WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

MULTI-VARIATE ANALYSIS OF THE FEDERAL FISHERY MANAGEMENT UNIT SPECIES FOR ECOSYSTEM COMPONENT DESIGNATION

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INTRODUCTION

The Magnuson Steven Act (MSA) requires the Regional Fishery Management Councils to develop fishery management plans (FMPs) for the stocks under its jurisdiction. The Western Pacific Fishery Management Council (the Council) developed five FMPs: 1) bottomfish; 2) crustacean; 3) precious corals; 4) coral reef ecosystem; and 5) pelagics. The non-pelagic FMPs are comprised of thousands of species majority of which are from the coral reef FMP. This was due to the "currently harvested coral reef taxa" and the "potentially harvested coral reef taxa" categories. The Council in 2006 started the transition from a stock-based FMP to place-based Fishery Ecosystem Plans (FEPs) with strategies for ecosystem-based fishery management. The FEPs was approved in 2009. The re-authorization of the MSA in 2007 required all species in the FMPs to have annual catch limits (ACLs). This challenged the Council to specify ACLs for thousands of species in the FEPs most of which are data limited.

At its 154th meeting on June 2012, the Council directed staff to conduct an analysis on all available data to determine species/stocks that are eligible for ecosystem component (EC) designation. The Council further directed staff to draft an options paper evaluating sets of alternatives to designate stocks as EC or retain these stocks under Annual Catch Limit management. The actions associated with this recommendation got delayed because of the MSA requirement to specify ACLs by the 2012 deadline.

After 4 years of ACL-based management, the Council again considered its previous recommendation. The Council directed staff to further explore and provide the Council with details in improving the ACL specification process through an omnibus amendment of the Fishery Ecosystem Plan to include re-classifying the management unit species into EC.

The Fishery Ecosystem Plan Team in April 2016 recommended the Council, in collaboration with the Pacific Island Fisheries Science Center, apply the following criteria, in addition to the criteria in the National Standard 1 guidelines, to designate EC species. The criteria are as follows:

- Parsing the catch between state/territorial catch versus federal catch;
- Proportion of the catch;
- Frequency of species detected in the time series;

- Habitat association of each MUS species and habitat distribution;
- Existence of an active fishery

The FEP Team further recommended using a combination of these criteria and the analysis is conducted in a multi-dimensional statistical framework. The analysis should consider weighting the criteria and use a range of threshold levels to evaluate the species to be designated as ecosystem components.

This analysis will support an amendment to remove species in the FEPs currently designated as "in need of conservation and management" and be designated as EC. Once designated as EC, these species will no longer require specification of maximum sustainable yield (MSY), optimum yield (OY), overfishing limits (OFL) and associated acceptable biological catch (ABC) and ACLs and essential fish habitat (EFH). This will simplify the fishery management process by focusing on species in need of active management. EC species will continue to be monitored to determine if there is a need to bring the species back into "species in need of conservation and management".

The objectives of this analysis are:

1. Consolidate available information for all management unit species in the FEP;
2. Develop a decision tree based on the NS1 guidelines and available data to screen species for ecosystem components;
3. Apply the filters to screen species for ecosystem components;
4. Develop threshold levels for screening species for ecosystem components;
5. Conduct the analysis using a multi-dimensional statistical framework;

METHODS

Available Data for Analysis

The following data was used for this analysis:

1. Frequency of species in the catch time series – determines how frequent the species is caught;
2. Species level catch to the total catch – determines how much the species is targeted; calculated in mean catch and total catch;
3. Species level biomass data – determines species abundance;
4. Species maximum depth data – proxy for the extent the species is distributed;
5. Proportion of depth distribution in territorial and federal waters – determines whether the extent of potential distribution of species in federal and territorial waters;

Species-level catch

In order to designate species under ecosystem components, a comprehensive list of species was generated by the Pacific Island Regional Office in 2012 during the first year of ACL implementation.

Species level data was requested from the Pacific Island Fisheries Science Center. The catch data was requested through the Western Pacific Fishery Information Network (WPacFIN). Species level catch information was generated for all species in the WPacFIN database. Catch data is from the boat and shore-based creel surveys from American Samoa, Guam, and Commonwealth of Northern Mariana Islands. For details of the data collection, see Oram et al. (2010a, 2010b, 2010c, 2010d 2010 e, 2010f).

The species level data was expanded to estimate the total species level catch. The boat-based creel survey data expansion algorithm multiplies average CPUE (lbs/trip by gear), times the average number of trips per day at each port (trips/day by gear), times the number of days in a year (days), to estimate annual landings (in lbs) over all ports and gears. This serial multiplication and summation ("expansion") is done separately for weekdays and for weekend/holidays, since the number of boats going out fishing ("participation rates") changes when people are off work.

The shore-based creel survey data expansion algorithm multiplies average CPUE by gear (lbs/hour), times the average number of gear-hours per day for each gear type (summed over several average shifts), times the number of days in a year (summed separately for weekdays and weekends/holidays), to get a total estimated catch (in lbs) for all areas and gears annually. Estimated pounds by species can then be derived from the proportion (% weight) of each species by gear type, which comes from interview data.

For details of the fishery dependent data calculation, see Tao and Tomita 2016 (PICDR-293-IR)

The species level catch time series table was used for the species occurrence information. Each catch entry was converted to presence or absence. If there is catch data for a given year that was scored as a 1 and if none it scored a 0.

Species-specific maximum depth

Maximum depth was assigned to each MUS. PIFSC-Coral Reef Ecosystem Program (CREP) provided the maximum depth (m) to the species detected through visual surveys from various research: 1) Baited Remote Underwater Video; 2) Mesophotic Reef Surveys in 2014; 3) Rebreather dives by R. Pyle in 2014; and 4) Bottomfish Camera drops in the Main Hawaiian Islands. If a species has multiple maximum depth records from the 4 data sources, the deepest observed depth was used for the analysis. These data sources are limited to fin fish. The MUS list also includes invertebrates and fish species that are not detected in the surveys. The Council contracted a third-party for a web search of available values for maximum depth from published, gray literature, and online databases. If a species has different maximum depth values from the PIFSC surveys and the web search, observed maximum depth values from surveys were used.

Proportion of habitat in territorial and federal waters

The existing fishery data collection system in the territories is not spatially explicit. This presents challenges in terms of catch attribution whether caught in territorial (0-3nm) or federal

waters (3-200nm). We used the depth profile and the extent of habitat with which the species are associated between territorial and federal waters. The PIFSC-CREP Ecospatial Information Team provided the estimates of hard and soft bottom habitat (expressed in m^2) per depth range (0-30m and 10m increment thereafter to 100m and 50m increment beyond 100m) per island (including the offshore banks). We made an assumption that the habitat extent is proportion to the population distribution of the species. The extent of the species distribution was cross referenced with the maximum depth information.

Species level biomass and abundance

The PIFSC-CREP Fish Ecology and Monitoring Team provided the species level standing stock biomass data. The data used was from the Stationary Point Count (SPC) surveys conducted in the territories and State of Hawaii. Briefly, the SPC involved 2 divers identifying fish species, estimated length, and counts each within a 7.5m radius cylinder. The two survey cylinders are adjacent to each other hence the 2 divers are approximately 15m apart. The cylinder extends from the benthos to the surface (Smith et al. 2011; Williams et al. 2011). Divers first list all observed reef fish species in the first five minutes of the survey. From the list generated, the divers sequentially counts and estimates the length (to the nearest centimeter) of the fish observed within the cylinder. Fish species later encountered that were not part of the initial list are still recorded but are classified in a different observation category.

Survey sites were selected randomly within strata by depth-bins (shallow – 0 to 6m; mid-depth – 6 to 18 m; and deep – 18 to 30 m). This is one possible source of variation in detectability and occupancy. Other sources may include diver-related variations, habitat type, and rugosity. Details of the survey protocol are available in Ayotte et al. (2015).

Standing stock biomass was calculated using the average biomass density (in gm^{-2}) of each species per depth strata per habitat type. The biomass density is multiplied with the extent of the hardbottom habitat to get the expanded standing stock biomass (in metric tons). For details of the biomass expansion see Williams 2010.

Analytical Framework

The analytical framework follows a decision-tree with varying threshold. The analysis used some of the criteria described in the National Standard 1 guidelines in developing the decision tree. Each criterion was assigned a data proxy. However, an overarching criterion was prior to applying the NS1 criteria to screen the species with information for the analysis. The final MUS list (Appendix 1) was known to be an artifact of the fishery database. For example, the coral reef taxa are classified as “currently harvested coral reef taxa” those harvested in the reef fisheries and “potentially harvested coral reef taxa” which are the rest of the species in the reef ecosystem. Most of the taxa have no information and just an artifact of the development of the species database. These species need to be removed before applying the filter criteria.

Table 1 describes the criteria and the data proxy assigned to each criterion. We used a decision tree matrix to filter species that do not need conservation and management measures (CMMs). The decision tree is shown in Figure 1. The first level is the data availability filter. If

there is no data available then it automatically falls as an ecosystem component that will be subject to further monitoring and research. The rationale is that there is no data to analyze for the stock status and therefore cannot be subject to any reasonable CMMs. A series of filter is then applied to the remaining species and a threshold (in quartiles) needs to be selected for each step. The remaining species will comprise the stock for federal fisheries management after all four filters are applied.

Table 1. National Standard 1 criteria for species in need of conservation and management measures and its respective data proxy.

National Standard 1 criteria	Data Proxy
1. Stock is an important component of the marine environment	Proportion of stock (habitat and depth as a proxy) in territorial versus federal water
2. Stock is caught by the fishery	Frequency of the species caught by the fishery over time
3. Stock is a target of a fishery	Species level catch to the total catch
4. Stock is important to commercial, recreational, or subsistence	Standing stock biomass

The analysis is focused on determining species of management importance in the federal waters. In order to achieve this, we have to make some assumptions on the data set used and how it would relate to the NS1 criteria. The following interpretation and assumptions were made for the NS1 criteria and its respective data proxy:

1. In order for a stock to be an important component of the "federal" marine environment, the species has to be significantly present in federal waters. We used the benthic habitat area by depth and the maximum depth information for each species. The benthic habitats in the territories have no extensive shallow continental shelf but rather have a steep slope going down to great depths. Most of the shallow habitats are within 3 miles. There were several banks that occur in federal waters which are included in the area calculation. It is automatic therefore that species that have shallow depth distribution are categorized in territorial waters whereas species with wider depth distribution will be found both in territorial and federal waters.

2. In order to gauge whether the stock is caught by the fishery, we assume that it will constantly appear in the fishery database. Species caught more frequently will be recorded often and will appear consistently in the catch time series. Since there is no objective way of creating a threshold, the frequency of occurrence is divided into quartiles. Species can appear on a 30 year time series 1-25%, 25-50%, 50-75%, 75-100% of the time.

3. For a stock to be a target of a fishery, the species should make up majority of the total catch. The average species annual expanded catch was divided with the total catch of all species to determine relative contribution to the total catch then was ranked from highest to lowest. Species that are assumed to be the target species will have the highest contribution to the total catch. The ranked list will determine their position on the quartiles similar to the frequency of occurrence.

4. For a stock to be important to commercial, recreational, or subsistence fisheries, species should have a reasonable level of biomass in order to be targeted. Biomass is used as a proxy for abundance. In order for the stock to be of fishery importance, the biomass level should be sustained. This can also be viewed as an output where conservation and management of the species should lead to a sustainable biomass level.

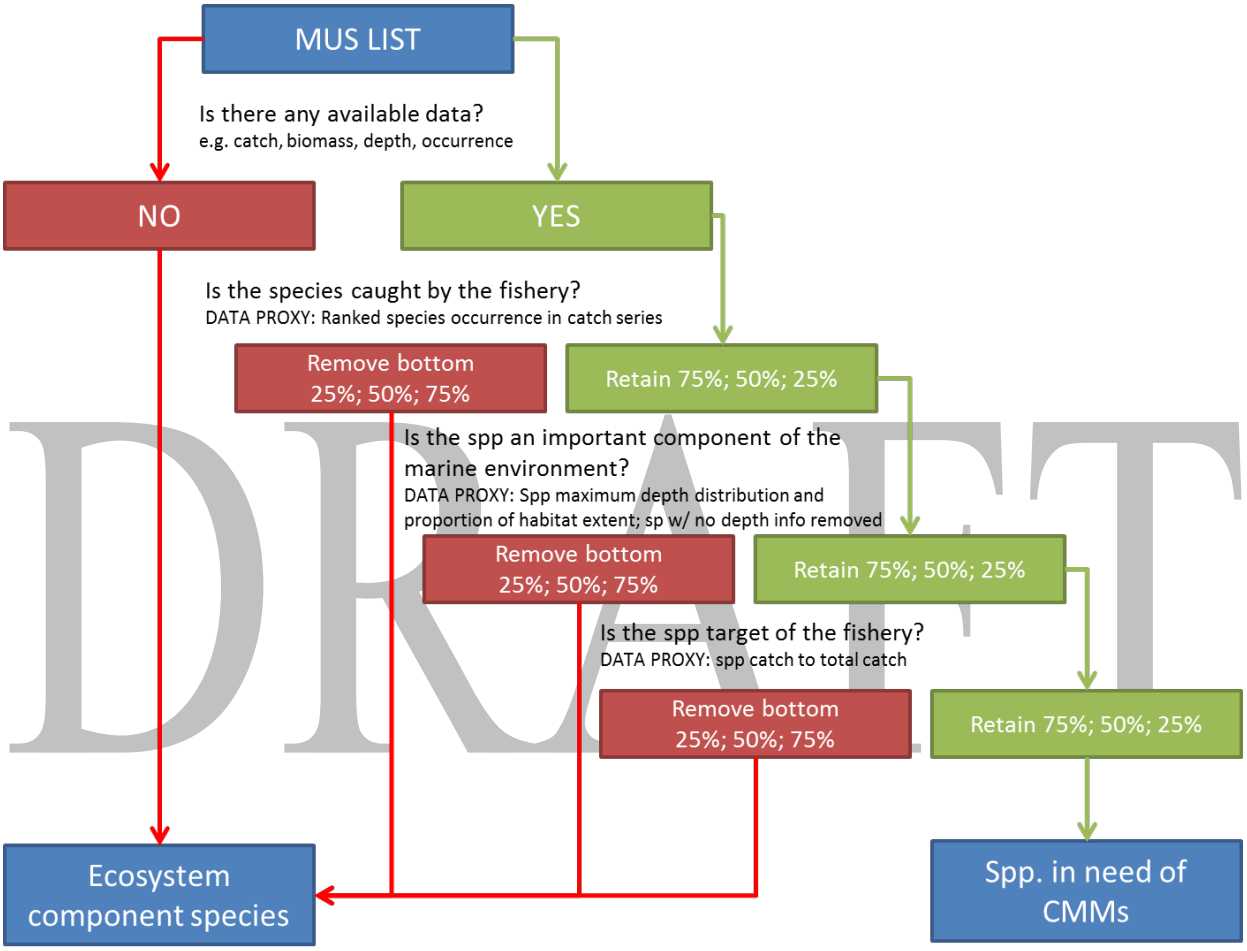

Figure 1. Decision tree for designation species as ecosystem components or species in need of CMMs

Multivariate Data Analysis

A master table of available information was generated for all the MUS species per jurisdiction. Each species were treated as a sample and the following data were treated as variables: 1) total catch; 2) mean catch; 3) total occurrence; 4) total count (individual pieces); 5) maximum depth; 6) biomass; and 7) habitat proportion in federal waters.

The master table was imported to PRIMER 6, a multivariate analysis software designed to calculate similarities in samples from the variables (Clarke and Warwick 2001). The quartile rank of occurrence, catch, max depth, and the depth bins were used as factors for each variable

entry per species. A log(X+1) transformation was used to standardize the data since the values have several orders of magnitude difference. Bray-Curtis analysis was used to calculate species similarities.

Non-metric multi-dimensional scaling (MDS) was used to plot distances for similar species in a 2-dimensional and 3-dimensional space. Species that have similar characteristics for the 7 variables would cluster together. The *stress* value for the plots is indicative on how each point is representative of the inherent similarity /or dissimilarity with other points. The lower the stress value the better the representation in a 2-dimensional or 3-dimensional space. Stress value <0.1 corresponds to a good ordination with no real prospect of misleading interpretation (Clarke and Warwick 2001). A Shepard diagram is plotted to show the regression between the Bray-Curtis similarity and the calculated distance from the MDS (in 2-dimension and 3-dimension). The MDS analysis was set to run 25 restarts to find the lowest stress value which is a form of optimization of the final MDS plots. Pearson correlation was used to show the vectors in the MDS plot. The vector lines of the variable show the directionality of the similar sample points.

The plots show the patterns in the species relationship relative to the variables. The points that clustered together are of interest which is the species group that will be filtered through this process. The multi-variate analysis is done at every filtering stage of the decision tree. A final list of species is generated after all filters are applied which are candidates for species under federal fisheries management.

RESULTS

Removal of MUS species with no available data

The MUS list for Guam contains 2,328 species that are mostly coral reef associated with a large number that are invertebrates. This was an artifact of the development of the species list table of the fishery database where staff developed a complete list of species occurring in Guam anticipating these species to appear in future catch interviews (David Hamm pers.comm. December 23, 2016). The majority of these species did not have catch information. In creating the master data table, most of the species did not have any biomass and maximum depth information. In running the multivariate analysis, these species with no data appeared as a fog of data point surrounding a tight cluster of species that have actual values (Figure 2a). This is also shown in the Shepard diagram where the vertical line with 0 similarity values and a wide distance values in the 3-D MDS indicates a large number of species clouding up the 3 dimensional spaces (Figure 2b). These species were removed following the decision tree (Figure 1).

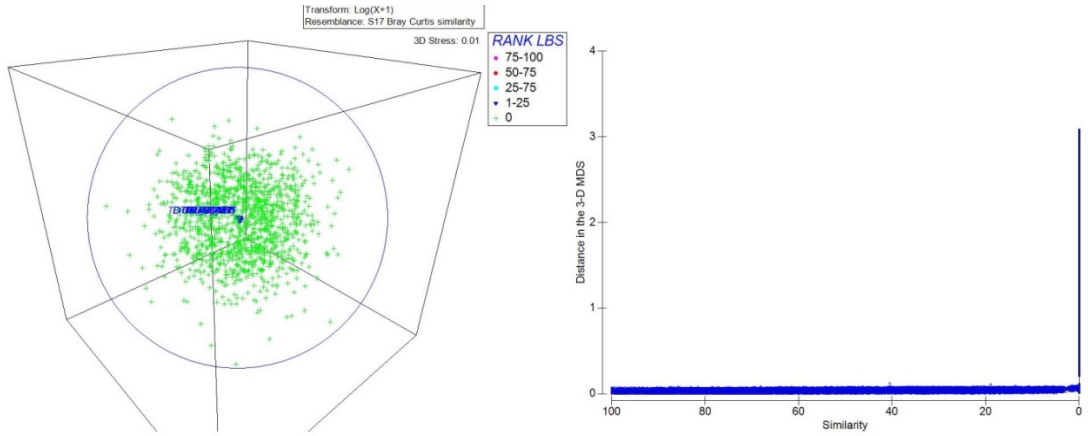

Figure 2. MDS plot (a) and Shepard diagram (b) of all MUS including species with no available data. The 3D stress value = 0.01.

Once the species with no available data were removed, the 3-dimensional pattern of species that comprise the central core in Figure 2a can be seen more clearly. The 3-dimensional plot showed three distinct "C"-like pattern. The stress-value (stress=0.05) indicates that this is a reliable spatial representation of the similarity of species based on the analyzed information (Figure 3A). The left most "C" cluster is comprised of several layers driven by the frequency of occurrence of species in the catch time series (Figure 3B). The majority of the species are appearing in the catch 0-25% of the time. This "C" cluster is also characterized by no depth information (Figure 3D). The "C" cluster on the right is comprised of species that do not have catch records (Figure 3C). The vector lines showed the right to left direction is driven by the availability and the intensity of the fishery dependent data. The left to right direction is driven by the availability and intensity of the depth profile and biomass. The Shepard diagram showed an improvement in the correlation between the index of similarity values and the distance assignment of the species (Figure 4). There are still species that had little information as shown by the vertical line.

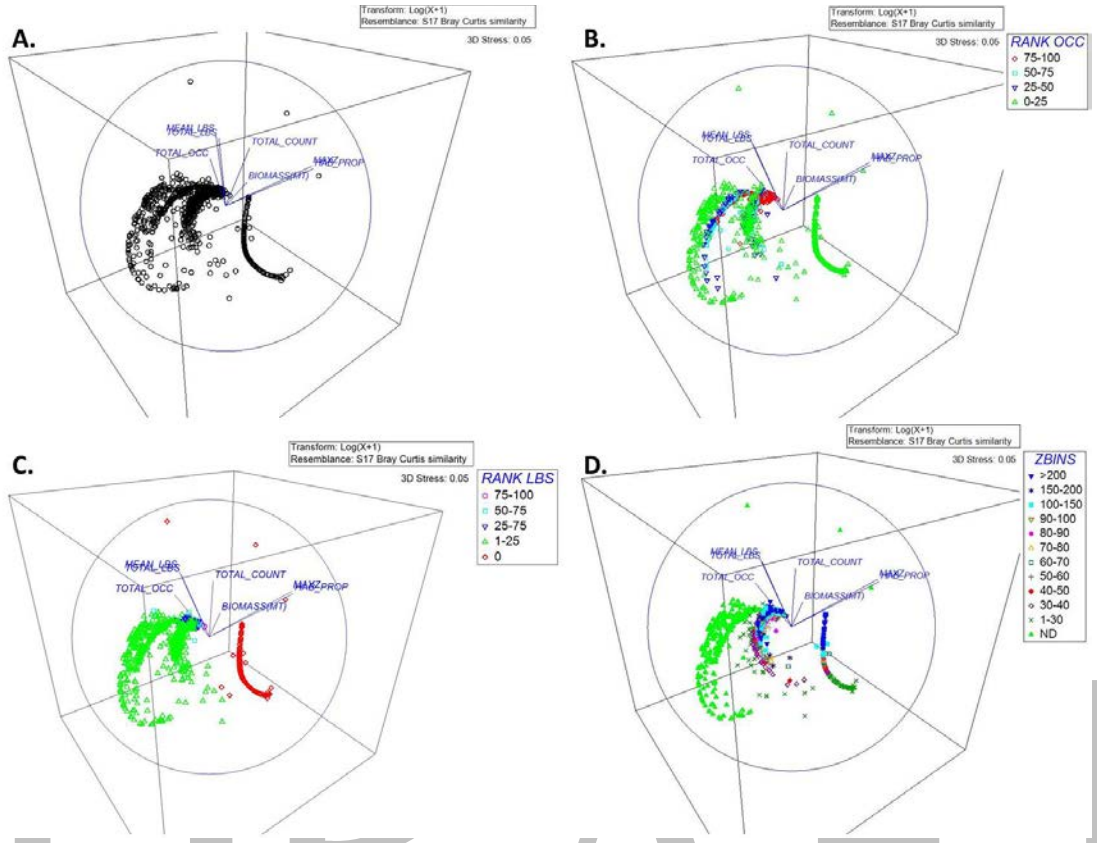

Figure 3. Three-dimensional plot with a stress-value 0.05 of MUS with available data (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

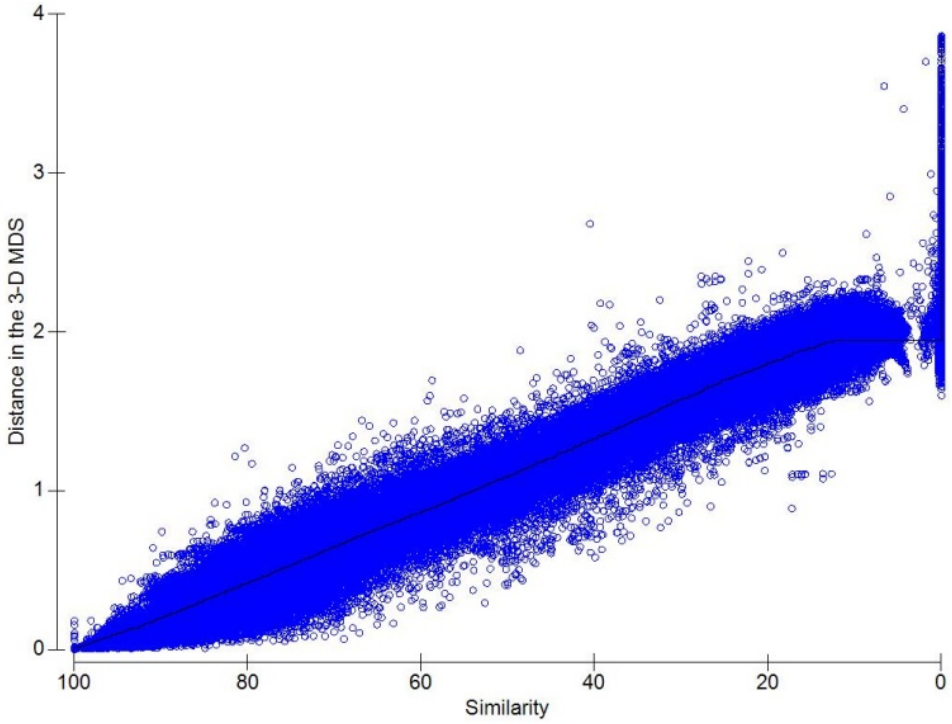

Figure 4. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot for MUS with available data.

Multivariate analysis on a 25% cut-off point

Delete lower quartile to remove species that are not or rarely caught by the fishery

This phase of the analysis applies the data proxy for the NS1 filters sequentially and utilizes a 25% cut-off point where the bottom 25% is removed and conversely retains the top 75%. This would remove species that are not or rarely caught by the fisheries.

The 3-D plot has a stress-value of 0.07. The 3-D plot shows 2 general clustering (Figure 5A). The vector line again separates the effect of the fishery dependent data from the habitat and biomass. Species with 0-25% frequency of being caught by the fishery were removed (Figure 5B). Within each cluster, one can see the general right to left directionality in the quartiles of occurrence from lower to higher occurrence. The same directionality can be seen in the 2 general clusters for the mean catch (lower proportion of catch on the right side of the cluster and increasing towards the left) (Figure 5C). The top cluster is characterized by species with no available depth information (Figure 5D). The lower cluster also showed a general vertical direction from species that occur in shallow water to deep water.

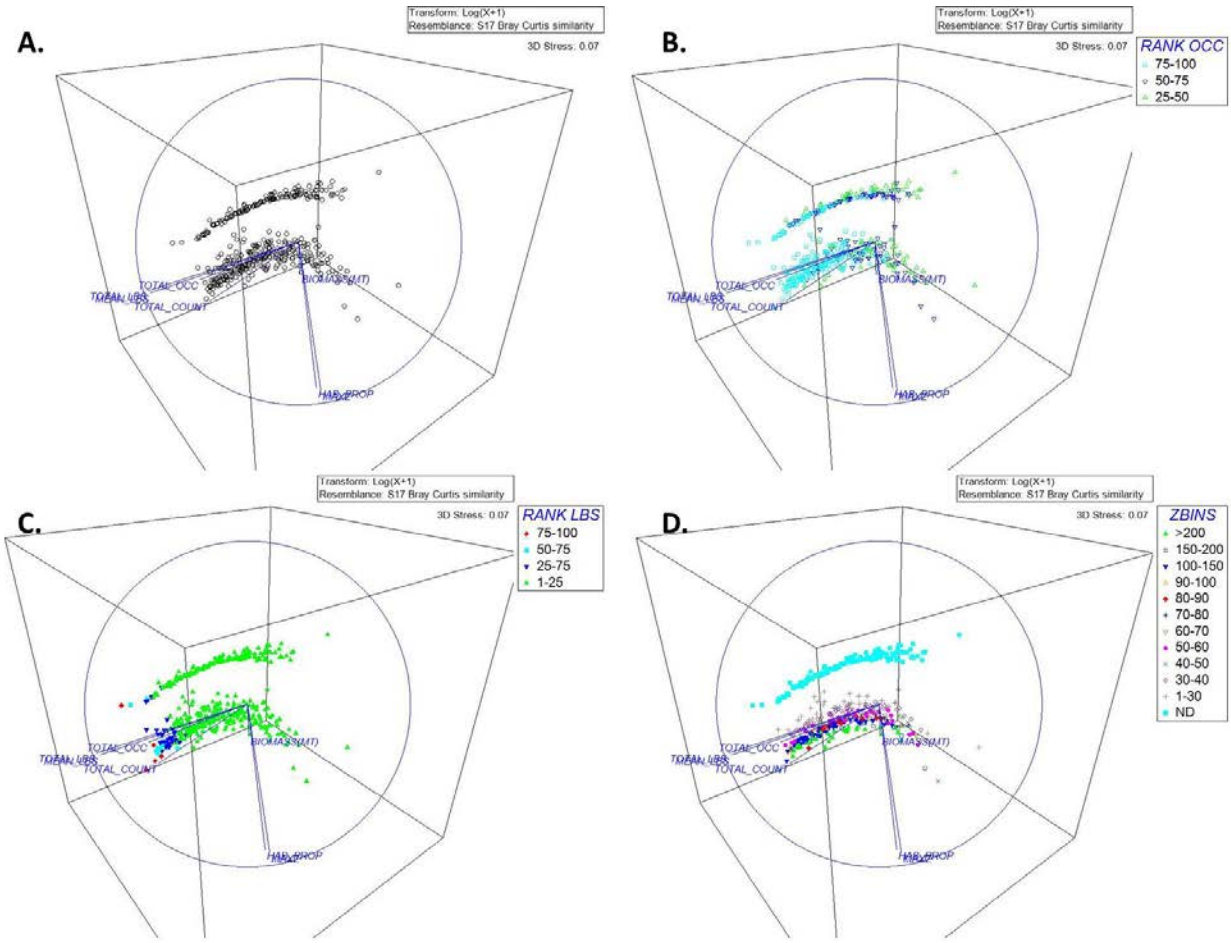

Figure 5. Three-dimensional plot with a stress-value 0.07 of remaining MUS after the lower quartile of frequency of occurrence was removed (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D).

The removal of the species that had 0-25% occurrence removed the vertical line in shown in Figure 4. The Shepard diagram now showed a smoother linear inverse relationship between similarity and distance (Figure 6).

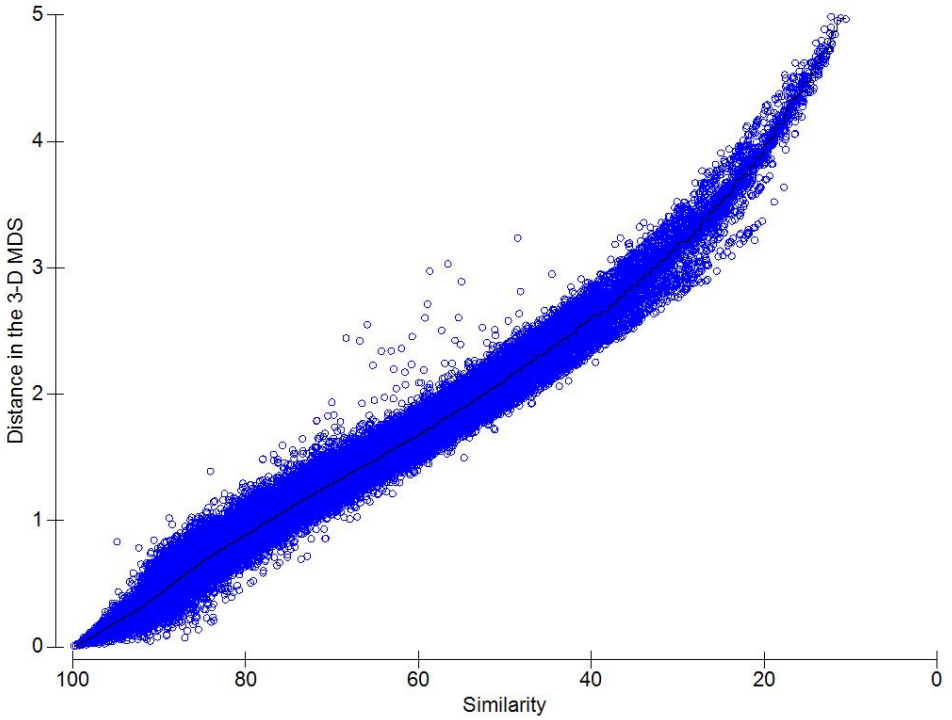

Figure 6. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the lower quartile of occurrence had been removed.

Delete lower quartile to remove species mostly in territorial waters

The second NS1 filter was applied at this stage to remove species that are mostly in shallower depth therefore occurring mostly in territorial waters. The 3-D plot stress value is 0.06. There is generally one set of cluster running upper-right to lower left direction with closer clustering at the middle to the lower right section (Figure 7A). This follows the general direction of the fishery dependent data like frequency of species occurrence in catch (Figure 7B) and contribution to the total catch (Figure 7C). Species that caught often typically contribute more to the total catch. Again, the vertical direction is driven by the depth distribution of the species and proportion of the habitat in federal waters (Figure 7D).

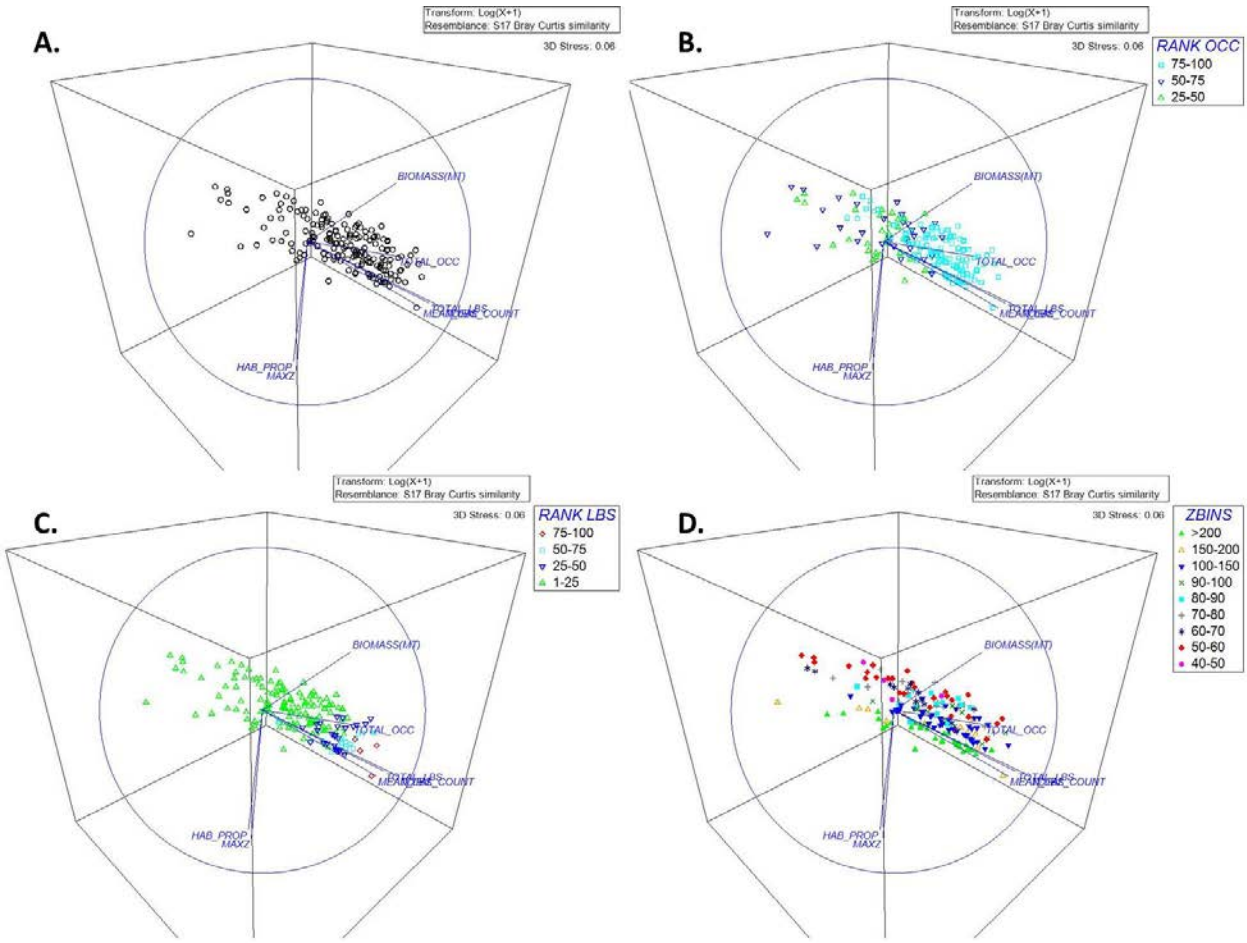

Figure 7. Three-dimensional plot with a stress-value 0.06 of remaining MUS after the lower quartile of frequency of occurrence and shallow depth species were removed (0-40 meter depth) (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

The resulting Shepard diagram showed tighter inverse correlation between the similarity values and the distance value in the 3-dimensional space. The similarity value minimum is in the upper 30%.

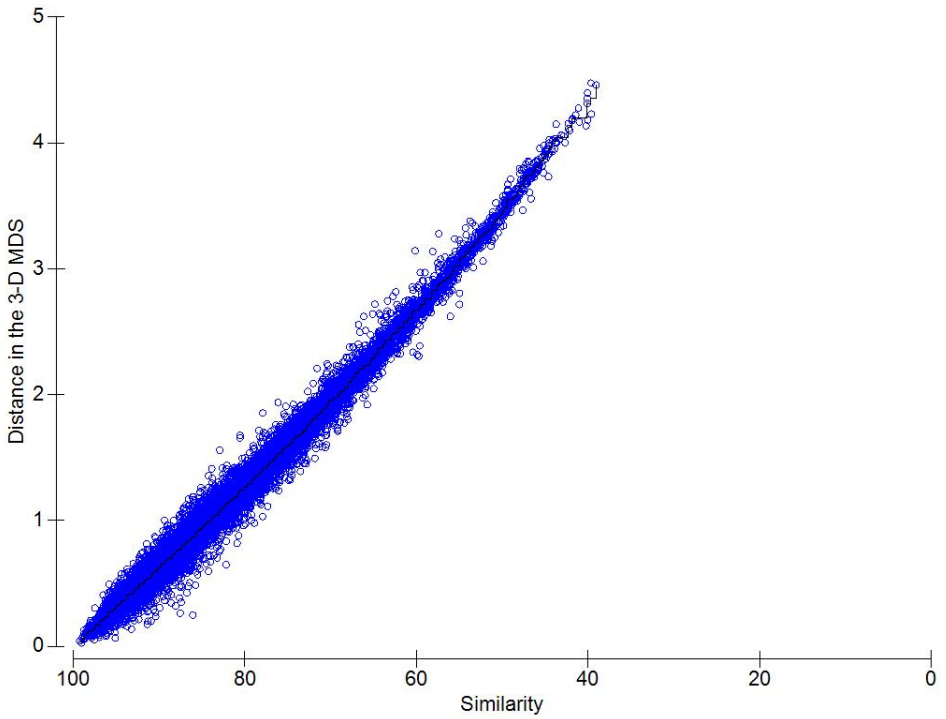

Figure 8. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the lower quartile of occurrence and shallow depth have been removed.

Delete lower quartile to remove species that are not targeted by the fishery

The third NS1 filter was applied at this stage to remove species that are not targeted by the fishery. This stage still uses the 0-25% cut-off similar to the first and second filter. The 3-D plot stress-value is 0.06. The cluster of points is less due to the removal of the shallower species from the last filter (Figure 9A). The vector configuration also follows multiple direction where catch by weight and number follows an upper left trajectory whereas occurrence tends to follow a low-left direction with biomass. Max depth and habitat proportion follows a slight upper right direction. The majority of the remaining species belong to the upper 75-100% quartile that is frequently caught by the fishery (Figure 9B). In contrast, only 4 species comprise the 75-100% quartile in terms of mean catch whereas the majority of the species merely contribute to 25-50% of the catch in the fishery. The group of species that was removed due to low catch was found at depths of 40-50m and that depth stratum was now removed from the analysis.

The Shepard diagram showed the higher similarity level and the distance values for the remaining species after all the filters had been applied (Figure 10). The similarity value minimum was at approximately 70%.

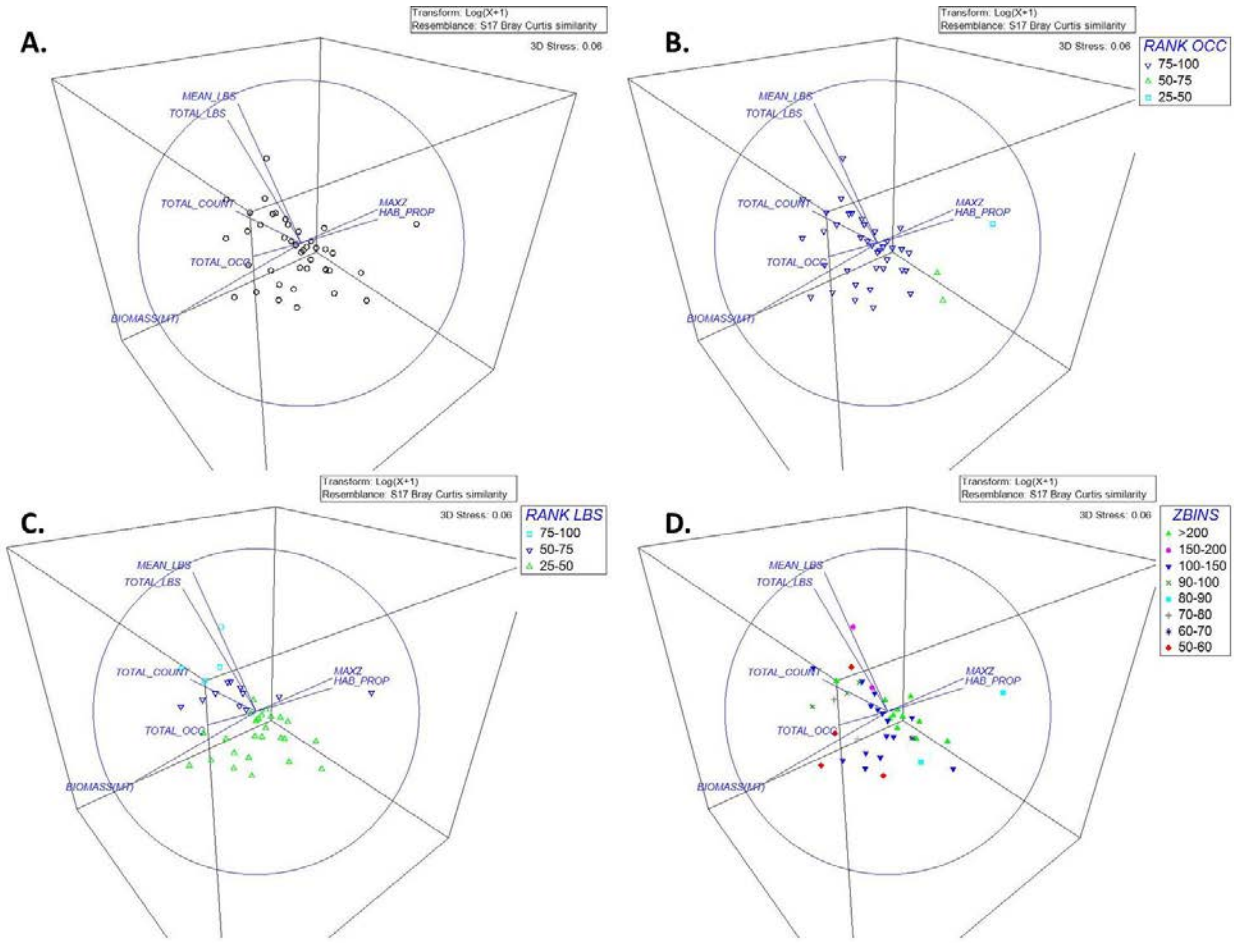

Figure 9. Three-dimensional plot with a stress-value 0.06 of remaining MUS after the lower quartile of frequency of occurrence, shallow depth species, and species with low mean catch were removed (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

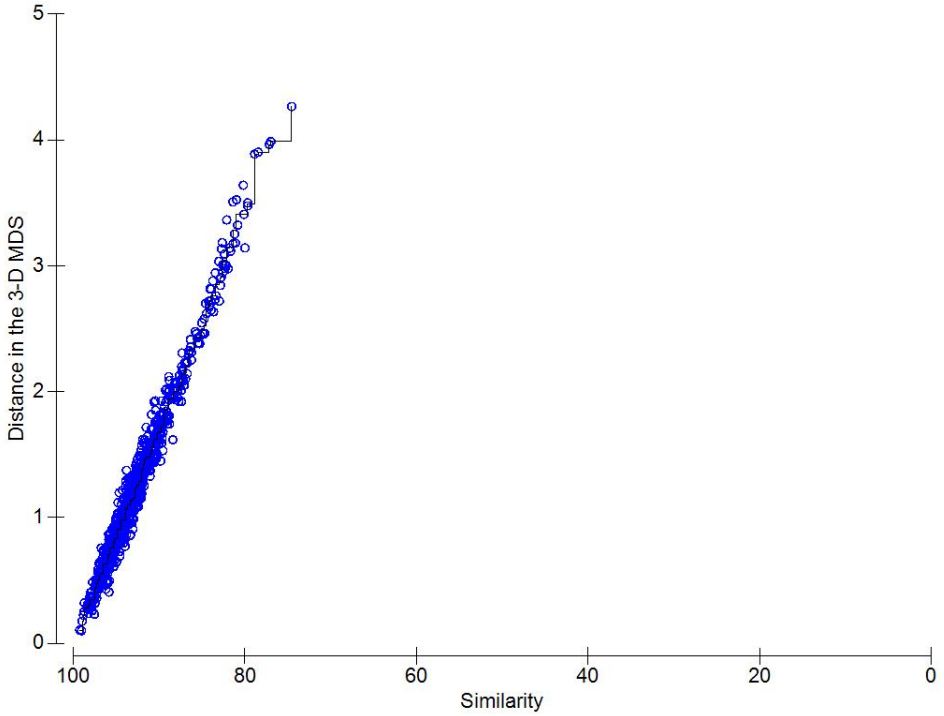

Figure 10. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the lower quartile of occurrence, shallow depth, and low catch.

Species decline rate after the filters were applied at 25% cut-off

Figure 11 shows the number of species remaining after the different filters were applied following the decision tree. The total MUS in Guam started at 2,328 species of which 1,274 had no fishery dependent, biomass, and max depth information. Of the remaining 1,054 species, 639 were not caught or are rarely caught by the fishery. After the 2 filters were applied, only 415 species were left. Two hundred thirty seven species were removed for those species occurred in territorial waters. Only 178 species were left after filter 3 and was further reduced by138 species to remove species that are not targeted by the fishery. Only 40 species remained from 2,328 when the cut-off was set at 25%. The list of candidate species to remain in federal fisheries management is found in Table 2.

Table 2. Candidate species for federal fisheries management after applying the filters for ecosystem components. This list was generated from a 25% cut-off.

Scientific Name	FAMILY	Common Name	FEP GROUP
Carcharhinus amblyrhynchos	Carcharhinidae	Carcharhinidae	CRE-Fishes
Carcharhinus melanopterus	Carcharhinidae	Carcharhinidae	CRE-Fishes
Triaenodon obesus	Carcharhinidae	Reef Whitetip Shark	CRE-Fishes
Himantura fai	Dasyatidae	Whipray	CRE-Fishes

Epinephelus fasciatus	Serranidae	blacktip grouper	BF Multi-species complex
Variola louti	Serranidae	lyretail grouper	BF Multi-species complex
Carangoides orthogrammus	Carangidae	Goldspot trevally	CRE-Fishes
Caranx ignobilis	Carangidae	giant trevally, jack	BF Multi-species complex
Caranx melampygus	Carangidae	Bluefin trevally	CRE-Fishes
Caranx sexfasciatus	Carangidae	Bigeye trevally	CRE-Fishes
Elagatis bipinnulata	Carangidae	Rainbow runner	CRE-Fishes
Selar crumenophthalmus	Carangidae	Atulai	CRE-Fishes
Aphareus rutilans	Lutjanidae	silvermouth (lehi)	BF Multi-species complex
Aprion virescens	Lutjanidae	grey snapper, jobfish	BF Multi-species complex
Etelis carbunculus	Lutjanidae	red snapper (ehu)	BF Multi-species complex
Etelis coruscans	Lutjanidae	red snapper (onaga)	BF Multi-species complex
Lutjanus bohar	Lutjanidae	Red Snapper	CRE-Fishes
Lutjanus fulvus	Lutjanidae	Flametail Snapper	CRE-Fishes
Lutjanus kasmira	Lutjanidae	blueline snapper	BF Multi-species complex
Lutjanus monostigma	Lutjanidae	Onespot Snapper	CRE-Fishes
Pristipomoides auricilla	Lutjanidae	yellowtail snapper	BF Multi-species complex
Pristipomoides zonatus	Lutjanidae	snapper (gindai)	BF Multi-species complex
Lethrinus harak	Lethrinidae	Thumbprint Emperor	CRE-Fishes
Lethrinus olivaceus	Lethrinidae	Longface Emperor	CRE-Fishes
Lethrinus obsoletus	Lethrinidae	Orange-Striped Emperor	CRE-Fishes
Lethrinus rubrioperculatus	Lethrinidae	redgill emperor	BF Multi-species complex
Lethrinus xanthochilus	Lethrinidae	Yellowlip Emperor	CRE-Fishes
Mulloidichthys flavolineatus	Mullidae	Yellowstriped Goatfish	CRE-Fishes
Parupeneus barberinus	Mullidae	Dash and dot Goatfish	CRE-Fishes
Sphyraena barracuda	Sphyraenidae	Great barracuda	CRE-Fishes
Cheilinus undulatus	Labridae	Napoleon wrasse	CRE-Fishes
Scarus schlegeli	Scaridae	Chevron Parrotfish	CRE-Fishes
Chlorurus sordidus	Scaridae	Bullethead Parrotfish	CRE-Fishes
Acanthurus triostegus	Acanthuridae	Convict tang	CRE-Fishes
Acanthurus xanthopterus	Acanthuridae	Yellowfin surgeonfish	CRE-Fishes
Naso lituratus	Acanthuridae	Orangespine unicornfish	CRE-Fishes
Naso unicornis	Acanthuridae	Bluespine unicornfish	CRE-Fishes
Siganus argenteus	Siganidae	Fork-Tail Rabbitfish	CRE-Fishes
Siganus spinus	Siganidae	Scribbled Rabbitfish	CRE-Fishes
Octopus cyanea	Octopodidae	Common Octopus	CRE-Invertebrates

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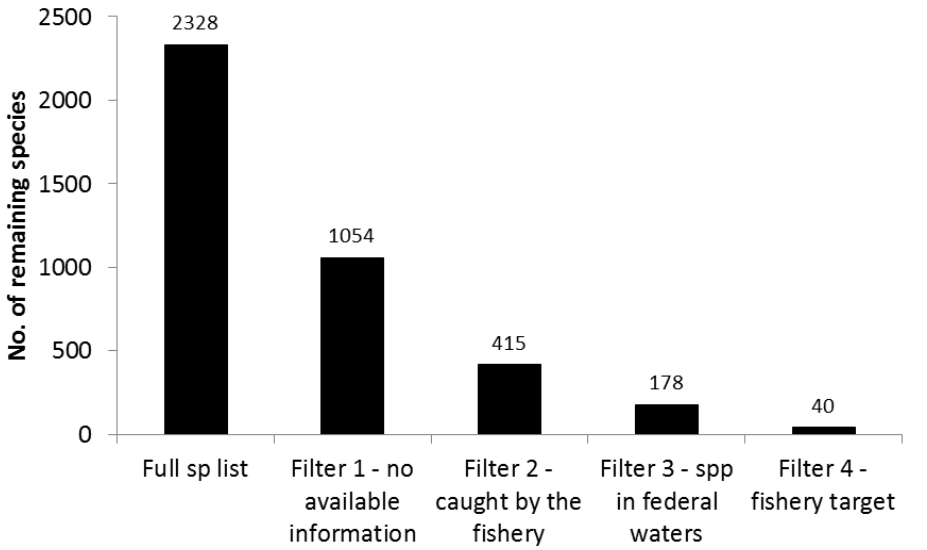

Figure 11. Number of species remaining for federal fisheries management after filters were applied at 25% cut-off.

Multivariate analysis on a 50% cut-off point

The results of the multivariate analysis on a 50% cut-off follows the 25% cut-off closely except more species are eliminated due to the higher threshold level. The vector relationship will likely to remain similar.

Delete 1-25% and 25-50% quartiles to remove species that is not or rarely caught by the fishery

The 3-D stress-value was at 0.07. There were 2 general clustering (upper and lower) of the remaining species after species with less than 50% frequency of occurrence were removed (Figure 12A). This pattern is similar with Figure 5 except that the points are less dense. The majority of the species remaining have occurrence of 75-100% (Figure 12B). However, despite high occurrence, the magnitude of mean catch falls within the 1-25% range (Figure 12C). The remaining species are also found in a wide range of depth distribution (Figure 12D). In comparing the Shepard diagram between the 25% (Figure 13A) and the 50% cut-off (Figure 13B), the points cluster more tightly along the correlation line in the 50% occurrence cut-off compared to the 25% cut-off. However, this may not be significant since the stress-value remain the same at 0.07.

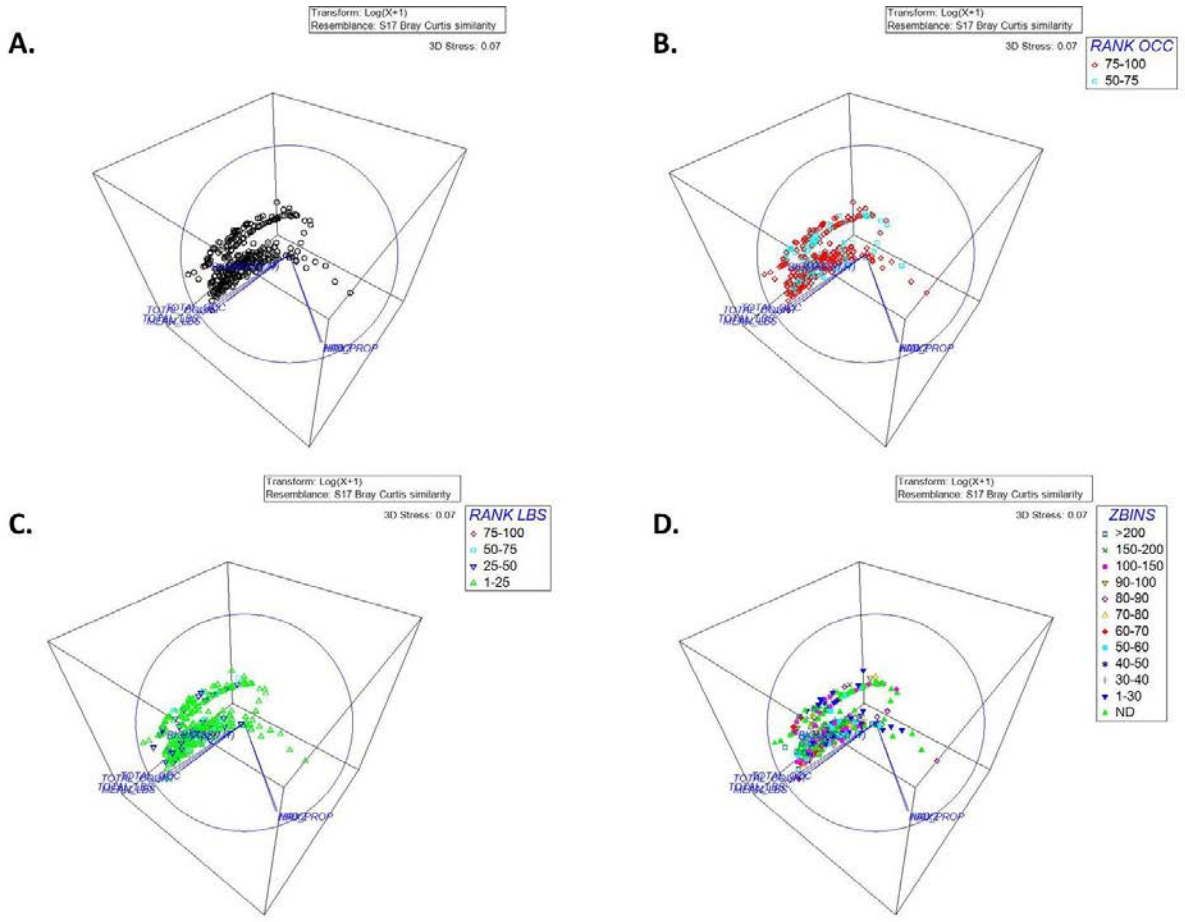

Figure 12. Three-dimensional plot with a stress-value 0.07 of remaining MUS after the 1-25% and 25-50% quartiles of frequency of occurrence were removed (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

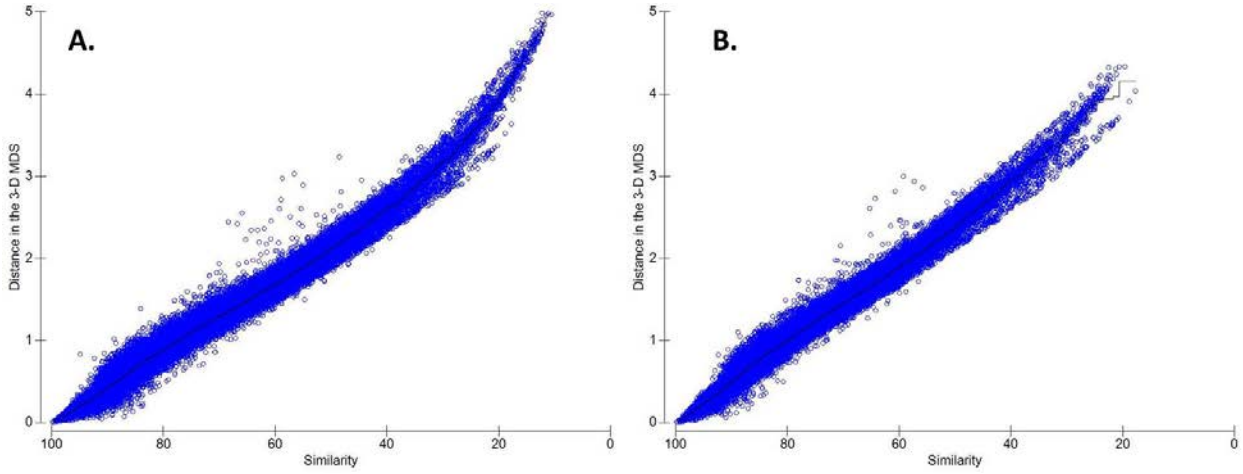

Figure 13. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the 1-25% quartile (A) and 25-50% quartile (B) of occurrence have been removed.

Delete 1-25% and 25-50% quartiles to remove species mostly in territorial waters

The 3-D stress value is at 0.05. The cluster of point became less dense when the species that occur at shallower depths were removed at 50% cut-off (Figure 14A). Similar to Figure 7, the vector line for biomass became more distinct in terms of trajectory. Occupancy is still dominated by species that has 75-100% occurrence (Figure 14B). Mean catch is still dominated by species that belongs to the lower quartile (Figure 14C). In terms of the depth distribution, the 50% cut-off removed species that occurs from 1-90 meters compared to the 25% cut-off where it only removed species that occurs to depths of 40 meters (Figure 14.D). The Shepard diagram showed a tighter cluster of points to the correlation line which can explain the 0.01 reduction in stress value compared to the 25% cut-off (Figure 15).

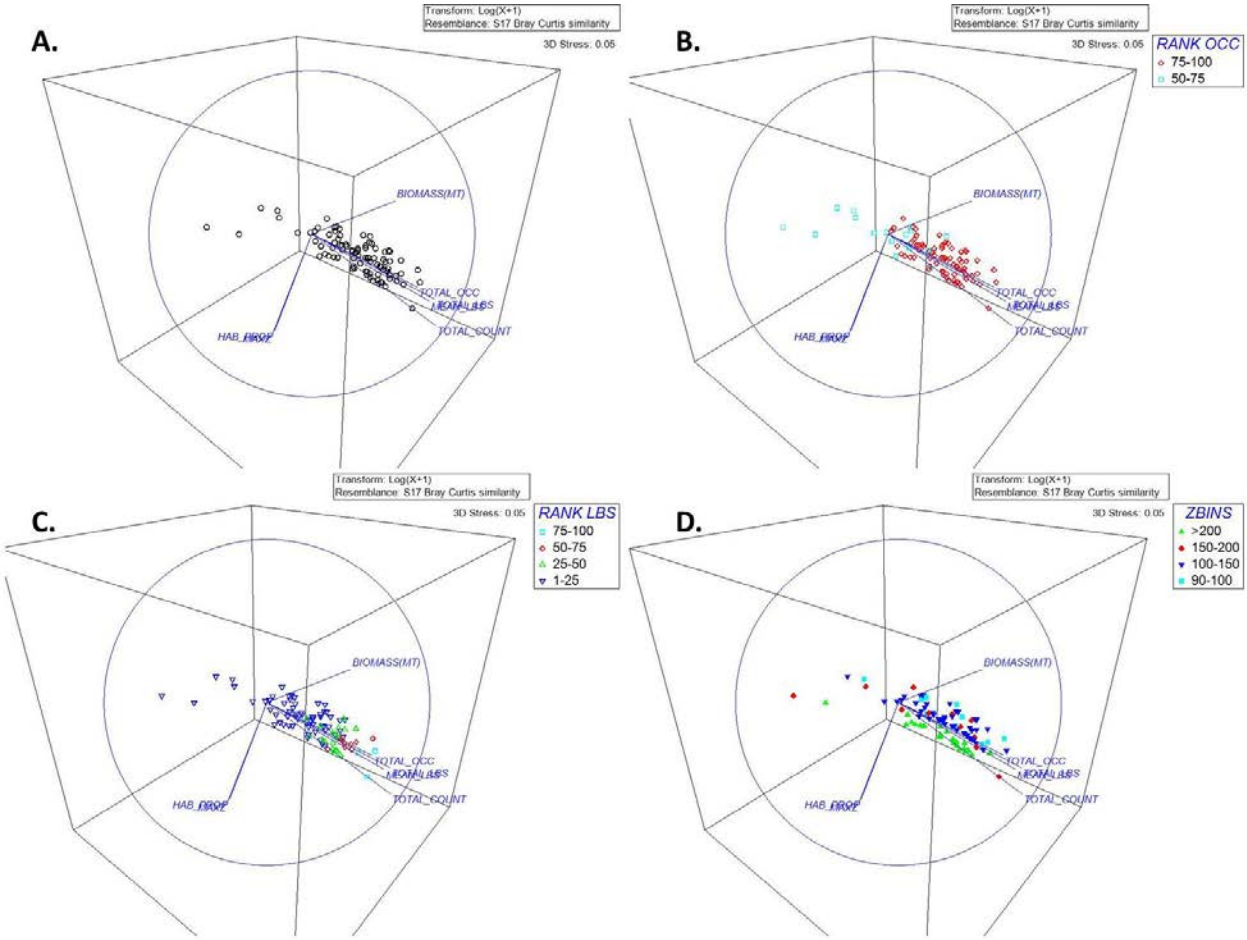

Figure 14. Three-dimensional plot with a stress-value 0.05 of remaining MUS after the 1-25% and 25-50% quartiles of frequency of occurrence and shallow depth species were removed (0-90 meter depth) (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

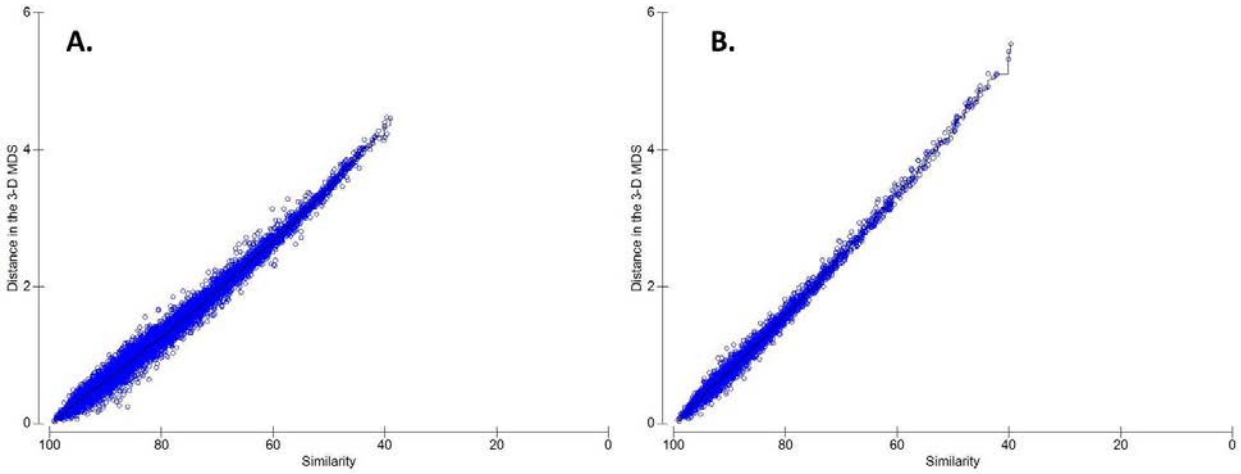

Figure 15. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the 1-25% quartile (A) and 25-50% quartile (B) of occurrence and shallow depths have been removed.

Delete 1-25% and 25-50% quartiles to remove species that are not targeted by the fishery

The 3-D stress-value is 0.02. Species names were included in the 3-D plot because the density of points allows viewing of the species that comprise the cluster (Figure 16A). After removing the species that are not targeted, only species that are caught frequently remained in the plot (Figure 16B). Nine of the 12 species remaining comprise 50-75% of the mean catch while 3 species make up 75-100% (Figure 16C). These species are found between 90m to depth greater than 200m (Figure 16D). The vector lines describe the variable that controls the directionality of points in the 3-D space. *Etelis coruscans* (deep water snapper) and *Caranx melampygus* (coral reef jacks) are found on deep waters whereas *Naso lituratus* (orange-spine unicorn fish) are at maximum observed depths of 90-100m. *Selar crumenopthalmus* (bigeye scads) and *Naso unicornis* (blue spine unicorn fish) dominate the catch in weight and count. The commonly surveyed species in the CREP program tend to follow the biomass vector line (e.g. *Acanthurus triostegus*, *N. lituratus*, *Lethrinus rubrioperculatus*). Highly mobile and deep water species tend to be less represented. The stress value decreased by 0.03 due to less points in the plot and the points fall directly on the correlation line (Figure 17).

Species decline rate after the filters were applied at 50% cut-off

As expected, the rate of decline per filtering stage is faster with higher cut-off threshold. The frequency of occurrence filter removed 729 species retaining 325 species that are caught more than 50% of the time (Figure 18). Filter 3 removed 234 species retaining 178 species potentially found in federal waters. Filter 4 removed 79 species that are contributes less than 50% of the mean catch. This leaves 12 species that are potentially in need of federal management. The list of species is found in Table 3.

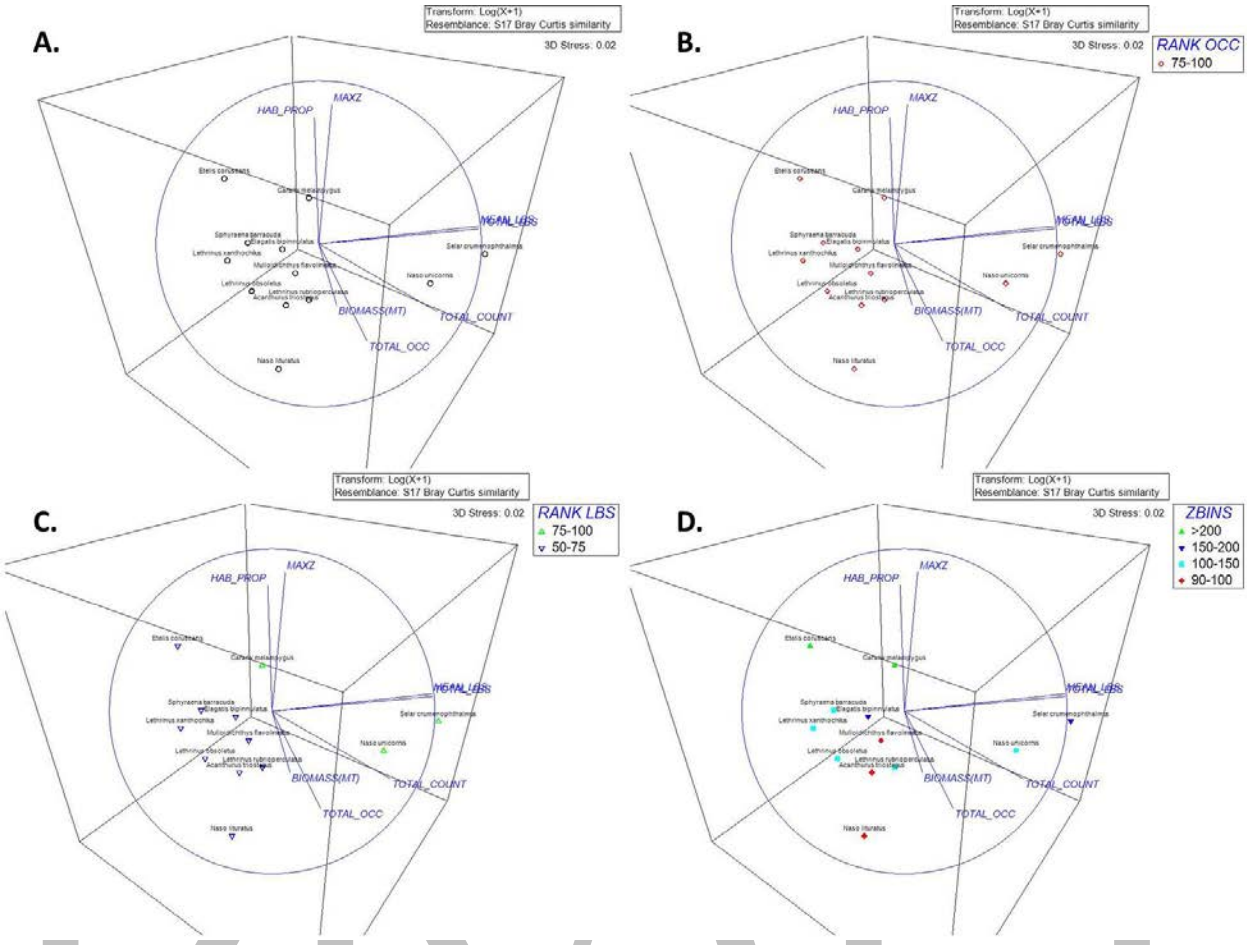

Figure 16. Three-dimensional plot with a stress-value 0.02 of remaining MUS after the 1-25% and 25-50% quartiles of frequency of occurrence, shallow depth species (0-90 meter depth), and species with low mean catch were removed (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

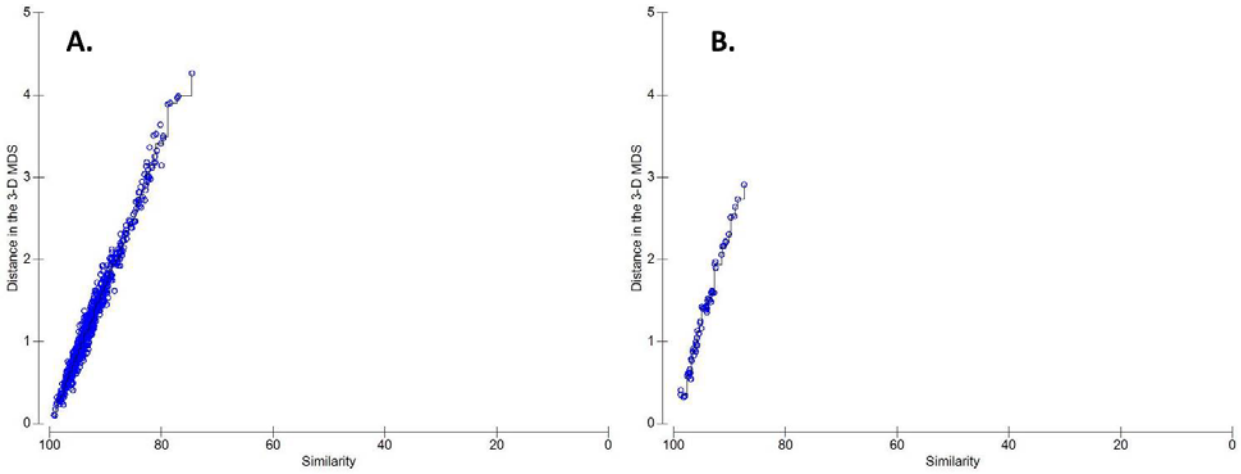

Figure 17. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the 1-25% quartile (A) and 25-50% quartile (B) of occurrence, shallow depths, and mean catch have been removed.

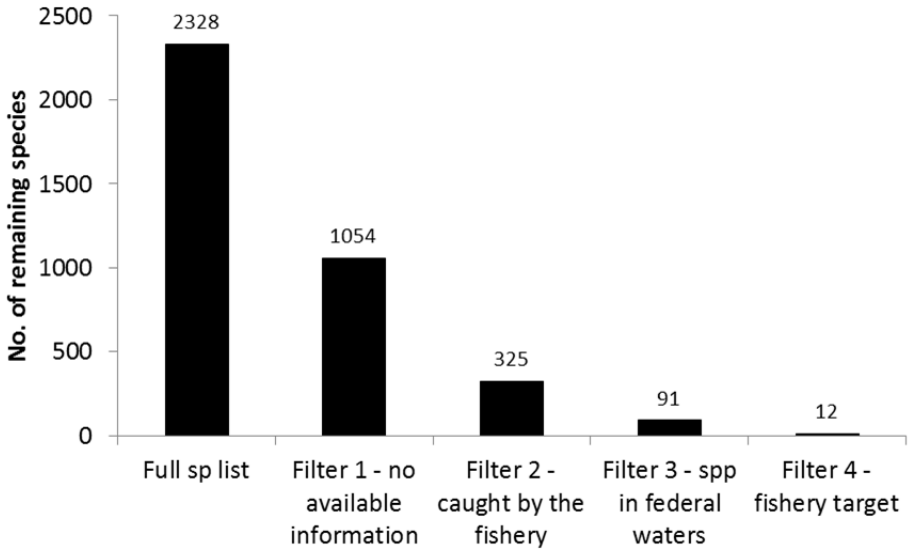

Figure 18. Number of species remaining for federal fisheries management after filters were applied at 50% cut-off.

Table 3. Candidate species for federal fisheries management after applying the filters for ecosystem components. This list was generated from a 50% cut-off.

Scientific Name	FAMILY	Common Name	FEP GROUP
Caranx melampygus	Carangidae	Bluefin trevally	CRE-Fishes
Elagatis bipinnulata	Carangidae	Rainbow runner	CRE-Fishes
Selar crumenophthalmus	Carangidae	Bigeye scads	CRE-Fishes
Etelis coruscans	Lutjanidae	red snapper (onaga)	BF Multi-species complex

Lethrinus obsoletus	Lethrinidae	Orange-Striped Emperor	CRE-Fishes
Lethrinus rubrioperculatus	Lethrinidae	redgill emperor	BF Multi-species complex
Lethrinus xanthochilus	Lethrinidae	Yellow lip Emperor	CRE-Fishes
Mulloidichthys flavolineatus	Mullidae	Yellow striped Goatfish	CRE-Fishes
Sphyraena barracuda	Sphyraenidae	Great Barracuda	CRE-Fishes
Acanthurus triostegus	Acanthuridae	Convict tang	CRE-Fishes
Naso lituratus	Acanthuridae	Orange spine unicornfish	CRE-Fishes
Naso unicornis	Acanthuridae	Blue spine unicornfish	CRE-Fishes

Multivariate analysis on a 75% cut-off point

The following figures describe the multivariate analysis at 75% cut-off. This would retain only the top 25% of species that pass the filters. The analysis stopped after filter 3 was applied because only 2 species will remain when the 75% cut-off is applied to the mean catch data. A minimum of 4 samples is needed to run the MDS analysis. Similar to the lower cut-off, the clustering pattern and general vector directions are consistently similar.

Delete 1-25%, 25-50%, and 50-75% quartiles to remove species that is not or rarely caught by the fishery

The 3-D stress value is 0.07. At this phase of the analysis, there is generally two sets of clustering in which the upper cluster of points is characterized by species with no depth data (Figure 19A and 19D). The majority of the points have lower quartiles in terms of mean catch (Figure 19C). Comparing the Shepard diagram, the data points have a narrower range of similarity values and showed a steeper slope relative to the distance value in the 3-dimensional space (Figure 20).

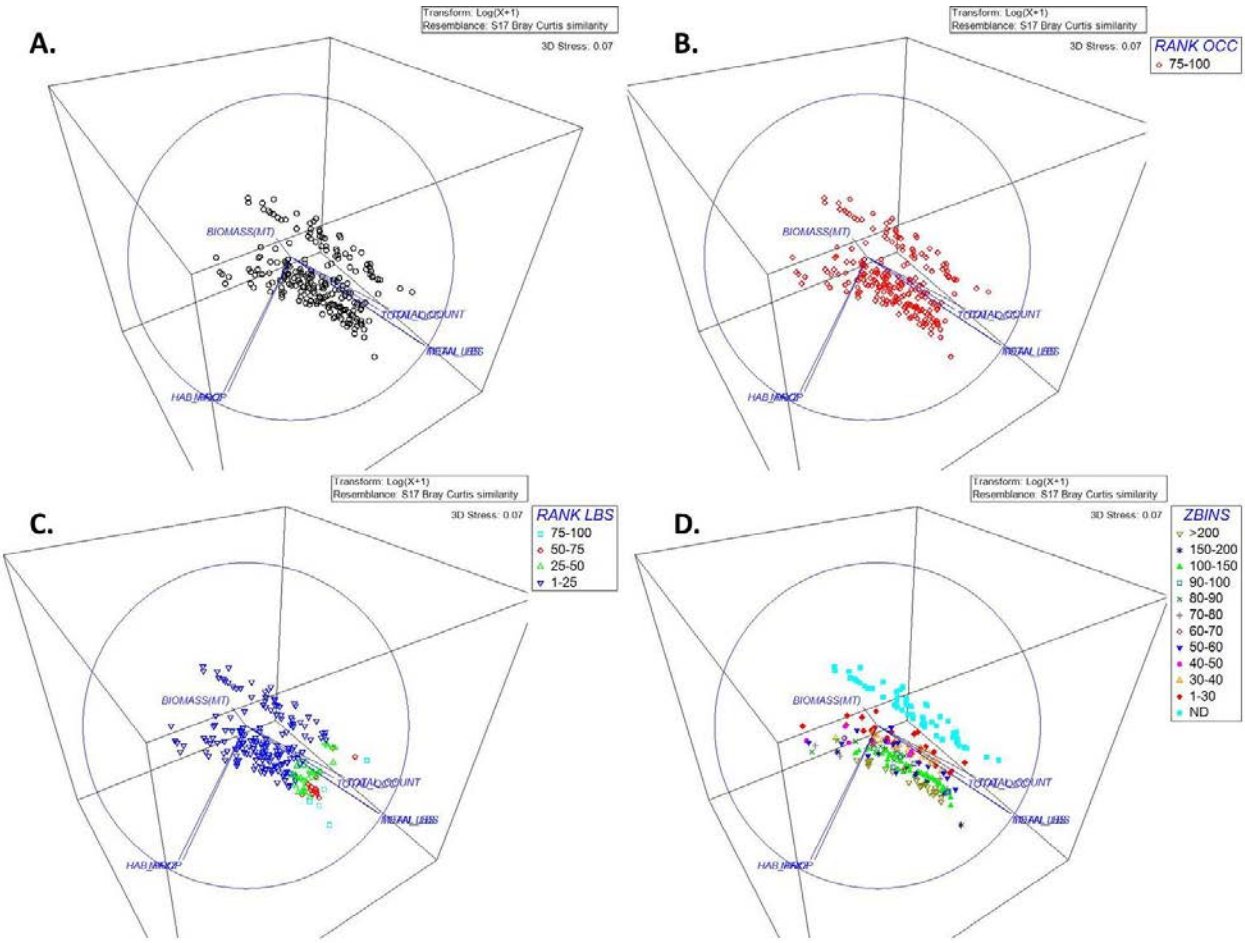

Figure 19. Three-dimensional plot with a stress-value 0.07 of remaining MUS after the 1-25%, 25-50%, and 50-75% quartiles of frequency of occurrence were removed (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

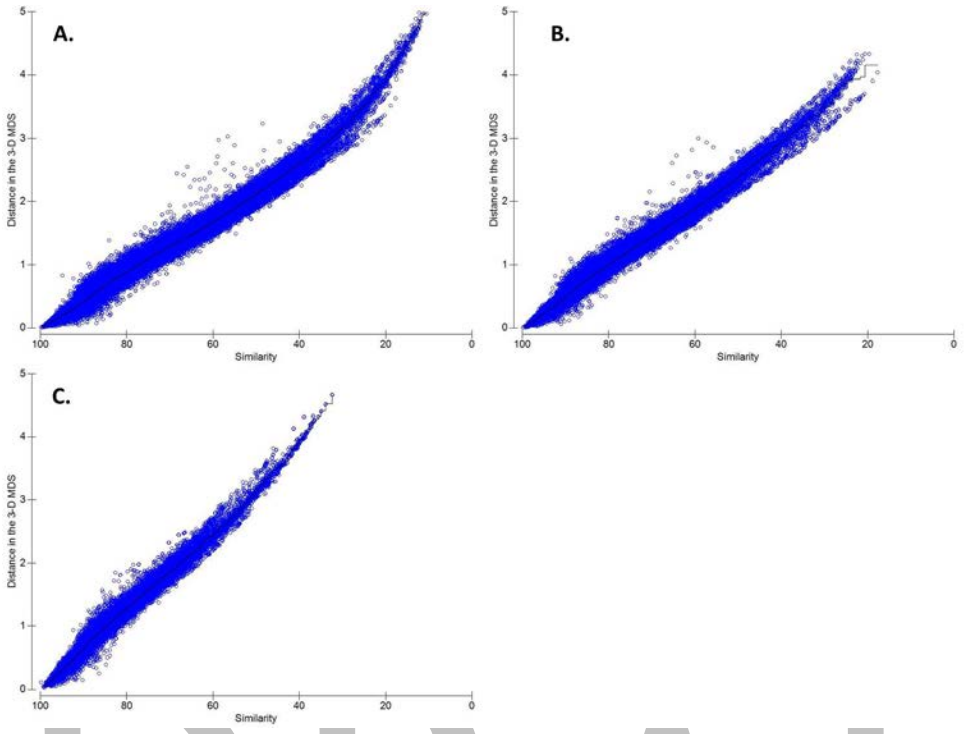

Figure 20. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the 1-25% quartile (A), 25-50% quartile (B), and 50-75% quartile (C) of occurrence have been removed.

Delete 1-25%, 25-50%, 50-75% quartiles to remove species that are mostly in territorial waters

The 3-D stress value is 0.03. Applying the second filter removed a significant number of species. This narrowed down the depth range to 150 meters and above (Figure 21D). Note that there are only 2 species that have mean catch that is in the upper quartile (Figure 21C). These are *Selar crumenophthalmus* (bigeye scads) and *Caranx melampygus* (bluefin trevally). The MDS analysis can no longer proceed from this point. The Shepard diagram also showed a narrower range of similarity value (Figure 22) compared to the other cut-off threshold. Also note that there is one outlier (*S. crumenophthalmus*) that has a distance measure of greater than 4 at a similarity level of 60%.

Species decline rate after the filters were applied at 75% cut-off

As expected the decline rate at 75% cut-off threshold will be higher. Figure 23 showed the relative rate of decline between the three cut-off thresholds. With a 75% cut-off, this leaves two species that are potentially in need of federal management. The list of species is found in Table 3.

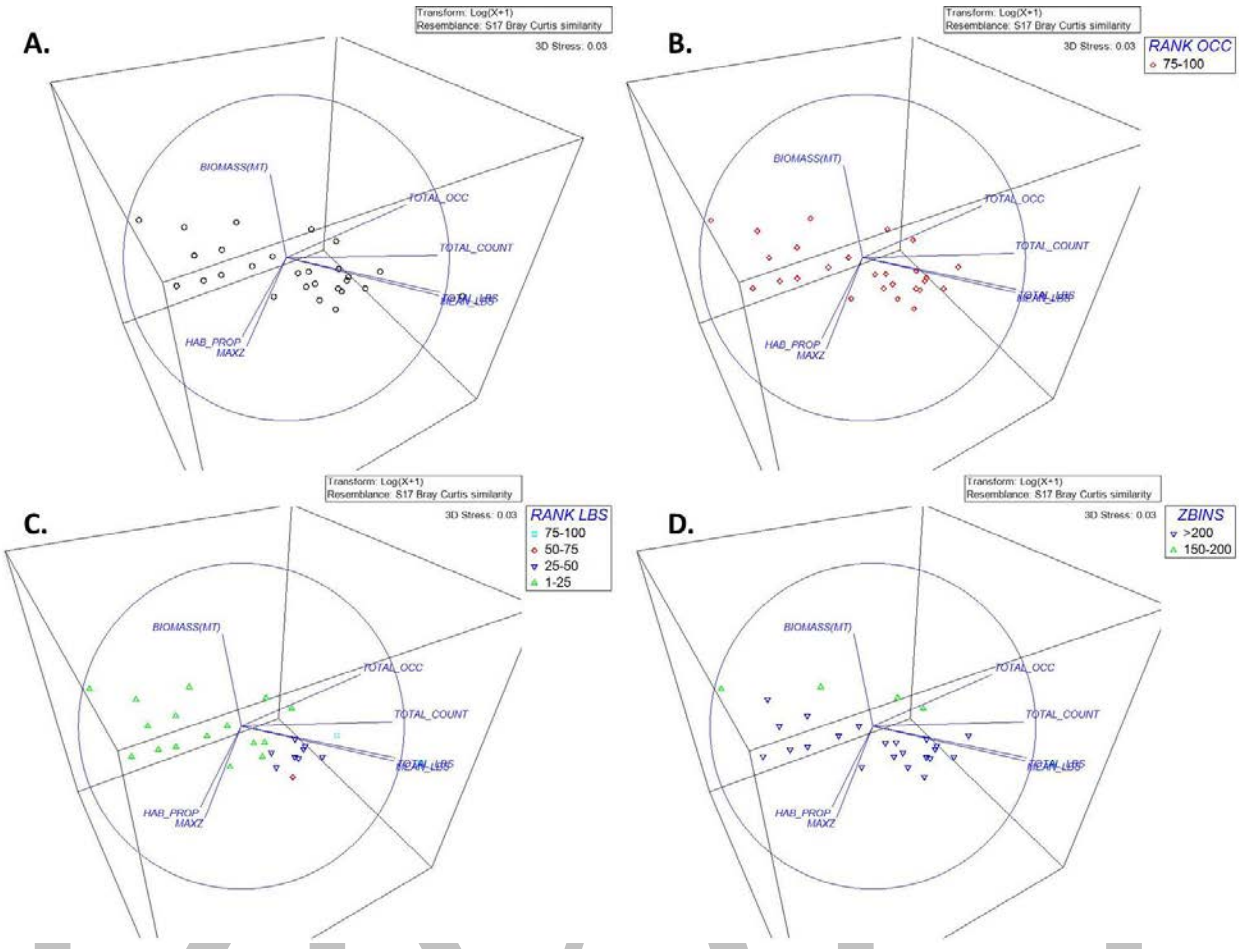

Figure 21. Three-dimensional plot with a stress-value 0.05 of remaining MUS after the 1-25%, 25-50%, and 75% quartiles of frequency of occurrence and shallow depth species were removed (0-150 meter depth) (A). The same 3-D plot with factors using quartiles of ranked frequency of occurrence (B); quartiles of mean catch (C); and depth intervals (D)

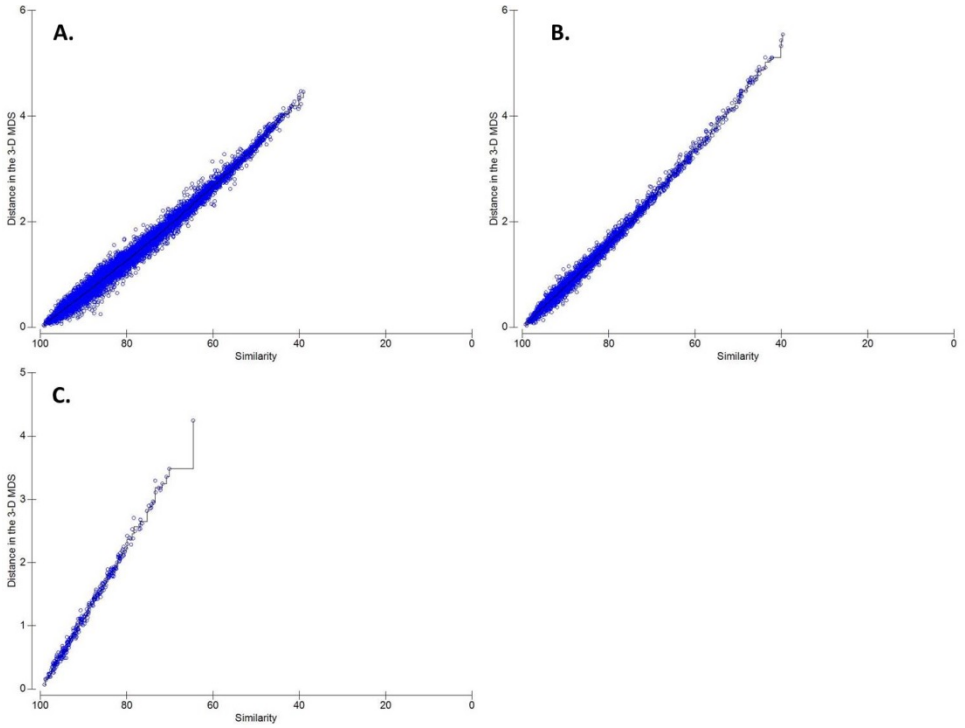

Figure 22. Shepard diagram showing the similarity values using Bray-Curtis index and the distance representation in the 3-D plot after the 1-25% quartile (A), 25-50% quartile (B), 50-75% quartile (C) of occurrence and shallow depths have been removed.

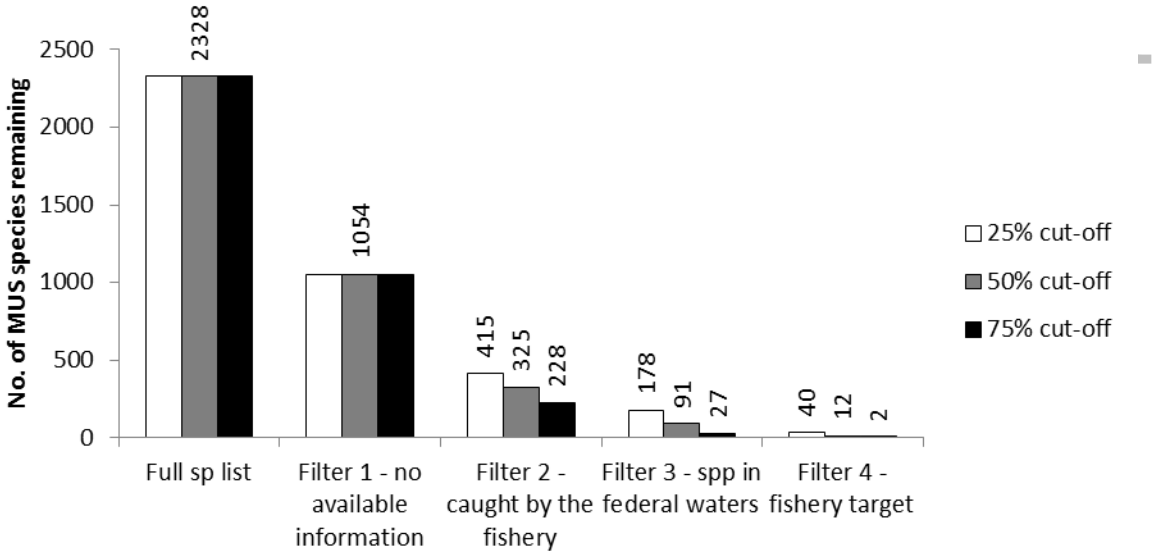

Figure 23. Number of species remaining after each filter is applied comparing the 3 cut-off thresholds

Table 4. Candidate species for federal fisheries management after applying the filters for ecosystem components. This list was generated from a 75% cut-off

Scientific Name	FAMILY	Common Name	FEP GROUP
Caranx melampygus	Carangidae	Bluefin trevally	CRE-Fishes
Selar crumenophthalmus	Carangidae	Bigeye scads	CRE-Fishes

DISCUSSION

The 2016 National Standard 1 guideline allows designation of species as ecosystem components that would alleviate the requirements for conservation and management measures. This allows the Council to keep the species in the FEPs for monitoring purposes. The guideline provided ten criteria for Councils to consider in evaluating whether the species need conservation and management measures:

1. The stock is an important component of the marine environment;
2. The stock is caught by the fishery;
3. Whether an FMP can improve or maintain the condition of the stock;
4. The stock is a target of a fishery;
5. The stock is important to commercial, recreational, or subsistence users;
6. The fishery is important to the Nation or to the regional economy;
7. The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution;
8. The economic condition of a fishery and whether an FMP can produce more efficient utilization;
9. The needs of a developing fishery and whether an FMP can foster orderly growth;
10. The extent to which the fishery is already adequately managed by states, by state/Federal programs, or by Federal regulations pursuant to other FMPs or international commissions, or by industry self-regulation, consistent with the requirements of the Magnuson-Stevens Act and other applicable law.

The analysis utilized only four of the ten criteria (Table 1) because of the limited available information for the MUS. The data proxies for the 4 criteria are suitable for the multivariate statistical framework used in the analysis. The multi-dimensional scaling was used because it is conceptually simple. It makes few model assumptions about the form of the data or inter-relationships of the samples, and the link between the final plots and the original data is relatively transparent and easy to explain (Clarke and Warwick 2001). This is particularly useful for this exploratory data analysis since the analysis used a diverse source of data and varying level of quantity and quality of data.

The 3-dimensional stress value ranges from a minimum of 0.02 to a high of 0.07. Stress values less than 0.05 indicate an excellent representation with no prospect of mis-interpretation. Stress values between 0.1 and 0.05 correspond to a good ordination with no real prospect of a misleading interpretation. The overall ordination results are deemed reliable and the clustering of the different species represent real differences in the data properties.

More than 50% of the Guam MUS had no available data. These species compress the species with available information in the ordination plot. Once removed, the MDS plots showed distinct patterns driven by the availability of catch, occurrence, biomass, and max depth distribution. The directionality of the points is driven by the magnitude of individual species information on these 4 variables. This is a good indicator that the removal of species at each filtering stage was conducted in an objective manner.

The cut-off threshold level dictates the number of species that will be removed. The lower the cut-off threshold results in lower number of species removed thereby retaining more species to be retained for federal management. The higher threshold removes more species retaining less for federal management. The slope of the number of species removed differs by threshold level. The SSC needs to choose an optimal cut-off threshold and review the species composition if it makes sense. At 25% cut-off threshold, there were 40 potential species that remained for federal management consideration. This comprised of 11 out of the 14 original bottomfish management unit species complex. All the precious coral and crustacean MUS are filtered to be ecosystem component. Only 29 species remained under the coral reef ecosystem; 28 fin fish and one invertebrate from 13 families. This included one vulnerable species, the humphead wrasse (*Cheilinus undulatus*).

At 50% cut-off, only 12 species remained from 5 coral reef fin fish families. Two species belong to the bottomfish management unit species complex (one shallow complex and one deep water complex). At 75% only two species remained and both are coastal pelagics.

The analysis followed a sequential removal of species based on the decision tree. The current analysis does not include a comparative analysis when the sequence of removal changed. The current analysis removes the lower quartiles for occurrence first, followed by the shallow species, then the lower quartile of mean catch. The species composition of remaining species may change if the sequence is changed.

CONCLUSION

The multidimensional statistical framework objectively segregated species based on available data. The analysis filtered species to the ecosystem component category following the sequential decision tree. This resulted in 40, 14, and 2 species for federal management consideration based on a 25%, 50%, and 75% cut-off threshold.

ACKNOWLEDGEMENT

The Council acknowledges the following Pacific Island Fisheries Science Center staff Ivor Williams, Marc Nadon, Tomoko Acoba, Jake Asher, Stefanie Dukes, Ashley Tomita and Paul Tao for providing the species level fish biomass, max depth, catch, counts, and habitat area information.

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APPENDIX 1

Species list table for the Guam

1. Bottomfish Multi-species Stock Complex (FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
32302	red snapper, silvermouth (lehi)	Aphareus rutilans
32303	grey snapper, jobfish	aprion virenscens
31404	giant trevally, jack	Caranx ignoblis
31405	black trevally, jack	Caranx lugubris
28919	blacktip grouper	Epinephelus fasciatus
28941	lunartail (lyretail) grouper	Vaiola lauti
32304	red snapper (ehu)	Etelis carbunculus
32305	red snapper (onaga)	Etelis coruscans
32818	ambon emperor	Lethrinus amboinenis
32809	redgill emperor	Lethrinus rubrioperculatus
32310	blueline snapper	Lutjanis kasmira
32317	yellowtail snapper	Pristipomoides auricilla
32318	pink snapper (paka)	Pristimpomoides filamentosus
32319	yelloweye snapper	Pristipomoides flavipinnis
32320	pink snapper (kalekale)	Pristipomoides seiboldi
32321	snapper (gindai)	Pristipomoides zonatus
31414	amberjack	Seriola dumerili

2. Crustacean deep-water shrimp complex (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
67600	deepwater shrimp	Heterocarpus spp.
67601	deepwater shrimp	Pandalus Unid sp 1
67602	deepwater shrimp	Pandalidae
67603	deepwater shrimp	Pandalidae

3. Crustacean spiny lobster complex (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
67913	spiny lobster	Panulirus marginatus
67915	spiny lobster	Panulirus penicillatus

4. Crustacean slipper lobster complex (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
67954	slipper lobster	Scyllaridae
67955	slipper lobster	Scyllaridae

5. Crustacean Kona crab complex (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
69150	Kona crab	Ranina ranina

6. Precious coral black coral complex (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
none	Black Coral	Anitpathes dichotoma
none	Black Coral	Antipathes grandis
none	Black Coral	Antipathes ulex

7. Exploratory area precious coral (except black coral) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name
none	Pink coral	Corallium secundum
none	Pink coral	Corallium regale
none	Pink coral	Corallium laauense
none	Bamboo coral	Lepidisis olapa
none	Bamboo coral	Acanella spp.
none	Gold Coral	Gerardia spp.
none	Gold Coral	Callogorgia gilberti

none	Gold Coral	Narella spp.
none	Gold Coral	Calyptrophora spp.

745
746 **8. Coral reef ecosystem (non-FSSI)**
747

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
41201	Achilles tang	Acanthurus achilles	
41232	Bariene's surgeonfish	Acanthurus bariene	
41207	Ringtail surgeonfish	Acanthurus blochii	
41234	Chronixis surgeonfish	Acanthurus chronixis	
41202	Eye-striped surgeonfish	Acanthurus dussumieri	
41204	Whitespotted surgeonfish	Acanthurus guttatus	
41239	Whitebar surgeonfish	Acanthurus leucocheilus	
41205	Palelipped surgeonfish	Acanthurus leucopareius	
41206	Blue-banded surgeonfish	Acanthurus lineatus	
41235	White-Freckled surgeonfish	Acanthurus maculiceps	
41233	Elongate surgeonfish	Acanthurus mata	
41203	Whitecheek surgeonfish	Acanthurus nigricans	
41208	Blackstreak surgeonfish	Acanthurus nigricauda	
41209	Brown surgeonfish	Acanthurus nigrofuscus	
41210	Bluelined surgeonfish	Acanthurus nigroris	
41240	Surgeonfish	Acanthurus nubilus	
41211	Orangeband surgeonfish	Acanthurus olivaceus	
41212	Mimic surgeonfish	Acanthurus pyroferus	
41243	Surgeonfishes/tangs	Acanthuridae	
41200	Surgeonfishes/tangs	Acanthuridae	
41213	Thomson's surgeonfish	Acanthurus thompsoni	
41214	Convict tang	Acanthurus triostegus	
41215	Yellowfin surgeonfish	Acanthurus xanthopterus	
41216	Twospot bristletooth	Ctenochaetus binotatus	
41217	Black surgeonfish	Ctenochaetus hawaiiensis	
41236	Blue-spotted Bristletooth	Ctenochaetus marginatus	
41218	Striped bristletooth	Ctenochaetus striatus	
41231	Yellow-eyed bristletooth	Ctenochaetus strigosus	
41237	Tomini's surgeonfish	Ctenochaetus tominiensis	
41219	Whitemargin unicornfish	Naso annulatus	
41220	Humpback unicornfish	Naso brachycentron	
41221	Spotted unicornfish	Naso brevirostris	
41241	Gray unicornfish	Naso caesius	
41222	Black tongue unicornfish	Naso hexacanthus	

41223	Orangespine unicornfish	Naso lituratus
41238	Naso tang	Naso lopezi
41242	Barred unicornfish	Naso thynnoides
41224	Humpnose unicornish	Naso tuberosus
41225	Bluespine unicornfish	Naso unicornis
41226	Bignose unicornfish	Naso vlamingii
41227	Hepatus tang	Paracanthurus hepatus
41228	Yellow tang	Zebrasoma flavescens
41229	Brown tang	Zebrasoma scopas
41230	Pacific sailfin tang	Zebrasoma veliferum
TOTAL		

9. Guam Coral Reef Ecosystem (Carangidae-Jacks) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
31401	Pennantfish/threadfin	Alectis ciliaris	
31402	Malabar Trevally	Alectis indicus	
31400	Jack (misc)	Carangidae	
31420		Carangini	
31419	Blue kingfish trevally	Carangoides caeruleopinnatus	
31431	Shadow kingfish	Carangoides dinema	
31422	Bar jack	Carangoides ferdau	
31433	Yellow dotted trevally	Carangoides fulvoguttatus	
31438	Headnotch trevally	Carangoides hedlandensis	
31403	Goldspot trevally	Carangoides orthogrammus	
31424	Barcheek trevally	Carangoides plagiotaenia	
31425	Jacks (misc)	Carangoides talamparoides	
31437	Trevally	Carangoides uii	
31429	Trevally	Caranx i'e'	
31406	Bluefin trevally	Caranx melampygus	
31428	Brassy trevally	Caranx papuensis	
31407	Bigeye trevally	Caranx sexfasciatus	
31408	Mackerel scad	Decapterus macarellus	
31423	Mackerel scad	Decapterus macrosoma	
31421	Round scad	Decapterus maruadsi	
31430	Round scad	Decapterus russelli	
31409	Rainbow runner	Elagatis bipinnulatus	
31410	Golden trevally	Gnathanodon speciosus	

31439		Megalaspis cordyla
31435	Pilotfish	Naucrates ductor
31440	Elagatis, Scomberoides	Naucratini
31412	Leatherback	Scomberoides lysan
31415	Almaco jack	Seriola rivoliana
31416	Small spotted pompano	Trachinotus bailloni
31417	Silver or Snubnose pompano	Trachinotus blochii
31432	Mandibular kingfish	Ulua mandibularis
31418	Kingfish	Uraspis helvola
31436	Deep trevally	Uraspis secunda
31434	Whitemouth trevally	Uraspis uraspis
TOTAL		

10. Guam Coral Reef Ecosystem (Selar crumenophthalmus-Atulai) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
31413	Atulai	Selar crumenophthalmus	
31426	Atulai	Atule mate	
31427	Atulai	Selar boops	
TOTAL			

11. Guam Coral Reef Ecosystem (Lethrinidae-Emperor) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
32800	Emperors	Lethrinidae	
32801	Yellow-Spot Emperor	Gnathodentex aurolineatus	
32802	Grey Bream	Gymnocranius griseus	
32804	Thumbprint Emperor	Lethrinus harak	
32805	Yellowtail Emperor	Lethrinus atkinsoni	
32806	Longface Emperor	Lethrinus olivaceus	
32807	Ornate Emperor	Lethrinus ornatus	
32808	Orange-Striped Emperor	Lethrinus obsoletus	

32810	Black-Blotch Emperor	Lethrinus semicinctus
32811	Yellowlip Emperor	Lethrinus xanthochilus
32812	Bigeye Emperor	Monotaxis grandoculus
32813	Japanese Bream	Gymnocranius euanus
32814	Orange-Spotted Emperor	Lethrinus erythracanthus
32815	Large-Eye Bream	Wattsia mossambica
32816	Stout Emperor	Gymnocranius sp
32817	Smtoothed Emperor	Lethrinus microdon
32819	Longspine Emperor	Lethrinus genivittatus
32820	Pinkear Emperor	Lethrinus lentjan
32821	Blue-Spotted Bream	Gymnocranius microdon
32822	Longfin Emperor	Lethrinus erythropterus
32823	Blue-Lined Bream	Gymnocranius grandoculus
32824	Slender Emperor	Lethrinus variegatus
TOTAL		

12. Guam Coral Reef Ecosystem (Scaridae-Parrotfish) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
36402	Bucktooth Parrotfish	Calotomus carolinus	
36420	Spineytooth Parrotfish	Calotomus spinidens	
36403	Bicolor Parrotfish	Cetoscarus bicolor	
36422	Parrotfish	Chlorurus bleekeri	
36431	Parrotfish	Chlorurus bowersi	
36408	Tan-Faced Parrotfish	Chlorurus frontalis	
36410	Steephead Parrotfish	Chlorurus microrhinos	
36433	Parrotfish	Chlorurus pyrrhurus	
36416	Bullethead Parrotfish	Chlorurus sordidus	
36404	Parrotfish	Hipposcarus longiceps	
36405	Seagrass Parrotfish	Leptoscarus vaigiensis	
36400	Parrotfishes	Scaridae	
36406	Fil-Finned Parrotfish	Scarus altipinnis	
36429	Parrotfish	Scarus chameleon	
36423	Parrotfish	Scarus dimidiatus	
36419	Parrotfish	Scarus festivus	
36434	Yellowfin Parrotfish	Scarus flavipectoralis	
36417	Tricolor Parrotfish	Scarus forsteni	

36407	Vermiculate Parrotfish	Scarus frenatus
36409	Blue-Barred Parrotfish	Scarus ghobban
36411	Parrotfish	Scarus globiceps
36424	Java Parrotfish	Scarus hypselosoma
36418	Parrotfish	Scarus sp.
36432	Black Parrotfish	Scarus niger
36412	Parrotfish	Scarus oviceps
36425	Greenthroat Parrotfish	Scarus prasiognathos
36413	Pale Nose Parrotfish	Scarus psittacus
36426	Parrotfish	Scarus quoyi
36427	Parrotfish	Scarus rivulatus
36414	Parrotfish	Scarus rubroviolaceus
36415	Chevron Parrotfish	Scarus schlegeli
36428	Parrotfish	Scarus spinus
36435	Tricolor Parrotfish	Scarus tricolor
36421	Parrotfish	Scarus xanthopleura
TOTAL		

13. Guam Coral Reef Ecosystem (Mullidae-Goatfish) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
33200	Goatfishes	Mullidae	Goatfish
33201	Yellowstriped Goatfish	Mulloidichthys flavolineatus	Goatfish
33202	Orange Goatfish	Mulloidichthys pflugeri	Goatfish
33219	Juvenile Goatfish	Mulloidichthys ti'ao	Goatfish
33203	Yellowfin Goatfish	Mulloidichthys vanicolensis	Goatfish
33216		Parupeneus barberinoides	Goatfish
33204	Dash And Dot Goatfish	Parupeneus barberinus	Goatfish
33205		Parupeneus bifasciatus	Goatfish
33210	White-Lined Goatfish	Parupeneus ciliatus	Goatfish
33206	Yellow Goatfish	Parupeneus cyclostomus	Goatfish
33208	Redspot Goatfish	Parupeneus heptacanthus	Goatfish
33214	Indian Goatfish	Parupeneus indicus	Goatfish
33211	Multibarred Goatfish	Parupeneus multifasciatus	Goatfish
33209	Sidespot Goatfish	Parupeneus pleurostigma	Goatfish
33217	Goatfish	Parupeneus sp	Goatfish

33218	Goatfish	Upeneus arge	Goatfish
33212	Band-Tailed Goatfish	Upeneus taeniopterus	Goatfish
33215	Blackstriped Goatfish	Upeneus tragula	Goatfish
33213	Yellowbanded Goatfish	Upeneus vittatus	Goatfish
TOTAL			

14. Guam Coral Reef Ecosystem (Mollusks) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
54501	Spiney Chiton	Acanthopleura spinosa	
54410	Bubble Shells,Sea Hares	Acteonidae	
54603	Antique Ark	Anadara antiquata	
54602	Indo-Pacific Ark	Arca navicularis	
54601	Ventricose Ark	Arca ventricosa	
54600	Ark Shells	Arcidae	
57742	Common Paper Nautilus	Argonauta argo	
57745	Gruner'S Paper Nautilus	Argonauta gruneri	
57741	Brown Paper Nautilus	Argonauta hians	
57743	Nodose Paper Nautilus	Argonauta nodosa	
57744	Noury'S Paper Nautilus	Argonauta nouri	
57740	Paper Nautiluses	Argonautidae	
56896	Pacific Sand Clam	Asaphis violescens	
56891	Gaudy Sand Clam	Aspaphis deflorata	
51751	Peron'S Sea Butterfly	Atlanta peroni	
51750		Atlantidae	
54424	Wh Pacific Atys	Atys naucum	
54604	Almond Ark	Babatia amygdalumtostum	
50840	Goblets,Dwarf Tritons	Buccinidae	
54421	Ampule Bubble	Bulla ampulla	
54420	Bubble Shells	Bullidae	
54422	Lined Bubble	Bullina lineata	
50796	Giant Frog Shell	Bursa bubo	
50791	Warty Frog Shell	Bursa bufonia	
50792	Blood-Stain Frog Shell	Bursa cruentata	
50793	Granulate Frog Shell	Bursa granularis	
50799	Lamarck'S Frog Shell	Bursa lamarcki	
50798	Red-Mth Frog Shell	Bursa lissostoma	
50794	Udder Frog Shell	Bursa mammata	

50797	Ruddy Frog Shell	Bursa rebeta
50795	Wine-Mth Frog Shell	Bursa rhodostoma
50790	Frog Shells	Bursidae
50751	Umbilicate Ovula	Calpurnus verrucosus
50878	File Miter	Cancilla filaris
50842	Smoky Goblet	Cantharus fumosus
50841	Waved Goblet	Cantharus undosus
56721	Varitated Cardita	Cardita variegata
56720	Carditid Clams	Carditidae
50767	Vibex Bonnet	Casmaria erinaceus
50768	Heavy Bonnet	Casmaria ponderosa
50765	Helmet Shells	Cassidae
50766	Horned Helmet	Cassius cornuta
55022	3-Toothed Cavoline	Cavolina tridentata
55023	Unicate Cavoline	Cavolina uncinata
55021	Sea Butterfly	Cavolinia cf globulosa
55020	Sea Butterflies	Cavolinidae
50650	Turret,Worm-Shells	Cerithiidae
50654	Column Certh	Cerithium columna
50651	Giant Knobbed Certh	Cerithium nodulosum
56711	Lazarus Jewel Box	Chama lazarus
56710	Jewel Boxes	Chamidae
50781	Triton Trumpet	Charonia tritonis
50812	Ramose Murex	Chicoreus ramosus
54500	Chitons	Chitonidae
56623	Cook'S Scallop	Chlamys cooki
56621	Squamose Scallop	Chlamys squamosa
56500	Bivalves	Class Bivalvia
55027	Pyramid Clio	Clio cuspidata
55026	Irregular Urchins	Clio pyramidata
50652	Morus Certh	Clypeomorus concisus
56706	Punctate Lucina	Codakia punctata
50847	Maculated Dwarf Triton	Columbraria muricata
50845	Shiny Dwarf Triton	Columbraria nitidula
50846	Twisted Dwarf Triton	Columbraria tortuosa
50920	Cone Shells	Conidae
50952	Sand-Dusted Cone	Conus arenatus
50963	Princely Cone	Conus aulicus
50968	Aureus Cone	Conus aureus
50969	Gold-Leaf Cone	Conus auricomus
50947	Banded Marble-Cone	Conus bandanus

50971	Bubble Cone	Conus bullatus
50942	Captain Cone	Conus capitaneus
50932	Cat Cone	Conus catus
50924	Chaldean Cone	Conus chaldeus
50972	Comma Cone	Conus connectens
50922	Crowned Cone	Conus coronatus
50970	Cylindrical Cone	Conus cylandraceus
50926	Distantly-Lined Cone	Conus distans
50923	Hebrew Cone	Conus ebraeus
50936	Ivory Cone	Conus eburneus
50965	Episcopus Cone	Conus episcopus
50927	Pacific Yellow Cone	Conus flavidus
50928	Frigid Cone	Conus frigidus
50945	General Cone	Conus generalis
50961	Geography Cone	Conus geographus
50955	Acorn Cone	Conus glans
50946	Imperial Cone	Conus imperialis
50964	Ambassador Cone	Conus legatus
50938	Leopard Cone	Conus leopardus
50951	Lithography Cone	Conus lithoglyphus
50937	Lettered Cone	Conus litteratus
50929	Livid Cone	Conus lividus
50958	Luteus Cone	Conus luteus
50966	Dignified Cone	Conus magnificus
50930	Soldier Cone	Conus miles
50939	1000-Spot Cone	Conus miliaris
50935	Morelet'S Cone	Conus moreleti
50934	Muricate Cone	Conus muriculatus
50940	Music Cone	Conus musicus
50943	Weasel Cone	Conus mustelinus
50954	Obscure Cone	Conus obscurus
50959	Pertusus Cone	Conus pertusus
50921	Flea-Bite Cone	Conus pulicarius
50931	Rat Cone	Conus rattus
50967	Netted Cone	Conus retifer
50933	Blood-Stained Cone	Conus sanguinolentus
50957	Leaden Cone	Conus scabriusculus
50925	Marriage Cone	Conus sponsalis
50950	Striatellus Cone	Conus striatellus
50948	Striated Cone	Conus striatus
50956	Terebra Cone	Conus terebra

50944	Checkered Cone	Conus tesselatus
50953	Textile Cone	Conus textile
50962	Tulip Cone	Conus tulipa
50960	Varius Cone	Conus varius
50941	Flag Cone	Conus vexillum
50949	Calf Cone	Conus vitulinus
50832	Eroded Coral Shell	Coralliophila erosa
50831	Violet Coral Shell	Coralliophila neritodidea
50830	Coral Shells	Coralliophilidae
56662	Giant Oyster	Crassostrea gigas
56661	Mangrove Oyster	Crassostrea mordax
50813	Bionic Rock Shell	Cronia biconica
56624	Speciosus Scallop	Cryptopecten speciosum
55025	Cigar Pteropod	Cuvierina columnella
50770	Tritons	Cymatiidae
50784	Clandestine Triton	Cymatium clandestinium
50773	Jeweled Triton	Cymatium gemmatum
50776	Liver Triton	Cymatium hepaticum
50786	Wide-Lipped Triton	Cymatium labiosum
50782	Black-Spotted Triton	Cymatium lotorium
50774	Short-Neck Triton	Cymatium muricinum
50772	Nicobar Hairy Triton	Cymatium nicobaricum
50779	Common Hairy Triton	Cymatium pileare
50771	Aquatile Hairy Triton	Cymatium pilere aquatile
50783	Pear Triton	Cymatium pyrum
50775	Red Triton	Cymatium rubeculum
50785	Dwarf Hairy Triton	Cymatium vespaceum
50703	Gold-Ringer Cowry	Cypraea annulus
50726	Arabian Cowry	Cypraea arabica
50734	Eyed Cowry	Cypraea argus
50739	Golden Cowry	Cypraea aurantium
50738	Beck'S Cowry	Cypraea beckii
50733	Bistro Cowry	Cypraea bistronatata
50702	Snake'S Head Cowry	Cypraea caputserpentis
50710	Carnelian Cowry	Cypraea carneola
50740	Chinese Cowry	Cypraea chinensis
50732	Chick-Pea Cowry	Cypraea cicercula
50721	Clandestine Cowry	Cypraea clandestina
50715	Sieve Cowry	Cypraea cribaria
50713	Sowerby'S Cowry	Cypraea cylindrica
50717	Depressed Cowry	Cypraea depressa

50743	Dillwyn'S Cowry	Cypraea dillywini
50706	Eglantine Cowry	Cypraea eglantina
50708	Eroded Cowry	Cypraea erosa
50736	Globular Cowry	Cypraea globulus
50711	Honey Cowry	Cypraea helvola
50730	Swallow Cowry	Cypraea hirundo
50742	Humphrey'S Cowry	Cypraea humphreysi
50707	Isabelle Cowry	Cypraea isabella
50731	Lined-Lip Cowry	Cypraea labrolineata
50741	Limacina Cowry	Cypraea limicina
50704	Lynx Cowry	Cypraea lynx
50716	Reticulated Cowry	Cypraea maculifera
50705	Map Cowry	Cypraea mappa
50737	Marie'S Cowry	Cypraea mariae
50725	Humpback Cowry	Cypraea mauritiana
50723	Microdon Cowry	Cypraea microdon
50701	Money Cowry	Cypraea moneta
50722	Nuclear Cowry	Cypraea nucleus
50709	Porus Cowry	Cypraea poraria
50714	Punctata Cowry	Cypraea punctata
50729	Jester Cowry	Cypraea scurra
50712	Grape Cowry	Cypraea staphlea
50724	Stolid Cowry	Cypraea stolida
50720	Mole Cowry	Cypraea talpa
50728	Teres Cowry	Cypraea teres
50718	Tiger Cowry	Cypraea tigris
50727	Ventral Cowry	Cypraea ventriculus
50719	Pacific Deer Cowry	Cypraea vitellus
50735	Undulating Cowry	Cypraea ziczac
50700	Cowrys	Cypraeidae
55024	3-Spined Cavoline	Diacria trispinosa
50778	Anal Triton	Distorso anus
55100	Dorid Nudibranchs	Doridae
50823	Clatherate Drupe	Drupa clathrata
50821	Elegant Pacific Drupe	Drupa elegans
50820	Digitate Pacific Drupe	Drupa grossularia
50819	Purple Pacific Drupe	Drupa morum
50818	Prickley Pacific Drupe	Drupa ricinus
50822	Strawberry Drupe	Drupa rubusidacaeus
56622	Spectacular Scallop	Excellichlamys spectiablis
50850	Spindles	Fasciolariidae

56722	Pac Strawberry Cockle	Fragum fragum
56908	Tumid Venus	Gafrarium tumidum
50777	Rosy Gyre Triton	Gyrineum roseum
50780	Purple Gyre Triton	Gyrinium pusillum
50911	Little Love Harp	Harpa amouretta
50913	True Harp	Harpa harpa
50912	Major Harp	Harpa major
50910	Harp Shells	Harpidae
50989	Lance Auger	Hastula lanceata
50988	Pencil Auger	Hastula penicillata
55101	Spanish Dancer	Hexabranchus sanguineus
56881	Giant Clam	Hippopus hippopus
50806	Anatomical Murex	Homalocanthia anatomica
54423	Gr-Lined Paber Bubble	Hydratina physis
50875	Cone-Like Miter	Imbricaria conularis
50873	Olive-Shaped Miter	Imbricaria olivaeformis
50874	Bonelike Miter	Imbricaria punctata
56611	Saddle Tree Oyster	Isognomon ephippium
56610	Tree Oysters	Isognomonidae
54351	Janthina Snail	Janthina janthina
54350	Pelagic Snails	Janthinidae
50682	Chiragra Spider Conch	Lambis chiragra
50685	Ormouth Spider Conch	Lambis crocota
50681	Common Spider Conch	Lambis lambis
50684	Scorpio Conch	Lambis scorpius scorpius
50680	Spider Conch	Lambis sp.
50683	Giant Spider Conch	Lambis truncata
50851	Nobby Spindle	Latirus nodatus
50852	Spindle	Latirus rudis
56681	Fragile Lima	Lima fragilis
56682	Indo-Pac Spiny Lima	Lima vulgaris
56680	Limas	Limidae
56904	Camp Pitar Venus	Lioconcha castrensis
56906	Hieroglyphic Venus	Lioconcha hieroglyphica
56905	Ornate Pitar Venus	Lioconcha ornata
50642	Scabra Periwinkle	Littorina scabra
50641	Undulate Periwinkle	Littorina undulata
50640	Periwinkles	Littorinidae
56705	Lucinas	Lucinidae
50762	Apple Tun	Malea pomum
50811	Pinnacle Murex	Marchia bipinnatus

50809	Fenestrate Murex	Marchia martinetana
54430	Melampus Shells	Melampidae
54431	Yellow Melampus	Melampus luteus
57401	Flamboyant Cuttlefish	Metasepia pfefferi
54425	Mini Lined-Bubble	Micromelo undatus
54411	Ventricose Milda	Milda ventricosa
56626	Miraculous Scallop	Mirapecten mirificus
50897	Imperial Miter	Miter imperalis
50899	Acuminate Miter	Mitra acuminata
50890	Cardinal Miter	Mitra cardinalis
50893	Chrysalis Miter	Mitra chrysalis
50895	Gold-Mth Miter	Mitra chrysostoma
50889	Coffee Miter	Mitra coffea
50898	Contracted Miter	Mitra contracta
50892	Kettle Miter	Mitra cucumaria
50876	Rusty Miter	Mitra ferruginea
50891	Strawberry Miter	Mitra fraga
50888	Tesselate Miter	Mitra incompta
50872	Episcopal Miter	Mitra mitra
50883	Papal Miter	Mitra papalis
50894	Red-Painted Miter	Mitra rubitincta
50871	Pontifical Miter	Mitra stictica
50870	Miter Shells	Mitridae
50000	Mollusca	MOLLUSCA
50801	Burnt Murex	Murex burneus
50800	Murex Shells	Muricidae
56505	Mussels	Mytilidae
50804	Tragonula Murex	Naquetia trigonulus
50803	Triquetra Murex	Naquetia triquetra
50817	Francolina Jopas	Nassa francolina
50855	Nassa Mud Snails	Nassariidae
50858	Granulated Nassa	Nassarius graniferus
50857	Margarite Nassa	Nassarius margaritiferus
50856	Pimpled Basket	Nassarius papillosus
50755	Moon Shells	Naticidae
57300	Nautilus	Nautilidae
57301	Chambered Nautilus	Nautilus ponpilius
50884	Clathrus Miter	Neocancilla clathrus
50896	Flecked Miter	Neocancilla granitina
50901	Butterfly Miter	Neocancilla papilio
50633	Ox-Palate Nerite	Nerita albicilla

50631	Plicate Nerite	Nerita plicata
50632	Polished Nerite	Nerita polita
50634	Reticulate Nerite	Nerita signata
50630	Nerites	Neritidae
50600	Diotocardia	O Archaeogastropoda
57700	Octopus	Octopodidae
57735	Common Octopus	Octopus cyanea
57734	Red Octopus	Octopus luteus
57736	Ornate Octopus	Octopus ornatus
57730	Octopus	Octopus sp
57732	Pelagic Octopus	Octopus sp 1
57733	Long-Armed Octopus	Octopus sp 2
57731	Elongate Octopus	Octopus teuthoides
50861	Amethyst Olive	Oliva annulata
50863	Carnelian Olive	Oliva carneola
50862	Red-Mth Olive	Oliva miniacea
50864	Peg Olive	Oliva paxillus
50860	Olive Shells	Olividae
57500	Squids	Order Teuthoidea
56660	True Oysters	Ostreidae
54412	Cat'S Ear Otopleura	Otopleura auriscati
50753	Common Egg Cowry	Ovula ovum
50750	Egg Shells	Ovulidae
56620	Scallops	Pectinidae
56902	Crispate Venus	Periglypta crispata
56903	Youthful Venus	Periglypta puerpera
56901	Reticulate Venus	Periglypta reticulata
56601	Pearl Oyster	Pinctada margaritfera
56531	Bicolor Pen Shell	Pinna bicolor
56530	Pen Shells	Pinnidae
50756	Breast-Shaped Moon	Polinices mamatus
50757	Pear-Shaped Moon	Polinices tumidus
50844	Strawberry Goblet	Pollia fragaria
50843	Beautiful Goblet	Pollia pulchra
50752	Fruit Ovula	Prionovula fruticum
56600	Pearl Oysters	Pteriidae
50904	Crenulate Miter	Pterygia crenulata
50907	Fenestrate Miter	Pterygia fenestrata
50905	Nut Miter	Pterygia nucea
50902	Rough Miter	Pterygia scabricula
50810	Club Murex	Pterynotus elongatus

50807	Fluted Murex	Pterynotus laqueatus
50808	3-Winged Murex	Pterynotus tripterus
54413	Solid Pupa	Pupa solidula
50816	Perssian Purpura	Purpura persica
54401	Sulcate Pyram	Pyramidella sulcata
54400	Pyram Shells	Pyramidellidae
50833	Quoy'S Coral Shell	Quoyula madreporarum
50834	Rapa Snail	Rapa rapa
50653	Rough Vertigus	Rhinoclavis aspera
50655	Obelisk Vertigus	Rhinoclavis sinensis
50900	Chaste Miter	Sabricola casta
56625	Tiger Scallop	Semipallium tigris
57403	Broadclub Cuttlefish	Sepia latimanus
57402	Cuttlefish	Sepia sp.
57594	Bigfin Reef Squid	Sepioteuthis lessoniana
56511	Box Mussel	Septifer bilocularis
50805	Lacy Murex	Siratus laciniatus
56670	Thorny Oysters	Spondylidae
56671	Ducal Thorny Oyster	Spondyulus squamosus
56532	Baggy Pen Shell	Streptopinna saccata
50660	True Conchs	Strombidae
50665	Samar Conch	Strombus dentatus
50666	Fragile Conch	Strombus fragilis
50663	Gibbose Conch	Strombus gibberulus
50669	Lavender-Mouth Conch	Strombus haemastoma
50667	Silver-Lip Conch	Strombus lentigninosus
50662	Red-Lip Conch	Strombus luhuanus
50664	Micro Conch	Strombus microurceus
50661	Mutable Conch	Strombus mutabilis
50672	Pretty Conch	Strombus plicatus
50670	Laciniate Conch	Strombus sinuatus
50671	Bull Conch	Strombus taurus
50612	Pyramid Top	Tectus pyramis
56894	Box-Like Tellin	Tellina capsoides
56892	Cat'S Tongue Tellin	Tellina linguafelis
56895	Remie'S Tellin	Tellina remies
56893	Rasp Tellin	Tellina scobinata
56890	Tellin Clams	Tellinidae
50668	Terebellum Conch	Terebellum terebellum
50985	Similar Auger	Terebra affinis
50997	Fly-Spotted Auger	Terebra areolata

50996	Eyed Auger	Terebra argus
50987	Babylonian Auger	Terebra babylonia
50990	Certhlike Auger	Terebra cerithiana
50995	Short Auger	Terebra chlorata
50984	Crenulated Auger	Terebra crenulata
50982	Dimidiate Auger	Terebra dimidiata
50994	Tiger Auger	Terebra felina
50991	Funnel Auger	Terebra funiculata
50993	Spotted Auger	Terebra gutatta
50981	Marlinspike Auger	Terebra maculata
50986	Cloud Auger	Terebra nubulosa
50983	Subulate Auger	Terebra subulata
50992	Undulate Auger	Terebra undulata
50980	Auger Shells	Terebridae
50815	Belligerent Rock Shell	Thais armigera
50814	Tuberose Rock Shell	Thais tuberosa
50761	Partridge Tun	Tonna perdix
50760	Tun Shells	Tonnidae
56723	Angulate Cockle	Trachycardium angulatum
56882	Giant Clam	Tridacna crocea
56883	Lagoon Giant Clam	Tridacna derasa
56884	Giant Clam	Tridacna gigas
56885	Common Giant Clam	Tridacna maxima
56886	Fluted Giant Clam	Tridacna squamosa
56880	Giant Clams	Tridacnidae
50610	Top Shells	Trochidae
50611	Top Shell	Trochus niloticus
50613	Radiate Top	Trochus radiatus
50865	Vases	Turbinellidae
50620	Turban Shell	Turbinidae
50622	Silver-Mouth Turbin	Turbo argyrostoma
50623	Tapestry Turbin	Turbo petholatus
50621	Rough Turbin	Turbo setosus
50867	Ceramic Vase	Vasum ceramicum
50866	Common Pacific Vase	Vasum turbinellus
56900	Venus Shells	Veneridae
50887	Bernhard'S Miter	Vexillum bernhardiana
50882	Cancellaria Miter	Vexillum cancellarioides
50880	Saffron Miter	Vexillum crocatum
50879	Roughened Miter	Vexillum exasperatum
50885	Patriarchal Miter	Vexillum patriarchalis

50881	Half-Banded Miter	Vexillum semifasciatum
50903	Specious Miter	Vexillum speciosum
50886	Bumpy Miter	Vexillum tuberosum
50906	Turbin Miter	Vexillum turbin
50877	Decorated Miter	Vexillum unifasciatum
50802	Spotted Vitularia	Vitularia miliaris
TOTAL		

15. Guam Coral Reef Ecosystem (Siganidae-Rabbitfish (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
41316	Manahak (Forktail Rabbitfish)	Manahak lesso'	Rabbitfish
41318	Manahak	Manahak sp	Rabbitfish
41300	Rabbitfish	Siganidae	Rabbitfish
41301	Fork-Tail Rabbitfish	Siganus argenteus	Rabbitfish
41307	Seagrass Rabbitfish	Siganus canaliculatus	Rabbitfish
41308	Coral Rabbitfish	Siganus corallinus	Rabbitfish
41302	Pencil-Streaked Rabbitfish	Siganus doliatus	Rabbitfish
41303	Fuscescens Rabbitfish	Siganus fuscescens	Rabbitfish
41309	Golden Rabbitfish	Siganus guttatus	Rabbitfish
41311	Lined Rabbitfish	Siganus lineatus	Rabbitfish
41313	White-Spotted Rabbitfish	Siganus oramin	Rabbitfish
41310	Masked Rabbitfish	Siganus puellus	Rabbitfish
41314	Peppered Rabbitfish	Siganus punctatissimus	Rabbitfish
41304	Gold-Spotted Rabbitfish	Siganus punctatus	Rabbitfish
41315	Randal'S Rabbitfish	Siganus randalli	Rabbitfish
41305	Scribbled Rabbitfish	Siganus spinus	Rabbitfish
41306	Vermiculated Rabbitfish	Siganus vermiculatus	Rabbitfish
41312	Rabbitfish	Siganus vulpinus	Rabbitfish
TOTAL			

16. Guam Coral Reef Ecosystem (Lutjanidae-Snapper) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch

32301	Silvermouth/Jobfish	Aphareus furca	Snappers
32300	Snappers	Lutjanidae	Snappers
32306	River Snapper	Lutjanus argentimaculatus	Snappers
32325	Two-Spot Snapper	Lutjanus biguttatus	Snappers
32307	Red Snapper	Lutjanus bohar	Snappers
32334	Snapper	Lutjanus boutton	Snappers
32326	Checkered Snapper	Lutjanus decussatus	Snappers
32327	Blackspot Snapper	Lutjanus ehrenbergi	Snappers
32335	Snapper	Lutjanus fulviflamma	Snappers
32308	Flametail Snapper	Lutjanus fulvus	Snappers
32309	Humpback Snapper	Lutjanus gibbus	Snappers
32328	Malabar Snapper	Lutjanus malabaricus	Snappers
32312	Onespot Snapper	Lutjanus monostigma	Snappers
32311	Scribbled Snapper	Lutjanus rivulatus	Snappers
32333	Snapper	Lutjanus sebae	Snappers
32329	1/2-Barred Snapper	Lutjanus semicinctus	Snappers
32330	One-Lined Snapper	Lutjanus vitta	Snappers
32332	Bl And Wh Snapper	Macolor macularis	Snappers
32313	Black Snapper	Macolor niger	Snappers
32314	Fusilier	Paracaesio sordidus	Snappers
32315	Yellowtail Fusilier	Paracaesio xanthurus	Snappers
32322	Deepwater Snapper	Randallichthys filamentosus	Snappers
49130	Shallow Snappers	SHALLOW SNAPPERS	Snappers
32331	Sailfin Snapper	Symphorichthys spilurus	Snappers
TOTAL			

17. Guam Coral Reef Ecosystem (Serranidae-Grouper) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
28901	Red-Flushed Grouper	Aethaloperca rogaa	
28956	Grouper	Anyperodon leucogrammicus	
28908	Orange Grouper	Cephalopholis analis	
28907	Peacock Grouper	Cephalopholis argus	
28911	Brownbarred Grouper	Cephalopholis boenack	
28909	Ybanded Grouper	Cephalopholis igarashiensis	
28910	Leopard Grouper	Cephalopholis leopardus	

28945	Coral Grouper	Cephalopholis miniata
28929	Harlequin Grouper	Cephalopholis polleni
28913	6-Banded Grouper	Cephalopholis sexmaculata
28912	Tomato Grouper	Cephalopholis sonnerati
28903	Grouper	Cephalopholis sp
28906	Pygmy Grouper	Cephalopholis spiloparaea
28914	Flag-Tailed Grouper	Cephalopholis urodeta
28915	Grouper	Cromileptes altivelis
28947	Orange Grouper	Epinephelus caeruleopunctatus
28948	Brown-Spotted Grouper	Epinephelus chlorostigma
28960	Orange Spot Grouper	Epinephelus coioides
28957	Grouper	Epinephelus corallicola
28946	Grouper	Epinephelus cyanopodus
28920	Blotchy Grouper	Epinephelus fuscoguttatus
28921	Hexagon Grouper	Epinephelus hexagonatus
28918	Grouper	Epinephelus howlandi
28922	Giant Grouper	Epinephelus lanceolatus
28958	Grouper	Epinephelus macrospilos
28923	Highfin Grouper	Epinephelus maculatus
28950	Malabar Grouper	Epinephelus malabaricus
28949	Bl-Spot Honeycomb Grouper	Epinephelus melanostigma
28925	Honeycomb Grouper	Epinephelus merra
28942	Grouper	Epinephelus miliaris
28916	Grouper	Epinephelus morrhua
28951	Wavy-Lined Grouper	Epinephelus ongus
28926	Marbled Grouper	Epinephelus polyphekadion
28953	Grouper	Epinephelus retouti
28930	7-Banded Grouper	Epinephelus septemfasciatus
28924	Tidepool Grouper	Epinephelus socialis
28952	4-Saddle Grouper	Epinephelus spilotoceps
28928	Greasy Grouper	Epinephelus tauvina
28902	Truncated Grouper	Epinephelus truncatus
28943	Wh-Margined Grouper	Gracila albomarginata
28938	Squaretail Grouper	Plectropomus areolatus
28937	Saddleback Grouper	Plectropomus laevis
28954	Leopard Coral Trout	Plectropomus leopardus
28955	Blue-Lined Coral Trout	Plectropomus oligacanthus
28940	Powell'S Grouper	Saloptia powelli

28900	Sea Basses,Groupers	Serranidae	
28944	Whmargin Lyretail Grouper	Variola albimarginata	
TOTAL			

18. Guam Coral Reef Ecosystem (Mugilidae-Mullet) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
35902	Fringelip Mullet	Crenimugil crenilabis	
35903	Yellowtail Mullet	Ellochelon vaigiensis	
35901	Engel'S Mullet	Moolgarda engeli	
35906	Bluespot Mullet	Moolgarda seheli	
35904	Gray Mullet	Mugil cephalus	
35900	Mullets	Mugilidae	
35905	Acute-Jawed Mullet	Neomyxus leuciscus	
TOTAL			

19. Guam Coral Reef Ecosystem (Kyphosidae-Chub/Rudderfish) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
33900	Rudderfish	Kyphosidae	Rudderfish
33901	Highfin Rudderfish	Kyphosus cinerascens	Rudderfish
33902	Lowfin Rudderfish	Kyphosus vaigiensis	Rudderfish
33903	Insular Rudderfish	Kyphosus bigibbus	Rudderfish

20. Guam Coral Reef Ecosystem (Other Crustaceans) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
69251	Spider Crab	Achaeus japonicus	
67500	Snapping Shrimp	Alphaeidae	
67501	Snapping Shrimp	Alpheus bellulus	

67502	Snapping Shrimp	Alpheus paracrinitus
64999	Anchylomerids	Anchylomeridae
67951	Slipper Lobster	Arctides regalis
60101	Acorn Barnacle	Balanus sp
62050	Mantis Shrimp	Bathysquillidae
69201	Box Crab	Calappa bicornis
69202	Box Crab	Calappa calappa
69203	Box Crab	Calappa hepatica
69200	Box Crabs	Calappidae
69252	Decorator Crab	Camposcia retusa
69350	Cancrids	Cancridae
69501	7-11 Crab	Carpilius convexus
69502	7-11 Crab	Carpilius maculatus
69401	Red-Legged Sw Crab	Charybdis erythrodactyla
69402	Red Sw Crab	Charybdis hawaiiensis
69204	Box Crab	Cycloes granulosa
69301	Elbow Crab	Daldorfia horrida
68202	Marine Hermit Crab	Dardanus gemmatus
68204	Marine Hermit Crab	Dardanus megistos
68203	Marine Hermit Crab	Dardanus pedunculatus
68201	Marine Hermit Crab	Dardanus sp
67121	Commensal Shrimp	Dasycaris zanzibarica
67000	Decapod Crustaceans	Decapoda
68200	Marine Hermit Crabs	Diogenidae
69161	Dorippid Crab	Dorippe frascone
69171	Sponge Crab	Dromia dormia
69170	Sponge Crabs	Dromiidae
68701	Mole Crab	Emerita pacifica
67851	Soft Lobster	Enoplometopus debelius
67852	Hairy Lobster	Enoplometopus occidentalis
69553	Redeye Crab	Eriphia sebana
69554	Red-Reef Crab	Etisus dentatus
69551	Red-Reef Crab	Etisus splendidus
69555	Brown-Reef Crab	Etisus utilis
62100	Mantis Shrimp	Eurysquillidae
68500	Squat Lobsters	Galatheidae
69850	Gecarcinids	Gecarcinidae
67220	Bbee And Harlequin Shrimp	Gnathophyllidae
67221	Bumblebee Shrimp	Gnathophylloides mineri
67222	Bumblebee Shrimp	Gnathophyllum americanum

62203	Mantis Shrimp	Gonodactylaceus mutatus
62201	Mantis Shrimp	Gonodactylellus affinis
62200	Mantis Shrimp	Gonodactylidae
62202	Mantis Shrimp	Gonodactylus chiragra
62204	Mantis Shrimp	Gonodactylus platysoma
62205	Mantis Shrimp	Gonodactylus smithii
69860	Shore Crabs	Grapsidae
69861	Shore Crab	Grapsus albolineatus
69862	Shore Crab	Grapsus grapsus
		tenuicrustat
69950	Hapalocarcinids	Hapalocarcinidae
62550	Mantis Shrimp	Harposquillidae
62300	Mantis Shrimp	Hemisquillidae
67104	Deepwater Shrimps	Heteropenaeus sp
67210	Hump-Backed Shrimp	Hippolytidae
69100	Homolids	Homolidae
67853	Soft Lobster	Hoplometopus holthuisi
67223	Harlequin Shrimp	Hymenocera picta
64810	Hyperid Amphipods	Hyperiidae
67921	Slipper Lobster	Ibacus sp
69000	True Crabs	Io Brachyura
67931	Long-Handed Lobster	Justitia longimanus
67211	Hump-Backed Shrimp	Koror misticius
69302	Elbow Crab	Lambrus longispinis
67111	Palaemonid Shrimp	Leander plumosus
68300	Lithodids	Lithodidae
69421	Swimming Crab	Lupocyclus
		grimquedentatus
64830	Lycaeids	Lycaeidae
69151	3-Toothed Frog Crab	Lyreidus tridentatus
62800	Mantis Shrimp	Lysiosquillidae
60100	Barnacles	Lythoglyptidae
69901	Telescope-Eye Crab	Macrophthalmus
		telescopicus
69250	Spider Crabs	Majidae
67101	Penaeid Prawn	Metapenaeopsis sp 1
67102	Penaeid Prawn	Metapenaeopsis sp 2
67103	Penaeid Prawn	Metapenaeopsis sp 3
69205	Box Crab	Mursia spinimanus
62900	Mantis Shrimp	Nannosquillidae
67850	Soft Lobsters	Nephropidae
69902	Large Ghost Crab	Ocypode ceratopthalma

69903	Ghost Crab	Ocypode cordimana
69904	Ghost Crab	Ocypode saratum
69900	Ocypodids	Ocypodidae
62350	Mantis Shrimp	Odontodactylidae
62351	Mantis Shrimp	Odontodactylus brevirostris
62352	Mantis Shrimp	Odontodactylus scyallarus
62701	Mantis Shrimp	Oratosquilla oratoria
62700	Mantis Shrimp	Oratosquillidae
68400	Soldier Hermit Crab	Paguridae
68401	Coral Hermit Crab	Paguritta gracilipes
68402	Coral Hermit Crab	Paguritta harmsi
67110	Palaemonid Shrimp	Palaemonidae
67917	Mole Lobster	Palinurellus wieneckii
67918	Painted Crayfish	Panulirus albiflagellum
67911	Painted Crayfish	Panulirus homarus
67912	Painted Crayfish	Panulirus longipes
67914	Painted Crayfish	Panulirus ornatus
67910	Painted Crayfish	Panulirus sp
67916	Painted Crayfish	Panulirus versicolor
69300	Elbow Crabs	Parthenopidae
67100	Panaeid Prawns	Penaeidae
67106	Penaeid Prawn	Penaeus latisulcatus
67105	Penaeid Prawn	Penaeus monodon
69864	Flat Rock Crab	Percnon planissimum
67122	Commensal Shrimp	Periclimenes amboinensis
67123	Commensal Shrimp	Periclimenes brevicarpalis
67124	Commensal Shrimp	Periclimenes cf ceratophthalmus
67125	Commensal Shrimp	Periclimenes holthuisi
67126	Commensal Shrimp	Periclimenes imperator
67127	Commensal Shrimp	Periclimenes inornatus
67128	Commensal Shrimp	Periclimenes kororensis
67129	Commensal Shrimp	Periclimenes ornatus
67130	Commensal Shrimp	Periclimenes psamathe
67131	Commensal Shrimp	Periclimenes soror
67132	Commensal Shrimp	Periclimenes tenuipes
67133	Commensal Shrimp	Periclimenes venustus
68601	Porcelain Crab	Petrolisthes lamarkii
64820	Phronimids	Phronimidae
69863	Shore Crab	Plagusia depressa tuberculata

64840	Platyscelids	Platyscelidae
67134	Commensal Shrimp	Pliopotonia furtiva
69461	Long-Eyed Swimming Crab	Podophthalmus vigil
67135	Commensal Shrimp	Pontonides uncigar
67120	Commensal Shrimp	Pontoniidae
68600	Porcellanid Crabs	Porcellanidae
69400	Swimming Crabs	Portunidae
69432	Blue Swimming Crab	Portunus pelagicus
69431	Swimming Crab	Portunus sanguinolentus
62400	Mantis Shrimp	Protosquillidae
62501	Mantis Shrimp	Pseudosquilla ciliata
62500	Mantis Shrimp	Pseudosquillidae
67231	Hingebeak Prawn	Rhinchocinetes hiatti
67230	Hinge-Beaked Prawns	Rhynchocinetidae
69471	Mangrove Crab	Scylla serrata
67604	Solenocerids	Solenoceridae
62600	Mantis Shrimp	Squillidae
67136	Commensal Shrimp	Stegopontonia commensalis
67200	Cleaner Shrimp	Stenopodidae
67201	Banded Coral Shrimp	Stenopus hispidus
62000	Mantis Shrimps	Stomatopoda
67503	Snapping Shrimp	Synalpheus carinatus
60102	Acorn Barnacle	Tetraclitella divisa
69481	Swimming Crab	Thalamita crenata
67212	Ambonian Shrimp	Thor amboinensis
69598	Xanthid Crab	Unid Megalops
69499	Portunid Crab	Unid sp 1
69599	Xanthid Crab	Unid sp 1
69498	Portunid Crab	Unid sp 2
69597	Xanthid Crab	Unid sp 2
67112	Palaemonid Shrimp	Urocaridella antonbruunii
69500	Dark-Finger Coral Crabs	Xanthidae
69870	Urchin Crab	Zebrida adamsii
69552	Shallow Reef Crab	Zosymus aeneus

TOTAL

21. Guam Coral Reef Ecosystem (Holocentridae-

Squirrelfish) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
24300	Squirrel,Soldierfishes	Holocentridae	
24398	Squirrelfishes	Holocentrinae	
24399	Soldierfishes	Myripristinae	
24313	Bronze Soldierfish	Myripristis adusta	
24314	Brick Soilderfish	Myripristis amaena	
24331	Doubletooth Soldierfish	Myripristis amaena	
24315	Bigscale Soldierfish	Myripristis berndti	
24324	Yellowfin Soldierfish	Myripristis chryseres	
24317	Pearly Soldierfish	Myripristis kuntee	
24318	Red Soldierfish	Myripristis murdjan	
24322	Scarlet Soldierfish	Myripristis pralinia	
24319	Violet Soldierfish	Myripristis violacea	
24320	White-Tipped Soldierfish	Myripristis vittata	
24326	White-Spot Soldierfish	Myripristis woodsi	
24309	Clearfin Squirrelfish	Neoniphon argenteus	
24312	Yellowstriped Squirrelfish	Neoniphon aurolineatus	
24310	Blackfin Squirrlefish	Neoniphon opercularis	
24311	Bloodspot Squirrelfish	Neoniphon sammara	
24340	Deepwater Soldierfish	Ostichthys brachygnathus	
24323	Deepwater Soldierfish	Ostichthys kaianus	
24321	Cardinal Squirrelfish	Plectrypops lima	
24301	Tailspot Squirrelfish	Sargocentron caudimaculatum	
24332	3-Spot Squirrelfish	Sargocentron cornutum	
24302	Crown Squirrelfish	Sargocentron diadema	
24330	Spotfin Squirrelfish	Sargocentron dorsomaculatum	
24334	Furcate Squirrelfish	Sargocentron furcatum	
24327	Samurai Squirrelfish	Sargocentron ittodai	
24333	Squirrelfish	Sargocentron lepros	
24328	Blackspot Squirrelfish	Sargocentron melanospilos	
24304	Finelined Squirrelfish	Sargocentron microstoma	
24305	Dark-Striped Squirrelfish	Sargocentron praslin	
24303	Speckled Squirrelfish	Sargocentron punctatissimum	
24306	Long-Jawed Squirrelfish	Sargocentron spiniferum	
24307	Blue-Lined Squirrelfish	Sargocentron tiere	
24308	Pink Squirrelfish	Sargocentron tieroides	
24329	Violet Squirrelfish	Sargocentron violaceum	

TOTAL

22. Guam Coral Reef Ecosystem (Alage) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
92102	Algae	Enteromorpha clathrata	
92200	Algae	Caulerpaceae	
92217	Algae	Caulerpa racemosa	
93602	Algae	Sargassum polycystum	
93604	Algae	Turbinaria ornata	
95000	Algae	Div Anthophyta	
95003	Algae	Halodule uninervis	

23. Guam Coral Reef Ecosystem Labridae-Wrasses) (non-FSSI)

DAWR Creel Species Code	Species Name	Scientific Name	2012 Estimated Catch
36201	Chiseltooth Wrasse	Anampses caeruleopunctatus	Wrasse
36297	Geographic Wrasse	Anampses geographicus	Wrasse
36268	Wrasse	Anampses melanurus	Wrasse
36202	Yellowtail Wrasse	Anampses meleagrides	Wrasse
36203	Yellowbreasted Wrasse	Anampses twisti	Wrasse
36205	Lyretail Hogfish	Bodianus anthioides	Wrasse
36206	Axilspot Hogfish	Bodianus axillaris	Wrasse
36288	2-Spot Slender Hogfish	Bodianus bimaculatus	Wrasse
36269	Diana'S Hogfish	Bodianus diana	Wrasse
36270	Blackfin Hogfish	Bodianus loxozonus	Wrasse
36271	Mesothorax Hogfish	Bodianus mesothorax	Wrasse
36243	Hogfish	Bodianus tanyokidus	Wrasse
36209	Floral Wrasse	Cheilinus chlorourus	Wrasse
36210	Red-Breasted Wrasse	Cheilinus fasciatus	Wrasse
36211	Snooty Wrasse	Cheilinus oxycephalus	Wrasse
36213	Tripletail Wrasse	Cheilinus trilobatus	Wrasse
36216	Cigar Wrasse	Cheilio inermis	Wrasse
36217	Yel-Cheeked Tuskfish	Choerodon anchorago	Wrasse
36313	Harlequin Tuskfish	Choerodon fasciatus	Wrasse

36305	Wrasse	Cirrhilabrus balteatus	Wrasse
36272	Wrasse	Cirrhilabrus cyanopleura	Wrasse
36273	Exquisite Wrasse	Cirrhilabrus exquisitus	Wrasse
36306	Johnson'S Wrasse	Cirrhilabrus johnsoni	Wrasse
36218	Wrasse	Cirrhilabrus katherinae	Wrasse
36274	Yellowband Wrasse	Cirrhilabrus luteovittatus	Wrasse
36307	Rhomboid Wrasse	Cirrhilabrus rhomboidalis	Wrasse
36309	Red-Margined Wrasse	Cirrhilabrus rubrimarginatus	Wrasse
36219	Clown Coris	Coris aygula	Wrasse
36275	Dapple Coris	Coris batuensis	Wrasse
36314	Pale-Barred Coris	Coris dorsomacula	Wrasse
36220	Yellowtailed Coris	Coris gaimardi	Wrasse
36221	Knife Razorfish	Cymolutes praetextatus	Wrasse
36291	Finescale Razorfish	Cymolutes torquatus	Wrasse
36300	Wandering Cleaner Wrasse	Diproctacanthus xanthurus	Wrasse
36222	Sling-Jawed Wrasse	Epibulus insidiator	Wrasse
36276	Sling-Jawed Wrasse	Epibulus n sp	Wrasse
36223	Bird Wrasse	Gomphosus varius	Wrasse
36224	2-Spotted Wrasse	Halichoeres biocellatus	Wrasse
36277	Drab Wrasse	Halichoeres chloropterus	Wrasse
36278	Canary Wrasse	Halichoeres chrysus	Wrasse
36318	Wrasse	Halichoeres dussumieri	Wrasse
36226	Checkerboard Wrasse	Halichoeres hortulanus	Wrasse
36227	Weedy Surge Wrasse	Halichoeres margaritaceus	Wrasse
36228	Dusky Wrasse	Halichoeres marginatus	Wrasse
36279	Pinstriped Wrasse	Halichoeres melanurus	Wrasse
36229	Black-Ear Wrasse	Halichoeres melasmapomus	Wrasse
36311	Ornate Wrasse	Halichoeres ornatissimus	Wrasse
36315	Seagrass Wrasse	Halichoeres papilionaceus	Wrasse
36298	Wrasse	Halichoeres prosopeion	Wrasse
36304	Wrasse	Halichoeres purpurascens	Wrasse
36280	Richmond'S Wrasse	*Halichoeres richmondi*	Wrasse
36281	Zigzag Wrasse	*Halichoeres scapularis*	Wrasse
36312	Shwartz Wrasse	*Halichoeres shwartzi*	Wrasse
36282	Wrasse	*Halichoeres sp*	Wrasse
36230	3-Spot Wrasse	*Halichoeres trimaculatus*	Wrasse
36225	Wrasse	*Halichoeres zeylonicus*	Wrasse
36231	Striped Clown Wrasse	*Hemigymnus fasciatus*	Wrasse
36232	1/2 &1/2 Wrasse	*Hemigymnus melapterus*	Wrasse
36303	Wrasse	Hologymnosus annulatus	Wrasse

36233	Ring Wrasse	*Hologymnosus doliatus*	Wrasse
36234	Tubelip Wrasse	*Labrichthys unilineatus*	Wrasse
36200	Wrasse	*Labridae*	Wrasse
36235	Bicolor Cleaner Wrasse	*Labroides bicolor*	Wrasse
36266	Bluestreak Cleaner Wrasse	*Labroides dimidiatus*	Wrasse
36237	Black-Spot Cleaner Wrasse	*Labroides pectoralis*	Wrasse
36283	Allen'S Wrasse	*Labropsis alleni*	Wrasse
36238	Micronesian Wrasse	*Labropsis micronesica*	Wrasse
36239	Wedge-Tailed Wrasse	Labropsis xanthonota	Wrasse
36240	Leopard Wrasse	Macropharyngodon meleagris	Wrasse
36284	Negros Wrasse	*Macropharyngodon negrosensis*	Wrasse
36241	Seagrass Razorfish	*Novaculichthys macrolepidotus*	Wrasse
36242	Dragon Wrasse	*Novaculichthys taeniourus*	Wrasse
36207	Arenatus Wrasse	*Oxycheilinus arenatus*	Wrasse
36264	2-Spot Wrasse	*Oxycheilinus bimaculatus*	Wrasse
36208	Celebes Wrasse	*Oxycheilinus celebecus*	Wrasse
36263	Bandcheek Wrasse	Oxycheilinus digrammus	Wrasse
36215	Oriental Wrasse	*Oxycheilinus orientalis*	Wrasse
36212	Ringtail Wrasse	*Oxycheilinus unifasciatus*	Wrasse
36292	Wrasse	*Paracheilinus bellae*	Wrasse
36293	Wrasse	*Paracheilinus sp*	Wrasse
36265	Wrasse	*Polylepion russelli*	Wrasse
36294	Wrasse	*Pseudocheilinops ataenia*	Wrasse
36244	Striated Wrasse	*Pseudocheilinus evanidus*	Wrasse
36245	6 Line Wrasse	*Pseudocheilinus hexataenia*	Wrasse
36246	8 Line Wrasse	*Pseudocheilinus octotaenia*	Wrasse
36285	Line Wrasse	*Pseudocheilinus sp*	Wrasse
36247	4 Line Wrasse	*Pseudocheilinus tetrataenia*	Wrasse
36316	Rust-Banded Wrasse	*Pseudocoris aurantiofasciata*	Wrasse
36317	Torpedo Wrasse	*Pseudocoris heteroptera*	Wrasse
36286	Yamashiro'S Wrasse	*Pseudocoris yamashiroi*	Wrasse
36267	Chiseltooth Wrasse	*Pseudodax moluccanus*	Wrasse
36248	Polynesian Wrasse	*Pseudojuloides atavai*	Wrasse
36249	Smalltail Wrasse	*Pseudojuloides cerasinus*	Wrasse
36250	Wrasse	*Pterogogus cryptus*	Wrasse
36296	Wrasse	*Pterogogus guttatus*	Wrasse
36251	Red-Shoulder Wrasse	*Stethojulis bandanensis*	Wrasse
36252	Wrasse	*Stethojulis strigiventor*	Wrasse
36299	Wrasse	*Stethojulis trilineata*	Wrasse

36253	2 Tone Wrasse	*Thalassoma amblycephalum*	Wrasse
36255	6 Bar Wrasse	*Thalassoma hardwickii*	Wrasse
36262	Jansen'S Wrasse	*Thalassoma janseni*	Wrasse
36287	Crescent Wrasse	*Thalassoma lunare*	Wrasse
36256	Sunset Wrasse	*Thalassoma lutescens*	Wrasse
36257	Surge Wrasse	*Thalassoma purpureum*	Wrasse
36258	5-Stripe Surge Wrasse	*Thalassoma quinquevittatum*	Wrasse
36254	Xmas Wrasse	*Thalassoma trilobatum*	Wrasse
36289	Wh-Barred Pygmy Wrasse	*Wetmorella albofasciata*	Wrasse
36259	Bl-Spot Pygmy Wrasse	*Wetmorella nigropinnata*	Wrasse
36290	Wrasse	*Xiphocheilus sp*	Wrasse
36261	Yblotch Razorfish	*Xyrichtys aneitensis*	Wrasse
36301	Celebe'S Razorfish	*Xyrichtys celebecus*	Wrasse
36302	Razorfish	*Xyrichtys geisha*	Wrasse
36308	Yellowpatch Razorfish	*Xyrichtys melanopus*	Wrasse
36260	Blue Razorfish	Xyrichtys pavo	Wrasse

24. Guam Coral Reef Ecosystem Species (Bolbometopon muricatum-bumphead parrotfish) (non-FSSI)

DAWR Creel Species Code	Species Name	*Scientific Name*	2012 Estimated Catch
36401	Bulbometopon muricatum	*Bumphead parrotfish*	

25. Guam Coral Reef Ecosystem Species (Cheilinus undulatus-humphead Napoleon wrasse) (non-FSSI)

DAWR Creel Species Code	Species Name	*Scientific Name*	2012 Estimated Catch
36214	Cheilius undulatus	*Napoleon wrasse*	

26. Guam Coral Reef Ecosystem (Carcharhinidae-Reef sharks) (non-FSSI)

DAWR Creel Species Code	Species Name	*Scientific Name*	2012 Estimated Catch
1101	Carcharhinus albimarginatus	*Carcharhinidae*	
1102	Carcharhinus amblyrhynchos	*Carcharhinidae*	
1104	Carcharhinus galapagensis	*Carcharhinidae*	
1106	Carcharhinus melanopterus	*Carcharhinidae*	
1201	Sphyrna lewini	*Hammerhead*	
1202	Sphyrna mokorran	*Hammerhead*	
1200	Sphyrnidae	*Hammerhead*	
TOTAL			

27. Guam Coral Reef Ecosystem (All Other CREMUS Combined) (non-FSSI)

DAWR Creel Species Code	Species Name	*Scientific Name*	Species Group
44518	Starry Triggerfish	*Abalistes stellatus*	Other
20701	Barred Needlefish	*Ablennes hians*	Other
35050	Blackspot Sergeant	*Abudefduf lorenzi*	Other
35051	Yellowtail Sergeant	*Abudefduf notatus*	Other
35001	Banded Sergeant	*Abudefduf septemfasciatus*	Other
35002	Scis-Tail Sgt Major	*Abudefduf sexfasciatus*	Other
35003	Black Spot Sergeant	*Abudefduf sordidus*	Other
35004	Sergeant-Major	*Abudefduf vaigiensis*	Other
29150	Spiney Basslets	*Acanthoclinidae*	Other
29151	Hiatt'S Basslet	*Acathoplesiops hiatti*	Other
40537	Goby	*Acentrogobius bonti*	Other
44566	Seagrass Filefish	*Acreichthys tomentosus*	Other
25601	Shrimpfish	*Aeoliscus strigatus*	Other
2201	Spotted Eagle Ray	*Aetobatis narinari*	Other
2202	Eagle Ray	*Aetomyleaus maculatus*	Other
4801	Indo-Pacific Bonefish	*Albula glossodonta*	Other
4802	Bonefish	*Albula neoguinaica*	Other
4800	Bonefish	*Albulidae*	Other

17100	Lancetfishes	*Alepisauidae*	Other
17101	Lancetfish	*Alepisaurus ferox*	Other
40711	Dorothea'S Wriggler	*Allomicrodesmis dorotheae*	Other
39202	Blenny	*Alticus arnoldorum*	Other
44558	Unicorn Filefish	*Aluterus monoceros*	Other
44551	Filefish	*Aluterus scriptus*	Other
44552	Filefish	*Amanses scopas*	Other
28700	Glass Perch	Ambassidae	Other
28701	Glassie	*Ambassis buruensis*	Other
28702	Glassie	*Ambassis interrupta*	Other
35201	2-Spot Hawkfish	*Amblycirrhitus bimacula*	Other
40501	Goby	*Amblyeleotris faciata*	Other
40502	Goby	*Amblyeleotris fontaseni*	Other
40503	Goby	*Amblyeleotris guttata*	Other
40506	Goby	*Amblyeleotris randalli*	Other
40505	Brown-Barred Goby	*Amblyeleotris steinitzi*	Other
40507	Bluespotted Goby	*Amblyeleotris wheeleri*	Other
4306	Blue Pilchard	*Amblygaster clupeoides*	Other
4307	Spotted Pilchard	*Amblygaster sirm*	Other
35005	Damselfish	*Amblygliphidodon aureus*	Other
35006	Staghorn Damsel	*Amblygliphidodon curacao*	Other
35052	White-Belly Damsel	*Amblygliphidodon leucogaster*	Other
35053	Ternate Damsel	*Amblygliphidodon ternatensis*	Other
40523	Goby	*Amblygobius decussatus*	Other
40524	Goby	*Amblygobius hectori*	Other
40670		*Amblygobius linki*	Other
40525	Goby	*Amblygobius nocturnus*	Other
40526	Goby	*Amblygobius phalaena*	Other
40527	Goby	*Amblygobius rainfordi*	Other
40662	Goby	*Amblygobius sp*	Other
44816	Evileye Puffer	*Amblyrhinchotus honckenii*	Other
40504	Prawn Goby	*Amlbyeleotris periophthalma*	Other
35007	Org-Fin Anemonefish	Amphiprion chrysopterus	Other
35008	Clark'S Anemonefish	*Amphiprion clarkii*	Other
35095	Tomato Anemonefish	*Amphiprion frenatus*	Other
35009	Dusky Anemonefish	*Amphiprion melanopus*	Other
35096	False Clown Anemonefish	*Amphiprion ocellaris*	Other
35010	Pink Anemonfish	*Amphiprion peridaeraion*	Other

35097	3-Banded Anemonefish	*Amphiprion tricinctus*	Other
43507	Dragonet	Anaora tentaculata	Other
5601	Allardice'S Moray	*Anarchias allardicei*	Other
5646	Canton Island Moray	*Anarchias cantonensis*	Other
5602	Seychelles Moray	*Anarchias seychellensis*	Other
4901	Freshwater Eel	*Anguilla bicolor*	Other
4902	Freshwater Eel	*Anguilla marmorata*	Other
4900	Freshwater Eel	Anguillidae	Other
24250	Flashlightfish	*Anomalopidae*	Other
24251	Flashlightfish	*Anomalops katoptron*	Other
19200	Anglerfish	*Antenariidae*	Other
19201	Pigmy Frogfish	*Antennarius analis*	Other
19202	Frogfish	*Antennarius biocellatus*	Other
19203	Freckled Frogfish	Antennarius coccineus	Other
19204	Giant Frogfish	*Antennarius commersonii*	Other
19205	Bandtail Frogfish	Antennarius dorehensis	Other
19206	Sargassumfish	*Antennarius maculatus*	Other
19207	Spotfin Frogfish	*Antennarius nummifer*	Other
19208	Painted Frogfish	*Antennarius pictus*	Other
19209	Randall'S Frogfish	*Antennarius randalli*	Other
19210	Spiney-Tufted Frogfish	*Antennarius rosaceus*	Other
19211	Bandfin Frogfish	*Antennatus tuberosus*	Other
25201	Boarfish	*Antigonia malayana*	Other
26460	Velvetfishes	Aploactinidae	Other
30435	Cardinalfish	Apogon amboinensis	Other
30401	Broad-Striped Cardinalfish	*Apogon angustatus*	Other
30402	Bigeye Cardinalfish	*Apogon bandanensis*	Other
30403	Cryptic Cardinalfish	*Apogon coccineus*	Other
30436	Ohcre-Striped Cardinalfish	*Apogon compressus*	Other
30437	Redspot Cardinalfish	*Apogon dispar*	Other
30438	Longspine Cardinalfish	*Apogon* doryssa	Other
30455	Elliot'S Cardinalfish	*Apogon ellioiti*	Other
30462	Cardinalfish	*Apogon eremeia*	Other
30439	Evermann'S Cardinalfish	*Apogon evermanni*	Other
30404	Eyeshadow Cardinalfish	*Apogon exostigma*	Other
30405	Bridled Cardinalfish	*Apogon fraenatus*	Other
30441	Cardinalfish	*Apogon fragilis*	Other
30440	Gilbert'S Cardinalfish	*Apogon gilberti*	Other
30406	Guam Cardinalfish	*Apogon guamensis*	Other
30468		*Apogon hartzfeldii*	Other
30407	Iridescent Cardinalfish	*Apogon kallopterus*	Other

30408	Inshore Cardinalfish	Apogon lateralis	Other
30409	Bluestreak Cardinalfish	*Apogon leptacanthus*	Other
30457	Black Cardinalfish	*Apogon melas*	Other
30463	Cardinalfish	*Apogon nigripinnis*	Other
30412	Black-Striped Cardinalfish	*Apogon nigrofasciatus*	Other
30464	Cardinalfish	*Apogon notatus*	Other
30413	7-Lined Cardinalfish	*Apogon novemfasciatus*	Other
30442	Pearly Cardinalfish	*Apogon* perlitus	Other
30465	Cardinalfish	*Apogon* rhodopterus	Other
30443	Sangi Cardinalfish	*Apogon sangiensis*	Other
30415	Gray Cardinalfish	*Apogon savayensis*	Other
30456	Seale'S Cardinalfish	Apogon sealei	Other
30417	Cardinalfish	*Apogon sp*	Other
30414	Bandfin Cardinalfish	*Apogon taeniophorus*	Other
30410	Bandfin Cardinalfish	*Apogon taeniopterus*	Other
30416	3-Spot Cardinalfish	*Apogon trimaculatus*	Other
30418	Ocellated Cardinalfish	*Apogonichthys ocellatus*	Other
30444	Perdix Cardinalfish	*Apogonichthys perdix*	Other
30400	Cardinalfishes	*Apogonidae*	Other
34377	Angelfish	*Apolemichthys griffisi*	Other
34351	Flagfin Anglefish	*Apolemichthys trimaculatus*	Other
34376	Angelfish	*Apolemichthys xanthopunctatus*	Other
29201	2-Lined Soapfish	*Aporops bilinearis*	Other
6619	Snake Eel	*Apterichtus klazingai*	Other
30419	Twinspot Cardinalfish	*Archamia biguttata*	Other
30420	Orange-Lined Cardinalfish	*Archamia fucata*	Other
30445	Blackbelted Cardinalfish	*Archamia zosterophora*	Other
6206	Scheele'S Conger	*Ariosoma scheelei*	Other
43903	Flounder	*Arnoglossus intermedius*	Other
44801	Brown Puffer	*Arothron hispidus*	Other
44802	Puffer	*Arothron manilensis*	Other
44803	Puffer	*Arothron mappa*	Other
44804	White-Spot Puffer	*Arothron meleagris*	Other
44805	Black-Spotted Puffer	*Arothron nigropunctatus*	Other
44806	Star Puffer	*Arothron stellatus*	Other
44102	Black Spotted Sole	*Aseraggodes melanostictus*	Other
44103	Smith'S Sole	*Aseraggodes smithi*	Other
44104	Whitaker'S Sole	*Aseraggodes whitakeri*	Other
39257	Lance Blenny	*Aspidontus dussumieri*	Other
39203	Cleaner Mimic	*Aspidontus taeniatus*	Other

40539		Asteropteryx semipunctatus	Other
43905	Intermediate Flounder	*Asterorhombus* intermedius	Other
40538	Goby	*Asterropteryx ensiferus*	Other
21800	Silverside	*Atherinidae*	Other
21805	Tropical Silverside	*Atherinomorus* duodecimalis	Other
21806	Striped Silverside	*Atherinomorus endrachtensis*	Other
21803	Silverside	*Atherinomorus lacunosus*	Other
21804	Hardyhead Silverside	*Atherinomorus lacunosus*	Other
21801	Bearded Silverside	*Atherion* elymus	Other
39240	Blenny	*Atrosalarius fuscus* holomelas	Other
25300	Trumpetfish	*Aulostomidae*	Other
25301	Trumpetfish	*Aulostomus chinensis*	Other
40540	Goby	*Austrolethops wardi*	Other
40541	Goby	*Awaous grammepomus*	Other
40542	Goby	*Awaous guamensis*	Other
44501	Undulate Triggerfish	*Balistapus undulatus*	Other
44500	Triggerfishes	*Balistidae*	Other
44502	Clown Triggerfish	*Balistoides conspicillum*	Other
44503	Titan Triggerfish	*Balistoides viridescens*	Other
40543	Goby	*Bathygobius cocosensis*	Other
40544	Goby	*Bathygobius cotticeps*	Other
40545	Goby	*Bathygobius fuscus*	Other
20700	Needlefish	*Belonidae*	Other
29001	Soapfish	*Belonoperca chaubanaudi*	Other
24200	Lantern-Eye Fish	*Berycidae*	Other
24201	Flashlightfish	*Beryx decadactylus*	Other
25818	Pipefish	*Bhanotia nuda*	Other
6205	Conger Eel	*Blachea xenobranchialis*	Other
39218	Blenny	*Blenniella cyanostigma*	Other
39222	Blenny	*Blenniella gibbifrons*	Other
39239		*Blenniella paula*	Other
39221	Blenny	*Blenniella periophthalmus*	Other
39200	Blennies	*Blenniidae*	Other
43900	Flounders	*Bothidae*	Other
43901	Peacock Flounder	*Bothus mancus*	Other
43902	Leopard Flounder	*Bothus pantherinus*	Other
44559	Taylor'S Inflator Filefish	*Brachaluteres taylori*	Other
6601	Snake Eel	*Brachysomophis sauropsis*	Other

18201	Codlet	*Bregmaceros nectabanus*	Other
18200	Codlets	*Bregmacerotidae*	Other
18651	Free-Tailed Brotula	*Brosmophyciops pautzkei*	Other
18601	Reef Cusk Eel	*Brotula multibarbata*	Other
18602	Townsend'S Cusk Eel	*Brotula townsendi*	Other
40546	Goby	*Bryaninops amplus*	Other
40547	Goby	*Bryaninops erythrops*	Other
40548	Goby	*Bryaninops natans*	Other
40549	Goby	*Bryaninops ridens*	Other
40550	Goby	*Bryaninops youngei*	Other
25819	Pipefish	*Bulbonaricus brauni*	Other
40402	Gudgeon	*Butis amboinensis*	Other
18650	Livebearing Brotulas	*Bythitidae*	Other
40551	Goby	*Cabillus tongarevae*	Other
6602	Snake Eel	*Caecula polyophthalma*	Other
32351	Scissor-Tailed Fusilier	*Caesio caerulaurea*	Other
32355	Fusilier	*Caesio cuning*	Other
32356	Lunar Fusilier	*Caesio lunaris*	Other
32352	Yellowback Caesio	*Caesio* teres	Other
32350	Fusilier	*Caesionidae*	Other
29050	Goldies	*Callanthiidae*	Other
6603	Snake Eel	*Callechelys marmorata*	Other
6604	Snake Eel	*Callechelys* melanotaenia	Other
43500	Dragonets	*Callionymidae*	Other
43508	Delicate Dragonet	*Callionymus delicatulus*	Other
43501	Mangrove Dragonet	*Callionymus enneactis*	Other
43502	Simple-Spined Dragonet	*Callionymus simplicicornis*	Other
40559	Goby	*Callogobious sp*	Other
40552	Goby	*Callogobius bauchotae*	Other
40553	Goby	*Callogobius centrolepis*	Other
40554	Goby	*Callogobius hasselti*	Other
40555	Goby	*Callogobius maculipinnis*	Other
40556	Goby	*Callogobius okinawae*	Other
40557	Goby	*Callogobius plumatus*	Other
40558	Goby	*Callogobius sclateri*	Other
29401	Longfin	*Calloplesiops altivelis*	Other
40403	Sleeper	*Calumia godeffroyi*	Other
44553	Gray Leatherjacket	Cantherhines dumerilii	Other
44565	Specktacled Filefish	*Cantherhines fronticinctus*	Other
44554	Honeycomb Filefish	*Cantherhines pardalis*	Other
44504	Rough Triggerfish	*Canthidermis maculatus*	Other

44807	Puffer	*Canthigaster amboinensis*	Other
44808	Puffer	*Canthigaster bennetti*	Other
44815	Puffer	*Canthigaster compressa*	Other
44809	Sharp Back Puffer	*Canthigaster coronata*	Other
44810	Puffer	*Canthigaster epilampra*	Other
44811	Puffer	*Canthigaster janthinoptera*	Other
44812	Puffer	*Canthigaster leoparda*	Other
44819	Circle-Barred Toby	*Canthigaster ocellicincta*	Other
44820	Papuan Toby	*Canthigaster papua*	Other
44813	Sharpnose Puffer	*Canthigaster solandri*	Other
44814	Saddle Shpns Puffer	*Canthigaster valentini*	Other
25200	Boarfishes	*Caproidae*	Other
26700	Coral Crouchers	*Caracanthidae*	Other
26701	Velvetfish	*Caracanthus maculatus*	Other
26702	Velvetfish	*Caracanthus unipinna*	Other
18700	Pearlfish	*Carapodidae*	Other
18702	Pearlfish	*Carapus mourlani*	Other
1109	Blackfin Shark	*Carcharhinus limbatus*	Other
902	Great White Shark	*Carcharodon carcharius*	Other
25600	Shrimpfishes	*Centriscidae*	Other
34379	Golden Angelfish	*Centropyge aurantia*	Other
34352	Bicolor Angelfish	*Centropyge bicolor*	Other
34353	Dusky Angelfish	*Centropyge bispinosus*	Other
34354	Colin'S Angelfish	*Centropyge colini*	Other
34367	White-Tail Angelfish	*Centropyge flavicauda*	Other
34355	Lemonpeel Anglefish	*Centropyge flavissimus*	Other
34356	Herald'S Anglefish	*Centropyge heraldi*	Other
34357	Flame Anglefish	*Centropyge loriculus*	Other
34368	Multicolor Angelfish	*Centropyge multicolor*	Other
34358	Multibarred Angelfish	*Centropyge multifasciatus*	Other
34359	Black-Spot Anglefish	*Centropyge nigriocellus*	Other
34378	Midnight Angelfish	Centropyge nox	Other
34360	Shepard'S Anglefish	*Centropyge shepardi*	Other
34369	Keyhole Angelfish	*Centropyge tibicen*	Other
34361	Pearlscale Anglefish	*Centropyge vrolicki*	Other
28959	Grouper	Cephalopholis cyanostigma	Other
39008	Triplefin	*Ceratobregma helenae*	Other
34301	Threadfin Butterflyfish	*Chaetodon auriga*	Other
34330	E Triangular Butterflyfish	*Chaetodon barronessa*	Other
34302	Bennetts Butterflyfish	*Chaetodon bennetti*	Other

34331	Burgess' Butterflyfish	*Chaetodon burgessi*	Other
34303	Speckled Butterflyfish	*Chaetodon citrinellus*	Other
34304	Saddleback Butterflyfish	*Chaetodon ephippium*	Other
34305	Ylw-Crn Butterflyfish	*Chaetodon flavocoronatus*	Other
34306	Kleins Butterflyfish	*Chaetodon kleinii*	Other
34307	Lined Butterflyfish	*Chaetodon lineolatus*	Other
34308	Racoon Butterflyfish	*Chaetodon lunula*	Other
34316	Redfinned Butterflyfish	Chaetodon lunulatus	Other
34309	Black-Back Butterflyfish	Chaetodon melannotus	Other
34310	Mertens Butterflyfish	*Chaetodon mertensii*	Other
34332	Meyer'S Butterflyfish	*Chaetodon meyeri*	Other
34311	Butterflyfish	*Chaetodon modestus*	Other
34333	Spot-Tail Butterflyfish	*Chaetodon ocellicaudus*	Other
34334	8-Banded Butterflyfish	Chaetodon octofasciatus	Other
34312	Ornate Butterflyfish	*Chaetodon ornatissimus*	Other
34335	Spot-Nape Butterflyfish	*Chaetodon oxycephalus*	Other
34313	Spotbnded Butterflyfish	*Chaetodon punctatofasciatus*	Other
34314	4-Spotted Butterflyfish	*Chaetodon quadrimaculatus*	Other
34336	Latticed Butterflyfish	*Chaetodon rafflesii*	Other
34315	Retculted Butterflyfish	*Chaetodon reticulatus*	Other
34337	Dotted Butterflyfish	*Chaetodon semeion*	Other
34338	Oval-Spot Butterflyfish	*Chaetodon speculum*	Other
34340	Tinker'S Butterflyfish	*Chaetodon tinkeri*	Other
34329	Chevron Butterflyfish	*Chaetodon trifascialis*	Other
34317	Pac Dblsddl Butterflyfish	*Chaetodon ulietensis*	Other
34318	Teardrop Butterflyfish	*Chaetodon unimaculatus*	Other
34319	Vagabond Butterflyfish	*Chaetodon vagabundus*	Other
34300	Butterflyfish	*Chaetodontidae*	Other
34370	Vermiculated Angelfish	Chaetodontoplus mesoleucus	Other
37401	Saddled Sandburrower	*Chalixodytes tauensis*	Other
36701	Gaper	*Champsodon vorax*	Other
36700	Gapers	*Champsodontidae*	Other
9800	Milkfish	*Chanidae*	Other
5647	Long-Jawed Moray	*Channomuraena vittata*	Other
9801	Milkfish	*Chanos chanos*	Other
30458	Lined Cardinalfish	*Cheilodipterus artus*	Other
30466	Intermediate Cardinalfish	*Cheilodipterus intermedius*	Other
30446	Cardinalfish	*Cheilodipterus isostigma*	Other

30422	Lg-Toothed Cardinalfish	*Cheilodipterus macrodon*	Other
30423	5-Lined Cardinalfish	*Cheilodipterus quinquelineata*	Other
30421	Truncate Cardinalfish	*Cheilodipterus singapurensis*	Other
20601	Flying Fish	*Cheilopogon spilonopterus*	Other
20602	Flying Fish	*Cheilopogon spilopterus*	Other
20603	Flying Fish	*Cheilopogon unicolor*	Other
35089	Minstrel Fish	*Cheiloprion labiatus*	Other
35907	Ceram Mullet	*Chelon macrolepis*	Other
5400	False Moray Eel	*Chlopsidae*	Other
25802	Pipefish	*Choeroichthys brachysoma*	Other
25801	Pipefish	*Choeroichthys sculptus*	Other
37001	Duckbill	*Chrionema* squamiceps	Other
35011	Midget Chromis	*Chromis acares*	Other
35012	Bronze Reef Chromis	*Chromis agilis*	Other
35022	Yel-Speckled Chromis	*Chromis alpha*	Other
35013	Ambon Chromis	*Chromis amboinensis*	Other
35014	Yellow Chromis	Chromis analis	Other
35015	Black-Axil Chromis	*Chromis atripectoralis*	Other
35054	Dark-Fin Chromis	*Chromis atripes*	Other
35059	Blue-Axil Chromis	*Chromis caudalis*	Other
35060	Deep Reef Chromis	*Chromis delta*	Other
35017	Twin-Spot Chromis	*Chromis elerae*	Other
35018	Scaly Chromis	*Chromis lepidolepis*	Other
35055	Lined Chromis	*Chromis lineata*	Other
35019	Bicolor Chromis	*Chromis margaritifer*	Other
35056	Black-Bar Chromis	*Chromis retrofasciata*	Other
35049	Ternate Chromis	*Chromis ternatensis*	Other
35020	Vanderbilt'S Chromis	Chromis vanderbilti	Other
35016	Blue-Green Chromis	*Chromis viridis*	Other
35057	Weber'S Chromis	*Chromis weberi*	Other
35058	Yel-Axil Chromis	*Chromis xanthochir*	Other
35021	Black Chromis	*Chromis xanthura*	Other
35024	2-Spot Demoiselle	*Chrysiptera biocellata*	Other
35027	Surge Demoiselle	*Chrysiptera brownriggii*	Other
35025	Blue-Line Demoiselle	*Chrysiptera caeruleolineata*	Other
35062	Blue Devil	*Chrysiptera cyanea*	Other
35026	Gray Demoiselle	*Chrysiptera glauca*	Other

35090	Blue-Spot Demoiselle	*Chrysiptera oxycephala*	Other
35064	King Demoiselle	*Chrysiptera rex*	Other
35065	Talbot'S Demoiselle	Chrysiptera talboti	Other
35028	Tracey'S Demoiselle	*Chrysiptera traceyi*	Other
35091	1-Spot Demoiselle	*Chrysiptera unimaculata*	Other
34610	Peacock Bass	*Cichla ocellaris*	Other
34600	Cichlids	*Cichlidae*	Other
35211	Threadfin Hawkfish	*Cirrhitichthys aprinus*	Other
35202	Falco'S Hawkfish	*Cirrhitichthys* falco	Other
35203	Pixy Hawkfish	*Cirrhitichthys oxycephalus*	Other
35200	Hawkfish	*Cirrhitidae*	Other
35204	Stocky Hawkfish	*Cirrhitus pinnulatus*	Other
6620	Fringelip Snake Eel	*Cirricaecula johnsoni*	Other
39242	Chestnut Blenny	*Cirripectes castaneus*	Other
39204	Spotted Blenny	*Cirripectes fuscoguttatus*	Other
39243	Blenny	*Cirripectes perustus*	Other
39206	Barred Blenny	*Cirripectes polyzona*	Other
39205	Squiggly Blenny	Cirripectes quagga	Other
39244	Red-Streaked Blenny	*Cirripectes stigmaticus*	Other
39207	Red-Speckled Blenny	*Cirripectes variolosus*	Other
14802	Air-Breath Catfish	*Clarias* batrachus	Other
14801	Air-Breath Catfish	*Clarias macrocephalus*	Other
14800	Air-Breath Catfish	*Clariidae*	Other
4300	Herring,Sprat,Sardines	*Clupeidae*	Other
26461	Velvetfish	*Cocotropis larvatus*	Other
6201	White Eel	*Conger cinereus* cinereus	Other
6202	Conger Eel	*Conger oligoporus*	Other
6208	Conger Eel	*Conger sp*	Other
6200	White,Conger,Garden Eel	*Congridae*	Other
30306	Deepwater Glasseye	*Cookeolus boops*	Other
30304	Bulleye	*Cookeolus japonicus*	Other
34339	Orangebanded Coralfish	*Coradion chrysozonus*	Other
40590	Goby	*Coryphopterus signipinnis*	Other
25803	Network Pipefish	*Corythoichthys flavofasciatus*	Other
25820	Pipefish	Corythoichthys haematopterus	Other
25804	Reef Pipefish	*Corythoichthys intestinalis*	Other
25805	Bl-Breasted Pipefish	*Corythoichthys nigripectus*	Other
25821	Ocellated Pipefish	*Corythoichthys ocellatus*	Other
25822	Many-Spotted Pipefish	*Corythoichthys polynotatus*	Other

25823	Guilded Pipefish	*Corythoichthys schultzi*	Other
25824	Roughridge Pipefish	*Cosmocampus banneri*	Other
25806	D'Arros Pipefish	*Cosmocampus darrosanus*	Other
25825	Maxweber'S Pipefish	*Cosmocampus maxweberi*	Other
37400	Sand Burrowers	*Creedidae*	Other
35911	Mullet	*Crenimugil heterochilos*	Other
40560	Goby	*Cristagobius sp*	Other
40508	Goby	*Cryptocentroides insignis*	Other
40511	Goby	Cryptocentrus cauruleomaculatus	Other
40509	Goby	*Cryptocentrus cinctus*	Other
40510	Goby	*Cryptocentrus koumansi*	Other
40512	Goby	*Cryptocentrus leptocephalus*	Other
40514	Goby	*Cryptocentrus sp* A	Other
40513	Goby	*Cryptocentrus strigilliceps*	Other
40515	Goby	*Ctenogobiops aurocingulus*	Other
40516	Goby	*Ctenogobiops feroculus*	Other
40517	Goby	*Ctenogobiops pomastictus*	Other
40518	Long-Finned Prwn Goby	*Ctenogobiops tangarorai*	Other
27304	Flathead	*Cymbacephalus beauforti*	Other
35212	Swallowtail Hawkfish	*Cyprinocirrhites polyactis*	Other
20604	Flying Fish	*Cypselurus angusticeps*	Other
20605	Flying Fish	*Cypselurus poecilopterus*	Other
20606	Flying Fish	*Cypselurus speculiger*	Other
28501	Flying Gurnard	*Dactyloptena orientalis*	Other
28502	Flying Gurnard	*Dactyloptena petersoni*	Other
28500	Flying Gurnard	*Dactylopteridae*	Other
35029	Humbug Dascyllus	*Dascyllus aruanus*	Other
35066	Black-Tail Dascyllus	*Dascyllus melanurus*	Other
35030	Reticulated Dascyllus	*Dascyllus reticulatus*	Other
35031	3-Spot Dascyllus	*Dascyllus trimaculatus*	Other
2000	Stingray	*Dasyatididae*	Other
2001	Blue-Spotted Sting Ray	*Dasyatis kuhlii*	Other
26401	Scorpionfish	*Dendrochirus biocellatus*	Other
26402	Scorpionfish	*Dendrochirus brachypterus*	Other
26427	Zebra Lionfish	*Dendrochirus zebra*	Other
32701	Slatey Sweetlips	*Diagramma pictum*	Other
16701	Lanternfish	*Diaphus schmidti*	Other
18652	Bythitid	*Dinematichthys iluocoetenoides*	Other

44903	Porcupinefish	*Diodon eydouxi*	Other
44901	Porcupinefish	*Diodon hystrix*	Other
44902	Porcupinefish	*Diodon liturosus*	Other
44900	Porcupinefish	*Diodontidae*	Other
43503	Dragonet	*Diplogrammus goramensis*	Other
8801	Bristlemouth	*Diplophos sp*	Other
35067	White-Spot Damsel	*Dischistodus chrysopoecilus*	Other
35068	Black-Vent Damsel	*Dischistodus melanotus*	Other
35032	White Damsel	Dischistodus perspicillatus	Other
25808	Banded Pipefish	*Doryramphus dactyliophorus*	Other
25807	Bluestripe Pipefish	*Doryramphus excisus*	Other
25826	Janss' Pipefish	*Doryramphus janssi*	Other
25827	Negros Pipefish	*Doryramphus negrosensis*	Other
4303	Sprat	*Dussumieria elopsoides*	Other
4302	Sprats	*Dussumieria sp* B	Other
31300	Diskfishes	*Echeneidae*	Other
31304	Remora	*Echeneis naucrates*	Other
5603	Whiteface Moray	*Echidna leucotaenia*	Other
5604	Snowflake Moray	*Echidna nebulosa*	Other
5605	Girdled Moray Eel	*Echidna polyzona*	Other
5606	Unicolor Moray	*Echidna unicolor*	Other
1350	Bramble Shark	*Echinorhinidae*	Other
1351	Bramble Shark	*Echinorhinus brucus*	Other
1352	Bramble Shark	*Echinorhinus cookei*	Other
39264	Banda Clown Blenny	*Ecsenius bandanus*	Other
39208	Blenny	Ecsenius bicolor	Other
39209	Blenny	*Ecsenius opsifrontalis*	Other
39245	Blenny	*Ecsenius sellifer*	Other
39246	Blenny	*Ecsenius yaeyamaensis*	Other
6621	Snake Eel	*Elapsopsis versicolor*	Other
40400	Sleepers	*Eleotrididae*	Other
40401	Gudgeon	*Eleotris fusca*	Other
32201	Bonnetmouth	*Emmelichthys* karnellai	Other
32200	Bonnet Mouths	*Emmelichtyidae*	Other
18703	Pearlfish	*Encheliophis boraboraensis*	Other
18705	Pearlfish	*Encheliophis gracilis*	Other
18701	Pearlfish	*Encheliophis homei*	Other
18704	Pearlfish	*Encheliophis vermicularis*	Other

5607	Bayer'S Moray	*Enchelycore bayeri*	Other
5608	Bikini Atoll Moray	*Enchelycore bikiniensis*	Other
5655	Dark-Spotted Moray	*Enchelycore kamara*	Other
5609	White-Margined Moray	*Enchelycore schismatorhynchus*	Other
5610	Viper Moray	Enchelynassa canina	Other
39210	Blenny	Enchelyurus kraussi	Other
4406	Gold Anchovy	*Enchrasicholina devisi*	Other
4405	Blue Anchovy	*Enchrasicholina heterolobus*	Other
4401	Oceanic Anchovy	*Enchrasicholina punctifer*	Other
4400	Anchovies	*Engraulidae*	Other
43904	Flounder	*Engyprosopon sp*	Other
39001	Triplefin	*Enneapterygius hemimelas*	Other
39002	Triplefin	*Enneapterygius minutus*	Other
39003	Triplefin	*Enneapterygius nanus*	Other
39247	Blenny	*Entomacrodus caudofasciatus*	Other
39248	Blenny	*Entomacrodus cymatobiotus*	Other
39211	Blenny	*Entomacrodus decussatus*	Other
39212	Blenny	*Entomacrodus niuafooensis*	Other
39213	Blenny	*Entomacrodus sealei*	Other
39241	Blenny	*Entomacrodus stellifer*	Other
39214	Blenny	*Entomacrodus striatus*	Other
39215	Blenny	Entomacrodus thalassinus thalassin	Other
34000	Batfish	*Ephippidae*	Other
32202	Bonnetmouth	*Erythrocles scintillans*	Other
1301	Spiny Dogfish	*Etmopterus pusillus*	Other
20757	Ribbon Halfbeak	*Euleptorhamphus viridis*	Other
28601	Dragon Fish	*Eurypegasus draconis*	Other
4304	Mantis Shrimp	*Eutremus teres*	Other
40561	Kawakawa	*Eviota afelei*	Other
40562	Herring	*Eviota albolineata*	Other
40563	Goby	*Eviota bifasciata*	Other
40564	Goby	*Eviota cometa*	Other
40565	Goby	*Eviota distigma*	Other
40566	Goby	*Eviota fasciola*	Other
40567	Goby	*Eviota herrei*	Other
40568	Goby	*Eviota infulata*	Other
40569	Goby	*Eviota lachdebrerei*	Other
40570	Goby	*Eviota latifasciata*	Other

40571	Goby	*Eviota melasma*	Other
40572	Goby	*Eviota nebulosa*	Other
40573	Goby	*Eviota pellucida*	Other
40574	Goby	*Eviota prasina*	Other
40575	Goby	*Eviota prasites*	Other
40576	Goby	*Eviota punctulata*	Other
40577	Goby	*Eviota queenslandica*	Other
40579	Goby	*Eviota saipanensis*	Other
40578	Goby	*Eviota sebreei*	Other
40580	Goby	*Eviota sigillata*	Other
40581	Goby	*Eviota smaragdus*	Other
40585	Goby	*Eviota sp*	Other
40582	Goby	*Eviota sparsa*	Other
40583	Goby	*Eviota storthynx*	Other
40584	Goby	*Eviota zonura*	Other
6622	Snake Eel	*Evipes percinctus*	Other
39216	Blenny	*Exalias brevis*	Other
20600	Flying Fish	*Exocoetidae*	Other
20611	Flying Fish	*Exocoetus volitans*	Other
40586	Goby	*Exyrias belissimus*	Other
40587	Goby	*Exyrias puntang*	Other
25401	Cornetfish	*Fistularia commersoni*	Other
25400	Cornetfish	*Fistulariidae*	Other
30453	Bay Cardinalfish	*Foa brachygramma*	Other
30454	Cardinalfish	*Foa sp*	Other
34320	Longnosed Butterflyfish	*Forcipiger flavissimus*	Other
34321	Big Longnose Butterflyfish	*Forcipiger longirostris*	Other
30467	Cardinalfish	*Fowleria abocellata*	Other
30426	Marbled Cardinalfish	*Fowleria marmorata*	Other
30425	Spotcheek Cardinalfish	*Fowleria punctulata*	Other
30427	Variegated Cardinalfish	*Fowleria* variegatus	Other
40588	Goby	*Fusigobius longispinus*	Other
40589	Goby	*Fusigobius neophytus*	Other
1107	Tiger Shark	*Galeocerdo cuvier*	Other
31802	Lg-Toothed Ponyfish	*Gazza achlamys*	Other
31808	Toothed Ponyfish	*Gazza minuta*	Other
34362	Ornate Angelfish	*Genicanthus bellus*	Other
34371	Black-Spot Angelfish	*Genicanthus melanospilos*	Other
34364	Watanabe'S Angelfish	*Genicanthus watanabei*	Other

32600	Mojarras	*Gerreidae*	Other
32602	Deep-Bodied Mojarra	*Gerres abbreviatus*	Other
32601	Common Mojarra	*Gerres acinaces*	Other
32604	Filamentous Mojarra	*Gerres filamentosus*	Other
32603	Oblong Mojarra	*Gerres oblongus*	Other
32605	Oyena Mojarra	*Gerres oyena*	Other
32606	Mojarra	*Gerres punctatus*	Other
9200	Telescopefish	*Giganturidae*	Other
40591	Goby	*Gladigobius ensifera*	Other
40592	Goby	*Glossogobius biocellatus*	Other
40593	Goby	*Glossogobius celebius*	Other
40594	Goby	*Glossogobius guirus*	Other
39249	Blenny	*Glyptoparus delicatulus*	Other
40595	Goby	*Gnatholepis anjerensis*	Other
40601		*Gnatholepis caurensis*	Other
40596	Goby	*Gnatholepis scapulostigma*	Other
40597	Goby	*Gnatholepis sp* A	Other
43400	Clingfish	*Gobiesocidae*	Other
40500	Goby	*Gobiidae*	Other
40598	Goby	*Gobiodon albofasciatus*	Other
40599	Goby	*Gobiodon citrinus*	Other
40602	Goby	*Gobiodon okinawae*	Other
40603	Goby	*Gobiodon quinquestrigatus*	Other
40604	Goby	*Gobiodon rivulatus*	Other
40605	Goby	*Gobiopsis bravoi*	Other
8802	Bristlemouth	*Gonostoma atlanticum*	Other
8803	Bristlemouth	*Gonostoma ebelingi*	Other
8800	Bristlemouths	Gonostomatidae	Other
6209	Orange-Barred Garden Eel	*Gorgasia preclara*	Other
6203	Conger Eel	*Gorgasia sp*	Other
29051	Goldies	*Grammatonotus sp* 1	Other
29052	Goldies	*Grammatonotus sp* 2	Other
41604	2-Lined Mackerel	*Grammatorcynos bilineatus*	Other
29002	Yellowstripe Soapfish	*Grammistes sexlineatus*	Other
29000	Soapfish	*Grammistidae*	Other
29003	Ocellate Soapfish	*Grammistops ocellatus*	Other
41001	Wormfish	*Gunnellichthys monostigma*	Other
41002	Onestripe Wormfish	*Gunnellichthys pleurotaenia*	Other
41011	Wormfish	Gunnellichthys viridescens	Other

30460	Philippine Cardinalfish	*Gymnapogon philippinus*	Other
30447	Cardinalfish	*Gymnapogon urospilotus*	Other
32361	Fusilier	*Gymnocaesio gymnopterus*	Other
5611	Zebra Moray	*Gymnomuraena zebra*	Other
5619	Moray Eel	*Gymnothorax berndti*	Other
5620	Buro Moray	*Gymnothorax buroensis*	Other
5624	Moray Eel	*Gymnothorax elegans*	Other
5635	Enigmatic Moray	*Gymnothorax enigmaticus*	Other
5621	Fimbriated Moray	*Gymnothorax fimbriatus*	Other
5622	Yellow-Margined Moray	Gymnothorax flavimarginatus	Other
5612	Brown Spotted Moray	*Gymnothorax fuscomaculatus*	Other
5623	Graceful-Tailed Moray	*Gymnothorax gracilicaudus*	Other
5625	Moray Eel	*Gymnothorax hepaticus*	Other
5626	Giant Moray	*Gymnothorax* javanicus	Other
5627	Blotch-Necked Moray	*Gymnothorax margaritophorus*	Other
5613	Marshall Isles Moray	*Gymnothorax marshallensis*	Other
5614	Dirty Yellow Moray	*Gymnothorax melatremus*	Other
5628	Whitemouth Moray	*Gymnothorax meleagris*	Other
5648	Monochrome Moray	*Gymnothorax monochrous*	Other
5629	1-Spot Moray	Gymnothorax monostigmus	Other
5630	Moray Eel	*Gymnothorax neglectus*	Other
5645	Yellowmouth Moray	Gymnothorax nudivomer	Other
5616	Pinda Moray	*Gymnothorax pindae*	Other
5649	Moray Eel	*Gymnothorax polyuranodon*	Other
5631	Richardson'S Moray	*Gymnothorax richardsoni*	Other
5632	Yellow-Headed Moray	*Gymnothorax rueppelliae*	Other
5618	Moray Eel	*Gymnothorax sp* cf Melatremus	Other
5633	Undulated Moray	*Gymnothorax undulatus*	Other
5634	Zonipectis Moray	*Gymnothorax zonipectus*	Other
32700	Sweetlips	*Haemulidae*	Other
25811	Brock'S Pipefish	*Halicampus brocki*	Other
25828	Duncker'S Pipefish	*Halicampus dunckeri*	Other
25812	Samoan Pipefish	*Halicampus mataafae*	Other
25829	Glittering Pipefish	*Halicampus nitidus*	Other
44301	Spikefish	*Halimochirurgus alcocki*	Other
39004	Triplefin	*Helcogramma capidata*	Other

39005	Triplefin	*Helcogramma chica*	Other
39006	Triplefin	*Helcogramma hudsoni*	Other
35069	Damselfish	*Hemiglyphidodon plagiometopon*	Other
20751	Halfbeak	*Hemiramphus archipelagicus*	Other
20758	Halfbeak	*Hemiramphus far*	Other
20760	Halfbeak	*Hemiramphus lutkei*	Other
20750	Halfbeak	*Hemirhamphidae*	Other
34322	Pyrimid Butterflyfish	*Hemitaurichthys polylepis*	Other
34323	Butterflyfish	Hemitaurichthys thompsoni	Other
34324	Longfinned Bannerfish	*Heniochus acuminatus*	Other
34325	Pennant Bannerfish	*Heniochus chrysostomus*	Other
34341	Bannerfish	*Heniochus diphreutes*	Other
34326	Masked Bannerfish	*Heniochus monoceros*	Other
34327	Singular Butterflyfish	*Heniochus singularis*	Other
34328	Humphead Bannerfish	Heniochus varius	Other
4308	Gold Spot Herring	*Herklotsichthys quadrimaculatus*	Other
6204	Conger Eel	*Heteroconger hassi*	Other
40606	Goby	*Heteroeleotris sp*	Other
30301	Glasseye	*Heteropriacanthus cruentatus*	Other
2006	Whipray	*Himantura* fai	Other
2005	Wh Tail Whipray	*Himantura granulata*	Other
2003	Leopard Ray	*Himantura uarnak*	Other
25830	Pipefish	*Hippichthys cyanospilos*	Other
25831	Pipefish	*Hippichthys spicifer*	Other
25809	Pipefish	*Hippocampus histrix*	Other
25832	Pipefish	*Hippocampus kuda*	Other
19212	Sargassum Fish	*Histrio histrio*	Other
28965	Fairy Basslet	*Holanthias borbonius*	Other
28966	Fairy Basslet	*Holanthias* katayamai	Other
30801	Tilefish	*Hoplolatilus cuniculus*	Other
30802	Tilefish	*Hoplolatilus fronticinctus*	Other
30803	Tilefish	*Hoplolatilus starcki*	Other
21807	Silverside	*Hypoatherina barnesi*	Other
21808	Silverside	*Hypoatherina cylindrica*	Other
21802	Silverside	*Hypoatherina ovalaua*	Other
20753	Halfbeak	*Hyporhamphus acutus* acutus	Other

20754	Halfbeak	*Hyporhamphus affinis*	Other
20755	Halfbeak	*Hyporhamphus dussumieri*	Other
6623	Snake Eel	*Ichthyapus* vulturus	Other
26430	Spiny Devilfish	*Inimicus* didactylus	Other
21901	Keeled Silverside	*Iso* hawaiiensis	Other
35210	6-Band Hawkfish	*Isocirrhitus sexfasciatus*	Other
21900	Keeled Silversides	*Isonidae*	Other
39265	Beautiful Rockskipper	*Istiblennius bellus*	Other
39217	Blenny	*Istiblennius chrysospilos*	Other
39266	Streaky Rockskipper	*Istiblennius dussumieri*	Other
39219	Blenny	*Istiblennius* edentulus	Other
39267	Interrupted Rockskipper	*Istiblennius interruptus*	Other
39220	Blenny	*Istiblennius lineatus*	Other
40607	Goby	*Istigobius* decoratus	Other
40608	Goby	*Istigobius ornatus*	Other
40609	Goby	*Istigobius rigilius*	Other
40610	Goby	*Istigobius spence*	Other
41900	Billfishes	*Istiophoridae*	Other
901	Mackerel Shark	*Isurus oxyrhinchus*	Other
5402	Bl-Nostril False Moray	*Kaupichthys atronasus*	Other
5403	Shortfin False Moray	*Kaupichthys* brachychirus	Other
5401	Common False Moray	*Kaupichthys hyoproroides*	Other
40612	Goby	*Kellogella quindecimfasciata*	Other
40611	Goby	*Kelloggella* cardinalis	Other
40701	Sand Dart	*Kraemeria bryani*	Other
40702	Sand Dart	*Kraemeria cunicularia*	Other
40703	Sand Dart	*Kraemeria samoensis*	Other
40700	Sand Darts	*Kraemeriidae*	Other
30103	Dark-Margined Flagtail	*Kuhlia* marginata	Other
30101	Barred Flagtail	*Kuhlia mugil*	Other
30102	River Flagtail	*Kuhlia rupestris*	Other
30100	Flagtails	*Kuhliidae*	Other
44601	Longhorn Cowfish	*Lactoria cornuta*	Other
44602	Spiny Cowfish	*Lactoria diaphana*	Other
44605	Thornback Cowfish	*Lactoria fornasini*	Other
44817	Oceanic Blaasop	*Lagocephalus lagocephalus*	Other
44818	Silverstripe Blaasop	*Lagocephalus* sceleratus	Other
900			
6627	Oriental Snake Eel	*Lamnostoma orientalis*	Other

31800	Ponyfishes	*Leiognathidae*	Other
31806	Slipmouth	*Leiognathus bindus*	Other
31804	Slipmouth	*Leiognathus elongatus*	Other
31801	Common Slipmouth	*Leiognathus equulus*	Other
31805	Slipmouth	*Leiognathus smithursti*	Other
31803	Oblong Slipmouth	*Leiognathus stercorarius*	Other
6605	Saddled Snake Eel	*Leiuranus semicinctus*	Other
43401	Clingfish	*Lepadichthys caritus*	Other
43402	Clingfish	*Lepadichthys minor*	Other
35048	Fusilier Damsel	*Lepidozygus* tapienosoma	Other
16901	Barracudina	*Lestidium nudun*	Other
37402	Sand Burrower	*Limnichthys donaldsoni*	Other
43403	Clingfish	*Liobranchia stria*	Other
28991	Swissguard Basslet	*Liopropoma lunulatum*	Other
28997	Swissguard Basslet	*Liopropoma maculatum*	Other
28992	Swissguard Basslet	*Liopropoma mitratum*	Other
28993	Swissguard Basslet	*Liopropoma multilineatum*	Other
28994	Pallid Basslet	*Liopropoma* pallidum	Other
28995	Pinstripe Basslet	*Liopropoma susumi*	Other
28996	Redstripe Basslet	*Liopropoma* tonstrinum	Other
39251	Blenny	*Litobranchus fowleri*	Other
35908	Giantscale Mullet	*Liza melinoptera*	Other
32501	Triplefin	*Lobotes* surinamensis	Other
32500	Tripletails	*Lobotidae*	Other
40519	Goby	*Lotilia graciliosa*	Other
28981	Magenta Slender Basslet	Luzonichthys waitei	Other
28982	Whitley'S Slender Basslet	*Luzonichthys whitleyi*	Other
40613	Goby	*Macrodontogobius wilburi*	Other
40520	Goby	*Mahidolia mystacina*	Other
30800	Tilefishes	*Malacanthidae*	Other
30851	Quakerfish	Malacanthus brevirostris	Other
30852	Striped Blanquillo	*Malacanthus latovittatus*	Other
2301	Manta Ray	Manta birostris	Other
45001	Sharptail Sunfish	*Masturus lanceolatus*	Other
4700	Tarpons	*Megalopidae*	Other
4701	Indo-Pacific Tarpon	*Megalops cyprinoides*	Other
39233	Poison-Fang Blenny	*Meiacanthus anema*	Other
39223	Poison-Fang Blenny	*Meiacanthus atrodorsalis*	Other
39258	1-Stripe Poison-Fang Blenny	*Meiacanthus ditrema*	Other
39259	Striped Poison-Fang Blenny	*Meiacanthus grammistes*	Other

44505	Black Triggerfish	*Melichthys niger*	Other
44506	Pinktail Triggerfish	*Melichthys vidua*	Other
18653	Brotula	*Microbrotula sp*	Other
41000	Wormfish	*Microdesmidae*	Other
25817	Anderson'S Shrt-Nosed Pipefish	*Micrognathus andersonii*	Other
25810	Pygmy Short-Nosed Pipefish	*Micrognathus brevirostris pygmaeus*	Other
25833	Pipefish	*Microphis brachyurus brachyurus*	Other
25834	Pipefish	*Microphis brevidorsalis*	Other
25835	Pipefish	*Microphis leiaspis*	Other
25836	Pipefish	*Microphis manadensis*	Other
25837	Pipefish	*Microphis retzii*	Other
25813	Ventricose Milda	*Minyichthys myersi*	Other
2300	Myer'S Pipefish	*Mobulidae*	Other
45000	Ocean Sunfishes	*Molidae*	Other
44550	Filefishes	*Monacanthidae*	Other
33300	Monos	*Monodactylidae*	Other
33301	Mono	*Monodactylus argenteus*	Other
18000	Codlings	Moridae	Other
5103	Rusty Spaghetti Eel	*Moringua ferruginea*	Other
5102	Java Spaghetti Eel	*Moringua javanica*	Other
5101	Spaghetti Eel	*Moringua microchir*	Other
5100	Worm Eel	*Moringuidae*	Other
40614	Goby	*Mugilogobius tagala*	Other
40615	Goby	*Mugilogobius villa*	Other
6300	Pike Eels	*Muraenesocidae*	Other
6301	Pike Conger	*Muraenesox cinereus*	Other
6612	Snake Eel	*Muraenichthys gymnotus*	Other
6606	Snake Eel	*Muraenichthys laticaudata*	Other
6607	Snake Eel	*Muraenichthys macropterus*	Other
6613	Snake Eel	*Muraenichthys schultzi*	Other
6614	Snake Eel	*Muraenichthys sibogae*	Other
5600	Morays	*Muraenidae*	Other
16700	Lanternfishes	*Myctophidae*	Other
16702	Laternfish	*Myctophum brachygnathos*	Other
2200	Eagle Ray	*Myliobatidae*	Other
6624	Snake Eel	*Myrichthys bleekeri*	Other
6608	Banded Snake Eel	*Myrichthys colubrinus*	Other
6610	Spotted Snake Eel	*Myrichthys maculosus*	Other

6615	Snake Eel	*Myrophis uropterus*	Other
200	Hagfish	*Myxinidae*	Other
201	Hagfish	*Eptaptretus carlhubbsi*	Other
39252	Combtooth Blenny	*Nannosalarius nativitatus*	Other
701	Nurse Shark	*Nebrius ferrugineus*	Other
1110	Lemon Shark	Negaprion acutidens	Other
41010	Decorated Dartfish	*Nemateleotris* decora	Other
41003	Helfrichs' Dartfish	*Nemateleotris helfrichi*	Other
41004	Fire Dartfish	*Nemateleotris* magnifica	Other
32400	Threadfin Breams	*Nemipteridae*	Other
32900	Breams	*Nemipteridae*	Other
32412	Forktail Bream	Nemipterus furcosus	Other
32409	Butterfly Bream	*Nemipterus hexadon*	Other
32410	Notched Butterfly Bream	*Nemipterus peronii*	Other
32411	Butterfly Bream	*Nemipterus tolu*	Other
35205	Flame Hawkfish	*Neocirrhitus armatus*	Other
35072	Royal Damsel	*Neoglyphidodon melas*	Other
35073	Yellowfin Damsel	*Neoglyphidodon nigroris*	Other
35070	Coral Demoiselle	*Neopomacentrus nemurus*	Other
35071	Freshwater Demoiselle	*Neopomacentrus taeniurus*	Other
35047	Violet Demoiselle	*Neopomacentrus violascens*	Other
42200	Man-Of-War Fish	*Nomeidae*	Other
39007	Triplefin	*Norfolkia brachylepis*	Other
44507	Redtooth Triggerfish	*Odonus niger*	Other
35909	Foldlip Mullet	*Oedalechilus labiosus*	Other
39263	Mangrove Blenny	*Omobranchus obliquus*	Other
39224	Blenny	*Omobranchus rotundiceps*	Other
39256	Blenny	*Omox biporos*	Other
18706	Bivalve Pearlfish	*Onuxodon fowleri*	Other
6600	Snake Eel	Ophichthidae	Other
6611	Dark-Shouldered Snake Eel	*Ophichthus cephalozona*	Other
18600	Cusk Eel	*Ophidiidae*	Other
40405	Sleeper	*Ophieleotris aporos*	Other
40406	Sleeper	*Ophiocara porocephala*	Other
36600	Jawfishes	*Opisthognathidae*	Other
36601	Variable Jawfish	*Opisthognathus sp* A	Other
36602	Wass' Jawfish	*Opisthognathus sp B*	Other
34700	Knifejaws	Oplegnathidae	Other
34701	Spotted Knifejaw	*Oplegnathus punctatus*	Other
40528	Goby	*Oplopomops diacanthus*	Other

40529	Goby	*Oplopomus oplopomus*	Other
40616	Goby	*Opua nephodes*	Other
700	Nurse,Zebra,Carpet Sharks	*Orectolobidae*	Other
34601	Tilapia	*Oreochromis mossambicus*	Other
44600	Boxfish, Cowfish	*Ostraciidae*	Other
44603	Cube Trunkfish	*Ostracion cubicus*	Other
44604	Spotted Trunkfish	*Ostracion meleagris meleagris*	Other
44606	Reticulate Boxfish	*Ostracion solorensis*	Other
35206	Longnose Hawkfish	*Oxycirrhitus typus*	Other
40407	Sleeper	*Oxyleotris lineolatus*	Other
44555	Longnose Filefish	*Oxymonacanthus longirostris*	Other
20759	Smallwing Flying Fish	*Oxyporhamphus micropterus* micropter	Other
40617	Goby	*Oxyurichthys guibei*	Other
40618	Goby	*Oxyurichthys microlepis*	Other
40619	Goby	*Oxyurichthys ophthalmonema*	Other
40620	Goby	*Oxyurichthys papuensis*	Other
40621	Goby	*Oxyurichthys tentacularis*	Other
40622	Goby	*Padanka sp*	Other
40623	Goby	*Palutris pruinosa*	Other
40624	Goby	*Palutris reticularis*	Other
35207	Arc-Eyed Hawkfish	*Paracirrhitus arcatus*	Other
35208	Freckeled Hawkfish	Paracirrhitus forsteri	Other
35209	Whitespot Hawkfish	*Paracirrhitus hemistictus*	Other
40625	Goby	*Paragobiodon echinocephalus*	Other
40626	Goby	*Paragobiodon lacunicolus*	Other
40627	Goby	*Paragobiodon melanosoma*	Other
40628	Goby	*Paragobiodon modestus*	Other
40629	Goby	*Paragobiodon xanthosoma*	Other
41012	Seychelle'S Wormfish	*Paragunnellichthy seychellensis*	Other
16900	Barracudinas	*Paralepididae*	Other
44556	Blacksaddle Mimic	*Paraluteres prionurus*	Other
44560	Filefish	*Paramonacanthus cryptodon*	Other
44561	Filefish	*Paramonacanthus japonicus*	Other

37102	Latticed Sandperch	Parapercis clathrata	Other
37103	Cylindrical Sandperch	*Parapercis cylindrica*	Other
37101	Blk-Dotted Sandperch	*Parapercis millipunctata*	Other
37105	Red-Barred Sandperch	*Parapercis multiplicata*	Other
37106	Black-Banded Sandperch	*Parapercis tetracantha*	Other
37104	Blotchlip Sandperch	*Parapercis xanthozona*	Other
33402	Sandperch	Parapriacanthus ransonneti	Other
26433	Mcadam'S Scorpionfish	Parascorpaena mcadamsi	Other
26426	Mozambique Scorpionfish	Parascorpaena mossambica	Other
44105	Peacock Sole	*Pardachirus pavoninus*	Other
39225	Blenny	*Parenchelyurus hepburni*	Other
20607	Flying Fish	*Parexocoetus brachypterus*	Other
20608	Flying Fish	*Parexocoetus mento*	Other
41013	Beautiful Hover Goby	*Parioglossus formosus*	Other
41014	Lined Hover Goby	Parioglossus lineatus	Other
41015	Naked Hover Goby	*Parioglossus nudus*	Other
41016	Palustris Hover Goby	*Parioglossus palustris*	Other
41017	Rainford'S Hover Goby	*Parioglossus rainfordi*	Other
41018	Rao'S Hover Goby	*Parioglossus raoi*	Other
41019	Taeniatus Hover Goby	*Parioglossus taeniatus*	Other
41020	Vertical Hover Goby	*Parioglossus verticalis*	Other
2007	Shortsnouted Ray	*Pasinachus sephen*	Other
28600	Dragonfish	*Pegasidae*	Other
33400	Sweepers	*Pempheridídae*	Other
33401	Bronze Sweeper	*Pempheris oualensis*	Other
34500	Armourheads	*Pentacerotidae*	Other
32901	Smalltooth Whiptail	*Pentapodus caninus*	Other
32902	3-Striped Whiptail	*Pentapodus trivittatus*	Other
37000	Duckbills	*Percophidae*	Other
40630	Goby	*Periophthalmus argentilineatus*	Other
40631	Goby	*Periophthalmus kalolo*	Other
44567	Yelloweye Filefish	*Pervagor alternans*	Other
44562	Orangetail Filefish	*Pervagor aspricaudatus*	Other
44557	Blackbar Filefish	*Pervagor janthinosoma*	Other
44563	Blackheaded Filefish	*Pervagor melanocephalus*	Other
44564	Blacklined Filefish	*Pervagor nigrolineatus*	Other
39260	Blenny	*Petroscirtes breviceps*	Other
39226	Blenny	*Petroscirtes mitratus*	Other

39261	Blenny	*Petroscirtes thepassi*	Other
39262	Blenny	*Petroscirtes variabilis*	Other
39227	Blenny	*Petroscirtes xestus*	Other
6625	Snake Eel	Phenamonas cooperi	Other
24202	Flashlightfish	*Photoblepheron palpebratus*	Other
25814	Pipefish	*Phoxocampus diacanthus*	Other
6626	Snake Eel	*Phyllophichthus xenodontus*	Other
18001	Codling	*Physiculus sp*	Other
37100	Sand Perch	*Pinguipedidae*	Other
39228	Blenny	*Plagiotremus laudandus*	Other
39229	Red Sabbertooth Blenny	*Plagiotremus rhynorhynchus*	Other
39230	Blenny	*Plagiotremus tapienosoma*	Other
34001	Batfish	*Platax orbicularis*	Other
34002	Pinnate Spadefish	*Platax pinnatus*	Other
34003	Longfin Spadefish	*Platax teira*	Other
20702	Keeled Needlefish	*Platybelone argalus platyura*	Other
27300	Flathead	*Platycephalidae*	Other
32710	2-Lined Sweetlips	*Plectorhinchus albovittatus*	Other
32706	Celebes Sweetlips	*Plectorhinchus celebecus*	Other
32707	Harlequin Sweetlips	*Plectorhinchus chaetodonoides*	Other
32712	Sweetlip	*Plectorhinchus flavomaculatus*	Other
32703	Gibbus Sweetlips	*Plectorhinchus gibbosus*	Other
32708	Lined Sweetlips	*Plectorhinchus lessonii*	Other
32709	Goldman'S Sweetlips	*Plectorhinchus lineatus*	Other
32705	Giant Sweetlips	*Plectorhinchus obscurus*	Other
32704	Spotted Sweetlips	*Plectorhinchus picus*	Other
32713	Sweetlip	*Plectorhinchus sp*	Other
32702	Oriental Sweetlips	*Plectorhinchus vittatus*	Other
28987	Fourmanoir'S Basslet	*Plectranthias fourmanoiri*	Other
28968	Basslet	*Plectranthias kamii*	Other
28985	Long-Finned Basslet	*Plectranthias longimanus*	Other
28969	Pygmy Basslet	*Plectranthias nanus*	Other
28990	Basslet	*Plectranthias rubrifasciatus*	Other
28986	Basslet	*Plectranthias winniensis*	Other
35033	Dick'S Damsel	*Plectroglyphidodo dickii*	Other
35034	Bright-Eye Damsel	*Plectroglyphidodo imparipennis*	Other

35035	Johnston Isle Damsel	*Plectroglyphidodo johnstonianus*	Other
35036	Jewel Damsel	*Plectroglyphidodo* lacrymatus	Other
35037	White-Band Damsel	*Plectroglyphidodo leucozonus*	Other
35038	Phoenix Isle Damsel	*Plectroglyphidodo phoenixensis*	Other
29400	Longfins	*Plesiopidae*	Other
29402	Red-Tipped Longfin	*Plesiops caeruleolineatus*	Other
29403	Bluegill Longfin	*Plesiops corallicola*	Other
29405	Sharp-Nosed Longfin	*Plesiops oxycephalus*	Other
40632	Goby	*Pleurosicya bilobatus*	Other
40664	Caroline Ghost Goby	*Pleurosicya carolinensis*	Other
40665	Blue Coral Ghost Goby	*Pleurosicya coerulea*	Other
40666	Fringed Ghost Goby	*Pleurosicya* fringella	Other
40667	Michael'S Ghost Goby	*Pleurosicya micheli*	Other
40668	Common Ghost Goby	*Pleurosicya mossambica*	Other
40633	Goby	*Pleurosicya muscarum*	Other
40669	Plicata Ghost Goby	*Pleurosicya plicata*	Other
14900	Eel Catfishes	*Plotosidae*	Other
14901	Striped Eel Catfish	*Plotosus lineatus*	Other
6207	Barred Sand Conger	*Poeciloconger fasciatus*	Other
29004	Spotted Soapfish	*Pogonoperca punctata*	Other
36101	6 Feeler Threadfin	*Polydactylus sexfilis*	Other
17501	Beardfish	*Polymixia japonica*	Other
17500	Beardfish	*Polymixiidae*	Other
36100	Threadfins	*Polynemidae*	Other
34350	Angelfishes	*Pomacanthidae*	Other
34365	Emperor Anglefish	*Pomacanthus imperator*	Other
34372	Blue-Girdled Angelfish	*Pomacanthus navarchus*	Other
34375	Semicircle Angelfish	*Pomacanthus semicirculatus*	Other
34373	6-Banded Angelfish	*Pomacanthus sexstriatus*	Other
34374	Blue-Faced Angelfish	*Pomacanthus xanthometopon*	Other
35000	Damselfishes	*Pomacentridae*	Other
35087	Damselfish	*Pomacentrus adelus*	Other
35039	Ambon Damsel	*Pomacentrus amboinensis*	Other
35094	Goldbelly Damsel	*Pomacentrus auriventris*	Other
35074	Speckled Damsel	*Pomacentrus bankanensis*	Other
35081	Charcoal Damsel	*Pomacentrus brachialis*	Other
35075	Burrough'S Damsel	*Pomacentrus burroughi*	Other

35084	White-Tail Damsel	*Pomacentrus chrysurus*	Other
35076	Neon Damsel	*Pomacentrus coelestis*	Other
35077	Outer Reef Damsel	*Pomacentrus emarginatus*	Other
35078	Blue-Spot Damsel	*Pomacentrus grammorhynchus*	Other
35092	Lemon Damsel	*Pomacentrus moluccensis*	Other
35086	Nagasaki Damsel	*Pomacentrus nagasakiensis*	Other
35093	Black-Axil Damsel	*Pomacentrus nigromanus*	Other
35040	Sapphire Damsel	*Pomacentrus pavo*	Other
35082	Philappine Damsel	*Pomacentrus philippinus*	Other
35083	Reid'S Damsel	*Pomacentrus reidi*	Other
35085	Blueback Damsel	*Pomacentrus simsiang*	Other
35041	Princess Damsel	*Pomacentrus vaiuli*	Other
35088	Slender Reef-Damsel	*Pomachromis exilis*	Other
35042	Guam Damsel	*Pomachromis guamensis*	Other
32711	Common Javelinefish	*Pomadasyus kaakan*	Other
26404	Lg-Headed Scorpionfish	*Pontinus macrocephalus*	Other
26431	Scorpionfish	*Pontinus sp*	Other
26452	Scopionfish	Pontinus tentacularis	Other
39231	Blenny	*Prealticus amboinensis*	Other
39232	Blenny	*Prealticus natalis*	Other
30300	Bigeyes	*Priacanthidae*	Other
30305	Bigeye	*Priacanthus alalaua*	Other
30302	Goggle-Eye	*Priacanthus hamrur*	Other
40634	Goby	*Priolepis cincta*	Other
40635	Goby	*Priolepis farcimen*	Other
40636	Goby	*Priolepis inhaca*	Other
40637	Goby	*Priolepis semidoliatus*	Other
30303	Bigeye	*Pristigenys meyeri*	Other
20609	Flying Fish	*Prognichthys albimaculatus*	Other
20610	Flying Fish	Prognichthys sealei	Other
42201	Freckeled Driftfish	*Psenes cyanophrys*	Other
44568	Rhino Leatherjacket	*Pseudalutarias nasicornis*	Other
30448	Cardinalfish	*Pseudamia amblyuroptera*	Other
30449	Cardinalfish	*Pseudamia* gelatinosa	Other
30450	Cardinalfish	*Pseudamia hayashii*	Other
30461	Cardinalfish	*Pseudamia zonata*	Other
30428	Cardinalfish	*Pseudamiops* gracilicauda	Other
28971	Bartlet'S Fairy Basslet	*Pseudanthias bartlettorum*	Other

28972	Bicolor Fairy Basslet	*Pseudanthias bicolor*	Other
28961	Red-Bar Fairy Basslet	*Pseudanthias cooperi*	Other
28973	Peach Fairy Basslet	*Pseudanthias dispar*	Other
28979	Fairy Basslet	*Pseudanthias huchtii*	Other
28974	Lori'S Anthias	*Pseudanthias lori*	Other
28962	Purple Queen	*Pseudanthias pascalus*	Other
28963	Sq-Spot Fairy Basslet	*Pseudanthias pleurotaenia*	Other
28975	Randall'S Fairy Basslet	*Pseudanthias randalli*	Other
28977	Smithvaniz' Fairy Basslet	*Pseudanthias smithvanizi*	Other
28964	Fairy Basslet	*Pseudanthias sp*	Other
28980	Fairy Basslet	*Pseudanthias squammipinnis*	Other
28976	Y Striped Fairy Basslet	Pseudanthias tuka	Other
28978	L-Finned Fairy Basslet	*Pseudanthias ventralis*	Other
5637	White Ribbon Eel	*Pseudechidna brummeri*	Other
44508	Ymargin Triggerfish	*Pseudobalistes flavimarginatus*	Other
44509	Blue Triggerfish	*Pseudobalistes fuscus*	Other
29100	Dottybacks	*Pseudochromidae*	Other
29101	Surge Dottyback	*Pseudochromis cyanotaenia*	Other
29102	Dusky Dottyback	*Pseudochromis fuscus*	Other
29103	Marshall Is Dottyback	*Pseudochromis marshallensis*	Other
29404	Dottyback	*Pseudochromis melanotaenia*	Other
29105	Long-Finned Dottyback	*Pseudochromis polynemus*	Other
29106	Magenta Dottyback	*Pseudochromis porphyreus*	Other
40638	Goby	*Pseudogobius javanicus*	Other
29202	Soapfish	*Pseudogramma polyacantha*	Other
29203	Soapfish	*Pseudogramma sp*	Other
29200	Soapfishes	*Pseudogrammidae*	Other
34501	Amourhead	*Pseudopentaceros pectoralis*	Other
29111	Robust Dottyback	*Pseudoplesiops multisquamatus*	Other
29107	Revelle'S Basslet	*Pseudoplesiops revellei*	Other
29108	Rose Island Basslet	*Pseudoplesiops rosae*	Other
29110	Basslet	*Pseudoplesiops sp*	Other
29109	Hidden Basslet	*Pseudoplesiops typus*	Other
41005	Blackfin Dartfish	*Ptereleotris evides*	Other
41021	Filament Dartfish	*Ptereleotris hanae*	Other
41006	Spot-Tail Dartfish	*Ptereleotris heteroptera*	Other
41009	Dartfish	*Ptereleotris lineopinnis*	Other

41007	Pearly Dartfish	*Ptereleotris microlepis*	Other
41008	Zebra Dartfish	*Ptereleotris zebra*	Other
32357	Yellowstreak Fusilier	*Pterocaesio lativittata*	Other
32353	Twinstripe Fusilier	*Pterocaesio marri*	Other
32360	Ruddy Fusilier	*Pterocaesio pisang*	Other
32362	Mosaic Fusilier	*Pterocaesio* tesselatata	Other
32354	Bluestreak Fusilier	*Pterocaesio tile*	Other
32358	3-Striped Fusilier	*Pterocaesio trilineata*	Other
26405	Spotfin Lionfish	*Pterois antennata*	Other
26406	Clearfin Lionfish	*Pterois radiata*	Other
26407	Turkeyfish	*Pterois volitans*	Other
26602	Ocellated Gurnard	Pterygiotrigla multiocellata	Other
26601	Gurnard	*Pterygiotrigla* sp	Other
31301	Slender Suckerfish	*Ptheirichthys lineatus*	Other
34366	Regal Anglefish	*Pygoplites diacanthus*	Other
28989	Fairy Basslet	*Rabaulichthys sp*	Other
45003	Trunkfish	*Ranzania laevis*	Other
41612	Mackerel	*Rastrelliger brachysoma*	Other
41610	Striped Mackerel	*Rastrelliger kanagurta*	Other
40639	Goby	*Redigobius bikolanus*	Other
40640	Goby	*Redigobius horiae*	Other
40641	Goby	*Redigobius sapangus*	Other
31302	Remora	*Remora remora*	Other
30451	Cardinalfish	*Rhabdamia cypselurus*	Other
30452	Cardinalfish	*Rhabdamia gracilis*	Other
39234	Blenny	*Rhabdoblenius rhabdotrachelus*	Other
39250		Rhabdoblennius ellipes	Other
39235	Blenny	*Rhabdoblennius snowi*	Other
1701	Guitarfish	*Rhinchobatus djiddensis*	Other
44510	Picassofish	*Rhinecanthus aculeatus*	Other
44511	Wedge Picassofish	*Rhinecanthus rectangulus*	Other
44520	Blackbelly Picassofish	*Rhinecanthus verrucosa*	Other
1700	Guitarfish	*Rhinobatidae*	Other
5636	Ribbon Eel	*Rhinomuraena quaesita*	Other
26428	Weedy Scorpionfish	*Rhinopias frondosa*	Other
31303	Remora	*Rhombochirus osteochir*	Other
44607	Smallnose Boxfish	*Rhynchostracion nasus*	Other
44608	Largenose Boxfish	*Rhynchostracion rhynorhynchus*	Other
9201	Telescopefish	*Rosaura* indica	Other

44569	Minute Filefish	*Rudarius minutus*	Other
39253		*Salarius alboguttatus*	Other
39236	Spotted Rock Blenny	*Salarius fasciatus*	Other
39255	Blenny	*Salarius luctuosus*	Other
39254	Blenny	*Salarius segmentatus*	Other
44000	Righteye Flounders	*Samaridae*	Other
44001	3 Spot Flounder	*Samariscus triocellatus*	Other
16001	Graceful Lizardfish	*Saurida gracilis*	Other
16002	Nebulous Lizardfish	*Saurida nebulosa*	Other
34100	Scats	*Scatophagidae*	Other
34101	Scat	*Scatophagus argus*	Other
40101	Schindleriid	*Schindleria praematurus*	Other
40100	Shindleriid	*Schindleriidae*	Other
6616	Snake Eel	*Schismorhinchus labialis*	Other
6617	Snake Eel	*Schultzidia johnstonensis*	Other
6618	Snake Eel	*Schultzidia* retropinnis	Other
32404	Spinecheek	*Scolopsis affinis*	Other
32402	2 Line Spinecheek	*Scolopsis* bilineatus	Other
32406	Ciliate Spinecheek	*Scolopsis ciliatus*	Other
32401	Bl And Wh Spinecheek	*Scolopsis lineatus*	Other
32403	Margarite'S Spinecheek	*Scolopsis margaritifer*	Other
32407	Spinecheek	*Scolopsis taeniopterus*	Other
32405	3 Line Spinecheek	*Scolopsis trilineatus*	Other
32408	Spinecheek	*Scolopsis xenochrous*	Other
41611	Narrow-Barred King Mackerel	*Scomberomorus commerson*	Other
26400	Scorpionfish	*Scorpaenidae*	Other
26413	Guam Scorpionfish	*Scorpaenodes guamensis*	Other
26429	Hairy Scorpionfish	Scorpaenodes hirsutus	Other
26414	Kellogg'S Scorpionfish	*Scorpaenodes kelloggi*	Other
26412	Minor Scorpionfish	*Scorpaenodes minor*	Other
26415	Coral Scorpionfish	*Scorpaenodes parvipinnis*	Other
26420	Blotchfin Scorpionfish	*Scorpaenodes varipinis*	Other
26417	Devil Scorpionfish	*Scorpaenopsis diabolus*	Other
26421	Pygmy Scorpionfish	*Scorpaenopsis fowleri*	Other
26422	Flasher Scorpionfish	*Scorpaenopsis macrochir*	Other
26416	Tassled Scorpionfish	*Scorpaenopsis oxycephala*	Other
26434	Papuan Scorpionfish	*Scorpaenopsis papuensis*	Other
26432	Scorpionfish	*Scorpaenopsis* sp	Other
5654	Tiger Snake Moray	*Scuticaria* tigrinis	Other
26408	Yellowspotted Scorpionfish	*Sebastapistes cyanostigma*	Other

26409	Galactacma Scorpionfish	*Sebastapistes* galactacma	Other
26410	Mauritius Scorpionfish	*Sebastapistes mauritiana*	Other
26425	Barchin Scorpionfish	*Sebastapistes strongia*	Other
31807	Pugnose Soapy	*Secutor ruconius*	Other
28970	Basslet	*Selenanthias myersi*	Other
28988	Hawkfish Anthias	*Serranocirrhitus latus*	Other
40645	Goby	*Sicyopterus macrostetholepis*	Other
40646	Goby	Sicyopterus micrurus	Other
40647	Goby	*Sicyopterus sp*	Other
40642	Goby	*Sicyopus* leprurus	Other
40644	Goby	*Sicyopus sp*	Other
40643	Goby	Sicyopus zosterophorum	Other
5615	Peppered Moray	*Sideria picta*	Other
5617	White-Eyed Moray	Sideria prosopeion	Other
40530	Goby	*Signigobius biocellatus*	Other
40531	Goby	*Silhouettea sp*	Other
30700	Sillagos	*Sillaginidae*	Other
30701	Cardinalfish	*Sillago sihama*	Other
30431	Cardinalfish	*Siphamia fistulosa*	Other
30459	Cardinalfish	*Siphamia fuscolineata*	Other
30430	Cardinalfish	*Siphamia versicolor*	Other
44101	Banded Sole	*Soleichthys heterohinos*	Other
44100	Soles	*Soleidae*	Other
25700	Ghost Pipefish	*Solenostomidae*	Other
25701	Ghost Pipefish	*Solenostomus* cyanopterus	Other
25702	Ornate Ghost Pipefish	*Solenostomus* paradoxus	Other
27305	Flathead	*Sorsogona welanderi*	Other
30434	Cardinalfish	*Sphaeramia nematoptera*	Other
30432	Cardinalfish	*Sphaeramia orbicularis*	Other
36004	Sharpfin Barracuda	*Sphyraena* acutipinnis	Other
36001	Great Barracuda	*Sphyraena barracuda*	Other
36008	Yellowtail Barracuda	*Sphyraena flavicauda*	Other
36003	Blackspot Barracuda	*Sphyraena forsteri*	Other
36007	Arrow Barracuda	*Sphyraena novaehollandiae*	Other
36002	Pygmy Barracuda	*Sphyraena obtusata*	Other
36006	Slender Barracuda	*Sphyraena putnamiae*	Other
36005	Blackfin Barracuda	*Sphyraena qenie*	Other
36000	Barracudas	*Sphyraenidae*	Other
4301	Blue Sprat	*Spratelloides delicatulus*	Other
4305	Silver Sprat	*Spratelloides gracilis*	Other

39237	Blenny	*Stanulus seychellensis*	Other
35043	White-Bar Gregory	*Stegastes albifasciatus*	Other
35044	Pacific Gregory	*Stegastes fasciolatus*	Other
35045	Farmerfish	*Stegastes lividus*	Other
35046	Dusky Farmerfish	*Stegastes nigricans*	Other
702	Leopard Shark	*Stegastoma varium*	Other
21809	Panatella Silverside	*Stenatherina panatella*	Other
40648	Goby	*Stenogobius genivittatus*	Other
40649	Goby	*Stenogobius sp*	Other
8900	Hatchetfishes	*Sternoptichidae*	Other
40650	Goby	*Stiphodon elegans*	Other
40651	Goby	*Stiphodon sp*	Other
4408	Samoan Anchovy	*Stolephorus apiensis*	Other
4404	Indian Anchovy	*Stolephorus indicus*	Other
4407	Gold Esurine Anchovy	*Stolephorus insularis*	Other
4409	Caroline Islands Anchovy	*Stolephorus multibranchus*	Other
4403	West Pacific Anchovy	*Stolephorus pacificus*	Other
4499	Anchovy	Stolephorus sp	Other
20703	Reef Needlefish	*Strongylura incisa*	Other
20705	Littoral Needlefish	*Strongylura leiura* leiura	Other
5638	Giant Esturine Moray	*Strophidon sathete*	Other
44512	Scythe Triggerfish	*Sufflamen* bursa	Other
44513	Halfmoon Triggerfish	*Sufflamen chrysoptera*	Other
44514	Bridle Triggerfish	*Sufflamen freanatus*	Other
32371	Symphysanid	Symphysanodon typus	Other
32370	Sympysanodon	Symphysanodontidae	Other
26418	Stonefish	Synanceia verrucosa	Other
5700	Cutthroat Eel	Synaphobranchidae	Other
5701	Cutthroat Eel	Synaphobranchus sp	Other
43504	Cirlcled Dragonet	Synchiropus circularis	Other
43511	Ladd'S Dragonet	Synchiropus laddi	Other
45308	Morrison'S Dragonet	Synchiropus morrisoni	Other
43505	Ocellated Dragonet	Synchiropus ocellatus	Other
43510	Dragonet	Synchiropus sp	Other
43506	Mandarin Fish	Synchiropus splendidus	Other
43509	Pipefish, Seahorse	Syngnathidae	Other
25800	Alligator Pipefish	Syngnathoides biaculeatus	Other
25815	Lizardfish	Synodontidae	Other
16000	2-Spot Lizardfish	Synodus binotatus	Other
16003	Clearfin Lizardfish	Synodus dermatogenys	Other
16007	Reef Lizardfish	Synodus englemanni	Other

16004	Blackblotch Lizardfish	Synodus jaculum	Other
16005	Variegatus Lizardfish	Synodus variegatus	Other
16006	Leaf Fish	Taenianotus triacanthus	Other
26419	Goby	Taenioides limicola	Other
40652	Giant Reef Ray	Taeniura meyeni	Other
2002	Crescent-Banded Grunter	Terapon jarbua	Other
29901	Thornfishes	Teraponidae	Other
29900	Smooth Puffers	Tetraodontidae	Other
26451	Mangrove Waspfish	Tetraroge barbata	Other
26450	Waspfishes	Tetrarogidae	Other
4402	Little Priest	Thryssa baelama	Other
27302	Broadhead Flathead	Thysanophrys arenicola	Other
27303	Longsnout Flathead	Thysanophrys chiltonae	Other
27301	Fringlip Flathead	Thysanophrys otaitensis	Other
34602	Tilapia	Tilapia zillii	Other
33701	Banded Archerfish	Toxotes jaculator	Other
33700	Archerfishes	Toxotidae	Other
25816	Double-Ended Pipefish	Trachyramphus bicoarctata	Other
44300	Spikefishes	Triacanthodidae	Other
1108	Reef Whitetip Shark	Triaenodon obesus	Other
37200	Sand Divers	Trichonotidae	Other
37201	Micronesian Sand-Diver	Trichonotus sp	Other
26600	Gurnards	Triglidae	Other
40653	Goby	Trimma caesiura	Other
40654	Goby	Trimma naudei	Other
40655	Goby	Trimma okinawae	Other
40658	Goby	Trimma sp A	Other
40659	Goby	Trimma sp B	Other
40656	Goby	Trimma taylori	Other
40657	Goby	Trimma tevegae	Other
40660	Goby	Trimmatom eviotops	Other
44702	3 Tooth Puffer	Triodon bursarius	Other
44701	3 Tooth Puffer	Triodon macropterus	Other
44700	Tripletooth Puffers	Triodontidae	Other
39000	Triplefins	Tripterygiidae	Other
20706	Keeled Houndfish	Tylosurus acus melanotus	Other
20704	Houndfish	Tylosurus crocodilis crocodilis	Other
39009	Longjaw Triplefin	Ucla xenogrammus	Other
37800	Stargazers	Uranoscopidae	Other

37801	Stargazer	Uranoscopus sp	Other
2004	Porcupine Ray	Urogymnus africanus	Other
5639	Unicolor Snake Moray	Uropterygius concolor	Other
5660	Fiji Moray Eel	Uropterygius fijiensis	Other
5650	Brown-Spotted Snake Eel	Uropterygius fuscoguttatus	Other
5651	Gosline'S Snake Moray	Uropterygius goslinei	Other
5652	Moon Moray	Uropterygius kamar	Other
5642	Lg-Headed Snake Moray	Uropterygius macrocephalus	Other
5640	Marbled Snake Moray	Uropterygius marmoratus	Other
5641	Tidepool Snake Moray	Uropterygius micropterus	Other
5653	Lg-Spotted Snake Moray	Uropterygius polyspilus	Other
5643	Moray Eel	Uropterygius supraforatus	Other