

CIBJO Guides Precious Coral

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... and throughout the ages we have adored Precious Coral

Introduction

The jewellery industry defines precious corals are those that are used in jewellery and decoration, specifically red, pink and white varieties with porcelain like lustre after polishing. They are limited to few species belonging to the Corallidae family, consisting of the three following genera: Corallium, Pleurocorallium and Hemicorallium. They have a specific gravity of approximately 2.8 and a hardness of 3½ on Mohs scale.

This text serves as a simple guide for all those involved with coral and coral jewellery. The contents conform with accepted trade practices and nomenclature for the industry as recommended by CIBJO, The World Jewellery Confederation. This simple guide to precious coral does not constitute a gemmological manual for the testing of precious coral, nor for identifying the species of precious coral, but rather is designed as a support to educational programs. The identification of coral requires experience and scientific/gemmological skills. The conclusive identification of coral species is a complex task, usually requiring advanced testing techniques including trace-element analysis and DNA "fingerprinting".

Importantly, this guide to Precious Coral does not substitute for, but rather compliments, the CIBJO Coral Book that is available as a free download at <u>https://www.cibjo.org/the-blue-books/</u>. It is recommended that readers also refer to the CIBJO Coral Book whenever uncertainty occurs.

Distinguishing between precious, common and reef coral

Precious coral species live in a different ecosystem than reef and common coral species. Reef-building corals ("Coral reef") inhabit shallow water in specific ecosystems such as the Great Barrier Reef and the Caribbean, as well as deeper waters where they are known as mesophotic corals, found at depths of 30-150 metres and these corals are not considered precious corals or used the jewellery industry. Common corals of both calcareous and non-calcareous types are also not considered to be precious coral some being be found in coral reefs. Common corals Include species from the Isidae, Primonidae, Parazoanthidae, Helioporidae, Melithaeidae, Sylasteridae families and the Antipatharia order. These are only rarely found in jewellery but they have been used for the production of ornaments, typically after treatment by polymer impregnation, bleaching or dying. Nowadays, Precious corals are collected 50 meters below the surface of the sea/ocean See Figure 1.

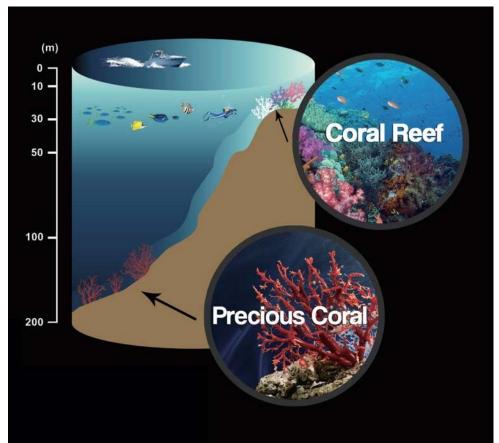


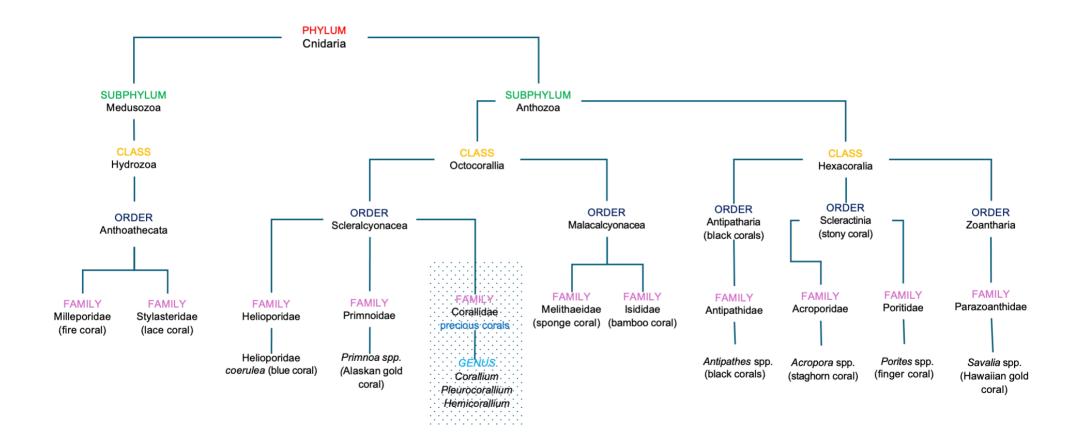
Figure 1: Most reef coral is located at approximate 8–20 m below sea level, whereas precious coral, such as "Aka" used in this example, is at depths of around 50–200 m and more.

Precious Coral Commercial and Proper Names

Commercial name	Scientific name	
Aka	Corallium japonicum	
Angel's skin	Pleurocorallium elatius (colour variation)*	
Bello	Corallium rubrum (colour variation)	
Bello di Sciacca	Corallium rubrum (colour variation from Sciacca deposit)	
Bianco	Pleurocorallium konojoi	
Bianco Rosa	Pleurocorallium secundum	
Boké	Pleurocorallium elatius (colour variation)	
Cerasuolo	Pleurocorallium elatius	
Deep Sea	Hemicorallium laauense	
"Garnet" coral"	Hemicorallium regale	
Magai	Pleurocorallium elatius (colour variation)	
Mediterranean	Corallium rubrum	
Midway	Pleurocorallium secundum	
Miss	Hemicorallium sulcatum	
Missu	Hemicorallium sulcatum	
Misu	Hemicorallium sulcatum	
Momo	Pleurocorallium elatius	
Moro	Corallium japonicum	
Oxblood	Corallium japonicum	
Peau d'Ange	Pleurocorallium elatius (colour variation)*	
Pelle d'Angello	Pleurocorallium elatius (colour variation)*	
Pure White	Pleurocorallium konojoi	
Rosato	Pleurocorallium secundum	
Sardegna	Corallium rubrum	
Sardinian	Corallium rubrum	
Satsuma	Pleurocorallium elatius	
Sciacca	Corallium rubrum (from Sciacca deposit)	
Shinkai	Hemicorallium laauense(cryptic species)	
Shiro	Pleurocorallium konojoi	

^{*} rarely, the commercial name may be also used for colour variation of *Corallium rubrum* and *Corallium japonicum*.

Simplified Coral Taxonomy



Common Coral Species

Bamboo coral

A common coral from the large, flexible and segmented species of the *Isididae* family composed of white calcitic internodes and dark keratinous gorgonian nodes, including species of the genera *Isis*, *Lepidsis* and *Acanella*. The white calcite component is commonly bleached and then dyed pink or red to imitate precious coral. Occurs practically worldwide, notably in Tasmania, New Zealand and USA waters. Also known in the trade as "mountain coral", "Chinese coral", "sea bamboo coral", "king coral", "tiger coral" and "jointed coral".



Figure 2: A specimen of Bamboo Coral; https://commons.wikimedia.org/wiki/File:Isidella_tentaculum_-_NOAA.jpg

Black coral

The generic designation of the colonial common coral belonging to the order *Antipatharia*. This forms quite flexible, spiny, tree like, unbranched or branched colonies composed of protein and chitin (non-calcareous skeletons) with very dark brown to black colour. Bleaching is common to obtain golden coloration. Common commercial names include accarbaar, akabar, horn coral and king coral. Black coral occurs almost worldwide, especially in strong current environments at depths up to 6000 meters, namely in the Caribbean, Hawaii and Oceania. All corals belonging Antipatharia order, including the *Antipathes* genus (*Antipathes* spp.) are listed in Appendix II of CITES.



Figure 3: A specimen of Black Coral: Black coral https://commons.wikimedia.org/wiki/File:Aphanipathes.jpg

Blue coral (Heliopora coerulea)

A reef building coral of calcareous composition belonging to the family *Helioporidae* specially the *Heliopora coerulea*. It has a distinct blue colour, with a rough and porous skeleton that usually requires resin impregnation to be used as ornament. Occurs in Indo-Pacific shallow waters and, as a reef building coral, is protected and hardly seen as a gem material today. This species is listed in the Appendix II of CITES. Also known in the trade as blue ridge coral, blue sponge coral and denim coral.

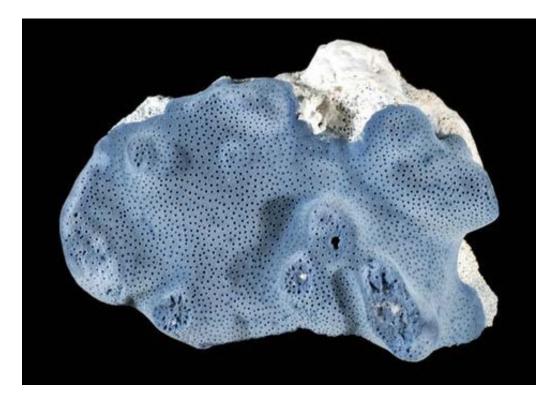


Figure 4: A specimen of Blue Coral: By Eric A. Lazo-Wasem - Gall L (2019). Invertebrate Zoology Division, Yale Peabody Museum. Yale University Peabody Museum. Occurrence dataset https://doi.org/10.15468/0lkr3w accessed via GBIF.org on 2019-08-31. https://www.gbif.org/occurrence/1039258522, CC0, https://commons.wikimedia.org/w/index.php?curid=81751518

Sponge coral

A common coral belonging to the family Melitidae of the order Malacalcyonacea. Its name is derived from its similar appearance to sponges. Until recently sponge coral was not used for jewellery because it has too many holes. As such, to be used in jewellery today, it relies on being filled with resin or a polymer and being polished. In addition to being filled, some material is also dyed, and a small amount of sponge coral has reportedly been "pressed" (crushed up), and mixed with epoxy to be formed into desired shapes. Sponge coral is often sold as natural Congi or "red spongy coral".

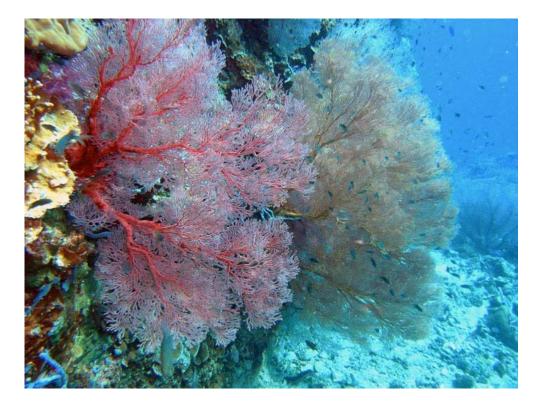


Figure 5: A specimen of Sponge Coral: By Anders Poulsen, Deep Blue (http://www.colours.dk/) - http://www.colours.dk/anders/diving/corals/gorgonian/gorgonian.html, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=1843988

Golden coral

Natural golden colored non-calcareous varieties belonging to the Primnoidae family with characteristic ring growth structures that occur at various depths, up to 1000 meters or more, in Alaskan waters, USA, and to the *Zoanthidae* family, notably *Kulamanamana haumeaae*, also with characteristic growth structures that lives at depths of 340-580 meters in Hawaiin waters that, after polishing may acquire a characteristic sheen effect. Black coral may be treated to obtain golden colour.

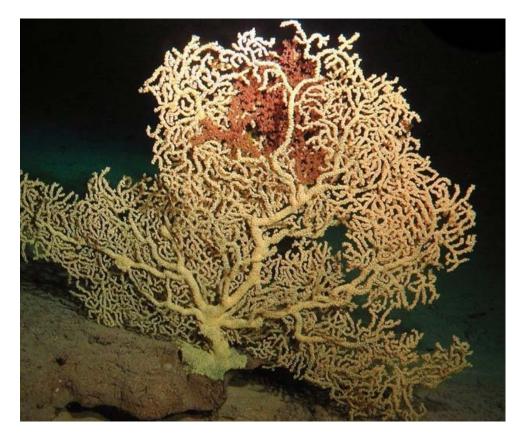


Figure 6: A specimen of Golden Coral: by Sinniger, Frederic; Ocaña, Oscar V.; Baco, Amy R. (2013). Diversity of Zoanthids (Anthozoa: Hexacorallia) on Hawaiian Seamounts: Description of the Hawaiian Gold Coral and Additional Zoanthids (Report). 8. PLOS ONE. pp. e52607. Bibcode:2013PLoSO...852607S. doi:10.1371/journal.pone.0052607. PMC 3541366. PMID 23326345., CC BY 2.5, https://commons.wikimedia.org/w/index.php?curid=137419670

Lace coral

Pink-to-red branches of the common coral of the Stylaster genus from the Stylasteridae family, with similar visual characteristics to some precious corals. Apart from a totally different taxonomy and geographic distribution, these have a different compositions (aragonitic skeleton, compared with the calcitic skeleton of Corallidae species) and are usually dyed and impregnated to imitate precious corals. All of these species belonging to the Stylasteridae family have been listed in Appendix II of CITES since 1990.



Figure 7: A specimen of Lace Coral: By Seascapeza - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=27719491



Washington Convention CITES

The Convention on International Trade in Endangered Species

The Washington Convention — CITES, entered into force in 1975, in response to concerns that many species were becoming endangered because of international trade. Because this trade crosses national borders, international collaboration and cooperation is crucial to ensure this trade is sustainable and controlled and does not threaten or endanger wildlife.

CITES regulates international trade in species by including species on one of three Appendices.

Appendix I — species that are threatened with extinction that cannot be traded internationally for primarily commercial purposes, unless permitted in exceptional circumstances (e.g. scientific research).

Appendix II — species that are not necessarily threatened now, but that may become so unless trade is controlled. They can be traded internationally for commercial purposes, but within strict regulations, requiring determinations of sustainability and legality.

Appendix III — species that are not endangered and that have been included at the request of a country which then seeks the cooperation of other countries to help prevent what considers to be unsustainable or illegal exploitation. The main objective is monitoring.

Coral groups included in the CITES Appendices II

Black coral (*Antipatharia* spp.) see Figure 3 Blue coral (*Heliopora coerulea*) see Figure 4 Stony corals (*Scleractinia* spp.) Organ-pipe corals (Tubiporidae spp.) Fire corals (Milleporidae spp.) Lace corals (Stylasteridae spp.) see Figure 7

Coral groups included in the CITES Appendix III

Red and pink coral (*Corallium elatius, C. japonicum, C. konojoi, C.secundum*), at the request from China.

Coral groups which are NOT included in the CITES Appendices

Mediterranean coral – *Corallium rubrum* "Garnet" coral – *Hemicorallium regale* Deep sea coral – *Hemicorallium laauense* Misu coral – *Hemicorallium sulcatum* Bamboo coral (Isididae) New coral (Not classified)

International regulation

Information for traders, customs and shipping agencies

Commercial name and Scientific name	CITES Appendix	Note and Comment
Mediterranean Sardinian Sciacca <i>(Corallium rubrum)</i>	Not included in any CITES Appendix	Can be exported and imported in every country
"Garnet" coral <i>(Hemicorallium regale)</i>	Not included in any CITES Appendix	
Deep sea (Hemicorallium laauense)	Not included in any CITES Appendix	
Misu Missu Miss <i>(Hemicorallium sulcatum)</i>	Not included in any CITES Appendix	
Midway (Corallium secundum)	CITES Appendix III	Requested by China, but lives only in the Pacific Ocean
Aka Moro Oxblood <i>(Corallium japonicum)</i>	CITES Appendix III	Requested by China
Cerasuolo Momo Satsuma <i>(Corallium elatius)</i>	CITES Appendix III	Requested by China
White (Corallium konojoi)	CITES Appendix III	Requested by China
Angel skin Boké Magai <i>(Corallium elatius)</i>	CITES Appendix III	Requested by China

Coral included in Appendix III:

Enacted in 2008, expired in 2013 and extended until 2016, when CITES must pronounce definitively to include in Appendix II or exclude it from the Washington Convention.

Fish and wildlife

Any importer in Switzerland and the United States requires a Fish and Wildlife licence to import coral.

Coral Value Criteria

Understanding the value of precious coral requires the full acknowledgment of the value factors associated with the various types and species of precious coral, these are; colour, colour distribution, lustre, surface quality, size and symmetry.

Considerable practical experience is required to be able to classify precious corals in terms of their value. Precious corals do not have an internationally accepted grading system for any of those factors, let alone an holistic classification.

Colour

The most valued colour differs from species to species. For example, reds are much more appreciated than oranges in Mediterranean coral, *Corallium rubrum*. Darker saturated reds are much appreciated in oxblood coral, *Corallium japonicum*, and a flesh light pink hue is high popularity in the angel skin variety of *Corallium elatius*.



Colour distribution

The greater the uniformity of the colour, the higher the value. In Mediterranean coral, colour is almost always uniform. In oxblood coral, for example, the presence of the large whitish core, although a valid diagnostic feature, is not commercially desirable. In other precious corals, especially in angel skin, it is very rare to obtain uniform pink colours throughout the bead or cabochon. This value factor related to the coral variety in question, but, in general, any contrasting streak or spots as well as veins or colour zoning have implications on the value of the coral.

Precious coral regulations for harvesting

"We, the jewellery industry, have experience of joining hands with civil society to show that the precious objects we produce are a force for good, and while we may create non-essential products, we are an essential industry," Dr Cavalieri said. "People need to associate coral jewellery with good environmental management. Environmentally conscious consumers should go out of their way to purchase precious coral jewellery, and certainly not avoid it.".

"The CIBJO's president's proposal was received warmly by attendees at the Pacific Precious Coral Forum, and was supported by Ming-Li Hung, President of the Taiwan Jewellery Industry Association, who agreed to seek full membership as a national association in CIBJO, and work toward the establishment of the CIBJO Precious Coral Commission at the 2014 CIBJO Congress in Moscow".

The Promise of Sustainability

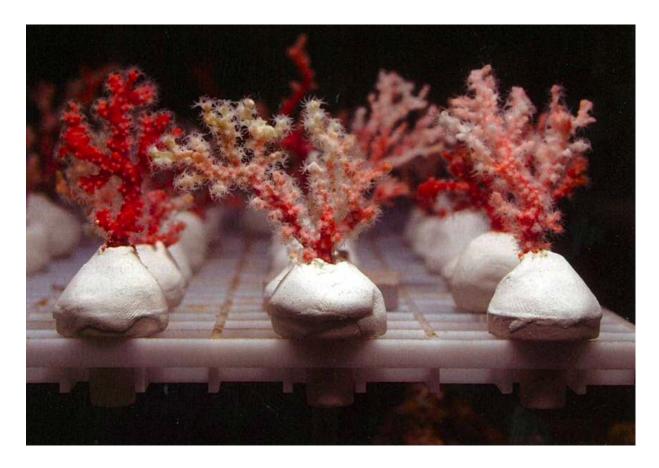


Figure 8: Precious coral transplantation

Taiwan

Strict regulations for precious coral fishing have been in force since February 2009. Taiwan has adopted a restrictive approach towards precious coral fisheries. Only vessels with precious coral fishery licenses are allowed to fish for coral.

These vessels must abide by the following rules:

- 1. Vessels must be fitted with Vessel Monitoring Systems which reports the location by the hour;
- 2. Vessels can operate only in five designated regions;
- 3. 220-day operation limit for each year;
- 4. Annual quota of 6 tons for each vessel.
- 5. Fishermen must record and submit fishery logbooks on a daily basis;
- 6. Subject to random inspections.

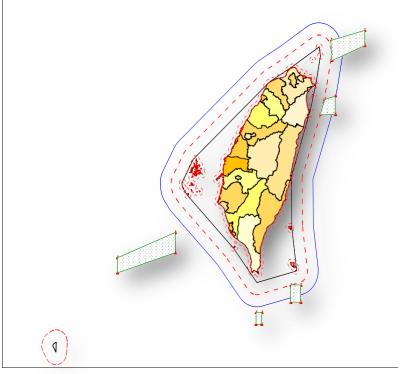


Figure 9: Figure 8 Illustration of the operating areas of coral fishing vessels. The white squares indicate the 5 designated coral fishing areas.

If the fishermen fail to comply with these regulations, their licenses will be retracted and will never be reissued again. In 2009, there were 96 legitimate coral fishery licenses. Currently, there are only 60 licenses left.

Coral boats can only dock at the Suao, Chijin or Magoong ports. Every boat must notify the government before heading out for coral activities. Upon their return, the customs will record details of the corals harvested.

Japan

To explore the possibility of a sustainable fishery of Japanese red coral *(Corallium japonicum,* also known as *Paracorallium japonicum)*, the morphometry and the population structure of populations in a non-harvested area and in a harvested area were investigated using a remotely operated vehicle (ROV) off Amami Island, Southern Japan, in 2009. In the harvested population, the estimated average ages are 10 to 20 years. In contrast, the main mode in the non-harvested population extends widely from 20 to 40 years, with a small but distinct secondary mode between 50 and 60 years. Commercially collected specimens are mainly 30–40 years old. The difference in the modes of non-harvested and harvested populations suggests that harvested populations return to the pre-fishing level after at least 10–20 years of a biological rest period. This study indicates a rotational harvest is useful for sustainable management.

In Japan, the prefectural governments control the coral fishery.

The coral fishing regulations of Kochi Prefecture include:

- 1. Only the boats with coral fishing permit are allowed to harvest coral, and new permits are not to be licensed.
- 2. From January to February, and June to August, the period when corals are laying eggs, coral fishing is prohibited.
- 3. After the nets are placed in the deep sea, the boat must stay still and the engine must be turned off in order to prevent the dragging of the nets minimising the possible damage of the seabed.
- 4. Corals from sizes less than 7mm and 3cm in length, must be put back in the sea.
- 5. Fishermen must record their daily activities in a logbook, which are to be submitted to the local government.
- 6. Maximum 500kg of living coral harvesting per year.
- 7. For protective reasons, there are only certain areas where boats can harvest coral.
- 8. In Kagoshima and Okinawa, the prefectural governments permit only fishing gear which can catch precious corals selectively, such as remotely operated vehicles (ROV).
- 9. Off Ogasawara Island, the coral fishing prohibited from January to April and June.

Italy and the Mediterranean

At the request of its members, the General Fisheries Commission for the Mediterranean (GFCM) has engaged in several actions over the past 4 years to develop a Regional Management Plan for Red Coral. Two recommendations have been issued in 2011 and 2012 as a temporary measure for the conservation of this highly valuable species from an ecological and economical point of view. In 2014 a document with Guidelines for the management of Mediterranean red coral populations in the Mediterranean was adopted by the GFCM members as a transitional measure towards the adoption of a Regional Management Plan which is under development. Members at the 38th Session agreed that this resource deserves a specific research program to fill important gaps on the knowledge of its actual status in the whole region and proposed a series of priority lines of research in which experts of the area should get involved. Fundraising is needed to launch a comprehensive program to improve the knowledge of red coral in the Mediterranean.

Rec. GFCM/35/2011/2 on the exploitation of red coral in the GFCM competence area.

This recommendation prohibits the harvest of red coral at less than 50 m depth until scientific studies indicate otherwise and establishes that the hammer used by scuba divers is the only permitted gear for harvesting. Until 2015, remotely operated vehicles (ROVs) can only be used for scientific purposes provided that they are not equipped with manipulator arms. The recommendation also states that fishers should record and report to national authorities daily catches and fishing effort by area and depths and make this information available to GFCM Secretariat so that it can be submitted to the consideration and advice of the SAC.

Rec. GFCM/36/2012/1 on further measures for the exploitation of red coral in the GFCM area

This recommendation establishes that the legal minimum size for red coral colonies to be harvested, retained on board, transhipped, landed, transferred, stored, sold or displayed or offered for sale as raw product should be at least 7 mm diameter at the trunk, measured within one centimetre from the base of the colony. A margin of tolerance of 10 % in live weight of undersized colonies is authorised and could be revised by the SAC on the basis of relevant studies.

According to this recommendation, GFCM members should submit, no later than 31st January of each year starting with the 2013-harvesting season, data on red coral harvesting by means of electronic forms, which have been developed by the GFCM Secretariat.

The adaptive regional management plan has been developed through several seminars and workshops, and may still be revised depending on various input from experts. It is, however, probable that this plan will be finalised, approved, and enforced during 2016. Then, the GFCM recommendations must be adopted by each Mediterranean country and only stricter measures may be implemented or maintained by a single country.

Hawaii & Midway's

The situation in Hawaii and Midway is that there has been very little harvesting, especially due to the high costs associated with such fishing. Thus, regulations are weaker than for the aforementioned countries and areas.

There is currently no fishing in Hawaii, but it is regulated by the Precious Corals Fishery Management Plan. <u>https://www.wpcouncil.org/precious/Precious%20Corals%20FMP.html</u>

Geographic locations of precious coral harvesting

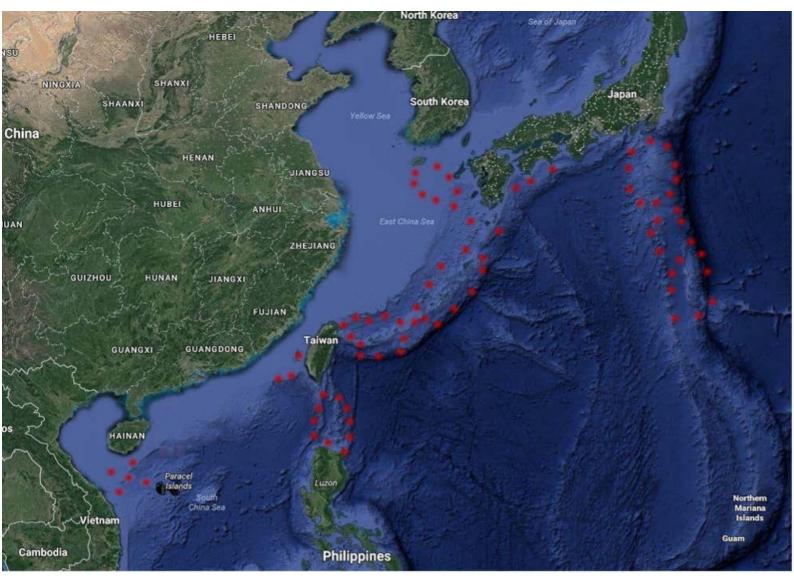
NOTE — These maps are based on recent data. However, they may or may not correspond to exact locations of specific coral.

NOTE — These maps show harvesting areas on Google Maps marked with red dots, based on actual data collected by E. Liverino from fishermen over 40 years. However, they may or may not correspond to exact locations of specific corals.

South China Sea and Japan Sea

Corallium japonicum Pleurocorallium elatius Pleurocorallium konojoi Hemicorallium sulcatum Aka Momo, Boké, Magai Pure White Misu

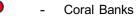
- Coral Banks

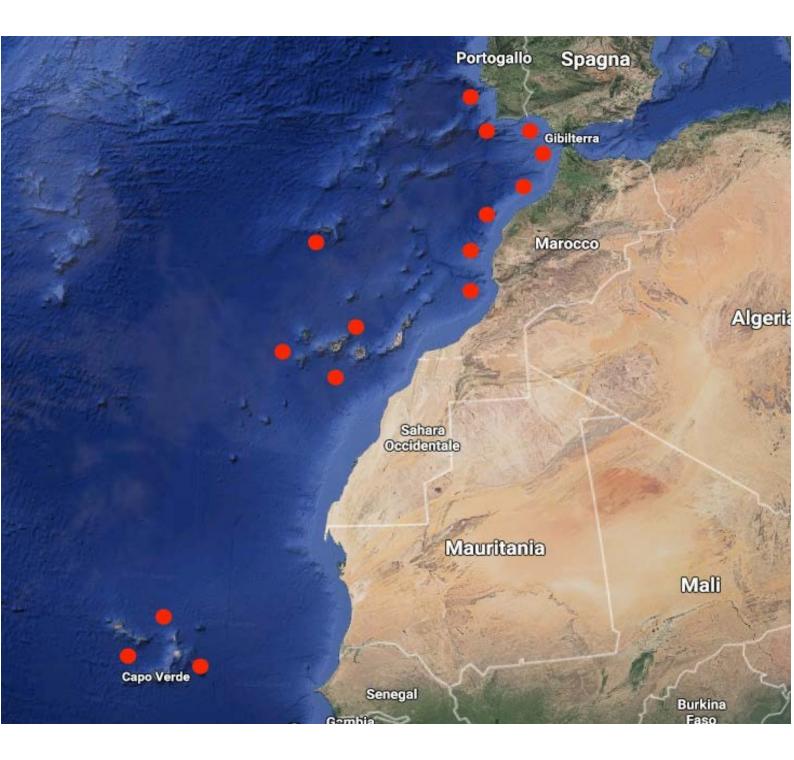


Mediterranean Sea and Atlantic Ocean

Corallium rubrum - Coral Banks Sardinia, Sciacca - Dead Coral Deposit (Sciacca and Alboran)

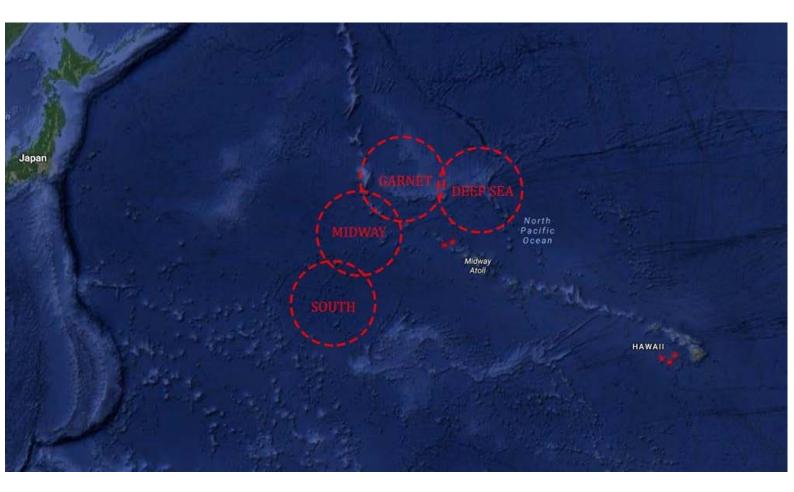






Pacific Ocean

Pleurocorallium secundum Rosato, Midway & White/PinkHawaii watersHemicoralium regale"Garnet coral"Hawaii and Midway watersHemicorallium laauenseDeep SeaMidway waters



Precious corals — Image Summary

For commercial use (e.g., import and export) it is suggested to use CITES Classification



Figure 10: Precious coral parure made in Torre del Greco, Italy, ca. 1860s Liverino 1894.



Figure 11: Hemicorallium. By NOAA - https://www.ncei.noaa.gov/waf/okeanos-animal-guide/Coralliidae025.html, Public Domain, https://commons.wikimedia.org/w/index.php?curid=104158074

Aka (Corallium japonicum)



Scientific name (taxon) CITES Commercial names Colour

Fishing area Depth Shape Height Diameter of trunk Weight

Corallium japonicum

Corallium japonicum (Appendix III) Aka, Moro, Oxblood Coral Dark red and very dark red with lengthwise white "soul".

Japan

80 - 300 m Fan-shape 5-30 cm 5-25 mm 100-500 g

Momo (Pleurocorallium elatius)



100-5,000 g

Scientific name CITES taxon classification Commercial name Colour

Fishing area Depth Shape Height Diameter of trunk Weight Pleurcorallium elatius Corallium elatius (Appendix III) Momo, Cerasuolo, Satsuma Bright red, salmon, orange, and flesh colour with lengthwise white "soul" Japan, Taiwan 150 - 350 m Fan shape 15-40 cm 10-50 mm Angel skin (Pleurocorallium elatius)



Scientific name CITES taxon classification Commercial name Colour Fishing area Depth Shape Height Diameter of trunk Weight Pleurcorallium elatius Corallium elatius (Appendix III) Angel's skin, Pelle d'angelo, Peau d'ange, Magai, Boké Light pink with different colour intensity Japan, Taiwan 150 - 350 m Fan shape 15-40 cm 10-50 mm 100-5,000 g

Pure white (Pleurocorallium konojoi)



Scientific name CITES taxon classification Commercial name Colour Fishing area Depth Shape Height Diameter of trunk Weight Pleurocorallium konojoi Corallium konjoi (Appendix III) Pure White, Shiro, Bianco Milky white and red or pink speckled white South China Sea and Vietnam 80–300 m Fan-shape 10-40 cm 10-30 mm 100-700 g

Midway (Pleurocorallium secundum)



Scientific name CITES taxon classification Commercial name Colour Fishing area Depth Shape Height Diameter of trunk Weight Corallium secundum Pleurocorallium secundum (Appendix III) Rosato, Midway and White/Pink Red speckled or veined white or pink; uniform clear pink Hawaii and Midway Island (1965) 400–600 m Fan-shape 10-30 cm 8-20 mm 50-300 g

Deep sea (Hemicorallium laauense)



Scientific name CITES taxon classification Commercial name Colour

Fishing area Depth Shape

Height Diameter of trunk Weight Hemicorallium Iaauense Not classified (Corallium secundum is suggested) Deep Sea Bright white, clear pink, white pomegranate, red veined or spotted Midway (1981). N/W around Emperor Seamount 1,000 - 2,000 m Fan-shape and parallel trunks lacking primary and secondary branches 10-40 cm 5-15 mm 50-250 g "Garnet" coral (Hemicorallium regale)



Scientific name CITES taxon classification

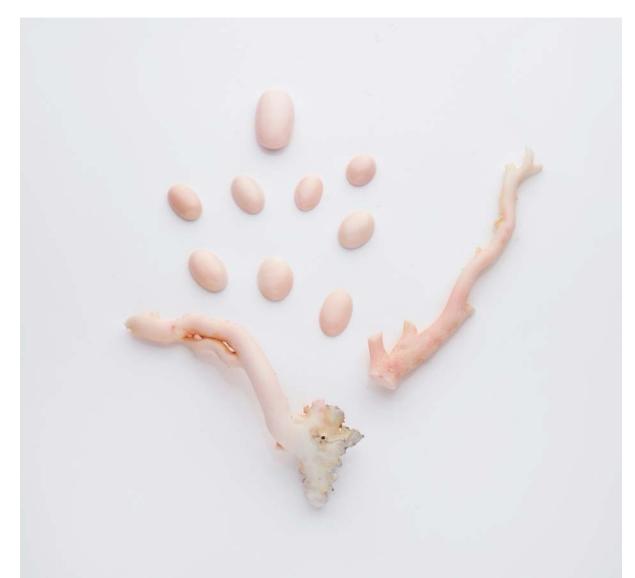
Commercial name Colour

Fishing area Depth Shape Height Diameter of trunk Weight

Hemicorallium regale

Not classified the name *Corallium secundum* is suggested "Garnet" coral Pomegranate-colour with different intensity shades of uniform pink Hawaii (1979) 350 - 600 m Parallel shape 10-20 cm 4-10 mm 50-150 g

Missu (Hemicorallium sulcatum)_



Scientific name CITES taxon classification Commercial name Colour

Fishing area Depth Shape Height Diameter of trunk Weight

Hemicorallium sulcatum

Not classified (*Corallium secundum* is suggested) Misu, Missu, Miss Pomegranate-colour with different intensity shades of uniform pink North Philippines, Taiwan and Japan (Boso Peninsula) 100 - 300 m Fan long shape 25 cm 15 mm 200 g

Mediterranean (Corallium rubrum)



Scientific name CITES taxon classification Commercial name Colour Fishing area Depth Shape Height Diameter of trunk Weight

Corallium rubrum

Corallium rubrum (Not listed) Mediterranean Uniform red to dark orange Mediterranean and adjacent west Atlantic areas 50 - 1000 m Bush-shape 10-20 cm 8 mm 50-300 g

Sciacca (Corallium rubrum)



Scientific name CITES taxon classification Commercial name Colour Collecting area Depth Shape Height Diameter of trunk Weight Corallium rubrum Corallium rubrum (not listed) Sciacca Orange, pink and darked "smoked" orange colour. Mediterranean, southern Sicily. 30–60 m Small branches 7-10 cm 5 mm

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Figure 12:. Inexplicable sculptures of a group of Chinese knights, complete with armour, in just ten centimetres. Representing the 8 noble thoughts (Eightfold Path) corresponds to the last of the Four Noble Truths, a key element of Buddhist doctrine. Understanding them, represents the first step to address the topic of the five powers, which are nothing more than 5 faculties, latent in man, but forgotten.