Data was exported from the REEF database on June 13, 2016.

This dataset was provided to Adraian Stier and Jameal Samhouri from University of Washington. This dataset includes data on 11 families of fishes (see below) from the entire REEF TWA database. REEF requests that these data are not distributed to other parties without prior notification to REEF's Director of Science, and that the geographic location data are not shared or published.

The 11 families requested are:

Aulostomidae, REEF Family Code 006Carangidae, REEF Family Code 014Carcharhinidae, REEF Family Code 015Lutjanidae, REEF Family Code 041Serranidae, REEF Family Code 064Sphyraenidae, REEF Family Code 066Muraenidae, REEF Family Code 046Holocentridae, REEF Family Code 035Sciaenidae, REEF Family Code 061Scorpaenidae, REEF Family Code 063Synodontidae, REEF Family Code 069

The data should be cited as:

REEF. 2016. Reef Environmental Education Foundation. World Wide Web electronic publication. www.REEF.org, date of download (13 June 2016).

Files sent are fish\_061316.txt, TWAsurveys\_061316.txt, TWAgeog.txt, and TWAspecies.txt.

fish\_061316.txt contain all sightings of all species from the 11 requested families in the REEF database from all locations in the REEF TWA database. Only Type 1, Species & Abundance, surveys are included (see REEF website for description of survey types). Both novice and expert data are included. The files contains 1,601,742 records. Each row is a fish sighting. Sightings from a given survey can be grouped using the formid#. There is a row of field headings. Fields included are:

1- recordID number (unique # identifying a particular record in a survey),

2- Form ID (unique # identifying a particular survey, multiple species sightings can be grouped together using this #),

3- geographic zone code (see TWAgeog.txt for site name and lat/lon),

4- species code# (see species.txt for common and scientific names),

5- family code# (see above)

6- abundance code (1- Single, 2- Few (2-10), 3- Many (11-100), 4- Abundant (>100))

TWAsurveys\_061316.txt contains the metadata information on surveys from all Type 1 REEF surveys currently in the TWA database. Each row is a survey. This file can be used to calculate non-sightings for species records. There are 138,099 s records in this file. The information contained in each row is:

1- form # (unique # from the survey, this corresponds to the form# field in the fish file),

2- experience of surveyor (Novice or Expert),

3- geographic zone code (see TWAgeog.txt),

4- survey date,

5- surface temperature in F.,

6- bottom temperature in F.,

7- bottom time,

8- start time,

9- visibility,

10- average depth (1 is snorkel, 2 is <10 feet, 3 is 10'-19', etc. up to 14 for 120'-129'),

11- current (1-none, 2-week, 3-strong), and

12- habitat type (there are 11 types of general habitats, see below),

Habitat codes are:

0. Unknown

1. Mixed is where a dive covers a variety of individual habitats.

2. High Profile Reef is a reef where most coral structures rise four or more feet off the bottom.

3. Low Profile Reef is a reef where most coral structures average less than four feet off the bottom.

4. Sloping Dropoff is an angled slope dropping into open water.

5. Wall is a shear dropoff of over 25 feet that faces open water.

6. Ledge is a single or few sharp drops in bottom topography of three or more feet that may or may not face open water

7. Grass is where sea grasses are the predominant feature

8. Sand is where the bottom is mostly sand.

9. Rubble is where broken coral, rock, boulders and/or gravel comprise the bulk of the bottom material.

10. Artificial includes ship wrecks, platforms, dumped debris or other artificially created habitats.

11. Open Water is in deep water where the bottom is not visible.

TWAgeog.txt contains a listing of the REEF Geographic Zone Codes for REEF’s TWA region, with site names and lat/lon if known. The Zone Code list is a hierarchical database of the region. Surveys are typically conducted at a specific 8-digit zone code. \*\*This sensitive information is not to be shared or published without written consent from REEF's Director of Science.

TWAspecies.txt contains a listing of the REEF species database for the 11 requested families, with species code# (references to the fish file), common name, scientific name, familyid, and scientific family name.

The typical metrics that are used in analyses of REEF data are presence/absence, Sighting Frequency, Density Score, and Abundance Score. These are calculated as -

Percent sighting frequency (%SF) for each species is the percentage of all dives in which the species was recorded.

Density score (D) for each species is a weighted average index based on the frequency of observations in different abundance categories. Density score is calculated as: D= ((nSx1)+(nFx2)+(nMx3)+(nAx4)) / (nS + nF + nM + nA), where nS, nF, nM, and nA represented the number of times each abundance category (Single, Few, Many, Abundant) was assigned for a given species. Values range from 1 to 4.

Abundance Score is an estimate of abundance that accounts for non-sightings and is calculated as D x %SF, values range from 0 to 4.

More information on these metrics, standard filters used on the dataset, and examples of how REEF data have been used can be found by reviewing the PDF papers and reports posted online at http://www.REEF.org.

\*\*Please do not share any of these datafiles with anyone without permission from REEF’s Director of Science.\*\*