Identifying AGRRA Corals: Part 1
Mound and Boulder Corals

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Atlantic and Gulf Rapid Reef Assessment (AGRRA) Program
Revision: 2013-05-22

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For images used in Part 1, our special thanks to:
Stony Corals

Stony corals have soft polyps above a stony (calcareous) skeleton. Most reef-building corals form colonies of interconnected polyps.

The shapes, sizes and colour of the polyps and colonies are used to help identify corals.
Coral Skeletons

The shapes and sizes of polyps are also visible in their underlying skeletons.

Septa are conspicuous vertical partitions in the polyp wall.
What to Look for Underwater

*Colony shape* – massive (= mound, columnar, heavy plates), crust, plate, branching

*Colony size range* – small to big

*Colony surface* – bumpy, smooth, ridged

*Polyp size* – small to big

*Polyp shape* – round, elliptical, irregular, Y-shaped

*Polyp colour* – brown, tan, yellow, olive, green, red

*Septal shape* – fat, thin; smooth, toothed

Adapted from P.R. Kramer
The stony corals illustrated here are limited to species found in the wider Caribbean at depths (<20 m) typical of most AGRRA surveys.

The names of some of these corals are changing as a result of modern research. More taxa are added as we gain underwater photographs of species that are rare and/or of geographically limited distributions. Expect periodic updates!

Photographers who can enhance this collection are encouraged to contact Judy Lang at: jlang@riposi.net or info@agrrra.org

For each species: (# in m and ft) = maximum colony size
Coding Corals in AGRRA Surveys

Use the CARICOMP-based coral codes.

The coral code for a genus (or occasionally a species complex) is the first 4 letters of its genus name and should be used whenever you are unsure of a coral’s species identity: **ORBI = Orbicella**

The coral code for a species is the first letter of the genus name followed by the first 3 letters of its species name: **OFAV = Orbicella faveolata**

Codes are shown before names appear on the introductory slide for species that are commonly recorded in AGRRA surveys.
The Montastraea annularis complex of species (annularis, faveolata, franksi) has been reclassified as the Orbicella annularis complex on the basis of recent molecular and morphological analyses. Montastraea cavernosa retains this genus name. See Budd et al., 2012 (reference given on final slide).
**Orbicella faveolata**  OFAV

small, round polyps with exsert walls (= protruding “outies”) in mounds with “skirted” (platy) edges, or thick plates

greens, browns, grey; may fluoresce

can grow very tall and/or wide  
(to ~ 4-5 m/12-15 ft)
**Orbicella faveolata**

**OFAV**

Surfaces smooth, ridged or with bumps aligned in vertical rows.

Colonies flatten in shade or deeper water.

Shallow/high light

Deep/low light

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**Orbicella annularis** OANN

small, round, exsert polyps are alive at the tops of columns
thick plates at colony sides or bases under low light conditions
light brown or yellow-brown
large colonies (to ~ 3-4 m/9-12 ft)
Orbicella annularis  OANN

columns may topple and scatter during storms if their bases are narrowed by bioerosion
Orbicella annularis  OANN

How differs from  
**O. faveolata:**
subdivides to form columns, with basal plates under low light conditions
live polyps on well-illuminated column tops  lack a skirt-like edge
lighter tissue coloureds
*Orbicella franksi*  OFRA

irregular bumps with large, exsert polyps that are pale or lack zooxanthellae (can see skeleton below)

large polyps along colony margin

irregular mounds, crusts or thick plates

(to ~ 3-4 m/9-12 ft)

aggressive spatial competitor
Orbicella franksi

*shallow/high light:* irregularly shaped mounds

*deep/low light:* thick, lumpy plates

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OFRA

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How similar to *O. faveolata*:
have bumps on large mounds, crusts or thick plates

How differs:
larger polyps overall
polyps on bumps are even bigger, irregularly shaped, and often lack zooxanthellae
more aggressive as a spatial competitor
How similar to *O. annularis*: can form large columns or thick plates

How differs:
enlarged polyps in irregular bumps can lack zooxanthellae
polyps along growing margins are enlarged
more aggressive as a spatial competitor
Which is Which?

O. annularis
OANN

O. franksi
OFRA

O. faveolata
OFAV

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Complications!

Some colonies look like “intermediates” of *O. franksi*, *O. annularis* and *O. faveolata*.

If unsure of species identity, code as: *Orbicella* ORBI

“In general, the genetic and morphological data suggest a north to south* hybridization gradient, with evidence for introgression strongest in the north. However, reproductive data show no such trend, with intrinsic barriers to gene flow comparable or stronger in the north.” See Fukami *et al.*, 2004 (reference given on final slide).

*north to south = Bahamas *versus* Panama
Solenastrea bournoni  SBOU

polyps separated by a smooth inter-polyp surface

cream to light brown;
polyps are slightly darker than the inter-polyp spaces

smooth or irregularly shaped mounds

(usually to ~ 50 cm/20 in)
How differs from *O. franksi*: smooth inter-polyp surfaces
bumps on mounds lack enlarged, colourless polyps
lighter colours with distinctly darker polyp centers
smaller colonies when fully grown
Which is Which?

O. franksi
OFRA

S. bournoni
SBOU
Solenastrea hyades  SHYA

How similar to *S. bournoni*:
light colours
polyps with distinct walls
(to ~ 60 cm/2 ft)

How differs:
larger polyps
irregular lobes above an encrusting base
Montastraea cavernosa  MCAV

large, round, exsert polyps
brown, yellow-brown, green or grey; sometimes fluorescent colours
(to ~ 3 m/9 ft)

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Montastraea cavernosa  MCAV

shallow/high light: mounds or columns
Montastraea cavernosa  MCAV

deep/low light: flattened, massive plates or crusts
Montastraea cavernosa  MCAV

Fluorescent proteins in the polyps produce the greenish or orange-red fluorescence that is sometimes seen under natural illumination, especially at depths > 3m/10 ft (see Oswald et al., 2007, reference given on final slide).

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natural light  strobe light

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Dichocoenia stokesi

very exsert, round, elliptical, elongate, or Y-shaped polyps
cream, yellow, or brown mounds or irregular shapes
(to 50 cm/18 in)
How differs from *M. cavernosa*: polyps are much more variable in shape

septa on vertical (not sloping) walls are more distinct

lighter colours

fully grown colonies are smaller
Colonies with flattened plates, and many smaller round polyps, have been called *Dichocoenia stellaris*.

Their identity, and that of columnar or irregularly shaped “intermediates” with flattened bases, is unclear.
What are These?

These are all called:  
*D. stokesi*  
DSTO!
somewhat exsert, round-elongated polyps (some Y-shaped)
septa have small teeth (see next slide)
pale yellow to brown
small mounds (usually to ~ 10 cm/4 in)
How similar to *D. stokesi*: exert, round-elongated polyps, some are Y-shaped similar colours

How differs:
- polyp walls protrude far less
- polyps are less separate
- septa with teeth on summits and inner sides
- fully grown colonies are smaller
Which is Which?

D. stokesi
DSTO

M. cavernosa
MCAV

F. fragum
FRA

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Siderastrea siderea

small, sunken polyps ("innies") with very thin septa
uniform colours: grey, yellow-brown to brown
rounded mounds
(to ~ 2 m/6 ft)
**Siderastrea siderea**  SSID

some pale or bleached colonies are fluorescent

smaller colonies may be encrusting
Siderastrea radians  

sunken “pinched” polyps (“innies”) with thick septa
pale polyp walls, centers dark

crusts, low mounds or unattached nodules
small (to ~ 30 cm/12 in)
How differs from *S. siderea*: septa are fewer and thicker “pinched” polyps, some elongate, and with darker centers fully grown colonies are smaller and flatter
Which is Which?

S. siderea
SSID

S. radians
SRAD
Which is Which?

**S. radians**  
SRAD

**S. siderea**  
SSID
Stephanocoenia intersepta  SINT

round, sunken polyps (“innies”) with thick septa

brown colour is most intense in polyp centers; appear to “blush” when polyps contract

thick crusts, irregular mounds

(to ~ 1 m/3 ft)
**Stephanocoenia intersepta**  

How similar to *Solenastrea bournoni*:
small, round polyps with light brownish colours that are most intense in polyp centers

**How differs:**
sunken (not protruding) polyps

crusts and low mounds have relatively smooth surfaces without large bumps
Stephanocoenia intersepta  SINT

How similar to  
*Siderastrea radians*:
- sunken polyps with dark polyp centers

How differs:
- “blushes” when tissues contract
- no “pinched” polyps
- larger crusts and mounds when fully grown

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Which is Which?

S. intersepta  
SINT

S. radians  
SRAD

S. bournoni  
SBOU

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Porites astreoides  PAST

tall, thin polyps look “fuzzy” when expanded
“lumpy” mounds or plates
“unusual” shape or colour combinations can occur even within a single coral!
(to ~ 1 m/3 ft)
Porites astreoides  PAST

*shallow:* usually lumpy mounds and yellow, yellow-green or olive

*deep:* usually thick crusts, lumpy or flattened plates and grey or brown
References

