

REEF CARE ANNUAL REPORT
NOVEMBER 2022

ALUNAN CORAL PROJECT
ALUNAN RESORT, PERHENTIAN



ALUNAN
CORAL PROJECT



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TEAM BACKGROUND

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Marine Science, UKM (Intern)

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Marine Biology, UMT (Intern)



OUR PRIMARY RESTORATION METHOD: CORAL POT



Our pots are made from portland cement & casted together with coral rubble to increase surface complexity. Coral pots are then conditioned to allow pH to drop to a more conducive surface for coral to attach to.

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Introduction

CORAL LOGS

- Each coral log holds five coral pots.
- Surface complexity from coral rubble and larger surface area allows natural coral recruits & other sessile invertebrates to settle.
- Compact profile of the logs reduces sedimentation while allowing enough surface area for colonies to grow.
- Metal rebar on both ends ease relocation of units.
- Sustainable Log-Pot system allows for easy maintenance and replacement of unsuccessful coral fragments

Mobile

Reusable

**Secure
substrate**

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Introduction

OUR 2022 IMPACT

1,580

Total Corals Planted

56.7K

People Reached Globally
*Instagram account reach

4,350

Eco-snorkelling Participants

5

Guest Lectures
(UNITAR, UMT)

4

Internship
(UMT, UKM, USCI)

RM87,348

Total Proceeds Channeled To Perhentian Businesses

70.41%

CORAL SURVIVORSHIP



Constant improvement of techniques has increased coral survivorship from 40% in 2019.

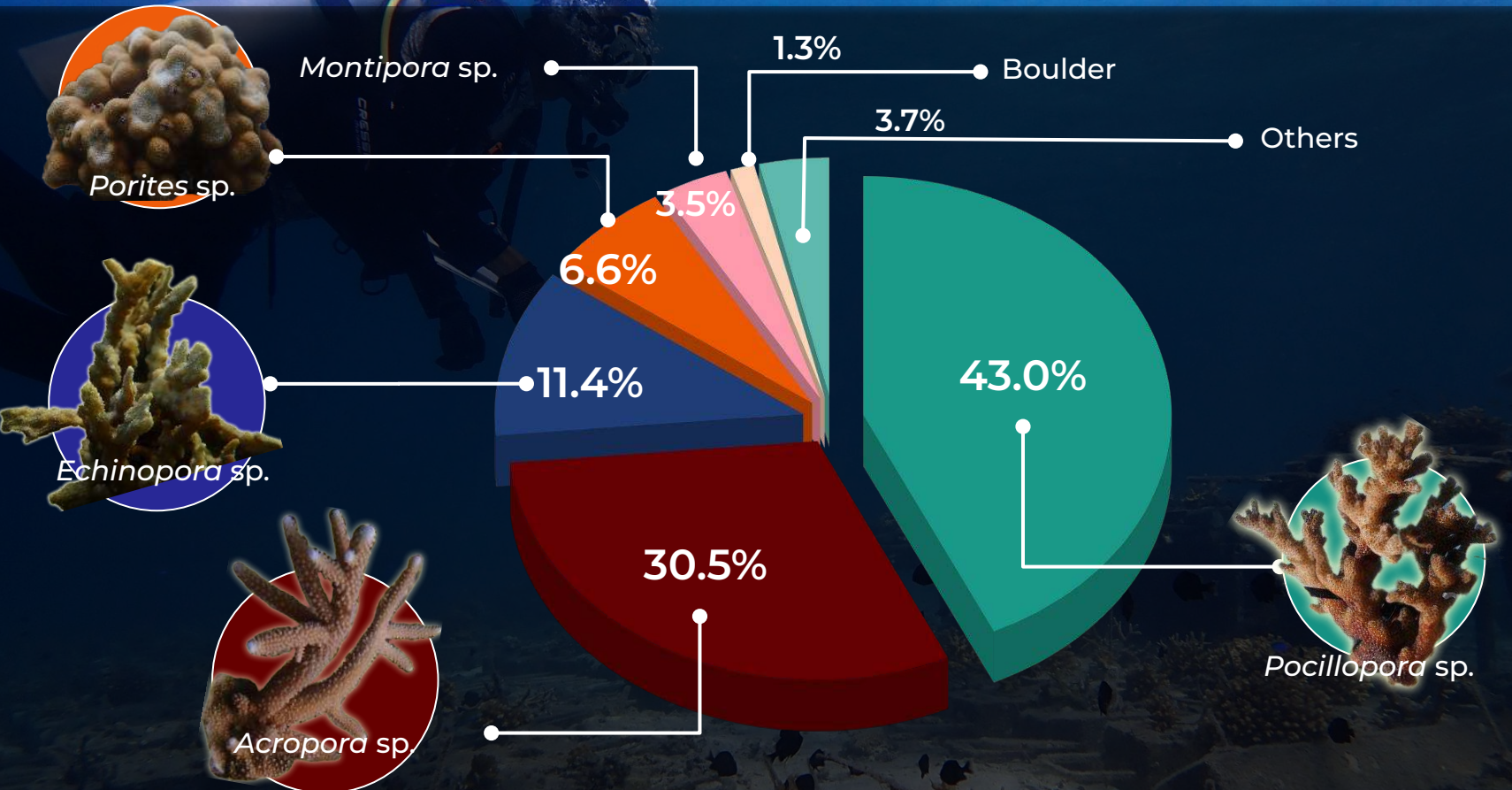


The number represents the proportion of still living colonies which includes newly added coral throughout the year 2022.

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Reef Care Data

CORAL SPECIES COMPOSITION



[SPECIES LIST](#) 📄



More than
1,079

Natural Coral Recruits

At least
3

Juvenile clam, *Tridacna* sp.



The increased surface complexity serves a better substrate for corals & other invertebrates to attach to.

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Reef Care Data

10 CORAL GROWTH RATE



Pocillopora spp.
Height: 42.6% (0.33cm)
Width: 77.5% (0.80cm)



Porites spp.
Height: 13.7% (0.07cm)
Width: 15.7% (0.10cm)



Echinopora spp.
Height: 53.6% (0.39cm)
Width: 25.6% (0.28cm)



Acropora sp. (Table)
- All colonies died.

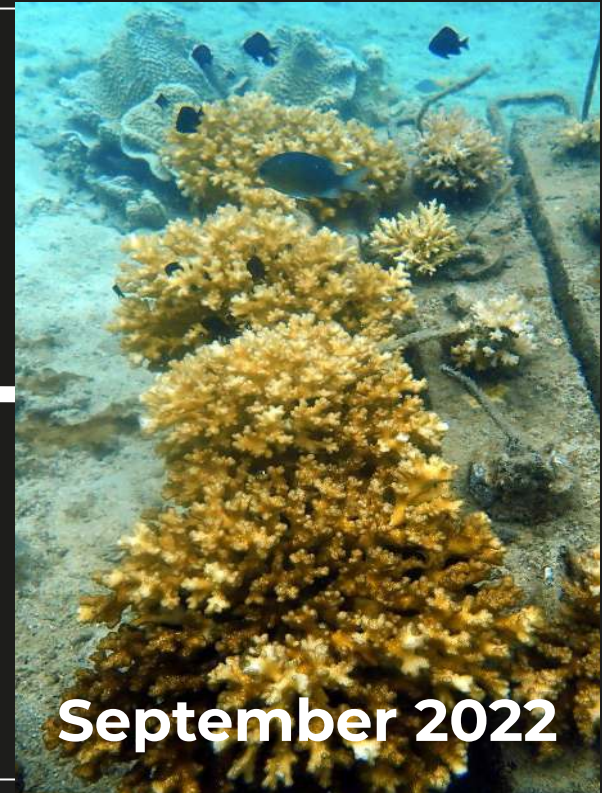


Acropora sp. (Branching)
Height: 23.7% (0.19cm)
Width: 18.9% (0.29cm)

*Growth rate is based of 6 months result (June to November 2022).

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CORAL GROWTH PROGRESS: CORAL LOG



Our coral adoption program was launched in June 2020 with the purpose of educating and creating awareness about coral reefs in Pulau Perhentian. The images above one of the many coral logs that have been adopted by visitors to the island. The proceeds from these adoptions directly support the operational needs of the Coral Project.

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CORAL GROWTH PROGRESS: MYDOF CORAL TRIPOD

Aluminium
frame

Rubber
Strap

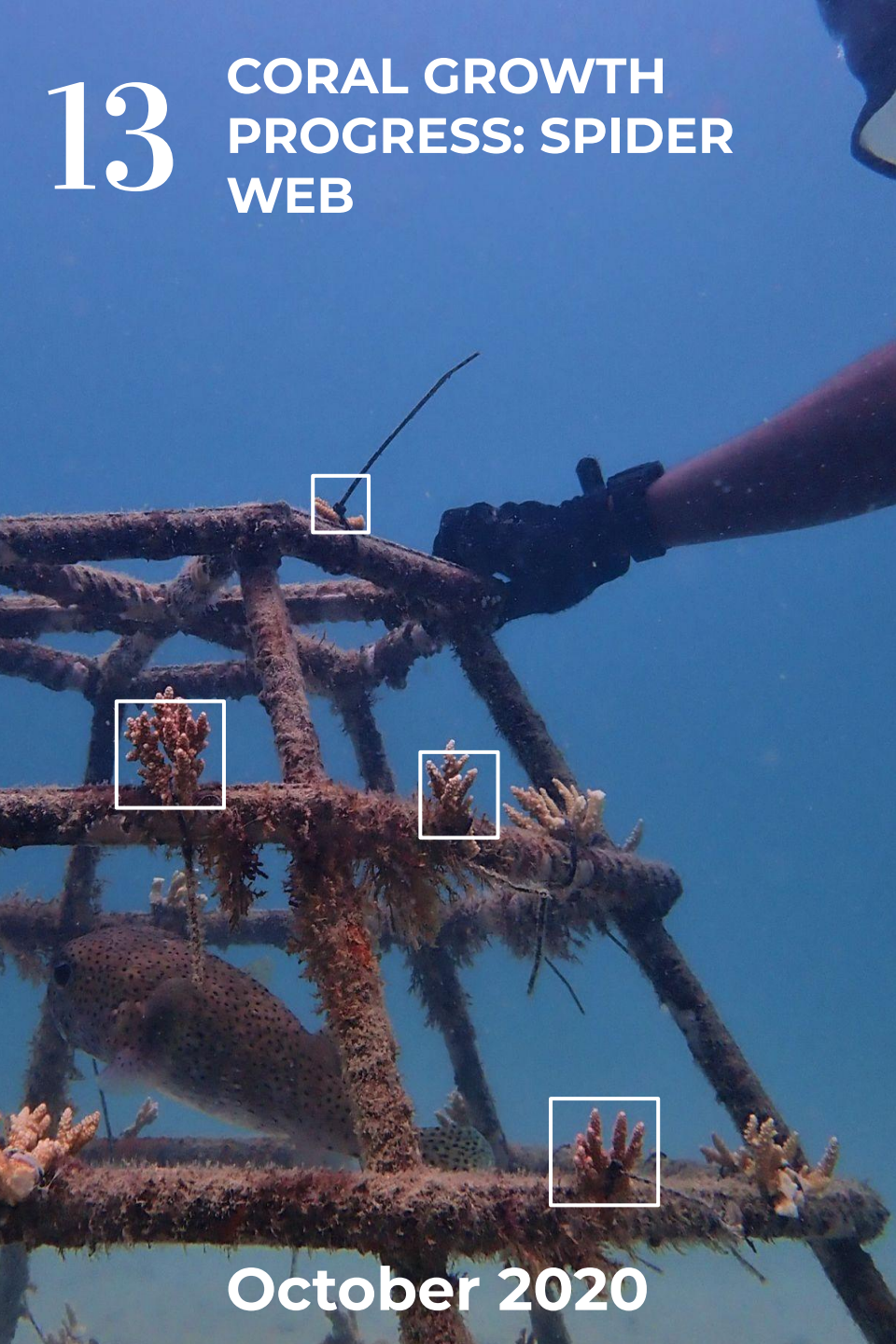
August 2020

November 2022

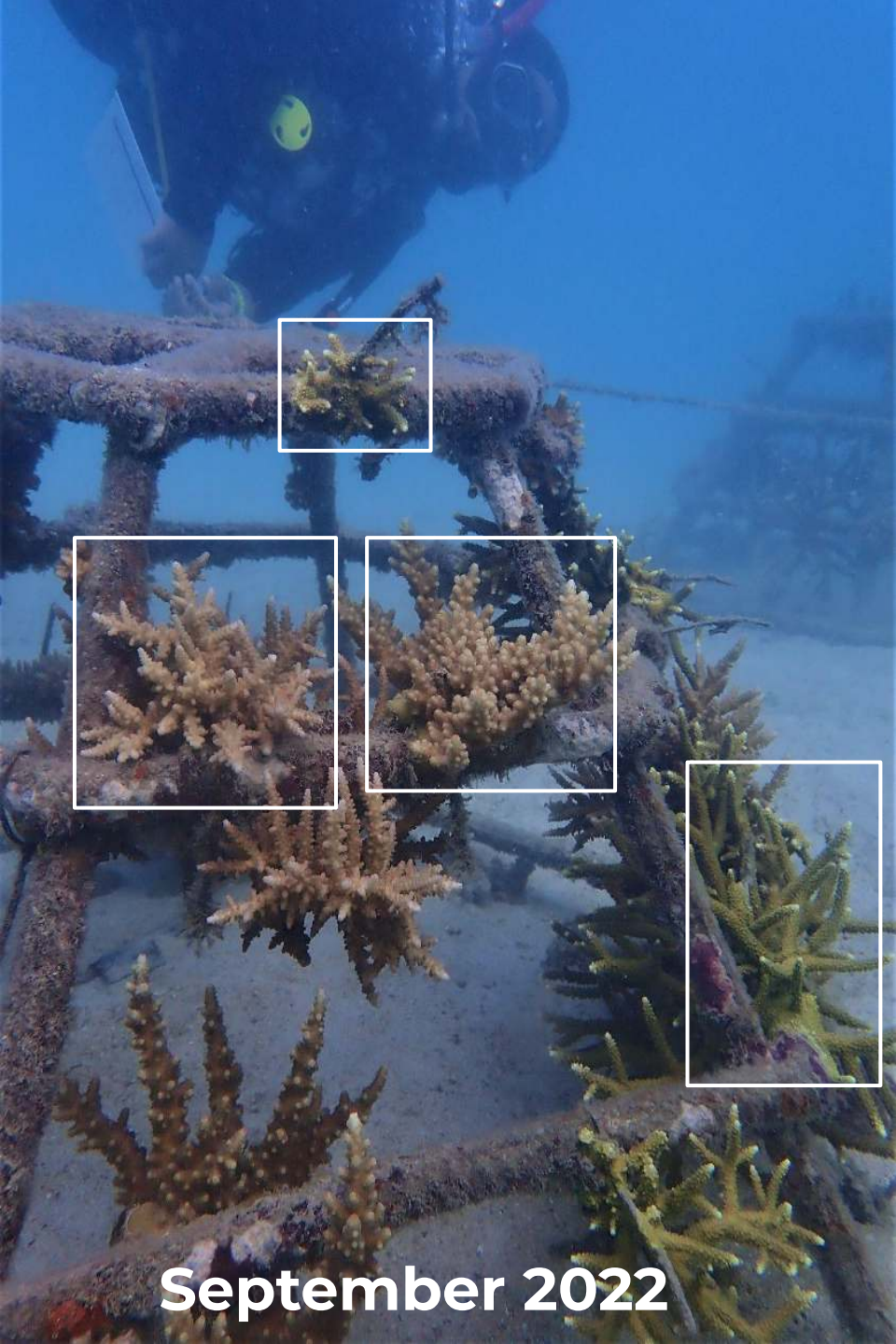
The MyDOF Coral Tripod helps in mitigating silt and sedimentation issues inherently present in coral restoration, while taking advantage of its design to accelerate coral growth. The coral nubbins are fixed directly inside the cement pots and strapped onto the frames.

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CORAL GROWTH
PROGRESS: SPIDER
WEB



October 2020



September 2022

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Reef Care Data

A total of **61** species
of fish observed and
recorded in our Reef
Care area

SPECIES LIST 📖

Fish Diversity in Alunan House Reef



Pomacentridae
(Damselfish)
20%



Labridae
(Wrasse)
11%



Scaridae
(Parrotfish)
10%



Serranidae
(Grouper)
5%

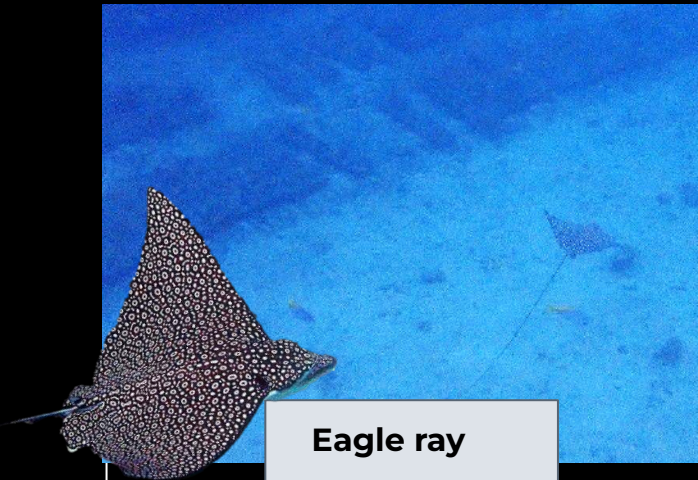


Nemipteridae
(Bream)
5%



Muraenidae
(Moray eel)
5%

Iconic species around Alunan Nursery



Eagle ray



**Humphead
Parrotfish**



Grey Bamboo Reef Shark



Guitarshark

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Reef Care Data

A total **66** taxa of coral reef - associated invertebrates observed and identified in our Reef Care area

*Taxa: Scientific classification of living things

**Phyla (singular-phyllum): A major group of animals & plants sharing one or more fundamental characteristics that sets them apart from each other

***This page excludes coral species

Taxa* Diversity in Alunan House Reef Classified by Phyla**



Mollusca

(Snail, clam, squid, sea slug)

51.5%



Echinodermata

(Sea cucumber, starfish, sea urchin)

19.7%



Cnidaria***

(Anemone, jellyfish)

9.1%



Arthropoda

(Crab, Shrimp)

7.6%

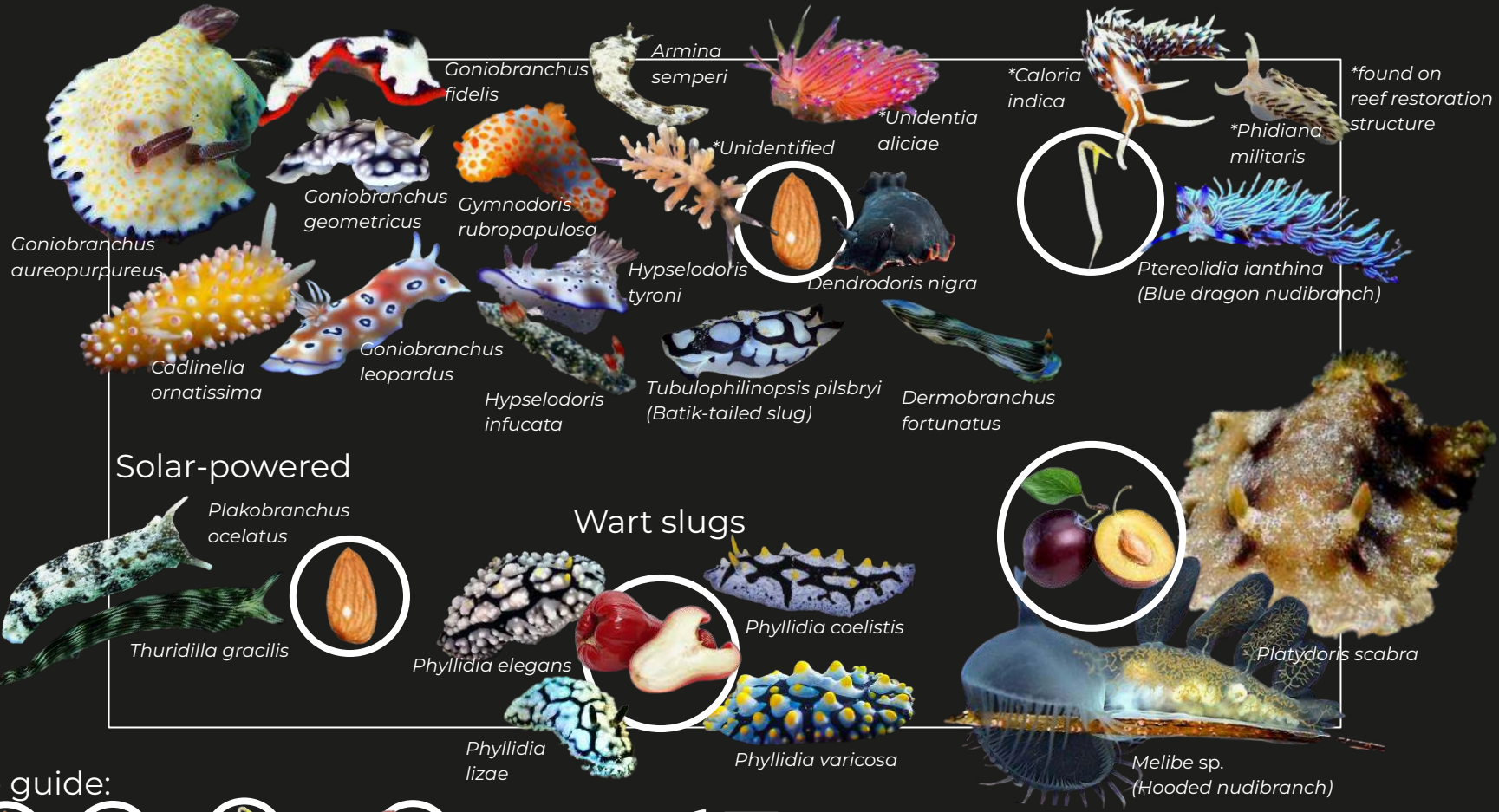


Annelida



(Marine Worm)

6.1%

INVERTEBRATES: NUDIBRANCH & SEA SLUG



Size guide:

 Almond 3 cm
 Plum 7 cm
 Bean Sprout 3.5 cm
 Java Apple 5 cm

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**Pictures are not to scale. Size guide can be used for easy reference to actual organism size.

18 TURTLE RESCUE SUMMARY

Egg Retrieval



On September 8th, approximately 60 turtle eggs were recovered from local poachers.

Artificial Nest



Artificial nest prepared to imitate real life nesting chambers to yield optimal results.

Burying & Relocation



Eggs were gently placed inside nest and covered to let nature takes its course.

Buried date : Sept 8th
No. of eggs : 60
Hatch date : Nov 14th
Incubation period : 67 days

RESULTS

51.7 %

SUCCESS RATE

Half of the nest were successfully incubated and released



Dead fetus



Success hatchling



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VOLUNTEERING

CORAL & DIVE VOLUNTEER

Marine Biology undergraduate, Dalhousie University, Canada

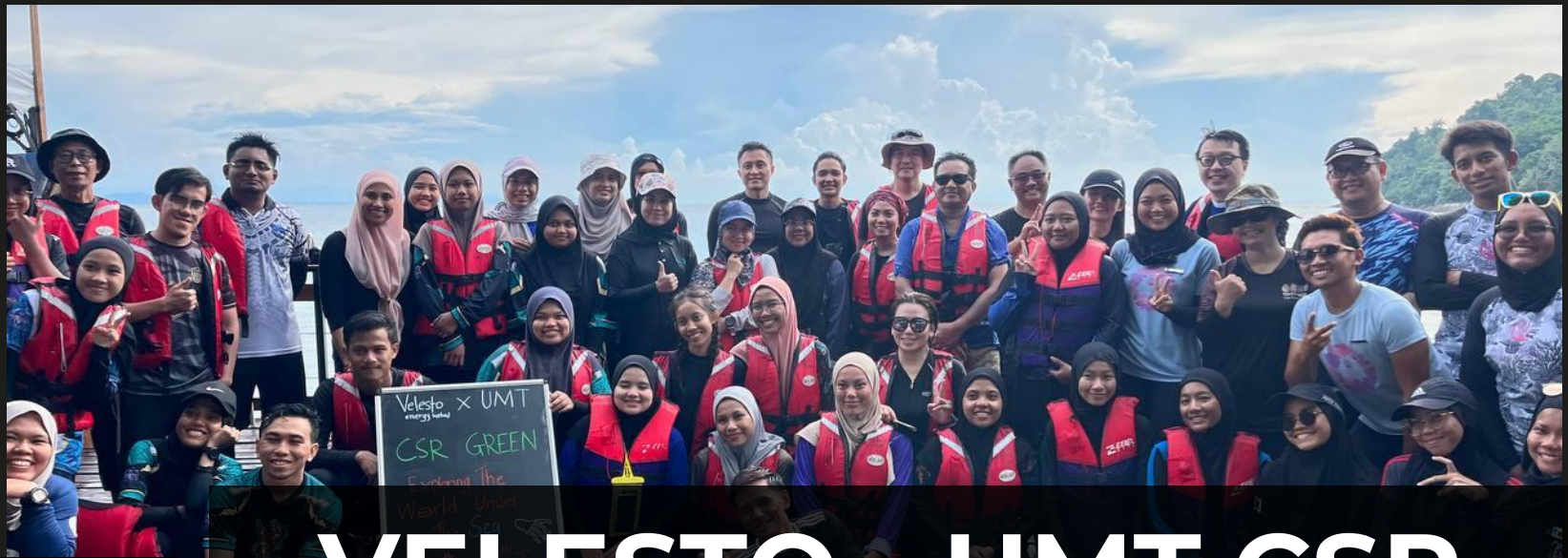


Proactive in supporting in-house marine biologists in his first marine conservation event with Alunan Coral Project

Experienced real-life work as a marine biologist during his summer holidays

Attentive to all Eco-snorkelling tour participants with positive energy

Shawn



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VELESTO - UMT CSR GREEN

As part of their sustainable development program, Veleso Energy Berhad collaborated with Universiti Malaysia Terengganu (UMT) to increase awareness amongst students as well as making a meaningful contribution to marine conservation through nursery establishment.





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Wildlife Conservation Project (WCP) by Charisma Movement

Charisma Movement was established with an aim to raise awareness and the spirit of volunteerism among youth through a hands-on experience in coral reef conservation.

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Prince Of Wales Island International School (POWIIS), Penang.



A coral restoration workshop in collaboration with Fuze Ecoteer and Alunan Coral Project for students from POWIIS to learn more about corals, marine life, and importance of coral conservation for the environment.



NURSERY SURVEY

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Involvement of Perhentian dive centres to encourage divers and dive professionals to get involved in our coral conservation to increase awareness on the threats faced by coral reefs

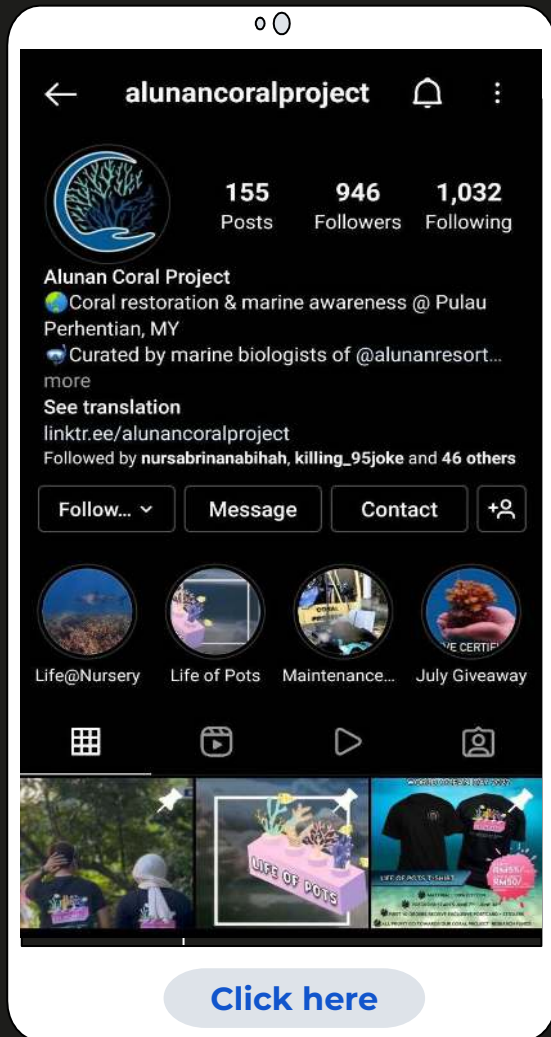


Awareness

Marine awareness & coral restoration activity with in-house guests & staffs.

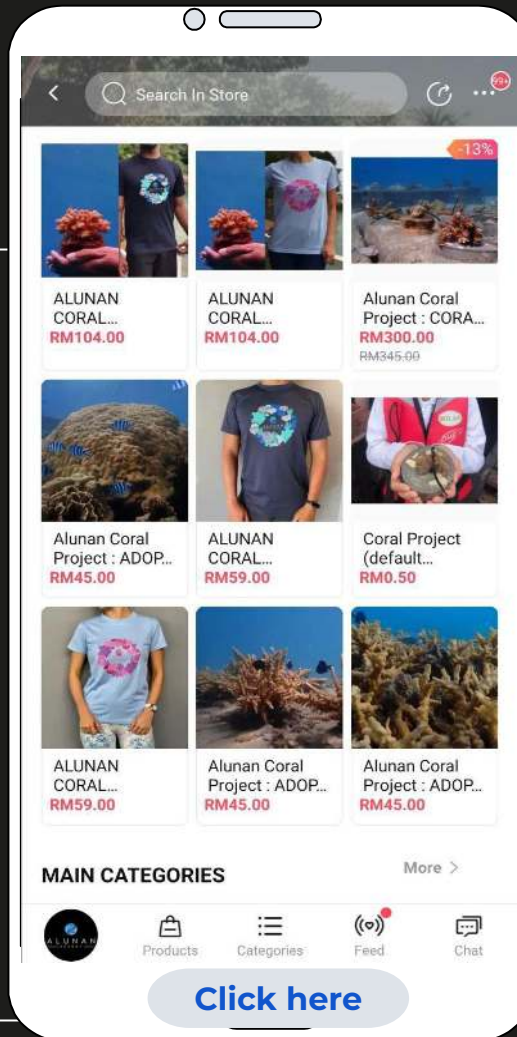


25
Awareness



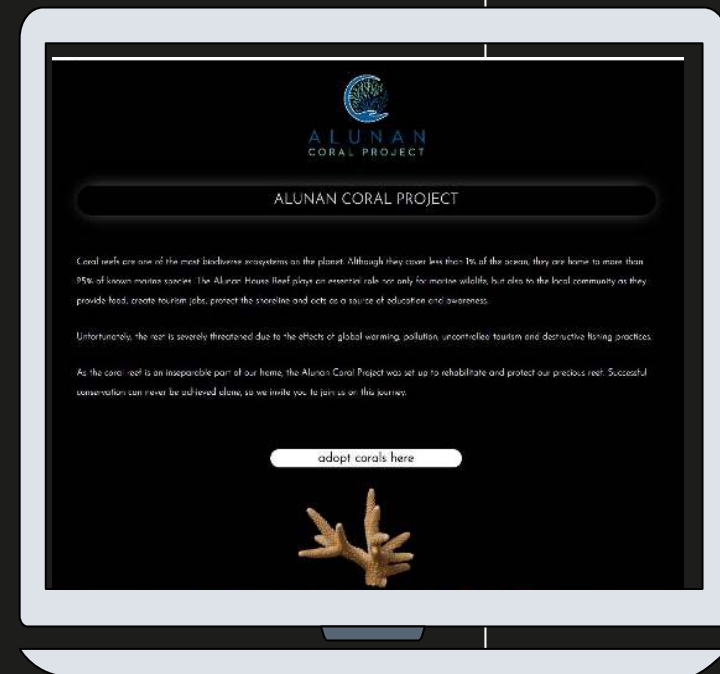
Instagram account

Reduces the gap between conservation & people through direct interaction and live updates



Merchandise for Conservation

Through an e-commerce platform (Lazada), we managed to raise funds for our restoration work from a wider audience



Website Page

A page dedicated to Alunan Coral Project to increase awareness of visitors/potential participants before they come to the island. Our reports are also made available for public to access.

APPENDIX

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List of coral species

Genus	Common name
Acropora	Staghorn coral, table coral
Pocillopora	Cauliflower coral
Echinopora	Hedgehog coral
Porites	Boulder coral
Favia	Knob coral
Favites	Star coral
Platygyra	Lesser valley coral
Hydnophora	Spine coral
Gardineroseris	Honeycomb coral
Galaxea	Octopus coral
Symphyllia	Sinuuous cup coral
Polyphyllia	Joker's boomerang coral

Genus	Common name
Lobophytum	Cabbage leather coral
Psammacora	Cat's paw coral
Pavona	Cactus coral
Millepora	Fire coral
Sinularia	Finger leather coral

List of Fish Species

Family	Species
Carcharhinidae (Requiem Sharks)	<i>Carcharhinus melanopterus</i>
Scyliorhinidae (Catsharks)	<i>Atelomycterus marmoratus</i>
Hemiscyllidae (Bamboosharks)	<i>Chiloscyllium griseum</i>
Dasyatidae (Whiptail Stingrays)	<i>Taeniura lymma</i>
Myliobatidae (Eagle Rays)	<i>Aetobatus narinari</i>
Labridae (Wrasses)	<i>Thalassoma lunare</i>
	<i>Hemigymnus melapterus</i>
	<i>Cheilinus chlorourus</i>
	<i>Cheilinus trilobatus</i>
	<i>Halichoeres chloropterus</i>
	<i>Halichoeres hortulanus</i>
	<i>Diproctacanthus xanthurus</i>
	<i>Labroides dimidiatus</i>

Family	Species
Caesionidae (Fusiliers)	<i>Caesio teres</i>
	<i>Caesio caeruleaurea</i>
Scaridae (Parrotfishes)	<i>Scarus rivulatus</i>
	<i>Scarus oviceps</i>
	<i>Scarus ghobban</i>
	<i>Scarus quoyi</i>
	<i>Scarus prasiognathos</i>
	<i>Bolbometopon muricatum</i>
Siganidae (Rabbitfishes)	<i>Siganus guttatus</i>
	<i>Siganus virgatus</i>

Family	Species
Pomacentridae (Damsel­fishes and Anemonefishes)	<i>Amphirion clarkii</i>
	<i>Amphirion ocellaris</i>
	<i>Neopomacentrus cyanomos</i>
	<i>Pomacentrus moluccensis</i>
	<i>Pomacentrus bankanensis</i>
	<i>Pomacentrus simsiang</i>
	<i>Neogyphidodon carlsoni</i>
	<i>Abudefduf sexfasciatus</i>
	<i>Abudefduf sordidus</i>
	<i>Abudefduf bengalensis</i>
	<i>Chromis caudalis</i>
Chaetodontidae (Butterflyfishes)	<i>Chaetodon octofasciatus</i>

Family	Species
Serranidae (Groupers)	<i>Epinephelus fasciatus</i>
	<i>Plectropomus maculatus</i>
	<i>Cephalopholis boenak</i>
	<i>Diploprion bifasciatum</i>
Nemipteridae (Threadfin and Monocle Breams)	<i>Scolopsis margatifera</i>
	<i>Scolopsis vosmeri</i>
	<i>Scolopsis bilineatus</i>
Lutjanidae (Snappers)	<i>Lutjanus ehrenbergii</i>
	<i>Lutjanus decussatus</i>
Blenniidae (Blennies)	<i>Petroscirtes xestus</i>
Gobiidae (Gobies)	<i>Istigobius decorates</i>
Ephippidae (Spadefishes or Batfishes)	<i>Platax sp.</i>
Pomacanthidae (Angelfishes)	<i>Pomacanthus annularis</i>

Family	Species
Pempheridae (Sweepers)	<i>Pempheris adusta</i>
Mullidae (Goatfishes)	<i>Upeneus tragula</i>
Tetraodontidae (Puffers)	<i>Arothron mappa</i>
Ostraciidae (Boxfishes)	<i>Ostracion cubicus</i>
Balistidae (Triggerfishes)	<i>Balistoides viridescens</i>
	<i>Pseudobalistes flavimarginatus</i>
Muraenidae (Moray Eels)	<i>Echidna nebulosa</i>
	<i>Gymnothorax thyrsoideus</i>
	<i>Gymnothorax favagineus</i>
Synanceiidae (Stonefishes)	<i>Inimicus didactylus</i>
Scorpaenidae (Scorpionfishes)	<i>Pterois volitans</i>
	<i>Scorpaenopsis sp.</i>
Holocentridae (Soldierfishes)	<i>Sargocentron rubrum</i>

List of Invertebrate Taxa

Phylum	Class	Order	Family	Genus	Species	Common name	
Echinodermata	Asteroidea	Forcipulatida	Asteriidae			Starfish	
		Spinulosida	Acanthasteridae	<i>Acanthaster</i>	<i>planci</i>	Crown-of-thorn starfish	
		Valvatida	Oreasteridae	<i>Culcita</i>	<i>novaeaguinae</i>	Cushion star	
	Crinoidea	Comatulida				Feather star	
	Echinoidea	Diadematoidea	Diadematida		<i>Diadema</i>	<i>setosum</i>	Sea urchin
					<i>Echinothrix</i>	<i>calamaris</i>	Banded sea urchin
	Holothuroidea	Apodida	Synaptidae				Synaptid sea cucumber
		Holothuriida	Holothuriidae		<i>Pearsonothuria</i>	<i>graeffeii</i>	Graeffe's sea cucumber
					<i>Bohadschia</i>	<i>vitiensis</i>	Brown Sandfish
	<i>Holothuria</i>			<i>hilia</i>	Light spotted sea cucumber		
Ophiuroidea	Ophiurida					Brittle star	

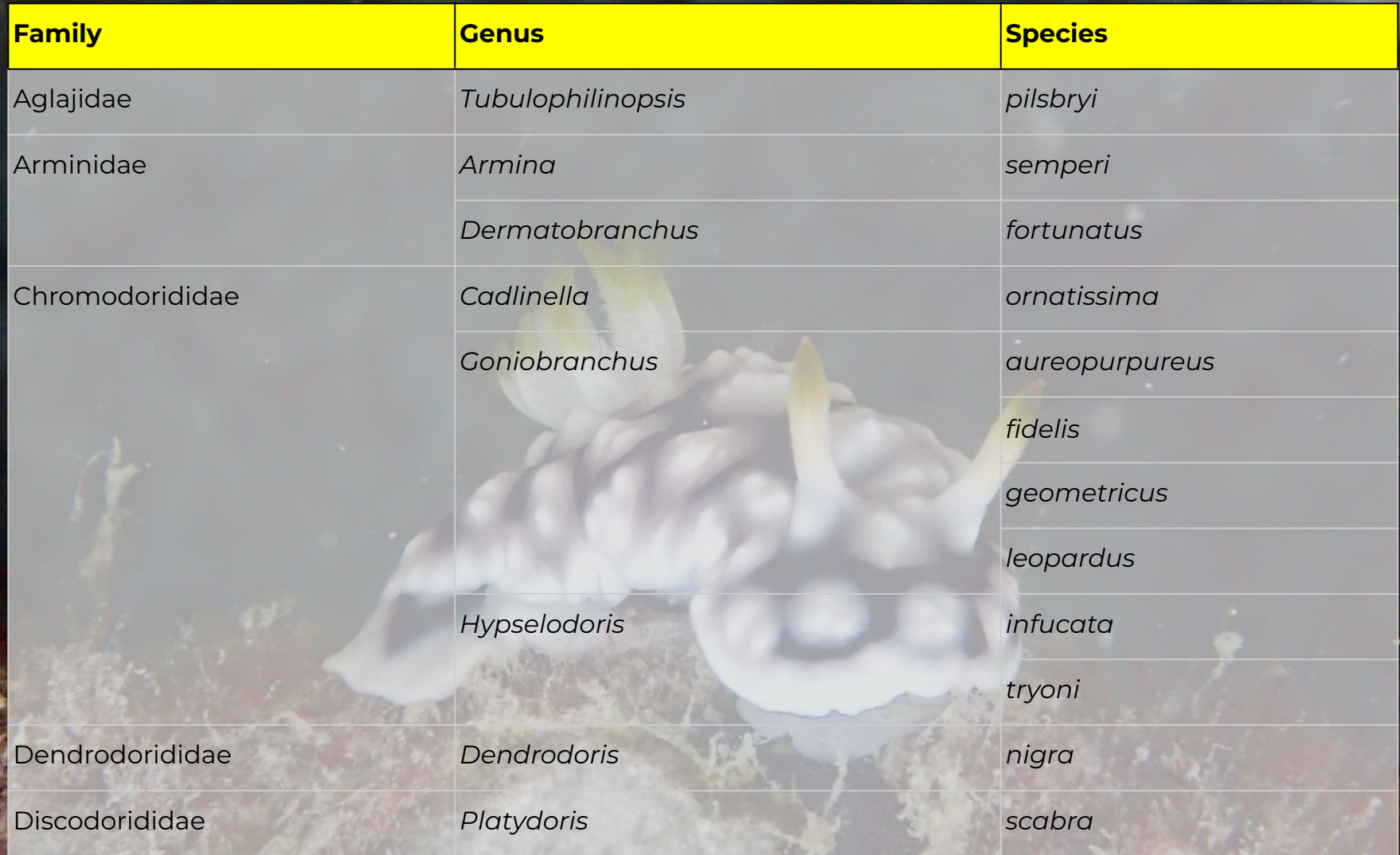
Mollusca	Bivalvia	Cardiida	Cardiidae	<i>Tridacna</i>	<i>Maxima</i>	Small giant clam
				<i>Tridacna</i>	<i>Squamosa</i>	Fluted giant clam
Cephalopoda	Cephalopoda	Octopoda	Octopodidae	<i>Octopus</i>	<i>sp.</i>	Octopus
		Sepiida	Sepiidae	<i>Sepia</i>		Cuttlefish
		Teuthida	Loliginidae			Squid
Gastropoda	Littorinimorpha	Littorinimorpha	Cypraeidae	<i>Talparia</i>	<i>talpa</i>	Chocolate banded cowry
			Muricidae	<i>Drupella</i>		Drupella snail
			Stomatellinae	<i>Stomatella</i>		Stomatella snail

Cnidaria	Anthozoa	Actiniaria	Actinodendronidae	<i>Actinodendron</i>	<i>plumosum</i>	Hell's fire anemone
			Stichodactylidae	<i>Heteractis</i>	<i>aurora</i>	Beaded sea anemone
				<i>Heteractis</i>	<i>magnifica</i>	Sea anemone
	Pennatulacea			Sea pen		
	Spirularia	Cerianthidae	<i>Ceriatrus</i>		Tube dwelling anemone	
	Scyphozoa			Jellyfish		
Annelida	Polychaeta		Serpulidae	<i>Spirobranchus</i>	<i>giganteus</i>	Christmas tree worm
			Sabellidae	<i>Sabella</i>		White tube worm
				<i>Sabellastrate</i>	<i>spectabilis</i>	Feather duster worm
						Bristle worm

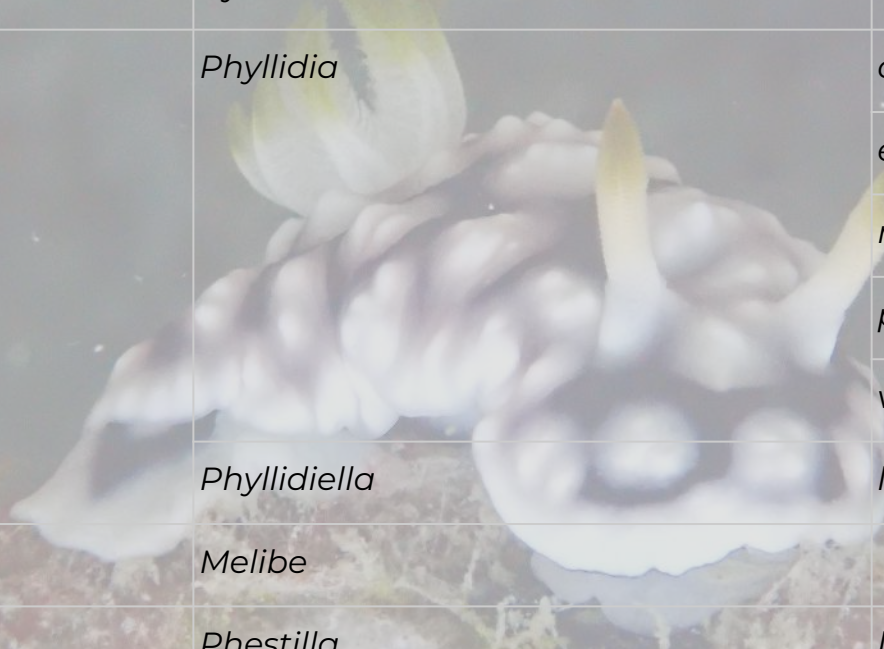
Arthropoda	Malacostraca	Decapoda	Carpiliidae	<i>Carpilius</i>	<i>maculatus</i>	Spotted reef crab
			Palaemonidae	<i>Ancylomenes</i>		Anemone shrimp
			Trapeziidae	<i>Trapezia</i>	<i>cymodoce</i>	Red coral Crab
			Xanthidae	<i>Cymo</i>	<i>andreossyi</i>	Blue eyed coral crab
	Hermit Crab					
Platyhelminthes	Rhabditophora	Polycladida	Pseudocerotidae	<i>Thysanozoon</i>	<i>nigropapillum</i>	Gold-dotted Flatworm
Nemertea	Pilidiophora	Heteronemertea	Valenciiniidae	<i>Baseodiscus</i>	<i>delineatus</i>	Very Long Ribbon Worm
Porifera	Demospongiae	Haplosclerida	Petrosiidae	<i>Xestospongia</i>	<i>testudinaria</i>	Barrel Sponge
Bryozoa						Moss Animal

List of Nudibranch Species

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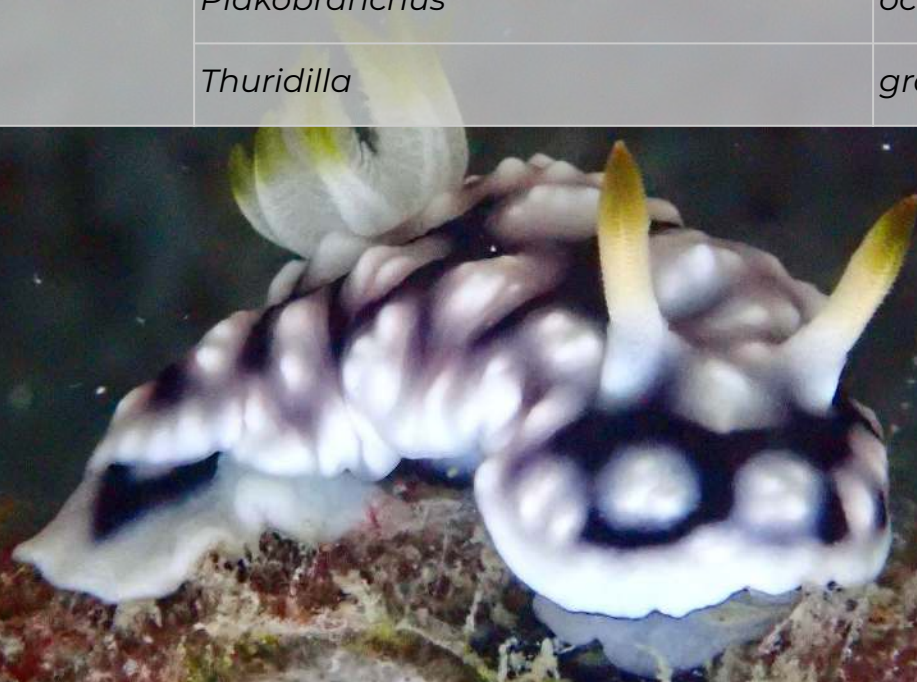


Family	Genus	Species
Aglajidae	<i>Tubulophilinopsis</i>	<i>pilsbryi</i>
Arminidae	<i>Armina</i>	<i>semperi</i>
	<i>Dermatobranchus</i>	<i>fortunatus</i>
Chromodorididae	<i>Cadlinella</i>	<i>ornatissima</i>
	<i>Goniobranchus</i>	<i>aureopurpureus</i>
		<i>fidelis</i>
		<i>geometricus</i>
	<i>leopardus</i>	
<i>Hypselodoris</i>	<i>infucata</i>	
		<i>tryoni</i>
Dendrodorididae	<i>Dendrodoris</i>	<i>nigra</i>
Discodorididae	<i>Platydoris</i>	<i>scabra</i>



Facelinidae	<i>Caloria</i>	<i>indica</i>
	<i>Phidiana</i>	<i>militaris</i>
	<i>Pteraeolidia</i>	<i>ianthina</i>
Gymnodorididae	<i>Gymnodoris</i>	<i>rubropapulosa</i>
Phyllidiidae	<i>Phyllidia</i>	<i>coelistis</i>
		<i>elegans</i>
		<i>nigra</i>
		<i>picta</i>
		<i>varicosa</i>
		<i>Phyllidiella</i>
Tethydidae	<i>Melibe</i>	
Trinchesiidae	<i>Phestilla</i>	<i>lugubris</i>

Unidentiidae	<i>Unidentia</i>	<i>aliciae</i>
Pleurobranchidae	<i>Berthellina</i>	
Plakobanchidae	<i>Plakobanchus</i>	<i>ocellatus</i>
	<i>Thuridilla</i>	<i>gracilis</i>



END OF REPORT

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