AGRRA Standard Product Metadata

Access Database

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Atlantic & Gulf Rapid Reefs Assessment (AGRRA)

Introduction

The purpose of this document is to describe AGRRA's standard products that are provided as a result of analysis of the data within the AGRRA Access database. This document should be used in tandem with the AGRRA training materials which describe the methodology used to collect data within the AGRRA surveys.

For the purposes of this document, the "Key" portion of the transect-level spreadsheets are presented for each summary product below. In the summary products, transects are averaged or summed to create the site level products. For all levels above site (i.e., batch, ecoregion, zone, etc.), site level values are averaged/summed to create the final product set.

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Algal Abundance

Highlights:

- Only includes data collected on benthic transects using Version 1-3 of the AGRRA Methodology
- Quadrat filtering restrictions: quadrats with <80% cover of any algal group excluded
- Starting in Version 3, Macroalgae were partitioned between Fleshy and Calcareous Macroalgae.
- Starting in Version 3, Turf Algae were no longer recorded

In versions 1-3 of the AGRRA protocol, the abundance (but not cover) of the major algal groups was estimated as the average of the percentage estimates in 25 x 25cm quadrats, originally placed (Version 1) at intervals along, or near, a 10m benthic transect. Beginning in Version 2, the number of quadrats/transect was stabilized at five; directions on their placement and amount of sediment cover to remove before observing the algae were progressively standardized. The maximum macroalgal heights recorded in each of the quadrats in V1 was changed to average heights in V2. Starting in version 3, turf algae were removed, and macroalgae were partitioned into fleshy and calcareous groups with separate measurements of their average heights. Macroalgal index, a proxy for algal biomass, was calculated as macroalgal abundance x macroalgal height.

Key	Product Definition	Description
CCA	% Crustose algae	Crustose coralline algal abundance

TA	% Turf algae	Turf algal abundance; Versions 1 and 2 only
M	% Macroalgae	Macroalgal abundance; calculated as sum of Fleshy and Calcareous Macroalgal abundances in Version 3
MH	Macro height (cm)	Macroalgal height calculated as avg. of Fleshy and Calcareous Macroalgal heights in Version 3
MI	Macro index	Macro abundance x Macro height; All Versions (**M*****MH**)
FMA	% Fleshy Macroalgae	Avg. Fleshy Macroalgal abundance; Version 3 only
FH	Fleshy Macro height (cm)	Avg. Fleshy Macroalgal height; Version 3 only
FMI	Fleshy Macro index	Avg. Fleshy Macro abundance x Avg. Fleshy Macro height; Version 3 only (**FMA*****FH**)
CMA	% Calcareous Macroalgae	Avg. Calcareous Macroalgal abundance; Version 3 only
CH	Calcareous Macro height (cm)	Avg. Calcareous Macroalgal height; Version 3 only
CMI	Calcareous Macro index	Avg. Calcareous Macro abundance x Avg. Calcareous Macro height; Version 3 only (**CMA*****CH**)

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Algal Cover

Highlights:

- Only includes data collected on benthic transects using Version 4 of the AGRRA Methodology
- Quadrat filtering restrictions: quadrats with <80% cover of any algal group excluded
- Algal group measurements as lengths intersecting the benthic transect line

The total intercept lengths of each algal group (but not Turf algae) along the 10-m benthic transect line was recorded. Average macroalgal heights, to calculate macroalgal index (as a function of cover not abundance), were measured in five, 25 cm x 25cm quadrats placed at five, 2-m intervals on the line. Each algal group is calculated as a proportion by summing its total intercept lengths and dividing by the total transect length in meters, i.e., Sum of Group intercept lengths (cm) / [Transect length (cm)]. The percentage cover for each group equals its proportion multiplied by 100.

Key	Product Definition	Description
CCA	% Crustose algae	Percent of crustose coralline algal intercept lengths
M	% Macroalgae	Percent of fleshy and calcareous macroalgal intercept lengths
MH	Macro height (cm)	Weighted avg. of the mean fleshy and mean calcareous macroalgal heights based on their relative intercept lengths
MI	Macro index	Macroalgal cover x Avg. Macroalgal height (**M*****MH**)
FMA	% Fleshy Macroalgae	Percent of fleshy macroalgal intercept lengths
FH	Fleshy Macro height (cm)	Avg. fleshy macroalgal height
FMI	Fleshy Macro index	Fleshy macroalgal cover x Avg. fleshy macroalgal height (**FMA*****FH**)
CMA	% Calcareous Macroalgae	Percent of calcareous macroalgal intercept lengths
CH	Calcareous Macro height (cm)	Avg. calcareous macroalgal height
CMI	Calcareous Macro index	Calcareous macroalgal cover x Avg. calcareous macro height (**CMA*****CH**)

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Algal Point Cover

Highlights:

- Only includes data collected on benthic transects using Version 5 of the AGRRA Methodology
- Values include any SAND/MUD/GRASS cover along transect, i.e., represent absolute percent cover regardless of the extent of any reef or other hard bottom.
- Lobophora heights assumed to be 0.1cm if not explicitly measured.

The code for each algal group that is directly below 100 points marked at 10-cm intervals along the 10-m benthic transects is recorded. Macroalgal heights are measured on at least 2 of the 6 transects and averaged for each transect. Each algal group is calculated as a proportion by summing the number of points for all its codes and dividing by the total number of available points in the transect length, i.e., Sum of Group Code Points / [Transect length (m) * 10]. The percentage cover for each group equals its proportion multiplied by 100.

Key	Product Definition	Description
Length	Length of transect (m)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
CCA	% Crustose algae	Only includes the CCA benthic code
TA	% Turf algae	Includes all benthic codes of turf algae* (TA/OSTR, TAM, TAS/STA benthic codes)**
M	% Macroalgae	Includes all benthic codes for fleshy, calcareous and undefined macroalgal points
MH	Macro height (cm)	Average macroalgal height of all macroalgae (**M** data column, not **UM**)
MI	Macro index	Macroalgal cover x Avg. macroalgal height (**M***MH**)
UM	% Undefined Macroalgae	Only includes the undefined macroalgal points (MA)
FMA	% Fleshy Macroalgae	Includes benthic codes of all the fleshy macroalgae*
FH	Fleshy Macro height (cm)	Average fleshy macroalgal height
FMI	Fleshy Macro index	Fleshy macroalgal cover x Avg. fleshy macroalgal height (**FMA***FH**)
CMA	% Calcareous Macroalgae	Includes benthic codes of all the calcareous macroalgae*,***
CH	Calcareous Macro height (cm)	Average calcareous macroalgal height
CMI	Calcareous Macro index	Calcareous macroalgal cover x Avg. calcareous macroalgal height (**CMA***CH**)

Bolded codes in definitions and descriptions refer to column ("Key") codes, not benthic codes.
*For listing of all benthic codes, see the training material document "AGRRA Benthos UW Codes.pdf" in the training materials section of the website as well as Table 1 in the Reference Tables section of this document.
**See Benthic Point Cover product to see turf algae codes calculated separately (TA/OSTR, TAM, TAS/STA).
***CMA no longer contains the ND-HALI benthic code for newly dead *Halimeda* as of 3/5/2020

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Algal Point Cover Scaled

Highlights:

- Only includes data collected on benthic transects using Version 5 of the AGRRA Methodology
- Percentages based on SCALED transect length with points for SAND/MUD/GRASS excluded, i.e., represents percent cover restricted to any reef or other hard bottom.
- *Lobophora* heights assumed to be 0.1cm if not explicitly measured.

The code for each algal group that is directly below 100 points marked at 10-cm intervals along the 10-m benthic transects is recorded. Macroalgal heights are measured on at least 2 of the 6 transects and averaged for each transect. Each algal group is calculated as a proportion by summing the number of points for all its codes and dividing by the total number of available points in the transect length minus the sum of the SAND/MUD/SEAGRASS points, i.e., Sum of Group Code Points / {[Transect length (m) * 10] – Sum of Sand/Mud/Seagrass points}. The percentage cover for each group equals its proportion multiplied by 100.

Key	Product Definition	Description
Length	Length of transect (m)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
SAND	Number of points coded as SAND	Transect-level product only
MUD	Number of points coded as MUD	Transect-level product only
GRASS	Number of points coded as GRASS, HALO, HSTI, SYRI, and THAL	Transect-level product only
SLength	Scaled length of transect (m) after removing **SAND**, **MUD** & **GRASS**	Transect-level product only
CCA	% Crustose algae	Only includes the CCA benthic code
TA	% Turf algae	Includes all benthic codes of turf algae* (TA/OSTR, TAM, TAS/STA benthic codes)**
M	% Macroalgae	Includes all benthic codes for fleshy, calcareous and undefined macroalgal points
UM	% Undefined Macroalgae	Only includes the undefined macroalgal points (MA)
MH	Macro height (cm)	Average macroalgal height of all macroalgae (**M** data column, not **UM**)
MI	Macro index	Macroalgal cover x Avg. macroalgal height (**M***MH**)
FMA	% Fleshy Macroalgae	Includes benthic codes of all the fleshy macroalgae*
FH	Fleshy Macro height (cm)	Average fleshy macroalgal height
FMI	Fleshy Macro index	Fleshy macroalgal cover x Avg. fleshy macroalgal height (**FMA***FH**)
CMA	% Calcareous Macroalgae	Includes benthic codes of all the calcareous macroalgae*,***
CH	Calcareous Macro height (cm)	Average calcareous macroalgal height
CMI	Calcareous Macro index	Calcareous macroalgal cover x Avg. calcareous macroalgal height (**CMA***CH**)

Bolded codes in definitions and descriptions refer to column ("Key") codes, not benthic codes.

*For listing of all benthic codes, see the training material document “AGRRA Benthos UW Codes.pdf” in the training materials section of the website as well as Table 1 in the Reference Tables section of this document.
**See Benthic Point Cover product to see turf algae codes calculated separately (TA/OSTR, TAM, TAS/STA).
***CMA no longer contains the ND-HALI benthic code for newly dead *Halimeda* as of 3/5/2020

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Batch

Highlights:

- This product shows the different batches (i.e., Project groupings of sites) and their attributes that are involved in the entire set of products provided. (Similar to “Site” product)

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Benthic Index

Highlights:

- Only includes data collected on benthic transects using Version 5 of the AGRRA Methodology
- 0.5% scored for combination points (e.g., DICT-HALI = ½ *Dictyota* & ½ *Halimeda*)
- Percentages based on SCALED transect length with points for SAND/MUD/GRASS excluded

A dimensionless number between 1 and 4, with high values corresponding to a reef benthos in relatively good condition, Benthic Index expresses the mean amount of reef surface covered by “reef promoters,” i.e., organisms that facilitate reef growth and allow coral larvae to settle, most importantly live corals, crustose coralline algae and sparse turf algae versus “reef detractors,” i.e., spatial competitors of corals and crustose coralline algae (CCA), like macroalgae, turf algal sediment mats and certain invertebrates that displace corals or prevent settlement of coral larvae and CCA spores. Benthic codes are recorded as points set at 10cm intervals along 10m benthic transects. Benthic groups are grouped as “Positive” (can facilitate reef growth and allow settlement of coral larvae/CCA spores) or “Negative” (can displace reef constructors and/or prevent coral larvae/CCA spores from settling). Each benthic group is calculated as a proportion by summing the number of points for all its codes and dividing by the total number of available points in the transect length minus the sum of the SAND/MUD/SEAGRASS points, i.e., Point sum of Codes / {[Transect length (m) * 10] – Sum of Sand/Mud/Seagrass points}. The percentage cover for each group equals its proportion multiplied by 100. These benthic components are summed to create percentages and converted to rankings used to calculate the benthic index as detailed in the table below.

For more information, see: Lang et al. 2016

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only

SAND	Number of points coded as SAND	Transect-level product only
MUD	Number of points coded as MUD	Transect-level product only
GRASS	Number of points coded as GRASS, HALO, HSTI, SYRI, and THAL	Transect-level product only
SLength	Scaled length of transect (meters) after removing **SAND**, **MUD** & **GRASS**	Transect-level product only
LC	% Live Coral (POSITIVE)	Includes all the categories of Coral, Coral-Bleached, and Coral-Pale benthic codes*
CCA	% Algae-Crustose (POSITIVE)	Only includes the CCA benthic code
FILM	% Biofilm (POSITIVE)	Only includes the FILM benthic code
TA	% Algae-Turf (POSITIVE)	Includes all benthic codes of turf algae (TA, OSTR)*,**
TAS	% Algae-Turf-Sediment (NEGATIVE)	Includes all benthic codes of turf-sediment algae (TAS, STA)*
TAM	% Algae-Turf-Mat (NEGATIVE)	Only includes the TAM benthic code**
MA	% Algae-Macro-(mixed) (NEGATIVE)	Only includes the MA benthic code which is an unclassified fleshy or calcareous alga or a mix point of both
CMA	% Algae-Macro-Calcareous (NEGATIVE)	Includes benthic codes of all the calcareous macroalgae*,***
FMA	% Algae-Macro-Fleshy (NEGATIVE)	Includes benthic codes of all the fleshy macroalgae*
CYAN	% Cyanobacteria (NEGATIVE)	Includes all conspicuous cyanobacteria
PEYS	% Algae-Peyssonnelid (NEGATIVE)	Only includes the PEYS benthic code
AINV	% Invertebrates-Aggressive (NEGATIVE)	Includes benthic codes of all the aggressive invertebrates*
NDC	% Newly Dead Coral (NEGATIVE)	Includes all of the category Coral-Dead benthic codes*
NDCCA	% Algae-Crustose-Newly Dead (NEGATIVE)	Only includes ND-CCA benthic code
NDHALI	% Newly Dead Halimeda (NEGATIVE)	Only includes ND-HALI benthic code
POSsum	% POSITIVE benthic components	LC + CCA + FILM + TA
POSrank	Rank of POSITIVE benthic components	1: <15%, 2: <30%, 3: <60%, 4: ≥60%
NEGsum	% NEGATIVE benthic components	TAS + TAM + MA + CMA + FMA + CYAN + PEYS + AINV + NDC + NDCCA + NDHALI
NEGrank	Rank of NEGATIVE benthic components	4: <15%, 3: <30%, 2: <60%, 1: ≥60%
BI	Benthic Index	(POSrank + NEGrank) / 2

Bolded codes in definitions and descriptions refer to column ("Key") codes, not benthic codes.
*For listing of all benthic and coral codes, see the training material document "AGRRA Benthos UW Codes.pdf" in the training materials section of the website as well as Tables 1 and 2 in the Reference Tables section of this document.
**TAM has been separated out from the TA category as of 3/10/2020
***CMA no longer contains the ND-HALI benthic code for newly dead *Halimeda* as of 3/5/2020

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Benthic Point Cover

Highlights:

- Only includes data collected on benthic transects using Version 5 of the AGRRA Methodology

- Values include any SAND/MUD/GRASS cover along transect
- 0.5% scored for combination points (e.g., DICT-HALI = ½ *Dictyota* & ½ *Halimeda*)

The code for each benthic group that is directly below 100 points marked at 10-cm intervals along the 10-m benthic transects is recorded. Each benthic group is calculated as a proportion by summing the number of points for all its codes and dividing by the total number of available points in the transect length, i.e., Sum of Group Code Points / [Transect length (m) * 10]. The percentage cover for each group equals its proportion multiplied by 100.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
SAND	% Sand	Only includes SAND and SEDI benthic codes
MUD	% Mud	Only includes MUD and SILT benthic codes
GRASS	% Seagrass	Only includes GRASS, HALO, HSTI, SYRI, and THAL benthic codes
LC	% Live Coral	Includes all the categories of Coral, Coral-Bleached, and Coral-Pale benthic codes*
NDC	% Newly Dead Coral	Includes the categories of Coral-Dead benthic codes*
CCA	% Algae-Crustose	Only includes the CCA benthic code
NDCCA	% Algae-Crustose-Newly Dead	Only includes ND-CCA benthic code
OC	% Other-Calcifiers (*Gypsina*, Calcified Worm Tubes)	Only includes CWT and GYPS benthic codes
TA	% Algae-Turf	Includes all benthic codes of turf algae (TA, OSTR)**
TAS	% Algae-Turf-Sediment	Includes all benthic codes of turf-sediment algae (TAS, STA)
TAM	% Algae-Turf-Mat	Only includes the TAM benthic code**
MA	% Algae-Macro	Only includes the MA benthic code which is an unclassified fleshy or calcareous alga or a mix point of both
CMA	% Algae-Macro-Calcareous	Includes benthic codes of all the calcareous macroalgae*,***
FMA	% Algae-Macro-Fleshy	Includes benthic codes of all the fleshy macroalgae*
CYAN	% Cyanobacteria	Includes all conspicuous Cyanobacteria
FILM	% Biofilm	Only includes the FILM benthic code
AINV	% Invertebrates-Aggressive	Includes benthic codes of all the aggressive invertebrates*
OINV	% Invertebrates-Other	Includes benthic codes of all the non-aggressive invertebrates*
PEYS	% Algae-Peyssonnelid	Only includes the PEYS benthic code
O	% Other (Rubble, Hole, Unknown, etc., but NOT Sand/Mud/Seagrass)	Includes benthic codes in the Other category excluding the codes given in sand/mud/seagrass*

*For listing of all benthic and coral codes, see the training material document "AGRRA Benthos UW Codes.pdf" in the training materials section of the website as well as Tables 1 and 2 in the Reference Tables section of this document.
**TAM has been separated out from the TA category as of 3/10/2020
***CMA no longer contains the ND-HALI benthic code for newly dead *Halimeda* as of 3/5/2020

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Benthic Point Cover Code

Highlights:

- Only includes data collected on benthic transects using Version 5 of the AGRRA Methodology
- Values include any SAND/MUD/GRASS cover along transect
- Shows percent cover for many of the unique benthic codes in the AGRRA database

The cover of all benthic groupings of benthic organisms (including corals, invertebrates and macroalgae), recorded as points set at 10-cm intervals along 10-m benthic transects. For listing of all coral and other benthic codes, see Tables 1 and 2 in the Reference Tables section of this document.

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Benthic Point Cover Scaled

Highlights:

- Only includes data collected on benthic transects using Version 5 of the AGRRA Methodology
- Values SCALED to remove any SAND/MUD/GRASS cover along transect.
- 0.5% scored for combination points (e.g., DICT-HALI = ½ *Dictyota* & ½ *Halimeda*)

The code for each benthic group that is directly below 100 points marked at 10-cm intervals along the 10-m benthic transects is recorded. Each benthic group is calculated as a proportion by summing the number of points for all its codes and dividing by the total number of available points in the transect length minus the sum of the SAND/MUD/SEAGRASS points, i.e., Point sum of Codes / {[Transect length (m) * 10] – Sum of Sand/Mud/Seagrass points}. The percentage cover for each group equals its proportion multiplied by 100.

Key	Product Definition	Description
Length	Length of transect (m)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
SAND	Number of points coded as SAND or SEDI	Transect-level product only
MUD	Number of points coded as MUD or SILT	Transect-level product only
GRASS	Number of points coded as GRASS, HALO, HSTI, SYRI, or THAL	Transect-level product only
SLength	Scaled length of transect (m) after removing **SAND**, **MUD** & **GRASS**	Transect-level product only
LC	% Live Coral	Includes all Coral, Coral-Bleached, and Coral-Pale benthic codes*
NDC	% Newly Dead Coral	Includes all Coral-Dead benthic codes*

CCA	% Algae-Crustose	Only includes the CCA benthic code
NDCCA	% Algae-Crustose-Newly Dead	Only includes CCA-ND benthic code
OC	% Other-Calcifiers (*Gypsina*, Calcified Worm Tubes)	Only includes CWT and GYPS benthic codes
TA	% Algae-Turf	Includes all benthic codes for turf algae (TA, OSTR)**
TAS	% Algae-Turf-Sediment	Includes all benthic codes for turf-sediment algae (TAS, STA)
TAM	% Algae-Turf-Mat (NEGATIVE)	Only includes the TAM benthic code**
MA	% Algae-Macro	Only includes the generic MA benthic code
CMA	% Algae-Macro-Calcareous	Includes benthic codes of all the calcareous macroalgae*,***
FMA	% Algae-Macro-Fleshy	Includes benthic codes of all the fleshy macroalgae*
CYAN	% Cyanobacteria	Includes all conspicuous Cyanobacteria
FILM	% Biofilm	Only includes the FILM benthic code
AINV	% Invertebrates-Aggressive	Includes benthic codes of all the aggressive invertebrates*
OINV	% Invertebrates-Other	Includes benthic codes of all the non-aggressive invertebrates*
PEYS	% Algae-Peyssonnelid	Only includes the PEYS benthic code
O	% Other (Rubble, Hole, Unknown, etc., but NOT Sand/Mud/Seagrass)	Includes benthic codes in the Other category excluding the codes given in sand/mud/seagrass*

Bolded codes in definitions and descriptions refer to column ("Key") codes, not benthic codes.
* For listing of all benthic and coral codes, see the training material document "AGRRA Benthos UW Codes.pdf" in the training materials section of the website as well as Tables 1 and 2 in the Reference Tables section of this document.
**TAM has been separated out from the TA category as of 3/10/2020
***CMA no longer contains the ND-HALI benthic code for newly dead *Halimeda* as of 3/5/2020

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Coral Area - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.
- All areas and percentages are estimates based on the measurements taken of the coral dimensions perpendicular to the axis of growth (planar view roughly parallel to the seafloor).
- Colony area estimate, assuming an overall oval shape, = Pi * [(Length * Width) / 4]
- **New** mortality = Non-living, freshly exposed, white, intact corallite structures
- **Transitional** mortality = Non-living corallite structures are slightly eroded and visible beneath sediment, diatom or cyanobacterial films, or algal turfs
- **Recent** mortality= New + Transitional mortality; used pre-V5
- **Old** mortality= Non-living corallite structures are overgrown by organisms that are not easily removed (e.g., many macroalgae and invertebrates)
- **Dead** = All mortality [(New + Transitional + Old) or (Recent + Old)]

- **Live** = Currently living coral (healthy-looking, pale or bleached) calculated as the coral area – sum of all mortality groups.

Coral measurements (length, width, and height), based on a planar view, are recorded for each coral transect along with the percentages of mortality. In protocol versions 1-4, mortality was made up of "Recent" and "Old." In version 5, "Recent" was split and became the sum of "New" and "Transitional" mortality. The width measurement was added in version 4 of the protocol as Versions 1-3 had only recorded length and height. Corals measured in versions 1-3 are assumed to have the same width as their length (then called diameter, ie. circular) in order to calculate area. Idealized coral total area is calculated as Pi * [(Length * Width) / 4] (ie. a circle for versions 1-3 where length and width are equal and an oval for versions 4-5). Once total area is calculated, the amounts of live and dead area per coral (and their relative percentages) can be calculated, based on the recorded mortality percentage. Each coral area group is the sum of all the individual coral calculations per transect.

Key	Product Definition	Description
TOTAL	Sum of Total colony area (cm^2)	All coral areas calculated using the average of the width and length measurements
NEW	Sum of New mortality area (cm^2)	Percent of new mortality per colony estimated in field * colony area gives the area of new mortality. This is then summed for all colonies within a transect.
TRAN	Sum of Transitional mortality area (cm^2)	Percent of transitional mortality per colony estimated in field * colony area gives the area of transitional mortality. This is then summed for all colonies within a transect.
REC	Sum of Recent mortality area (cm^2)	Sum of **NEW** and **TRAN**
OLD	Sum of Old mortality area (cm^2)	Percent of old mortality per colony estimated in field * colony area gives the area of old mortality. This is then summed for all colonies within a transect.
DEAD	Sum of Dead area (cm^2)	Sum of **NEW**, **TRAN**, and **OLD**
LIVE	Sum of Live area (cm^2)	**TOTAL** - **DEAD**
%NEW	% New mortality area (% of total area)	Percent of all the coral area within the transect that is new mortality (**NEW**/**TOTAL** * 100)
%TRAN	% Transitional mortality area (% of total area)	Percent of all the coral area within the transect that is transitional mortality (**TRAN**/**TOTAL** * 100)
%REC	% Recent mortality area (% of total area)	Sum of **%NEW** and **%TRAN**
%OLD	% Old mortality area (% of total area)	Percent of all the coral area within the transect that is old mortality (**OLD**/**TOTAL** * 100)
%DEAD	% Dead area (% of total area)	Sum of **%NEW**, **%TRAN**, and **%OLD**
%LIVE	% Live area (% of total area)	100 - **%DEAD**

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Coral Composition - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.

The numbers and percentages of the most common stony coral genera (12 out of 27 included) and species (21 out of 76 included). The percentages are simply the abundance values divided by the total number of corals per transect * 100. These values cannot be used for estimates of population density in pre-Version 5 batches, as large corals are more likely than small corals to be sampled by line transects (Zvuloni et al. 2008. Limnol. Oceanogr.: Methods 6: 144-15). Fragments are not included in the current version of this calculated product.

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Coral Cover

Highlights:

- This is one product for all versions of the AGRRA protocol
- Different protocols measure coral cover differently which may limit comparisons among versions (see below)
- Coral cover not measured for the Bahamas-1997, Bahamas-1998A, Belize-1999A & VirginIslands-1998 batches (Version 1 of the protocol)

As this product spans the majority of all the batches in the database, dating back to Version 2 of the AGRRA protocol, there are a few differences to consider. It is important to know which version of the protocol each batch/survey employed in order to compare data collected in different years.

Protocols V2-3: Coral coverage is measured as the percentage of the total length (to the nearest 10cm) of the 10m transect that intersects live coral. The scaled value of coral coverage is the percentage of live coral in the length of transect that intersects a reef or other hard bottom, i.e., the transect length from which sand has been excluded, calculated as length of live coral under transect / (10m – length of sand patches).

Protocol V4: Coral coverage is measured as the percentage of the total length of the 10m transect that is intersecting live coral. The scaled value of coral coverage is the percentage of live coral in the length of transect that intersects a reef or other hard bottom, i.e., the transect length from which sand has been excluded calculated, as length of live coral under transect / (10m – [length of sand patches). This is very similar to the V2-3 methodology, except the lengths are measured at a higher precision (and as coral name code by experienced surveyors) along with other benthic categories.

Protocol V5: Coral coverage is calculated as the sum of the benthic points that are categorized as live coral, live coral/bleached, and live coral/pale divided by the total number of points under the transect line (usually 100 points for a full 10m transect). Scaled is the same except the denominator (total points dividing by) removes sand/mud/seagrass (which includes SAND, MUD, GRASS, HALO, HSTI, SYRI, THAL) points (see Table 1 in the Reference Tables section of this document for all AGRRA benthic codes). 2 codes are allowed for each point. If one code exists, it gets the full value of the point. If 2 codes exist, they are each scored as half a point.

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Coral Cover Species

Same as “Coral Cover” methodology but partitioned by species (only applicable to versions 4 and 5). Absolute values not scaled to remove sand, mud (V5 only) and seagrass (V5 only) from transect length.

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Coral Cover Species Scaled

Same as “Coral Cover” methodology but partitioned by species (only applicable to versions 4 and 5). Relative values scaled by having any length along transect containing sand, mud (V5 only), or seagrass (V5 only) subtracted from transect length.

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Coral Density - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.
- This product is only applicable to protocol Version 4 and later.
- Version 4 of the protocol used a 10-m line transect method while version 5 used a 1x10 m belt for corals; thus, the data from these two versions are not comparable.

The number of colonies and colony density [colonies per meter (Version 4) or per square meter (Version 5)] for all coral species combined at the transect level and above and for each species at the batch level. For version 5, both measured and counted corals were included in the density calculations (Length = measured transect length + counted transect length).

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
COLONY	Colony density (#/10m or /10m^2)	Number of colonies / Length * 10
CLUMP	Clump density (#/10m or /10m^2)	Number of clumps / Length * 10
FRAG	Fragment density (#/10m or /10m^2)	Number of fragments / Length * 10

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Coral Disease - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.
- These names are not intended to be diagnostic of any particular pathogen or other causation. Each disease is assigned a code. When an incorrect disease name has been assigned to a coral (e.g. WPD on acroporids) it has been reclassified as UNK.

Prevalence (as percentages) of common coral diseases and of bleached corals for all coral species is combined at the transect level and above and for each species at the batch level. Each disease group is calculated as a proportion by summing the number of corals with its code and dividing by the total number of corals in the transect length surveyed. The percentage for each group equals its proportion multiplied by 100.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
NC	Total number of corals	Number of corals measured for each transect
BLEACH	% Bleached	All corals that had paling, partly bleached or bleached recorded
X	% Disease present (Basic surveys)	Corals marked that a disease is present but purposefully not identified as the surveyor was a novice (transect marked as basic)
UNK	% Unknown disease	Corals marked that a disease is present but the surveyor was unable to identify which disease
BBD	% Black Band Disease	-
CCI	% Caribbean Ciliate Infection	-
CHC	% Coral Health Compromised	-
CWS	% Caribbean White Syndrome	-
DSD	% Dark Spot Disease	-
GAN	% Growth Anomaly	-
RTL	% Rapid Tissue Loss	-
RBD	% Red Band Disease	-
AWD	% Acropora White Diseases/Syndromes	-
CBD	% Colored Band Diseases	-
WBD	% White Band Disease	-
WPD	% White Plague Disease	-
WSD	% White Spot/Patchy Necrosis	-
YBD	% Yellow Band/Blotch Disease	-
WDS	% White Diseases/Syndromes	-
SCTLD	% Stony Coral Tissue Loss Disease	-
TOTAL	% Total diseases	Sum of all disease type percentages

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Coral Family Composition

The number and percentages of coral colonies recorded in each coral family by batch. Percent is calculated as the number of colonies for each group divided by the total number of colonies present per batch * 100.

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Coral Mortality Prevalence - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.
- Mortality was estimated in a non-comparable method for the V.1 Bahamas-1997 batch (25cm).
- For V5 protocol batches Recent mortality is no longer recorded but computed as New + Transitional mortalities

The number and percentage of corals that are standing dead (ie. completely dead over all parts of the skeleton, and still identifiable to species or at least to genus level) and of corals that show various forms of partial coral mortality (new, transitional, old) or combinations thereof. Originally, the AGRRA protocol measured recent mortality as mortality in which corallite structures are white and either still intact or covered by a layer of turf algae or fine mud; plus, any fresh scars in the live tissues that are exposed by fish bites. Starting in version 5 of the protocol, recent mortality was split and recorded as new and transitional mortality. New mortality means the skeletal structures of the coral have no sediment, bacterial/microalgal biofilms, turf algae, etc., on their bright white surfaces. In transitional mortality, the skeletal structures are slightly eroded at most and covered with a fine layer of sediment, microbial/microalgal biofilms, or sparse turf algae. Old mortality is the stage at which the skeletal structures are completely covered over by organisms that are not easily removed, e.g., thick algal turfs, many macroalgae and invertebrates.

Depending on the AGRRA batch, (ie. project_that used the AGRRA methodology) all corals greater than a minimum size of 10, or 25cm were assessed in Versions 1-4 and 4, 10 or 25 cm in Version 5. This product is split into these 3 size categories to allow similar batches of data (followed the same protocol) to be directly compared. Mortality was measured in a non-comparable method for the Bahamas-1997 batch and is therefore excluded from these products.

Key	Product Definition	Description
NC	Total number of corals	Number of corals assessed for each transect (includes only measured, not counted corals)
NSD	Total number of standing dead corals	Number of corals that are completely dead; Isolates = 0
NRM	Total number of corals with recent mortality	Number based on estimates of recent mortality in protocol versions 1-4; For version 5, **NNM+NTM**
NNM	Total number of corals with new mortality	Measured in version 5 batches only

NTM	Total number of corals with transitional mortality	Measured in version 5 batches only
NOM	Total number of corals with old mortality	
NAM	Total number of corals with any mortality	**NRM**+**NOM** or **NNM**+**NTM**+**NOM**
%SD	Percentage of standing dead corals	**NSD** / **NC** * 100
%RM	Percentage of corals with recent mortality	**NRM** / **NC** * 100
%NM	Percentage of corals with new mortality	**NNM** / **NC** * 100; Measured in version 5 batches only
%TM	Percentage of corals with transitional mortality	**NTM** / **NC** * 100; Measured in version 5 batches only
%OM	Percentage of corals with old mortality	**NOM** / **NC** * 100
%AM	Percentage of corals with any mortality	**NAM** / **NC** * 100

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Coral Partial Mortality - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.
- Mortality was measured in a non-comparable method for the Bahamas-1997 batch
- For V5 protocol batches Recent mortality is no longer recorded but computed as New + Transitional mortalities

The number of corals that are standing dead (defined as 100% OLD mortality in the current version of the products), and the average percentage of recent (Versions 1-4) or alternatively new and/or transitional (Version 5) or old (all Versions) partial mortality among all corals or all corals excluding standing dead (full definitions of each described in the "Coral Mortality Prevalence" product subsection of this document). These percentages differ from the percentages given in the Coral Area product. While the Coral Area product gives the percent of partial mortality area found among all the corals of a given transect, this product gives the average percent of partial mortality found on any given coral of a transect. Mortality was measured in a non-comparable method for the Bahamas-1997 batch and is therefore excluded from these products.

Key	Product Definition	Description
NC	Total number of corals	Number of corals assessed for each transect (includes only measured, not counted corals)
NSD	Total number of standing dead corals	Number of corals that are completely dead; Isolates = 0
N	% new partial mortality (excluding standing dead)	Average percentage of new partial mortality on assessed colonies that were living; Measured in version 5 batches only
T	% transitional partial mortality (excluding standing dead)	Average percentage of transitional partial mortality on assessed colonies that were living; Measured in version 5 batches only
R	% recent partial mortality (excluding standing dead)	Average percentage of recent partial mortality (new + transitional at the colony level in version 5 batches) on assessed colonies that were living

O	% old partial mortality (excluding standing dead)	Average percentage of old partial mortality on assessed colonies that were living
A	% all (total) partial mortality (excluding standing dead)	Average percentage of total partial mortality (new + transitional + old at the colony level) on assessed colonies that were living
NSD	% new partial mortality (including standing dead)	Average percentage of new partial mortality on all assessed colonies; Measured in version 5 batches only
TSD	% transitional partial mortality (including standing dead)	Average percentage of transitional partial mortality on all assessed colonies; Measured in version 5 batches only
RSD	% recent partial mortality (including standing dead)	Average percentage of recent partial mortality (new + transitional at the colony level in version 5 batches) on all assessed colonies
OSD	% old partial mortality (including standing dead)	Average percentage of old partial mortality on all assessed colonies
ASD	% all (total) partial mortality (including standing dead)	Average percentage of total partial mortality (new + transitional + old at the colony level) on all assessed colonies

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Coral Recruits

Highlights:

- Quadrat filtering restrictions for protocol versions 1-4: quadrats with <80% cover of any algal group excluded

This product contains recruit information for what is considered by AGRRA as a recruit. These are by definition small corals with maximum diameters of 2 cm or less. Starting in V5.4 of the AGRRA protocol "large" recruits in the size range between 2-4 cm are now recorded along with the smaller recruits within the quadrats on the benthic transect. Information for the newer large recruits can be found in the “Large” sheet of this workbook along with the standard smaller recruit information. Note that the large recruits in the 2-4 cm range may actually represent mature corals for some smaller species such as SRAD or FFRA. It is also important to note that recording recruits was an optional part of the AGRRA protocol until Version 3 when it became a required part of the process.

The numbers of coral recruits are recorded within quadrats in order to calculate densities with overall totals as well as densities of the most commonly encountered coral recruit genera (5 out of 27 genera). Densities are calculated for all coral species combined at the transect level and above and for each species at the batch level. Densities are calculated by taking the total number of recruits for each group for all recorded quadrats within a transect divided by the number of quadrats. This gives the density per quadrat which is one sixteenth of a square meter (25 x 25cm quadrats). This value is then multiplied by 16 to give the final densities per square meter.

Key	Product Definition	Description
NQ	Total number of quadrats	Number of quadrats recorded for each transect
ALL	Total number of all recruits	Sum of small and large recruits

AGAR	Total number of *Agaricia* recruits	Sum of small and large recruits
DICH	Total number of *Dichocoenia* recruits	Sum of small and large recruits
FAVI	Total number of *Favia* recruits	Sum of small and large recruits
PORI	Total number of *Porites* recruits	Sum of small and large recruits
SIDE	Total number of *Siderastrea* recruits	Sum of small and large recruits
UNKN	Total number of Unknown recruits	Sum of small and large recruits
ALL/m^2	Density of all recruits	Sum of small and large recruits; calculated per square meter
AGAR/m^2	Density of *Agaricia* recruits	Sum of small and large recruits; calculated per square meter
DICH/m^2	Density of *Dichocoenia* recruits	Sum of small and large recruits; calculated per square meter
FAVI/m^2	Density of *Favia* recruits	Sum of small and large recruits; calculated per square meter
PORI/m^2	Density of Porites recruits	Sum of small and large recruits; calculated per square meter
SIDE/m^2	Density of *Siderastrea* recruits	Sum of small and large recruits; calculated per square meter
UNKN/m^2	Density of Unknown recruits	Sum of small and large recruits; calculated per square meter
S_ALL/m^2	Density of all (Small) recruits	Only small recruits; calculated per square meter
S_AGAR/m^2	Density of *Agaricia* recruits	Only small recruits; calculated per square meter
S_DICH/m^2	Density of *Dichocoenia* recruits	Only small recruits; calculated per square meter
S_FAVI/m^2	Density of *Favia* recruits	Only small recruits; calculated per square meter
S_PORI/m^2	Density of *Porites* recruits	Only small recruits; calculated per square meter
S_SIDE/m^2	Density of *Siderastrea* recruits	Only small recruits; calculated per square meter
S_UNKN/m^2	Density of Unknown recruits	Only small recruits; calculated per square meter
L_ALL/m^2	Density of all (Large) recruits	Only large recruits; calculated per square meter
L_AGAR/m^2	Density of *Agaricia* recruits	Only large recruits; calculated per square meter
L_DICH/m^2	Density of *Dichocoenia* recruits	Only large recruits; calculated per square meter
L_FAVI/m^2	Density of *Favia* recruits	Only large recruits; calculated per square meter
L_PORI/m^2	Density of *Porites* recruits	Only large recruits; calculated per square meter
L_SIDE/m^2	Density of *Siderastrea* recruits	Only large recruits; calculated per square meter
L_UNKN/m^2	Density of Unknown recruits	Only large recruits; calculated per square meter
T_ALL/m^2	Density of all (Large & Small) recruits	Sum of small and large recruits; calculated per square meter
T_AGAR/m^2	Density of *Agaricia* recruits	Sum of small and large recruits; calculated per square meter
T_DICH/m^2	Density of *Dichocoenia* recruits	Sum of small and large recruits; calculated per square meter

T_FAVI/m²	Density of *Favia* recruits	Sum of small and large recruits; calculated per square meter
T_PORI/m²	Density of *Porites* recruits	Sum of small and large recruits; calculated per square meter
T_SIDE/m²	Density of *Siderastrea* recruits	Sum of small and large recruits; calculated per square meter
T_UNKN/m²	Density of Unknown recruits	Sum of small and large recruits; calculated per square meter

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Coral Size - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.
- Extra coral measurement (Width) only recorded starting with V4 protocol

The maximum diameter, width and height for the most commonly encountered coral species. Colony width was not recorded until version 4 of the protocol. The number, average, and standard deviation is given for each species. Number simply gives the number of colonies for that species that were measured. Average is the mean value (length, width, or height) of all the colonies per transect. Standard deviation is only given if the number of colonies is greater than one.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 10m, but could be shorter if external circumstances arose; Transect-level product only
NC	Total number of corals	
TOTAL	Size for all coral species	Average length, width, or height of all species combined (cm)
<species>	Species abbreviation	Number, average (cm), and standard deviation recorded for the top 20 occurring species

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Coral Size Frequency - 4, 10, 25cm

Highlights:

- Includes data collected on coral transects using all versions of the AGRRA methodology
- Batches are filtered by surveyed coral cutoff size (protocol and selection dependent; 4, 10, or 25cm length) such that batches with cutoffs less than or equal to the chosen cutoff are included. Any corals smaller than the cutoff are ignored.

Size distribution of common coral species in multiple size classes. Size classes based on idealized planar coral areas using measured diameter (length parallel to the substratum) for circular estimate (V1-3) and

measured maximum length and maximum width perpendicular to the direction of growth for elliptical estimate (V4-5; for more details on how this was calculated, see “Coral Area” product subsection of this document).

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Depth Range Coral

Highlights:

- The average site depth used when depth not recorded on a transect.
- Data was combined for all reef zones and habitat types.
- The number of transects surveyed at each depth slice is shown at bottom of each worksheet.
- COUNT: Not all the depth ranges were surveyed with equal frequency which likely affects distribution by depth.
- DENSITY: This report attempts to 'normalize' the count at each depth slice by calculating density per 100 transects (an arbitrary value in an attempt to provide a useful range of numbers).
- DENSITY: There are very few surveys below 20m and so the increased variance is likely to produce unusually high-density spikes in some cases.

Colony counts and densities for all species of AGRRA species showing the distribution by depth ranges each meter.

Key	Product Definition	Description
NC	Total number of corals	
<0-19>	Coral count/density at various depth slices	0 = 0.0-0.9m, 1 = 1.0-1.9m, 2 = 2.0-2.9m, etc.

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Depth Range Fish

Highlights:

- The average site depth used when depth not recorded on a transect.
- Data were combined for all reef zones and habitat types.
- The number of transects surveyed at each depth slice is shown at bottom of each worksheet.
- COUNT: Not all the depth ranges were surveyed with equal frequency which likely affects distribution by depth.
- DENSITY: This report attempts to 'normalize' the count at each depth slice by calculating density per 100 transects (an arbitrary value in an attempt to provide a useful range of numbers).
- DENSITY: There are very few surveys below 20m and so the increased variance is likely to produce unusually high-density spikes in some cases.

Fish counts and densities for all species of AGRRA species showing the distribution by depth ranges each meter.

Key	Product Definition	Description
NF	Total number of fishes	

<0-19>	Fish count/density at various depth slices	0 = 0.0-0.9m, 1 = 1.0-1.9m, 2 = 2.0-2.9m, etc.

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Fish Biomass

Highlights:

- Includes data collected on fish transects using all versions of the AGRRA methodology
- Commercially Significant defined as species in FishBase with Fishery Importance of Commercial or Highly Commercial
- Aquarium Ornamentals defined as Angelfishes and Butterflyfishes along with Spanish Hogfish
- Fish biomass is partitioned among Herbivore, Invertivore and Piscivore columns in proportion to the percentage of each species' diet for that category given in FishBase

Fish biomass estimates from size class and length-weight formulas for each surveyed species are summarized by family, diet, fishery importance and total (all AGRRA fishes). In some cases, if a fish could not be identified to species, its family code may have been recorded. All accepted species and family codes are shown in Reference Table 5 at the end of this document.

Biomass for each individual fish is calculated as $A * (S * TL2FL)^B$, where A and B are the species biomass curve coefficients, S is the size (usually the size class midpoint for the AGRRA fishes), and TL2FL is a species total length to fork length conversion factor, if necessary, depending on the species coefficients provided in FishBase.

Summations are then used to calculate the total biomass of a species, group, or family. These summations are then normalized using (Biomass / (2 * Transect Length (m))) * 100 to produce biomass in grams per $100m^2$. The current product release uses coefficient values collected for each species from FishBase in 2013 (see Reference Table 5 for actual species/family level values used for calculations).

Starting in Release V2.0 of the standard AGRRA products in 2013, the coefficients of fish biomass have been updated. There is a legacy version that still uses the biomass coefficients in place before 2013 to aid in comparisons of earlier uses of AGRRA data in ongoing monitoring projects and prior AGRRA literature. When both versions are available, this replacement fish biomass product should be used as a truer estimate of the actual biomass for all other uses.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in some early batches)
T	Total biomass (grams/$100m^2$)	For all species
H	Herbivore biomass (grams/$100m^2$)	Calculated using the percent biomass assigned to the “%Herbivore” category per fish species*
I	Invertivore biomass (grams/$100m^2$)	Calculated using the percent biomass assigned to the “%Invertivore” category per fish species*
P	Piscivore biomass (grams/$100m^2$)	Calculated using the percent biomass assigned to the “%Piscivore” category per fish species*

CS	Commercially Significant species biomass (grams/100m^2)	Includes fish species marked as Commercially Significant*
DP	*Diadema* Predator species biomass (grams/100m^2)	Includes fish species marked as predators of *Diadema**
AO	Aquarium Ornamental species biomass (grams/100m^2)	Includes fish species marked as ornamentals*
ANGE	Angelfishes biomass (grams/100m^2)	All species in family*
BARR	Barracudas biomass (grams/100m^2)	Only Great Barracuda
BOXF	Boxfishes biomass (grams/100m^2)	All species in family*
BUTT	Butterflyfishes biomass (grams/100m^2)	All species in family*
CHUB	Chubs biomass (grams/100m^2)	All species in family*
DAMS	Damselfishes biomass (grams/100m^2)	Only Threespot and Yellowtail Damselfish
FILE	Filefishes biomass (grams/100m^2)	All species in family*
GROU	Groupers biomass (grams/100m^2)	All species in family*
GRUN	Grunts biomass (grams/100m^2)	All species in family*
JACK	Jacks biomass (grams/100m^2)	Only Bar Jack and Permit
MORA	Morays biomass (grams/100m^2)	Only Goldentail, Green, and Spotted
PARR	Parrotfishes biomass (grams/100m^2)	All species in family*
PORC	Porcupinefishes biomass (grams/100m^2)	Only Balloonfish and Porcupinefish
PORG	Porgies biomass (grams/100m^2)	Only Jolthead, Saucereye, Sheepshead and Pluma
PUFF	Porcupinefishes biomass (grams/100m^2)	Only Bandtail Puffer
SCOR	Scorpionfishes biomass (grams/100m^2)	Only exotic Lionfish
SNAP	Snappers biomass (grams/100m^2)	All species in family*
SURG	Surgeonfishes biomass (grams/100m^2)	All species in family*
TRIG	Triggerfishes biomass (grams/100m^2)	All species in family*
WRAS	Wrasse biomass (grams/100m^2)	Only Hogfish, Spanish Hogfish, Slippery Dick, Yellowhead Wrasse, and Puddingwife

*See Reference Table 5 for actual species level values used for calculations

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Fish Biomass Legacy

The calculation of this product is exactly the same as “Fish Biomass” except that the equation does not include the “TL2FL” coefficient (See “Fish Biomass” for full equation). This product also uses different biomass coefficient values, taken from FishBase in 1998 (Version 1.0 of the AGRRA standard products; see Reference Table 5 for legacy coefficient values per species/family). This product continues to be produced in order to aid in comparisons of earlier uses of AGRRA data in ongoing monitoring projects. The “Fish Biomass” product should be used as a truer estimate of the actual biomass unless comparing to old published AGRRA monitoring data.

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Fish Biomass Grouper

Biomass estimates from size class and length-weight formulas separated by species for all Groupers (Epinephelidae). For full description of equations and calculations, see “Fish Biomass” product section of this document.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)
CCRU	*Cephalopholis cruentata* biomass (grams/100m^2)	Graysby
CFUL	*Cephalopholis fulva* biomass (grams/100m^2)	Coney
EADS	*Epinephelus adscensionis* biomass (grams/100m^2)	Rock Hind
EGUT	*Epinephelus guttatus* biomass (grams/100m^2)	Red Hind
EMOR	*Epinephelus morio* biomass (grams/100m^2)	Red Grouper
ESTR	*Epinephelus striatus* biomass (grams/100m^2)	Nassau Grouper
MBON	*Mycteroperca bonaci* biomass (grams/100m^2)	Black Grouper
MINT	*Mycteroperca interstitialis* biomass (grams/100m^2)	Yellowmouth Grouper
MTIG	*Mycteroperca tigris* biomass (grams/100m^2)	Tiger Grouper
MVEN	*Mycteroperca venenosa* biomass (grams/100m^2)	Yellowfin Grouper

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Fish Biomass Parrotfish

Biomass estimates from size class and length-weight formulas separated by species for all Parrotfishes (Scaridae). For full description of equations and calculations, see “Fish Biomass” product section of this document.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)
SCEL	*Scarus coelestinus* biomass (grams/100m^2)	Midnight Parrotfish
SCER	*Scarus coeruleus* biomass (grams/100m^2)	Blue Parrotfish
SGUA	*Scarus guacamaia* biomass (grams/100m^2)	Rainbow Parrotfish
SISE	*Scarus iseri* biomass (grams/100m^2)	Striped Parrotfish
STAE	*Scarus taeniopterus* biomass (grams/100m^2)	Princess Parrotfish
SVET	*Scarus vetula* biomass (grams/100m^2)	Queen Parrotfish
SATO	*Sparisoma atomarium* biomass (grams/100m^2)	Greenblotch Parrotfish
SAUR	*Sparisoma aurofrenatum* biomass (grams/100m^2)	Redband Parrotfish
SCHR	*Sparisoma chrysopterum* biomass (grams/100m^2)	Redtail Parrotfish
SRUB	*Sparisoma rubripinne* biomass (grams/100m^2)	Yellowtail Parrotfish
SVIR	*Sparisoma viride* biomass (grams/100m^2)	Stoplight Parrotfish

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Fish Density

Highlights:

- Includes data collected on fish transects using all versions of the AGRRA methodology

- Commercially Significant defined as species in FishBase with Fishery Importance of Commercial or Highly Commercial
- Aquarium Ornamentals defined as Angelfishes and Butterflyfishes along with Spanish Hogfish

Density of the surveyed fishes by family, fishery importance and total (all AGRRA fishes). The density is calculated as the [Count of each species / (length of transect * 2)] * 100. This value is then summed up for the different groups of interest.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)
T	Total (all species) density (#/100m^2)	
CS	Commercially Significant species density (#/100m^2)	Includes fish species marked as Commercially Significant*
DP	*Diadema* Predator species density (#/100m^2)	Includes fish species marked as predators of *Diadema**
AO	Aquarium Ornamental species density (#/100m^2)	Includes fish species marked as ornamentals*
ANGE	Angelfishes density (#/100m^2)	All species in family*
BARR	Barracudas density (#/100m^2)	Only Great Barracuda
BOXF	Boxfishes density (#/100m^2)	All species in family*
BUTT	Butterflyfishes density (#/100m^2)	All species in family*
CHUB	Chubs density (#/100m^2)	All species in family*
DAMS	Damselfishes density (#/100m^2)	Only Threespot and Yellowtail Damselfish
FILE	Filefishes density (#/100m^2)	All species in family*
GROU	Groupers density (#/100m^2)	All species in family*
GRUN	Grunts density (#/100m^2)	All species in family*
JACK	Jacks density (#/100m^2)	Only Bar Jack and Permit
MORA	Morays density (#/100m^2)	Only Goldentail, Green, and Spotted
PARR	Parrotfishes density (#/100m^2)	All species in family*
PORC	Porcupinefishes density (#/100m^2)	Only Balloonfish and Porcupinefish
PORG	Porgies density (#/100m^2)	Only Jolthead, Saucereye, Sheepshead and Pluma
PUFF	Porcupinefishes density (#/100m^2)	Only Bandtail Puffer
SCOR	Scorpionfishes density (#/100m^2)	Only exotic Lionfish
SNAP	Snappers density (#/100m^2)	All species in family*
SURG	Surgeonfishes density (#/100m^2)	All species in family*
TRIG	Triggerfishes density (#/100m^2)	All species in family*
WRAS	Wrasse density (#/100m^2)	Only Hogfish, Spanish Hogfish, Slippery Dick, Yellowhead Wrasse, and Puddingwife

*See Reference Table 5 for actual species level values used for calculations

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Fish Density Grouper

Density of the surveyed fishes separated by species for all Grouper (Epinephelidae). For full description of calculations, see “Fish Density” product section of this document.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)
CCRU	*Cephalopholis cruentata* density (#/100m^2)	Graysby
CFUL	*Cephalopholis fulva* density (#/100m^2)	Coney
EADS	*Epinephelus adscensionis* density (#/100m^2)	Rock Hind
EGUT	*Epinephelus guttatus* density (#/100m^2)	Red Hind
EMOR	*Epinephelus morio* density (#/100m^2)	Red Grouper
ESTR	*Epinephelus striatus* density (#/100m^2)	Nassau Grouper
MBON	*Mycteroperca bonaci* density (#/100m^2)	Black Grouper
MINT	*Mycteroperca interstitialis* (#/100m^2)	Yellowmouth Grouper
MTIG	*Mycteroperca tigris* density (#/100m^2)	Tiger Grouper
MVEN	*Mycteroperca venenosa* density (#/100m^2)	Yellowfin Grouper

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Fish Density Parrotfish

Density of the surveyed fishes separated by species for all Parrotfishes (Scaridae). For full description of calculations, see “Fish Density” product section of this document.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)
SCEL	*Scarus coelestinus* density (#/100m^2)	Midnight Parrotfish
SCER	*Scarus coeruleus* density (#/100m^2)	Blue Parrotfish
SGUA	*Scarus guacamaia* density (#/100m^2)	Rainbow Parrotfish
SISE	*Scarus iseri* density (#/100m^2)	Striped Parrotfish
STAE	*Scarus taeniopterus* density (#/100m^2)	Princess Parrotfish
SVET	*Scarus vetula* density (#/100m^2)	Queen Parrotfish
SATO	*Sparisoma atomarium* density (#/100m^2)	Greenblotch Parrotfish
SAUR	*Sparisoma aurofrenatum* density (#/100m^2)	Redband Parrotfish
SCHR	*Sparisoma chrysopterum* density (#/100m^2)	Redtail Parrotfish
SRUB	*Sparisoma rubripinne* density (#/100m^2)	Yellowtail Parrotfish
SVIR	*Sparisoma viride* density (#/100m^2)	Stoplight Parrotfish

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Fish Family Composition

The number and percentages of fish recorded in each fish family by batch. Percent is calculated as the number of fish for each group divided by the total number of fishes present per batch * 100.

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Fish Size Frequency

Highlights:

- Includes data collected on fish transects using all versions of the AGRRA methodology
- Parrotfishes and Grunts in the 0-5 class are not recorded in earlier versions of the protocol.
- Fishes in the 6-10 cm category in the Mexico-1999C batch actually represent a size range of 3-10 cm and no individuals are recorded in the 0-5 cm category.
- Separate sheets are named for each fish family. See Reference Table 6 for code definitions.

Size distribution of all of the AGRRA fish families in multiple size classes. The percentages are calculated by taking the number of fish (sum of all transects per site) in each size class and dividing it by the total number of fish * 100. This product is split among the fish families on the different sheets of the spreadsheet. A species level product has also been created using this same format for a fixed list of Grouper, Snapper, and Parrotfish species. See Reference Table 5 for fish species code definitions.

This list can easily be adjusted to include other species upon request.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)
NF	Total number of fishes	
Lavg	Average length of fish	Uses midpoints of size classes
0-5	# of fishes in 0-5 cm size category	
6-10	# of fishes in 6-10 cm size category	
11-20	# of fishes in 11-20 cm size category	
21-30	# of fishes in 21-30 cm size category	
31-40	# of fishes in 31-40 cm size category	
>40	# of fishes in >40 cm size category	
% 0-5	% of fishes in 0-5 cm size category	
% 6-10	% of fishes in 6-10 cm size category	
% 11-20	% of fishes in 11-20 cm size category	
% 21-30	% of fishes in 21-30 cm size category	
% 31-40	% of fishes in 31-40 cm size category	
% >40	% of fishes in >40 cm size category	

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Grouper Index

A product created for a specific purpose in the Bahamas. It calculates the density (#/100m^2) of fish in the Grouper family within different size classes in order to calculate a “Grouper Index” value. The index is defined as: [0-5]+[6-10]+[11-20]+2*[21-30]+4*[31-40]+6*[>40], where the size class ranges represent the density of Grouper within that range.

Key	Product Definition	Description
Length	Length of transect (meters)	Usually 30m (50m in early batches)

GI	Grouper Index	Summation of weighted densities defined above
0-5	Density of Grouper within the 0-5cm size class (#/100m^2)	
6-10	Density of Grouper within the 6-10cm size class (#/100m^2)	
11-20	Density of Grouper within the 11-20cm size class (#/100m^2)	
21-30	Density of Grouper within the 21-30cm size class (#/100m^2)	
31-40	Density of Grouper within the 31-40cm size class (#/100m^2)	
>40	Density of Grouper within the >40cm size class (#/100m^2)	

Motile Inverts

Highlights:

- *Diadema*, other urchins, lobster, conch and sea cucumber numbers represent counts per square meter (#/m2).
- *Diadema* breakdown by Adult and Juvenile, plus Lobster and Conch counts began in version 4 of the protocol.
- Other urchins and sea cucumber counts were sequentially added to version 5 of the protocol.

The number of motile invertebrates is recorded in a one-meter wide belt centered on the benthic transect in order to calculate the density of each group per square meter (Count /m^2). In versions 1-3 of the protocol, only total *Diadema* counts were made. Starting in version 4 of the protocol, *Diadema* were split into juvenile and adult categories; (spiny) lobster, and (Queen) conch were added. Other urchins were added to version 5 in 2013 and sea cucumbers in 2017.

Key	Product Definition	Description
DT	Number of Diadema (Total) per m^2	Available for all protocol versions
DJ	Number of Diadema (Juvenile) per m^2	Available for protocol version 4 and onward
DA	Number of Diadema (Adult) per m^2	Available for protocol version 4 and onward
OU	Number of Other Urchins per m^2	Available for protocol version 5 from 2013
L	Number of (Spiny) Lobster per m^2	Available for protocol version 4 and onward
C	Number of (Queen) Conch per m^2	Available for protocol version 4 and onward
S	Number of Sea Cucumbers per m^2	Available for protocol version 5 from 2017

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Relief

Highlights:

- Maximum Relief (a proxy for reef rugosity) was not estimated prior to protocol version 3
- Maximum Relief (in cm) was estimated on the benthic transects in versions 3-4 of the protocol
- Maximum Relief estimates along the fish transects, which are longer and potentially cover more variable topography, began in version 5 of the protocol.

Maximum relief in version 3 of the protocol was estimated as the difference (in cm) between the highest and lowest points within a 1-m radius of the 1-, 3-, 5-, 7-, and 9- m marks along each of the 6 benthos transect lines. The definitions of “highest “and “lowest” points in version 4 were clarified as “the tallest

coral or reef rock above the lowest point in the underlying substratum." Maximum reef relief, was transferred to the fish transects in version 5, where it is estimated at 5m or 15ft intervals for 6 estimates in each of 10 transects. The 5 or 6 estimates were averaged together to give a final transect level relief estimate.

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Sighting Frequency

Number of surveyed sites (and percentage of these sites) where AGRRA coral and fish species were recorded. These values are for all the sites combined for all the batches included in the product set.

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Site

Highlights:

- This product shows the different sites (ie. point locations within a batch) and their attributes that are involved in the entire set of products provided. (Similar to "Batch" product)

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Species Richness

Highlights:

- Comparable across all protocol versions
- Values are by batch level only

The number of AGRRA coral and fish species, genera (coral only), and families that were recorded for each batch are included in the product set. For a list of all coral and fish families/genera/species, see Reference Tables 2, 5, and 6.

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Substrate

Highlights:

- Substrate values were not recorded until Version 2 of the protocol

Proportion of the predominant substrate codes recorded within quadrats (maximum of 2 codes per quadrat) collected during the coral transect (Versions 2-4 of the protocol) or benthic transect (Version 5 of the protocol). Each substrate group is calculated as a proportion by summing the number of quadrats for all its codes (half a quadrat value given for quadrats with 2 substrate codes) and dividing by the total number of quadrats recorded, i.e., Sum of quadrats per substrate code / [Total number of quadrats].

Key	Product Definition	Description

NQ	Number of quadrats	Usually 5, but could be less if suitable areas were not found; Transect-level product only
LCS	Live coral substrata	Only includes “LCS” substrate codes
DCS	Immobile dead coral substrata	Only includes “DCS” substrate codes
MUD	Mud	Only includes “MUD” substrate codes
PAVE	Carbonate pavement	Only includes “PAVE” substrate codes
ROCK	Non-carbonate bedrock or boulders	Only includes “ROCK” substrate codes
RUB	Loose coral rubble	Only includes “RUB” substrate codes
SAND	Sand	Only includes “SAND” substrate codes
SMS	Mixtures of sand and mud	Only includes “SMS” substrate codes
UNK	Unknown	Only includes “UNK” substrate codes

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Reference Tables

Table 1: The AGRRA database’s current acceptable benthos underwater codes.

Code	Category	Description
CCA	Algae-Crustose	Crustose Coralline Algae
ND-CCA	Algae-Crustose-Dead	Crustose Coralline Algae (Newly Dead)
MA	Algae-Macro	Undefined Macro Algae / height (cm)
ACET	Algae-Macro-Calcareous	*Acetabularia* / height (cm)
AMPH	Algae-Macro-Calcareous	*Amphiroa* / height (cm)
CMA	Algae-Macro-Calcareous	Calcareous Macro Algae / height (cm)
GALA	Algae-Macro-Calcareous	*Galaxaura* / height (cm)
GCMA	Algae-Macro-Calcareous	Green Calcareous Macro Algae / height (cm)
HALI	Algae-Macro-Calcareous	*Halimeda* / height (cm)
HALM	Algae-Macro-Calcareous	*Halimeda* Mat / height (cm)
JANI	Algae-Macro-Calcareous	*Jania* / height (cm)
PENI	Algae-Macro-Calcareous	*Penicillus* / height (cm)
RCMA	Algae-Macro-Calcareous	Red Calcareous Macro Algae / height (cm)
RHIP	Algae-Macro-Calcareous	*Rhipocephalus* / height (cm)
UDOT	Algae-Macro-Calcareous	*Udotea* / height (cm)
ND-HALI	Algae-Macro-Calcareous-Dead	Newly Dead *Halimeda* / height (cm)
ACAN	Algae-Macro-Fleshy	*Acanthophora* / height (cm)
BATO	Algae-Macro-Fleshy	*Batophora* / height (cm)
BFMA	Algae-Macro-Fleshy	Brown Fleshy Macro Algae / height (cm)
CAUL	Algae-Macro-Fleshy	*Caulerpa* / height (cm)
CLAD	Algae-Macro-Fleshy	*Cladophora* / height (cm)
CODI	Algae-Macro-Fleshy	*Codium* / height (cm)
COEL	Algae-Macro-Fleshy	*Coelothrix* / height (cm)
CRYP	Algae-Macro-Fleshy	*Cryptonemia* / height (cm)

DICT	Algae-Macro-Fleshy	*Dictyota* / height (cm)
DSPH	Algae-Macro-Fleshy	*Dictyosphaeria* / height (cm)
FMA	Algae-Macro-Fleshy	Fleshy Macro Algae / height (cm)
GELI	Algae-Macro-Fleshy	*Gelidiella* / height (cm)
GFMA	Algae-Macro-Fleshy	Green Fleshy Macro Algae / height (cm)
HYPO	Algae-Macro-Fleshy	*Hypoglossum* / height (cm)
LAUR	Algae-Macro-Fleshy	*Laurencia* / height (cm)
LIAG	Algae-Macro-Fleshy	*Liagora* / height (cm)
LOBO	Algae-Macro-Fleshy	*Lobophora* / height (cm)
MART	Algae-Macro-Fleshy	*Martensia* / height (cm)
MICR	Algae-Macro-Fleshy	*Microdictyon* / height (cm)
NEOM	Algae-Macro-Fleshy	*Neomeris* / height (cm)
PADI	Algae-Macro-Fleshy	*Padina* / height (cm)
RFMA	Algae-Macro-Fleshy	Red Fleshy Macro Algae / height (cm)
SARG	Algae-Macro-Fleshy	*Sargassum* / height (cm)
STYP	Algae-Macro-Fleshy	*Stypopodium* / height (cm)
TURB	Algae-Macro-Fleshy	*Turbinaria* / height (cm)
ULVA	Algae-Macro-Fleshy	*Ulva* / height (cm)
VAL/VALO	Algae-Macro-Fleshy	*Valonia* / height (cm)
WRAN	Algae-Macro-Fleshy	*Wrangelia* / height (cm)
PEY/PEYS	Algae-Peyssonnelid	Peyssonnelid Algae
OSTR	Algae-Turf	*Ostreobium*
TA	Algae-Turf	Turf Algae / height (cm)
TAM	Algae-Turf	Turf Algae Mat / height (cm)
STA	Algae-Turf-Sediment	Turf Algae << Sediment / height (cm)
TAS	Algae-Turf-Sediment	Turf Algae >> Sediment / height (cm)
FILM	Biofilm	Microbial/microalgal/diatom biofilm
LC	Coral	Live Coral
LMC	Coral	Live Milleporid Coral
LSC	Coral	Live Scleractinian Coral
BLC	Coral-Bleached	Bleached (live) coral
DC	Coral-Dead	Dead Coral
NDC	Coral-Dead	Newly Dead Coral (white skeleton)
NDMC	Coral-Dead	Newly Dead Milleporid Coral (white skeleton)
ND-XXX	Coral-Dead	Newly Dead species-specific code from reference Table 2 of coral species
PLC	Coral-Pale	Pale (live) coral
CYAM	Cyanobacteria	Cyanobacteria mat
CYAN	Cyanobacteria	Any conspicuous Cyanobacteria / height (cm)
ANEM	Invertebrates	Anemone
CMOR	Invertebrates	Coralimorph
GORG	Invertebrates	Gorgonian holdfast (including erect Briarium)
HYDR	Invertebrates	Hydroids
OCTO	Invertebrates	Octocorallian holdfast

OINV	Invertebrates	Other Invertebrate
SABE	Invertebrates	Sabellid worms
SERP	Invertebrates	Serpulid worms
SPON	Invertebrates	Epibenthic sponge
TUNI	Invertebrates	Tunicate
XMUT	Invertebrates	*Xestospongia muta*
AINV	Invertebrates-Aggressive	Aggressive Invertebrate
ASPO	Invertebrates-Aggressive	Aggressive Sponge
BASB	Invertebrates-Aggressive	*Briareum asbestinum*
BL-ECAR	Invertebrates-Aggressive	Bleached (live) *Erythropodium caribaeorum*
BL-PCAR	Invertebrates-Aggressive	Bleached (live) *Palythoa caribaeorum*
BRYO	Invertebrates-Aggressive	Bryozoan
CCAR	Invertebrates-Aggressive	*Chondrilla caribensis*
CDEL	Invertebrates-Aggressive	*Cliothosa delitrix* (Red/Orange)
CKOC	Invertebrates-Aggressive	Clionids that Kill & Overgrow Corals/CCA
CLIO	Invertebrates-Aggressive	Clionids that Kill & Overgrow Corals/CCA
CZOO	Invertebrates-Aggressive	Zooxanthellate (Brown/Black) clionid
ECAR	Invertebrates-Aggressive	*Erythropodium caribaeorum*
IKOC	Invertebrates-Aggressive	Inverts that Kill & Overgrow Corals/CCA
PCAR	Invertebrates-Aggressive	*Palythoa caribaeorum*
P-ECAR	Invertebrates-Aggressive	Pale (live) *Erythropodium caribaeorum*
P-PCAR	Invertebrates-Aggressive	Pale (live) *Palythoa caribaeorum*
RFLO	Invertebrates-Aggressive	*Ricordea florida* (coralimorph)
SZEA	Invertebrates-Aggressive	*Svenzea zeai*
TSOL	Invertebrates-Aggressive	*Tridemnum solidum*
ZOAN	Invertebrates-Aggressive	Zoanthid
-	Other	Other
BARE	Other	Bare
CABLE	Other	Hydrophone cable (AUTEC)
GRASS	Other	Seagrass
HALO	Other	*Halophila decipiens*
HOLE	Other	Invisible (in a hole)
HSTI	Other	*Halophila stipulacea*
MUD	Other	Mud
PAVE	Other	Pavement
ROCK	Other	Rock
RUBB	Other	Rubble
SAND	Other	Sand
SEDI	Other	Sediment
SILT	Other	Silt
SYRI	Other	*Syringodium filiforme*
THAL	Other	*Thalassia testudinum*
XXX	Other	Unknown
CWT	Other-Calcifiers	Calcified Worm Tubes

GYPS	Other-Calcifiers	*Gypsina*

Table 2: The AGRRA database's current acceptable coral codes.

Abbr	Species Name	Family Name
ACER	*Acropora cervicornis*	Acroporidae
APAL	*Acropora palmata*	Acroporidae
APRO	*Acropora prolifera*	Acroporidae
ACRO	*Acropora sp.*	Acroporidae
AAGA	*Agaricia agaricites*	Agariciidae
AFRA	*Agaricia fragilis*	Agariciidae
AGRA	*Agaricia grahamae*	Agariciidae
AHUM	*Agaricia humilis*	Agariciidae
ALAM	*Agaricia lamarcki*	Agariciidae
AGAR	*Agaricia* sp.	Agariciidae
ATEN	*Agaricia tenuifolia*	Agariciidae
AUND	*Agaricia undata*	Agariciidae
HCUC	*Helioseris cucullata*	Agariciidae
MAUR	*Madracis auretenra (mirabilis)*	Pocilloporidae*
MDEC	*Madracis decactis*	Pocilloporidae
MFOR	*Madracis formosa*	Pocilloporidae
MPHA	*Madracis pharensis*	Pocilloporidae
MADR	*Madracis* sp.	Pocilloporidae
SINT	*Stephanocoenia intersepta*	Astrocoeniidae
CARB	*Cladocora arbuscula*	Scleractinia incertae sedis
DCYL	*Dendrogyra cylindrus*	Meandrinidae
DSTE	*Dichocoenia stellaris*	Meandrinidae
DSTO	*Dichocoenia stokesii*	Meandrinidae
EFAS	*Eusmilia fastigiata*	Meandrinidae
MJAC	*Meandrina jacksoni*	Meandrinidae
MMEA	*Meandrina meandrites*	Meandrinidae
MEAN	*Meandrina* sp.	Meandrinidae
OANN	*Orbicella annularis*	Merulinidae
OFAV	*Orbicella faveolata*	Merulinidae
OFRA	*Orbicella franksi*	Merulinidae
ORBI	*Orbicella* sp.	Merulinidae
MALC	*Millepora alcicornis*	Milleporidae
MCOM	*Millepora complanata*	Milleporidae
MILL	*Millepora* sp.	Milleporidae
MSQU	*Millepora squarosa*	Milleporidae
MSTR	*Millepora striata*	Milleporidae
MCAV	*Montastraea cavernosa*	Montastraeidae
CNAT	*Colpophyllia natans*	Faviidae*
DLAB	*Diploria labyrinthiformis*	Faviidae
DIPL	*Diploria* sp.	Faviidae

FFRA	*Favia fragum*	Faviidae
FAVI	*Favia* sp.	Faviidae
IRIG	*Isophyllia rigida*	Faviidae
ISIN	*Isophyllia sinuosa*	Faviidae
ISOP	*Isophyllia* sp.	Faviidae
MARE	*Manicina areolata*	Faviidae
MANG	*Mussa angulosa*	Faviidae
MALI	*Mycetophyllia aliciae*	Faviidae
MDAN	*Mycetophyllia danaana*	Faviidae
MFER	*Mycetophyllia ferox*	Faviidae
MLAM	*Mycetophyllia lamarckiana*	Faviidae
MYCE	*Mycetophyllia* sp.	Faviidae
PCLI	*Pseudodiploria clivosa*	Faviidae
PSEU	*Pseudodiploria* sp.	Faviidae
PSTR	*Pseudodiploria strigosa*	Faviidae
SCUB	*Scolymia cubensis*	Faviidae
SLAC	*Scolymia lacera*	Faviidae
SCOL	*Scolymia* sp.	Faviidae
SWEL	*Scolymia wellsi*	Faviidae
SBOU	*Solenastrea bournoni*	Faviidae
SHYA	*Solenastrea hyades*	Faviidae
SOLE	*Solenastrea* sp.	Faviidae
ODIF	*Oculina diffusa*	Oculinidae
OCUL	*Oculina* sp.	Oculinidae
OVAR	*Oculina varicosa*	Oculinidae
PDIG	*Porites* (digitate)	Poritidae
PAST	*Porites astreoides*	Poritidae
PBRA	*Porites cf. branneri*	Poritidae
PDIV	*Porites divaricata*	Poritidae
PFUR	*Porites furcata*	Poritidae
PPOR	*Porites porites*	Poritidae
PORI	*Porites* sp.	Poritidae
SRAD	*Siderastrea radians*	Siderastreidae
SSID	*Siderastrea siderea*	Siderastreidae
SIDE	*Siderastrea* sp.	Siderastreidae
SSTE	*Siderastrea stellata*	Siderastreidae
UNKN	Unknown species	Unknown

*****Hoeksema, B. W.; Cairns, S. (2020). World List of Scleractinia. Accessed at http://www.marinespecies.org/scleractinia on 2020-06-16 .

Table 3: The AGRRA database's current list of public data batches. Coral cutoff describes the smallest coral size measured individually. The protocol columns display the protocol version for that transect type.

Name	Description	Year	Coral Cutoff	Benthos Protocol	Coral Protocol	Fish Protocol	Site Selection
Bahamas-1997	Andros Island, Bahamas	1997	25		V1 [modified]	V1 [modified]	Representative
VirginIslands-1998	USVI (St. Thomas)	1998	25		V2	V2	Strategic
Bahamas-1998A	San Salvador Island, Bahamas	1998	10		V1	(Bohnsack et al. cylinders)	Representative > Strategic
Bahamas-1998B	Andros Island, Bahamas	1998	10		V2	V2	Representative
Curaçao-1998	Curaçao, Netherlands Antilles	1998	25		V2 [modified]	V2 [modified]	Strategic
Bonaire-1999	Bonaire, Netherlands Antilles	1999	25		V2	V2	Representative > Strategic
México-1999A	Akumal & Xcalak, Quintana Roo, México	1999	25		V2	V2 [modified]	Representative
Belize-1999A	Northern and south-central barrier reef, Belize	1999	10		V1	(Bohnsack et al. cylinders)	Representative > Strategic
VirginIslands-1999	USVI (St. Croix, St. Thomas) & BVI (Guana)	1999	25		V2	V2	Strategic
Cayman-1999	Little Cayman & Grand Cayman, British West Indies	1999	10		V2.2	V2.1	mixed Representative & Strategic
StVincent-1999	Horseshoe Reef, Tobago Cays Marine Park, Grenadines, St. Vincent & the Grenadines	1999	25		V2.2	V2.2	Representative > Strategic
México-1999B	Central-southern coast, Quintana Roo, México	1999	25		V2.2	[non-AGRRA belt method]	Strategic & Representative
Cuba-1999	María la Gorda, southeast Ensenada de Corrientes, Cuba	1999	25		V2.2	V2.2 [modified]	Representative > Strategic
México-1999C	Veracruz Reef System, México	1999	25		V2 [modified]		Representative (4); Strategic (2)
Belize-1999B	Lighthouse Atoll, Belize	1999	25		V2.2?	V2.2?	Strategic & Representative
Bahamas-1999	Abaco Islands, Bahamas	1999	10		V2	V2.1?	Representative
TurksCaicos-1999	Caicos, Turks & Mouchoir Banks, Turks & Caicos Islands	1999	10		V2.1 [modified]	V2.2	Strategic & Representative
Venezuela-1999	Archipiélago de los Roques National Park, Venezuela	1999	10		V2.2	V2.2	Representative
CostaRica-1999	Cahuita National Park, Costa Rica	1999	25		V2.2 [modified]	V2.2 [modified]	Representative > Strategic
USA-1999	Flower Garden Banks National Marine Sanctuary, Gulf of Mexico	1999	25		V2.1	V2.1	Strategic & Representative
StMaarten-1999	St. Maarten (Windward Netherlands Antilles survey)	1999	10		V2.1	V2.1	Representative & Strategic

Saba-1999	Saba & Saba Bank (Windward Netherlands Antilles survey)	1999	10		V2.1	V2.1	Representative & Strategic
StEustatius-1999	St. Eustatius (Windward Netherlands Antilles survey)	1999	10		V2.1	V2.1	Representative & Strategic
Curaçao-2000	Curaçao, Netherlands Antilles	2000	25		V2 [modified]		Strategic
VirginIslands-2000	USVI (St. Thomas, St. John) & BVI (Anegada, Virgin Gorda)	2000	25		V2 (17); V2 [modified] (5)	V2.1 (St. Croix); V2 (others)	Strategic >> Haphazard
Cayman-2000	Cayman Brac, British West Indies	2000	10		V2.2		mixed Representative & Strategic
Belize-2000	Turneffe Atoll, Glovers Reef & barrier reef, Belize	2000	10		V3	V3	Unbiased >> Strategic
México-2000	Chinchorro Banks, Quintana Roo, México	2000	25		V3	V3	Unbiased >> Strategic
Jamaica-2000	Northern, northwestern, western and southwestern reefs, Jamaica	2000	10		V3	V3	Representative >> Strategic
Cuba-2001A	Batabanó, Cuba	2001	10		V3	V3	Unbiased >> Strategic
Cuba-2001B	Sabana-Camagüey, Cuba	2001	10		V3	V3	Representative
Cuba-2001C	Jardines de la Reina, Cuba	2001	10		V3	V3	Unbiased >> Strategic
Bahamas-2002	Andros Island, Bahamas (AUTEC)	2002	10		V3	V3	Strategic
Panamá-2002	Bocas del Toro & Comarca de Kuna Yala (San Blas Islands), Panama	2002	10		V3	V3	Representative & Strategic
USA-2003	Biscayne Bay National Park & Florida Keys National Marine Sanctuary, Florida	2003	10		V3	V3	Strategic (reef crests); Representative (others)
Nicaragua-2003	Big and Little Corn Islands, Nicaragua	2003	10		V3	V3	Representative
DominicanRep-2003	Dominican Republic (Punta Cana & Babaro)	2003	10		V3	V3	Representative
PuertoRico-2003	Culebra, Vieques & Cayos de la Cordillera, Puerto Rico	2003	10		V3	V3	Strategic (reef crests); Representative (others)
DominicanRep-2004	Dominican Republic	2004	10		V3	V3	Representative
Bahamas-2004	Andros Island, Bahamas (AUTEC)	2004	10		V3	V3	Strategic
USA-2004A	Broward County, Florida	2004	10		V3	V3	Representative
USA-2004B	Dry Tortugas, Florida	2004	10		V3	V3	Representative > Strategic
Jamaica-2005	Pedro Bank, Jamaica (TNC partnership)	2005	10		V4	V4	Representative
Antigua-2005	North Sound NCORE survey	2005	10		V4	V3	Strategic
México-2005	Mexico component of Meso-American Reef survey (TNC partnership)	2005	10		V4	V4	Representative
Grenada-2005	Carriacou and surrounding islands, Grenada (TNC partnership)	2005	10		V4	V4	Representative

Dominica-2005	Dominica	2005	10		V4	V4	Strategic
Belize-2006	Belize component of Meso-American Reef survey (WWF partnership)	2006	10		V4	V4	Representative
Honduras-2006	Honduras component of Meso-American Reef survey (TNC partnership)	2006	10		V4	V4	Representative
México-2006	Mexico component of Meso-American Reef survey (TNC partnership)	2006	10		V4	V4	Representative
Guatemala-2006	Guatemala component of Meso-American Reef survey (TNC partnership)	2006	10		V4	V4	Representative
USA-2006	Molasses Reef SPA	2006	10		V4	V4	Strategic
Bahamas-2006	Andros Island, Bahamas (AUTEC)	2006	10		V4	V4	Strategic
Bahamas-2007	Andros Island, Bahamas (AUTEC)	2007	4	V5	V5	V5	Strategic
Belize-2008	Belize City, Palencia, & San Pedro (Healthy Reefs Initiative partnership)	2008	10		V4	V4	Strategic
StVincent-2008	St. Vincent, West Indies	2008	10		V4	V4	Strategic
Bahamas-2008A	New Providence & Rose Island REA	2008	4	V5	V5	V5	Representative > Strategic
Bahamas-2008B	Andros Island, Bahamas (AUTEC)	2008	4	V5	V5	V5	Strategic
Belize-2009A	Belize City, Palencia, & San Pedro (Healthy Reefs Initiative partnership)	2009	10		V4	V4	Strategic
Belize-2009B	Belize City, Caye Caulker, Glovers, Palencia, & Turneffe (Healthy Reefs Initiative partnership)	2009	10		V4	V4	Representative
México-2009	México (Healthy Reefs Initiative partnership)	2009	10		V4	V4	Representative
Bahamas-2009	Andros Island, Bahamas (AUTEC)	2009	4	V5	V5	V5	Strategic
Honduras-2009	Honduras (Healthy Reefs Initiative partnership)	2009	10		V4	V4	Strategic
Honduras-2010	Honduras - Cayos Cochinos (Healthy Reefs Initiative partnership)	2010	4	V5	V5	V5	Representative > Strategic
Bahamas-2011A	Cay Sal Bank, Bahamas (Living Oceans Foundation expedition)	2011	4	V5	V5	V5	Strategic
Honduras-2011A	Tela, Honduras	2011	4	V5	V5	V5	Representative > Strategic
StKitts-2011	St. Kitts (Living Oceans Foundation expedition)	2011	4	V5	V5	V5	Strategic
México-2011A	México (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Strategic
Honduras-2011B	Swan Island, Honduras (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Strategic
Honduras-2011C	Roatan, Honduras (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Strategic

Bahamas-2011B	Inaguas, Bahamas (Living Oceans Foundation expedition)	2011	4	V5	V5	V5	Strategic
Belize-2011	Belize (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Representative
Honduras-2011D	Roatan, Honduras (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Strategic
México-2011B	México (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Representative
Bahamas-2011C	Andros, Bahamas (Living Oceans Foundation expedition)	2011	4	V5	V5	V5	Strategic
Bahamas-2011D	Andros Island, Bahamas (AUTEC)	2011	4	V5	V5	V5	Strategic
Bahamas-2011E	New Providence & Rose Island (Perry Institute)	2011	4	V5	V5	V5	Representative > Strategic
Honduras-2011E	Roatan & Utila, Honduras (Healthy Reefs Initiative partnership)	2011	4	V5	V5	V5	Strategic
Guatemala-2012	Guatemala (Healthy Reefs Initiative partnership)	2012	4	V5	V5	V5	Representative
Jamaica-2012	Pedro Bank, Jamaica (Living Oceans Foundation expedition)	2012	4	V5	V5	V5	Strategic
Honduras-2012A	Guanaja, Honduras (Healthy Reefs Initiative partnership)	2012	4	V5	V5	V5	Strategic
Navassa-2012	Navassa (Living Oceans Foundation expedition)	2012	4	V5	V5	V5	Strategic
Colombia-2012	San Andrés, Colombia (Living Oceans Foundation expedition)	2012	4	V5	V5	V5	Strategic
Honduras-2012B	Utila, Honduras (Healthy Reefs Initiative partnership)	2012	4	V5	V5	V5	Strategic
Honduras-2012C	Cayos Cochinos, Honduras (Healthy Reefs Initiative partnership)	2012	4	V5	V5	V5	Strategic
Bahamas-2012A	New Providence & Rose Island (Perry Institute)	2012	4	V5	V5	V5	Representative > Strategic
Bahamas-2012B	Lucayan National Park, Grand Bahama, Bahamas	2012	4	V5	V5	V5	Strategic
Bahamas-2013A	Plana, Samana, Mayaguana, Acklins/Crooked Island (The Nature Conservancy REA)	2013	4	V5	V5	V5	Strategic
Honduras-2013A	Tela, Honduras	2013	4	V5	V5	V5	Representative > Strategic
Belize-2013	Belize (Healthy Reefs Initiative partnership)	2013	4	V5	V5	V5	Representative
Honduras-2013B	Swan Island, Honduras (Healthy Reefs Initiative partnership)	2013	4	V5	V5	V5	Strategic
Jamaica-2014	Jamaica (Waitt Foundation partnership)	2014	4	V5	V5	V5	Strategic
Bahamas-2013B	Cross Harbour, Great Abaco, Bahamas	2013	4	V5	V5	V5	Strategic

Bahamas-2013C	East Grand Bahama, Bahamas	2013	4	V5	V5	V5	Strategic
Bahamas-2013D	Joulter Cays, Bahamas	2013	4	V5	V5	V5	Strategic
Guatemala-2013	Guatemala (Healthy Reefs Initiative partnership)	2013	4	V5	V5	V5	Representative
México-2014	México (Healthy Reefs Initiative partnership)	2014	4	V5	V5	V5	Representative
Honduras-2014	Swan Island, Honduras (Healthy Reefs Initiative partnership)	2014	4	V5	V5	V5	Representative
Grenada-2015A	Grenada	2015	4	V5	V5	V5	Strategic
Honduras-2015A	Honduras (Healthy Reefs Initiative partnership)	2015	4	V5	V5	V5	Strategic
Jamaica-2015	Jamaica (TNC contract)	2015	4	V5	V5	V5	Representative >> Strategic
Haiti-2015	Haiti (TNC contract)	2015	4	V5	V5	V5	Representative >> Strategic
DominicanRep-2015	Dominican Republic (TNC contract)	2015	4	V5	V5	V5	Representative >> Strategic
Grenada-2015B	Grenadines [Grenada] (TNC contract)	2015	4	V5	V5	V5	Representative >> Strategic
StVincent-2015	Grenadines [St. Vincent] (TNC contract)	2015	4	V5	V5	V5	Representative >> Strategic
Bahamas-2015A	Andros Island	2015	4	V5	V5	V5	Representative
Bahamas-2015B	New Providence & Rose Island	2015	4	V5	V5	V5	Representative
Bahamas-2016A	New Providence & Rose Island	2016	4	V5	V5	V5	Representative
Guatemala-2016	Guatemala (Healthy Reefs Initiative partnership)	2016	4	V5	V5	V5	Representative
México-2016	México (Healthy Reefs Initiative partnership)	2016	4	V5	V5	V5	Representative
Honduras-2016A	Honduras (Healthy Reefs Initiative partnership)	2016	4	V5	V5	V5	Representative
Belize-2016	Belize (Healthy Reefs Initiative partnership)	2016	4	V5	V5	V5	Representative
Antigua-2017	Antigua	2017	4	V5	V5	V5	Strategic
Bahamas-2016B	Peterson Cay National Park, Grand Bahama	2016	4	V5	V5	V5	Representative
Bahamas-2016C	South Abaco, Bahamas	2016	4	V5	V5	V5	Representative
Bahamas-2016D	Eleuthera, Bahamas	2016	4	V5	V5	V5	Representative
Bahamas-2016E	New Providence, Bahamas	2016	4	V5	V5	V5	Representative
Bahamas-2017A	Savana Sound - Eleuthera, Bahamas	2017	4	V5	V5	V5	Representative
México-2017	Veracruz, Mexico (AGRRA Training)	2017	4	V5	V5	V5	Strategic
Bahamas-2017B	Exuma Cays, Bahamas	2017	4	V5	V5	V5	Representative
Bahamas-2017C	Cat Island, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic

Bahamas-2017D	Conception Island, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic
Bahamas-2017E	Eleuthera, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic
Bahamas-2017F	Long Island, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic
Honduras-2015B	Tela, Honduras	2015	4	V5	V5	V5	Representative > Strategic
Honduras-2016B	Tela, Honduras	2016	4	V5	V5	V5	Representative > Strategic
Bahamas-2017G	North Eleuthera, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic
Bahamas-2017H	Walker Cay, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic
Bahamas-2015C	Andros Island, Bahamas	2015	4	V5	V5	V5	Representative > Strategic
Bahamas-2015D	Castaway Cay, Bahamas	2015	4	V5	V5	V5	Representative > Strategic
Bahamas-2017I	South Abaco, Bahamas	2017	4	V5	V5	V5	Haphazard>Strategic
Jamaica-2017	Port Royal Cays, Kingston, Jamaica	2017	4	V5	V5	V5	Strategic
Jamaica-2018A	Portland Bight	2018	4	V5	V5	V5	Strategic>Haphazard
Grenada-2018A	Gouyave, Grenada	2018	4	V5	V5	V5	Strategic
Honduras-2013C	Miskito Coast, Honduras	2013	4	V5	V5	V5	Strategic
Grenada-2018B	South Coast, Grenada	2018	4	V5	V5	V5	Haphazard
Grenada-2018C	Carriacou, Grenada (TNC Contract)	2018	4	V5	V5	V5	Strategic
StVincent-2018	Union Island, St. Vincent and the Grenadines (TNC Contract)	2018	4	V5	V5	V5	Strategic
Antigua-2018	Redonda, Antigua and Barbuda	2018	4	V5	V5	V5	Strategic
DominicanRep-2018	Samaná, Dominican Republic (TNC Contract)	2018	4	V5	V5	V5	Random>Strategic
Haiti-2018	Haiti (TNC Contract)	2018	4	V5	V5	V5	Random>Strategic>Haphazard
Jamaica-2018B	Bluefields, Jamaica (TNC contract)	2018	4	V5	V5	V5	Strategic
TurksCaicos-2018	North Coast, East Caicos	2018	4	V5	V5	V5	Strategic
México-2018B	Veracruz, México (Veragrra)	2018	4	V5	V5	V5	Strategic
Bahamas-2018A	Exuma Sound, Bahamas	2018	4	V5	V5	V5	Strategic>Haphazard
Antigua-2019	Nelson's Dockyard National Park	2019	4	V5	V5	V5	Strategic
México-2018A	México (Healthy Reefs Initiative partnership)	2018	4	V5	V5	V5	Random>Strategic>Haphazard
Belize-2018A	Belize (Healthy Reefs Initiative partnership)	2018	4	V5	V5	V5	Random>Strategic
Honduras-2018	Honduras (Healthy Reefs Initiative partnership)	2018	4	V5	V5	V5	Strategic>Random>Haphazard
Belize-2018B	Turneffe Atoll (ERI MBRS data), Belize	2018	4	V5	V5	V5	Random
Belize-2018C	Toledo District (TIDES MBRS data)	2018	4	V5	V5	V5	Strategic

Guatemala-2018	Guatemala (Healthy Reefs Initiative partnership)	2018	4	V5	V5	V5	Strategic>Random
Bahamas-2018C	Abaco, Bahamas	2018	4	V5	V5	V5	Strategic>Haphazard
Bahamas-2018E	Grand Bahama, Bahamas	2018	4	V5	V5	V5	Strategic>Haphazard
Bahamas-2018F	Lucaya National Park, Bahamas	2018	4	V5	V5	V5	Strategic>Haphazard
Bahamas-2018G	West Grand Bahama, Bahamas	2018	4	V5	V5	V5	Strategic>Haphazard
Bahamas-2019A	Ocean Cay, Bahamas	2019	4	V5	V5	V5	Haphazard>Random>Strategic
Belize-2018F	Glover's Reef Atoll and the South Water Cayes, Belize (WCS Data)	2018	4	V5	V5	V5	Random
Belize-2018G	Blue Venture Partner Data	2018	4	V5	V5	V5	Random
Grenada-2019A	Grenada 2019	2019	4	V5	V5	V5	Strategic
Grenada-2019B	Grenada Marine Protected Areas program monitoring within MPAs	2019	4	V5	V5	V5	Strategic>Haphazard
Bahamas-2019B	Abaco, Bahamas	2019	4	V5	V5	V5	Haphazard>Strategic>Random
Bahamas-2019C	New Providence & Rose Island, Bahamas	2019	4	V5	V5	V5	Strategic
Bahamas-2019D	Great Exuma inside National Park	2019	4	V5	V5	V5	Strategic>Haphazard
Bahamas-2018B	Rapid Ecological assessment for proposed MPA	2018	4	V5	V5	V5	Strategic>Haphazard

Table 4: The AGRRA database's current list of public data batches along with their main points of contact

Name	Description	Year	Benthos Contact	Coral Contact	Fish Contact	Additional Contact
Bahamas-1997	Andros Island, Bahamas	1997		Philip Kramer	Philip Kramer	Kenneth Marks
VirginIslands-1998	USVI (St. Thomas)	1998		Richard Nemeth	Richard Nemeth	Christy Pattengill-Semmens
Bahamas-1998A	San Salvador Island, Bahamas	1998		Paulette Peckol	Paulette Peckol	Allen Curran
Bahamas-1998B	Andros Island, Bahamas	1998		Philip Kramer	Philip Kramer	Kenneth Marks
Curaçao-1998	Curaçao, Netherlands Antilles	1998		Andrew Bruckner	Andrew Bruckner	
Bonaire-1999	Bonaire, Netherlands Antilles	1999		Philip Kramer	Philip Kramer	Kalli De Meyer
México-1999A	Akumal & Xcalak, Quintana Roo, México	1999		Robert Steneck	Robert Steneck	
Belize-1999A	Northern and south-central barrier reef, Belize	1999		Paulette Peckol	Paulette Peckol	Allen Curran
VirginIslands-1999	USVI (St. Croix, St. Thomas) & BVI (Guana)	1999		Richard Nemeth	Richard Nemeth	Christy Pattengill-Semmens
Cayman-1999	Little Cayman & Grand Cayman, British West Indies	1999		Carrie Manfrino	Christy Pattengill-Semmens	Brice Semmens

StVincent-1999	Horseshoe Reef, Tobago Cays Marine Park, Grenadines, St. Vincent & the Grenadines	1999		Alice Deschamps	Kristi D. Klomp	André Desrochers
México-1999B	Central-southern coast, Quintana Roo, México	1999		Miguel Ruiz-Zárate	Enrique Núñez-Lara	Ernesto Arias-González
Cuba-1999	María la Gorda, southeast Ensenada de Corrientes, Cuba	1999		Pedro Alcolado	Rodolfo Claro	
México-1999C	Veracruz Reef System, México	1999		Guillermo Horta-Puga		
Belize-1999B	Lighthouse Atoll, Belize	1999		Julianne Robinson	Julianne Robinson	
Bahamas-1999	Abaco Islands, Bahamas	1999		Joshua Feingold	Joshua Feingold	Kenneth Banks
TurksCaicos-1999	Caicos, Turks & Mouchoir Banks, Turks & Caicos Islands	1999		Bernhard Riegl	Marilyn Brandt	Carrie Manfrino
Venezuela-1999	Archipiélago de los Roques National Park, Venezuela	1999		Estrella Villamizar	Juan Posada	Patricia Richards Kramer
CostaRica-1999	Cahuita National Park, Costa Rica	1999		Ana Fonseca	Carlos Gamboa	Jorge Cortés
USA-1999	Flower Garden Banks National Marine Sanctuary, Gulf of Mexico	1999		Christy Pattengill-Semmens	Christy Pattengill-Semmens	Stephen Gittings
StMaarten-1999	St. Maarten (Windward Netherlands Antilles survey)	1999		Kristi D. Klomp	Kristi D. Klomp	David Kooistra
Saba-1999	Saba & Saba Bank (Windward Netherlands Antilles survey)	1999		Kristi D. Klomp	Kristi D. Klomp	David Kooistra
StEustatius-1999	St. Eustatius (Windward Netherlands Antilles survey)	1999		Kristi D. Klomp	Kristi D. Klomp	David Kooistra
Curaçao-2000	Curaçao, Netherlands Antilles	2000		Andrew Bruckner		
VirginIslands-2000	USVI (St. Thomas, St. John) & BVI (Anegada, Virgin Gorda)	2000		Richard Nemeth	Richard Nemeth	
Cayman-2000	Cayman Brac, British West Indies	2000		Carrie Manfrino		
Belize-2000	Turneffe Atoll, Glovers Reef & barrier reef, Belize	2000		Patricia Richards Kramer	Patricia Richards Kramer	
México-2000	Chinchorro Banks, Quintana Roo, México	2000		Philip Kramer	Philip Kramer	
Jamaica-2000	Northern, northwestern, western and southwestern reefs, Jamaica	2000		Kristi D. Klomp	Kristi D. Klomp	George Warner
Cuba-2001A	Batabanó, Cuba	2001		Pedro Alcolado	Fabián Pina	Elena de la Guardia
Cuba-2001B	Sabana-Camagüey, Cuba	2001		Pedro Alcolado	Karel Cantelar Ramos	Sergio González-Ferrer
Cuba-2001C	Jardines de la Reina, Cuba	2001		Pedro Alcolado	Fabián Pina	Elena de la Guardia
Bahamas-2002	Andros Island, Bahamas (AUTEC)	2002		Patricia Kramer	Patricia Kramer	

Panamá-2002	Bocas del Toro & Comarca de Kuna Yala (San Blas Islands), Panama	2002		Juan Maté	Kenneth Marks	Judith Lang
USA-2003	Biscayne Bay National Park & Florida Keys National Marine Sanctuary, Florida	2003		Diego Lirman	Marilyn Brandt	Robert Ginsburg
Nicaragua-2003	Big and Little Corn Islands, Nicaragua	2003		Alex Hunt	Alex Hunt	
DominicanRep-2003	Dominican Republic (Punta Cana & Babaro)	2003		Marilyn Brandt	Marilyn Brandt	
PuertoRico-2003	Culebra, Vieques & Cayos de la Cordillera, Puerto Rico	2003		Andrew Bruckner	Kenneth Marks	Amit Hazra
DominicanRep-2004	Dominican Republic	2004		Rodrigo Garza	Rodrigo Garza	
Bahamas-2004	Andros Island, Bahamas (AUTEC)	2004		Patricia Kramer	Patricia Kramer	
USA-2004A	Broward County, Florida	2004		Rodrigo Garza	Rodrigo Garza	
USA-2004B	Dry Tortugas, Florida	2004		Rodrigo Garza	Rodrigo Garza	
Jamaica-2005	Pedro Bank, Jamaica (TNC partnership)	2005		Philip Kramer	Philip Kramer	
Antigua-2005	North Sound NCORE survey	2005		Marilyn Brandt	Marilyn Brandt	
México-2005	Mexico component of Meso-American Reef survey (TNC partnership)	2005		Alejandro Arrivillaga	Alejandro Arrivillaga	
Grenada-2005	Carriacou and surrounding islands, Grenada (TNC partnership)	2005		Philip Kramer	Philip Kramer	
Dominica-2005	Dominica	2005		Sascha Steiner	Sascha Steiner	
Belize-2006	Belize component of Meso-American Reef survey (WWF partnership)	2006		Melanie McField	Melanie McField	
Honduras-2006	Honduras component of Meso-American Reef survey (TNC partnership)	2006		Alejandro Arrivillaga	Alejandro Arrivillaga	
México-2006	Mexico component of Meso-American Reef survey (TNC partnership)	2006		Alejandro Arrivillaga	Alejandro Arrivillaga	
Guatemala-2006	Guatemala component of Meso-American Reef survey (TNC partnership)	2006		Alejandro Arrivillaga	Alejandro Arrivillaga	
USA-2006	Molasses Reef SPA	2006		Rodrigo Garza	Rodrigo Garza	
Bahamas-2006	Andros Island, Bahamas (AUTEC)	2006		Patricia Kramer	Patricia Kramer	
Bahamas-2007	Andros Island, Bahamas (AUTEC)	2007	Patricia Kramer	Patricia Kramer	Patricia Kramer	
Belize-2008	Belize City, Palencia, & San Pedro (Healthy Reefs Initiative partnership)	2008		Melanie McField	Melanie McField	
StVincent-2008	St. Vincent, West Indies	2008		James Byrne	James Byrne	
Bahamas-2008A	New Providence & Rose Island REA	2008	Judy Lang	Judy Lang	Ken Marks	
Bahamas-2008B	Andros Island, Bahamas (AUTEC)	2008	Patricia Kramer	Patricia Kramer	Patricia Kramer	

Belize-2009A	Belize City, Palencia, & San Pedro (Healthy Reefs Initiative partnership)	2009		Melanie McField	Melanie McField	
Belize-2009B	Belize City, Caye Caulker, Glovers, Palencia, & Turneffe (Healthy Reefs Initiative partnership)	2009		Melanie McField	Melanie McField	
México-2009	México (Healthy Reefs Initiative partnership)	2009		Melanie McField	Melanie McField	
Bahamas-2009	Andros Island, Bahamas (AUTEC)	2009	Patricia Kramer	Patricia Kramer	Patricia Kramer	
Honduras-2009	Honduras (Healthy Reefs Initiative partnership)	2009		Melanie McField	Melanie McField	
Honduras-2010	Honduras - Cayos Cochinos (Healthy Reefs Initiative partnership)	2010	Melanie McField	Melanie McField	Melanie McField	
Bahamas-2011A	Cay Sal Bank, Bahamas (Living Oceans Foundation expedition)	2011	Judy Lang	Judy Lang	Ken Marks	
Honduras-2011A	Tela, Honduras	2011	Jennifer Myton	Jennifer Myton	Ian Drysdale	
StKitts-2011	St. Kitts (Living Oceans Foundation expedition)	2011	Andrew Bruckner	Andrew Bruckner	Andrew Bruckner	
México-2011A	México (Healthy Reefs Initiative partnership)	2011	Lorenzo Alvarez Filip	Lorenzo Alvarez Filip	Lorenzo Alvarez Filip	
Honduras-2011B	Swan Island, Honduras (Healthy Reefs Initiative partnership)	2011	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Honduras-2011C	Roatan, Honduras (Healthy Reefs Initiative partnership)	2011	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Bahamas-2011B	Inaguas, Bahamas (Living Oceans Foundation expedition)	2011	Judy Lang	Judy Lang	Ken Marks	
Belize-2011	Belize (Healthy Reefs Initiative partnership)	2011	Melanie McField	Melanie McField	Melanie McField	
Honduras-2011D	Roatan, Honduras (Healthy Reefs Initiative partnership)	2011	Jennifer Myton	Jennifer Myton	Ian Drysdale	
México-2011B	México (Healthy Reefs Initiative partnership)	2011	Melanie McField	Melanie McField	Melanie McField	
Bahamas-2011C	Andros, Bahamas (Living Oceans Foundation expedition)	2011	Judy Lang	Judy Lang	Ken Marks	
Bahamas-2011D	Andros Island, Bahamas (AUTEC)	2011	Patricia Kramer	Patricia Kramer	Patricia Kramer	
Bahamas-2011E	New Providence & Rose Island (Perry Institute)	2011	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Honduras-2011E	Roatan & Utila, Honduras (Healthy Reefs Initiative partnership)	2011	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Guatemala-2012	Guatemala (Healthy Reefs Initiative partnership)	2012	Lorenzo Alvarez Filip	Lorenzo Alvarez Filip	Lorenzo Alvarez Filip	
Jamaica-2012	Pedro Bank, Jamaica (Living Oceans Foundation expedition)	2012	Judy Lang	Judy Lang	Ken Marks	
Honduras-2012A	Guanaja, Honduras (Healthy Reefs Initiative partnership)	2012	Jennifer Myton	Jennifer Myton	Ian Drysdale	

Navassa-2012	Navassa (Living Oceans Foundation expedition)	2012	Judy Lang	Judy Lang	Judy Lang	
Colombia-2012	San Andrés, Colombia (Living Oceans Foundation expedition)	2012	Judy Lang	Judy Lang	Judy Lang	
Honduras-2012B	Utila, Honduras (Healthy Reefs Initiative partnership)	2012	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Honduras-2012C	Cayos Cochinos, Honduras (Healthy Reefs Initiative partnership)	2012	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Bahamas-2012A	New Providence & Rose Island (Perry Institute)	2012	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2012B	Lucayan National Park, Grand Bahama, Bahamas	2012	Krista Sherman	Krista Sherman	Krista Sherman	
Bahamas-2013A	Plana, Samana, Mayaguana, Acklins/Crooked Island (The Nature Conservancy REA)	2013	Philip Kramer	Philip Kramer	Philip Kramer	
Honduras-2013A	Tela, Honduras	2013	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Belize-2013	Belize (Healthy Reefs Initiative partnership)	2013	Roberto Pott	Roberto Pott	Roberto Pott	
Honduras-2013B	Swan Island, Honduras (Healthy Reefs Initiative partnership)	2013	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Jamaica-2014	Jamaica (Waitt Foundation partnership)	2014	Suzanne Palmer	Suzanne Palmer	Suzanne Palmer	
Bahamas-2013B	Cross Harbour, Great Abaco, Bahamas	2013	Krista Sherman	Krista Sherman	Krista Sherman	
Bahamas-2013C	East Grand Bahama, Bahamas	2013	Krista Sherman	Krista Sherman	Krista Sherman	
Bahamas-2013D	Joulter Cays, Bahamas	2013	Krista Sherman	Krista Sherman	Craig Dahlgren	
Guatemala-2013	Guatemala (Healthy Reefs Initiative partnership)	2013	Ana Giro	Ana Giro	Ana Giro	
México-2014	México (Healthy Reefs Initiative partnership)	2014	Lorenzo Alvarez Filip	Lorenzo Alvarez Filip	Marisol Rueda Flores	
Honduras-2014	Swan Island, Honduras (Healthy Reefs Initiative partnership)	2014	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Grenada-2015A	Grenada	2015	Stephen Nimrod	Stephen Nimrod	Stephen Nimrod	
Honduras-2015A	Honduras (Healthy Reefs Initiative partnership)	2015	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Jamaica-2015	Jamaica (TNC contract)	2015	Judy Lang	Judy Lang	Ken Marks	
Haiti-2015	Haiti (TNC contract)	2015	Judy Lang	Judy Lang	Ken Marks	
DominicanRep-2015	Dominican Republic (TNC contract)	2015	Judy Lang	Judy Lang	Ken Marks	
Grenada-2015B	Grenadines [Grenada] (TNC contract)	2015	Judy Lang	Judy Lang	Ken Marks	
StVincent-2015	Grenadines [St. Vincent] (TNC contract)	2015	Judy Lang	Judy Lang	Ken Marks	
Bahamas-2015A	Andros Island	2015	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2015B	New Providence & Rose Island	2015	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2016A	New Providence & Rose Island	2016	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	

Guatemala-2016	Guatemala (Healthy Reefs Initiative partnership)	2016	Ana Giro	Ana Giro	Ana Giro	
México-2016	México (Healthy Reefs Initiative partnership)	2016	Lorenzo Alvarez Filip	Lorenzo Alvarez Filip	Marisol Rueda Flores	
Honduras-2016A	Honduras (Healthy Reefs Initiative partnership)	2016	Jennifer Myton	Jennifer Myton	Ian Drysdale	
Belize-2016	Belize (Healthy Reefs Initiative partnership)	2016	Roberto Pott	Roberto Pott	Roberto Pott	
Antigua-2017	Antigua	2017	Suzanne Palmer	Suzanne Palmer	Suzanne Palmer	
Bahamas-2016B	Peterson Cay National Park, Grand Bahama	2016	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2016C	South Abaco, Bahamas	2016	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2016D	Eleuthera, Bahamas	2016	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2016E	New Providence, Bahamas	2016	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017A	Savana Sound - Eleuthera, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
México-2017	Veracruz, Mexico (AGRRA Training)	2017	Judy Lang	Judy Lang	Marisol Rueda	
Bahamas-2017B	Exuma Cays, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017C	Cat Island, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017D	Conception Island, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017E	Eleuthera, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017F	Long Island, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Honduras-2015B	Tela, Honduras	2015	Andrea Rivera	Andrea Rivera		
Honduras-2016B	Tela, Honduras	2016	Andrea Rivera	Andrea Rivera		
Bahamas-2017G	North Eleuthera, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017H	Walker Cay, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2015C	Andros Island, Bahamas	2015	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2015D	Castaway Cay, Bahamas	2015	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2017I	South Abaco, Bahamas	2017	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Jamaica-2017	Port Royal Cays, Kingston, Jamaica	2017	Suzanne Palmer	Suzanne Palmer	Suzanne Palmer	
Jamaica-2018A	Portland Bight	2018	Suzanne Palmer	Suzanne Palmer	Suzanne Palmer	
Grenada-2018A	Gouyave, Grenada	2018	Olando Harvey	Olando Harvey	Olando Harvey	
Honduras-2013C	Miskito Coast, Honduras	2013	Andrea Rivera	Andrea Rivera	Andrea Rivera	
Grenada-2018B	South Coast, Grenada	2018	Jerry Enoe	Jerry Enoe	Jerry Enoe	
Grenada-2018C	Carriacou, Grenada (TNC Contract)	2018	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
StVincent-2018	Union Island, St. Vincent and the Grenadines (TNC Contract)	2018	Sandy Voegeli	Sandy Voegeli	Sandy Voegeli	
Antigua-2018	Redonda, Antigua and Barbuda	2018	Ruleo Camacho	Ruleo Camacho	Ruleo Camacho	

DominicanRep-2018	Samaná, Dominican Republic (TNC Contract)	2018	Rita Sellares	Rita Sellares	Rita Sellares	
Haiti-2018	Haiti (TNC Contract)	2018	Rita Sellares	Rita Sellares	Rita Sellares	
Jamaica-2018B	Bluefields, Jamaica (TNC contract)	2018	Monique Curtis	Monique Curtis	Llewelyn Meggs	
TurksCaicos-2018	North Coast, East Caicos	2018	Don Stark	Don Stark	Don Stark	
México-2018B	Veracruz, México (Veragrra)	2018	Horacio Perez-España	Horacio Perez-España	Horacio Perez-España	
Bahamas-2018A	Exuma Sound, Bahamas	2018	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Antigua-2019	Nelson's Dockyard National Park	2019	Ruleo Camacho	Ruleo Camacho	Ruleo Camacho	
México-2018A	México (Healthy Reefs Initiative partnership)	2018	Andrea Rivera	Andrea Rivera	Fernando Pardo	
Belize-2018A	Belize (Healthy Reefs Initiative partnership)	2018	Alexander Navarro	Alexander Navarro	Melanie McField	
Honduras-2018	Honduras (Healthy Reefs Initiative partnership)	2018	Andrea Rivera	Andrea Rivera	Angela Randazzo Eisemann	
Belize-2018B	Turneffe Atoll (ERI MBRS data), Belize	2018	Nicole Craig	Nicole Craig	Jani Salazar	
Belize-2018C	Toledo District (TIDES MBRS data)	2018	Nicole Craig	Nicole Craig	Nicole Craig	
Guatemala-2018	Guatemala (Healthy Reefs Initiative partnership)	2018	Ana Giro	Ana Giro	Ana Giro	
Bahamas-2018C	Abaco, Bahamas	2018	Nikita Shiel-Rolle	Nikita Shiel-Rolle	Craig Dahlgren	
Bahamas-2018E	Grand Bahama, Bahamas	2018	Nikita Shiel-Rolle	Nikita Shiel-Rolle	Craig Dahlgren	
Bahamas-2018F	Lucaya National Park, Bahamas	2018	Nikita Shiel-Rolle	Nikita Shiel-Rolle	Craig Dahlgren	
Bahamas-2018G	West Grand Bahama, Bahamas	2018	Nikita Shiel-Rolle	Nikita Shiel-Rolle	Craig Dahlgren	
Bahamas-2019A	Ocean Cay, Bahamas	2019	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Belize-2018F	Glover's Reef Atoll and the South Water Cayes, Belize (WCS Data)	2018	Nicole Craig	Nicole Craig	Nicole Craig	
Belize-2018G	Blue Venture Partner Data	2018	Nicole Craig	Nicole Craig	Nicole Craig	
Grenada-2019A	Grenada 2019	2019	Lindy Knowles	Olando K. Harvey	Olando K. Harvey	
Grenada-2019B	Grenada Marine Protected Areas program monitoring within MPAs	2019	Olando Harvey	Olando Harvey	Olando Harvey	
Bahamas-2019B	Abaco, Bahamas	2019	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2019C	New Providence & Rose Island, Bahamas	2019	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2019D	Great Exuma inside National Park	2019	Craig Dahlgren	Craig Dahlgren	Craig Dahlgren	
Bahamas-2018B	Rapid Ecological assessment for proposed MPA	2018	Candice Brittain	Candice Brittain	Candice Brittain	

Table 5: AGRRA Fish table used for the Fish Biomass product calculations. Family column value refers to the ID value in Reference Table 6 below.

Common Name	Scientific Name	Abbr	Family	%Herbivore	%Invertivore	%Piscivore	Diadema	Ornamental	Commercial	TL2FL	A	B	LegacyA	LegacyB
Doctorfish	*Acanthurus chirurgus*	ACHI	1	100						0.95	0.00	3.53	0.00	3.53
Blue Tang	*Acanthurus coeruleus*	ACOE	1	100						0.93	0.04	2.83	0.04	2.83
Ocean Surgeonfish	*Acanthurus tractus*	ATRA	1	100						0.91	0.02	2.98	0.02	2.98
Queen Triggerfish	*Balistes vetula*	BVET	2		100		Yes			0.79	0.05	2.78	0.03	2.99
Ocean Triggerfish	*Canthidermis sufflamen*	CSUF	2		100		Yes		Yes	0.99	0.02	3.06	0.02	3.06
Black Durgon	*Melichthys niger*	MNIG	2	82	18					0.79	0.05	2.78	0.06	2.65
Sargassum Triggerfish	*Xanthichthys ringens*	XRIN	2		100		Yes			0.79	0.05	2.78	0.03	2.99
Bar Jack	*Caranx ruber*	CRUB	3		8	92			Yes	0.84	0.02	2.99	0.01	3.24
Permit	*Trachinotus falcatus*	TFAL	3		100		Yes		Yes	0.85	0.05	2.80	0.05	2.80
Foureye Butterflyfish	*Chaetodon capistratus*	CCAP	4		100			Yes		1	0.05	2.86	0.02	3.19
Spotfin Butterflyfish	*Chaetodon ocellatus*	COCE	4	5	95			Yes		1	0.03	2.98	0.03	2.98
Reef Butterflyfish	*Chaetodon sedentarius*	CSED	4		100			Yes		1	0.03	3.08	0.03	3.08
Banded Butterflyfish	*Chaetodon striatus*	CSTR	4		100			Yes		1	0.02	3.14	0.02	3.14
Longsnout Butterflyfish	*Prognathodes aculeatus*	PACU	4		100			Yes		1	0.05	2.86	0.02	3.19
Balloonfish	*Diodon holocanthus*	DHOL	5		100		Yes	Yes		1	0.16	2.40	0.02	3.00
Porcupinefish	*Diodon hystrix*	DHYS	5		100		Yes	Yes		1	0.53	2.28	0.53	2.28
Graysby	*Cephalopholis cruentata*	CCRU	6		34	66				1	0.01	3.08	0.01	3.04
Coney	*Cephalopholis fulva*	CFUL	6		54	46			Yes	1	0.02	2.93	0.02	3.00
Rock Hind	*Epinephelus adscensionis*	EADS	6		80	20			Yes	1	0.01	3.22	0.01	3.11

Red Hind	*Epinephelus guttatus*	EGUT	6		79	21			Yes	1	0.01	3.10	0.01	3.11
Jewfish/Goliath Grouper	*Epinephelus itajara*	EITA	6		84	16				1	0.01	3.06	0.01	3.06
Red Grouper	*Epinephelus morio*	EMOR	6		85	15			Yes	1	0.01	3.04	0.01	3.04
Nassau Grouper	*Epinephelus striatus*	ESTR	6		36	64			Yes	1	0.01	3.04	0.01	3.23
Comb Grouper	*Mycteroperca acutirostris*	MACU	6			100				1	0.01	3.03	0.01	3.21
Black Grouper	*Mycteroperca bonaci*	MBON	6			100			Yes	1	0.01	3.21	0.01	3.21
Yellowmouth Grouper	*Mycteroperca interstitialis*	MINT	6			100			Yes	1	0.02	2.94	0.01	3.21
Gag	*Mycteroperca microlepis*	MMIC	6		5	95			Yes	0.98	0.01	3.03	0.01	3.03
Scamp	*Mycteroperca phenax*	MPHE	6			100			Yes	0.98	0.01	3.03	0.01	3.21
Tiger Grouper	*Mycteroperca tigris*	MTIG	6			100			Yes	1	0.01	3.12	0.01	3.12
Yellowfin Grouper	*Mycteroperca venenosa*	MVEN	6		6	94			Yes	0.96	0.01	3.14	0.01	3.14
Black Margate	*Anisotremus surinamensis*	ASUR	7		100				Yes	0.87	0.01	3.39	0.01	3.39
Porkfish	*Anisotremus virginicus*	AVIR	7		100					0.9	0.01	3.17	0.01	3.17
Juvenile Grunt	*Haemulon / Anisotremus*	HJUV	7		100				Yes	0.89	0.01	3.16	0.01	3.16
White Margate	*Haemulon album*	HALB	7		100				Yes	0.87	0.01	3.09	0.02	3.04
Tomtate	*Haemulon aurolineatum*	HAUR	7		100					0.88	0.01	3.21	0.01	3.21
Caesar Grunt	*Haemulon carbonarium*	HCAR	7		100		Yes			0.93	0.04	2.74	0.01	3.06
Smallmouth Grunt	*Haemulon chrysargyreum*	HCHR	7		100					0.91	0.40	2.16	0.40	2.16
French Grunt	*Haemulon flavolineatum*	HFLA	7		100				Yes	0.86	0.01	3.16	0.01	3.16
Spanish Grunt	*Haemulon macrostomum*	HMAC	7		100		Yes			0.93	0.02	3.06	0.02	3.03
Cottonwick	*Haemulon melanurum*	HMEL	7		100					0.92	0.02	2.95	0.02	2.95

Sailors Choice	*Haemulon parra*	HPAR	7		100					0.93	0.02	2.99	0.02	2.99
White Grunt	*Haemulon plumierii*	HPLU	7		95	5	Yes			0.89	0.01	3.16	0.01	3.16
Bluestriped Grunt	*Haemulon sciurus*	HSCI	7		100		Yes			0.9	0.02	3.00	0.02	3.00
Latin Grunt	*Haemulon steindachneri*	HSTE	7		100					0.87	0.00	2.91	0.01	3.12
Striped Grunt	*Haemulon striatum*	HSTR	7		100					0.9	0.02	3.10	0.02	3.10
Chub	*Kyphosus* spp.	KYPH	8	100						0.91	0.02	3.08	0.02	3.08
Spanish Hogfish	*Bodianus rufus*	BRUF	9		100		Yes	Yes		0.92	0.01	3.05	0.01	3.05
Slippery Dick	*Halichoeres bivittatus*	HBIV	9		97	3	Yes	Yes		1	0.01	3.09	0.01	2.94
Yellowhead Wrasse	*Halichoeres garnoti*	HGAR	9		97	3	Yes	Yes		1	0.01	3.37	0.01	3.38
Puddingwife	*Halichoeres radiatus*	HRAD	9		100		Yes			1	0.01	3.04	0.01	3.04
Hogfish	*Lachnolaimus maximus*	LMAX	9		100					0.94	0.02	2.99	0.02	2.99
Mutton Snapper	*Lutjanus analis*	LANA	10		65	35			Yes	0.92	0.02	3.01	0.02	3.01
Schoolmaster	*Lutjanus apodus*	LAPO	10		37	63			Yes	0.98	0.02	2.98	0.02	2.98
Blackfin Snapper	*Lutjanus buccanella*	LBUC	10		65	35			Yes	0.94	0.03	2.86	0.07	2.74
Cubera Snapper	*Lutjanus cyanopterus*	LCYA	10		13	87			Yes	1	0.02	2.98	0.02	3.06
Gray Snapper	*Lutjanus griseus*	LGRI	10		29	71			Yes	0.95	0.02	2.88	0.02	2.88
Dog Snapper	*Lutjanus jocu*	LJOC	10		29	71			Yes	0.95	0.04	2.90	0.03	2.86
Mahogany Snapper	*Lutjanus mahogoni*	LMAH	10		25	75			Yes	0.95	0.04	2.72	0.04	2.72
Lane Snapper	*Lutjanus synagris*	LSYN	10		55	45			Yes	0.94	0.03	2.81	0.03	2.81
Yellowtail Snapper	*Ocyurus chrysurus*	OCHR	10		39	61			Yes	0.9	0.04	2.72	0.04	2.72
Scrawled Filefish	*Aluterus scriptus*	ASCR	11	43	57			Yes		1	0.82	1.81	0.82	1.81
Whitespotted Filefish	*Cantherhines macrocerus*	CMAC	11		100			Yes		1	0.06	2.65	0.06	2.65
Orangespotted Filefish	*Cantherhines pullus*	CPUL	11	55	45					1	0.07	2.56	0.07	2.56

Slender Filefish	*Monacanthus tuckeri*	MTUC	11		43	57				1	0.01	3.56	0.01	3.56
Green Moray	*Gymnothorax funebris*	GFUN	12		5	95				1	0.00	2.86	0.00	2.86
Goldentail Moray	*Gymnothorax miliaris*	GMIL	12		5	95				1	0.00	2.57	0.00	2.57
Spotted Moray	*Gymnothorax moringa*	GMO	12			100				1	0.00	3.16	0.00	3.16
Spotted Trunkfish	*Lactophrys bicaudalis*	LBIC	13		84	16	Yes	Yes		0.84	0.12	2.63	0.03	3.00
Cherubfish	*Centropyge argi*	CARG	14	100				Yes		1	0.13	2.26	0.06	2.69
Blue Angelfish	*Holacanthus bermudensis*	HBER	14		100			Yes		1	0.03	2.90	0.03	2.90
Queen Angelfish	*Holacanthus ciliaris*	HCIL	14		100			Yes		1	0.03	2.90	0.03	2.90
Rock Beauty	*Holacanthus tricolor*	HTRI	14		100			Yes		1	0.04	2.86	0.04	2.86
Gray Angelfish	*Pomacanthus arcuatus*	PARC	14	25	75			Yes		1	0.03	2.97	0.03	2.97
French Angelfish	*Pomacanthus paru*	PPAR	14	19	81			Yes		1	0.02	3.13	0.02	3.13
Yellowtail Damselfish	*Microspathodon chrysurus*	MCHR	15	93	7					0.88	0.02	3.08	0.02	3.08
Threespot Damselfish	*Stegastes planifrons*	SPLA	15	28	72			Yes		0.86	0.04	2.86	0.04	2.86
Bluelip Parrotfish	*Cryptotomus roseus*	CROS	16	100						1	0.01	3.28	0.05	3.18
Juvenile Parrotfish	*Scarus / Sparisoma*	SJUV	16	100						1	0.03	2.92	0.03	2.92
Midnight Parrotfish	*Scarus coelestinus*	SCEL	16	100						1	0.02	3.02	0.02	3.06
Blue Parrotfish	*Scarus coeruleus*	SCER	16	100						1	0.01	3.11	0.01	3.11
Rainbow Parrotfish	*Scarus guacamaia*	SGUA	16	100						1	0.02	3.06	0.02	3.06
Striped Parrotfish	*Scarus iseri*	SISE	16	100						1	0.02	3.02	0.01	3.05
Princess Parrotfish	*Scarus taeniopterus*	STAE	16	100						1	0.14	2.39	0.03	2.71
Queen Parrotfish	*Scarus vetula*	SVET	16	100						1	0.03	2.92	0.03	2.92

Greenblotch Parrotfish	*Sparisoma atomarium*	SATO	16	100				Yes		1	0.01	3.03	0.01	3.03
Redband Parrotfish	*Sparisoma aurofrenatum*	SAUR	16	100						1	0.00	3.43	0.00	3.43
Redtail Parrotfish	*Sparisoma chrysopterum*	SCHR	16	100						1	0.01	3.17	0.01	3.17
Bucktooth Parrotfish	*Sparisoma radians*	SRAD	16	100						1	0.02	3.04	0.01	3.03
Yellowtail Parrotfish	*Sparisoma rubripinne*	SRUB	16	100						1	0.02	3.06	0.02	3.06
Stoplight Parrotfish	*Sparisoma viride*	SVIR	16	100						1	0.03	2.92	0.03	2.92
Lionfish	*Pterois volitans*	PVOL	17		5	95				1	0.02	2.89	0.02	3.01
Jolthead Porgy	*Calamus bajonado*	CBAJ	18		100		Yes			0.89	0.04	2.82	0.04	2.82
Saucereye Porgy	*Calamus calamus*	CCAL	18		100		Yes			0.95	0.04	2.80	0.04	2.80
Sheepshead Porgy	*Calamus penna*	CPEN	18		100		Yes			0.92	0.10	2.54	0.07	2.67
Pluma Porgy	*Calamus pennatula*	CPET	18		100		Yes		Yes	0.89	0.02	3.11	0.02	3.11
Great Barracuda	*Sphyraena barracuda*	SBAR	19			100				0.94	0.01	3.08	0.00	3.08
Bandtail Puffer	*Sphoeroides spengleri*	SSPE	20		100		Yes			1	0.01	3.27	0.02	3.05
Surgeonfishes	Acanthuridae	ACAN	1	100						0.93	0.04	2.83	0.04	2.83
Triggerfishes	Balistidae	BALI	2	82	18					0.79	0.05	2.78	0.06	2.65
Jacks	Carangidae	CARA	3		8	92			Yes	0.84	0.02	2.99	0.01	3.24
Butterflyfishes	Chaetodontidae	CHAE	4		100			Yes		1	0.05	2.86	0.02	3.19
Porcupinefishes	Diodontidae	DIOD	5		100		Yes	Yes		1	0.16	2.40	0.02	3.00
Groupers	Serranidae	SERR	6		54	46			Yes	1	0.02	2.93	0.02	3.00
Grunts	Haemulidae	HAEM	7		100				Yes	0.86	0.01	3.16	0.01	3.16
Chubs	Kyphosidae	KYPH	8	100						0.91	0.02	3.08	0.02	3.08
Wrasses	Labridae	LABR	9		97	3	Yes	Yes		1	0.01	3.37	0.01	3.38
Snappers	Lutjanidae	LUTJ	10		37	63			Yes	0.98	0.02	2.98	0.02	2.98
Filefishes	Monacanthidae	MONA	11	55	45					1	0.07	2.56	0.07	2.56
Morays	Muraenidae	MURA	12			100				1	0.00	3.16	0.00	3.16

Boxfishes	Ostraciidae	OSTR	13		84	16	Yes	Yes		0.84	0.12	2.63	0.03	3.00
Angelfishes	Pomacanthidae	PACA	14		100			Yes		1	0.04	2.86	0.04	2.86
Damselfishes	Pomacentridae	PCEN	15	93	7					0.88	0.02	3.08	0.02	3.08
Parrotfishes	Scaridae	SCAR	16	100						1	0.02	3.02	0.01	3.05
Scorpionfishes	Scorpaenidae	SCOR	17		5	95				1	0.02	2.89	0.02	3.01
Porgies	Sparidae	SPAR	18		100		Yes			0.95	0.04	2.80	0.04	2.80
Barracudas	Sphyraenidae	SPHY	19			100				0.94	0.01	3.08	0.00	3.08
Pufferfishes	Tetraodontidae	TETR	20		100		Yes			1	0.01	3.27	0.02	3.05

Table 6: AGRRA Fish family table

ID	Scientific Name	Common Name	Spanish Name	Code
1	Acanthuridae	Surgeonfishes	Cirujanos	SURG
2	Balistidae	Triggerfishes	Cochitos	TRIG
3	Carangidae	Jacks	Jureles y Pámpanos	JACK
4	Chaetodontidae	Butterflyfishes	Peces Mariposa	BUTT
5	Diodontidae	Porcupinefishes	Peces Erizo	PORC
6	Serranidae	Groupers	Cabrillas y Garropas (Meros)	GROU
7	Haemulidae	Grunts	Burros y Roncos	GRUN
8	Kyphosidae	Chubs	Chopas	CHUB
9	Labridae	Wrasses	Doncellas (Labridos?)	WRAS
10	Lutjanidae	Snappers	Pargos	SNAP
11	Monacanthidae	Filefishes	Lijas	FILE
12	Muraenidae	Morays	Morenas	MORA
13	Ostraciidae	Boxfishes	Peces Cofre	BOXF
14	Pomacanthidae	Angelfishes	Ángeles	ANGE
15	Pomacentridae	Damselfishes	Jaquetas (Damiselas)	DAMS
16	Scaridae*	Parrotfishes	Loros	PARR
17	Scorpaenidae	Scorpionfishes	Escorpiones	SCOR
18	Sparidae	Porgies	Plumas	PORG
19	Sphyraenidae	Barracudas	Barracudas	BARR
20	Tetraodontidae	Pufferfishes	Botetes	PUFF

*Sensu Randall, J.E. and P. Parenti. 2014. Parrotfishes are not wrasses. Reef Encounter 29: 16-18.