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Hafa Adai Mr. Smith:

Thank you for the opportunity to provide comments on the Status Review Report and to offer additional information regarding the proposed listing of 82 candidate coral species under the U.S. Endangered Species Act (ESA). We would also like to take this opportunity to provide comments on the potential management implications should any of the candidate coral species be listed as threatened or endangered.

The preparers of the NOAA Technical Memorandum NMFS-PIFSC-27, *Status Review Report of 82 Candidate Coral Species Petitioned Under the U.S. Endangered Species Act*, should be commended for the thoroughness of their review of published and unpublished sources, their care in dealing with the sometimes complex task of defining a coral species, and their pursuit of input from specialists to gain further insights.

Enclosed is detailed information provided for each of the candidate coral species, generated by the BSP-GCMP Biologist, with assistance from the 2012 NOAA Program Support Specialist for Guam, upon their review of the Status Review Report. The enclosed information includes confirmation of information presented in the Status Review Report when appropriate, and additional or corrected information about the occurrence and abundance of the coral species proposed for listing; additional information about the known threats to these species is also provided for a few species. Additional comments provided by the NOAA Program Support Specialist for Guam are also included following the detailed information for each of the candidate species.

Based on the review of the candidate species by the BSP-GCMP Biologist, 35 of the 76 Indo-Pacific species petitioned for listing under the ESA have been confidently confirmed as occurring in Guam's waters, with an additional 8 species that are likely to occur in Guam. This is a large number of candidate species, with several of these species (particularly *Millepora tuberosa*, *Heliopora coerulea*, and *Leptoseris incrustans*) found in relatively high abundance across multiple reef zones on Guam. The high abundance and widespread distribution of many of these species, should any of them become listed, would likely lead to the designation of large expanses of Guam's coral reef ecosystem as critical habitat. We feel that this would place a large burden on local and federal agencies currently involved in coral reef management on Guam, and to Guam's coral reef resource users. While there may be benefits as a result of the protection of these species afforded by the ESA, the further stretching of already limited local and federal capacity will likely detract from the important

work currently being carried out on Guam towards the protection and conservation of Guam's entire coral reef ecosystem. The listing of any of these species would also likely shunt already-limited federal funding towards the management of the bureaucracy required to carry out the mandates of the ESA. These negative impacts may actually outweigh any positive benefits provided to these species should they be listed.

Although the ESA has been effectively used to aid in the recovery of several critically endangered species, in this particular case we believe that the listing of any of the proposed 82 coral species under the ESA would not effectively protect these coral species from the top three threats listed in the Status Review Report, including ocean warming, disease, and ocean acidification. Instead, the increased burden on local and federal agencies, the likely decrease in funds directed towards local conservation and restoration projects, and the potential for increased antagonism among some agencies and resource users towards regulatory bodies may inadvertently harm these species, other reef organisms, and the humans that depend on them.

While the predicted negative impacts of the listing of one or more of the candidate coral species are not reason alone to *not* list a species should these species actually be on the precipice of extinction, it is not clear that any of these species are indeed threatened with extinction, and it is also not clear that the listing of these species as threatened or endangered under the ESA would actually aid in the recovery of these species should such a recovery be necessary. It is this uncertainty as to the actual need, the potential for negative impacts to local efforts to address threats to reef resources, and questions surrounding the appropriateness of using the ESA in this manner that cause us to be wary of the listing of these coral species as endangered or threatened.

With regard to the question about these species' potential for extinction, we believe that it is very difficult to make accurate determinations on risk to a species' survival when critical information from across the species' entire range is incomplete, as is the case with many of candidate species. If a coral is assumed to be present in an area without any clear supporting evidence, this can complicate the determinations of the percent likelihood of a species falling below the Critical Risk Threshold (the percent may be assessed as being lower or higher than it should be). This also contributes to the large variability in likelihood percent determined by the Biological Review Team. In order to make a better informed determination regarding each of these species, another assessment report may be necessary once more comprehensive scientific information is gathered from the comments on the Status Review.

We are keenly aware of the poor state of many of the world's coral reefs, and Guam's reefs are certainly no exception. While the currently degraded state of many of Guam's reef resources is primarily a result of activities carried out locally, we are also aware of the impending impacts associated with climate change, such as ocean acidification and an increase in the frequency and severity of mass bleaching events. But we don't think that the ESA is the appropriate tool to protect these species from extinction, let alone aid in the recovery of already degraded coral reef ecosystems. In order to address ocean warming and ocean acidification, aggressive international treaties and federal legislation must be passed to reduce carbon emissions and the emission of other greenhouse gases. It seems clear that the petitioners aim to force the U.S. federal government to address the issue of climate change through the listing of these coral species under the ESA. While addressing climate change is absolutely critical in order to prevent the mass degradation of large expanses of coral reef resources in the U.S. and across the globe, the ESA may not be the appropriate tool to address this major concern, and we think it may actually undermine the ESA itself. As an example of local and regional action to address climate change, Guam is engaged with regional partners in conservation initiatives under the Micronesia Challenge, and has participated in the adoption of the Climate Change Resolution by

the Micronesia Chief Executives. While we are not aware of a silver bullet that would force the U.S. and other nations to make rapid, significant cuts in greenhouse gas emissions, the failure of attempts to use the ESA protection of polar bears to force the U.S. to regulate greenhouse gas emissions suggests that the attempt to use the listing of coral species may likewise fail. Other strategies to cut greenhouse gas emissions need to be explored, and efforts must be focused to carry out those strategies most likely to succeed, not those that have already failed.

By dealing with major local coral reef stressors, such as land-based sources of pollution and heavy fishing pressure, vulnerable reef systems can become more resilient in the face of climate change. The dire need to immediately address the significant impacts to Guam's reef resources as a result of local stressors, and the potential for the listing of these coral species under the ESA to shunt already limited resources away from local conservation and restoration work, lead us to believe that it may be better to instead focus on enhancing the ability of local agencies and conservation groups to address local stressors. We believe that the slew of existing local and federal legislation provide much (but not all) of the tools required to protect and enhance Guam's coral reef resources; the lack of capacity to effectively enforce existing legislation, and the lack of political and community will to make the changes needed to effectively carry out mandates already on the books are the main stumbling blocks to effective coral reef conservation on Guam. We do not believe that listing these coral species under the ESA will help us address these major obstacles, and may actually exacerbate them by further stretching capacity.

Passing and implementing local regulations that require best management practices for construction projects, increasing streambank restoration efforts, and upland restoration projects that improve water quality are some of the ways the local government and community groups on Guam are currently addressing impacts to Guam's coral reef resources. Continuing and expanding these kinds of projects is crucial to restoring already degraded reef resources, protecting those in good condition, and enhancing the overall resilience of Guam's coral reef ecosystem.

As is apparent from our comments, we are wary of actions, such as the potential listing of the candidate coral species that may not contribute to our efforts to manage Guam's reef resources, and that may actually detract from these efforts. However, with that said, we still embrace the opportunity to provide as much local knowledge as possible so that the review of the candidate coral species is as thorough and informed as possible.

Thank you for the opportunity to provide our comments on the candidate coral species proposed for listing under the ESA. Guam's reefs are critical to the lives of the island's community, and we take seriously our responsibility to contribute towards the effective management of this valuable resource.


THOMAS A. MORRISON
Director

Enclosures

cc: Governor of Guam
Coral Reef Point of Contact
Director, Dept of Agriculture
Administrator, GEPA

**Detailed comments provided on NOAA Technical Memorandum NMFS-PIFSC-27, Status
Review Report of 82 Candidate Coral Species Petitioned Under the U.S. Endangered
Species Act**

*David R. Burdick, Biologist,
Bureau of Statistics and Plan, Guam Coastal Management Program*

The information presented below pertains primarily to species known or suspected to occur in the nearshore waters of Guam, as the BSP-GCMP Biologist is most familiar with species/communities that occur there, but occasionally information is provided in reference to the Marianas Archipelago. The comments presented may include confirmation of information presented in the Status Review Report, as well as additional or corrected information about the occurrence and abundance of the coral species proposed for listing may also be provided; additional or corrected information about the known threats to these species is also provided for a few species.

Of the 76 Indo-Pacific species petitioned for listing, 35 have been confidently confirmed as occurring in Guam's waters, with an additional 8 species that are likely to occur in Guam. Symbols included after each species heading denote those species that have been confirmed from Guam's waters (■), species that likely occur in Guam's waters (■), and those that have not been reported from Guam (■).

1. *Millepora foveolata* ■

Occurrence: As noted in the Status Review Report, this species has been reported from the Northern Mariana Islands (Randall, 1995) but has not been recorded from Guam. The BSP-GCMP Biologist has not personally observed this species in Guam's waters since his arrival to Guam in 2004, although its reported presence in the Northern Mariana Islands suggests there is a possibility that it does occur on Guam but it has not yet been reported due to misidentification or rarity.

2. *Millepora tuberosa* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; CRED, unpubl. data; Randall, 2003), as correctly noted in the Status Review Report. Randall and Myers (1983) and HDR EOC and CSA International (2011) also report this species from Guam's waters.

Abundance/Habitat: *Millepora tuberosa* can be common across multiple reef zones on Guam, but it is likely that it has often been misidentified as crustose coralline algae and thus

its abundance on Guam (and likely elsewhere throughout its range) has been underreported to-date.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Millepora tuberosa* is also highly likely to occur in the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

The relatively high abundance of this species on Guam would suggest that its local population is relatively resilient to local stressors – mainly predation, sedimentation and other land-based pollutants, and secondary impacts of heavy fishing pressure (e.g., encroachment, loss of recruiting substrate due to fleshy algae proliferation). Guam has not yet experienced a severe, large-scale bleaching event, but populations of *M. tuberosa* appear to remain relatively robust despite moderate thermal stress events recorded in the past several years.

3. *Heliopora coerulea* ■

Occurrence: This species has been confirmed from Guam's waters (Amesbury et al., 1999; Burdick, unpubl. data; CRED, unpubl. data), as correctly noted in the Status Review. Randall and Myers (1983) and Paulay et al. (2003) also reported this species from the Marianas, and more recently *H. coerulea* was reported from Apra Harbor, Guam, by HDR EOC and CSA International (2011a) and from the War and the Pacific National Historic Park nearshore areas in Piti (HDR EOC and CSA International (2011b).

Abundance/Habitat: *Heliopora coerulea* is occasionally encountered within multiple reef zones on Guam, primarily in reef flat and outer reef slope areas; it can be locally abundant at some sites (e.g., parts of the Piti Bay reef flat).

Additional Threat Information: In the past several years, Dr. Laurie Raymundo, Director of the University of Guam Marine Lab, and the BSP-GCMP Biologist have observed a large number of *H. coerulea* colonies on Guam that have exhibited partial or full mortality caused by an unknown stressor; a turfing algae species/community present on these colonies may be the cause of this mortality or may secondarily infect the colony after mortality caused by a pathogen or some other stressor.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Heliopora coerulea* is also expected to occur in the

Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

If mortality as a result of the stressor mentioned above is positively correlated with water temperature (although no evidence currently exists to support such a claim), we may see increasing levels of mortality in *Heliopora coerulea* associated with climate change, even with the low susceptibility to bleaching as a result of thermal stress. In the event that *H. coerulea* is vulnerable to a disease/disease state and if the virulence of this disease/disease state is positively correlated with water temperature, the assessment of this species' risk of extirpation from Guam and its risk of extinction throughout its range may have to be revisited.

4. *Pocillopora danae* ■

Occurrence: This species has been confirmed from Guam's waters (Amesbury et al., 1999; Burdick, unpubl. data; CRED, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters.

Abundance/Habitat: *Pocillopora danae* is uncommonly to occasionally encountered in Guam's waters; it is found across multiple reef zones, but is most commonly encountered in shallow to moderate depths in protected fringing reef, channel, and lagoon habitats (Randall and Burdick, in prep).

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pocillopora danae* is also expected to occur in the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

5. *Pocillopora elegans* ■

Occurrence: This species has been confirmed from Guam's waters (Amesbury et al., 1999; Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters.

Abundance/Habitat: *Pocillopora elegans* is uncommonly to occasionally encountered in Guam's waters; it is primarily found in the lower reef front zone and the adjacent submarine terrace to a depth of 20-30 m (Randall, unpubl. data).

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pocillopora elegans* is also expected to occur in the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point

Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

6. *Seriatopora aculeata* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters.

Abundance/Habitat: *Seriatopora aculeata* is rare to uncommon in Guam's waters. According to R. H. Randall (unpubl. data) it is primarily found in exposed seaward reef slope zones where there is good water circulation and rates of sedimentation are low; however, the few specimens of *S. aculeata* observed by the BSP-GCMP Biologist in Guam's waters since 2004 were found along the southwestern coast of Guam in areas with high rates of sedimentation.

Additional Remarks: According to the Status Review Report, *Seratiopora aculeata* has not been reported from federally protected waters. While the species may not have been recorded in any federally protected waters on Guam, there is a possibility it may be found in the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

7. *Acropora aculeus* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003; Wallace, 1999), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters. But note that the specimens identified as *A. aculeus* in Randall (1983) and Randall (2003) appear to be different than that described and depicted as *A. aculeus* in Veron (2000) and Wallace (1999). With that said, specimens that match the descriptions and images provided in Veron (2000) and Wallace (1999) have been observed on Guam by the BSP-GCMP biologist.

Abundance/Habitat: According to Randall and Burdick (In prep), *Acropora aculeus* is uncommon in Guam's waters, having only been found in Cocos Lagoon and by a handful of specimens from several sites along the southwestern coast that were identified by Randall in photographs taken by the BSP-GCMP biologist. Again, however, it must be noted that the specimens identified as *Acropora aculeus* by Randall do not appear to be consistent with *A. aculeus* as described and depicted in Veron (2000) and Wallace (1999). The specimens

observed by the BSP-GCMP biologist on Guam that do appear to be consistent with Veron (2000) and Wallace (1999) are also uncommon, but appear to have a wider distribution across the island's nearshore waters, being primarily found in exposed seaward reef slope areas down to at least 30 m.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora aculeus* is also expected to occur in the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

8. *Acropora acuminata* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003; Wallace, 1999), as correctly noted in the Status Review. Wallace (1999) also lists a specimen collected from Guam and HDR and CSA International (2011a) recently reported *A. acuminata* from Apra Harbor, Guam. However, it should be noted that specimens from Guam identified as *Acropora acuminata* consistently exhibit an aborescent "staghorn" growth form, which is different from the branching tabular form, with up-turned branches at the periphery of the table, that is observed elsewhere throughout the species' reported range. The original description of this species by Verrill in 1864 describes colonies as having "...regularly tapering, often curved branches," which would seem to better fit with the non-Guam populations that exhibit the branching tabular form. There also appears to be differences in the types of radials observed in the Guam staghorn specimens and those that exhibit the branching tabular form. Collected specimens of both the Guam and non-Guam forms of *A. acuminata* (if they are indeed the same species) turn black in color, a phenomenon not reported for other *Acropora* species. When considering these differences and similarities, the staghorn form observed on Guam and the branching tabular forms could represent different species or they could be forms of the same species or represent distinct sub-species.

Abundance/Habitat: According to Randall and Burdick (In prep) *Acropora acuminata* is most commonly encountered on deeper reef flat areas along the western and northern coasts of Guam, in lagoon habitats in Cocos Lagoon and Apra Harbor, and channel slope environments in Mamaon and Manell channels. Randall also notes that this species is rare in upper seaward reef slope and occasionally observed on embayment reefs.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora acuminata* may occur in the Marianas Trench

Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

9. *Acropora aspera* ■

Occurrence: This species has been confirmed from Guam's waters (Amesbury, et al., 1999; Burdick, unpubl. data; Randall, 2003; Wallace, 1999), as correctly noted in the Status Review. An additional reference, Randall and Myers (1983) also reported this species from Guam's waters. But note that *Acropora aspera* as reported in Randall and Myers (1983) and Randall (2003) is likely *Acropora pulchra* and that what was reported as *A. hebes* in these publications is now referred to as *A. aspera* (Randall and Burdick, In prep)

Abundance/Habitat: According to Randall and Burdick (In prep), *A. aspera* distribution on Guam is restricted to shallow reef flat platform moat and reef margin habitats along the western and northern coasts and the shallow reef platform and terrace along the south side of Cocos Lagoon in water generally less than a meter deep. Randall and Burdick (In prep) report that *A. aspera* is rather uncommon within its overall habitat range, it can be abundant in small local regions.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora aspera* may occur in the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation). This species is reported from the War in the Pacific National Historic Park, but it is likely that the species reported was what Randall had previously been calling *A. aspera* and would now be considered *A. pulchra*. While a less common species, what is now referred to as *A. aspera* (formerly *A. hebes*) is also expected to occur in the War in the Pacific National Historic Park.

10. *Acropora dendrum* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora dendrum* has not been recorded from Guam or elsewhere in the Mariana Islands.

11. *Acropora donei* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora donei* has not been recorded from Guam or elsewhere in the Mariana Islands.

12. *Acropora globiceps* ■

Occurrence: This species has been reported from Guam's waters (Burdick, unpubl. data; Wallace, 1999), as correctly noted in the Status Review, although the report from Burdick should be considered tentative until Randall and Burdick can resolve the identifications of the various *Acropora humilis*-like species found in Guam's waters.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora aspera* may occur in the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

13. *Acropora horrida* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora horrida* has not been recorded from Guam or elsewhere in the Mariana Islands.

14. *Acropora jacquelineae* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora jacquelineae* has not been recorded from Guam or elsewhere in the Mariana Islands.

15. *Acropora listeri* ■

Occurrence: *Acropora listeri* has been reported from Guam's waters (Wallace, 1999), as correctly noted in the Status Review. Additional references, including Randall and Myers (1983) and Randall (2003), also reported this species from Guam.

Abundance/Habitat: Specimens consistent with *Acropora listeri* that were observed by the BSP-GCMP Biologist were primarily found in exposed reef front and upper reef slope environments. This species appears to be relatively uncommon in Guam's waters.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora listeri* may occur in the Marianas Trench

Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

16. *Acropora lokani* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora lokani* has not been recorded from Guam or elsewhere in the Mariana Islands.

17. *Acropora microclados* ■

Occurrence: *Acropora microclados* has been reported from Guam's waters (Wallace, 1999), as correctly noted in the Status Review. This species has not been reported from Guam's waters by R. H. Randall, but the BSP-GCMP Biologist has observed and photographed a handful of colonies that match the description and images provided for *A. microclados* in Veron (2000) and Wallace (1999). Images of one of these colonies were recently provided to Doug Fenner, who also thought the photographed specimen was consistent with *A. microclados*.

Abundance/Habitat: The handful of specimens consistent with *Acropora microclados* that were observed by the BSP-GCMP Biologist were found on the seaward reef slope below 15 meters depth.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora microclados* may occur in the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

18. *Acropora palmerae* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; CRED, unpubl. data; Randall, 2003; Wallace, 1999), as correctly noted in the Status Review. An additional reference, Randall and Myers (1983) also reported this species from Guam's waters.

Abundance/Habitat: *Acropora palmerae* is common to abundant along the seaward edge of the reef margin and reef front zone.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora palmerae* is likely to occur in the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

19. *Acropora paniculata* ■

Occurrence: Although *Acropora paniculata* has been reported from the Commonwealth of the Northern Mariana Islands (CRED, unpubl. data), neither Randall nor Wallace have reported this species from Guam. However, the BSP-GCMP Biologist has observed and photographed specimens from Guam's waters that closely match the descriptions of *A. paniculata* in Veron (2000) and Wallace (1999). While further examination is required, it appears as though specimens from Guam identified as *A. rambleri* by Randall are consistent with what Veron (2000) and Wallace (1999) have described as *A. paniculata*.

Abundance/Habitat: Specimens consistent with *Acropora paniculata* that have been observed by the BSP-GCMP Biologist were observed in seaward reef slope environments, typically at depths greater than 20 meters (to at least 40 m).

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, specimens consistent with *Acropora paniculata* have been observed by the BSP-GCMP Biologist in the waters of the War in the Pacific National Historic Park. This species is also expected to occur in the Orote Point Ecological Reserve Area and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

20. *Acropora pharaonis* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora pharaonis* has not been recorded from Guam or elsewhere in the Mariana Islands.

21. *Acropora polystoma* ■

Occurrence: Within the Status Review Report, *Acropora polystoma* is reported from Guam only by unpublished data provided by Burdick. This species has been previously reported by Randall and Myers (1983) as *Acropora* sp. 1, and in Randall (2003) specimens were incorrectly thought to be closest to *A. lutkeni* (Randall and Burdick, In prep). It should be

noted that what has been identified as *Acropora polystoma* on Guam is not entirely consistent with *A. polystoma* as described by other authors and may represent a separate species.

Abundance/Habitat: According to Randall and Burdick (In prep), *Acopora polystoma* is generally restricted to the upper exposed seaward reef slope zone to a depth of 10 meters where there is good water circulation.

Additional Remarks: If the species reported from Guam is indeed *Acropora polystoma*, it is likely to be found in the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation) and may occur in the Marianas Trench Marine National Monument.

22. *Acropora retusa* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora retusa* has not been recorded from Guam or elsewhere in the Mariana Islands. However, the BSP-GCMP Biologist has recently photographed a couple specimens from within Apra Harbor that appear similar to descriptions and images of *Acropora retusa* provided by other authors. In addition, R. H. Randall has tentatively applied *Acropora retusa* to specimens he has collected from Guam.

23. *Acropora rudis* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora rudis* has not been recorded from Guam or elsewhere in the Mariana Islands.

24. *Acropora speciosa* ■

Occurrence: As correctly noted in the Status Review Report, *Acropora speciosa* has not been recorded from Guam or elsewhere in the Mariana Islands. However, it should be noted that specimens tentatively identified as “*Acropora ~speciosa*” were observed during surveys carried out by HDR EOC and CSA International (2011b).

25. *Acropora striata* ■

Occurrence: As noted in the Status Review Report, *Acropora striata* has been reported from Guam by Burdick (unpubl. data) and Randall (2003). However, it should be noted that the specimens from Guam's waters identified as *A. striata* by Randall appear to be inconsistent with the description and images of *A. striata* provided by Veron (2000). According to Randall and Burdick (In prep), *A. striata* specimens reported from Guam form caespitose clumps that are profusely branched; this is in contrast to the dense thickets described in Veron (2000). It should also be noted that the unpublished data for *A. striata* provided by Burdick that was cited in the Status Review Report was not based on first-hand observations of the species in Guam's waters, and instead was intended to make note that Randall had identified this species in Guam's waters.

Abundance/Habitat: *Acropora striata* is rare on Guam, having thusfar only been found at on the reef platform moat at Luminao reef, in water less than a meter deep (Randall and Burdick, In prep).

Additional Remarks: If the species reported from Guam is indeed *Acropora striata*, it is possible that it could be found in the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation); however, the rarity of the species identified as *A. striata* in Guam's waters would make its occurrence in these areas unlikely.

26. *Acropora tenella* ■

Occurrence: *Acropora tenella* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

27. *Acropora vaughani* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. It should also be noted that Wallace (1999) lists an *A. vaughani* specimen collected from Guam. This species was also reported from Guam in Randall and Myers (1983).

Abundance/Habitat: On Guam, *Acropora vaughani* is uncommon, primarily restricted to Apra Harbor and fringing embayment reef channels and seaward reef slopes along the southwest coast; it is generally found at depths between 10 and 40 meters (Randall and Burdick, In prep).

Additional Remarks: It is possible, but unlikely, that this species may occur in the War in the Pacific National Historic Park, particularly in its waters that occur south of Orote Peninsula. It is even less likely to be found in the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, or the Ritidian National Wildlife Refuge. The BSP-GCMP Biologist is not familiar enough with the habitats of the Marianas Trench Marine National Monument to confidently estimate its likelihood of occurring within this area, but the protected habitat within the crater at Maug may provide suitable conditions for this species.

28. *Acropora verweyi* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Wallace, 1999), as correctly noted in the Status Review. It should also be noted that this species was reported from Guam's waters in Randall (2003) as "*Acropora cf. verweyi*" and will be reported as *Acropora verweyi* in an upcoming publication by Randall and Burdick (In prep).

Abundance/Habitat: *Acropora verweyi* is a common, and sometimes locally abundant, species found in Guam's exposed reef fronts and upper seaward reef slopes; while typically found in waters less than 7 meters, it can be found to at least 20 meters.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Acropora verweyi* has been reported from the Haputo Ecological Reserve Area and the Ritidian National Wildlife Refuge (Burdick, unpubl. data); its occurrence within the War in the Pacific National Historic Park and the Orote Point Ecological Reserve Area is highly likely (although its occurrence in these areas requires confirmation).

29. *Anacropora puertogalerae* ■

Occurrence: *Anacropora puertogalerae* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

30. *Anacropora spinosa* ■

Occurrence: *Anacropora spinosa* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

31. *Astreopora cucullata* ■

Occurrence: As noted in the Status Review Report, *Astreopora cucullata* has not been reported from Guam. However, specimens identified as *Astreopora cucullata* were recorded during recent surveys on Guam carried out by HDR EOC and CSA International (2011a, 2011b). Neither R. H. Randall nor the BSP-GCMP Biologist have seen images of the species identified by the HDR/CSA Biologists as *A. cucullata*.

32. *Isopora crateriformis* ■

Occurrence: As correctly noted in the Status Review Report, *Isopora crateriformis* has not been recorded from Guam or elsewhere in the Mariana Islands.

33. *Isopora cuneata* ■

Occurrence: *Isopora cuneata* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay. However, *I. cuneata* can be readily confused with encrusting colonies of *I. palifera*, a species which is found in Guam's waters, so it is possible that its range extends to the Marianas but has been lumped with *I. palifera*.

34. *Montipora angulata* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora angulata* has not been recorded from Guam or elsewhere in the Mariana Islands.

35. *Montipora australiensis* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora australiensis* has not been recorded from Guam or elsewhere in the Mariana Islands.

36. *Montipora calcarea* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora calcarea* has not been recorded from Guam or elsewhere in the Mariana Islands.

37. *Montipora caliculata* ■

Occurrence: This species has been confirmed from Guam's waters (CRED, unpubl. data; Randall, 2003), as correctly noted in the Status Review. More recently, Burdick (unpubl. data) and Randall and Burdick (In prep) report this species from Guam's waters.

Abundance/Habitat: Consistent with the information provided in the Status Review Report (based on information presented in Veron, 2000), *Montipora caliculata* appears to be found in a variety of reef environments on Guam, from high-energy reef channel and buttress zones and shallow reef terraces to embayment reefs and deeper seaward reef slopes to at least 20 meters.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Montipora caliculata* has recently been reported from the War in the Pacific National Historic Park and from two survey sites just outside the Orote Point Ecological Reserve Area (HDR EOC and CSA International, 2011b). *Montipora caliculata* is also likely to occur in the Haputo Ecological Reserve Area and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

38. *Montipora dilitata* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora dilitata* has not been recorded from Guam or elsewhere in the Mariana Islands.

39. *Montipora flabellata* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora flabellata* has not been recorded from Guam or elsewhere in the Mariana Islands.

40. *Montipora turgescens* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora turgescens* has not been recorded from Guam or elsewhere in the Mariana Islands.

41. *Montipora lobulata* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; CRED, unpubl. data; Randall, 2003), as correctly noted in the Status Review. An additional reference, Randall and Myers (1983), also reported this species from Guam's waters.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Montipora lobulata* may also occur within the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

42. *Montipora patula* ■

Occurrence: As correctly noted in the Status Review Report, *Montipora patula* has not been recorded from Guam or elsewhere in the Mariana Islands.

43. *Alveopora allingi* ■

Occurrence: This species has been confirmed from Guam's waters (Randall, 2003), as correctly noted in the Status Review.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Alveopora allingi* may also occur within the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

44. *Alveopora fenestrata* ■

Occurrence: This species has been confirmed from Guam's waters (Randall, 2003), as correctly noted in the Status Review.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Alveopora fenestrata* may also occur within the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

45. *Alveopora verrilliana* ■

Occurrence: This species has been confirmed from Guam's waters (Randall, 2003), as correctly noted in the Status Review.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Alveopora verrilliana* may also occur within the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

46. *Porites horizontalata* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983), and, more recently, HDR EOC and CSA International (2011a, 2011b) also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (In prep), *Porites horizontalata* is uncommon in most habitats, generally occurring as widely scattered isolated colonies; however, the species may be locally abundant and form monotypic patches ten more meters across, particularly in Apra Harbor lagoon habitats. Colonies are most commonly observed in deeper quieter waters of fringing reef channels, barrier reef channels, Apra Harbor Lagoon, and seaward reef slopes zones, particularly along the southwest coast.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Porites horizontalata* has been reported from the waters of the War in the Pacific National Historic Park (HDR EOC and CSA International, 2011b). *Porites horizontalata* may also occur within the waters of the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

47. *Porites napopora* ■

Occurrence: *Porites napopora* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

48. *Porites nigrescens* ■

Porites nigrescens has not been recorded from Guam or elsewhere in the Mariana Islands. The inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

49. *Porites pukoensis* ■

Occurrence: As correctly noted in the Status Review Report, *Porites pukoensis* has not been recorded from Guam or elsewhere in the Mariana Islands.

50. *Psammocora stellata* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (In prep), *Psammocora stellata* is a common to locally abundant species that is mostly restricted to shallow reef flat platforms where there is large moats of low tide perched water, and on shallow lagoon terraces in water generally less than three meters depth.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Psammocora stellata* has been recorded from the waters of the War in the Pacific National Historic Park (Burdick, unpubl. data). *Psammocora stellata* may also occur within the waters of the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

51. *Leptoseris incrustans* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983), and, more recently, HDR EOC and CSA International (2011a, 2011b) also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (In prep), *Leptoseris incrustans* is the most common and widespread *Leptoseris* species in Guam's waters. This species can be found in every reef and lagoon habitat except in low tide moats of water on reef flat platforms. It is particularly common in cavernous and cryptic regions of the reef margin, and on scarp wall and overhanging ledge habitats, and deep seaward reef slopes.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Leptoseris incrustans* is likely to occur in the waters of the War in the Pacific National Historic Park, the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

52. *Leptoseris yabei* □

Occurrence: As correctly noted in the Status Review Report, *Leptoseris yabei* has not been recorded from Guam or elsewhere in the Mariana Islands. However, initial examination by R. H. Randall of images of various species of *Leptoseris* taken by the BSP-GCMP Biologist yielded at least one *Leptoseris* specimen from Guam that is more consistent with *L. yabei* than its similar congener, *L. mycetoseroides* (Randall, pers. comm.). Further confirmation is required before the range of this species is extended to the Marianas Islands, but the possibility of its occurrence on Guam should be noted.

53. *Pachyseris rugosa* ■

Occurrence: *Pachyseris rugosa* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

54. *Pavona bipartita* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data), as correctly noted in the Status Review. This species was previously considered by Randall to be a shallow water form of *Pavona clavus*, but *P. bipartita* will be considered separate from *P. clavus* in his upcoming publication (Randall and Burdick, In prep).

Abundance/Habitat: The BSP-GCMP biologist has only encountered a handful of *Pavona bipartita* colonies, all of which were found on the sides of channels in high energy reef front environments.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pavona bipartita* may also occur in the waters of the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

55. *Pavona cactus* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Additional references, including Randall and Myers (1983) and, more recently, HDR EOC and CSA International (2011a, 2011b), also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (In prep), *Pavona cactus* is common to locally abundant in deeper protected seaward reef slope habitats, fringing embayment reefs, and lagoon habitats. In the lagoon floor of Apra Harbor *Pavona cactus* commonly form large monospecific thickets meters in extent. This species appears to be tolerant of fairly turbid water conditions.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pavona cactus* may also occur in the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

56. *Pavona decussata* ■

Occurrence: This species has been confirmed from Guam's waters (Amesbury et al., 1999; Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Additional references, including Randall and Myers (1983) and, more recently, HDR EOC and CSA International (2011a, 2011b), also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (In prep), *Pavona decussata* is common to locally abundant on subtidal fringing and barrier reef flat platforms where there is good water circulation, and shallow lagoon terraces. In shallow low tide reef flat moats of perched water colonies commonly form extensive microatolls.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pavona decussata* may also occur in the waters of the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

57. *Pavona diffluens* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review.

Abundance/Habitat: According to Randall and Burdick (In prep), *Pavona diffluens* is a rare to uncommon species in Guam's waters; this species is widespread around the island, but is most commonly encountered on the seaward reef slope habitats where there is good water circulation.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pavona diffluens* may also occur in the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the

Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

58. *Pavona venosa* ■

Occurrence: This species has been confirmed from Guam's waters (Amesbury et al., 1999; Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Additional references, including Randall and Myers (1983) and, more recently, HDR EOC and CSA International (2011b), also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (In Prep), *Pavona venosa* is an uncommon to common species in Guam's waters; this species has a widespread distribution around the island, but is most commonly encountered on the upper seaward reef slope, reef margin, reef flat platform, fringing embayment reef, and lagoon habitats where there is good water circulation.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Pavona venosa* may also occur in the waters of the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

59. *Galaxea astreata* ■

Occurrence: This species had not been reported from Guam until recently, when specimens identified as *Galaxea astreata* were recorded during recent surveys in Apra Harbor and at several sites outside the harbor (HDR EOC and CSA International, 2011a, 2011b). The BSP-GCMP Biologist has also observed a species consistent with *Galaxea astreata* and has tentatively identified these specimens as *Galaxea cf. astreata*. A colony of *Galaxea cf. astreata* collected from Apra Harbor was recently provided to R. H. Randall for identification.

Additional Remarks: The species identified as *Galaxea astreata* by HDR EOC biologists and as *Galaxea cf. astreata* by the BSP-GCMP biologist is indeed *Galaxea astreata* has been recorded from the waters of the War in the Pacific National Historic Park. This species may also occur in the waters of the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

60. *Pectinia alcicornis* ■

Occurrence: *Pectinia alcicornis* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay. However, specimens tentatively identified as *Pectinia ~alcicornis* were recorded from Apra Harbor during recent surveys carried out by HDR EOC and CSA International (2011a). *Pectinia alcicornis* and *P. paeonia*, a similar congener confirmed from Guam's waters, can exhibit highly similar colony growth forms and could be easily confused. However, it is possible that *Pectinia alcicornis* has inadvertently been lumped with *P. paeonia*, so the BSP-GCMP Biologist will make an effort to obtain at least one specimen of colonies believed to be *P. alcicornis* to determine if this species does indeed occur in Guam's waters.

61. *Acanthastrea brevis* ■

Occurrence: *Acanthastrea brevis* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay. However, it should be noted that the BSP-GCMP Biologist has photographed a specimen from Guam's waters that is more consistent with *Acanthastrea brevis* than its similar congener, *A. echinata*. Images of the specimen have been provided to R. H. Randall for tentative confirmation and the BSP-GCMP Biologist is currently seeking to collect a specimen for further confirmation of this species' identification.

62. *Acanthastrea hemprichii* ■

Occurrence: As correctly noted in the Status Review Report, *Acanthastrea hemprichii* has not been recorded from Guam or elsewhere in the Mariana Islands.

63. *Acanthastrea ishigakiensis* ■

Occurrence: *Acanthastrea ishigakiensis* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is likely

an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

64. *Acanthastrea regularis* ■

Occurrence: *Acanthastrea regularis* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is likely an error resulting from the misidentification of photographic records provided to Veron by G. Paulay. However, it should be noted that the BSP-GCMP Biologist has photographed numerous specimens from Guam's waters that are highly consistent with *Acanthastrea regularis* as described and depicted in Veron (2000). Images of the specimen have been provided to R. H. Randall for tentative confirmation and the BSP-GCMP Biologist is currently seeking to collect a specimen for further confirmation of this species' identification.

65. *Barabattoia laddi* ■

Occurrence: *Barabattoia laddi* has not been recorded from Guam or elsewhere in the Mariana Islands. The inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

66. *Caulastrea echinulata* ■

Occurrence: As correctly noted in the Status Review Report, *Caulastrea echinulata* has not been recorded from Guam or elsewhere in the Mariana Islands.

67. *Cyphastrea agassizi* ■

Occurrence: The Status Review Report notes that *Cyphastrea agassizi* has been reported from Guam's waters, citing unpublished data provided by Burdick. This species is likely what R. H. Randall has been calling *Leptastrea bottae* (Randall and Myers, 1983; Randall, 2003), but further examination of collected specimens and the literature are required before this species would be synonymised with *C. agassizi* for the upcoming publication by Randall

and Burdick (In prep). *Cyphastrea agassizi* specimens were also recorded during recent surveys carried out by HDR EOC and CSA International (2011b).

Abundance/Habitat: *Leptastrea bottae*, which may be changed to *Cyphastrea agassizi* in an upcoming publication, is a widely scattered to locally common species that occurs most abundantly on reef flat platforms and shallow lagoon terraces, becoming less common in the upper seaward reef slope habitats (Randall and Burdick, In prep).

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Cyphastrea agassizi* has recently been reported from the waters of the War in the Pacific National Historic Park (HDR EOC and CSA International, 2011b). This species may also occur in the waters of the Marianas Trench Marine National Monument, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

68. *Cyphastrea ocellina* ■

Occurrence: *Cyphastrea ocellina* has not yet been reported from Guam's waters or from elsewhere in the Mariana Islands, as correctly noted in the Status Review Report. However, specimens identified by R. H. Randall as *C. ocellina* have been collected from Guam's waters. This species will be reported from Guam's waters in the upcoming publication by Randall and Burdick.

Abundance/Habitat: According to Randall and Burdick (in prep), all *Cyphastrea ocellina* colonies from Mariana waters were collected on seaward or embayment reef slope zones between 2 and 22 meters depth and on the upper platform surface of Galvez Bank at 43 meters depth.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Cyphastrea ocellina* may also occur in the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

69. *Euphyllia cristata* ■

Occurrence: This species has been confirmed from Guam's waters (Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Euphyllia cristata* may also occur in the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas requires confirmation).

70. *Euphyllia paraancora* ■

Occurrence: As noted in the Status Review Report, this species has been reported from Guam's waters (Burdick, unpubl. data). This occurrence of this species in Guam's waters has not been reported in any published literature, but it will likely be included in Randall and Burdick (in prep).

Abundance/Habitat: The handful of colonies observed by the BSP-GCMP Biologist have been found in fairly turbid reef environments along the east coast of Guam, primarily along the sides of embayment reefs at depths of about 2 to at least 20 m.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Euphyllia paraancora* may also occur in the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas is unlikely and would require confirmation).

71. *Euphyllia paradivisa* ■

Occurrence: As correctly noted in the Status Review Report, *Euphyllia paradivisa* has not been recorded from Guam or elsewhere in the Mariana Islands.

72. *Physogyra lichtensteini* ■

Occurrence: *Physogyra lichtensteini* has not been recorded from Guam or elsewhere in the Mariana Islands. As correctly noted in the Status Review Report, the inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

73. *Turbinaria mesenterina* ■

Occurrence: *Turbinaria mesenterina* has not been recorded from Guam or elsewhere in the Mariana Islands. The inclusion of the Mariana archipelago within the known distribution of this species in Veron (2000) is an error resulting from the misidentification of photographic records provided to Veron by G. Paulay.

74. *Turbinaria peltata* ■

Occurrence: As correctly noted in the Status Review Report, *Turbinaria peltata* has not been recorded from Guam or elsewhere in the Mariana Islands.

75. *Turbinaria reniformis* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) and, more recently, HDR EOC and CSA International (2011b) also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (in prep), *Turbinaria reniformis* is a widely distributed, but uncommon species that is most frequently found on lower seaward reef slopes, embayment reefs, reef channels, and lagoon habitats. In protected habitats it occurs at shallower depths than in exposed reef zones.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Turbinaria reniformis* may also occur in the waters of the Marianas Trench Marine National Monument, the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas is unlikely and would require confirmation).

76. *Turbinaria stellulata* ■

Occurrence: This species has been confirmed from Guam's waters (Burdick, unpubl. data; Randall, 2003), as correctly noted in the Status Review. Randall and Myers (1983) also reported this species from Guam's waters.

Abundance/Habitat: According to Randall and Burdick (in prep), *Turbinaria stellulata* is a widely distributed, but uncommon species that is most frequently found on lower seaward reef slopes, embayment reefs, reef channels, and lagoon habitats. In protected habitats it occurs at shallower depths than in exposed reef zones.

Additional Remarks: In addition to occurring in the federally protected areas listed for this species in the Status Review Report, *Turbinaria stellulata* may also occur in the waters of the War in the Pacific National Historic Park, the Haputo Ecological Reserve Area, the Orote Point Ecological Reserve Area, and the Ritidian National Wildlife Refuge (although its occurrence in these areas is unlikely and would require confirmation).

References

HDR EOC and CSA International, Inc. 2011a. Supplemental marine resource surveys to support the CVN transient pier, Apra Harbor, Guam. Task 1 – CVN impact area surveys (coral reef community). Prepared for Naval Facilities Engineering Command, Pacific.

HDR EOC and CSA International, Inc. 2011b. Supplemental marine resource surveys to support the CVN transient pier, Apra Harbor, Guam. Task 2 – Potential mitigation site reconnaissance surveys. Prepared for Naval Facilities Engineering Command, Pacific.

Paulay, G., M. P. Puglisi, and J. A. Starmer. 2003. The non-scleractinian Anthozoa (Cnidaria) of the Mariana Islands. *Micronesica* 35-36: 138-155.

Randall, R. H. and D. R. Burdick. In prep.

Randall, R. H. and R. F. Myers. 1983. Guide to the Coastal Resources of Guam: Volume II - The Corals. University of Guam Marine Laboratory Contribution 189. University of Guam Press.

Additional comments

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To address the Status Review Report specifically, please find below some comments and questions:

- How will putting them on the ESA list protect them from going extinct in the U.S. (since the ESA only covers those in U.S. waters)? What happens if they are extirpated in U.S. waters, but not globally (since they are considered over their whole range)?
- It would be good to list the abundance of the species in U.S. waters as well as globally. If they are locally common and abundant in U.S. waters, would that change the decision for listing?
- For those species that are uncommon or rare, it would be nice to know if they have always been rare (even before a 30% decline over 30 years), or if they have gone from common to uncommon/rare due to the declines.
- There is very little species specific information available on life history and threats for the 82 species. There is, however, a lot of inference from the Genus and Family level. Are these comparisons and assumptions valid? With recent studies identifying the genetic relationships of coral species, it has become evident that some species thought to be closely related due to morphological and skeletal characterization are deeply divergent genetically. This suggests that inferring similar responses to threats of other species may not necessarily be legitimate.
- The review needs to be clear in the identification of Guam as part of the Mariana Islands, not part of the CNMI, or even NMI (Northern Mariana Islands). It can be considered part of the Southern Mariana Islands.
- When there are species identification discrepancies (i.e. *Acropora palmerae* could be the same as *Acropora robusta*), some the species are still assessed as separate within the Status Review. However, *A. robusta* isn't even considered in the listing. When looking at the Montiporids, there are species which are clumped together in a species complex (due to lack of discernible genetic differentiation) and all three are considered as one (*Montipora dilatata/flabellate/turgescens*). Perhaps *A. palmerae* and *A. robusta* should be considered a complex if there are uncertainties. What happens if a coral is listed that is not an actual species? Would we have to go back and reevaluate the list? Will they list just one species, but protect the whole complex?
 - Guam does not have *Montipora patula*, which is listed, but we do have *Montipora verrilli*, which is not listed. These two are considered a complex and considered as such by the BRT. So, what happens if they list the complex or just *patula*? Will *M. verrilli* be affected as well if the taxonomy is not flushed out?

- If *Porites pukoensis* is not, in fact, a separate species from *P. lobata*, should we assess *Porites lobata*? Why evaluate *P. pukoensis* as a separate species if it is not genetically distinct from *Porites lobata*?
- How can *Alveopora allingi* be only 9% less likely to go extinct than *Montipora patula/verilli* when its only threat is bleaching, but *Montipora patula/verilli* doesn't show any characteristic that would reduce its extinction risk (i.e. it is affected by multiple threats, including bleaching)? I think *A. allingi* would be even less likely than *M. patula/verilli* to go extinct given its wide range of habitat types and broad distribution, putting it "less likely than not".
- Did the presence of these species in federally protected waters affect the likelihood rating? I feel it should given that this means they are already being protected at some level, but this wasn't even brought up in the likelihood considerations.
 - As far as coral protection, Guam already has a variety of local laws in place to protect corals (they were listed in the Draft Management Report).
- Why is *Acanthastrea brevis* split between "less likely than not" and "more likely than not" at 50% likelihood when others that had a likelihood of 50% were considered "less likely than not" (i.e. *Acanthastrea hemprichii*)?
 - *Pocillopora elegans* had a likelihood of 50% and is listed as "as likely as not".