



Petition to List 83 Reef-building Coral Species under the Endangered Species Act

**NOAA
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SERVICE**



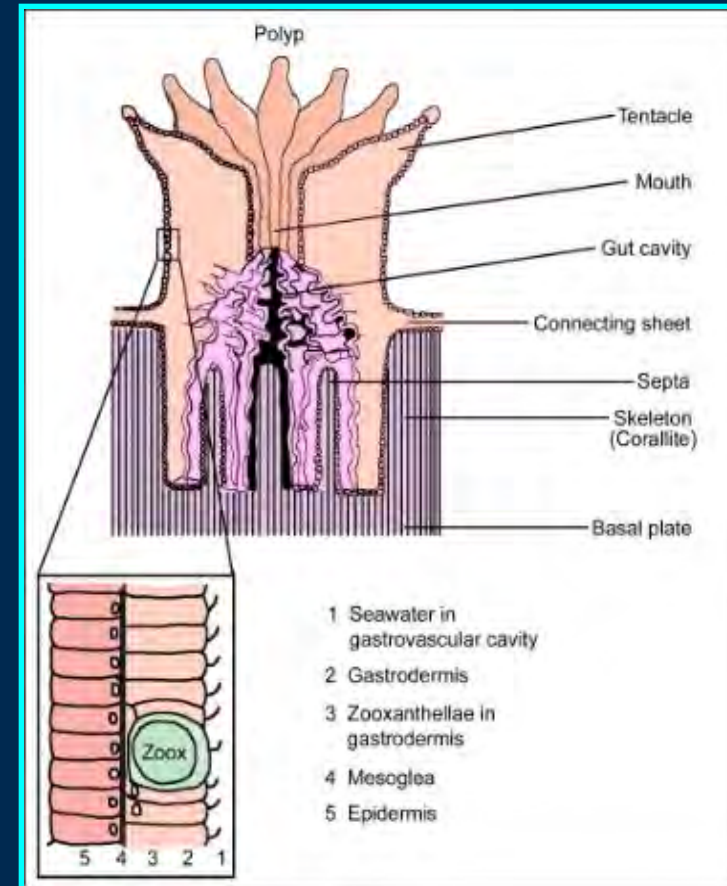
Petition Background

- **Received from Center for Biological Diversity on October 20, 2009**
- **Requested 83 species to be listed as endangered or threatened**
- **Requested critical habitat be designated concurrently**
- **Asserts at least 30% reductions over a 30–year period**
- **Their source: all species are listed as either vulnerable (76), endangered (6) or critically endangered (1) by the World Conservation Union (IUCN)**



Corals

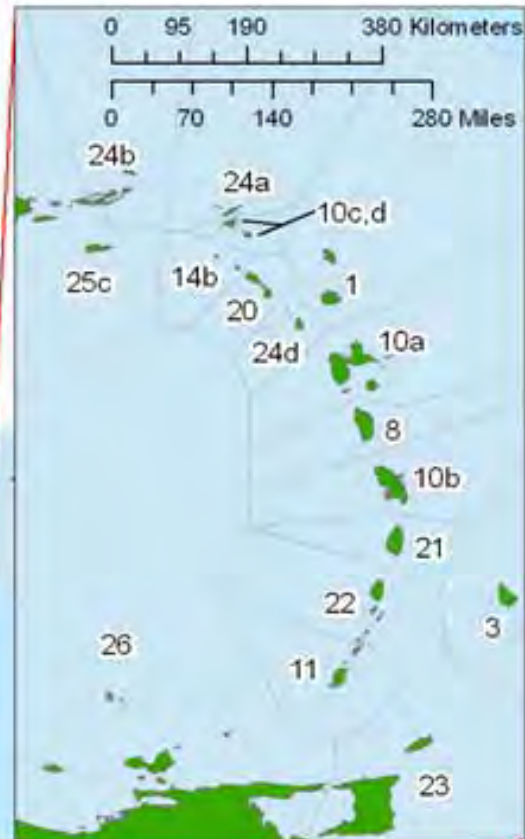
- Marine invertebrates of the phylum Cnidaria
- Secrete calcium carbonate skeletons
- Can be solitary or colonial
- Need hard substrate to settle
- Require temperatures between 25° - 30° C
- Require adequate sunlight and water quality
- Two modes of reproduction
 - Sexual (brooding or broadcast spawning)
 - Asexual (fragmentation)



Schematic view of coral polyp (corallite) anatomy
{Sumich, 1996}

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|--|---|---|
| 1. Antigua & Barbuda | 11. Grenada | 19. Panama |
| 2. Bahamas | 12. Guatemala | 20. St. Kitts & Nevis |
| 3. Barbados | 13. Haiti | 21. St. Lucia |
| 4. Belize | 14. Holland (a:Aruba, Curacao,
Bonaire; b:Saba, St. Maarten,
St. Eustatius) | 22. St. Vincent & Grenadines |
| 5. Colombia | 15. Honduras | 23. Trinidad and Tobago |
| 6. Costa Rica | 16. Jamaica | 24. United Kingdom (a:Anguilla, b:British
Virgin Islands, c:Cayman Islands,
d:Montserrat, e:Turks & Caicos) |
| 7. Cuba | 17. Mexico | 25. United States (a:Florida,
b:Puerto Rico, c:US Virgin Islands) |
| 8. Dominica | 18. Nicaragua | 26. Venezuela |
| 9. Dominican Republic | | |
| 10. France (a:Guadeloupe,
b:Martinique, c:St. Berthelemy, d:St. Martin) | | |





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|--|---|---|----------------------|--|
| 1. Australia (a:Cocos-Keeling Islands, b:Christmas Island, c:Norfolk Island) | 16. Fiji | 29. Madagascar | 44. Panama | 61. Tonga |
| 2. Bahrain | 17. France (a:New Caledonia, b:French Polynesia, c:Mayotte, d:Reunion, e:Wallis & Futuna) | 30. Malaysia | 45. Papua New Guinea | 62. Tuvalu |
| 3. Brunei | | 31. Maldives | 46. Philippines | 63. United Arab Emirates |
| 4. Cambodia | | 32. Marshall Islands | 47. Qatar | 64. United Kingdom (a: Pitcairn Islands, b:British Indian Ocean Territory) |
| 5. Chile (Easter Island) | 18. Guatemala | 33. Mauritius | 48. Samoa | 65. United States (a:Hawaii, b: Commonwealth of the Northern Mariana Islands, c:Guam, d:American Samoa, e:Pacific Remote Island Areas) |
| 6. China | 19. Honduras | 34. Mexico | 49. Saudi Arabia | |
| 7. Colombia | 20. India (a:Andaman and Nicobar) | 35. Mozambique | 50. Seychelles | |
| 8. Comoros Islands | 21. Indonesia | 36. Myanmar | 51. Singapore | |
| 9. Costa Rica | 22. Iran | 37. Nauru | 52. Solomon Islands | |
| 10. Djibouti | 23. Israel | 38. New Zealand (a:Cook Islands, b:Tokelau) | 53. Somalia | |
| 11. Ecuador | 24. Japan | 39. Nicaragua | 54. South Africa | |
| 12. El Salvador | 25. Jordan | 40. Niue | 55. Sri Lanka | |
| 13. Egypt | 26. Kenya | 41. Oman | 56. Sudan | |
| 14. Eritrea | 27. Kiribati (a:Gilbert, b:Phoenix, c:Line Island groups) | 42. Palau | 57. Taiwan | |
| 15. Fed. States of Micronesia | 28. Kuwait | 43. Pakistan | 58. Tanzania | |
| | | | 59. Thailand | |
| | | | 60. Timor-Leste | |
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Petition Response Steps





Coral Status Review

- Analyzed status and trends of 82 species
- Identified major threats to species
- Estimated level of extinction risk
- Did not make endangered, threatened, or not warranted determinations



Pocillopora elegans (Veron, 2000)



Threats to Corals

**Ocean Warming
Disease**

Ocean Acidification

Reef Fishing—Trophic Effects

Sedimentation

Nutrients

Sea-Level Rise

Toxins

Changing Ocean Circulation

Changing Storm Tracks/Intensities

Predation

Destructive Fishing Practices

Ornamental Trade

Natural Physical Damage

Human-induced Physical Damage

Aquatic Invasive Species



Now - Potential Determinations

Endangered - any species *in danger of extinction* throughout all or a significant portion of its range

Threatened - any species which is likely to become an endangered species within the *foreseeable future* throughout all or a significant portion of its range

Not Warranted



ESA Section 4 Listing Factors

A species may be listed if it is threatened or endangered due to any one of the following five listing factors:

- 1. Present or threatened destruction, modification, or curtailment of its habitat or range**
- 2. Overutilization for commercial, recreational, scientific, or educational purposes**
- 3. Disease or predation**
- 4. Inadequacy of existing regulatory mechanisms**
- 5. Other natural or man-made factors affecting its continued existence**



Next Steps

- Analyze listing factors; make listing determinations
- Publish 12-month finding in Federal Register (due April 15, 2012)
- *If any corals proposed for listing*, final rule would be due one year later (April 15, 2013)
 - Final rule would take effect 60 days later (June 15, 2013)
- *If any corals are listed*:
 - consider development of 4(d) rules for any threatened species
 - consider designating critical habitat
 - prepare Recovery Plans



Potential Implications: Section 7

- **Any federal agency that authorizes, funds, or carries out an action that may affect listed species is required to complete a Section 7 consultation**
- **Examples of federal activities that may affect corals:**
 - Channel deepening/dredging
 - Harbor expansion or in-water improvements
 - Shoreline development that includes in-water work
 - Beach re-nourishment
 - Sewage outfalls
 - Pile driving, in-water blasting
 - Military training that disturbs the substrate
 - Fishing techniques that disturb the substrate



Results?

To be determined...



Porites pukoensis (Veron, 2000)

For more information, visit our website:

http://www.fpir.noaa.gov/PRD/prd_coral.html

<http://sero.nmfs.noaa.gov/pr/esa/82CoralSpecies.htm>



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