

# **AGRRA-PORT**

**Atlantic & Gulf Rapid Reef Assessment  
Parameterized Online Reporting Tool**

**Version 1.1**

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# AGRRA Parameterized Online Reporting Tool

## Overview

This document briefly describes the user interface and functionality of the PORT (Parameterized Online Reporting Tool) now available on the AGRRA website. Through this tool users may select from any of the basic report types and then customize the output by selecting the desired output columns and filtering the data to generate reports tailored to the user's specifications.

After the user specifies the parameters for the report the online database is queried to generate the output. A series of SQL queries are sent to the MySQL database server running on the AGRRA website to progressively build the final report. There is no need for understanding the underlying AGRRA database structure or the Structured Query Language (SQL) used to extract data from databases. The steps performed during the construction of the final database table(s) used in the report may be viewed to monitor the creation progress.

Once the customized database tables are generated according to the user's parameters, they are transformed into various output products for use by the user. The output is currently available in three formats:

- HTML – hypertext formatted for viewing in the browser
- XLS – Microsoft Excel™ formatted for further analysis
- CSV – Plain text file (Comma Separated Values) for exporting to other software

## Process Flow

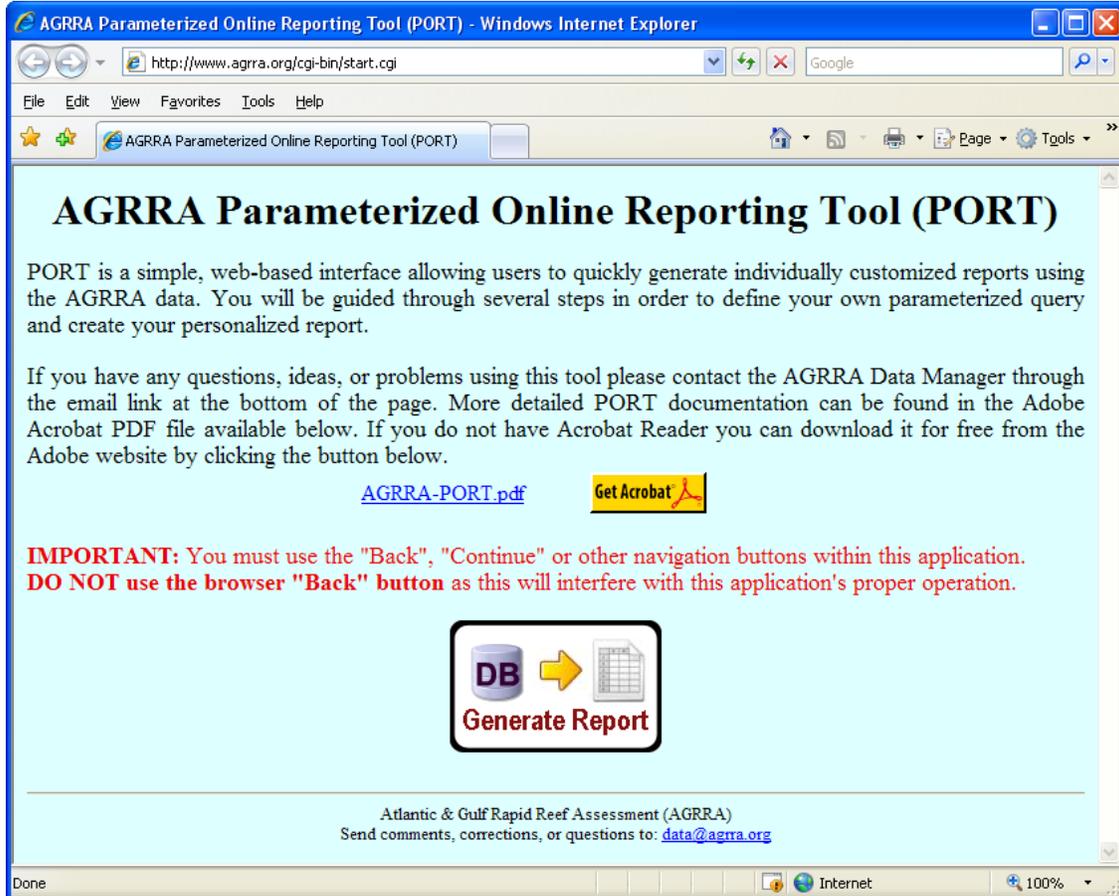
The configuration of the customized reports is accomplished by the following steps:

- Introduction
- Step 1: Select Product Type
- Step 2: Select Product Level
- Step 3: Select Output Columns
- Step 4: Select Filtering Criteria
- Step 5: Select Options
- Database Query/Report Generation
- Viewing Outputs

After progressing through the five configuration steps shown above, the database is queried to generate the specified report. This output may then be viewed in any of its various forms. The user interface and operational features of these steps are described below in more detail.

**Introduction**

When the Parameterized Online Reporting Tool is started from the AGRRA website an introduction page is presented first (shown below).



This page gives a brief overview of the process and a warning not to use the browser’s navigation (Back and Forward) buttons. Because this application requires several steps to gather the user’s input, it uses multiple forms and a session cookie (cookies must be enabled) to maintain state information throughout the process. Navigating with the browser’s back and forward buttons can interfere with the normal operation of the application. For this reason users are cautioned to use the application’s Back, Continue or other buttons to navigate through the application instead of their browser’s back button.

The latest version of this document is available for download from the AGRRA website (<http://www.agrra.org/AGRRA-PORT.pdf>) through a link provided on the start page. Users who do not currently have the Adobe Acrobat® Reader on their computers are provided with a button where they can download it for free from the Adobe website.

The process of configuring the report begins when the user clicks on the Generate Report button at the bottom of the page. This directs the user to Step 1 as shown below.

## Step 1: Select Product Type

Once the Generate Report button is pressed from the start page the following options are shown:

### Step 1: Select Product Type

Begin by selecting one of the standard AGRRA product types from the list below. Brief descriptions are given for each product type.

AlgalAbundance	Relative abundance estimates of crustose coralline algae, turf algae (1997-mid 2000 only) and macroalgae, plus macroalgal height. Macroalgal index (macroalgal abundance x height) is a proxy for macroalgal biomass. NOTE: Turfs were eliminated and macroalgae were partitioned into fleshy and calcareous macroalgae in mid-2000.
CoralComposition	Numbers and percentages of the most common stony coral genera and species. NOTE: Cannot be used for estimates of population density as large corals are far more likely than small corals to be sampled by line transects.
CoralDisease	Prevalence (as numbers and percentages) of common coral diseases and of bleached corals.
CoralMortality	Number of standing dead corals, percent recent partial mortality, percent old partial mortality and percent total partial mortality (including or excluding standing dead corals). NOTE: Mortality was measured in a non-comparable method for the Bahamas-1997 batch and is excluded from these products.
CoralSize	Maximum diameter and maximum height for the most commonly sampled coral species.
FishBiomass	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).
FishDensity	Density of the surveyed fishes by family, fishery importance and total (all AGRRA fishes)
FishSize	Size class distributions by the most common of the AGRRA fish families.
LinearIntercept	Percent live coral cover, percent sand, percent corrected live coral cover (after removing % sand) and maximum reef relief (after mid-2000). NOTE: Not measured in some batches during 1997-1999.

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There are currently nine different product types that may be generated using the data contained in the AGRRA benthic and fish databases. A brief description of each product type is displayed next to the product type buttons. Clicking the Back button returns to the start page and clicking any product button proceeds to Step 2 for the selected product type.

Slightly more verbose descriptions of the available product families are given below:

- **AlgalAbundance** – Algae abundances are one component of the benthic surveys measured using a 25×25cm PVC quadrat to sample the algal community. The abundance (percentage cover) of different types of algae are estimated within the quadrats and recorded. Early versions of the AGRRA protocol measured crustose coralline algae, turf algae, and macroalgae categories. In later revisions of the protocol (around mid-2000) the turf measurement was dropped and the macroalgae was divided into fleshy and calcareous components. The amount of non-algae cover in the quadrat is recorded as “other”. The pre-generated “standard” AlgalAbundance products available with the latest release of the AGRRA data omit algal quadrats containing more than 20% other (non-algae). In addition to the abundances for the various algal types, the height of the macroalgal canopy is also measured. In later protocol versions this is also split into fleshy and calcareous macroalgal canopy heights which are measured separately. The values computed for this product type include the average abundances for the various algae types (crustose coralline, turf, macroalgae, fleshy macroalgae, and calcareous macroalgae). Additionally, a value known as the “macroalgal index” is computed. This value is used as a proxy for the macroalgal biomass by multiplying the canopy height by the abundance (percentage cover). This was again broken down into fleshy and calcareous components in later versions of the protocol.
- **CoralComposition** – The individual coral colonies encountered along the 10m transect line used on the benthic surveys are recorded by species. This product type calculates the colony quantities (and relative percentage of total colonies) for the most common coral genera and species. The list of common genera/species was determined by analyzing the overall AGRRA database of over 80,000 coral colonies. The top genera available in this product type are:

*Acropora* (ACRO)  
*Agaricia* (AGAR)  
*Colpophyllia* (COLP)  
*Diploria* (DIPL)  
*Millepora* (MILL)  
*Montastraea* (MONT)  
*Porites* (PORI)  
*Siderastrea* (SIDE)  
*Stephanocoenia* (STEP)

The most common species (or species groups) available in this product type are:

*Acropora cervicornis* (ACER)  
*Acropora palmata* (APAL)  
*Agaricia agaricites* (AAGA)  
*Agaricia tenuifolia* (ATEN)  
*Agaricia* sp. (AGAR)  
*Colpophyllia natans* (CNAT)  
*Diploria clivosa* (DCLI)  
*Diploria labyrinthiformis* (DLAB)  
*Diploria strigosa* (DSTR)  
*Millepora alcicornis* (MALC)  
*Millepora complanata* (MCOM)  
*Millepora* sp. (MILL)  
*Montastraea annularis* (MANN)  
*Montastraea cavernosa* (MCAV)  
*Montastraea faveolata* (MFAV)  
*Montastraea franksi* (MFRA)  
*Montastraea* sp. (MONT)  
*Porites astreoides* (PAST)  
*Porites furcata* (PFUR)  
*Porites porites* (PPOR)  
*Siderastrea siderea* (SSID)  
*Stephanocoenia intersepta* (SINT)

The species indicated with “sp.” represent any colonies that are unable to be determined to species but are able to be categorized to genus. *Montastraea* sp. represent (usually small) colonies of the small-polyp “annularis” species complex which are easily distinguished from the large-polyp MCAV. NOTE: This product cannot be used for estimates of population density as large corals are far more likely than small corals to be sampled by line transects.

- **CoralDisease** – Any diseases or bleaching conditions are recorded for the coral colonies surveyed along the 10m transect line. The codes currently used to describe diseases on AGRRA surveys are the following: BB=Black Band, DS=Dark Spots, RB=Red Band, WB=White Band, WP=White Plague, WS=White Spot/Patchy Necrosis, YB=Yellow Band, and UK=Unknown. While coral diseases are thought to have increased significantly over the past decade they are still not well characterized and disease identifications are tenuous at best. Several diseases that are not known to occur on various corals (e.g. WP on acroporids) have been reclassified to UK. In addition to diseases the coral bleaching condition is included here as well as it is also an indicator of coral stress. For this product any colonies that are showing some deficiency of zooxanthellae (coded as P=Pale, PB=Partially Bleached, or BL=Bleached) are counted as bleached. This product summarizes disease and bleaching using abundance (numbers of affected colonies) and prevalence (relative percentage of the total number of colonies).

- **CoralMortality** –The partial mortality of the colony surface from a planar view perpendicular to the axis of growth is estimated for colonies along the 10m transect line. The mortality is classified as either “recent” or “old” based on the following definition. “Recent” mortality is any non-living part of the coral where the corallites are white and are intact or covered over by a thin layer of filamentous algae or mud. “Old” mortality, in contrast, is any non-living part of the coral where the corallite structures are either gone or covered over by organisms that are not easily removed. “Total” mortality is the sum of the recent and old partial mortality percentages. The old and total partial mortality averages are computed including/excluding “standing dead” colonies. Standing dead colonies are defined as colonies with 100% old mortality which have not yet eroded into unidentifiable components of the substrate. The abundance of these standing dead colonies (NSD) is included as well as the abundances of colonies with non-zero recent mortality (NRM), colonies with non-zero old mortality (NOM), and colonies with any non-zero mortality (recent or old) as (NTM). By dividing these abundances by the total number of colonies (NC) prevalence percentages may easily be obtained from the abundances. NOTE: Mortality was measured in a non-comparable method for the Bahamas-1997 batch and is excluded from these products.
- **CoralSize** – The maximum diameter and height of the coral colonies surveyed along the 10m transect line are recorded. This product type calculates the average colony sizes (diameter and height) for the most commonly recorded coral species. The list of species is the same as detailed for the CoralComposition product described above. Earlier versions of the AGRRA protocol used a 25cm cutoff and did not record colonies with maximum diameters below this limit. Later versions of the protocol decreased this cutoff to 10cm. The differential exclusion of smaller corals between batches of surveys has an effect on all of the coral-based products (particularly the CoralSize product for obvious reasons).
- **FishBiomass** – The fishes (of selected family groups) that are encountered along the 30m fish transects are recorded according to set of size categories. The categories consist of the following (all in cm): 0-5, 6-10, 11-20, 21-30, 31-40, and >40. Using a Length-Weight formula:  $W = a(L)^b$  and a length estimate based on the median length of each size category, the approximate weight (mass) of a fish can be estimated. The “a” and “b” coefficients are species-specific and are taken from published studies. The coefficients from these studies were calculated based on regression analysis using data from specimens that were weighed and had their lengths measured. For this product biomass is calculated by family group, by commercial fisheries significance, by diet composition, as well as an overall total for all species included in the AGRRA protocol. Family groups correspond to taxonomic fish families with the following exceptions: the yellowtail damselfish (*Microspathodon chrysurus*) is the only species included in Damselfish; the Filefish and Triggerfish families are grouped together under the more general term Leatherjacket; and only the larger “groupers” (*Epinephelus* & *Mycteroperca*) are included in Seabass.

The family groups and their codes are: AF=Angelfish (Pomacanthidae), BF=Butterflyfish (Chaetodontidae), DF=Damselfish (*Microspathodon chrysurus* only), GR=Grunt (Haemulidae), LJ=Leatherjacket (Balistidae & Monacanthidae), PF=Parrotfish (Scaridae), SB=Seabass (*Epinephelus* spp. & *Mycteroperca* spp.), SF=Surgeonfish (Acanthuridae), SN=Snapper (Lutjanidae), as well as O=Other (miscellaneous AGRRA species). The biomass is also calculated for all AGRRA species which are considered to have a commercially significant fishery. Lastly, using the estimated percentages of plants, invertebrates, and fishes in the diet of each AGRRA species, biomass is apportioned into H=Herbivore, I=Invertivore, and P=Piscivore categories. Information on the L-W coefficients, commercial fisheries significance, and diet composition for the species of interest to AGRRA is obtained from the FishBase website ([www.fishbase.org](http://www.fishbase.org)). This information is summarized in Tables 1-3 at the end of this document.

- **FishDensity** – Using the quantities of fishes recorded along the 30m fish transects estimates of fish density ( $\#/100\text{m}^2$ ) are calculated. As with the FishBiomass product fish density is calculated for the various family groups (explained above), for commercially significant species, and as a total density for all of the AGRRA species. The density numbers are, however, not broken down by diet composition as they were in the FishBiomass product.
- **FishSize** – The lengths of the target AGRRA fish species encountered along the 30m fish transects are not recorded directly. The fishes sighted are instead classified into the size classes 0-5, 6-10, 11-20, 21-30, 31-40, and >40 based on their estimated sizes (in cm). The exception being juvenile Grunts (Haemulidae) and Parrotfishes (Scaridae) which are difficult to determine to species when small and so are not recorded for the 0-5cm category. The FishSize product provides some basic size/frequency analysis of the fish populations for the main family groups included in the AGRRA protocol. The numbers of individuals and the relative percentages for each size category are calculated.
- **LinearIntercept** – Several measurements are made along the 10m transect line during benthic surveys. Newer versions of the AGRRA protocol have added additional measurements but live stony coral cover has been measured along the transect line for some time (though it was not measured in some batches during 1997-1999). Absolute live coral cover as well as a “corrected” live cover (calculated as relative live cover when the area covered by sand is subtracted from the transect length) are both presented in the LinearIntercept product. For many surveys (after mid-2000) the maximum relief of the bottom (in cm) along the transect line was measured giving an estimate of the reef’s rugosity. The relief was measured, at various points along the transect, as the height of the tallest coral or reef rock above the lowest point in the underlying substratum.

Refer the AGRRA\_V1.5-README.doc and Atoll Research Bulletin 496 (2003), which can be downloaded from the AGRRA website ([www.agrra.org](http://www.agrra.org)), for more details of the AGRRA methods, definitions and calculations.

## Step 2: Select Product Level

Once a product type is selected by clicking the appropriate button in Step 1 the various levels available for that product type are displayed in Step 2 as shown below:

### Step 2: Select Product Level

The following types of reports are available for this product type. Select a product level from the following.

**CoralDisease**

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ByTransect

Multiple transects are surveyed at each site (standardly 2-6 benthic and 10 fish). Choose this product level to get the most detailed information for this product.

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BySite

This product level aggregates the transect-level information into values for each site. This level is most useful producing data for GIS applications as each site is represented by a latitude and longitude.

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ByBatch

This product level aggregates the site-level data by survey batch. This allows overall values for regional survey batches to be compared to one another. Merging data for different reef zones (CREST, FORE, PATCH, etc.) within a batch would produce misleading values, Because of this all geographic levels beyond the site level are broken down by reef zone.

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ByShelf

This product level aggregates the site-level data by shelf unit. Combining the data for each shelf (Andros Shelf, South Central Cuba Shelf, West Saba Shelf, etc.) allows comparisons to be made between different shelf units. When analyzing data at this level it is important to keep in mind that surveys have been performed over time range which has been interspersed with episodic events like bleaching and disease outbreaks. Additionally, multiple batches may be combined within a single shelf unit.

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ByEcoRegion

This product level aggregates the site-level data by marine ecoregion. Combining the data for each ecoregion (Floridian, Greater Antilles, etc.) allows comparisons to be made between different ecoregions throughout the Tropical Northwestern Atlantic province. When analyzing data at this level the same caveats apply as for the shelf-level data.

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BySpecies

This product level breaks down the data by species. This can be useful when trying to determine the measured and calculated values for a particular species and to see how they vary between species.

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Back

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There are currently up to six different product levels that may be selected depending on the product type chosen. A brief description of how the data is aggregated for each of these product levels is presented. Clicking the Back button returns to Step 1 and clicking any level button proceeds to Step 3 for the selected product level.

Slightly more verbose descriptions of the various levels that are available for the product types are given below:

- **ByTransect** – The most basic sampling unit in the AGRRA protocol is the transect. Multiple transects are surveyed at each site – 2-6 transects (10m) for the benthic protocol and 10 transects (30m) for the fish protocol. Choosing to group at the transect level gives the most detailed view of the data. This detail can result in some very large output reports as there are data for thousands of transects contained in the AGRRA databases.
- **BySite** – The data calculated at the transect-level may be grouped by site and combined to produce site-level values. It is important to note that any site-level averages are based on values calculated for the most basic sampling unit (the transect) and not on the underlying fishes, coral colonies, or algal quadrats. Site-level data is the most useful for interfacing with GIS (Geographical Information System) applications as each site contains latitude and longitude coordinates allowing the data to be plotted on a map.
- **ByBatch** – The site-level data may be combined for all sites surveyed for a batch of data to produce batch-level values. A batch consists of a number of sites that are surveyed for a particular region over a short period of time. In AGRRA these batches are named with the country and the year of the survey. An optional alpha suffix is used to distinguish batches for a particular country and year in cases where there were multiple. Merging data for sites from various reef zones (e.g. CREST, FORE or PATCH) would produce misleading results as these reef zones are often very different in terms of fish/coral composition and other fundamental attributes. For this reason any of the geographical data aggregation levels beyond the site level are always separated by reef zone. It is also important to note that AGRRA data has been gathered over several years when comparing values at the batch-level.
- **ByShelf** – The site-level data may also be grouped and combined by continental/insular shelf units. The shelf unit corresponding to each site was obtained by joining the AGRRA sites with the Sealy Shelf Unit shapefile in a GIS application. See Figure 1 at the end of this document for a view of the layout of these shelf units. As with all geographical data aggregation levels beyond the site level, data is separated by reef zone. Comparing data at this biogeographical level may allow multiple batches of data to be combined to provide a more in-depth look at the reefs of the various shelf units. Combining data at this level carries additional risks since data before and after episodic events like bleaching and disease outbreaks. For this reason extra attention should be paid to the dates of the surveys and measures may possibly be taken to limit the time span for a report (discussed in Step 4 later) to control for these events.

- **ByEcoRegion** – The site-level data may also be grouped and combined by wide-scale marine ecoregional classifications. The ecoregion for each site was obtained by joining the AGRRA sites with the TNC Ecoregion shapefile in a GIS application. See Figure 2 at the end of this document for a view of the layout of these ecoregions. As with all geographical data aggregation levels beyond the site level, data is separated by reef zone. Comparing data at this greatest of geographical levels allows the opportunity for large amounts of data to be combined. As with the ByShelf data aggregation level, this capability must be tempered with the understanding that data may be combined at the ecoregion level representing surveys before and after significant events like bleaching and disease outbreaks.
- **BySpecies** – In addition to the geographic data aggregation levels already presented there is one additional aggregation level that may be available depending on the product type. For some products the data may be combined by species allowing the measured or calculated data to be compared between the various species.

### Step 3: Select Output Columns

Once a product level is selected by clicking the appropriate button in Step 2 the various output columns available for that product type and level are displayed in Step 3 as shown below:

### Step 3: Select Output Columns

For the selected product type and level the following output columns are available. Select the columns to appear in the report from the list below.

NOTE: Selecting the checkbox to the left of **Column** will select/unselect all values.

CoralDiseaseBySite	
<input checked="" type="checkbox"/> <b>Column</b>	<b>Description</b>
<input checked="" type="checkbox"/> <b>Batch</b>	Name of batch
<input checked="" type="checkbox"/> <b>Site</b>	Name of site
<input checked="" type="checkbox"/> <b>Date</b>	Date of survey
<input checked="" type="checkbox"/> <b>Latitude</b>	Latitude (decimal degrees)
<input checked="" type="checkbox"/> <b>Longitude</b>	Longitude (decimal degrees)
<input checked="" type="checkbox"/> <b>Zone</b>	Reef zone category
<input checked="" type="checkbox"/> <b>Shelf</b>	Continental/insular shelf unit
<input checked="" type="checkbox"/> <b>Ecoregion</b>	Marine ecoregional classification
<input checked="" type="checkbox"/> <b>Depth</b>	Average depth of survey (meters)
<input checked="" type="checkbox"/> <b>Cutoff</b>	Minimum coral size measured for batch
<input checked="" type="checkbox"/> <b>NT</b>	Total number of transects
<input checked="" type="checkbox"/> <b>NC</b>	Total number of corals
<input type="checkbox"/> <b>Bleach</b>	# Bleached
<input type="checkbox"/> <b>UK</b>	# Unknown disease
<input checked="" type="checkbox"/> <b>BB</b>	# Black Band
<input type="checkbox"/> <b>DS</b>	# Dark Spots
<input type="checkbox"/> <b>RB</b>	# Red Band
<input type="checkbox"/> <b>WB</b>	# White Band
<input checked="" type="checkbox"/> <b>WP</b>	# White Plague
<input type="checkbox"/> <b>WS</b>	# White Spot/Patchy Necrosis
<input type="checkbox"/> <b>YB</b>	# Yellow Band/Blotch
<input type="checkbox"/> <b>Total</b>	# Total diseases

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In this step the currently selected product type and level which were selected in the first two steps are displayed as a reminder and a list of possible output columns for this report is displayed. A brief description of each of the columns is given to the right of the column name. To the left of each column name is a checkbox that will be used to determine if the column will be included or excluded from the final report. The topmost checkbox located in the column header (to the left of the word **Column**) can be used as a shortcut to select or unselect all of the columns with a single click. In this example only the columns for the Black Band (BB) and White Plague (WP) diseases have been checked. Once the desired output columns have been selected, click the Continue button to proceed to Step 4. Clicking the Back button returns to Step 2 and clicking the Start Over button will restart the process at Step 1.

**Step 4: Select Filtering Criteria**

Once the output columns have been selected in Step 3 the report may be further customized by adding filtering criteria to limit the data included in the output. The filtering criteria are displayed in Step 4 as shown below:

### Step 4: Select Filtering Criteria

The total number of rows of data that will appear in your product report is shown below. You can add optional filters that may reduce this number of rows (e.g., by limiting the geographic range or depth) by clicking on the 'Add Filter' button. Repeat until you are satisfied with your choice of filters. If you change your mind and wish to remove a filter, check the box beside the filter description and click on the 'Delete Filter' button. When finished, click on the 'Continue' button.

NOTE: Selecting disjunct criteria (e.g., Bahamian ecoregion together with Cuban sites or CREST zone together with depths > 20m) will cause no rows to remain in the product.

CoralDiseaseBySite	
Filter Criteria Description	# Rows
(No filters specified)	<b>Total Rows:</b> 812

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Initially no filtering criteria are defined and the total number of rows in the final output report is shown to the right. If no data filtering is desired, click the Continue button to proceed to Step 5. Clicking the Back button returns to Step 3 and clicking the Start Over button will restart the process at Step 1. To add a filtering criterion click Add Filter and the filtering criteria will be displayed as shown below:

### Add Filtering Criteria

Filtering criteria may be selected from variables common to all product types or from variables specific to a particular product type. Select a variable to use in creating a filtering criterion from the drop-down list below.

**Filtering Criterion Variable:** Select Variable...

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A filtering criterion variable may be selected from the drop-down list or the Back button may be used cancel this filter and to return to Step 4. The Start Over button, as usual, will restart the process at Step 1. The following criteria variables are currently available:

#### Common

- Batch – Name of the batch
- Country – Name of the country
- Date – Survey date (YYYY-MM-DD)
- Depth – Depth of the site (meters)
- EcoRegion – Name of the marine ecoregion
- Latitude – Latitude of the site (decimal degrees)
- Longitude – Longitude of the site (decimal degrees)
- Shelf – Name of the shelf unit
- Site – Name of the site
- Surveyor – Code for person who performed survey
- Transect – Transect number for the site
- Zone – Reef zone code

#### Quadrat

- Quadrat Index – Quadrat number for the transect
- Site Index – Quadrat number for the site
- % Crustose Coralline – Abundance of crustose coralline algae in quadrat
- % Turf – Abundance of turf algae in quadrat
- % Macro – Abundance of macroalgae in quadrat
- % Fleshy – Abundance of fleshy macroalgae in quadrat
- % Calcareous – Abundance of calcareous macroalgae in quadrat
- % Other – Abundance of other (non-algae) in quadrat
- Macro Height – Macroalgal canopy height (cm)
- Fleshy Height – Fleshy macroalgal canopy height (cm)
- Calcareous Height – Calcareous macroalgal canopy height

Once a variable is selected from the drop-down list a more detailed description is displayed along with one of two methods for specifying the filter based on this variable. For non-numerical filters a list of all possible values for the selected variable is presented as shown below:

### Add Filtering Criteria

Filtering criteria may be selected from variables common to all product types or from variables specific to a particular product type. Select a variable to use in creating a filtering criterion from the drop-down list below.

**Filtering Criterion Variable:** Country ▾

---

The names of the countries in which surveys have been performed are shown below. Select the countries to include in the report.

NOTE: Selecting the checkbox to the left of **Values** will select/unselect all values.

**Values**

- Bahamas
- Belize
- Brazil
- Cayman Islands
- Costa Rica
- Cuba
- Dominican Republic
- Grenada
- Guatemala
- Honduras
- Jamaica
- Mexico
- Netherland Antilles (North)
- Netherland Antilles (South)
- Nicaragua
- Panama
- Puerto Rico
- St. Vincent
- Turks & Caicos Islands
- United States
- Venezuela
- Virgin Islands

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Selecting various values from the list (by clicking the checkbox next to the values) will create a criterion that only allows data matching the selected values to appear in the final output report. As before, the topmost checkbox may be used as a quick method for selecting or unselecting all of the values. The Continue button is used to proceed to the confirmation step.

The filtering criteria confirmation step is shown below:

### Add Filtering Criteria

**Confirm the addition of the following filter:**

Country.Name in ('Cayman Islands', 'Cuba', 'Jamaica')

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The Back button may be used to return to the filter definition step or the Add Filter may be used to confirm that the filter is correct.

For numeric variables a different method for defining a filter is used. Instead of displaying a list of values to choose from, various comparison options are displayed along with a box to enter a numerical value. By entering a number in the space provided and selecting one of the comparison choices a filter can be created to limit the data based on this numerical relationship.

### Add Filtering Criteria

Filtering criteria may be selected from variables common to all product types or from variables specific to a particular product type. Select a variable to use in creating a filtering criterion from the drop-down list below.

**Filtering Criterion Variable:** Depth ▼

---

Survey depth can be used as a filtering criterion. Enter the depth value (in meters) and select a comparison option.

≠  
 <  
 ≤  
 Site Depth  (numeric value in meters)  
 =  
 ≥  
 >

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Each filter added may limit the number of rows in the final report. The number of rows that make it through each filter is shown to the right of the filter’s description. It is possible to add filters that limit the data included in the report in such a way that no rows are left in the final output. An example of just such a set of disjunct criteria shown below:

### Step 4: Select Filtering Criteria

The total number of rows of data that will appear in your product report is shown below. You can add optional filters that may reduce this number of rows (e.g., by limiting the geographic range or depth) by clicking on the 'Add Filter' button. Repeat until you are satisfied with your choice of filters. If you change your mind and wish to remove a filter, check the box beside the filter description and click on the 'Delete Filter' button. When finished, click on the 'Continue' button.

NOTE: Selecting disjunct criteria (e.g., Bahamian ecoregion together with Cuban sites or CREST zone together with depths > 20m) will cause no rows to remain in the product.

CoralDiseaseBySite	
<input type="checkbox"/> <b>Filter Criteria Description</b>	<b># Rows</b>
<input type="checkbox"/> Country.Name in (Cayman Islands, Cuba, Jamaica)	266
<input checked="" type="checkbox"/> Site.Depth >= 7	439
<input type="checkbox"/> Site.ReefZone in (CREST)	237
<b>Total Rows:</b>	<b>0</b>

**No rows selected—change criteria before continuing**

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In this example the filter selecting only Cuba and the two island-nations to its south has limited the output to 266 (of the original 812) rows. The depth filter requiring sites to be at least 7m deep is less restrictive and would (on its own) limit the output to 439 rows. When the filter requiring only sites categorized in the CREST reef zone was added it culled all but 237 (of the 812) rows. Unfortunately, the combination of these three filters has left no sites that match ALL of the criteria. This is apparent by the displayed total row count of zero, the red warning message indicating that the criteria need to be changed, and the disappearance of the Continue button prohibiting progress until the situation is resolved.

The main problem here is that CREST sites are generally shallow. The constraints of  $\geq 7m$  depth and CREST reef zone appear to be mutually exclusive with no rows (sites) sharing both characteristics. One way of resolving this conflict is to remove the depth limitation. The depth filter has been selected by clicking the checkbox next to the filter description. Clicking the Delete Filter button removes the selected (depth) filter but leaves the remaining two filters.

After the overly-limiting depth constraint is removed the remaining list of filtering criteria are shown below:

### Step 4: Select Filtering Criteria

The total number of rows of data that will appear in your product report is shown below. You can add optional filters that may reduce this number of rows (e.g., by limiting the geographic range or depth) by clicking on the 'Add Filter' button. Repeat until you are satisfied with your choice of filters. If you change your mind and wish to remove a filter, check the box beside the filter description and click on the 'Delete Filter' button. When finished, click on the 'Continue' button.

NOTE: Selecting disjunct criteria (e.g., Bahamian ecoregion together with Cuban sites or CREST zone together with depths > 20m) will cause no rows to remain in the product.

CoralDiseaseBySite	
<input type="checkbox"/> <b>Filter Criteria Description</b>	<b># Rows</b>
<input type="checkbox"/> Country.Name in (Cayman Islands, Cuba, Jamaica)	266
<input type="checkbox"/> Site.ReefZone in (CREST)	237
<b>Total Rows:</b>	<b>87</b>

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As shown by the displayed total row count, there are 87 sites categorized as CREST within the countries selected. Since this number is now non-zero, the Continue button has reappeared

To modify the parameters for an existing filter criteria simply delete the filter and add it again with different parameters. Once the add filter process has been repeated to allow all the desired data limiting criteria to be specified, clicking the Continue button will proceed to Step 5 where the final options may be specified.

### Step 5: Select Options

Once any filtering criteria have been selected in Step 4 only a few remaining options need to be specified. These options are displayed in Step 5 as shown below:

### Step 5: Select Options

Select from among the following options or parameters available for this product.

CoralDiseaseBySite	
<input type="checkbox"/> <b>Verbose</b>	Show verbose commentary detailing the series of queries executed on the MySQL database server to generate the specified product.
4 <input type="text"/> <b>Min Transects</b>	Standard AGRRA summary products omit sites with fewer than 4 benthic transects and 6 x 30 m (or 4 x 50 m) fish transects. Enter your choice of a minimum number of transects if you wish to exclude sites with few transects from the higher-level (Site/Batch/Shelf/EcoRegion) products.
25 <input type="text"/> <b>Min Coral Diameter</b>	Standard AGRRA summary products include corals that are at least 10 cm in maximum diameter (rare before mid 2000) or at least 25 cm in maximum diameter (all surveys). Specifying a larger value for minimum size (e.g. 100) will filter out many of the smaller colonies showing only large, old colonies. Enter your choice of a minimum diameter limit if you wish for this product.
<input type="checkbox"/> <b>Min Coral Height</b>	No limits were made on the minimum height of a coral colony (in fact some encrusting corals are recorded with a height of zero). Enter your choice of a minimum height limit if you wish for this product.

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The options available at this last step depend on the product type and level selected in the first two steps. A brief description of the options and their uses follows:

- Verbose** – This option can be used to enable verbose tracking of the progress of the SQL queries that are sent to the online MySQL databases which contain the AGRRA data. For those with knowledge of the Structured Query Language (SQL) the resulting output may be informative as it shows how the fundamental AGRRA data are processed to generate the configured output.

- **Min Transects** – Standard summary products are generated from the AGRRA data and are available, along with the databases, in the public release area of the AGRRA website. When these products are generated any sites with fewer than 4 benthic transects and  $6 \times 30$  m (or  $4 \times 50$  m) fish transects are omitted from the products. Since these sites have half or less of the usual amount of survey effort for a site, they are not included in the reports as a quality control measure to reduce the effect of under-sampled sites in the report products. Sites with few transects may likewise be eliminated from the customized online reports by entering a minimum number of transects. This option is only available at the Site/Batch/Shelf/EcoRegion products levels.
- **Min Sites** – Like the Min Transects option described above the Min Sites option can be used to cull reef zones where there was minimal sampling. Since data is grouped by reef zone for all product levels above the site level, any reef zones which are represented by fewer than the specified number of sites can be removed as under-sampled zones. For the standard AGRRA summary products a limit of 4 sites per zone is used to filter out the less intensively sampled reef zones. This option is only available at the Batch/Shelf/EcoRegion product levels.
- **Min Coral Diameter** – Since the minimum diameter of corals surveyed decreased (from 25cm to 10cm) with the revised protocol in 2000, corals in the 10-25cm size range are not found in the earlier data batches. To enhance comparisons between the older and newer batches for potentially size-dependent attributes, a minimum coral diameter (e.g. 25) may be specified to standardize the data. Alternatively, this option may be set to a larger value (e.g. 100) to screen out all but the largest of corals in order to view data only for large, old colonies. This option is only available for the coral-based product types.
- **Min Coral Height** – Unlike coral diameter no limits were placed on the minimum height for a colony to be included on a survey. Many encrusting corals, in fact, are recorded as having a height of zero. Since this option is not used to standardize protocol-related differences in the collected data, it is most useful in combination with Min Coral Diameter to screen out all but the largest colonies. This option is only available for the coral-based product types.

Once any optional parameters have been entered at this step the Continue button is used to proceed to the report generation step. Clicking the Back button returns to Step 4 and clicking the Start Over button will restart the process at Step 1.

### Database Query/Report Generation

At this step all of the choices that were selected in the previous steps are used to query the online AGRRA databases and generate the customized report. This step may take some time to complete as some product types require many steps to construct the final output. Once the generation process is complete output similar to the following is displayed:

### Query Database to Generate Report

Based on your choices in the previous steps, multiple queries are being made to the online AGRRA database. You will be able to view the resulting report online via HTML links that will appear below. You can also save the report as an Excel spreadsheet for further processing or save the delimited text (comma separated values) files to import into other programs.

**Please wait while results are generated...**

HTML	Excel	Delimited Text
<a href="#">CoralDiseaseBySite.html</a> <a href="#">Key.html</a>	<a href="#">CoralDiseaseBySite.xls</a>	<a href="#">CoralDiseaseBySite.csv</a> <a href="#">Key.csv</a>

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If the Verbose option was selected in Step 5 the text of the various SQL queries will be shown as they are sent to the database.

When the database queries have completed the final output is converted to three different output formats and presented in a table at the bottom of the page. The three output formats and their uses are explained next.

### Viewing Outputs

- **HTML** – For quick viewing of the output, the generated table may be viewed by clicking on the links provided. This basic output format allows the results to be viewed by those who do not possess additional expensive software like MS Office or ESRI ArcGIS®. Because the results are directly available for viewing through the Web browser this is also a useful format for verifying that the report has produced the desired results before downloading another format.

All product types produce at least one data table (and some more than one). The data table(s) may be viewed by clicking the HTML link provided. In addition to the data table(s) there is also a key containing the column descriptions for the data table, any parameters that were used during the construction of the report, as well as any notes particular to that product type. A sample HTML data table and its key are shown below:

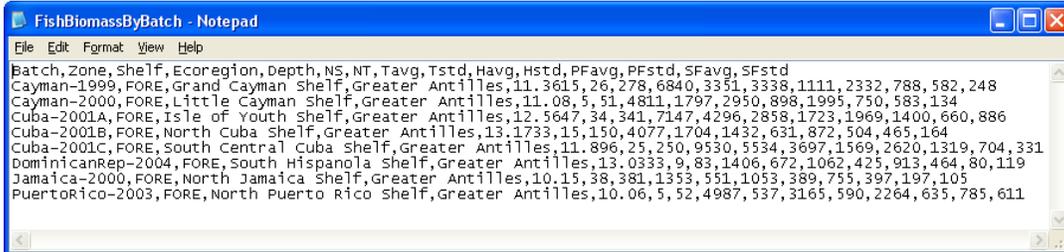
Batch	Zone	Shelf	Ecoregion	Depth	NS	NT	Tavg	Tstd	Havg	Hstd	PFavg	PFstd	SFavg	SFstd
Cayman-1999	FORE	Grand Cayman Shelf	Greater Antilles	11.4	26	278	6840	3351	3338	1111	2332	788	582	248
Cayman-2000	FORE	Little Cayman Shelf	Greater Antilles	11.1	5	51	4811	1797	2950	898	1995	750	583	134
Cuba-2001A	FORE	Isle of Youth Shelf	Greater Antilles	12.6	34	341	7147	4296	2858	1723	1969	1400	660	886
Cuba-2001B	FORE	North Cuba Shelf	Greater Antilles	13.2	15	150	4077	1704	1432	631	872	504	465	164
Cuba-2001C	FORE	South Central Cuba Shelf	Greater Antilles	11.9	25	250	9530	5534	3697	1569	2620	1319	704	331
DominicanRep-2004	FORE	South Hispanola Shelf	Greater Antilles	13.0	9	83	1406	672	1062	425	913	464	80	119
Jamaica-2000	FORE	North Jamaica Shelf	Greater Antilles	10.2	38	381	1353	551	1053	389	755	397	197	105
PuertoRico-2003	FORE	North Puerto Rico Shelf	Greater Antilles	10.1	5	52	4987	537	3165	590	2264	635	785	611

Key	Description
<b>Batch</b>	Name of batch
<b>Zone</b>	Reef zone category
<b>Shelf</b>	Continental/insular shelf unit
<b>Ecoregion</b>	Marine ecoregional classification
<b>Depth</b>	Average depth of survey (meters)
<b>NS</b>	Total number of sites
<b>NT</b>	Total number of transects
<b>T</b>	Total (all species) biomass (grams/100m2)
<b>H</b>	Herbivore biomass (grams/100m2)
<b>PF</b>	Parrotfish (Scaridae) biomass (grams/100m2)
<b>SF</b>	Surgeonfish (Acanthuridae) biomass (grams/100m2)
<b>avg</b>	(Averages)
<b>std</b>	(Standard deviations)
<b>Filter:</b>	WHERE Site.EcoRegion in ('Greater Antilles') AND Site.Depth >= 8
<b>Min Transects:</b>	6
<b>Min Sites:</b>	4
<b>NOTE:</b>	Parrotfishes and Grunts in the 0-5cm size class are not recorded as per the protocol. Fishes in the 6-10cm size category in the México-1999C batch actually represent a size range of 3-10 cm and no individuals are recorded in the 0-5 cm category. Commercially Significant defined as species in FishBase with Fishery Importance of Commercial or Highly Commercial. 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 data from the Bahamas-1997 batch is not considered representative and is excluded from these products.

- XLS** – For those who wish to do further calculations based on the data that is output from this customized report, the results are available as a MS Excel spreadsheet workbook. Since several of the report types generate multiple tables of output, these tables are conveniently packaged as separate worksheets within the single workbook file. As with the HTML version of the output, a key is included to provide column descriptions as well as details on the parameters used to create the output and any product-specific notes. A link to the generated Excel spreadsheet may be used to download the file for later processing. An example of how the spreadsheet file looks is shown below:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Batch	Zone	Shelf	Ecoregion	Depth	NS	NT	Tavg	Tstd	Havg	Hstd	PFavg	PFstd	SFavg	SFstd	
2	Cayman-1999	FORE	Grand Cayman Shelf	Greater Antilles	11.4	26	278	6840	3351	3338	1111	2332	788	582	248	
3	Cayman-2000	FORE	Little Cayman Shelf	Greater Antilles	11.1	5	51	4811	1797	2950	898	1995	750	583	134	
4	Cuba-2001A	FORE	Isle of Youth Shelf	Greater Antilles	12.6	34	341	7147	4296	2858	1723	1969	1400	660	886	
5	Cuba-2001B	FORE	North Cuba Shelf	Greater Antilles	13.2	15	150	4077	1704	1432	631	872	504	465	164	
6	Cuba-2001C	FORE	South Central Cuba Shelf	Greater Antilles	11.9	25	250	9530	5534	3697	1569	2620	1319	704	331	
7	DominicanRep-2004	FORE	South Hispanola Shelf	Greater Antilles	13.0	9	83	1406	672	1062	425	913	464	80	119	
8	Jamaica-2000	FORE	North Jamaica Shelf	Greater Antilles	10.2	38	381	1353	551	1053	389	755	397	197	105	
9	PuertoRico-2003	FORE	North Puerto Rico Shelf	Greater Antilles	10.1	5	52	4987	537	3165	590	2264	635	785	611	
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- **CSV** – Plain text CSV (Comma Separated Values) files are useful for those who have access to other data manipulation programs such as SAS<sup>®</sup> Statistics for statistical analysis or ESRI ArcGIS<sup>®</sup> for spatial analysis. The CSV file format is a simple and widely-recognized format that is easily imported into other software packages. An example of what a plain text CSV looks like is shown below:



**Table 1: Length-width relationship coefficients for the AGRRA fish species**

<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>A</b>	<b>B</b>
Angelfish	Cherubfish	<i>Centropyge argi</i>	0.0601	2.6920
Angelfish	Blue Angelfish	<i>Holacanthus bermudensis</i>	0.0319	2.8994
Angelfish	Queen Angelfish	<i>Holacanthus ciliaris</i>	0.0337	2.9004
Angelfish	Rock Beauty	<i>Holacanthus tricolor</i>	0.0428	2.8577
Angelfish	Gray Angelfish	<i>Pomacanthus arcuatus</i>	0.0344	2.9680
Angelfish	French Angelfish	<i>Pomacanthus paru</i>	0.0203	3.1264
Butterflyfish	Foureye Butterflyfish	<i>Chaetodon capistratus</i>	0.0220	3.1897
Butterflyfish	Spotfin Butterflyfish	<i>Chaetodon ocellatus</i>	0.0318	2.9838
Butterflyfish	Reef Butterflyfish	<i>Chaetodon sedentarius</i>	0.0252	3.0760
Butterflyfish	Banded Butterflyfish	<i>Chaetodon striatus</i>	0.0222	3.1395
Butterflyfish	Longsnout Butterflyfish	<i>Prognathodes aculeatus</i>	0.0220	3.1897
Damselfish	Yellowtail Damselfish	<i>Microspathodon chrysurus</i>	0.0239	3.0825
Grunt	Black Margate	<i>Anisotremus surinamensis</i>	0.0059	3.3916
Grunt	Porkfish	<i>Anisotremus virginicus</i>	0.0148	3.1674
Grunt	White Margate	<i>Haemulon album</i>	0.0167	3.0423
Grunt	Tomtate	<i>Haemulon aurolineatum</i>	0.0100	3.2077
Grunt	Caesar Grunt	<i>Haemulon carbonarium</i>	0.0147	3.0559
Grunt	Smallmouth Grunt	<i>Haemulon chrysargyreum</i>	0.3971	2.1567
Grunt	French Grunt	<i>Haemulon flavolineatum</i>	0.0127	3.1581
Grunt	Spanish Grunt	<i>Haemulon macrostomum</i>	0.0244	3.0295
Grunt	Cottonwick	<i>Haemulon melanurum</i>	0.0226	2.9527
Grunt	Sailors Choice	<i>Haemulon parra</i>	0.0199	2.9932
Grunt	White Grunt	<i>Haemulon plumierii</i>	0.0121	3.1612
Grunt	Bluestriped Grunt	<i>Haemulon sciurus</i>	0.0194	2.9996
Grunt	Striped Grunt	<i>Haemulon striatum</i>	0.0175	3.0990
Leatherjackets	Scrawled Filefish	<i>Aluterus scriptus</i>	0.8230	1.8136
Leatherjackets	Queen Triggerfish	<i>Balistes vetula</i>	0.0267	2.9903
Leatherjackets	Whitespotted Filefish	<i>Cantherhines macrocerus</i>	0.0562	2.6534
Leatherjackets	Orangespotted Filefish	<i>Cantherhines pullus</i>	0.0684	2.5632
Leatherjackets	Ocean Triggerfish	<i>Canthidermis sufflamen</i>	0.0176	3.0554
Leatherjackets	Black Durgon	<i>Melichthys niger</i>	0.0562	2.6534
Leatherjackets	Sargassum Triggerfish	<i>Xanthichthys ringens</i>	0.0267	2.9903
Parrotfish	Midnight Parrotfish	<i>Scarus coelestinus</i>	0.0153	3.0618
Parrotfish	Blue Parrotfish	<i>Scarus coeruleus</i>	0.0124	3.1109
Parrotfish	Rainbow Parrotfish	<i>Scarus guacamaia</i>	0.0155	3.0626
Parrotfish	Striped Parrotfish	<i>Scarus iseri</i>	0.0147	3.0548
Parrotfish	Unidentified Scarus sp.	<i>Scarus sp.</i>	0.0250	2.9214
Parrotfish	Princess Parrotfish	<i>Scarus taeniopterus</i>	0.0335	2.7086
Parrotfish	Greenlip Parrotfish	<i>Scarus trispinosus</i>	0.0153	3.0618
Parrotfish	Queen Parrotfish	<i>Scarus vetula</i>	0.0250	2.9214
Parrotfish	Greenblotch Parrotfish	<i>Sparisoma atomarium</i>	0.0121	3.0275
Parrotfish	Redband Parrotfish	<i>Sparisoma aurofrenatum</i>	0.0046	3.4291
Parrotfish	Redtail Parrotfish	<i>Sparisoma chrysopterus</i>	0.0099	3.1708
Parrotfish	Bucktooth Parrotfish	<i>Sparisoma radians</i>	0.0121	3.0275
Parrotfish	Redfin Parrotfish	<i>Sparisoma rubripinne</i>	0.0156	3.0641
Parrotfish	Unidentified Sparisoma sp.	<i>Sparisoma spp.</i>	0.0250	2.9214
Parrotfish	Stoplight Parrotfish	<i>Sparisoma viride</i>	0.0250	2.9214

Family	Common Name	Scientific Name	A	B
Seabass	Graysby	<i>Cephalopholis cruentata</i>	0.0135	3.0439
Seabass	Coney	<i>Cephalopholis fulva</i>	0.0175	3.0000
Seabass	Rock Hind	<i>Epinephelus adscensionis</i>	0.0111	3.1124
Seabass	Red Hind	<i>Epinephelus guttatus</i>	0.0111	3.1124
Seabass	Jewfish	<i>Epinephelus itajara</i>	0.0131	3.0560
Seabass	Dusky Grouper	<i>Epinephelus marginatus</i>	0.0065	3.2292
Seabass	Red Grouper	<i>Epinephelus morio</i>	0.0123	3.0350
Seabass	Nassau Grouper	<i>Epinephelus striatus</i>	0.0065	3.2292
Seabass	Comb Grouper	<i>Mycteroperca acutirostris</i>	0.0068	3.2051
Seabass	Black Grouper	<i>Mycteroperca bonaci</i>	0.0068	3.2051
Seabass	Yellowmouth Grouper	<i>Mycteroperca interstitialis</i>	0.0068	3.2051
Seabass	Gag	<i>Mycteroperca microlepis</i>	0.0130	3.0305
Seabass	Scamp	<i>Mycteroperca phenax</i>	0.0068	3.2051
Seabass	Tiger Grouper	<i>Mycteroperca tigris</i>	0.0094	3.1200
Seabass	Yellowfin Grouper	<i>Mycteroperca venenosa</i>	0.0095	3.1400
Snapper	Mutton Snapper	<i>Lutjanus analis</i>	0.0162	3.0112
Snapper	Schoolmaster	<i>Lutjanus apodus</i>	0.0194	2.9779
Snapper	Cubera Snapper	<i>Lutjanus cyanopterus</i>	0.0151	3.0601
Snapper	Gray Snapper	<i>Lutjanus griseus</i>	0.0232	2.8809
Snapper	Dog Snapper	<i>Lutjanus jocu</i>	0.0308	2.8574
Snapper	Mahogany Snapper	<i>Lutjanus mahogoni</i>	0.0429	2.7190
Snapper	Lane Snapper	<i>Lutjanus synagris</i>	0.0295	2.8146
Snapper	Yellowtail Snapper	<i>Ocyurus chrysurus</i>	0.0405	2.7180
Surgeonfish	Ocean Surgeonfish	<i>Acanthurus bahianus</i>	0.0237	2.9752
Surgeonfish	Doctorfish	<i>Acanthurus chirurgus</i>	0.0040	3.5328
Surgeonfish	Blue Tang	<i>Acanthurus coeruleus</i>	0.0415	2.8346
Other	Spanish Hogfish	<i>Bodianus rufus</i>	0.0144	3.0532
Other	Bar Jack	<i>Carangoides ruber</i>	0.0074	3.2370
Other	Hogfish	<i>Lachnolaimus maximus</i>	0.0203	2.9880
Other	Great Barracuda	<i>Sphyræna barracuda</i>	0.0050	3.0825

**Table 2: Commercially significant AGRRA fish species  
(C=Commercial, HC=Heavy Commercial)**

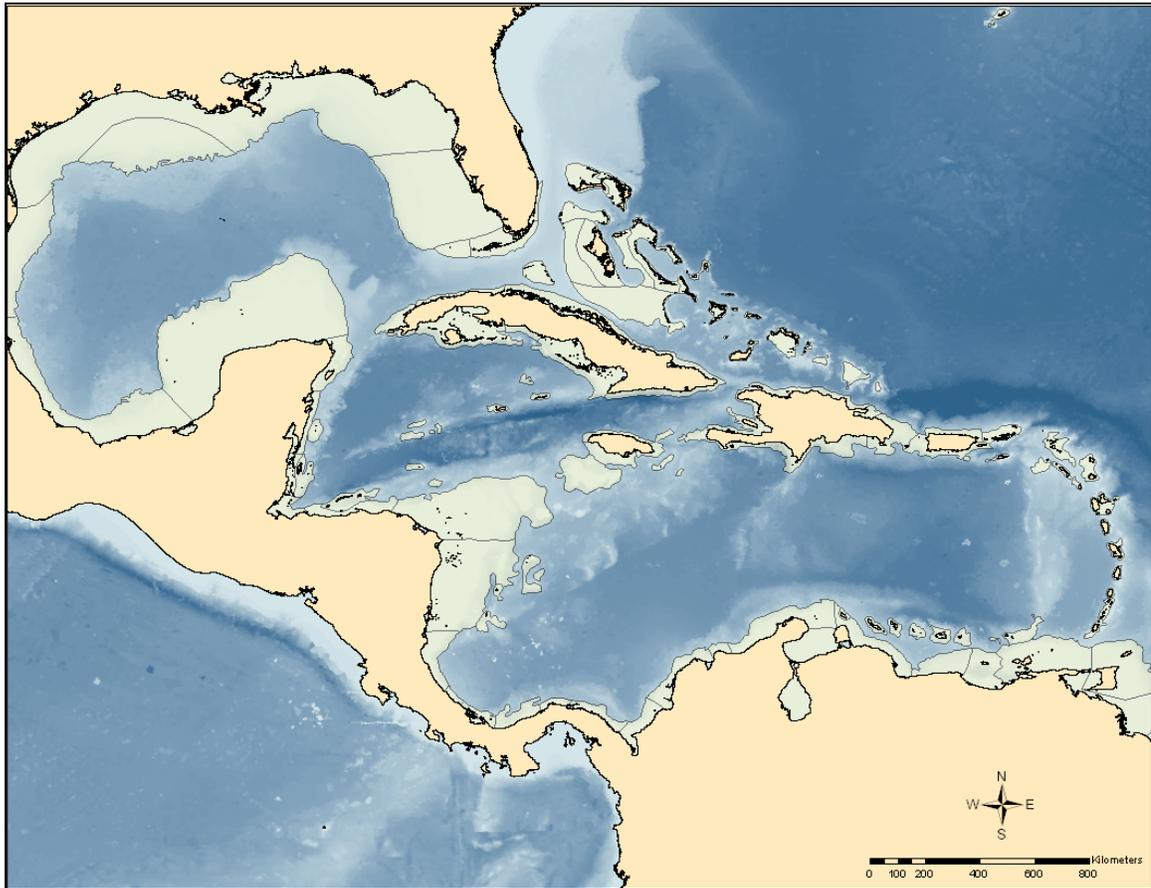
<b>Category</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Fishery</b>
Grunt	Black Margate	Anisotremus surinamensis	C
Grunt	White Margate	Haemulon album	C
Grunt	French Grunt	Haemulon flavolineatum	C
Leatherjacket	Ocean Triggerfish	Canthidermis sufflamen	C
Seabass	Coney	Cephalopholis fulva	C
Seabass	Rock Hind	Epinephelus adscensionis	HC
Seabass	Red Hind	Epinephelus guttatus	HC
Seabass	Dusky Grouper	Epinephelus marginatus	HC
Seabass	Red Grouper	Epinephelus morio	C
Seabass	Nassau Grouper	Epinephelus striatus	C
Seabass	Black Grouper	Mycteroperca bonaci	HC
Seabass	Yellowmouth Grouper	Mycteroperca interstitialis	C
Seabass	Gag	Mycteroperca microlepis	HC
Seabass	Scamp	Mycteroperca phenax	HC
Seabass	Tiger Grouper	Mycteroperca tigris	C
Seabass	Yellowfin Grouper	Mycteroperca venenosa	HC
Snapper	Mutton Snapper	Lutjanus analis	HC
Snapper	Schoolmaster	Lutjanus apodus	C
Snapper	Cubera Snapper	Lutjanus cyanopterus	C
Snapper	Gray Snapper	Lutjanus griseus	C
Snapper	Dog Snapper	Lutjanus jocu	C
Snapper	Mahogany Snapper	Lutjanus mahogoni	C
Snapper	Lane Snapper	Lutjanus synagris	C
Snapper	Yellowtail Snapper	Ocyurus chrysurus	C
Other	Bar Jack	Carangoides ruber	C

**Table 3: Diet composition for the AGRRA fish species  
(%P=Plants, %I=Invertebrates, %F=Fishes)**

Family	Common Name	Scientific Name	%P	%I	%F
Angelfish	Cherubfish	<i>Centropyge argi</i>	100		
Angelfish	Blue Angelfish	<i>Holacanthus bermudensis</i>		100	
Angelfish	Queen Angelfish	<i>Holacanthus ciliaris</i>		100	
Angelfish	Rock Beauty	<i>Holacanthus tricolor</i>		100	
Angelfish	Gray Angelfish	<i>Pomacanthus arcuatus</i>	25	75	
Angelfish	French Angelfish	<i>Pomacanthus paru</i>	19	81	
Butterflyfish	Foureye Butterflyfish	<i>Chaetodon capistratus</i>		100	
Butterflyfish	Spotfin Butterflyfish	<i>Chaetodon ocellatus</i>	5	95	
Butterflyfish	Reef Butterflyfish	<i>Chaetodon sedentarius</i>		100	
Butterflyfish	Banded Butterflyfish	<i>Chaetodon striatus</i>		100	
Butterflyfish	Longsnout Butterflyfish	<i>Prognathodes aculeatus</i>		100	
Damselfish	Yellowtail Damselfish	<i>Microspathodon chrysurus</i>	93	7	
Grunt	Black Margate	<i>Anisotremus surinamensis</i>		100	
Grunt	Porkfish	<i>Anisotremus virginicus</i>		100	
Grunt	White Margate	<i>Haemulon album</i>		100	
Grunt	Tomtate	<i>Haemulon aurolineatum</i>		100	
Grunt	Caesar Grunt	<i>Haemulon carbonarium</i>		100	
Grunt	Smallmouth Grunt	<i>Haemulon chrysargyreum</i>		100	
Grunt	French Grunt	<i>Haemulon flavolineatum</i>		100	
Grunt	Spanish Grunt	<i>Haemulon macrostomum</i>		100	
Grunt	Cottonwick	<i>Haemulon melanurum</i>		100	
Grunt	Sailors Choice	<i>Haemulon parra</i>		100	
Grunt	White Grunt	<i>Haemulon plumierii</i>		95	5
Grunt	Bluestriped Grunt	<i>Haemulon sciurus</i>		100	
Grunt	Striped Grunt	<i>Haemulon striatum</i>		100	
Leatherjacket	Scrawled Filefish	<i>Aluterus scriptus</i>	43	57	
Leatherjacket	Queen Triggerfish	<i>Balistes vetula</i>		100	
Leatherjacket	Whitespotted Filefish	<i>Cantherhines macrocerus</i>		100	
Leatherjacket	Orangespotted Filefish	<i>Cantherhines pullus</i>	55	45	
Leatherjacket	Ocean Triggerfish	<i>Canthidermis sufflamen</i>		100	
Leatherjacket	Black Durgon	<i>Melichthys niger</i>	82	18	
Leatherjacket	Sargassum Triggerfish	<i>Xanthichthys ringens</i>		100	
Parrotfish	Midnight Parrotfish	<i>Scarus coelestinus</i>	100		
Parrotfish	Blue Parrotfish	<i>Scarus coeruleus</i>	100		
Parrotfish	Rainbow Parrotfish	<i>Scarus guacamaia</i>	100		
Parrotfish	Striped Parrotfish	<i>Scarus iseri</i>	100		
Parrotfish	Unidentified Scarus sp.	<i>Scarus sp.</i>	100		
Parrotfish	Princess Parrotfish	<i>Scarus taeniopterus</i>	100		
Parrotfish	Greenlip Parrotfish	<i>Scarus trispinosus</i>	100		
Parrotfish	Queen Parrotfish	<i>Scarus vetula</i>	100		
Parrotfish	Greenblotch Parrotfish	<i>Sparisoma atomarium</i>	100		
Parrotfish	Redband Parrotfish	<i>Sparisoma aurofrenatum</i>	100		
Parrotfish	Redtail Parrotfish	<i>Sparisoma chrysopterus</i>	100		
Parrotfish	Bucktooth Parrotfish	<i>Sparisoma radians</i>	100		
Parrotfish	Redfin Parrotfish	<i>Sparisoma rubripinne</i>	100		
Parrotfish	Unidentified Sparisoma sp.	<i>Sparisoma spp.</i>	100		
Parrotfish	Stoptlight Parrotfish	<i>Sparisoma viride</i>	100		

Family	Common Name	Scientific Name	%P	%I	%F
Seabass	Graysby	<i>Cephalopholis cruentata</i>		34	66
Seabass	Coney	<i>Cephalopholis fulva</i>		54	46
Seabass	Rock Hind	<i>Epinephelus adscensionis</i>		80	20
Seabass	Red Hind	<i>Epinephelus guttatus</i>		79	21
Seabass	Jewfish	<i>Epinephelus itajara</i>		84	16
Seabass	Dusky Grouper	<i>Epinephelus marginatus</i>		76	24
Seabass	Red Grouper	<i>Epinephelus morio</i>		85	15
Seabass	Nassau Grouper	<i>Epinephelus striatus</i>		36	64
Seabass	Comb Grouper	<i>Mycteroperca acutirostris</i>			100
Seabass	Black Grouper	<i>Mycteroperca bonaci</i>			100
Seabass	Yellowmouth Grouper	<i>Mycteroperca interstitialis</i>			100
Seabass	Gag	<i>Mycteroperca microlepis</i>		5	95
Seabass	Scamp	<i>Mycteroperca phenax</i>			100
Seabass	Tiger Grouper	<i>Mycteroperca tigris</i>			100
Seabass	Yellowfin Grouper	<i>Mycteroperca venenosa</i>		6	94
Snapper	Mutton Snapper	<i>Lutjanus analis</i>		65	35
Snapper	Schoolmaster	<i>Lutjanus apodus</i>		37	63
Snapper	Cubera Snapper	<i>Lutjanus cyanopterus</i>		13	87
Snapper	Gray Snapper	<i>Lutjanus griseus</i>		29	71
Snapper	Dog Snapper	<i>Lutjanus jocu</i>		29	71
Snapper	Mahogany Snapper	<i>Lutjanus mahogoni</i>		25	75
Snapper	Lane Snapper	<i>Lutjanus synagris</i>		55	45
Snapper	Yellowtail Snapper	<i>Ocyurus chrysurus</i>		39	61
Surgeonfish	Ocean Surgeonfish	<i>Acanthurus bahianus</i>	100		
Surgeonfish	Doctorfish	<i>Acanthurus chirurgus</i>	100		
Surgeonfish	Blue Tang	<i>Acanthurus coeruleus</i>	100		
Other	Spanish Hogfish	<i>Bodianus rufus</i>		100	
Other	Bar Jack	<i>Carangoides ruber</i>		8	92
Other	Hogfish	<i>Lachnolaimus maximus</i>		100	
Other	Great Barracuda	<i>Sphyrna barracuda</i>			100

**Figure 1: Sealy Shelf Units**



**Figure 2: TNC Ecoregions**

