coral ecoregions of the coral triangle and combine these with reef fish species abundance (called species richness). We define these areas as the Andaman Sea, Gulf of Thailand, Sunda Shelf and Sulu Sea. By country, these ecoregions broadly correspond to Thailand, most of Malaysia and the Philippines respectively.

BUTTERFLYFISH SPECIES

Fish Base (www.fishbase.org) lists 131 species of butterflyfish (Chaetodontidae) in the world's oceans. Of these, the Philippines has the greatest number of species (63), followed by Thailand (33) and Malaysia (22). Malaysia is at the “intersection” between Indian Ocean and Pacific Ocean butterflyfish distributions and there are probably more kinds of butterflyfish in Malaysia than have been recorded so far. In fact, 14 butterflyfish species are recorded by Fish Base as being present in both Thailand and in the Philippines but not recorded in Malaysia. The Department of Fisheries Malaysia (2009) has listed 42 species names under the family of Chaetodontidae that have been recorded in Malaysian waters. It seems likely that more species will be found on Malaysian coral reefs.

Listed below are 64 species of butterflyfish of Malaysia, Thailand and the Philippines that were photographed by the authors. Fish were identified up to species level using published references (Allen, 2020; Froese and Pauly, 2019; WoRMS Editorial Board, 2021).

	Species Name	Common Name	MY	PH	TH
1	<i>Chaetodon adiergastos</i>	Philippine butterflyfish	✓	✓	
2	<i>Chaetodon andamanensis</i>	Andaman butterflyfish			✓
3	<i>Chaetodon argentatus</i>	Asian butterflyfish		✓	
4	<i>Chaetodon auriga</i>	Threadfin butterflyfish	✓	✓	✓
5	<i>Chaetodon auripes</i>	Oriental butterflyfish	✓	✓	
6	<i>Chaetodon austriacus</i>	Blacktail butterflyfish		✓	
7	<i>Chaetodon baronessa</i>	Eastern triangular butterflyfish	✓	✓	
8	<i>Chaetodon bennetti</i>	Blue-lashed butterflyfish	✓	✓	
9	<i>Chaetodon burgessi</i>	Burgess' butterflyfish	✓	✓	
10	<i>Chaetodon citrinellus</i>	Speckled butterflyfish	✓	✓	
11	<i>Chaetodon collare</i>	Redtail butterflyfish	✓	✓	✓

12	<i>Chaetodon decussatus</i>	Indian vagabond butterflyfish	✓	✓	✓
13	<i>Chaetodon ephippium</i>	Saddle butterflyfish	✓	✓	
14	<i>Chaetodon falcula</i>	Blackwedged butterflyfish	✓	✓	✓
15	<i>Chaetodon fasciatus</i>	Diagonal butterflyfish		✓	
16	<i>Chaetodon flavirostris</i>	Black butterflyfish		✓	
17	<i>Chaetodon gardineri</i>	Gardner's butterflyfish			✓
18	<i>Chaetodon guentheri</i>	Crochet butterflyfish	✓	✓	
19	<i>Chaetodon guttattissimus</i>	Peppered butterflyfish			✓
20	<i>Chaetodon kleinii</i>	Sunburst butterflyfish	✓	✓	
21	<i>Chaetodon lineolatus</i>	Lined butterflyfish	✓	✓	✓
22	<i>Chaetodon lunula</i>	Raccoon butterflyfish	✓	✓	✓
23	<i>Chaetodon lunulatus</i>	Oval butterflyfish		✓	✓
24	<i>Chaetodon melannotus</i>	Blackback butterflyfish	✓	✓	✓
25	<i>Chaetodon mertensii</i>	Atoll butterflyfish			✓
26	<i>Chaetodon meyeri</i>	Scrawled butterflyfish			✓
27	<i>Chaetodon nippon</i>	Japanese butterflyfish			✓
28	<i>Chaetodon ocellicaudus</i>	Spot-tail butterflyfish	✓	✓	
29	<i>Chaetodon octofasciatus</i>	Eightband butterflyfish	✓	✓	✓
30	<i>Chaetodon ornatissimus</i>	Ornate butterflyfish	✓	✓	✓
31	<i>Chaetodon oxycephalus</i>	Spot-nape butterflyfish			✓
32	<i>Chaetodon plebeius</i>	Blueblotch butterflyfish			✓
33	<i>Chaetodon punctatofasciatus</i>	Spotband butterflyfish	✓	✓	
34	<i>Chaetodon quadrimaculatus</i>	Fourspot butterflyfish			✓
35	<i>Chaetodon rafflesii</i>	Latticed butterflyfish	✓	✓	✓

36	<i>Chaetodon rainfordi</i>	Rainford's butterflyfish	✓		
37	<i>Chaetodon reticulatus</i>	Mailed butterflyfish	✓		
38	<i>Chaetodon selene</i>	Yellow-dotted butterflyfish	✓	✓	
39	<i>Chaetodon semeion</i>	Dotted butterflyfish		✓	✓
40	<i>Chaetodon speculum</i>	Mirror butterflyfish	✓	✓	
41	<i>Chaetodon triangulum</i>	Triangle butterflyfish			✓
42	<i>Chaetodon trifascialis</i>	Chevron butterflyfish	✓	✓	✓
43	<i>Chaetodon trifasciatus</i>	Melon butterflyfish	✓	✓	✓
44	<i>Chaetodon ulietensis</i>	Pacific double-saddle butterflyfish	✓	✓	
45	<i>Chaetodon unimaculatus</i>	Teardrop butterflyfish		✓	
46	<i>Chaetodon vagabundus</i>	Vagabond butterflyfish	✓	✓	✓
47	<i>Chaetodon wiebeli</i>	Hong Kong butterflyfish		✓	✓
48	<i>Chaetodon xanthocephalus</i>	Yellowhead butterflyfish			✓
49	<i>Chaetodon xanthurus</i>	Pearlscale butterflyfish		✓	
50	<i>Chelmon rostratus</i>	Copperband butterflyfish	✓	✓	✓
51	<i>Coradion altivelis</i>	Highfin coralfish	✓	✓	
52	<i>Coradion chrysozonus</i>	Goldengirdled coralfish	✓	✓	✓
53	<i>Coradion melanopus</i>	Twospot coralfish		✓	
54	<i>Forcipiger flavissimus</i>	Longnose butterfly fish	✓	✓	
55	<i>Forcipiger longirostris</i>	Longnose butterflyfish	✓	✓	✓
56	<i>Hemitaurichthys polylepis</i>	Pyramid butterflyfish	✓	✓	
57	<i>Hemitaurichthys zoster</i>	Brown-and-white butterflyfish			✓
58	<i>Heniochus acuminatus</i>	Pennant coralfish	✓	✓	✓
59	<i>Heniochus chrysostomus</i>	Threeband pennantfish	✓	✓	

60	<i>Heniochus diphreutes</i>	False Moorish idol	✓	✓	
61	<i>Heniochus monoceros</i>	Masked bannerfish	✓	✓	✓
62	<i>Heniochus pleurotaenia</i>	Phantom bannerfish		✓	✓
63	<i>Heniochus singularius</i>	Singular bannerfish		✓	✓
64	<i>Parachaetodon ocellatus</i>	Sixspine butterflyfish	✓	✓	✓

Notes: MY = Malaysia; PH = Philippines; TH = Thailand.



Chaetodon adiergastos Seale, 1910

PHILIPPINE BUTTERFLYFISH / BAGANG TOMPOK MATA

Notable Anatomy:	Broad eye bar and narrow diagonal stripes on side.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	North-western Australia and throughout Indo-Malay region.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon andamanensis Kuitert & Debelius, 1999

ANDAMAN BUTTERFLYFISH

Notable Anatomy:	Overall bright yellow colour apart from a black band which runs from the top of the head and through the eyes.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	10 - 40 m.
Distribution:	Eastern Indian Ocean: India through Indonesia.
Conservation Status:	Data Deficient.
Location Photographed:	Similan Island, Thailand.

Chaetodon argentatus Smith & Radcliffe, 1911

ASIAN BUTTERFLYFISH

Notable Anatomy:	Silver coloured body which is marked by a mesh of diagonal black lines creating a net like pattern.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	5 - 20 m.
Distribution:	Western Pacific: Japan, Taiwan, China, and the Philippines
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon auriga Forsskål, 1775

THREADFIN BUTTERFLYFISH / BAGANG FILAMEN

Notable Anatomy:	Chevron markings and yellow posterior.
Maximum Length:	23 cm.
Habitat:	Reef-associated.
Depth:	1 - 60 m.
Distribution:	Australia and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Ko Butang, Thailand.





Chaetodon auripes Jordan & Snyder, 1901

ORIENTAL BUTTERFLYFISH / BAGANG CINA

Notable Anatomy:	A yellow body with a wide vertical black band running through the eyes with a thinner white band immediately behind it.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	Western Pacific: Japan to Taiwan, to the Maldives Islands.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon austriacus Rüppell, 1836

BLACKTAIL BUTTERFLYFISH

Notable Anatomy:	Anal, caudal and part of the dorsal fins are pitch black.
Maximum Length:	13 cm.
Habitat:	Reef-associated.
Depth:	1 - 15 m.
Distribution:	Western Indian Ocean: Red Sea and Gulf of Aden.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Chaetodon bennetti Cuvier, 1831

BLUELASHED BUTTERFLYFISH / BAGANG PISAU

Notable Anatomy:	Yellow body with a black patch surrounded by a blue circle below the dorsal fin and two curved blue lines above the belly.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	Indo-Pacific: East Africa to the Pitcairn Group, north to Japan, south to Lord Howe and Rapa islands.
Conservation Status:	Data Deficient.
Location Photographed:	South China Sea.

Chaetodon baronessa Cuvier, 1829

EASTERN TRIANGULAR BUTTERFLYFISH / BAGANG TIMUR

Notable Anatomy:	Three reddish-brown bars on the head, including one running across the eye.
Maximum Length:	16 cm.
Habitat:	Reef-associated.
Depth:	5 - 20 m.
Distribution:	Western Pacific: Cocos-Keeling Islands in the eastern Indian Ocean and Indonesia to Fiji and Tonga north to southern Japan, south to New Caledonia and New South Wales, Australia.
Conservation Status:	Least Concern.
Location Photographed:	Langkawi, Malaysia.



Chaetodon burgessi Allen & Starck, 1973

BURGESS' BUTTERFLYFISH / BAGANG HITAM PUTIH

Notable Anatomy:	Three areas of contrasting black - a black bar through the eye; a diagonal bar from the top of the head to behind the pectoral fin base; and a broad diagonal black area on the rear of the body.
Maximum Length:	14 cm.
Habitat:	Reef-associated.
Depth:	20 - 80 m.
Distribution:	Western Pacific: The Philippines and north-eastern Borneo to Flores and Pohnpei.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Chaetodon citrinellus Cuvier, 1831

SPECKLED BUTTERFLYFISH / BAGANG BINTIK

Notable Anatomy:	Distinguished by small dots on yellow background.
Maximum Length:	13 cm.
Habitat:	Reef-associated.
Depth:	1 - 36 m.
Distribution:	North West Australia. Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon decussatus Cuvier, 1829

INDIAN VAGABOND BUTTERFLYFISH / BAGANG INDIA

Notable Anatomy:	A broad black area across the rear of the body and dorsal fin, and bright pale-yellow bars on the tail.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	Indo-West Pacific: Maldives, India, Sri Lanka, Andaman Sea and the westernmost portion of the Indo-Malayan Archipelago.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.

Chaetodon collare Bloch, 1787

REDTAIL BUTTERFLYFISH / BAGANG EKOR MERAH

Notable Anatomy:	A dark body with pale scale centres, white bar behind eyes and red caudal-fin base.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	1 - 20 m.
Distribution:	Indo-West Pacific: Persian Gulf, Maldives to Japan and South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Segantang, Malaysia.



Chaetodon ephippium Cuvier, 1831

SADDLE BUTTERFLYFISH / BAGANG PELANA

Notable Anatomy:	Distinguished by large black saddle.
Maximum Length:	30 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Sibu, Malaysia.



Chaetodon falcula Bloch, 1795

BLACKWEDGED BUTTERFLYFISH / BAGANG BAJI HITAM

Notable Anatomy:	A white body broadly outlined in yellow, two black wedge-shaped saddles on the back
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 15 m.
Distribution:	Indian Ocean from East Africa to Indonesia
Conservation Status:	Least Concern.
Location Photographed:	Akuarium Tunku Abdul Rahman, Malaysia.



Chaetodon fasciatus Forsskål, 1775

DIAGONAL BUTTERFLYFISH

Notable Anatomy:	A yellow body marked with 11 diagonal stripes.
Maximum Length:	22 cm.
Habitat:	Reef-associated.
Depth:	2 - 25 m.
Distribution:	Western Indian Ocean: The Red Sea, the Gulf of Aden.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon flavirostris Günther, 1874

BLACK BUTTERFLYFISH

Notable Anatomy:	A purplish-black body with broad yellow submarginal bands on the dorsal, caudal and anal fins.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	2 - 30 m.
Distribution:	Pacific Ocean: Australia to Pitcairn.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Chaetodon guentheri Ahl, 1923

CROCHET BUTTERFLYFISH / BAGANG RENDA

Notable Anatomy:	Small dark spots forming irregular lines on a silvery-white body, a black eye bar, and bright yellow dorsal and anal fins.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	5 - 40 m.
Distribution:	Western Pacific: from southern Japan to Taiwan and the Ryukyu Islands and from Indonesia, Papua New Guinea and the Great Barrier Reef to Lord Howe Island, New South Wales and Tonga.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.

Chaetodon gardineri Norman, 1939

GARDNER'S BUTTERFLYFISH

Notable Anatomy:	A whitish body with a black vertical band running through the eye and a black posterior to the body.
Maximum Length:	17 cm.
Habitat:	Reef-associated.
Depth:	2 - 90 m.
Distribution:	Western Indian Ocean: Gulf of Aden to the Gulf of Oman eastward to Sri Lanka.
Conservation Status:	Least Concern.
Location Photographed:	Similan Island, Thailand.



Chaetodon guttatissimus Bennett, 1833

PEPPERED BUTTERFLYFISH

Notable Anatomy:	Silvery white body marked with irregular vertical rows of dark spots or speckles on the flanks.
Maximum Length:	12 cm.
Habitat:	Reef-associated.
Depth:	3 - 30 m.
Distribution:	Indian Ocean: Red Sea south to South Africa and east to Christmas Island. Western Thailand and Bali, Indonesia.
Conservation Status:	Least Concern.
Location Photographed:	Hin Daeng, Thailand.



Chaetodon kleinii Bloch, 1790

SUNBURST BUTTERFLYFISH / BAGANG BELANG PUTIH

Notable Anatomy:	A combination of bars on front of body and golden-brown area on rear half.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	4 - 60 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	South China Sea.



Chaetodon lunula (Lacepède, 1802)

RACCOON BUTTERFLYFISH / BAGANG RAKUN

Notable Anatomy:	A black “mask” and diagonal black bar behind head, with golden colour on lower sides, similar to the “raccoon” mask (hence the common name).
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 170 m.
Distribution:	Indo-Pacific: East Africa to the Hawaiian and Marquesan islands, north to southern Japan. South East Atlantic: South Africa.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.

Chaetodon lineolatus Cuvier, 1831

LINED BUTTERFLYFISH / BAGANG GARIS

Notable Anatomy:	Narrow black stripes on sides and broad black area along dorsal fin base.
Maximum Length:	30 cm.
Habitat:	Reef-associated.
Depth:	2 - 170 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.



Chaetodon lunulatus Quoy & Gaimard, 1825

OVAL BUTTERFLYFISH

Notable Anatomy:	A pinkish-yellow body grading to yellow on the head and lower body, with oblique purplish stripes along sides, a yellow-margined black band through the eye and along the dorsal and anal-fin bases.
Maximum Length:	26 cm.
Habitat:	Reef-associated.
Depth:	3 - 30 m.
Distribution:	Pacific Ocean: widespread from Japan and Australia to the Tuamotu Islands and Hawaii.
Conservation Status:	Least Concern.
Location Photographed:	Hin Daeng, Thailand.



Chaetodon melannotus Bloch & Schneider, 1801

BLACKBACK BUTTERFLYFISH / BAGANG PANAU

Notable Anatomy:	A whitish body encircled in yellow, with many diagonal black lines on side, black upper back, black eye bar, black saddle on the caudal peduncle, yellow snout and fins.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	2 - 20 m.
Distribution:	Indo-Pacific: Red Sea and East Africa to Samoa, north to southern Japan, south to Lord Howe Island. Throughout Micronesia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.



Chaetodon mertensii Cuvier, 1831

ATOLL BUTTERFLYFISH

Notable Anatomy:	A white body with 5-7 dark chevron markings on side, and orange areas on posterior part of body and tail.
Maximum Length:	12.5 cm.
Habitat:	Reef-associated.
Depth:	10 - 120 m.
Distribution:	Pacific Ocean: Ryukyu Islands to the Philippines and extending to Lord Howe, Rapa and Tuamotu Islands.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon meyeri Bloch & Schneider, 1801

SCRAWLED BUTTERFLYFISH

Notable Anatomy:	A whitish to greyish body with black diagonal stripes that curve posteriorly.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	2 - 25 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Similan Island, Thailand.



Chaetodon nippon Steindachner & Döderlein, 1883

JAPANESE BUTTERFLYFISH

- Notable Anatomy:** A creamy-brown body rimmed with dark brown.
Maximum Length: 15 cm.
Habitat: Reef-associated.
Depth: 5 - 30 m.
Distribution: Western Pacific: Japan and Korea to the Philippines.
Conservation Status: Least Concern.
Location Photographed: Dumarán Island, Palawan, The Philippines.



Chaetodon ocellicaudus Cuvier, 1831

SPOT-TAIL BUTTERFLYFISH / BAGANG EKOR TANDA

- Notable Anatomy:** Very similar to *C. melannotus*, but has an isolated black spot on the tail base.
Maximum Length: 15 cm.
Habitat: Reef-associated.
Depth: 3 - 50 m.
Distribution: Western Central Pacific: Malaysia to New Guinea, to the Philippines; Palau in Micronesia.
Conservation Status: Data Deficient.
Location Photographed: Pulau Sibú, Malaysia.



Chaetodon ornatissimus Cuvier, 1831

ORNATE BUTTERFLYFISH / BAGANG JALUR JINGGA

Notable Anatomy:	Brown-orange diagonal stripes.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 35 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.



Chaetodon octofasciatus Bloch, 1787

EIGHTBAND BUTTERFLYFISH / BAGANG BELANG HITAM

Notable Anatomy:	8 narrow black bands (including tail) on either yellow or white body.
Maximum Length:	12 cm.
Habitat:	Reef-associated.
Depth:	3 - 20 m.
Distribution:	Indo-West Pacific: Sri Lanka to New Guinea and Solomon Islands and north to southern Japan.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Songsong, Malaysia.

Chaetodon oxycephalus Bleeker, 1853

SPOT-NAPE BUTTERFLYFISH

Notable Anatomy:	Very similar to <i>C. lineolatus</i> , but has isolated dark patch on forehead.
Maximum Length:	25 cm.
Habitat:	Reef-associated.
Depth:	10 - 40 m.
Distribution:	Indo-Pacific: Sri Lanka to Queensland, Australia and north to the Philippines.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Chaetodon plebeius Cuvier, 1831

BLUEBLOTCH BUTTERFLYFISH

Notable Anatomy:	Ovate blue spot on a yellow body.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	1 - 10 m.
Distribution:	Western Pacific: Andaman Sea to Fiji, to Japan, and to Australia.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.

Chaetodon punctatofasciatus Cuvier, 1831

SPOTBAND BUTTERFLYFISH / BAGANG BINTIK BELANG

Notable Anatomy:	Bars on back and spots below. Similar with <i>C. guttatissimus</i> , but <i>C. guttatissimus</i> has no vertical bars.
Maximum Length:	12 cm.
Habitat:	Reef-associated.
Depth:	1 - 45 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon quadrimaculatus Gray, 1831

FOURSPOT BUTTERFLYFISH

Notable Anatomy:	Four rounded, eye-shaped spots, two on each lateral surface.
Maximum Length:	16 cm.
Habitat:	Reef-associated.
Depth:	2 - 40 m.
Distribution:	Central Pacific Ocean: Southern Japan south to Hawaiian, Marquesan, Pitcairn, Samoa, and Marshall Islands.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.





Chaetodon rainfordi McCulloch, 1923

RAINFORD'S BUTTERFLYFISH

Notable Anatomy:	A yellow body with two broad bluish-grey bands, orange margins on the body, and orange eye bar.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	1 - 15 m.
Distribution:	Western Pacific: Fish Base states it is restricted to the Great Barrier Reef, adjacent coastal areas, and Lord Howe Island. The authors have photographed the species in the Philippines.
Conservation Status:	Near Threatened.
Location Photographed:	Dumaran Island, Palawan, The Philippines.

Chaetodon rafflesii Anonymous [Bennett], 1830

LATTICED BUTTERFLYFISH / BAGANG NENAS

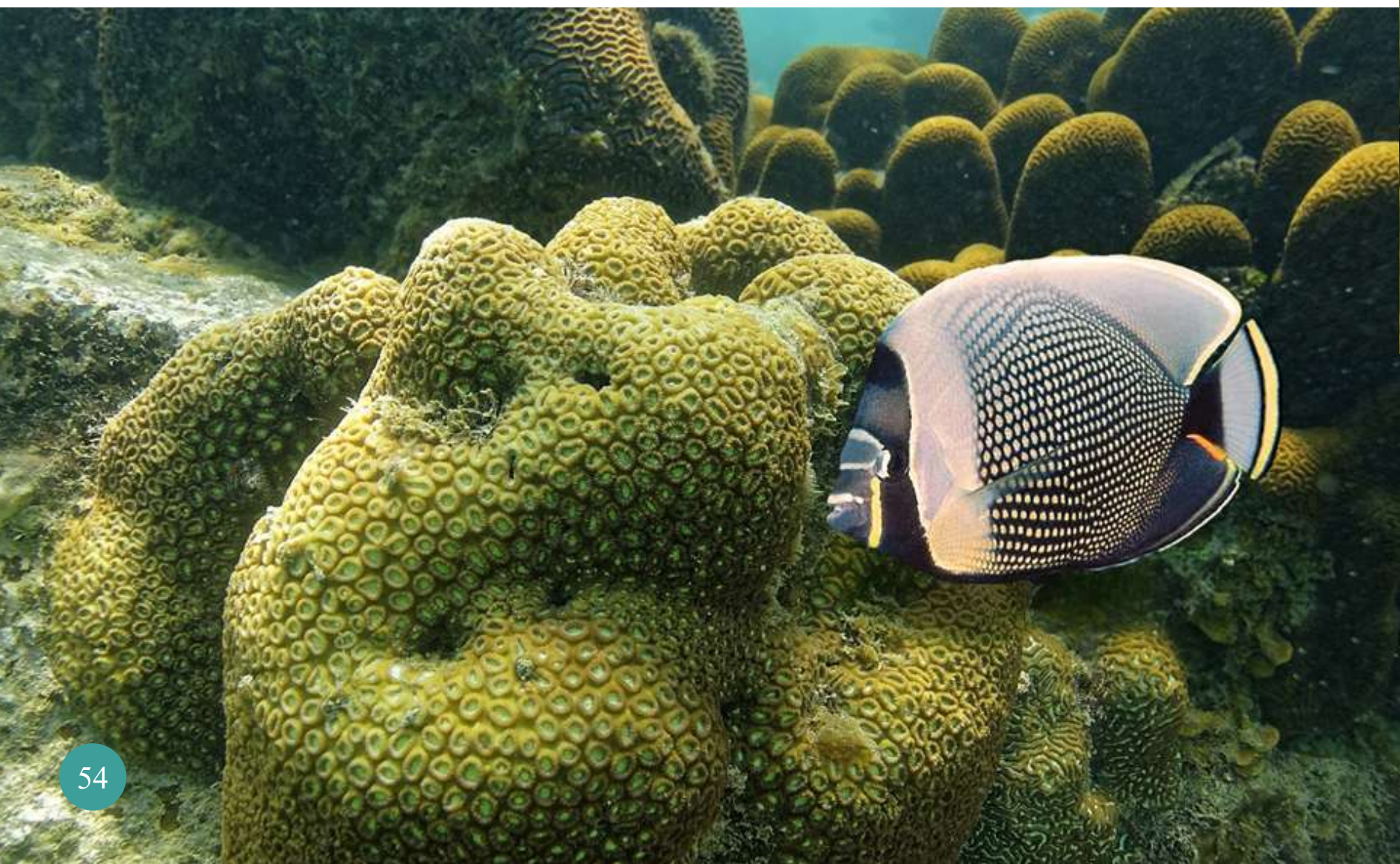
Notable Anatomy:	A yellow body with dark scales margins that appear cross-hatched or lattice-like.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	1 - 15 m.
Distribution:	Indo-Pacific: Sri Lanka to the Tuamotu Islands, to southern Japan, to the Great Barrier Reef; Palau to the eastern Caroline Islands in Micronesia.
Conservation Status:	Least Concern.
Location Photographed:	Akuarium Tunku Abdul Rahman, Malaysia.



Chaetodon reticulatus Cuvier, 1831

MAILED BUTTERFLYFISH

Notable Anatomy:	A blackish body with rows of pale spots on side, a broad pale band behind head, and pale dorsal fin.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	1 - 40 m.
Distribution:	Pacific Ocean: Ryukyu Islands to the Great Barrier Reef and the Hawaiian, Marquesas and Ducie Islands.
Conservation Status:	Data Deficient.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Chaetodon selene Bleeker, 1853

YELLOW-DOTTED BUTTERFLYFISH / BAGANG BINTIK KUNING

Notable Anatomy:	A whitish body marked with diagonal lines of greyish / yellowish spots.
Maximum Length:	16 cm.
Habitat:	Reef-associated.
Depth:	8 - 50 m.
Distribution:	Indonesia and New Guinea northwards to Japan.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Chaetodon speculum Cuvier, 1831

MIRROR BUTTERFLYFISH / BAGANG PIPIT

Notable Anatomy:	A round spot on the yellow body.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	3 - 30 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.

Chaetodon semeion Bleeker, 1855

DOTTED BUTTERFLYFISH

Notable Anatomy:	A yellow body with an elongated black teardrop-shaped bar through the eye, a blue forehead, diagonal rows of black dots along the side, and a filament trailing from the dorsal fin.
Maximum Length:	26 cm.
Habitat:	Reef-associated.
Depth:	2 - 50 m.
Distribution:	Indo-Pacific: Maldives to the Tuamotu Islands, to Ryukyu Islands, and to the Great Barrier Reef.
Conservation Status:	Least Concern.
Location Photographed:	Ko Butang, Thailand.



Chaetodon triangulum Cuvier, 1831

TRIANGLE BUTTERFLYFISH

Notable Anatomy:	A whitish body with numerous wide grey chevron bands, orange mouth, brownish orange eye band that becomes orange near the top of the head.
Maximum Length:	16 cm.
Habitat:	Reef-associated.
Depth:	1 - 25 m.
Distribution:	Indian Ocean: Madagascar to the Andaman Sea and western Indonesian Archipelago.
Conservation Status:	Least Concern.
Location Photographed:	Hin Daeng, Thailand.



Chaetodon trifascialis Quoy & Gaimard, 1825

CHEVRON BUTTERFLYFISH / BAGANG SARJAN

Notable Anatomy:	A triangular-shaped body and narrow chevron markings.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	2 - 30 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Near Threatened.
Location Photographed:	Pulau Pemanggil, Malaysia.



Chaetodon trifasciatus Park, 1797

MELON BUTTERFLYFISH / BAGANG SEMANGKA

Notable Anatomy:	Dark stripes on orange to purple body and reddish anal fin.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	Indian Ocean: from East Africa to Andaman Sea, and western Indonesia (western Sumatra, Java and Bali).
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.

Chaetodon ulietensis Cuvier, 1831

PACIFIC DOUBLE-SADDLE BUTTERFLYFISH / BAGANG DWIPELANA

Notable Anatomy:	2 broad blackish bars and a series of narrow vertical lines on white body.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	2 - 30 m.
Distribution:	Indo-Pacific: Cocos-Keeling Islands to the Tuamotu Islands, and to Japan.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.

Chaetodon unimaculatus Bloch, 1787

TEARDROP BUTTERFLYFISH

Notable Anatomy:	A black spot on the white body and yellow fins.
Maximum Length:	16 cm.
Habitat:	Reef-associated.
Depth:	1 - 60 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Chaetodon vagabundus Linnaeus, 1758

VAGABOND BUTTERFLYFISH / BAGANG SULAM

Notable Anatomy:	2 series of narrow dark oblique lines perpendicular to each other (chevron pattern) on a whitish body, blackish band across posterior part of body and dark bar on middle of tail.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	5 - 30 m.
Distribution:	Indo-Pacific: East Africa to the Line and Tuamotu islands, to southern Japan, to the Lord Howe and the Austral Islands.
Conservation Status:	Least Concern.
Location Photographed:	Langkawi, Malaysia.



Chaetodon xanthocephalus Bennett, 1833

YELLOWHEAD BUTTERFLYFISH

Notable Anatomy:	A pearly white body with greyish blue chevrons, a yellow band of colour on the head, along the dorsal and ventral parts of the body and on the fins.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 30 m.
Distribution:	Western Indian Ocean: East Africa to Sri Lanka and the Maldives.
Conservation Status:	Least Concern.
Location Photographed:	Similan Island, Thailand.

Chaetodon wiebelsi Kaup, 1863

HONG KONG BUTTERFLYFISH

Notable Anatomy:	A yellow body marked with oblique brown lines. A vertical black band running through the eye, with a white bar to its rear, and a black blotch on the forehead.
Maximum Length:	19 cm.
Habitat:	Reef-associated.
Depth:	4 - 25 m.
Distribution:	Western Pacific: Japan to Thailand; including the Ryukyu Islands, Taiwan, the South China Sea, and the Gulf of Thailand.
Conservation Status:	Least Concern.
Location Photographed:	Similan Island, Thailand.





Chelmon rostratus Linnaeus, 1758

COPPERBAND BUTTERFLYFISH / KEPER SUMPIT

Notable Anatomy:	Elongate snout and pattern of orange bars with black ocellus on basal part of dorsal fin.
Maximum Length:	20 cm.
Habitat:	Reef-associated.
Depth:	1 - 25 m.
Distribution:	Western Pacific: Andaman Sea to Ryukyu Islands and Australia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Tioman, Malaysia.

Chaetodon xanthurus Bleeker, 1857

PEARLSCALE BUTTERFLYFISH

Notable Anatomy:	Similar to <i>C. mertensii</i> , but has reticulated pattern on sides rather than dark chevrons.
Maximum Length:	14 cm.
Habitat:	Reef-associated.
Depth:	6 - 50 m.
Distribution:	Western Pacific: Indonesia and the Philippines, and to the Ryukyu Islands.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.



Coradion altivelis McCulloch, 1916

HIGHFIN CORALFISH / BENDERA BALUNG

Notable Anatomy:	A whitish body with four dark bands, the first through eye, the double-bands on the anterior part of the body are narrow, and the last band at rear of the body is broad and diffuse.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	3 - 30 m.
Distribution:	Indo-West Pacific: Andaman Sea and Indonesia to Papua New Guinea, to southern Japan, to the Great Barrier Reef.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Coradion chrysozonus Cuvier, 1831

GOLDENGIRDLED CORALFISH / BENDERA BELANG JINGGA

Notable Anatomy:	Orange-brown bars and black pelvic fins. Similar to <i>C. altivelis</i> , but the double-bars on the anterior part of the body are thicker and lighter.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	3 - 60 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia; mainly Indo-Australian archipelago.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.

Coradion melanopus (Cuvier, 1831)

TWOSPOT CORALFISH

Notable Anatomy:	Double-bar in front of tail base and pair of ocellated spots.
Maximum Length:	15 cm.
Habitat:	Reef-associated.
Depth:	10 - 30 m.
Distribution:	Western Pacific: Indonesia, The Philippines to Papua New Guinea and Bismarck Archipelago.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.



Forcipiger flavissimus Jordan & McGregor, 1898

LONGNOSE BUTTERFLY FISH / PIPIT PENDEK

Notable Anatomy:	Long snout, black colour on upper half of head and yellow colour of body.
Maximum Length:	22 cm.
Habitat:	Reef-associated.
Depth:	1 - 145 m.
Distribution:	North West Australia, Great Barrier Reef and throughout South East Asia; Indo-Eastern Pacific.
Conservation Status:	Least Concern.
Location Photographed:	Akuarium Tunku Abdul Rahman, Malaysia.



Forcipiger longirostris (Broussonet, 1782)

LONGNOSE BUTTERFLYFISH / PIPIT PANJANG

Notable Anatomy:	Elongate snout and rich yellow colouration with upper part of head black. Similar to <i>F. flavissimus</i> , but has much longer snout and row of black dots on the chest.
Maximum Length:	22 cm.
Habitat:	Reef-associated.
Depth:	1 - 200 m.
Distribution:	Indo-Central Pacific: West Papua, Great Barrier Reef, offshore reefs of Western Australia and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Sibu, Malaysia.



Hemitaurichthys polylepis (Bleeker, 1857)

PYRAMID BUTTERFLYFISH / KEREPEK

Notable Anatomy:	Pyramid-shaped white area surrounded by yellow. Head is usually brown.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	1 - 60 m.
Distribution:	West and Central Pacific: Great Barrier Reef, offshore reefs of Western Australia and throughout South East Asia.
Conservation Status:	Least Concern.
Location Photographed:	Coral Bay, Palawan, The Philippines.

Hemitaurichthys zoster (Bennett, 1831)

BROWN-AND-WHITE BUTTERFLYFISH

Notable Anatomy:	Black in colour with a wide vertical white band covering the middle of the body. The dorsal fin is coloured in the same pattern as the body, but has the addition of yellow on the tips of the white band.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	1 - 40 m.
Distribution:	Indian Ocean from East Africa and Oman to Andaman Sea and Indonesia (western Sumatra and south-western Java).
Conservation Status:	Least Concern.
Location Photographed:	Similan Island, Thailand.



Heniochus acuminatus (Linnaeus, 1758)

PENNANT CORALFISH / GAYAM PANJI

Notable Anatomy:	Elongated dorsal rays, resembles <i>H. diphreutes</i> , but longer snout and rounded anal fin.
Maximum Length:	25 cm.
Habitat:	Reef-associated.
Depth:	2 - 175 m.
Distribution:	Indo-Pacific: found throughout the region.
Conservation Status:	Least Concern.
Location Photographed:	Akuarium Tunku Abdul Rahman, Malaysia.



Heniochus diphreutes Jordan, 1903

FALSE MOORISH IDOL / GAYAM LAWI

Notable Anatomy:	Elongated dorsal rays, resembles <i>H. acuminatus</i> , but has shorter snout and angular anal fin.
Maximum Length:	21 cm.
Habitat:	Reef-associated.
Depth:	5 - 210 m.
Distribution:	Indo-Pacific: Red Sea and South Africa to warm-temperate Australia and the Hawaiian Islands.
Conservation Status:	Least Concern.
Location Photographed:	Dumaran Island, Palawan, The Philippines.

Heniochus chrysostomus Cuvier, 1831

THREEBAND PENNANTFISH / GAYAM TIRUS

Notable Anatomy:	Short “banner” and broad black band across head that is continuous with pelvic fins.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	2 - 60 m.
Distribution:	Indo-Pacific: Western India to Pitcairn Islands, to southern Japan, to Rowley Shoals, southern Queensland, and New Caledonia; throughout Micronesia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Sibiu, Malaysia.



Heniochus monoceros Cuvier, 1831

MASKED BANNERFISH / GAYAM TOPENG

Notable Anatomy:	A silvery-white body with a prominent bony protuberance on the head, two broad diagonal bands on the body and yellow dorsal, caudal and anal fins.
Maximum Length:	24 cm.
Habitat:	Reef-associated.
Depth:	2 - 30 m.
Distribution:	Indo-Pacific: East Africa to the Tuamotu Islands, to southern Japan, to New South Wales and Tonga.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Perhentian, Malaysia.



Heniochus pleurotaenia Ahl, 1923

PHANTOM BANNERFISH / GAYAM

Notable Anatomy:	A white body with brown to dark areas and a brown face mask covering the mouth, eyes and the base of the first rays of the dorsal fin. A little horn adorns the axis between the eyes.
Maximum Length:	17 cm.
Habitat:	Reef-associated.
Depth:	1 - 25 m.
Distribution:	Indian Ocean: Maldives and Sri Lanka to Java, north to the Andaman Sea.
Conservation Status:	Least Concern.
Location Photographed:	Langkawi, Malaysia.



Heniochus singularius Smith & Radcliffe, 1911

SINGULAR BANNERFISH / GAYAM

Notable Anatomy:	A diffuse white bar with dark scale centres, bordered in front and behind by black bars, with a dark bar through the eye and another encircling the snout. A prominent hump on the nape
Maximum Length:	30 cm.
Habitat:	Reef-associated.
Depth:	2 - 250 m.
Distribution:	Pacific Ocean: Andaman Islands in the eastern Indian Ocean to Samoa, to southern Japan, and to New Caledonia.
Conservation Status:	Least Concern.
Location Photographed:	Pulau Sibiu, Malaysia.



Parachaetodon ocellatus Cuvier, 1831

SIXSPINE BUTTERFLYFISH / PANCANG BENDERA

Notable Anatomy:	Tall, triangular dorsal fin and orange-brown bars.
Maximum Length:	18 cm.
Habitat:	Reef-associated.
Depth:	5 - 40 m.
Distribution:	Indo-West Pacific: found throughout the region.
Conservation Status:	Least Concern.
Location Photographed:	Ko Butang, Thailand.

HIGHLIGHTS

- 🐟 Ten interesting facts about the butterflyfish.
- 🐟 Although they are called butterflyfish, this “yellow fish” family is named after their special “comb-like” teeth.
- 🐟 There are more than 130 species of butterflyfish, mostly live on coral reefs.
- 🐟 Only 25% of butterflyfish species feed exclusively on living coral polyps.
- 🐟 Butterflyfish are among the most common reef fish to breed with other butterflyfish species.
- 🐟 Many butterflyfish form pair bonds.
- 🐟 Some butterflyfish are monogamous, where the male protects the pair’s territory, allowing the female to feed.
- 🐟 Butterfish can make sounds that use to keep other members of the similar species at bay.
- 🐟 The blacknosed butterflyfish or barberfish cleans other fishes (including sharks and mantas) of their parasites.
- 🐟 Many butterflyfish mask their eye with a distinctive dark bar and may add a false eyespot at the tail. The overall effect is thought to mislead predators by suggesting the fish will try to escape in the opposite direction.
- 🐟 Butterflyfish are indicator species for coral reef health. Most butterflyfish numbers are controlled by the abundance and health of coral reefs rather than by the number or size of predators.

ABOUT THE AUTHORS



Ts. Mohamad Saupi Ismail is a senior research officer and currently works as Director of the National Marine Park Research Centre, Department of Fisheries Malaysia. His previous job was the manager of the Aquarium Tunku Abdul Rahman (AkuaTAR), Pulau Pinang. His areas of expertise are coral reef assessment, seahorse and coral propagation. He has been appointed as a member of the Pool of Experts (PoE) of the United Nations Regular Process for Global Reporting and Assessment of the State of the Marine Environment. Also, he is the National Scientific Authority for corals, seahorses and sea anemones. He has published many books and international journals, including a book recognised as the 50 Best Malaysian Titles for International Rights 2021/2022, entitled “Karang: Kultur dan Pembiakan”. He is currently pursuing his Ph.D. at Universiti Putra Malaysia, Serdang. An avid diver, he is certified as a PADI Dive Master.

Dr. Gerald B. Goeden became involved with scientific wildlife photography for National Geographic in the South Pacific and Austral-Asia. He has received awards for photographic work and was awarded the “Key to the City of Miami” for his conservation efforts. A research career in the ecology and management of marine parks on the Great Barrier Reef helped him document much of the world’s largest coral reef system and many incredible atolls in the crystal waters of the S. W. Pacific.



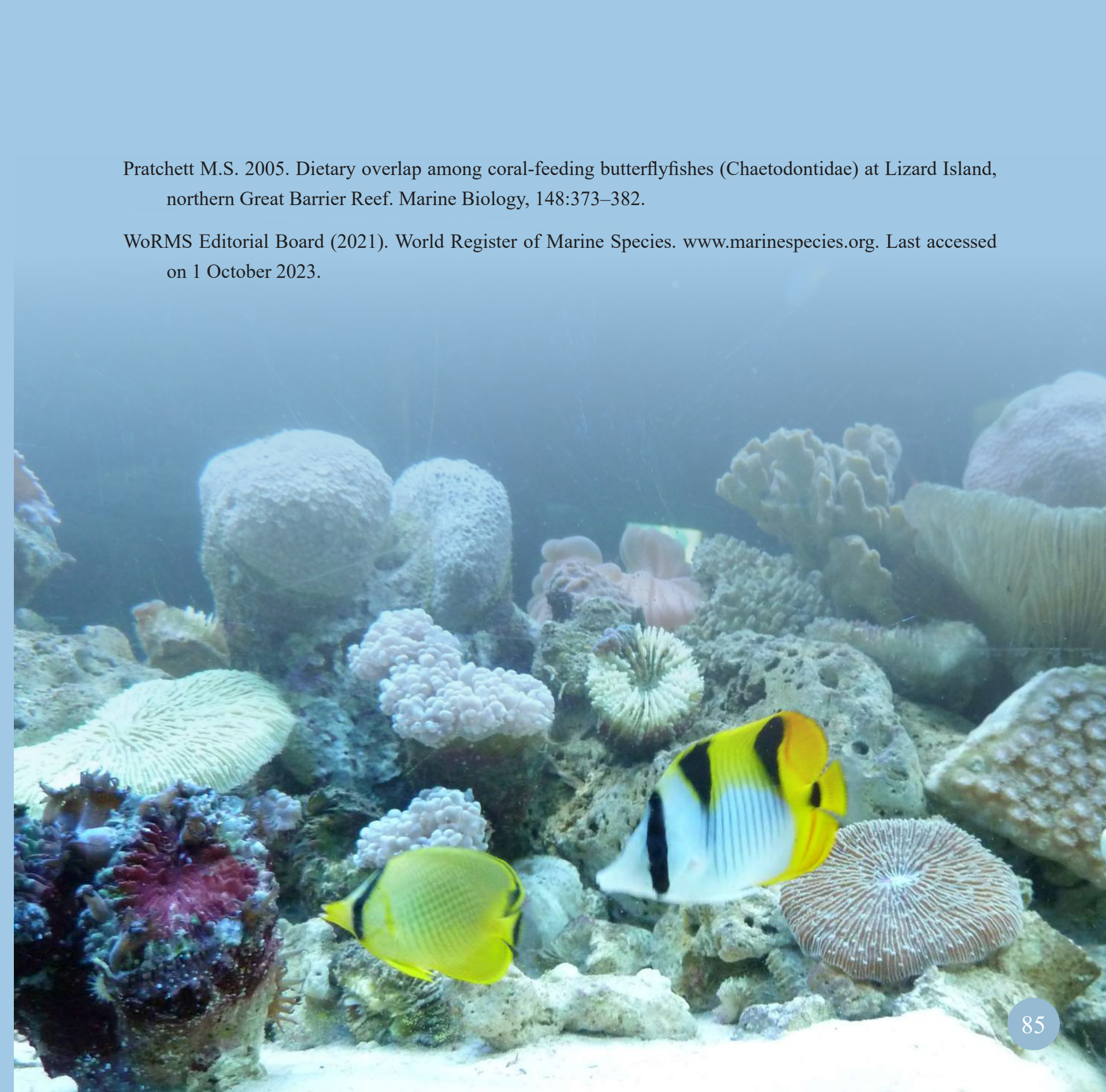
Since taking up residence in Malaysia, he established an award winning Reef Rehabilitation program to counter tsunami damage at Langkawi, achieved Malaysia Book of Records recognition with the world’s first Inland Marine Sanctuary, and won a “Best National Book Award, Malaysia 2019”. Dr. Goeden is now the Chief Scientist for Carbon Collectors BV and Fizzy Transition Ventures BV. These joint companies are developing very-large scale artificial reef systems to sequester carbon and increase biodiversity in accordance with UN SDGs.

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Pulau Payar, Malaysia



Butterflyfishes are one of the most conspicuous inhabitants of coral reefs and have attracted the attention of many scuba divers and researchers. Many find their way into the aquarium trade, but most are difficult to keep and face a shortened life in captivity.

Man's first interest in these odd fishes was due to their butterfly-like colors and their tendency to dart from coral to coral. But as we learn more about these unusual species, we are beginning to understand their critical role in the health of coral reefs around the world.

Of the 131 Butterflyfish species in the world, Malaysia is fortunate to have about a third of these (42) recorded in their Marine Parks. This book showcases the findings of these fishes throughout Malaysia, Thailand and the Philippines.

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