DIVERSITY AND HABITAT OF AMERICAN SĀMOA'S MESOPHOTIC CORAL ECOSYSTEMS: IMPLICATIONS TO THE DEEP REFUGE HYPOTHESIS

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By

Anthony David Montgomery

Dissertation Committee:

Robert J. Toonen, Chairperson
Megan Donahue
Randall Kosaki
Celia M. Smith
John Wiltshire

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DEDICATION

For my wife, Kikue, and two daughters,

Ryumi (**琉海**) and Ryusa (**琉珊**),

who have supported me on this endeavor.

Your love and strength have given

me the inspiration to persist

and achieve this goal.

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ABSTRACT

Over a century of study in American Sāmoa has built a foundation of coral reef ecology within the region. However, this work has been restricted to shallow coral reefs (SCRs; < 30 m) until recently, where a few studies have started describing American Sāmoa's mesophotic coral ecosystems (MCEs). MCEs are defined as coral reef communities with zooxanthellate corals and associated biotic assemblages between 30–150 m depth. Mapping efforts within the territory have documented habitat characteristics for SCRs, as well as MCEs. I estimate that American Sāmoa has 451.5 km^2 of marine habitat between the shoreline and 150 m depth while mesophotic depths represent 357.5 km^2 or 79% of the total area. Approximately 56 km^2 (12.4%) of the marine habitat above 150 m is under various levels of protection through a system of local, territorial, and federal marine protected areas. Of this, 21.7 km^2 (6%) includes mesophotic depths. With only a handful of studies conducted and the majority of MCEs in American Sāmoa unexplored, there remain significant information gaps in understanding the basic biodiversity and ecology of the region.

To address the gap in biodiversity knowledge, I present an annotated checklist of the stony corals (Scleractinia, Milleporidae, Stylasteridae, and Helioporidae) of American Sāmoa. A total of 377 valid species have been reported from American Sāmoa with 342 species considered either present (251) or possibly present (91). Of these 342 species, 66 have a recorded geographical range extension, and 90 have been reported from mesophotic depths (30–150 m). Additionally, four new species records (*Acanthastrea subechinata*, *Favites paraflexuosus*, *Echinophyllia echinoporoides*, *Turbinaria irregularis*) are presented. Coral species of concern include species listed under the U.S. Endangered Species Act (ESA) and the International Union for Conservation of Nature's (IUCN) Red List of threatened species. Approximately 17.5% of the species present or possibly present are categorized as threatened by IUCN compared to 27% of the species globally. American Sāmoa has seven ESA-listed species, including *Acropora globiceps*, *Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Fimbriaphyllia paradivisa*, and *Isopora crateriformis*. There are two additional species possibly present, *Pavona diffluens* and *Porites napopora*.

The deep reef refuge hypothesis postulates that mesophotic coral ecosystems (MCEs) serve as a refuge for shallow coral reef (SCR) species during times of disturbance at shallow depths. This hypothesis requires that MCEs are protected as disturbance decreases with depth, and there is species overlap across depth that allow MCE species to provide propagules to SCRs. I analyzed stony coral communities across MCEs and SCRs to describe the community similarity and species overlap across communities. This research estimates that an additional 57 species are yet to be discovered in American Sāmoa and MCE habitats may be the largest source of those species. MCE communities were found to be distinct and a subset of SCR communities. Species overlap included 63 species with 12 deep exclusive species and 209 shallow exclusive species. Of the these, 19 species may have the greatest potential to serve as reseeding species. Two protected species include *Acropora speciosa* as an occasional deep specialist and *Fimbriaphyllia paradivisa* as a deep exclusive species. Based on distinct

communities and a limited number of species overlap with the greatest potential to serve as a refuge, we propose utilizing a broader framework by developing a generalized refuge hypothesis to include SCRs species contribution to MCEs that can enable better conservation planning. Overall, the upper MCE in American Sāmoa does not serve as a reseeding refuge for the SCR community or any habitat with SCRs, but there are several species that may serve as a species-specific refuge.

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General Introduction

American Sāmoa Background

American Sāmoa is an unincorporated territory of the United States and lies 4,180 km southwest of Honolulu, Hawaiʻi, 2,890 km northeast from Auckland, New Zealand, and 1,240 km northeast of Suva, Fiji in the Southern Pacific Ocean (14° S latitude; Figure 1.1). Tonga lies approximately 900 km to the southwest and Tuvalu lies approximately 1,400 km to the northwest. It is part of an archipelago of islands, seamounts, banks, and atolls that includes the independent nation of Sāmoa with the two high islands (Upolu and Savaiʻi) and eight smaller islands. The Territory of American Sāmoa (Figure 1.2) consists of five volcanic high islands of Tutuila, Aunuʻu, (Figure 1.3) and the Manuʻa Islands of Taʻū, Ofu, and Olosega (Figure 1.4), one low island (Swains Island), and one true atoll (Rose Atoll) (Birkeland et al. 2008).

Coral reef research has been conducted in American Sāmoa for over 100 years (Mayor 1918, 1924b, 1924a) including a series of studies documenting its coral communities (Birkeland et al. 1987, 2003, 2013, Maragos et al. 1994, Hoffmeister 1925) including coral species checklists (Lamberts 1983, Birkeland 2001, 2007a, 2007b, Coles et al. 2003, DiDonato et al. 2006, Lovell and McLardy 2008, Kenyon et al. 2011). While shallow coral reefs (SCR; 0–30 m) have been well documented over a long-period of time, the mesophotic coral ecosystems (MCE; 30–150 m) of American Sāmoa remain largely unexplored. Only a handful of published work exists (Pyle 2001, Wright 2002, 2005, Brainard et al. 2008, Bare et al. 2010, Wright et al. 2012, Blyth-Skyrme et al. 2013). More broadly, the marine habitat of American Sāmoa has been mapped between 0–150 m depths (Wright 2002, 2005, Lundbald 2004, NOAA 2005, Lundblad et al. 2006, Kendall 2011, Wright et al. 2012). Even with this limited insight, we only have a glimpse of the importance of MCE habitat within American Sāmoa.

Based on the mapping effort previously conducted, the bathymetry of American Sāmoa is well documented. Locker et al. (2010) reported that "…MCEs are more common in the Sāmoan than in the Mariana and Hawaiian Islands." Qualitatively, Figure 1.3 shows that size of the coral reef platform around Tutuila compared to its land mass and when considering the reef slope down to 30 m is close to shore, the majority of this platform is within MCE depths. The actual presence of MCEs on this platform is not well documented, but Bare et al. (2010) reported that mid-shelf patch reefs with "abundant scleractinians" mostly consisted of plate-like *Acropora* spp. and were of similar composition to SCRs and the northeastern and eastern banks seemed to have the highest coral cover observed. Given the expansive shelf surrounding the island of Tutuila compared to the size of the island and the documented presence of coral communities, MCEs may be of greater importance than in other island chains across the U.S. Pacific.

Locker et al. (2010) report that 46% of the U.S. Caribbean coral reefs are potential MCE habitat (defined as 30-100 meters) which essentially doubled potential coral reef habitat at the time. Furthermore, Locker et al. (2010) report that 69% of potential coral reef habitat in the Main Hawaiian Islands includes MCEs. Harris et al. (2013) state that coral reef habitat may increase by 100% when considering MCEs. If one were to consider the other U.S. coral reef areas including the Northwestern Hawaiian Islands, Guam, Commonwealth of the Mariana Islands, American Sāmoa, and the Pacific Island Remote Areas (Wake, Johnston, Palmyra, Kingman, Howland, and Baker), the amount of potential MCE within the U.S. Pacific increases dramatically.

Deep Reef Refuge Hypothesis

Coral reef ecosystems include tropical marine habitats between 0–150 meters depth consisting of reef-building corals and associated communities. Previously referred to as deep coral reefs or the coral reef twilight zone (Pyle 1996b, 1998, 2000), the term mesophotic coral ecosystems (MCEs) was coined in 2008 (Puglise et al. 2009) and defined as being "characterized by the presence of light-dependent corals and associated communities that are typically found at depths ranging from 30 to 40 m and extending to over 150 m in tropical and subtropical regions. The dominant communities providing structural habitat in the mesophotic zone can be comprised of coral, sponge, and algal species" (Hinderstein et al. 2010). Previously thought to be a marginal habitat, MCEs are now generally viewed to be an extension of the broader coral reef ecosystem. The extension of coral reef communities into deeper water has led to the development of the 'deep reef refugia' hypothesis (DRRH) stating that MCEs serve as potential refugia for SCR species (Bongaerts et al. 2010a).

Bongaerts et al. (2010a) was the first to formulate the DRRH for MCEs based on work of others (Vermeij 1986, Glynn 1996, Riegl and Piller 2003, Halfar et al. 2005). Bongaerts et al. (2010a) reviewed the current literature regarding the DRRH for Caribbean reefs and concluded that the DRRH is more likely to apply to "depth generalist" species and may serve a greater importance in the upper range of MCEs (30–60 m).

Bongaerts and Smith (2019) distinguished the terms of 'refuge' and 'refugia' *sensu* Keppel et al. (2012). The difference between 'refuge' and 'refugia' considers a temporal aspect to the concept of the DRRH. Refuge has typically been used for ecological scales while refugia has been used for an evolutionary timescale (Keppel et al. 2012) resulting in a substantial difference in the current DRRH conceptual framework (Bongaerts and Smith 2019). Here, I use the term refuge under a deep reef refuge hypothesis (DRRH) *sensu* Bongaerts and Smith (2019). This conceptual framework is broader in scope than the original DRRH *sensu* Bongaerts et al. (2010a) as it considers the components of disturbance, type of protection, time, depth, ecological scope (individual species to community scale), and species resilience.

The DRRH includes two foundational assumptions: 1) MCEs are sufficiently protected from the stressors on SCRs, and 2) MCEs have species overlap with SCRs to be a source of propagules to SCRs (Bongaerts et al. 2010a). The first assumption requires that MCEs are protected from SCR disturbances. For example, if a bleaching event occurs, then the temperature disturbance and its impacts will not extend below SCR depths thereby leaving the MCE populations unimpacted. However, there are many threats to MCEs as with SCRs. These threats range from global stressors of warming water, ocean acidification, and increase in storm events to local stressors of physical impacts, fisheries, water quality alteration, invasive species, disease (Smith et al. 2019). Additionally, crown-of-thorn outbreaks have been suggested as an impact (Montgomery et al. 2019). In addition to the threats these systems face, the resilience of MCE species plays a major role on how MCEs can serve as a refuge.

Under the second assumption of the DRRH, species not only have to be present in meaningful abundances to provide a sufficient reproductive reservoir, but the individual species must have vertical connectivity through reproductive capacity, recruitment, and genetic exchange across depths. Species overlap is a central component to the DRRH, and it has been suggested that the upper MCE may serve the most likely role for a refuge (Bongaerts et al. 2010a, Bridge et al. 2012, Loya et al. 2016). Species have been characterized as 'shallow-specialist', 'deep-specialist', and 'depth-generalist' where a specialist species is only found in the corresponding depth zone and the generalist species are found across depths (Bongaerts et al. 2010a). Bongaerts and Smith (2019) provided additional discussion on a conceptual framework for the DRRH and introduced the terms 'reseeding' for species that provide substantial propagules from unimpacted populations and 'local persistence' for species that have limited ability to reseed other populations.

Since the formal DRRH was postulated, many coral studies have examined the viability of this concept (Smith et al. 2014, 2016, Holstein et al. 2015, 2016b, 2016a, Assis et al. 2016, Laverick et al. 2016, Bongaerts et al. 2017, Muir et al. 2017, Semmler et al. 2017, Kavousi and Keppel 2018, Morais and Santos 2018, Pereira et al. 2018, Rocha et al. 2018, Slattery et al. 2018, Bongaerts and Smith 2019, Kavousi 2019). These studies have resulted in different conclusions for the role of MCE corals to serve as a refuge. Many of these studies were reported from the Atlantic (Holstein et al. 2015, 2016b, 2016a, Smith et al. 2016, Bongaerts et al. 2017, Semmler et al. 2017, Morais and Santos 2018, Rocha et al. 2018) while fewer were from the Pacific (Smith et al. 2014, Muir et al. 2017, Rocha et al. 2018). Six support the DRRH (Smith et al. 2014, Holstein et al. 2015, 2016b, 2016a, Muir et al. 2017, Semmler et al. 2017) while one has a split conclusion (Bongaerts et al. 2017), one has limited support (Morais and Santos 2018), and two with no support for MCE as a refuge (Smith et al. 2016, Rocha et al. 2018). Of these, four studies used a community analysis (Muir et al. 2017, Semmler et al. 2017, Morais and Santos 2018, Rocha et al. 2018) and six used a species-specific approach (Smith et al. 2014, 2016, Holstein et al. 2015, 2016b, 2016a, Bongaerts et al. 2017). Studies focused on other organisms (not corals) have found little evidence of MCEs to serve as a refuge despite some species overlap (Hurley et al. 2016: brachyurans, Kane 2018: fish) while Tenggardjaja et al. (2014) suggest that a refuge may exist for *Chromis verater*, an endemic Hawaiian fish.

A specific example involves *Seriatopora hystrix*, which was extirpated from shallow water areas in Okinawa, and later discovered in the upper MCE at depths of 35–47 m (Sinniger et al. 2013) indicating a potential for this species to recover from MCEs. Later the ability of this species for reseeding was described as limited based on its reproductive characteristics (Prasetia et al. 2017). Bongaerts et al. (2010b) found strong genetic structure across depth for this species on the Great Barrier Reef, but Sinniger et al. (2017) found there to be limited genetic structure across depths in Okinawa. Further, there appears to be cryptic species within these lineages making genetic structure more difficult to discern (Warner et al. 2015, Sinniger et al. 2017). This complexity highlights the challenges of determining the potential of MCEs to serve as a refuge for even a single species.

Biodiversity

In general, the MCEs of the world are poorly studied. Scientific understanding of these ecosystems is slowly growing as the scientific interest and published literature on MCEs has grown (Turner et al. 2017, Bongaerts et al. 2019), but often lacking is a basic knowledge of the species that are present. Without this knowledge, we are unable to understand fundamental ecological questions for these ecosystems. As previously discussed, the foundation of the DRRH is premised on species overlap and distribution across depth. While we have far more knowledge of the species on the SCRs, we have not even captured the diversity on the most accessible coral reefs in the world. In order to understand the connectivity and ecology of MCEs, there is a need to further characterize these ecosystems and bring parity to our understanding. This raises the basic need to understand the biodiversity of all coral reefs including MCEs.

Global biodiversity has been on the decline (Wilson 1997) with anthropogenic changes (Ehrlich and Wilson 1991, Lovejoy 1997). These declines are associated with the expansion of humans into undeveloped areas (e.g. habitat destruction), human-induced changes in climate systems (Lovejoy 1997, Myers and Ottensmeyer 2005), and increasing demand of natural resources such as fisheries (Reaka-Kudla 1997, Myers and Ottensmeyer 2005). The loss of biodiversity in marine systems is no exception and with increasing ocean temperatures and acidification, biodiversity in these ecosystems is particularly vulnerable (Myers and Ottensmeyer 2005, Harley et al. 2006, Dupont et al. 2010). The rate of biodiversity loss has not decreased with increasing scientific and public awareness (Reaka-Kudla 1997) and the true rate of biodiversity loss is likely not known or grossly underestimated as it is difficult to determine how many global species exist. With a lack of knowledge of the number of species in an ecosystem, system-wide threats to those ecosystems can exacerbate biodiversity loss for species currently unknown to science (Reaka-Kudla 1997, Myers and Ottensmeyer 2005). It has been estimated that we may be losing species at a rate faster than we are currently describing new species, thereby losing the opportunity fully understand the ecological connectivity of our natural systems (Stork 1997, Myers and Ottensmeyer 2005, Richards and Day 2018).

Early research on MCE fishes have reported approximately a third of the species observed were new species (Colin 1974, Pyle 1996a, 2000). Fishes are generally believed to be well described compared to most other marine taxa, so if this trend extends to other less described or understood marine taxa, the number of undescribed species may be substantially larger. As threats to MCE are slowly beginning to be documented (Baker et al. 2016, Rocha et al. 2018, Smith et al. 2019), MCEs may represent a prominent example of potential biodiversity loss before it is documented.

The biodiversity of corals is no different. With 24 coral species listed under the U.S. Endangered Species Act (NOAA 2021) and hundreds more listed as threatened by the International Union of Conservation of Nature (Carpenter et al. 2008), the taxonomic issues with corals (Bernard 1902, Veron 1995, Forsman et al. 2015, Veron 2015), and the projected climate impacts (van Hooidonk et al. 2014), it is not known what has been or will be lost before its discovery. Coral biogeography has only been studied in the last few decades (Stehli and Wells 1971) with species level comparisons in the last two decades despite species descriptions over the last three centuries. Corals of the World (CoTW; (Veron et al. 2019) recognizes 833 valid zooxanthellate scleractinian species globally and does not include the azooxanthellate dendrophylliid corals (Cairns 2001, Arrigoni et al. 2014) as well as the cave dwelling *Leptoseris troglodyta* (Hoeksema 2012). The World List of Scleractinia (WLS) reports 1,627 valid species with approximately half of those being zooxanthellate, hermatypic species (Hoeksema and Cairns 2021). Broad-scale biogeographic studies require regional-scale data that can be traced back to a consistent taxonomy (Veron 1995). The most comprehensive biogeographic analysis of scleractinians include Veron et al. (2015) and CoTW (Veron 2000, Veron et al. 2019). Together, these studies show a pattern of highest diversity in the Coral Triangle with decreasing diversity towards the north, east, and south (Hoeksema 2007, Veron et al. 2015). The ecoregion described by (Veron et al. 2019) that includes American Sāmoa is the Sāmoa, Tuvalu, and Tonga ecoregion and includes the island groups of Tuvalu, Tokelau, Wallis and Futuna, Tonga, Niuē, and the Sāmoa Archipelago (Figure 1.1). Recent work on marine ecoregions suggest different regions than Veron et al. (2019) (Crandall et al. 2019, Cacciapaglia et al. 2021), but here I use Veron's ecoregions for comparison given the vast coral biogeographical dataset incorporated.

Research Focus

To fill some of the gaps for MCEs in American Sāmoa, I cover three main topics in this dissertation. I review the current knowledge of MCEs in American Sāmoa and further analyze the amount of habitat and its characteristics across the islands of American Sāmoa to determine the potential MCE habitat. Additional analysis is conducted to show the MCE habitat within the Territory's marine protected areas. In order to make species comparisons with SCRs, I present a comprehensive stony coral (Scleractinia, Milleporidae, and Stylasteridae) species checklist that includes information on likelihood of presence, the supporting evidence, distribution, MCE presence, threatened status, and general discussion on taxonomic comments. This checklist provides a foundation for additional work on species similarity across habitats. Further, I provide the diversity metrics, community similarity, and species assemblages for stony corals (scleractinian and milleporids) in the upper MCE (30–70 m) and SCR (<30 m) of American Sāmoa. We also estimate the number of coral species not yet documented between MCE and SCR habitats. These analyses are considered in the context of the DRRH and, in particular, to the second assumption of the DRRH to highlight the state of knowledge on the DRRH and its management implications of coral species.

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Figures

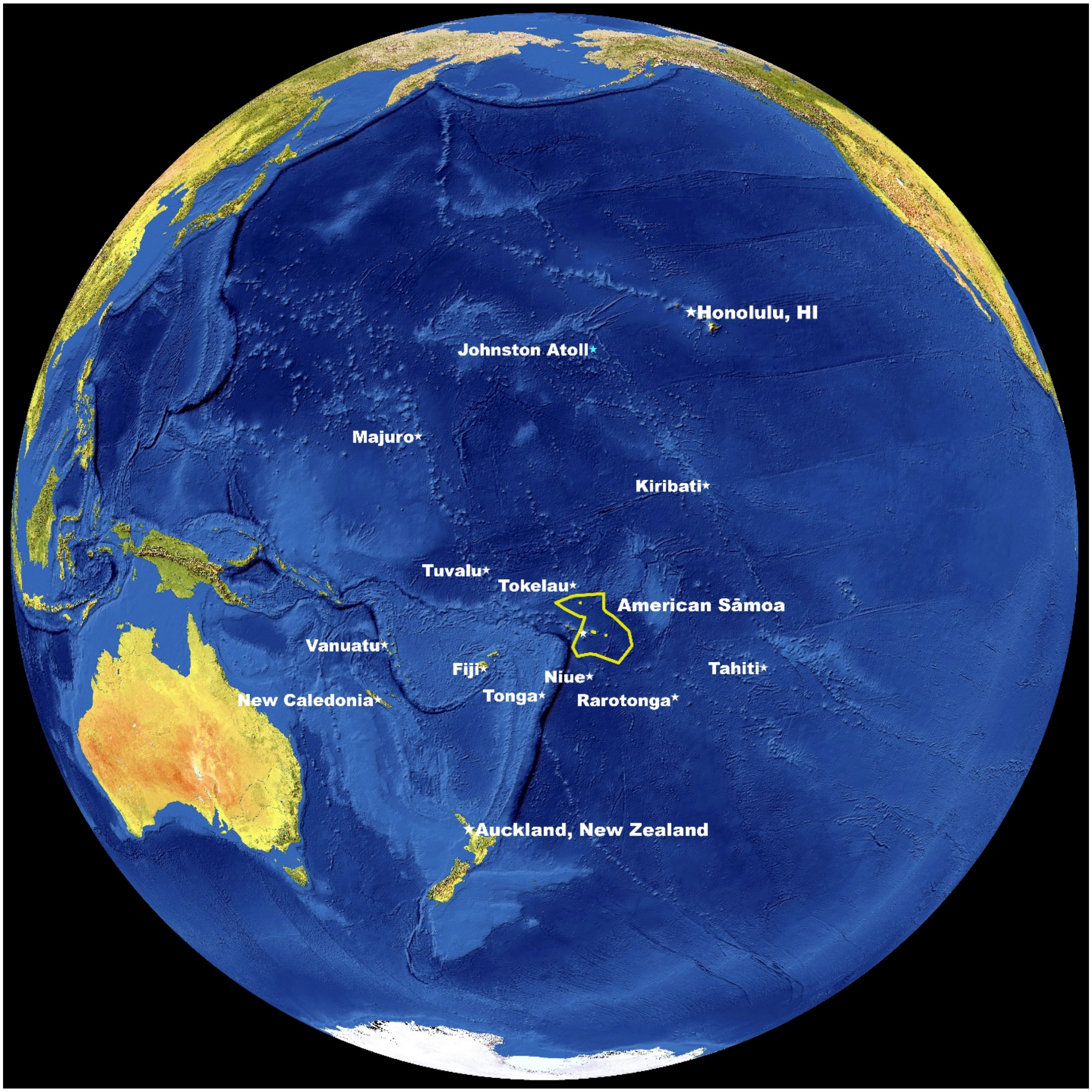

Figure 1.1. Global map showing the location of American Sāmoa nearby other Pacific islands.

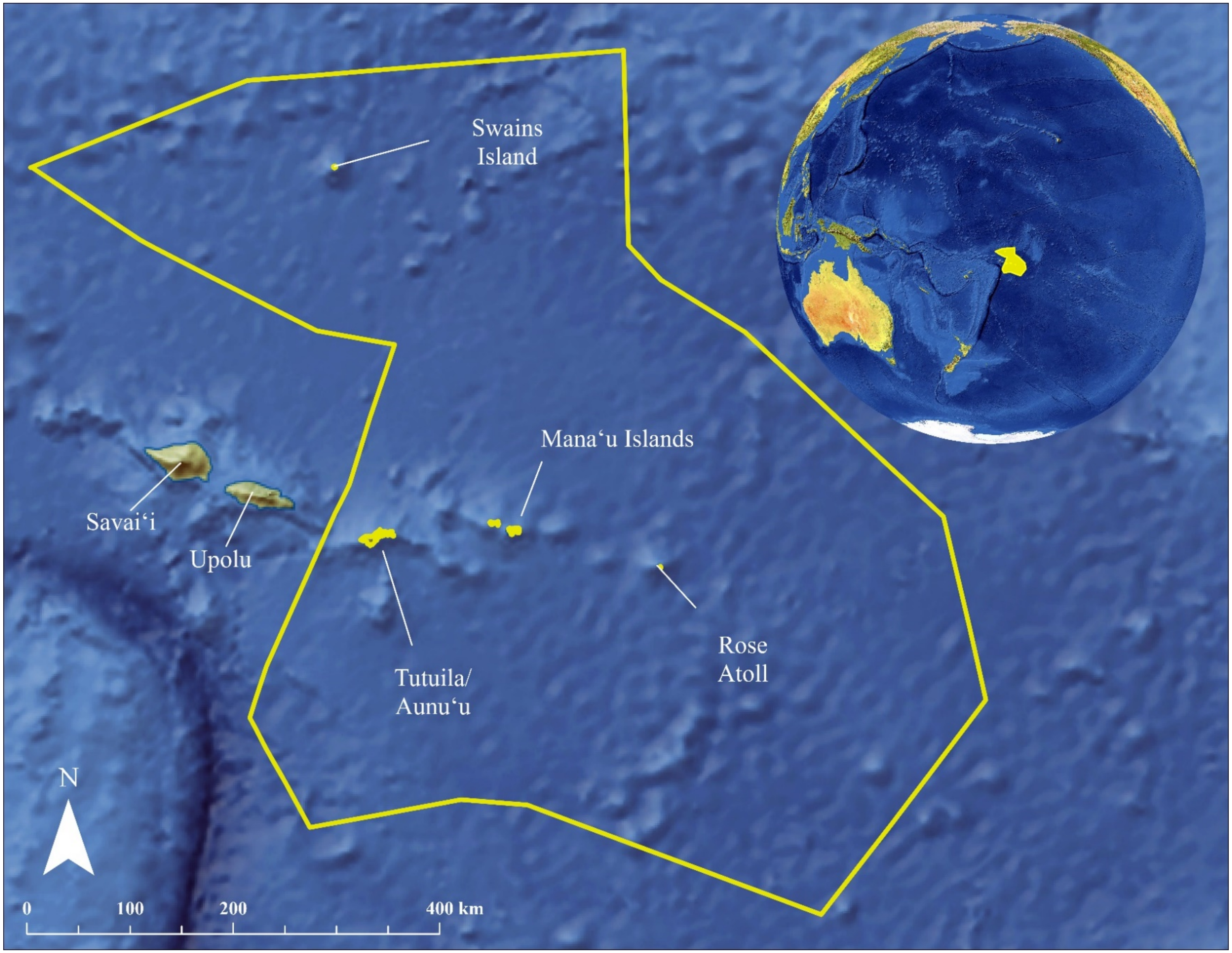

Figure 1.2. Map showing the Territory of American Sāmoa, the Exclusive Economic Zone (in yellow), and the major island groups.

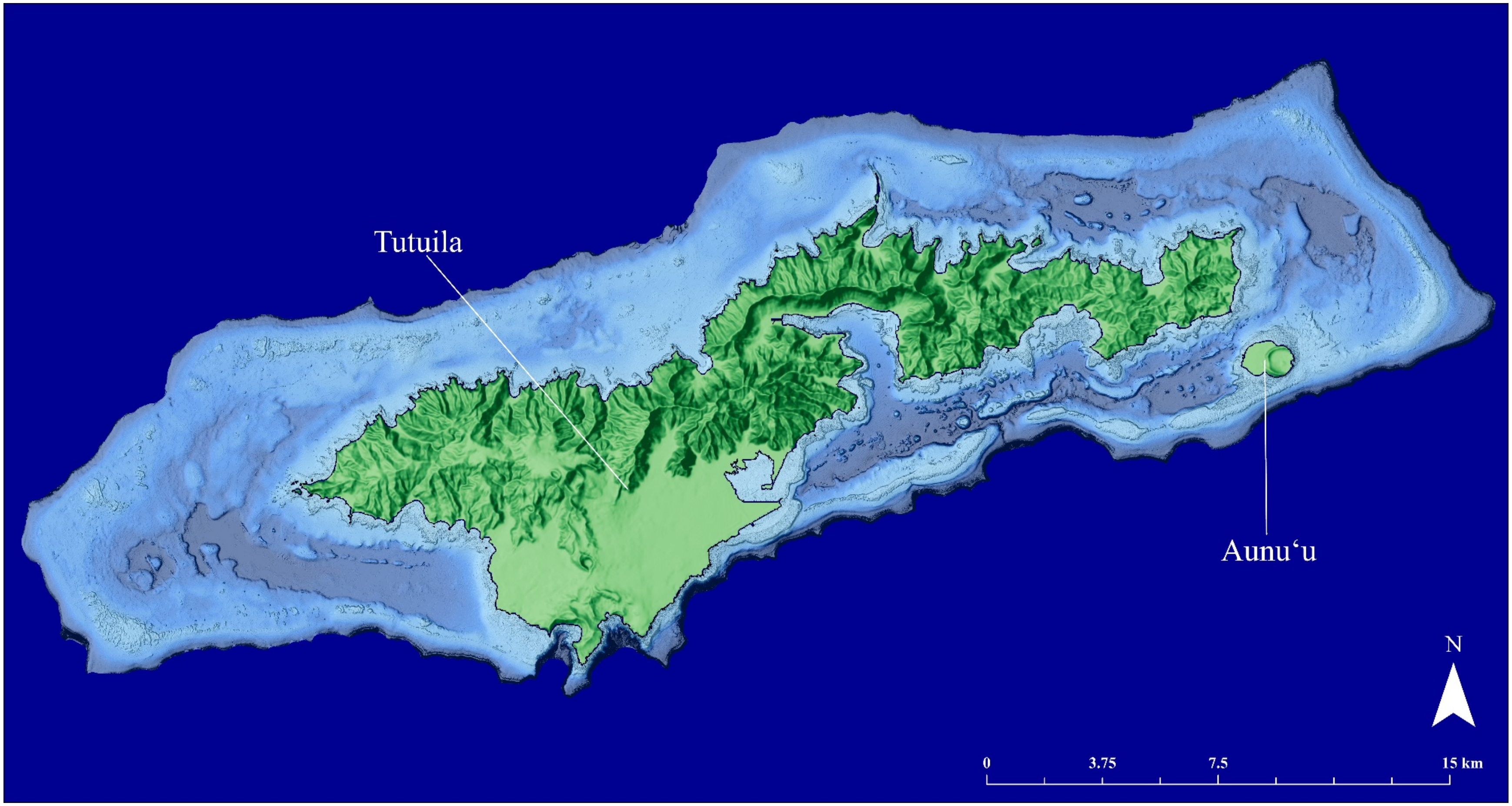

Figure 1.3. Map showing the islands of Tutuila and Aunu‘u. Note the largest bank surrounding the island highlighting the large amount of potential MCE habitat

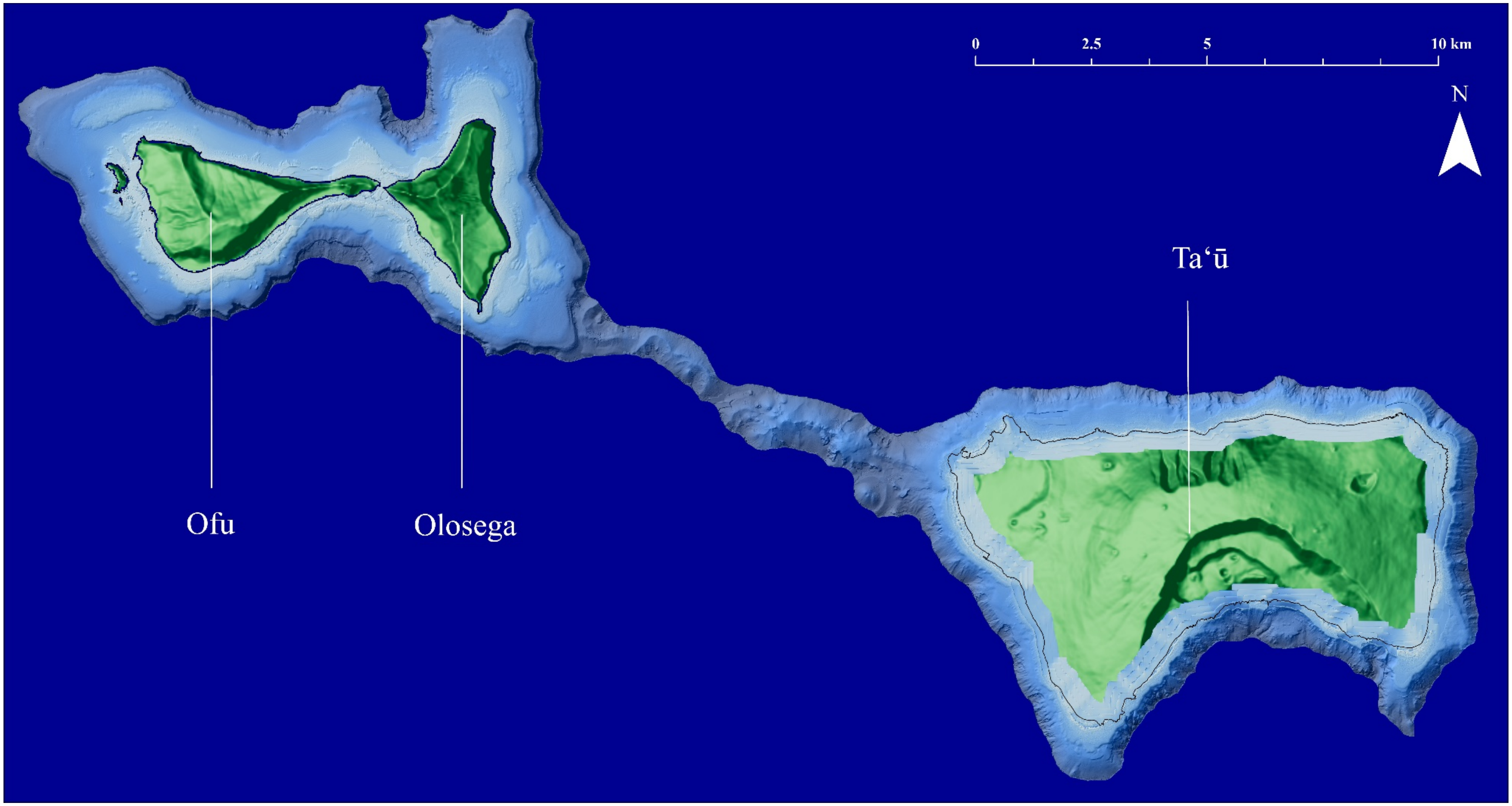

Figure 1.4. Map showing the Manu‘a Islands of Ofu, Olosega, and Ta‘ū. Note the bridge connecting the islands with mesophotic or sub-mesophotic depths.

Chapter 2
Mesophotic Coral Ecosystems of American Sāmoa

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Authors: Anthony D. Montgomery, Douglas Fenner, Randall K. Kosaki, Richard L. Pyle, Daniel Wagner, and Robert J. Toonen

Abstract

Over a century of study in American Sāmoa has built a foundation of coral reef ecology within the region. However, this work has been restricted to shallow coral reefs (SCRs; < 30 m) until recently, where a few studies have started describing American Sāmoa's mesophotic coral ecosystems (MCEs). MCEs are defined as coral reef communities with zooxanthellate corals and associated biotic assemblages between 30–150 m depth. Mapping efforts within the territory have documented habitat characteristics for SCRs, as well as MCEs. We estimate that American Sāmoa has 451.5 km^2 of marine habitat between the shoreline and 150 m depth. Mesophotic depths represent 357.5 km^2 (79%) of the total area. Approximately 56 km^2 (12.4%) of the marine habitat above 150 m is under various levels of protection through a system of local, territorial, and federal marine protected areas. Of this, 21.7 km^2 (6%) includes mesophotic depths. With only a handful of studies conducted and the majority of MCEs in American Sāmoa unexplored, there remain significant information gaps in understanding the basic biodiversity and ecology of the region. There are over 300 species of scleractinian corals known from American Sāmoa, and approximately 110 species at mesophotic depths, representing over one-third of the total diversity. Approximately 1,013 fish species have been recorded from American Sāmoa (0–150 m), including five new records and four potentially new species from MCEs. Other anthozoan corals are currently being studied but most invertebrate and algal communities at mesophotic depths remain uninvestigated.

Keywords

mesophotic coral ecosystems, American Sāmoa, biodiversity, marine protected areas

Introduction

American Sāmoa is an unincorporated territory of the United States, with an estimated human population of 55,537 (United Nations 2017). Located in the southern hemisphere (14° S latitude), American Sāmoa is part of an archipelago of islands, seamounts, banks, and atolls that includes the independent nation of Sāmoa. The Territory of American Sāmoa consists of five volcanic high islands (Tutuila, Aunuʻu, and the Manuʻa Islands of Taʻū, Ofu, and Olosega), one low island (Swains Island), and one true atoll (Rose Atoll) (Birkeland et al. 2008). The main island of Tutuila is located 4,180 km southwest of Honolulu, Hawaiʻi, 2,890 km northeast from Auckland, New Zealand, and 1,240 km northeast of Suva, Fiji (Figure 2.1).

American Sāmoa's marine habitat above 150 m covers an area of 451.5 km^2 and includes both shallow coral reefs (SCRs; < 30 m depth) and mesophotic coral ecosystems (MCEs; 30–150 m depth; Hinderstein et al. 2010). In comparison, the total land area only extends for 200 km^2. Approximately half of the shoreline has associated reef flats that are hard carbonate with low rugosity. Within these reef flats, Ofu and Olosega have natural pools nearshore (up to 3 m deep), and Tutuila has a few manmade pools (up to 7 m deep) created by fill material extraction.

Beyond the reef crest, the reef slopes downward creating a forereef slope. The forereef slope is fairly close to shore and has higher coral and coralline algae cover than the reef flat. Some areas have a reef slope that extends into deep water nearshore. One example is Fagatele Bay, which is part of the National Marine Sanctuary of American Sāmoa (NMSAS). Fagatele Bay is an ancient shoreline volcanic caldera with the seaward wall collapsed that forms a bay with steep sides and an offshore canyon.

In general, the forereef slope on Tutuila, Ofu, and Olosega ends at a depth of about 10–30 m on a carbonate shelf that is 3–7 km wide. On Tutuila, a ring of bank reefs parallels the outer edge of the shelf and appears to be a sunken barrier reef. These bank reefs are not well explored except for Taema Bank, 3 km offshore near the mouth of Pago Pago Harbor. The top is approximately 8 m deep and covered in coralline algae with rubble on the northern (inner) slope and coral on the southern (outer) slope. The Tutuila shelf ends in a vertical cliff that extends to a depth of 350 m.

Northwest of Taʻū and southeast of Olosega is a ridge connecting the islands with a volcanic cone approximately 2.3 km from Taʻū that rises as shallow as 38 m. This isolated area has MCEs with patches of nearly 100% cover of scleractinian corals (Blyth-Skyrme et al. 2013). Both Swains Island and Rose Atoll have steep slopes from the forereef to beyond 150 m. Between Tutuila and the Manuʻa islands are two submerged banks (Muli Guyot or Northeast Bank and Tulaga or Two Percent Bank) that rise to 49 and 78 m, respectively, and may serve as stepping stones for organisms migrating between the islands. Additionally, a bank approximately 65 km to the south of Tutuila (Papatua Guyot or South Bank) rises to 23 m (Bauer and Kendall 2011).

Research History

There has been substantial effort over the past century to document SCRs within American Sāmoa. The first coral reef survey in the territory was in 1917 (Mayor 1924; Dahl and Lamberts 1977), and since then, many more surveys have been conducted throughout the territory (Birkeland et al. 1987, 2003, 2013; Mundy 1996; Green and Hunter 1998; Green 2002; Craig et al. 2005; Sabater and Tofaeono 2006; Brainard et al. 2008; Fenner et al. 2008; Kendall and Poti 2011; NOAA 2011). This work has laid a strong foundation for understanding the biodiversity of the major reef-associated species of the islands. Several studies have documented the SCR flora and fauna of American Sāmoa (Hoffmeister 1925; Jordan 1927; Wass 1982, 1984; Lamberts 1983; Mundy 1996; Madrigal 1999; Coles et al. 2003; Skelton 2003; Skelton and South 2004; DiDonato et al. 2006; Whaylen and Fenner 2006; Birkeland et al. 2008; Craig 2009; Kenyon et al. 2010; Tsuda et al. 2011).

The majority of American Sāmoan habitats between 20–150 m depths were mapped from 1985 through 2006 (Wright 2002, 2005; Wright et al. 2002, 2012; Lundbald et al. 2006). Maps were also produced using a habitat classification system that was developed based on American Sāmoa reefs and includes MCEs (Lundbald 2004; Lundbald et al. 2006). This mapping effort includes most of the MCE area, except for some small areas below 90 m around Tutuila (PIBHMC 2017). An additional habitat map was made for Tutuila (from shore to 150 m in depth) using the same methods as the U.S. National Oceanographic and Atmospheric Administration's (NOAA) shallow coral reef maps (NOAA 2005; Kendall 2011). Together, these efforts serve as a basic habitat classification around which subsequent biodiversity and ecological studies have been arranged.

In addition to habitat mapping and classification, there have been limited in-water surveys within MCEs of American Sāmoa. One of the earliest such surveys was conducted by the Bishop Museum with two closed-circuit rebreather (CCR) dives by Richard L. Pyle and John L. Earle (Figure 2.2; Pyle 2001; Wright et al. 2002; Bare et al. 2010). One dive was in Fagatele Bay, Tutuila to a depth of 113 m, and the other was to 60 m in the outer section of Pago Pago Harbor. During these dives, several new mesophotic fish species were discovered (Pyle 2001).

NOAA's National Marine Fisheries Service (NMFS) conducted a series of towed camera surveys across multiple islands in 2002, 2004, and 2008 (Figure 2.2; Brainard et al. 2008; Bare et al. 2010; Blyth-Skyrme et al. 2013). These surveys included 89 tows off Tutuila and Aunuʻu (30–130 m), 25 tows off Ofu and Olosega (30–170+ m), and 16 tows off Taʻū (30–160 m) (Blyth-Skyrme et al. 2013). These surveys classified substrate type, substrate cover, coral morphology, and other benthic observations.

In 2005, three submersible dives were conducted by NOAA's Hawaiʻi Undersea Research Laboratory (HURL) at two different locations (Figure 2.2; Wright 2005; Bare et al. 2010; Wright et al. 2012). One dive was conducted in Fagatele Bay (to 213 m) and two on Taema Bank off Tutuila (to 464 m and 447 m, respectively). The purpose of these dives was to validate areas previously mapped, as well as estimate substrate cover, all species identifications, and benthic transitions (Wright 2005).

In 2015, the National Park of American Sāmoa (NPAS) conducted roving diver surveys for crown-of-thorns starfish (COTS) at three Tutuila sites outside the park boundaries to 40 m depth (Figure 2.2). These surveys documented the presence of few COTS and found expansive coral mortality. Nearby SCR areas were some of the most impacted sites from COTS suggesting that COTS may be responsible for the coral mortality observed at 40 m (Ian Moffitt, pers. comm.). Additionally, the NPAS maintains a hydrophone to record reef and other sounds at 40 m.

In 2016, the Hawaiʻi Institute of Marine Biology (HIMB) conducted a series of CCR dives (Figure 2.2). These surveys documented the diversity of scleractinian and other anthozoan corals in the upper-mesophotic zone (30–60 m; Montgomery, unpublished data). Approximately 110 scleractinian species were documented including three coral species listed under the U.S. Endangered Species Act.

A team of CCR divers from NOAA's Office of National Marine Sanctuaries, Papahānaumokuākea Marine National Monument (PMNM) conducted four CCR dives to survey MCEs in 2015 and eight dives in 2017 (Figure 2.2). These dives were aimed at documenting the diversity of fish, gorgonian, and antipatharian fauna at several sites within the NMSAS. A total of 30 specimens of antipatharian corals, 74 gorgonian corals, one *Leptoseris* sp., over 548 video-based records of species (mostly fishes), and hundreds of in-situ digital images were collected during these efforts.

Environmental Setting

Oceanographic conditions of the Sāmoan Archipelago are fairly stable compared to neighboring northern and southern latitudes (see review by Pirhalla et al. 2011). The conditions are similar on most islands except Swains Island, which is located further north (11º S) and formed from a different volcanic hot spot. The archipelago has small seasonal fluctuations in winds, waves, and sea surface temperatures (SST). Multi-year variability is associated with climatic cycles and exemplified by SST with a smaller range, fewer extremes, and smaller inter-annual variability compared to higher latitudes (to both its north and south) due to its proximity to the equatorial Pacific warm water pool. However, SST time-series from 1985 to 2007 have shown a 1℃ increase in addition to several documented temperature anomaly events, resulting in at least three major bleaching events (Craig 2009), and with the archipelago experiencing thermal stress a third of the time. More recently, bleaching events have occurred in 2015 and 2016–2017. Bleaching during 2015 was observed in back reef pools, reef flats, and reef slopes due to temperatures of approximately 30˚C for several months (American Sāmoa Department of Marine and Wildlife Resources, unpublished data). Bleaching in 2016–2017 was observed to be more common at depths of 6–15 m on reef slopes, but was also present on reef flats and back reef pools with observations beyond the reef slope as deep as 40 m. The full extent of these bleaching events is still being assessed (Alice Lawrence, Mareike Sudek, Bert Fuiava, and Ian Moffit, pers. comm.).

In-situ instruments in American Sāmoa often measure higher temperatures than satellite-derived measurements, which do not capture the high horizontal variability across reef habitats, such as back reefs and reef flats versus forereefs and offshore platforms (Kendall and Poti 2011). The NPAS has collected some information on vertical temperature variability across depths down to 30–40 m, but temperatures across mesophotic depths remain undocumented (Ian Moffitt, pers. comm.).

Habitat Description

MCE habitats may be more common in American Sāmoa than in other U.S. Pacific jurisdictions (Locker et al. 2010), but there have not been any attempts to quantify MCEs despite extensive mapping efforts. To determine the potential importance of mesophotic depths, we contibute a quantitative description of the total area of shallow and mesophotic depths, as well as the mean slope (including standard deviation) and proportion of bottom hardness classification for mesophotic depths.1 Together, these habitat characteristics may influence the type of benthic organisms present and are useful indicators of potential MCE habitat type or presence. Additional research is needed to develop more effective and comprehensive predictive modeling for the presence of MCE communities using methods from other areas, such as those described by Bridge et al. (2012), Costa et al. (2015), or Veazey et al. (2016).

These analyses were conducted by dividing mesophotic depths into three 40 m zones: the upper-mesophotic zone (30–70 m), mid-mesophotic zone (70–110 m), and the lower-mesophotic zone (110–150 m). Given how few studies have been conducted in American Sāmoa, the depth zones used herein are for analysis purposes only and are not reflective of any actual faunal transition. However, based on the faunal transition observed in other Pacific MCEs (Kahng and Kelley 2007; Rooney et al. 2010; Loya et al. 2016; Pyle et al. 2016), these depth classifications may help guide future studies on faunal transitions on American Sāmoa's MCEs.

The total area of potential reef habitat (from the shoreline to 150 m) in American Sāmoa is 451.5 km^2, of which 357.5 km^2 (79%) is potential MCE habitat (Table 2.1). The majority of the MCE habitat is located on the extensive platform surrounding Tutuila/Aunuʻu (305.7 km^2) which is more than six-times greater than the corresponding SCR habitat (49.6 km^2). The remainder of the MCE habitat is off Ofu/Olosega (23.3 km^2) and Taʻū (22.3 km^2), which is nearly twice as large as their

[1]Total area was calculated by using the five meter grid merged multibeam bathymetry and IKONOS derived depth data available from the Pacific Islands Benthic Habitat Mapping Center (PIBHMC 2017) and the shoreline boundary available from the American Samoa Department of Commerce Web Portal (http://portal.gis.doc.as/). The bathymetry data for seven areas (Tutuila/Aunuʻu islands, Ofu/Olosega islands, Taʻū Island, Swains Island, Rose Atoll, Northeast Bank, and Two Percent Bank) were imported into ArcGIS© 10.2 and converted from ASCII to a raster file type. Missing cell values (i.e., no data) were interpolated with the Raster Calculator in Spatial Analyst. The raster file was then reclassified into four classes: 0–30 m (SCR), 30.01–70 m (upper-mesophotic zone), 70.01–110 m (mid-mesophotic zone), and 110.01–150 m (lower-mesophotic zone) and converted to a depth zone classification shapefile. The geodesic area was then calculated for each area including the land area represented by the shoreline boundary. The bathymetry raster file was further used to calculate reef slope with the Slope tool in Spatial Analyst, and the slope statistics were calculated with Zonal Statistics based on the depth zone classification shapefile. The calculation of the proportion of bottom hardness classification was calculated from the five meter grid hard bottom vs. soft bottom substrate data from PIBHMC (2017). These data were converted to a shapefile and combined with the depth zone classification shapefile. The proportion was calculated by dividing the area for each bottom type within each depth zone classification by the total area of each corresponding depth zone classification. The unclassified category represents the area with missing backscatter data from the original Simrad em3002d and Reason 8101 datasets.

corresponding SCRs (12.2 and 11.4 km^2, respectively). Swains Island and Rose Atoll have small MCE habitat areas (0.6 and 1.3 km^2, respectively) with larger SCR areas (2.3 and 7.8 km^2, respectively). Northeast Bank and Two Percent Bank have MCE areas (14.4 and 0.8 km^2, respectively) with no corresponding SCR area. Based on total area, the habitat at mesophotic depths off American Sāmoan high islands is substantially greater than their corresponding SCRs (Table 2.1).

Upper-mesophotic Zone

The upper-mesophotic zone (30–70 m) is significantly larger on Tutuila/Aunuʻu (224 km^2) compared to the corresponding SCR habitat or the upper-mesophotic zone on other islands (Table 2.1). Considering the size of the upper-mesophotic zone area around Tutuila/Aunuʻu and a higher likelihood of faunal overlap with SCRs (Kahng and Kelley 2007; Rooney et al. 2010; Loya et al. 2016; Pyle et al. 2016), the upper-mesophotic zone on Tutuila/Aunuʻu is important to the broader management of corals reefs within the territory. This trend seems to extend to Ofu/Olosega as well, given the upper-mesophotic zone accounts for almost 20% more total area than the corresponding SCRs. However, the area and proportion of upper-mesophotic zone for Taʻū, Swains Island, and Rose Atoll significantly decreases compared to SCR habitat. In between Tutuila and the Manuʻa Islands lies Northeast Bank with 11 km^2 of upper-mesophotic area (Table 2.1).

The mean slope of the upper-mesophotic zone is fairly low for Tutuila/Aunuʻu, Ofu/Olosega, and the Northeast Bank, moderate for Taʻū, and high for Swains Island and Rose Atoll (Table 2.1). The bottom hardness classification is mostly hard bottom for Tutuila/Aunuʻu (55.8%), Ofu/Olosega (76.7%), and Taʻū (72.8%) (Figure 2.3). Bare et al. (2010) also reported similar hard bottom classification (44.9%±41.0% to 67.0%±38.3%) for Tutuila. This large percentage of hard bottom suggests high potential of suitable habitat for complex benthic communities.

Known areas in the upper-mesophotic zone along the insular shelf of Tutuila include a series of patch reefs, mounds, and bank tops. These reefs range from 35–50 m in depth (Figure 2.4) and have three distinct types. The first reef type includes low rugosity isolated carbonate mounds with 5–10 m of relief from the surrounding unconsolidated sediment and minimal scleractinian abundance and a higher gorgonian abundance (Figure 2.4A). The second reef type includes high rugosity isolated patch reefs with 5–10 m of relief and a sloped reef edge with large rubble edges and convoluted transitions surrounded by unconsolidated sediment (Figure 2.4B). This reef type has more scleractinian coral diversity (Figure 2.5A), as well as many recently dead corals (Figure 2.5B–C). The cause for the coral mortality is unknown, but based on reports from NPAS staff it may be related to COTS outbreaks in 2015. The third reef type is located on the slopes of large banks (Figure 2.4C), starting as shallow as 10–20 m and extending into the mid-mesophotic zone. This reef type has low coral diversity and low rugosity dominating by turf algae.

Mid-mesophotic Zone

The mid-mesophotic zone (70–110 m) is largest on Tutuila/Aunuʻu (75 km^2) compared to the other islands. The mid-mesophotic zone is smaller around Ofu/Olosega, Taʻū, Northeast Bank, Two Percent Bank, Swains Island, and Rose Atoll (Table 2.1). The mean slope of the mid-mesophotic zone is low for Tutuila/Aunuʻu, Ofu/Olosega, Northeast Bank, and Two Percent Bank, moderate for Taʻū, and high for Swains Island and Rose Atoll (Table 2.1). The major benthic fauna for habitats with high slope, particularly habitats with near vertical slope, are gorgonians and antipatharians, while scleractinians are uncommon (Figures. 2.4D and 2.6).

The bottom hardness classification in the mid-mesophotic zone is mostly soft for Tutuila/Aunuʻu (46.1%), and hard for Ofu/Olosega (53.2%) and Taʻū (61.1%) (Figure 2.3). However, investigations by Blyth-Skyrme et al. (2013) on Taʻū have reported bottom hardness to be mostly sandy between 50–110 m suggesting this to be less suitable habitat for MCE communities. The difference in these estimates is likely due to differing scales of these analyses. Around Tutuila, Bare et al. (2010) reported hard bottom within the mid-mesophotic zone ranging from 14.6%±28.1% to 47.8%±46.8% and falls within our estimated hard bottom. Available data shows that the amount of hard bottom decreases with depth and suggests less suitable habitat characteristics for high density scleractinian communities. Swains Island, Rose Atoll, and Northeast Bank were mostly unclassified for bottom type.

Lower-mesophotic Zone

The lower-mesophotic zone (110–150 m) across American Sāmoa is smaller compared to the corresponding SCR area and the upper- and mid-mesophotic zones. While the total area of the lower-mesophotic zone is smaller, the same trend of increasing area across the high islands did not apply, but rather the lower-mesophotic zone area on Taʻū is nearly four times the size of Ofu/Olosega. The area of the lower-mesophotic zones around Swains Island, Rose Atoll, and Two Percent Bank are small, while Ofu/Olosega and Northeast Bank are moderate (Table 2.1).

The mean slope of the lower-mesophotic zone is moderate for Tutuila/Aunuʻu, Ofu/Olosega, Taʻū, Northeast Bank, and Two Percent Bank. The slopes have relatively high standard deviations suggesting wide variation across areas. The mean slope for Swains Island and Rose Atoll is high with lower standard deviations suggesting a relatively uniform slope habitat (Table 2.1). It should be noted that areas with steep slope will inherently have less two-dimensional surface area. Steep slope habitats typically have different biological communities. The bottom type is predominantly soft for Tutuila/Aunuʻu (54.8%), Ofu/Olosega (76.5%), and Taʻū (59.2%), although Taʻū also has a moderate amount of hard bottom (37.0%) (Figure 2.3). Swains Island, Rose Atoll, and Northeast Bank were mostly unclassified for bottom type.

Not much is known about the lower-mesophotic zone because there has been very little exploration. A limited number of camera tow sleds and submersible dives have been conducted below 110 m (Blyth-Skyrme et al. 2013; Wright 2005). Below Taema Bank, there is a steep carbonate wall from

110 m to at least 213 m with gorgonian assemblages and in some places *Halimeda* spp. (Wright 2005).

Biodiversity

Macroalgae

The marine algal diversity on American Sāmoan SCRs was documented by Coles et al. (2003), Skelton (2003), Skelton and South (2004), and Tsuda et al. (2011). Skelton and South (2004) reported 230 species (133 Rhodophyta, 23 Phaeophyta, and 74 Chlorophyta) from American Sāmoa while Tsuda et al. (2011) reported an additional 28 species from Swains Island. However, this list does not include unidentified material within Rhodophyta (including crustose coralline algae) and Cyanophyta, so the total algae diversity is likely higher. Further, many of these SCR algae are notoriously understudied and are likely to include many cryptic taxa (Sherwood et al. 2019; Sherwood et al. 2020; Cabrera et al. 2021). In contrast, virtually nothing is known of the mesophotic algal communities of American Sāmoa (Bare et al. 2010; Blyth-Skyrme et al. 2013). Bare et al. (2010) mention vast areas covered with *Halimeda* spp. along deep reef slopes and bank sides around Tutuila.

Anthozoans

Scleractinian corals of American Sāmoa have been studied extensively, but there is no comprehensive species checklist. Given the high number of scleractinian species that are present in American Sāmoa, properly identifying them to species level is a challenge and molecular studies are dramatically revising classical taxonomy of many well-studied groups (Fukami et al. 2004, 2008; Forsman et al. 2009, 2010; Marti-Puig et al. 2014; Johnston et al. 2017). Thus, significant study is required to properly document the diversity of scleractinians within American Sāmoa. Over 400 unique scleractinian names have been reported from American Sāmoa (Fenner, unpublished data), while Birkeland et al. (2008) report 337, but these 400 names include synonyms and possible misidentifications. It is estimated that with adequate sampling the actual number of valid species may exceed 400 (Whaylen and Fenner 2006). The depth ranges of coral species in American Sāmoa have not been systematically studied, so it is not possible to separate out species occurrences across depths.

Non-scleractinian anthozoans are poorly documented. Whaylen and Fenner (2006) reported 10 genera of alcyonaceans, two genera of antipatharians, three genera of zoanthids, and three genera of coralimorpharians (also summarized in Birkeland et al. 2008), but none of these were reported to the species level and all of these groups present substantial taxonomic challenges. Coles et al. (2003) reported 20 species of alcyonaceans (including six species of gorgonians), three species of anemones, four species of coralimorpharians, seven species of zoanthids, and two species of antipatharians. These reports include only occurrences from SCRs, but groups such as alcyonaceans (including gorgonians) and antipatharians are typically more common within MCEs and poorly studied in terms of molecular data relative to the scleractinians (McFadden et al. 2017). Thus, these groups represent significant gaps in our understanding of the biodiversity of American Sāmoa.

Anthozoan coral species across MCEs have not been fully characterized; however, there has been some work conducted to identify some species. Bare et al. (2010) reported 14 tentative scleractinian species, but these identifications were based on photo/video documentation from a camera sled, which makes species-level identification difficult. In 2016, eight sites from 30–60 m were surveyed to document scleractinian, antipatharian, and alcyonacean diversity with particular focus on scleractinians (Montgomery, unpublished data). Approximately 110 scleractinian species have been documented in the upper-mesophotic zone (Table 2.2). This represents nearly a third of the known coral species within American Sāmoa. Of these species, *Acropora solitaryensis*, *Alveopora excelsa*, *Leptoseris tubulifera*, *Cycloseris costulata*, *Porites arnaudi*, and *Porites myrmidonensis* represent new records for American Sāmoa. Additionally, one coralimorpharian, 28 alcyonaceans, including 13 gorgonians, two milleporids, one stylasterid, two zoanthids, and four antipatharians were found. Additional work on antipatharians and gorgonains is currently being conducted by Daniel Wagner and Sonia Rowley, respectively.

Fishes

Very little has been previously published about the reef fishes inhabiting the MCEs of American Sāmoa. The earliest comprehensive checklist of Sāmoan fishes (Jordan and Seale 1906) was limited to collections on SCRs using dynamite, poisons, beach seines, and local skin diver collections. An update of this checklist brought the number of fish species known from Sāmoa to 585 (Jordan 1927), but included very few fishes from MCEs. The most recent and most comprehensive checklist of the fishes of American Sāmoa (Wass 1984) was the first to use SCUBA for observations and collections. This checklist focused on fishes known from SCRs, but sampling included dives to 75 m, and hook and line fishing to 500 m resulting in 991 species with 890 from < 60 m and 56 species from 60–500 m.

In 2001, CCR dives by Pyle and Earle documented several new records of fishes, including the basslet *Pseudanthias hutomoi*, the tilefish *Hoplolatilus marcosi*, and the boxfish *Ostracion whitleyi*. They also noted several other species they could not identify at the time, two of which were new to science and named later (*Pseudanthias flavicauda* and *P. carlsoni*), and another was later determined to be the wrasse *Cirrhilabrus roseafascia*. Eight additional new records of fishes from MCEs were documented based on submersible observations including the angelfish *Genicanthus bellus*, the grouper *Cephalopholis polleni*, the triggerfish *Xanthicththys auromarginatus*, and the butterflyfish *Chaetodon tinkeri* (Wright 2005).

CCR dive surveys conducted in 2017 by the PMNM team resulted in over 500 video-based occurrence records of mesophotic fishes off the southern coast of Tutuila, including Fagatele Bay. Of the 118 species documented, 61 were recorded from mesophotic depths. Among these were at least five additional new records of known species (*Bodianus paraleucosticticus*, *Centropyge colini*, *Chromis brevirostris*, *Chromis degruyi*, *Chromis earina*) and four possible new species (one in the family Apogonidae, and one each in the genera *Parapercis*, *Symphysanodon*, and *Tryssogobius*; Figure 2.7). These records were included as part of a broader analysis of patterns of fish biodiversity within American Sāmoa for both SCRs and MCEs, assessed using occurrence records from two separate databases, the Global Biodiversity Information Facility (GBIF 2017) and the Explorers Log (2017).2 A limitation of these data is sampling bias, in that data collecting effort is not evenly distributed across all depths.3

A total of 483 occurrence records for American Sāmoa representing 244 species among 118 genera in 35 of the 74 families of coral reef fishes were in the combined databases. Of these, 168 species (69%) were from SCRs and 56 (23%) from MCEs or deeper (30–200 m). The remaining 20 species occur on both SCRs and MCEs. The top-20 most species-rich families for coral reef fishes in American Sāmoa are shown in Figure 2.8. All but four families (Ephippidae, Platycephalidae, Priacanthidae, and Pseudochromidae) were recorded from SCRs. All four of these families normally occur at shallow depths, so their absence from SCRs in the databases is most likely an artifact of incomplete sampling. Similarly, 11 families were only recorded from SCRs (e.g., Caesionidae, Cirrhitidae, Lutjanidae, Muraenidae, Ophichthidae, Syngnathidae, and Synodontidae) that are known to be well-represented on MCEs in other areas (see Pyle et al. 2019).

The pattern of species richness in American Sāmoa is generally consistent with that of coral reef fish families in general (see Pyle et al. 2019). Four of the top five most species-rich families are the same in American Sāmoa as they are for reef fishes worldwide (Apogonidae is the seventh most species-rich family instead of fifth, being replaced among the top-five in American Sāmoa by Chaetodontidae).

Other Biotic Components

Shallow macroinvertebrate species included 43 porifera, 22 hydroids, 308 gastropods, 63 bivalves, three stomatopods, 80 decapods, 14 asteroids, six crinoids, 24 ophiuroids, 13 echinoids, 17 holothuroids, and 12 ascidians (Coles et al. 2003), but many of these groups are notoriously understudied and include many cryptic taxa (Fautin et al. 2010). Birkeland (1989) reported six species of crinoids, 11 species of asteroids, 10 species of echinoids, and 16 species of holothuroids. The diversity of macroinvertebrate species on American Sāmoa MCEs is largely unknown, but it is likely that many SCR species extend into MCEs.

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[2] Data downloaded from the GBIF and Explorer Log databases were filtered for records 0–200 m in depth for country codes for American Samoa or Western Samoa, the locality description included the term 'Samoa,' or the records included georeferenced coordinates within a bounding box defined by 11° S, 173° W and 14.5° S, 169° W. Records for both country codes were included because many of these are incorrectly assigned, and the patterns for both regions are likely to be the same. The combined datasets were further filtered to include records from 74 families of coral reef fishes (see Pyle et al. 2019).

[3] Sampling bias for all records were clustered into 10-m depth zones. Effort was determined by analyzing the number of occurrence records and distinct species within each depth zone, and the number of observation/collection days across each depth zone. The majority of collecting days (70%) were between 0–30 m in SCRs, whereas only 30% of the collecting days involved mesophotic depths. The number of records per day varied from a low of 1.0 (110–150 m) to a high of 6.9 (10–20 m), and an average of 3.8 across all zones.

Ecology

Macroalgae

Around Tutuila, the maximum cover of macroalgae was at 50–70 m mostly nearshore or on reef slopes near offshore banks and decreased in shallower and deep water (Bare et al. 2010). Crustose coralline algae were common across most mesophotic depths and ranged from 7.3 to 20.7% cover (Blyth-Skyrme et al. 2013). Ofu/Olosega was reported to have significant hard bottom below 80 m, but turf and macroalgae were dominant, while hard bottom below 110 m on Ta‘ū was colonized by turf algae (Blyth-Skyrme et al. 2013).

Anthozoans

Scleractinian communities around Tutuila were found across all mesophotic depths, but the peak abundances (15.5%±26% cover) were observed between 30–50 m, usually atop offshore banks and insular shelf patch reefs. Wright et al. (2012) reported that corals extended down to 36 m on Taema Bank on a consistent basis. The scleractinians within upper-mesophotic zone communities were dominated by encrusting *Montipora* spp. and massive *Porites* spp. colonies with occasional columnar and free-living colonies between 40–70 m. *Acropora* spp. plate corals peaked slightly deeper at 60–70 m, with *Leptoseris* spp., *Pachyseris* sp., and *Montipora* sp. foliose colonies found deeper than 70 m. Branching scleractinians were more common between 80–110 m. Other colonizers mostly consisting of *Sacrophyton* spp. and *Lobophyton* spp. ranged from 13.4 to 19.6% cover (Bare et al. 2010; Blyth-Skyrme et al. 2013).

Ofu/Olosega had patches of scleractinian communities with a peak abundance of 80–100% cover between 40–70 m (with the maximum depth observation at 74 m). However, the overall highest mean cover (10.7%) was between 30–40 m consisting of massive and encrusting colonies. Colonies between 40–80 m were foliose with low abundance (< 5% cover). Scleractinian corals around Ta‘ū had a peak abundance (14.6%) between 40–50 m consisting of encrusting, massive, and branching colonies. Colonies between 50–70 m also included foliose morphologies in addition to the morphologies observed shallower (Blyth-Skyrme et al. 2013).

Fishes

In 2017, the first quantitative data on the abundance of fishes within MCEs in American Sāmoa was collected by the PMNM team. Using 25 x 2 m visual belt transects (sensu Kane et al. 2014), the team conducted three surveys between 40 and 60 m, and five surveys between 90 and 100 m. Mean abundance per transect of the 20 most abundant species in each depth range are presented in Table 2.3. A total of 251 individuals of 40 species and 32 genera were recorded.

Threats and Conservation Issues

The SCRs of American Sāmoa are generally thought to be in good condition (Fenner et al. 2008) and resilient (Birkeland et al. 2003) compared to many reefs around the world, but fish biomass has been reported to be significantly lower than lightly fished coral reefs in other locations (Birkeland et al. 2008). While the coral reefs of American Sāmoa face the same threats as coral reefs elsewhere, three threats have been documented to have major impacts on American Sāmoan reefs: outbreaks of COTS, coral bleaching, and major storm events (Birkeland et al. 2003; Fenner et al. 2008). Fishing impacts are also of concern, and Green (2002) indicated a decline of parrotfish and Maori wrasse were likely due to overfishing. However, broader impacts are not well documented across large spatial scales in American Sāmoa (Williams et al. 2011). We do not fully understand the current conditions of American Sāmoa's MCEs because of a significant lack of information.

Marine Protected Areas

Marine protected areas (MPAs) within American Sāmoa have been created at the federal, local, and community levels through various conservation frameworks. Of American Sāmoa's waters (0–150 m depth), 56 km^2 (12.4%) are under protection, of which 34.4 km^2 are SCR depths and 21.7 km^2 are MCE depths.

The American Sāmoa Government has a goal to protect 20% of its coral reef habitat (Jacob and Oram 2012; Raynal et al. 2016). The American Sāmoa Government has three types of MPAs developed under the Community-based Fisheries Management Program (CFMP) and the no-take MPA program managed under the Department of Marine and Wildlife Resources, as well as Special Management Areas (SMAs) managed under its Department of Commerce. Federally managed areas include the NPAS, the NMSAS, Rose Atoll National Wildlife Refuge, and the Rose Atoll National Marine Monument. Currently, all these MPA designations are spread across 27 sites with varying levels of protection and few with complete no-take provisions.

Of the 15 MPAs managed by the American Sāmoan Government, only five have depths that extend into the upper-mesophotic zone[4] (Figures 2.1A–B). Of these five, only one (Fagamalo No-Take MPA) has any significant area and extends offshore. The habitat characteristics of the MCE section of this MPA consists of a low slope (3.7˚±4.6˚) and approximately 58.8% hard bottom with 23.9% left unclassified. The other MPAs are Fagamalo Village MPA, Pago Pago SMA, Vatia Village MPA, and the Ofu Territorial Marine Park, each of which have small areas of MCE habitat, except for Pago Pago SMA, and are characterized with low slopes (Figure 2.9 and Table 2.4). Kendall (2011) provides a detailed breakdown of the habitat characteristics for each of the MPAs on Tutuila, but the details are not segregated into SCR and MCE, thereby making it difficult to ascertain the role of MCEs in the broader context of coral reef management. The dominance of SCRs under protection is not surprising given the commonly known threats to coral reefs and the state of understanding of these ecosystems, but also highlights the need for further consideration of the role MCEs may play into the broader management strategies of coral reefs.

[4] The methods to calculate the area for each depth zone classification, the reef slope, and proportion of bottom hardness type for each individual MPA were the same as the island-wide calculations. The island-wide data was clipped with each individual MPA boundary and geodesic and slope statistics were calculated.

The NPAS was designated in 1998 (U.S. Public Law 100-571) to protect natural and cultural resources including coral reefs (NPAS 2002) and prohibits all fishing and gathering except for subsistence purposes (16 USC 410qq–2). The NPAS consists of three units: Tutuila, Ofu, and Taʻū (Figures 2.1A–B). Of the three, the Tutuila unit (6.49 km^2) has the most area in the upper-mesophotic zone, followed by the Ofu unit, and the Taʻu unit (Table 2.4). The Taʻū unit also includes 0.48 km^2 in the mid-mesophotic zone and 0.49 km^2 in the lower-mesophotic zone. Each unit has different habitat characteristics. Tutuila unit is mostly flat (4.5˚±5.5˚) with Ofu unit having more hard bottom and Taʻū unit has significantly greater slope (31.4˚±14.5˚ to 37.8˚±12.4˚) and extended deeper than the other units (Figure 2.10 and Table 2.4). However, there has been limited work done in these areas, so the presence of MCE communities is unknown.

In 2012, the Fagatele Bay National Marine Sanctuary was expanded and renamed NMSAS. The expansion of NMSAS greatly increased the sanctuary's area and the habitat types under protection. NMSAS has seven management areas across all islands with varying levels of site protection. The management areas include Aunuʻu Island area A and area B, Fagalua/Fogamaʻa, Fagatele Bay, Taʻū, Swains Island, and Muliava (area around Rose Atoll outside the reef crest) (Figures 2.1A–D). Fagatele Bay is the only site within the NMSAS with full no-take protections. The Aunuʻu Island management areas have significantly more MCE area than SCR area with low slopes, except for the lower-mesophotic zone with a moderate slope (Table 2.4). The Fagalua/Fogamaʻa and Fagatele Bay management areas have nearly equal area between MCEs and SCRs with moderate slopes and high slope standard deviation across all zones. The Taʻū management area has more MCE area than SCR with low to moderate slopes across all depths (Table 2.4). In general, there is a diverse mixture of hard and soft bottom, but generally more soft bottom at deeper depths. The Aunuʻu Island management areas have a higher proportion of hard bottom compared to the Fagalua/Fogamaʻa and Fagatele Bay management areas. The Taʻū management area has more hard bottom in the upper-mesophotic zone and transitions to more soft bottom in the lower-mesophotic zone (Figure 2.11). It should be noted that Rose Atoll is under multiple agency jurisdiction for protection besides the NMSAS and includes the U.S. Fish and Wildlife Service, and NOAA's NMFS. The inner part of Rose Atoll does not have any MCEs.

Threatened Corals

In 2014, NOAA's NMFS listed 15 Indo-Pacific scleractinian corals as threatened under the U.S. Endangered Species Act (NOAA 2014). Of these, seven are known to occur in American Sāmoa's SCRs. In 2016, surveys were conducted at eight sites around Tutuila to document the presence of listed corals on MCEs. These surveys documented three of the seven listed species below 40 m: *Acropora speciosa* at three sites, *Euphyllia paradivisa* at one site, and *Pavona* cf. *diffluens* at one site (Figure 2.12; Montgomery, unpublished data). Of the eight sites surveyed, five had listed coral species present suggesting their presence is likely common. There is much discussion about the role of MCEs as a potential refugia for SCRs (Bongaerts et al. 2010; Semmler et al. 2017; Bongaerts and Smith 2019). Before any meaningful analysis can be taken on the ecological significance of a single habitat or community providing resilience to another, a basic species characterization needs to occur. If species overlap does not exist (Hurley et al. 2016), the role as a direct refuge is not possible. Here, we demonstrate that species presence does overlap across habitats for some listed scleractinians. Further data is needed on their complete distribution, densities, reproductive characteristics, and connectivity before a conclusion can be made on the role of American Sāmoa's MCEs as a refuge for listed scleractinian corals.

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Figures

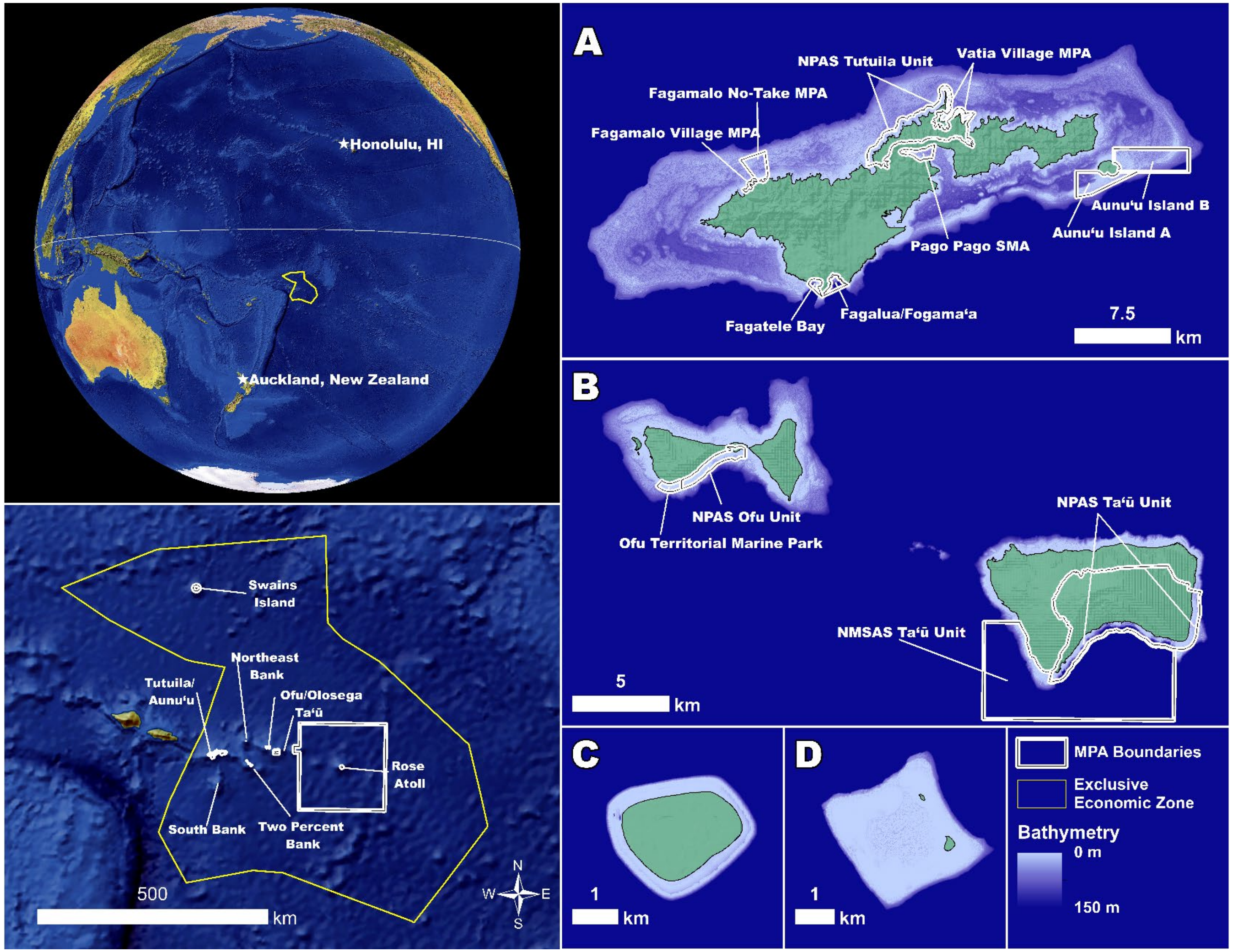

Figure 2.1. Map of American Sāmoa. (A) Tutuila, (B) Manu'a Islands of Ofu, Olosega, and Ta'ū, (C) Swains Islands, and (D) Rose Atoll/Muliava. Additionally, the marine protected areas with mesophotic depths are highlighted and labeled except in (C) and (D).

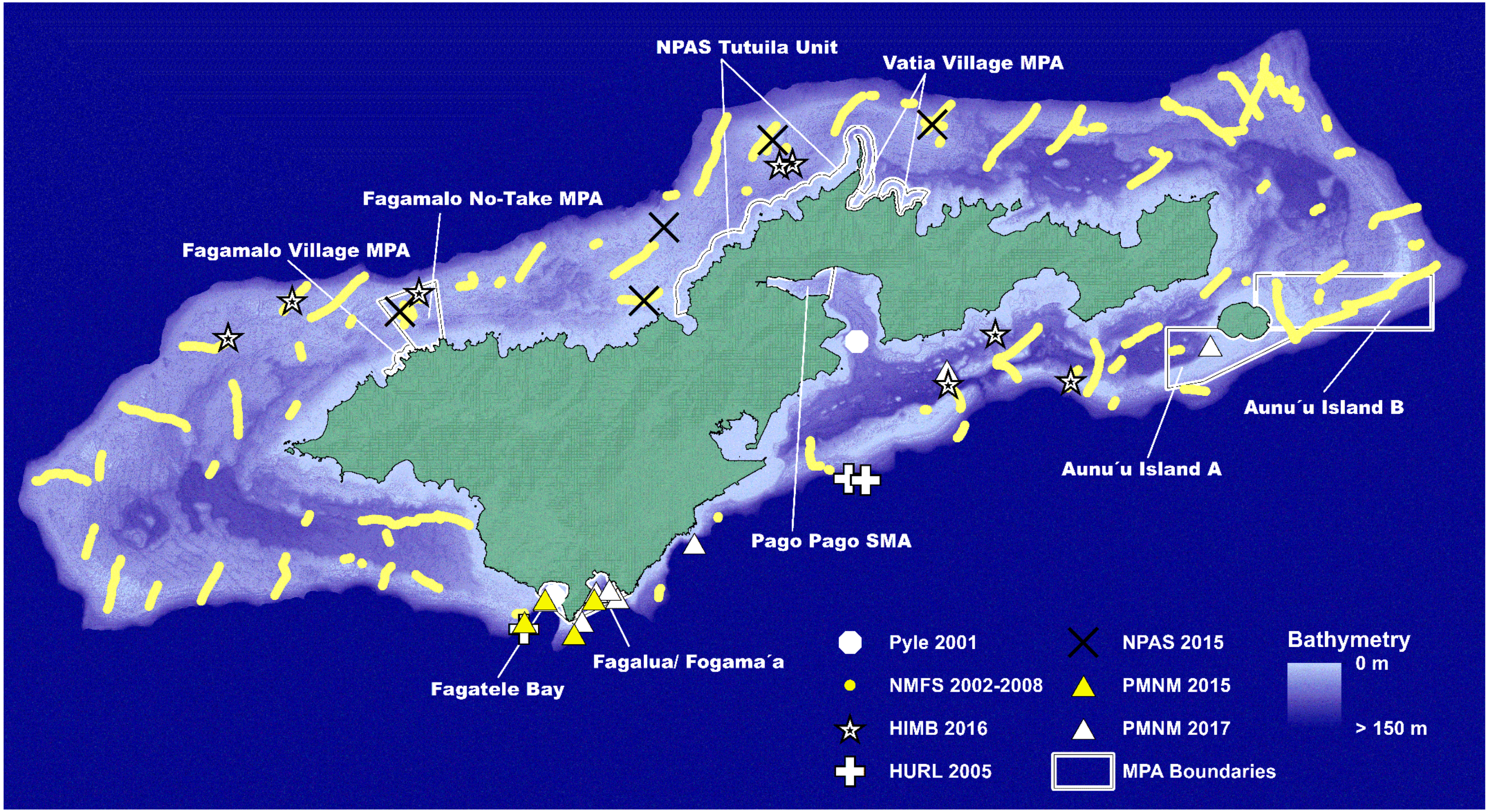

Figure 2.2. Map of Tutuila showing the locations of previous surveys.

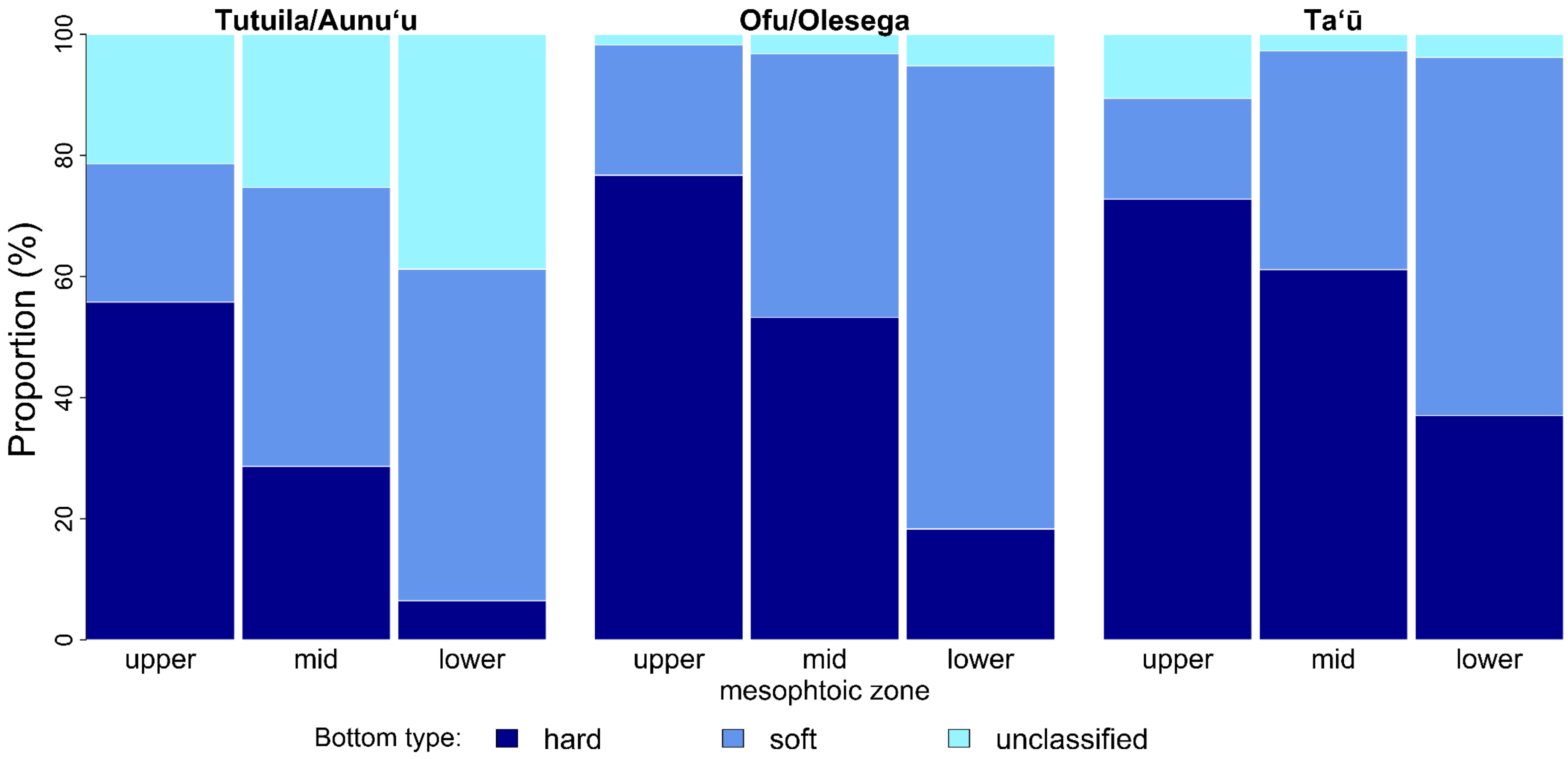

Figure 2.3. Bar plots showing the proportion of bottom hardness classification for mesophotic zones across Tutuila/Aunu‘u, Ofu/Olosega, and Ta‘ū.

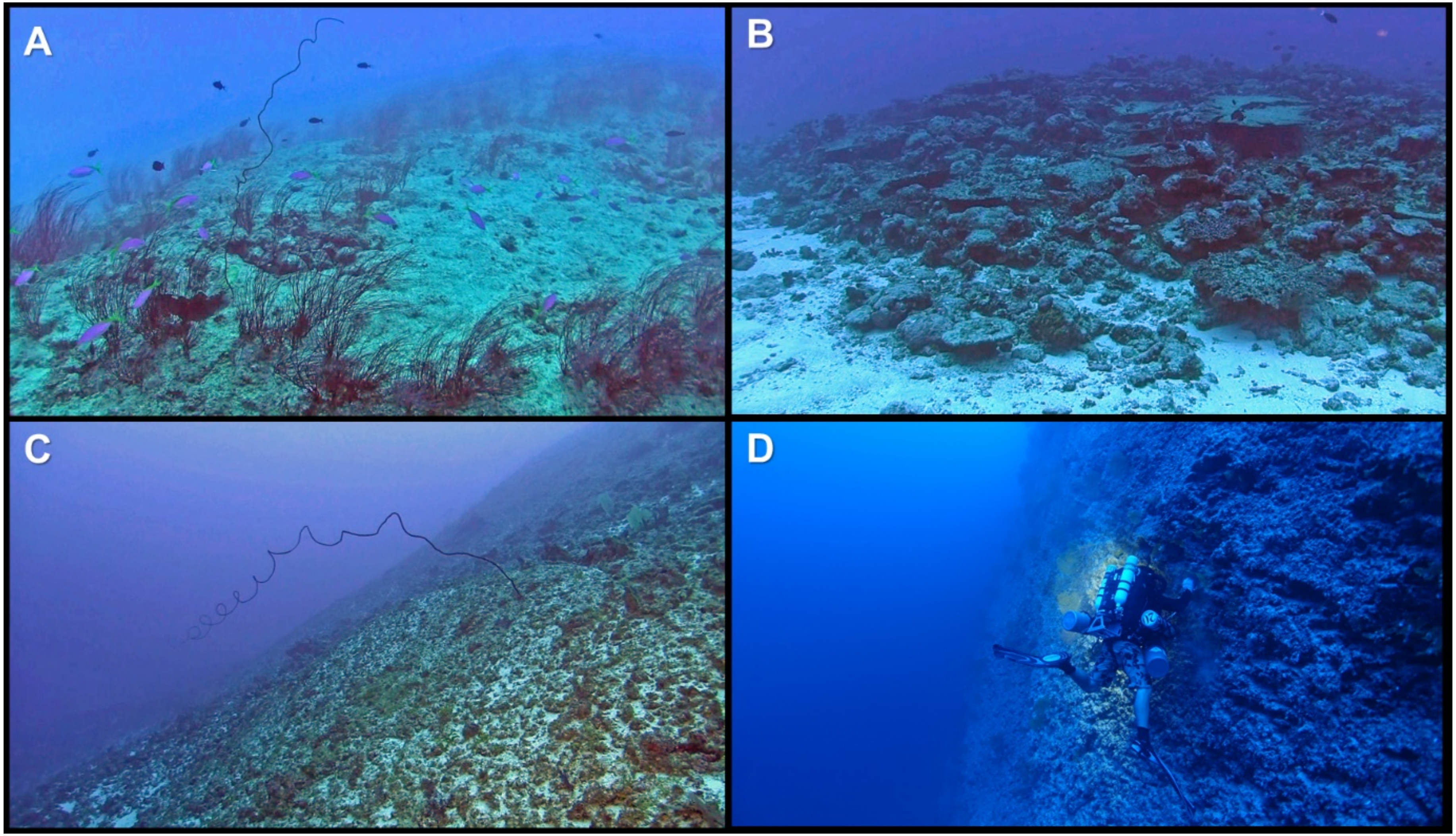

Figure 2.4. Photos of various sites in the upper-mesophotic zone (30–70 m). (A) isolated limestone mound covered in gorgonians, (B) edge of limestone reef with high rugosity and scleractinian cover, (C) steep slope with little coral presence, and (D) NOAA diver Jason Leonard collects specimens along a vertical drop-off at a depth of 92 m off Fagatele Bay, Tutuila (Photos: A.D. Montgomery[A-C]; R.L. Pyle [D]).

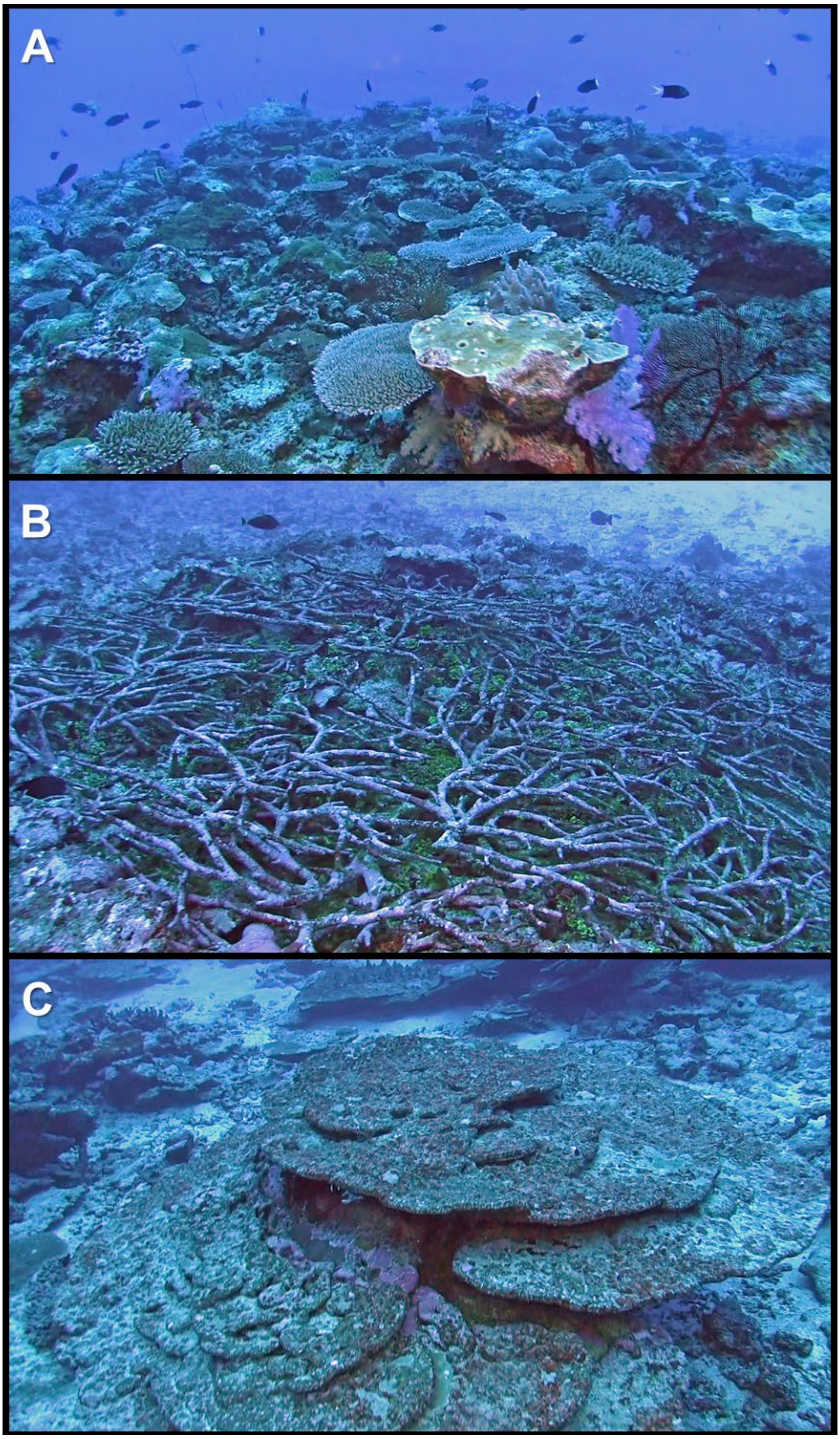

Figure 2.5. Photos of various sites of the upper-mesophotic zone. (A) isolated limestone mound with high scleractinian cover and species diversity, (B) dead patch of staghorn *Acropora* sp., and (C) dead *Porites arnaudi* colonies (Photos: A.D. Montgomery).

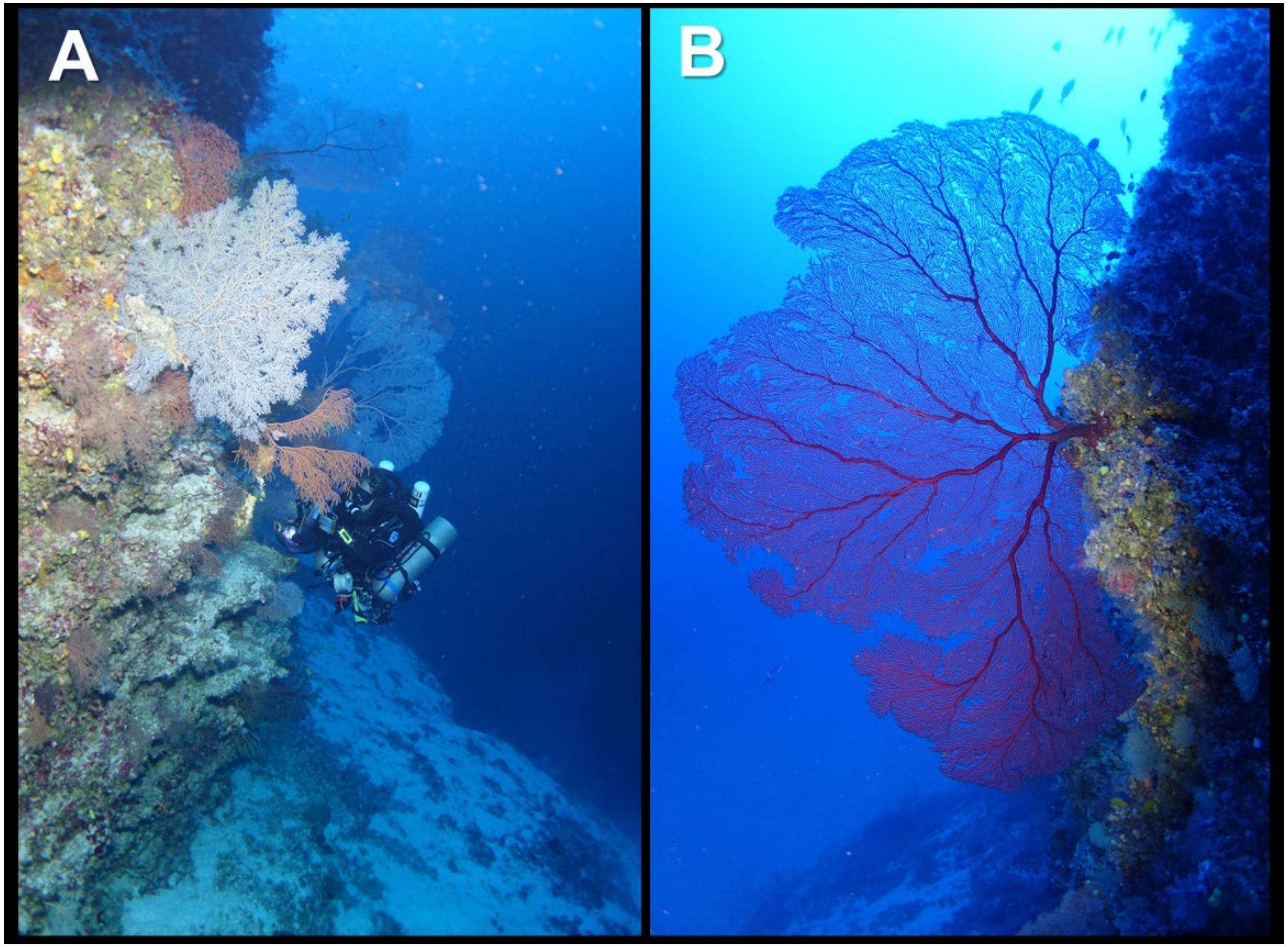

Figure 2.6. Photos of various sites in the mid-mesophotic zone (70–100 m) in Fagatele Bay, Tutuila. (A) NOAA diver Daniel Wagner photographs gorgonian and antipatharian corals at a depth of 83 m off Fogamaʻa, Tutuila, and (B) large gorgonian coral along a reef drop-off at a depth of about 70 m off Vaitogi, Tutuila (Photos: R.L. Pyle).

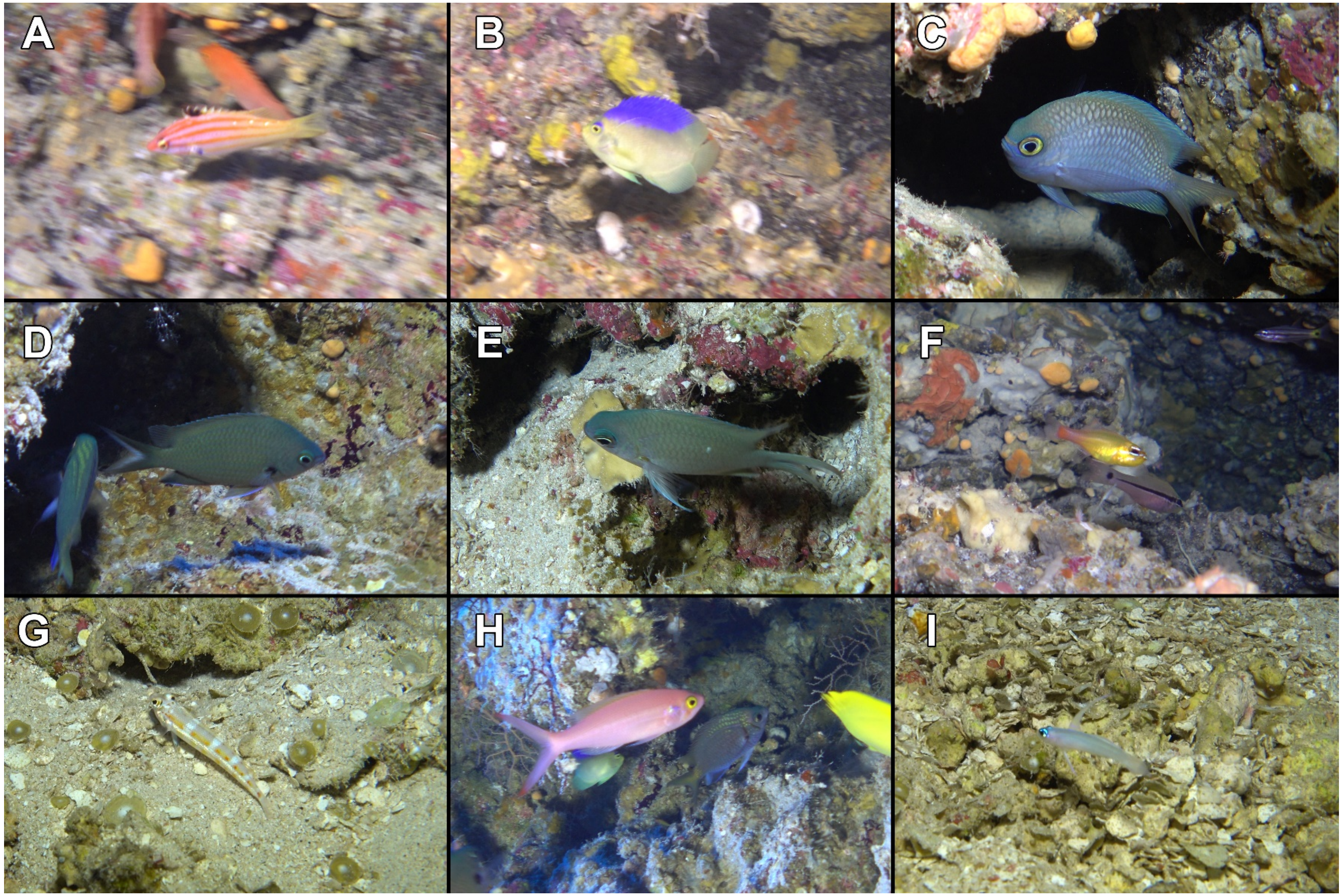

Figure 2.7. Sample of new records of fishes in American Sāmoa discovered during the 2017 rebreather expedition: (a) *Bodianus paraleucosticticus*v Gomon 2006, (b) *Centropyge colini* Smith-Vaniz and Randall 1974, (c) *Chromis brevirostris* Pyle, Earle and Greene 2008, (d) *Chromis degruyi* Pyle, Earle and Greene 2008, (E) *Chromis earina* Pyle, Earle and Greene 2008, (f) *Pseudanthias flavicauda* Randall and Pyle 2001, (g) Apogonidae sp., (h) *Parapercis* sp., (i) *Tryssogobius* sp., (j) *Symphysanodon* sp. (Photo credits: R.L. Pyle, can be reused under the CC BY license).

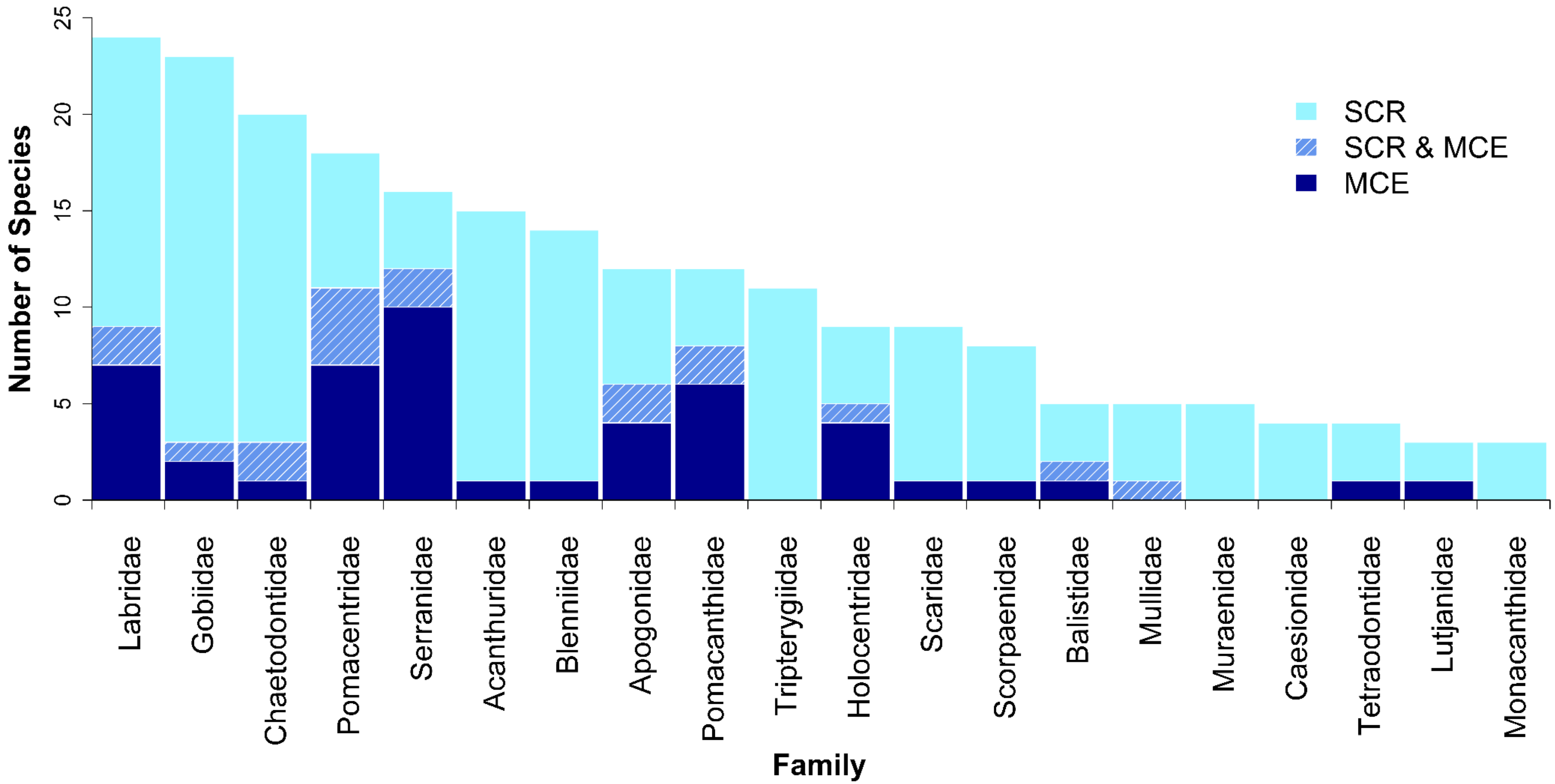

Figure 2.8. The 20 most species-rich families of coral reef fishes from GBIF (2017) and Explorers Log (2017) databases. Values for both SCR and MCE habitats also include species occurring in both habitats.

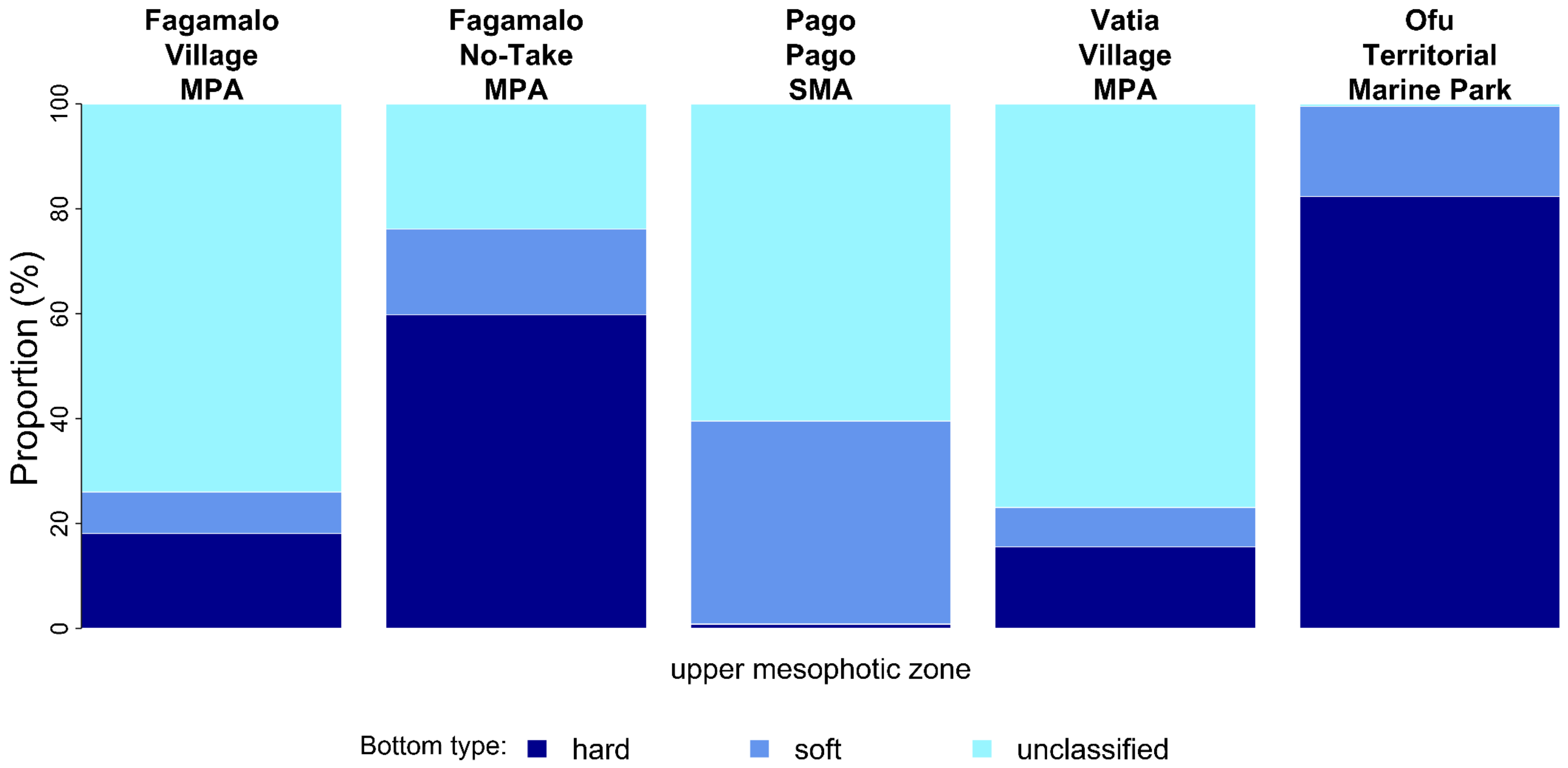

Figure 2.9. Bar plots showing the proportion of bottom hardness classification for mesophotic zones in different American Sāmoa Government MPAs. These areas did not have any mid- and lower-mesophotic depths.

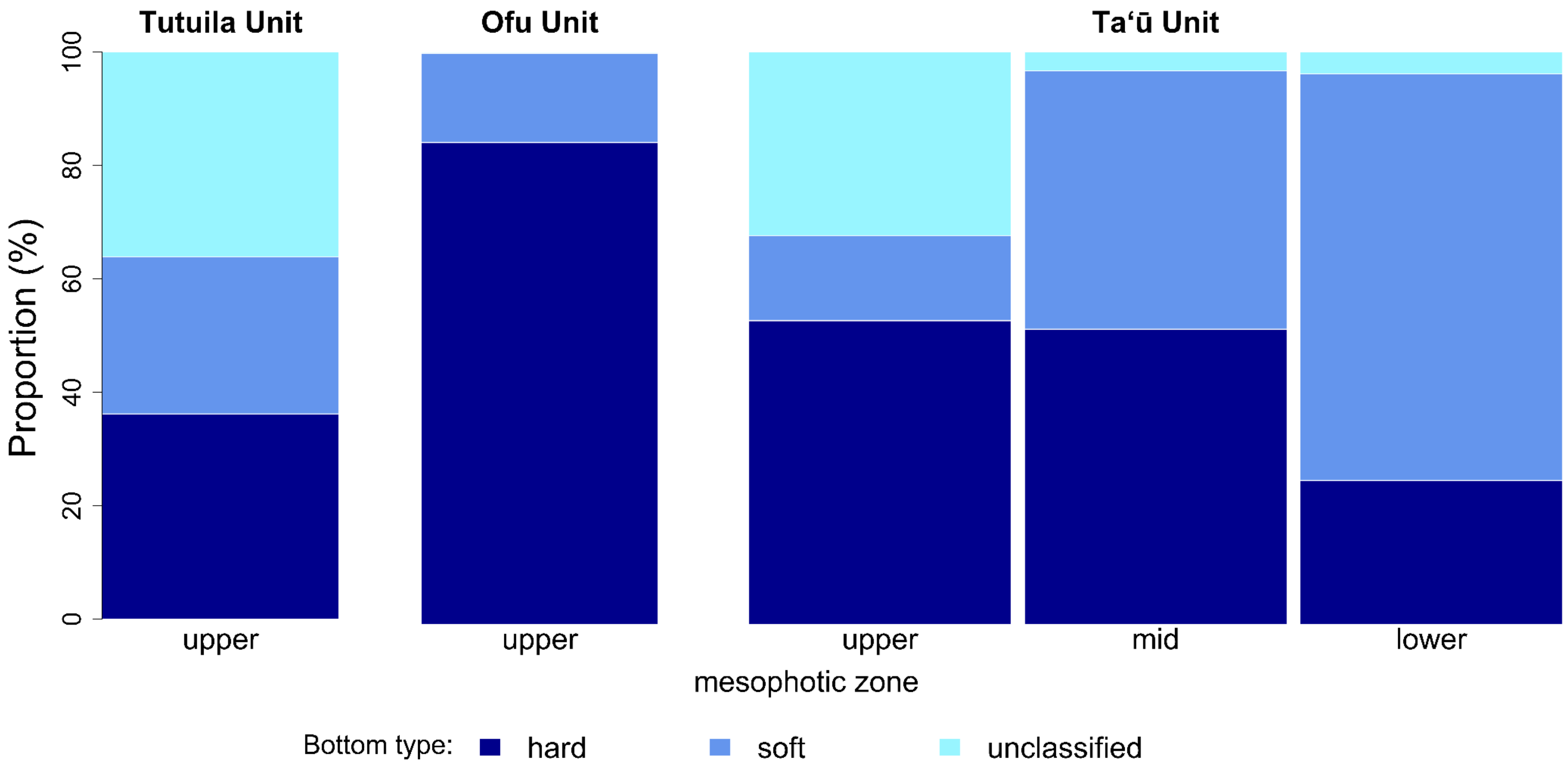

Figure 2.10. Bar plots showing the proportion of bottom hardness classification for mesophotic zones in different NPAS management units. The Tutuila and Ofu units did not have any mid- and lower-mesophotic depths.

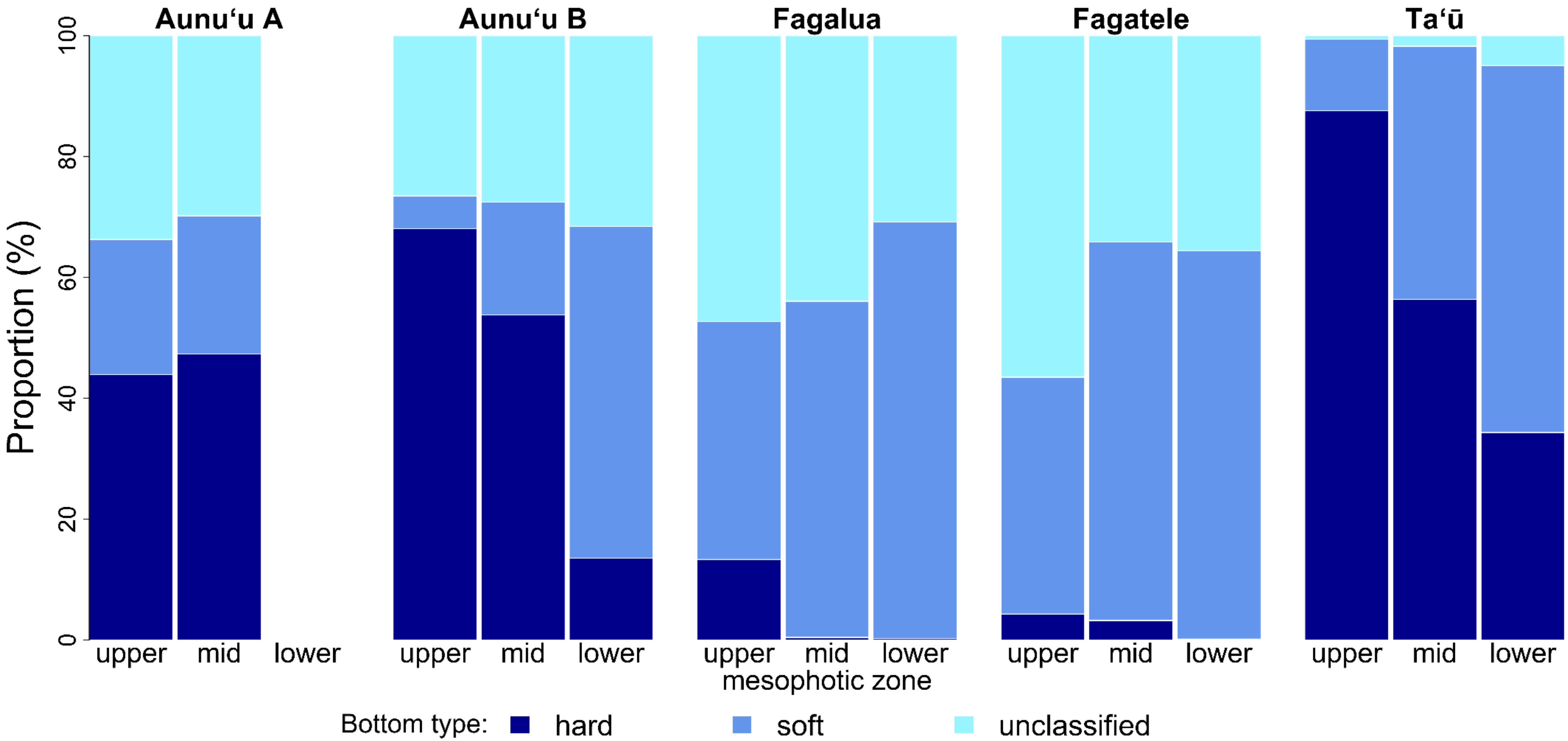

Figure 2.11. Bar plots showing the proportion of bottom hardness classification for mesophotic zones in different NMSAS management areas. The bottom hardness for Swains Island and Muliava is mostly unclassified and are not represented in this graph.

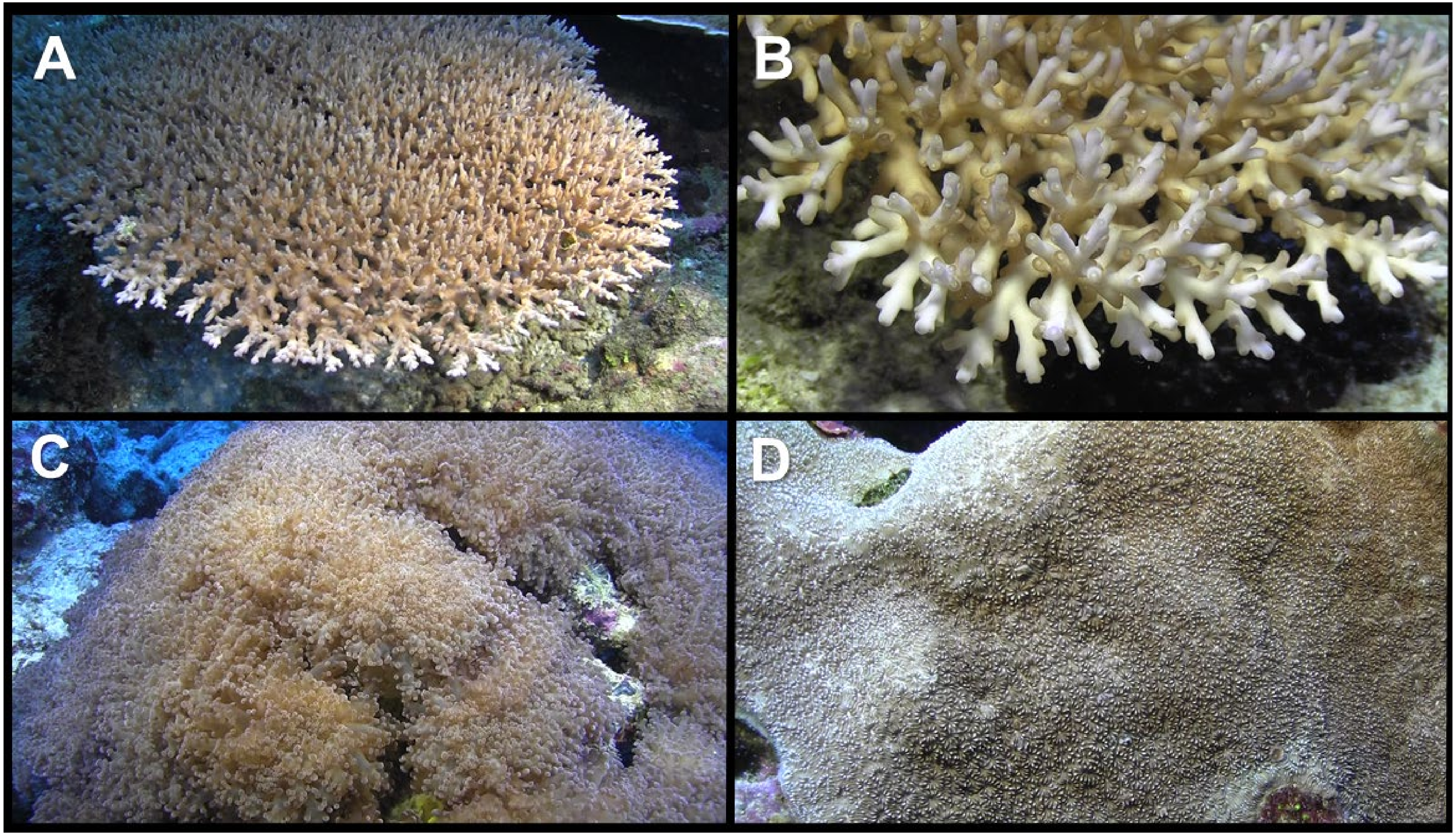

Figure 2.12. Photos of the threatened corals listed under the U.S. Endangered Species Act. (A) *Acropora speciosa*, (B) Close-up of *Acropora speciosa*, **(**C) *Euphyllia paradivisa*, and (D) *Pavona* cf. *diffulens* (Photos: A.D. Montgomery).

Tables

Table 2.1. Geodesic area and reef slope for each island and bank group. The mesophotic zones are upper (30–70 m), mid (70–110 m), and lower (110–150 m).

		Tutuila/ Aunu‘u	Ofu/ Olosega	Ta‘ū	Swains	Rose	Northeast Bank	Two Percent Bank
Habitat Area (km^2)	Land	137.8	12.6	45.5	3.6	0.1	0.0	0.0
	SCR	49.6	12.1	22.3	2.3	7.8	0.0	0.0
	MCE	305.7	23.3	11.4	0.6	1.3	14.4	0.8
	upper	224.2	14.3	4.5	0.3	0.7	11.0	0.0
	mid	74.6	7.3	3.8	0.2	0.4	2.5	0.4
	lower	6.8	1.7	3.1	0.1	0.1	0.9	0.4
Mesophotic zone slope (mean ± sd)	upper	3.9±5.4	6.4 ±6.5	19.8 ±13.6	51.1±7.1	30.9 ±13.8	2.3±12.7	—
	mid	5.7 ±7.2	11.7 ±9.4	24.1 ±13.4	56.3±7.2	42.2 ±17.2	12.2 ±9.3	11.7 ±9.0
	lower	30.1 ±19.8	36.8 ±18.6	30.9 ±12.9	73.7±7.7	70.5±8.9	32.6 ±15.8	28.4 ±14.0

Table 2.2. Scleractinian coral species present in American Sāmoa's upper-mesophotic zone [taxonomy according to WoRMS Editorial Board (2017), except for *Acropora cf. akajimensis*]. *Listed species under the U.S. Endangered Species Act. $^{+}$New records for American Sāmoa.

Family *Genus species*	Max Depth (m)	**Family** *Genus species*	Max Depth (m)	**Family** *Genus species*	Max Depth (m)	**Family** *Genus species*	Max Depth (m)	**Family** *Genus species*	Max Depth (m)
Acroporidae		**Agariciidae**		**Fungiidae**		*Oxypora lacera*	42.6	**Poritidae**	
Acropora aculeus	48.6	*Gardineroseris planulata*	48.9	*Cycloseris costulata*$^{+}$	34.8	*Oxypora* sp.	42.9	*Goniopora* cf. *djiboutiensis*	46.8
Acropora cf. *akajimensis*	41.4	*Leptoseris* cf. *scabra*	52.5	*Cycloseris vaughani*	47.1	**Pocilloporidae**		*Goniopora* cf. *minor*	47.7
Acropora intermedia	36.6	*Leptoseris explanata*	46.2	*Fungia horrida*	39	*Pocillopora* cf. *danae*	47.7	*Goniopora* cf. *somaliensis*	46.8
Acropora latistella	42.3	*Leptoseris scabra*	46.5	*Fungia* sp. 1	41.4	*Pocillopora damicornis*	49.8	*Porites arnaudi*$^{+}$	48.9
Acropora paniculata	40.8	*Leptoseris* sp.	46.8	*Fungia* sp. 2	48	*Pocillopora grandis*	48.9	*Porites myrmidonensis*$^{+}$	44.1
Acropora solitaryensis^{+}	44.4	*Leptoseris tubulifera*$^{+}$	52.2	*Fungia* sp. 3	48	*Pocillopora verrucosa*	48.3	*Porites rus*	47.1
Acropora sp. 1	49.8	*Pavona* cf. *diffluens**	44.4	*Herpolitha limax*	46.8	*Stylophora pistillata*	50.4	*Porites* sp. 1	46.5
Acropora sp. 2	42.9	*Pavona chiriquiensis*	46.5	*Herpolitha* sp.	47.7	**Merulinidae**		*Porites* sp. 2	41.7
*Acropora speciosa**	45.9	*Pavona varians*	53.4	*Lithophyllon concinna*	48.6	*Astrea curta*	42	*Porites* sp. 3	46.8
Acropora spp.	53.1	**Coscinaraeidae**		*Lobactis scutaria*	39.3	*Astrea* sp.	33.3	*Porites* sp. 4	48.6
Alveopora excelsa^{+}	51.9	*Coscinaraea columna*	45.9	*Pleuractis granulosa*	4.1	*Coelastrea aspera*	47.4	*Porites* sp. 5	39.6
Alveopora spongiosa	45.9	**Euphylliidae**		*Pleuractis moluccensis*	48.3	*Cyphastrea* sp. 1	52.5	*Porites* sp. 6	48.9
Astreopora listeri	52.8	*Euphyllia glabrescens*	48.6	*Sandalolitha dentata*	47.1	*Cyphastrea* sp. 2	33	**Psammocoridae**	
Astreopora randalli	42.3	*Euphyllia paradivisa**	49.2	*Sandalolitha robusta*	39.3	*Favites* sp. 1	45.9	*Psammocora nierstraszi*	47.1
Astreopora sp.	33.6	*Galaxea astreata*	46.2	**Lobophylliidae**		*Favites* sp. 2	48.6	*Psammocora profundacella*	48
Astreopora suggesta	45.9	*Galaxea fascicularis*	46.2	*Acanthastrea brevis*	42.3	*Favites* sp. 3	46.5	**Scleractinia incertae sedis**	
Montipora aequituberculata	33.6	**Dendrophylliidae**		*Acanthastrea* cf. *brevis*	46.2	*Goniastrea stelligera*	42.6	*Leptastrea pruinosa*	32.4
Montipora capitata	48.6	*Rhizopsammia* sp.	52.2	*Acanthastrea echinata*	38.7	*Hydnophora exesa*	38.4	*Leptastrea purpurea*	51.6
Montipora cf. *incrassita*	33	*Tubastraea coccinea*	45	*Echinophyllia aspera*	40.2	*Leptoria phrygia*	42	*Leptastrea transversa*	33.6
Montipora grisea	53.1	*Turbinaria peltata*	48.6	*Echinophyllia sp.*	45.6	*Merulina ampliata*	41.7	*Pachyseris speciosa*	52.5
Montipora sp. 1	42	*Turbinaria stellulata*	50.7	*Lobophyllia* cf. *robusta*	40.2	*Merulina scabricula*	39	*Plesiastrea versipora*	42.9
Montipora sp. 2	46.2	**Diploastreidae**		*Lobophyllia hemprichii*	47.7	*Platygyra* sp.	41.7		
Montipora sp. 3	41.1	*Diploastrea heliopora*	42.9	*Lobophyllia* sp. 1	45.6	**Mussidae**			
Montipora sp. 4	53.1	*Diploastrea* sp.	42.9	*Lobophyllia* sp. 2	48.3	*Favia* sp.	48.6		
Montipora tuberculosa	49.2			*Oxypora crassispinosa*	46.8				

Table 2.3. Twenty most abundant species of fishes on MCEs at Fagatele Bay, American Sāmoa. Surveys were conducted in the upper-mesophotic zone (n=3) and mid-mesophotic zone (n=5) depth ranges. Mean number of fish per 25 m x 2 m transect presented.

	Upper-mesophotic zone (40–60 m)			**Mid-mesophotic zone (60–100 m)**		
Rank	**Species**	**$\bar{x}$**	**SD**	**Species**	**$\bar{x}$**	**SD**
1	*Chromis amboinensis*	7.7	10.0	*Chromis amboinensis*	6.6	11.7
2	*Pseudanthias pleurotaenia*	6.7	7.6	*Pseudanthias pleurotaenia*	4.4	3.8
3	*Trimma* sp.	4.3	7.5	*Myripristis chryseres*	2.6	5.8
4	*Chromis xanthura*	1.7	2.9	*Chromis earina*	2.4	5.4
5	*Pictichromis porphyrea*	1.7	2.9	*Trimma* sp.	2.0	4.5
6	*Acanthurus thompsoni*	1.3	2.3	*Caesio* sp.	1.8	2.7
7	*Cephalopholis spiloparaea*	1.0	1.7	*Chromis alpha*	1.4	2.6
8	*Zanclus cornutus*	1.0	1.7	*Pseudanthias carlsoni*	1.2	2.7
9	*Chromis viridis*	1.0	1.7	*Pseudanthias fasciatus*	1.2	2.7
10	*Pomacentrus vaiuli*	1.0	1.7	*Aphareus furca*	1.0	1.7
11	*Centropyge heraldi*	0.7	1.2	*Pictichromis porphyrea*	0.8	1.3
12	*Heniochus varius*	0.7	1.2	*Forcipiger longirostris*	0.6	0.9
13	*Apolemichthys trimaculatus*	0.7	1.2	*Pseudanthias* sp.	0.6	1.3
14	*Forcipiger longirostris*	0.7	1.2	*Parupeneus* sp.	0.4	0.6
15	*Chaetodon vagabundus*	0.7	1.2	*Bodianus bimaculatus*	0.4	0.9
16	*Canthigaster valentini*	0.7	1.2	*Bodianus paraleucosticticus*	0.2	0.5
17	*Labroides dimidiatus*	0.7	1.2	*Caranx lugubris*	0.2	0.5
18	*Pygoplites diacanthus*	0.3	0.6	*Carcharhinus amblyrhynchos*	0.2	0.5
19	*Dascyllus reticulatus*	0.3	0.6	*Centropyge heraldi*	0.2	0.5
20	Serranidae sp.	0.3	0.6	*Cephalopholis spiloparaea*	0.2	0.5

$\bar{x}$ mean; SD = standard deviation

Table 2.4. Geodesic area and reef slope for each American Sāmoa Government MPAs, NPAS units, and NMSAS management areas. The mesophotic zones are upper (30–70 m), mid (70–110 m), and lower (110-150 m).

		American Sāmoa Government MPAs					NPAS			NMSAS						
		Fagamalo Village MPA	Fagamalo No-Take MPA	Pago Pago SMA	Vatia Village MPA	Ofu Territorial Marine Park	Tutuila Unit	Ofu Unit	Taʻū Unit	Aunuʻu Island A	Aunuʻu Island B	Fagalua/ Fogamaʻa	Fagatele Bay	Taʻū Island	Swains Island	Muliava/ Rose Atoll**
Habitat Area (km^2)	SCRs	0.34	0.71	0.73	0.60	0.46	2.92	1.36	6.90	2.60	2.53	0.45	0.42	1.23	1.68	1.10
	MCEs	0.03	2.18	0.51	0.02	0.02	3.57	0.16	1.67	2.34	6.94	0.49	0.27	1.70	0.48	1.31
	upper	0.03	2.18	0.51	0.02	0.02	3.57	0.16	0.70	1.26	6.08	0.22	0.12	0.71	0.23	0.75
	mid	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	1.08	0.67	0.10	0.07	0.54	0.18	0.43
	lower	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.18	0.17	0.07	0.45	0.07	0.13
Slope (mean±sd)	upper	7.1±6.3	3.7±4.6	5.9±7.0	13.4±8.9	11.8±8.2	4.5±5.5	7.5±6.9	35.0±14.7	10.5±8.8	3.8±4.2	29.7±15.1	29.5±14.2	15.6±8.0	50.9±6.5	30.9±13.8
	mid	—	—	—	—	—	—	—	37.8±12.4	4.9±5.1	8.1±6.5	35.1±14.3	29.0±17.1	22.7±9.8	56.1±7.2	42.2±17.2
	lower	—	—	—	—	—	—	—	31.4±14.5	—	29.8±16.2	31.7±14.2	27.1±17.6	30.9±12.3	73.7±8.1	70.5±8.9

**Calculations include the U.S. Fish and Wildlife National Wildlife Refuge/ Rose Atoll National Marine Monument, and NMSAS.

Chapter 3
Annotated checklist for stony corals of American Sāmoa with reference to mesophotic depth records

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Authors: Anthony D. Montgomery, Douglas Fenner, and Robert J. Toonen

Abstract

An annotated checklist of the stony corals (Scleractinia, Milleporidae, Stylasteridae, and Helioporidae) of American Sāmoa is presented. A total of 377 valid species have been reported from American Sāmoa with 342 species considered either present (251) or possibly present (91). Of these 342 species, 66 have a recorded geographical range extension and 90 have been reported from mesophotic depths (30–150 m). Additionally, four new species records (*Acanthastrea subechinata* Veron, 2000, *Favites paraflexuosus* Veron, 2000, *Echinophyllia echinoporoides* Veron & Pichon, 1980, *Turbinaria irregularis* Bernard, 1896) are presented. Coral species of concern include species listed under the U.S. Endangered Species Act (ESA) and the International Union for Conservation of Nature's (IUCN) Red List of threatened species. Approximately 17.5% of the species present or possibly present are categorized as threatened by IUCN compared to 27% of the species globally. American Sāmoa has seven ESA-listed or ESA candidate species, including *Acropora globiceps* (Dana, 1846), *Acropora jacquelineae* Wallace, 1994, *Acropora retusa* (Dana, 1846), *Acropora speciosa* (Quelch, 1886), *Fimbriaphyllia paradivisa* (Veron, 1990), *Isopora crateriformis* (Gardiner, 1898), and *Pocillopora meandrina* Dana, 1846. There are two additional species possibly present, i.e., *Pavona diffluens* (Lamarck, 1816) and *Porites napopora* Veron, 2000.

Keywords

mesophotic coral ecosystems, WoRMS, World List of Scleractinia, new records, Scleractinia, Milleporidae, Stylasteridae

Introduction

American Sāmoa is an unincorporated territory of the United States and lies between Hawaiʻi and New Zealand in the Southern Pacific Ocean (Figure 3.1). The Sāmoan Archipelago includes American Sāmoa, which consists of five high islands (Tutuila, Aunuʻu, Ofu, Olosega, and Taʻū), one low island (Swains Island), and an atoll (Rose), and the Independent state of Sāmoa at the west end of the archipelago with the two high islands (Upolu and Savaiʻi) and eight smaller islands. Tonga lies approximately 900 km to the southwest and Tuvalu lies approximately 1,400 km to the northwest.

Coral reef research has been conducted in American Sāmoa since the early 1900s with work analyzing the growth rate of coral reefs and reporting the World's second stony coral transect (Mayor 1924a, 1924b; Mayor 1918). Since then, there has been a series of studies around the territory documenting its coral communities (Hoffmeister 1925; Birkeland et al. 1987, 2003, 2013; Maragos et al. 1994) including coral species checklists (Lamberts 1983; Birkeland 2001, 2007a, 2007b; Coles et al. 2003; DiDonato et al. 2006; Lovell and McLardy 2008; Kenyon et al. 2011). While there have been several papers looking at the coral species of American Sāmoa, most are not peer-reviewed and none to date have considered the mesophotic zone explicitly. This has led to a large amount of documentation on the coral diversity across the territory, but not in a comprehensive manner that analyzes all available data and the scale of evidence for a complete coral species presence.

Previously referred to as deep coral reefs or the coral reef twilight zone (Pyle 1996, 1998, 2000), mesophotic coral ecosystems (MCE) are well defined in the literature: "Mesophotic coral ecosystems (MCEs) are characterized by the presence of light-dependent corals and associated communities that are typically found at depths ranging from 30 to 40 m and extending to over 150 m in tropical and subtropical regions. The dominant communities providing structural habitat in the mesophotic zone can be comprised of coral, sponge, and algal species" (Hinderstein et al. 2010). Previously thought to be marginal habitats, MCEs have been hypothesized as potential refugia for shallow water corals under the 'deep reef refugia' hypothesis (DRRH) (Glynn 1996; Hughes and Tanner 2000; Riegl and Piller 2003; Bak et al. 2005; Kahng et al. 2010; Bongaerts et al. 2010; Tenggardjaja et al. 2014; Holstein et al. 2015). Others have argued that MCEs host different communities of species, and make unlikely refugia from a warming ocean (Hurley et al. 2016; Smith et al. 2016; Bongaerts et al. 2017; Semmler et al. 2017). Bongaerts et al. (2010) reviewed the current literature regarding the DRRH for Caribbean reefs and concluded that the DRRH is more likely to apply to "depth generalist" species and may serve a greater importance in the upper range of MCEs (30–60 m). This was later exemplified on a Pacific reef in Okinawa, where the coral *Seriatopora hystrix* Dana, 1846 was extirpated from shallow water, and later discovered in an upper MCE at depths of 35 to 47 m (Sinniger et al. 2013). Here, we provide a notation for each species reported to be within the mesophotic zone in order to provide a common baseline on species occurrence.

The biogeography of corals has only been studied in the last few decades (Stehli and Wells 1971) with species level comparisons in the last two decades. Corals of the World (CoTW; Veron et al. (2016) recognizes 833 valid zooxanthellate scleractinian species globally and does not include the azooxanthellate dendrophylliid corals (Cairns 2001; Arrigoni et al 2014) as well as the cave dwelling *Leptoseris troglodyta* Hoeksema, 2012 (Hoeksema 2012a). The World List of Scleractinia (WLS) reports 1,610 valid species with approximately half of those being zooxanthellate, hermatypic species (Hoeksema and Cairns 2019). Broad-scale biogeographic studies require regional-scale data that can be traced back to a consistent taxonomy (Veron 1995). The most comprehensive biogeographic analysis of scleractinians has been completed by Veron et al. (2015) and CoTW (Veron 2000; Veron et al. 2016). Together, these studies show a pattern of highest diversity in the Coral Triangle with decreasing diversity towards the north, east, and south (Hoeksema 2007; Veron et al. 2015). The ecoregion described by Veron et al. (2016) that includes American Sāmoa is the Sāmoa, Tuvalu, and Tonga ecoregion and includes the island groups of Tuvalu, Tokelau, Wallis and Futuna, Tonga, Niuē, and the Sāmoa Archipelago. Veron et al. (2016) reports this ecoregion has 313 reef coral species, while the neighboring ecoregions range from 16 to over 500 coral reef species and the Coral Triangle with 627 coral reef species (Table 3.1; Veron et al. 2016).

In order to make available the vast history of work completed in American Sāmoa, we present a detailed annotated analysis for the reported shallow and mesophotic stony coral species including scleractinian, milleporid, stylasterid, and helioporid species. This analysis presents the information in an open, transparent manner that allows the reader to judge any particular observation over and beyond our analysis. The goal of this study is to provide a foundation for a thorough species list for the Territory of American Sāmoa with a mechanism that allows the reader to trace back to the original recording of the species. This mechanism will allow different interpretations of the taxonomy, confidence of a species observation, or future analyses of species presence to be re-analyzed or questioned easily. Further, we believe this type of approach to a species checklist on a small regional scale can provide a valuable contribution to broader scale biogeographic analyses as discussed by Veron (1995).

Materials and Methods

Species occurrences in the study area were recorded from all available literature (Mayor 1924a, 1924b; Hoffmeister 1925; Dahl and Lamberts 1977; USACE 1980; Dahl 1981; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Itano and Buckley 1988; Hoeksema, 1989; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Green et al. 1999; Mundy and Green 1999; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; Wolstenholme et al. 2003; Cornish and DiDonato 2004; DiDonato et al. 2006; Birkeland 2007a, 2007b; Fenner et al. 2008; Lovell and McLardy 2008; Forsman and Birkeland 2009; Forsman et al. 2009; Bare et al. 2010; Benzoni et al. 2010; Kenyon et al. 2010, 2011; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; AM 2018; BPBM 2018; DMWR 2018;

Fenner 2018; QM 2018; USNMNH 2018; Creuwels 2019; Gross 2019; Montgomery et al. 2019; Paulay and Brown 2019). Each appearance of a species name was recorded with as much information as available including the exact spelling of the species name, identification qualifiers (e.g., cf., aff., ?, etc.), survey type, island, species location (e.g., site name, transect label, etc.), the reference of the appearance, if the species was referenced to a different source and its reference, and any other general notes or information. This information was collected in a Microsoft Excel spreadsheet and imported into R where the data were validated. All unique species names were cross-referenced with valid accepted names in the World Register of Marine Species (WoRMS) through their REST webservice (http://www.marinespecies.org/rest/). Names were queried for exact matches and missing matches were queried for fuzzy matches based on the Taxamatch algorithm (Rees 2014). Remaining names were queried again with older generic names (e.g., *Madrepora* instead of *Acropora*). All remaining names were retained as used.

Additional data validation steps included the elimination of duplicate returns from WoRMS, examining each individual fuzzy match return and dubious names, and standardizing nomenclature for unaccepted name explanations. The classification was updated based on the accepted valid name of a species and added to all records from the WoRMS database. Finally, any missing names that were unable to be matched with WoRMS records were added individually.

The checklist is arranged by species presence determination and then by order and alphabetically by family, genus and species for each valid name. Each species record starts with listing the valid species name as accepted in WoRMS (WoRMS Editorial Board 2018). The valid name is hyperlinked to the WoRMS species taxa webpage followed by the species authority and AphiaID. Under each valid name, species names as appeared in the literature are reported followed by the species authority and AphiaID. Species names that have grammatical misspellings are labeled with [sic]. If the species was a synonym, then it was labeled as a heterotypic or homotypic synonym. We use the term 'homotypic synonym' to refer to cases where the same species epithet is combined with different genera, and 'heterotypic synonym' in cases where different species epithets are regarded as subjective junior synonyms. While the terms ‘objective synonym’ and ‘subjective synonym’ are technically defined within the International Code of Zoological Nomenclature (ICZN) Code to mean essentially the same (http://www.nhm.ac.uk/hosted-sites/iczn/code/index.jsp?booksection=glossary&nfv=true), in our experience the term ‘objective synonym’ is most commonly used in cases of different species epithets that share the same type specimen (e.g., replacement names). Therefore, we believe the terms ‘homotypic synonym’ and ‘heterotypic synonym’ are more appropriate in the present context, which is consistent with how these terms are most commonly used for taxonomic purposes. Each species name is followed by the references that used that exact name and spelling. The references are separated into first-hand accounts labeled as reported and second or more-hand accounts labeled as referenced.

All names (valid and synonymies) according to the World List of Scleractinia (Hoeksema and Cairns 2019) were cross-referenced with the accepted names by Veron et al. (2016), Wallace (1999), and

Wallace et al. (2012) to provide the reader with a potentially different view of the species and highlight any differences. Any name that matched a name accepted by Wallace (1999) or Wallace et al. (2012) was noted by CCW. Any name that matched a name accepted by Veron et al. (2016) was notated as CoTW. The notation also provides a hyperlink to the factsheet available on the CoTW webpage (http://www.coralsoftheworld.org/page/home/). Veron et al. (2016) is an electronic source that has evolved from the printed worldwide overview of reef-dwelling Scleractinia by Veron (2000), while Hoeksema and Cairns (2019) is based on published taxonomic revisions of various scleractinian families and genera, partly based on molecular analyses and/or on the re-examination of type specimens and other museum material (Wallace 1999; Wallace et al. 2007, 2012; Hoeksema 2009, 2012a, 2012b, 2014; Benzoni et al. 2010, 2011, 2012a, 2014; Gittenberger et al. 2011; Huang et al. 2011, 2014a, 2014b, 2016; Budd et al. 2012; Arrigoni et al. 2014, 2015, 2016a, 2016b, 2017, 2018a; Kitano et al. 2014; Schmidt-Roach et al. 2014; Terraneo et al. 2016, 2017).

After all names and references are listed, we include our determination of the species presence in American Sāmoa. This determination was split into five categories: present, possibly present, uncertain, not likely present, and not present. This determination was made largely on the type of evidence available including the number of references, the type of reference, the evidence the reference includes (e.g., in-situ observation, photographic, sample identified, or type specimen), and taxonomic and identification certainty. The species presence determination is followed by information on the highest level of evidence available to support the species presence. Additionally, the annotation includes the reported species distribution within American Sāmoa as reported by the literature, the nearest confirmed ecoregion for the species presence according to Veron et al. (2016), the direction of a potential geographic range extension, the evidence of species vulnerability as documented by the International Union for Conservation of Nature's (IUCN) Red List of threatened species (IUCN 2018) as assessed by Carpenter et al. (2008) and the U.S. Endangered Species Act (ESA), and the depths and associated references for corals reported from mesophotic depths. Finally, we provide notes that discuss our justification of a species presence determination, other evidence not already listed, or other noteworthy comments. Each IUCN note is hyperlinked to the IUCN Red List species information webpage (http://www.iucnredlist.org/).

Species listed by the National Oceanic and Atmospheric Administration (NOAA) under the ESA are notated with the symbol $\mathcal{T}$ for threatened and $\mathcal{C}$ for candidate listing. The species status as listed by the IUCN Red List of Threatened Species is noted as Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), and Not Evaluated (NE).

Museum name abbreviations

AM = Austalian Museum, New South Wales, Australia
BPBM = Bernice P. Bishop Museum, Honolulu, Hawaiʻi
CRED = Coral Reef Ecosystem Division, NOAA, Honolulu, Hawaiʻi

DMWR = Department of Marine and Wildlife Resources, Pago Pago, American Sāmoa
NMNH = U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C.
QM = Queensland Museum, Brisbane, Australia

Datasets

All the data and associated metadata from this study are provided as supplementary files (AS_Coral_Occurrence_Data.txt, AS_Coral_Occurrence_Metadata.xml, AS_Coral_Taxon_Data.txt, AS_Coral_Taxon_Metadata.xml).

Checklist

Present

Class Anthozoa Ehrenberg, 1834
Subclass Hexacorallia Haeckel, 1896
Order Scleractinia Bourne, 1900
Family Acroporidae Verrill, 1902
Genus *Acropora* Oken, 1815

Acropora abrotanoides **(Lamarck, 1816) (207083)** CoTW CCW

Acropora abratanoides (Lamarck, 1816) (207083) [sic]. Reported—Lamberts 1983.

Acropora abrotanioides (Lamarck, 1816) (207083) [sic]. Reported—DMWR 2018.

Acropora abrotanoides (Lamarck, 1816) (207083). CoTW CCW Reported—USACE 1980; Birkeland et al. 1987; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner 2018; NMNH 2018; QM 2018. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora abrotenoides (Lamarck, 1816) (207083) [sic]. Reported—Work and Rameyer 2002.

Acropora danai (Milne Edwards, 1860) (206990) heterotypic synonym. Reported—Birkeland et al. 1987; Maragos et al. 1995; Mundy 1996; DiDonato et al. 2006; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006.

Acropora irregularis (Brook, 1892) (206993) heterotypic synonym. Reported—Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b.

Acropora rotumana (Gardiner, 1898) (207001) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997.

Acropora tutuilensis Hoffmeister, 1925 (430656) heterotypic synonym. CoTW Reported—Mayor 1924b; Hoffmeister 1925; Lamberts 1983; Birkeland et al. 1987; Kenyon et al. 2010; NMNH 2018. Referenced—Green et al. 1999; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Type specimen location (synonym *Acropora tutuilensis*). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species has four synonyms with *Acropora tutuilensis* Hoffmeister, 1925 accepted as a valid species by Veron et al. (2016) and as a synonym of *A. abrotanoides* by Wallace (1999) and Wallace et al. (2012) suggesting some ambiguity in species identifications and species boundaries.

Acropora aculeus **(Dana, 1846) (206991)** CoTW CCW

Acropora aculeus (Dana, 1846) (206991). CoTW CCW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland 2007a; Corals NPAS 2016; Fenner 2018; QM 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 49 m depth (Montgomery et al. 2019).

Acropora acuminata **(Verrill, 1864) (207020)** CoTW CCW

Acropora acuminata (Verrill, 1864) (207020). CoTW CCW Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994; Fisk and Birkeland 2002; Coles et al. 2003; Corals NPAS 2016; QM 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by C. Wallace). **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—This is not an easy species to identify in the field. Photographic evidence from Corals NPAS (2016) is inconclusive, but a specimen identified by C. Wallace is in the QM.

Acropora anthocercis **(Brook, 1893) (207024)** CoTW CCW

Acropora anthocercis (Brook, 1893) (207024). CoTW CCW Reported—Birkeland 2007a; QM 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by J. Wolstenholme). **Distribution**—Ofu. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Acropora aspera (Dana, 1846) (207011) CoTW CCW

Acropora aspera (Dana, 1846) (207011). CoTW CCW Reported—USACE 1980; Lamberts 1983; Mundy 1996; Birkeland 2007a; Kenyon et al. 2010; Birkeland et al. 2013; BPBM 2018; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018. Referenced—Coles et al. 2003; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Acropora cribripora Dana, 1846 (741197) heterotypic synonym. Reported—Mayor 1924b.

Acropora hebes (Dana, 1846) (367984) heterotypic synonym. Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—Randall and Myers (1983) accepted *Acropora hebes* (Dana, 1846) as a valid species while Veron et al. (2016), Wallace (1999), and Wallace et al. (2012) did not.

Acropora austera (Dana, 1846) (207052) CoTW CCW

Acropora austera (Dana, 1846) (207052). CoTW CCW Reported—Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Bare et al. 2010; Corals NPAS 2016; AM 2018; DMWR 2018; Fenner 2018; QM 2018. Referenced—Hoffmeister 1925; DiDonato et al. 2006; Lovell and McLardy 2008.

Acropora austera cf. (Dana, 1846) (207052). CoTW CCW Reported—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Sāmoa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The photo of this species reported in Corals NPAS (2016) appears to show a specimen of *Acropora pagoensis* Hoffmeister, 1925.

Acropora batunai Wallace, 1997 (288187) CoTW CCW

Acropora batunai Wallace, 1997 (288187). CoTW CCW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Vulnerability**—VU.

Acropora carduus (Dana, 1846) (288189) CoTW CCW

Acropora carduus (Dana, 1846) (288189). CoTW CCW Reported—Craig et al. 2001; Birkeland 2007a; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008.

Acropora prolixa (Verrill, 1866) (1261651) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Acropora cerealis **(Dana, 1846) (207016)** CoTW CCW

Acropora ceralis (Dana, 1846) (207016) [sic]. Reported—USACE 1980.

Acropora cerealis (Dana, 1846) (207016). CoTW CCW Reported—Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018. Referenced—Green et al. 1999; Birkeland 2007b; Lovell and McLardy 2008.

Acropora cerealis cf. (Dana, 1846) (207016). CoTW CCW Reported—DMWR 2018.

Acropora cerialis (Dana, 1846) (207016) [sic]. Reported—Mundy 1996. Referenced—Fisk and Birkeland 2002.

Acropora cymbicyathus (Brook, 1893) (207109) heterotypic synonym. Reported—Mayor 1924b; Hoffmeister 1925. Referenced—Hoffmeister 1925.

Acropora symbicyathus (Brook, 1893) (207109) [sic] heterotypic synonym. Reported—Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Rose Atoll, Sāmoa Islands, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora chesterfieldensis **Veron & Wallace, 1984 (288191)** CoTW CCW

Acropora chesterfieldensis Veron & Wallace, 1984 (288191). CoTW CCW Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Ofu/Olosega. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species is documented by clear photographic evidence (Fenner 2018) to support its presence in American Sāmoa.

Acropora clathrata **(Brook, 1891) (207075)** CoTW CCW

Acropora clathrata (Brook, 1891) (207075). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Fenner et al. 2008; Bare et al. 2010; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; QM 2018. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora complanata (Brook, 1893) (207071) heterotypic synonym. Reported—Birkeland et al. 1987; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b.

Acropora vasiformis (Brook, 1893) (207073) heterotypic synonym. Reported—Birkeland et al. 1987.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora cytherea **(Dana, 1846) (207095)** CoTW CCW

Acropora arcuata (Brook, 1892) (207089) heterotypic synonym. Referenced—Hoffmeister 1925.

Acropora armata (Brook, 1892) (206992) heterotypic synonym. Referenced—Hoffmeister 1925.
Acropora corymbosa (Lamarck, 1816) (207018) possible heterotypic synonym. Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; BPBM 2018.
Acropora cytharea (Dana, 1846) (207095) [sic]. Reported—Mundy 1996. Referenced—Fisk and Birkeland 2002.
Acropora cytherea (Dana, 1846) (207095). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; AM 2018; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.
Acropora reticulata (Brook, 1892) (207021) heterotypic synonym. Reported—Birkeland et al. 1987.
Acropora reticulata cf. (Brook, 1892) (207021) heterotypic synonym. Reported—Birkeland et al. 1987.
Acropora symmetrica (Brook, 1891) (207005) heterotypic synonym. Reported—Birkeland et al. 1987. Referenced—Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Sāmoa Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The photo of this species reported in Corals NPAS (2016) appears to be incorrect.

***Acropora digitifera* (Dana, 1846) (207045)** CoTW CCW

Acropora digitifera (Dana, 1846) (207045). CoTW CCW Reported—USACE 1980; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; Wolstenholme et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.
Acropora digitifera ? (Dana, 1846) (207045). CoTW CCW Reported—DMWR 2018.
Acropora digitifera cf. (Dana, 1846) (207045). CoTW CCW Reported—USACE 1980; Birkeland et al. 2003.
Acropora leptocyathus (Brook, 1891) (207025) heterotypic synonym. Reported—Mayor 1924a, 1924b; Hoffmeister 1925; Dahl and Lamberts 1977; Lamberts 1983; BPBM 2018. Referenced—Hoffmeister 1925; Green et al. 1997.
Acropora schmitti ? Wells, 1950 (288245) heterotypic synonym. CoTW Referenced—Coles et al. 2003.
Acropora schmitti Wells, 1950 (288245) heterotypic synonym. CoTW Reported—USACE 1980; Lamberts 1983.
Acropora wardii Verrill, 1902 (740141) heterotypic synonym. Reported—Birkeland et al. 1987.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Sāmoa Islands, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species includes the synonym *Acropora schmitti* Wells, 1950 that is recognized by Veron et al. (2016), but not by Wallace (1999) nor Wallace et al. (2012). Randall and Myers (1983) recognized *Acropora wardii* Verrill, 1902 as a valid species that appears to be different from *A. digitifera*.

Acropora divaricata **(Dana, 1846) (207106)** CoTW CCW

Acropora divaricata (Dana, 1846) (207106). CoTW CCW Reported—Birkeland et al. 1987; Mundy 1996; Fisk and Birkeland 2002; DiDonato et al. 2006; Fenner et al. 2008; Corals NPAS 2016; QM 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by C. Wallace). **Distribution**—American Sāmoa, Aunuʻu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species has been reported by several studies with one of them providing photographic evidence (Corals NPAS 2016) and one specimen report by C. Wallace from QM (2018). The coral documented by Corals NPAS (2016) is an uncertain identification. This species can be difficult to identify, but based on the identification by C. Wallace we conclude that this species is present.

Acropora donei **Veron & Wallace, 1984 (288198)** CoTW CCW

Acropora akajimensis cf. Veron, 1990 (288183) heterotypic synonym. CoTW Reported—Montgomery et al. 2019.

Acropora akajimensis Veron, 1990 (288183) heterotypic synonym. CoTW Reported—Fisk and Birkeland 2002; Birkeland 2007a; Fenner 2018. Referenced—Birkeland 2007b.

Acropora donei ? Veron & Wallace, 1984 (288198). CoTW CCW Reported—Coles et al. 2003.

Acropora donei Veron & Wallace, 1984 (288198). CoTW CCW Reported—Craig et al. 2001; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Montgomery and D. Fenner). **Distribution**—American Sāmoa, Ofu, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 41 m depth (Montgomery et al. 2019). **Notes**—*Acropora akajimensis* is a synonym of *A. donei*, but Veron et al. (2016) recognize *A. akajimensis* as a valid species while Wallace (1999) and Wallace et al. (2012) do not. The *A. akajimensis* reported in Montgomery et al. (2019) was based on a skeletal analysis of a sample that matched the description of *A. akajimensis* very closely, and not *A. donei*. *A. donei* is neat and tidy with the radial corallites and branches being relatively blunt and relatively uniform in thickness. *A. akajimensis* appears much more jagged and disorganized, with pointy corallites and branches. More taxonomic research is needed for these species. The nearest confirmed ecoregion for *A. akajimensis* is New Caledonia (Veron et al. 2016).

Acropora eurystoma **(Klunzinger, 1879) (207108)**CoTW CCW

Acropora eurystoma (Klunzinger, 1879) (207108). CoTW CCW Reported—NMNH 2018.

Acropora pagoenis Hoffmeister, 1925 (411144) [sic] heterotypic synonym. Reported—Birkeland et al. 1987.

Acropora pagoensis Hoffmeister, 1925 (411144) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Fenner et al. 2008; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Type (synonym *Acropora pagoensis*). **Distribution**—American Sāmoa, Aunu‘u, Ofu/Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Red Sea north-central. **Geographical range extension**—Southeast. **Notes**—In Hoffmeister's (1925) original description of *A. pagoensis*, he cites it as similar to *A. eurystoma*. However, Wallace (1999) and Veron et al. (2016) consider this species a probable synonym of *Acropora tenuis* (Dana, 1846). All citations have used the name *A. pagoensis* except for NMNH (2018) in which one specimen from American Sāmoa was identified by S. Cairns as *A. eurystoma*. Hoffmeister (1925) further states this species is distinctive from *A. eurystoma*. We consider *A. eurystoma* present based on *A. pagoensis* being synonymized under *A. eurystoma*, however, we believe *A. pagoensis* may be a valid species and *A. eurystoma* is not likely a valid name for the American Sāmoa observations. Veron et al. (2016) and Wallace (1999) consider this species to be endemic to the Red Sea. We believe more taxonomic investigation into this species is warranted, which should include colonies collected from American Sāmoa.

Acropora gemmifera **(Brook, 1892) (207097)**CoTW CCW

Acropora gemmifera (Brook, 1892) (207097). CoTW CCW Reported—Birkeland et al. 1987, 2003, 2013; Itano and Buckley 1988; Maragos et al. 1994, 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; Wolstenholme et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; QM 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora gemmifera cf. (Brook, 1892) (207097). CoTW CCW Reported—Birkeland et al. 1987, 2003. Referenced—Green et al. 1999; Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora globiceps **(Dana, 1846) (430645)**CoTW CCW

Acropora globiceps (Dana, 1846) (430645). CoTW CCW Reported—Fisk and Birkeland 2002; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018. Referenced—Coles et al. 2003; Lovell and McLardy 2008; Kenyon et al. 2011.

Acropora globiceps ? (Dana, 1846) (430645). CoTW CCW Reported—DMWR 2018.

Acropora globiceps cf. (Dana, 1846) (430645).[CoTW] [CCW] Reported—Coles et al. 2003; Corals NPAS 2016. Referenced—DiDonato et al. 2006.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—$\mathcal{T}$, VU. **Notes**—Fenner (this study) has examined the type specimens of *Acropora humilis* (Dana, 1846) and *A. globiceps*. All colonies examined (including the ones within the DMWR collection) belong clearly to *A. globiceps*. The name *A. globiceps* was forgotten until Wallace (1999) and Veron (2000) used it again. It appears likely that all reports of *A. humilis* from the Sāmoan Archipelago are actually *A. globiceps*.

Acropora granulosa **(Milne Edwards, 1860) (207093)**[CoTW] [CCW]

Acropora granulosa (Milne Edwards, 1860) (207093).[CoTW] [CCW] Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

Acropora granulosa cf. (Milne Edwards, 1860) (207093).[CoTW] [CCW] Reported—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Acropora hyacinthus **(Dana, 1846) (207044)**[CoTW] [CCW]

Acropora conferta (Quelch, 1886) (207107) heterotypic synonym. Referenced—Hoffmeister 1925.

Acropora hyacanthus (Dana, 1846) (207044) [sic]. Reported—BPBM 2018.

Acropora hyacinthus (Dana, 1846) (207044).[CoTW] [CCW] Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Itano and Buckley 1988; Maragos et al. 1994; Mundy 1996; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora surculosa (Dana, 1846) (207085) heterotypic synonym. Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Corals NPAS 2016; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007b.

Acropora surculosa cf. (Dana, 1846) (207085) heterotypic synonym. Reported—Coles et al. 2003; DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Sāmoa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—While Wallace (1999) and Veron et al. (2016) concur that *Acropora surculosa* (Dana, 1846) is a synonym of *A. hyacinthus*, Randall and Myers (1983) considered *A. surculosa* to be valid. Randall (1995) reports both *A. surculosa* and *A. hyacinthus* from Palau. Colonies in American Sāmoa fit the type of *A. surculosa* (examined by D. Fenner) and appears to be different from *A. hyacinthus*. *Acropora surculosa* has smaller colonies with longer cone-shaped branchlets that more often appear to be fused or with multiple branch tips with long tentacles out during the day, while *A. hyacinthus* has larger colonies with shorter cylindrical branchlets that don't fuse or have multiple branch tips with much smaller tentacles if exposed during the day. Photos show *A. surculosa* to have significant variation in both Guam (www.guamreeflife.com) and American Sāmoa. More research should pursue the potential for species distinction between these two species.

Acropora intermedia **(Brook, 1891) (207035)** CoTW CCW

Acropora intermedia (Brook, 1891) (207035). CoTW CCW Reported—USACE 1980; Lamberts 1983; Craig et al. 2001; Fisk and Birkeland 2002; BPBM 2018; Fenner 2018; QM 2018; Montgomery et al. 2019. Referenced—Lovell and McLardy 2008.

Acropora vanderhorsti Hoffmeister, 1925 (741178) heterotypic synonym. Reported—Mayor 1924b; Hoffmeister 1925; Lamberts 1983; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Ofu, Ofu/Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 37 m depth (Montgomery et al. 2019). **Notes**—This species has also been called *Acropora nobilis* (Dana, 1846). Wallace (1999) describes the relationship between *A. intermedia*, *Acropora robusta* (Dana, 1846), and *A. nobilis*.

Acropora jacquelineae **Wallace, 1994 (288212)** CoTW CCW

Acropora jacquelineae Wallace, 1994 (288212). CoTW CCW Reported—Fenner 2018. Referenced—Kenyon et al. 2011.

Acropora jacquilinae Wallace, 1994 (288212) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—$\mathcal{T}$, VU. **Notes**—There have been only two references that report this species, but T. Hughes also reports seeing it on Ta'ū (T. Hughes, pers. comm.). An examination of an *A. jacquelineae* sample by D. Luck concluded that it was not this species based on the fact that the axials were slightly smaller than reported in Wallace (1999) and that there were many small radial corallites while Wallace (1999) reported there are very few such radials in this species (Luck 2013). Examination of skeletal photographs in Wallace (1999) clearly show that corallites in most of the colony indeed have very few radials, but corallites near the edge of the colony have many radials. The sample analyzed by D. Luck was taken from the edge of the colony by D. Fenner and D. Luck likely did not realize that the sample was taken from the edge. Given that this species is listed as threatened under the ESA, careful attention has been paid to the presence of this species and we believe the evidence in hand is sufficient to conclude its presence in American Sāmoa albeit likely as a rare species.

Acropora latistella **(Brook, 1892) (207039)** CoTW CCW

Acropora latistella /azurea (Brook, 1892) (207039). Reported—DMWR 2018.

Acropora latistella (Brook, 1892) (207039). CoTW CCW Reported—USACE 1980; Lamberts 1983; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland et al. 2003; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; Fenner 2018; NMNH 2018; QM 2018; Montgomery et al. 2019. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

Acropora latistella ? (Brook, 1892) (207039). CoTW CCW Reported—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 42 m depth (Montgomery et al. 2019).

Acropora listeri **(Brook, 1893) (207057)** CoTW CCW

Acropora listeri (Brook, 1893) (207057). CoTW CCW Reported—DiDonato et al. 2006; Kenyon et al. 2010; Corals NPAS 2016; QM 2018. Referenced—Coles et al. 2003; Lovell and McLardy 2008; Kenyon et al. 2011.

Acropora listeri cf. (Brook, 1893) (207057). CoTW CCW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by C. Wallace). **Distribution**—American Sāmoa, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—A photographic record exists for this species (Corals NPAS 2016); however, this may be incorrectly identified. In addition, there is a single specimen reported by QM (2018) identified by C. Wallace.

Acropora longicyathus **(Milne Edwards, 1860) (207114)** CoTW CCW

Acropora longicyathus (Milne Edwards, 1860) (207114). CoTW CCW Reported—USACE 1980; Lamberts 1983; Kenyon et al. 2010. Referenced—Lovell and McLardy 2008.

Acropora syringodes (Brook, 1892) (207014) heterotypic synonym. Reported—Mayor 1924b; Hoffmeister 1925; Lamberts 1983; NMNH 2018. Referenced—Hoffmeister 1925.

Acropora syringoides (Brook, 1892) (207014) [sic] heterotypic synonym. Referenced—Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Rose Atoll, Sāmoa Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora lutkeni **Crossland, 1952 (206994)** CoTW CCW

Acropora lutkeni cf. Crossland, 1952 (206994). CoTW CCW Reported—DMWR 2018.

Acropora lutkeni Crossland, 1952 (206994). CoTW CCW Reported—Maragos et al. 1994; Fisk and Birkeland 2002; Corals NPAS 2016; QM 2018. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by C. Wallace). **Distribution**—American Sāmoa, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—QM (2018) reports this species identified by C. Wallace.

Acropora microclados **(Ehrenberg, 1834) (207101)** CoTW CCW

Acropora assimilis Brook, 1892 (741262) [sic] heterotypic synonym. Reported—NMNH 2018.

Acropora microclados (Ehrenberg, 1834) (207101). CoTW CCW Reported—Fisk and Birkeland 2002; DiDonato et al. 2006; Corals NPAS 2016; DMWR 2018. Referenced—Lovell and McLardy 2008; Kenyon et al. 2011.

Acropora microclados ? (Ehrenberg, 1834) (207101). CoTW CCW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—The photographic record by Corals NPAS (2016) is incorrect, but there are multiple other specimen reports.

Acropora millepora **(Ehrenberg, 1834) (207023)** CoTW CCW

Acropora convexa cf. (Dana, 1846) (367986) heterotypic synonym. CoTW Reported—Birkeland et al. 2003.

Acropora millepora (Ehrenberg, 1834) (207023). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland 2007a; Birkeland et al. 2013; BPBM 2018. Referenced—Green et al. 1999; Coles et al. 2003; Lovell and McLardy 2008.

Acropora millepora cf. (Ehrenberg, 1834) (207023). CoTW CCW Reported—DMWR 2018.

Acropora prostrata (Dana, 1846) (207084) heterotypic synonym. Reported—Fisk and Birkeland 2002.

Acropora prostrata ? (Dana, 1846) (207084) heterotypic synonym. Reported—Coles et al. 2003.

Acropora squamosa Brook, 1892 (741205) heterotypic synonym. Reported—Birkeland et al. 1987. Referenced—Coles et al. 2003; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Acropora monticulosa **(Brüggemann, 1879) (207103)** CoTW CCW

Acropora monticulosa (Brüggemann, 1879) (207103). CoTW CCW Reported—Birkeland et al. 1987; Itano and Buckley 1988; Maragos et al. 1994, 1995; Mundy 1996; Coles et al. 2003; Wolstenholme et al. 2003; Birkeland 2007a; Corals NPAS 2016; DMWR 2018; Fenner 2018; QM 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Acropora muricata **(Linnaeus, 1758) (207007)**[CoTW] [CCW]

Acropora arbuscula (Dana, 1846) (207003) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

Acropora formosa gracilis (Dana, 1846) (207036) heterotypic synonym. Reported—NMNH 2018.

Acropora formosa var. brachiata (Dana, 1846) (207036) heterotypic synonym. Reported—Hoffmeister 1925. Referenced—Green et al. 1997.

Acropora formosa var. gracilis (Dana, 1846) (207036) heterotypic synonym. Reported—Hoffmeister 1925. Referenced—Green et al. 1997.

Acropora formosa var. gracilis aff. (Dana, 1846) (207036) heterotypic synonym. Reported—Mayor 1924b.

Acropora formosa (Dana, 1846) (207036) heterotypic synonym. Reported—Mayor 1924a; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Mundy and Green 1999; Birkeland and Belliveau 2000; DiDonato et al. 2006; Fenner et al. 2008; Corals NPAS 2016; BPBM 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997; Coles et al. 2003; DiDonato et al. 2006.

Acropora formosa cf. (Dana, 1846) (207036) heterotypic synonym. Reported—USACE 1980.

Acropora gracilis (Dana, 1846) (207060) heterotypic synonym. Reported—Kenyon et al. 2010. Referenced—Hoffmeister 1925.

Acropora muricata (Linnaeus, 1758) (207007).[CoTW] [CCW] Reported—Mayor 1924a; Dahl and Lamberts 1977; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Birkeland et al. 2013; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; QM 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Ofu, Ofu/Olosega, Olosega, Sāmoa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Acropora nana **(Studer, 1879) (207100)**[CoTW] [CCW]

Acropora azura Veron & Wallace, 1984 (288186) [sic] heterotypic synonym. Reported—Corals NPAS 2016.

Acropora azurea Veron & Wallace, 1984 (288186) heterotypic synonym.[CoTW] Reported—Birkeland et al. 1987, 2003; Mundy 1996; Fenner et al. 2008. Referenced—Green et al. 1999; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora nana /valida (Studer, 1879) (207100). Reported—DMWR 2018.

Acropora nana (Studer, 1879) (207100).[CoTW] [CCW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Maragos et al. 1994; Mundy 1996; Green et al. 1997; Birkeland and Belliveau 2000; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; QM 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981;

Green et al. 1997; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora nana cf. (Studer, 1879) (207100). CoTW CCW Reported—Birkeland et al. 1987. Referenced—Green et al. 1999; Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Acropora nasuta **(Dana, 1846) (207009).** CoTW CCW

Acropora canaliculata (Klunzinger, 1879) (1262051) heterotypic synonym. Reported—NMNH 2018.

Acropora nasuta (Dana, 1846) (207009). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994, 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Bare et al. 2010; Kenyon et al. 2010; Corals NPAS 2016; AM 2018; DMWR 2018; Fenner 2018; QM 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora nasuta cf. (Dana, 1846) (207009). CoTW CCW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Acropora palmerae **Wells, 1954 (207049).** CoTW CCW

Acropora palmera Wells, 1954 (207049) [sic]. Reported—Corals NPAS 2016.

Acropora palmerae Wells, 1954 (207049). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Coles et al. 2003; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Acropora palmeri Wells, 1954 (207049) [sic]. Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—Wallace (1999) and Veron (2000) point out that this species has no differences in corallites or coenosteum with *Acropora robusta* (Dana, 1846), only the differences in colony shape (almost all branches versus almost all encrusting). This raises the question if these two are separate species or not.

Acropora paniculata **Verrill, 1902 (207008).** CoTW CCW

Acropora panicualta Verrill, 1902 (207008) [sic]. Reported—DMWR 2018.

Acropora paniculata Verrill, 1902 (207008). CoTW CCW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Ofu, Ofu/Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 41 m depth (Montgomery et al. 2019). **Notes**—The photographic record by Corals NPAS (2016) is incorrect, but there are multiple specimen reports.

Acropora polystoma **(Brook, 1891) (207050)** CoTW CCW

Acropora massawensis von Marenzeller, 1907 (207004) heterotypic synonym. CoTW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983.

Acropora polystoma (Brook, 1891) (207050). CoTW CCW Reported—Maragos et al. 1994; Corals NPAS 2016; NMNH 2018; QM 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Acropora pulchra **(Brook, 1891) (207015)** CoTW CCW

Acropora pulchra (Brook, 1891) (207015). CoTW CCW Reported—Mayor 1924b; USACE 1980; Lamberts 1983; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016; Fenner and Sudek 2016; BPBM 2018; DMWR 2018; Fenner 2018; QM 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a; Lovell and McLardy 2008.

Acropora pulchra ? (Brook, 1891) (207015). CoTW CCW Reported—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora retusa **(Dana, 1846) (430653)** CoTW CCW

Acropora retusa (Dana, 1846) (430653). CoTW CCW Reported—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; Fenner 2018; QM 2018. Referenced—Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by C. Wallace). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—*T*, VU. **Notes**—The photographic record by Corals NPAS (2016) is incorrect, but Fenner (2018) shows clear evidence of its presence in addition to the QM (2018) specimen identified by C. Wallace.

Acropora robusta (Dana, 1846) (207000) CoTW CCW

Acropora cuspidata (Dana, 1846) (872427) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

Acropora nobilis (Dana, 1846) (207090) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b.

Acropora nobilis ? (Dana, 1846) (207090) heterotypic synonym. Reported—Coles et al. 2003.

Acropora pacifica (Brook, 1891) (207033) heterotypic synonym. Referenced—Hoffmeister 1925.

Acropora paxilligera (Dana, 1846) (872424) heterotypic synonym. Reported—Birkeland et al. 1987, 2003. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b.

Acropora pinguis Wells, 1950 (207070) heterotypic synonym. CoTW Reported—Lamberts 1983.

Acropora pinquis aff. Wells, 1950 (207070) [sic] heterotypic synonym. Reported—USACE 1980.

Acropora pinquis Wells, 1950 (207070) [sic] heterotypic synonym. Reported—USACE 1980.

Acropora robusta (Dana, 1846) (207000). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Green and Hunter 1998; DiDonato et al. 2006; Bare et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora robusta ? (Dana, 1846) (207000). CoTW CCW Reported—Coles et al. 2003. Referenced—Coles et al. 2003.

Acropora robusta cf. (Dana, 1846) (207000). CoTW CCW Reported—Hunter et al. 1993.

Acropora smithi (Brook, 1893) (368476) heterotypic synonym. Reported—Birkeland et al. 1987; Maragos et al. 1994. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Sāmoa Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—*Acropora nobilis* has been synonymized with *A. robusta* by Wallace (1999) and accepted by Veron et al. (2016). Fenner has examined its type of *A. nobilis* in NMNH and agrees with Veron et al. (2016). Many reports of *A. intermedia* and *A. nobilis* in American Sāmoa may actually be *A. intermedia*. The photographic record by Corals NPAS (2016) is incorrect. However, given that multiple specimens have been identified from American Sāmoa, we believe that this species is present in American Sāmoa.

Acropora samoensis (Brook, 1891) (207055) CoTW CCW

Acropora samoensis (Brook, 1891) (207055). CoTW CCW Reported—Mayor 1924a, 1924b; Hoffmeister 1925; Dahl and Lamberts 1977; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Maragos et al. 1994, 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; BPBM 2018; NMNH 2018. Referenced—Hoffmeister 1925;

Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora samoensis ? (Brook, 1891) (207055). CoTW CCW Reported—DMWR 2018.

Acropora samoensis aff. (Brook, 1891) (207055). CoTW CCW Reported—Mayor 1924b.

Acropora samoensis cf. (Brook, 1891) (207055). CoTW CCW Reported—DMWR 2018. Referenced—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Sāmoa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The type location of this species is "Sāmoa Islands." This could be either American Sāmoa or Independent Sāmoa. These two political entities are parts of the same archipelago, and thus many species present in one are likely in the other. The photographic record by Corals NPAS (2016) is incorrect.

Acropora secale **(Studer, 1878) (207080)** CoTW CCW

Acropora diversa (Brook, 1891) (207054) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

Acropora diversa cf. (Brook, 1891) (207054) heterotypic synonym. Reported—Coles et al. 2003.

Acropora quelchi (Brook, 1893) (207022) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997.

Acropora quelchi cf. (Brook, 1893) (207022) heterotypic synonym. Reported—Coles et al. 2003.

Acropora secale (Studer, 1878) (207080). CoTW CCW Reported—Fisk and Birkeland 2002; DiDonato et al. 2006; Corals NPAS 2016; DMWR 2018; NMNH 2018; QM 2018. Referenced—Lovell and McLardy 2008.

Acropora secale cf. (Studer, 1878) (207080). CoTW CCW Reported—DMWR 2018.

Acropra secale /valida/kimbiensis (Studer, 1878) (207080) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species is tough to identify *in situ*, but based on multiple specimens of this species and its synonyms we believe this species to be present.

Acropora selago **(Studer, 1879) (207040)** CoTW CCW

Acropora delicatula (Brook, 1891) (207082) [sic] heterotypic synonym. Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994, 1995; Birkeland et al. 2003; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007b.

Acropora insignis Nemenzo, 1967 (288211) possible heterotypic synonym. CoTW Reported—DMWR 2018; Fenner 2018.

Acropora selago (Studer, 1879) (207040). CoTW CCW Reported—Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010. Referenced—Green et al. 1999; Coles et al. 2003; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Ofu, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—Veron (2000) indicates that *A. insignis* is quite different from *A. selago*, which has more appressed radial corallites that are labellate and *A. insignis* has a distinctive coloration. This makes this species easy to distinguish in the water. Given the dispute with this synonym, more work should be conducted to look at the species variation in this group. Randall & Myers (1983) and Randall (1995, 2003) consider *Acropora deliculata* (Brook, 1891) a valid species.

Acropora solitaryensis **Veron & Wallace, 1984 (288248)** CoTW CCW

Acropora solitaryensis Veron & Wallace, 1984 (288248). CoTW CCW Reported—QM 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Vanuatu and Cook Islands, central Pacific. **Geographical range extension**—Between two disjunct ecoregions although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—VU. **Mesophotic record**— 44 m depth (Montgomery et al. 2019). **Notes**—This species is confirmed by multiple specimen reports (QM 2018, Montgomery et al. 2019).

Acropora speciosa **(Quelch, 1886) (430655)** CoTW CCW

Acropora rambleri (Bassett-Smith, 1890) (207088) possible heterotypic synonym. Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

Acropora rayneri Brook, 1892 (751726) [sic] heterotypic synonym. Reported—BPBM 2018.

Acropora speciosa (Quelch, 1886) (430655). CoTW CCW Reported—Bare et al. 2010; DMWR 2018; Fenner 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Fiji and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions. **Vulnerability**—*T*, VU. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Acropora tenuis **(Dana, 1846) (207105)** CoTW CCW

Acropora africana (Brook, 1893) (207063) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983.

Acropora tenuis (Dana, 1846) (207105). CoTW CCW Reported—Birkeland et al. 1987, 2003; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Kenyon et al. 2010; Corals NPAS 2016; NMNH 2018; QM 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—

Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The photographic record by Corals NPAS (2016) is incorrect, but there are multiple specimen reports.

Acropora teres **(Verrill, 1866) (288255)** CoTW taxon inquirendum

Acropora teres (Verrill, 1866) (288255). CoTW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland 2007a; NMNH 2018. Referenced—Coles et al. 2003.

Acropora teres cf. (Verrill, 1866) (288255). CoTW Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Marshall Islands and Solomon Islands and Bougainville. **Geographical range extension**—Southeast. **Vulnerability**—DD. **Notes**—*Acropora teres* (Verrill, 1886) has not been recorded in American Sāmoa since Lamberts (1983) and before then, Hoffmeister (1925) except for Birkeland (2007a). The observations by Birkeland (2007a) in Ofu Lagoon concerned preliminary identifications without verification making the present record unverifiable. Given that there have been multiple specimen reports documenting this species, it is possible that this species has been extirpated and is no longer present in American Sāmoa.

Acropora valida **(Dana, 1846) (207072)** CoTW CCW

Acropora valida (Dana, 1846) (207072). CoTW CCW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994, 1995; Mundy 1996; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; NMNH 2018; QM 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora valida aff. (Dana, 1846) (207072). CoTW CCW Reported—Coles et al. 2003.

Acropora valida cf. (Dana, 1846) (207072). CoTW CCW Reported—Maragos et al. 1994.

Acropora variabilis (Klunzinger, 1879) (207028) heterotypic synonym. CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; BPBM 2018. Referenced—Birkeland 2007b.

Acropora variabilis aff. (Klunzinger, 1879) (207028) heterotypic synonym. CoTW Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora verweyi **Veron & Wallace, 1984 (288263)** CoTW CCW

Acropora verweyi cf. Veron & Wallace, 1984 (288263). CoTW CCW Reported—Mundy 1996. Referenced—Fisk and Birkeland 2002.

Acropora verweyi Veron & Wallace, 1984 (288263). CoTW CCW Reported—Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016; Fenner 2018; QM 2018.

Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by C. Wallace). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Genus *Alveopora* Blainville, 1830

***Alveopora allingi* Hoffmeister, 1925 (207192)** CoTW

Alveopora allingi Hoffmeister, 1925 (207192). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Maragos et al. 1994; Mundy 1996; Corals NPAS 2016; NMNH 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Type specimen location. **Distribution**—American Sāmoa, Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 31, 35 m depth (Hoffmeister 1925; Lamberts 1983). **Notes**—American Sāmoa is the type location of this species.

***Alveopora tizardi* Bassett-Smith, 1890 (207195)** CoTW

Alveopora tizardi Bassett-Smith, 1890 (207195). CoTW Reported—Fenner 2018.

Alveopora tizardi cf. Bassett-Smith, 1890 (207195). CoTW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Vanuatu. **Vulnerability**—LC. **Notes**—This species has skeletal features very similar to *A. excelsa*, but is nodular instead of horizontal branches.

***Alveopora verrilliana* Dana, 1846 (207201)** CoTW

Alveopora verriliana Dana, 1846 (207201) [sic]. Reported—USACE 1980.

Alveopora verrilliana Dana, 1846 (207201). CoTW Reported—Hoffmeister 1925; Lamberts 1983; Kenyon et al. 2010; BPBM 2018; NMNH 2018. Referenced—Green et al. 1997; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

***Alveopora viridis* Quoy & Gaimard, 1833 (207203)** CoTW

Alveopora virdis Quoy & Gaimard, 1833 (207203) [sic]. Reported—Birkeland et al. 2003.

Alveopora viridis Quoy & Gaimard, 1833 (207203). CoTW Reported—Lamberts 1983; Birkeland et al. 1987. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—Aunu‘u, Tutuila. **Nearest confirmed ecoregion**—Caroline Islands, Micronesia. **Geographical range extension**—Southeast. **Vulnerability**—NT.

Genus *Astreopora* Blainville, 1830

***Astreopora cucullata* Lamberts, 1980 (287943)** CoTW

Astreopora cuccullata Lamberts, 1980 (287943) [sic]. Reported—BPBM 2018.

Astreopora cucullata Lamberts, 1980 (287943). CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Type specimen location. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—American Sāmoa is the type location of this species.

***Astreopora gracilis* Bernard, 1896 (207124)** CoTW

Astreopora gracilis Bernard, 1896 (207124). CoTW Reported—Birkeland et al. 1987; Fisk and Birkeland 2002; Birkeland 2007a; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Astreopora gracilis cf. Bernard, 1896 (207124). CoTW Reported—Mundy 1996. Referenced—Fisk and Birkeland 2002.

Astreopora gracillis Bernard, 1896 (207124) [sic]. Reported—Birkeland et al. 2003.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

***Astreopora listeri* Bernard, 1896 (207125)** CoTW

Astreopora listera Bernard, 1896 (207125) [sic]. Reported—Corals NPAS 2016.

Astreopora listeri Bernard, 1896 (207125). CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 53 m depth (Montgomery et al. 2019).

Astreopora myriophthalma **(Lamarck, 1816) (207128)** CoTW

Astrcopora myriopthalma (Lamarck, 1816) (207128) [sic]. Reported—Hunter et al. 1993.

Astreopora eliptica Yabe & Sugiyama, 1941 (430659) heterotypic synonym. Reported—DMWR 2018. Referenced—Coles et al. 2003.

Astreopora elliptica Yabe & Sugiyama, 1941 (430659) [sic] heterotypic synonym. Reported—Birkeland et al. 1987; Maragos et al. 1994; Corals NPAS 2016; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Astreopora microphthalma (Lamarck, 1816) (207128) [sic]. Reported—Fenner et al. 2008.

Astreopora myriophthalma /listeri (Lamarck, 1816) (207128). Reported—DMWR 2018.

Astreopora myriophthalma /suggesta (Lamarck, 1816) (207128). Reported—DMWR 2018.

Astreopora myriophthalma (Lamarck, 1816) (207128). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Astreopora myriopthalma (Lamarck, 1816) (207128) [sic]. Reported—Hunter et al. 1993; Green and Hunter 1998.

Astreopora profunda Verrill, 1872 (207126) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, South Bank, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Astreopora randalli **Lamberts, 1980 (207127)** CoTW

Astreopora randalli Lamberts, 1980 (207127). CoTW Reported—Birkeland et al. 1987, 2003; Coles et al. 2003; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 42 m depth (Montgomery et al. 2019).

Astreopora scabra **Lamberts, 1982 (430660)** CoTW

Astreopora scabra Lamberts, 1982 (430660). CoTW Reported—Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Milne Bay, Papua New Guinea. **Geographical range extension**—East. **Vulnerability**—LC.

Astreopora suggesta **Wells, 1954 (287948)** CoTW

Astreopora suggesta Wells, 1954 (287948). CoTW Reported—Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—LC. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Genus *Isopora* Studer, 1879

Isopora brueggemanni **(Brook, 1893) (730688)** CoTW CCW

Acropora brueggemanni (Brook, 1893) (207067) homotypic synonym. Reported—Lamberts 1983; Maragos et al. 1994; Birkeland 2007a. Referenced—Birkeland 2007b.

Acropora bruggemanni (Brook, 1893) (207067) [sic] homotypic synonym. Reported—USACE 1980.

Acropora bruggemanni cf. (Brook, 1893) (207067) [sic] homotypic synonym. Reported—USACE 1980.

Isopora brueggemanni (Brook, 1893) (730688). CoTW CCW Reported—Kenyon et al. 2010.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Ofu, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—Live colonies are fairly distinctive.

Isopora crateriformis **(Gardiner, 1898) (730691)** CoTW CCW

Acropora carterformis (Gardiner, 1898) (288193) [sic] homotypic synonym. Reported—Birkeland et al. 2003.

Acropora carteriformis (Gardiner, 1898) (288193) [sic] homotypic synonym. Reported—Birkeland et al. 2003.

Acropora craterformis (Gardiner, 1898) (288193) [sic] homotypic synonym. Reported—Birkeland et al. 2003; Coles et al. 2003.

Acropora crateriformis (Gardiner, 1898) (288193) homotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Bare et al. 2010; Corals NPAS 2016; BPBM 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Isopora crateriformis (Gardiner, 1898) (730691). CoTW CCW Reported—CRED 2011; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018; Paulay and Brown 2019. Referenced—Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—*T*, VU. **Notes**—Wallace (1999) and Veron (2000) note that the only difference between this species and *Isopora cuneata* (Dana, 1846) is colony shape. *Isopora crateriformis* is encrusting while *I. cuneata* is cuneate to branching. Fenner has found only the encrusting/plate shape of *I. crateriformis* in American Sāmoa. *I. crateriformis* is abundant to dominant in shallow reef slopes on southwest Tutuila.

Isopora palifera **(Lamarck, 1816) (730686)** CoTW CCW

Acropora paiifera (Lamarck, 1816) (207037) [sic] homotypic synonym. Reported—Hunter et al. 1993.

Acropora palifera (Lamarck, 1816) (207037) homotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994; Coles et al. 2003; Fenner et al. 2008; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Isopora palifera (Lamarck, 1816) (730686). CoTW CCW Reported—Kenyon et al. 2010; CRED 2011; DMWR 2018; Fenner 2018; NMNH 2018; QM 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Genus *Montipora* Blainville, 1830

Montipora aequituberculata **Bernard, 1897 (207144)** CoTW

Montipora aequituberculata ? Bernard, 1897 (207144). CoTW Reported—Coles et al. 2003.

Montipora aequituberculata Bernard, 1897 (207144). CoTW Reported—Maragos et al. 1994; Green and Hunter 1998; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Montipora aquituberculata Bernard, 1897 (207144) [sic]. Reported—DMWR 2018.

Montipora composita Crossland, 1952 (759845) heterotypic synonym. Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987. Referenced—Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Montgomery and D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Ofu, Ofu/Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 34 m depth (Montgomery et al. 2019).

Montipora berryi **Hoffmeister, 1925 (869368)**

Montipora berryi Hoffmeister, 1925 (869368). Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Coles et al. 2003; Corals NPAS 2016; NMNH 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Type specimen location. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Veron et al. (2016) consider this a possible synonym of *Montipora informis* Bernard, 1897.

Montipora caliculata **(Dana, 1846) (287696)** CoTW

Montipora caliculata /foveolata (Dana, 1846) (287696). Reported—DMWR 2018.

Montipora caliculata (Dana, 1846) (287696). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Montipora capitata **(Dana, 1846) (287697)** CoTW

Montipora capitata (Dana, 1846) (287697). CoTW Reported—Corals NPAS 2016; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Montgomery and D. Fenner). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Fiji and Kiribati, south-east Line Islands. **Geographical range extension**—Between two disjunct ecoregions although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—NT. **Mesophotic record**— 49 m depth (Montgomery et al. 2019). **Notes**—While its presence is supported by a sample, more analysis should be done by a comparison with samples from Hawaiʻi. Also, see note for *Montipora verrucosa* (Lamarck, 1816).

Montipora efflorescens **Bernard, 1897 (207163)** CoTW

Montipora efflorescens ? Bernard, 1897 (207163). CoTW Reported—DMWR 2018.

Montipora efflorescens Bernard, 1897 (207163). CoTW Reported—Mundy 1996; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Montipora trabeculata Bernard, 1897 (759819) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; NMNH 2018. Referenced—Green et al. 1997.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species is difficult to identify.

Montipora ehrenbergi **Verrill, 1872 (207155)**

Montipora ehrenbergi Verrill, 1872 (207155). Reported—USACE 1980.

Montipora ehrenbergii Verrill, 1872 (207155) [sic]. Reported—Hoffmeister 1925; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Green et al. 1997; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016; NMNH 2018. Referenced—Green et al. 1997, 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Ofu, Ofu/Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Veron et al. (2016) believe this species is a probable synonym of *Montipora hispida* (Dana, 1846).

Montipora foliosa **(Pallas, 1766) (207182)** CoTW

Montipora acutata Bernard, 1897 (759840) [sic] heterotypic synonym. Reported—Lamberts 1983.

Montipora foliosa (Pallas, 1766) (207182). CoTW Reported—Birkeland et al. 1987; Maragos et al. 1994; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Montipora pulcherrima Bernard, 1897 (759835) heterotypic synonym. Reported—USACE 1980.

Montipora pulcherrima cf. Bernard, 1897 (759835) heterotypic synonym. Reported—Lamberts 1983.

Montipora scutata Bernard, 1897 (759840) heterotypic synonym. Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Single specimen report (synonym *Montipora acutata* identified by A. Lamberts). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 30 m depth (Lamberts 1983).

Montipora foveolata **(Dana, 1846) (207133)** CoTW

Montipora foveolata (Dana, 1846) (207133). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Montipora foveolata cf. (Dana, 1846) (207133). CoTW Reported—Hunter et al. 1993.

Montipora socialis Bernard, 1897 (207173) heterotypic synonym. Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Coles et al. 2003; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b.

Montipora socislis Bernard, 1897 (207173) [sic] heterotypic synonym. Reported—Birkeland et al. 1987.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Montipora grisea **Bernard, 1897 (287709)** CoTW

Montipora grisea Bernard, 1897 (287709). CoTW Reported—Mundy 1996; Green et al. 1997; Mundy and Green 1999; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; DiDonato et al.

2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 53 m depth (Montgomery et al. 2019).

Montipora incrassata **(Dana, 1846) (287714)** CoTW

Montipora incrassata (Dana, 1846) (287714). CoTW Reported—Fisk and Birkeland 2002; Kenyon et al. 2010; CRED 2011; Fenner 2018.

Montipora incrassita cf. (Dana, 1846) (287714) [sic]. Reported—Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Manuʻa Islands, Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 33 m depth (Montgomery et al. 2019).

Montipora informis **Bernard, 1897 (207186)** CoTW

Montipora informis Bernard, 1897 (207186). CoTW Reported—Birkeland et al. 1987; Maragos et al. 1994, 1995; Mundy 1996; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Montipora informis cf. Bernard, 1897 (207186). CoTW Reported—Hunter et al. 1993; DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora marshallensis **Wells, 1954 (1263761)**

Montipora marshallensis Wells, 1954 (1263761). Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Veron et al. (2016) believe this name is probably synonymous with *Montipora crassituberculata* Bernard, 1897. It has otherwise not been reported from American Sāmoa. Lamberts (1983) reported this species to be rare and Birkeland et al. (1987) reported this species from a single site in 1979.

Montipora spumosa **(Lamarck, 1816) (207138)**CoTW

Montipora spumosa (Lamarck, 1816) (207138).CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Green and Hunter 1998; Birkeland et al. 2003; Kenyon et al. 2010. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora tuberculosa **(Lamarck, 1816) (207156)**CoTW

Montipora tuberculosa (Lamarck, 1816) (207156).CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 49 m depth (Montgomery et al. 2019). **Notes**—The photo of this species reported in Corals NPAS (2016) is too blurry for identification, which seems unlikely to be correct.

Montipora turgescens **Bernard, 1897 (207142)**CoTW

Montipora turgescens ? Bernard, 1897 (207142).CoTW Reported—Coles et al. 2003.

Montipora turgescens Bernard, 1897 (207142).CoTW Reported—Mundy 1996; Green and Hunter 1998; Mundy and Green 1999; Craig et al. 2001; Birkeland et al. 2003; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—LC.

Montipora turtlensis **Veron & Wallace, 1984 (287731)**CoTW

Montipora turtlensis Veron & Wallace, 1984 (287731).CoTW Reported—Work and Rameyer 2002; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016; Fenner 2018. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Montipora vaughani **Hoffmeister, 1925 (430668)**

Montipora vaughani Hoffmeister, 1925 (430668). Reported—Hoffmeister 1925; Lamberts 1983; Fenner 2018; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Type specimen location. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—DD. **Notes**—This species is easily identified, but has one difference with *M. foveolata*, i.e., rows of corallites that are closer together within rows and farther apart between rows. However, some colonies have areas like this and other areas like *M. foveolata*. Veron et al. (2016) believe this species is probable synonym of *M. foveolata*.

Montipora venosa **(Ehrenberg, 1834) (207139)** CoTW

Montipor venosa (Ehrenberg, 1834) (207139) [sic]. Reported—Birkeland et al. 2003.

Montipora venosa (Ehrenberg, 1834) (207139). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Green et al. 1997; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; Fenner 2018; NMNH 2018. Referenced—Green et al. 1997, 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Montipora verrilli **Vaughan, 1907 (207136)** CoTW

Montipora verilli Vaughan, 1907 (207136) [sic]. Reported—CRED 2011. Referenced—Lovell and McLardy 2008.

Montipora verrilli auaensis Vaughan, 1907 (207136). Reported—NMNH 2018.

Montipora verrilli var. auaensis Hoffmeister, 1925 (1262050). Reported—Hoffmeister 1925.

Montipora verrilli cf. Vaughan, 1907 (207136). CoTW Referenced—Coles et al. 2003.

Montipora verrilli Vaughan, 1907 (207136). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Green et al. 1997; Coles et al. 2003; NMNH 2018. Referenced—Green et al. 1997, 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b.

Montipora verrillii Vaughan, 1907 (207136) [sic]. Reported—Corals NPAS 2016.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—DD. **Notes**—There appears to be no reliable way to distinguish this species from *Montipora patula* Verrill, 1870 in spite of claims (Fenner 2005). More analysis of this species and *M. patula* is needed to determine which species is valid. The latter has not been reported from American Sāmoa.

Family Agariciidae Gray, 1847
Genus *Gardineroseris* Scheer & Pillai, 1974

Gardineroseris planulata **(Dana, 1846) (207274)** CoTW

Gardineroseris plantuata (Dana, 1846) (207274) [sic]. Reported—Birkeland et al. 2003.

Gardineroseris planulata (Dana, 1846) (207274). CoTW Reported—Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Coles et al. 2003; DiDonato et al. 2006; Corals NPAS 2016; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Gardineroseris ponderosa (Gardiner, 1905) (766561) heterotypic synonym. Reported—USACE 1980.

Gardinoseris planulata (Dana, 1846) (207274) [sic]. Reported—Green and Hunter 1998; Fenner et al. 2008.

Pavona planulata cf. (Dana, 1846) (1263640) homotypic synonym. Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 49 m depth (Montgomery et al. 2019).

Genus *Leptoseris* Milne Edwards & Haime, 1849

Leptoseris explanata **Yabe & Sugiyama, 1941 (207289)** CoTW

Leptoseris explanata Yabe & Sugiyama, 1941 (207289). CoTW Reported—Maragos et al. 1994; Mundy 1996; Coles et al. 2003; Kenyon et al. 2010; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Leptoseris foliosa **Dinesen, 1980 (207286)** CoTW

Leptoseris foliosa ? Dinesen, 1980 (207286). CoTW Reported—DMWR 2018.

Leptoseris foliosa Dinesen, 1980 (207286). CoTW Reported—Mundy 1996; Kenyon et al. 2010; DMWR 2018; Fenner 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Leptoseris gardineri **(van der Horst, 1922) (207284)**.[CoTW]

Leptoseris gardineri (van der Horst, 1922) (207284).[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; BPBM 2018; DMWR 2018; NMNH 2018. Referenced—Coles et al. 2003; Lovell and McLardy 2008.

Leptoseris gardineri cf. (van der Horst, 1922) (207284).[CoTW] Reported—NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—LC. **Mesophotic record**— 49, 50 m depth (Hoffmeister 1925; Lamberts 1983).

Leptoseris incrustans **(Quelch, 1886) (207279)**.[CoTW]

Leptoseris incrustans (Quelch, 1886) (207279).[CoTW] Reported—Birkeland et al. 1987; Maragos et al. 1994; Coles et al. 2003; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Leptoseris mycetoseroides **Wells, 1954 (207283)**.[CoTW]

Leptoseris mycetoceroides Wells, 1954 (207283) [sic]. Reported—Green and Hunter 1998.

Leptoseris mycetoseroides cf. Wells, 1954 (207283).[CoTW] Referenced—Coles et al. 2003.

Leptoseris mycetoseroides Wells, 1954 (207283).[CoTW] Reported—Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Leptoseris scabra **Vaughan, 1907 (207282)**.[CoTW]

Leptoseris scabra ? Vaughan, 1907 (207282).[CoTW] Reported—DMWR 2018.

Leptoseris scabra cf. Vaughan, 1907 (207282).[CoTW] Reported—Montgomery et al. 2019.

Leptoseris scabra Vaughan, 1907 (207282). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Maragos et al. 1994; Green and Hunter 1998; Coles et al. 2003; Kenyon et al. 2010; CRED 2011; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30, 52 m depth (Lamberts 1983; Montgomery et al. 2019).

Leptoseris solida **(Quelch, 1886) (207290)** CoTW

Leptoseris solida (Quelch, 1886) (207290). CoTW Reported—NMNH 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Luck). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions. **Vulnerability**—LC.

Leptoseris tubulifera **Vaughan, 1907 (207288)** CoTW

Leptoseris tubulifera Vaughan, 1907 (207288). CoTW Reported—Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Montgomery). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—LC. **Mesophotic record**— 52 m depth (Montgomery et al. 2019).

Leptoseris yabei **(Pillai & Scheer, 1976) (207287)** CoTW

Leptoseris yabei (Pillai & Scheer, 1976) (207287). CoTW Reported—Maragos et al. 1994; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Genus *Pavona* Lamarck, 1801

Pavona bipartita **Nemenzo, 1979 (289199)** CoTW

Pavona bipartita Nemenzo, 1979 (289199). CoTW Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Pavona chiriquiensis **Glynn, Maté & Stemann, 2001 (289200)** CoTW

Pavona chiriquensis Glynn, Maté & Stemann, 2001 (289200) [sic]. Reported—Fenner and Sudek 2016; DMWR 2018; Fenner 2018.

Pavona chiriquiensis Glynn, Maté & Stemann, 2001 (289200). CoTW Reported—Kenyon et al. 2010; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu/Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 46 m depth (Montgomery et al. 2019). **Notes**—See note on *Pavona varians* Verrill, 1864.

Pavona clavus **(Dana, 1846) (207318)** CoTW

Pavona clavus (Dana, 1846) (207318). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Coles et al. 2003; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Pavona lilacaea (Klunzinger, 1879) (207297) [sic] heterotypic synonym. Reported—Birkeland et al. 1987.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This is a distinctive species, but corallites are near identical to *P. bipartita*.

Pavona decussata **(Dana, 1846) (207320)** CoTW

Pavona decussata (Dana, 1846) (207320). CoTW Reported—Mayor 1924a, 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Coles et al. 2003; Birkeland 2007a; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1997; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Pavona decussata ? (Dana, 1846) (207320). CoTW Reported—NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Pavona divaricata **(Lamarck, 1816) (207311)**

Pavona divaricata (Lamarck, 1816) (207311). Reported—Mayor 1924a, 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; BPBM 2018; NMNH 2018. Referenced—Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Olosega, Sāmoa Islands, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—The coral in the photo of this species reported in Corals NPAS (2016) appears to be incorrectly identified and should be *Pavona frondifera* (Lamarck, 1816). Veron et al. (2016) consider *Pavonia divaricata* Lamarck, 1816 as a synonym of *P. frondifera*.

Pavona duerdeni **Vaughan, 1907 (207315)** CoTW

Pavona duerdeni Vaughan, 1907 (207315). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Fisk and Birkeland 2002; Coles et al. 2003; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu/Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30 m depth (Lamberts 1983).

Pavona explanulata **(Lamarck, 1816) (207306)** CoTW

Pavona explanata (Lamarck, 1816) (207306) [sic]. Referenced—Coles et al. 2003.

Pavona explanulata (Lamarck, 1816) (207306). CoTW Reported—Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Coles et al. 2003; DiDonato et al. 2006; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Pavona explanulata cf. (Lamarck, 1816) (207306). CoTW Reported—Maragos et al. 1994.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Pavona frondifera **(Lamarck, 1816) (207307)** CoTW

Pavona frondifera (Lamarck, 1816) (207307). CoTW Reported—Mayor 1924a, 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Maragos et al. 1994; Fisk and Birkeland 2002; DiDonato et al. 2006; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Pavona gigantea **Verrill, 1869 (289201)** CoTW

Pavona gigantea cf. Verrill, 1869 (289201). CoTW Reported—Lamberts 1983.

Pavona gigantea Verrill, 1869 (289201). CoTW Reported—USACE 1980; DMWR 2018; Fenner 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Tutuila. **Nearest confirmed ecoregion**—Marshall Islands and Galapagos Islands.

Geographical range extension—Between two disjunct ecoregions, significant geographical range extension. **Vulnerability**—LC. **Mesophotic record**— 30 m depth (Lamberts 1983).

Pavona maldivensis **(Gardiner, 1905) (207309)** CoTW

Pavona maldivensis (Gardiner, 1905) (207309). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Pavona pollicata Wells, 1954 (207299) heterotypic synonym. Reported—BPBM 2018; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Pavona minuta **Wells, 1954 (207317)** CoTW

Pavona minuta Wells, 1954 (207317). CoTW Reported—Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Work and Rameyer 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Pavona varians **Verrill, 1864 (207303)** CoTW

Pavona varians aff. Verrill, 1864 (207303). CoTW Reported—Coles et al. 2003.

Pavona varians cf. Verrill, 1864 (207303). CoTW Reported—Maragos et al. 1994.

Pavona varians Verrill, 1864 (207303). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30, 53 m depth (Lamberts 1983; Montgomery et al. 2019). **Notes**—Some earlier identifications prior to and shortly after 2001 of this species likely concern *P. chiriquiensis* because its name was not available or not well known since 2001. However, some reported observations of *Pavona* spp. included potential variations of *P. varians* (Maragos et al. 1994; Coles et al. 2003).

Pavona venosa **(Ehrenberg, 1834) (207301)** CoTW

Pavona venosa (Ehrenberg, 1834) (207301). CoTW Reported—Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1995; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—The identification of a photographed specimen of this species reported in Corals NPAS (2016) appears to be incorrect and should be *Coscinaraea columna* (Dana, 1846).

Family Astrocoeniidae Koby, 1890
Genus *Stylocoeniella* Yabe & Sugiyama, 1935

Stylocoeniella armata **(Ehrenberg, 1834) (206950)** CoTW

Stylocoenia armata (Ehrenberg, 1834) (206950) [sic]. Reported—DMWR 2018.

Stylocoeniella aramta (Ehrenberg, 1834) (206950) [sic]. Reported—Birkeland et al. 2003.

Stylocoeniella armata (Ehrenberg, 1834) (206950). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Stylocoeniella guentheri **(Bassett-Smith, 1890) (206948)** CoTW

Stylocoenia guntheri (Bassett-Smith, 1890) (206948) [sic]. Reported—DMWR 2018.

Stylocoeniella guentheri (Bassett-Smith, 1890) (206948). CoTW Reported—Fisk and Birkeland 2002; CRED 2011; Corals NPAS 2016; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu/Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Family Coscinaraeidae Benzoni, Arrigoni, Stefani & Stolarski, 2012
Genus *Coscinaraea* Milne Edwards & Haime, 1848

Coscinaraea columna **(Dana, 1846) (207256)** CoTW

Coscinaraea collumna (Dana, 1846) (207256) [sic]. Reported—Craig et al. 2001; Fenner et al. 2008; DMWR 2018.

Coscinaraea column (Dana, 1846) (207256) [sic]. Reported—USACE 1980.

Coscinaraea columna (Dana, 1846) (207256). CoTW Reported—Hoffmeister 1925; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; BPBM 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Coscinarea columna (Dana, 1846) (207256) [sic]. Reported—Hunter et al. 1993; Maragos et al. 1995; Fenner et al. 2008.

Coscinerea columna (Dana, 1846) (207256) [sic]. Reported—Mayor 1924b; Coles et al. 2003. Referenced—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Coscinaraea exesa **(Dana, 1846) (287938)** CoTW

Coscinaraea exesa (Dana, 1846) (287938). CoTW Reported—Green and Hunter 1998; Kenyon et al. 2010; Fenner 2018.

Coscinarea exesa (Dana, 1846) (287938) [sic]. Reported—CRED 2011.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Family Dendrophylliidae Gray, 1847
Genus *Endopsammia* Milne Edwards & Haime, 1848

Endopsammia regularis **(Gardiner, 1899) (289894)**

Endopsammia regularis (Gardiner, 1899) (289894). Reported—DMWR 2018; Fenner 2018; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—This species was collected by D. Fenner and identified by S. Cairns at the NMNH. Based on the evidence of a collected sample, we accept the presence of this species in American Sāmoa.

Genus *Tubastraea* Lesson, 1829

Tubastraea coccinea **Lesson, 1829 (291251)**

Tubastraea aurea (Quoy & Gaimard, 1833) (367759) heterotypic synonym. Reported—Birkeland et al. 1987. Referenced—Coles et al. 2003; Birkeland 2007b.

Tubastraea coccinea Lesson, 1829 (291251). Reported—DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Lovell and McLardy 2008.

Tubastrea coccinea Lesson, 1829 (291251) [sic]. Reported—USACE 1980; Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available. **Mesophotic record**— 45 m depth (Montgomery et al. 2019).

Tubastraea diaphana **(Dana, 1846) (291252)**

Dendrophyllia diaphana Dana, 1846 (210747) homotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983.

Tubastraea diaphana (Dana, 1846) (291252). Reported—NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available.

Genus *Turbinaria* Oken, 1815

Turbinaria frondens **(Dana, 1846) (207506)**[CoTW]

Turbinarea frondens ? (Dana, 1846) (207506) [sic]. Reported—Coles et al. 2003.

Turbinaria frondens (Dana, 1846) (207506).[CoTW] Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

Turbinaria frondens cf. (Dana, 1846) (207506).[CoTW] Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Turbinaria irregularis **Bernard, 1896 (207505)**[CoTW]

Turbinaria irregularis Bernard, 1896 (207505).[CoTW] Reported—This paper (Figure 3.2d).

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—LC. **Notes**—This species is presented here as a new record (Figure 3.2d).

Turbinaria mesenterina **(Lamarck, 1816) (207511)**CoTW

Turbinaria mesenterina (Lamarck, 1816) (207511).CoTW Reported—Green and Hunter 1998; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Turbinaria peltata **(Esper, 1794) (207512)**CoTW

Turbinaria peltata (Esper, 1794) (207512).CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Green and Hunter 1998; Fenner 2018; Montgomery et al. 2019. Referenced—Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, South Bank, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 30, 49 m depth (Lamberts 1983; Montgomery et al. 2019).

Turbinaria reniformis **Bernard, 1896 (207507)**CoTW

Turbinarea reniformis Bernard, 1896 (207507) [sic]. Reported—Coles et al. 2003. Referenced—Coles et al. 2003.

Turbinaria reniformis Bernard, 1896 (207507).CoTW Reported—Birkeland et al. 1987; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Turbinaria veluta Bernard, 1896 (767034) possible heterotypic synonym. Reported—Maragos et al. 1994; Corals NPAS 2016. Referenced—DiDonato et al. 2006.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner and J. Wolstenholme). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Turbinaria stellulata **(Lamarck, 1816) (207510)**CoTW

Turbinaria stellulata (Lamarck, 1816) (207510).CoTW Reported—Maragos et al. 1994, 1995; Green and Hunter 1998; DiDonato et al. 2006; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 51 m depth (Montgomery et al. 2019).

Family Diploastreidae Chevalier & Beauvais, 1987
Genus *Diploastrea* Matthai, 1914

Diploastrea heliopora **(Lamarck, 1816) (207417)** [CoTW]

Diploastrea heliopora (Lamarck, 1816) (207417). [CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; Cornish and DiDonato 2004; DiDonato et al. 2006; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; Gross 2019; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 43 m depth (Montgomery et al. 2019). **Notes**—This species is relatively easy to identify.

Family Euphylliidae Alloiteau, 1952
Genus *Euphyllia* Dana, 1846

Euphyllia glabrescens **(Chamisso & Eysenhardt, 1821) (207617)** [CoTW]

Euphyllia glabrescens (Chamisso & Eysenhardt, 1821) (207617). [CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Coles et al. 2003; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—American Sāmoa, Aunu'u, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 49 m depth (Montgomery et al. 2019). **Notes**—Identification of this species requires both skeleton shape and tentacle shape.

Genus *Fimbriaphyllia* Veron & Pichon, 1980

Fimbriaphyllia paradivisa **(Veron, 1990) (1048080)**

Euphyllia paradivisa Veron, 1990 (207615) homotypic synonym. [CoTW] Reported—Fenner 2018; Montgomery et al. 2019. Referenced—Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—*T*. **Mesophotic record**— 49 m depth (Montgomery et al. 2019). **Notes**—The identification of this species is well documented by photographic evidence and is a conclusive identification. Identification of this species requires both skeleton shape and tentacle shape.

Genus *Galaxea* Oken, 1815

Galaxea astreata **(Lamarck, 1816) (207368)** CoTW

Galaxea astreata (Lamarck, 1816) (207368). CoTW Reported—Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Galaxea clavus Dana, 1846 (207367) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Galaxea fascicularis **(Linnaeus, 1767) (207366)** CoTW

Galaxea fascicularis (Linnaeus, 1767) (207366). CoTW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; Creuwels 2019; Montgomery et al. 2019. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Galaxee fascicularia (Linnaeus, 1767) (207366) [sic]. Reported—Birkeland et al. 1987.

Galaxia fascicularis (Linnaeus, 1767) (207366) [sic]. Reported—Mayor 1924a.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Family Fungiidae Dana, 1846
Genus *Ctenactis* Verrill, 1864

Ctenactis crassa **(Dana, 1846) (288875)** CoTW

Ctenactis crassa (Dana, 1846) (288875). CoTW Reported—Bare et al. 2010; Fenner 2018. Referenced—Lovell and McLardy 2008.

Herpetoglosa simplex (Gardiner, 1905) (211417) [sic] heterotypic synonym. Reported—Birkeland et al. 1987.

Herpetoqlosa simplex (Gardiner, 1905) (211417) [sic] heterotypic synonym. Referenced—Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunuʻu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Ctenactis echinata **(Pallas, 1766) (216132)** CoTW

Ctenactis echinata (Pallas, 1766) (216132). CoTW Reported—Maragos et al. 1994; Bare et al. 2010; Corals NPAS 2016; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a; Lovell and McLardy 2008.

Fungia echinata (Pallas, 1766) (367892) homotypic synonym. Reported—USACE 1980; Lamberts 1983; Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30 m depth (Lamberts 1983).

Genus *Cycloseris* Milne Edwards & Haime, 1849

Cycloseris costulata **(Ortmann, 1889) (207325)** CoTW

Cycloseris costulata (Ortmann, 1889) (207325). CoTW Reported—Fenner 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 35 m depth (Montgomery et al. 2019).

Cycloseris fragilis **(Alcock, 1893) (716448)**

Cycloseris fragilis (Alcock, 1893) (716448). Reported—Kenyon et al. 2010.

Cycloseris patelliformis (Boschma, 1923) (207329) heterotypic synonym. CoTW Reported—Maragos et al. 1994; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Fungia fragilis (Alcock, 1893) (207333) homotypic synonym. Reported—Hoeksema 1989; NMNH 2018.

Fungia patelliformis Boschma, 1923 (716681) heterotypic synonym. Reported—Mayor 1924a; Hoffmeister 1925; USACE 1980; Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 33, 30 m depth (Hoffmeister 1925; Lamberts 1983). **Notes**—Veron et al. (2016) name this species *Diaseris fragilis* Alcock, 1893.

Cycloseris tenuis **(Dana, 1846) (207324)**CoTW

Cycloseris tenuis (Dana, 1846) (207324).CoTW Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion.

Cycloseris vaughani **(Boschma, 1923) (207327)**CoTW

Cycloseris vaughani (Boschma, 1923) (207327).CoTW Reported—Montgomery et al. 2019.

Cycloseris vaughani cf. (Boschma, 1923) (207327).CoTW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 47 m depth (Montgomery et al. 2019). **Notes**—Other mesophotic records are known from eastern Indonesia, eastern Australia and Easter Island (Hoeksema 2012c; Muir et al. 2018; Hoeksema et al. 2019).

Genus *Danafungia* Wells, 1966

Danafungia horrida **(Dana, 1846) (716608)**

Fungia danae Milne Edwards & Haime, 1851 (716867) heterotypic synonym. Reported—Maragos et al. 1994; Corals NPAS 2016.

Fungia danai Milne Edwards & Haime, 1851 (207343) heterotypic synonym, wrong species spelling. CoTW Reported—Birkeland et al. 1987, 2003; Mundy 1996; Coles et al. 2003. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Fungia horrida Dana, 1846 (207355) homotypic synonym.CoTW Reported—Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Kenyon et al. 2010; Corals NPAS 2016; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Fungia klunzingeri cf. Döderlein, 1901 (207354) heterotypic synonym.CoTW Reported—DMWR 2018.

Fungia klunzingeri Döderlein, 1901 (207354) heterotypic synonym.CoTW Reported—Maragos et al. 1994; Mundy 1996; Fenner et al. 2008; DMWR 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

Fungia valida Verrill, 1864 (207358) heterotypic synonym. Reported—Maragos et al. 1994.

American Sāmoa status—Present. **Evidence**—Single specimen report (synonym *Fungia klunzingeri* identified by D. Fenner), Multiple photographic records. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 39 m depth (Montgomery et al. 2019).

Danafungia scruposa **(Klunzinger, 1879) (716609)**

Fungia scruposa Klunzinger, 1879 (207340) homotypic synonym.[CoTW] Reported—Fisk and Birkeland 2002; Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Aunu'u, Manu'a Islands, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Genus *Fungia* Lamarck, 1801

Fungia fungites **(Linnaeus, 1758) (207350)**[CoTW]

Fungia fungites (Linnaeus, 1758) (207350).[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hoeksema 1989; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Genus *Halomitra* Dana, 1846

Halomitra pileus **(Linnaeus, 1758) (207361)**[CoTW]

Halomitra pileus (Linnaeus, 1758) (207361).[CoTW] Reported—USACE 1980; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Coles et al. 2003; Corals NPAS 2016; BPBM 2018; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Sāmoa Islands, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Herpolitha* Eschscholtz, 1825

Herpolitha limax **(Esper, 1797) (207363)**[CoTW]

Herpolitha limax (Esper, 1797) (207363).[CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Green and Hunter 1998; Coles et al. 2003; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Herpolitha weberi cf. (van der Horst, 1921) (411207) heterotypic synonym.[CoTW] Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Ofu/Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30, 47 m depth (Lamberts 1983; Montgomery et al. 2019). **Notes**—Veron et al. (2016) report this species is distinguishable from *H. weberi* only when they co-occur, although they were synonymized by Hoeksema (1989) who considered the two dredged fragmented type specimens of *H. weberi* to represent a deep-water ecomorph of *H. limax*. It is possible that the specimens identified by Veron (2000) are thick, juvenile specimens and therefore do not show the character of full-grown corals while the types are very thin and from deeper (maybe silty) substrates (B. Hoeksema pers. comm.). More work should be done on these two species.

Genus *Lithophyllon* Rehberg, 1892

***Lithophyllon concinna* (Verrill, 1864) (716645)**

Fungia concinna Verrill, 1864 (207353) homotypic synonym.[CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Fungia conncina Verrill, 1864 (207353) [sic] homotypic synonym. Reported—Fenner et al. 2008.

Lithophyllon concinna (Verrill, 1864) (716645). Reported—Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 49 m depth (Montgomery et al. 2019).

***Lithophyllon repanda* (Dana, 1846) (716653)**

Fungia repanda Dana, 1846 (207359) homotypic synonym.[CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hoeksema 1989; Maragos et al. 1994; Mundy 1996; Coles et al. 2003; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Genus *Lobactis* Verrill, 1864

Lobactis scutaria **(Lamarck, 1801) (716542)**

Fungia scutaria Lamarck, 1801 (207341) homotypic synonym.[CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hoeksema 1989; Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Fungis scutaria Lamarck, 1801 (207341) [sic] homotypic synonym. Reported—Birkeland et al. 1987.

Lobactis scutaria (Lamarck, 1801) (716542). Reported—Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 39 m depth (Montgomery et al. 2019). **Notes**—This species is relatively easy to identify.

Genus *Pleuractis* Verrill, 1864

Pleuractis granulosa **(Klunzinger, 1879) (716549)**

Fungia gransulosa Klunzinger, 1879 (207348) [sic] homotypic synonym. Reported—USACE 1980.

Fungia granulosa Klunzinger, 1879 (207348) homotypic synonym.[CoTW] Reported—Lamberts 1983; Kenyon et al. 2010; CRED 2011; DMWR 2018; Fenner 2018. Referenced—Lovell and McLardy 2008.

Pleuractis granulosa (Klunzinger, 1879) (716549). Reported—Creuwels 2019; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu/Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 30, 44 m depth (Lamberts 1983; Montgomery et al. 2019).

Pleuractis gravis **(Nemenzo, 1955) (716550)**

Fungia gravis Nemenzo, 1955 (288853) homotypic synonym.[CoTW] Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion.

Pleuractis moluccensis **(Van der Horst, 1919) (716545)**

Fungia molluccensis Van der Horst, 1919 (207337) [sic] homotypic synonym. Reported—Fisk and Birkeland 2002.

Fungia moloccensis Van der Horst, 1919 (207337) [sic] homotypic synonym. Reported—DMWR 2018.

Fungia moluccensis Van der Horst, 1919 (207337) homotypic synonym.[CoTW] Reported—Hoeksema 1989; Fenner 2018; NMNH 2018.

Pleuractis moluccensis (Van der Horst, 1919) (716545). Reported—Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 48 m depth (Montgomery et al. 2019).

Pleuractis paumotensis **(Stutchbury, 1833) (716547)**

Fungia paumotensis Stutchbury, 1833 (207339) homotypic synonym.[CoTW] Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Maragos et al. 1994; Coles et al. 2003; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Genus *Polyphyllia* Blainville, 1830

Polyphyllia novaehiberniae **(Lesson, 1831) (289231)**[CoTW]

Lithactinia novaehiberniae Lesson, 1831 (717282) homotypic synonym. Reported—Lamberts 1983.

Polyphyllia novae-hiberniae (Lesson, 1831) (289231) [sic]. Reported—USACE 1980.

Polyphyllia novaehibernae (Lesson, 1831) (289231) [sic]. Reported—Fenner 2018.

Polyphyllia novaehiberniae (Lesson, 1831) (289231).[CoTW] Reported—NMNH 2018. Referenced—Lovell and McLardy 2008.

Polyphyllia novohibernae (Lesson, 1831) (289231) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Genus *Sandalolitha* Quelch, 1884

Sandalolitha dentata **Quelch, 1884 (291009)**[CoTW]

Sandalolitha dentata Quelch, 1884 (291009).[CoTW] Reported—DMWR 2018; Fenner 2018; Montgomery et al. 2019.

Sandalothia dentata Quelch, 1884 (291009) [sic]. Reported—Bare et al. 2010.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Aunu‘u, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 47 m depth (Montgomery et al. 2019).

Sandalolitha robusta **(Quelch, 1886) (291010)** CoTW

Sandalolitha robusta (Quelch, 1886) (291010). CoTW Reported—Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Sandolitha robusta (Quelch, 1886) (291010) [sic]. Reported—Coles et al. 2003. Referenced—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by J. Wolstenholme). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, South Bank, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 39 m depth (Montgomery et al. 2019).

Family Lobophylliidae Dai & Horng, 2009
Genus *Acanthastrea* Milne Edwards & Haime, 1848

Acanthastrea brevis **Milne Edwards & Haime, 1849 (430639)** CoTW

Acanthastrea brevis cf. Milne Edwards & Haime, 1849 (430639). CoTW Reported—Montgomery et al. 2019.

Acanthastrea brevis Milne Edwards & Haime, 1849 (430639). CoTW Reported—DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Ofu/Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Acanthastrea echinata **(Dana, 1846) (207384)** CoTW

Acanthastrea echinata (Dana, 1846) (207384). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 39 m depth (Montgomery et al. 2019).

Acanthastrea hemprichii **(Ehrenberg, 1834) (288878)** CoTW

Acanthastrea hemprichii (Ehrenberg, 1834) (288878). CoTW Reported—Fenner 2018. Referenced—Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East although Veron et al.

(2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—VU. **Notes**—This species is documented by clear photographic evidence (Fenner 2018) to support the record of its presence in American Sāmoa.

Acanthastrea subechinata **Veron, 2000 (288885)** CoTW

Acanthastrea subechinata Veron, 2000 (288885). CoTW Reported—This paper (Figure 3.2a).

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Ofu, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Vulnerability**—NT. **Notes**—This species is presented here as a new record (Figure 3.2a).

Genus *Echinomorpha* Veron, 2000

Echinomorpha nishihirai **(Veron, 1990) (289877)** CoTW

Echinomorpha nishihirai (Veron, 1990) (289877). CoTW Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Genus *Echinophyllia* Klunzinger, 1879

Echinophyllia aspera **(Ellis & Solander, 1786) (207370)** CoTW

Echinophyllia aspera (Ellis & Solander, 1786) (207370). CoTW Reported—USACE 1980; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Echinopora aspera (Ellis & Solander, 1786) (766286) homotypic synonym. Reported—Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30, 40 m depth (Lamberts 1983; Montgomery et al. 2019).

Echinophyllia echinoporoides **Veron & Pichon, 1980 (287973)** CoTW

Echinophyllia echinoporoides Veron & Pichon, 1980 (287973). CoTW Reported—This paper (Figure 3.2c).

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species is presented here as a new record (Figure 3.2c).

Genus *Lobophyllia* de Blainville, 1830

Lobophyllia agaricia **(Milne Edwards & Haime, 1849) (888135)**

Symphyllia agaricia Milne Edwards & Haime, 1849 (288082) homotypic synonym.[CoTW] Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Lobophyllia corymbosa **(Forskål, 1775) (207391)**[CoTW]

Lobophyllia corymbosa (Forskål, 1775) (207391).[CoTW] Reported—Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Lobophyllia costata **(Dana, 1846) (207393)**

Lobophyllia costata (Dana, 1846) (207393). Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987. Referenced—Green et al. 1999; Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Lamberts (1983) reported this species as common. Veron et al. (2016) report this species as a synonym of *Lobophyllia hemprichii* (Ehrenberg, 1834).

Lobophyllia hemprichii **(Ehrenberg, 1834) (207392)**[CoTW]

Lobophyllia hemprichi (Ehrenberg, 1834) (207392) [sic]. Reported—Hunter et al. 1993; Green and Hunter 1998.

Lobophyllia hemprichii (Ehrenberg, 1834) (207392).[CoTW] Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Mundy 1996; Mundy and Green 1999; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 48 m depth (Montgomery et al. 2019).

Lobophyllia ishigakiensis **(Veron, 1990) (888146)**

Acanthastrea ishigakiensis Veron, 1990 (288879) homotypic synonym.[CoTW] Reported—Fenner 2018. Referenced—Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Lobophyllia recta **(Dana, 1846) (888140)**

Symphillia recta (Dana, 1846) (207399) [sic] homotypic synonym. Reported—CRED 2011.

Symphyllia nobilis (Dana, 1846) (207396) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; NMNH 2018.

Symphyllia recta (Dana, 1846) (207399) homotypic synonym.[CoTW] Reported—Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Genus *Oxypora* Saville-Kent, 1871

Oxypora crassispinosa **Nemenzo, 1979 (288351)**[CoTW]

Oxypora crassispinosa Nemenzo, 1979 (288351).[CoTW] Reported—DMWR 2018; Fenner 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 47 m depth (Montgomery et al. 2019). **Notes**—This species sensu Veron (2000) appears to be different, suggesting the original description and type need to be examined.

Oxypora lacera **(Verrill, 1864) (207374)**[CoTW]

Oxypora lacera (Verrill, 1864) (207374).[CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Mundy and Green 1999; Fisk and Birkeland 2002; Coles et al. 2003; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū, Tutuila. **Nearest confirmed**

ecoregion—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 43 m depth (Montgomery et al. 2019).

Family Merulinidae Verrill, 1865
Genus *Astrea* Lamarck, 1801

***Astrea annuligera* Milne Edwards & Haime, 1849 (762420)** CoTW

Astrea annuligera Milne Edwards & Haime, 1849 (762420). CoTW Reported—Fenner 2018; NMNH 2018.

Montastraea annuligera (Milne Edwards & Haime, 1849) (207484) homotypic synonym. Reported—Fisk and Birkeland 2002; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007b.

Montastrea annuligera (Milne Edwards & Haime, 1849) (764065) homotypic synonym, wrong genus spelling. Reported—Birkeland et al. 1987, 2003; Mundy 1996; Fenner et al. 2008; Kenyon et al. 2010; DMWR 2018. Referenced—Coles et al. 2003; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Ofu/Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

***Astrea curta* Dana, 1846 (762421)** CoTW

Astrea curta Dana, 1846 (762421). CoTW Reported—Fenner 2018; NMNH 2018; Montgomery et al. 2019.

Montastraea curta (Dana, 1846) (207481) homotypic synonym. Reported—Craig et al. 2001; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b.

Montastrea curta (Dana, 1846) (764064) homotypic synonym, wrong genus spelling. Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Coles et al. 2003; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Fenner and Sudek 2016; DMWR 2018. Referenced—Coles et al. 2003; Lovell and McLardy 2008.

Orbicella curta Dana, 1846 (766045) homotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 42 m depth (Montgomery et al. 2019).

Genus *Caulastraea* Dana, 1846

Caulastraea furcata **Dana, 1846 (289577)**

Caulastrea furcata Dana, 1846 (207412) wrong genus spelling.[CoTW] Reported—Birkeland et al. 1987; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Fenner et al. 2008; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

Caulastrea furreata Dana, 1846 (207412) [sic] wrong genus spelling. Reported—Birkeland et al. 2003.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by J. Wolstenholme). **Distribution**—American Sāmoa, Manuʻa Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Genus *Coelastrea* Verrill, 1866

Coelastrea palauensis **(Yabe & Sugiyama, 1936) (762428)**

Goniastrea palauenis (Yabe & Sugiyama, 1936) (207458) [sic] homotypic synonym. Reported—Green and Hunter 1998.

Goniastrea palauensis (Yabe & Sugiyama, 1936) (207458) homotypic synonym.[CoTW] Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994. Referenced—Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—New Caledonia. **Geographical range extension**—East. **Mesophotic record**— 30 m depth (Lamberts 1983).

Genus *Cyphastrea* Milne Edwards & Haime, 1848

Cyphastrea chalcidicum **(Forskål, 1775) (207415)**[CoTW]

Cyphastrea chalcidicum (Forskål, 1775) (207415).[CoTW] Reported—Lamberts 1983; Maragos et al. 1994; Mundy 1996; Birkeland et al. 2003; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Cyphastrea chalcidium (Forskål, 1775) (207415) [sic]. Reported—Fisk and Birkeland 2002.

Cyphastrea chalcidium ? (Forskål, 1775) (207415) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30 m depth (Lamberts 1983).

Cyphastrea microphthalma **(Lamarck, 1816) (207416)**[CoTW]

Cyphastrea gardineri cf. Matthai, 1914 (766209) heterotypic synonym. Reported—Lamberts 1983.

Cyphastrea microphthalma (Lamarck, 1816) (207416).CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; BPBM 2018; DMWR 2018; NMNH 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Cyphastrea micropthalma (Lamarck, 1816) (207416) [sic]. Reported—Fisk and Birkeland 2002.

Cyphastrea micropthalma cf. (Lamarck, 1816) (207416) [sic]. Reported—Hunter et al. 1993.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 33, 35 m depth (Hoffmeister 1925; Lamberts 1983).

Genus *Dipsastraea* Blainville, 1830

***Dipsastraea favus* (Forskål, 1775) (718748)**

Dipsastraea favus (Forskål, 1775) (718748). Reported—NMNH 2018.

Favia favulus (Forskål, 1775) (207435) [sic] homotypic synonym. Reported—Fisk and Birkeland 2002.

Favia favus (Forskål, 1775) (207435) homotypic synonym.CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by S.D. Cairns). **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

***Dipsastraea laxa* (Klunzinger, 1879) (758235)**

Dipsastraea laxa (Klunzinger, 1879) (758235). Reported—Gross 2019.

Favia laxa (Klunzinger, 1879) (207430) homotypic synonym.CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

***Dipsastraea matthaii* (Vaughan, 1918) (758240)**

Dipsastraea matthaii (Vaughan, 1918) (758240). Reported—NMNH 2018; Gross 2019.

Favia matthai ? Vaughan, 1918 (207437) [sic] homotypic synonym. Reported—DMWR 2018.

Favia matthai Vaughan, 1918 (207437) [sic] homotypic synonym. Reported—Green and Hunter 1998; Corals NPAS 2016.

Favia matthaii Vaughan, 1918 (207437) homotypic synonym.[CoTW] Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Dipsastraea pallida **(Dana, 1846) (758233)**

Dipsastraea pallida (Dana, 1846) (758233). Reported—NMNH 2018; Gross 2019.

Favia pallida (Dana, 1846) (207440) homotypic synonym.[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Dipsastraea rotumana **(Gardiner, 1899) (758237)**

Dipsastraea rotumana (Gardiner, 1899) (758237). Reported—NMNH 2018; Gross 2019.

Favia rotumana (Gardiner, 1899) (207438) homotypic synonym.[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

Favites rotumana (Gardiner, 1899) (207438) [sic] homotypic synonym. Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Dipsastraea speciosa **(Dana, 1846) (758219)**

Dipsastraea speciosa (Dana, 1846) (758219). Reported—NMNH 2018.

Favia speciosa (Dana, 1846) (207425) homotypic synonym.[CoTW] Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Dipsastraea truncata **(Veron, 2000) (758228)**

Favia truncatus Veron, 2000 (288076) homotypic synonym, wrong species spelling.[CoTW] Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Ofu/Olosega. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion.

Genus *Echinopora* Lamarck, 1816

Echinopora gemmacea **(Lamarck, 1816) (207418)**[CoTW]

Echinopora gemmacea (Lamarck, 1816) (207418).[CoTW] Reported—Coles et al. 2003; DiDonato et al. 2006; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; DMWR 2018; Paulay and Brown 2019. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008.

Echinopora gemmacea ? (Lamarck, 1816) (207418).[CoTW] Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The photographed specimen in Corals NPAS (2016) appears to belong to *Echinopora hirsutissima* Milne Edwards & Haime, 1849.

Echinopora hirsutissima **Milne Edwards & Haime, 1849 (207420)**[CoTW]

Echinopora hirsutissima ? Milne Edwards & Haime, 1849 (207420).[CoTW] Reported—Coles et al. 2003.

Echinopora hirsutissima Milne Edwards & Haime, 1849 (207420).[CoTW] Reported—Birkeland et al. 1987, 2003; Mundy 1996; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner and J. Wolstenholme). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Echinopora lamellosa **(Esper, 1795) (207421)**[CoTW]

Echinopora lamellosa (Esper, 1795) (207421).[CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994, 1995; Mundy 1996; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Echinopra lamellosa (Esper, 1795) (207421) [sic]. Reported—CRED 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Favites* Link, 1807

***Favites abdita* (Ellis & Solander, 1786) (207449)**CoTW

Favites abdita (Ellis & Solander, 1786) (207449).CoTW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; Gross 2019. Referenced—Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

***Favites chinensis* (Verrill, 1866) (207451)**CoTW

Favites chinensis (Verrill, 1866) (207451).CoTW Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994; DiDonato et al. 2006; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008.

Favites chinesis (Verrill, 1866) (207451) [sic]. Reported—Birkeland 2007a. Referenced—Birkeland 2007b.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

***Favites flexuosa* (Dana, 1846) (207444)**CoTW

Favites flexuosa (Dana, 1846) (207444).CoTW Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Favites halicora **(Ehrenberg, 1834) (207447)**[CoTW]

Favia halicora (Ehrenberg, 1834) (765790) homotypic synonym. Reported—Green and Hunter 1998.

Favites halicora (Ehrenberg, 1834) (207447).[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; NMNH 2018; Gross 2019. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Favites halicora cf. (Ehrenberg, 1834) (207447).[CoTW] Reported—Birkeland et al. 1987. Referenced—Green et al. 1999; Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 30 m depth (Lamberts 1983).

Favites paraflexuosus **Veron, 2000 (288822)**

Favites paraflexuosus Veron, 2000 (288822). Reported—This paper (Figure 3.2b).

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Ofu, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Notes**—This species is presented here as a new record (Figure 3.2b). Veron et al. (2016) recognize the spelling of this species as *Favites paraflexuosa* Veron, 2000 even though the spelling correction was corrected in ICZN (2011).

Favites pentagona **(Esper, 1795) (207446)**[CoTW]

Favites pentagona (Esper, 1795) (207446).[CoTW] Reported—Green et al. 1997; Birkeland and Belliveau 2000; Birkeland et al. 2003; Coles et al. 2003; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b.

Favites pentagonia (Esper, 1795) (207446) [sic]. Reported—CRED 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Goniastrea* Milne Edwards & Haime, 1848

Goniastrea edwardsi **Chevalier, 1971 (207466)** CoTW

Goniastrea edwardsi Chevalier, 1971 (207466). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Goniastrea edwardsii Chevalier, 1971 (207466) [sic]. Reported—Fisk and Birkeland 2002.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Goniastrea favulus **(Dana, 1846) (288026)** CoTW

Goniastrea favulus (Dana, 1846) (288026). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Craig et al. 2001; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016; Fenner 2018; Gross 2019. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Goniastrea favulus ? (Dana, 1846) (288026). CoTW Reported—DMWR 2018.

Goniastrea favulus cf. (Dana, 1846) (288026). CoTW Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The photographed specimen of this species in Corals NPAS (2016) appears to be incorrectly identified and should be *Goniastrea pectinata* (Ehrenberg, 1834).

Goniastrea minuta **Veron, 2000 (288027)** CoTW

Goniastrea minuta ? Veron, 2000 (288027). CoTW Reported—DMWR 2018.

Goniastrea minuta Veron, 2000 (288027). CoTW Reported—DiDonato et al. 2006; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—New Caledonia. **Geographical range extension**—East. **Vulnerability**—NT.

Goniastrea pectinata **(Ehrenberg, 1834) (207464)** CoTW

Goniastrea pectinata /retiformis (Ehrenberg, 1834) (207464). Reported—DMWR 2018.

Goniastrea pectinata (Ehrenberg, 1834) (207464). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003;

DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Goninstrea pectinata (Ehrenberg, 1834) (207464) [sic]. Reported—Hunter et al. 1993.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The photographed specimen of this species in Corals NPAS (2016) appears to be incorrectly identified and should be *Goniastrea retiformis* (Lamarck, 1816).

***Goniastrea retiformis* (Lamarck, 1816) (207461)**[CoTW]

Goniastrea retifirmis (Lamarck, 1816) (207461) [sic]. Reported—Mundy 1996.

Goniastrea retifonnis (Lamarck, 1816) (207461) [sic]. Reported—Hunter et al. 1993.

Goniastrea retiformis (Lamarck, 1816) (207461).[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Cornish and DiDonato 2004; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Goniastrea retortiformis (Lamarck, 1816) (207461) [sic]. Reported—NMNH 2018.

Goniostrea retiformis (Lamarck, 1816) (207461) [sic]. Reported—Hunter et al. 1993.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The photographed specimen of this species in Corals NPAS (2016) appears to be incorrectly identified and is likely a *Porites* sp.

***Goniastrea stelligera* (Dana, 1846) (763067)**

Favia stelliger (Dana, 1846) (207441) [sic] homotypic synonym. Reported—Work and Rameyer 2002.

Favia stelligera (Dana, 1846) (207441) homotypic synonym.[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Goniastrea stelligera (Dana, 1846) (763067). Reported—NMNH 2018; Gross 2019; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 43 m depth (Montgomery et al. 2019).

Genus *Hydnophora* Fischer von Waldheim, 1807

Hydnophora exesa **(Pallas, 1766) (207403)**CoTW

Hydnophora exaesa (Pallas, 1766) (207403) [sic]. Reported—Fisk and Birkeland 2002.

Hydnophora exesa (Pallas, 1766) (207403).CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Hydrophora exesa (Pallas, 1766) (207403) [sic]. Reported—Birkeland et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 30, 38 m depth (Lamberts 1983; Montgomery et al. 2019).

Hydnophora microconos **(Lamarck, 1816) (207402)**CoTW

Hydnophora microconnos (Lamarck, 1816) (207402) [sic]. Reported—CRED 2011.

Hydnophora microconos grade rigida (Lamarck, 1816) (207402). Reported—Hoffmeister 1925.

Hydnophora microconos (Lamarck, 1816) (207402).CoTW Reported—Mayor 1924a; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994, 1995; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1997, 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Hydnophora microconus (Lamarck, 1816) (207402) [sic]. Reported—Hunter et al. 1993; Green and Hunter 1998.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 30 m depth (Lamberts 1983).

Hydnophora rigida **(Dana, 1846) (207406)**CoTW

Hydnophora rigida (Dana, 1846) (207406).CoTW Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Mundy 1996; Fisk and Birkeland 2002; DiDonato et al. 2006; Fenner et al. 2008;

Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by J. Wolstenholme). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The photographed coral of this species in Corals NPAS (2016) appears to be incorrectly identified.

Genus *Leptoria* Milne Edwards & Haime, 1848

Leptoria phrygia (Ellis & Solander, 1786) (207477) [CoTW]

Leptoria phrygia /gracilis (Ellis & Solander, 1786) (207477). Referenced—Green et al. 1997.

Leptoria phrygia grade gracilis cf. (Ellis & Solander, 1786) (207477). Reported—Hoffmeister 1925.

Leptoria phrygia (Ellis & Solander, 1786) (207477). [CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Leptoria phygria (Ellis & Solander, 1786) (207477) [sic]. Reported—Hunter et al. 1993.

Leptoria phyrygia (Ellis & Solander, 1786) (207477) [sic]. Reported—Fisk and Birkeland 2002.

Leptoria tenuis (Dana, 1846) (367855) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983; NMNH 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 30, 42 m depth (Lamberts 1983; Montgomery et al. 2019).

Genus *Merulina* Ehrenberg, 1834

Merulina ampliata (Ellis & Solander, 1786) (207407) [CoTW]

Merulina ampliata (Ellis & Solander, 1786) (207407). [CoTW] Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Mundy and Green 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Merulina vaughani Van der Horst, 1921 (758411) heterotypic synonym. Reported—Hoffmeister 1925; Birkeland et al. 1987; NMNH 2018. Referenced—Green et al. 1999; Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 42 m depth (Montgomery et al. 2019).

Merulina scabricula **Dana, 1846 (289198)**CoTW

Merulina scabicula Dana, 1846 (289198) [sic]. Referenced—Birkeland 2007b.

Merulina scabricula Dana, 1846 (289198).CoTW Reported—Maragos et al. 1994; Green and Hunter 1998; Coles et al. 2003; DiDonato et al. 2006; Fenner et al. 2008; Corals NPAS 2016; DMWR 2018; Montgomery et al. 2019. Referenced—Coles et al. 2003; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 39 m depth (Montgomery et al. 2019). **Notes**—Some taxonomic disagreement exists for this genus as Huang et al. (2014) recognize *Paraclavarina* as a synonym of *Merulina* while Veron et al. (2016) do not.

Genus *Mycedium* Milne Edwards & Haime, 1851

Mycedium elephantotus **(Pallas, 1766) (207373)**CoTW

Mycedium elephantotum (Pallas, 1766) (207373) [sic]. Reported—Hunter et al. 1993.

Mycedium elephantotus (Pallas, 1766) (207373).CoTW Reported—Birkeland et al. 1987; Itano and Buckley 1988; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Mycedium robokaki **Moll & Best, 1984 (287735)**CoTW

Mycedium robokakai Moll & Best, 1984 (287735) [sic]. Reported—Fenner 2018.

Mycedium robokaki Moll & Best, 1984 (287735).CoTW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Manu'a Islands, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—LC.

Genus *Oulophyllia* Milne Edwards & Haime, 1848

Oulophyllia crispa **(Lamarck, 1816) (207485)** CoTW

Oulophyllia crispa /bennettae (Lamarck, 1816) (207485). Reported—DMWR 2018.

Oulophyllia crispa (Lamarck, 1816) (207485). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Coles et al. 2003; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Genus *Paragoniastrea* Huang, Benzoni & Budd, 2014

Paragoniastrea russelli **(Wells, 1954) (817179)**

Favites russell (Wells, 1954) (207454) [sic] homotypic synonym. Reported—Birkeland et al. 1987.

Favites russelli (Wells, 1954) (207454) homotypic synonym. CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 30 m depth (Lamberts 1983).

Genus *Platygyra* Ehrenberg, 1834

Platygyra contorta **Veron, 1990 (289205)** CoTW

Platygyra contorta Veron, 1990 (289205). CoTW Reported—Fisk and Birkeland 2002; DiDonato et al. 2006; Corals NPAS 2016. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Ofu. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Platygyra daedalea **(Ellis & Solander, 1786) (207489)** CoTW

Meandra esperi (Milne Edwards & Haime, 1849) (1262040) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983.

Platygyra dadaelea (Ellis & Solander, 1786) (207489) [sic]. Reported—Fenner et al. 2008.

Platygyra daedala (Ellis & Solander, 1786) (207489) [sic]. Reported—Work and Rameyer 2002.

Platygyra daedalea (esperi) (Ellis & Solander, 1786) (207489). Reported—Kenyon et al. 2010.

Platygyra daedalea (Ellis & Solander, 1786) (207489).[CoTW] Reported—Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Platygyra daedallea (Ellis & Solander, 1786) (207489) [sic]. Reported—Hunter et al. 1993.

Platygyra rustica (Dana, 1846) (411248) heterotypic synonym. Reported—USACE 1980.

Platygyrus daedalea (Ellis & Solander, 1786) (207489) [sic]. Reported—Lamberts 1983.

Platygyrus rustica (Dana, 1846) (411248) [sic] heterotypic synonym. Reported—Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

***Platygyra lamellina* (Ehrenberg, 1834) (207487)**[CoTW]

Meandra lamellina Ehrenberg, 1834 (1262039) homotypic synonym. Reported—Hoffmeister 1925.

Platygyra lamellina (Ehrenberg, 1834) (207487).[CoTW] Reported—USACE 1980; Birkeland et al. 1987; Maragos et al. 1994; Birkeland 2007a; Kenyon et al. 2010; NMNH 2018. Referenced—Coles et al. 2003; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Platygyra lamellina ? (Ehrenberg, 1834) (207487).[CoTW] Reported—Coles et al. 2003.

Platygyrus lamellina (Ehrenberg, 1834) (207487) [sic]. Reported—Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

***Platygyra pini* Chevalier, 1975 (207490)**[CoTW]

Platygyia pini Chevalier, 1975 (207490) [sic]. Reported—Birkeland et al. 2003.

Platygyra pini Chevalier, 1975 (207490).[CoTW] Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; CRED 2011; Corals NPAS 2016; DMWR 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

***Platygyra sinensis* (Milne Edwards & Haime, 1849) (207486)**[CoTW]

Platygyra sinensis (Milne Edwards & Haime, 1849) (207486).[CoTW] Reported—Maragos et al. 1994, 1995; Mundy 1996; Fisk and Birkeland 2002; DiDonato et al. 2006; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—The photographed coral of this species in Corals NPAS (2016) appears to be uncertain, but there are multiple other reports of this species.

Genus *Scapophyllia* Milne Edwards & Haime, 1848

Scapophyllia cylindrica **Milne Edwards & Haime, 1849 (291024)** CoTW

Scapophyllia cylindrica Milne Edwards & Haime, 1849 (291024). CoTW Reported—Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Coles et al. 2003; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Family Plesiastreidae Dai & Horng, 2009
Genus *Plesiastrea* Milne Edwards & Haime, 1848

Plesiastrea versipora **(Lamarck, 1816) (207494)** CoTW

Pleasiastrea versipora (Lamarck, 1816) (207494) [sic]. Referenced—Birkeland 2007b.
Plesiastrea veripora (Lamarck, 1816) (207494) [sic]. Reported—USACE 1980.
Plesiastrea versipora (Lamarck, 1816) (207494). CoTW Reported—Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Fisk and Birkeland 2002; Coles et al. 2003; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Coles et al. 2003; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Olosega, Rose Atoll, South Bank, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 43 m depth (Montgomery et al. 2019).

Family Pocilloporidae Gray, 1840
Genus *Pocillopora* Lamarck, 1816

Pocillopora ankeli **Scheer & Pillai, 1974 (430671)** CoTW

Pocillopora ankeli Scheer & Pillai, 1974 (430671). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—Southeast. **Vulnerability**—VU.

Pocillopora brevicornis **Lamarck, 1816 (206951)**[CoTW]

Pocillopora brevicornis Lamarck, 1816 (206951).[CoTW] Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Maragos et al. 1994; Kenyon et al. 2010; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997.

Pocillopora setcheli Hoffmeister, 1925 (206967) [sic] heterotypic synonym. Reported—Corals NPAS 2016.

Pocillopora setchelli cf. Hoffmeister, 1925 (206967) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

Pocillopora setchelli Hoffmeister, 1925 (206967) heterotypic synonym. Reported—USACE 1980; Birkeland et al. 1987, 2003; Coles et al. 2003; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b.

Pocillopora setichelli Hoffmeister, 1925 (206967) [sic] heterotypic synonym. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Type specimen location (synonym *Pocillopora setchelli*). **Distribution**—American Sāmoa, Aunuʻu, Ofu, Ofu/Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Pocillopora damicornis **(Linnaeus, 1758) (206953)**[CoTW]

Pocillipora damicornis var. cespitosa (Linnaeus, 1758) (206953) [sic]. Reported—Hoffmeister 1925.

Pocillopora damicomis (Linnaeus, 1758) (206953) [sic]. Reported—Hunter et al. 1993.

Pocillopora damicornis caespitosa Dana, 1846 (545628). Reported—Mayor 1924b; NMNH 2018.

Pocillopora damicornis var. bulbosa (Linnaeus, 1758) (206953). Reported—Hoffmeister 1925.

Pocillopora damicornis var. cespitosa Dana, 1846 (818848). Reported—Mayor 1924b; Hoffmeister 1925. Referenced—Green et al. 1997.

Pocillopora damicornis (Linnaeus, 1758) (206953).[CoTW] Reported—Mayor 1924a; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Cornish and DiDonato 2004; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019; Paulay and Brown 2019. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest**

confirmed ecoregion—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 50 m depth (Montgomery et al. 2019). **Notes**—See *P. acuta* note.

Pocillopora elegans **Dana, 1846 (206956)** CoTW

Pocillopora elegans ? Dana, 1846 (206956). CoTW Reported—DMWR 2018.

Pocillopora elegans Dana, 1846 (206956). CoTW Reported—Birkeland et al. 1987, 2003; Coles et al. 2003; CRED 2011; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Rose Atoll, Swains, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Pocillopora grandis **Dana, 1846 (206952)**

Pocillopora edouxi Milne Edwards, 1860 (206958) [sic] heterotypic synonym. Reported—Fenner et al. 2008.

Pocillopora eydouxi cf. Milne Edwards, 1860 (206958) heterotypic synonym. CoTW Reported—USACE 1980.

Pocillopora eydouxi Milne Edwards, 1860 (206958) heterotypic synonym. CoTW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Pocillopora eydoxi Milne Edwards, 1860 (206958) [sic] heterotypic synonym. Reported—Birkeland et al. 1987.

Pocillopora grandis Dana, 1846 (206952). Reported—QM 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 49 m depth (Montgomery et al. 2019).

Pocillopora ligulata **Dana, 1846 (206959)** CoTW

Pocillopora ligulata Dana, 1846 (206959). CoTW Reported—Birkeland et al. 1987, 2003; Coles et al. 2003; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Pocillopora meandrina **Dana, 1846 (206964)** CoTW

Pocillopora meandrina cf. Dana, 1846 (206964). CoTW Reported—Birkeland et al. 2003.

Pocillopora meandrina Dana, 1846 (206964). CoTW Reported—USACE 1980; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Pocillopora meandrioa Dana, 1846 (206964) [sic]. Reported—Hunter et al. 1993.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, South Bank, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—$\mathcal{C}$, LC.

Pocillopora verrucosa **(Ellis & Solander, 1786) (206954)** CoTW

Pocillopora danae cf. Verrill, 1864 (206963) heterotypic synonym. CoTW Reported—Montgomery et al. 2019.

Pocillopora danae Verrill, 1864 (206963) heterotypic synonym. CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Green et al. 1997; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Pocillopora verrucosa (Ellis & Solander, 1786) (206954). CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 48 m depth (Montgomery et al. 2019).

Pocillopora woodjonesi Vaughan, 1918 (289252) CoTW

Pocillopora woodjonesi Vaughan, 1918 (289252).CoTW Reported—Lamberts 1983; Fisk and Birkeland 2002; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016; Fenner 2018; QM 2018. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

Pocillopora woodjonsi Vaughan, 1918 (289252) [sic]. Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Seriatopora* Lamarck, 1816

Seriatopora hystrix Dana, 1846 (206973) CoTW

Seriatopora angulata Klunzinger, 1879 (206971) heterotypic synonym. Reported—BPBM 2018. Referenced—Coles et al. 2003.

Seriatopora hystrix Dana, 1846 (206973).CoTW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994. Referenced—Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Stylophora* Schweigger, 1820

Stylophora pistillata Esper, 1797 (206982) CoTW

Stylophora mordax (Dana, 1846) (206981) heterotypic synonym. Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Itano and Buckley 1988; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; NMNH 2018. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007a, 2007b.

Stylophora mordax cf. (Dana, 1846) (206981) heterotypic synonym. Reported—USACE 1980.

Stylophora pistiliata Esper, 1797 (206982) [sic]. Reported—Hunter et al. 1993.

Stylophora pistillata Esper, 1797 (206982).CoTW Reported—Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Bare et al. 2010; CRED 2011; Birkeland et al. 2013; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Lovell and McLardy 2008.

Stylophora pistllata Esper, 1797 (206982) [sic]. Referenced—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 50 m depth (Montgomery et al. 2019). **Notes**—Eight species or forms of *Stylophora* are found in the Indian

Ocean and Red Sea. *Stylophora* spp. decrease in number from west to east and only the thick-branched and non-, red-tinged form of *Stylophora pistillata* Esper, 1797 has made it to American Sāmoa.

Family Poritidae Gray, 1840
Genus *Goniopora* de Blainville, 1830

Goniopora columna **Dana, 1846 (207221)** CoTW

Goniopora collumna Dana, 1846 (207221) [sic]. Reported—DMWR 2018.

Goniopora columna Dana, 1846 (207221). CoTW Reported—Birkeland et al. 1987; Coles et al. 2003; Fenner 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—NT.

Goniopora fruticosa **Saville-Kent, 1891 (288272)** CoTW

Goniopora fruiticosa Saville-Kent, 1891 (288272) [sic]. Reported—Corals NPAS 2016; DMWR 2018.

Goniopora fruticosa Saville-Kent, 1891 (288272). CoTW Reported—DiDonato et al. 2006; Fenner 2018. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Goniopora pandoraensis **Veron & Pichon, 1982 (288275)** CoTW

Goniopora pandaorensis Veron & Pichon, 1982 (288275) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Vanuatu. **Geographical range extension**—East. **Vulnerability**—LC.

Goniopora somaliensis **Vaughan, 1907 (207212)** CoTW

Goniopora somaliensis cf. Vaughan, 1907 (207212). CoTW Reported—USACE 1980; Lamberts 1983; Montgomery et al. 2019.

Goniopora somaliensis Vaughan, 1907 (207212). CoTW Reported—Birkeland et al. 1987, 2003; Mundy 1996; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manu‘a Islands, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 47 m depth (Montgomery et al. 2019).

Genus *Porites* Link, 1807

Porites annae **Crossland, 1952 (288886)**CoTW

Porites annae Crossland, 1952 (288886).CoTW Reported—Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Forsman et al. 2009; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Porites arnaudi **Reyes-Bonilla & Carricart-Ganivet, 2000 (288888)**CoTW

Porites arnaudi cf. Reyes-Bonilla & Carricart-Ganivet, 2000 (288888).CoTW Reported—DMWR 2018.

Porites arnaudi Reyes-Bonilla & Carricart-Ganivet, 2000 (288888).CoTW Reported—Fenner 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—Aunu'u, Olosega, Tutuila. **Nearest confirmed ecoregion**—Clipperton Atoll, east Pacific. **Geographical range extension**—Southwest, Veron et al. (2016) strongly predicted this species in the Society Islands, French Polynesia indicating it exists further west than Clipperton Atoll. **Vulnerability**—LC. **Mesophotic record**— 49 m depth (Montgomery et al. 2019).

Porites cylindrica **Dana, 1846 (207229)**CoTW

Porites andrewsi Vaughan, 1918 (207252) heterotypic synonym. Reported—Mayor 1924a, 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; BPBM 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997.

Porites capricornis Rehberg, 1892 (760262) heterotypic synonym. Reported—NMNH 2018.

Porites cylindrica ? Dana, 1846 (207229).CoTW Reported—DMWR 2018.

Porites cylindrica Dana, 1846 (207229).CoTW Reported—Birkeland et al. 1987, 2003, 2013; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Mundy and Green 1999; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Cornish and DiDonato 2004; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Forsman et al. 2009; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Porties cylindrica Dana, 1846 (207229) [sic]. Reported—Maragos et al. 1995.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Porites evermanni **Vaughan, 1907 (288900)** CoTW

Porites evermanni Vaughan, 1907 (288900). CoTW Reported—Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—Aunu‘u, Ofu/Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—New Caledonia and Kiribati west, Gilbert Islands. **Geographical range extension**—East and Southeast. **Vulnerability**—DD.

Porites horizontalata **Hoffmeister, 1925 (207237)** CoTW

Porites horizontalata cf. Hoffmeister, 1925 (207237). CoTW Reported—Fisk and Birkeland 2002.

Porites horizontalata Hoffmeister, 1925 (207237). CoTW Reported—Hoffmeister 1925; USACE 1980; Birkeland et al. 1987; Coles et al. 2003; Corals NPAS 2016; Fenner 2018; NMNH 2018. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Porites horizontallata Hoffmeister, 1925 (207237) [sic]. Reported—DMWR 2018.

Synaraea horizontalata Hoffmeister, 1925 (207237) [sic]. Reported—USACE 1980; Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Type specimen location. **Distribution**—American Sāmoa, Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Mesophotic record**— 33, 30 m depth (Hoffmeister 1925; Lamberts 1983).

Porites latistellata **Quelch, 1886 (869070)** CoTW

Porites latistella Quelch, 1886 (288906) wrong species spelling. Reported—USACE 1980; Lamberts 1983. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Vanuatu and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions.

Porites lichen **Dana, 1846 (207228)** CoTW

Porites lichen /randalli ? Dana, 1846 (207228). Reported—DMWR 2018.

Porites lichen Dana, 1846 (207228). CoTW Reported—Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; Forsman et al. 2009; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Porties lichen Dana, 1846 (207228) [sic]. Reported—USACE 1980.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30 m depth (Lamberts 1983).

Porites lobata **Dana, 1846 (207225)** CoTW

Porites lobata /lutea Dana, 1846 (207225). Reported—Hunter et al. 1993.

Porites lobata forma nodulosa Dana, 1846 (207225). Reported—Hoffmeister 1925. Referenced—Green et al. 1997.

Porites lobata nodulosa Dana, 1846 (207225). Reported—NMNH 2018.

Porites lobata aff. Dana, 1846 (207225). CoTW Reported—USACE 1980.

Porites lobata cf. Dana, 1846 (207225). CoTW Reported—USACE 1980; Maragos et al. 1994; Fisk and Birkeland 2002; Cornish and DiDonato 2004; DMWR 2018.

Porites lobata Dana, 1846 (207225). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Green and Hunter 1998; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Forsman et al. 2009; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The photo of this species reported in Corals NPAS (2016) appears to be uncertain.

Porites lutea **Milne Edwards & Haime, 1851 (207246)** CoTW

Porites arenosa (Esper, 1797) (207241) heterotypic synonym. Reported—USACE 1980.

Porites lutea /evermanni Milne Edwards & Haime, 1851 (207246). Reported—DMWR 2018.

Porites lutea haddoni Vaughan, 1918 (994051). Reported—NMNH 2018.

Porites lutea var. haddoni aff. Milne Edwards & Haime, 1851 (207246). Reported—Mayor 1924b.

Porites lutea var. haddoni Milne Edwards & Haime, 1851 (207246). Reported—Mayor 1924b; Hoffmeister 1925. Referenced—Green et al. 1997.

Porites lutea ? Milne Edwards & Haime, 1851 (207246). CoTW Reported—DMWR 2018.

Porites lutea aff. Milne Edwards & Haime, 1851 (207246). CoTW Reported—Mayor 1924b; USACE 1980.

Porites lutea cf. Milne Edwards & Haime, 1851 (207246). CoTW Reported—USACE 1980; Fisk and Birkeland 2002.

Porites lutea Milne Edwards & Haime, 1851 (207246). CoTW Reported—Mayor 1924a, 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Forsman et al. 2009; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; BPBM 2018; DMWR 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Porites var. haddoni Vaughan, 1918 (760256) heterotypic synonym. Reported—USACE 1980.

Porties lutea Milne Edwards & Haime, 1851 (207246) [sic]. Reported—Maragos et al. 1995.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 30 m depth (Lamberts 1983). **Notes**—The septal pattern of *P. evermanni* and *P. lutea* are essentially identical (Fenner 2005). Colonies of *P. lutea* collected and analyzed molecularly from American Sāmoa fell into three distinct clades that included colonies identified as *P. evermanni* (Forsman et al. 2009). The type specimen of *P. lutea* has not been examined, and Turak (pers. comm.) indicates that the label on the presumed type in the Paris Natural History Museum may have been moved from a different skeleton. Thus, there are significant taxonomic challenges for this species and more work needed to sort the differences.

Porites monticulosa **Dana, 1846 (367816)** [CoTW]

Porites monticulosa Dana, 1846 (367816). [CoTW] Reported—Birkeland et al. 1987; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Swains, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species is very similar to *Porites rus* (Forskål, 1775). The type specimen of *P. monticulosa* in the Yale Peabody Museum is a short, thick, rounded column. It can be reliably separated from *P. rus* in many locations in the Pacific, including American Sāmoa and Hawaii (Fenner 2005). However, there are no reliable microscopic features that distinguish it from *P. rus* and the species concept sensu Veron (2000) and Veron et al. (2016).

Porites murrayensis **Vaughan, 1918 (207232)** [CoTW]

Porites murraensis Vaughan, 1918 (207232) [sic]. Referenced—Green et al. 1997.

Porites murrayensis ? Vaughan, 1918 (207232). [CoTW] Reported—DMWR 2018.

Porites murrayensis Vaughan, 1918 (207232). [CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Hunter et al. 1993; Maragos et al. 1994; Green and Hunter 1998; Coles et al. 2003; CRED 2011; Corals NPAS 2016; NMNH 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Porites randalli **Forsman & Birkeland, 2009 (758221)** [CoTW]

Porites randalli Forsman & Birkeland, 2009 (758221). [CoTW] Reported—Forsman and Birkeland 2009; BPBM 2018; DMWR 2018; Fenner 2018; NMNH 2018; Paulay and Brown 2019.

American Sāmoa status—Present. **Evidence**—Type specimen location. **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Porites rus **(Forskål, 1775) (207231)**[CoTW]

Porites convexa (Verrill, 1864) (207230) heterotypic synonym. Reported—Birkeland et al. 1987, 2003; Coles et al. 2003; BPBM 2018. Referenced—Green et al. 1999; Coles et al. 2003.

Porites faustinoi Hoffmeister, 1925 (207239) heterotypic synonym. Reported—Hoffmeister 1925; NMNH 2018.

Porites rus (Forskål, 1775) (207231).[CoTW] Reported—Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Birkeland and Belliveau 2000; Fisk and Birkeland 2002; Coles et al. 2003; Cornish and DiDonato 2004; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; Fenner and Sudek 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Porites undulata (Verrill, 1864) (207243) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; NMNH 2018. Referenced—Green et al. 1997.

Synaraea faustino Hoffmeister, 1925 (207239) [sic] heterotypic synonym. Reported—Lamberts 1983.

Synaraea undulata Klunzinger, 1879 (760291) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 47 m depth (Montgomery et al. 2019). **Notes**—Veron et al. (2016) report *P. faustinoi* as a synonym of *P. horizontalata*.

Porites stephensoni **Crossland, 1952 (288915)**[CoTW]

Porites stephensoni Crossland, 1952 (288915).[CoTW] Reported—Birkeland et al. 1987; Fenner 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunu‘u, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Vanuatu. **Geographical range extension**—East. **Vulnerability**—NT. **Notes**—This is a small, distinctive massive species that only lives on reef flats and is not hard to identify.

Genus *Stylaraea* Milne Edwards & Haime, 1851

Stylaraea punctata **(Linnaeus, 1758) (212178)**CoTW

Stylaraea punctata (Linnaeus, 1758) (212178).CoTW Reported—Green et al. 1997; Birkeland and Belliveau 2000; Birkeland et al. 2013; BPBM 2018; DMWR 2018; Fenner 2018. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

Stylarea punctata (Linnaeus, 1758) (212178) [sic]. Reported—Coles et al. 2003; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—DD.

Family Psammocoridae Chevalier & Beauvais, 1987
Genus *Psammocora* Dana, 1846

Psammocora contigua **(Esper, 1794) (207267)**CoTW

Psammacora contigua (Esper, 1794) (207267) [sic]. Reported—USACE 1980.

Psammocora contigua tutuilensis (Esper, 1794) (207267). Reported—NMNH 2018.

Psammocora contigua var. maldivensis (Esper, 1794) (207267). Reported—Mayor 1924b; Hoffmeister 1925.

Psammocora contigua var. tutuilensis Hoffmeister, 1925 (869367). Reported—Hoffmeister 1925. Referenced—Green et al. 1997.

Psammocora contigua (Esper, 1794) (207267).CoTW Reported—Mayor 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; BPBM 2018; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Psammocora obtusangula cf. (Lamarck, 1816) (287783) heterotypic synonym.CoTW Reported—Coles et al. 2003.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Psammocora digitata **Milne Edwards & Haime, 1851 (207260)**CoTW

Psammocora digitata Milne Edwards & Haime, 1851 (207260).CoTW Reported—Coles et al. 2003; DiDonato et al. 2006; Corals NPAS 2016; Fenner 2018. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—American Sāmoa, Aunuʻu, Ofu, Ofu/Olosega, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Vanuatu.

Geographical range extension—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—NT. **Notes**—This species forms massive colonies, which can be very large, and not columnar. Historically, reports under *P. digitata* should be considered *Psammocora haimiana* Milne Edwards & Haime, 1851, and vice versa (Benzoni et al. 2010; Veron et al. 2016). However, the name *P. haimiana* has never been reported in American Sāmoa. See note on *P. haimiana*.

Psammocora nierstraszi **Van der Horst, 1921 (207261)** CoTW

Psammacora nietstraszi Van der Horst, 1921 (207261) [sic]. Reported—USACE 1980.

Psammocora neirstraszi Van der Horst, 1921 (207261) [sic]. Reported—Birkeland et al. 1987. Referenced—Green et al. 1999; Birkeland 2007b.

Psammocora nierstraszi aff. Van der Horst, 1921 (207261). CoTW Reported—Coles et al. 2003.

Psammocora nierstraszi Van der Horst, 1921 (207261). CoTW Reported—Lamberts 1983; Maragos et al. 1994; Green and Hunter 1998; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Coles et al. 2003; Lovell and McLardy 2008.

Psammocora nierstrazi Van der Horst, 1921 (207261) [sic]. Reported—Fisk and Birkeland 2002.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 47 m depth (Montgomery et al. 2019).

Psammocora profundacella **Gardiner, 1898 (207271)** CoTW

Psammacora superficialis Gardiner, 1898 (207270) [sic] heterotypic synonym. Reported—USACE 1980; CRED 2011.

Psammocora profundacella Gardiner, 1898 (207271). CoTW Reported—Maragos et al. 1994, 1995; Mundy 1996; Fisk and Birkeland 2002; Fenner et al. 2008; Benzoni et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Lovell and McLardy 2008.

Psammocora profundicella Gardiner, 1898 (207271) [sic]. Reported—Green and Hunter 1998; Coles et al. 2003; Birkeland 2007a. Referenced—Coles et al. 2003; Birkeland 2007a, 2007b.

Psammocora samoaensis Hoffmeister, 1925 (718645) [sic] heterotypic synonym. Reported—NMNH 2018.

Psammocora samoensis Hoffmeister, 1925 (718645) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983; Birkeland et al. 1987, 2003; Green et al. 1997. Referenced—Green et al. 1999; Coles et al. 2003.

Psammocora superficiales Gardiner, 1898 (207270) [sic] heterotypic synonym. Reported—Birkeland et al. 1987.

Psammocora superficialis /nierstraszi Gardiner, 1898 (207270) heterotypic synonym. Reported—DMWR 2018.

Psammocora superficialis Gardiner, 1898 (207270) heterotypic synonym. Reported—Hoffmeister 1925; Lamberts 1983; Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; Birkeland et al. 2003; Benzoni et al. 2010; Corals NPAS 2016; DMWR 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 48 m depth (Montgomery et al. 2019). **Notes**—See note for *P. haimiana* for more details.

Family Scleractinia genera *incertae sedis*
Genus *Leptastrea* Milne Edwards & Haime, 1849

***Leptastrea bewickensis* Veron, Pichon & Best, 1977 (287822)** CoTW

Leptastrea bewickensis ? Veron, Pichon & Best, 1977 (287822). CoTW Reported—Coles et al. 2003.

Leptastrea bewickensis Veron, Pichon & Best, 1977 (287822). CoTW Reported—Fisk and Birkeland 2002; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The photo of this species reported in Corals NPAS (2016) appears to be incorrect and may be another *Leptastrea* sp.

***Leptastrea bottae* (Milne Edwards & Haime, 1849) (207476)** CoTW

Leptastrea bottae (Milne Edwards & Haime, 1849) (207476). CoTW Reported—Lamberts 1983.

Leptastrea immersa Klunzinger, 1879 (207473) heterotypic synonym. Reported—Birkeland et al. 1987.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—New Caledonia and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions. **Vulnerability**—NT. **Notes**—Lamberts (1983) reported this species as rare, and Birkeland et al. (1987) reported it from three sites as the synonym *L. immersa*.

***Leptastrea pruinosa* Crossland, 1952 (207472)** CoTW

Leptastrea pruinosa ? Crossland, 1952 (207472). CoTW Reported—Coles et al. 2003.

Leptastrea pruinosa Crossland, 1952 (207472). CoTW Reported—Kenyon et al. 2010; CRED 2011; Fenner 2018; NMNH 2018; Montgomery et al. 2019.

American Sāmoa status—Present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—Aunu‘u, Ofu/Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 32 m depth (Montgomery et al. 2019). **Notes**—The color/tissue seen on living colonies makes identification from photos easier than from skeleton. The species is documented by both specimens and photographs.

Leptastrea purpurea **(Dana, 1846) (207470)**CoTW

Leptastrea purpurea (Dana, 1846) (207470).CoTW Reported—Mayor 1924a, 1924b; Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Maragos et al. 1994, 1995; Mundy 1996; Green et al. 1997; Green and Hunter 1998; Birkeland and Belliveau 2000; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; BPBM 2018; Fenner 2018; NMNH 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Letpastrea purpurea (Dana, 1846) (207470) [sic]. Reported—DMWR 2018.

Letpastrea purpurea cf. (Dana, 1846) (207470) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 52 m depth (Montgomery et al. 2019).

Leptastrea transversa **Klunzinger, 1879 (207474)**CoTW

Leptastrea transversa Klunzinger, 1879 (207474).CoTW Reported—Birkeland et al. 1987, 2003; Itano and Buckley 1988; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018; Montgomery et al. 2019. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner and J. Wolstenholme). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 34 m depth (Montgomery et al. 2019).

Genus *Pachyseris* Milne Edwards & Haime, 1849

Pachyseris gemmae **Nemenzo, 1955 (288721)**CoTW

Pachyseris gemmae Nemenzo, 1955 (288721).CoTW Reported—DMWR 2018; Fenner 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Pachyseris rugosa **(Lamarck, 1801) (207292)** CoTW

Pachyseris carinata Brüggemann, 1879 (766851) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983.

Pachyseris rugosa (Lamarck, 1801) (207292). CoTW Reported—Birkeland et al. 1987; Maragos et al. 1994; Green and Hunter 1998; DMWR 2018; Fenner 2018; NMNH 2018. Referenced—Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Pachyseris speciosa **(Dana, 1846) (207293)** CoTW

Pachyseris levicollis (Dana, 1846) (207294) heterotypic synonym. Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983.

Pachyseris speciosa (Dana, 1846) (207293). CoTW Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Corals NPAS 2016; BPBM 2018; DMWR 2018; Fenner 2018; NMNH 2018; Montgomery et al. 2019. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 33, 30, 52 m depth (Hoffmeister 1925; Lamberts 1983; Montgomery et al. 2019).

Genus *Plerogyra* Milne Edwards & Haime, 1848

Plerogyra simplex **Rehberg, 1892 (287848)** CoTW

Plerogyra simplex Rehberg, 1892 (287848). CoTW Reported—USACE 1980; Lamberts 1983; DMWR 2018; Fenner 2018.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—NT.

Plerogyra sinuosa **(Dana, 1846) (207498)** CoTW

Plerogyra sinuosa (Dana, 1846) (207498). CoTW Reported—Maragos et al. 1994; Corals NPAS 2016; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a.

American Sāmoa status—Present. **Evidence**—Multiple photographic records. **Distribution**—Ofu, Ofu/Olosega, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Subclass Octocorallia Haeckel, 1866
Order Helioporacea Bock, 1938
Family Helioporidae Moseley, 1876
Genus *Heliopora* de Blainville, 1830

Heliopora coerulea **(Pallas, 1766) (210725)**

Heliopora coerulca (Pallas, 1766) (210725) [sic]. Reported—Hunter et al. 1993.

Heliopora coerulea (Pallas, 1766) (210725). Reported—USACE 1980; Lamberts 1983; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Craig et al. 2001; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; CRED 2011; Corals NPAS 2016; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a; Lovell and McLardy 2008; Kenyon et al. 2011.

Helipora coerulea (Pallas, 1766) (210725) [sic]. Reported—DMWR 2018.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Olosega, South Bank, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—VU.

Class Hydrozoa Owen, 1843
Order Anthoathecata Cornelius, 1992
Family Milleporidae Fleming, 1828
Genus *Millepora* Linnaeus, 1758

Millepora dichotoma **Forskål, 1775 (210733)**

Millepora dichotoma cf. Forskål, 1775 (210733). Reported—Birkeland et al. 1987.

Millepora dichotoma Forskål, 1775 (210733). Reported—Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Craig et al. 2001; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC.

Millepora exaesa **Forsskål, 1775 (210728)**

Millepora exaesa Forsskål, 1775 (210728). Reported—Green et al. 1997; Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Corals NPAS 2016; Fenner 2018.

Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Millepora exesa Forsskål, 1775 (210728) [sic]. Reported—DMWR 2018.

Millepora tuberosa Boschma, 1966 (210732) heterotypic synonym. Reported—Birkeland et al. 1987, 2003; Birkeland and Belliveau 2000; Coles et al. 2003; DMWR 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC. **Notes**—*Millepora exaesa* is yellow-brown with occasional light green or pink, encrusts rubble, can have larger bumps, and found in lagoons. The synonym *Millepora tuberosa* Boschma, 1966 is purple encrusting sheets on hard substrate that can grow quite large and is found on slopes. Skeletons can easily be confused, but live colonies are distinguishable. For taxonomic details, see Randall and Cheng (1984). We believe that the taxonomy of this group needs to be revised and that the synonym *M. tuberosa* Boschma, 1966 may deserve to be resurrected for specimens outside the Red Sea (Arrigoni et al. 2018b). The photographed specimen of this species reported in Corals NPAS (2016) appears to have an incorrect identification and should be *Millepora platyphylla* Hemprich & Ehrenberg, 1834.

Millepora intricata **Milne Edwards, 1860 (210727)**

Millepora intricata Milne Edwards, 1860 (210727). Referenced—Lovell and McLardy 2008.

Millepora murrayi Quelch, 1884 (292201) possible heterotypic synonym. Reported—DiDonato et al. 2006; Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC. **Notes**—Colonies of *M. intricata* have less obvious ogives while the synonym *Millepora murrayi* Quelch, 1884 has very obvious ogives, which are downward curving branches with upward growing branches on the upper edge. Fenner has seen *M. intricata* in the Philippines which could be mistaken for *M. murrayi*. Razak and Hoeksema (2003) were correct that the colonies reported from Indonesia were *M. intricata*, but it is possible that *M. murrayi* is also present and valid. We believe this group needs to be revisited and the synonym *M. murrayi* may deserve to be resurrected. For more taxonomic details, see Randall and Cheng (1984).

Millepora platyphylla **Hemprich & Ehrenberg, 1834 (210730)**

Millepora platyphylla cf. Hemprich & Ehrenberg, 1834 (210730). Reported—DMWR 2018.

Millepora platyphylla Hemprich & Ehrenberg, 1834 (210730). Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Birkeland and Belliveau 2000; Craig et al. 2001; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; Fenner and

Sudek 2016; BPBM 2018; Fenner 2018. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Millepora platyphyllia cf. Hemprich & Ehrenberg, 1834 (210730) [sic]. Reported—Fisk and Birkeland 2002.

American Sāmoa status—Present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunuʻu, Ofu, Ofu/Olosega, Rose Atoll, Sāmoa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC.

Possibly present

Class Anthozoa Ehrenberg, 1834
Subclass Hexacorallia Haeckel, 1896
Order Scleractinia Bourne, 1900
Family Acroporidae Verrill, 1902
Genus *Acropora* Oken, 1815

***Acropora bushyensis* Veron & Wallace, 1984 (206999)** CoTW CCW

Acropora bushiensis Veron & Wallace, 1984 (206999) [sic]. Reported—Mundy 1996. Referenced—Birkeland 2007b.

Acropora bushyensis Veron & Wallace, 1984 (206999). CoTW CCW Referenced—Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—New Caledonia. **Geographical range extension**—East. **Vulnerability**—LC.

***Acropora echinata* (Dana, 1846) (207069)** CoTW CCW

Acropora echinata (Dana, 1846) (207069). CoTW CCW Reported—Maragos et al. 1994; BPBM 2018. Referenced—Hoffmeister 1925; Coles et al. 2003; Birkeland 2007a, 2007b.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—Ofu/Olosega, Sāmoa Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—This species is reported in American Sāmoa based on four specimens labeled as *A. echinata* in the BPBM collection. However, the specimens listed at BPBM do not show documentation about the person that provided the identification. The referenced reports are based on Maragos et al. (1994) except for Hoffmeister (1925), which references this species presence in the Sāmoa Islands from Brook (with uncertain location). Based on the limited observations and the lack of a confirmed identification in the BPBM collection, we consider this species as possibly present in American Sāmoa.

Acropora elseyi **(Brook, 1892) (207113).** CoTW CCW

Acropora elseyi (Brook, 1892) (207113). CoTW CCW Reported—Craig et al. 2001; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Ofu. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species was reported by Craig et al. (2001) and photo-documented in Corals NPAS 2016 (2016). Craig et al. (2001) reported this coral outside a belt transect area during surveys in the Ofu pools indicating this species has a low abundance. DiDonato et al. (2006) references to Craig et al. (2001), but the referenced document of this species in Lovell and McLardy (2008) could not be located. This species is similar to *A. carduus*. Based on these limited observations and its close similarity to another species, we determined this species as possibly present in American Sāmoa.

Acropora glauca **(Brook, 1893) (207017).** CoTW CCW

Acropora glauca (Brook, 1893) (207017). CoTW CCW Reported—Fisk and Birkeland 2002; DiDonato et al. 2006; Corals NPAS 2016. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Ofu, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The identity of the photographed specimen in Corals NPAS (2016) appears to be incorrect and should be *A. clathrata*.

Acropora horrida **(Dana, 1846) (207006).** CoTW CCW

Acropora horrida (Dana, 1846) (207006). CoTW CCW Reported—USACE 1980; Lamberts 1983; Craig et al. 2001; Birkeland 2007a; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008; Kenyon et al. 2011.

Acropora horrida ? (Dana, 1846) (207006). CoTW CCW Reported—Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Acropora kirstyae **Veron & Wallace, 1984 (288215).** CoTW CCW

Acropora kirstyae Veron & Wallace, 1984 (288215). CoTW CCW Reported—Birkeland 2007a; Kenyon et al. 2010.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Ofu, Rose Atoll. **Nearest confirmed ecoregion**—New Caledonia. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—VU. **Notes**—This species is fairly distinctive.

[*Acropora loripes*](#) (Brook, 1892) (207074)[CoTW] [CCW]

Acropora loripes (Brook, 1892) (207074).[CoTW] [CCW] Reported—Birkeland et al. 2003; Fenner et al. 2008; Kenyon et al. 2010. Referenced—Green et al. 1999; Coles et al. 2003; Lovell and McLardy 2008.

Acropora rosaria (Dana, 1846) (207029) possible heterotypic synonym.[CoTW] Reported—Fisk and Birkeland 2002. Referenced—Hoffmeister 1925.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Rose Atoll, Sāmoa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

[*Acropora microphthalma*](#) (Verrill, 1870) (207046)[CoTW] [CCW]

Acropora microphthalma (Verrill, 1870) (207046).[CoTW] [CCW] Reported—Craig et al. 2001; Fisk and Birkeland 2002; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008.

Acropora micropthalma (Verrill, 1870) (207046) [sic]. Reported—Birkeland 2007a. Referenced—Birkeland 2007b.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—Veron et al. (2016) report this species is readily confused with other *Acropora* species with a staghorn-like form. Wallace (1999) reports this species is difficult to distinguish from *Acropora muricata* (Linnaeus, 1758). Despite the limited number of observations of this species and the difficulty in its identification, we believe that the photographic record from Corals NPAS (2016) is plausible evidence of its presence.

[*Acropora sarmentosa*](#) (Brook, 1892) (288244)[CoTW] [CCW]

Acropora sarmentosa (Brook, 1892) (288244).[CoTW] [CCW] Reported—Fisk and Birkeland 2002.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Taʻū. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—*Acropora sarmentosa* is very distinctive and reported to be common by Veron et al. (2016). Given it has been reported by so few papers, we label this species as possibly present. *Acropora verweyi* Veron & Wallace, 1984 is somewhat similar and present.

[*Acropora spicifera*](#) (Dana, 1846) (207087)[CoTW] [CCW]

Acropora spicefera (Dana, 1846) (207087) [sic]. Reported—USACE 1980.

Acropora spicifera (Dana, 1846) (207087).[CoTW] [CCW] Reported—Lamberts 1983; Maragos et al. 1994; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—*Acropora spicifera* is a difficult species to identify *in situ*, but a sample has been identified by A. Lamberts. Veron et al. (2016) report this species to be uncommon outside Australia.

Acropora squarrosa **(Ehrenberg, 1834) (207053)** CoTW CCW

Acropora squarrosa (Ehrenberg, 1834) (207053). CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987; Maragos et al. 1994; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b.

Acropora squarrosa cf. (Ehrenberg, 1834) (207053). CoTW CCW Reported—Birkeland et al. 1987.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Aunu‘u, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Madagascar north. **Geographical range extension**—East although Veron et al. (2016) stated this species distribution was uncertain due to taxonomic uncertainties, significant geographical range extension. **Vulnerability**—LC. **Notes**—*Acropora squarrosa* is a Red Sea and western Indian Ocean species, and both Wallace (1999) and Veron (2000) report that it is endemic to the Red Sea. Based on a sample identified by A. Lamberts and *in situ* reports (Birkeland et al 1987; Maragos et al. 1994), we believe that this species is possibly present. However, caution may be warranted on this species due to the later work not available to Lamberts (1983), Birkeland et al. 1987, and Maragos et al. (1994) .

Acropora striata **(Verrill, 1866) (207081)** CoTW CCW

Acropora striata (Verrill, 1866) (207081). CoTW CCW Reported—Fisk and Birkeland 2002; Birkeland 2007a. Referenced—Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Manu‘a Islands, Ofu. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Acropora subglabra **(Brook, 1891) (288250)** CoTW CCW

Acropora subglabra (Brook, 1891) (288250). CoTW CCW Reported—Birkeland et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species is similar to *A. echinata* and *A. carduus*.

Acropora valenciennesi **(Milne Edwards, 1860) (206995)** CoTW CCW

Acropora splendida Nemenzo, 1967 (740875) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

Acropora valenciennesi (Milne Edwards, 1860) (206995). CoTW CCW Referenced—Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Acropora vaughani **Wells, 1954 (288262)** CoTW CCW

Acropora vaughani Wells, 1954 (288262). CoTW CCW Reported—Maragos et al. 1994; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016. Referenced—Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunu'u, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Acropora yongei **Veron & Wallace, 1984 (207032)** CoTW CCW

Acropora yongei /pulchra Veron & Wallace, 1984 (207032). Reported—DMWR 2018.

Acropora yongei ? Veron & Wallace, 1984 (207032). CoTW CCW Reported—Coles et al. 2003.

Acropora yongei Veron & Wallace, 1984 (207032). CoTW CCW Reported—Birkeland et al. 1987, 2003; Mundy 1996; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Alveopora* Blainville, 1830

Alveopora excelsa **Verrill, 1864 (289255)** CoTW

Alveopora excelsa Verrill, 1864 (289255). CoTW Reported—Montgomery et al. 2019.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Raja Ampat, Papua. **Geographical range extension**—East. **Vulnerability**—EN. **Mesophotic record**— 52 m depth (Montgomery et al. 2019). **Notes**—*Alveopora* species can be difficult to identify from photos or even skeletons.

Alveopora spongiosa **Dana, 1846 (207198)** CoTW

Alveopora spongiosa ? Dana, 1846 (207198). CoTW Reported—DMWR 2018.

Alveopora spongiosa cf. Dana, 1846 (207198). CoTW Reported—Mundy 1996. Referenced—Fisk and Birkeland 2002.

Alveopora spongiosa Dana, 1846 (207198). CoTW Reported—Fisk and Birkeland 2002; Birkeland 2007a; Montgomery et al. 2019. Referenced—Birkeland 2007b.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Mesophotic record**— 46 m depth (Montgomery et al. 2019).

Alveopora superficialis **Pillai & Scheer, 1976 (207199)**

Alveopora superficiales Pillai & Scheer, 1976 (207199) [sic]. Reported—Birkeland et al. 1987. Referenced—Green et al. 1999; Birkeland 2007b.

Alveopora superficialis Pillai & Scheer, 1976 (207199). Reported—Birkeland et al. 1987; Coles et al. 2003. Referenced—Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Veron et al. (2016) consider this species a synonym of *A. spongiosa*.

Genus *Astreopora* Blainville, 1830

Astreopora explanata **Veron, 1985 (287944)**

Astreopora explanata Veron, 1985 (287944). Reported—Maragos et al. 1994. Referenced—Birkeland 2007b.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—This species is considered a synonym of *A. expansa* by Veron et al. (2016).

Astreopora incrustans **Bernard, 1896 (207131)**[CoTW]

Astreopora incrustans Bernard, 1896 (207131).[CoTW] Reported—NMNH 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (Identifier unknown). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Vulnerability**—VU.

Astreopora ocellata **Bernard, 1896 (207123)**[CoTW]

Astreopora ocellata Bernard, 1896 (207123).[CoTW] Reported—Maragos et al. 1994; Fisk and Birkeland 2002. Referenced—Birkeland 2007a, 2007b.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Manuʻa Islands, Taʻū, Tutuila. **Nearest confirmed ecoregion**—New Caledonia. **Geographical range extension**—East. **Vulnerability**—LC. **Notes**—This species is subtly different from *A. myriophthalma*.

Genus *Isopora* Studer, 1879

Isopora cuneata **(Dana, 1846) (730687)**[CoTW] [CCW]

Acropora cuneata (Dana, 1846) (206997) homotypic synonym. Reported—Hunter et al. 1993; Maragos et al. 1994; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Isopora cuneata (Dana, 1846) (730687).[CoTW] [CCW] Referenced—Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunuʻu, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—See note of *I. crateriformis*.

Genus *Montipora* Blainville, 1830

Montipora angulata **(Lamarck, 1816) (287691)** CoTW

Montipora angulata (Lamarck, 1816) (287691). CoTW Reported—Kenyon et al. 2010. Referenced—Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Vulnerability**—VU. **Notes**—This species was only reported by Kenyon et al. (2010) from Rose Atoll and is reported to be very rare (Veron et al. 2016).

Montipora calcarea **Bernard, 1897 (287695)**

Montipora calcarea Bernard, 1897 (287695). Reported—Fisk and Birkeland 2002; Kenyon et al. 2010; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Manuʻa Islands, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—VU. **Notes**—Veron et al. (2016) consider this species unresolved and *M. calcarea* sensu Veron (2000) as an undefined separate species.

Montipora conicula **Wells, 1954 (1263760)**

Montipora conicula Wells, 1954 (1263760). Reported—Coles et al. 2003; Corals NPAS 2016. Referenced—DiDonato et al. 2006.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—This species has been reported by two sources, but there is no photo documentation or collection material available for this species. However, both sources for this species are from well-known coral experts, so we accept this species presence in American Sāmoa. Veron et al. (2016) consider this species unresolved.

Montipora corbettensis **Veron & Wallace, 1984 (287701)** CoTW

Montipora corbettensis Veron & Wallace, 1984 (287701). CoTW Reported—Mundy 1996; Fisk and Birkeland 2002; Birkeland 2007a; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunuʻu, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Montipora danae **Milne Edwards & Haime, 1851 (207152)** CoTW

Montipora danae Milne Edwards & Haime, 1851 (207152). CoTW Reported—Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Fisk and Birkeland 2002; Kenyon et al. 2010. Referenced—Fisk and Birkeland 2002; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora digitata **(Dana, 1846) (207185)**[CoTW]

Montipora digitata (Dana, 1846) (207185).[CoTW] Reported—Green and Hunter 1998.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—Hunter and Green (1998) reported this species with an occasional abundance at two sites.

Montipora effusa **(Dana, 1846) (207169)**[CoTW]

Montipora effusa (Dana, 1846) (207169).[CoTW] Reported—Fisk and Birkeland 2002; Birkeland 2007a; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunu'u, Ofu, Tutuila. **Nearest confirmed ecoregion**—Vanuatu and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions. **Vulnerability**—NT.

Montipora floweri **Wells, 1954 (287707)**[CoTW]

Montipora floweri Wells, 1954 (287707).[CoTW] Reported—Mundy 1996; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; Birkeland 2007a. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora hispida **(Dana, 1846) (207164)**[CoTW]

Montipora hispida (Dana, 1846) (207164).[CoTW] Reported—Birkeland et al. 1987; Maragos et al. 1994; Green et al. 1997; Birkeland and Belliveau 2000; Fenner et al. 2008; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunu'u, Ofu, Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species has a distinctive colony morphology of thin plates and columns.

Montipora hoffmeisteri **Wells, 1954 (287713)**[CoTW]

Montipora hoffmeisteri cf. Wells, 1954 (287713).[CoTW] Reported—Coles et al. 2003.

Montipora hoffmeisteri Wells, 1954 (287713).[CoTW] Reported—USACE 1980; Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora lobulata **Bernard, 1897 (207141)**[CoTW]

Montipora lobulata Bernard, 1897 (207141).[CoTW] Reported—Birkeland et al. 1987; Fisk and Birkeland 2002; Coles et al. 2003; Kenyon et al. 2010. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007a, 2007b; Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Manu‘a Islands, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Montipora millepora **Crossland, 1952 (207190)**[CoTW]

Montipora millepora Crossland, 1952 (207190).[CoTW] Reported—Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Birkeland 2007a; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora mollis **Bernard, 1897 (207137)**[CoTW]

Montipora mollis Bernard, 1897 (207137).[CoTW] Reported—Fisk and Birkeland 2002; Birkeland 2007a; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora monasteriata **(Forskål, 1775) (207153)**[CoTW]

Montipora monasteriata (Forskål, 1775) (207153).[CoTW] Reported—Maragos et al. 1995; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Montipora nodosa **(Dana, 1846) (287719)** CoTW

Montipora nodosa (Dana, 1846) (287719). CoTW Reported—Mundy 1996; Fisk and Birkeland 2002; Work and Rameyer 2002; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Montipora nodosa cf. (Dana, 1846) (287719). CoTW Reported—DMWR 2018.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—Corals in some published photos of this species (Veron 2000) appear to be incorrectly identified, showing no papillae between lumps, while this species has papillae between lumps. The photos appear to be of *Montipora turgescens* Bernard, 1897. Identifications based on Veron (2000) may be of *Montipora turgescens* Bernard, 1897 due to this error.

Montipora peltiformis **Bernard, 1897 (207180)** CoTW

Montipora peltiformis Bernard, 1897 (207180). CoTW Reported—Fisk and Birkeland 2002; DiDonato et al. 2006; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Manuʻa Islands, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Montipora undata **Bernard, 1897 (207167)** CoTW

Montipora colei Wells, 1954 (759740) heterotypic synonym. Reported—Birkeland et al. 1987. Referenced—Birkeland 2007b.

Montipora undata Bernard, 1897 (207167). CoTW Reported—Kenyon et al. 2010. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Montipora verrucosa **(Lamarck, 1816) (207146)** CoTW

Montipora verrucosa (Lamarck, 1816) (207146). CoTW Reported—Maragos et al. 1994; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple photographic records. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—*Montipora capitata* has commonly been reported as *M. verrucosa*, especially in Hawaii (Fenner 2005).

Family Agariciidae Gray, 1847
Genus *Coeloseris* Vaughan, 1918

***Coeloseris mayeri* Vaughan, 1918 (207613)**[CoTW]

Coeloseris mayeri Vaughan, 1918 (207613).[CoTW] Reported—Mundy 1996; Coles et al. 2003; Kenyon et al. 2010. Referenced—Fisk and Birkeland 2002; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Pavona* Lamarck, 1801

***Pavona cactus* (Forskål, 1775) (207312)**[CoTW]

Pavona cactus (Forskål, 1775) (207312).[CoTW] Reported—Craig et al. 2001; Birkeland 2007a; CRED 2011; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008; Kenyon et al. 2011.

Pavona foliosa Dana, 1846 (766375) [sic] heterotypic synonym. Reported—Mayor 1924b.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Ofu, Ofu/Olosega, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU. **Notes**—The identification of a coral in a photo of this species reported in Corals NPAS (2016) appears to be incorrect and should be *Leptoseris gardineri* (van der Horst, 1922). Otherwise, this species has only been observed by Craig et al. (2001) as an off transect observation and by Birkeland (2007a).

***Pavona diffluens* (Lamarck, 1816) (207295)**[CoTW]

Pavona diffluens (Lamarck, 1816) (207295).[CoTW] Reported—Corals NPAS 2016; DMWR 2018; Fenner 2018. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

Pavona diffluens cf. (Lamarck, 1816) (207295).[CoTW] Reported—Birkeland et al. 1987; Montgomery et al. 2019. Referenced—Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Ofu/Olosega, Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Socotra Archipelago. **Geographical range extension**—Southeast, significant geographical range extension. **Vulnerability**—$\mathcal{T}$, VU. **Mesophotic record**— 44 m depth (Montgomery et al. 2019). **Notes**—This species is similar to *Pavona explanulata* (Lamarck, 1816) and *Pavona gigantea* Verrill, 1869. The type locality of this species is the Red Sea, from where it is well known. Randall (1995, 2003) has also reported this species from Guam and the Marianas. Veron (2014) reports that colonies in the Pacific Ocean are likely belonging to an undescribed species that is similar to *P. diffluens*, but with different corallite sizes. Fenner (pers. comm.) reports that there appear to be no differences in corallite sizes or features between the specimen in the DMWR collection and Red Sea skeleton shown by Veron (2000: Vol 2: p. 188) and Sheppard and Sheppard (1991: p. 88). Photos of the live colonies appear to be within the range of variation of Red Sea colonies (sensu Veron 2000). Fenner (2015) also reported this species with a level of species ID uncertainty. NOAA currently implements the species concept as described in Veron (2014) thereby not affording the protection of the ESA to corals similar to *P. diffluens* in the Pacific (NOAA 2014). Given the protection status of *P. diffluens* under the ESA, more analysis is warranted on its type and samples from American Sāmoa. Here, we apply the precautionary principle to this species as possibly present in American Sāmoa until Pacific specimens are confirmed to belong to *P. diffluens* or can be described as a new species.

Family Dendrophylliidae Gray, 1847
Genus *Rhizopsammia* Verrill, 1870

Rhizopsammia verrilli **van der Horst, 1922 (210737)**
Rhizopsammia verrilli van der Horst, 1922 (210737). Reported—Fenner 2018.
American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—This species has been documented by Fenner (2018), but no samples have been identified. An analysis of the skeletal characteristics is warranted before a firm conclusion on species presence can be made. Arrigoni et al. (2014: Fig. 10M-O) provide more information and illustrations on this species.

Genus *Turbinaria* Oken, 1815

Turbinaria radicalis **Bernard, 1896 (289213)** CoTW
Turbinaria radicalis Bernard, 1896 (289213). CoTW Reported—NMNH 2018.
American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Bismarck Sea, New Guinea and Great Barrier Reef south. **Geographical range extension**—East. **Vulnerability**—NT. **Notes**—This species is documented from American Sāmoa from a sample in the NMNH, but the expert that made the identification is not listed within the NMNH (2018) database.

Family Euphylliidae Alloiteau, 1952
Genus *Euphyllia* Dana, 1846

Euphyllia cristata **Chevalier, 1971 (289214)** CoTW
Euphyllia cristata Chevalier, 1971 (289214). CoTW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—VU.

Genus *Galaxea* Oken, 1815

Galaxea horrescens **(Dana, 1846) (707460)** CoTW

Acrhelia horrescens (Dana, 1846) (289335) homotypic synonym. Reported—USACE 1980; Lamberts 1983.

Galaxea horrescens (Dana, 1846) (707460). CoTW Referenced—Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This observation was from dredged material from the construction of the Pago Pago airport (Lamberts 1983). Separately from the report of *A. horrescens*, Lamberts (1983) stated that fossil corals of the genus *Acrhelia* were found in the airport dredged material. The reference to the fossil coral may have concerned *A. horrescens*, presently known as *G. horrescens*.

Family Fungiidae Dana, 1846
Genus *Cycloseris* Milne Edwards & Haime, 1849

Cycloseris explanulata **(van der Horst, 1922) (716292)**

Psammocora explanulata van der Horst, 1922 (207265) homotypic synonym. CoTW Reported—Coles et al. 2003; Corals NPAS 2016.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—New Caledonia and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions. **Notes**—There remains some significant taxonomic disagreement with the placement of *Psammocora explanulata* van der Horst, 1922 in the genus *Cycloseris*. Benzoni et al. (2012a) moved this species into *Cycloseris* based on genetic evidence, but Veron et al. (2016) state that this species does not have the genus level characters of *Cycloseris* and therefore retains this species in *Psammocora*. However, original genus descriptions are often simple and based on the characters of the type species. They may need to be revised based on new information and the addition of other species. A taxonomic revision seems warranted in this circumstance (Benzoni et al. 2012). The identification of this species can be similar to *Cycloseris wellsi* (Veron & Pichon, 1980) (see the note for that species for further information), and Benzoni et al. (2012) report it may be confused with *Cycloseris mokai* (Hoeksema, 1989) although field identifications are distinct.

Cycloseris wellsi **(Veron & Pichon, 1980) (716291)**

Coscinaraea wellsi Veron & Pichon, 1980 (207257) homotypic synonym. CoTW Reported—Maragos et al. 1994. Referenced—Birkeland 2007b.

Coscinerea wellsi Veron & Pichon, 1980 (207257) [sic] homotypic synonym. Referenced—Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Notes**—Similar to *C. explanulata*, this species was moved to the genus *Cycloseris* from *Coscinaraea* (Benzoni et al. 2012). See the note under *C. explanulata* for more details.

Genus *Lithophyllon* Rehberg, 1892

Lithophyllon scabra **(Döderlein, 1901) (716611)**

Fungia scabra Döderlein, 1901 (288856) homotypic synonym.[CoTW] Reported—Maragos et al. 1994. Referenced—Birkeland 2007b.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Vanuatu and Society Islands, French Polynesia. **Geographical range extension**—Between two disjunct ecoregions. **Notes**—This species is similar to *Lithophyllon concinna* (Verrill, 1864) and considered rare by Veron et al. (2016), although it has been observed as an abundant species at shallow depths on nearshore reefs in Indonesia and also in shallow water in eastern Australia (Hoeksema 2012c, 2012d, 2015).

Lithophyllon undulatum **Rehberg, 1892 (290309)**[CoTW]

Lithophyllon undulatum Rehberg, 1892 (290309).[CoTW] Reported—Fisk and Birkeland 2002.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species is fairly distinctive, but there has only been a single observation (Fisk and Birkeland 2002). This observation included only a single colony within a quantitative study.

Family Lobophylliidae Dai & Horng, 2009

Genus *Echinophyllia* Klunzinger, 1879

Echinophyllia echinata **(Saville-Kent, 1871) (287972)**[CoTW]

Echinophyllia echinata (Saville-Kent, 1871) (287972).[CoTW] Reported—Coles et al. 2003; CRED 2011. Referenced—Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—Coles et al. (2003) erroneously referenced Birkeland et al. 1987. Birkeland et al. (1987) did not report this species.

Genus *Lobophyllia* de Blainville, 1830

Lobophyllia hataii **Yabe & Sugiyama, 1936 (207390)** [CoTW]

Lobophyllia hataii Yabe & Sugiyama, 1936 (207390). [CoTW] Reported—Kenyon et al. 2010.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Ta‘ū. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Lobophyllia radians **(Milne Edwards & Haime, 1849) (888141)**

Symphyllia radians Milne Edwards & Haime, 1849 (207401) homotypic synonym. [CoTW] Reported—Fenner et al. 2008.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Lobophyllia robusta **Yabe & Sugiyama, 1936 (288104)** [CoTW]

Lobophyllia robusta cf. Yabe & Sugiyama, 1936 (288104). [CoTW] Reported—DMWR 2018; Montgomery et al. 2019.

Lobophyllia robusta Yabe & Sugiyama, 1936 (288104). [CoTW] Reported—Kenyon et al. 2010; DMWR 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 40 m depth (Montgomery et al. 2019). **Notes**—The specimen identified by D. Fenner remains an uncertain identification.

Lobophyllia sinuosa **(Quoy & Gaimard, 1833) (888144)**

Lobophyllia sinosa (Quoy & Gaimard, 1833) (888144) [sic]. Reported—USACE 1980.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Aunu‘u. **Nearest confirmed ecoregion**—Not available. **Notes**—Veron et al. (2016) maintain this species in the genus *Symphyllia* and reports this species as a probable synonym of *S. recta*.

Lobophyllia valenciennesii **(Milne Edwards & Haime, 1849) (888145)**

Symphyllia valenciennesii Milne Edwards & Haime, 1849 (207398) homotypic synonym. Reported—Birkeland et al. 1987. Referenced—Birkeland 2007b.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Notes**—Veron et al. (2016) maintain this species in the genus *Symphyllia*, but also accept the incorrect species spelling of *S. valenciennesi*.

Family Merulinidae Verrill, 1865
Genus *Coelastrea* Verrill, 1866

Coelastrea aspera **(Verrill, 1866) (762427)**

Coelastrea aspera (Verrill, 1866) (762427). Reported—Montgomery et al. 2019.
Goniastrea aspera ? Verrill, 1866 (207467) homotypic synonym.[CoTW] Reported—Coles et al. 2003.
Goniastrea aspera Verrill, 1866 (207467) homotypic synonym.[CoTW] Reported—Fisk and Birkeland 2002; CRED 2011; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Ofu/Olosega, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Mesophotic record**— 47 m depth (Montgomery et al. 2019).

Genus *Cyphastrea* Milne Edwards & Haime, 1848

Cyphastrea decadia **Moll & Best, 1984 (288920)**[CoTW]

Cyphastrea decadia Moll & Best, 1984 (288920).[CoTW] Reported—Kenyon et al. 2010.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species is fairly distinctive and was only reported by one source from Rose Atoll where surveys have been limited. Colonies from the lagoon of Rose Atoll found by D. Fenner have a colony shape intermediate between that of this species and other species.

Cyphastrea serailia **(Forskål, 1775) (207413)**[CoTW]

Cyphastrea serailia (Forskål, 1775) (207413).[CoTW] Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.
Cyphastrea serailia cf. (Forskål, 1775) (207413).[CoTW] Reported—Hunter et al. 1993.
Cyphastrea seralia (Forskål, 1775) (207413) [sic]. Reported—Fenner et al. 2008.
Cyphastrea seralia ? (Forskål, 1775) (207413) [sic]. Reported—DMWR 2018.
Cyphastrea serilia cf. (Forskål, 1775) (207413) [sic]. Reported—Hunter et al. 1993.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Genus *Dipsastraea* Blainville, 1830

Dipsastraea amicorum **(Milne Edwards & Haime, 1849) (762753)**

Dipsastraea amicorum (Milne Edwards & Haime, 1849) (762753). Reported—Gross 2019.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (unknown identifier). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Notes**—The record of this species is only based on a single specimen in the University of California of Paleontology (Gross 2019). Veron et al. (2016) classify this species in the genus *Favia*, which is an Atlantic taxon according to others (Budd et al. 2012; Baron-Szabo 2018).

Dipsastraea helianthoides **(Wells, 1954) (758239)**

Favia helianthila Wells, 1954 (207429) [sic] homotypic synonym. Reported—USACE 1980.

Favia helianthoides Wells, 1954 (207429) homotypic synonym.[CoTW] Reported—Birkeland et al. 1987; Craig et al. 2001; Birkeland 2007a; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

Favia heliantoides Wells, 1954 (207429) [sic] homotypic synonym. Reported—Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Dipsastraea laddi **(Wells, 1954) (762754)**

Barabattoia laddi (Wells, 1954) (271296) homotypic synonym. Reported—Kenyon et al. 2010. Referenced—Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville and Cook Islands, central Pacific. **Geographical range extension**—Between two disjunct ecoregions. **Notes**—This species is very rarely reported from anywhere in the world and in American Sāmoa only from Rose Atoll during limited surveys. Veron et al. (2016) report the species *B. laddi* as a historical generic designation for *Favia laddi*.

Dipsastraea maxima **(Veron, Pichon & Wijsman-Best, 1977) (758230)**

Favia maxima Veron, Pichon & Wijsman-Best, 1977 (207428) homotypic synonym.[CoTW] Reported—Kenyon et al. 2010.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Notes**—This species has only been recorded from Rose Atoll from limited surveys.

Genus *Echinopora* Lamarck, 1816

Echinopora horrida **Dana, 1846 (288342)**[CoTW]

Echinopora horrida Dana, 1846 (288342).[CoTW] Reported—Maragos et al. 1994; Mundy 1996. Referenced—Fisk and Birkeland 2002; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Echinopora pacificus **Veron, 1990 (288345)**CoTW

Echinopora pacifica Veron, 1990 (288345) [sic]. Reported—Fisk and Birkeland 2002.

Echinopora pacificus Veron, 1990 (288345).CoTW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Ofu, Tutuila. **Nearest confirmed ecoregion**—Vanuatu. **Geographical range extension**—East. **Vulnerability**—NT. **Notes**—This species was only recorded by a single study and the number of colonies reported was limited (Fisk and Birkeland 2002). Veron et al. (2016) report *Echinopora lamellosa* (Esper, 1795) as a similar species.

Genus *Favites* Link, 1807

Favites colemani **(Veron, 2000) (763489)**

Montastraea colemani Veron, 2000 (289299) [sic] homotypic synonym. Reported—Birkeland 2007a.

Montastrea colemani ? Veron, 2000 (289299) homotypic synonym, wrong genus spelling. Reported—DMWR 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Ofu, Ta‘ū. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Notes**—Veron et al. (2016) accept this species as *Phymastrea colemani* (Veron, 2000). This species is documented by single specimen (DMWR 2018) with an uncertain identification in addition to a single *in situ* report (Birkeland 2007a).

Favites complanata **(Ehrenberg, 1834) (207455)**CoTW

Favites complanata (Ehrenberg, 1834) (207455).CoTW Reported—Birkeland et al. 1987, 2003; Mundy 1996; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; CRED 2011; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Favites complanata cf. (Ehrenberg, 1834) (207455).CoTW Reported—Birkeland et al. 1987; DMWR 2018. Referenced—Green et al. 1999; Coles et al. 2003.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—The record of this species was based on a single specimen with an uncertain identification and the single photographic record (Corals NPAS 2016) appears to be uncertain. There remain multiple reports of this species, so we list this species as possibly present.

Favites rotundata **Veron, Pichon & Wijsman-Best, 1977 (207445)**

Favia rotundata (Veron, Pichon & Wijsman-Best, 1977) (207427) homotypic synonym.CoTW Reported—Corals NPAS 2016.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Favites valenciennesi **(Milne Edwards & Haime, 1849) (763525)**

Montastraea valciennesi (Milne Edwards & Haime, 1849) (207482) [sic] homotypic synonym. Reported—Fisk and Birkeland 2002.

Montastraea valenciennesi (Milne Edwards & Haime, 1849) (207482) homotypic synonym. Reported—Fisk and Birkeland 2002; CRED 2011; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a.

Montastrea valenciennesi (Milne Edwards & Haime, 1849) (764067) homotypic synonym, wrong genus spelling. Reported—Mundy 1996; Kenyon et al. 2010. Referenced—Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Taʻū. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Notes**—Veron et al. (2016) accept this species as *Phymastrea valenciennesi* (Milne Edwards & Haime, 1849). This species is very similar to *Favites colemani* (Veron, 2000), differing in the size of corallites.

Genus *Hydnophora* Fischer von Waldheim, 1807

Hydnophora grandis **Gardiner, 1904 (287996)**

Hydnophora grandis Gardiner, 1904 (287996). Reported—DMWR 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC. **Notes**—Veron et al. (2016) report that *H. grandis* is a synonym of *H. exesa*, but *H. grandis* sensu Veron (2000) is an unnamed species.

Genus *Merulina* Ehrenberg, 1834

Merulina triangularis **(Veron & Pichon, 1980) (739884)**

Clavarina triangularis Veron & Pichon, 1980 (739878) homotypic synonym. Reported—Birkeland et al. 1987. Referenced—Birkeland 2007b.

Paraclavarina triangularis (Veron & Pichon, 1980) (290627) homotypic synonym.[CoTW] Referenced—Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Aunuʻu, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East.

Genus *Oulophyllia* Milne Edwards & Haime, 1848

Oulophyllia bennettae **(Veron, Pichon & Wijsman-Best, 1977) (288394)** CoTW

Oulophyllia bennettae (Veron, Pichon & Wijsman-Best, 1977) (288394). CoTW Reported—Fisk and Birkeland 2002; Fenner 2018.

Oulophyllia bennetti (Veron, Pichon & Wijsman-Best, 1977) (288394) [sic]. Reported—Birkeland 2007a.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—Veron et al. (2016) report this species as ‘uncommon, but conspicuous’. However, this species appears identical to *Oulophyllia crispa* (Lamarck, 1816), except that it has two or fewer corallites in one valley, while *O. crispa* is meandroid with many corallites in a valley. In American Sāmoa, many colonies appear to have intermediate-length valleys.

Genus *Paragoniastrea* Huang, Benzoni & Budd, 2014

Paragoniastrea australensis **(Milne Edwards & Haime, 1857) (817177)**

Goniastrea australensis (Milne Edwards & Haime, 1857) (207460) homotypic synonym. CoTW Reported—Mundy 1996; Fisk and Birkeland 2002; Kenyon et al. 2010. Referenced—Fisk and Birkeland 2002; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Goniastrea australiensis (Milne Edwards & Haime, 1857) (207460) [sic] homotypic synonym. Reported—Birkeland et al. 1987.

Goniastrea australiensis ? (Milne Edwards & Haime, 1857) (207460) [sic] homotypic synonym. Reported—DMWR 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Olosega, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Genus *Platygyra* Ehrenberg, 1834

Platygyra ryukyuensis **Yabe & Sugiyama, 1935 (289206)** CoTW

Platygyra ryukyuensis Yabe & Sugiyama, 1935 (289206). CoTW Reported—Kenyon et al. 2010.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT.

Family Pocilloporidae Gray, 1840
Genus *Pocillopora* Lamarck, 1816

Pocillopora acuta **Lamarck, 1816 (759099)**CoTW

Pocillopora bulbosa cf. Ehrenberg, 1834 (206968) heterotypic synonym. Reported—USACE 1980; Lamberts 1983.

Pocillopora damicornis bulbosa Ehrenburg, 1834 (224196) heterotypic synonym. Reported—NMNH 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Kiribati, north-east Line Islands. **Geographical range extension**—Southwest although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Notes**—This species was observed by Lamberts (1983), but within an uncertain identification. A sample exists in the NMNH listed as *Pocillopora damicornis bulbosa* Ehrenburg, 1834, but this database entry does not list the expert that made the identification. Recent genetic and morphological evidence in Hawaii and Singapore suggests common misidentification between *Pocillopora damicornis* (Linnaeus, 1758) and *P. acuta* (Poquita-Du et al. 2017, 2019; Johnston et al. 2018).

Family Poritidae Gray, 1840
Genus *Goniopora* de Blainville, 1830

Goniopora djiboutiensis **Vaughan, 1907 (207210)**CoTW

Goniopora djiboutiensis cf. Vaughan, 1907 (207210).CoTW Reported—Montgomery et al. 2019.

Goniopora djiboutiensis Vaughan, 1907 (207210).CoTW Reported—Mundy 1996. Referenced—Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Mesophotic record**— 47 m depth (Montgomery et al. 2019).

Goniopora lobata **Milne Edwards, 1860 (207208)**CoTW

Goniopora lobata cf. Milne Edwards, 1860 (207208).CoTW Reported—Coles et al. 2003.

Goniopora lobata Milne Edwards, 1860 (207208).CoTW Referenced—Birkeland 2007b.

Goniopora traceyi cf. Wells, 1954 (759973) heterotypic synonym. Reported—Lamberts 1983.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—Olosega, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species is similar to *Goniopora columna* Dana, 1846.

Goniopora pedunculata **Quoy & Gaimard, 1833 (759975)**

Goniopora minor cf. Crossland, 1952 (207217) heterotypic synonym.CoTW Reported—Montgomery et al. 2019.

Goniopora minor Crossland, 1952 (207217) heterotypic synonym.[CoTW] Reported—Coles et al. 2003; CRED 2011.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—Ofu/Olosega, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Mesophotic record**— 48 m depth (Montgomery et al. 2019). **Notes**—This species is similar to *Goniopora tenuidens* (Quelch, 1886). Veron et al. (2016) report this as an unrecognized species.

Goniopora tenuidens **(Quelch, 1886) (207211)**[CoTW]

Goniopora tenuidens (Quelch, 1886) (207211).[CoTW] Reported—Birkeland et al. 1987.

Goniopora tenuidens cf. (Quelch, 1886) (207211).[CoTW] Reported—DMWR 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Ofu, Tutuila. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—LC. **Notes**—This species is similar to *G. pedunculata* (*Goniopora minor* Crossland, 1952 as a synonym).

Genus *Porites* Link, 1807

Porites densa **Vaughan, 1918 (288897)**[CoTW]

Porites densa Vaughan, 1918 (288897).[CoTW] Reported—Mundy 1996; CRED 2011. Referenced—Fisk and Birkeland 2002; Birkeland 2007a; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—American Sāmoa, Manu‘a Islands, Ofu, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Vulnerability**—NT. **Notes**—This species has only been reported as a new record by a single study (Mundy 1996). Most *Porites* spp. can be difficult to identify without a skeletal sample.

Porites myrmidonensis **Veron, 1985 (288908)**[CoTW]

Porites myrmidonensis Veron, 1985 (288908).[CoTW] Reported—Montgomery et al. 2019.

American Sāmoa status—Possibly present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Coral Sea. **Geographical range extension**—East. **Vulnerability**—LC. **Mesophotic record**— 44 m depth (Montgomery et al. 2019).

Porites napopora **Veron, 2000 (288909)**[CoTW]

Porites napopora Veron, 2000 (288909).[CoTW] Reported—Fisk and Birkeland 2002. Referenced—Birkeland 2007b; Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Pohnpei and Kosrae, Micronesia. **Geographical range extension**—Southeast. **Vulnerability**—$\mathcal{T}$, VU. **Notes**—This species has only been reported by a single study with only two colonies observed. Veron (2014) reports that this species does not occur within the Sāmoa, Tuvalu, and Tonga region. NOAA (2018) reports that this species is possibly present in American Sāmoa. Fenner (2015) reports this species with a moderate level of species identity while Veron (2014) reports this species is distinctive.

Porites nigrescens **Dana, 1848 (207234)**[CoTW]

Porites nigrescens Dana, 1848 (207234).[CoTW] Reported—Maragos et al. 1994, 1995; Mundy 1996; Corals NPAS 2016. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008; Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manu'a Islands, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—VU.

Porites pukoensis **Vaughan, 1907 (207250)**[CoTW]

Porites pukoensis Vaughan, 1907 (207250).[CoTW] Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; NMNH 2018. Referenced—Kenyon et al. 2011.

American Sāmoa status—Possibly present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Hawaii east. **Geographical range extension**—South. **Vulnerability**—CE. **Notes**—Skeleton identification is the strongest evidence of a species presence short of a type location, but massive *Porites* are difficult to identify. The occurrence of *P. pukoensis* has only been confirmed from the Hawaiian Archipelago despite these reports. However, additional analysis of the specimen within the NMNH collection should occur to make a final conclusion of the presence of species. Veron et al. (2016) show the Sāmoa, Tuvalu, and Tonga region to be doubtful for this species presence.

Porites solida **(Forskål, 1775) (207227)**[CoTW]

Porites solida (Forskål, 1775) (207227).[CoTW] Reported—Maragos et al. 1995; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Forsman et al. 2009; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018. Referenced—DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Porites solida cf. (Forskål, 1775) (207227).[CoTW] Reported—Fisk and Birkeland 2002.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by J. Wolstenholme). **Distribution**—American Sāmoa, Aunu'u, Manu'a Islands, Ofu, Olosega, Rose Atoll, Ta'ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—Large massive *Porites* spp. are the most difficult of all coral species to identify, even with skeleton samples examined by experts. The identity of the photographed specimen in Corals NPAS (2016) appears to be uncertain.

Porites superfusa **Gardiner, 1898 (759336)**[CoTW]

Porites superfusa Gardiner, 1898 (759336).[CoTW] Reported—Birkeland et al. 2003; Coles et al. 2003; Kenyon et al. 2010; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—Ofu, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga.

Porites vaughani **Crossland, 1952 (288918)** CoTW

Porites vaughani Crossland, 1952 (288918). CoTW Reported—Maragos et al. 1994; Fisk and Birkeland 2002; Birkeland et al. 2003; Coles et al. 2003; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016. Referenced—Green et al. 1999; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Possibly present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC.

Family Psammocoridae Chevalier & Beauvais, 1987
Genus *Psammocora* Dana, 1846

Psammocora haimiana **Milne Edwards & Haime, 1851 (718603)** CoTW

Psammacora folium Umbgrove, 1939 (207259) [sic] heterotypic synonym. Reported—USACE 1980.

Psammocora folium Umbgrove, 1939 (207259) heterotypic synonym. Reported—Lamberts 1983.

Psammocora haimeana Milne Edwards & Haime, 1851 (207262) wrong species spelling. Reported—Birkeland et al. 1987, 2003; Maragos et al. 1994; Mundy 1996; Fisk and Birkeland 2002; Coles et al. 2003; Birkeland 2007a; Fenner et al. 2008; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; DMWR 2018; NMNH 2018. Referenced—Green et al. 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Psammocora hameana Milne Edwards & Haime, 1851 (207262) [sic] wrong species spelling. Reported—Fenner et al. 2008.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Aunuʻu, Manuʻa Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Swains, Taʻū, Tutuila. **Nearest confirmed ecoregion**—Vanuatu and Tuamotu Archipelago west, central Pacific. **Geographical range extension**—Between two disjunct ecoregions although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Notes**—Benzoni et al. (2010) discuss at length several species of *Psammocora*. They reported that the species name *P. haimeana* sensu Klunzinger 1879 seems to be an incorrect spelling of *P. haimiana*, but that this misspelling has been propagated in the literature since Veron and Pichon (1976). However, the name *P. haimeana* is not as simple as an incorrect spelling as they document through morphological and molecular analyses that specimens identified as *P. haimeana* are actually *Psammocora profundacella* Gardiner, 1898. This indicates that all the colonies listed here as *P. haimeana* are likely *P. profundacella* and should not be considered as evidence for the presence of *P. haimiana*. However, A. Lamberts identified a specimen as *P. folium* which appears to be a synonym of *P. haimiana*, which Benzoni et al. (2010) confirm as correct. Despite this sample, we believe that the uncertainty of the identity of this species leaves uncertainty of its presence in American Sāmoa. We should further note that the name *P. haimiana* has not been directly reported in American Sāmoa, which historically has been used incorrectly for the species *P. digitata* (see note under *P. digitata*.

Class Hydrozoa Owen, 1843
Order Anthoathecata Cornelius, 1992
Family Milleporidae Fleming, 1828
Genus *Millepora* Linnaeus, 1758

Millepora tenera **Boschma, 1949 (210729)**

Millepora tenella Ortmann, 1892 (287427) heterotypic synonym. Reported—Maragos et al. 1995; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

Millepora tenera Boschma, 1949 (210729). Reported—USACE 1980; Lamberts 1983; Maragos et al. 1994.

Millepora tortuosa Dana, 1848 (735836) heterotypic synonym. Reported—USACE 1980.

Milliporina tortuosa Dana, 1848 (735836) [sic] heterotypic synonym. Reported—BPBM 2018.

American Sāmoa status—Possibly present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—American Sāmoa, Ofu, Sāmoa Islands, Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC. **Notes**—This is a branching species, and it is possible that *M. dichotoma* in American Sāmoa may have been identified as *M. tenera* erroneously.

Uncertain

Class Anthozoa Ehrenberg, 1834
Subclass Hexacorallia Haeckel, 1896
Order Scleractinia Bourne, 1900
Family Acroporidae Verrill, 1902
Genus *Acropora* Oken, 1815

Acropora cophodactyla **(Brook, 1892) (430641)**[CoTW] taxon inquirendum

Acropora cophodactyla /lutkeni (Brook, 1892) (430641). Reported—DMWR 2018.

Acropora cophodactyla (Brook, 1892) (430641).[CoTW] Reported—DiDonato et al. 2006; Corals NPAS 2016; DMWR 2018. Referenced—Lovell and McLardy 2008.

Acropora cophodactyla aff. (Brook, 1892) (430641).[CoTW] Reported—Coles et al. 2003.

American Sāmoa status—Uncertain. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Ofu, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—DD. **Notes**—*Acropora cophodactyla* has some taxonomic uncertainty, but Veron et al. (2016) recognize this as a valid species. Based on this uncertain taxonomic status, we regard the presence of this species in American Sāmoa as uncertain. However, a number of reports have reported this species or a species similar to *A. cophodactyla*.

Acropora dendrum **(Bassett-Smith, 1890) (288195)** CoTW CCW

Acropora dendrum (Bassett-Smith, 1890) (288195). CoTW CCW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Vanuatu. **Geographical range extension**—East although Veron et al. (2016) strongly predicted the presence of this species in the Sāmoa, Tuvalu and Tonga ecoregion. **Vulnerability**—VU. **Notes**—This species has only been reported by Fisk and Birkeland (2002). Wallace (1999) considers this species a difficult and uncertain species rarely reported. Based on this, we have uncertainty about the presence of this species in American Sāmoa.

Acropora exquisita **Nemenzo, 1971 (288202)**

Acropora exquisita Nemenzo, 1971 (288202). Reported—Kenyon et al. 2010.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—DD. **Notes**—This species is not accepted by Veron et al. (2016), Wallace (1999), or Wallace et al. (2012). Veron et al. (2016) report this species sensu Veron (2000) as unresolved and that it concerns an undescribed species. Based on this uncertainty and only a single observation by Kenyon et al. (2010), we are uncertain of its presence in American Sāmoa.

Acropora subulata **(Dana, 1846) (368478)** CoTW CCW

Acropora subulata (Dana, 1846) (368478). CoTW CCW Reported—Mundy 1996; DiDonato et al. 2006; Corals NPAS 2016; DMWR 2018. Referenced—Fisk and Birkeland 2002; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

Acropora subulata cf. (Dana, 1846) (368478). CoTW CCW Reported—Corals NPAS 2016.

American Sāmoa status—Uncertain. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—American Sāmoa, Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—While a specimen has been identified as *A. subulata* by D. Fenner, recent examination and consideration of the previous identification suggests that the specimen may belong to *A. surculosa* instead.

Genus *Astreopora* Blainville, 1830

Astreopora expansa **(Brüggemann, 1877) (207129)** CoTW

Astreopora expansa (Brüggemann, 1877) (207129). CoTW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Vanuatu. **Vulnerability**—NT. **Notes**—Veron et al. (2016) report this species as distinctive, but the species has only been reported by one study. Based on this uncertainty, we believe that its presence in American Sāmoa is uncertain.

Genus *Montipora* Blainville, 1830

Montipora orientalis **Nemenzo, 1967 (287720)** CoTW

Montipora orientalis ? Nemenzo, 1967 (287720). CoTW Referenced—Birkeland 2007b.

Montipora orientalis cf. Nemenzo, 1967 (287720). CoTW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Uncertain. **Evidence**—Multiple reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Solomon Islands and Bougainville. **Geographical range extension**—East. **Vulnerability**—VU. **Notes**—This species was reported by two studies both with uncertain identification (Birkeland 2007b, Fisk and Birkeland 2002), indicating that there have been no confirmed observations. Also, this is a rare species (Veron et al. 2016). Based on the lack of a confirmed identification, we consider this species presence as uncertain.

Family Agariciidae Gray, 1847
Genus *Leptoseris* Milne Edwards & Haime, 1849

Leptoseris striata **Fenner & Veron, 2000 (288719)** CoTW

Leptoseris striata Fenner & Veron, 2000 (288719). CoTW Reported—Bare et al. 2010.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—New Caledonia. **Vulnerability**—NT. **Notes**—Bare et al. (2010) is the only reference to this species and that study has tentative identifications based on video footage taken from a towed camera, which is usually very blurry. Evidence for the presence of this species in American Sāmoa is therefore uncertain.

Family Lobophylliidae Dai & Horng, 2009
Genus *Homophyllia* Brüggemann, 1877

Homophyllia bowerbanki **(Milne Edwards & Haime, 1857) (886931)**

Acanthastrea hillae Wells, 1955 (207381) heterotypic synonym. CoTW Reported—Mundy 1996. Referenced—Fisk and Birkeland 2002; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Notes**—Mundy (1996) reported this species as a new record for American Sāmoa and remarked on its distinctive morphology. Veron et al. (2016) reported that this species may be difficult to distinguish from *Lobophyllia ishigakiensis* (Veron, 1990) and *Sclerophyllia maxima* (Sheppard & Salm, 1988), the latter not reported in American Sāmoa. It's possible that this report was a misidentified colony of *L. ishigakiensis*. Veron et al. (2016) maintain *A. hillae* as valid and recognizes *Acanthastrea bowerbanki* Milne Edwards & Haime, 1857 as a separate and valid species. Arrigoni et al. (2016) synonymized both species under *H. bowerbanki*.

Genus *Oxypora* Saville-Kent, 1871

Oxypora glabra **Nemenzo, 1959 (207375)**CoTW

Oxypora glabra Nemenzo, 1959 (207375).CoTW Reported—Green and Hunter 1998.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species was reported at two sites by Green and Hunter (1999) and no other *Oxypora* spp. were reported. Their observation could have been confused with a different *Oxypora* sp.

Family Merulinidae Verrill, 1865

Genus *Caulastraea* Dana, 1846

Caulastraea echinulata **(Milne Edwards & Haime, 1849) (289576)**

Caulastrea echinulata /furcata (Milne Edwards & Haime, 1849) (411159) wrong genus spelling. Reported—Fenner 2018.

American Sāmoa status—Uncertain. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Fiji. **Notes**—Veron et al. (2016) maintain the incorrect genus spelling of *Caulastrea*.

Genus *Dipsastraea* Blainville, 1830

Dipsastraea danai **(Milne Edwards & Haime, 1857) (758238)**

Favia danae ? Verrill, 1872 (764061) homonym, heterotypic synonym. Reported—Coles et al. 2003.

Favia danae Verrill, 1872 (764061) homonym, heterotypic synonym. Reported—CRED 2011.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Ofu/Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Notes**—Coles et al. (2003) reported a questionable identification as the only observation of this species in American Sāmoa. Based on this uncertainty, we find the presence of this species uncertain. Veron et al. (2016) maintain *Favia danai* as the name for this species.

Genus *Favites* Link, 1807

Favites spinosa **(Klunzinger, 1879) (430662)**CoTW

Favites spinosa cf. (Klunzinger, 1879) (430662).CoTW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Tutuila. **Nearest confirmed ecoregion**—Bismarck Sea, New Guinea. **Vulnerability**—VU. **Notes**—The identification of this species was listed as cf. by Fisk and Birkeland (2002). Based on the uncertainty of this single observation, we list the presence of this species as uncertain.

Genus *Pectinia* Blainville, 1825

Pectinia lactuca **(Pallas, 1766) (207378)** CoTW

Pectinia lactuca (Pallas, 1766) (207378). CoTW Reported—Work and Rameyer 2002.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—American Sāmoa. **Nearest confirmed ecoregion**—Fiji. **Geographical range extension**—East. **Vulnerability**—VU. **Notes**—This species is rather recognizable, but it has not been observed by any other study than by Work and Rameyer (2002), who are not coral experts. Based on this uncertainty, we list this species presence as uncertain.

Family Pocilloporidae Gray, 1840
Genus *Pocillopora* Lamarck, 1816

Pocillopora molokensis **Vaughan, 1907 (411253)** CoTW

Pocillopora molokensis Vaughan, 1907 (411253). CoTW Reported—Kenyon et al. 2010.

American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Rose Atoll. **Nearest confirmed ecoregion**—Kiribati, north-east Line Islands. **Geographical range extension**—Southwest. **Vulnerability**—DD. **Notes**—*Pocillopora molokensis* is known as a mesophotic species, and this observation was from shallow water at Rose Atoll. Veron et al. (2016) report a similar species as *Pocillopora effusus* Veron, 2000, which occurs in wave-washed habitats that reflect those of Rose Atoll. *Pocillopora effusus* is only known from the eastern Pacific (Veron et al. 2016). We conclude that the presence of this species in American Sāmoa is uncertain.

Family Poritidae Gray, 1840
Genus *Porites* Link, 1807

Porites australiensis **Vaughan, 1918 (207249)** CoTW

Porites australiensis cf. Vaughan, 1918 (207249). CoTW Reported—Fisk and Birkeland 2002.

Porites australiensis Vaughan, 1918 (207249). CoTW Reported—Maragos et al. 1994, 1995; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; BPBM 2018. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

American Sāmoa status—Uncertain. **Evidence**—Single specimen report (identifier unknown). **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Rose Atoll, Swains, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species is notoriously difficult to identify or separate from *Porites lobata* Dana, 1846. The single specimen collected is located in the BPBM collection, but the identifying person is not listed within the BPBM database. The specimen in the photograph of this species reported in Corals NPAS (2016) appears too unidentifiable.

Family Psammocoridae Chevalier & Beauvais, 1987
Genus *Psammocora* Dana, 1846

Psammocora stellata **(Verrill, 1866) (287784)** [CoTW]
Psammocora stellata (Verrill, 1866) (287784). [CoTW] Reported—CRED 2011.
American Sāmoa status—Uncertain. **Evidence**—Single report. **Distribution**—Rose Atoll, Swains. **Nearest confirmed ecoregion**—Kiribati central, Phoenix Islands. **Geographical range extension**—South. **Vulnerability**—VU. **Notes**—The only evidence for this observation came from CRED (2011) during a belt transect survey. More evidence is needed to determine the presence of this species.

Class Hydrozoa Owen, 1843
Order Anthoathecata Cornelius, 1992
Family Stylasteridae Gray, 1847
Genus *Distichopora* Lamarck, 1816

Distichopora gracilis **Dana, 1848 (288326)**
Distichopora gracilis Dana, 1848 (288326). Reported—Birkeland et al. 1987; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.
American Sāmoa status—Uncertain. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Species identifications of corals within *Distichopora* are difficult, so we list this species presence as uncertain. It is possible that reports of *D. gracilis* are of *Distichopora violacea* (Pallas, 1766) as they are difficult to distinguish.

Distichopora violacea **(Pallas, 1766) (210734)**
Distichopora violacea (Pallas, 1766) (210734). Reported—Fenner 2018.
American Sāmoa status—Uncertain. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Species identifications of corals within *Distichopora* are difficult, so we list this species presence as uncertain.

Genus *Stylaster* Gray, 1831

Stylaster gracilis **Milne Edwards & Haime, 1850 (285880)**
Stylaster gracilis cf. Milne Edwards & Haime, 1850 (285880). Reported—Birkeland et al. 1987. Referenced—Green et al. 1999.
Stylaster gracilis Milne Edwards & Haime, 1850 (285880). Reported—Birkeland et al. 1987; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007b; Lovell and McLardy 2008.

American Sāmoa status—Uncertain. **Evidence**—Single photographic record. **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—Species identifications of corals within *Stylaster* are uncertain, so we list this species as uncertain.

Stylaster sanguineus **Valenciennes in Milne Edwards & Haime, 1850 (285906)**

Stylaster elegans Verrill, 1864 (527670) heterotypic synonym. Reported—Maragos et al. 1994; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a.

American Sāmoa status—Uncertain. **Evidence**—Single photographic record. **Distribution**—Ofu, Ofu/Olosega, Olosega. **Nearest confirmed ecoregion**—Not available. **Notes**—Species identifications of corals within *Stylaster* are uncertain, so we list this species as uncertain.

Likely not present

Class Anthozoa Ehrenberg, 1834
Subclass Hexacorallia Haeckel, 1896
Order Scleractinia Bourne, 1900
Family Acroporidae Verrill, 1902
Genus *Acropora* Oken, 1815

Acropora grandis **(Brook, 1892) (207031)** CoTW CCW

Acropora grandis (Brook, 1892) (207031). CoTW CCW Reported—Craig et al. 2001; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Lovell and McLardy 2008.

American Sāmoa status—Likely not present. **Evidence**—Multiple reports. **Distribution**—American Sāmoa, Ofu. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—It is possible that this record concerns a misidentification of *Acropora intermedia* (Brook, 1891). Based on this, we consider this species not likely present in American Sāmoa.

Acropora hemprichii **(Ehrenberg, 1834) (288207)** CoTW CCW

Acropora hemprichii cf. (Ehrenberg, 1834) (288207). CoTW CCW Reported—Fisk and Birkeland 2002.

American Sāmoa status—Likely not present. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Ofu. **Nearest confirmed ecoregion**—Sri Lanka south. **Vulnerability**—VU. **Notes**—This species was reported in a single study (Fisk and Birkeland 2002) and was identified as cf., with no photo or skeleton specimen to support this identification. Based on this single uncertain observation and the fact that this species is only reported from the Red Sea and the Indian Ocean (Wallace 1999, Veron et al. 2016), we believe that it is not likely present in American Sāmoa.

Acropora humilis **(Dana, 1846) (207094)** CoTW CCW

Acropora fructicosa Brook, 1892 (740120) [sic] heterotypic synonym. Reported—Mayor 1924b; Hoffmeister 1925; Lamberts 1983.

Acropora fruticosa Brook, 1892 (740120) heterotypic synonym. Reported—USACE 1980.

Acropora humilis (Dana, 1846) (207094).CoTW CCW Reported—USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003, 2013; Itano and Buckley 1988; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Craig et al. 2001; Fisk and Birkeland 2002; Coles et al. 2003; Wolstenholme et al. 2003; DiDonato et al. 2006; Birkeland 2007a; Fenner et al. 2008; Bare et al. 2010; Kenyon et al. 2010; CRED 2011; Corals NPAS 2016; AM 2018; BPBM 2018; NMNH 2018; QM 2018. Referenced—Dahl and Lamberts 1977; Dahl 1981; Green et al. 1997, 1999; Fisk and Birkeland 2002; Coles et al. 2003; DiDonato et al. 2006; Birkeland 2007a, 2007b; Lovell and McLardy 2008.

Acropora humilis aff. (Dana, 1846) (207094).CoTW CCW Reported—Mayor 1924b.

Acropora ocellata (Klunzinger, 1879) (207115) heterotypic synonym.CoTW Reported—Birkeland et al. 1987, 2003; Kenyon et al. 2010; Corals NPAS 2016; Fenner 2018. Referenced—Green et al. 1999; DiDonato et al. 2006; Birkeland 2007b.

Acropora ocellata cf. (Klunzinger, 1879) (207115) heterotypic synonym.CoTW Reported—Coles et al. 2003.

American Sāmoa status—Likely not present. **Evidence**—Multiple specimen reports. **Distribution**—American Sāmoa, Aunu‘u, Manu‘a Islands, Ofu, Ofu/Olosega, Olosega, Rose Atoll, Ta‘ū, Tutuila. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—NT. **Notes**—This species has often been reported in American Sāmoa (see notes for . *globiceps*). Based on the historical misidentification of *A. humilis*, we believe that this species in not likely present in American Sāmoa. The synonym *Acropora ocellata* (Klunzinger, 1879) is recognized by Veron et al. (2016) as a valid species, which therefore needs additional taxonomic study.

Acropora pharaonis **(Milne Edwards, 1860) (207059)**CoTW CCW

Acropora pharaonis (Milne Edwards, 1860) (207059).CoTW CCW Referenced—Kenyon et al. 2011.

Acropora pharoensis (Milne Edwards, 1860) (207059) [sic]. Reported—DMWR 2018.

American Sāmoa status—Likely not present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Aunu‘u, Tutuila. **Nearest confirmed ecoregion**—Sri Lanka south. **Vulnerability**—$\mathcal{T}$, VU. **Notes**—The sample identification was made by D. Fenner in the DMWR collection. However, subsequent work has indicated that this identification was incorrect, and the sample may represent a new, undescribed species (Fenner, pers. comm.). Based on this uncertainty, we believe that *A. pharaonis* is likely not present in American Sāmoa.

Acropora rudis **(Rehberg, 1892) (288241)**CoTW CCW

Acropora rudis (Rehberg, 1892) (288241).CoTW CCW Reported—DMWR 2018. Referenced—Kenyon et al. 2011.

Acropora rudis cf. (Rehberg, 1892) (288241).CoTW CCW Reported—DMWR 2018.

American Sāmoa status—Likely not present. **Evidence**—Single specimen report (identified by D. Fenner). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Sumatra west. **Vulnerability**—$\mathcal{T}$, EN. **Notes**—The sample identification was made by D. Fenner in the DMWR collection, but subsequent work has indicated this identification was incorrect (Fenner, pers. comm.). Based on this uncertainty, we believe this species is likely not present in American Sāmoa.

Genus *Montipora* Blainville, 1830

Montipora australiensis **Bernard, 1897 (287693)**[CoTW]

Montipora australiensis Bernard, 1897 (287693).[CoTW] Reported—Birkeland 2007a. Referenced—Kenyon et al. 2011.

American Sāmoa status—Likely not present. **Evidence**—Single report. **Distribution**—Ofu. **Nearest confirmed ecoregion**—Coral Sea and Tuamotu Archipelago south-east and Pitcairn Islands. **Vulnerability**—𝒯, VU. **Notes**—Veron (2014) reported that this species can be misidentified as other *Montipora* spp. and does not report this as species present within the Sāmoa, Tuvalu, and Tonga region. Fenner (2014) reported this species with a high degree of identification uncertainty, which therefore also applies to American Sāmoa. The only record in American Sāmoa is by Birkeland (2007a). NOAA (2015b) reports the distribution of this species within American Sāmoa as possible, but not confirmed. Based on this information, we conclude that this species is likely absent within American Sāmoa.

Montipora bilaminata **Bernard, 1897 (1263759)**[CoTW] taxon inquirendum

Montipora bilamina Bernard, 1897 (1263759) [sic]. Reported—Lamberts 1983.

Montipora bilaminata Bernard, 1897 (1263759).[CoTW] Reported—USACE 1980.

American Sāmoa status—Likely not present. **Evidence**—Single specimen report (identified by A. Lamberts). **Distribution**—American Sāmoa, Tutuila. **Nearest confirmed ecoregion**—South China Sea.

Family Fungiidae Dana, 1846

Genus *Polyphyllia* Blainville, 1830

Polyphyllia talpina **(Lamarck, 1801) (211418)**[CoTW]

Polyphyllia talpina (Lamarck, 1801) (211418).[CoTW] Referenced—Lovell and McLardy 2008.

American Sāmoa status—Likely not present. **Evidence**—Referenced only. **Distribution**—American Sāmoa. **Nearest confirmed ecoregion**—Sāmoa, Tuvalu and Tonga. **Vulnerability**—LC. **Notes**—This species has not been directly reported from American Sāmoa and a single study references this species to the United Nations Environment Programme (UNEP) World Conservation Monitoring Centre (WCMC). Based on this limited evidence, we conclude this species presence is likely not present.

Family Poritidae Gray, 1840
Genus *Porites* Link, 1807

Porites compressa **Dana, 1846 (207236)**[CoTW]
Porites compressa Dana, 1846 (207236).[CoTW] Reported—BPBM 2018.
American Sāmoa status—Likely not present. **Evidence**—Single specimen report (identifier unknown). **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Hawaii east. **Vulnerability**—LC. **Notes**—The source of this observation is a sample within the BPBM collection, but the identifying person is not listed within the BPBM database. This species could be confused with *Porites cylindrica* Dana, 1846, and *Porites* spp. can be difficult to identify even with a sample in hand. Given *P. compressa* is believed to be restricted to the Hawaiian Islands and it is similar to a common species, *P. cylindrica*, we believe this species is likely not present in American Sāmoa.

Not present

Class Anthozoa Ehrenberg, 1834
Subclass Hexacorallia Haeckel, 1896
Order Scleractinia Bourne, 1900
Family Acroporidae Verrill, 1902
Genus *Acropora* Oken, 1815

Acropora plantaginea **(Lamarck, 1816) (207042)**[CoTW] taxon inquirendum
Acropora plantaginea (Lamarck, 1816) (207042).[CoTW] Referenced—Hoffmeister 1925.
American Sāmoa status—Not present. **Evidence**—Referenced only. **Distribution**—Sāmoa Islands. **Nearest confirmed ecoregion**—Seychelles south. **Vulnerability**—DD. **Notes**—Veron et al. (2016) accept this species as valid; however, given the taxonomic uncertainty, we consider this species as not present until more information is available.

Acropora prolifera **(Lamarck, 1816) (288235)**[CoTW] [CCW]
Acropora prolifera (Lamarck, 1816) (288235).[CoTW] [CCW] Reported—Fisk and Birkeland 2002.
American Sāmoa status—Not present. **Evidence**—Single report. **Distribution**—Manu‘a Islands, Ta‘ū. **Nearest confirmed ecoregion**—Belize and west Caribbean. **Notes**—*Acropora prolifera* is exclusively a Caribbean hybrid. This record may be a simple typo meant to be *Acropora palifera* (Lamarck, 1816), now known as *Isopora palifera* (Lamarck, 1816). Given a single reference uses this name, we assume it to be an error (verified by C. Birkeland pers. comm.); and hence, conclude that it is not present in American Sāmoa.

Genus *Alveopora* Blainville, 1830

Alveopora explanata **Hoffmeister, 1945 (1263757)**

Alveopora explanata Hoffmeister, 1945 (1263757). Reported—Green and Hunter 1998.

American Sāmoa status—Not present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Notes**—This species is considered extinct (Hoeksema and Cairns 2018).

Family Fungiidae Dana, 1846

Genus *Pleuractis* Verrill, 1864

Pleuractis seychellensis **(Hoeksema, 1993) (716548)**

Fungia seychellensis Hoeksema, 1993 (207345) homotypic synonym.[CoTW] Reported—Fenner 2018.

American Sāmoa status—Not present. **Evidence**—Single photographic record. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Chagos Archipelago. **Notes**—This species has only been documented by Fenner (2018) with photographic evidence. However, Fenner (pers. comm.) reports this identification is incorrect.

Family Merulinidae Verrill, 1865

Genus *Orbicella* Dana, 1846

Orbicella annularis **(Ellis & Solander, 1786) (758260)**[CoTW]

Montastraea annularis (Ellis & Solander, 1786) (207479) homotypic synonym. Reported—Fisk and Birkeland 2002.

American Sāmoa status—Not present. **Evidence**—Single report. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Belize and west Caribbean. **Vulnerability**—$\mathcal{T}$. **Notes**—This species is known to be restricted to the Atlantic Ocean and is most likely meant to be *Astrea annuligera* Milne Edwards & Haime, 1849 formerly known as *Montastrea annuligera* (Milne Edwards & Haime, 1849). We assume this to be a simple error as verified by C. Birkeland (pers. comm.).

Class Hydrozoa Owen, 1843

Order Anthoathecata Cornelius, 1992

Family Milleporidae Fleming, 1828

Genus *Millepora* Linnaeus, 1758

Millepora alcicornis **Linnaeus, 1758 (210726)**

Millepora alcicornis Linnaeus, 1758 (210726). Reported—Hoffmeister 1925; Lamberts 1983.

American Sāmoa status—Not present. **Evidence**—Multiple specimen reports. **Distribution**—Tutuila. **Nearest confirmed ecoregion**—Not available. **Vulnerability**—LC. **Notes**—Hoffmeister (1925) identified a sample as this species in American Sāmoa. However, this is an Atlantic species that is not been documented to be present anywhere in the Indo-Pacific. The sample was likely *Millepora dichotoma* Forskål, 1775 (see Razak and Hoeksema 2003), which has been documented in American Sāmoa.

Scleractinia names that are not valid

***Acropora caniculata* nomen dubium**

Acropora caniculata. Reported—DiDonato et al. 2006; Corals NPAS 2016.

Closest name—*Acropora nasuta* (Dana, 1846). **Notes**—The closest name to this report is *Acropora paniculata*, but this was reported by Corals NPAS (2016) with photographic evidence. Based on this photo, the colony clearly does not belong to *A. paniculata*. An additional fuzzy match for species names is *Acropora canaliculata*, which is a synonym of *Acropora nasuta*. This specimen in the photo more closely matches *A. nasuta*.

***Acropora damicornis var. gracilis* nomen dubium**

Acropora damicornis var. gracilis. Reported—Mayor 1924b.

Closest name—*Pocillopora damicornis* (Linnaeus, 1758). **Notes**—Likely wrong genus name recorded, although the subspecies is unknown.

***Acropora exigua* (Dana, 1846) (367985) taxon inquirendum**

Acropora exigua (Dana, 1846) (367985). Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; NMNH 2018.

***Acropora haimei* Milne Edwards, 1860 (207110) taxon inquirendum**

Acropora haimii Milne Edwards, 1860 (207110) [sic]. Reported—Mayor 1924b.

***Acropora superficialis* nomen dubium**

Acropora superficialis. Reported—Birkeland et al. 1987.

Closest name—*Alveopora superficialis* Pillai & Scheer, 1976 or *Psammocora superficialis* Gardiner, 1898. **Notes**—*Acropora* is very different than *Alveopora* and *Psammocora*, so it seems likely neither of the closest names is correct. The intended identification is not clear, but it is possible the wrong genus name was accidently recorded.

***Cyphastrea immersa* nomen dubium**

Cyphastrea immersa. Reported—DMWR 2018.

Closest name—*Lepastrea immersa* Klunzinger, 1879. **Notes**—Likely wrong genus name recorded. *L. immersa* is accepted as *Leptastrea bottae*.

***Favia chinensis* nomen dubium**

Favia chinensis. Reported—Maragos et al. 1995.

Closest name—*Favites chinensis* (Verrill, 1866). **Notes**—Likely wrong genus name recorded.

***Favia favites* nomen dubium**

Favia favites. Reported—Fisk and Birkeland 2002.

Notes—This name was most likely meant to represent an unidentified merulinid species.

***Favia spinosa* nomen dubium**

Favia spinosa ?. Referenced—Birkeland 2007b.

Closest name—*Favites spinosa* (Klunzinger, 1879). **Notes**—Birkeland (2007b) references Fisk and Birkeland (2002). Likely wrong genus name recorded.

***Goniopora gracilis* (Milne Edwards & Haime, 1849) (207222) taxon inquirendum**

Goniopora gracilis cf. (Milne Edwards & Haime, 1849) (207222). Reported—Lamberts 1983.

***Goniopora parvistella* Ortmann, 1888 (207215) taxon inquirendum**

Goniopora parvastella Ortmann, 1888 (207215) [sic]. Reported—Lamberts 1983.

Goniopora parvistella Ortmann, 1888 (207215). Reported—USACE 1980.

***Goniopora retiformis* nomen dubium**

Goniopora retiformis. Reported—BPBM 2018.

Closest name—*Goniastrea retiformis* (Lamarck, 1816). **Notes**—Likely wrong genus name recorded.

***Goniopora samoa* nomen dubium**

Goniopora samoa. Reported—Lamberts 1983.

Closest name—*Goniopora somaliensis* Vaughan, 1907. **Notes**—Likely wrong spelling of the species name.

***Herpolitha crassa* nomen dubium**

Herpolitha crassa. Reported—USACE 1980; Lamberts 1983.

Closest name—*Ctenactis crassa* (Dana, 1846). **Notes**—Likely wrong genus name recorded.

***Madrepora rosacea* Esper, 1791 (1262328) taxon inquirendum**

Acropora rosacea Esper, 1791 (1262328). Referenced—Hoffmeister 1925.

Notes—Hoffmeister (1925) references Studer (1901).

***Madrepora secunda* Dana, 1846 (815921) taxon inquirendum**

Acropora secunda Dana, 1846 (815921) [sic]. Referenced—Hoffmeister 1925.

Notes—Hoffmeister (1925) references Studer (1901).

***Montipora culiculata* nomen nudum**

Montipora culiculata Bernard (207189). Reported—Birkeland et al. 2003.

***Montipora curta* nomen dubium**

Montipora curta. Reported—Maragos et al. 1995.

Closest name—*Montastrea curta* (Dana, 1846). **Notes**—Likely wrong genus name recorded. *Montastrea curta* is accepted as *Astrea curta*.

***Montipora elschneri* Vaughan, 1918 (207181) taxon inquirendum**

Montipora elschneri Vaughan, 1918 (207181). Reported—Hoffmeister 1925; USACE 1980; Lamberts 1983; Birkeland et al. 1987, 2003; Green et al. 1997; NMNH 2018. Referenced—Green et al. 1997, 1999; Birkeland 2007b.

Montipora elshneri Vaughan, 1918 (207181) [sic]. Reported—Coles et al. 2003; Corals NPAS 2016. Referenced—Coles et al. 2003; DiDonato et al. 2006.

***Montipora granulosa* Bernard, 1897 (207171) taxon inquirendum**

Montipora granulosa Bernard, 1897 (207171). Reported—Birkeland et al. 1987, 2003; Green et al. 1997; Birkeland and Belliveau 2000. Referenced—Green et al. 1999; Coles et al. 2003; Birkeland 2007b.

Montipora granulosa cf. Bernard, 1897 (207171). Reported—Birkeland et al. 1987.

Closest name—*Montipora grisea* Bernard, 1897. **Notes**—Likely the wrong species name was recorded.

***Montipora monticulosa* Studer, 1880 (873507) taxon inquirendum**

Montipora monticulosa Studer, 1880 (873507). Reported—Maragos et al. 1994; Corals NPAS 2016. Referenced—DiDonato et al. 2006; Birkeland 2007a.

Closest name—*Montipora monasteriata* (Forskål, 1775). **Notes**—Likely the wrong species name was recorded.

***Montipora pagoensis* nomen dubium**

Montipora pagoensis ?. Reported—Birkeland et al. 2003.

Closest name—*Acropora pagoensis* Hoffmeister, 1925. **Notes**—*Acropora* and *Montipora* are quite different, but we suspect the wrong genus name was recorded.

***Montipora scabricula* (Dana, 1846) (759851) taxon inquirendum**

Montipora scabricula (Dana, 1846) (759851). Reported—Kenyon et al. 2010.

Closest name—*Merulina scabricula* Dana, 1846. **Notes**—Likely wrong genus name recorded.

***Montipora studeri* Vaughan, 1907 (411237) taxon inquirendum**

Montipora studeri Vaughan, 1907 (411237). Reported—Maragos et al. 1994. Referenced—Birkeland 2007b.

***Montipora truncata* Zou, Song & Ma, 1975 (1317852) taxon inquirendum**

Montipora truncata Zou, Song & Ma, 1975 (1317852). Referenced—Green et al. 1997.

***Mussa sinuosa* (Lamarck, 1816) (1262046) taxon inquirendum**

Mussa sinuosa (Lamarck, 1816) (1262046). Reported—Hoffmeister 1925; Lamberts 1983.

***Pavona haimeana* nomen dubium**

Pavona haimeana ?. Reported—Birkeland et al. 2003.

Closest name—*Psammocora haimeana* Milne Edwards & Haime, 1851. **Notes**—Likely wrong genus name recorded.

***Plesiastrea curta* nomen dubium**

Plesiastrea curta. Reported—NMNH 2018.

Closest name—*Astrea curta* Dana, 1846. **Notes**—*Astrea* was formerly known as *Montastrea*.

***Porites bernardi* Vaughan, 1907 (869037) taxon inquirendum**

Porites bernardi cf. Vaughan, 1907 (869037). Reported—DMWR 2018.

***Porites matthaii* nomen dubium**

Porites matthaii. Reported—USACE 1980; Lamberts 1983.

Closest name—*Favia matthaii* Vaughan, 1918. **Notes**—Likely wrong genus name recorded.

***Porites queenslandi septima* nomen nudum**

Porites queenslandi septima. Reported—USACE 1980; Lamberts 1983.

Notes—This name was used by Bernard 1905, who described various varieties of *Porites* colonies using numbers. These varieties are not valid taxa under the rules set forth by the ICZN (Hoeksema, pers. comm.).

***Psammacora var. tutuilensis* nomen dubium**

Psammacora var. tutuilensis. Reported—USACE 1980.

Closest name—*Psammocora contigua* var. *tutuilensis* Hoffmeister, 1925.

***Scapophyllia pistillata* nomen dubium**

Scapophyllia pistillata. Reported—Green and Hunter 1998.

Closest name—*Stylophora pistillata* Esper, 1797. **Notes**—Likely wrong genus name recorded.

***Seriatopora crassa* Quelch, 1886 (411280) taxon inquirendum**

Seriatopora crassa Quelch, 1886 (411280). Reported—Birkeland et al. 1987. Referenced—Birkeland 2007b.

***Stylaster aurea* nomen dubium**

Stylaster aurea. Reported—USACE 1980.

Closest name—*Tubastraea aurea* (Quoy & Gaimard, 1833). **Notes**—*Tubastraea* and *Stylaster* are quite different, but we suspect the wrong genus name was recorded.

***Stylocora contigua* nomen dubium**

Stylocora contigua ?. Reported—Birkeland et al. 2003.

Closest name—*Psammocora contigua* (Esper, 1794). **Notes**—Likely wrong genus name recorded.

Phylum Bryozoa

Class Stenolaemata Borg, 1926, Order Cyclostomatida Busk, 1852, Family Lichenoporidae Smitt, 1867, *Domopora truncata* (Jameson, 1811) (868511) *Millepora truncata* Jameson, 1811 (1293355) or Class Gymnolaemata Allman, 1856, Order Cheilostomatida Busk, 1852, Family Myriaporidae Gray, 1841, *Myriapora truncata* (Pallas, 1766) (111435) *Millepora truncata* Pallas, 1766 (210731) homotypic synonym Reported—Mayor 1924b, Hoffmeister 1925, Lamberts 1983; **Distribution**—Tutuila; **Notes**—This species was later determined to be a bryozoan, but it is not clear which species it actually refers to. We include this species in the list so one can track the name *M. truncata*.

Discussion

There can be considerable uncertainty in identifying corals due to several underlying problems (Bernard 1902; Veron 1993, 1995, 2015; Forsman et al. 2015). Some species are inherently difficult to identify or to discern from congeners based on minor morphological differences or plastic characters making taxonomic differences difficult to discern (Todd et al. 2008). Additionally, people may have considerable variation in identification skills and taxonomic knowledge leading to incorrect identifications. Finally, names of species or a species concept can change over time, particularly in groups that have a historical nomenclatural confusion such as *Psammocora haimeana* as discussed below. This makes it difficult to judge if species identifications are correct without documentation of the observation. For specimens observed *in situ*, there is no way to truly verify the observation as correct, so we can only rely on the expertise of the observer, the frequency of the species observed, and a subjective likelihood of the species observation. For reports that have photographic documentation, the species observation may be verifiable, but photographic documentation is often inconclusive as the appropriate species level characters are not always visible. Reports that rely on the identification of a collected specimen can be the most powerful for conclusive documentation. However, even with collections, caution should still be exercised because individuals vary in their ability and experience with coral taxonomy and identification. The most conclusive documentation of a species presence is the collection of a specimen that becomes the type specimen of that species. This also includes species and its type that are synonymized with another species. Type specimens described from American Sāmoa include *Acropora tutuilensis* (synonym *Acropora abrotanoides*), *Acropora pagoensis* (synonym *Acropora eurystoma*), *Alveopora allingi*, *Astreopora cucullata*, *Montipora berryi*, *Montipora vaughani*, *Pocillopora setchelli* (synonym *Pocillopora brevicornis*), *Porites horizontalata*, and *Porites randalli*.

The spelling of species names and the interpretation of the exact spelling or the assumed name can also be important in determining the likelihood of the presence of that given species. In the course of this analysis, two examples demonstrate the need for keeping track of the spellings and how to determine the meaning of the intended species. One example is the reported species name *Acropora caniculata* (DiDonato et al. 2006; Corals NPAS 2016) which is not a valid species name. The fuzzy match algorithm used in the WoRMS REST webservice suggested that the best match is *Acropora paniculata* which is reasonable if one assumes this is a simple typo. However, Corals NPAS (2016) provides photographic evidence of this species and the photo is clearly not *A. paniculata*. Instead, the specimen in the photo more closely resembles *Acropora nasuta*, which has a synonym of *A. canaliculata* that may serve as the likely misspelled name. This highlights the need to carefully review all fuzzy name matches, particularly when a species is reported with no verifiable evidence. Another example is the reported name *Psammocora haimeana* which had been a historical name used and reported. However, we now know that *P. haimeana* has been a misspelled name of *P. haimiana* starting with Klunzinger (1879) and perpetuated since. Further evidence now shows that colonies reported as *P. haimeana* are actually *Psammocora profundacella* (Benzoni et al. 2010). This shows that published names, especially those that do not have type specimens, further complicating proper identification, should be used carefully.

Coral taxonomy and identification are fraught with complex difficulties and highly variable, and sometimes poorly documented characters. Taxonomy is largely based on the morphology of type specimens; therefore, additional comparison between a specimen and the species type description is usually needed to confirm an identification. An example of this situation is *Acropora humilis* and *Acropora globiceps* where we believe all previous reports of *A. humilis* in American Sāmoa are actually *A. globiceps* based on evaluation of the type specimens of both species by D. Fenner. These comparisons are rarely done due to researchers being unaware of how to find the type specimens or to the inability to access type specimens, if they are even available at all. Some coral type specimens are of poor quality and increase the likelihood of different interpretations (Veron et al. 2016).

Further complicating coral taxonomy and identification is the uncertain evolutionary history of this group, and the general lack of concordance between morphological and molecular systematics of scleractinians (Fukami et al. 2004). Coral taxonomy is based on morphological characters of the skeleton; however, these characters do not always delineate families or species well. For example, early application of molecular phylogenetic analyses to scleractinian corals revealed two major groups, complex and robust, based on DNA that did not correspond to morphologically-based suborders (Romano and Palumbi 1996; Romano and Cairns 2000). Subsequent studies found that most families of corals based on morphological characters were not monophyletic based on genetic data (Fukami et al. 2008). Adding to the confusion, there is concordance between molecular data and morphological characters in some groups (Wallace et al. 2007; Flot et al. 2008; Forsman et al. 2010; Benzoni et al. 2012b; Marti-Puig et al. 2014; Forsman et al. 2015), but not others and even variable conclusions among studies using the same groups of species (Miller and Benzie 1997; Forsman et al. 2009, 2017; Pinzón et al. 2013; Combosch and Vollmer 2015; Johnston et al. 2017). Veron (1995) proposed this inconsistency originates from corals having undergone reticulate evolution where species populations hybridized during periods of overlap separated by periods of isolation confounding species boundaries. A range of contradictory studies argue in support of or against reticulate evolution in corals (Johnston et al. 2017a; van Oppen et al. 2001; Vollmer and Palumbi 2002; Flot et al. 2011; Combosch and Vollmer 2015). Ultimately, whatever the cause, all morphological traits are based on the underlying genetic code with environmental influences, so morphological and molecular characters have to agree at some level, and there is a need to combine both approaches to further our understanding of species boundaries and resolve the ongoing "species problem" (Bernard 1902) in scleractinian corals (Fukami et al. 2004, 2008; Forsman et al. 2010; Stat et al. 2012; Kitahara et al. 2016; Johnston et al. 2017). Studies that show a discordance between morphological and molecular approaches should be viewed with caution due to the genes examined, false assumptions of the mechanism of evolution, and/or the plasticity and appropriateness of both the morphological and molecular characters examined (Losos et al. 2012). We believe this annotated checklist provides a foundation for further morphological and genetic analysis of the corals present within American Sāmoa.

Despite the difficulties of identification, this checklist is our best estimate of the species we believe are present in American Sāmoa given the caveat of different levels of identification uncertainty. These results provide a comprehensive list of species in an orderly fashion that can be further analyzed and/or reinterpreted by others interested in coral species distribution. We report there has been 745 unique names and spellings of species used for American Sāmoa. Of these, 538 represent valid species names (including synonyms), of which 377 are currently accepted names. Among these 377 species, we conclude that there are 251 species present and 91 species possibly present. In addition, there are 20 species of uncertain presence, nine species likely not present, and six species considered incorrectly reported and not present. A significant factor in determining the number of species in any location is a consistent use of accepted taxonomy.

If we consider differences in the taxonomy, the number of species present in American Sāmoa can change. The main differences between differing taxonomies include two distinct types of synonyms. One includes homotypic synonyms where the species identification is not in dispute, but rather the placement of that species within a certain genus, thereby creating a dispute in species name, but no dispute in that species being a discrete taxonomic entity. Of these species presented here, there are 54 homotypic species with CoTW disagreeing on 40 species. Thirty-four include species where CoTW does not acknowledge the movement of a species to a different genus and six species where CoTW moves species to a different genus but is not currently recognized by WLS. The other type of synonym difference includes heterotypic synonyms where two names are based on two type specimens that have been combined into a single species. In this circumstance, different experts based on their experience and knowledge of that species may have differing opinions on the validity of the synonyms. Of these species presented here, there are 72 heterotypic species with CoTW disagreeing on 20 species split in WLS and eight species that CoTW splits but are not in WLS. A fundamental difference is that taxonomic changes in WLS are based on references in peer-reviewed journals and those in CoTW are not. This is important since taxonomic changes based on the ICZN need to be published in printed media such as journals and books or they need to have a Zoobank registration, while those in electronic media only without a Zoobank registration are not valid. While the on-line version of CoTW (Veron et al. 2016) is not currently compliant with ICZN, it does provide insight to different expert opinion on species concepts.

Here we report new records for American Sāmoa. *Montipora marshallensis* Wells, 1954 is reported as a probable synonym of *Montipora crassituberculata* Bernard, 1897 by CoTW and is included in the eight heterotypic synonyms discussed previously, but this synonymization creates the first time this name to be used in relation to American Sāmoa and is not included in the totals listed in this study. Additionally, we report four new records documented by D. Fenner not previously reported in American Sāmoa. These records include *Acanthastrea subechinata* Veron, 2000 (Figure 3.2a), *Favites paraflexuosus* Veron, 2000 (Figure 3.2b), *Echinophyllia echinoporoides* Veron & Pichon, 1980 (Figure 3.2c), and *Turbinaria irregularis* Bernard, 1896 (Figure 3.2d). The evidence presented here is sufficient to conclude these species are present.

We report a total of 342 species present or possibly present for American Sāmoa. If one were to accept the species with taxonomic differences of opinion from Veron et al. (2016), the species number decreases by approximately 12 species. Further, Veron et al. (2016) included only zooxanthellate scleractinian corals thereby reducing the number by another eight species (four azooxanhellate dendrophyllids and four milleporids). This allows comparable numbers of 322 species to the 313 species reported by Veron et al. (2016) from the Sāmoa, Tuvalu, Tonga ecoregion. Presumably, any in-depth analysis for the other islands within this ecoregion will report other species not found in American Sāmoa. This would indicate that the species richness reported in Veron et al. (2016) is likely an underestimate for this ecoregion. It is difficult to determine the amount of this underestimate, but may indicate that the species richness is closer to that found in Micronesia, the Coral Sea, or Vanuatu (Table 3.1). This also indicates that the species richness is still much lower than the Coral Triangle and the broader geographical pattern of species richness across the Pacific remains (Veron et al. 2015). The known diversity of an area is largely a product of effort. With increasing effort, more species are documented up to an asymptote (Colwell et al. 2012). Both the present list and the estimates in Veron et al. (2016) are likely to be underestimates of the true diversity within any single region.

Using the ecoregions from Veron et al. (2016), we show geographical range extension records for 66 species considered present or possibly present. The direction of these range extensions is 61% to the east, while 21% close the gap between two disjunct ecoregions. Fewer species are extended south (3%), southeast (11%), and southwest (4%). There are no species that are only extended to the west. Of these range extensions, three species were considerable. The nearest confirmed ecoregion for *Acropora squarrosa* was Madagascar north, while *Pavona gigantea* was Marshall Islands and Galapagos Islands and *Pavona diffluens* was Socotra Archipelago in the Indian Ocean.

While shallow coral reef corals are relatively well described, mesophotic corals are poorly described in American Sāmoa. The maximum reported depth of a zooxanthellate coral is 165 m at Johnston Atoll (Kahng and Maragos 2006), and 19 of 66 coral species were reported from mesophotic depths in the Hawaiian Archipelgo (Spalding et al. 2019). Of the 51 reviewed studies that report corals from American Sāmoa, only four have reported corals from mesophotic depths (Hoffmeister 1925; Lamberts 1983; Bare et al. 2010; Montgomery et al. 2019). These limited results report a total of 90 mesophotic species to a maximum depth of 53 m, leaving a significant portion of MCE depths unexplored and hence a large information gap in the coral species diversity. Bare et al. (2010) reported additional species and colonies deeper than previously reported, but the species are tentative identifications from low-resolution video so are not included here. Most of the mesophotic corals reported are considered depth generalist species with almost all of them reported from shallow reefs. Given the maximum depth of these species reports, it is very likely that the number of species recorded from American Sāmoa will increase with more surveys on MCEs, particularly from the lower mesophotic depth range.

Corals have long been threatened from many sources of anthropogenic factors including overfishing, land-based sources of pollution, development, and climate change (Pandolfi 2003; Bellwood et al. 2004; Halpern et al. 2007; Brainard et al. 2011). Based on these threats, 845 scleractinian, helioporid, tubiporid, and milleporid coral species were assessed for extinction risk using the IUCN Red List Categories and Criteria. Carpenter et al. (2008) estimated that 27% of the global species of corals were threatened (Table 3.2). Of the species considered present or possibly present in American Sāmoa, we estimate that 17.5% of the species are considered threatened while only 14% of the known mesophotic corals are categorized as threatened. This seems in line with the determination that American Sāmoa's coral reefs are in "good" condition (NOAA and UM-CEP 2018). Overall, this seems to suggest the corals in American Sāmoa may be doing better than corals on a global scale; however, it should be noted that there is a higher percentage of corals that have an unknown assessment. The vertical distribution of species may play an important role in their potential risk of extinction, particularly for species that are considered depth generalist in which most of the mesophotic corals reported in American Sāmoa are considered.

NOAA has also listed 18 Indo-Pacific species (including three species recorded outside U.S. waters; *Cantharellus noumeae* Hoeksema & Best, 1984, *Siderastrea glynni* Budd & Guzman, 1994, and *Tubastraea floreana* Wells, 1982) under the ESA (16 U.S.C. § 1531) and of these species, six have been confirmed in American Sāmoa (*Acropora globiceps, Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Fimbriaphyllia paradivisa*, and *Isopora crateriformis*; NOAA 2015a) with another six species (*Acropora lokani*, *Acropora tenella*, *Anacropora spinosa*, *Montipora australiensis* Bernard, 1897, *Porites napopora*, and *Seriatopora aculeata* considered possibly present (Table 3.3). In addition, one species, *Pocillopora meandrina*, is a candidate species for listing and it widely reported from American Sāmoa (USACE 1980; Birkeland et al. 1987; Hunter et al. 1993; Maragos et al. 1994, 1995; Mundy 1996; Green and Hunter 1998; Birkeland 2001, 2007a; Craig et al. 2001; Fisk and Birkeland 2002; Work and Rameyer 2002; Birkeland et al. 2003; Coles et al. 2003; DiDonato et al. 2006; Fenner et al. 2008; Kenyon et al. 2010; Corals NPAS 2016; DMWR 2018; Fenner 2018). Of these seven species considered confirmed, we validate that all seven are in American Sāmoa, but also believe two others are possibly present (*Pavona diffluens* and *Porites napopora*). Of the five remaining species (*Acropora lokani*, *Acropora tenella*, *Anacropora spinosa*, *Montipora australiensis*, and *Seriatopora aculeata* that NOAA considers possibly present, we believe one, *Montipora australiensis* Bernard, 1897 is likely absent. The four remaining species (*Acropora lokani*, *Acropora tenella*, *Anacropora spinosa*, and *Seriatopora aculeata* have not been reported within American Sāmoa. These reports provide resource managers additional information to further evaluate species distributions.

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Figures

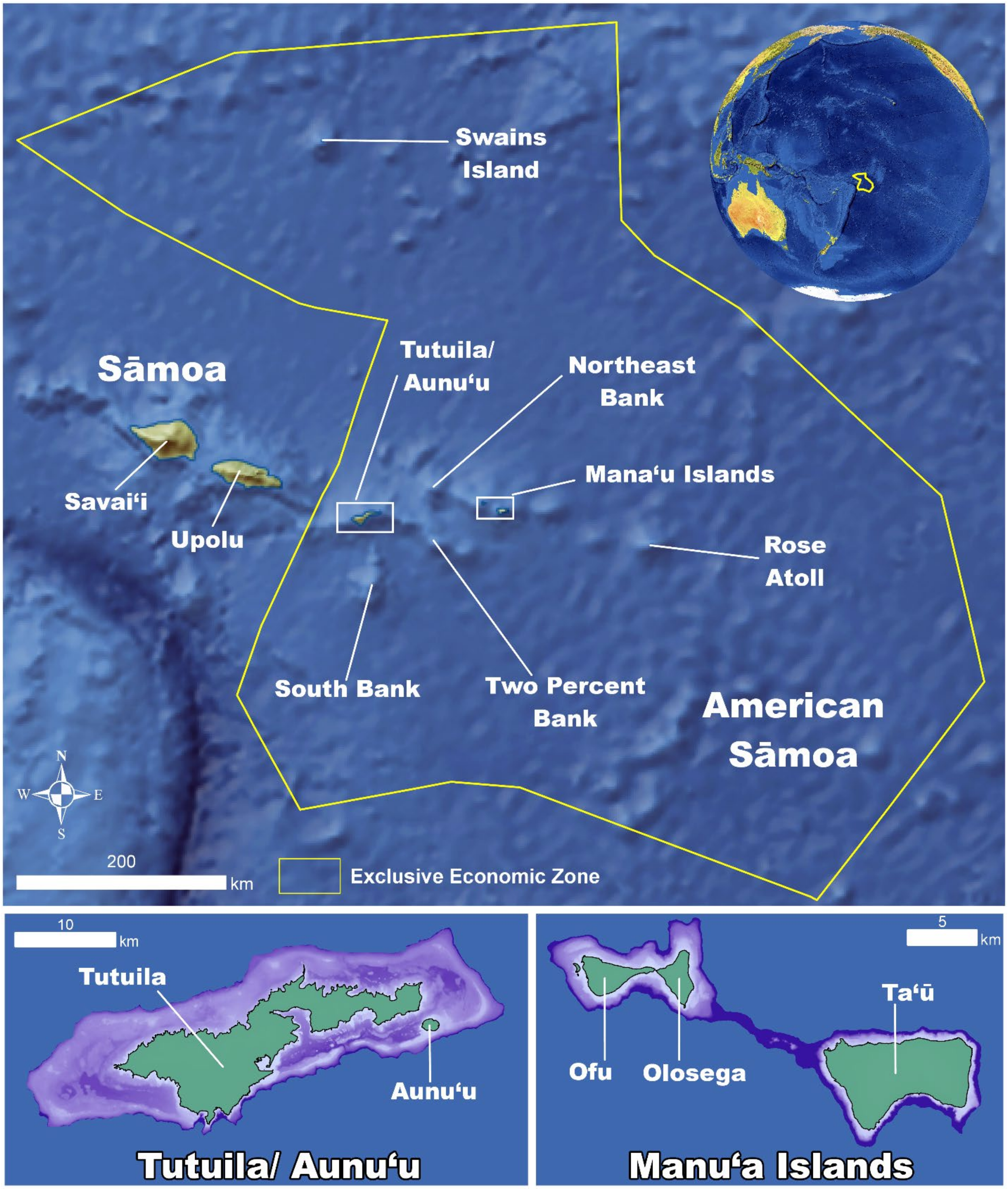

Figure 3.1. Map of American Sāmoa. A map of American Sāmoa showing its proximity to Independent Sāmoa and the distances between all the island groups (in green) and shallow (< 150 meter depth) banks (in purple) within the territory.

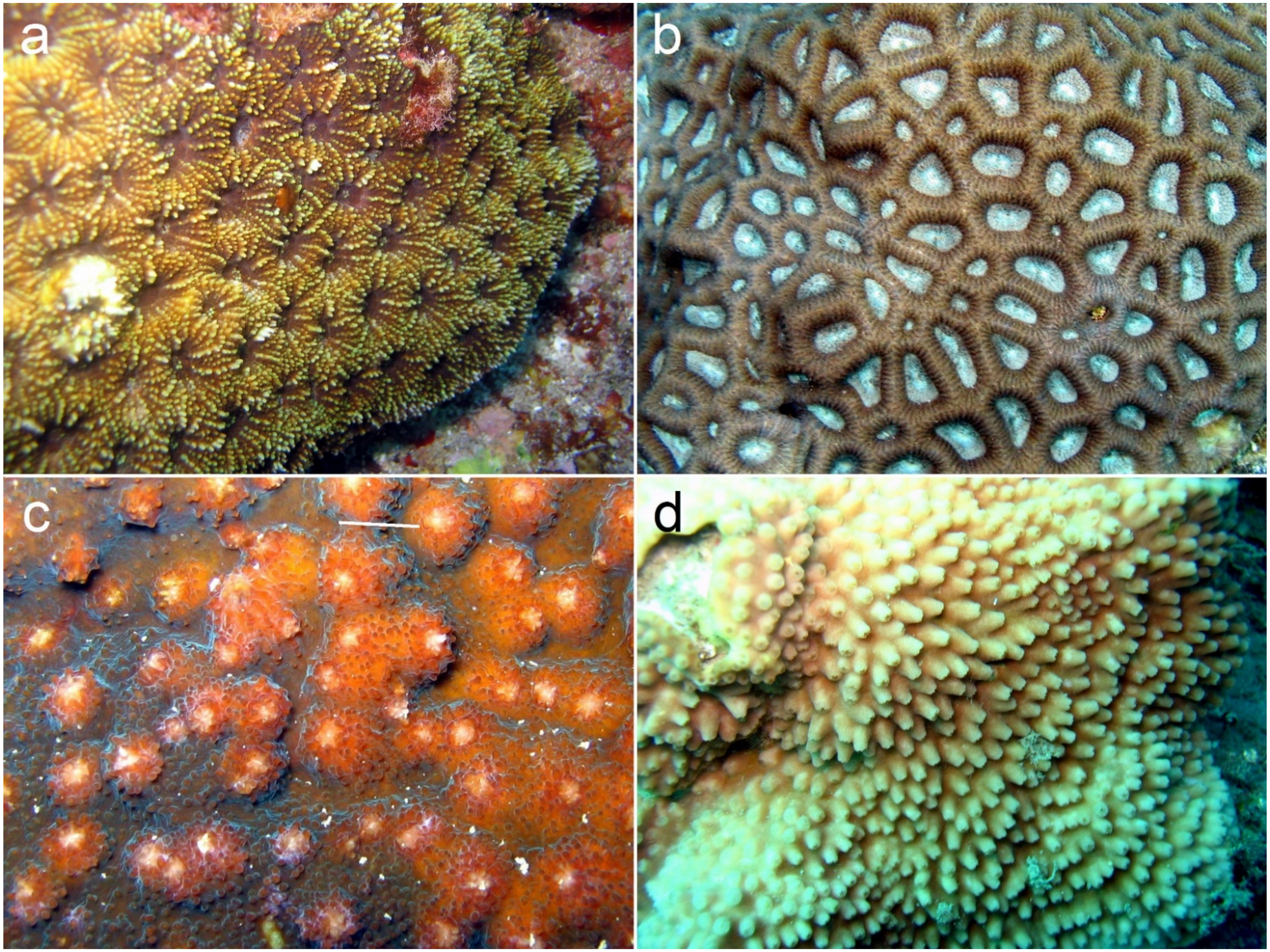

Figure 3.2. New scleractinian records for American Sāmoa. a) *Acanthastrea subechinata* Veron, 2000, b) *Favites paraflexuosus* Veron, 2000, c) *Echinophyllia echinoporoides* Veron & Pichon, 1980, d) *Turbinaria irregularis* Bernard, 1896. Photos by D. Fenner.

Tables

Table 3.1. Zooxanthellate, reef-dwelling scleractinian species richness for the ecoregions surrounding American Sāmoa based on Veron et al. (2016).

Ecoregion	Number of Species
Coral Triangle	627
Bismarck Sea, New Guinea	538
Milne Bay, Papua New Guinea	523
Solomon Islands and Bougainville	516
New Caledonia	439
Fiji	395
Caroline Islands, Micronesia	395
Vanuatu	391
Pohnpei and Kosrae, Micronesia	384
Coral Sea	378
Kiribati west, Gilbert Islands	316
Sāmoa, Tuvalu, Tonga	313
Marshall Islands	309
Great Barrier Reef south	308
Kiribati, north-east Line Islands	194
Cook Islands, central Pacific	181
Kiribati central, Phoenix Islands	178
Society Islands, French Polynesia	176
Austral Islands, French Polynesia	153
Tuamotu Archipelago west, central Pacific	117
Kiribati, south-east Line Islands	112
Tuamotu Archipelago south-east and Pitcairn Islands	104
Hawaii (Main Hawaiian Islands)	58
Johnston Atoll, north central Pacific	37
Marquesas Islands, French Polynesia	23
Kermadec Islands, south Pacific	16

Table 3.2. The number of corals assessed for extinction risk. The number of corals and the percentages (Unknown (Unk) = DD + NE; Threatened (Thr) = VU + EN + CE).

Species status	DD	LC	NT	VU	EN	CE	NE	Total	Unk	NT + Thr	Thr
Present	5	104	55	41	0	0	46	251	20.3%	38.2%	16.3%
Possibly Present	0	32	16	17	1	1	24	91	26.4%	38.5%	20.9%
Uncertain	3	3	2	5	0	0	7	20	50.0%	35.0%	25.0%
Likely Not Present	0	3	1	3	1	0	1	9	11.1%	55.6%	44.4%
Not Present	1	1	0	0	0	0	6	8	87.5%	0.0%	0.0%
Present & Possibly Present	5	136	72	58	1	1	67	342	21.9%	38.3%	17.5%
MCE	0	47	12	12	1	0	18	90	20.0%	27.8%	14.4%
Global	141	297	176	201	25	5	0	845	16.7%	48.2%	27.3%

Table 3.3. Corals listed under the ESA. The coral species listed under the ESA with the likely presence reported in this study and NOAA's report of species occurrence (NOAA 2015b). Listing status is noted $\mathcal{T}$ for threatened and $\mathcal{C}$ for candidate. Species reported from mesophotic depths are noted by *.

ESA Species	Listing Status	Presence	NOAA listed Occurrence
Acropora globiceps (Dana, 1846)	$\mathcal{T}$	Present	Confirmed
Acropora jacquelineae Wallace, 1994	$\mathcal{T}$	Present	Confirmed
Acropora lokani Wallace, 1994	$\mathcal{T}$	Not reported	Possible
Acropora pharaonis (Milne Edwards, 1860)	$\mathcal{T}$	Likely not present	Unlikely
Acropora retusa (Dana, 1846)	$\mathcal{T}$	Present	Confirmed
Acropora rudis (Rehberg, 1892)	$\mathcal{T}$	Likely not present	Unlikely
**Acropora speciosa* (Quelch, 1886)	$\mathcal{T}$	Present	Confirmed
Acropora tenella (Brook, 1892)	$\mathcal{T}$	Not reported	Possible
Anacropora spinosa Rehberg, 1892	$\mathcal{T}$	Not reported	Possible
**Fimbriaphyllia paradivisa* (Veron, 1990)	$\mathcal{T}$	Present	Confirmed
Isopora crateriformis (Gardiner, 1898)	$\mathcal{T}$	Present	Confirmed
Montipora australiensis Bernard, 1897	$\mathcal{T}$	Likely not present	Possible
Orbicella annularis (Ellis & Solander, 1786)	$\mathcal{T}$	Not present	Caribbean species, not in Indo-Pacific
**Pavona diffluens* (Lamarck, 1816)	$\mathcal{T}$	Possibly present	Unlikely
Pocillopora meandrina Dana, 1846	$\mathcal{C}$	Present	
Porites napopora Veron, 2000	$\mathcal{T}$	Possibly present	Possible
Seriatopora aculeata Quelch, 1886	$\mathcal{T}$	Not reported	Possible

Supplementary Material

Supplementary material 1. American Sāmoa Coral Occurrence Data and Metadata. A dataset that includes all species mentions across 51 citations with American Sāmoa. https://doi.org/10.15468/07opwe

Supplementary material 2. American Sāmoa Coral Taxon Data and Metadata. A dataset that includes the scientific name for each coral occurrence and the translation accepted name for each species. This dataset also includes information on agreement with CoTW (Veron et al. 2016), Wallace (1999) and Wallace et al. (2012), ESA status, IUCN Red List status, mesophotic citations include depth, the evidence used to support its presence, and the status of its presence in American Sāmoa. https://doi.org/10.15468/07opwe

Chapter 4
Testing the assumptions of the deep reef refuge hypothesis using community similarity and species overlap between habitats

Abstract

I propose a new approach to classify species as depth specialists or generalists and encourage a broader framework for the deep reef refuge hypothesis (DRRH). This approach changes the conceptual role of MCEs and emphasizes their importance in conservation planning regardless of their role as a refuge or not. I analyzed stony coral communities in American Sāmoa across mesophotic coral ecosystems (MCEs) and shallow coral reefs (SCRs) to describe the community similarity and species overlap to test the foundational assumption of the DRRH. I found 12 species of corals exclusively on MCEs and 209 exclusively on SCRs with another 63 species overlapping between depth zones. Of these, 19 appear to have the greatest potential to serve as reseeding species. Two additional species are listed under the U.S. Endangered Species Act, *Acropora speciosa* and *Fimbriaphyllia paradivisa* categorized as an occasional deep specialist and a deep exclusive species, respectively. Based on the community distinctiveness and minimal species overlap of SCR and MCE communities, I propose a broader framework by evaluating species overlap with various SCR and MCE habitats. This provides an opportunity to consider the opposite of the DRRH where SCRs support MCEs.

Keywords

mesophotic coral ecosystem, Scleractinia, alpha diversity, beta diversity, deep exclusive species, shallow exclusive species, American Sāmoa

Introduction

Global biodiversity is declining (Wilson 1997) with anthropogenic changes (Ehrlich and Wilson 1991, Lovejoy 1997). These declines are associated with the expansion of humans into undeveloped areas (e.g., habitat destruction), human-induced changes in climate systems (Lovejoy 1997, Myers and Ottensmeyer 2005), and increasing demand of natural resources such as fisheries (Reaka-Kudla 1997, Myers and Ottensmeyer 2005). The scale of biodiversity loss in marine systems remains unclear as it remains largely undocumented at the resolution of species. However, the lack of documented species loss is not reassuring based on the fossil records and the extinction associated with historical climate change (Briggs 2011). With increasing ocean temperatures and acidification, future biodiversity in these ecosystems is vulnerable (Myers and Ottensmeyer 2005, Harley et al. 2006, Dupont et al. 2010). Biodiversity loss has continued despite increased scientific and public awareness (Reaka-Kudla 1997) with the true rate of biodiversity loss likely not known or grossly underestimated as it is difficult to determine how many global species exist. With a lack of knowledge of the number of species in an ecosystem, system-wide threats to those ecosystems can exacerbate biodiversity loss for species currently unknown to science (Reaka-Kudla 1997, Myers and Ottensmeyer 2005). It has been estimated that we may be losing species at a rate faster than we are currently describing new species, thereby losing the opportunity fully understand the ecological connectivity of our natural systems (Stork 1997, Myers and Ottensmeyer 2005, Richards and Day 2018). The rate of species loss compared to new species descriptions is not well understood or documented in marine systems or coral reefs (Briggs 2011). However, there remains vast areas of coral reefs not explored (Pyle and Copus 2019).

Coral reef ecosystems include tropical marine habitats between 0–150 meters depth consisting of reef-building corals and associated communities. They can be divided into shallow coral reefs (SCRs) between 0–30 m and mesophotic coral ecosystems (MCEs) between 30–150 m. MCEs consist of scleractinian or other associated assemblages of antipatharians, octocorals, sponges, or algae and shares functional assemblages with SCRs (Hinderstein et al. 2010). Previously thought to be a marginal habitat, MCEs are now generally viewed to be an extension of the broader coral reef ecosystem. The realization that coral reef communities extend into deep water has led to the development of the 'deep reef refugia' hypothesis (DRRH) stating that MCEs serve as potential refugia for SCR species (Bongaerts et al. 2010). Bongaerts et al. (2010) was the first to formulate the DRRH for MCEs based on the work of others (Vermeij 1986, Glynn 1996, Riegl and Piller 2003, Halfar et al. 2005) and rests on two foundational assumptions: 1) MCEs are sufficiently protected from the stressors on SCRs, and 2) MCEs have species overlap with SCRs to be a source of propagules to SCRs.

In order to meet the second assumption of the DRRH, individual species must have meaningful abundances in both habitats to provide a viable reproductive reservoir and vertical connectivity. Species overlap is a central component to the DRRH, so species have been characterized as 'shallow-specialist', 'deep-specialist', and 'depth-generalist' where a specialist species is found only in the corresponding depth zone and the generalist species are found across depths (Bongaerts et al. 2010).

Bongaerts and Smith (2019) also introduced the terms ‘reseeding’ for species that provide substantial propagules from unimpacted populations and ‘local persistence’ for species that have limited ability to reseed other populations.

Bongaerts and Smith (2019) also distinguished the terms of refuge and refugia (*sensu* Keppel et al. 2012) with an explicit consideration of time: refuge has typically been used for ecological scales while refugia has been used for evolutionary timescales (Keppel et al. 2012). The conceptual difference between refuge and refugia is a substantive one under the current DRRH framework (Bongaerts and Smith 2019). This conceptual framework is broader in scope than the original DRRH (*sensu* Bongaerts et al. 2010) as it considers the components of disturbance, type of protection, time, depth, ecological scope (individual species to community scale), and species resilience. Lacking current evidence that MCEs serve as refugia, I focus on the ecological timescale and use the term refuge under a deep reef refuge hypothesis (DRRH) *sensu* Bongaerts and Smith (2019).

Another component introduced has been the distance/divergence trade-off stating that the disturbance and community similarity decrease across depth that creates an optimal depth range where disturbance is minimal, but the community shares enough species that allow a refuge to exist (Bongaerts and Smith 2019). This trade-off concept provides a context for which to test the DRRH for communities that most likely serve as a refuge. Previous studies have shown a difference in community composition across MCE depths (Pyle and Copus 2019), and it has been suggested that the upper MCE may serve the most likely role for a refuge (Bongaerts et al. 2010, Loya et al. 2016).

Since the formal DRRH was postulated, many studies have examined the viability of this concept, both from the Atlantic (Holstein et al. 2015, 2016b, 2016a, Smith et al. 2016, Bongaerts et al. 2017, Semmler et al. 2017, Morais and Santos 2018, Rocha et al. 2018) and – fewer – from the Pacific (Smith et al. 2014, Muir et al. 2017, Rocha et al. 2018). These studies have resulted in different conclusions for the role of MCE corals to serve as a refuge. Six support the DRRH (Smith et al. 2014, Holstein et al. 2015, 2016b, 2016a, Muir et al. 2017, Semmler et al. 2017) while one has a split conclusion (Bongaerts et al. 2017), one has limited support (Morais and Santos 2018), and two with no support for MCE as a refuge (Smith et al. 2016, Rocha et al. 2018). Of these, four studies used a community analysis (Muir et al. 2017, Semmler et al. 2017, Morais and Santos 2018, Rocha et al. 2018) and six used a species-specific approach (Smith et al. 2014, 2016, Holstein et al. 2015, 2016b, 2016a, Bongaerts et al. 2017).

To test the DRRH assumption requiring species overlap between MCEs and SCRs, I compare diversity metrics, community similarity, and species assemblages for stony corals (scleractinian and milleporids) from the SCRs (<30 m) to the upper MCE (30-70 m) of American Sāmoa (Figure 4.1). Using species accumulation curves, I also estimate the number of coral species not yet documented in both MCE and SCR habitats. Diversity metrics and community similarity was used to test the DRRH at a community scale while species assemblage comparisons were used to determine individual species overlap and their likelihood to serve as a reseeding species. These comparisons are further utilized to highlight management implications of MCEs.

Methods

Dataset Description

Data for this paper includes surveys conducted at 163 sites around the Territory of American Sāmoa recording stony coral species presence (Scleractinia and Milleporid). Data was collected using open circuit scuba (93 SCR sites by D. Fenner) and closed-circuit mixed gas rebreathers (eight MCE sites by A. Montgomery) and supplemented by published data from Maragos et al. (1994) (52 SCR sites) and Coles et al. (2003) (10 SCR sites). Survey methodologies were similar across all surveys.

SCR surveys were conducted between 0–30 m using a roving diver method. Divers descended to the lower limit of the reef slope or a depth limit of 30 m for Tutuila or 20 m for other islands. Then, the divers moved up slope into as shallow water as was safe given surf conditions while searching for as many species as possible. Dives ranged from 70 minutes on Tutuila to 45 minutes on other islands. Dive time was similar but not standardized on reef flats and in pools. Coral skeletons were collected and added to the American Sāmoa Department Marine and Wildlife Resources coral collection for skeletal verification. MCE surveys were conducted between 30–70 m (58±6 m, mean ± s.d.) using a similar roving diver method. Divers covered as much habitat as possible to increase the sampling area, but survey time ranged from 35–55 minutes. One expert diver documented each unique species or species morphology observed with a Canon G-10 video camera and a GoPro Hero 3 camera. The second assistant diver focused on collecting coral samples as directed by the expert diver. Each sample was documented by video and placed in a labeled bag. Skeletons were placed in the Bernice P. Bishop Museum invertebrate collection and identifications were archived with the Global Biodiversity Information Facility. All coral identifications were based on Veron (Veron 2000), Wallace (Wallace 1999), and Hoeksema (Hoeksema 1989). Names were corrected for synonymies based on the World Register of Marine Species (Anon 2020). The raw data is included as Supplementary Data S1.

Species reports for all four survey efforts were filtered through WoRMS to standardize to currently accepted taxonomy. The names were crossed referenced with Montgomery et al. (2019) to account for species names reported to be taxon inquirendum or believed to be misidentified. Finally, unidentified species were standardized into a genus species notation to minimize how observers may have lumped or split unidentified species. Standardizations accounted for both synonymies and unidentified species notations and are shown in Supplemental Data S1.

Site Groupings

In order to make comparisons for alpha and beta diversity, community similarity, and species overlap, individual sites were grouped by MCE or SCR sites for a broad comparison between MCE and SCR communities. Sites were further grouped by another categorical variable that combines habitat zone and island. These groups referred to as habitat groups were intended to separate out variability of communities from different habitats on different islands and were used for comparison only to MCE sites. There was no comparison between SCR habitat groups as the focus of this study was to compare SCR communities to MCE communities. These groups included the: upper MCE by Tutuila, reef slope by Tutuila, reef flat by Tutuila, reef slope/reef flat by Tutuila, reef flat/pool by Tutuila, pool by Tutuila, harbor by Tutuila, reef slope by Manuʻa Islands, reef flat by Manuʻa Islands, reef slope/reef flat by Manuʻa Islands, pool by Manuʻa Islands, reef slope by Rose Atoll, reef slope by Swains Island, and reef slope by South Bank. The habitats were based on those reported and, in some cases, crossed two habitats. The number of sites within a habitat grouping varied and is shown in Table 4.1. All groupings were used for all analyses except for the beta diversity where the groupings of six or more sites were used. The MCE sites were all from the upper MCE habitat, so the reference of MCE sites and upper MCE sites are synonymous in this study.

Species Accumulation Curves

To estimate the number of coral species not yet discovered in American Sāmoa, species accumulation curves were made with the iNEXT function (q=0, datatype = "incidence_raw", endpoint = 400, nboot = 10000, knots = 400, conf = 0.95) within the iNEXT package in R (Hsieh et al. 2020), which is based on previous work (Colwell et al. 2012, Chao et al. 2014). Species accumulation curves were developed with three methods that handle species nomenclature differently. One method included analysis based on the original species name without consolidating synonymies as well as using the unidentified species as reported (referred to as original). Another method included standardizing the species names by consolidating the synonymies and using the unidentified species as reported (referred to as standardized + unidentified). This method was considered the best approach (see discussion). The final method included standardizing the species names by consolidating the synonymies as well as consolidating the unidentified species to a standardized genus notation (genus sp.; referred to as standardized). This was calculated for the MCE, SCR, and combine datasets (Figure 4.2).

Gamma and Alpha Diversity

Gamma (regional) and alpha (site) diversity were used to test the differences between MCEs and SCRs. Gamma diversity was calculated by adding up all the unique species for MCE, SCR, and all sites based on the standardized species nomenclature. The alpha diversity (i.e., species richness at each site) was calculated based on observed unique species at MCE and SCR sites as well as the SCR habitat groups.

Beta Diversity

Beta diversity and its constituent components were used to test the species differentiation between MCEs and SCRs. Beta diversity was calculated using the betapart package (Baselga et al. 2020) with a Jaccard dissimilarity index in R. Betapart provides the total beta diversity as well as the species replacement (i.e., turnover fraction) and nestedness-resultant fraction of Jaccard dissimilarity components of the total beta diversity. The beta diversity was calculated between all MCE sites to all SCR sites in addition to between the upper MCE sites and SCR habitat groups that had more than six sites. These SCR habitat groups included the reef flat by Tutuila, reef slope/ reef flat by Tutuila, reef flat by Tutuila, reef slope by Manu‘a Islands, reef slope/ reef flat by Manu‘a Islands, pool by Manu‘a Islands, reef slope by Rose Atoll, and reef slope by Swains Island. The beta diversity was calculated in three different ways: 1) a single pairwise comparison of all MCE sites into a MCE group and all SCR sites consolidated into a SCR group (referred to as the single pairwise comparison), 2) bootstrapping 10,000 times the pairwise comparison of a single random site from each group (referred to as the bootstrapped pairwise comparison), and 3) bootstrapping 10,000 times the multiwise comparison of four sites randomly chosen from each group (referred to as the bootstrapped multiwise comparison).

These three analyses were compared to demonstrate the variability associated with the method in which beta diversity was calculated. The single pairwise comparison can be highly influenced by differences with sample sizes, so conducting a single random pairwise comparison or an equally weighted multiwise comparison may provide a better estimate. Selecting a single pair across a community will highlight the extreme variation between communities based single site outliers. Here, I used an equally weighted multiwise comparison with 4 sites that maximizes the unique combinations to compare, but also minimizes the influence of single sites that may be considered outliers to develop the best beta diversity estimate. However, the mean of the bootstrapped multiwise comparison may not represent an accurate estimate of the beta diversity as per Baselga (2012), but provides the best range of the true beta diversity.

Community Similarity

To test the community similarity across MCE and SCR habitats, I used using Primer v7 with the PERMANOVA extension (Anderson et al. 2008, Clarke and Gorley 2015). A resemblance matrix was calculated with a Jaccard dissimilarity. Two different analyses were conducted, non-metric multidimensional scaling (NMDS) using bootstrap averages and the distance among centroids. Bootstrap averages were calculated to compare MCE and SCR sites (150 bootstraps per group) as well as habitat groups (25 bootstraps per group). Distance among centroids was calculated for the habitat groups. A distance-based test for homogeneity of multivariate dispersions (PERMDISP) using 999 permutations was conducted which also provides a measure of beta diversity when based on Jaccard dissimilarity. I tested for overall differences in community composition between MCE and SCR sites using PERMANOVA (unrestricted permutation of raw data with 999 permutations and type III sum of squares). I also used PERMANOVA to test for differences in community composition between habitat groups.

Species Overlap

To determine the individual species, overlap and their potential to serve as a reseeding species, a species list that excluded unidentified species was created for MCE and SCR sites as well as each SCR habitat group. The site occupancy (percent of sites) for each species in each habitat group was determined and the species were categorized by relative abundance as common (observed in 50% or greater of the sites), occasional (observed between 25% and 50% of the sites), or rare (using definitions from Gaston 1994). Based on a species relative abundance in each habitat group, the species was designated as a specialist or generalist. A species that had a higher relative abundance in one habitat was designated a specialist and a species that had the same relative abundance across habitats was designated a generalist. A species that was common in the MCE and occasional or rare in SCR was designated as a 'common deep specialist' while a species that was occasional on the MCE and rare in the SCR was designated as an 'occasional deep specialist'. The same approach was used for species with a higher relative abundance in SCRs than MCEs and categorized as a 'common shallow specialist' or 'occasional shallow specialist'. Generalist species were categorized according to their relative abundance as 'common generalist', 'occasional generalist', or 'rare generalist'. Species that were exclusively found in MCEs or SCRs were categorized as deep or shallow exclusive species. These comparisons are shown graphically in Figure 4.8.

Results

Species Accumulation Curves

The estimated number of stony coral species in American Sāmoa varies depending on how the unidentified species were reported and the taxonomy used by the observer as described in the methods (Figure 4.2). There were 343–399 species estimated with the standardized + unidentified method; the SCRs were estimated to have 290–316 species versus 144–243 species for MCEs (Figure 4.2b). This approach appears to provide the best estimate (see discussion). There were 476–553 species estimated with the original method; the SCRs were estimated to have 393–440 and MCEs had 154–258 (Figure 4.2a). There were 299–329 species estimated including 276–303 in SCRs and 108–167 in MCEs (Figure 4.2c) with the standardized method. The full interpolated and extrapolated values are included in the Supplementary Data S2.

MCE to SCR Comparison

Gamma diversity was 289 species across all sites, 93 species across MCE sites, and 272 species across all SCR sites. The alpha diversity was 27.9 and 40.7 species for MCE and SCR sites, respectively (Figure 4.3a, Table 4.1, Supplementary Data S3). The beta diversity components of nestedness and turnover varied depending on how the site data was compared (Figure 4.3b, Table 4.2, Supplementary Data S3). I conducted three types of comparisons (see methods for details): 1) the single pairwise comparison, 2) the bootstrapped pairwise comparison (lighter shade of the graph in Figure 4.3b), and 3) the bootstrapped multiwise comparison (darker shade of the graph in Figure 4.3b). The bootstrapped pairwise comparison and the bootstrapped multiwise comparison show a higher turnover and lower nestedness than the single pairwise comparison (black points on the graph in Figure 4.3b). These results show an inversion from a higher turnover to a higher nestedness. This inversion is likely due to two reasons including the differences in sample sizes (eight for MCE and 155 for SCR) and the many different habitats of the SCR. The SCR sites have a higher variability due to increased habitat diversity across SCRs while the MCEs in this study are only from the upper MCE and habitats are more homogenous. When distinct SCR habitats are lumped together there is an increased probability that species presence will overlap resulting in a higher nestedness fraction of the beta diversity. This is also exemplified in the bootstrapped pairwise comparison where some individual sites have higher nestedness than most other sites. In this context, the range of beta diversity values of most interest to compare are the multiwise comparison as this compares a similar sample size between groups.

MCE and SCR communities are distinct (PERMANOVA, $t = 2.3$, $p_{perm} = 0.001$, 997 unique permutations, Appendix A), and there is no difference in dispersion between SCR and MCE sites (PERMDISP, $F_{1,160} = 5.6141$, $p_{perm} = 0.183$; Appendix B). NMDS (Figure 4.4a) shows the variation of individual sites while Figure 4.4b shows the bootstrapped averages for all MCE and SCR sites. There is considerable variability between SCR sites, and MCE species are a partial subset of the SCR species.

Habitat Group Comparison

The alpha diversity across the upper MCE and SCR habitat groups ranged from 4 to 64.6 with the upper MCE being 27.9 or approximately in the middle of this range (Figure 4.5, Table 4.1, Supplementary Data S2). Beta diversity was relatively high across the upper MCE to the SCR habitat groups (Figure 4.6). The upper MCE had lower turnover and higher nestedness in the reef slope on Tutuila group compared to other SCR habitat groups indicating increased species overlap between the upper MCE and the reef slope on Tutuila group compared to other SCR habitat groups. Similar to the MCE-SCR comparison, the beta diversity comparisons are shown to have closer fraction of turnover and nestedness when comparing all sites compared to multiwise comparison. The comparison including all sites shows increased nestedness indicating there is increased species overlap with increasing addition of rare species that do not show up in any four random sites.

Upper MCE sites are distinct when comparing the community similarity with SCR habitat groups (PERMANOVA, $F_3 = 3.4977$, $p_{perm} = 0.001$, 997 unique permutations, Appendix C). Additionally, there were significant differences between habitats (PERMANOVA, $F_6 = 6.9984$, $p_{perm} = 0.001$, 997 unique permutations, Appendix C) and islands (PERMANOVA, $F_5 = 6.4473$, $p_{perm} = 0.001$, 995 unique permutations, Appendix C). There is a significant difference in dispersion among all sites (PERMDISP, $F_{1,13} = 9.7842$, $P_{perm} = 0.001$, Appendix D). The dispersion of pairwise comparisons between the upper MCE and individual SCR habitat groups ranged from no difference to significant difference with many of the comparisons resulting in a difference having small sample sizes. NMDS (Figure 4.7a) shows the variation of individual habitat groups while Figure 4.7b shows the bootstrap averages and Figure 4.7c shows the distance among centroids.

Species Overlap

There were 209 shallow exclusive species, 12 deep exclusive species, and 63 species with overlap. The percent of MCE species that overlap with SCR species was high (84%), but relatively low for SCR species that overlap with MCEs (23%). However, as the sites are partitioned into habitat groups, the percent of overlap decreases (Table 4.3). The percent of species categorized as a depth specialist or generalist is shown in Table 4.3. The reef slope of Tutuila and the Manuʻa Islands have more shallow specialists than deep specialists (33.3% compared to 13.4% and 26.7% compared to 5.3%, respectively). There are less common and occasional depth generalists (8%) while there are more rare depth generalists (37.3%) on SCRs. However, some habitat groups have similar or lower number rare generalist, but with small number of species differences (1–4). This can be seen graphically in Figure 4.8 showing the comparison of MCE to SCR sites. Further comparisons for habitat groups (reef slope on Tutuila, reef slope on the Manuʻa islands, reef slope on Rose Atoll, and the reef flat on Tutuila) are shown in Figures 4.9–12. All species lists as a result of MCE and SCR species comparisons included in Supplementary Data S4. These results were also supported by a SIMPER analysis in Primer using Bray-Curtis similarity measure. This also includes the relative categorization of species between groups. Of the three species listed under the U.S. Endangered species Act, *Acropora speciosa* was listed as an occasional deep specialist, *Fimbriaphyllia paradivisa* was listed as a deep exclusive species, and *Pavona diffluens* was a rare generalist.

Discussion

Although coral reefs occupy a small portion of marine habitat, they are home to an estimated 550,000 to 1,330,000 species, the majority of which are yet to be described (Reaka-Kudla 1997, Fisher et al. 2015). Here, I attempt to provide an estimate of the number of coral species not yet discovered in American Sāmoa. This estimate is influenced by the species concept utilized by the observer (i.e., varying interpretation of a species with a range of taxonomic characters), taxonomic changes over time, and how unidentified species are labeled. The best estimate is provided by standardizing the taxonomy with currently accepted names and leaving the various unidentified species identifications as reported which provides a better estimate of the number of unidentified species. Using this approach, I estimate that between 343–399 species should be found in American Sāmoa (Figure 4.2b).

Montgomery et al. (2019) reported that 342 species are present or likely present based on a comprehensive review of previous species reports suggesting up to 57 additional species could be found in American Sāmoa. As problems with coral taxonomy get resolved and further exploration of the MCEs of American Sāmoa occur, additional species are likely to be discovered in American Sāmoa. The estimated number of MCE species was estimated to be 144–243 and was based on a sample of eight sites which is well below the asymptote displayed in Figure 4.2. Colwell et al. (2012) reported that these curves are only accurate out to about two to three times the reference sample, so eight samples cannot accurately predict the species richness to over 25 sites. As more MCE sites are surveyed, there will undoubtedly be more unique species observed that may account for a large portion of the species yet to be discovered in American Sāmoa, which will also increase the predicted species richness.

The overall coral species richness of American Sāmoa is likely higher than previously reported and based on the coral species reported in Montgomery et al. (2019) for the Sāmoa, Tuvalu, Tonga ecoregion, coral species richness is likely similar to the known species richness in Micronesia, the Coral Sea, or Vanuatu ecoregions. Further, this study has documented the gamma diversity (diversity across the study samples) at 289 species with a range of alpha diversity (mean of site level species richness) across habitats and islands (Table 4.1) from 4–64 species. The alpha diversity of the upper MCE sites was near the midpoint of alpha diversity ranges (with the lowest at the Harbor on Tutuila and the highest on the reef slope on Tutuila) showing the species richness is typical when compared to other SCR habitats. The similarity of alpha diversity is further supported by the high level of species overlap between MCE and SCR sites (84% of MCE species). The level of overlap is not unexpected since the upper MCE was targeted for this study based on previous studies that show the upper MCE to be a subset of SCR communities (Rooney et al. 2010, Bridge et al. 2012, Pyle et al. 2016, Bongaerts and Smith 2019, Muir and Pichon 2019, Spalding et al. 2019, Turak and DeVantier 2019).

While there is a large percentage of species overlap, there is also a considerable difference in the communities across depths as well as within the upper MCE and various SCR habitats. These differences are highlighted by high beta diversity between MCE and SCR, largely attributed to species turnover, rather than nestedness. However, the interpretation of beta diversity (including the turnover and nestedness fractions) is dependent to how the comparison is constructed. In this case, we believe the best comparison is using an equal number of sites across groups. When analyzing a single site comparison, there is higher variability in the comparison and some single site comparisons show similar turnover to nestedness fractions. However, a single site comparison does not provide an accurate estimate of beta diversity (Baselga 2012). Conversely, comparison of communities with highly unequal sample sizes also does not provide an accurate estimate of beta diversity as the community that has more surveyed sites will have a greater number of species observed based on effort as shown in Figure 4.2. Increased sampling will in turn change the patterns of species comparison solely based on effort. I conducted four random sites per group multiwise comparison that provides a better estimate of beta diversity and its variability. These comparisons show that there is a high fraction of turnover between MCE and SCR communities (Figure 4.3b, Table 4.2) as well between MCE and individual SCR habitats (Figure 4.6, Table 4.2). The turnover fraction is lower and subsequent nestedness fraction is higher between the upper MCE and the reef slope on Tutuila compared to other reef slopes on other islands or other habitats, indicating a greater similarity between these communities.

There are distinct community assemblages between MCE and SCR communities (Figure 4.4) and between the upper MCE and the SCR habitat groups (Figure 4.7). Despite cases of individual species overlap, the overall community composition is different between upper MCE and SCR habitats. Thus, the upper MCE does not appear to provide a replacement community to any SCR community. I show that there is no universal replacement from the MCE community to SCR communities despite individual species overlap, an important aspect to consider for the DRRH (Bongaerts and Smith 2019). While the MCE community is a subset of SCR species, the SCR communities have 209 of 284 shallow exclusive species not found on MCEs. Of those species found on MCEs, there is a varying level of overlap with different habitats across different islands. Based on the distinctness of the communities and the large number of SCR species not found on MCEs, MCEs have limited ability to reseed SCRs.

Notwithstanding this distinction, MCE and SCR communities share 63 species. For these species, there is the potential for the upper MCE population to reseed SCR populations. To reseed the SCR, these 63 species must be resilient to disturbance and must produce viable offspring that recruit into SCR populations. While population densities and reproductive capacities are outside the scope of this study, I utilize the available presence/absence data to identify which of these 63 species may warrant future study to identify a species-specific refuge. Species presence across depths is not the only basic factor in determining a species-specific refuge potential. The abundance (number of individuals) or commonness (frequency of species presence across sites) of the species across both MCE and SCR sites is also important. For example, a species that is found only at a single MCE site and is common in the SCRs may have a decreased ability to reseed SCRs. In contrast, if a species is common across MCE sites, but less in SCR sites, it may serve as a reseeding species, but not provide a similar function as a species that was common in the SCR. A species that is common in both MCEs and SCR sites, would certainly be of interest for further research of reproductive ability, genetic connectivity, recruitment potential, and resilience to environmental changes of a species' ability to serve as a reseeding species. These studies can be labor intensive and expensive, so narrowing down the species of interest is valuable.

Previous studies have shown the MCE communities, particularly the upper MCEs to be a subset of SCR species and have a substantial overlap in species presence (Muir and Pichon 2019, Turak and DeVantier 2019). However, other studies have shown there to be distinct community differences between SCRs and MCEs (Semmler et al. 2017, Morais and Santos 2018, Rocha et al. 2018) as supported by this study. Species comparisons have been analyzed simply as species exclusive to a depth range (specialists) and the overlap of the species between ranges (generalists). This binary classification misses the significance of common and rare species on a reef and the implications of their abundance on coral reef diversity. I propose to refine species comparisons by analyzing the species overlap in a nuanced way and categorizing the species relative abundance for comparison across depth ranges or habitats. I use the term specialist (stenotope) to categorize species that have an overlap across depth, but differ in their relative abundance across depth while the term generalist (eurytope) is used for species that are similar in abundance across depths. I also introduce the terms of common, occasional, and rare to specialists and generalists to account for the relative abundance. Common species are species found across 50% or more of the sites while rare species are found at 25% or less of sites. A similar definition could easily be developed for site abundance data as well. I make the classification based on the relative position of commonness of a species on MCE sites relative to SCR sites. Common deep specialists are species common on MCE sites but only occasional or rare on SCR sites, and occasional deep specialist are occasional on MCE sites and rare on SCR sites. Generalist species are found in the same abundance on MCE and SCR sites.

In this analysis, I apply the assumption that rarity and specialist species are correlated with persistence (*sensu* (Bongaerts and Smith 2019). Rare species are more likely to serve in a depth persistence role as opposed to a reseeding role. Rarity and persistence are often viewed through a lens of extinction when species meet certain reproductive criteria (Vermeij and Grosberg 2018). Rare species may have some ability to provide propagules to SCRs over time (Holstein et al. 2016b, Loya et al. 2016), but may have less ability to reseed habitats where the species was previously common. Specialist species have been shown to have shorter species longevity in the fossil record (Kammer et al. 1998) indicating that generalist species are more resistant to perturbations. Specialist species may also be at a higher risk of population declines (Jones et al. 2006). Deep specialist species likely play a role in species persistence within the region assuming they are sufficiently protected at depth and resilient to some levels of disturbance, but they may also provide a role in reseeding SCRs with a different functional role. Shallow specialist species may also serve in a persistence role or even in a reverse role on MCEs where they provide propagules to maintain the diversity on MCEs. Additionally, species that are exclusive to MCEs as deep exclusive species or exclusive to SCRs as shallow exclusive species are unlikely to serve as reseeding or persistence species for either habitat.

While I present a mechanism to separate out these categories, the exact break from one category to the next is less important than to highlight the relative differences as these differences may change across comparisons and the type of data available. The process of making relative comparisons provides a useful tool to narrow species that could play an increased role as a reseeding species and hence a species-specific refuge. Rare species play an integral part of maintaining the biodiversity of a community, but being less common may not provide a sufficient source of propagules while common species may have an increased capacity to adapt and compete across locations and environmental gradients.

By incorporating relative abundance, this analysis provides additional insight into the DRRH. While the DRRH was formulated as a source-sink relationship from deep to shallow, there is nothing preventing this process working equally in reverse. The species comparisons show more species that are shallow specialists than deep specialists for the habitat groups and less for the SCRs in total (Table 4.3). The most significant comparison is the upper MCE and the reef slope on Tutuila where there are 15 more shallow specialist than deep specialist while these communities appear to be more similar than other SCR groups. If the generalist species serve as a SCR source as opposed to a sink coupled with more species that are shallow specialists, it is plausible that shallow populations support deep populations as much or more than deep populations support shallow populations. If the primary source of propagules are SCR species, then MCEs are threatened through indirect impacts from any impacts to reproductive populations on SCRs, even if MCEs are more protected and less often disturbed. This would indicate that MCEs deserve as much protection as SCRs. While protection could be justified in either scenario, if MCEs are under threat equally to SCRs, then they deserve protection for their own survival to maintain diversity and function across the coral ecosystem, as has been argued (Laverick et al. 2016, Rocha et al. 2018, Soares 2020, Soares et al. 2020).

Further, I argue that the DRRH should be considered in a broader framework that incorporates the variability on all coral reef communities. Even if the original premise of the DRRH is valid mounting evidence that MCE communities are distinct with some proportion of overlapping species, it may be more appropriate to refine the question into a broader framework. Here I argue that framework should account for region or site level variability with the consideration of many types of SCR habitats and their potential similarity or dissimilarity to various MCE habitats. SCR habitats are often lumped (but see Turak and DeVantier 2019) when compared to MCE habitats that are generally broken into upper, mid, or lower MCEs. MCE habitats may have as many habitat types as SCR when accounting for slope, water clarity, light levels, temperature, substrate composition, and current in addition to depth (Pyle and Copus 2019). While the DRRH was developed under a specific context during a time of increasing scientific interest in MCEs, it is now time to move beyond our past approach and start formulating more detailed hypothesis for region specific communities and threats. This nuanced approach should include considerations of SCR habitats supporting MCE habitats, MCEs deserving protection for their own intrinsic value and unique biodiversity, and the concept of MCEs sharing or having unique threats. Growing evidence suggests SCR threats often extend into the MCE (White et al. 2013, Pinheiro et al. 2019, Smith et al. 2019), and reliance on propagules from SCRs may further exacerbate threats to MCEs. Ultimately, MCEs must be considered more frequently in conservation planning and marine protected area systems, regardless of their ability or lack thereof to serve as a refuge for SCRs.

To apply these concepts to MCEs in American Sāmoa, comparisons were made to determine the highest priority species to examine as potential species-specific refuge. The full comparison results are shown in Supplementary Data S4 and Figures 4.8–4.12. The species that may have the highest probability of serving as reseeding species from MCE to SCR communities are the common and occasional generalist species and include *Galaxea fascicularis*, *Pavona varians, Leptastrea purpurea*, *Lithophyllon concinna*, *Pocillopora damicornis*, and *Pocillopora verrucosa*. These species represent eight percent of the MCE species and include the common and occasional generalist across all SCR sites (Figure 4.8, Table 4.3). However, the comparison with the upper MCE and the reef slope on Tutuila shows 12% of the species are common generalists. These include *Galaxea fascicularis*, *Leptastrea purpurea*, *Leptoseris scabra*, *Pachyseris speciosa*, *Pavona chiriquiensis, Pavona varians*, *Pocillopora verrucosa*, *Psammocora nierstraszi*, and *Sandalolitha dentata*. Others species include *Montipora grisea* (Reef Flat by Tutuila; Reef Flat/ Pool Tutuila; Pool by Manuʻa Islands), *Herpolitha limax* (Reef Slope by Manuʻa Islands; Reef Slope/ Reef Flat Manuʻa Islands), *Millepora platyphylla* (Reef Slope/ Reef Flat Tutuila; Reef Slope/ Reef Flat Manuʻa Islands), *Stylophora pistillata* (Reef Slope/ Reef Flat Manuʻa Islands; Reef Slope by Swains Island), *Coscinaraea columna* (Reef Slope/ Reef Flat Manuʻa Islands), *Acanthastrea brevis* (Pool by Manuʻa Islands), *Turbinaria peltata* (Reef Slope South Bank), and *Turbinaria stellulata* (Reef Slope South Bank). These 19 common and occasional generalist species listed represent about 30% of the species that overlap between MCE and SCR communities, but only 7% of the species on SCRs.

There were 36 rare generalist species, 35 shallow specialist species, and 24 deep specialist species when making individual SCR habitat island group comparisons. Based on our assumption of rarity and persistence, our results suggests that in general, MCE coral communities may serve a persistence role for SCR coral diversity. While patterns of specialist and generalist vary among comparisons, the most obvious change is the decrease in species overlap between the reef slope and reef flat and the reef slope on Tutuila to the reef slope on other islands (Figures 4.9–4.12). This distinction shows that the reef slope on Tutuila may serve as a more likely refuge for a few species and suggests an influence of geographical distribution.

There are species of interest that deserve special attention. Three species within this study are listed under the U.S. Endangered Species Act. They range from an occasional deep specialist, *Acropora speciosa*, to a deep exclusive species, *Fimbriaphyllia paradivisa*, to a rare generalist, *Pavona diffluens*. *Fimbriaphyllia paradivisa* has been observed at shallow depths in American Sāmoa (Montgomery et al. 2019), the Philippines (Veron 2000, Luzon et al. 2017) and Timor Leste (Turak and DeVantier 2019), but is also known as an MCE species in the Red Sea (Eyal et al. 2016, 2019, Tamir et al. 2019) and the Ryukyu Archipelago (Fujii et al. 2020). *Acropora speciosa* has been found on SCRs and MCEs in American Sāmoa (Montgomery et al. 2019) and has been documented on MCEs in Papua New Guinea (Longenecker et al. 2019), Great Barrier Reef, Indonesia, Micronesia, and Tuamotu islands (Muir and Pichon 2019), and Turak and DeVantier (2019) reported is one of the most common Acropora spp. in the upper MCE. The presence of the ESA species within MCE habitats highlights the need to ask specific questions on their role and the potentially recovery of these species. Currently the U.S. National Marine Fisheries Service is proposing critical habitat for these species, excluding *P. diffluens* due to potential taxonomic issues with this species in the Pacific Ocean (NOAA 2020). In this proposal, the critical habitat would be defined down to 40 m depth thereby eliminating the majority of suitable habitat in which I observed and has been documented for these species. While management of any species below 30 m is a challenge, there will be less opportunity to further protect or recover these species with such a broad exclusion. Both *A. speciosa* and *F. paradivisa* serve as high priority species for further investigation into a species-specific framework of the DRRH.

Conclusion

I propose a new approach to classify depth specialists and generalist species as well as encourage a broader framework when analyzing community and species overlap across depth. The role MCEs serve regardless of the degree MCEs serve as a refuge must be considered in conservation planning. I demonstrate this need with stony coral communities in American Sāmoa. The MCEs of American Sāmoa have fewer coral species than SCRs, but the alpha diversity is about the midpoint for alpha diversities across different SCR habitats. The MCEs have a higher species turnover fraction than SCRs but are more similar to the reef slope on Tutuila than other shallow reef habitats. Community similarity analysis shows that the MCE communities are distinct from SCRS and that, at the community level, the upper MCE in American Sāmoa does not provide a refuge for SCRs or different SCR habitats across islands. However, there are 19 species worthy of further study as a potential reseeding species among these depth zones. There are another 35 shallow specialist species that may contribute to the upper MCE coral community.

Supplementary Materials

The following supplementary data is available upon request and will be open source after it is published: Data S1: Raw species site data; Data S2: Accumulation curve results; Data S3: Diversity results; and Data S4: Species lists. Additionally, the identification images are hosted at Bishop P. Bernice Museum and the identification are available through the Global Biodiversity Information Facility.

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Figures

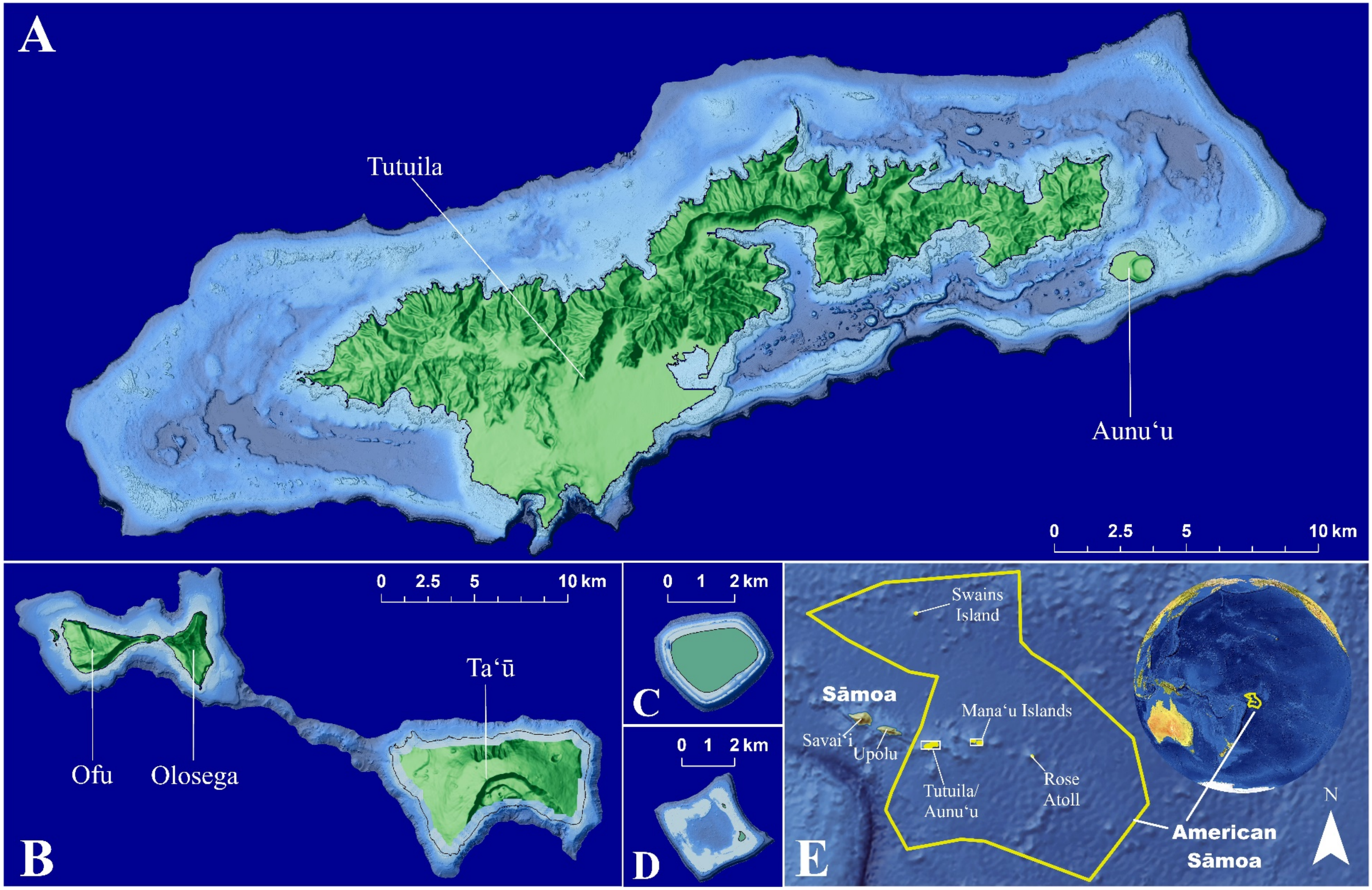

Figure 4.1. Map of American Sāmoa showing the islands and bathymetry of MCEs on Tutuila and Aunu‘u (A), Manu‘a Islands of Ofu, Olosega, and Ta‘ū (B), Swains Island (C), Rose Atoll (D), and the location of all islands with the exclusive economic zone (E).

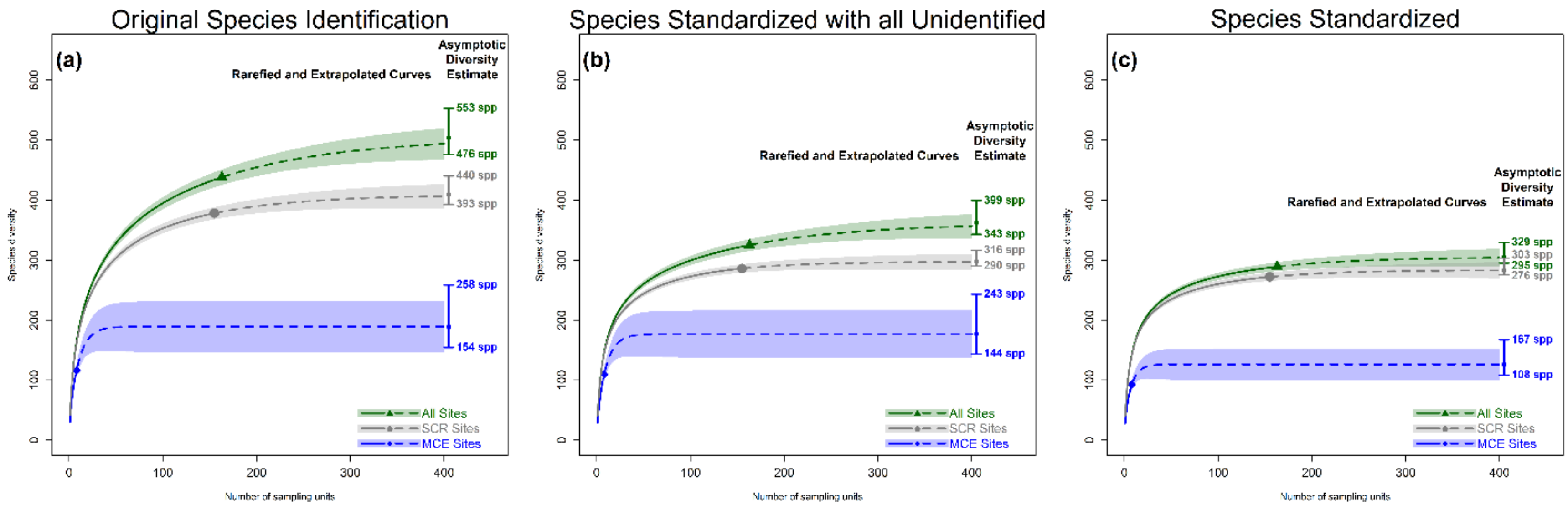

Figure 4.2. Species accumulations curves showing MCE, SCR, and all sites under three different methods of reported taxonomic names and species identifications. (a) Original species identification uses the exact species name and listed uncertainty of the identification, (b) Species standardized by collapsing all synonymies while maintaining all unidentified species as reported, and (c) all species were standardized by collapsing all synonymies as well as collapsing all unidentified species by genera.

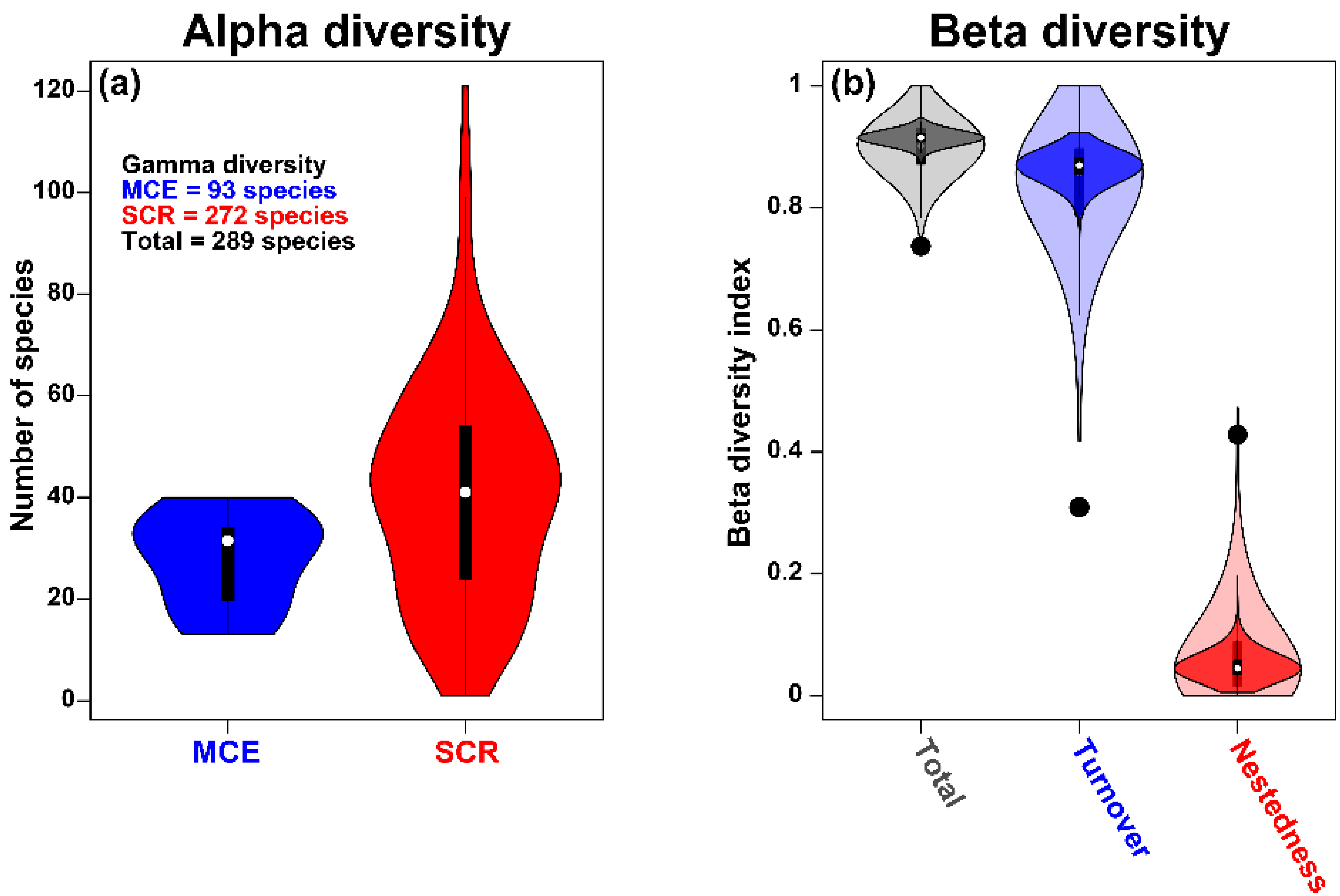

Figure 4.3. (a) Alpha diversity comparing MCE (30–70 m) and SCR (0–30 m) (b) Beta diversity including turnover and nestedness comparing MCE and SCR sites. Black points represent the beta diversity for the single pairwise comparison, the light-colored areas represent the beta diversity calculated with the bootstrapped pairwise comparison from each group, and the dark colored areas represent the bootstrapped multiwise comparison from each group.

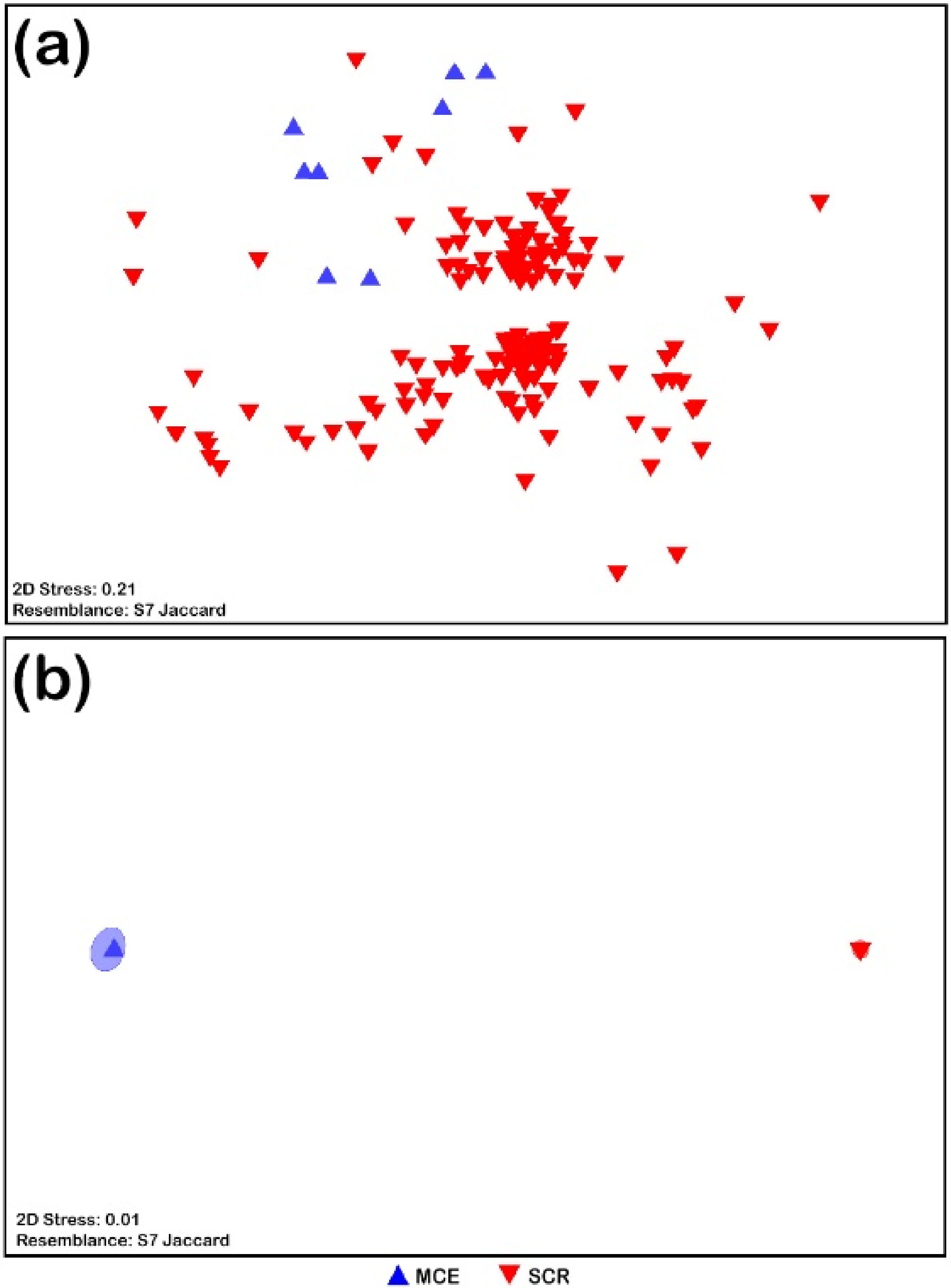

Figure 4.4. (a) NMDS plot for MCE and SCR sites (b) NMDS plot of Bootstrap Averages.

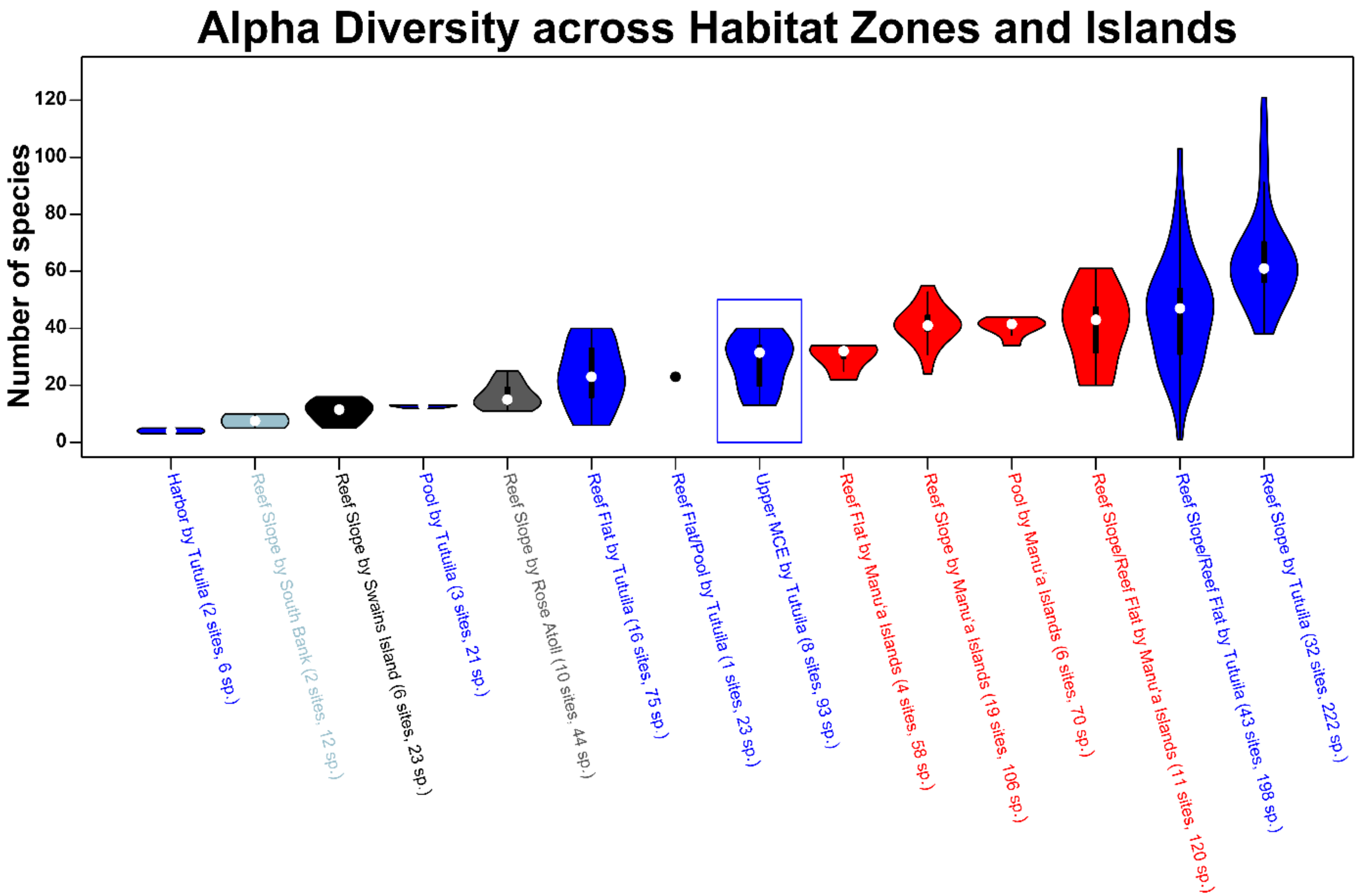

Figure 4.5. Alpha diversity across various habitats comparing the upper MCE to 13 other SCR habitat groups.

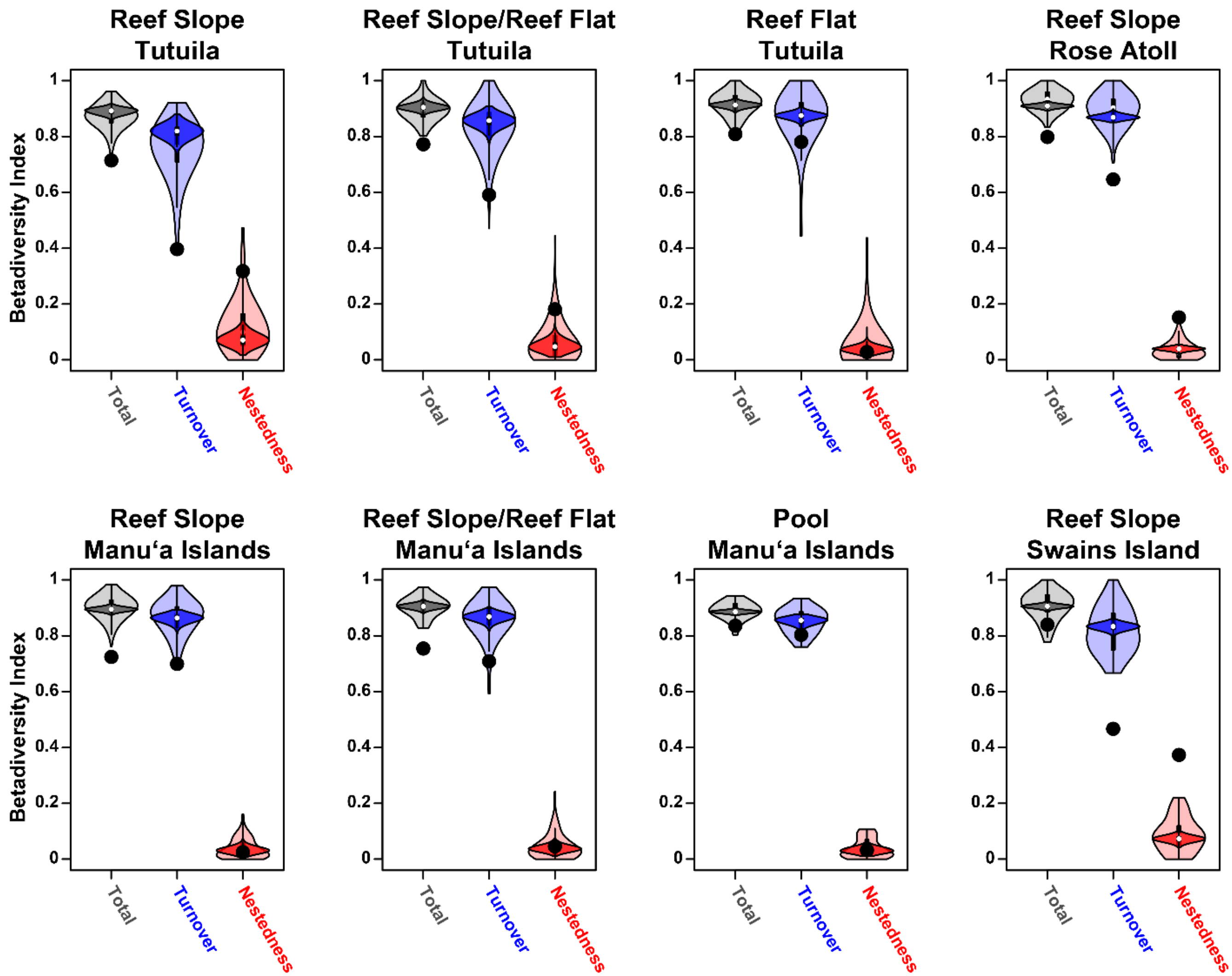

Figure 4.6. Beta diversity estimates using pairwise site comparison between the MCE and individual SCR habitats. Black points represent the beta diversity for the single pairwise comparison, the light-colored areas represent the beta diversity calculated with the bootstrapped pairwise comparison from each group, and the dark colored areas represent the bootstrapped multiwise comparison from each group.

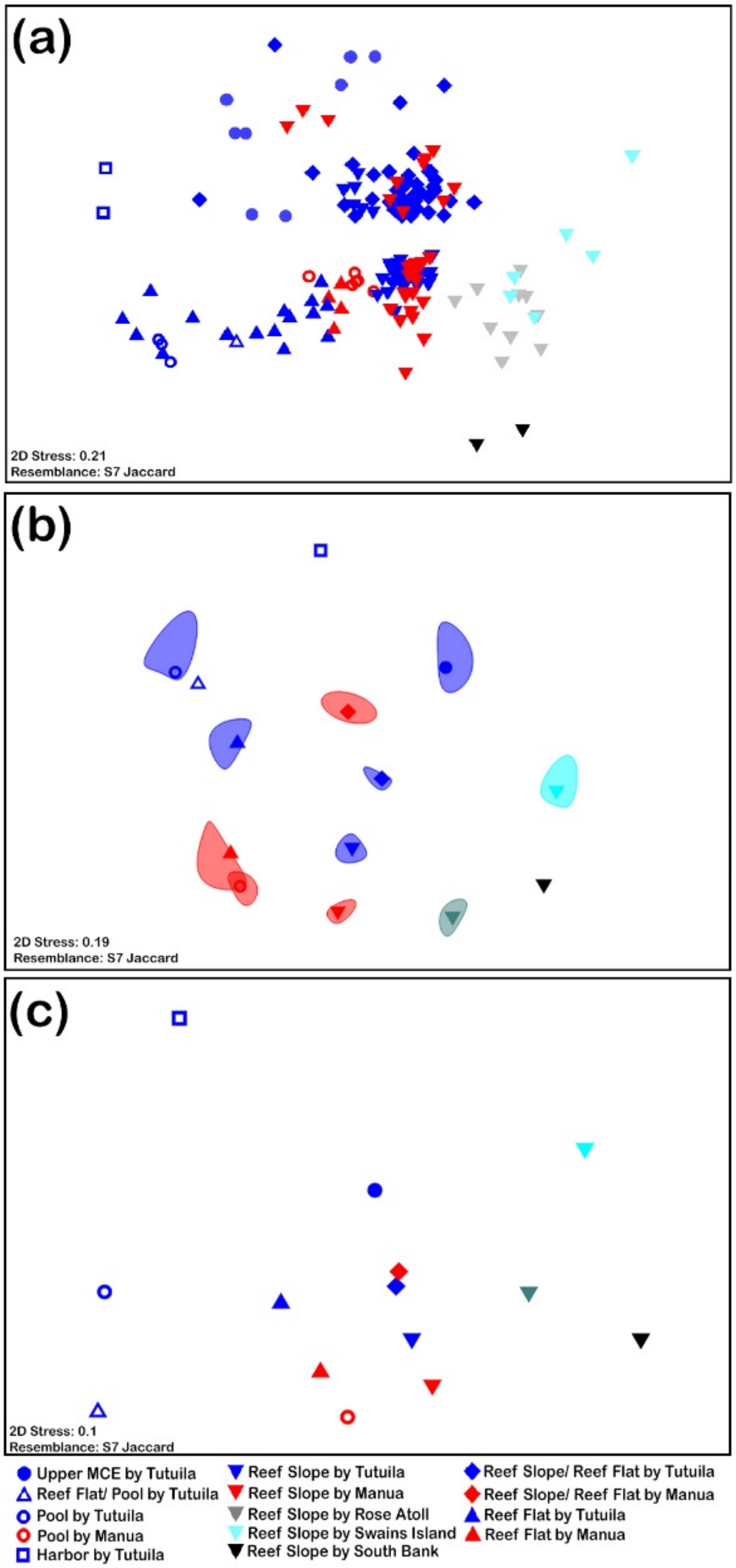

Figure 4.7. NMDS graphs showing coral community similarity calculated by Bootstrap Averages and Distance among Centroid for habitat groups.

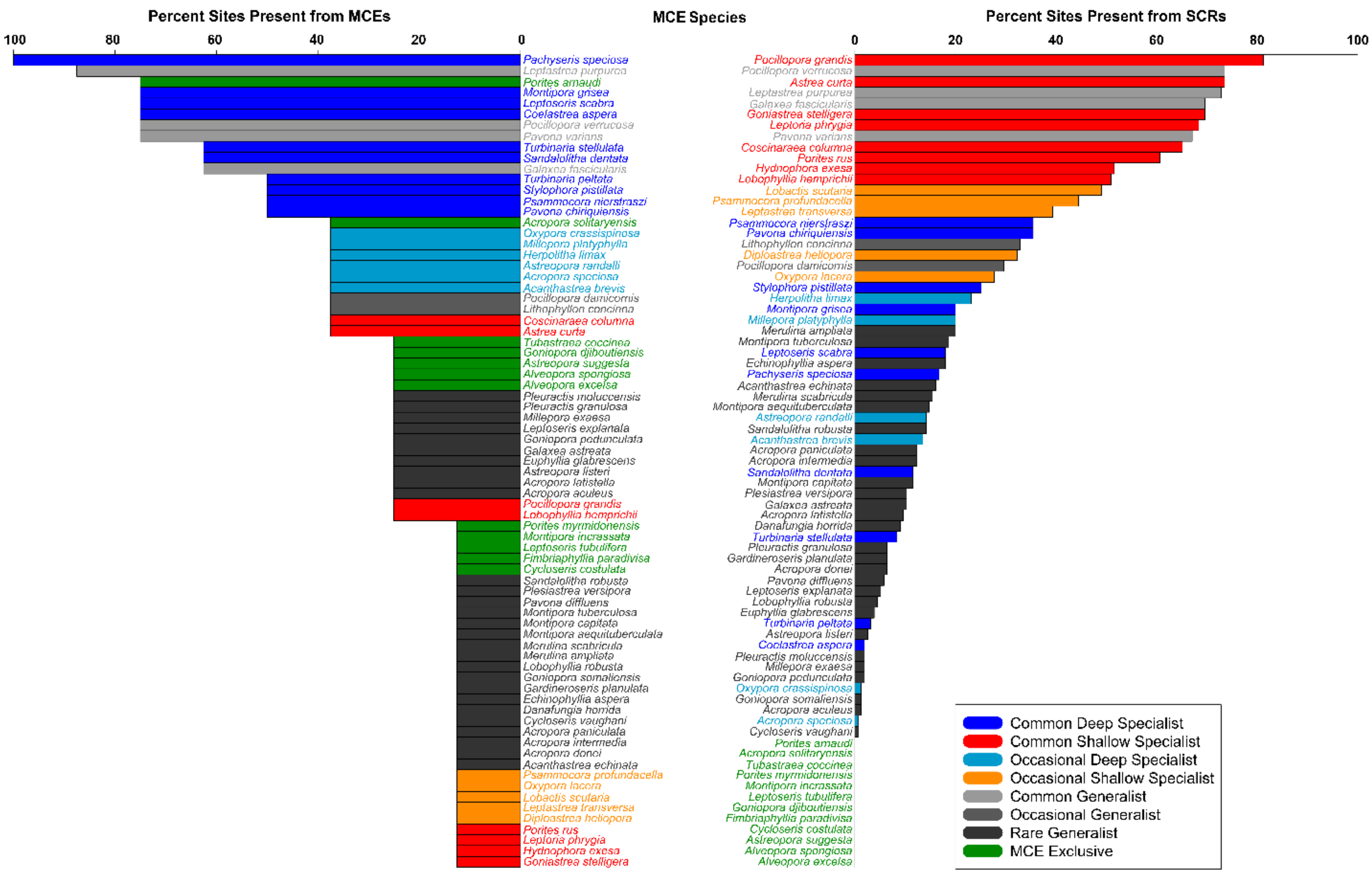

Figure 4.8. MCE species and the commonness across MCE sites compared to SCR sites. Color coding highlights the categorization of individual species as common, occasional, or rare and as a specialist or generalist.

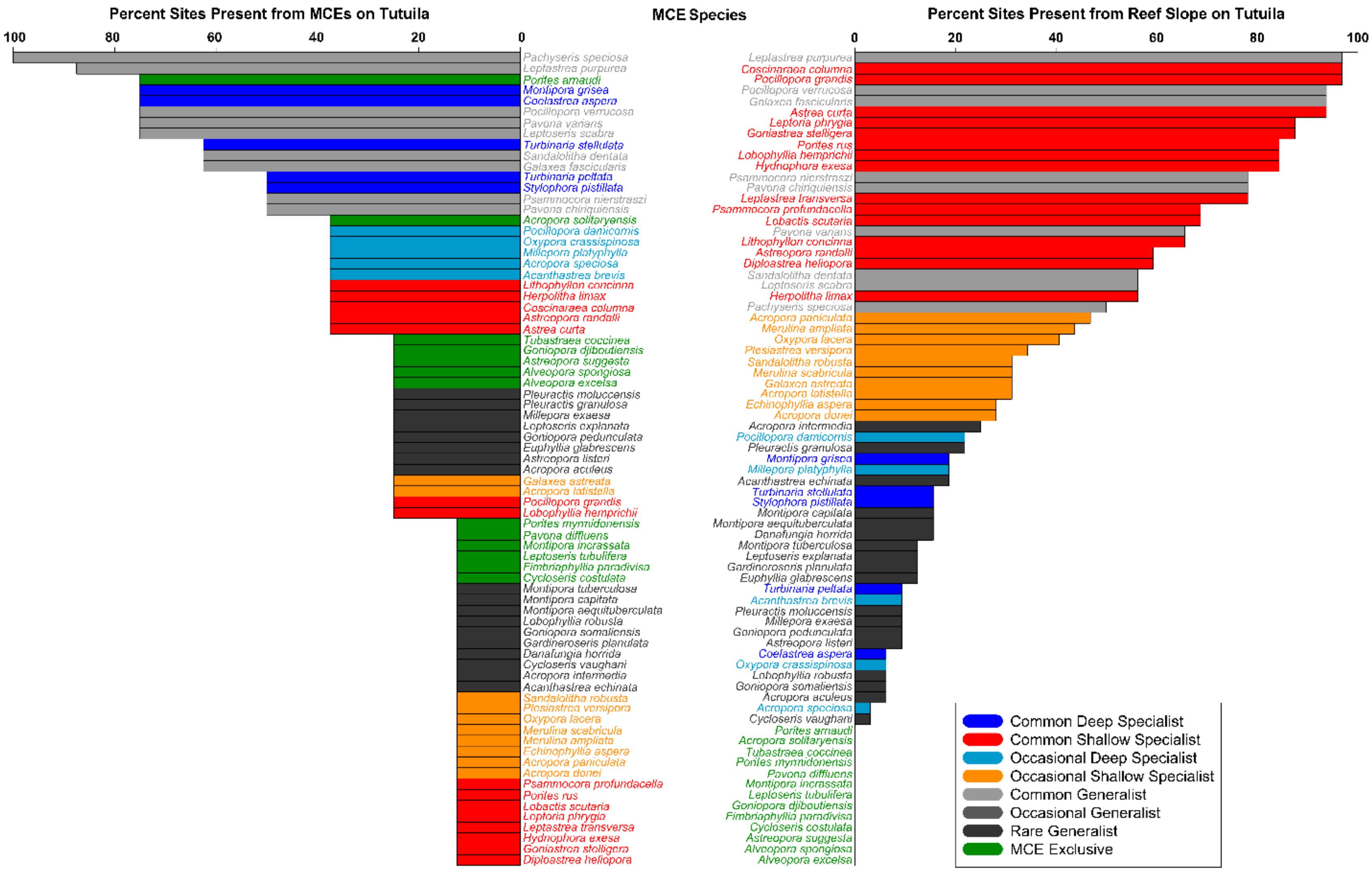

Figure 4.9. MCE species and the commonness across MCE sites compared to reef slope on Tutuila sites. Color coding highlights the categorization of individual species as common, occasional, or rare and as a specialist or generalist.

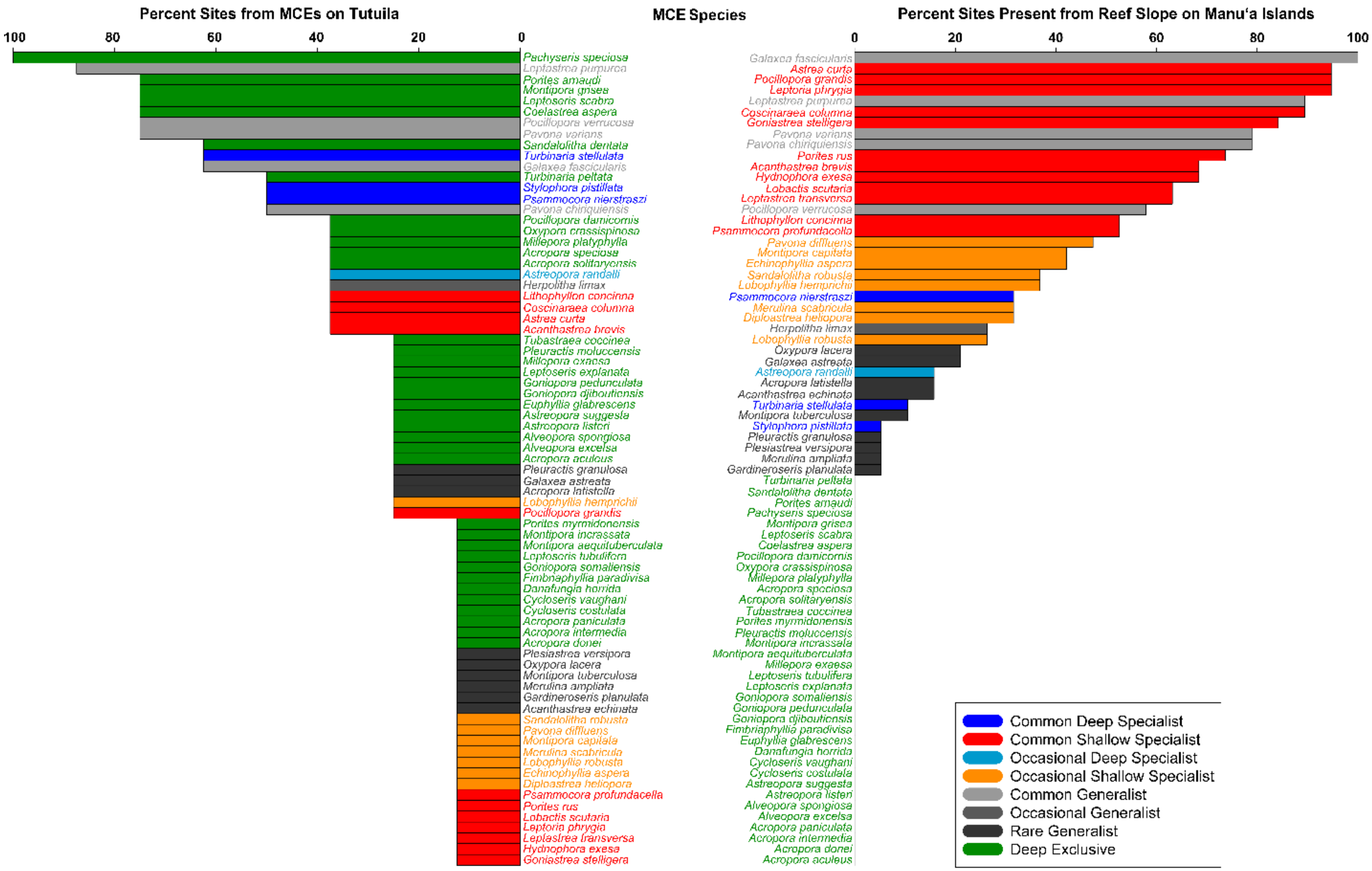

Figure 4.10. MCE species and the commonness across MCE sites compared to reef slope on the Manu‘a Islands sites. Color coding highlights the categorization of individual species as common, occasional, or rare and as a specialist or generalist.

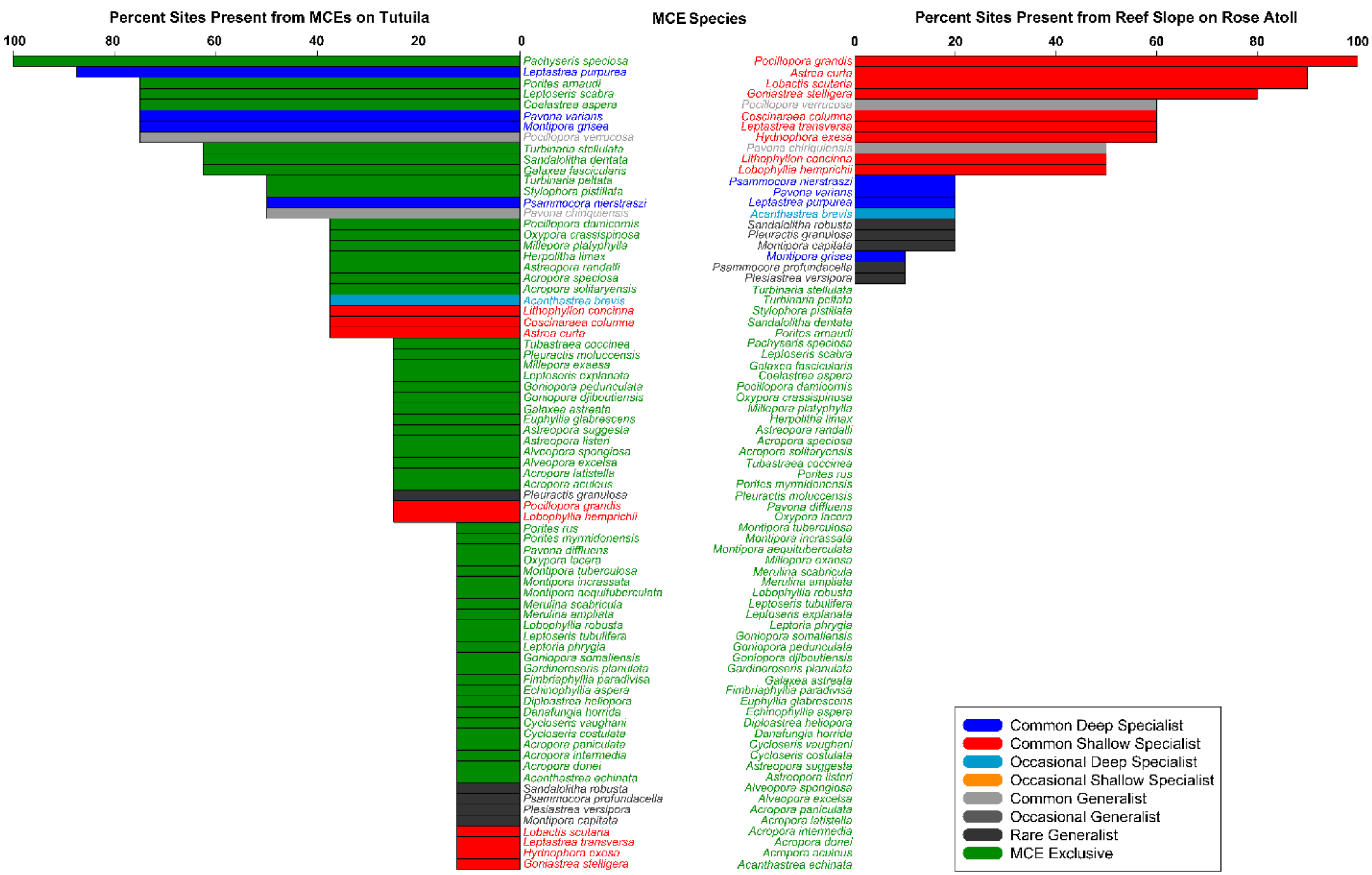

Figure 4.11. MCE species and the commonness across MCE sites compared to reef slope on Rose Atoll sites. Color coding highlights the categorization of individual species as common, occasional, or rare and as a specialist or generalist.

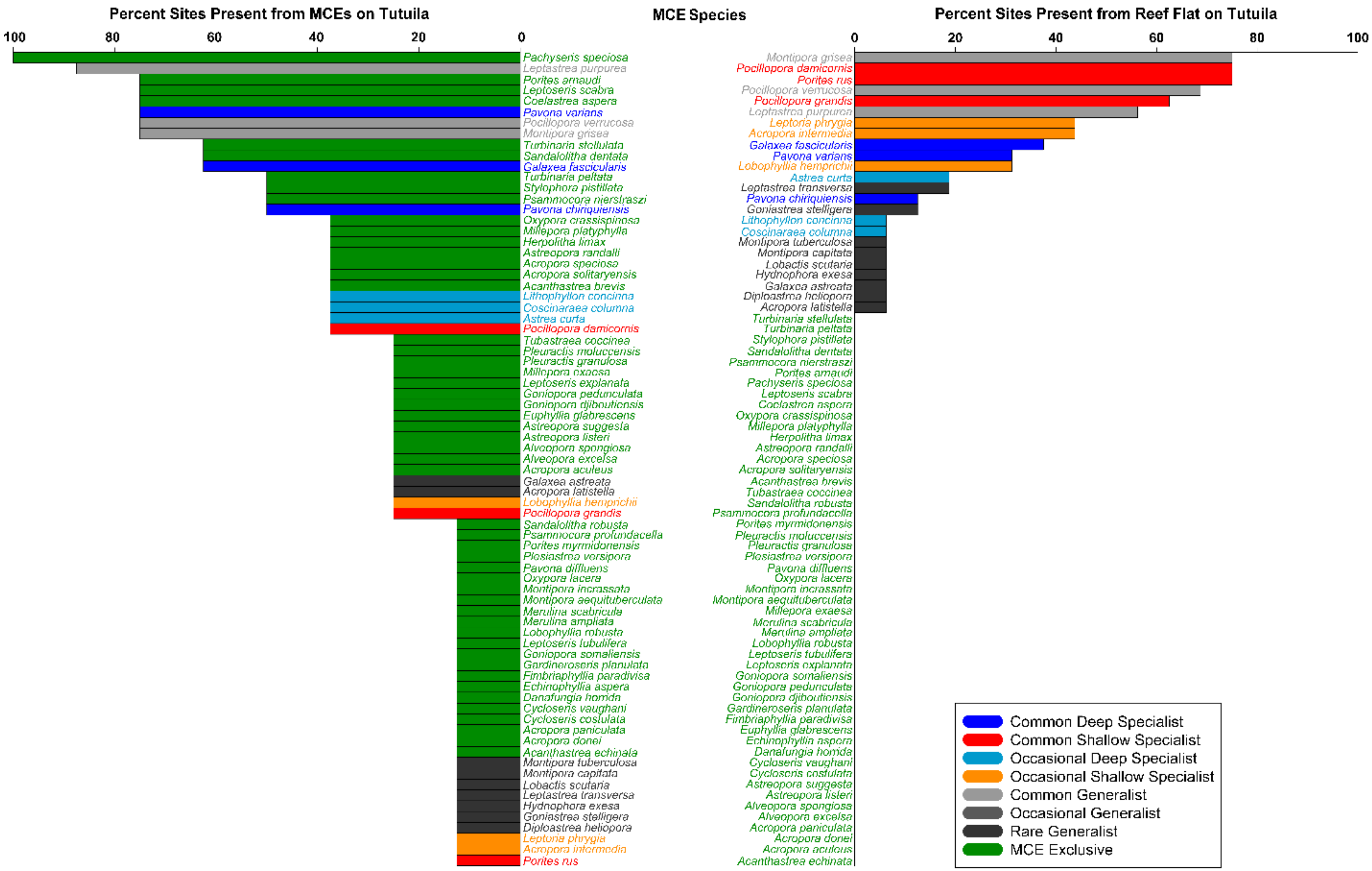

Figure 4.12. MCE species and the commonness across MCE sites compared to reef flat on Tutuila sites. Color coding highlights the categorization of individual species as common, occasional, or rare and as a specialist or generalist.

Tables

Table 4.1. Summary of alpha diversity across all group of sites showing the minimum, maximum, mean, median, 1st quantile, and 3rd quantile across the sites for each habitat group as well as the total species richness for each habitat group.

	MCE	SCR	Harbor by Tutuila	Reef Slope by South Bank	Reef Slope by Swains Island	Pool by Tutuila	Reef Slope by Rose Atoll	Reef Flat by Tutuila	Reef Flat/Pool by Tutuila	Upper MCE by Tutuila	Reef Flat by Manu‘a Islands	Reef Slope by Manu‘a Islands	Pool by Manu‘a Islands	Reef Slope/Reef Flat by Manu‘a Islands	Reef Slope/Reef Flat by Tutuila	Reef Slope by Tutuila
Minimum	13	1	3	5	5	12	11	6	23	13	22	24	34	20	1	38
1st Quantile	19.8	24	3.5	6.3	8.8	12.5	13.3	15.8	23	19.8	29.5	39	40.3	31.5	31	56.3
Median	31.5	41	4	7.5	11.5	13	15	23	23	31.5	32	41	41.5	43	47	61
Mean	27.9	40.7	4	7.5	11	12.7	16.4	23.3	23	27.9	30	41	40.5	40.7	45.9	64.6
3rd Quantile	34	54	4.5	8.8	13.5	13	19.3	33	23	34	32.5	44.5	42	47.5	54	70.3
Maximum	40	121	5	10	16	13	25	40	23	40	34	55	44	61	103	121
Species Richness	93	272	6	12	23	21	44	75	23	93	58	106	70	120	198	222
Number of Sites	8	155	2	2	6	3	10	16	1	8	4	19	6	11	43	32

Table 4.2. Beta diversity for the upper MCE compared to each SCR habitat group. Numbers in the Table represent total beta diversity, turnover fraction, and nestedness fraction, respectively.

	SCR	Reef Slope by Tutuila	Reef Slope/Reef Flat by Tutuila	Reef Flat by Tutuila	Reef Slope by Rose Atoll	Reef Slope by Manu‘a Islands	Reef Slope/Reef Flat by Manu‘a Islands	Pool by Manu‘a Islands	Reef Slope by Swains Island
Maximum	0.94, 0.92, 0.15	0.91, 0.88, 0.18	0.94, 0.91, 0.14	0.94, 0.9, 0.09	0.93, 0.9, 0.05	0.92, 0.89, 0.08	0.93, 0.9, 0.08	0.9, 0.88, 0.06	0.92, 0.86, 0.1
3rd Quantile	0.92, 0.88, 0.06	0.9, 0.83, 0.08	0.91, 0.87, 0.06	0.92, 0.88, 0.04	0.91, 0.87, 0.04	0.9, 0.87, 0.04	0.91, 0.88, 0.04	0.89, 0.86, 0.04	0.91, 0.84, 0.08
Mean	0.91, 0.87, 0.05	0.89, 0.82, 0.07	0.91, 0.86, 0.05	0.91, 0.87, 0.04	0.91, 0.87, 0.04	0.89, 0.86, 0.03	0.91, 0.87, 0.04	0.89, 0.85, 0.03	0.91, 0.83, 0.07
Median	0.92, 0.87, 0.05	0.89, 0.82, 0.07	0.9, 0.86, 0.05	0.91, 0.88, 0.04	0.91, 0.87, 0.04	0.89, 0.86, 0.03	0.91, 0.87, 0.04	0.89, 0.85, 0.03	0.91, 0.83, 0.07
1st Quantile	0.91, 0.86, 0.04	0.88, 0.8, 0.06	0.9, 0.84, 0.04	0.91, 0.87, 0.03	0.91, 0.86, 0.04	0.89, 0.85, 0.03	0.9, 0.86, 0.03	0.88, 0.85, 0.02	0.9, 0.83, 0.07
Minimum	0.88, 0.77, 0.01	0.86, 0.7, 0.02	0.88, 0.77, 0.01	0.89, 0.83, 0.01	0.89, 0.85, 0.02	0.87, 0.79, 0.01	0.88, 0.81, 0.01	0.87, 0.82, 0.01	0.89, 0.8, 0.04
Overall	0.74, 0.31, 0.43	0.71, 0.4, 0.32	0.77, 0.59, 0.18	0.81, 0.78, 0.03	0.8, 0.65, 0.15	0.72, 0.7, 0.03	0.75, 0.71, 0.05	0.84, 0.8, 0.03	0.84, 0.47, 0.37

Table 4.3. Percent and number of MCE species overlap with SCR communities and their categorization of common, occasional, or rare and specialist or generalist.

	Species Overlap	Deep Exclusive Species	Common Deep Specialist	Occasional Deep Specialist	Common Shallow Specialist	Occasional Shallow Specialist	Common Generalist	Occasional Generalist	Rare Generalist
SCR	84% (63)	16% (12)	13.3% (10)	8% (6)	10.7% (8)	6.7% (5)	5.3% (4)	2.7% (2)	37.3% (28)
Reef Slope by Tutuila	82.7% (62)	17.3% (13)	6.7% (5)	6.7% (5)	20% (15)	13.3% (10)	12% (9)	0% (0)	24% (18)
Reef Slope/Reef Flat by Tutuila	58.7% (44)	41.3% (31)	10.7% (8)	4% (3)	14.7% (11)	8% (6)	5.3% (4)	1.3% (1)	14.7% (11)
Reef Flat by Tutuila	32% (24)	68% (51)	4% (3)	4% (3)	4% (3)	4% (3)	4% (3)	0% (0)	12% (9)
Reef Flat/Pool by Tutuila	8% (6)	92% (69)	2.7% (2)	0% (0)	5.3% (4)	0% (0)	0% (0)	0% (0)	0% (0)
Pool by Tutuila	8% (6)	92% (69)	4% (3)	0% (0)	2.7% (2)	1.3% (1)	0% (0)	0% (0)	0% (0)
Harbor by Tutuila	2.7% (2)	97.3% (73)	1.3% (1)	0% (0)	1.3% (1)	0% (0)	0% (0)	0% (0)	0% (0)
Reef Slope by Manu‘a Islands	52% (39)	48% (36)	4% (3)	1.3% (1)	16% (12)	10.7% (8)	6.7% (5)	1.3% (1)	12% (9)
Reef Slope/Reef Flat by Manu‘a Islands	44% (33)	56% (42)	2.7% (2)	1.3% (1)	8% (6)	9.3% (7)	5.3% (4)	5.3% (4)	12% (9)
Reef Flat by Manu‘a Islands	22.7% (17)	77.3% (58)	2.7% (2)	1.3% (1)	9.3% (7)	0% (0)	5.3% (4)	0% (0)	4% (3)
Pool by Manu‘a Islands	29.3% (22)	70.7% (53)	0% (0)	1.3% (1)	10.7% (8)	2.7% (2)	8% (6)	1.3% (1)	5.3% (4)
Reef Slope by Swains Island	18.7% (14)	81.3% (61)	4% (3)	4% (3)	4% (3)	0% (0)	4% (3)	0% (0)	2.7% (2)
Reef Slope by Rose Atoll	28% (21)	72% (54)	5.3% (4)	1.3% (1)	12% (9)	0% (0)	2.7% (2)	0% (0)	6.7% (5)
Reef Slope by South Bank	9.3% (7)	90.7% (68)	0% (0)	0% (0)	4% (3)	0% (0)	5.3% (4)	0% (0)	0% (0)

Appendix A – PERMANOVA Results for MCE-SCR Comparison

PERMANOVA
Permutational MANOVA

Resemblance worksheet
Name: Resem1
Data type: Similarity
Selection: All
Resemblance: S7 Jaccard

Sums of squares type: Type III (partial)
Fixed effects sum to zero for mixed terms
Permutation method: Unrestricted permutation of raw data
Number of permutations: 999

Factors

Name	Abbrev.	Type	Levels
MCE-SCR	MC	Fixed	2

PAIR-WISE TESTS

Term 'MC'

Groups	t	Unique P (perm)	perms
MCE, SCR	2.2891	0.001	997

Denominators

Groups	Denominator	Den.df
MCE, SCR	1*Res	160

Average Similarity between/within groups

	MCE	SCR
MCE	23.294	
SCR	9.6021	19.181

Appendix B – PERMDISP Results for MCE-SCR Comparison

Group factor: MCE-SCR
Number of permutations: 999

Number of groups: 2
Number of samples: 162

DEVIATIONS FROM CENTROID
F: 5.6141 df1: 1 df2: 160
P (perm): 0.183

PAIRWISE COMPARISONS	t	P (perm)
" (MCE,SCR)"	2.3694	0.176

MEANS AND STANDARD ERRORS

Group	Size	Average	SE
MCE	8	50.773	1.4575
SCR	154	57.061	0.59893

Group factor: zoneisland2
Number of permutations: 999

Number of groups: 14
Number of samples: 162

DEVIATIONS FROM CENTROID
F: 9.7842 df1: 13 df2: 148
P (perm): 0.001

PAIRWISE COMPARISONS	t	P (perm)
" (Upper-mesophoticTutuila,Reef SlopeTutuila)"	2.1919	0.104
" (Upper-mesophoticTutuila,Reef Slope/ Reef FlatTutuila)"	0.59936	0.699
" (Upper-mesophoticTutuila,Harbor HabitatTutuila)"	5.7204	0.021
" (Upper-mesophoticTutuila,Reef FlatTutuila)"	0.91095	0.473
" (Upper-mesophoticTutuila,Reef Flat/ PoolTutuila)"	11.612	0.098
" (Upper-mesophoticTutuila,PoolTutuila)"	6.5517	0.008
" (Upper-mesophoticTutuila,Reef FlatManua)"	6.4233	0.003
" (Upper-mesophoticTutuila,PoolManua)"	9.5636	0.001
" (Upper-mesophoticTutuila,Reef SlopeManua)"	3.695	0.007
" (Upper-mesophoticTutuila,Reef SlopeSouth Bank)"	4.3537	0.027
" (Upper-mesophoticTutuila,Reef SlopeRose)"	2.7557	0.035
" (Upper-mesophoticTutuila,Reef SlopeSwains)"	5.2951	0.001
" (Upper-mesophoticTutuila,Reef Slope/ Reef FlatManua)"	1.1561	0.343

MEANS AND STANDARD ERRORS

Group	Size	Average	SE
Upper-mesophoticTutuila	8	50.773	1.4575
Reef SlopeTutuila	32	43.961	1.4993
Reef Slope/ Reef FlatTutuila	42	49.017	1.2406
Harbor HabitatTutuila	2	33.333	0
Reef FlatTutuila	16	48.43	1.6547
Reef Flat/ PoolTutuila	1	0	Undefined
PoolTutuila	3	34.215	1.0367

Reef FlatManua	4	36.467	1.0529
PoolManua	6	30.104	1.5621
Reef SlopeManua	19	41.345	1.5267
Reef SlopeSouth Bank	2	37.5	0
Reef SlopeRose	10	42.63	2.3616
Reef SlopeSwains	6	31.352	3.8057
Reef Slope/ Reef FlatManua	11	47.417	2.2248

Appendix C – PERMANOVA Results for Habitat Group Comparison

PERMANOVA
Permutational MANOVA

Resemblance worksheet
Name: Resem1
Data type: Similarity
Selection: All
Resemblance: S7 Jaccard

Sums of squares type: Type III (partial)
Fixed effects sum to zero for mixed terms
Permutation method: Permutation of residuals under a reduced model
Number of permutations: 999

Factors

Name	Abbrev.	Type	Levels
zone	zo	Fixed	7
island	is	Fixed	6

PERMANOVA table of results

Source	df	SS	MS	Pseudo-F	P(perm)	Unique perms
zo	6	93188	15531	6.9984	0.001	997
is	5	71541	14308	6.4473	0.001	995
zoxis**	3	23287	7762.3	3.4977	0.001	997
Res	147	3.2623E+05	2219.3			
Total	161	5.4799E+05				

** Term has one or more empty cells

Details of the expected mean squares (EMS) for the model

Source	EMS
zo	1*V(Res) + 11.987*S(zo)
is	1*V(Res) + 12.245*S(is)
zoxis	1*V(Res) + 9.7673*S(zoxis)

Res 1*V(Res)

Construction of Pseudo-F ratio(s) from mean squares

Source	Numerator	Denominator	Num.df	Den.df
zo	1*zo	1*Res	6	147
is	1*is	1*Res	5	147
zoxis	1*zoxis	1*Res	3	147

Estimates of components of variation

Source	Estimate	Sq.root
S(zo)	1110.5	33.325
S(is)	987.29	31.421
S(zoxis)	567.51	23.822
V(Res)	2219.3	47.109

Appendix D – PERMDISP Results for Habitat Group Comparison

PERMDISP
Distance-based test for homogeneity of multivariate dispersions

Resemblance worksheet
Name: Resem1
Data type: Similarity
Selection: All
Resemblance: S7 Jaccard

Group factor: zoneisland2
Number of permutations: 999

Number of groups: 14
Number of samples: 162

DEVIATIONS FROM CENTROID
F: 9.7842 df1: 13 df2: 148
P (perm): 0.001

PAIRWISE COMPARISONS

Groups	t	P (perm)
(Upper-mesophoticTutuila,Reef SlopeTutuila)	2.1919	0.104
(Upper-mesophoticTutuila,Reef Slope/ Reef FlatTutuila)	0.59936	0.699
(Upper-mesophoticTutuila,Harbor HabitatTutuila)	5.7204	0.021
(Upper-mesophoticTutuila,Reef FlatTutuila)	0.91095	0.473
(Upper-mesophoticTutuila,Reef Flat/ PoolTutuila)	11.612	0.098
(Upper-mesophoticTutuila,PoolTutuila)	6.5517	0.008
(Upper-mesophoticTutuila,Reef FlatManua)	6.4233	0.003

(Upper-mesophoticTutuila,PoolManua)	9.5636	0.001
(Upper-mesophoticTutuila,Reef SlopeManua)	3.695	0.007
(Upper-mesophoticTutuila,Reef SlopeSouth Bank)	4.3537	0.027
(Upper-mesophoticTutuila,Reef SlopeRose)	2.7557	0.035
(Upper-mesophoticTutuila,Reef SlopeSwains)	5.2951	0.001
(Upper-mesophoticTutuila,Reef Slope/ Reef FlatManua)	1.1561	0.343
(Reef SlopeTutuila,Reef Slope/ Reef FlatTutuila)	2.617	0.022
(Reef SlopeTutuila,Harbor HabitatTutuila)	1.7467	0.632
(Reef SlopeTutuila,Reef FlatTutuila)	1.8424	0.145
(Reef SlopeTutuila,Reef Flat/ PoolTutuila)	5.1041	0.032
(Reef SlopeTutuila,PoolTutuila)	1.9606	0.376
(Reef SlopeTutuila,Reef FlatManua)	1.7396	0.364
(Reef SlopeTutuila,PoolManua)	3.8941	0.002
(Reef SlopeTutuila,Reef SlopeManua)	1.1489	0.315
(Reef SlopeTutuila,Reef SlopeSouth Bank)	1.0619	0.747
(Reef SlopeTutuila,Reef SlopeRose)	0.44456	0.718
(Reef SlopeTutuila,Reef SlopeSwains)	3.2945	0.017
(Reef SlopeTutuila,Reef Slope/ Reef FlatManua)	1.202	0.308
(Reef Slope/ Reef FlatTutuila,Harbor HabitatTutuila)	2.7278	0.325
(Reef Slope/ Reef FlatTutuila,Reef FlatTutuila)	0.25981	0.81
(Reef Slope/ Reef FlatTutuila,Reef Flat/ PoolTutuila)	6.0252	0.019
(Reef Slope/ Reef FlatTutuila,PoolTutuila)	3.1508	0.067
(Reef Slope/ Reef FlatTutuila,Reef FlatManua)	3.0823	0.044
(Reef Slope/ Reef FlatTutuila,PoolManua)	5.6316	0.001
(Reef Slope/ Reef FlatTutuila,Reef SlopeManua)	3.6296	0.003
(Reef Slope/ Reef FlatTutuila,Reef SlopeSouth Bank)	2.0031	0.646
(Reef Slope/ Reef FlatTutuila,Reef SlopeRose)	2.286	0.075
(Reef Slope/ Reef FlatTutuila,Reef SlopeSwains)	4.9425	0.003
(Reef Slope/ Reef FlatTutuila,Reef Slope/ Reef FlatManua)	0.59673	0.644
(Harbor HabitatTutuila,Reef FlatTutuila)	3.1409	0.307
(Harbor HabitatTutuila,Reef Flat/ PoolTutuila)	No test	
(Harbor HabitatTutuila,PoolTutuila)	0.65902	0.793
(Harbor HabitatTutuila,Reef FlatManua)	1.9843	0.794
(Harbor HabitatTutuila,PoolManua)	1.1323	0.943
(Harbor HabitatTutuila,Reef SlopeManua)	1.6639	0.729
(Harbor HabitatTutuila,Reef SlopeSouth Bank)	No test	
(Harbor HabitatTutuila,Reef SlopeRose)	1.694	0.588
(Harbor HabitatTutuila,Reef SlopeSwains)	0.2852	0.892
(Harbor HabitatTutuila,Reef Slope/ Reef FlatManua)	2.6041	0.323
(Reef FlatTutuila,Reef Flat/ PoolTutuila)	7.0986	0.063
(Reef FlatTutuila,PoolTutuila)	3.6163	0.022
(Reef FlatTutuila,Reef FlatManua)	3.5064	0.02
(Reef FlatTutuila,PoolManua)	6.335	0.001
(Reef FlatTutuila,Reef SlopeManua)	3.1451	0.007
(Reef FlatTutuila,Reef SlopeSouth Bank)	2.274	0.582
(Reef FlatTutuila,Reef SlopeRose)	2.0704	0.094

(Reef FlatTutuila,Reef SlopeSwains)	4.8289	0.003
(Reef FlatTutuila,Reef Slope/ Reef FlatManua)	0.37309	0.753
(Reef Flat/ PoolTutuila,PoolTutuila)	16.502	0.276
(Reef Flat/ PoolTutuila,Reef FlatManua)	15.489	0.198
(Reef Flat/ PoolTutuila,PoolManua)	7.284	0.137
(Reef Flat/ PoolTutuila,Reef SlopeManua)	6.0555	0.052
(Reef Flat/ PoolTutuila,Reef SlopeSouth Bank)	No test	
(Reef Flat/ PoolTutuila,Reef SlopeRose)	5.4426	0.088
(Reef Flat/ PoolTutuila,Reef SlopeSwains)	3.1137	0.138
(Reef Flat/ PoolTutuila,Reef Slope/ Reef FlatManua)	6.1525	0.092
(PoolTutuila,Reef FlatManua)	1.4835	0.214
(PoolTutuila,PoolManua)	1.7236	0.408
(PoolTutuila,Reef SlopeManua)	1.8105	0.427
(PoolTutuila,Reef SlopeSouth Bank)	2.4542	0.315
(PoolTutuila,Reef SlopeRose)	1.8802	0.317
(PoolTutuila,Reef SlopeSwains)	0.51025	0.719
(PoolTutuila,Reef Slope/ Reef FlatManua)	2.9913	0.019
(Reef FlatManua,PoolManua)	2.9978	0.044
(Reef FlatManua,Reef SlopeManua)	1.4274	0.496
(Reef FlatManua,Reef SlopeSouth Bank)	0.65388	1
(Reef FlatManua,Reef SlopeRose)	1.5896	0.329
(Reef FlatManua,Reef SlopeSwains)	1.0593	0.414
(Reef FlatManua,Reef Slope/ Reef FlatManua)	2.863	0.036
(PoolManua,Reef SlopeManua)	3.9022	0.002
(PoolManua,Reef SlopeSouth Bank)	2.5933	0.385
(PoolManua,Reef SlopeRose)	3.7843	0.009
(PoolManua,Reef SlopeSwains)	0.30329	0.825
(PoolManua,Reef Slope/ Reef FlatManua)	5.316	0.002
(Reef SlopeManua,Reef SlopeSouth Bank)	0.7986	0.932
(Reef SlopeManua,Reef SlopeRose)	0.47394	0.699
(Reef SlopeManua,Reef SlopeSwains)	2.9163	0.019
(Reef SlopeManua,Reef Slope/ Reef FlatManua)	2.3151	0.049
(Reef SlopeSouth Bank,Reef SlopeRose)	0.93474	0.793
(Reef SlopeSouth Bank,Reef SlopeSwains)	0.88488	0.63
(Reef SlopeSouth Bank,Reef Slope/ Reef FlatManua)	1.8337	0.673
(Reef SlopeRose,Reef SlopeSwains)	2.6704	0.041
(Reef SlopeRose,Reef Slope/ Reef FlatManua)	1.4763	0.246
(Reef SlopeSwains,Reef Slope/ Reef FlatManua)	3.9183	0.004

MEANS AND STANDARD ERRORS

Group	Size	Average	SE
Upper-mesophoticTutuila	8	50.773	1.4575
Reef SlopeTutuila	32	43.961	1.4993
Reef Slope/ Reef FlatTutuila	42	49.017	1.2406
Harbor HabitatTutuila	2	33.333	0
Reef FlatTutuila	16	48.43	1.6547

Reef Flat/ PoolTutuila	1	0	Undefined
PoolTutuila	3	34.215	1.0367
Reef FlatManua	4	36.467	1.0529
PoolManua	6	30.104	1.5621
Reef SlopeManua	19	41.345	1.5267
Reef SlopeSouth Bank	2	37.5	0
Reef SlopeRose	10	42.63	2.3616
Reef SlopeSwains	6	31.352	3.8057
Reef Slope/ Reef FlatManua	11	47.417	2.2248

Sample	Group	Distance
AM-150	Upper-mesophoticTutuila	51.798
AM-162	Upper-mesophoticTutuila	56.19
AM-164	Upper-mesophoticTutuila	53.167
AM-33	Upper-mesophoticTutuila	55.232
AM-43	Upper-mesophoticTutuila	50.396
AM-49	Upper-mesophoticTutuila	47.897
AM-59	Upper-mesophoticTutuila	47.179
AM-60	Upper-mesophoticTutuila	44.322
C-1	Reef SlopeTutuila	54.904
C-10	Reef SlopeTutuila	60.631
C-2	Reef SlopeTutuila	54.282
C-7	Reef SlopeTutuila	61.128
C-8	Reef SlopeTutuila	60.081
C-9	Reef SlopeTutuila	57.621
F-31	Reef SlopeTutuila	39.891
F-32	Reef SlopeTutuila	37.555
F-33	Reef SlopeTutuila	37.808
F-34	Reef SlopeTutuila	44.626
F-35	Reef SlopeTutuila	37.655
F-36	Reef SlopeTutuila	50.204
F-37	Reef SlopeTutuila	40.817
F-38	Reef SlopeTutuila	36.558
F-39	Reef SlopeTutuila	44.138
F-40	Reef SlopeTutuila	42.119
F-41	Reef SlopeTutuila	43.84
F-42	Reef SlopeTutuila	35.061
F-43	Reef SlopeTutuila	40.069
F-44	Reef SlopeTutuila	35.313
F-45	Reef SlopeTutuila	39.572
F-46	Reef SlopeTutuila	45.209
F-47	Reef SlopeTutuila	35.629
F-48	Reef SlopeTutuila	37.522
F-49	Reef SlopeTutuila	28.589
F-50	Reef SlopeTutuila	42.148
F-51	Reef SlopeTutuila	44.513

F-52	Reef SlopeTutuila	36.359
F-53	Reef SlopeTutuila	38.808
F-54	Reef SlopeTutuila	46.919
F-55	Reef SlopeTutuila	42.877
F-56	Reef SlopeTutuila	54.299
C-3	Reef Slope/ Reef FlatTutuila	53.174
C-6	Reef Slope/ Reef FlatTutuila	55.992
JM-10	Reef Slope/ Reef FlatTutuila	42.556
JM-11	Reef Slope/ Reef FlatTutuila	42.887
JM-12	Reef Slope/ Reef FlatTutuila	50.905
JM-13	Reef Slope/ Reef FlatTutuila	45.423
JM-14	Reef Slope/ Reef FlatTutuila	45.532
JM-15	Reef Slope/ Reef FlatTutuila	40.006
JM-16	Reef Slope/ Reef FlatTutuila	54.217
JM-17	Reef Slope/ Reef FlatTutuila	64.387
JM-18	Reef Slope/ Reef FlatTutuila	60.261
JM-19	Reef Slope/ Reef FlatTutuila	39.543
JM-20	Reef Slope/ Reef FlatTutuila	46.727
JM-21	Reef Slope/ Reef FlatTutuila	49.552
JM-22	Reef Slope/ Reef FlatTutuila	53.901
JM-24	Reef Slope/ Reef FlatTutuila	40.623
JM-25	Reef Slope/ Reef FlatTutuila	49.298
JM-26	Reef Slope/ Reef FlatTutuila	49.162
JM-27	Reef Slope/ Reef FlatTutuila	55.588
JM-28	Reef Slope/ Reef FlatTutuila	42.885
JM-3	Reef Slope/ Reef FlatTutuila	73.265
JM-30	Reef Slope/ Reef FlatTutuila	49.801
JM-31	Reef Slope/ Reef FlatTutuila	48.878
JM-32	Reef Slope/ Reef FlatTutuila	51.055
JM-33	Reef Slope/ Reef FlatTutuila	39.63
JM-34	Reef Slope/ Reef FlatTutuila	45.461
JM-35	Reef Slope/ Reef FlatTutuila	45.046
JM-36	Reef Slope/ Reef FlatTutuila	47.261
JM-37	Reef Slope/ Reef FlatTutuila	51.45
JM-39	Reef Slope/ Reef FlatTutuila	45.218
JM-4	Reef Slope/ Reef FlatTutuila	62.104
JM-40	Reef Slope/ Reef FlatTutuila	69.998
JM-41	Reef Slope/ Reef FlatTutuila	47.293
JM-42	Reef Slope/ Reef FlatTutuila	47.111
JM-43	Reef Slope/ Reef FlatTutuila	52.677
JM-44	Reef Slope/ Reef FlatTutuila	39.967
JM-45	Reef Slope/ Reef FlatTutuila	41.818
JM-46	Reef Slope/ Reef FlatTutuila	51.331
JM-5	Reef Slope/ Reef FlatTutuila	38.288
JM-6	Reef Slope/ Reef FlatTutuila	42.81
JM-7	Reef Slope/ Reef FlatTutuila	43.523

JM-8	Reef Slope/ Reef FlatTutuila	42.09
C-4	Harbor HabitatTutuila	33.333
C-5	Harbor HabitatTutuila	33.333
F-1	Reef FlatTutuila	52.196
F-10	Reef FlatTutuila	64.446
F-12	Reef FlatTutuila	41.098
F-13	Reef FlatTutuila	48.207
F-14	Reef FlatTutuila	41.698
F-15	Reef FlatTutuila	45.716
F-16	Reef FlatTutuila	58.722
F-2	Reef FlatTutuila	42.493
F-20	Reef FlatTutuila	50.213
F-3	Reef FlatTutuila	44.023
F-4	Reef FlatTutuila	42.939
F-5	Reef FlatTutuila	55.448
F-6	Reef FlatTutuila	45.173
F-7	Reef FlatTutuila	43.802
F-8	Reef FlatTutuila	50.58
F-9	Reef FlatTutuila	48.126
F-11	Reef Flat/ PoolTutuila	0
F-17	PoolTutuila	33.179
F-18	PoolTutuila	33.179
F-19	PoolTutuila	36.289
F-21	Reef FlatManua	39.621
F-22	Reef FlatManua	35.279
F-23	Reef FlatManua	35.574
F-24	Reef FlatManua	35.394
F-25	PoolManua	31.668
F-26	PoolManua	31.047
F-27	PoolManua	27.404
F-28	PoolManua	25.888
F-29	PoolManua	28.121
F-30	PoolManua	36.497
F-57	Reef SlopeManua	38.361
F-58	Reef SlopeManua	40.957
F-59	Reef SlopeManua	42.253
F-60	Reef SlopeManua	41.923
F-61	Reef SlopeManua	35.589
F-62	Reef SlopeManua	41.843
F-63	Reef SlopeManua	37.308
F-64	Reef SlopeManua	39.232
F-65	Reef SlopeManua	47.06
F-66	Reef SlopeManua	39.979
F-69	Reef SlopeManua	41.121
F-70	Reef SlopeManua	51.579
F-71	Reef SlopeManua	41.297

F-72	Reef SlopeManua	29.836
F-73	Reef SlopeManua	45.092
F-74	Reef SlopeManua	29.387
F-75	Reef SlopeManua	48.21
F-76	Reef SlopeManua	56.93
F-77	Reef SlopeManua	37.605
F-67	Reef SlopeSouth Bank	37.5
F-68	Reef SlopeSouth Bank	37.5
F-78	Reef SlopeRose	53.189
F-79	Reef SlopeRose	32.801
F-81	Reef SlopeRose	53.767
F-82	Reef SlopeRose	46.305
F-83	Reef SlopeRose	43.377
F-84	Reef SlopeRose	35.191
F-85	Reef SlopeRose	47.245
F-86	Reef SlopeRose	36.301
F-87	Reef SlopeRose	36.454
F-88	Reef SlopeRose	41.668
F-89	Reef SlopeSwains	26.197
F-90	Reef SlopeSwains	28.062
F-91	Reef SlopeSwains	25.62
F-92	Reef SlopeSwains	41.396
F-93	Reef SlopeSwains	22.13
F-94	Reef SlopeSwains	44.706
JM-M1	Reef Slope/ Reef FlatManua	62.617
JM-M10	Reef Slope/ Reef FlatManua	40.608
JM-M11	Reef Slope/ Reef FlatManua	45.476
JM-M2	Reef Slope/ Reef FlatManua	53.777
JM-M3	Reef Slope/ Reef FlatManua	57.873
JM-M4	Reef Slope/ Reef FlatManua	44.789
JM-M5	Reef Slope/ Reef FlatManua	42.898
JM-M6	Reef Slope/ Reef FlatManua	43.064
JM-M7	Reef Slope/ Reef FlatManua	39.747
JM-M8	Reef Slope/ Reef FlatManua	45.453
JM-M9	Reef Slope/ Reef FlatManua	45.283

Chapter 5
Conclusion

Coral Reef Habitat

The shallow coral reefs (SCRs) of American Sāmoa are generally thought to be in good condition (Fenner et al. 2008) and resilient (Birkeland et al. 2003) compared to many reefs around the world. Three threats have been documented to have major impacts on American Sāmoan reefs: outbreaks of COTS, coral bleaching, and major storm events (Birkeland et al. 2003, Fenner et al. 2008). Fishing impacts are also of concern, and Green (2002) indicated a decline of parrotfish and Maori wrasse were likely due to overfishing. However, broader impacts are not well documented across large spatial scales in American Sāmoa (Williams et al. 2011). We do not yet fully understand the current conditions of American Sāmoa's mesophotic coral ecosystems (MCEs) or how disturbances may extend beyond SCR depths due to a significant lack of information. This dissertation is the first centrally focused research on MCEs in American Sāmoa and includes several key outcomes and their management implications that can be highlighted.

A basic management framework should consider the coral reef ecosystem to include tropical marine habitats between 0–150 meters depth consisting of reef-building corals and associated communities. This definition should include both SCRs between 0–30 m and mesophotic coral ecosystems (MCEs) between 30–150 m. Under this framework, I show that American Sāmoa has 451.5 km^2 of marine habitat between 0–150 m with 357.5 km^2 or 79% in MCE depths. Given this vast, unexplored area and the lack of knowledge on its biodiversity, ecology, and threats facing these systems, resource managers must consider these areas and depth in management decisions and conservation planning.

The American Sāmoa Government has a goal to protect 20% of its coral reef habitat (Jaacob and Oram 2012, Raynal et al. 2016). Marine protected areas (MPAs) within American Sāmoa have been created at the federal, local, and community levels through various conservation frameworks. Of American Sāmoa's waters between 0–150 m depth, 56 km^2 (12.4%) are under protection, of which 34.4 km^2 are SCR depths and 21.7 km^2 are MCE depths. These areas include 15 MPAs managed by the American Sāmoan Government, three units within the National Park of American Sāmoa, and seven units under the National Marine Sanctuary of American Sāmoa. The dominance of SCRs under protection is not surprising given the commonly known threats to coral reefs and the state of understanding of these ecosystems, but also highlights the need for further consideration of the role MCEs may play into the broader management strategies of coral reefs. Future MPA planning should consider incorporating habitat that includes adjacent deeper water areas to maintain a broader diversity of marine habitats.

Biodiversity

A closer look at the biodiversity of American Sāmoa's coral reefs, also highlight the disparity between SCRs and MCEs. While this is not surprising, I provide a comprehensive species checklist for the stony corals of American Sāmoa in order to provide a baseline for current and future MCE work. With a strong foundation, future research can easily highlight species that are new depth or geographic records and their distribution across the Territory.

Coral taxonomy and identification are fraught with complex difficulties and highly variable, and sometimes poorly documented characters. Taxonomy is largely based on the morphology of type specimens; therefore, additional comparison between a specimen and the species type description is usually needed to confirm an identification. These comparisons are rarely done due to researchers being unaware of how to find the type specimens or to the inability to access type specimens, if they are even available at all. Some coral type specimens are of poor quality and increase the likelihood of different interpretations (Veron et al. 2019). There can be considerable uncertainty in identifying corals due to several underlying problems (Bernard 1902, Veron 1995, 2015, Forsman et al. 2015). Some species are inherently difficult to identify or to discern from congeners based on minor morphological differences or plastic characters making taxonomic differences difficult to discern (Todd 2008). Additionally, people may have considerable variation in identification skills and taxonomic knowledge leading to incorrect identifications. Finally, names of species or a species concept can change over time, particularly in groups that have a historical nomenclatural confusion. This makes it difficult to judge if species identifications are correct without documentation of the observation.

Despite the difficulties of identification, this checklist is a best estimate of the species present in American Sāmoa given the caveat of different levels of identification uncertainty. These results provide a comprehensive list of species in an orderly fashion that can be further analyzed and/or reinterpreted by others interested in coral species distribution. I report there have been 745 unique names and spellings of species used for American Sāmoa. Of these, 538 represent valid species names (including synonyms), of which 377 are currently accepted names. Among these 377 species, I conclude that there are 251 species present and 91 species possibly present as well as 20 species of uncertain presence, nine species likely not present, and six species considered incorrectly reported and not present.

If one considers differences in the taxonomy, the number of species present in American Sāmoa can change. The main differences between differing taxonomies include two distinct types of synonyms. One includes homotypic synonyms where the species identification is not in dispute, but rather the placement of that species within a certain genus, thereby creating a dispute in species name, but no dispute in that species being a discrete taxonomic entity. Of these species presented here, there are 54 homotypic species with Corals of the World (CoTW; http://www.coralsoftheworld.org) disagreeing on 40 species. Thirty-four include species where CoTW does not acknowledge the movement of a species to a different genus and six species where CoTW moves species to a different genus but is not currently recognized by The World List of Scleractinia (WLS; http://www.marinespecies.org/scleractinia). The other type of synonym difference includes heterotypic synonyms where two names are based on two type specimens that have been combined into a single species. In this circumstance, different experts based on their experience and knowledge of that species may have differing opinions on the validity of the synonyms. Of these species presented here, there are 72 heterotypic species with CoTW disagreeing on 20 species split in WLS and eight species that CoTW splits but are not in WLS. A fundamental difference is that taxonomic changes in WLS are based on references in peer-reviewed journals and those in CoTW are not. This is important since taxonomic changes based on the International Commission on Zoological Nomenclature (ICZN) need to be published in printed media such as journals and books or they need to have a Zoobank registration, while those in electronic media only without a Zoobank registration are not valid. While the on-line version of CoTW (Veron et al. 2019) is not currently compliant with ICZN, it does provide insight to different expert opinion on species concepts.

I report new records for American Sāmoa. *Montipora marshallensis* is reported as a probable synonym of *Montipora crassituberculata* Bernard, 1897 by CoTW and is included in the eight heterotypic synonyms discussed previously, but this synonymization creates the first time this name to be used in relation to American Sāmoa and is not included in the totals listed in this study. Additionally, I report seven new records (four documented by D. Fenner) not previously reported in American Sāmoa. These records include *Acanthastrea subechinata* Veron, 2000, *Favites paraflexuosus* Veron, 2000, *Echinophyllia echinoporoides* Veron & Pichon, 1980, and *Turbinaria irregularis* Bernard, 1896, *Alveopora excelsa* Verrill, 1864, *Leptoseris tubulifera* Vaughan, 1907, and *Porites myrmidonensis* Veron, 1985.

I report a total of 342 species present or possibly present for American Sāmoa. If one were to accept the species with taxonomic differences of opinion from Veron et al. (2019), the species number decreases by approximately 12 species. Further, Veron et al. (2019) included only zooxanthellate scleractinian corals thereby reducing the number by another eight species (four azooxanthellate dendrophylliids and four milleporids). This allows comparable numbers of 322 species to the 313 species reported by Veron et al. (2019) from the Sāmoa, Tuvalu, Tonga ecoregion. Presumably, any in-depth analysis for the other islands within this ecoregion will report other species not found in American Sāmoa. This would indicate that the species richness reported in Veron et al. (2019) is likely an underestimate for this ecoregion. It is difficult to determine the amount of this underestimate, but may indicate that the species richness is closer to that found in Micronesia, the Coral Sea, or Vanuatu. This also indicates that the species richness is still much lower than the Coral Triangle and the broader geographical pattern of species richness across the Pacific remains (Veron et al. 2015).

Using the ecoregions from Veron et al. (2019), I show geographical range extension records for 66 species considered present or possibly present. The direction of these range extensions is 61% to the east, while 21% close the gap between two disjunct ecoregions. Fewer species are extended south (3%), southeast (11%), and southwest (4%). There are no species that are only extended to the west. Of these range extensions, three species were considerable. The nearest confirmed ecoregion for *Acropora squarrosa* was Madagascar north, while *Pavona gigantea* was Marshall Islands and Galapagos Islands and *Pavona diffluens* was Socotra Archipelago in the Indian Ocean.

The known diversity of an area is largely a product of effort. With increasing effort, more species are documented up to an asymptote (Colwell et al. 2012). Both the present list and the estimates in Veron et al. (2019) are likely to be underestimates of the true diversity within any single region. To close this gap, I provide an estimate of the number of coral species not yet discovered in American Sāmoa. This estimate is influenced by the species concept utilized by the observer (i.e., varying interpretation of a species with a range of taxonomic characters), taxonomic changes over time, and how unidentified species are labeled. The best estimate is provided by standardizing the taxonomy with currently accepted names and leaving the various unidentified species identifications as reported which provides a broader estimate of the number of unidentified species. Using this approach, I estimate that between 343–399 should be found in American Sāmoa. Based on the 342 species considered present or likely present suggests up to 57 additional species could be found in American Sāmoa. As problems with coral taxonomy gets resolved and further exploration of American Sāmoa's MCEs occur, the prospect of additional species not yet discovered in American Sāmoa is likely. As more MCE sites are surveyed, there will undoubtedly be more unique species observed that may account for a large portion of the species yet to be discovered in American Sāmoa.

Deep Reef Refuge Hypothesis

I have shown the gamma diversity (diversity across the study samples) is 289 species with a range of alpha diversity (mean of site level species richness) across habitat zones and islands from 4–64 species. The alpha diversity of the upper MCE sites was near the midpoint of alpha diversity ranges (with the lowest at the harbor on Tutuila and the highest on the reef slope on Tutuila) showing the species richness is typical when compared to other SCR habitats. This is further supported by the high level of MCE species overlap with SCR sites (84%). This level of overlap is not unexpected since the upper MCE was targeted for this study based on previous studies that show the upper MCE to be a subset of SCR communities (Rooney et al. 2010, Bridge et al. 2012, Pyle et al. 2016, Spalding et al. 2019). This pattern has also been found in other parts of the Indo-Pacific region (Muir and Pichon 2019, Turak and DeVantier 2019).

While there is a large percentage of species overlap, there is also a considerable difference in the communities across MCEs to SCRs as well as the upper MCE and various SCR habitats. This is shown in the beta diversity values. The beta diversity between MCE and SCR communities is relatively high and generally is driven by the species turnover fraction as opposed to the nestedness fraction. The turnover fraction is lower and subsequent nestedness fraction is higher between the upper MCE and the reef slope on Tutuila compared to other reef slopes on other islands or other habitat groups. This suggests a greater similarity between communities.

A community similarity analysis shows there to be distinct community assemblages between MCE and SCR communities and between the upper MCE and various habitat zone by island strata. Despite the high degree of individual species overlap, the overall community composition is different suggesting the upper MCE does not provide a replacement community to any other SCR community, even at different scales. This is an important aspect to consider in the DRRH as Bongaerts and Smith (2019) include a community level component to the DRRH framework. I show that there is no universal replacement from the MCE community to SCR communities despite individual species overlap. While the MCE community is a subset of SCR species (63), the SCR communities still have many species (209) not found on MCEs. Of those species found on MCEs, there is a varying level of overlap with different habitat zones across different islands. Based on the distinctness of the communities and the large number of SCR species not found on MCEs, it seems the SCRs have a higher potential to supply MCEs with species, than the reverse. This suggests that the MCE communities may serve a persistence function for SCRs although this would be affected by disturbance across reefs and depth, the resilience of the individual species, and the biological characteristics that allow connectivity among species populations, all outside the scope of this study.

While the MCE and SCR communities are distinct and there are a large number of species restricted to SCRs, there remains 63 species with depth overlap. This indicates there is at least the potential for some species in the upper MCE to serve as a reseeding species for SCR populations. In order to narrow this list down to highlight the most likely species to serve as a species-specific refuge, I presented a different mechanism to represent depth specialist and generalist species. This mechanism incorporates the abundance or commonness of the species across both MCE and SCR sites. Abundance can be calculated as the percentage of site occupancy or the density within sites, and either metric may be used depending on the data available. I used the percentage of site occupancy as an indicator of species abundance. A species that is found only at a single MCE site and is common in the SCRs may have a decreased ability to serve as a reseeding species. Vice versa, if a species is common across MCE sites, but less in SCR sites, it may serve as a reseeding species, but not provide a similar function as a species that was common in the SCR. A species that is both common in MCEs sites and SCR sites, would certainly be of interest for further research for studies of reproductive ability, genetic connectivity, recruitment potential, and resilience to environmental changes.

This mechanism included the terms of common, occasional, and rare with the terms of specialists and generalists. In addition, the species that are exclusive to MCEs or SCRs were classified as deep exclusive species and shallow exclusive species. Common species were species found across 50% or more of the sites while rare species are found at 25% or less of sites. A similar definition could easily be developed for site abundance data as well. The classification is made based on the relative position of commonness of a species on MCE sites to SCR sites. Common deep specialists are species common on MCE sites but only occasional or rare on SCR sites, and occasional deep specialist are occasional on MCE sites and rare on SCR sites. The opposite pattern is used for shallow specialists. Generalist species are found in the same abundance on MCE and SCR sites. This applies the assumption that increased distribution across more sites compared to the decrease in distribution across other sites affects the likelihood that a species can serve as a reseeding species. Rare species in MCEs still have the potential to provide propagules to SCRs over time (Holstein et al. 2016, Loya et al. 2016), but a common species may have a greater potential to be a reseeding species as opposed to a persistence species.

These comparisons highlight the species with the highest probability of serving as reseeding species from MCE to SCR communities. These include *Galaxea fascicularis*, *Pavona varians*, *Pocillopora verrucosa*, *Leptastrea purpurea*, *Lithophyllon concinna*, and *Pocillopora damicornis*. These species represent eight percent of the MCE species and include the common and occasional generalist across all SCR sites. The comparison with the upper MCE and the reef slope on Tutuila has 12% of the species that are common generalists including *Pavona chiriquiensis*, *Psammocora nierstraszi*, *Galaxea fascicularis*, *Sandalolitha dentata*, *Leptoseris scabra*, *Pavona varians*, *Pocillopora verrucosa*, *Leptastrea purpurea*, and *Pachyseris speciosa*. Others species include *Montipora grisea* (Reef Flat by Tutuila; Reef Flat/ Pool Tutuila; Reef Flat by Manu‘a Islands; Pool by Manu‘a Islands), *Herpolitha limax* (Reef Slope by Manu‘a Islands; Reef Slope/ Reef Flat Manu‘a Islands), *Millepora platyphylla* (Reef Slope/ Reef Flat Tutuila; Reef Slope/ Reef Flat Manu‘a Islands), *Stylophora pistillata* (Reef Slope/ Reef Flat Manu‘a Islands; Reef Slope by Swains Island), *Coscinaraea columna* (Reef Slope/ Reef Flat Manu‘a Islands), *Acanthastrea brevis* (Pool by Manu‘a Islands), *Turbinaria peltata* (Reef Slope South Bank), and *Turbinaria stellulata* (Reef Slope South Bank).

These 19 species represent about 30% of the species that overlap MCE and SCR communities, but only 7% of the species on SCRs. There were 36 rare generalist species, 35 shallow specialist species, and 24 deep specialist species when making individual habitat group comparisons. Based on our assumption of rarity and persistence, these results suggests that in general, MCE coral communities may serve a persistence role for SCR coral diversity. While patterns of specialist and generalist vary among comparisons, the most obvious change is the decrease in species overlap between the reef slope and reef flat and the reef slope on Tutuila to the reef slope on other islands. This distinction shows that the reef slope on Tutuila may serve as a more likely refuge for a few species and suggests an influence of geographical distribution.

By incorporating relative abundance, this analysis provides additional insight into the DRRH. While the DRRH was formulated as a source of propagules from deep to shallow, there is nothing preventing this process working equally in reverse. Our species comparisons show more species that are shallow specialists than deep specialists at the habitat groups and less for the SCRs in total. The most significant comparison is the upper MCE and the reef slope on Tutuila where there are 15 more shallow specialist than deep specialist and these communities appear to be more similar than other

SCR groups. If the generalist species serve as a SCR source as opposed to a sink coupled with more species that are shallow specialists, it is plausible that shallow populations support deep populations as much or more than deep populations support shallow populations. If the primary source of propagules are SCR species, then MCEs are threatened through indirect impacts from any impacts to reproductive populations on SCRs, even if MCEs are more protected and less often disturbed. This would indicate that MCEs deserve as much protection as SCRs. While protection could be justified in either scenario, if MCEs are under threat equally to SCRs, then they deserve protection for their own survival to maintain diversity and function across the coral ecosystem, as has been argued (Laverick et al. 2016, Rocha et al. 2018, Soares 2020, Soares et al. 2020).

Further, I argue that the DRRH should be considered in a broader framework that incorporates the variability on all coral reef communities. Even if the original premise of the DRRH is valid, mounting evidence that MCE communities are distinct with some proportion of overlapping species, it may be more appropriate to refine the question into a broader framework. Here I argue that framework should account for region or site level variability with the consideration of many types of SCR habitats and their potential similarity or dissimilarity to various MCE habitats. SCR habitats are often lumped (but see Turak and DeVantier 2019) when compared to MCE habitats that are generally broken into upper, mid, or lower MCEs. MCE habitats may have as many habitat types as SCR when accounting for slope, water clarity, light levels, temperature, substrate composition, and current in addition to depth (Pyle and Copus 2019). While the DRRH was developed under a specific context during a time of increasing scientific interest in MCEs, it is now time to move beyond the past approach and start formulating more detailed hypothesis for region specific communities and threats. This nuanced approach should include considerations of SCR habitats supporting MCE habitats, MCEs deserving protection for their own intrinsic value and unique biodiversity, and the concept of MCEs sharing or having unique threats. Growing evidence suggests SCR threats often extend into the MCE (White et al. 2013, Pinheiro et al. 2019, Smith et al. 2019), and reliance on propagules from SCRs may further exacerbate threats to MCEs. Ultimately, MCEs must be considered more frequently in conservation planning and marine protected area systems, regardless of their ability or lack thereof to serve as a refuge for SCRs.

Listed Species

The National Marine Fisheries Service (NMFS) has listed 18 Indo-Pacific species under the U.S. Endangered Species Act (16 U.S.C. § 1531). Of these species, I confirm six species (*Acropora globiceps*, *Acropora jacquelineae*, *Acropora retusa*, *Acropora speciosa*, *Fimbriaphyllia paradivisa*, and *Isopora crateriformis*) are in present in American Sāmoa, but also two others are possibly present (*Pavona diffluens* and *Porites napopora*). I, further, document for the first time that three species are found below 40 m: *Acropora speciosa*, *Fimbriaphyllia paradivisa*, and *Pavona* cf. *diffulens*. Of the sites surveyed, 62% of the sites has a listed species present suggesting their presence is common. *Acropora speciosa* is considered an occasional deep specialist and has been reported as one of the most common *Acropora* spp. in the upper MCE (Turak and DeVantier 2019). *Fimbriaphyllia paradivisa* is considered a deep exclusive species and is known as a common MCE species in the Red Sea (Eyal et al. 2016, Tamir et al. 2019). *Pavona* cf. *diffluens* is reported as a rare generalist and is not one of the seven listed species reported from American Sāmoa since there are some taxonomic uncertainties with this species whereas Veron suggests the specimens found in the Pacific are different form the specimens in the Red Sea. The NMFS adopts this interpretation, but yet there is no attempt at addressing the taxonomic issues while this species has been reported from American Sāmoa by multiple papers (Birkeland et al. 1987, Corals NPAS 2016, DMWR 2018, Fenner 2018, Montgomery et al. 2019). Under the precautionary approach, it seems warranted to treat this species the same until such time it is redescribed.

In addition to the listing of these species, NMFS is proposing to list critical habitat for these species, excluding *P. diffluens* (NOAA 2020). In this proposal, the critical habitat would be defined down to 40 m depth thereby eliminating the majority of suitable habitat for these species. While management of any species below 30 m is a challenge, there will be less opportunity to further protect or recover this species with such a broad exclusion. Given the known depth distribution of these species in American Sāmoa and elsewhere, MCE depths should be considered for critical habitat in order for meaningful conservation and recovery of these species to occur.

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