

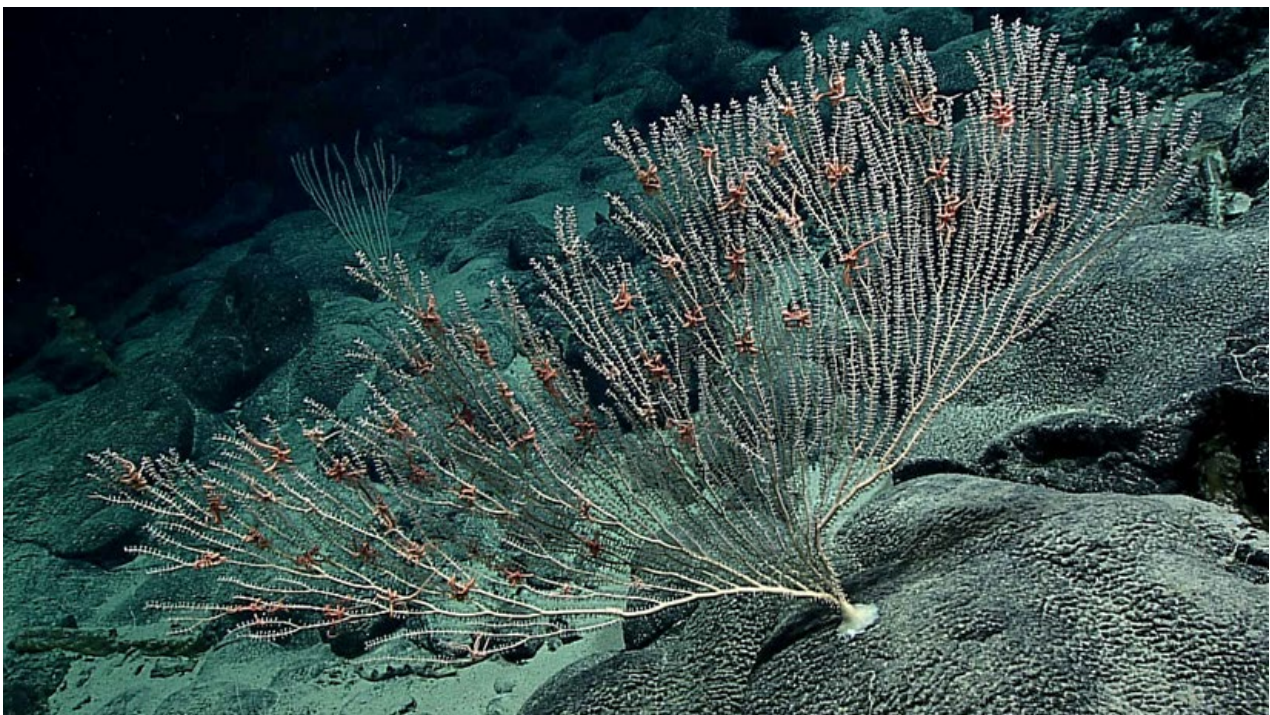


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Preliminary List of Deep-Sea Coral Taxa in the Wake Island Unit of the Pacific Remote Islands Marine National Monument (v. 2021)

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This annex to the U.S. Pacific Islands chapter (Parrish et al. 2017) in “The State of Deep-Sea Coral and Sponge Ecosystems of the United States” provides the first list of deep-sea coral taxa in the Phylum Cnidaria, Classes Anthozoa and Hydrozoa, known to occur in the U.S. waters around Wake Island (Figure 1). For the purposes of this list, deep-sea corals are defined as azooxanthellate, heterotrophic coral species occurring in waters 50 m deep or more. Details are provided on the observed depth range of each taxon (Table 1). This list was compiled from video observations and limited collections conducted during the first deepwater exploration of Wake Atoll and the surrounding seamounts during a NOAA Ship *Okeanos Explorer* expedition in 2016 (Kelley et al. 2019; Kennedy et al. 2019). Twelve remotely-operated vehicle (ROV) dives were conducted at depths between 444 – 3,136m in the Wake Unit of the Monument (nine dives on seamounts and three on the flanks of Wake Island). Therefore, the list does not include many species that occur in shallower waters. **Taxon identifications should be considered**

preliminary, as most were derived only from video without collected samples. Taxonomic names are those currently accepted in the World Register of Marine Species ([WoRMS](https://www.marinespecies.org/)), and are arranged by order, and alphabetically within order by family, genus, and species.

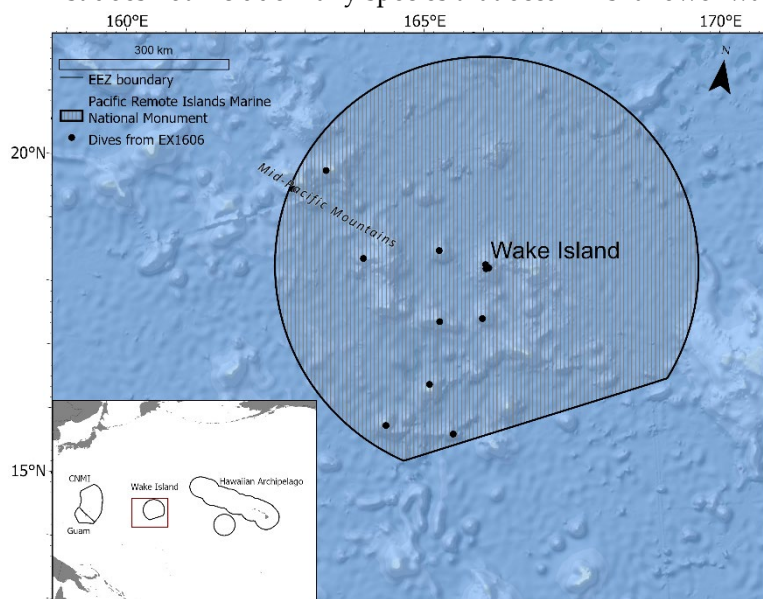


Figure 1. Wake Island and the surrounding U.S. waters of the U.S. exclusive economic zone (EEZ, white boundary). All of the waters within the U.S. EEZ are part of the Wake Unit of the Pacific Remote Islands Marine National Monument. The black dots identify the ROV surveys conducted in 2016.

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Cover Photo: Primnoid coral with brittle stars on a guyot south of Wake Island. Image credit: NOAA Ocean Exploration

Table 1. List of known deep-sea coral species in the Phylum Cnidaria, Class Anthozoa and Class Hydrozoa, and their reported depth distribution in U.S. waters around the Wake Island. Blue fields indicate newly described species since 2017. References are numbered to correspond with citations following the table, along with notes (in superscript letters) pertaining to individual taxa. For taxa identified exclusively from video without collected specimens, identifications should be treated as preliminary.

Higher Taxon	Species	Depth Range (m)	References
Class Anthozoa			
Subclass Hexacorallia			
Order Antipatharia			
Family Antipathidae	<i>Antipathes sylospongia</i> Opresko & Wagner 2020 ^a	1242-2008	1,2,3
Family Cladopathidae	<i>Heteropathes</i> sp. cf. <i>H. americana</i> (Opresko, 2003)	2546	2
	<i>Heteropathes</i> sp. cf. <i>H. pacifica</i> (Opresko, 2005)	2480-2581	2
	<i>Hexapathes</i> sp. cf. <i>H. australiensis</i> Opresko, 2003	3083	2
	<i>Trissopathes</i> sp.	1155-2250	1,2
Family Leiopathidae	<i>Leiopathes</i> sp.	638	2
Family Schizopathidae	<i>Bathypathes pseudoalternata</i> Molodtsova, Opresko & Wagner, 2022	2052	4
	<i>Bathypathes</i> spp.	465-2246	2
	<i>Lillipathes</i> sp.	1413-1983	2
	<i>Parantipathes</i> sp.	2074-2200	2
	<i>Stauropathes</i> sp.	564-3083	1,2
Order Scleractinia			
Family Caryophylliidae	<i>Caryophyllia</i> sp.	1928-2555	2
	<i>Crispatotrochus</i> sp.	461	1
Family Dendrophylliidae	<i>Dendrophyllia</i> sp.	492-590	2
	<i>Eguchipsammia</i> sp.	468-469	2
	<i>Enallopsammia rostrata</i> (Pourtales, 1878) [= <i>Enallopsammia amphleioides</i> (Alcock, 1902)]	573-1129	2
Family Flabellidae	<i>Polymyces wellsi</i> Cairns, 1991	514-636	2
Family Oculinidae	<i>Madrepora oculata</i> Linnaeus, 1758	806-829	1,2
Order Zoantharia			
Family Parazoanthidae	<i>Kulamanamana haumea</i> e Sinniger, Ocaña & Baco, 2013 (= <i>Gerardia</i> sp.)	444-499	1,2

Higher Taxon	Species	Depth Range (m)	References
Class Anthozoa			
Subclass Octocorallia			
Order Alcyonacea			
Family Acanthogorgiidae	<i>Acanthogorgia</i> sp.	814-1896	2
Family Alcyoniidae	<i>Anthomastus tahinodus</i> d'Hondt, 1988	1240-1912	1,2
	cf. <i>Anthomastus</i> sp.	445-1894	2
	<i>Pseudoanthomastus</i> sp.	445-1911	2
Family Chrysogorgiidae	<i>Chrysogorgia</i> cf. <i>abludo</i> Pante & Watling, 2011	1281	2
	<i>Chrysogorgia chryseis</i> Bayer & Stefani, 1988	2520	2
	<i>Chrysogorgia flavescens</i> Nutting, 1908	1894-1958	2
	<i>Chrysogorgia geniculata</i> (Wright & Studer, 1889)	1475- 2541	2
	<i>Chrysogorgia stellata</i> Nutting, 1908	1951-2572	2
	<i>Iridogorgia magnispiralis</i> Watling, 2007	1208-2201 ^b	2
	<i>Pseudochrysogorgia</i> sp. ^c	2502-2515	2
	<i>Ramuligorgia militaris</i> (Nutting, 1908) ^d (= <i>Pleurogorgia militaris</i> Nutting, 1908)	2466-2577	1,2
	<i>Rhodaniridogorgia superba</i> (Nutting, 1908)	531-598	2
<i>Rhodaniridogorgia</i> sp.	1851	2	
Family Coralliidae ^e	<i>Hemicorallium abyssale</i> (Bayer, 1956) (= <i>Corallium abyssale</i>)	1232-1846	2
	<i>Pleurocorallium porcellanum</i> (Pasternak, 1981) (= <i>Corallium kishinouyei</i> Bayer, 1996)	1380-1508	2
Family Keratoisididae ^f (Formerly Isididae, in part)	<i>Acanella weberi</i> Nutting, 1910	1845-1851	2
	<i>Bathygorgia</i> sp. ^c	1851	2
	<i>Eknomisis</i> sp. (branched)	1399-1505	2
	<i>Eknomisis</i> sp. (unbranched)	1175-3069	2
	<i>Jasonisis</i> sp.	1854-1984	1,2
	Keratoisidinae (Clade 4, Subclade I4) (<i>sensu</i> Watling et al. 2022) ^g	1847-2036	1,2,5
Family Nidaliidae	Unidentified Nidaliidae	492	2
Family Paragorgiidae	<i>Paragorgia coralloides</i> Bayer, 1993	1910	2
	<i>Paragorgia</i> sp.	1241-2084	2
Family Plexauridae	Unidentified Plexauridae	444-1912	2
Family Primnoidae	<i>Calyptrophora angularis</i> (Nutting, 1908)	1843-2174	2
	<i>Calyptrophora diaphana</i> Cairns, 2012	1105-1116	1,2
	<i>Calyptrophora lyra</i> Cairns, 2018	1380-1506	1,2,6
	<i>Calyptrophora wyvillei</i> Wright, 1885 (= <i>Calyptrophora versluysi</i> Nutting, 1908))	1116-1224	2
	<i>Candidella gigantea</i> (Wright & Studer, 1889)	1850-2245	2

Higher Taxon	Species	Depth Range (m)	References
Family Primnoidae (cont.)	<i>Macroprimnoa ornata</i> Cairns 2018	3061-3067	1,2,6
	<i>Narella aurantiaca</i> Cairns, 2018	746-761	1,2,6
	<i>Narella bowersi</i> (Nutting, 1908)	1845-2522	2
	<i>Narella calamus</i> Cairns, 2018	3026-2074	1,2,6
	<i>Narella dichotoma</i> (Versluys, 1906) (Includes <i>Narella nuttingi</i> Bayer, 1997)	1211-2504	2
	<i>Narella macrocalyx</i> Cairns & Bayer, 2007 [2008]	1237-2529	2,6
	<i>Narella merga</i> Cairns, 2018	1214-2582	1,2,6
	<i>Paracalyptrophora</i> sp.	1088-2186	2
Family Victorgorgiidae	<i>Victorgorgia alba</i> (Nutting, 1908) ^h (= <i>Anthothela nuttingi</i> Bayer, 1956)	637-1243	2
Order Pennatulacea			
Family Anthoptilidae	<i>Anthoptilum</i> sp. ^c	455-944	2
Family Pennatulidae	<i>Ptilella inflata</i> (Kükenthal, 1910) (= <i>Pennatula inflata</i> Kükenthal, 1910)	595-613	2
Family Protoptilidae	<i>Protoptilum</i> sp. ^c	2576	2
Family Scleroptilidae	<i>Calibelemnon symmetricum</i> Nutting, 1908 ^c	444-1259	2
Family Umbellulidae	<i>Umbellula</i> sp.	1144-1281	2

Higher Taxon	Species	Depth Range (m)	References
Phylum Cnidaria			
Class Hydrozoa			
Order Anthoathecata			
Family Stylasteridae	<i>Lepidopora</i> sp.	2177-2250	1,2

Notes:

- A recently described species of black coral, identified as *Antipathes sylospongia* (Opresko & Wagner 2020), was observed living commensally with different species of glass sponges in the order Sceptrulophora. One collection was made on *Farrea* cf. *occa erecta* on a guyot southwest of Wake Island.
- Colonies of "*Iridogorgia* sp." records (those not identified as *I. magnispiralis*) ranged from 1844-2503m
- Tentative identification.
- Cairns et al. (2021) redescribed *Pleurogorgia militaris* Nutting 1908, placing it in a new genus, *Ramuligorgia*
- A large number of observations were recorded only as "*Hemicorallium* sp." and one as *H. nr. laauense*. The depth range of "*Hemicorallium* sp." records (those not identified as *H. abyssale*) ranged from 809-1970m.
- Saucier et al. (2021) have revised the phylogeny of the bamboo corals (formerly Isididae), resulting in five families. The bamboo corals described from Wake all appear to belong in the new family Keratoisididae.

- g. Watling et al. (2022) Used genetic information along with morphological characters that include axis construction, branching pattern, polyp form, and sclerite type and arrangement to distinct clades and subclades within the Family Keratoisididae.
- h. Moore et al. (2017) have placed *Anthothela nuttingi* Bayer, 1956 (originally *Clematissa alba* Nutting, 1908) in the genus *Victorgorgia* based on morphological characteristics and phylogenetic reconstructions using mitochondrial gene regions. There were some colonies at depths as shallow as 458 m identified as *Victorgorgia* sp. that may represent a separate species.

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