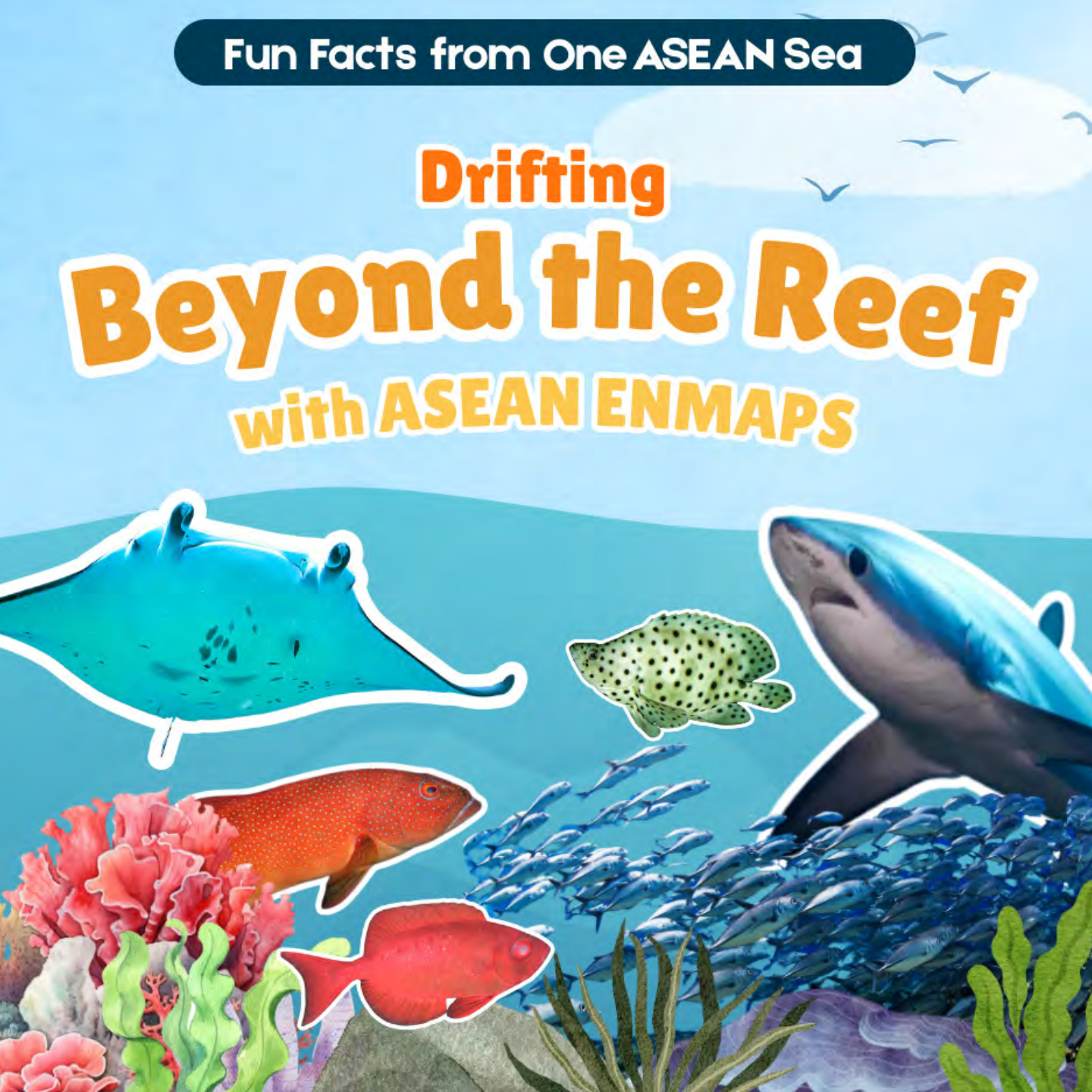
Fun Facts from One ASEAN Sea

Drifting Beyond the Reef

with ASEAN ENMAPS



ASEAN ENMAPS
Commit. Conserve. Communicate. For Our One ASEAN Sea.

gef UNDP ASEAN CENTRE FOR BIODIVERSITY

Fun Facts from One ASEAN Sea

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Drifting Beyond the Reef with ASEAN ENMAPS

Citation
ASEAN Centre for Biodiversity. (2025). *Drifting Beyond the Reef with ASEAN ENMAPS*. ASEAN Centre for Biodiversity

Cover design: Laurenz B. Cruz

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This publication was produced with the assistance of the Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN Region (ASEAN ENMAPS), implemented by the United Nations Development Programme (UNDP) through the funding of the Global Environment Facility (GEF), and with the ASEAN Centre for Biodiversity (ACB) as the executing agency.

Table of Contents

Photo: Daniel M. Ocampo

Foreword

The ocean is full of wonders. From the dazzling corals to the colourful schools of fish—these marine ecosystems are not just beautiful. They are essential to life as they provide food and support livelihoods for millions of people, while protecting the coastlines and providing cultural benefits to the people, especially in the ASEAN region.

Through the *Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN Region (ASEAN ENMAPS)* project, we are working to conserve these ecosystems across Southeast Asia by building networks of marine protected areas and by strengthening the governance of marine resources. One of these efforts is the publication of the *Fun Facts from One ASEAN Sea*, which brings the conservation mission to young readers, the future stewards of the ocean.

This book is more than just a collection of fun facts about our marine ecosystems. It is the gateway to curiosity, discovery, and the cultivation of enthusiasm toward protecting our shared marine heritage. Characterised by vibrant illustrations and amazing facts, this book provides our future stewards a way to explore the incredible life under the sea and understand why it is important to keep our waters and coastlines healthy. We hope that this would create a spark among the youth to love nature and to inspire them to become champions of the sea in their schools, families, and communities.

Thus, let's read on and dive in to protect the ocean together!

Jerome L. Montemayor, PhD
Executive Director
ASEAN Centre for Biodiversity

Photo: Daniel M. Ocampo

Let's dive in!

Thresher shark | *Alopias vulpinus*
Daniel Graham

Sharks

DID YOU KNOW?

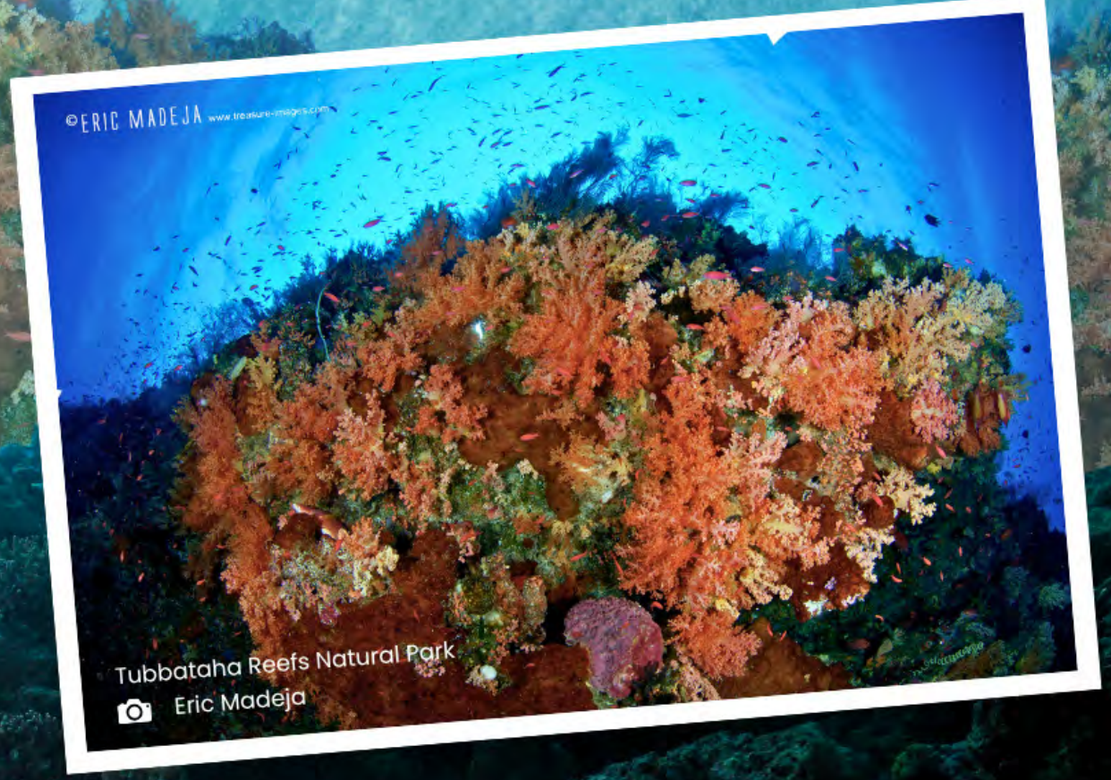
The presence of **sharks** is a sign of a **healthy** ocean.

Baby Gray Reef Shark | *Carcharhinus amblyrhynchos*
q phia

Blacktip reef shark | *Carcharhinus melanopterus*
q phia

If sharks thrive in a marine environment, it means the ecosystem is healthy enough to support these top predators. Sharks need so much fish to maintain it. Thus, when there are lots of sharks in the ocean, surely, there are plenty of fish surrounding and supporting these top predators.

Thus, a thriving shark population is a strong indicator of marine biodiversity and balance.

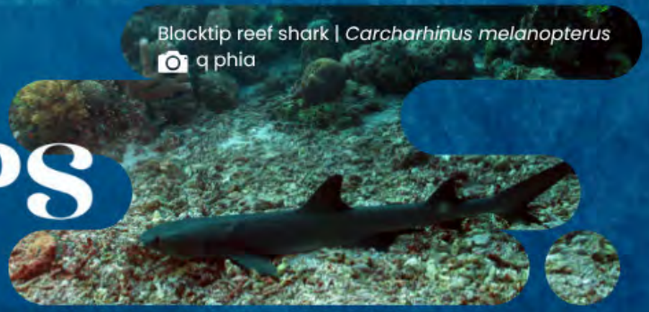


Tubbataha Reefs Natural Park
Eric Madeja

Blacktip reef shark | *Carcharhinus melanopterus*
q phia

Tubbataha Reefs Natural Park, one of the 11 pilot sites of the project **Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN region (ASEAN ENMAPS)**, is home to various species of sharks.

Thresher shark | *Alopias vulpinus*
q phia



Blacktip reef shark | *Carcharhinus melanopterus*
q phia

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ASEAN ENMAPS is a regional project designed to **enhance the management of marine protected area networks** and **marine corridors** within selected large marine ecosystems in **Indonesia**, **the Philippines**, and **Thailand**. It is implemented by the UNDP in Asia and the Pacific through the funding of the Global Environment Facility, and with the ACB as the executing agency.

Juvenile Whitebanded Bamboo Shark
Christian Gloor

Juvenile Brownbanded Bamboo Shark
Alessandro Cere

Bamboo Sharks

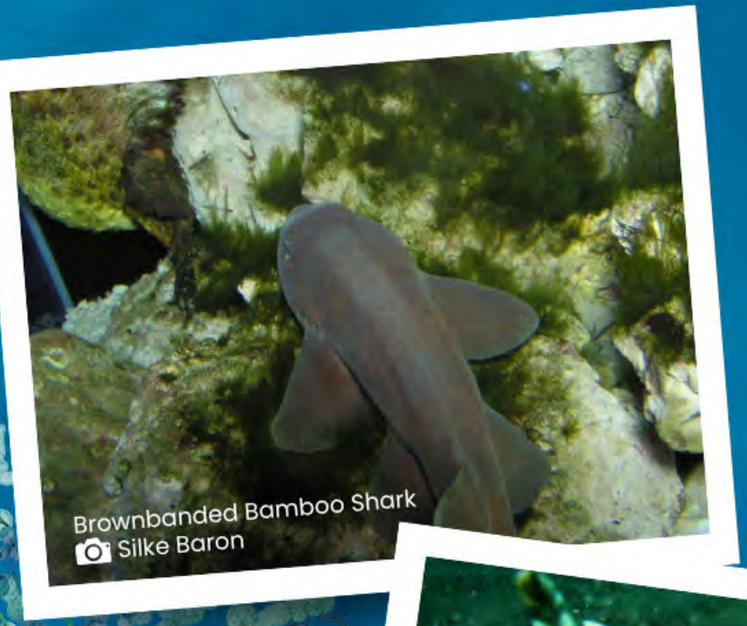
DID YOU KNOW?

In Southeast Asia, **Bamboo Sharks** are more than just fascinating marine creatures—they are also symbols of **new beginnings and fresh opportunities**. Spotting one in the wild is considered a **good omen**.

Whitebanded bamboo shark (*Chiloscyllium plagiosum*)
Silke Baron

Bamboo Sharks have some adorable quirks, too. Unlike their live-bearing cousins, they **lay eggs in pairs**, securing them to reef substrates like tiny underwater treasure chests.

Their patterned skin, **resembling bamboo**, adds a touch of elegance to the ecosystem's balance.



Brownbanded Bamboo Shark
Silke Baron

Juvenile Whitebanded Bamboo Shark
Christian Gloor

Bamboo Sharks are **bottom dwellers** in shallow waters with coral reef, seagrass beds, mangrove stands, and rocky or sandy bottoms.

They use **suction feeding** to feed on **bottom-dwelling creatures**, expelling water or sand out of their gills. By day, these **nocturnal beauties** nap in the crevices, then emerge at night to hunt **small fish** and invertebrates, playing a crucial role in maintaining **ecosystem balance**.

Brownbanded Bamboo Shark (*Chiloscyllium punctatum*)
Fluffy Creature

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Brownbanded Bamboo Shark
Silke Baron

Although they're not threatened species, overfishing and habitat destruction remind us of the importance of reef conservation.

That's why ASEAN ENMAPS champions the protection of coral reefs, ensuring Bamboo Sharks continue to inspire hope and new beginnings for years to come!

Derek Keats

Humphead Wrasse (*Cheilinus undulatus*)
incidencematrix

Humphead Wrasse

DID YOU KNOW?

The **Humphead Wrasse** is the ocean's own head-banging drummer! This fish doesn't just swim; it throws down a loud **"knock" by snapping its mouth shut**, chatting up fellow wrasses and giving predators a real scare. Imagine that as your alarm clock!

Badi R. Samaniego

Humphead Wrasse (*Cheilinus undulatus*)
Matt Kieffer

Growing up to **2.5 metres (8.2 feet)** and weighing **200 kilograms (440 pounds)**, it's like the heavyweight champ of the coral reefs, living large for up to **30 years**.

Flashy and fabulous, it's not just a looker—it keeps the reef party balanced. Humphead wrasse **controls populations** of coral-damaging crown-of-thorns starfish and preys on other hard-shelled invertebrates.

But here's the plot twist: **they are now endangered**, thanks to overfishing and coral reef breakdown due to human activities and natural causes.

The **ASEAN ENMAPS Project** is stepping in to save the day, working hard to protect this oceanic rock star and its vibrant home.

Derek Keats

Derek Keats

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Let's keep the Humphead Wrasse rocking in the deep!

Coccolithophores sp.
Sophie Zweifel
courtesy of SNSF
Scientific Image Competition

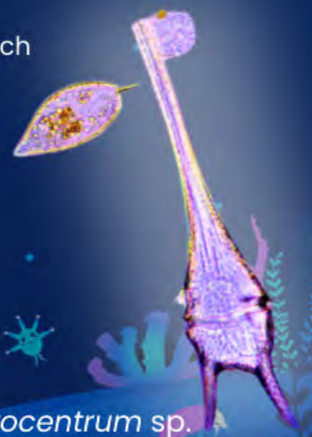
Phytoplankton

DID YOU KNOW?

Ever wonder how ocean parties start? Meet the phytoplankton—the sun-powered mini-marvels hanging out in the top ten feet of water. Phytoplankton are the major producers—capturing light all day and converting it into food, and in the process releases oxygen.

Pyrocystis lunula
Anthea Oestreicher
courtesy of SNSF Scientific
Image Competition

Coscinodiscus sp. and *Ceratium* sp.
Mississippi Department of Marine Research

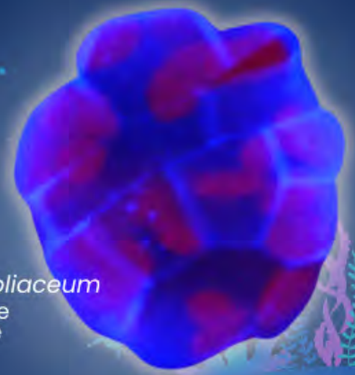


Ceratium sp. and *Prorocentrum* sp.
Mississippi Department of Marine Research

By night, zooplankton, the tiny grazers of the sea, swim up to feast on phytoplankton under the cover of darkness, trying to avoid predators.

But here's the twist! Many phytoplankton glow when disturbed, creating a bioluminescent light show.

Anemone feeding on plankton
Klaus Stiefel



Kryptoperidinium foliaceum
FWC Fish & Wildlife Research Institute

So now, with a glow-in-the-dark dinner, the fish can't resist joining, attracting even bigger fish…and you get an epic, all-you-can-eat feeding frenzy!

Phytoplankton
NOAA Photo Library

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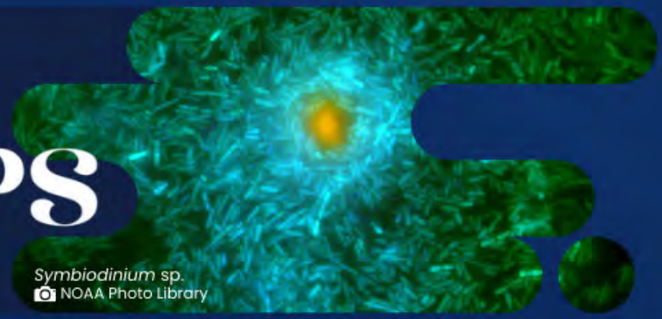
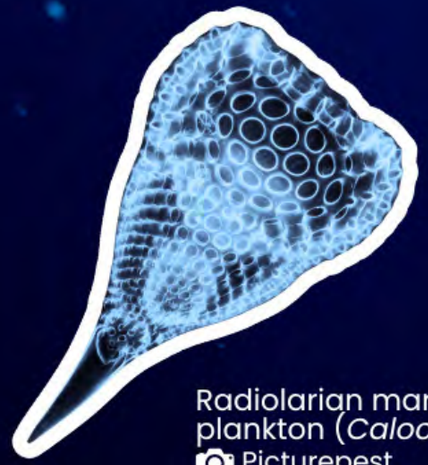


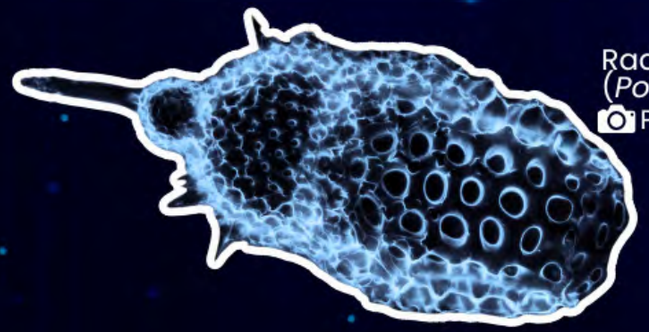
Symbiodinium sp.
NOAA Photo Library

Through the ASEAN ENMAPS project, we're working to protect these nutrient-rich marine areas where upwelling brings essential nutrients to the surface, sparking life all the way up the food chain.

By safeguarding these ecosystems, we're keeping the natural balance and ensuring future generations can marvel at these incredible spectacles of nature.



Radiolarian marine plankton (*Calocyclas sp.*)
Picturepest



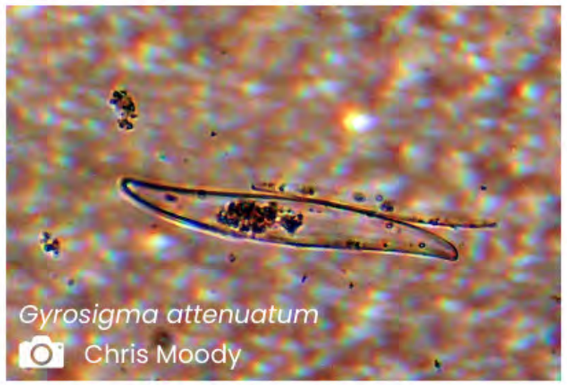
Radiolarian zooplankton (*Podocyrtis ampla*)
Picturepest

Plankton

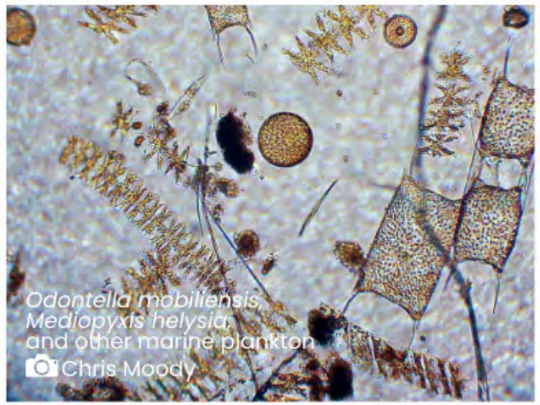
DID YOU KNOW?

Microplankton, the ocean's tiniest travellers, don't just drift aimlessly—they follow a daily routine that shapes entire ecosystems!

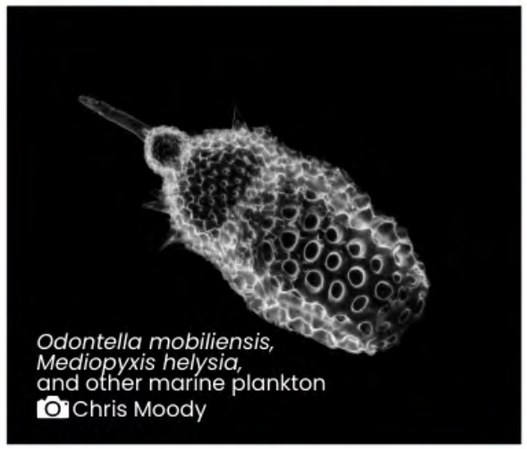
These small drifting organisms, the phytoplankton (tiny plants) and zooplankton (tiny animals), form the base of the aquatic food chain.



Gyrosigma attenuatum
Chris Moody

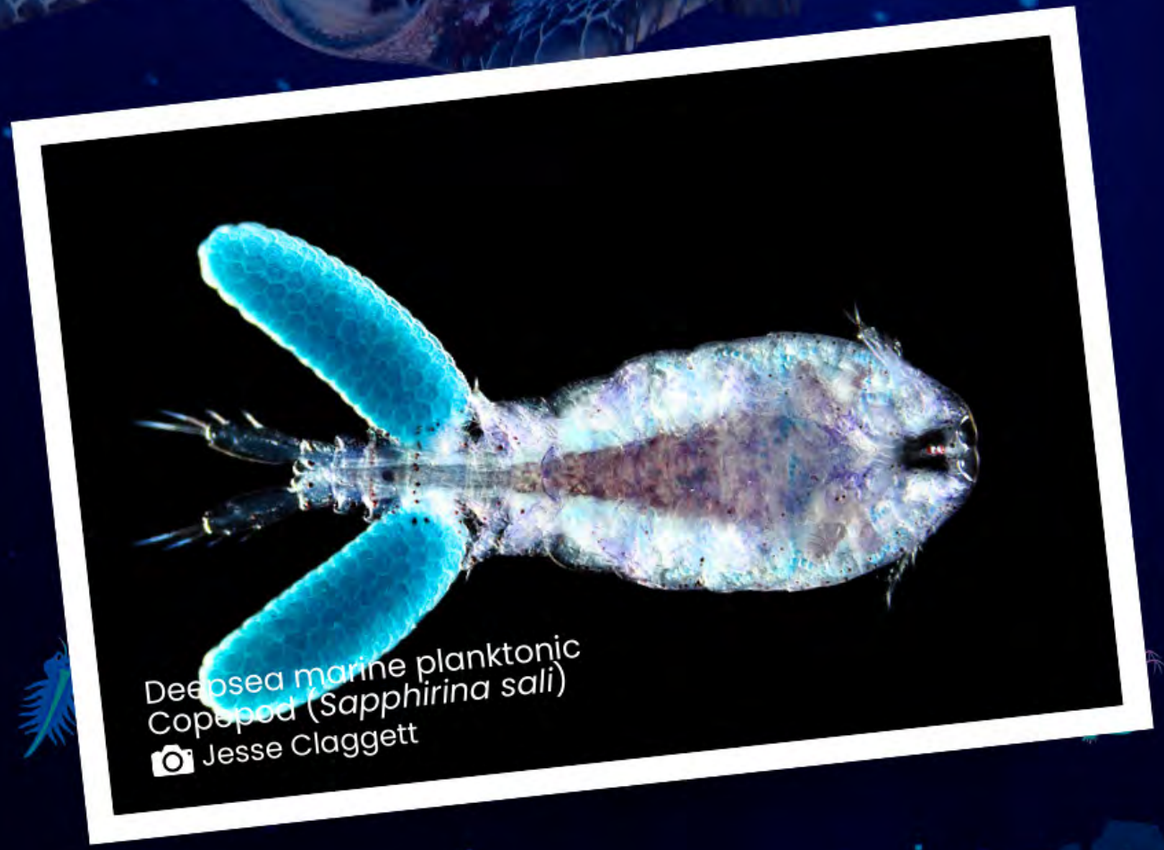


Odontella mobiliensis,
Mediopyxis helysia,
and other marine plankton
Chris Moody



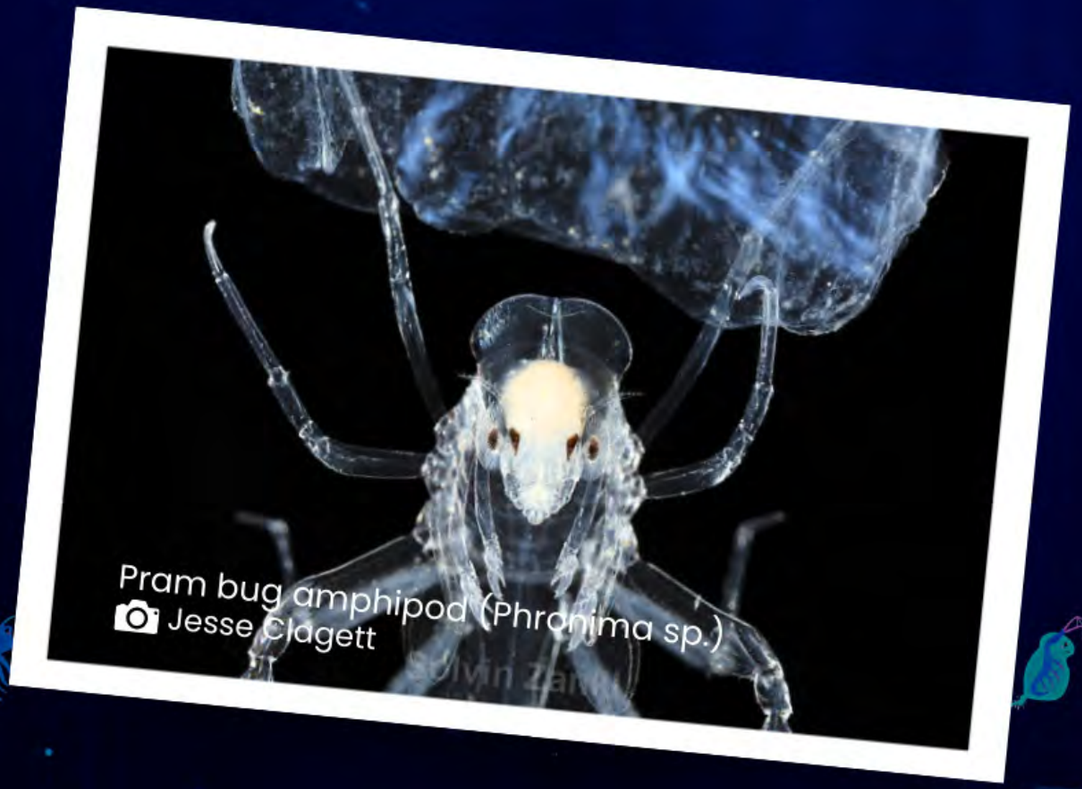
Odontella mobiliensis,
Mediopyxis helysia,
and other marine plankton
Chris Moody

Zooplankton move **up at night** to feed near the surface and **descend during the day** to **avoid predators**. This daily shuffle significantly **impacts the trophic structure** of seagrass beds, mangroves, and reefs.



Deepsea marine planktonic Copepod (*Sapphirina sali*)
Jesse Claggett

Phytoplankton are eaten by zooplankton (copepods), which are meals for small fish, crabs, and shrimps. Larger predators, in turn, prey on small fish, crabs, and shrimps.



Pram bug amphipod (Phronima sp.)
Jesse Clagett

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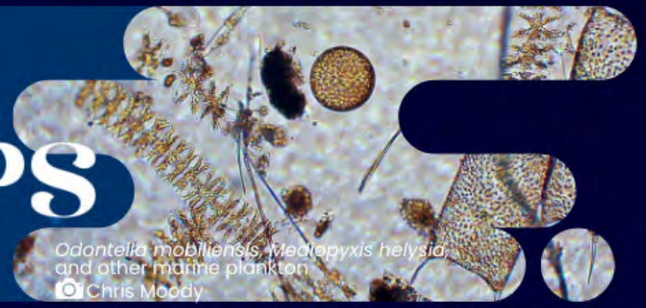


Odontella mobiliensis, *Mediopyxis helysia*, and other marine plankton
Chris Moody

As plankton availability shifts throughout the day, it ripples through the food web and affect everything from herbivores to top predators.

Similarly, the ASEAN ENMAPS Project works to conserve these interconnected habitats and adjacent upwelling areas, ensuring a balanced and thriving marine ecosystem!

Leopard Coral Grouper (*Plectropomus leopardus*)
Jan Massersmith

Giant Grouper (*Epinephelus lanceolatus*)
Magda Ehlers

Grouper Spawning

DID YOU KNOW?

Groupers throw the ultimate New Year's party under the sea!

These reef celebs gather in **huge groups** called **spawning aggregations** to release their eggs and sperm for **fertilisation**. They time these gatherings during the **lunar cycle**, including around New Year. Talk about celebrating underneath the moonlit skies!

Giant Grouper (*Epinephelus lanceolatus*)
The Cosmonaut

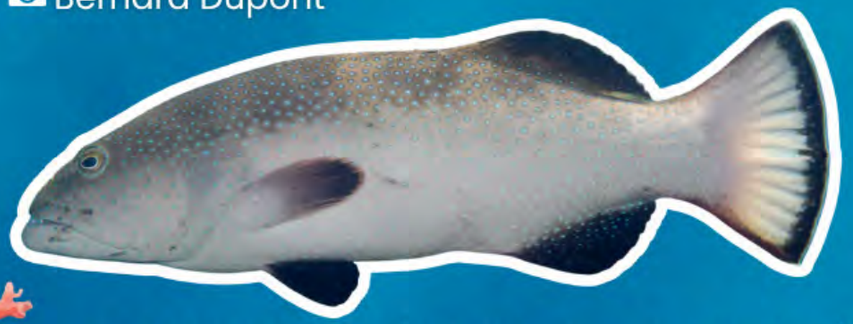
Highfin Coral Grouper (*Plectropomus oligacanthus*)
Rickard Zerpe

Because **groupers gather** in such **large numbers** to reproduce, they are seen as a symbol of **renewal and life**. Their gatherings also remind us how connected marine life is—when groupers thrive, the entire reef benefits!

Highfin grouper *(Epinephelus maculatus)*
Rickard Zerpe

Groupers are also the **defenders of coral reefs**, keeping **smaller fish populations in check and maintaining balance**. Without them, the reef would be in total chaos—like a buffet with no one to manage the line.

Highfin Grouper (*Epinephelus maculatus*)
Bernard Dupont



Malabar Grouper (*Epinephelus malabaricus*)
Rafi Amar

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Malabar Grouper (*Epinephelus malabaricus*)
Rafi Amar

Sadly, overfishing and habitat loss are crashing their spawning parties. That's why ASEAN ENMAPS promotes sustainable fisheries by establishing networks of marine protected areas, giving groupers more safe spaces to thrive.

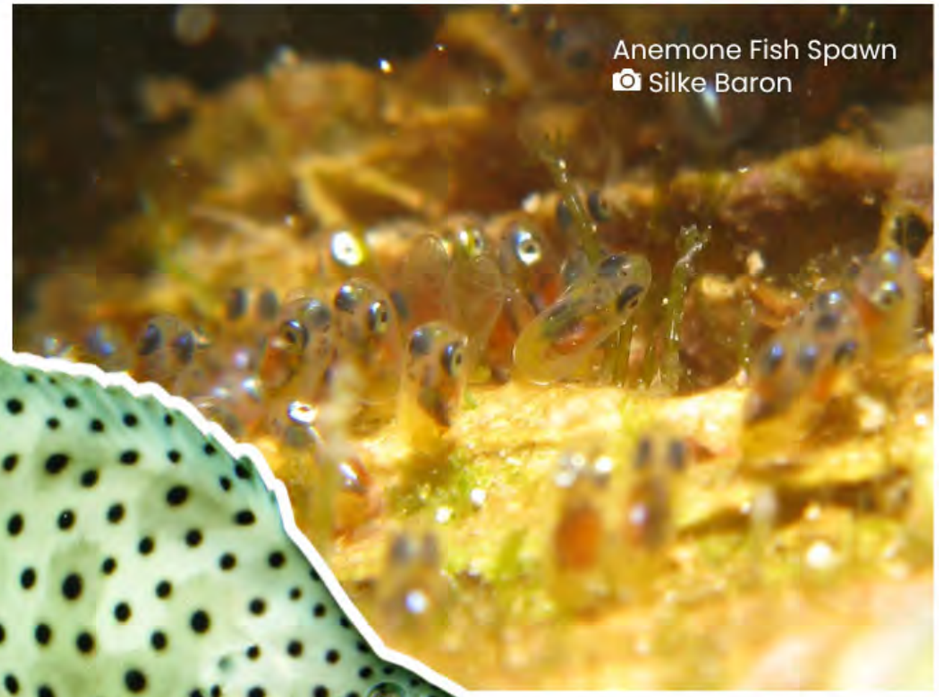
Big Eye Grouper
Philip Wade

Grouper Spawning Aggregation

Groupers travel great distances across the sea—all for love. They'll swim up to **17 kilometres** just for speed dating or for blind dates during their annual love fest called **spawning aggregations**, where they gather to secure their species' future.

Leopard Coral Grouper
Klaus Stiefel

They even synchronise their **spawning with the lunar cycle**– on full or new moons when tides are strongest. This strategy ensures the fish embryos hitch a **ride on the currents**, giving the next generation a head start on their ocean adventures.



Anemone Fish Spawn
Silke Baron

Panther Grouper
Udo Schröter

The groupers are habitual creatures, **returning to the same dating spot** every year. This makes them easy targets because once fishers discover where they hold their romantic trysts, they can be **wiped out**– threatening both the species and the marine ecosystem they support.

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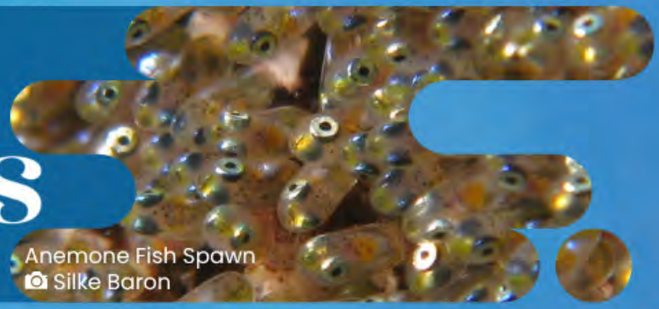

Anemone Fish Spawn
Silke Baron

That's why **ASEAN ENMAPS** aims to include these spawning sites in Marine Protected Areas (MPAs) to ensure the consistent supply of fish larvae, to replenish fish populations, and for fishers to value the these sites as part of their **sustainability**. By protecting these spots, we're saving groupers and ensuring our oceans thrive for generations to come.

Surgeonfish post-larvae
Jean Marie Gradot

Fish Larvae and Connectivity

DID YOU KNOW?

Ocean currents serve as super highways that carry the future army of the marine world—**the larvae of fishes, corals, and invertebrates**—across hundreds or thousands of kilometres to reach **potential habitats** in coral reefs, mangroves, and seagrass beds.

Japanese anchovy (*Engraulis japonicus*)
Kingfisher

Larval dispersal is an important component of how **marine connectivity operates**. It is also critical for **replenishing fish** and other marine populations and for **maintaining ocean health** and biodiversity.

Fish species like groupers and snappers time their spawning with specific currents to ensure their larvae get a seaward ride, dodging predators and boosting survival rates. Migratory species like tuna also rely on the ocean currents' "free ride" and save on energy to connect feeding and breeding grounds.

Larvae of fish
Napat Polchoke

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Japanese anchovy (*Engraulis japonicus*) larvae
Jean Marie Gradot

Recognising this, **ASEAN ENMAPS** is studying the **ocean connectivity** to expand conservation efforts by developing **a network of marine protected areas**. This would ensure that **Our One ASEAN Sea** can maintain its vibrance, support sustainable fisheries, and safeguard the livelihoods of coastal communities–all for a healthier interconnected marine ecosystem.

Crab-eating Macaque
(*Macaca fascicularis*)

Mangrove Ecosystem

DID YOU KNOW?

Mangrove forests are the ultimate all-in-one hotel, restaurant, and playground for coastal and marine species!

Mangrove snail
(Ellobium aurisjudae)

Mangrove nomia
(Nomia lusoria)

Snails climb up and down the trunk and branches to find food both on the branches, leaves, and in the water below; **bees** buzz about handling "tree business;" and even **long-tailed macaques** have a cozy spot in the branches.

Brown-winged Kingfisher (*Pelargopsis amauroptera*)

Great Egret (*Ardea alba*)

Oh, and those twisty roots? They're not just for show—epiphytes grow there, these are tiny plants that feed baby fish like it's their buffet! Plus, don't miss the Brown-winged Kingfisher, Buffy fish-owl, and Great Egret—all finding their meals and nesting spots in this thriving ecosystem.

Silversides (*Atherinidae*) swimming above mangrove roots

Mangroves = biodiversity goldmine.

That's why ASEAN ENMAPS is working to save these hotspots, expanding the conservation through marine protected area networks for all those tiny fishies, kingfishers and owls, and their mangrove roommates!

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Great Egret (*Ardea alba*) in ADPLS
Courtesy of DENR Region 1

Fish Menopause

DID YOU KNOW?

Unlike humans, fish **don't retire** from **laying eggs**—they're in it for life! Fish do not undergo **menopause**; they continue to be reproductive. In fact, they even get better with age, just like fine wine.

More mature fish release better-quality eggs. And with some fishes even living up to 60 years old, making every egg count!

Lene aus Topp

Humphead Wrasse
(*Cheilinus undulatus*)
Yvette Lee

By protecting these fish in MPAs and by expanding the area for conservation through MPA networks, we're giving them an exclusive VIP pass to a safe space to lay their eggs and a nurturing underwater buffet where the fun never stops.

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ASEAN ENMAPS is dedicated to **keeping the ocean's party in full swing**—because who wouldn't love more fish in the sea?

fishing only mature species
and leaving the

Sustainability Through Regeneration

DID YOU KNOW?

Shifting from extraction to regeneration = sustainability

True **sustainability** means harvesting only **what nature can replenish**. Gather marine resources without uprooting the source. For example, fishing only mature species and leaving the **young to grow**.

We can improve ecosystems to boost productivity too. Restoring mangroves not only protects coastlines but also increases fish nurseries and carbon storage.

And when we reduce threats—like plastic pollution or destructive gear—we give ecosystems a fighting chance to thrive.

Truong Hoai Vu

Bernard Dupont

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Let's shift from extraction to regeneration. Support community-led conservation, choose sustainably sourced products, and amplify practices that heal, not harm. Join ASEAN ENMAPS in conserving Our One ASEAN Sea!

Editorial board

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