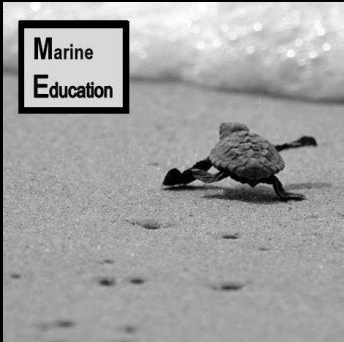


Introduction to Coral Taxonomy



Gail Riches

www.MarineEducation.com.au

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Information, identification, distribution and taxonomy of reef building corals

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Examine distributions



Coral Geographic

Species Factsheets

Authors



Charlie Veron



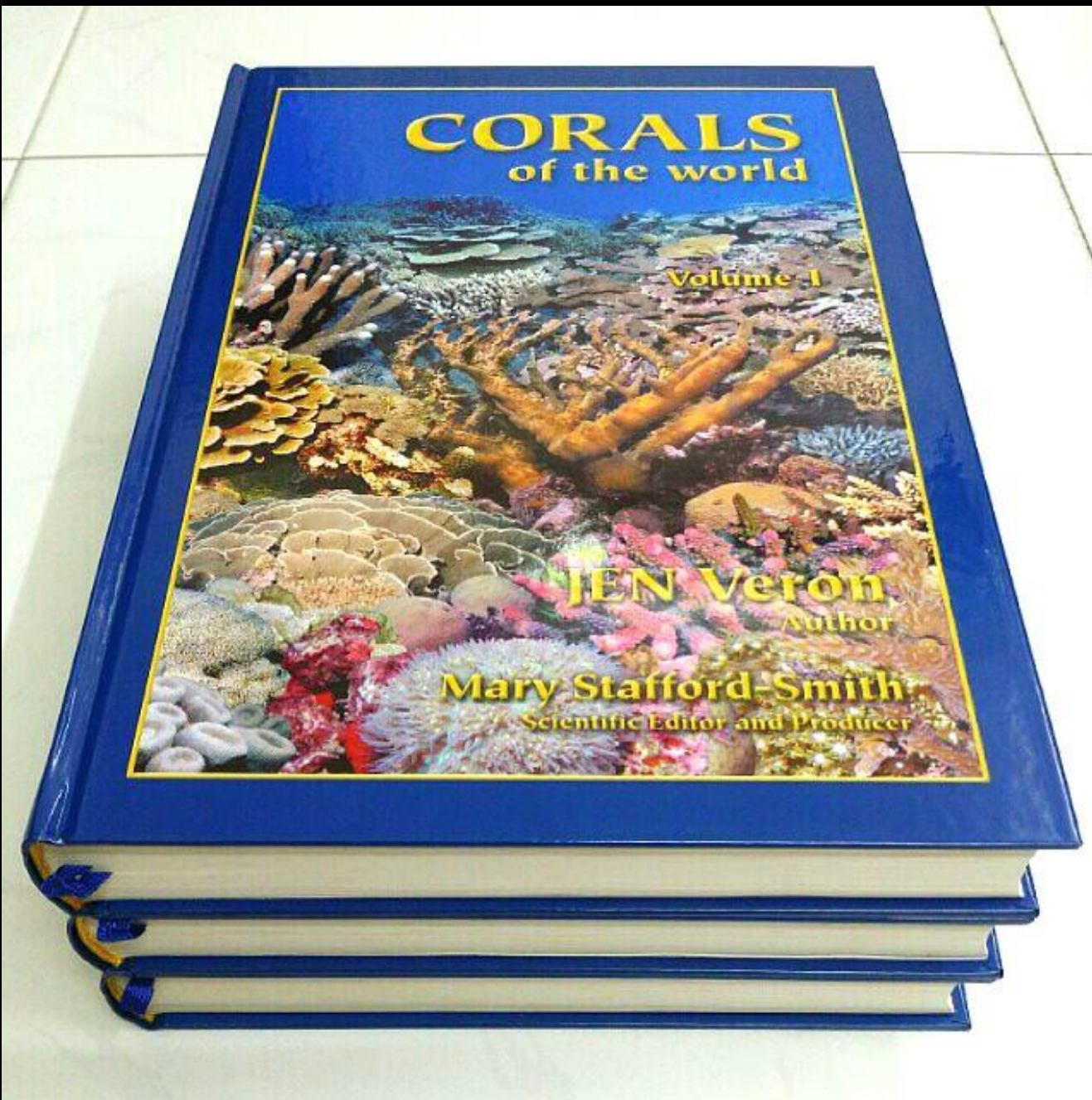
Mary Stafford-Smith



Emre Turak



Lyndon DeVantier



CORAL IDENTIFICATION GUIDE

Name:

Date:

An Introductory Guide to Coral Taxonomy



2mm

CoralOfTheWorld.org

Euphyllia bellisensis showing calice opening. INDONESIA. Photograph: Ernie Turak. Reprinted with permission¹.

¹Veron, J.E.N., Stafford-Smith, M.J., Turak, E., and Coleman, M. (2018). *Coral of the World: Indonesia* (2018). <http://www.coraloftheworld.org/indonesia>. Accessed 2019. Available at: https://doi.org/10.1007/978-94-007-5444-4_1.

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By Gal Riches

OVER 1730 IMAGES - COMPLETELY REVISED - MOLECULAR COMPLIANT

CORAL FINDER 2021



RUSSELL KELLEY

INDO PACIFIC HARD CORALS

BYO GUIDES

KEY GROUPS

BRANCHING / PLATES OF BRANCHLETS

WITH AXIAL CORALLITE	1 - 4
NO AXIAL CORALLITE	
- corallites <2mm	5 - 8
- corallites >2mm	9 - 10
- branch surface complex / angular / sculpted	11 - 12

MEANDERING RIDGES & VALLEYS

CORALLITES WITH SEPARATE WALLS	13 - 14
CORALLITES WITH SHARED OR NO WALLS	
- corallites 1-4mm	15 - 16
- corallites 4-10mm	17 - 18
- corallites >10mm	19 - 22

MASSIVE OR THICK COLONIES (excluding meandering corallites)

- corallites with separate walls <8mm	23 - 26
8-20mm	27 - 28
- corallites with no / indistinct walls linked by septo-costae	29 - 30
- corallites with shared wall <8mm	31 - 36
8-12mm	37 - 38
>12mm	39 - 40
- colony with raised skeletal surface textures	41 - 42

THIN PLATES & CRUSTS (vases, tiers, fronds, leafy & encrusting)

- raised skeletal or crumpled surface textures	43 - 44
- encrusting with rounded corallites	45 - 46
- vases or tiers -(note there are 5 galleries use TRUE SCALE QUICK INDEX p47 to explore... ..)	47 - 56
- leafy fronds or lettuce like	57 - 58
- corallites linked by continuous septo-costae	59 - 60
- with fingers or tubes arising	61 - 62

SOLITARY OR ISOLATED OR FREE LIVING

- free living -> disc circular or oval -> 10-30cm with single mouth	63 - 64
- free living -> disc elongate &/OR domed	65 - 66
- free living -> other	67 - 68
- isolated & attached	69 - 70

LARGE, DAYTIME EXPANDED POLYPS..... 71 - 74

COLUMNS 75 - 76

BLUE, FIRE, ORGAN PIPE, LACE CORALS & SPICULITES..... 77 - 78

The Coral Compactus: WESTERN AUSTRALIA



Hard Coral Genus Identification Guide

Version 2

Zoe Richards



WAM WESTERN AUSTRALIAN MUSEUM



woodside



Australian Government Department of Environment and Energy



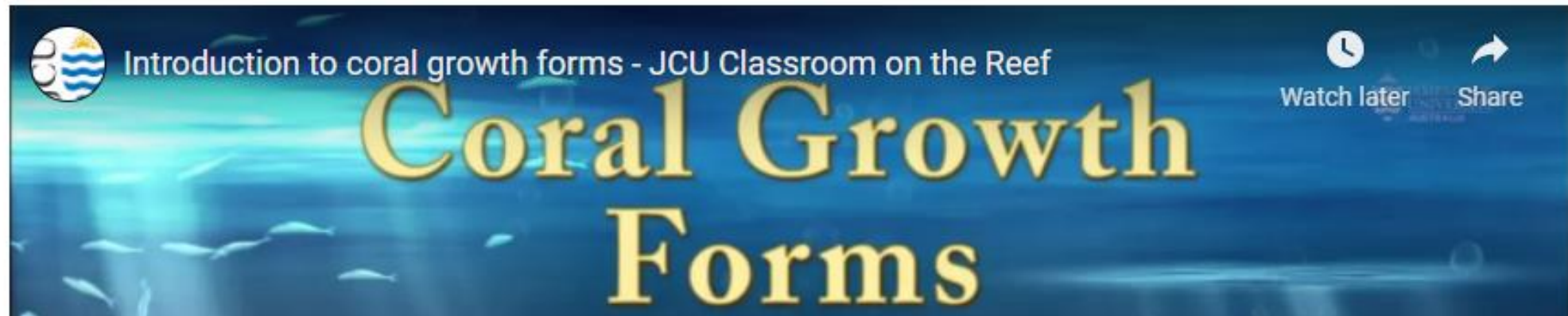
Australian Biological Resources Study

Coral identification

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An introduction to coral growth forms

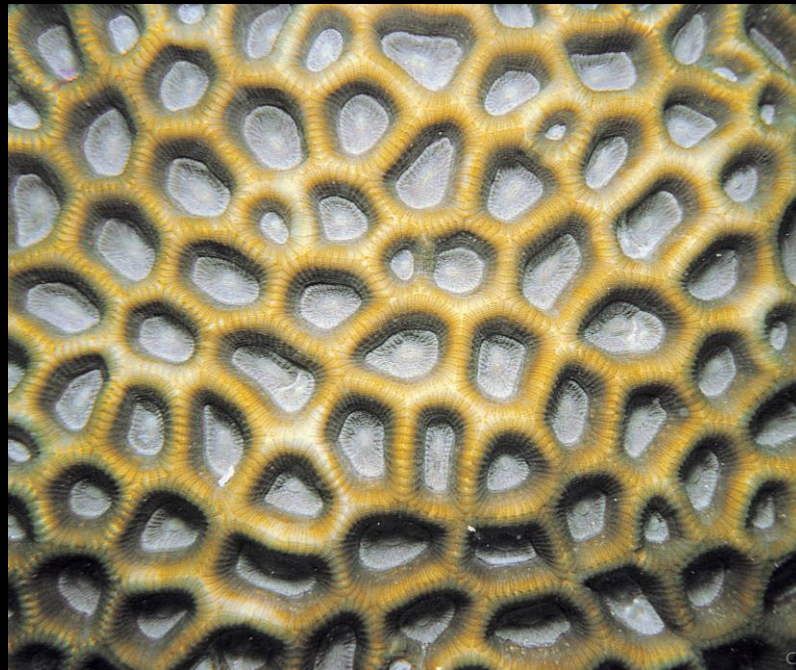
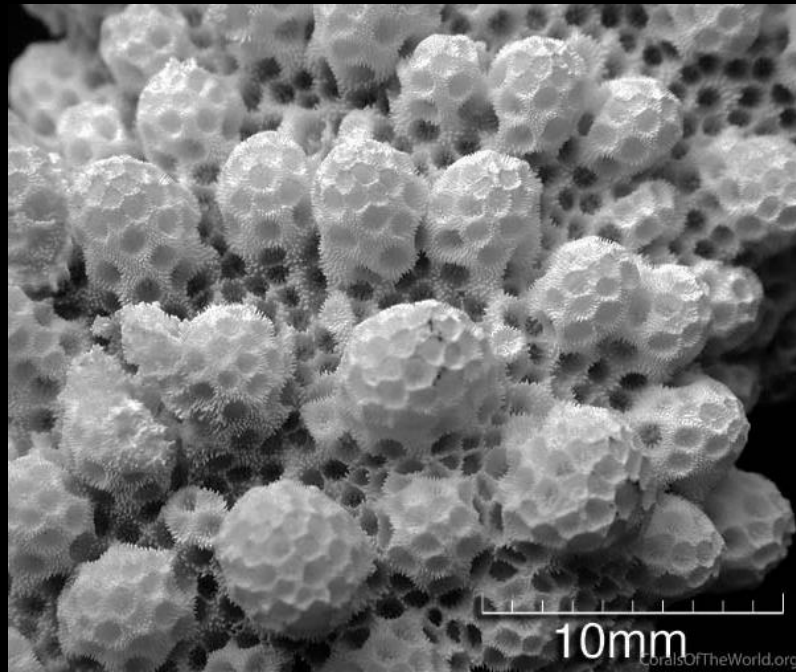
with Dr Mia Hoogenboom

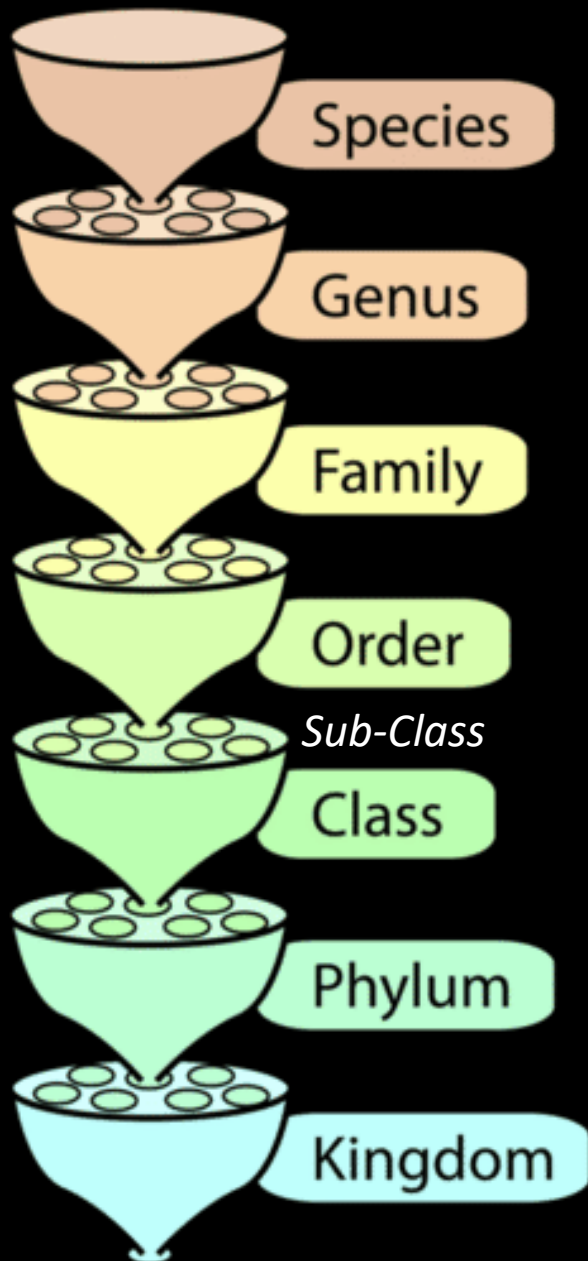




- Youtube Channel
- Freebies

Connecting Marine
Teachers to each other,
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Species

Genus

Family

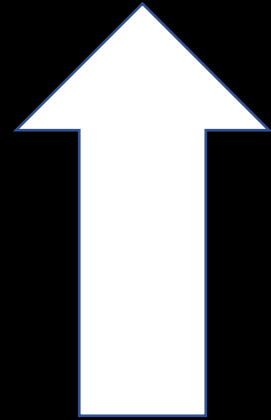
Order

Sub-Class

Class

Phylum

Kingdom



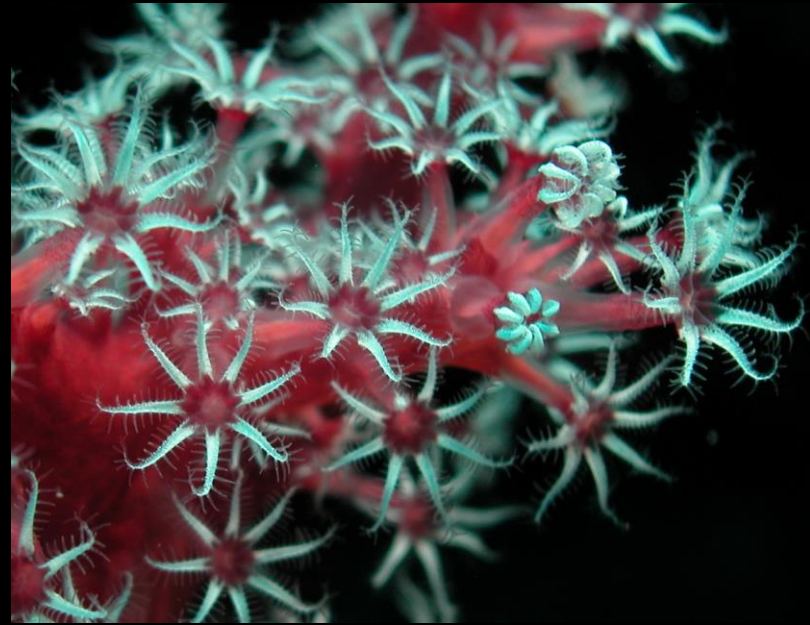
Scleractinia

Hexacorals and Octocorals

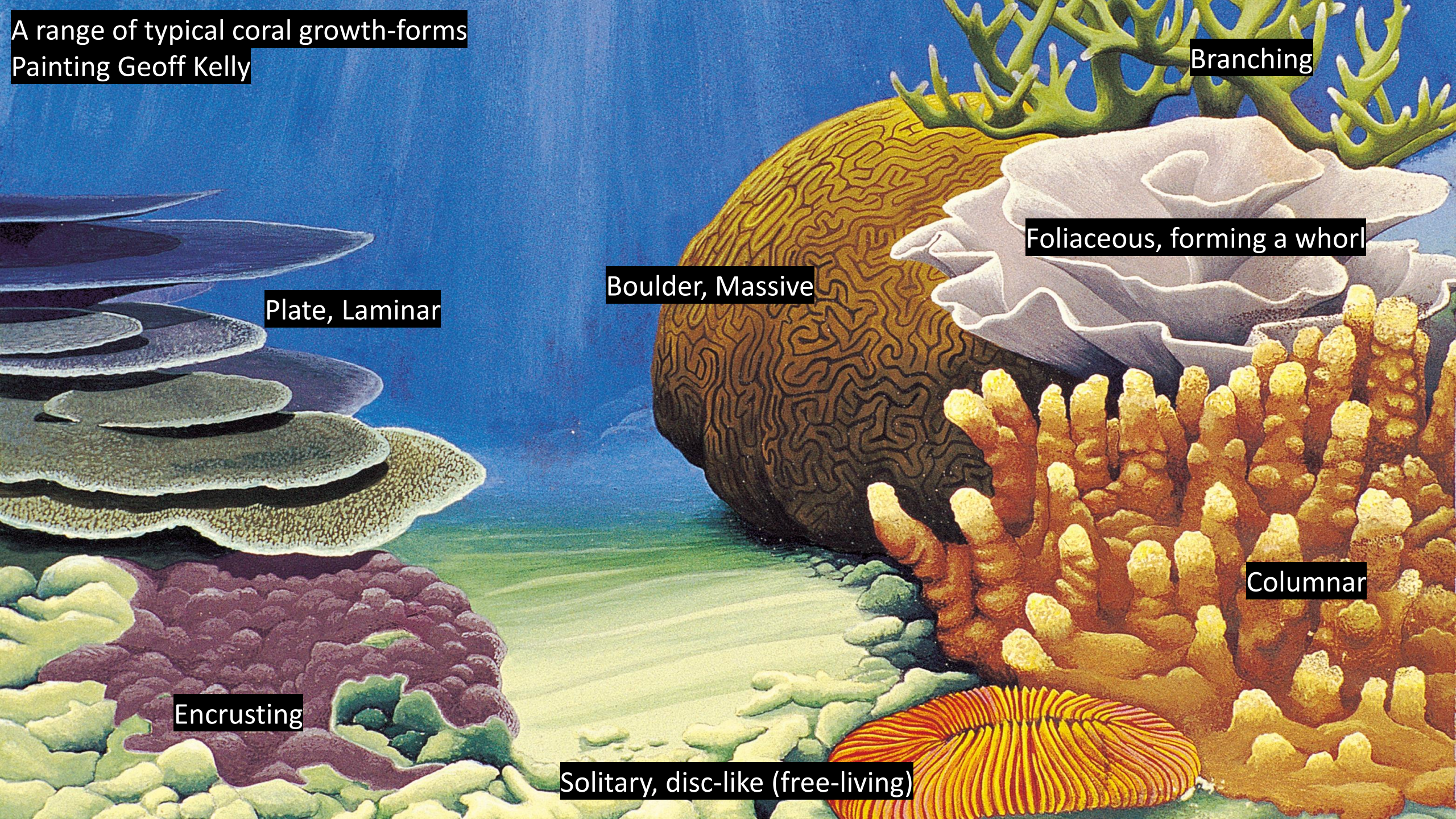
Anthozoa

Cnidaria

Animal



A range of typical coral growth-forms
Painting Geoff Kelly



Branching

Foliaceous, forming a whorl

Boulder, Massive

Plate, Laminar

Columnar

Encrusting

Solitary, disc-like (free-living)

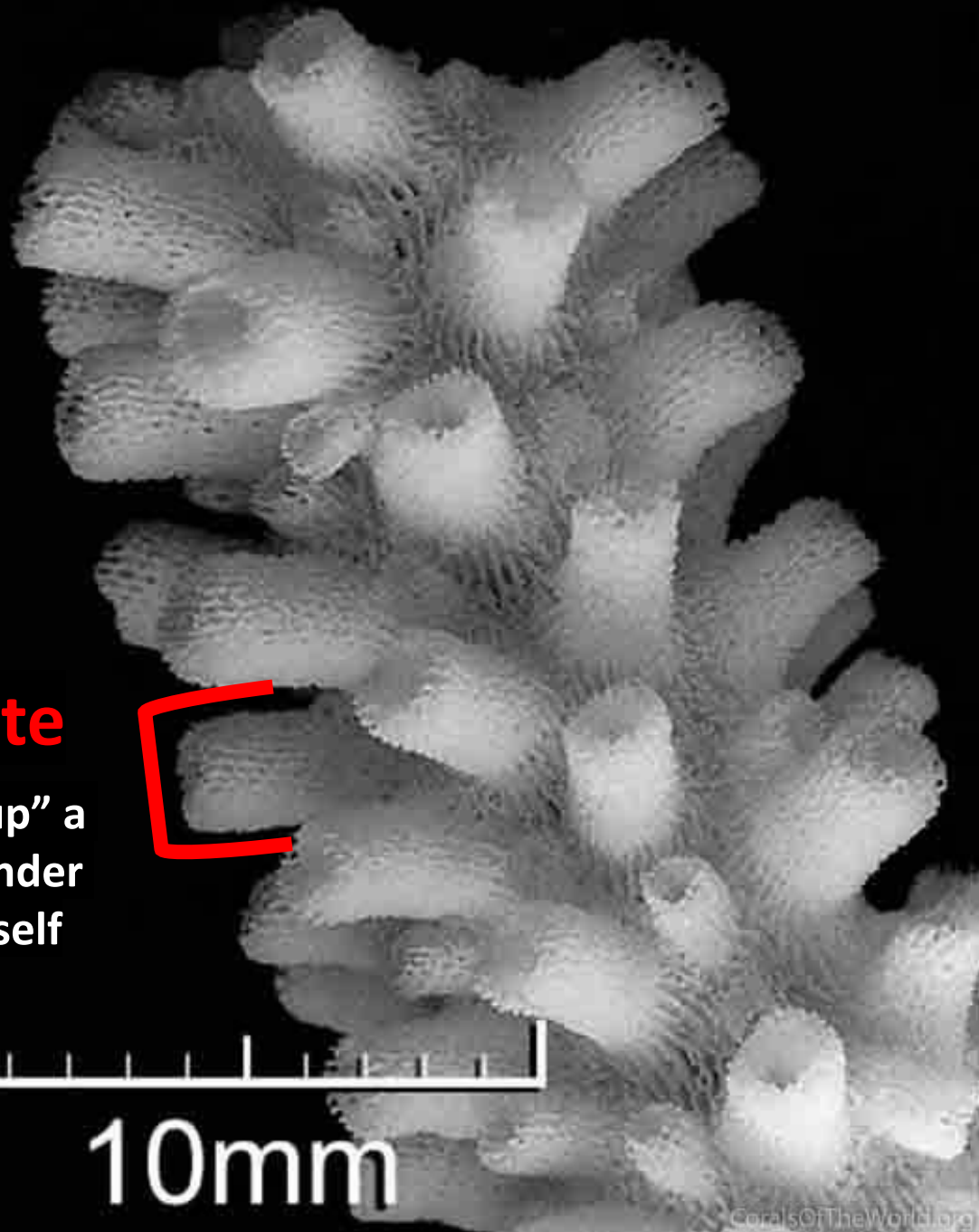
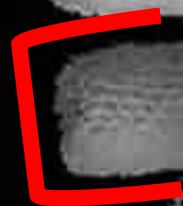
Growth form = Position and size of coral polyps



Corallite
the skeletal "cup" a
polyp makes under
and around itself



10mm

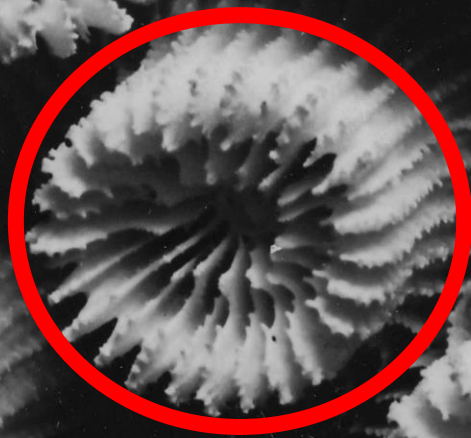


CoralsOfTheWorld.org

Image: Charlie Veron

Favia amicornum
(pineapple coral)

Wall



Acropora

Derived from the Greek word

"akron" meaning *"summit"*

and refers to the presence of a corallite at the tip of each branch of coral.

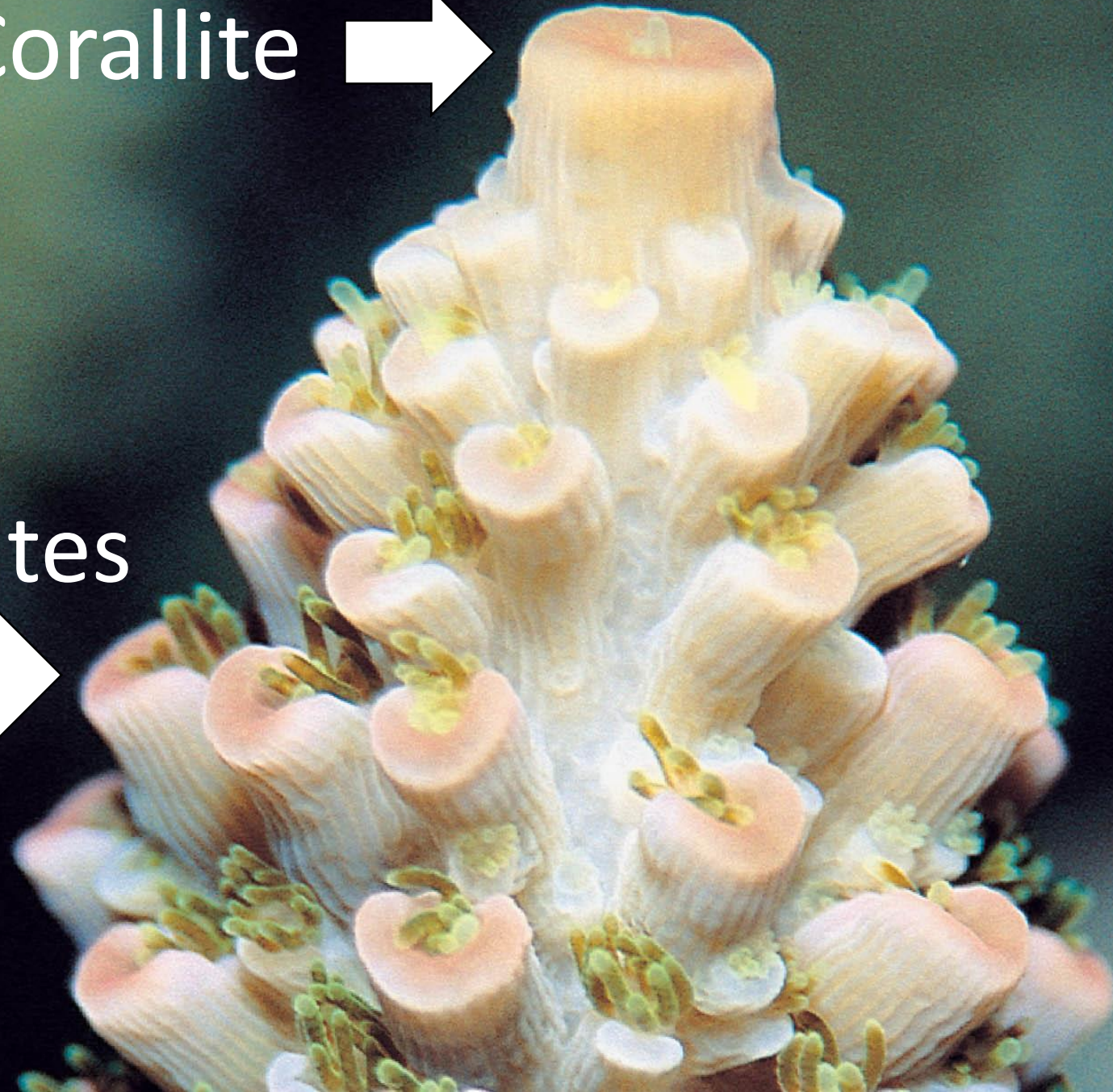
Acropora intermedia



Image: Emre Turak

Axial Corallite →

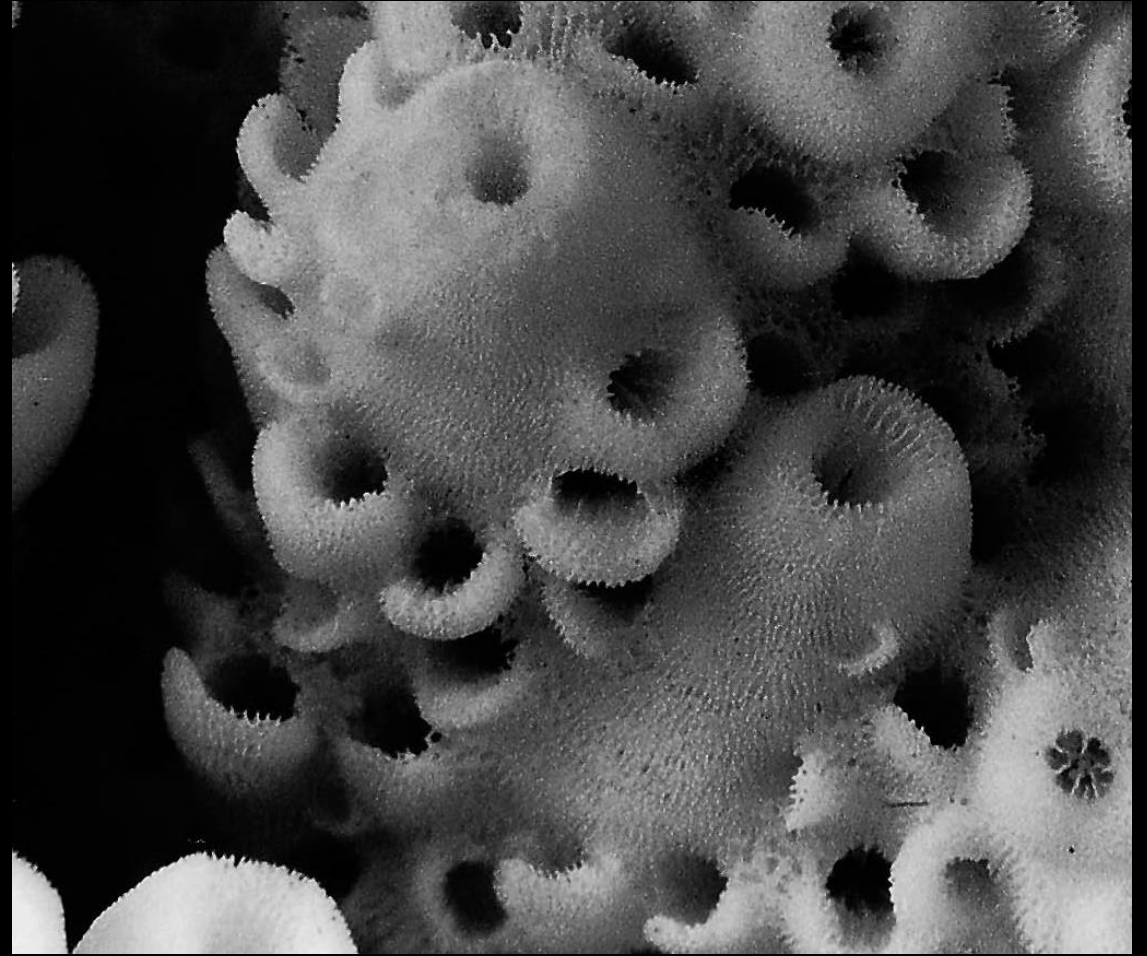
Radial Corallites



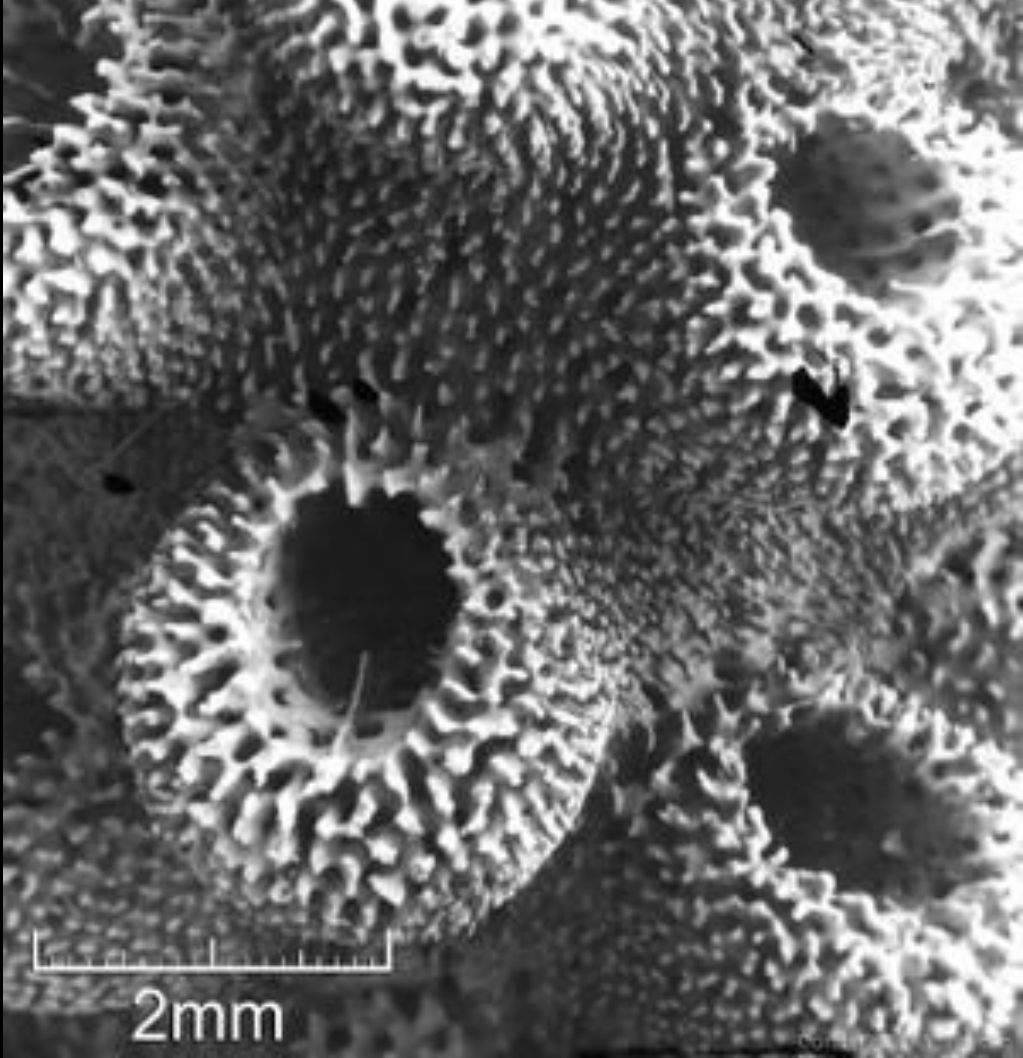
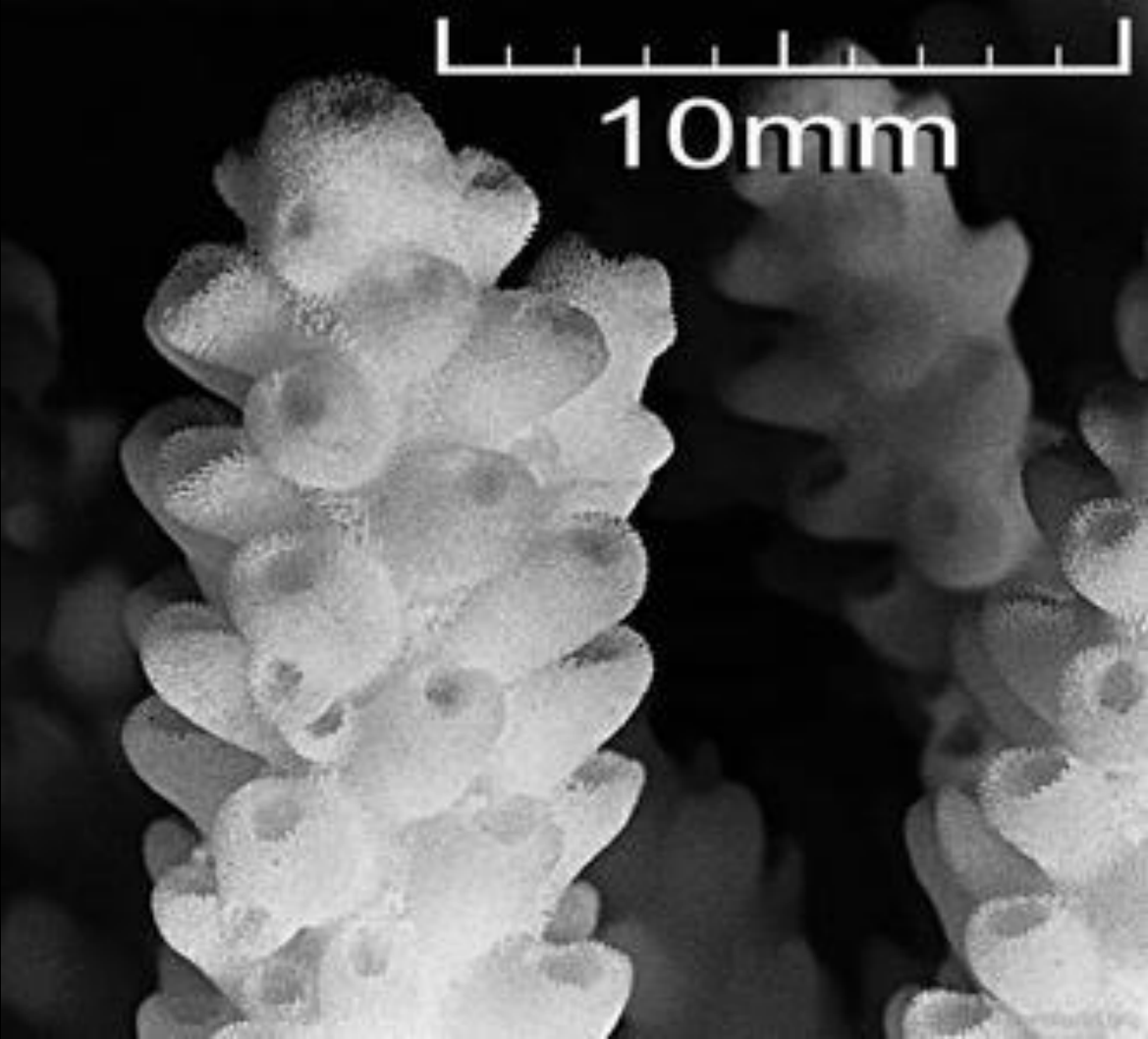
Acropora cophodactyla

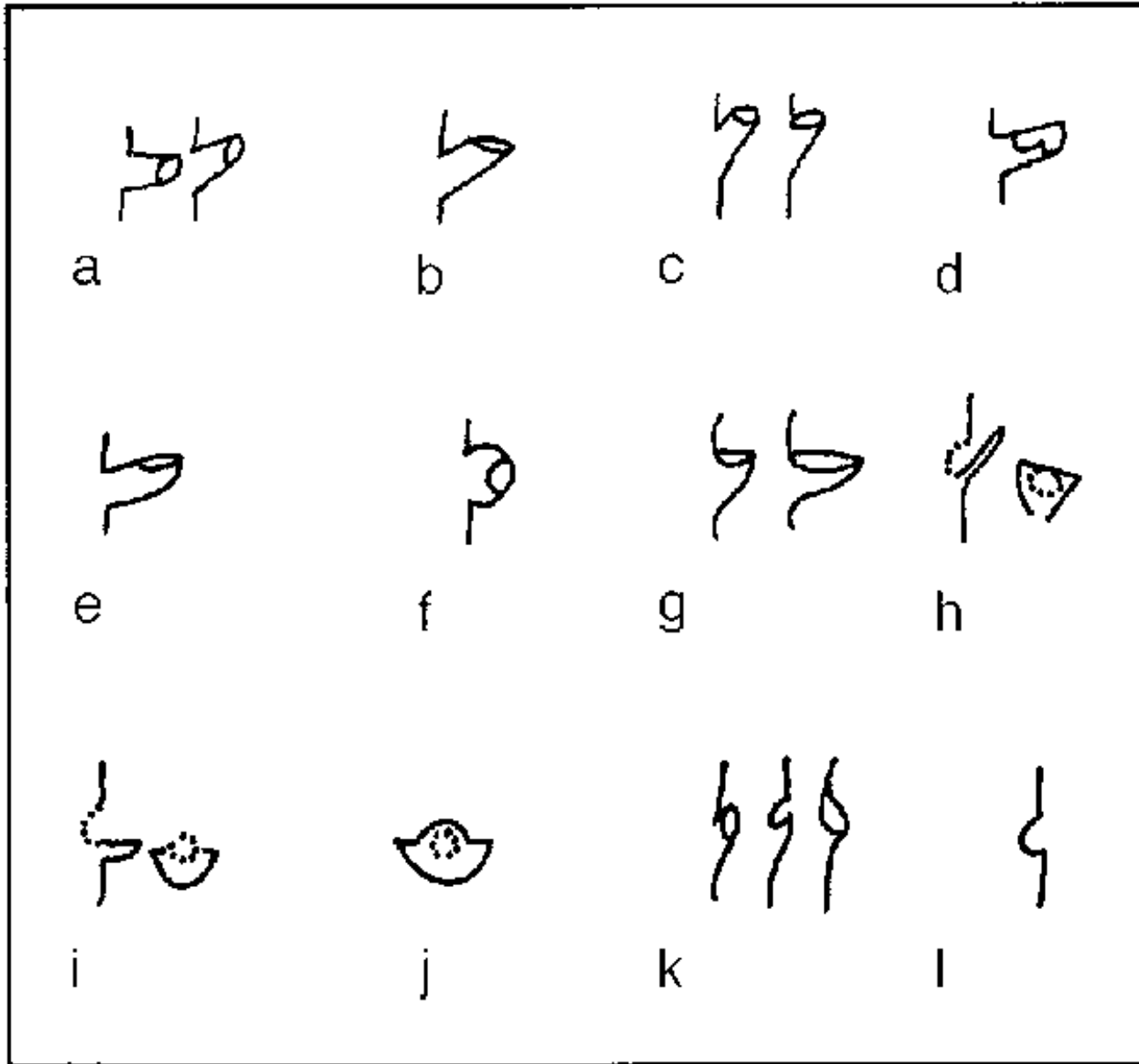


CoralsOfTheWorld.org



Acropora chesterfieldensis





Diagrammatic representation of corallite shape categories in Wallace *et al.*, (1997).

a: tubular, round opening

b: tubular, oblique opening

c: tubular appressed

d: tubular, dimidiate opening

e: tubular, nariform opening

f: rounded tubular

g: nariform

h: labellate, sealy lip

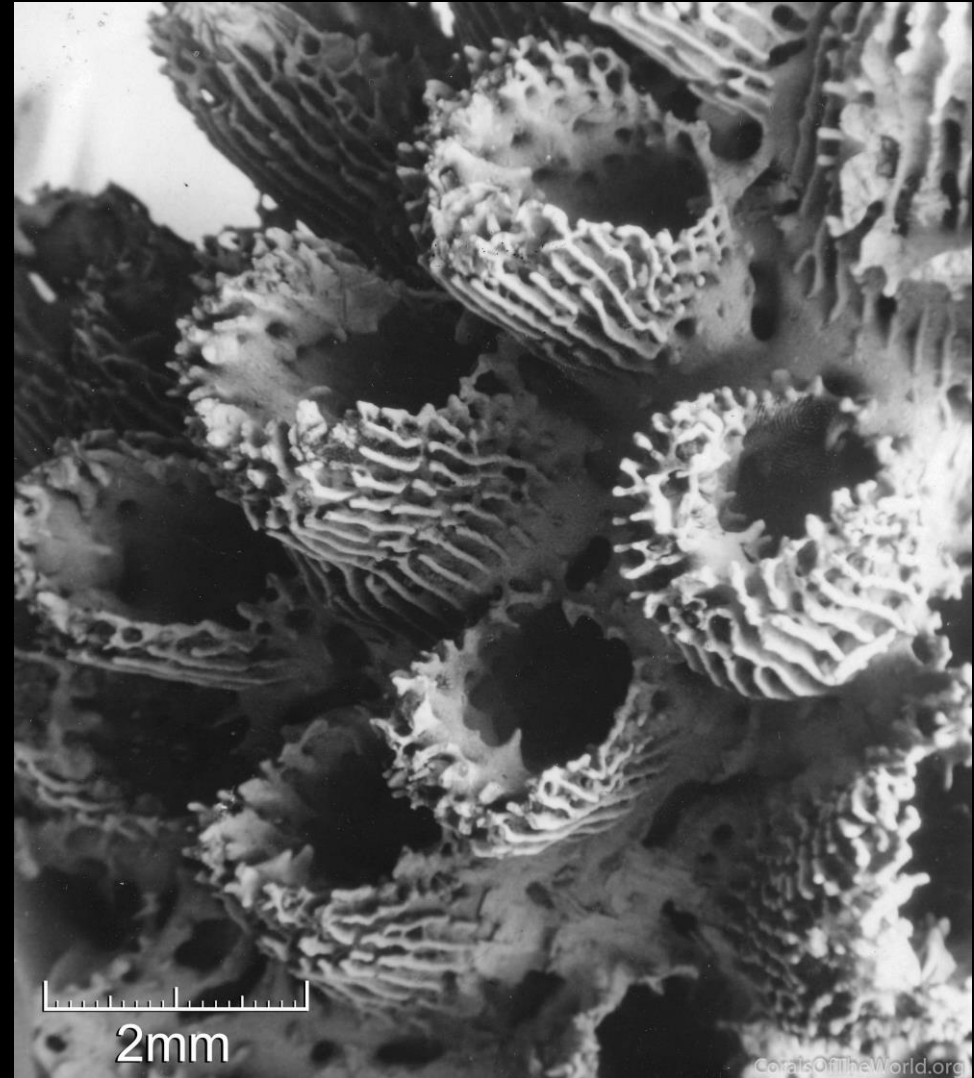
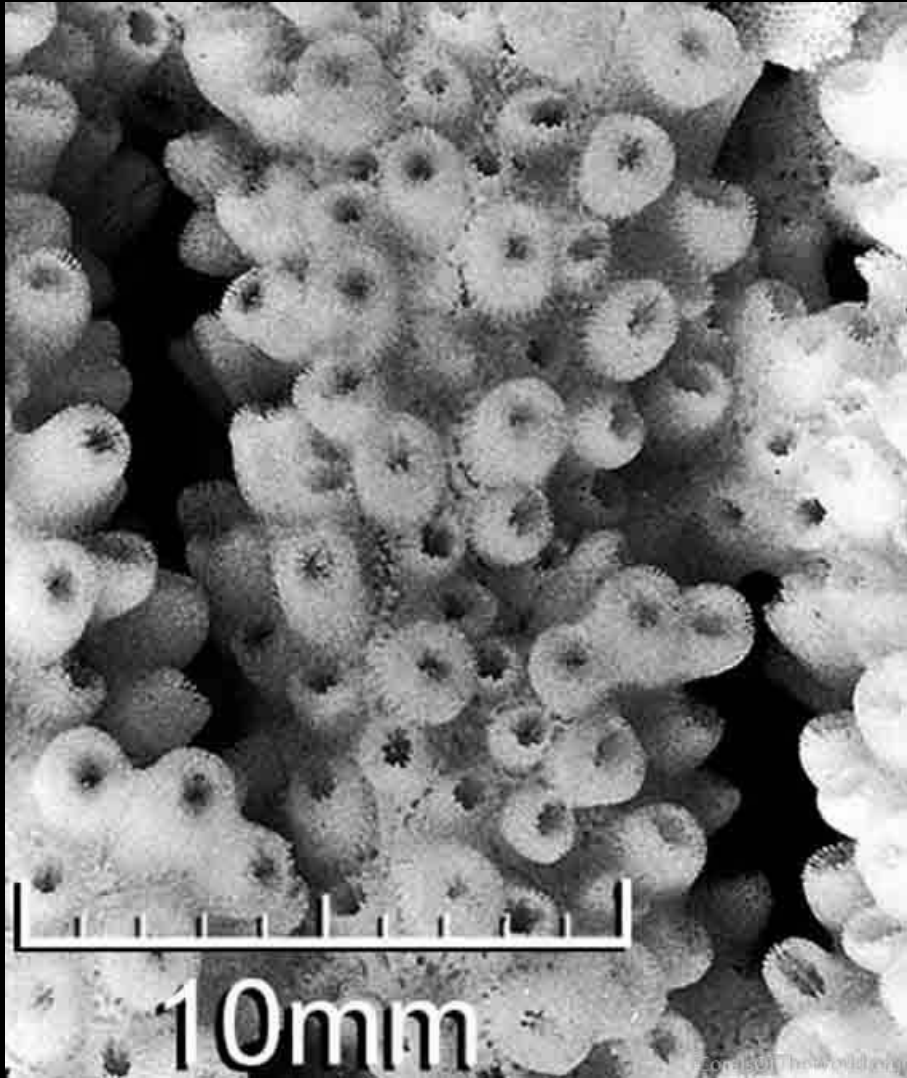
i: labellate, flaring lip

j: cochleariform

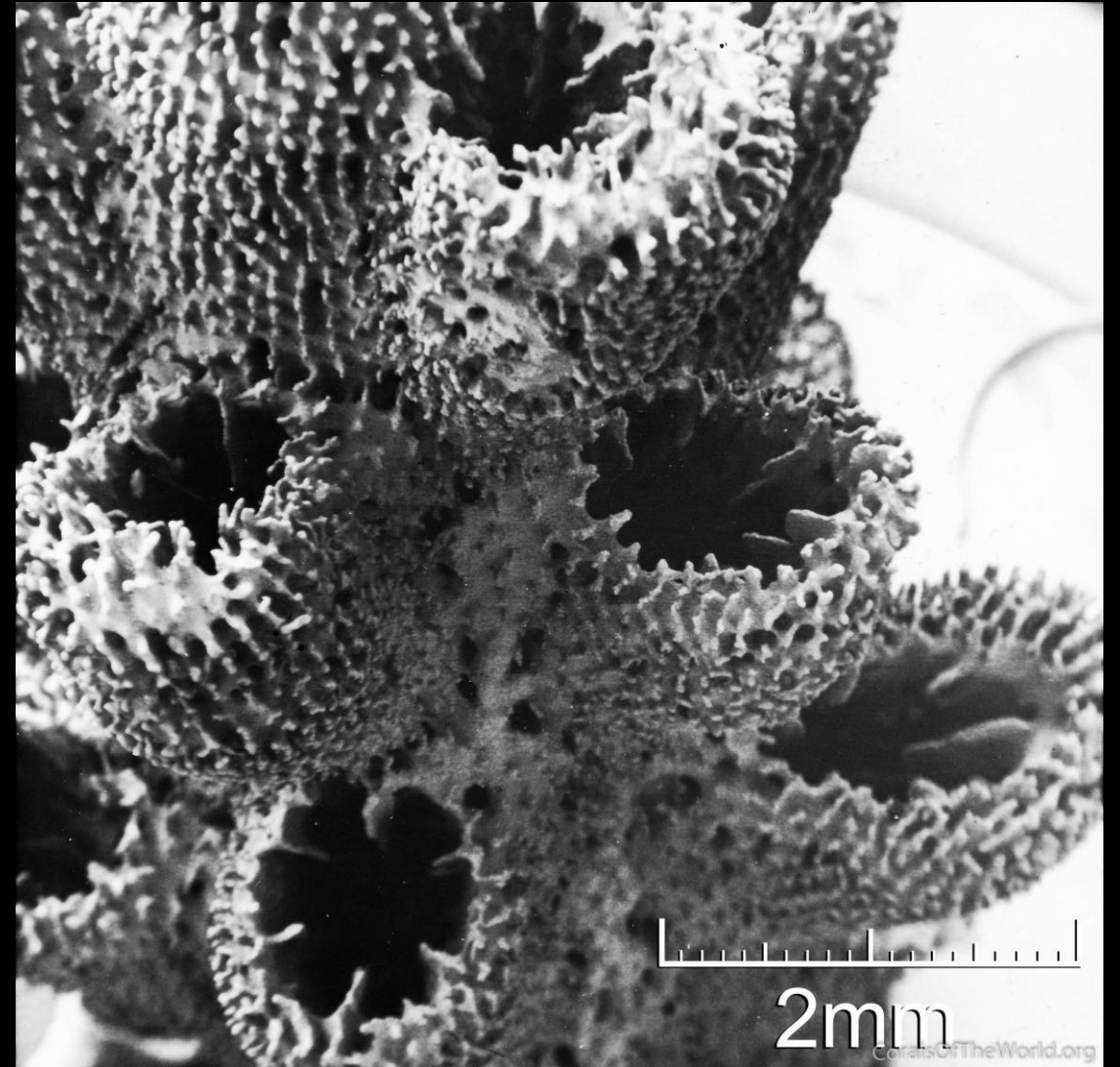
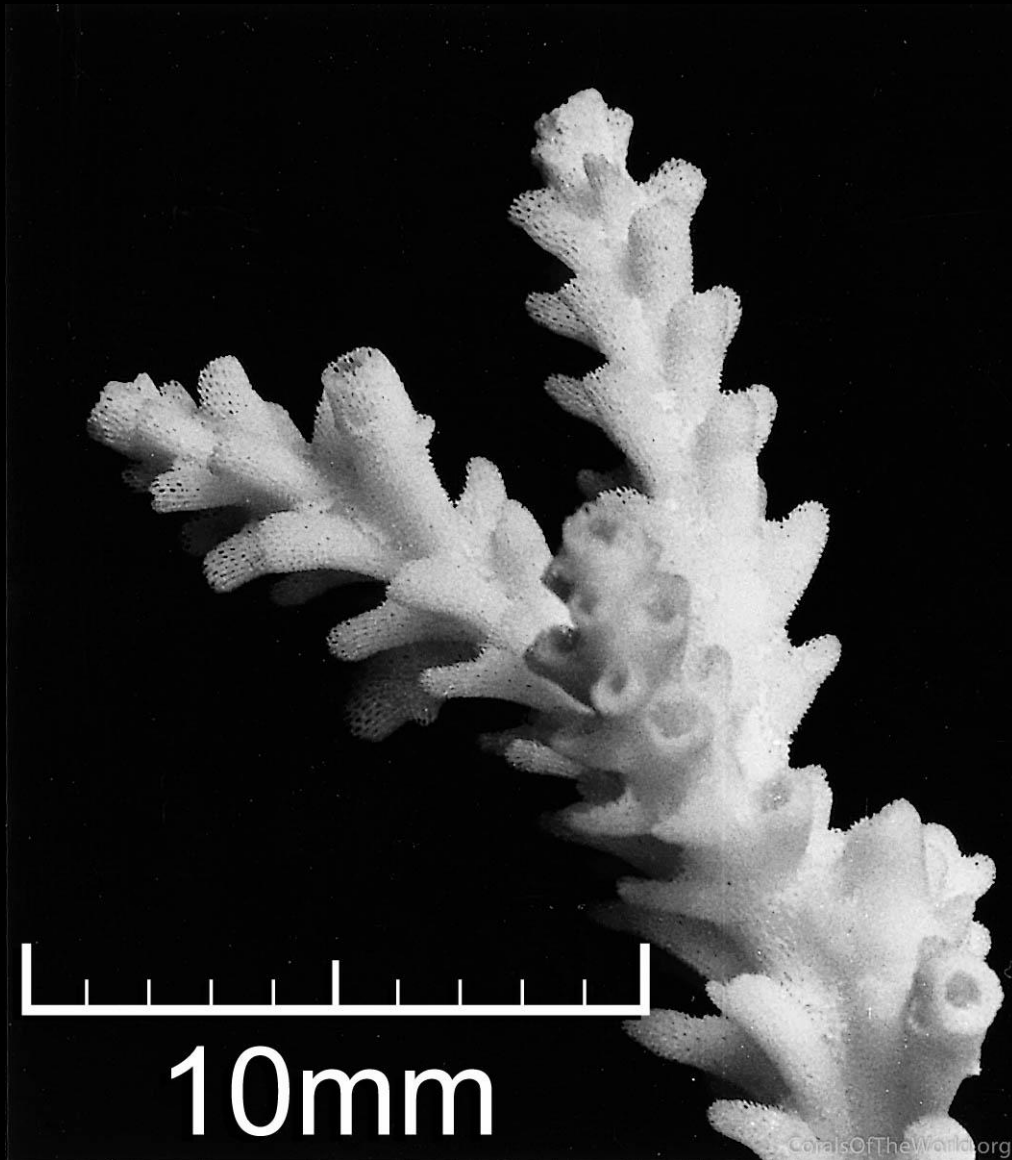
k: subimmersed

l: immersed

Acropora clathrata



Acropora cerealis



Acropora cerealis



Image: Charlie Veron

Acropora digitifera



Image: Charlie Veron

Acropora digitifera



Image: Neville Coleman

Acropora elseyi



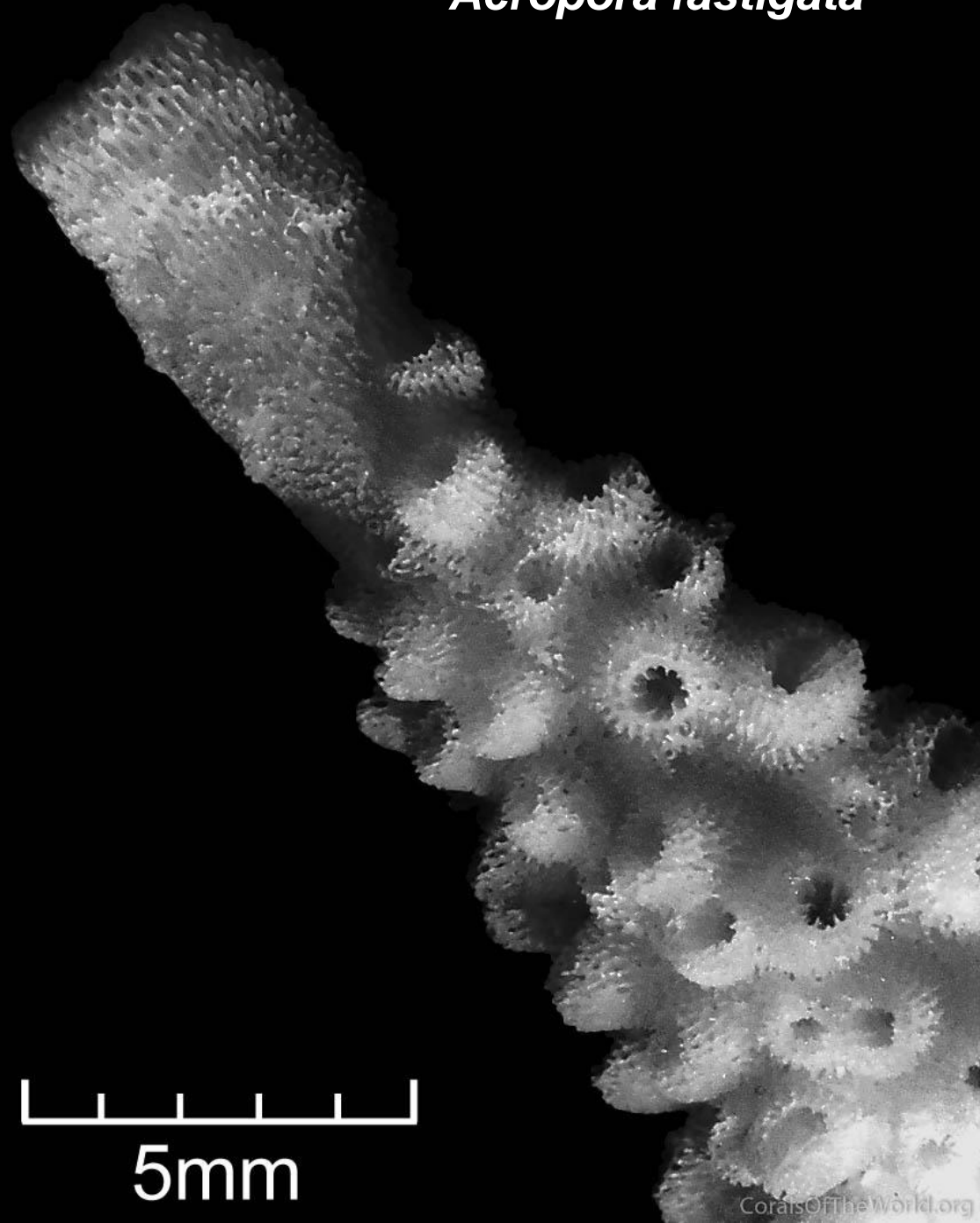
Image: Ed Lovell



Image: Emre Turak

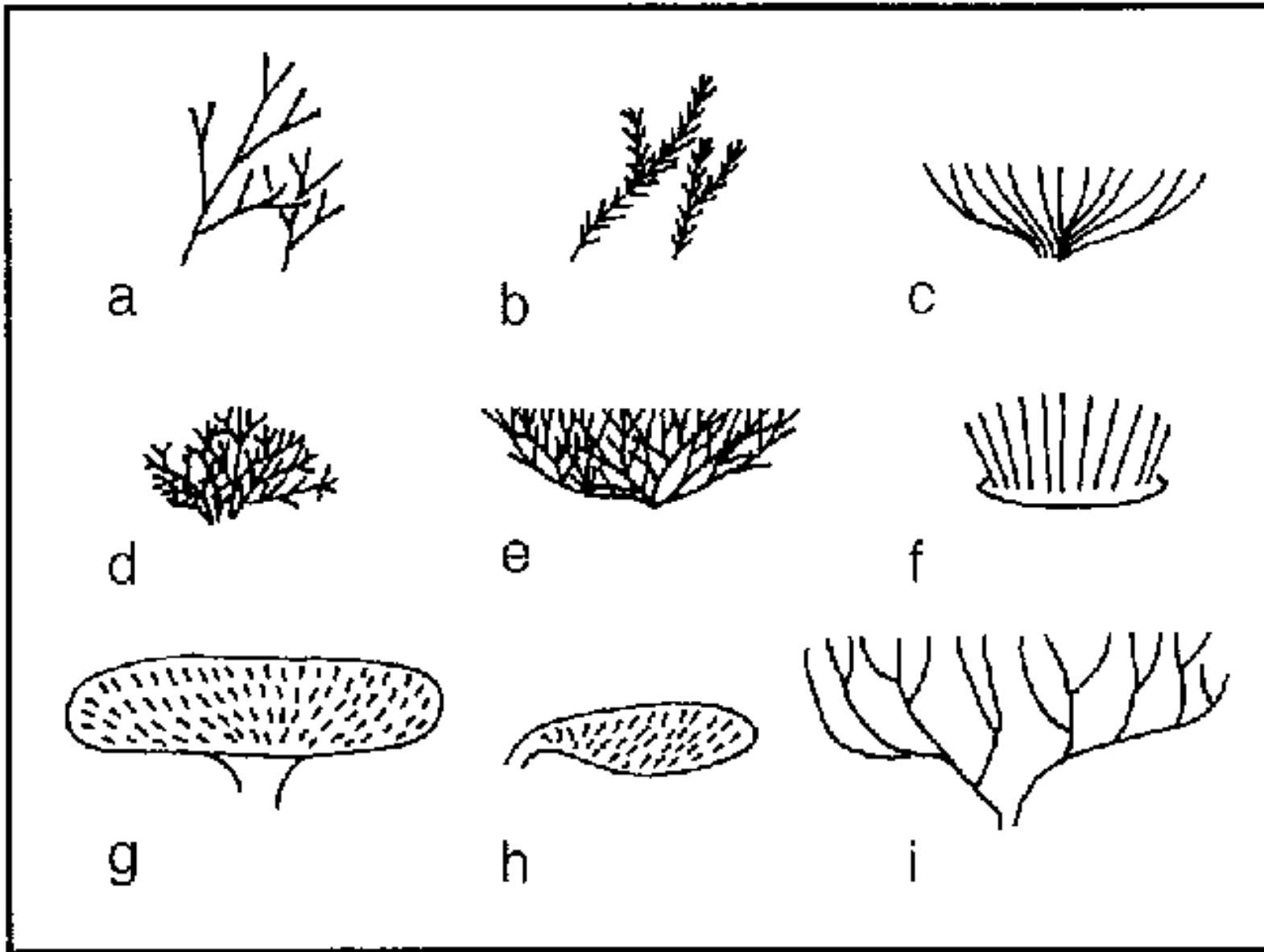
Cora

Acropora fastigata



5mm

CoralsOfTheWorld.org



Diagrammatic representation of colony shape categories in Wallace *et al.*, 1997.

a: arborescent

b: hispidose

c: corymbose

d: caespitose

e: caespito-corymbose,

f: digitate

g: table

h: plate

i: arborescent table.

Pocillopora

“Cauliflower Corals”

Pocillopora damicornis

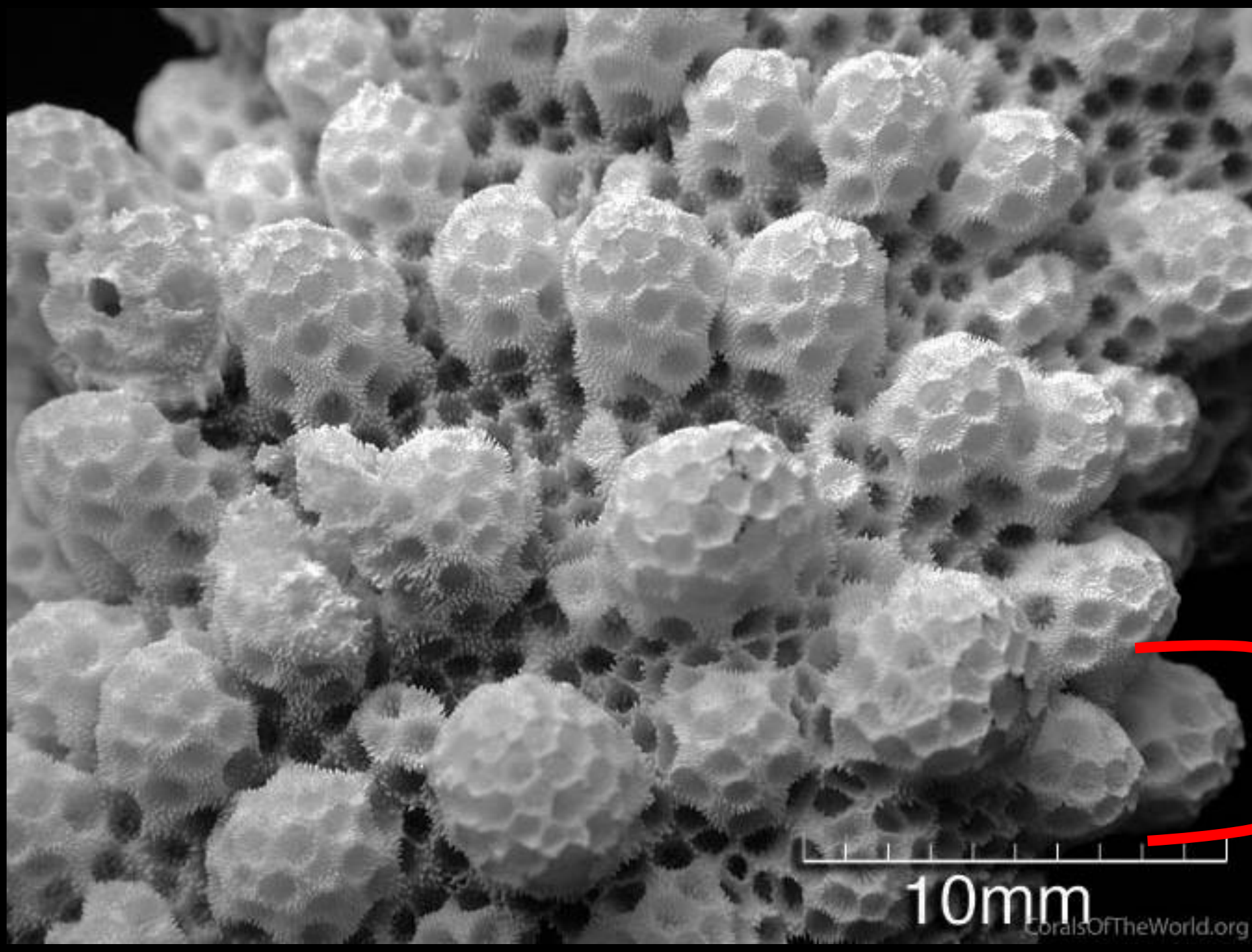


Image: David Paz-Garcia

Pocillopora aliciae



Image: Charlie Veron



← **Corallite**

Verrucae

10mm

CoralsOfTheWorld.org

Image: Charlie Veron

Pocillopora ankeli



Pocillopora eydouxi



Image: Russell Kelley

Pocillopora eydouxi



Image: Emre Turak and Lyndon De Vantier

Pocillopora eydouxi



Image: Mary Stafford-Smith

Montipora

Usually thin, often layered, leafy, *bumpy* **plate corals** or *bumpy* **encrusting corals**. Occasionally branching.

Montipora aequituberculata



Image: Charlie Veron

Montipora aequituberculata



Image: Charlie Veron

Montipora capricornis



Image: Charlie Veron

Montipora foliosa

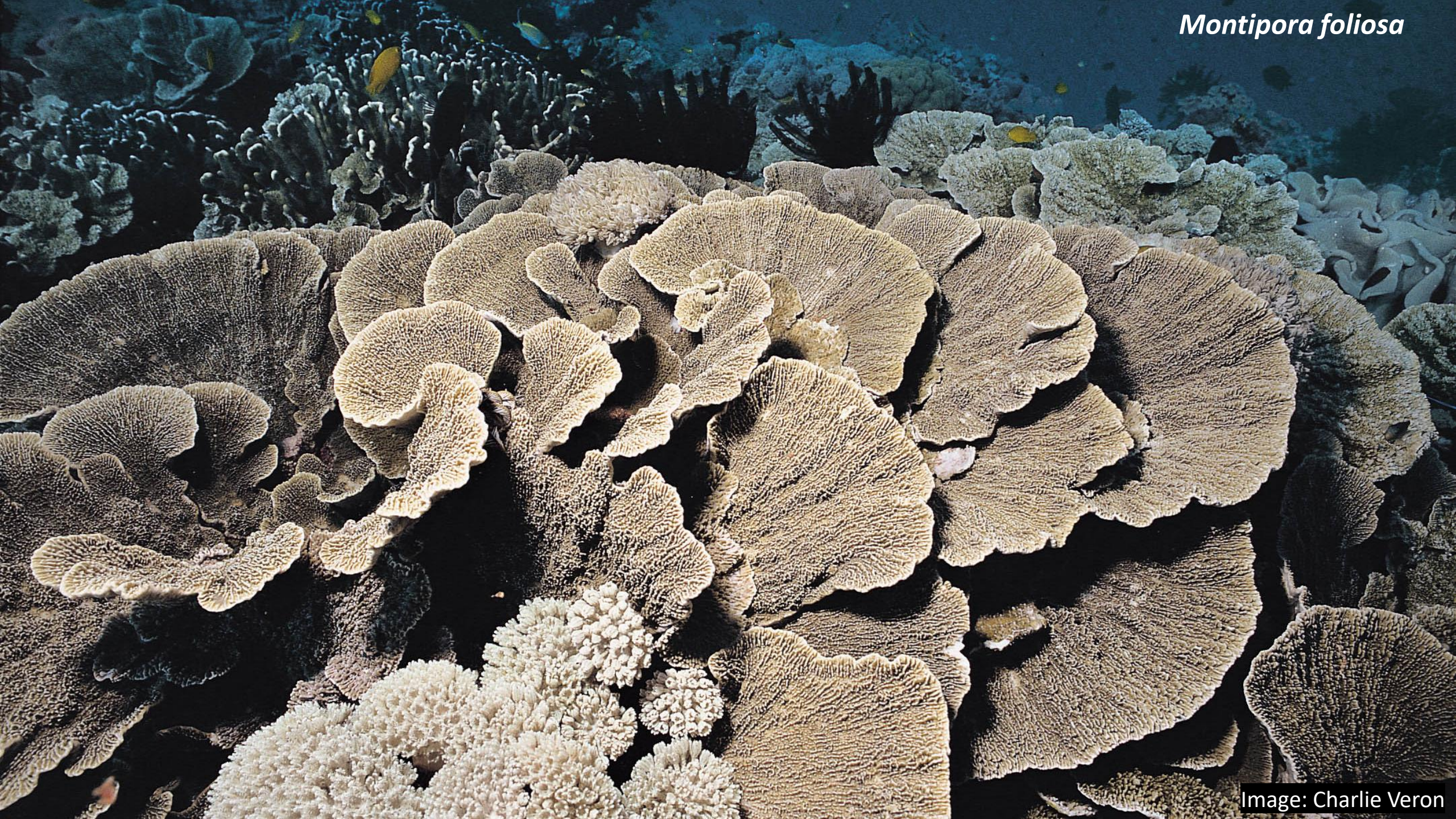
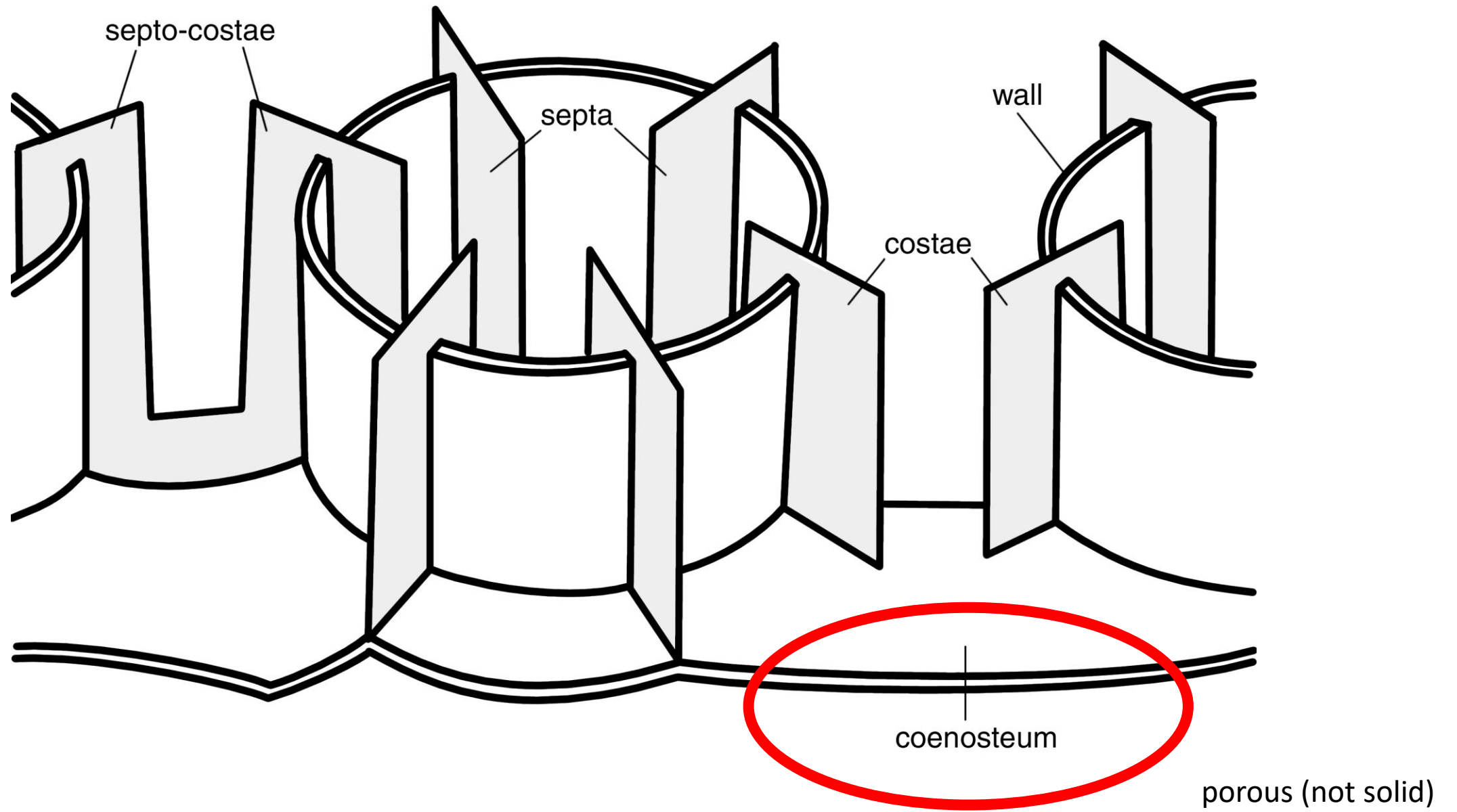


Image: Charlie Veron



Montipora verrilli



Image: Keoki Stender



Montipora verrucosa

Image: Charlie Veron

Montipora foliosa



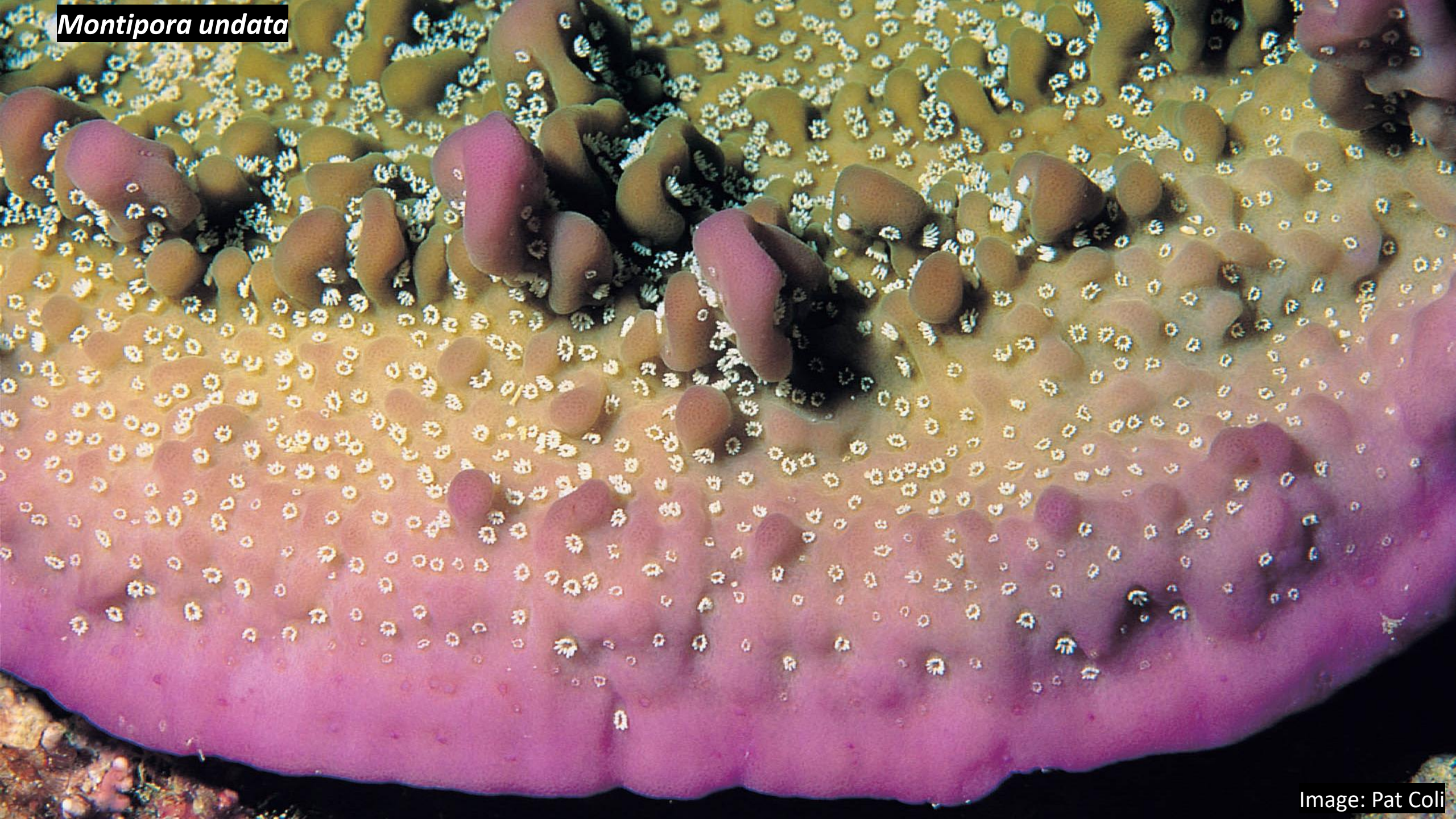
Image: Ed Lovell

Montipora confusa



Image: Charlie Veron

Montipora undata



Porites

Helmet Coral / Micro-atolls

Very small corallites (<2mm)

Thus, colonies appear *smooth*

Porites lobata



Porites lobata



Porites lutea



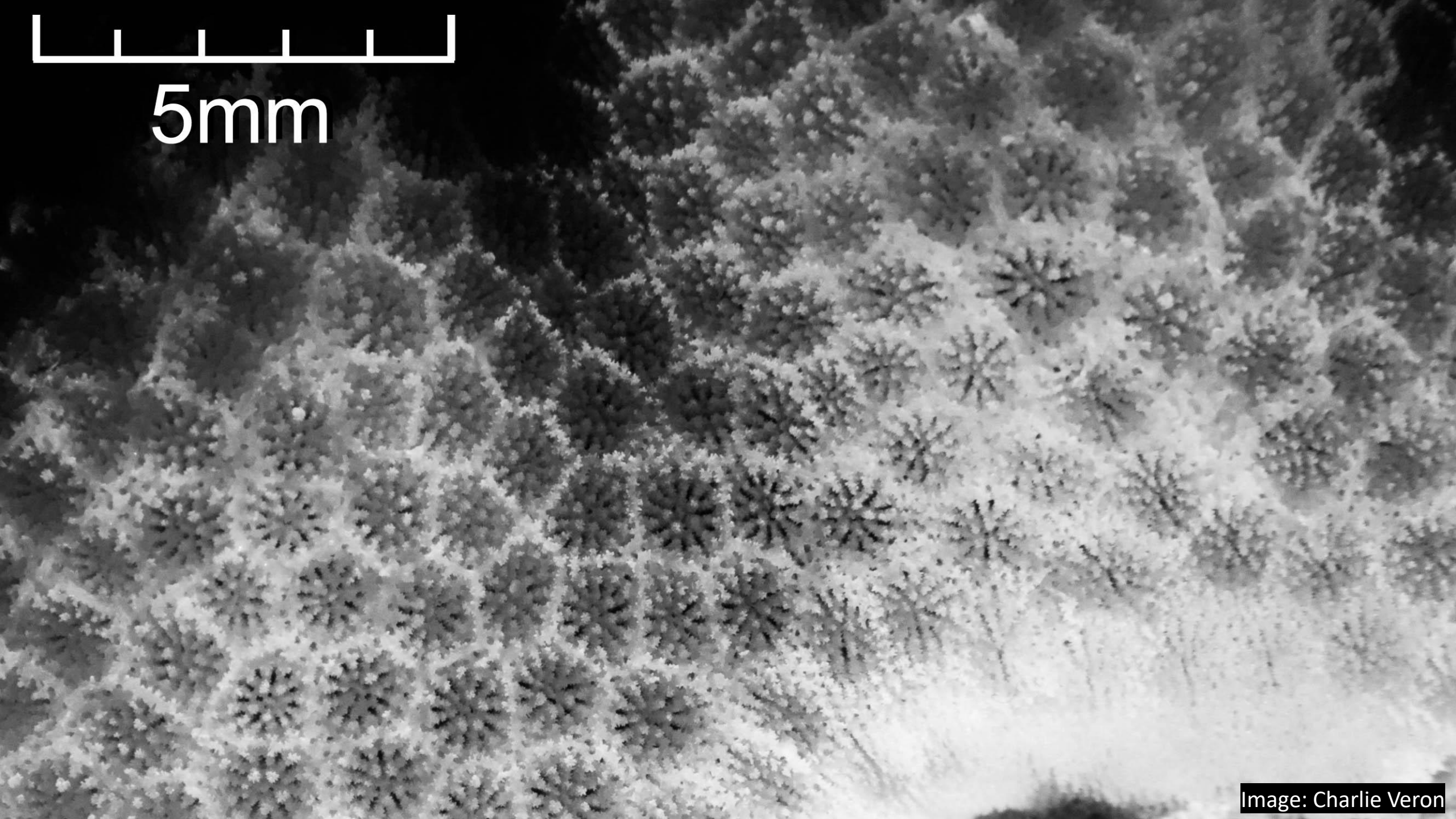
Porites lutea



Image: Emre Turak and Lyndon DeVantier



5mm



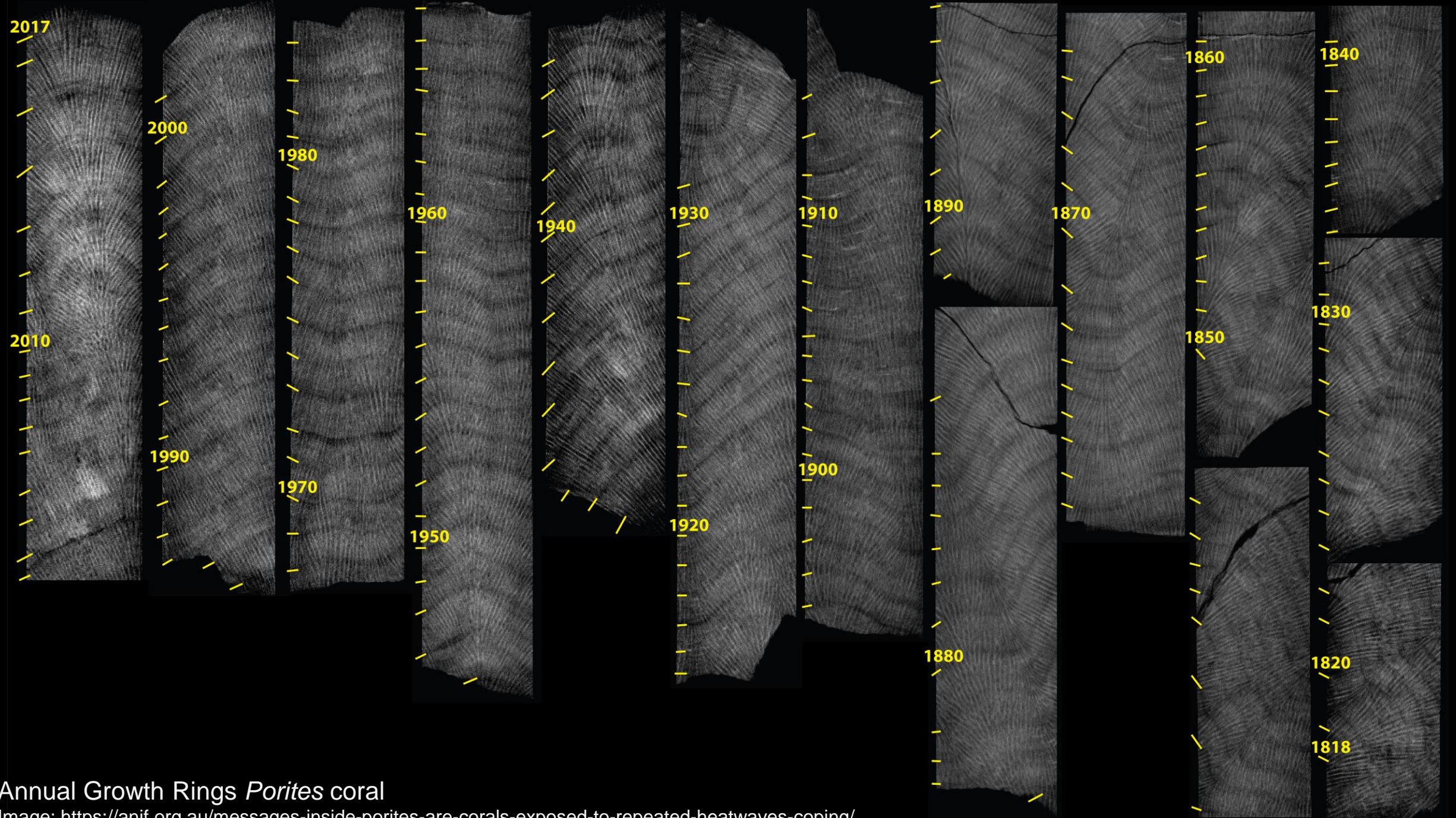


“Big Mumma” American Samoa. The typical growth rate of *Porites* is 1cm/year.

Photograph: Wendy Cover/NOAA

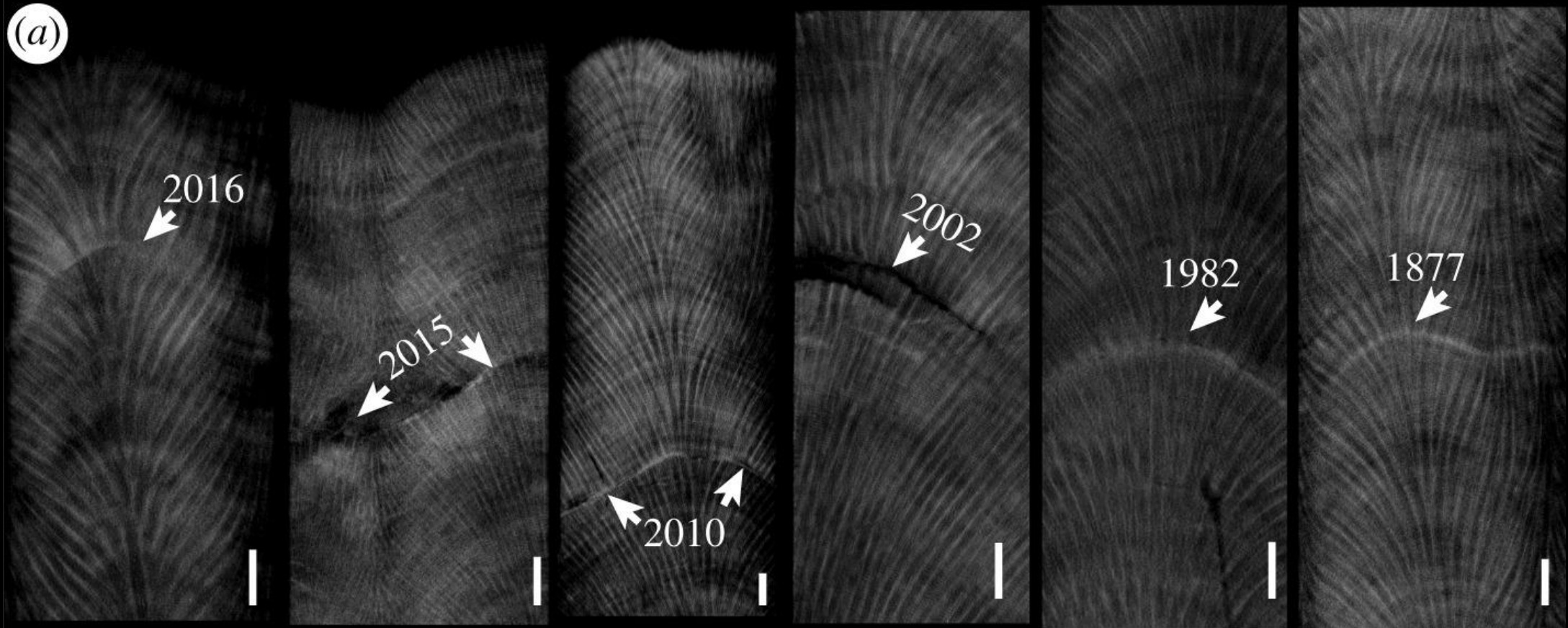
Image: Wendy Cover /NOAA





Annual Growth Rings *Porites* coral

Image: <https://anif.org.au/messages-inside-porites-are-corals-exposed-to-repeated-heatwaves-coping/>

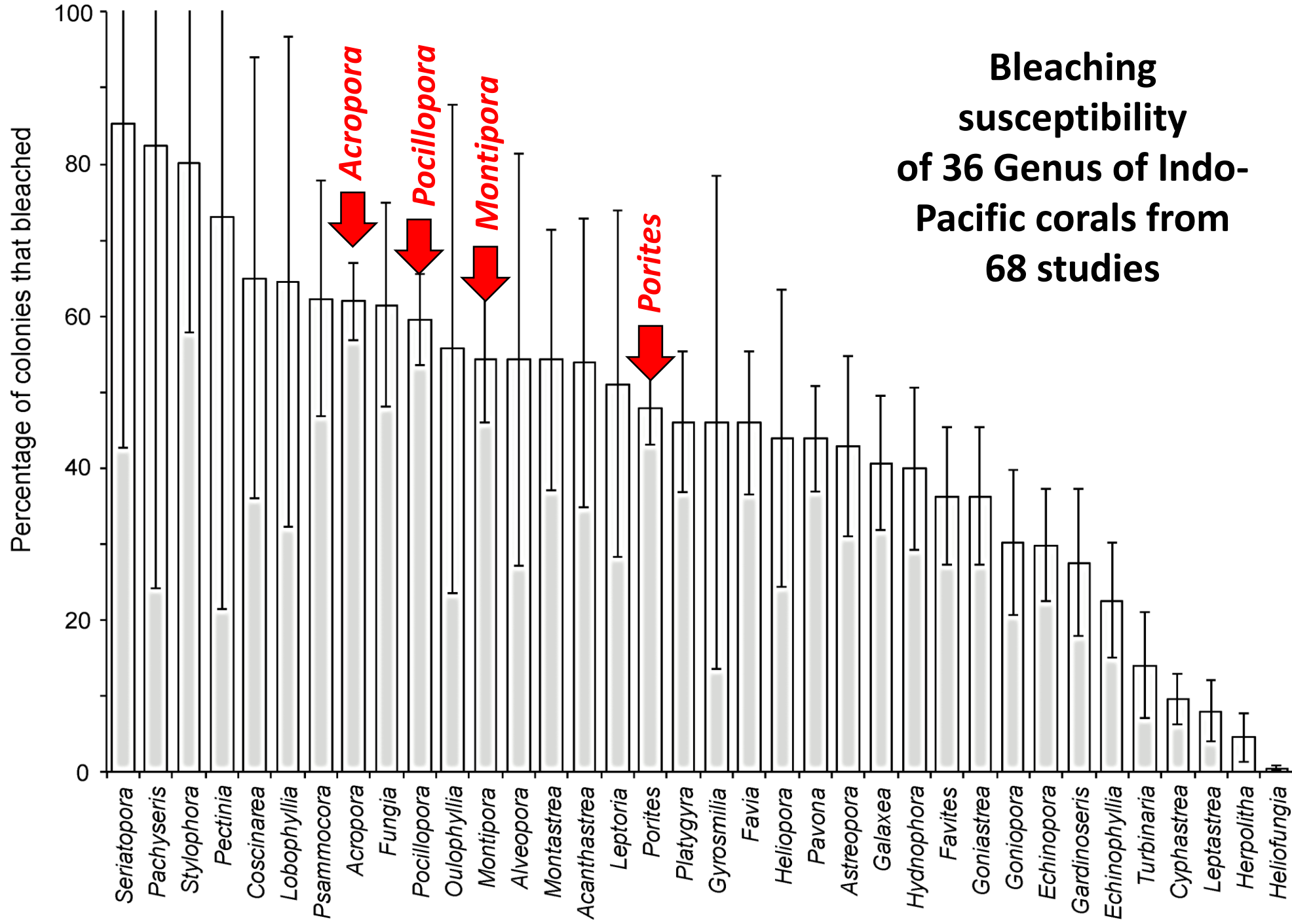


High Density Stress Bands = stress event (e.g. heat wave)

DeCarlo, T. *et al.*, (2019)

Image: DeCarlo Thomas M., Harrison Hugo B., Gajdzik Laura, Alaguarda Diego, Rodolfo-Metalpa Riccardo, D'Olivo Juan, Liu Gang, Patalwala Diana, and McCulloch Malcolm T. (2019) Acclimatization of massive reef-building corals to consecutive heatwaves. *Proc. R. Soc. B.* **286**2019023520190235. Accessed 4/7/21 from: <https://royalsocietypublishing.org/doi/10.1098/rspb.2019.0235>

From 68 studies conducted between 1982 and 2005 (Kenya to Panama)
Hoey, A. S. *et al.*, (2016)



Hoey, A.S.; Howells, E.; Johansen, J.L.; Hobbs, J.-P.A.; Messmer, V.; McCowan, D.M.; Wilson, S.K.; Pratchett, M.S. Recent Advances in Understanding the Effects of Climate Change on Coral Reefs. *Diversity* **2016**, *8*, 12. <https://doi.org/10.3390/d8020012>

Favites

Moon Coral

Walls are joined (Cerioid colonies)

Favites vasta
(cerioid)

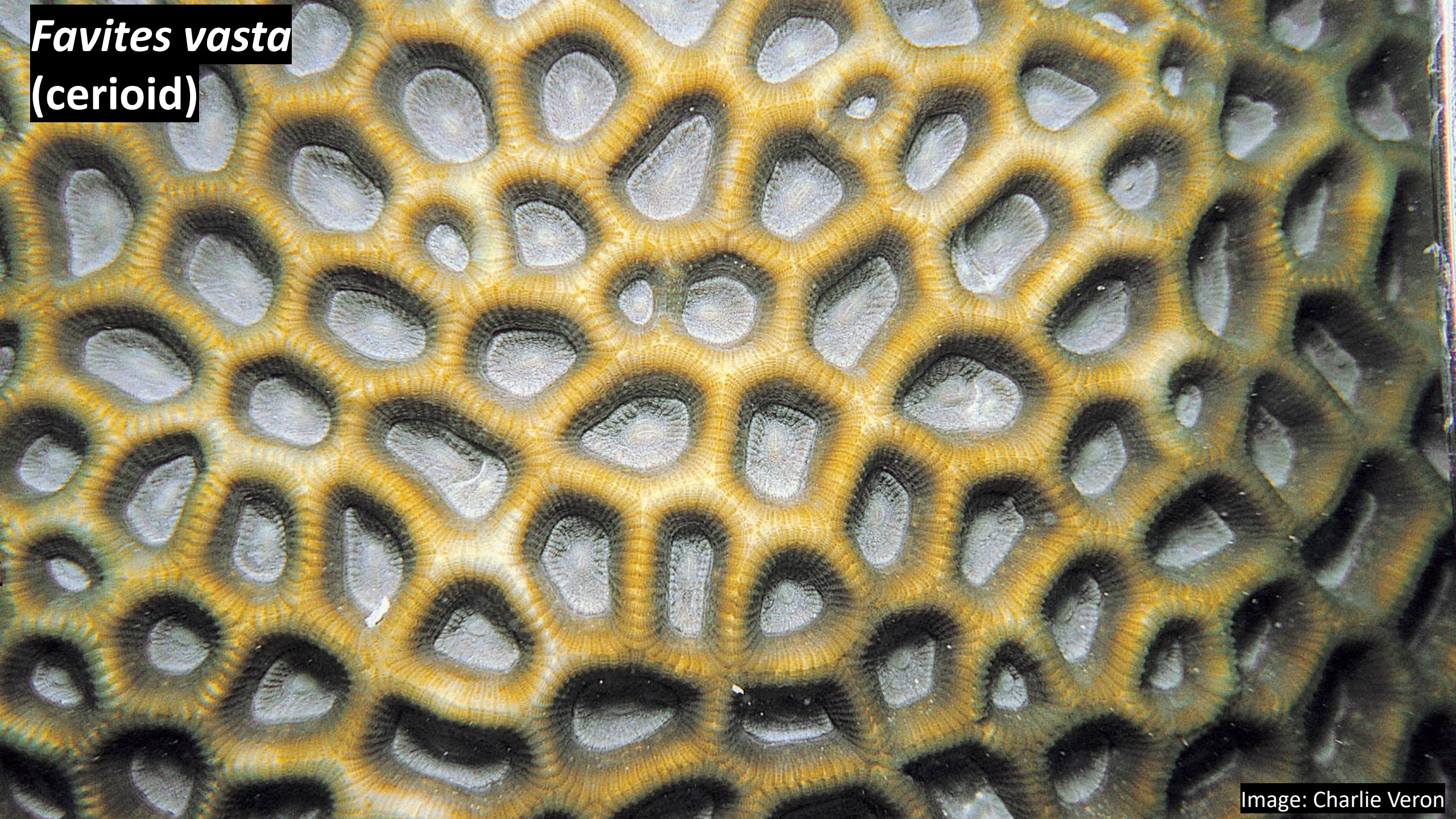


Image: Charlie Veron

Favites flexuosa
(cerioid)



Image: Emre Turak and Lyndon De Vantier

Favites flexuosa
(cerioid)

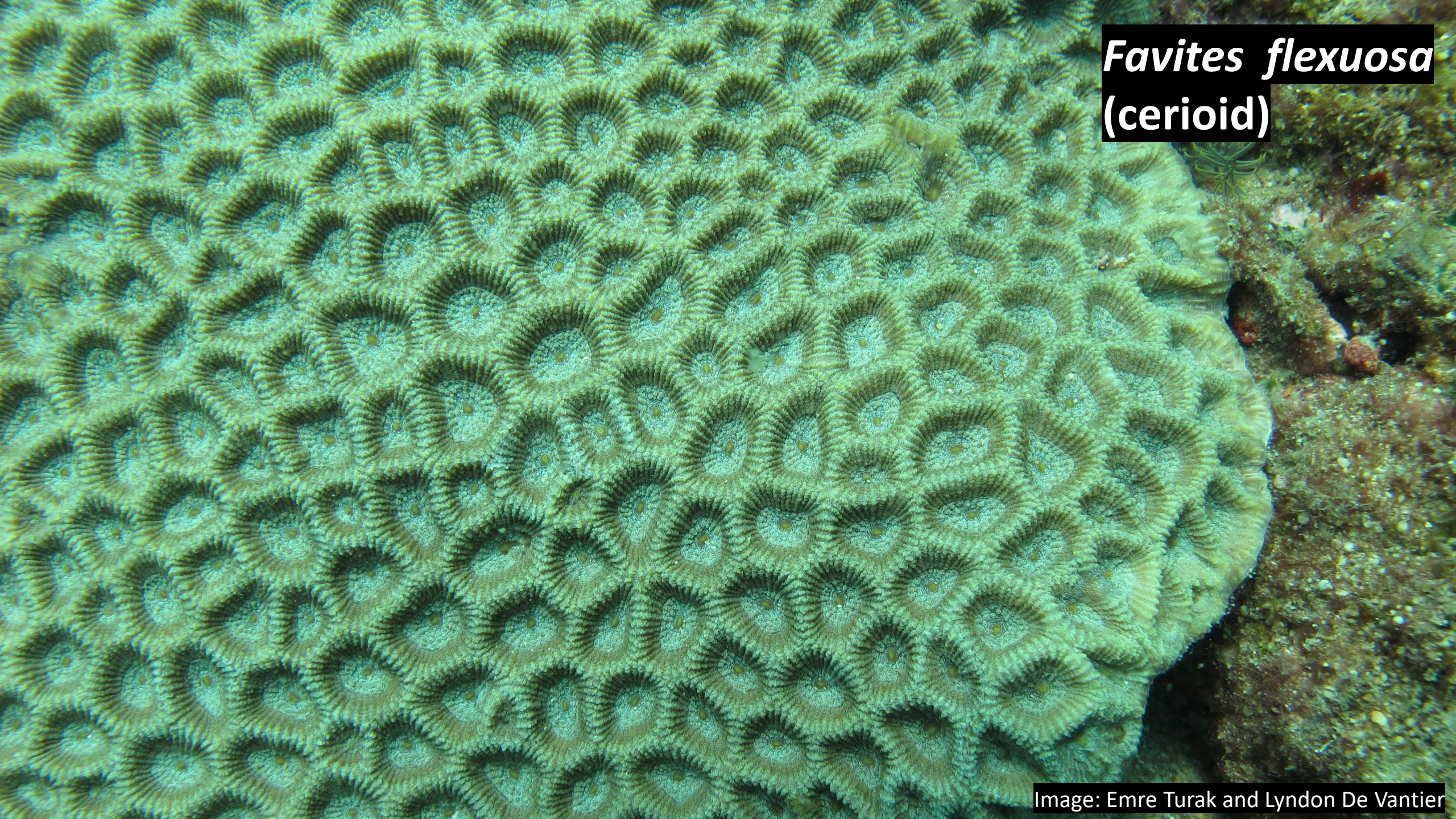


Image: Emre Turak and Lyndon De Vantier

Favites flexuosa
(cerioid)

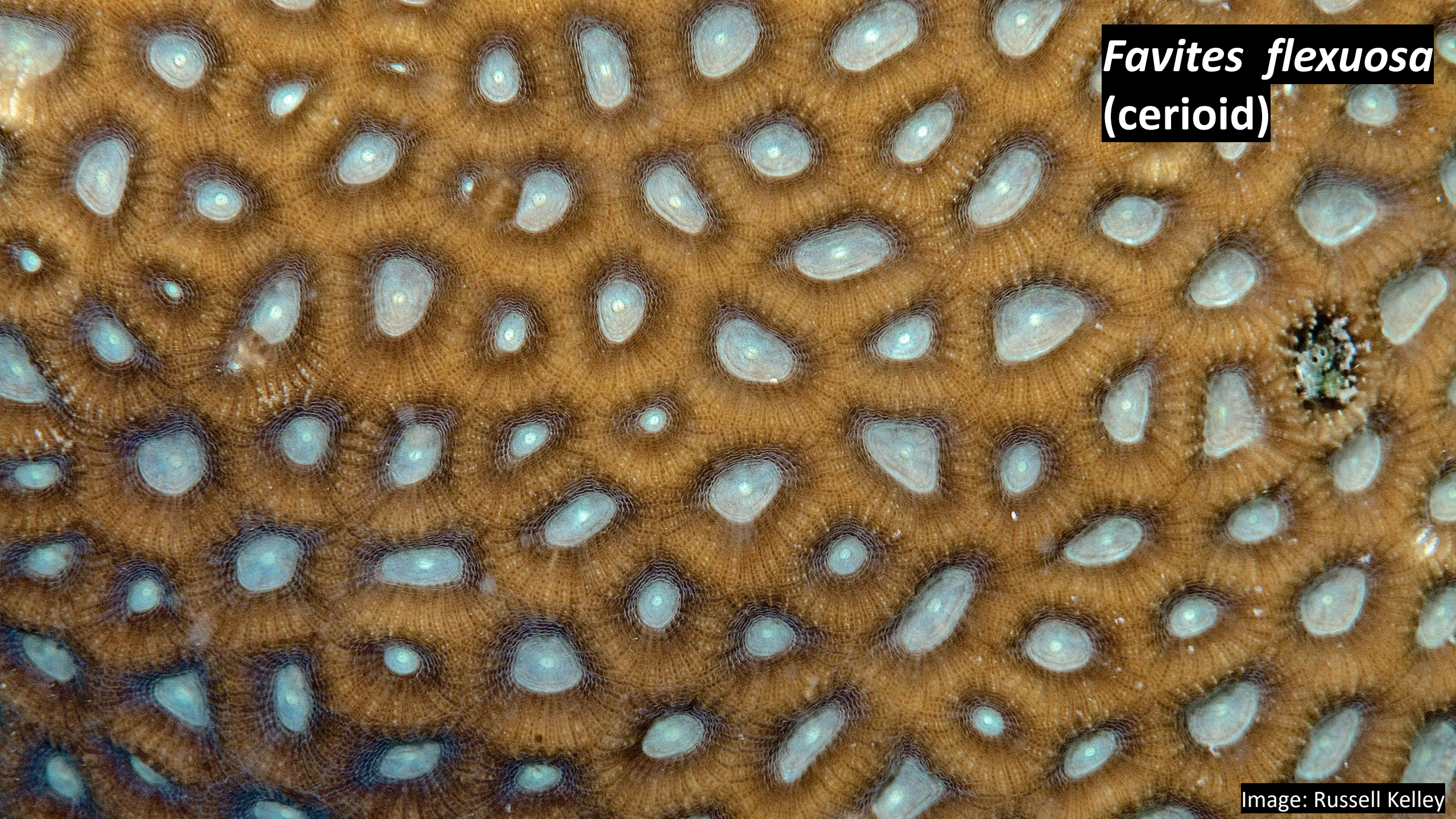


Image: Russell Kelley

Favites paraflexuosa
(cerioid)

20mm

Favites paraflexuosa
(cerioid)



Favites russelli
(cerioid)

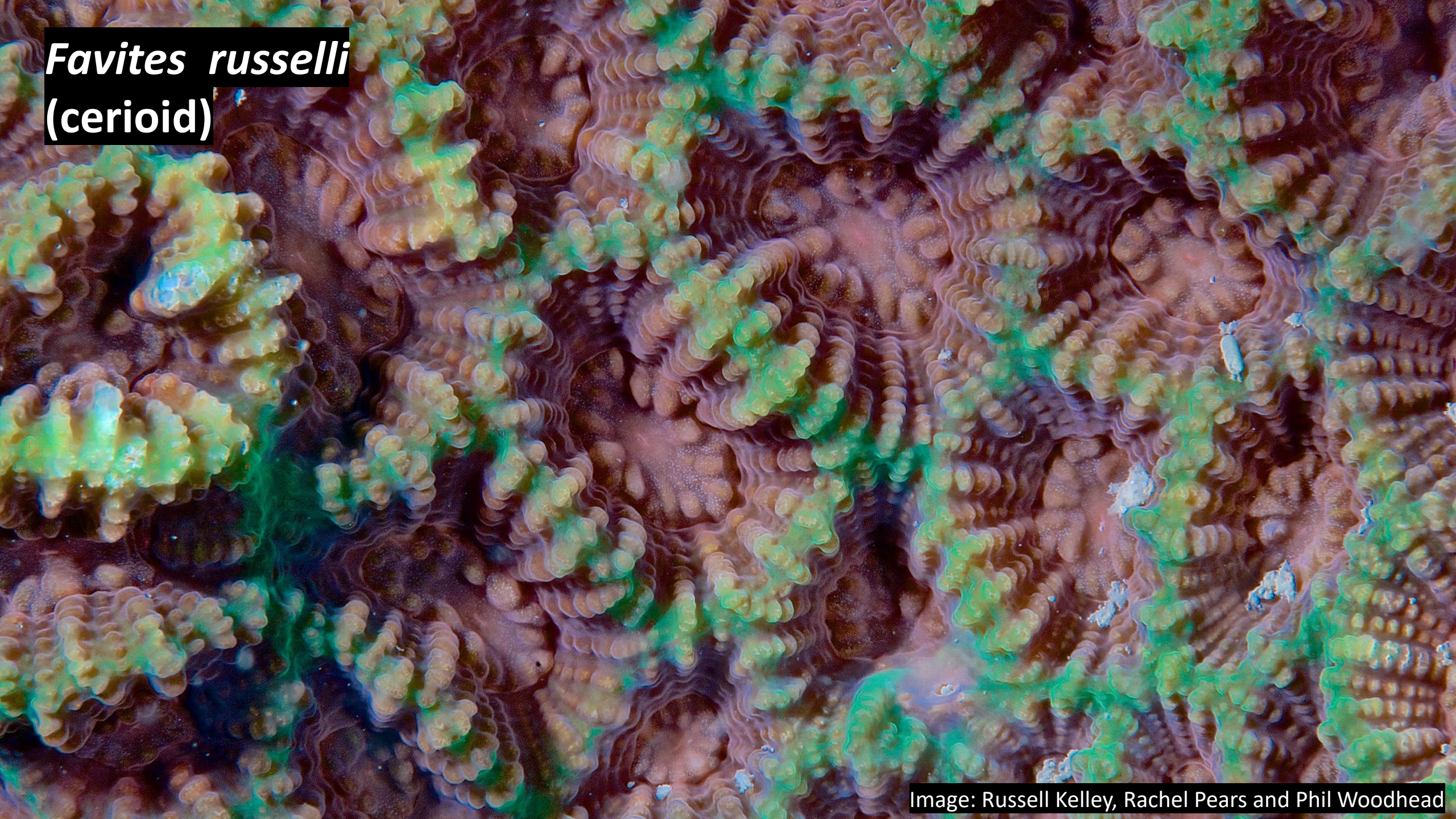


Image: Russell Kelley, Rachel Pears and Phil Woodhead

Favia (Dipsastraea)

Indo-Pacific

Pineapple Coral

Walls separate (*Plocoid* colonies)

Favia lizardensis
(placoid)



Favia maritima
(placoid)



Favia speciosa
(placoid)

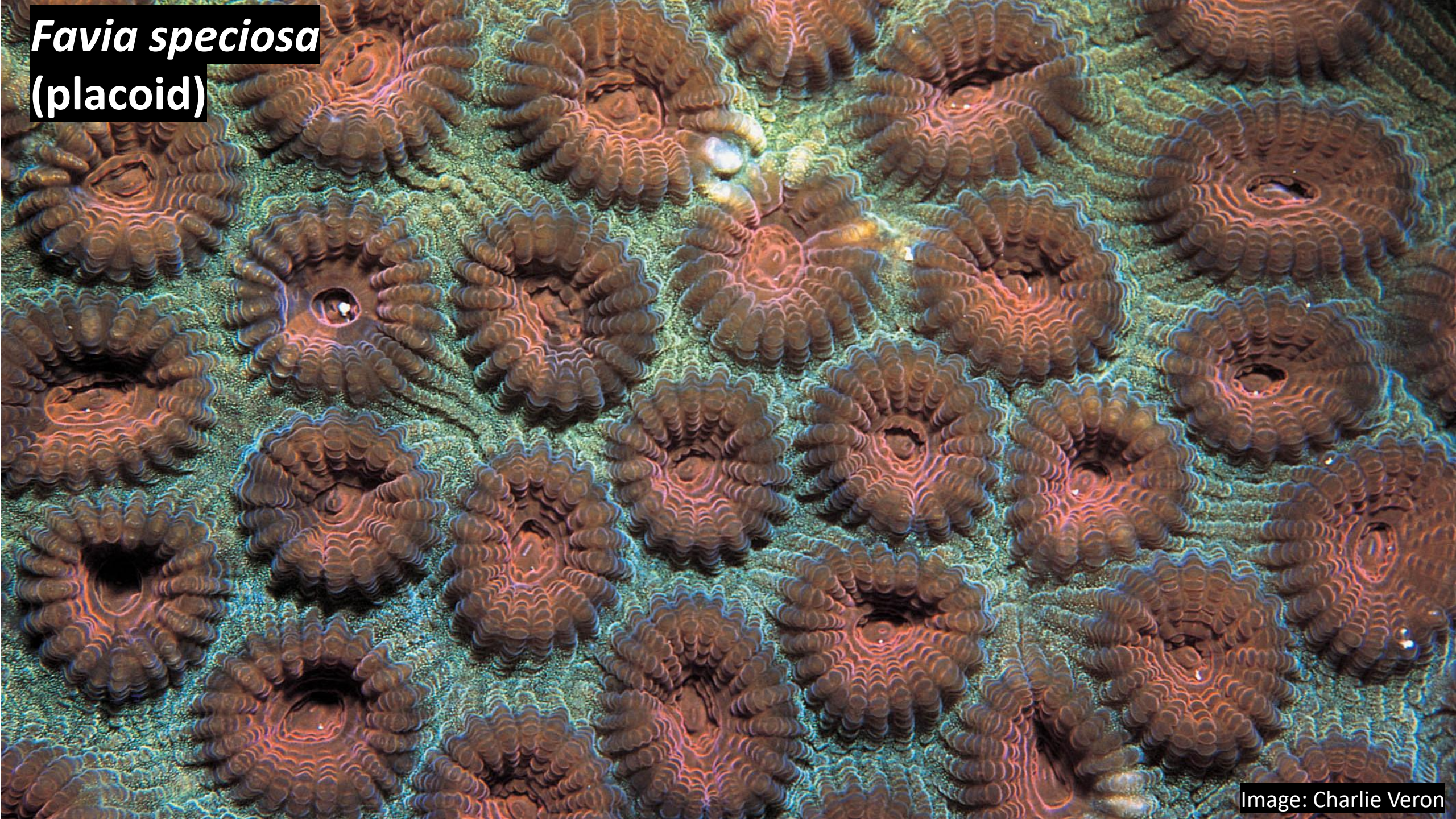


Image: Charlie Veron

Favia fava
(placoid)



Image: Emre Turak and Lyndon DeVantier

Favia lizardensis
(placoid)



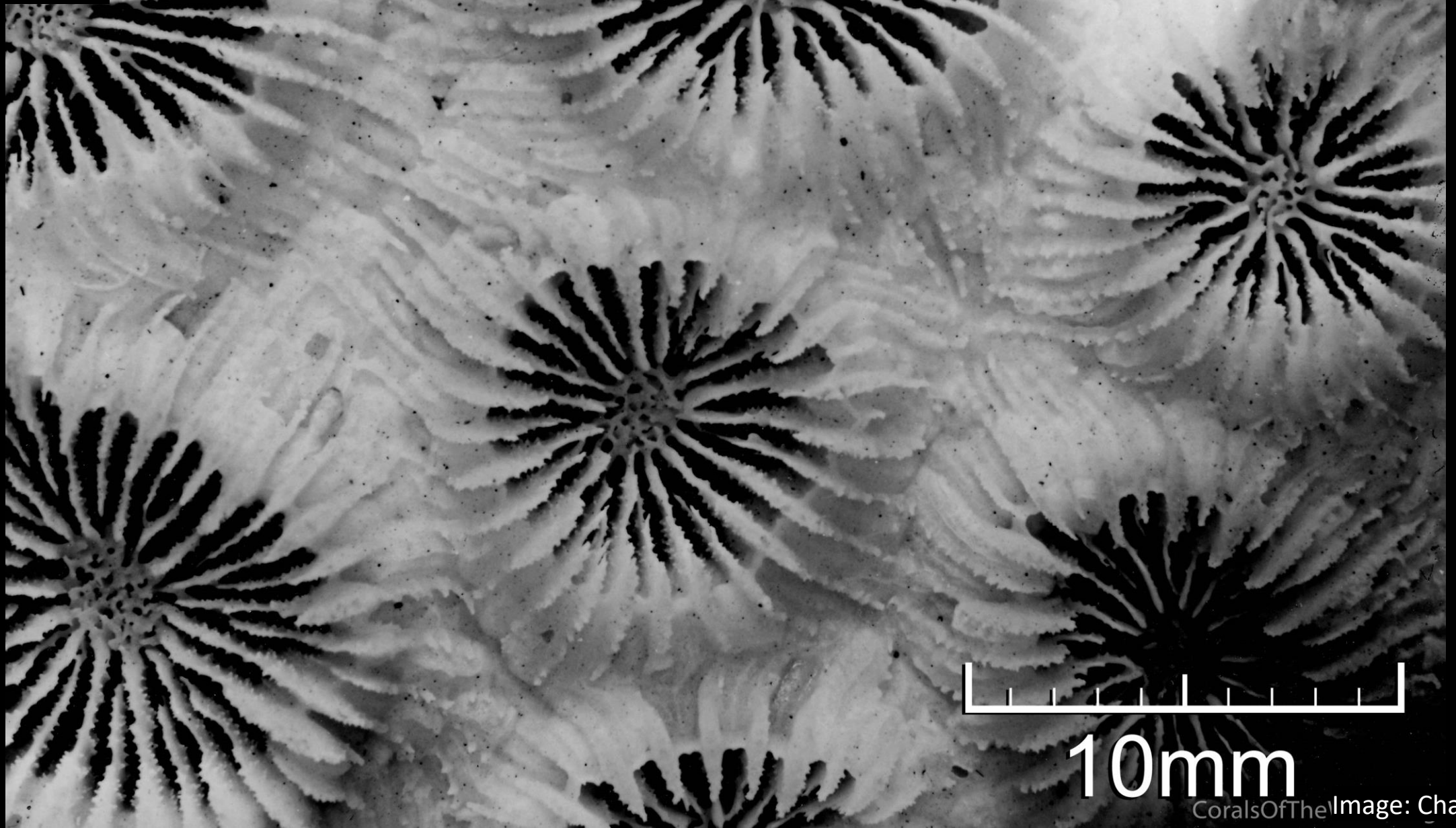
Image: Emre Turak and Lyndon DeVantier

Favia maritima
(placoid)



Image: Emre Turak and Lyndon DeVantier

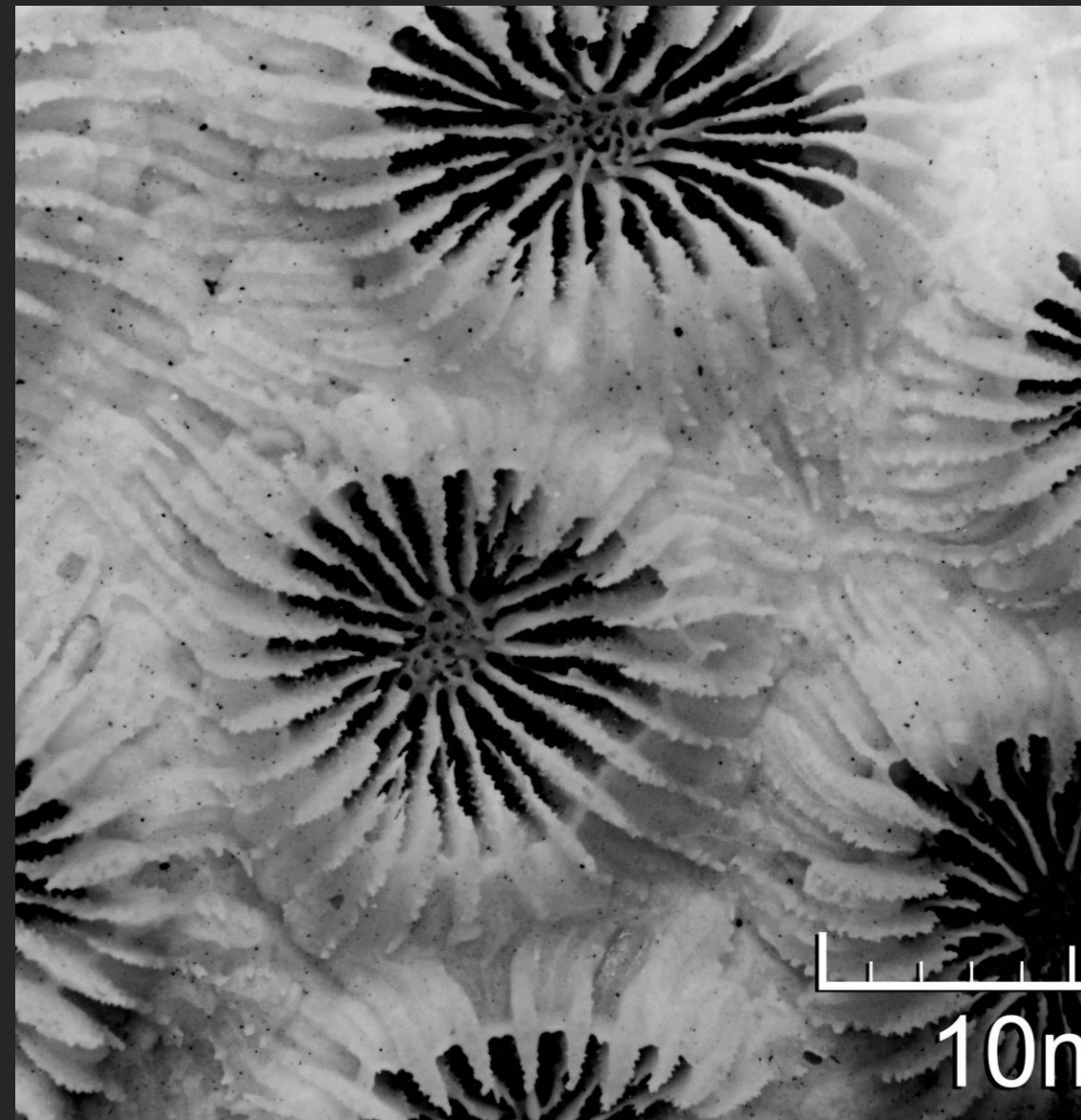
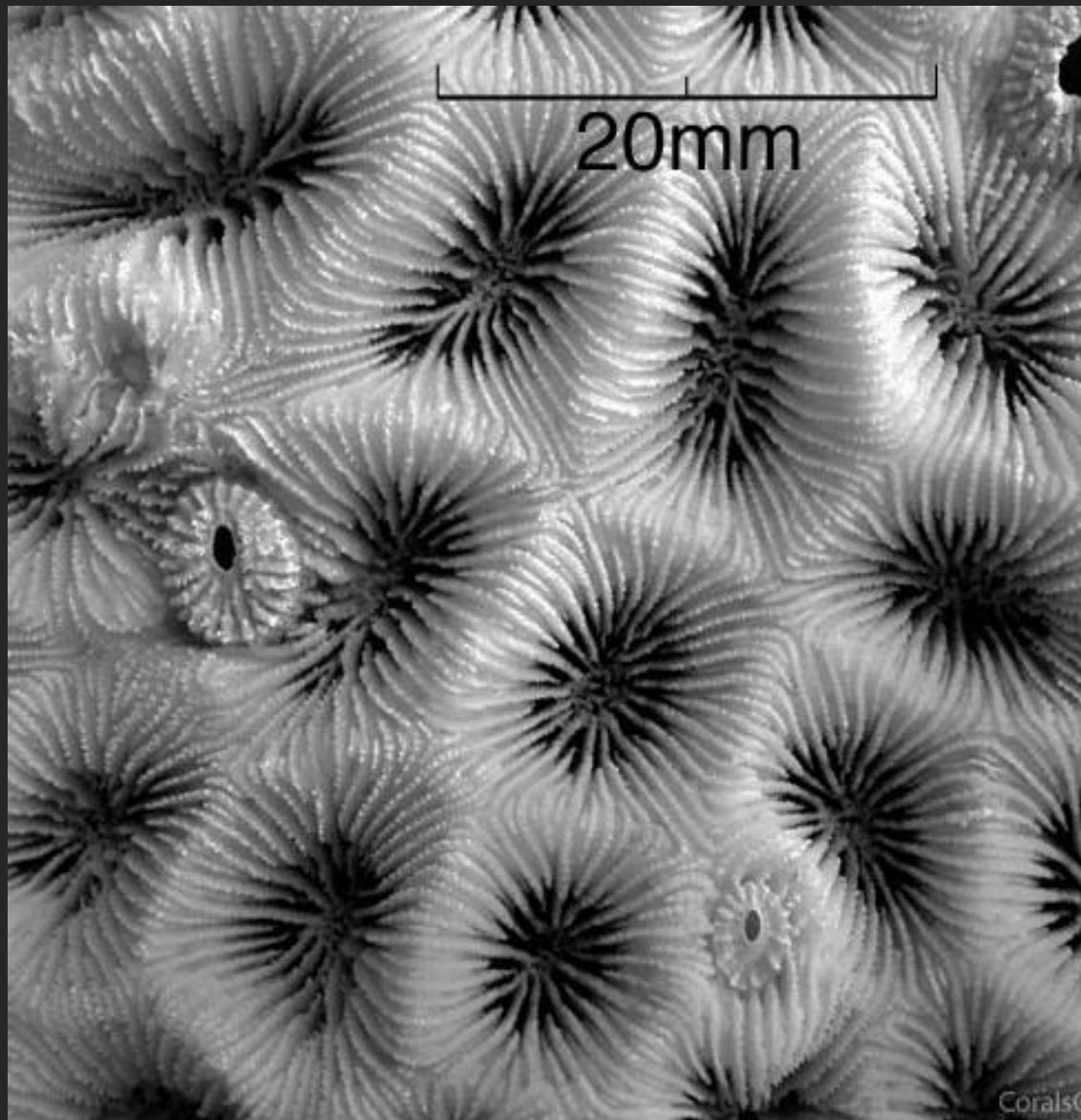
Favia matthaii
(placoid)



Genus: Favites

Question: What is the main difference?

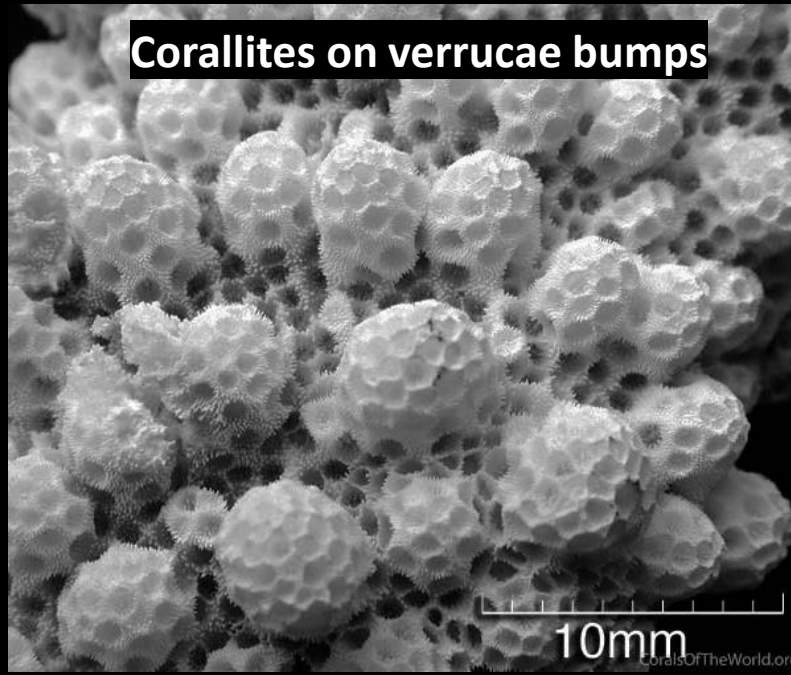
Genus: Favia



Axial and radial corallites



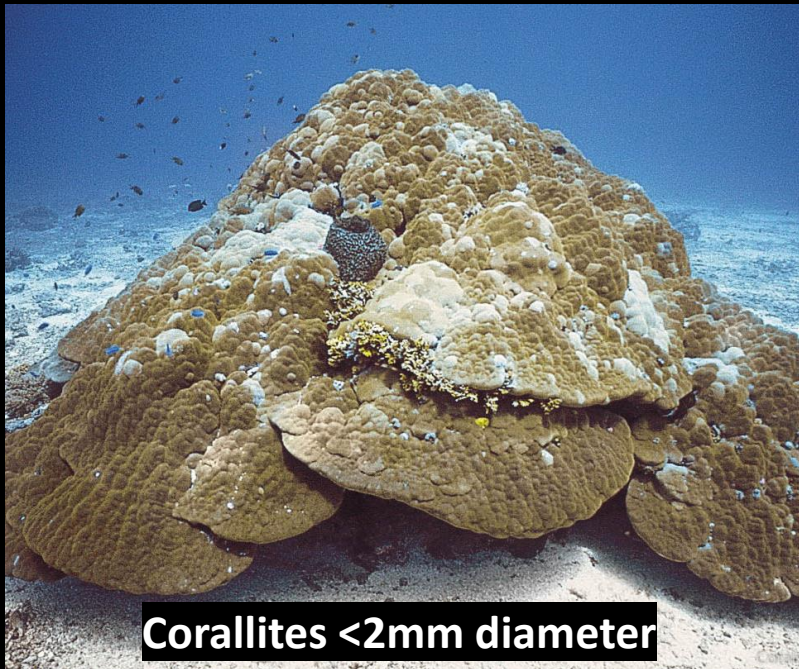
Corallites on verrucae bumps



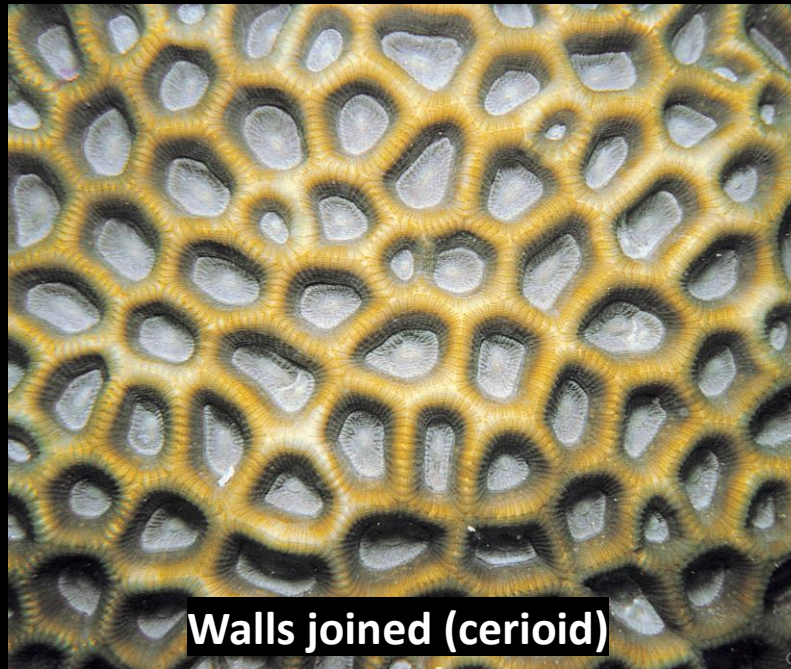
bumpy coenosteum



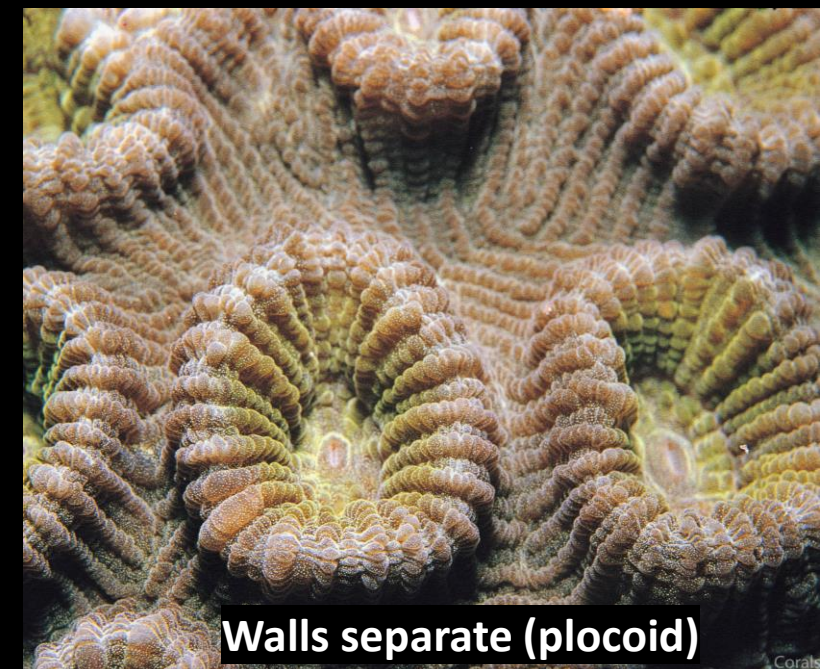
Corallites <2mm diameter



Walls joined (cerioid)



Walls separate (plocoid)



A close-up photograph of a branching Acropora coral. The coral has a yellowish-orange color and a complex, multi-tiered structure with many small polyps.

Acropora

A close-up photograph of Pocillopora coral, showing a dense arrangement of small, rounded polyps. A scale bar at the bottom right indicates 10mm.

Pocillopora

A photograph of a large, flat, pinkish-purple Montipora coral. The coral has a distinct, slightly wavy edge and a smooth, textured surface.

Montipora

A photograph of a large, brownish Porites coral. The coral has a thick, rounded, and somewhat irregular shape, resting on a sandy seabed.

Porites

A close-up photograph of Favites coral, showing a highly regular, grid-like pattern of large, rounded polyps.

Favites

A close-up photograph of Favia (Dipsastraea) coral, showing a complex, multi-tiered structure with many small polyps.

**Favia
(Dipsastraea)**



Youtube: *"Time lapse of staghorn hard coral growing, close up of polyps"*

<https://www.youtube.com/watch?v=dU6KmDP0qhw&list=RDCMUCjPYibO3vEileIByAZTHpDA&index=1>